880 Doolittle Drive Industrial Project

Draft Environmental Impact Report

PLN22-0039

prepared by

City of San Leandro
835 East 14th Street
San Leandro, California 94577
Contact: Cindy Lemaire, AICP, CNU-A, Senior Planner

prepared with the assistance of

Rincon Consultants, Inc.
449 15th Street, Suite 303
Oakland, California 94612

June 2024

RINCON CONSULTANTS, INC.
Environmental Scientists | Planners | Engineers
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Executive Summary

This document is an Environmental Impact Report (EIR) analyzing the environmental effects of the proposed 880 Doolittle Drive Industrial Project (proposed project). This section summarizes the characteristics of the proposed project, alternatives to the proposed project, and the environmental impacts and mitigation measures associated with the proposed project.

Project Synopsis

Project Applicant

Prologis
510-656-1900

Lead Agency Contact Person

Cindy Lemaire, AICP, CNU-A, Senior Planner
City of San Leandro
835 East 14th Street
San Leandro, California 94577
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Project Description

This EIR has been prepared to examine the potential environmental effects of the 880 Doolittle Drive Industrial Project. The following is a summary of the full project description, which can be found in Section 2.0, *Project Description*.

The project site is located at 880 Doolittle Drive, which is on the east side of Doolittle Drive just east of adjacent properties with frontage on Doolittle Drive, approximately 0.2 mile north of its intersection with Davis Street, in San Leandro. The project site measures approximately 14.14 acres and consists of two Assessor's parcels: APN 77A-0741-004-02 and 77A-0741-005-00. Existing access to the project site is from a driveway on Doolittle Drive. Access to the site is also provided from a driveway at the southern terminus of Hester Street, which is a public street north of the project site.

The regional location of the site is shown in Figure 2-1, and the vicinity of the site and its boundaries are shown in Figure 2-2.

Project Characteristics

The proposed project consists of consolidating the two parcels comprising the project site into a single parcel, demolishing existing vacant structures, and developing a new industrial shell building on the site. The proposed project also includes a new surface parking lot, internal circulation roadways, new utility connections, and landscaping. Site preparation activities would commence with demolition of the two existing vacant structures on site, as well as all associated surface parking, landscaping, and internal circulation and driveways on the site. Existing utility connections would be completely removed or abandoned in place in accordance with local and state regulations, in coordination with utility providers. After approximately 6 months following demolition of existing structures, the proposed project would include construction of a new warehouse with supporting

office space. The proposed warehouse is approximately 244,573 square feet, comprised of a 229,573 square-foot of warehouse and 15,000 square feet of associated office space. Approximately 10,000 square feet of office space would be provided on the ground floor alongside the warehouse use. The remaining 5,000 square feet of office space would be on a mezzanine level of the warehouse. The footprint of the warehouse and office use would be 239,753 square feet. The proposed floor area ratio (FAR) is 0.40 and the maximum building height would be 50 feet with an interior clear height of 40 feet. Sixty-four loading docks are proposed, 27 on the north side and 37 on the south side of the building. In addition to dock doors, traditional doors for egress and ingress to the building would be provided for each of the two office spaces within the proposed warehouse. Traditional doors would be provided on the north side of the building and south side of the building, next to dock doors. A conceptual site plan is provided as Figure 2-4.

The exterior of the proposed warehouse would be constructed of a mix of materials, including concrete panels, corrugated and noncorrugated metal panels, wood finish/trim, and glazing. Glazing refers to the glass installed in the building such as windows. Glazing would be a mix of insulated glass installed over concrete and other materials, and glass installed over openings to serve as traditional windows.

The building would be constructed for a speculative tenant or tenants; the project is intended for occupancy by uses consistent with the site's General Industrial designation, as well as those uses permitted under the site's Industrial General zoning classification. The proposed shell building would be designed to accommodate a future industrial tenant who may perform interior improvements to accommodate their specific needs.

Parking and Site Access

Access to the project site would be from the driveway on Doolittle Drive in the southwest area of the site, and from the end of Hester Street in the northern area of the site. Although these are both existing driveways, the proposed project would include reconstruction of the driveways to meet City standards and current ADA requirements. This would involve repairs as needed of the driveway from Doolittle Drive. New curb cut would be provided at the cul-de-sac on Hester Street, which would also include reconstructing (i.e., replacement of) portions of the sidewalk along the project site frontage on Hester Street. Additionally, a new, second, driveway to the site would be constructed at the end of Hester Street, providing a total of three driveways.

A total of 204 parking spaces would be provided on-site for passenger vehicles, which would be located primarily in a new surface parking lot on the west side of the proposed building. The other main surface parking area would be on the north side of the warehouse. This parking area would consist of 59 spaces sized for tractor trailers. A total of 24 bicycle parking spaces would be provided in the vicinity of the office main entrance, including 12 short-term spaces and 12 long-term spaces.

Utilities

The proposed industrial building would require utility and drainage improvements including new sanitary sewer, storm drain, and domestic water lines. These new utilities would connect to existing utilities within the right-of-way of Doolittle Drive. Bioretention areas would be constructed on-site to collect and treat stormwater runoff prior to discharge into the City's storm drain system. Electricity at the project site would be provided by Pacific Gas & Electric, which provides services to the project area. The proposed project would also include natural gas energy, also provided by Pacific Gas & Electric.

Construction and Grading

The timing of project construction would be determined by market forces and other considerations, such as weather or availability of workforce. However, for purposes of this analysis it is anticipated that construction would begin in 2024 with demolition of existing vacant structures and related infrastructure, such as utilities and surface parking. Site grading would occur following demolition of the existing development on the project site, which totals approximately 212,000 square feet of structures. Elevations on the project site following grading would vary between approximately 10 feet and 17 feet above mean sea level. Preliminary grading design shows a balanced site. Project construction would commence following grading. Construction would include excavation and trenching to install buried utility connections, such as new water, sanitary sewer, and storm drain laterals. The foundation of the warehouse would be poured followed by framing and construction of the walls, interior spaces, and exterior. Paving of surface parking areas, driveways, and internal access roads would also occur during project construction, as well as construction of new sidewalk on site frontage along Hester Street. Construction staging would occur on-site. A variety of typical construction equipment would be used, such as backhoes, dump trucks, excavators, pavers, and dozers. A crawler crane with a boom height of up to approximately 161 feet would also be required. During construction, up to five existing trees just off the project site at the terminus of Hester Street would be removed.

Project Objectives

The underlying purpose of the proposed project is to provide a modern industrial warehouse with ancillary office using sustainable and environmentally superior practices within the existing industrialized portion of the City. The proposed project would accommodate the need for additional large warehouse uses in the City and in Alameda County, while enhancing the economic vitality of the City.

The City and the applicant have the following objectives for the project:

- Increase the economic base of the City's industrial corridor by maximizing the productive use of the City’s industrial land, which is currently underutilized;
- Create a modern warehouse that contributes to the aesthetics of the surrounding area through the redevelopment of an obsolete and underutilized property;
- Create a new, efficient and updated warehouse that is attractive to future tenants, by incorporating the state's green building design and building health and safety standards;
- Maintain and protect the City’s inventory of larger-scale industrial sites with easy access to freeways, rails, airports, and seaports; and
- Support and retain existing industrial uses and employment in the City of San Leandro’s industrial sector.

Alternatives

As required by Section 15126.6 of the *CEQA Guidelines*, this EIR examines a range of reasonable alternatives to the proposed project that would attain most of the basic project objectives (stated in Section 2, *Project Description*, of this EIR) but would avoid or substantially lessen the significant adverse impacts.

Included in this analysis are three alternatives, including the CEQA-required "no project" alternative, that involve changes to the project that would reduce the project-related potentially significant environmental impacts as identified in this EIR. Alternatives have been developed to provide a reasonable range of options to consider that would help decision makers and the public understand the general implications of revising or eliminating certain components of the proposed project.

The following alternatives are evaluated in this EIR:

- Alternative 1: No Project
- Alternative 2: No Natural Gas
- Alternative 3: Airport Parking Land Use

Detailed descriptions of the alternatives are included in the impact analysis for each alternative. The potential environmental impacts of each alternative are analyzed in Sections 6.2 through 6.4.

Alternative 1 (No Project). The No Project Alternative assumes that the two existing industrial masonry buildings would remain on the project site. These buildings are currently vacant. The City has no applications on file for occupancy of the buildings; therefore, this analysis assumes the buildings would remain vacant under this alternative. The project applicant or another person or organization could submit an application for occupancy of one or both buildings in the future. Granting an occupancy permit for a business or activity allowed by-right within the existing Industrial General zoning district of the site would be a ministerial permit, and CEQA may not be applicable.

The No Project Alternative would not fulfill any of the project objectives.

Alternative 2 (No Natural Gas). Under the No Natural Gas Alternative, the proposed industrial building would be constructed on the project site, nearly consistent with the proposed project. Alternative 2 assumes that the industrial building and associated surface parking lot would be approximately the same size and design as the proposed project, which would require the same demolition and construction activities as the proposed project. Once construction is complete, Alternative 2 assumes the same on-site operations would occur as with the proposed project, with the exception of natural gas consumption. Under this alternative, natural gas connections would not be provided on the project site. Therefore, potential future occupants and uses in the new industrial building would not consume natural gas, as natural gas would be unavailable on the project site. Alternative 2 would instead require on-site building operations to rely entirely on electricity for energy.

The No Natural Gas Alternative would fulfill most project objectives but not all objectives. For example, this alternative would develop an industrial building with easy access to freeways and airports, while also supporting industrial employment opportunities within the city's industrial sector. Alternative 2 would also contribute to the aesthetics of the surrounding area because the vacant and aging existing buildings on-site would be demolished and replaced with a new building. However, Alternative 2 may not fulfill the objective of creating a warehouse that is attractive to future tenants to the same extent as the proposed project. While it is reasonable to assume a new warehouse proximate to freeways, rail, and the Oakland International Airport would be attractive to many tenants, the elimination of natural gas utility may deter some tenants from leasing or purchasing the warehouse, as natural gas could be critical to their business or operations. For example, businesses that manufacture products such as paper, glass, and steel typically use natural gas.

Alternative 3 (Airport Parking Land Use). Under the Airport Parking Land Use Alternative, the proposed industrial building would be constructed on the project site, nearly consistent with the proposed project. Alternative 3 assumes that the industrial building and associated surface parking lot would be approximately the same size and design as the proposed project, which would require the same demolition and construction activities as the proposed project. Once construction is complete, Alternative 3 assumes the proposed building would not operate as a warehouse. Instead, the building would operate as covered vehicle parking serving the Oakland International Airport. The new surface parking areas would also be for airport parking. Because the building would not operate as a warehouse, more surface parking would be provided on-site compared to the proposed project because larger parking spaces and areas for tractor trailer maneuvers would be eliminated from the project design. Alternative 3 assumes that the new building would not include natural gas connections, as there would not be demand to heat internal spaces used solely for vehicle parking and storage that could not generally be met with electric heat.

The Airport Parking Land Use Alternative would fulfill the project objective to create a modern warehouse structure that contributes to the aesthetics of the surrounding area through the redevelopment of an obsolete and underutilized property, although the building would not operate as a warehouse. Alternative 3 would not fulfill the other objectives of the project, which are generally centered on creating industrial employment and industrial productivity, which would not be accomplished from airport parking.

Refer to Section 6.0, *Alternatives*, for the complete alternatives analysis.

Areas of Known Controversy

The EIR scoping process did not identify any areas of known controversy for the proposed project. Responses to the Notice of Preparation of a Draft EIR are summarized in Section 1, *Introduction*. Comments pertained to a range of issues, but most notably air quality, airport hazards, greenhouse gas emissions, hazardous materials and soil and groundwater contamination, noise, transportation, and tribal cultural resources.

Issues to be Resolved

The proposed project would require site plan review and grading and building permits, as well as a tree removal permit, use permit, and height exception. In addition, given the proximity of the Oakland Internation Airport to the project site, a No Hazard Determination for the warehouse was issued from the Federal Aviation Administration pursuant to Federal Aviation Regulations Part 77. Further, several mitigation measures discussed in Section 4.2, Hazards and Hazardous Materials, of this EIR would require either approval or oversight from the California Department of Toxic Substances Control (DTSC). Issues to be resolved also include the choice among alternatives and whether or how to mitigate potentially significant effects of the project.

Issues Not Studied in Detail in the EIR

Section 1.4, *Issues Not Studied in Detail in the EIR*, summarizes issues from the environmental checklist that were addressed in the Initial Study (Appendix A). As indicated in the Initial Study, there is no substantial evidence that significant impacts would occur to the following issue areas: Aesthetics, Agricultural Resources, Air Quality, Biological Resources, Cultural Resources, Energy, Geology and Soils, Hydrology and Water Quality, Land Use and Planning, Mineral Resources,

Population and Housing, Public Services, Recreation, Tribal Cultural Resources, Utilities and Service Systems, and Wildfire. Impacts to Greenhouse Gas Emissions, Hazards and Hazardous Materials, Noise, and Transportation were found to be potentially significant and are addressed in this EIR.

Summary of Impacts and Mitigation Measures

Table ES-1 includes a brief description of the environmental issues relative to the proposed project, the identified environmental impacts, proposed mitigation measures, and residual impacts. Impacts are categorized by significance. Per Section 15123(b) of the State CEQA Guidelines, Table ES-1 addresses only those impacts determined to be potentially significant in either the Initial Study (Appendix A) or the EIR, or both. Significant and unavoidable adverse impacts require a statement of overriding considerations to be issued per Section 15093 of the State CEQA Guidelines if the project is approved. Significant but mitigable impacts are adverse impacts that can be feasibly mitigated to less than significant levels and which require findings to be made under Section 15091 of the State CEQA Guidelines. Less than significant impacts would not exceed significance thresholds and therefore would not require mitigation.

The Initial Study found that the proposed project would have significant but mitigable impacts on air quality, biological resources, cultural resources, and tribal cultural resources. The Initial Study addresses these issues and provides mitigation measures, which are summarized in Table ES-1 below. These issues, as well as those issues found to have less than significant impacts in the Initial Study, are not analyzed further in this EIR. Discussion of these impacts may be found in the Initial Study (Appendix A). Issues that were found to have potentially significant impacts in the Initial Study and therefore required additional analysis in the EIR include greenhouse gas emissions, hazards and hazardous materials, noise, and transportation. Table ES-1 summarizes the impacts related to these issues as well as applicable mitigation measures to reduce impacts, as identified in this EIR.

Impacts are categorized as follows:

- **Significant and Unavoidable.** An impact that cannot be reduced to below the threshold level given reasonably available and feasible mitigation measures. Such an impact requires a Statement of Overriding Considerations to be issued if the project is approved per §15093 of the CEQA Guidelines.
- **Less than Significant with Mitigation Incorporated.** An impact that can be reduced to below the threshold level given reasonably available and feasible mitigation measures. Such an impact requires findings under §15091 of the CEQA Guidelines.
- **Less than Significant.** An impact that may be adverse but does not exceed the threshold levels and does not require mitigation measures. However, mitigation measures that could further lessen the environmental effect may be suggested if readily available and easily achievable.
- **No Impact:** The proposed project would have no effect on environmental conditions or would reduce existing environmental problems or hazards.

Table ES-1 Summary of Potentially Significant Environmental Impacts, Mitigation Measures, and Residual Impacts

Impact	Mitigation Measure (s)	Residual Impact
Air Quality		
Construction of the proposed project would generate wind-blown dust that could contribute particulate matter into the local atmosphere. With implementation of Mitigation Measure AQ-1, this impact would be less than significant.	**AQ-1 BAAQMD Best Management Practices for Construction-Related Fugitive Dust Emissions.** The project applicant shall require all construction contractors to implement the basic construction mitigation measures recommended by BAAQMD to reduce fugitive dust emissions. Emission reduction measures will include, at a minimum, the following measures: 1. All exposed surfaces (e.g., parking areas, staging areas, soil piles, graded areas, and unpaved access roads) shall be watered two times per day. 2. All haul trucks transporting soil, sand, or other loose material off-site shall be covered. 3. All visible mud or dirt track-out onto adjacent public roads shall be removed using wet power vacuum street sweepers at least once per day. The use of dry power sweeping is prohibited. 4. All vehicle speeds on unpaved roads shall be limited to 15 mph. 5. All roadways, driveways, and sidewalks to be paved shall be completed as soon as possible. Building pads shall be laid as soon as possible after grading unless seeding or soil binders are used. 6. All excavation, grading, and/or demolition activities shall be suspended when average wind speeds exceed 20 mph. 7. All trucks and equipment, including their tires, shall be washed off prior to leaving the site. 8. Unpaved roads providing access to sites located 100 feet or further from a paved road shall be treated with a 6- to 12-inch compacted layer of wood chips, mulch, or gravel. 9. Publicly visible signs shall be posted with the telephone number and name of the person to contact at the lead agency regarding dust complaints. This person shall respond and take corrective action within 48 hours. The Air District's General Air Pollution Complaints number shall also be visible to ensure compliance with applicable regulations.	Less than significant.
Biological Resources		
The proposed project would involve construction work near street trees just off the project site near the driveway that connects to Hester Street which may affect protected nesting birds in existing trees. Impacts to nesting birds would be reduced to less than significant with implementation of Mitigation Measure BIO-1.	**BIO-1 Nesting Bird Avoidance and Minimization Measures.** The following avoidance and minimization measures shall be implemented during project construction activities: ▪ Initial site disturbance shall occur outside the general avian nesting season (February 1 through September 15), if feasible. ▪ If initial site disturbance occurs in a work area within the general avian nesting season indicated above, a qualified biologist shall conduct a pre-construction	Less than significant.

Impact	Mitigation Measure (s)	Residual Impact
	nesting bird survey no more than 14 days prior to initial disturbances in the work area. The survey shall include the entire area of disturbance area plus a 50-foot buffer (relevant to non-raptor species) and 300-foot buffer (relevant to raptors) around the site. If active nests are located, all construction work shall be conducted outside a buffer zone from the nest to be determined by the qualified biologist. The buffer should be a minimum of 50 feet for non-raptor bird species and at least 300 feet for raptor species. Larger buffers may be required and/or smaller buffers may be established depending upon the species, status of the nest, and construction activities occurring in the vicinity of the nest. The buffer area(s) shall be closed to all construction personnel and equipment until the adults and young are no longer reliant on the nest site. A qualified biologist shall confirm that breeding/nesting is completed and young have fledged the nest prior to removal of the buffer. ▪ If construction activities in a given work area cease for more than 14 days, additional surveys shall be conducted for the work area. If active nests are located, the aforementioned buffer zone measures shall be implemented.	
Cultural Resources		
Unanticipated archaeological deposits could be encountered and damaged during ground-disturbing activities required for project construction. Impacts to archeological resources would be reduced to less than significant with implementation of Mitigation Measure CR-1.	**CR-1 Unanticipated Discovery of Cultural Resources.** In the event that archaeological resources are unexpectedly encountered during ground-disturbing activities, work within 50 feet of the find shall halt and an archaeologist meeting the Secretary of the Interior's Professional Qualifications Standards for archaeology (National Park Service 1983) shall be contacted immediately to evaluate the find. If the resource is determined by the qualified archaeologist to be prehistoric, then a Native American representative shall also be contacted to participate in the evaluation of the resource. If the qualified archaeologist and/or Native American representative determines it to be appropriate, archaeological testing for CRHR eligibility shall be completed. If the resource proves to be eligible for the CRHR and impacts to the resource cannot be avoided via project redesign, a qualified archaeologist shall prepare a data recovery plan tailored to the physical nature and characteristics of the resource, per the requirements of CCR Guidelines Section 15126.4(b)(3)(C). The data recovery plan shall identify data recovery excavation methods, measurable objectives, and data thresholds to reduce any significant impacts to cultural resources related to the resource. Pursuant to the data recovery plan, the qualified archaeologist and Native American representative, as appropriate, shall recover and document the scientifically consequential information that justifies the resource's significance. The City shall review and approve the treatment plan and archaeological testing as appropriate, and the resulting documentation shall be submitted to the regional	Less than significant.

Impact	Mitigation Measure (s)	Residual Impact
	repository of the CHRIS, per CCR Guidelines Section 15126.4(b)(3)(C).	
Greenhouse Gas Emissions		
Impact GHG-1. The proposed project would include new natural gas connections, which would have the potential to contribute to the long-term generation of GHG emissions affecting the environment. This impact would be significant and unavoidable.	No feasible mitigation measures are available.	Significant and unavoidable.
Impact GHG-1. The proposed project would include new natural gas connections, which would have the potential to contribute to the long-term generation of GHG emissions affecting the environment. This impact would be significant and unavoidable.	No feasible mitigation measures are available.	Significant and unavoidable.
The cumulative GHG impacts of the proposed project would be significant.	No feasible mitigation measures are available.	Significant and unavoidable.
Hazards and Hazardous Materials		
Impact HAZ-1. The project has the potential to create a significant hazard to the public or the environment through reasonably foreseeable upset and accident conditions involving the release of hazardous materials into the environment due to potential hazardous materials that may be present in the existing on-site structures and soils and groundwater. In addition, because of existing soil and groundwater contamination, the site is on a list compiled pursuant to Government Code Section 65962.5. This impact would be potentially significant but mitigable.	**HAZ-1 Project Demolition Activities.** In conformance with State and local laws, a visual inspection/pre-demolition survey, and possible sampling, shall be conducted prior to the demolition of on-site building(s) to determine the presence of asbestos-containing materials (ACMs) and/or lead-based paint. Documentation of the survey shall be provided to the City of San Leandro prior to commencement of demolition activities. During demolition activities, all building materials containing lead-based paint shall be removed in accordance with Cal/OSHA Lead in Title 8, California Code of Regulations (CCR), Section 1532.1, including employee training, employee air monitoring, and dust control. Any debris or soil containing lead-based paint or coatings shall be disposed of at landfills that meet acceptance criteria for the type of lead being disposed. All potentially friable asbestos containing materials (ACMs) shall be removed in accordance with National Emission Standards for Air Pollution (NESHAP) guidelines prior to demolition or renovation activities that may disturb ACMs. All demolition activities shall be undertaken in accordance with Cal/OSHA standards contained in Title 8, CCR, Section 1529, to protect workers from asbestos exposure. A registered asbestos abatement contractor shall be retained to remove and dispose of ACMs identified in the asbestos survey performed for the site in accordance with the standards stated above in this mitigation measure. Materials containing more than one-percent asbestos are also subject to Bay Area Air Quality Management District regulations. Removal of materials containing more than	Less than significant.

Impact	Mitigation Measure (s)	Residual Impact
	one-percent asbestos shall be completed in accordance with Bay Area Air Quality Management District requirements and notifications. Based on Cal/OSHA rules and regulations, the following conditions shall be implemented to limit impacts to construction workers: ▪ Prior to commencement of demolition activities, a building survey, including sampling and testing, shall be completed to identify and quantify building materials containing lead-based paint. ▪ During demolition activities, all building materials containing lead-based paint shall be removed in accordance with Cal/OSHA Lead in Construction Standard, Title 8, CCR, Section 1532.1, including employee training, employee air monitoring and dust control. ▪ Any debris or soil containing lead-based paint or coatings shall be disposed of at landfills that meet acceptance criteria for the type of waste being disposed. **HAZ-2 Implementation of the Revised Soil and Groundwater Management Plan and DTSC Regulatory Oversight.** The project shall implement the appropriate handling procedures and worker health and safety measures during excavating or dewatering activities as described in the site-specific Revised Soil and Groundwater Management Plan developed by RMD Environmental Solutions for the project in June 2021 (included as Appendix D to this EIR). Measures included in the Revised Soil and Groundwater Management Plan to control potential hazardous contamination and exposure include, but are not limited to the following: ▪ Construction contractors shall implement dust control mitigation measures during construction activities at the project site to minimize the generation of dust. Examples of dust control measures that shall be implemented include routinely applying water or non-toxic soil stabilizers to exposed soils while performing grading and excavation activities; sweeping (with wet power sweepers) paved access roads, parking areas, and staging areas; covering or otherwise stabilizing soil stockpiles at the end of each workday; And suspending construction activities that cause visible dust plumes and odors to extend beyond project site boundaries. Some additional dust control mitigation measures listed in the Soil and Groundwater Management Plan include limiting construction vehicle and equipment speeds to 15 miles per hours when operated on exposed soils and removing visible loose soils from vehicles before leaving the project site. ▪ To prevent or minimize construction equipment from tracking polluted spoils off the site onto roadways, trucks used to transport soil will be	

Impact	Mitigation Measure (s)	Residual Impact
	loaded in a manner to minimize soil spillage and fugitive dust. Examples of ways to load trucks to minimize spillage and dust include loading the truck bed to less than full capacity and covering the bed of truck after it has been loaded. ▪ Construction equipment shall be cleaned prior to movement out of active work zones in impacted areas. The equipment wheels/tires shall be cleaned by means of shovels and stiff-bristled brooms or brushes until they are fully cleaned. Upon completion of cleaning, debris shall be placed in the appropriate transportation vessel and the plastic sheeting shall be disposed. If washing water is required, decontamination wash water shall be profiled and transported to an appropriate disposal or recycling facility. Equipment exiting the project site shall be inspected and logged for compliance with the site decontamination requirements. ▪ A construction Health and Safety Plan shall be prepared by the project applicant or its general contractor for the proposed project in accordance with Federal and State Occupational Safety and Health Administration (OSHA) standards for hazardous waste operations (29 Code of Federal Regulations [CFR] 1910.1208 and 8 California Code of Regulations [CCR] 5192, respectively). Subcontractors shall either adopt the General Contractor's Health and Safety Plan or prepare their own Health and Safety Plan satisfying the same regulatory requirements. The General Contractor shall be responsible for verifying that onsite construction workers and visitors have read and adhere to the procedures established in the Health and Safety Plan. A copy of the Health and Safety Plan shall be kept onsite during redevelopment activities. In the event that unanticipated conditions occur at the site, the General Contractor shall be responsible for modifying the Health and Safety Plan accordingly. ▪ Field screening of soil shall be conducted continuously during ground disturbing activities using a calibrated handheld photoionization detector or other organic vapor meter. Field screening using a photoionization detector shall be conducted by properly trained General Contractor and/or Environmental Consultant personnel. Based on the field screening, excavated soil shall be separated into stockpiles in three categories: 1) Background Soil: No visual and odor indicators, and photoionization detector measurements that are consistent with background levels. Photoionization detector readings of up to 5 parts per million by volume (ppmv) shall be considered background levels. These soils can be characterized for onsite reuse, if applicable; 2) Interim Soil: No visual and odor indicators, and photoionization detector measurements between 5 ppmv and 50 ppmv. These soils can be characterized	

Impact	Mitigation Measure (s)	Residual Impact
	for onsite reuse, if applicable; and 3) Contaminated Soil: Staining and odor indicators present, and/or photoionization detector measurements of more than 50 ppmv. These soils shall be further evaluated and are likely to be characterized for offsite disposal. ▪ If soil exhibiting evidence of contamination (e.g., visual and odor indicators, and photoionization detector measurements of more than 50 ppmv), is encountered during ground disturbing activities, the project applicant and/or General Contractor shall cease ground disturbing activities in the area and delineate the area with barricades or fencing, stakes and plastic sheeting as appropriate, and signage to notify onsite workers and visitors of access restrictions. The General Contractor shall notify the Property Owner and Environmental Consultant. Upon notification, the Environmental Consultant shall implement and/or provide oversight. ▪ Stormwater pollution controls shall be implemented by the project applicant and/or General Contractor to minimize sediment runoff in stormwater. Best Management Practices including grading the site and installing stormwater control measures such as temporary earth berms or erecting silt fences around the perimeter of exposed soil at the site, shall be implemented to prevent erosion and sediment runoff from the site. Straw bale barriers or sediment traps shall be required to protect any existing catch basins or drainage channels. ▪ During project construction activities, soil and/or groundwater sampling, removal and management of discovered underground structures (e.g., storage tanks), chemical analysis and proper disposal of contaminated materials, and soil import activities shall be documented in a daily field log by the project applicant and/or General Contractor and/or Environmental Consultant. At the completion of the construction activities, a Construction Completion Report shall be prepared by the Environmental Consultant for submittal to DTSC that summarizes the soil and groundwater handling activities. The DTSC shall continue to be utilized for agency oversight of assessment and remediation of the project site through completion of construction activities. In addition to implementing the Revised Soil and Groundwater Management Plan, prior to commencement of construction and grading activities at the project site, the project applicant shall implement and/or complete the following tasks, and other tasks if requested by DTSC, regarding the open Site Cleanup Program Case: ▪ Implement the November 19, 2020 Redevelopment-Related Groundwater Monitoring Well Network Modification Work Plan, as approved by DTSC on May 26, 2021	

Impact	Mitigation Measure (s)	Residual Impact
	▪ Implement the October 5, 2021 Revised Vapor Intrusion Mitigation System Implementation Work Plan, as approved by DTSC on December 1, 2021 ▪ Implement the October 21, 2021 Revised Community Air Monitoring Plan (CAMP), as approved by DTSC on December 1, 2021 ▪ Prepare a Five Year Remedial Action Review Report for the years 2019-2023 as specified in a DTSC letter dated May 3, 2022 ▪ Implement the August 30, 2022 Soil Vapor Probe Destruction Workplan, as approved by DTSC on September 29, 2022 Upon submittal or completion of the information above, and in accordance with the 2012 Land Use Covenant, DTSC may require actions such as: development of subsurface investigation workplans; completion of soil, soil vapor, and/or groundwater subsurface investigations; installation of soil vapor or groundwater monitoring wells; soil excavation and offsite disposal; completion of human health risk assessments; and/or completion of remediation reports or case closure documents. Subsurface soil, soil vapor, and groundwater investigations, if required, shall be conducted in accordance with a sampling plan that shall be reviewed and approved by the DTSC. The DTSC approval documents shall be submitted to and reviewed by the City prior to issuing grading permits. **HAZ-3 Construction Dewatering Requirements.** Construction dewatering effluent, if produced, shall be pumped into holding tanks or United Nations (UN)-rated 55-gallon drums with appropriate labeling and secondary containment. If dewatering effluent would be discharged to an existing storm drain or drains, a National Pollutant Discharge Elimination System (NPDES) permit shall be obtained from the Regional Water Quality Control Board. If dewatering effluent would be discharged to the San Leandro Water Pollution Control Plant, an industrial pre-treatment permit shall be obtained from the San Leandro Environmental Services Section. Chemical analysis shall be performed in accordance with the receiving facility's requirements prior to discharge. If concentrations exceed the limits established for the discharge point, the dewatering effluent shall either be (1) transferred into a vacuum truck or properly labeled UN-rated 55-gallon drums and transported offsite for disposal at an appropriately licensed disposal facility; or (2) treated and discharged following sampling and analysis to confirm compliance with permit requirements. **HAZ-4 Groundwater Monitoring Well Protection.** A November 19, 2020 Redevelopment-Related Groundwater Monitoring Well Network Modification Work Plan (RMD Environmental Solutions 2020c), which was approved in 2021 DTSC letter, was prepared to reduce the potential for damaged or lost wells during development of the project site. Based on available	

Impact	Mitigation Measure (s)	Residual Impact
	development plans at that time, the monitoring wells were designated for either: 1. Protection in areas where minimal grade changes are anticipated. These monitoring wells shall be marked with paint and/or installation of delineators/snow fencing/bollards. The project applicant and/or General Contractor shall protect these groundwater monitoring wells and maintain access to the wells for routine monitoring to the extent practicable; or 2. Destruction in areas within the building footprint and areas with substantial grade changes. The DTSC shall be notified of changes to these designations based on modifications to the development plans and/or input from the project applicant and/or General Contractor with rationale for wells that do not warrant replacement. Prior to removal or installation of any wells, permits shall be acquired from the Alameda County Public Works Agency. **HAZ-5 Engineered Vapor Barrier Requirement.** An engineered vapor barrier shall be employed to further protect against possible vapor intrusion of chemicals of potential concern into the proposed building. The vapor barrier shall be designed to meet the needs of the building. Vapor barriers are generally constructed using membranes constructed with high-density polyethylene or other polyolefin-based resins. The vapor barrier shall be resistant to volatile organic compounds. The vapor barrier shall meet the American Society for Testing and Materials guideline for a vapor barrier and have a permeance rating of 0.1 perms or less. The thickness and strength of the vapor barrier shall be based on the needs for the building, but the architect and contractor shall use a material strong enough to easily withstand the building construction and other building considerations. The selected vapor barrier shall be approved by the DTSC or Regional Water Quality Control Board prior to installation. Written approval from either the DTSC or Regional Water Quality Control Board shall be provided to the City of San Leandro before building permits are issued. **HAZ-6 Bioretention Design Coordination.** The project applicant shall consult with the City of San Leandro on location and/or design of the on-site bioretention basins to ensure protection of the groundwater basin, which may include, but is not limited to, locating the basins outside of the restricted areas or use of a liner in the detention basin. The final design and location of the on-site bioretention basins shall demonstrate that groundwater would be protected from contamination. If bioretention basins are proposed in the restricted areas, DTSC and/or the San Francisco Bay RWQCB shall also approve the design of the bioretention basins.	
Noise and Vibration		
Impact NOI-1. Construction and operation of the proposed project would generate noise, increasing	**NOI-1 On-Site Noise Barrier.** The applicant shall install a permanent noise barrier along the property boundary that is oriented in a northwest-southeast direction and	Less than significant.

Impact	Mitigation Measure (s)	Residual Impact
ambient noise levels near the project site. Construction noise would be temporary and below thresholds of significance. Traffic noise during operation would also be below significance thresholds; however, on-site operational noise would exceed thresholds established for the nearest sensitive receptor. Impacts would be potentially significant but mitigable.	separates the project site from APN 77A-742-3-2. The noise barrier shall be a solid fence or wall design and no less than 8 feet tall. The noise barrier shall be no less that 140 feet in length, beginning at the southernmost end of this property boundary.	
Impact NOI-2. Operation of the project would not generate substantial groundborne vibration, but project construction would generate groundborne vibration. Construction vibration levels would exceed thresholds of structural damage at nearby existing buildings. Impacts would be potential significant but mitigable.	**NOI-2 Static Roller Requirement.** The project applicant and/or its construction contractors shall use of a static roller in lieu of a vibratory roller for paving activities within 15 feet of the existing off-site buildings to the north and west of the project site. City staff shall verify that this requirement is incorporated into construction plans prior to issuance of a building permit and verified in the field.	Less than significant.
Impact NOI-3. The project would result in employment opportunities within areas that occur inside of noise contours of the Oakland International Airport. However, the project site would be within the 60 dBA noise contour, and 60 dBA is not an excessive noise level. Therefore, people working in the project site would not be exposed to excessive airport noise, and impacts would be less than significant.	No mitigation measures are required.	Less than significant.
Transportation		
Impact TRA-1. The project would generate VMT that is more than 15 percent below the average VMT per employee in the project area Therefore, the proposed project would not conflict with CEQA Guidelines Section 15064.3, subdivision (b), and impacts would be less than significant.	No mitigation measures are required.	Less than significant.
Impact TRA-2. The project would introduce tractor trailers entering into roadway traffic via driveways. However, sufficient sight distance exists to prevent tractor trailers existing the project site from creating hazards related to dangerous intersections. Impacts would be less than significant.	No mitigation measures are required.	Less than significant.
Tribal Cultural Resources		
Unanticipated tribal cultural resources could be encountered and	**TCR-1 Unanticipated Discovery of Tribal Cultural Resources.** In the event that cultural resources of Native	Less than significant.

Impact	Mitigation Measure (s)	Residual Impact
damaged during ground-disturbing activities required for project construction. Impacts to tribal cultural resources would be reduced to less than significant with implementation of Mitigation Measure TCR-1.	American origin are identified during project construction, all earth-disturbing work within 50 feet of the find shall be temporarily suspended or redirected until an archaeologist has evaluated the nature and significance of the find as a cultural resource and an appropriate local Native American representative is consulted. If the City, in consultation with local Native American tribes, determines that the resource is a tribal cultural resource and thus significant under CEQA, a mitigation plan shall be prepared and implemented in accordance with state guidelines and in consultation with local Native American group(s). The plan shall include avoidance of the resource or, if avoidance of the resource is infeasible, the plan shall outline the appropriate treatment of the resource in coordination with the appropriate local Native American tribal representative and, if applicable, a qualified archaeologist. The plan shall include measures to ensure the find is treated in a manner that respectfully retains, to the degree feasible, the qualities that render the resource of significance to the local Native American group(s). Examples of appropriate mitigation for tribal cultural resources include, but are not limited to, protecting the cultural character and integrity of the resource, protecting traditional use of the resource, protecting the confidentiality of the resource, or heritage recovery.	

1 Introduction

This document is an Environmental Impact Report (EIR) for a proposed industrial development located at 880 Doolittle Drive, San Leandro, California. The proposed 880 Doolittle Drive Industrial Project (hereafter referred to as the "proposed project" or "project") would be constructed on a site currently developed with vacant warehouses and surface parking.

This section discusses (1) the project and EIR background; (2) the legal basis for preparing an EIR; (3) the scope and content of the EIR; (4) issue areas found not to be significant by the Initial Study; (5) the lead, responsible, and trustee agencies; and (6) the environmental review process required under the California Environmental Quality Act (CEQA). The proposed project is described in detail in Section 2, *Project Description*. The Initial Study is provided as Appendix A to this EIR.

1.1 Environmental Impact Report Background

The City of San Leandro distributed a Notice of Preparation (NOP) of the EIR for a 30-day agency and public review period starting on November 22, 2023 and ending on December 22, 2023. The City received letters from eight public agencies in response to the NOP during the public review period. The NOP is presented in Appendix B of this EIR, along with the responses received. Table 1-1 on the following page summarizes the content of the letters and where the issues raised are discussed in the EIR.

1.2 Purpose and Legal Authority

The proposed project requires the discretionary approval of the City of San Leandro; therefore, the project is subject to the environmental review requirements of the California Environmental Quality Act (CEQA). In accordance with Section 15121 of the *CEQA Guidelines* (California Code of Regulations, Title 14), the purpose of this EIR is to serve as an informational document that:

> "will inform public agency decisionmakers and the public generally of the significant environmental effect of a project, identify possible ways to minimize the significant effects, and describe reasonable alternatives to the project."

This EIR has been prepared as a project EIR pursuant to Section 15161 of the *CEQA Guidelines*. A Project EIR is appropriate for a specific development project. As stated in the *CEQA Guidelines*:

> "This type of EIR should focus primarily on the changes in the environment that would result from the development project. The EIR shall examine all phases of the project, including planning, construction, and operation."

This EIR is to serve as an informational document for the public and City of San Leandro decision makers. The process will include a public hearing before the City Council of San Leandro to consider certification of a Final EIR and approval of the proposed project.

Table 1-1 NOP Comments Summary

Commenter	Comment/Request Summary	Where the Topic is Discussed in the EIR
Alameda County, Community Development Agency, Planning Department	The Airport Land Use Commission has no comments on the scope of the environmental analysis in the EIR. However, regarding the Oakland Airport Land Use Compatibility Plan: The project site is located primarily in the Outer Approach Zone (Zone 4), where warehouses and distribution facilities are a compatible use. This assumes that there will be at most 100 employees per acre and that at least 20 percent of the parcel will be vacant land (this includes parking areas). Commercial and industrial uses are compatible with the 60 dB CNEL contour, in which 880 Doolittle is located. With the stated height of 50 feet, the new warehouse should be under the Part 77 surface maximum for the area. The site is located in the plan's avigation easement zone.	Potential noise impacts of the project are evaluated in Section 4.3, *Noise*. Section 9, *Hazards and Hazardous Materials*, of the Initial Study, which is provided as Appendix to this EIR, discusses Part 77 surface maximum and proposed building height.
Bay Area Air Quality Management District	It is recommended that the project incorporate all feasible measures to reduce air quality and greenhouse gas impacts, including the installation of on-site solar arrays, procurement of 100 percent renewable energy, electrification of all operations to the extent feasible including 'make-ready' electrification infrastructure, and consideration of truck route management to reduce community impacts.	The potential air quality impacts of the project, including potential health risk impacts from air pollution, are evaluated in the Initial Study for the project. The Initial Study is provided as Appendix A to this EIR. Additionally, the Initial Study contains a detailed health risk assessment prepared for the project. The potential impacts of the project related to greenhouse gas emissions are evaluated in Section 4.1, *Greenhouse Gas Emissions*, of this EIR.
Bay Area Air Quality Management District	The project should incorporate construction mitigation measures, especially for demolition and site preparation that may elevate fugitive dust.	The potential air quality impacts of the project, including potential health risk impacts from air pollution, are evaluated in the Initial Study for the project. The Initial Study is provided as Appendix A to this EIR. Best management practices for controlling fugitive dust during project construction have been incorporated as mitigation.
Bay Area Air Quality Management District	Certain aspects of the project may require a permit from the Bay Air Quality Management District (for example, backup diesel generators and asbestos demolition). Please ensure the Bay Air Quality Management District is adequately recognized as a permitting agency in future environmental documents.	The project applicant will be responsible for obtaining applicable permits for the project.

Commenter	Comment/Request Summary	Where the Topic is Discussed in the EIR
California Department of Justice	Diesel trucks visiting warehouses emit nitrogen oxide (NOx)—a primary precursor to smog formation and a significant factor in the development of respiratory problems like asthma, bronchitis, and lung irritation—and diesel particulate matter (a subset of fine particular matter that is smaller than 2.5 micrometers)—a contributor to cancer, heart disease, respiratory illnesses, and premature death.	The potential air quality impacts of the project, including potential health risk impacts from air pollution, are evaluated in the Initial Study for the project. The Initial Study is provided as Appendix A to this EIR. Additionally, the Initial Study contains a detailed health risk assessment prepared for the project.
California Department of Justice	Trucks and on-site loading activities can also be loud, bringing disruptive noise levels during 24/7 operation that can cause hearing damage after prolonged exposure.	Potential noise impacts of the project are evaluated in Section 4.3, *Noise*.
California Department of Justice	The hundreds, and sometimes thousands, of daily truck and passenger car trips that warehouses generate can contribute to traffic jams, deterioration of road surfaces, traffic accidents, and unsafe conditions for pedestrians and bicyclists.	Traffic jams are a type of traffic delay. Traffic delay at key intersection near the project site is discussed in the Initial Study. The Initial Study is provided as Appendix A to this EIR. Potential conflicts of the project with pedestrian and bicycle modes of transportation are evaluated in the Initial Study. Potential transportation hazards such as unsafe intersections or incompatible vehicle types are evaluated in Section 4.4, *Transportation*, of this EIR.
California Department of Justice	Warehouses may also have other environmental impacts.	The potential environmental impacts of the project are evaluated in this EIR and in the Initial Study, which is provided as Appendix A to this EIR.
California Department of Justice	In preparing the EIR, the Department of Justice encourages the City to consult its publication titled *Warehouse Projects: Best Practices and Mitigation Measures to Comply with the California Environmental Quality Act*.	The City reviewed the publication referenced in this comment and relevant components have been incorporated into the preparation of this EIR. For example, the publication recommends preparation of a noise impact analysis. As described in EIR Section 4.3, *Noise*, a noise impact analysis has been prepared for the project.

Commenter	Comment/Request Summary	Where the Topic is Discussed in the EIR
California Department of Justice	Priority should be placed on avoiding land use conflicts between warehouses and sensitive receptors and on mitigating the impacts of any unavoidable land use conflicts. However, even projects located far from sensitive receptors may contribute to harmful regional air pollution, so you should consider measures to reduce emissions associated with the project to help the State meet its air quality goals. A distant warehouse may also impact sensitive receptors if trucks must pass near sensitive receptors to visit the warehouse.	The potential air quality impacts of the project are evaluated in the Initial Study. The Initial Study is provided as Appendix A to this EIR.
California Department of Toxic Substances Control	Surveys should be conducted for lead-based paint and products, mercury, asbestos containing materials, and polychlorinated biphenyl caulk prior to demolition of buildings and structures. Removal, demolition, and disposal of the above-mentioned chemicals should be conducted in compliance with California environmental regulations and policies.	Potential impacts of the project associated with hazardous materials, including chemicals mentioned in this comment, are evaluated in Section 4.2, *Hazards and Hazardous Materials*.
California Department of Toxic Substances Control	Imported soil and fill material should be tested to ensure any contaminants of concern are within approved screening levels for the intended land use. To minimize the possibility of introducing contaminated soil and fill material there should be documentation of the origins of the soil or fill material and, if applicable, sampling be conducted to ensure that the imported soil and fill material meets screening levels for the intended land use. The soil sampling should include analysis based on the source of the fill and knowledge of the prior land use.	The proposed project does not include importing fill material.
California Department of Toxic Substances Control	Prior to new buildings being constructed on site, a Remedial Action Plan amendment will be required to evaluate the soil vapor impacts and vapor intrusion risk. While a vapor mitigation system has been discussed for the site, the system cannot be installed before the completion of the Remedial Action Plan amendment.	The potential impacts related to soil vapor intrusion are evaluated in Section 4.2, *Hazards and Hazardous Materials*. Section 4.2, *Hazards and Hazardous Materials,* also identifies mitigation measures for impacts related to soil vapor intrusion.
California Department of Transportation – Aeronautics Program	The project site is primarily in Safety Zone 4 (Outer Approach/Departure Zone), with a portion in Zone 6 (Traffic Pattern Zone) of the Oakland International Airport and therefore must adhere to the safety criteria and restrictions defined in the Airport Land Use Compatibility Plan (ALUCP) formed by the ALUC pursuant to the PUC, Section 21674. Warehouse and office space square footage per person should be further reviewed to adhere to consistency with the ALUCP and Table 3-2 of the ALUCP. Section 3.3.2.7. should also be reviewed to ensure compatibility with development criteria.	This comment does not directly pertain to environmental impacts evaluated under CEQA. However, the City recognizes the importance of adhering to the Airport Land Use Compatibility Plan. The Alameda County Community Development Agency, Planning Department (ALUC) also provided a written comment in response to the NOP. In that letter the ALUC indicates that warehouses are a compatible use within Safety Zone 4 assuming certain restrictions on the number of employees on-site.

Commenter	Comment/Request Summary	Where the Topic is Discussed in the EIR
California Department of Transportation – Aeronautics Program	The project site is included on a list of hazardous material sites compiled pursuant to Government Code Section 65962.5, compatibility restrictions should be reviewed per the ALUCPs Table 3-2 and Section 3.3.2.8(e).	Potential impacts of the project associated with hazardous materials are evaluated in Section 4.2, *Hazards and Hazardous Materials*.
California Department of Transportation – Aeronautics Program	The proposed project may also be subject to 14 CFR Part 77 Conical Surface standards and CNEL Contours noise compatibility in applicable areas.	The Alameda County, Community Development Agency, Planning Department (ALUC) also provided a written comment in response to the NOP. In that letter the ALUC indicates that the proposed height of the warehouse should be under the Part 77 surface maximum for the area. The ALUC also indicated that commercial and industrial uses are compatible with the 60 dB CNEL contour, in which 880 Doolittle is located.
California Department of Transportation – Aeronautics Program	Caltrans advises the City of San Leandro to submit its plans to the ALUC to determine if the plans or projects are consistent or not with the ALUCP according to the State Aeronautics Act's statutory procedure.	This comment does not directly pertain to environmental impacts evaluated under CEQA. However, the project plans will be submitted to the ALUC for review.
California Department of Transportation	Please consider the following freight issues when drafting the DEIR: the number of parking spaces should be based on peak operating time of the activity generator; site entrance and exit points should accommodate the design of vehicle movements; the DEIR should identify pedestrian and bicycle conflict points to and from the proposed facility as well as bus stops that may conflict with truck parking zones; and the project should consider the number of legal truck parking spots available in the area and the potential areas that may be utilized as unauthorized parking.	Parking requirements are not a CEQA topic or issue area. However, the project will be evaluated by the City for conformance to the San Leandro Municipal Code, including the provision of adequate parking. Potential conflicts of the project with transit, pedestrian, and bicycle modes of transportation are evaluated in the Initial Study. The Initial Study is provided as Appendix A to this EIR. Potential transportation hazards such as unsafe intersections or incompatible vehicle types are evaluated in Section 4.4, *Transportation*, of this EIR.
California Department of Transportation	Potential impacts to the state right-of-way from project-related temporary access points should be analyzed. Mitigation for significant impacts due to construction and noise should be identified. Project work that requires movement of oversized or excessive load vehicles on State roadways requires a transportation permit that is issued by Caltrans. To apply, please visit Caltrans Transportation Permits. Prior to construction, coordination may be required with Caltrans to develop a Transportation Management Plan to reduce construction traffic impacts to the State Transportation Network.	Impacts to state right-of-way are not environmental impacts pursuant to CEQA. Regardless, the proposed project does not include temporary access points from or within state right-of-way. The project applicant must obtain all required permits and comply with regulatory requirements. Construction and operational noise impacts are evaluated in Section 4.3, *Noise*, of this EIR.

Commenter	Comment/Request Summary	Where the Topic is Discussed in the EIR
California Department of Transportation	As the Lead Agency, the City of San Leandro is responsible for all project mitigation, including any needed improvements to the State Transportation Network. The project's fair share contribution, financing, scheduling, implementation responsibilities and lead agency monitoring should be fully discussed for all proposed mitigation measures.	Mitigation measures required for the project are identified in the Initial Study (see Appendix A) and throughout this EIR. The Executive Summary of this EIR also lists all required mitigation measures for the project. The identified mitigation measures do not require improvements or modifications to the State Transportation Network. As part of the CEQA process, the City will prepare a Mitigation Monitoring and Reporting Program (MMRP). The MMRP will identify the timing and monitoring frequency of mitigation measures, as well as the agency or organization responsible for ensuring the measure is implemented and monitored accordingly.
East Bay Municipal Utility District	When the development plans are finalized, the project sponsor should contact EBMUD's New Business Office and request a water service estimate to determine costs and conditions for providing water service to the project. Engineering and installation of water services require substantial lead time, which should be provided for in the project sponsor's development schedule.	The project applicant would request water service for the project site once the development plans are finalized and would consider the lead time in their project development schedule.
East Bay Municipal Utility District	The District's Standard Site Assessment Report indicates the potential for contaminated soils or groundwater to be within the project's boundaries. The project sponsor should be aware that East Bay Municipal Utility District will not install pipeline or services in contaminated soil or groundwater, nor in areas where groundwater contaminant concentrations exceed specified limits. The project sponsor must submit copies to East Bay Municipal Utility District of all known information regarding soil and groundwater quality within or adjacent to the project boundary and a legally sufficient, complete, and specific written remediation plan establishing the methodology, planning and design of all necessary systems for the removal, treatment, and disposal of contaminated soil and groundwater.	Potential impacts of the project associated with hazardous materials, including contaminated soil and groundwater, are evaluated in Section 4.2, *Hazards and Hazardous Materials*.

Commenter	Comment/Request Summary	Where the Topic is Discussed in the EIR
East Bay Municipal Utility District	The East Bay Municipal Utility District will not design piping or services until soil and groundwater quality data and remediation plans have been received and reviewed and will not start underground work until remediation has been carried out and documentation of the effectiveness of the remediation has been received and reviewed. If no soil or groundwater quality data exists, or the information supplied by the project sponsor is insufficient, East Bay Municipal Utility District may require the project sponsor to perform sampling and analysis to characterize the soil and groundwater that may be encountered during excavation, or East Bay Municipal Utility District may perform such sampling and analysis at the project sponsor's expense. If evidence of contamination is discovered during East Bay Municipal Utility District work on the project site, work may be suspended until such contamination is adequately characterized and remediated to East Bay Municipal Utility District standards.	Potential impacts of the project associated with hazardous materials, including contaminated soil and groundwater, are evaluated in Section 4.2, *Hazards and Hazardous Materials*.
East Bay Municipal Utility District	East Bay Municipal Utility District requests that the City include in its conditions of approval a requirement that the project sponsor comply with Assembly Bill 325, "Model Water Efficient Landscape Ordinance," (Division 2, Title 23, California Code of Regulations, Chapter 2.7, Sections 490 through 495). The project sponsor should be aware that Section 31 of East Bay Municipal Utility District's Water Service Regulations requires that water service shall not be furnished for new or expanded service unless all the applicable water-efficiency measures described in the regulation are installed at the project sponsor's expense.	This comment cites regulatory requirements. The proposed project must comply with regulatory requirements regardless of CEQA analysis and mitigation measures.
Native American Heritage Commission	The Native American Heritage Commission recommends consultation with California Native American tribes that are traditionally and culturally affiliated with the geographic area of the proposed project as early as possible in order to avoid inadvertent discoveries of Native American human remains and best protect tribal cultural resources.	No California Native American Tribes have submitted requests to the City of San Leandro for consultation on CEQA projects pursuant to Public Resources Code Section 21080.3.1. The proposed project does not involve an amendment to the City's General Plan; therefore, consultation pursuant to SB 18 is not required. Potential project impacts related to tribal cultural resources are evaluated in the Initial Study, which is provided as Appendix A to the EIR. The Initial Study also provides mitigation measures to reduce potential impacts to tribal cultural resources. These mitigation measures also appear in the Executive Summary of this EIR.

1.3 Scope and Content

This EIR addresses impacts identified by the Initial Study to be potentially significant. The following issues were found to include potentially significant impacts and have been studied in the EIR:

- Greenhouse Gas Emissions
- Hazards and Hazardous Materials
- Noise
- Transportation

In preparing the EIR, use was made of pertinent City policies and guidelines, certified EIRs and adopted CEQA documents, and other background documents. A full reference list is contained in Section 7, *References and Preparers*.

The alternatives section of the EIR (Section 5) was prepared in accordance with Section 15126.6 of the *CEQA Guidelines* and focuses on a range of reasonable alternatives that are capable of eliminating or reducing significant adverse effects associated with the project while feasibly attaining most of the basic project objectives. In addition, the alternatives section identifies the "environmentally superior" alternative among the alternatives assessed. The alternatives evaluated include the CEQA-required "No Project" alternative and two alternative development scenarios for the project site.

The level of detail contained throughout this EIR is consistent with the requirements of CEQA and applicable court decisions. Section 15151 of the *CEQA Guidelines* provides the standard of adequacy on which this document is based. The *CEQA Guidelines* state:

> An EIR should be prepared with a sufficient degree of analysis to provide decisionmakers with information which enables them to make a decision which intelligently takes account of environmental consequences. An evaluation of the environmental effects of the proposed project need not be exhaustive, but the sufficiency of an EIR is to be reviewed in light of what is reasonably feasible. Disagreement among experts does not make an EIR inadequate, but the EIR should summarize the main points of disagreement among the experts. The courts have looked not for perfection, but for adequacy, completeness, and a good faith effort at full disclosure.

1.4 Issues Not Studied in Detail in the EIR

Table 1-2 lists the environmental resource areas that were addressed in the Initial Study (Appendix A). A full analysis of each resource area listed in Table 1-2 can be found in Appendix A. As indicated in the Initial Study, there is no substantial evidence that the proposed project may have a significant impact on the environment in any of these issue areas, either with or without mitigation, depending on the specific impact.

Table 1-2 Issues Not Studied in the EIR

▪ Aesthetics	▪ Agriculture and Forestry Resources
▪ Air Quality	▪ Biological Resources
▪ Cultural Resources	▪ Energy
▪ Geology and Soils	▪ Hydrology and Water Quality
▪ Hydrology and Water Quality	▪ Land Use and Planning
▪ Mineral Resources	▪ Population and Housing
▪ Public Services	▪ Recreation
▪ Tribal Cultural Resources	▪ Utilities and Service Systems
▪ Wildfire	

Impacts included in the Initial Study that would be less than significant with implementation of mitigation include:

- **Air Quality:** Construction of the proposed project would generate wind-blown dust that could contribute particulate matter into the local atmosphere. With implementation of Mitigation Measure AQ-1, this impact would be less than significant.

  AQ-1 BAAQMD Best Management Practices for Construction-Related Fugitive Dust Emissions

  The project applicant shall require all construction contractors to implement the basic construction mitigation measures recommended by BAAQMD to reduce fugitive dust emissions. Emission reduction measures will include, at a minimum, the following measures:

  1. All exposed surfaces (e.g., parking areas, staging areas, soil piles, graded areas, and unpaved access roads) shall be watered two times per day.
  2. All haul trucks transporting soil, sand, or other loose material off-site shall be covered.
  3. All visible mud or dirt track-out onto adjacent public roads shall be removed using wet power vacuum street sweepers at least once per day. The use of dry power sweeping is prohibited.
  4. All vehicle speeds on unpaved roads shall be limited to 15 mph.
  5. All roadways, driveways, and sidewalks to be paved shall be completed as soon as possible. Building pads shall be laid as soon as possible after grading unless seeding or soil binders are used.
  6. All excavation, grading, and/or demolition activities shall be suspended when average wind speeds exceed 20 mph.
  7. All trucks and equipment, including their tires, shall be washed off prior to leaving the site.
  8. Unpaved roads providing access to sites located 100 feet or further from a paved road shall be treated with a 6- to 12-inch compacted layer of wood chips, mulch, or gravel.
  9. Publicly visible signs shall be posted with the telephone number and name of the person to contact at the lead agency regarding dust complaints. This person shall respond and take corrective action within 48 hours. The Air District's General Air Pollution Complaints number shall also be visible to ensure compliance with applicable regulations.

- **Biological Resources:** The proposed project would involve construction work near street trees just off the project site near the driveway that connects to Hester Street which may affect protected nesting birds in existing trees. Impacts to nesting birds would be reduced to less than significant with implementation of Mitigation Measure BIO-1.

BIO-1 Nesting Bird Avoidance and Minimization Measures

The following avoidance and minimization measures shall be implemented during project construction activities:

  - Initial site disturbance shall occur outside the general avian nesting season (February 1 through September 15), if feasible.
  - If initial site disturbance occurs in a work area within the general avian nesting season indicated above, a qualified biologist shall conduct a pre-construction nesting bird survey no more than 14 days prior to initial disturbances in the work area. The survey shall include the entire area of disturbance area plus a 50-foot buffer (relevant to non-raptor species) and 300-foot buffer (relevant to raptors) around the site. If active nests are located, all construction work shall be conducted outside a buffer zone from the nest to be determined by the qualified biologist. The buffer should be a minimum of 50 feet for non-raptor bird species and at least 300 feet for raptor species. Larger buffers may be required and/or smaller buffers may be established depending upon the species, status of the nest, and construction activities occurring in the vicinity of the nest. The buffer area(s) shall be closed to all construction personnel and equipment until the adults and young are no longer reliant on the nest site. A qualified biologist shall confirm that breeding/nesting is completed and young have fledged the nest prior to removal of the buffer.
  - If construction activities in a given work area cease for more than 14 days, additional surveys shall be conducted for the work area. If active nests are located, the aforementioned buffer zone measures shall be implemented.

- **Cultural Resources:** Unanticipated archaeological deposits could be encountered and damaged during ground-disturbing activities required for project construction. Impacts to archeological resources would be reduced to less than significant with implementation of Mitigation Measure CR-1.

CR-1 Unanticipated Discovery of Cultural Resources

In the event that archaeological resources are unexpectedly encountered during ground-disturbing activities, work within 50 feet of the find shall halt and an archaeologist meeting the Secretary of the Interior's Professional Qualifications Standards for archaeology (National Park Service 1983) shall be contacted immediately to evaluate the find. If the resource is determined by the qualified archaeologist to be prehistoric, then a Native American representative shall also be contacted to participate in the evaluation of the resource. If the qualified archaeologist and/or Native American representative determines it to be appropriate, archaeological testing for CRHR eligibility shall be completed. If the resource proves to be eligible for the CRHR and impacts to the resource cannot be avoided via project redesign, a qualified archaeologist shall prepare a data recovery plan tailored to the physical nature and characteristics of the resource, per the requirements of CCR Guidelines Section 15126.4(b)(3)(C). The data recovery plan shall identify data recovery excavation methods, measurable objectives, and data thresholds to reduce any significant impacts to cultural resources related to the resource. Pursuant to the data recovery plan, the qualified archaeologist and Native American representative, as

appropriate, shall recover and document the scientifically consequential information that justifies the resource's significance. The City shall review and approve the treatment plan and archaeological testing as appropriate, and the resulting documentation shall be submitted to the regional repository of the CHRIS, per CCR Guidelines Section 15126.4(b)(3)(C).

- **Tribal Cultural Resources:** Unanticipated tribal cultural resources could be encountered and damaged during ground-disturbing activities required for project construction. Impacts to tribal cultural resources would be reduced to less than significant with implementation of Mitigation Measure TCR-1.

TCR-1 Unanticipated Discovery of Tribal Cultural Resources

In the event that cultural resources of Native American origin are identified during project construction, all earth-disturbing work within 50 feet of the find shall be temporarily suspended or redirected until an archaeologist has evaluated the nature and significance of the find as a cultural resource and an appropriate local Native American representative is consulted. If the City, in consultation with local Native American tribes, determines that the resource is a tribal cultural resource and thus significant under CEQA, a mitigation plan shall be prepared and implemented in accordance with state guidelines and in consultation with local Native American group(s). The plan shall include avoidance of the resource or, if avoidance of the resource is infeasible, the plan shall outline the appropriate treatment of the resource in coordination with the appropriate local Native American tribal representative and, if applicable, a qualified archaeologist. The plan shall include measures to ensure the find is treated in a manner that respectfully retains, to the degree feasible, the qualities that render the resource of significance to the local Native American group(s). Examples of appropriate mitigation for tribal cultural resources include, but are not limited to, protecting the cultural character and integrity of the resource, protecting traditional use of the resource, protecting the confidentiality of the resource, or heritage recovery.

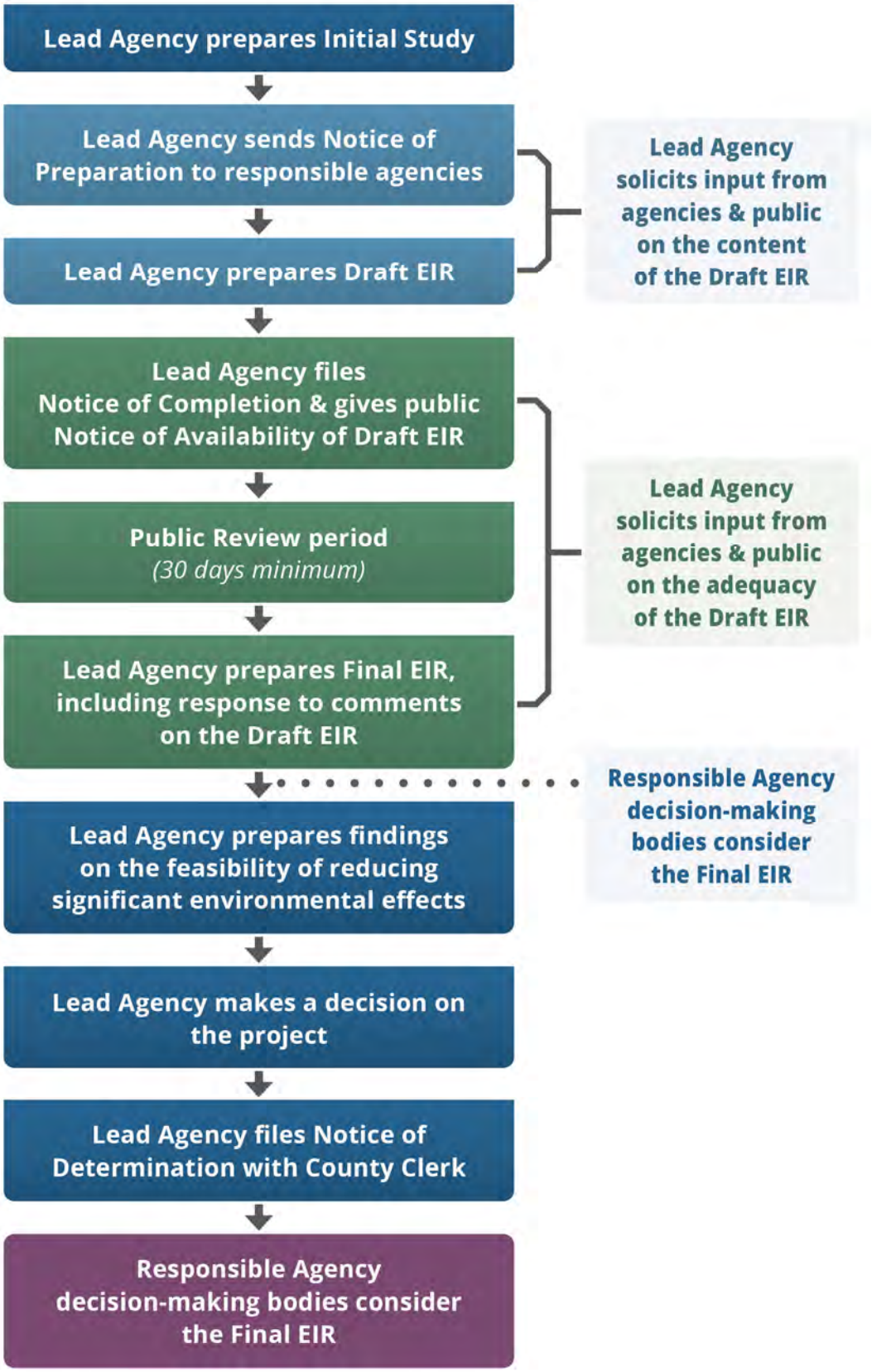
1.5 Environmental Review Process

The environmental impact review process, as required under CEQA, is summarized below and illustrated in Figure 1-1. The steps are presented in sequential order.

1. **Notice of Preparation (NOP) and Initial Study**. After deciding that an EIR is required, the lead agency (City of San Leandro) must file a NOP soliciting input on the EIR scope to the State Clearinghouse, other concerned agencies, and parties previously requesting notice in writing (*CEQA Guidelines* Section 15082; Public Resources Code Sections 21080.4 and 21092.2). Aside from temporary exceptions in place prior to September 30, 2021, due to the COVID-19 pandemic, the NOP must be posted at the County Clerk's office for 30 days. The NOP may be accompanied by an Initial Study that identifies the issue areas for which the project could create significant environmental impacts (*CEQA Guidelines* Section 15082(a)(2).
2. **Draft EIR Prepared.** The Draft EIR must contain a) table of contents or index; b) summary; c) project description; d) environmental setting; e) discussion of significant impacts (direct, indirect, cumulative, growth-inducing and unavoidable impacts); f) a discussion of alternatives; g) mitigation measures; and h) discussion of irreversible changes.

3. **Notice of Completion (NOC).** The lead agency must file a NOC with the State Clearinghouse when it completes a Draft EIR and prepare a Public Notice of Availability of a Draft EIR. The lead agency must post the NOC in the County Clerk's office for at least 30 days and send a copy of the NOC to anyone requesting it (Public Resources Code Sections 21092, 21092.3, and *CEQA Guidelines* Section 15087). Additionally, public notice of Draft EIR availability must be given through at least one of the following procedures: a) publication in a newspaper of general circulation; b) posting on and off the project site; and c) direct mailing to owners and occupants of contiguous properties. The lead agency must solicit input from other agencies and the public and respond in writing to all comments received (Public Resources Code Sections 21104 and 21153). The minimum public review period for a Draft EIR is 30 days (Public Resources Code 21091).
4. **Final EIR.** A Final EIR must include a) the Draft EIR; b) copies of comments received during public review; c) a list of persons and entities commenting on the Draft EIR; and d) the Lead Agency's responses to comments.
5. **Certification of Final EIR.** Prior to making a decision on a proposed project, the lead agency must certify that: a) the Final EIR has been completed in compliance with CEQA; b) the Final EIR was presented to the decision-making body of the lead agency; c) the decision-making body reviewed and considered the information in the Final EIR prior to approving a project; and d) the Final EIR reflects the lead agency's independent judgment and analysis (*CEQA Guidelines* Section 15090).
6. **Lead Agency Project Decision.** The lead agency may a) disapprove the project because of its significant environmental effects; b) require changes to the project to reduce or avoid significant environmental effects; or c) approve the project despite its significant environmental effects, if the proper findings and statement of overriding considerations are adopted (*CEQA Guidelines* Sections 15042 and 15043).
7. **Findings/Statement of Overriding Considerations.** For each significant impact of the project identified in the EIR, the lead agency must find, based on substantial evidence in the record, that either: a) the project has been changed to avoid or substantially reduce the magnitude of the significant impact; b) changes to the project are within another agency's responsibility and jurisdiction and such changes have or should be adopted by the other agency; or c) specific economic, social, legal, technological, or other considerations make the mitigation measures or project alternatives infeasible (*CEQA Guidelines* Section 15091). If an agency approves a project with unavoidable significant environmental effects, it must prepare a written Statement of Overriding Considerations that sets forth the specific social, economic, or other reasons supporting the agency's decision (*CEQA Guidelines* Section 15091).
8. **Mitigation Monitoring Reporting Program.** When the lead agency makes findings on significant effects identified in the EIR, it must adopt a reporting or monitoring program for mitigation measures that were adopted or made conditions of project approval to mitigate significant effects (*CEQA Guidelines* Sections 15091 and 15097).
9. **Notice of Determination (NOD).** The lead agency must file a NOD after deciding to approve a project for which an EIR is prepared (*CEQA Guidelines* Section 15094). A local agency must file the NOD with the County Clerk. The NOD must be posted for 30 days and sent to anyone previously requesting notice. Posting of the NOD starts a 30-day statute of limitations on CEQA legal challenges (Public Resources Code Section 21167[c]).

Figure 1-1 Environmental Review Process



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2 Project Description

This section describes all components and characteristics of the proposed project, including the project applicant, the project site and surrounding land uses, major project characteristics, project objectives, and discretionary actions needed for approval, and serves as a basis for the analysis that follows in subsequent chapters of this Draft Environmental Impact Report (EIR). This section also provides an overview of existing conditions on and around the project site, including current jurisdictional designations; however, existing conditions are described in greater detail in the Environmental Setting portion of each environmental analysis section in Chapter 3, Environmental Setting.

2.1 Project Applicant

Prologis
Claudia Tarpin, Director, Development
(510)-656-1900

2.2 Lead Agency Contact Person

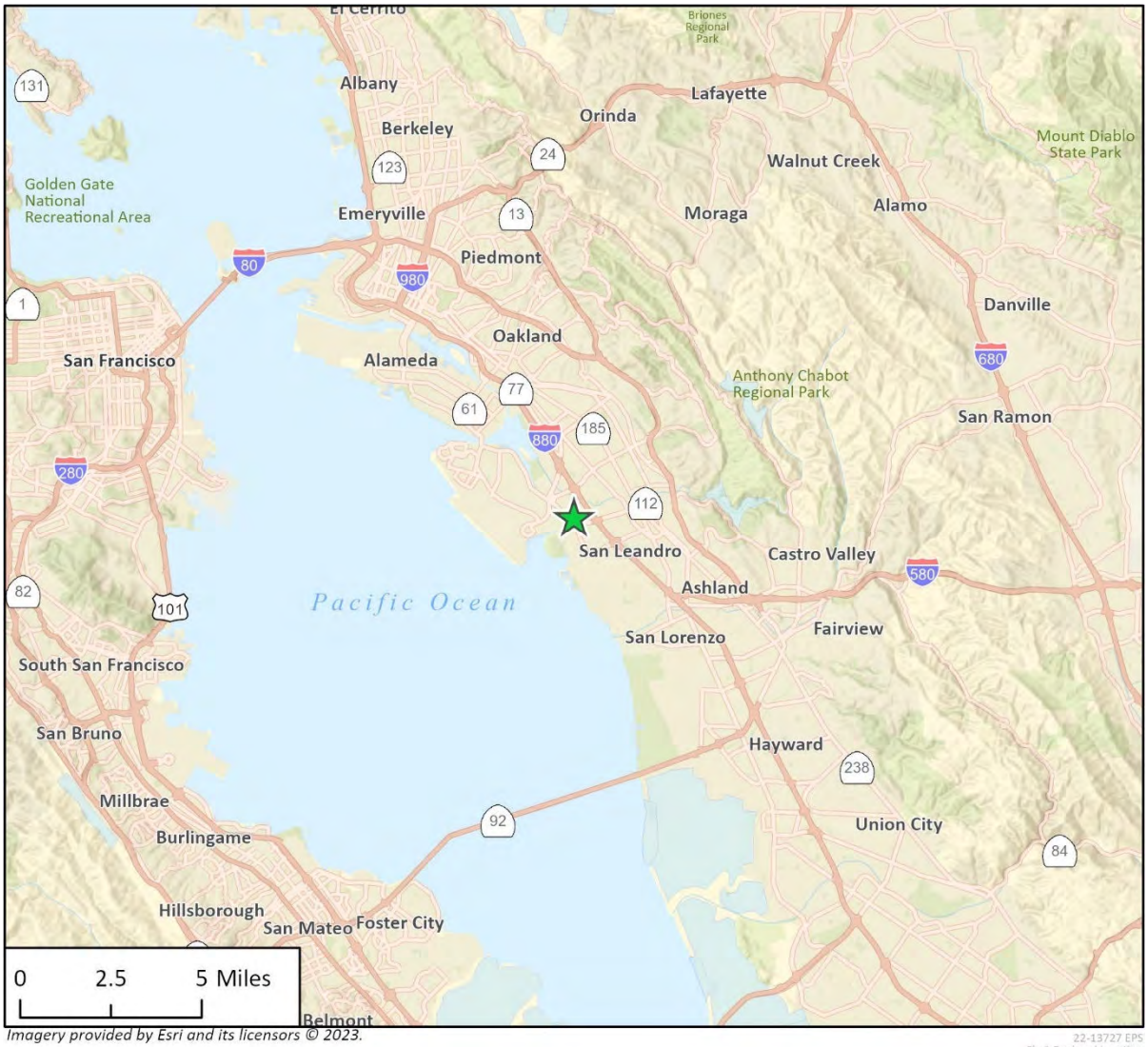
Cindy Lemaire, AICP, CNU-A, Senior Planner
City of San Leandro
835 East 14th Street
San Leandro, California 94577
(510) 577-3348

2.3 Project Location

The project site is located at 880 Doolittle Drive, which is on the east side of Doolittle Drive just east of adjacent properties with frontage on Doolittle Drive, approximately 0.2 mile north of its intersection with Davis Street, in San Leandro. The project site measures approximately 14.14 acres and consists of two Assessor's parcels: APN 77A-0741-004-02 and 77A-0741-005-00. Existing access to the project site is from a driveway on Doolittle Drive. Access to the site is also provided from a driveway at the southern terminus of Hester Street, which is a public street north of the project site. Figure 2-1 shows the site location in a regional context. Figure 2-2 shows an aerial view of the location of the site relative to the surrounding area. The aerial photograph shown in Figure 2-2 is outdated in that is shows vehicles on-site indicating an occupied building. The buildings on site are currently vacant with no active operations.

The project site is also in the planning area of the Airport Land Use Compatibility Plan for the Oakland International Airport (Alameda County Community Development Department 2010).

Figure 2-1 Regional Location



Imagery provided by Esri and its licensors © 2023.

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Fig 1 Regional Location

Project Location

N

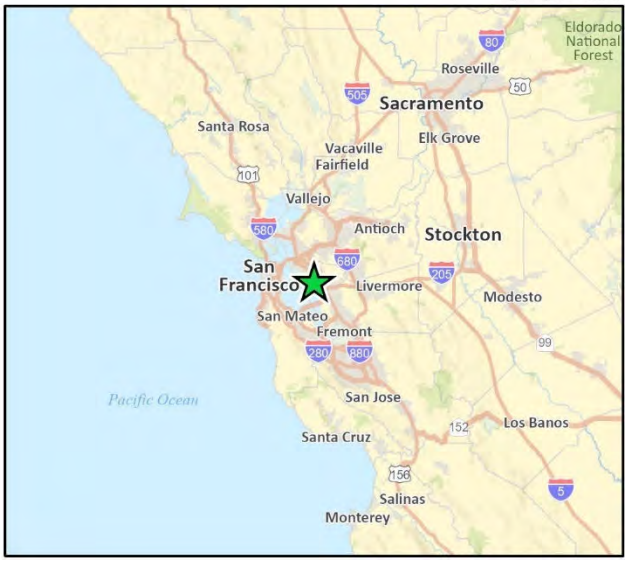


Figure 2-2 Project Site Location

Imagery provided by Microsoft Bing and its licensors © 2023.

22-13727 EPS
Fig 2 Project Location

2.4 Existing Site Characteristics

2.4.1 Site History and Existing Conditions

The project site is entirely developed. Existing on-site development consists of an approximately 207,000 square-foot industrial masonry building, an approximately 4,700 square-foot industrial masonry building, and paved surface parking lots, including a large surface parking lot covering approximately the northern half of the site. These existing buildings are vacant, and the unoccupied condition is the circumstance used for the environmental baseline in this document. Unpaved portions of the site are limited to small islands of landscaping, such as a strip of landscaping around the cul-de-sac at the end of Hester Street and landscaping along the easternmost project site boundary. Existing landscaping is a mix of non-native and weedy ground cover consisting of ruderal grass. There are inactive railroad tracks adjacent to the south and west of the site, and there is an active railroad corridor approximately 400 feet east of the project site.

In addition to the on-site warehouses, the project site has also been used as vehicle parking for people departing from the Oakland International Airport. However, operation of airport parking on the site ended during the COVID-19 pandemic and never resumed. The project site is currently vacant with no active operations.

Representative photographs of existing site conditions are shown on Figure 2-3.

2.4.2 General Plan Designation

The project site is designated as General Industrial (IG) in the San Leandro 2035 General Plan (City of San Leandro 2016). According to the Land Use Element of the 2035 General Plan, areas designated as General Industrial may contain a wide range of manufacturing, transportation, food and beverage processing, technology, warehousing, vehicle storage, office-flex, and distribution uses. A limited range of commercial uses are also permitted in these areas.

2.4.3 Zoning

The site is zoned as an Industrial General (IG) District. According to the San Leandro Zoning Code, areas zoned as Industrial General Districts are allowed to contain the following uses: accessory uses, other than entertainment events, when in conjunction with a permitted use; adult-oriented business; emergency and non-emergency ambulance services; artists' studios; automobile parts sales; building materials and services; business services; business and trade schools; catering services; communications facilities; emergency health care; equipment sales; retail financial institutions; general and limited food processing; government offices; health and fitness centers; home improvement and interior decoration; custom, general, limited, and research and development industry; laboratories; maintenance and repair services; marine sales and services; medical supply stores; nurseries; offices, business and professional; parcel processing and shipping centers; pre-existing residential uses; big box retail sales; telecommunications, architecturally-integrated antennas and/or co-locations on existing tower structures; minor utilities; new vehicle/heavy equipment dealers; and storage and wholesale/retail distribution warehouse that utilizes the existing building that would not be expanded 10,000 square feet or more.

Figure 2-3 Existing Site Conditions: Representative Photographs

Existing driveway connection between Doolittle Drive and the project site. The view in this photograph is northeast, toward the project site with Doolittle Drive behind the camera.

Typical existing development on the project site, incuding existing vacant structures, fencing, ashpalt parking and driving surfaces, and signage. The view in this photograph is east toward where the driveway from Doolittle Drive crosses into the project site.

Figure 2-3 Existing Site Conditions: Representative Photographs (Continued)

Typical existing development on the project site, incuding existing vacant structures, ashpalt parking and driving surfaces, and ruderal vegetation. The view in this photograph is southwest facing existing buildings with the camera positioned in the northern area of ths site.

Typical existing development on the project site, incuding existing vacant structures, overhead utilities, ashpalt parking and driving surfaces, and tractor trailers. The view in this photograph is south facing existing buildings with the camera positioned in the northern area of ths site.

Figure 2-3 Existing Site Conditions: Representative Photographs (Continued)

Typical existing developmen ton the project site, incuding an existing vacant structure, fencing, ashpalt parking and driving surfaces, as well as off-site railroad tracks along the southern site boundary. The view in this photograph is east.

The terminus of Hester Street and the existing driveway connection between Hester Street and the project site. Existing development on the project site is visible in the background. The view in this photograph is southeast toward the project site.

2.4.4 Surrounding Land Uses

The project is located on an infill site that is largely surrounded by industrial and commercial uses. Land adjacent to the northern boundary of the project site is developed with a mix of commercial and industrial land uses, including but not limited to, tool vendors, screen printing shops, machine shops, and sign shops. Carden Street separates the project site from land uses to the east, which are comprised of trucking businesses, a landscape company, metal supplier, and other commercial/industrial businesses.

The site is approximately 2.5 miles east of the San Francisco Bay, 5.8 miles northwest of San Lorenzo Creek, and 2.5 miles west of San Leandro Creek. The San Francisco Bay shoreline is approximately 3,000 feet southwest of the project site. The freight and corporate aircraft runways at Oakland International Airport are approximately 4,050 feet northwest of the project site.

2.5 Project Description

The proposed project consists of consolidating the two parcels comprising the project site into a single parcel, demolishing existing vacant structures, and developing a new industrial shell building on the site. There is no specific known land use and/or tenant proposed at this time, and the shell building would be designed to accommodate a future industrial tenant who may perform interior improvements to accommodate their specific needs. The proposed project also includes a new surface parking lot, internal circulation roadways, new utility connections, and landscaping, including landscaped areas that would serve as stormwater management. The major components of the proposed project are described in subsections below.

2.5.1 Property Consolidation and Demolition

The project site comprises two separate parcels, identified as APNs 77A-0741-004-02 and 77A-0741-005-00. The proposed project includes merging these two parcels into a single parcel. The new parcel would measure approximately 14.14 acres.

Site preparation activities would commence with demolition of the two existing vacant structures on site, as well as all associated surface parking, landscaping, and internal circulation and driveways on the site. Existing utility connections would be completely removed or abandoned in place in accordance with local and state regulations, in coordination with utility providers. Demolition materials, such as solid waste from the existing structures and asphalt pavement, would be disposed of at permitted or licensed facilities in accordance with local and state regulations. Demolition would last approximately 2 months.

2.5.2 Industrial Development

After approximately 6 months following demolition of existing structures, the proposed project would include construction of a new warehouse with supporting office space. The proposed building is approximately 244,573 square feet, comprised of a 229,573 square-foot of warehouse and 15,000 square feet of associated office space. Approximately 10,000 square feet of office space would be provided on the ground floor alongside the warehouse use. The remaining 5,000 square feet of office space would be on a mezzanine level of the warehouse. The footprint of the warehouse and office use would be 239,753 square feet. The proposed warehouse would be positioned within the project site to comply with the City's minimum frontage setback requirement of 10 feet. The proposed floor area ratio (FAR) is 0.40 and the maximum building height would be 50 feet with an

interior clear height of 40 feet. Figure 2-4, which is a conceptual site plan, shows the location of the proposed warehouse on the project site.

As shown on Figure 2-4, sixty-four loading docks are proposed, 27 on the north side and 37 on the south side of the building. In addition to dock doors, traditional doors for egress and ingress to the building would be provided for each of the two office spaces within the proposed warehouse. Traditional doors would be provided on the north side of the building and south side of the building, next to dock doors.

The exterior of the proposed warehouse would be constructed of a mix of materials, including concrete panels, corrugated and noncorrugated metal panels, wood finish/trim, and glazing. Glazing refers to the glass installed in the building such as windows. Glazing would be a mix of insulated glass installed over concrete and other materials, and glass installed over openings to serve as traditional windows. Generally, given the proposed warehouse use, exterior windows would be limited to the office use areas of the buildings. Figure 2-5 shows conceptual elevations of the proposed building, including identifying the various exterior finishes and glazing that would be used. Conceptual renderings of the project are shown on Figure 2-6.

At the time of publishing of this EIR, a tenant has not been identified for the proposed building. However, operational hours and activities would be typical of a warehouse land use. The building would be constructed for a speculative tenant or tenants; the project is intended for occupancy by uses consistent with the site's General Industrial General Plan land use designation, as well as those uses permitted under the site's Industrial General zoning classification. Based on employee generation rates published by the U.S. Green Building Council (2023), the proposed project would employ approximately 152 full-time employees.[1]

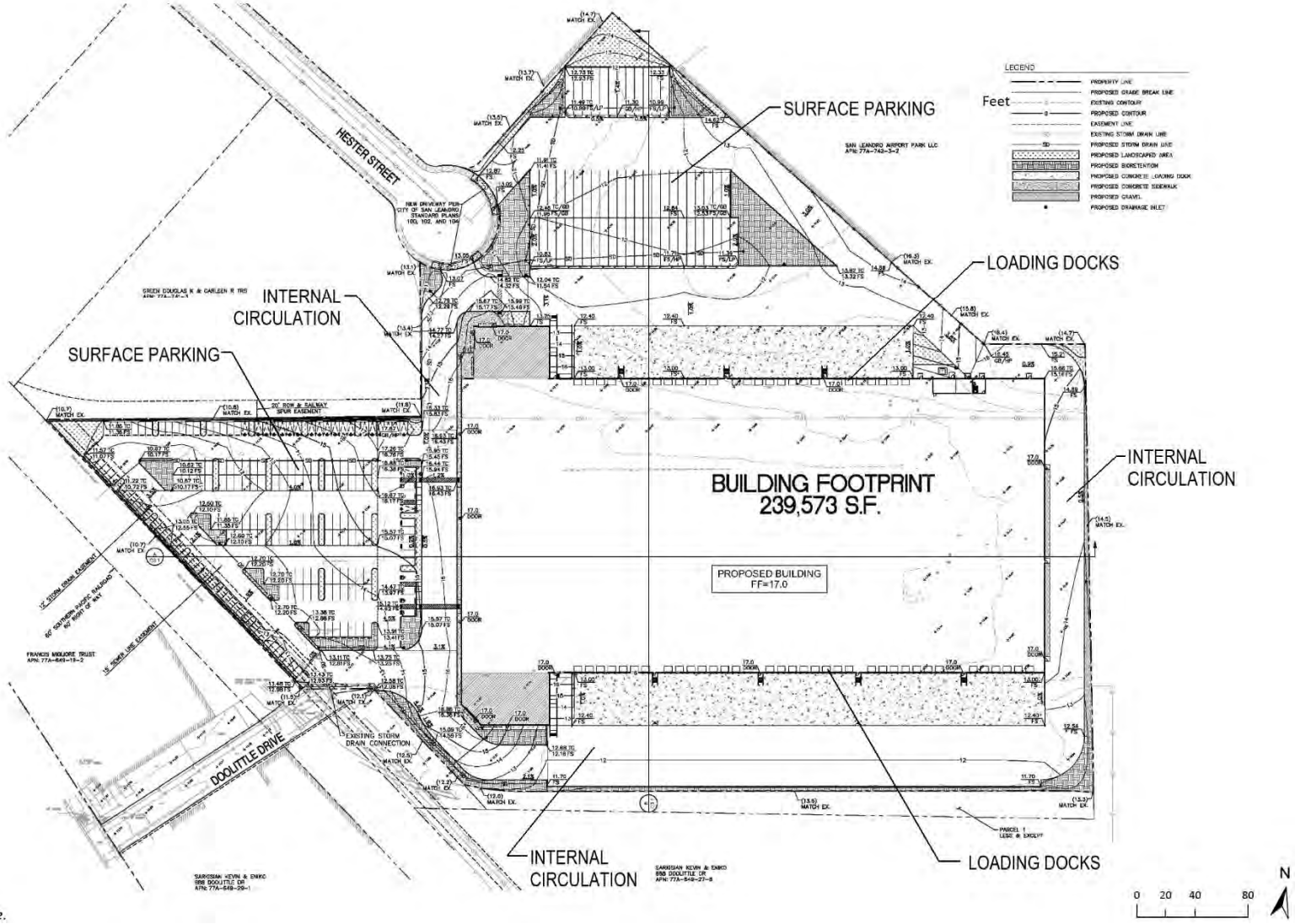
2.5.3 Circulation/Access and Parking

Access to the project site would be from the driveway on Doolittle Drive in the southwest area of the site, and from the end of Hester Street in the northern area of the site, as shown on Figure 2-4. Although these are both existing driveways, the proposed project would include reconstruction of the driveways to meet City standards and current ADA requirements. This would involve repairs as needed of the driveway from Doolittle Drive. New curb cut would be provided at the cul-de-sac on Hester Street, which would also include reconstructing (i.e., replacement of) portions of the sidewalk along the project site frontage on Hester Street. Additionally, a new, second, driveway to the site would be constructed at the end of Hester Street, providing a total of three driveways.

The proposed driveways would lead to internal access and circulation roads that encircle the proposed warehouse as well as surface parking areas that would be provided on the west and north sides of the warehouse. The internal circulation roads are designed to comply with standards for passenger vehicles, tractor-trailers, and emergency equipment like fire engines and ambulances. The internal circulation road would be wide enough to allow tractor trailers to maneuver in reverse into loading docks on the north and south side of the warehouse, as shown on Figure 2-4.

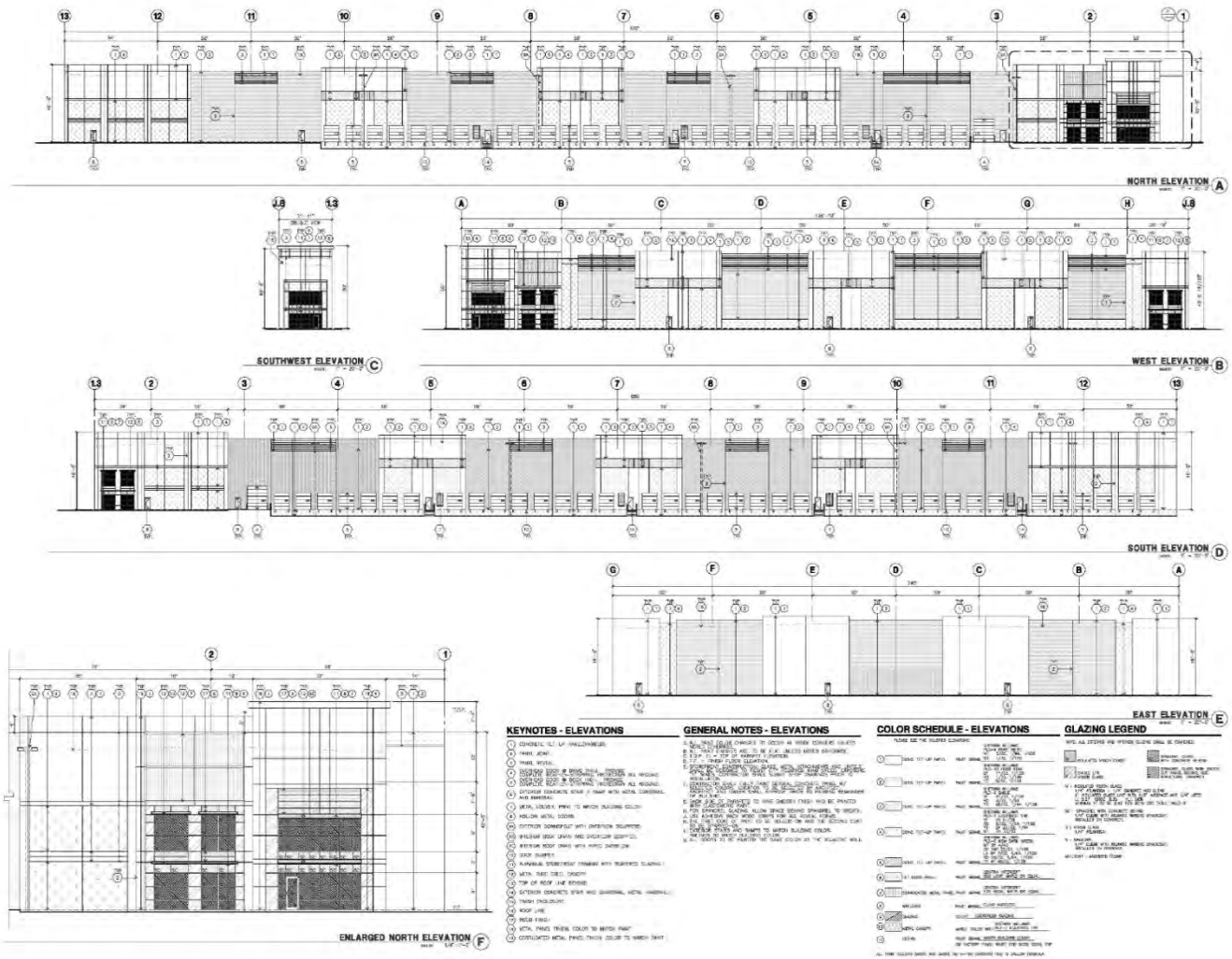
[1] (229,573 square foot warehouse distribution use/2,500 square foot per employee) + (15,000 square foot office use/250 square foot per employee) = 152 employees (US Green Building Council 2023). Numbers may not add up due to rounding.

Figure 2-4 Conceptual Site Plan



Source: HPA Architecture.

Figure 2-5 Conceptual Building Elevations



Source: HPA Architecture.

Figure 2-6 Conceptual Rendering of Project

The proposed project would include two main surface parking areas. The lot on the west side of the building would consist primarily of parking spaces for passenger vehicles. A total of 204 parking spaces would be provided for passenger vehicles, consisting of the following:

- 116 standard parking spaces (9 feet by 18.5 feet)
- 57 spaces for compact cars (8 feet by 16 feet)
- 3 standard accessible spaces
- 3 standard accessible van space
- 4 clean air spaces
- 21 electric vehicle spaces

The other main surface parking area would be on the north side of the warehouse, as shown on Figure 2-4. This parking area would consist of 59 spaces sized for tractor trailers. Tractor trailer parking spaces would be 10 feet by 53 feet each.

In addition to vehicle parking, the proposed project would also provide on-site bicycle parking. A total of 24 bicycle parking spaces would be provided in the vicinity of the office main entrance, including 12 short-term spaces and 12 long-term spaces.

2.5.4 Landscaping

Approximately 41,592 square feet of landscaping would be provided throughout the site including along the perimeter of the site to provide screening and a buffer between adjoining properties and land uses as well as in parking islands. No landscaping is proposed on the east side of the warehouse, which faces Carden Street and other commercial and industrial land uses. Instead, the project would include rock mulch at the eastern project site boundary. Where landscaping is installed, it would consist mostly of shrubs, providing either visual accents or screening, depending on planting density. Landscaping would also include new trees. New trees would be planted amongst shrubs along much of the site boundary, but also in landscaped parking islands within the surface parking area designed for passenger vehicles. Trees would also be planted around the proposed driveways on Hester Street, near the surface parking area designed for trailers. Trees would be a mix of conifers and deciduous species. Landscaping shrubs and trees would consist of species native to California. The proposed project would comply with water efficient landscape and would include the planting of species that would be appropriate for the local climate and contribute to conserving outdoor water use.

The project would also include bioswale areas to treat stormwater runoff. The bioswales would be planted with a mix of native grasses, low shrubs, and sod. These bioswale areas are described in more detail below in the Utilities section of this project description.

2.5.5 Utilities

Potable water service for the project would be provided by the East Bay Municipal Utility District (EBMUD), the City of San Leandro potable water service provider. A new water connection would be constructed on site and connect to an existing water main that is beneath the surface of the existing driveway at Doolittle Drive. Generally, the new water connection would be located beneath the new surface parking area on the west side of the proposed warehouse, as shown on Figure 2-7. A new fire hydrant pipeline would also connect to the existing water main in the project area in accordance with City code and requirements.

Sanitary sewer service for the project would be provided by the City's Sewer Department. Similar to the water line, a new sanitary sewer line would connect the proposed warehouse and an existing sanitary sewer main through the driveway on Doolittle Drive, as shown on Figure 2-7.

Stormwater runoff would be treated on site to meet the current Alameda County C.3 stormwater regulations before being discharged to the existing storm drain system. On-site treatment would occur with a series of bioswales, as shown on Figure 2-7. The bioswales are designed to capture and slow/pool runoff from impervious surfaces, functioning as bioretention areas. The bioswales would include approximately 18 inches of biotreatment soils and an underlying approximately 12 inches of permeable gravels. The bioswales will be vegetated with a native bioretention grass. Runoff collects and infiltrates the biotreatment soil, reducing the volume of runoff discharged into the storm drain system. Slowing the velocity of runoff by directing it into bioswales also allows solids to settle out before the runoff is discharged into the storm drain system. After entering on-site bioswales, treated runoff that infiltrates the soil would enter storm drain inlets installed in each bioswale. As shown on Figure 2-7, the inlets would connect to a storm drain pipeline installed beneath new surface parking areas and connect to an existing storm drain through the Doolittle Drive driveway.

Electricity and natural gas service at the project site would be provided by Pacific Gas & Electric, which provides services to the project area.

2.5.6 Construction and Grading

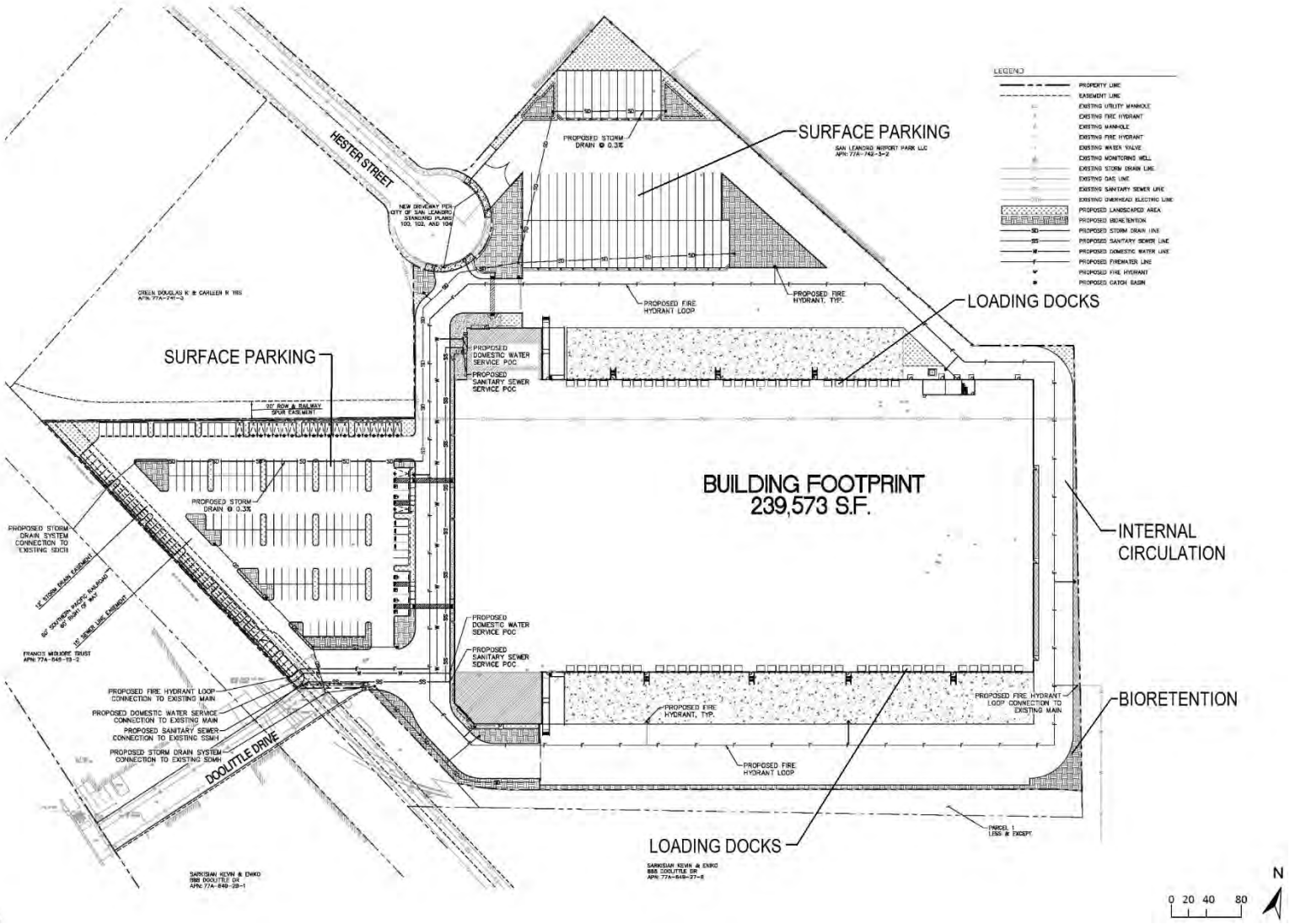
The timing of project construction would be determined by market forces and other considerations, such as weather or availability of workforce. However, for purposes of this analysis it is anticipated that construction would begin in 2024 with demolition of existing vacant structures and related infrastructure, such as utilities and surface parking.

Site grading would occur following demolition of the existing development on the project site, which totals approximately 212,000 square feet of structures. The site is relatively level, which minimizes the amount of grading included in the proposed project. Generally, grading would be designed to slope in a west-southwest direction across the site, which would allow stormwater runoff to flow into bioswale areas and then continue into the City's storm drain system using gravity rather than mechanical forces. Elevations on the project site following grading would vary between approximately 10 feet and 17 feet above mean sea level. Preliminary grading design shows a balanced site The conceptual grading plan for the proposed project is shown on Figure 2-8.

Project construction would commence following grading. Construction would include excavation and trenching to install buried utility connections, such as new water, sanitary sewer, and storm drain laterals. The foundation of the warehouse would be poured followed by framing and construction of the walls, interior spaces, and exterior. Paving of surface parking areas, driveways, and internal access roads would also occur during project construction, as well as construction of new sidewalk on site frontage along Hester Street. Additionally, repaving of a small off-site area between the existing off-site railroad tracks and the project site would be conducted. Following construction, new landscaping would be planted or installed. Assuming construction of the project is continuous, construction would occur over approximately 18 months, with 6 of those months being a period of inactivity following demolition that is associated with construction contracting.

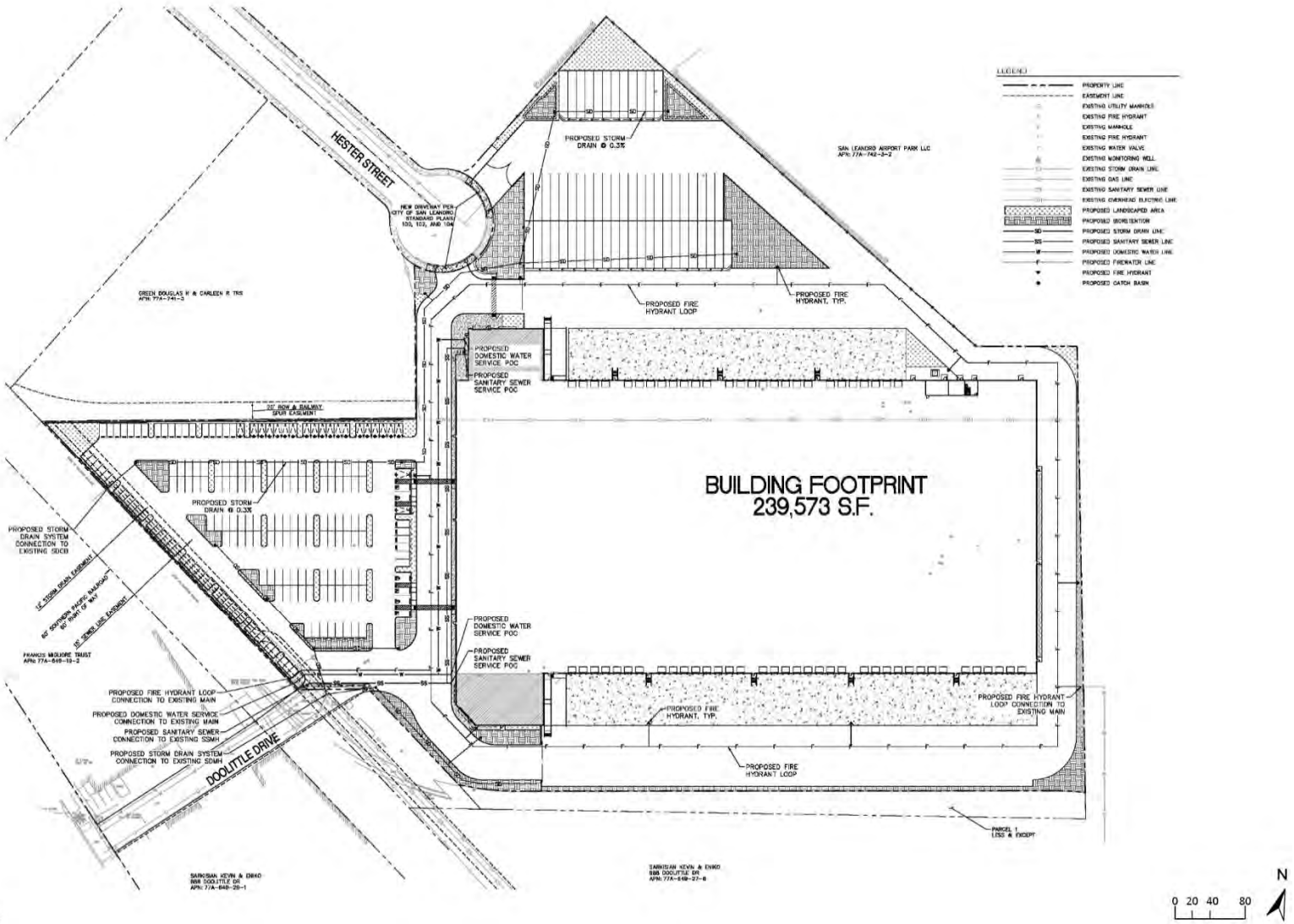
Construction staging would occur on-site. A variety of typical construction equipment would be used, such as backhoes, dump trucks, excavators, pavers, and dozers. A crawler crane with a boom height of up to approximately 161 feet would also be required. During construction, up to five existing trees just off the project site at the terminus of Hester Street would be removed.

Figure 2-7 Preliminary Utility Plan



Source: HPA Architecture.

Figure 2-8 Conceptual Grading Plan



Source: HPA Architecture.

2.6 Project Objectives

CEQA Guidelines Section 15124(b) requires an EIR to include a statement of objectives sought by the project. The objectives assist the City, as the lead agency, in developing a reasonable range of alternatives to be evaluated in the EIR. The project objectives also aid decision-makers in preparing findings or, if necessary, a statement of overriding considerations. The statement of objectives also includes the underlying purpose of the Project and the Project benefits.

The underlying purpose of the proposed project is to provide a modern industrial warehouse with ancillary office using sustainable and environmentally superior practices within the existing industrialized portion of the City. The proposed project would accommodate the need for additional large warehouse uses in the City and in Alameda County, while enhancing the economic vitality of the City.

The City and the applicant have the following objectives for the project:

- Increase the economic base of the City's industrial corridor by maximizing the productive use of the City's industrial land, which is currently underutilized;
- Create a modern warehouse that contributes to the aesthetics of the surrounding area through the redevelopment of an obsolete and underutilized property;
- Create a new, efficient and updated warehouse that is attractive to future tenants, by incorporating the state's green building design and building health and safety standards;
- Maintain and protect the City's inventory of larger-scale industrial sites with easy access to freeways, rails, airports, and seaports; and
- Support and retain existing industrial uses and employment in the City of San Leandro's industrial sector.

2.7 Lead, Responsible, and Trustee Agencies

The CEQA Guidelines define lead, responsible, and trustee agencies. The City of San Leandro is the lead agency for the project because it holds principal responsibility for approving the project.

A responsible agency refers to a public agency other than the lead agency that has discretionary approval over the project. The project site is approximately 4,050 feet away from the nearest runways at Oakland International Airport. Due to this proximity, pursuant to Federal Aviation Regulations Part 77, a No Hazard Determination for the warehouse was issued from the Federal Aviation Administration pursuant to Federal Aviation Regulations Part 77, because the proposed warehouse would have a maximum height of 50 feet, exceeding the 43 feet maximum permitted at this distance from the airport runway. The applicant submitted the project to the FAA, who determined that a building height of 50 feet does not present a hazard to air navigation. An additional No Hazard Determination may also be needed for the use of project construction equipment exceeding 43 feet in height.

Several mitigation measures discussed in Section 4.2, *Hazards and Hazardous Materials*, of this EIR require either approval or oversight from the California Department of Toxic Substances Control (DTSC). For this reason, DTSC is identified as a responsible agency.

A trustee agency refers to a state agency having jurisdiction by law over natural resources affected by a project. There are no trustee agencies for the proposed project.

2.8 Required Approvals

The following permits and approvals are required from the City of San Leandro prior to the construction of the proposed project:

- Use Permit
- Site Plan Review
- Height Exception
- Building Permit
- Grading Permit
- Tree Removal Permit

3 Environmental Setting

This section provides a general overview of the environmental setting for the proposed project. More detailed descriptions of the environmental setting for each environmental issue area can be found in Section 4, *Environmental Impact Analysis*.

3.1 Regional Setting

The project site is in the City of San Leandro, which is part of the greater San Francisco Bay Area in northern California. The San Francisco Bay Area is an urbanized region composed of numerous cities and counties that have a combined population of approximately 7.5 million people and encompass almost 7,000 square miles (California Department of Finance 2023). The climate varies within the San Francisco Bay Area, but the region is generally known to have a coastal Mediterranean climate with cool, wet winters and mild to hot, dry summers. Although air quality in the area has steadily improved in recent years, several counties in the San Francisco Bay Area Region remain nonattainment areas for ozone (urban smog).

San Leandro is located along the eastern side of the bay and is approximately 17 miles inland of Pacific Ocean coastline. Incorporated in 1872, San Leandro was primarily an agricultural city until World War II, when the city experienced rapid population growth. The city's population doubled between 1940 and 1950 and doubled again between 1950 and 1960. San Leandro shifted to manufacturing and commercial sectors, and by the late 1960s, the city was almost completely built out. Infill development has continued to expand San Leandro's commercial and residential growth (City of San Leandro 2020). The city borders the San Francisco Bay to the west and extends approximately 4 miles inland. To the north of the city are the cities of Alameda and Oakland, and to the south are the cities of Hayward and Fremont. Major roadways in the city include San Leandro Boulevard, Marina Boulevard, and Washington Avenue. Freeways that pass through the City include Interstate 880 (I-880), Interstate 580 (I-580), and State Route 185 (SR 185). I-880 is approximately 0.3 mile east of the project site, and I-580 is approximately 2.7 miles east. Figure 2-1 in Section 2, *Project Description*, shows the location of the project site in the region.

3.2 Project Site Setting

As shown in Figure 2-2 in Section 2, *Project Description,* the project site is bordered by industrial and commercial development to the north, including but not limited to, tool vendors, screen printing shops, machine shops, and sign shops. Carden Street separates the project site from land uses to the east, which are comprised of trucking businesses, a landscape company, metal supplier, and other commercial/industrial businesses. Industrial and commercial development also occurs to the south of the project site, as well as to the west. The freight and corporate aircraft runways at Oakland International Airport are approximately 4,050 feet northwest of the project site. There are inactive railroad tracks adjacent to the south and west of the site, and there is an active railroad corridor approximately 400 feet east of the project site. The San Francisco Bay shoreline is approximately 3,000 feet southwest of the project site. The site is approximately 2.5 miles east of the San Francisco Bay, 5.8 miles northwest of San Lorenzo Creek, and 2.5 miles west of San Leandro Creek.

The project site is nearly flat and currently occupied by two vacant industrial masonry buildings and has a General Plan land use designation of General Industrial. The site is zoned Industrial General District, as defined by the City's Zoning Ordinance. Uses permitted in the Industrial General designation include a wide range of manufacturing, transportation, food and beverage processing, technology, warehousing, vehicle storage, office-flex, and distribution uses. A limited range of commercial uses are also permitted in areas designated Industrial General.

3.3 Cumulative Development

In addition to the specific impacts of individual projects, the California Environmental Quality Act (CEQA) requires Environmental Impact Reports (EIRs) to consider potential cumulative impacts of the proposed project. The CEQA Guidelines define "cumulative impacts" as two or more individual impacts that, when considered together, are substantial or will compound other environmental impacts (CEQA Guidelines Sections 15065 and 15355). Cumulative impacts are the combined changes in the environment that result from the incremental impact of development of the proposed project and other nearby past, pending, and planned projects. For example, noise impacts of two nearby projects may be less than significant when analyzed separately but could have a significant impact when analyzed together. Cumulative impact analysis allows the EIR to provide a reasonable forecast of future environmental conditions and can more accurately gauge the effects of a series of projects. Consistent with CEQA Guidelines Section 15130, the discussion in this EIR focuses on the identification of any significant cumulative impacts and, where present, the extent to which the proposed project would constitute a considerable contribution to the cumulative impact.

CEQA requires cumulative impact analysis in EIRs to consider either a list of past, planned and pending projects that may contribute to cumulative effects or a forecast of future development potential. Past projects include those land uses that have been previously developed and comprise the existing environment. Pending projects include those projects recently approved or under construction. Planned projects are those that are reasonably foreseeable, such as those for which an application is on file and in process with a local planning department. Past, currently planned and pending projects in San Leandro are listed in Table 3-1. In particular, the projects are either located in proximity or along the same major arterial and collector roads as the project site and construction schedules may overlap. These projects are considered in the cumulative analyses in Section 4.0, *Environmental Impact Analysis*.

Table 3-1 Cumulative Projects List

Project No.	Project Location[1]	Land Use
1	1345 Doolittle Drive	Industrial- 264,000 square-foot industrial spec. building
2	1091 Doolittle Drive	Light Industrial – expansion of a heavy processing facility
3	100 & 200 Halcyon Drive	Commercial
4	2806 Marina Boulevard	Apartments – 3-story building with 6 units
5	1815 Williams Street	Commercial – 2-story multi-tenant industrial building
6	1411 Bancroft Avenue	Medical – reuse of a 3,457 square-foot building providing 15 medical beds
7	601 Aladdin Avenue	Light Industrial – waste/bulky item hauling
8	14341 Bancroft Avenue	Apartments – 20 units
9	1700 Doolittle Drive	Industrial – 79,840 square-foot industrial spec. building
10	14143 Washington Avenue	Industrial – 52,269 square-foot warehouse
11	Monarch Bay Shoreline	Mixed-Use
12	2599 Fairway Drive	Residential – 144 single-family dwellings and 62 townhomes
13	1800 Williams Street	Industrial – 9,306 square-foot building
14	13489 East 14th Street	Residential – 9 townhouses
15	1199 East 14th Street	Apartments – 180-unit multi-family building
16	1965 Marina Boulevard	Commercial – small-scale fast-food
17	1919 Williams Street	Industrial – demolition of an existing warehouse and construction of a new warehouse
18	15101 Washington Avenue	Apartments – 72-unit multi-family building

[1] Cumulative project details were obtained from the City of San Leandro in 2024

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4 Environmental Impact Analysis

This section discusses the possible environmental effects of the project for the specific issue areas that were identified through the scoping process as having the potential to cause significant effects on the environment. A "significant effect on the environment" as defined by the *CEQA Guidelines* Section 15382:

> means a substantial, or potentially substantial, adverse change in any of the physical conditions within the area affected by the project including land, air, water, minerals, flora, fauna, ambient noise, and objects of historic or aesthetic significance. An economic or social change by itself shall not be considered a significant effect on the environment. A social or economic change related to a physical change may be considered in determining whether the physical change is significant.

This document is an EIR in that it evaluates potential impacts on a limited number of environmental issue areas that the lead agency determined to be significant (*CEQA Guidelines* Sections 15006(d), 15063(c)(3)). After preparation of the Initial Study Checklist (see Appendix A), the City of San Leandro determined that the EIR would focus on the potentially significant impacts of the proposed project on the following environmental topics or resources:

- Greenhouse Gas Emissions
- Hazards and Hazardous Materials
- Noise
- Transportation

The assessment of each issue area begins with a discussion of the environmental setting related to the issue, which is followed by the regulatory framework, and the impact analysis. In the impact analysis, the first subsection identifies the methodologies used and the "significance thresholds," which are those criteria adopted by the City and other agencies, widely recognized, or developed specifically for this analysis to determine whether potential effects are significant. The next subsection describes each impact of the proposed project, mitigation measures for significant impacts, and the level of significance after mitigation measures are incorporated into or by the project. "Mitigation Measures" are measures that would be required of the project to avoid a significant adverse impact; to minimize a significant adverse impact; to rectify a significant adverse impact by restoration; to reduce or eliminate a significant adverse impact over time by preservation and maintenance operations; or to compensate for the impact by replacing or providing substitute resources or environment. Each effect under consideration for an issue area is separately listed in bold text with the discussion of the effect and its significance. Each bolded impact statement also contains a statement of the significance determination for the environmental impact as follows:

- **Significant and Unavoidable.** An impact that cannot be reduced to below the threshold level given reasonably available and feasible mitigation measures. Such an impact requires findings under *CEQA Guidelines* Section 15091 and a Statement of Overriding Considerations to be issued if the project is approved per *CEQA Guidelines* Section 15093.
- **Less than Significant with Mitigation Incorporated.** An impact that can be reduced to below the threshold level given reasonably available and feasible mitigation measures. Such an impact requires findings under *CEQA Guidelines* Section 15091.

- **Less than Significant.** An impact that may be adverse but does not exceed the threshold levels and does not require mitigation measures. However, mitigation measures that could further lessen the environmental effect may be suggested if readily available and easily achievable.
- **No Impact.** The proposed project would have no effect on environmental conditions or would reduce existing environmental problems or hazards.

Following each environmental impact discussion is a list of mitigation measures (if required) and the residual effects or level of significance remaining after implementation of the measure(s). In cases where the mitigation measure for an impact could have a significant environmental impact in another issue area, this impact is discussed and evaluated as a secondary impact. The impact analysis concludes with a discussion of cumulative effects, which evaluates the impacts associated with the proposed project in conjunction with other planned and pending developments in the area listed in Section 3.0, *Environmental Setting*.

The Executive Summary of this EIR summarizes all impacts and mitigation measures that apply to the proposed project, including mitigation measures identified in the Initial Study (Appendix A).

4.1 Greenhouse Gas Emissions

This section of the EIR analyzes greenhouse gas (GHG) emissions associated with the proposed project and potential impacts related to climate change. This section describes regional GHG emission sources and inventories, the regulatory framework applicable to GHG emissions, and evaluates potential project impacts related to GHG emissions as a result of project construction and operation.

4.1.1 Setting

a. Overview of Climate Change and Greenhouse Gases

Climate change is the observed increase in the average temperature of the Earth's atmosphere and oceans along with other substantial changes in climate (such as wind patterns, precipitation, and storms) over an extended period of time. Climate change is the result of numerous, cumulative sources of GHG emissions contributing to the "greenhouse effect," a natural occurrence which takes place in Earth's atmosphere and helps regulate the temperature of the planet. Most of the radiation from the sun hits Earth's surface and warms it. The surface, in turn, radiates heat back towards the atmosphere in the form of infrared radiation. Gases and clouds in the atmosphere trap and prevent some of this heat from escaping into space and re-radiate it in all directions.

GHG emissions occur both naturally and from human activities, such as fossil fuel burning, decomposition of landfill wastes, raising livestock, deforestation, and some agricultural practices. GHGs produced by human activities include carbon dioxide (CO_2), methane, nitrous oxide, hydrofluorocarbons, perfluorocarbons, and sulfur hexafluoride. Different types of GHGs have varying global warming potentials (GWP). The GWP of a GHG is the potential of a gas or aerosol to trap heat in the atmosphere over a specified timescale (generally, 100 years). Because GHGs absorb different amounts of heat, a common reference gas (CO_2) is used to relate the amount of heat absorbed to the amount of the gas emitted, referred to as "carbon dioxide equivalent" (CO_2e), which is the amount of GHG emitted multiplied by its GWP. Carbon dioxide has a 100-year GWP of one. By contrast, methane has a GWP of 30, meaning its global warming effect is 30 times greater than CO_2 on a molecule per molecule basis (Intergovernmental Panel on Climate Change [IPCC] 2022).[1]

b. Greenhouse Gas Emissions Inventories

Based upon the California Air Resources Board (CARB) California Greenhouse Gas Inventory for 2000-2021, California produced 381.3 million metric tons (MMT) of CO2e in 2021 (CARB 2023). Transportation is the major source of GHG in California, contributing 39 percent of the state's total GHG emissions. Industrial operations are the second largest source, contributing 22 percent of the state's GHG emissions. Specifically, emissions from the electricity sector continue to decline due to growing zero-GHG energy generation sources, dominated by solar (CARB 2023).

The City of San Leandro conducted a citywide GHG emissions inventory while preparing its current Climate Action Plan, which was approved in July 2021 (City of San Leandro 2021). Emissions

[1] The Intergovernmental Panel on Climate Change's (2022) *Sixth Assessment Report* determined that methane has a GWP of 30. However, the 2017 Climate Change Scoping Plan published by the California Air Resources Board uses a GWP of 25 for methane, consistent with the Intergovernmental Panel on Climate Change's (2007) *Fourth Assessment Report*. Therefore, this analysis utilizes a GWP of 25.

inventories were prepared for 2005, 2010, 2015, and 2017. Table 4.1-1 shows the change in GHG emissions from 2005 to 2017, and the activity data by subsector for the four inventory years.

Table 4.1-1 San Leandro Annual GHG Emissions, Metric Tons

Sector	2005 CO_2e	2010 CO_2e	2015 CO_2e	2017 CO_2e
Transportation	363,550	372,220	353,130	344,290
Non-residential energy	182,950	146,600	96,490	88,620
Residential energy	101,760	100,650	83,830	73,320
Waste	46,910	40,080	38,880	34,860
Off-road	23,190	22,860	30,940	26,970
BART	2,920	3,030	3,720	3,710
Water and wastewater	-	2,410	2,470	1,820
Total	**720,990**	**687,860**	**609,460**	**573,580**

Source: City of San Leandro 2021 Climate Action Plan (2021)

In 2017, transportation remained the largest source of GHG emissions, accounting for approximately 60 percent of the city's total. Nonresidential energy was the second-largest source of GHG emissions, equaling approximately 15 percent of the community total, followed by residential energy at 13 percent (City of San Leandro 2021).

c. Potential Effects of Climate Change

Potential impacts of climate change in California may include sea level rise, loss of water supply and snowpack, more and larger forest fires, damage to agriculture, public health impacts, and habitat destruction (Office of the Attorney General [OAG] 2018). These potential impacts are also anticipated and have been observed in the Bay Area.

The most relevant effects of climate change to the project site are those that could result in potential damage to the structure or its occupants, including severe storms or water shortages during drought conditions.

Climate change makes open space areas and the built environment at the edge of natural areas more vulnerable to fires by increasing temperatures and making forests and brush drier. Potential increases in the severity and frequency of drought would exacerbate the risk of wildfire. The fire season in California has begun to start earlier, last longer, and be more intense than in the last several decades. Wildfire occurrence statewide could increase several fold by the end of the century, increasing fire suppression and emergency response costs and damage to property (OAG 2018).

The project site is not adjacent to wildland fuels, such as forest, chaparral, or annual grasslands. The project site is developed and surrounded by urban and built-up lands and does not contain wildland fuels, such as forest or grassland. However, the smoke from wildland fires in other areas of the Bay Area, as well as other areas of the State could impact the health of potential occupants of the proposed building.

4.1.2 Regulatory Setting

a. Federal Regulations

The federal government has taken regulatory steps toward addressing climate change. Generally, California policy and regulations and regulations implemented at the regional and local levels are as or more comprehensive and stringent than federal actions; therefore, this section focuses on state, regional, and local regulatory actions whose implementation would lessen the contribution of the proposed project to GHG emissions and associated climate change.

b. State Regulations

Assembly Bill 32

Assembly Bill 32, the California Global Warming Solutions Act (Health and Safety Code Section 38500 et seq.),established a statewide GHG emissions cap for 2020, adopted mandatory reporting rules for substantial sources of GHGs, and adopted a comprehensive plan, known as the Climate Change Scoping Plan, identifying how emissions reductions would be achieved from significant GHG sources.

Effective January 1, 2017, SB 32 amended the California Global Warming Solutions Act. SB 32, and accompanying Executive Order B-30-15, requires CARB to ensure that statewide GHG emissions are reduced 40 percent below the 1990 level by 2030.

On November 30, 2017, CARB released its 2017 Climate Change Scoping Plan (2017 Scoping Plan), which lays out the framework for achieving the 2030 reductions as established in SB 32 (and other regulations). The 2017 Scoping Plan identifies the GHG reductions needed by emissions sector to achieve a Statewide emissions level that is 40 percent below 1990 levels before 2030. Many of the programs require Statewide action, promulgated through regulation, and are outside the ability of substate jurisdictions to implement on their own accord. This is important to recognize in terms of GHG emissions efficiency and attaining GHG targets. The ability to attain targets will rely not only on transportation strategies (e.g., the SCS) but also on land use strategies implemented by local cities and counties (e.g., qualified GHG reduction plans) and controls and actions tied to economy-wide changes promulgated by the State.

California Renewables Portfolio Standard

In 2015, the Legislature enacted Senate Bill 350, which embodies a policy encouraging a substantial increase in the use of electric vehicles and increased the Renewable Portfolio Standard to require 50 percent of electricity generated to be from renewables by 2030.

On September 10, 2018, former Governor Brown signed into law SB 100 and Executive Order B55-18. SB 100 raises California's Renewable Portfolio Standard requirement to 50 percent renewable resources target by December 31, 2026, and to achieve a 60 percent target by December 31, 2030. SB 100 also requires that retail sellers and local publicly owned electric utilities procure a minimum quantity of electricity products from eligible renewable energy resources so that the total kilowatt hours of those products sold to their retail end-use customers achieve 44 percent of retail sales by December 31, 2024, 52 percent by December 31, 2027, and 60 percent by December 31, 2030. Executive Order B-55-18 establishes a carbon neutrality goal for California by 2045; and sets a goal to maintain net negative emissions thereafter.

Assembly Bill 1493, Pavley Clean Car Standards

In July 2002, the Legislature enacted AB 1493 (Pavley Bill), which requires the maximum feasible reduction of GHGs emitted by passenger vehicles and light-duty trucks beginning with model year 2009. In September 2009, CARB adopted amendments to the Pavley standards to reduce GHG emissions from new motor vehicles through the 2016 model year. These regulations created what are commonly known as the "Pavley II standards."

Advanced Clean Cars

In January 2012, CARB adopted an Advanced Clean Cars program aimed at reducing both smog-causing pollutants and GHG emissions for vehicles model years 2017-2025. The regulations focus on substantially increasing the number of plug-in hybrid cars and zero-emission vehicles in the vehicle fleet and on making fuels such as electricity and hydrogen readily available for these vehicle technologies. It is expected that the Advanced Clean Car regulations will reduce GHG emissions from California passenger vehicles by about 34 percent below 2016 levels by 2025, all while improving fuel efficiency and reducing motorists' costs.

Senate Bill 375, Sustainable Communities Strategy

Senate Bill 375, signed in August 2008, requires sustainable community strategies to be included in regional transportation plans to reduce emissions of GHGs. The San Francisco Bay Metropolitan Transportation Commission and the Association of Bay Area Governments jointly approve and prepare Plan Bay Area, which includes the San Francisco Bay region's Sustainable Communities Strategy and Regional Transportation Plan. The most current version is Plan Bay Area 2050. Plan Bay Area 2050 includes a target to reduce GHG emissions by 10 percent per capita by 2020 and by 19 percent per capita by 2035.

California Energy Code

The California Energy Code (California Code of Regulations, Title 24, Part 6), which is incorporated into the California Building Standards Code, was first established in 1978 in response to a legislative mandate to reduce California's energy consumption. The California Energy Code is updated every three years by the California Energy Commission to allow consideration and possible incorporation of new energy efficiency technologies and construction methods. The 2022 Energy Code encourages efficient electric heat pumps, establishes electric-ready requirements for new homes, expands solar photovoltaic and battery storage standards, strengthens ventilation standards, and more. Buildings whose permit applications are applied for on or after January 1, 2023, must comply with the 2022 Energy Code.

California Green Buildings Standards Code

The purpose of the California Green Building Standards, which became effective on January 1, 2011, is to improve building design and construction to reduce negative environmental impacts through sustainable construction practices. The 2019 California Green Building Standards instituted mandatory and voluntary environmental performance standards for all ground-up new construction of commercial, low-rise residential uses, and state-owned buildings, as well as schools and hospitals. Jurisdictions could opt to adopt Tier 1 or Tier 2 standards, which are stricter than the mandatory standards, that would apply to new construction. The most current version, the 2022 California Green Building Standards, requires that most new homes and buildings statewide will either need to

be equipped with at least one highly efficient heat pump for either space heating or water heating, or face higher energy efficiency requirements. The 2022 California Green Building Standards also provides more standards for electric vehicles and infrastructure.

c. Local Regulations

Bay Area Air Quality Management District 2017 Clean Air Plan

The Bay Area Air Quality Management District (BAAQMD) adopted its 2017 Clean Air Plan to define a vision for achieving ambitious GHG reduction targets for 2030 and 2050, and to provide a regional climate protection strategy that will put the Bay Area on a pathway to achieve those GHG reduction targets (BAAQMD 2017). There are 85 control measures designed to decrease emissions of air pollutants and GHGs in the Clean Air Plan. The control measures that address GHG emissions and that are applicable to the project include TR1: Clean Air Teleworking Initiative; TR 2: Trip Reduction Programs; TR19: Medium and Heavy-Duty Trucks; TR 22: Construction, Freight, and Farming Equipment; BL1: Green Buildings; BL2: Decarbonize Buildings; BL4: Urban Heat Island Mitigation; and SL1: Short-Lived Climate Pollutants.

Bay Area Air Quality Management District CEQA Guidelines

On April 20, 2022, the BAAQMD Board of Directors adopted *CEQA Thresholds for Evaluating the Significance of Climate Impacts from Land Use Projects and Plans*. The purpose of the BAAQMD CEQA Guidelines is to assist lead agencies in evaluating air quality and climate impacts from proposed land use projects and plans in the San Francisco Bay Area Air Basin. The Guidelines include nonbinding recommendations for how a lead agency can evaluate, measure, and mitigate air quality and climate impacts generated from land use construction and operational activities. The Guidelines do not replace the State CEQA Statute and Guidelines; rather, they are designed to provide BAAQMD-recommended procedures for evaluating potential air quality and climate impacts during the environmental review process that are consistent with CEQA requirements.

City of San Leandro 2035 General Plan

The City of San Leandro's 2035 General Plan, adopted in September 2016, lists several GHG-reduction goals, policies, and actions as part of the Transportation Element and Open Space, Parks, and Conservation Element that support the goal of reducing GHG emissions. The following goals and policies are applicable to the proposed project (City of San Leandro 2016):

> **Policy T-5.2 Evaluating Development Impacts:** Use vehicle miles traveled (VMT) as the primary metric for evaluating the transportation impacts of new development proposals. Traffic impact studies may also consider the total number of trips generated and the resulting impact on traffic volumes and congestion (e.g., "Level of Service"), but VMT shall provide the primary basis for determining appropriate mitigation measures.

Goal OSC-7: Promote recycling, water conservation, green building, and other programs which reduce greenhouse gas emissions and create a more sustainable environment.

> **Policy OSC-7.8 Green Building:** Promote green building in new construction and remodels.

Goal OSC-8: Promote the efficient use of energy and the increased use of renewable energy by San Leandro residents and businesses.

Policy OSC-8.1 Conservation and Energy Efficiency: Strongly advocate for increased energy conservation by San Leandro residents and businesses, and ensure that the City itself is a conservation role model.

Policy OSC-8.2 Planning and Building Practices: Encourage construction, landscaping, and site planning practices that minimize heating and cooling costs and ensure that energy is efficiently used. Local building codes and other City regulations and procedures should meet or exceed state and federal standards for energy conservation and efficiency, and support the City's greenhouse gas reduction goals.

City of San Leandro Municipal Code

Section 3.24.400 of the SLMC requires commercial business organic waste generators and multi-family dwelling units to participate in organic waste collection services. These uses must subscribe to collection services for compost containers, recycling containers, and landfill containers.

Section 7.5.600 of the SLMC requires compliance with Tier 1 of the California Green Building Code, Title 24, Part 11, which details requirements for energy conservation and green design. Section 7.5.700 of the SLMC requires compliance with the California Energy Code, Title 24, Part 6, which details requirements for the use of energy-efficient design and technologies as well as provisions for incorporating renewable energy resources into building design.

San Leandro 2021 Climate Action Plan

The 2021 Climate Action Plan is San Leandro's comprehensive strategy to reduce GHG emissions and to adapt to changing climate conditions (City of San Leandro 2021). The Climate Action Plan allows City of San Leandro (City) decision-makers, staff, and the community to understand the sources and magnitude of local GHG emissions and the impacts of climate change on the community, reduce GHG emissions, prioritize steps to achieve GHG emission-reduction targets, and increase resilience. The 2021 Climate Action Plan also presents a work plan and monitoring program for the City to track progress toward reducing GHG emissions and achieving targets. The 2021 Climate Action Plan meets the criteria under State CEQA Guidelines Section 15183.5(b), which is often referred to as "Qualified Climate Action Plan."

4.1.3 Impact Analysis

a. Methodology and Thresholds of Significance

According to *CEQA Guidelines* Appendix G, impacts related to GHG emissions are considered significant if implementation of the proposed project would:

1. Generate GHG emissions, either directly or indirectly, that may have a significant impact on the environment; or
2. Conflict with an applicable plan, policy, or regulation adopted for the purpose of reducing the emissions of greenhouse gases.

The 2022 BAAQMD *CEQA Guidelines* document contains two approaches for determining significance of GHGs (BAAQMD 2022). The two approaches are as follows:

1. Projects must include, at a minimum, the following project design elements:

   Buildings

   - The project will not include natural gas appliances or natural gas plumbing (in both residential and nonresidential development).
   - The project will not result in any wasteful, inefficient, or unnecessary energy usage as determined by the analysis required under CEQA Section 21100(b)(3) and Section 15126.2(b) of the State CEQA Guidelines.

   Transportation

   - Achieve a reduction in project-generated vehicle miles traveled (VMT) below the regional average consistent with the current version of the California Climate Change Scoping Plan (currently 15 percent) or meet a locally adopted Senate Bill 743 VMT target, reflecting the recommendations provided in the Governor's Office of Planning and Research's Technical Advisory on Evaluating Transportation Impacts in CEQA:
     - Residential projects: 15 percent below the existing VMT per capita
     - Office projects: 15 percent below the existing VMT per employee
     - Retail projects: no net increase in existing VMT
   - Achieve compliance with off-street electric vehicle requirements in the most recently adopted version of CALGreen Tier 2.

2. Projects must be consistent with a local GHG reduction strategy that meets the criteria under State CEQA Guidelines Section 15183.5(b).

   According to the BAAQMD CEQA Thresholds for Evaluating the Significance of Climate Impacts From Land Use Projects and Plans, a qualified GHG reduction strategy must:

   - Quantify GHG emissions, both existing and projected over a specified period, resulting from activities in a defined geographic area
   - Establish a level, based on substantial evidence, below which the contribution to GHG emissions from activities covered by the plan would not be cumulatively considerable
   - Identify and analyze the GHG emissions resulting from specific actions or categories of actions anticipated in the geographic area
   - Specify measures or a group of measures, including performance standards, that substantial evidence demonstrates, if implemented on a project-by-project basis, would collectively achieve the specified emissions level
   - Establish a mechanism to monitor the plan's progress toward achieving the level and to require amendment if the plan is not achieving specified levels
   - Be adopted in a public process following environmental review

While the City's Climate Action Plan meets the requirements specified in criterion 2, the City has determined this analysis will evaluate the project in terms of consistency with the project design elements listed under criterion 1 above. Methodology for determining consistency is based on applicant-provided data, such as site plans, proposed utility plans, and a Transportation Impact Analysis (see Appendix C).

Threshold 1:	Would the project generate GHG emissions, either directly or indirectly, that may have a significant impact on the environment?

IMPACT GHG-1 THE PROPOSED PROJECT WOULD INCLUDE NEW NATURAL GAS CONNECTIONS, WHICH WOULD HAVE THE POTENTIAL TO CONTRIBUTE TO THE LONG-TERM GENERATION OF GHG EMISSIONS AFFECTING THE ENVIRONMENT. THIS IMPACT WOULD BE SIGNIFICANT AND UNAVOIDABLE.

Project Construction

Project construction would generate GHG emissions from the combustion of fuels used to power construction equipment, such as gasoline and diesel fuel. Construction workers would also use personal vehicles to commute to the project site, resulting in additional GHG emissions. The generation of GHG emissions from project construction activities would be temporary for the duration of construction, which would be approximately 18 months with some periods of inactivity. Project construction would not conflict with the BAAQMD criterion 1 approach, above, because construction would not involve buildings or permanent substantial increases in VMT or wasteful or excessive energy consumption. Accordingly, construction of the project would not generate GHG emissions that result in significant impacts on the environment.

Project Operation

As noted in Section 2.5.5, *Utilities*, the proposed project would include new natural gas connections to the proposed building. According to the Bay Area Air Quality Management District, projects that include natural gas appliances or natural gas plumbing should be found to make a significant climate impact because it will hinder California's efforts to address climate change (Bay Area Air Quality Management District 2022). Although the project would not result in wasteful or inefficient energy use (see Initial Study, Appendix A), because the proposed project would include new natural gas connections (i.e., plumbing), impacts would be significant.

The proposed project would satisfy other parameters of BAAQMD Criterion 1. For example, according to the Transportation Impact Analysis prepared for the project (see Appendix C), VMT generated by the project would be at least 15 percent below the average VMT per employee in the region. Specifically, the project would generate 15.34 VMT per employee in 2020 and 16.08 VMT per employee in 2040. The VMT per employee in the region in 2020, accounting for a 15 percent reduction, would be 16.3, and in 2040 would be 16.2. The project VMT of 15.34 and 16.08 is below the regional average for 2020 and 2040, respectively. The CalGreen Code requires at least 10 percent of the total parking spaces for a new project to be electric-vehicle ready parking spaces. With the proposed 204 parking spaces, at least 21 electric-vehicle ready parking spaces must be provided to meet CalGeen requirements. A total of 21 electric-vehicle ready parking spaces are proposed, which therefore meets the CalGreen Code requirement. Accordingly, because the project VMT per capita would be at least 15 percent below regional VMT per capita and sufficient electric-vehicle ready parking spaces would be provided, the proposed project would satisfy the transportation component of BAAQMD criterion 1.

Because the project would result in a potentially significant GHG emissions impact associated with new natural gas plumbing, implementation of mitigation is required.

Mitigation Measures

The City is unable to implement mitigation to reduce this significant impact based on a recent court case titled California Restaurant Association v. City of Berkeley. Briefly, in this case, the California Restaurant Association sued Berkeley in the U.S. District Court for the Northern District of California, arguing among other things that the federal Energy Policy and Conservation Act (EPCA) preempted the City's ordinance banning natural gas in new buildings. The District Court dismissed the California Restaurant Association's challenge. However, the Ninth Circuit reversed the District Court, holding that EPCA expressly preempts state and local regulations concerning the energy use of many natural gas appliances. The Ninth Circuit concluded that EPCA preempted Berkeley's ban of natural gas, because it prohibited the onsite installation of natural gas infrastructure necessary to support natural gas appliances covered under the EPCA. Accordingly, based on the decision of the Ninth Circuit in California Restaurant Association v. City of Berkeley, the City of San Leandro cannot require the project applicant to eliminate natural gas from the proposed project. No other mitigation is available to eliminate the use of natural gas in the proposed project. See Section 6, *Alternatives*, which includes project alternatives that do not include natural gas connections.

Significance After Mitigation

Because there is no feasible mitigation to reduce potentially significant impacts resulting from GHG emissions of the project, impacts would remain significant and unavoidable.

Threshold 2:	Would the project conflict with an applicable plan, policy, or regulation adopted for the purpose of reducing the emissions of greenhouse gases?

IMPACT GHG-2 THE PROPOSED PROJECT WOULD CONFLICT WITH AN APPLICABLE POLICY OR POLICIES ADOPTED FOR THE PURPOSES OF REDUCING THE EMISSIONS OF GREENHOUSE GASES. THIS IMPACT WOULD BE SIGNIFICANT AND UNAVOIDABLE.

The BAAQMD 2017 Clean Air Plan contains numerous control measures designed to decrease emissions of air pollutants and GHGs in the San Francisco Bay. Some of the control measures are not applicable to the proposed project and are not evaluated further in this document. For example, Control Measure TR-17 encourages increased use of cleaner burning jet fuel in commercial jets arriving and departing the Bay Area, and the proposed project does not include commercial jet operations. Control measures that are applicable to the proposed project and also address GHG emissions include: TR1: Clean Air Teleworking Initiative; TR 2: Trip Reduction Programs; TR19: Medium and Heavy-Duty Trucks; TR 22: Construction, Freight, and Farming Equipment; BL1: Green Buildings; BL2: Decarbonize Buildings; BL4: Urban Heat Island Mitigation; and SL1: Short-Lived Climate Pollutants. Project consistency with these control measures is evaluated in Table 4.1-2, below. As shown therein, the proposed project would be consistent with most control measures of the BAAQMD 2017 Clean Air Plan. The proposed project would be inconsistent with control measure TR-1, pertaining to telecommuting policies. However, as discussed in Section 4.4, Transportation, of this EIR, the proposed project would generate VMT that is at least 15 percent below average VMT per employee in the area. Therefore, inconsistency with control measure TR-1 would not result in significant environmental impacts. As shown in Table 4.1-2, the proposed project would also be inconsistent with control measure SL-1, which pertains to reducing methane emissions from landfills. As described in Section 19, Utilities and Service Systems, of the Initial Study (Appendix A), project generated waste per day would be less than 0.02 percent of Altamont Landfill's allowable waste limit and project generated waste annually would be less than 0.0007 percent of Altamont

Landfill's remaining capacity. The project would be required to comply with City and State plans and policies to reduce solid waste generation, including a requirement to divert at least 50 percent of solid waste and recyclables as required by Assembly Bill 939. Therefore, inconsistency with control measure SL-1 would not result in significant environmental impacts.

Table 4.1-2 Project Consistency Analysis with the BAAQMD 2017 Clean Air Plan

2017 Clean Air Plan Control Measure	Project Consistency Analysis
TR-1: Develop teleworking best practices for employers and develop additional strategies to promote telecommuting. Promote teleworking on Spare the Air Days.	**Inconsistent.** A tenant for the proposed building has not been identified at this time; therefore, it is unknown if the future tenant(s) would promote telecommuting for their employees.
TR-2: Implement the regional Commuter Benefits Program (Rule 14-1) that requires employers with 50 or more Bay Area employees to provide commuter benefits. Encourage trip reduction policies and programs in local plans, e.g., general and specific plans while providing grants to support trip reduction efforts. Encourage local governments to require mitigation of vehicle travel as part of new development approval, to adopt transit benefits ordinances in order to reduce transit costs to employees, and to develop innovative ways to encourage rideshare, transit, cycling, and walking for work trips. Fund various employer-based trip reduction programs.	**Consistent.** A tenant for the proposed building has not been identified at this time; therefore, it is unknown how many employees may work at the site. However, the Commuter Benefits Program is a BAAQMD rule (Rule 14-1). Accordingly, if the future tenant is an employer with 50 or more employees, that employer must comply with Rule 14-1.
BL-1: Collaborate with partners such as KyotoUSA to identify energy-related improvements and opportunities for onsite renewable energy systems in school districts; investigate funding strategies to implement upgrades. Identify barriers to effective local implementation of the CALGreen (Title 24) statewide building energy code; develop solutions to improve implementation/enforcement. Work with ABAG's BayREN program to make additional funding available for energy-related projects in the buildings sector. Engage with additional partners to target reducing emissions from specific types of buildings.	**Consistent.** The proposed project would be constructed compliant to the version of CALGreen in effect when construction permits are issued. Because the project would be constructed to a newer version of CALGreen than onsite existing buildings, the proposed project would increase the efficiency of potential future operations on the project site.
SL-1: Reduce methane from landfills and farming activities through various control measures listed under waste and agriculture sectors. Develop a rule to reduce methane emissions from natural gas pipelines and processing operations and amend regulations to reduce emissions of methane and other organic gases from equipment leaks at oil refineries. Enforce applicable regulations on the servicing of existing air conditioning units in motor vehicles, support the adoption of more stringent regulations by CARB and/or U.S. EPA, and encourage better HFC disposal practices.	**Inconsistent.** The proposed project does not include new landfill facilities and would not involve farming activities. The proposed project would include new natural gas plumbing, which because it would be new, would not be corroded and less susceptible to leaks compared to older, existing natural gas infrastructure at the project site. However, the project would not separate waste, such as having a compost for organic waste.

Source: BAAQMD 2017 Clean Air Plan (2017)

The City of San Leandro updated and approved its Climate Action Plan in July 2021, which outlines strategies for reducing GHG emissions through various activities, including but not limited to water conservation, energy conservation, land use design and orientation, transportation-oriented development, and renewable energy source use. Table 4.1-3 below compares the project's consistency with the City's Climate Action Plan.

Table 4.1-3 Project Consistency with the San Leandro Climate Action Plan

San Leandro Climate Action Plan Measure	Project Consistency
Building Efficiency (BE)	
BE-1: Electrified retrofits. Incentivize significant building retrofits with fewer or no natural gas appliances to reduce pollution and increase cost savings.	**Inconsistent.** The proposed project would include the development of a new light industrial warehouse and would not retrofit existing buildings. The proposed project would include a new natural gas connection. Although the existing on-site buildings have natural gas connections, the proposed project would not result in fewer or no natural gas connections or appliances.
BE-2: Electrified new construction. Commit to developing a reach code limiting natural gas use in new construction, or as directed by the State or regional agencies.	**Inconsistent.** The City of San Leandro has adopted a reach code encouraging limiting natural gas use in new construction. However, the proposed project would include natural gas infrastructure.
Renewable Energy (RE)	
RE-4: Increase renewable energy generation and energy storage capacity at nonresidential properties.Encourage the use of non-fossil fuel backup generation systems as much as possible.	**Consistent.** The proposed project would be required to comply with San Leandro Municipal Code Chapter 7-5, Article 6 Green Building Code, which would require all new development to be consistent with Title 24, including the provision for solar-ready rooftop infrastructure.
Reducing Auto Dependency (AD)	
AD-1: Traffic calming. Continue to provide the Neighborhood Traffic Calming Program and related efforts to reduce travel speeds and cut through traffic in residential areas.	**Consistent.** The proposed project would not include a roadway that could be used to cut through residential neighborhoods and would facilitate travel to the proposed project driveways.
AD-4: Evaluate parking standards. Evaluate parking standards and continue to support shared parking and other efforts to ensure the availability of necessary parking while reducing vehicle miles traveled.	**Consistent.** The proposed project would provide parking consistent with development standards contained in the San Leandro Municipal Code.
Active and Alternative Transportation (AT)	
AT-1: Transportation Demand Management (TDM). Require local employers above a certain number of employees to develop programs that promote ride sharing, flextime, telecommuting, and other means to reduce commute trips and congestion, and target 10 percent mode shift.	**Consistent.** Although the number of employees that would be employed by the proposed project is unknown at the time of preparation of this report, the proposed project would comply with any City TDM programs should they apply.
AT-2: Bicycle infrastructure. Expand San Leandro's bicycle network and supportive bicycle infrastructure, including funding buildout of the City's bicycle network as identified in the current Bicycle and Pedestrian Master Plan, to meet commute trip, non-commute trip, and recreational needs.	**Consistent.** The proposed project would not inhibit the expansion of the City's bicycle network, because it would be consistent with existing Building Codes and would not prevent the installation of bicycle lanes or infrastructure adjacent to the project site. Additionally, the project would include 12 bicycle parking spaces.
Transportation Electrification and Low-Carbon Fuels (TE)	
TE-1: Electric vehicle adoption. Conduct education and outreach to inform members of the public about the availability of EVs, and the economic incentives available to encourage EV adoption. **TE-2:** Increase the availability of publicly accessible EV charging stations at multi-family residential buildings, retail centers, offices, and public facilities.	**Consistent.** The proposed project includes the development of a new warehouse that would be subject to Title 24 requirements mandating EV charging infrastructure. The proposed project would include 21 EV charging spaces.

San Leandro Climate Action Plan Measure	Project Consistency
Waste Management (WM)	
WM-1: Increased curbside recycling. Increase participation in curbside recycling programs, including efforts to reduce material contamination and improvements to waste educational programs.	**Consistent.** The proposed project would be required to comply with the City's construction debris and waste recycling ordinance. The proposed project would be provided waste removal services by Oro Loma Sanitary District,which provides recycling services for residential uses.
WM-2: Curbside composting. Expand participation in composting programs, including partnerships with community organizations such as StopWaste and a mandatory curbside composting program for all businesses.	**Consistent.** The Oro Loma Sanitary District would provide Green Waste bins for the proposed project's waste disposal and the proposed project would participate in mandatory composting practices for businesses.
Waste Reduction and Reuse (WR)	
WR-1: Waste minimization. Explore emerging opportunities for waste minimization, including maker spaces, material reuse, and tool-lending libraries.	**Inconsistent.** The project has not considered maker spaces, material reuse, or tool-lending libraries.
WR-2: Construction and Demolition waste. Explore opportunities to exceed State requirements for construction and demolition materials by encouraging deconstruction and material reuse.	**Consistent.** The construction contractor would be required to comply with San Leandro Municipal Code Section 3-7 related to constructionwaste and debris recycling. San Leandro Municipal Code Section 3-7 exceeds State requirements by requiring the project applicant to submit a Debris Recycling Statement to the City.
Water Efficiency (WE)	
WE-4: New Greywater Installations. Continue to require water conservation and green infrastructure strategies as a condition of approval for major developments.	**Consistent.** As described in Section 2, *Project Description*, The proposed project would comply with water efficient landscape and would include the planting of species that would be appropriate for the local climate and contribute to conserving outdoor water use.
Community Consumption (CC)	
CC-4: Carbon Sequestration. Promote increasing soil carbon and planting high carbon sequestering, climate appropriate species in landscaping projects.	**Consistent.** The proposed project would increase the amount of landscaping on the site compared to current conditions, which would contribute to carbon sequestration on- site.

Source: City of San Leandro 2021

As shown above in Table 4.1-3, the proposed project would be generally consistent with the City's Climate Action Plan. However, the proposed project would be inconsistent with policy WR-1 pertaining to waste reuse and policies BE-1 and BE-2 of the Climate Action Plan, which pertain to replacing natural gas with electricity. Inconsistency with policy WR-1 would not result in physical environmental impacts because the policy encourages maker spaces, and tool-lending libraries for example. The absence of these features from the project do not result in physical environmental effects. The proposed project would be inconsistent with policies BE-1 and BE-2 because the proposed project would include new natural gas connections. Accordingly, the proposed project would conflict with an applicable plan, policy, or regulation adopted for the purpose of reducing GHG emissions. Impacts would be potentially significant, and mitigation is required.

Mitigation Measures

The City is unable to implement mitigation to reduce this significant impact based on a recent court case titled California Restaurant Association v. City of Berkeley. Briefly, in this case, the California Restaurant Association sued Berkeley in the U.S. District Court for the Northern District of California,

arguing among other things that the federal Energy Policy and Conservation Act (EPCA) preempted the City's ordinance banning natural gas in new buildings. The District Court dismissed the California Restaurant Association's challenge. However, the Ninth Circuit reversed the District Court, holding that EPCA expressly preempts state and local regulations concerning the energy use of many natural gas appliances. The Ninth Circuit concluded that EPCA preempted Berkeley's ban of natural gas, because it prohibited the onsite installation of natural gas infrastructure necessary to support natural gas appliances covered under the EPCA. Accordingly, based on the decision of the Ninth Circuit in California Restaurant Association v. City of Berkeley, the City of San Leandro cannot require the project applicant to eliminate natural gas from the proposed project. No other mitigation is available to eliminate the use of natural gas in the proposed project. See Section 6, *Alternatives*, which includes project alternatives that do not include natural gas connections.

Significance After Mitigation

Because there is no feasible mitigation to reduce potentially significant impacts resulting from GHG emissions of the project, impacts would remain significant and unavoidable.

4.1.4 Cumulative Impacts

A project's environmental impacts are "cumulatively considerable" if the "incremental effects of an individual project are significant when viewed in connection with the effects of past projects, the effects of other current projects, and the effects of probable future projects" (*CEQA Guidelines* Section 15065[a][3]). While greenhouse gas emissions are a global occurrence and climate change affects the entire planet, it is impractical to extend the geographic scope for this cumulative impacts analysis to the entire planet. Additionally, the geographic scope for this analysis need only to include the San Franscisco Bay Area due to the abundance or GHG emission sources, including residential, commercial, industrial, and mobile sources. Combined, the GHG emissions from these sources have resulted in a significant cumulative impact related to climate change. The proposed project would result in additional GHG emissions, especially due to the combustion of natural gas that is included in the natural project. The other reasonably foreseeable future projects listed in Table 3.1 of this EIR would also generate GHG emissions. Accordingly, the cumulative GHG impacts of the proposed project would be significant. As described in Section 4.1.3, there are no feasible mitigation measures to reduce the significant GHG impacts of the proposed project. the project's contribution to significant cumulative GHG impacts would be cumulatively considerable.

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4.2 Hazards and Hazardous Materials

This section of the EIR addresses the potential environmental impacts of the proposed project that are related to hazards and hazardous materials. Simply defined, a hazardous waste is a waste with properties that make it dangerous or capable of having a harmful effect on human health or the environment (U.S. Environmental Protection Agency 2023). This section is based largely on a Revised Soil and Groundwater Management Plan that RMD Environmental Solutions, Inc. prepared for the project site in 2021. The California Department of Toxic Substances Control (DTSC) approved the Revised Soil and Groundwater Management Plan in a letter dated August 3, 2021. The Soil and Groundwater Management Plan and the DTSC approval letter are provided as Appendix D to this EIR.

4.2.1 Setting

a. Past and Current Land Uses

As described in EIR Section 2.3, *Project Location*, the project site consists of two Assessor's parcels: APN 77A-0741-004-02 and 77A-0741-005-00. Kaiser Aerotech manufactured aerospace and/or aircraft equipment on APN 77A-0741-004-02 from approximately 1955 to 1996, when these operations ceased, and the manufacturing equipment was dismantled (RMD Environmental Solutions 2021). Kaiser Aerotech used the APN 77A-0741-005-00 for employee parking, light manufacturing, and storage between 1963 and 1976. Between 1976 and 2002, most of the APN 77A-0741-005-00 was leased to other businesses including a cargo container repair and storage company and a light manufacturing company (RMD Environmental Solutions 2021; Appendix D).

From the early 2000s to May 2020, Expresso Airport Parking operated at the Site to provide off-site airport parking and the former manufacturing buildings were repurposed as indoor parking (RMD Environmental Solutions 2021). Currently the buildings remain on site.

b. Hydrogeologic Zones

Hydrogeological zones refer to the subsurface areas of rock and soil containing distinct characteristics that influence groundwater flow and storage. As it relates to prior site operations and associated use of hazardous materials, the site's hydrogeologic zones determine how these materials may contribute to groundwater contamination. According to the Soil and Groundwater Management Plan for the project site (RMD Environmental Solutions 2021), the project site subsurface consists of the following hydrogeologic zones:

- **Vadose zone:** Ground surface to the top of the water table at approximately 5 feet below ground surface;
- **A-zone:** Approximately 5-15 feet below ground surface; thin, discontinuous sand lenses;
- **B-zone:** Approximately 15-35 feet below ground surface; thicker sand channels enveloped by fine-grained soil;
- **Fine-grained soil:** Approximately 35-45 feet below ground surface; interpreted aquitard; and
- **C-zone:** Below approximately 45 feet below ground surface; thicker, more laterally continuous sand intervals.

In general, horizontal hydraulic gradients are toward the west in each of the three water-bearing zones. Groundwater is typically observed at approximately 5 to 7 feet below ground surface in the A-zone. Groundwater elevations in A-zone observed in existing on-site wells are typically similar to those in adjacent B-zone wells and are below those in adjacent C-zone wells (RMD Environmental Solutions 2021). On-site groundwater monitoring well locations are shown on Figure 4.2-1.

c. Hazardous Constituents of Potential Concern

The project site is included on a list of hazardous materials sites compiled pursuant to Government Code Section 65962.5, otherwise known as the "Cortese List" (DTSC 2023; State Water Resources Control Board 2023). The project site is considered a hazardous site due to subsurface contamination with chlorinated volatile organic compounds associated with the Kaiser Aerotech operation that formerly operated on-site. Specifically, according to the Soil and Groundwater Management Plan prepared for the project site (RMD Environmental Solutions 2021; Appendix D), the primary contaminants of potential concern at the site are trichloroethene and its associated degradation products, cis-1,2-dichloroethene, trans-1,2- dichloroethene, and vinyl chloride. Trichloroethene is considered the primary indicator contaminant of potential concern based on the past Kaiser Aerotech operations. Trichloroethene and its degradation products are distributed throughout the soil and groundwater occurring throughout the A and B hydrogeologic zones, which extend approximately 5 to 35 feet below ground surface. Tetrachloroethene is largely limited to this same zone but slightly less deep into the B hydrogeologic zone and is considered to be the result of an offsite source associated with the railroad at the western boundary of the site (RMD Environmental Solutions 2021; Appendix D).

d. Phase I Environmental Site Assessment Document

Langan Engineering and Environmental Services, Inc. prepared a Phase I Environmental Site Assessment for the project site in December 2019. The findings of the 2019 Phase I Environmental Site Assessment include a summary of the site contamination identified by DTSC (see *Section c. Hazardous Constituents of Potential Concern*, above). Additionally, the Phase I Environmental Site Assessment identifies elevated concentrations of lead associated with deteriorating paint at the project site. Further, the Phase I Environmental Site Assessment identifies the presence of asbestos containing materials at the site, generally associated with the existing vacant buildings. There are also approximately 51 electrical transformers present at the site that contain polychlorinated biphenyls.

e. Remediation Actions

Environmental response activities, including remedial actions, have been implemented at the project site to address chlorinated volatile organic compounds observed in the site subsurface. As described in the Final Remedial Action Plan (The Source Group, Inc. 2008a) and Remedial Design and Implementation Plan (The Source Group, Inc. 2008b), the remediation of trichloroethene at the site was addressed using primarily bioremediation techniques. Areas containing concentrations of 1,000 micrograms per liter (µg/L) or greater were treated using enhanced reductive de-chlorination through injection of an electron-donor substrate, which is a process that modifies the groundwater conditions to enhance degradation of contaminates to their non-contaminated end products. Routine groundwater monitoring results are used to continue to evaluate site conditions and remedial progress (RMD Environmental Solutions 2021; Appendix D).

Figure 4.2-1 On-Site Groundwater Well Network

Source: RMD Environmental Solutions 2021

Groundwater monitoring data indicate that remediation efforts successfully reduced trichloroethene concentrations in the onsite wells to near or below its maximum contaminant level (MCL) (5.0 µg/L) in most of the treatment areas. The MCL is the maximum level of contaminant allowed in water which is delivered to a user of a public water system. In several areas, the return toward ambient conditions and more limited enhanced reductive de-chlorination have not resulted in trichloroethene concentration rebound above 100 µg/L indicating the effectiveness of remediation efforts. In the A-zone and B-zone monitored natural attenuation wells, the generally stable-to-decreasing concentrations of trichloroethene and its degradation products (e.g., cis-1,2-dichloroethene, vinyl chloride) observed during routine groundwater monitoring are consistent with ongoing natural attenuation in lower concentration areas. The need for further electron-donor substrate injections and continued natural attenuation continue to be evaluated through routine groundwater monitoring (RMD Environmental Solutions 2021; Appendix D).

f. Sub-Slab Vapor, Indoor Air, and Soil Vapor

In April 2020, 12 sub-slab vapor points were installed on-site and sampled and three ambient air samples, 13 indoor air samples, and one duplicate indoor air sample were also collected at the project site. Later, in October 2020, eight soil vapor probes were installed and sampled at approximate depths of 4.75 to 5 feet below ground surface. In January 2021, three soil vapor probes were installed and sampled at an approximate depth of 4.25 feet below ground surface (RMD Environmental Solutions 2021).

In the 2020 and 2021 vapor samples, trichloroethene, tetrachloroethene, cis-1,2- dichloroethene, vinyl chloride, benzene, and ethylbenzene were detected at concentrations exceeding the commercial/industrial screening levels in either sub-slab vapor or soil vapor sample samples, or both (using a conservative U.S. Environmental Protection Agency soil vapor to indoor air attenuation factor of 0.03).

In general, indoor air concentrations were consistent with background, ambient concentrations and benzene was the only volatile organic compound detected at concentrations exceeding the commercial/industrial screening levels. At the time of sampling, existing on-site buildings were used for off-airport parking. As such, vehicles were operating within and outside the building. Vehicular exhaust likely contributed to the benzene concentrations detected in both indoor and ambient air samples (RMD Environmental Solutions 2021; Appendix D).

g. Land Use Covenant

In conjunction with environmental response activities, a Land Use Covenant (LUC) was filed with Alameda County in 2012 to ensure that the site is not used for the following land uses: residences, hospitals for humans, public or private school for persons under 21 years of age, and day care center for children. The Land Use Covenant requires DTSC approval of planned future use of groundwater at the project site and a Soil Management Plan prior to planned disturbance of subsurface soil in two limited areas of the site. These soil management areas are shown on Figure 4.2-2 as “Approximate Extent of TCE Concentration Above 910 ug/m”. Operation and maintenance activities and annual Land Use Covenant inspections are routinely conducted to evaluate groundwater conditions and remedial progress at the site (RMD Environmental Solutions 2021). The Land Use Covenant is included as an attachment to the Soil and Groundwater Management Plan, which is provided as Appendix D to this EIR.

Figure 4.2-2 Soil Managment Areas

Source: RMD Environmental Solutions 2021

4.2.2 Regulatory Setting

a. Federal Regulations

Toxic Substances Control Act (1976) and the Resource Conservation and Recovery Act of 1976

These acts established a program administered by the U.S. Environmental Protection Agency for the regulation of the generation, transportation, treatment, storage, and disposal of hazardous waste. The Resource Conservation and Recovery Act was amended in 1984 by the Hazardous and Solid Waste Act, which affirmed and extended the "cradle to grave" system of regulating hazardous wastes. Among other things, the use of certain techniques for the disposal of some hazardous wastes was specifically prohibited by the Hazardous and Solid Waste Act.

Comprehensive Environmental Response, Compensation and Liability Act, amended by the Superfund Amendments and Reauthorization Act (1986)

This law was enacted in 1980 and provides broad federal authority to respond directly to releases or threatened releases of hazardous substances that may endanger public health or the environment. Among other things, the Comprehensive Environmental Response, Compensation and Liability Act established requirements concerning closed and abandoned hazardous waste sites, provided for liability of persons responsible for releases of hazardous waste at these sites, and established a trust fund to provide for cleanup when no responsible party could be identified. The Comprehensive Environmental Response, Compensation and Liability Act also enabled revision of the National Contingency Plan, which provided the guidelines and procedures needed to respond to releases and threatened releases of hazardous substances, pollutants, or contaminants. The National Contingency Plan also established the National Priorities List.

Lead-Based Paint Regulations

Regulations for lead-based paint are contained in the Lead-Based Paint Elimination Final Rule, 24 CFR 33, governed by the U.S. Housing and Urban Development, which requires sellers and lessors to disclose known lead-based paint and lead-based paint hazards to perspective purchasers and lessees. Additionally, all lead-based paint abatement activities must be in compliance with California Occupational Safety and Health Administration (Cal/OSHA) and Federal OSHA and with the State of California Department of Health Services requirements. Only lead-based paint -trained and -certified abatement personnel are allowed to perform abatement activities. All lead-based paint removed from structures must be hauled and disposed of by a transportation company licensed to transport this type of material at a landfill or receiving facility licensed to accept the waste.

Regulations to manage and control exposure to lead-based paint are also described in CFR Title 29, Section 1926.62 and California Code of Regulations Title 8 Section 1532.1. These regulations cover the demolition, removal, cleanup, transportation, storage, and disposal of lead-containing material. The regulations outline the permissible exposure limit, protective measures, monitoring, and compliance to ensure the safety of construction workers exposed to lead-based materials. Cal/OSHA's Lead in Construction Standard requires project proponents to develop and implement a lead compliance plan when lead-based paint would be disturbed during construction. The plan must describe activities that could emit lead, methods for complying with the standard, safe work

practices, and a plan to protect workers from exposure to lead during construction activities. Cal/OSHA requires 24-hour notification if more than 100 sf of lead-based paint is disturbed.

U.S. Environmental Protection Agency

The U.S. Environmental Protection Agency is the agency primarily responsible for enforcement and implementation of Federal laws and regulations pertaining to hazardous materials. Applicable Federal regulations pertaining to hazardous materials are contained in the CFR Titles 29, 40, and 49. Hazardous materials, as defined in the CFR, are listed in 49 CFR 172.101. The management of hazardous materials is governed by the following laws:

1. Resource Conservation and Recovery Act of 1976) (42 USC 6901 et seq.); Comprehensive Environmental Response, Compensation, and Liability Act of 1980 (also called the Superfund Act) (42 USC 9601 et seq.)
2. Federal Insecticide, Fungicide, and Rodenticide Act (7 USC 136 et. Seq.)
3. Superfund Amendments and Reauthorization Act of 1986 (Public Law 99 499)

These laws and associated regulations include specific requirements for facilities that generate, use, store, treat, and/or dispose of hazardous materials. The U.S. Environmental Protection Agency provides oversight and supervision for Federal Superfund investigation/remediation projects, evaluates remediation technologies, and develops hazardous materials disposal restrictions and treatment standards.

Asbestos Regulations

Asbestos is a naturally occurring fibrous material that was extensively used as a fireproofing and insulating agent in building construction materials before such uses were banned by the U.S. Environmental Protection Agency in the 1970s. Asbestos-containing materials (ACMs) were commonly used for insulation of heating ducts as well as ceiling and floor tiles. Undisturbed ACMs contained within building materials present no significant health risk because there is no exposure pathway. However, once these tiny fibers are disturbed, they can become airborne and become a respiratory hazard. The fibers are very small and cannot be seen with the naked eye. Once they are inhaled, they can become lodged into the lungs, and may cause cancer, lung disease or other pulmonary complications.

The U.S. Environmental Protection Agency regulations under Title 40 CFR Part 61 regulate the removal and handling of ACMs. The federal Occupational Safety and Health Administration also has a survey requirement under Title 29 CFR that is implemented by Cal/OSHA under Title 8 California Code Regulations. These regulations require facilities to take all necessary precautions to protect employees and the public from exposure to asbestos.

b. State Regulations

Department of Toxic Substances Control

As a department of the California EPA, the Department of Toxic Substances Control (DTSC) is the primary agency in California that regulates hazardous waste, cleans up existing contamination, and looks for ways to reduce the hazardous waste produced in California. DTSC regulates hazardous waste in California primarily under the authority of the Resource Conservation and Recovery Act and the California Health and Safety Code.

DTSC also administers the California Hazardous Waste Control Law to regulate hazardous wastes. While the Hazardous Waste Control Law is generally more stringent than the Resource Conservation and Recovery Act, until the U.S. Environmental Protection Agency approves the California program, both state and federal laws apply in California. The Hazardous Waste Control Law lists 791 chemicals and approximately 300 common materials that may be hazardous; establishes criteria for identifying, packaging, and labeling hazardous wastes; prescribes management controls; establishes permit requirements for treatment, storage, disposal, and transportation; and identifies some wastes that cannot be disposed of in landfills.

Government Code Section 65962.5 requires the DTSC, the State Department of Health Services, the State Water Resources Control Board, and CalRecycle to compile and annually update lists of hazardous waste sites and land designated as hazardous waste sites throughout the state. The Secretary for Environmental Protection consolidates the information submitted by these agencies and distributes it to each city and county where sites on the lists are located. Before the lead agency accepts an application for any development project as complete, the applicant must consult these lists to determine if the site at issue is included.

If any soil is excavated from a site containing hazardous materials, it would be considered a hazardous waste if it exceeded specific criteria in Title 22 of the California Code of Regulations. Remediation of hazardous wastes found at a site may be required if excavation of these materials is performed, or if certain other soil disturbing activities would occur. Even if soil or groundwater at a contaminated site does not have the characteristics required to be defined as hazardous waste, remediation of the site may be required by regulatory agencies subject to jurisdictional authority. Cleanup requirements are determined on a case-by-case basis by the agency taking jurisdiction.

Hazardous Waste Control Act

The hazardous waste management program enforced by DTSC was created by the Hazardous Waste Control Act (California Health and Safety Code Section 25100 et seq.), which is implemented by regulations described in CCR Title 26. The State program is similar to, but more stringent than, the Federal program under the Resource Conservation and Recovery Act. The regulations list materials that may be hazardous, and establish criteria for their identification, packaging, and disposal. Environmental health standards for management of hazardous waste are contained in California Code of Regulations (CCR) Title 22, Division 4.5. As required by California Government Code Section 65962.5, DTSC maintains a Hazardous Waste and Substances Site List for the State called the Cortese List.

California Department of Pesticide Regulation, Department of Food and Agriculture, and the Department of Public Health

The California Department of Pesticide Regulations (DPR), a division of California Environmental Protection Agency, in coordination with the California Department of Food and Agriculture, a division of Measurement Standards and the California Department of Public Health have the primary responsibility to regulate pesticide use, vector control, food, and drinking water safety. CCR Title 3 requires the coordinated response between the County Agricultural Commissioner and the Sonoma County Department of Health Services to address the use of pesticides used in vector control for animal and human health on a local level. DPR registers pesticides; the County tracks pesticide use. Title 22 is used also to regulate both small and large California Department of Public Health water systems.

California Fire Building Code

The 2016 Fire and Building Code (2016) establishes the minimum requirements consistent with nationally recognized good practices to safeguard the public health, safety, and general welfare for the hazards of fire, explosion, or dangerous conditions in new and existing buildings, structures and premises, and to provide safety and assistance to firefighters and emergency responders during emergency operations. The provisions of this code apply to the construction, alteration, movement enlargement, replacement, repair, equipment, use and occupancy, location, maintenance, removal, and demolition of every building or structure or any appurtenances connected or attached to such building structures throughout the State of California.

c. Local Regulations

Alameda County Local Hazard Mitigation Plan

The Alameda County Local Hazard Mitigation Plan assesses hazards, risks, and capabilities for hazard mitigation, and then provides a blueprint for a mitigation strategy. The hazard and risk assessment focuses on dam failure inundation, drought, earthquake, flood, landslide, liquefaction, tsunami, and wildfire. The Alameda County 2016 Local Hazard Mitigation Plan was adopted by the County Board of Supervisors in January 2016, and was approved by the Federal Emergency Management Agency in October 2016.

Alameda County Water Department

The Alameda County Water District manages the Niles Cone Groundwater Basin, which underlies the project site, through comprehensive programs that protect and improve water supplies for groundwater users. The project site is also located within the Alameda County Water District's jurisdictional boundary. The Alameda County Water District is identified within the Sustainable Groundwater Management Act as the exclusive local agency within its statutory boundaries to comply with the Sustainable Groundwater Management Act. The Alameda County Water District is also the Groundwater Sustainability Agency for the Niles Cone Groundwater Basin and has an approved Alternative to a Groundwater Sustainability Plan.

Alameda County Department of Environmental Health

The mission of the Alameda County Department of Environmental Health is to protect the health, safety and well-being of the public through the promotion of environmental quality. The department's Hazardous Materials Division contains the Clean Water Program, Waste Tire Program, and the Certified Unified Program Agency for much of Alameda County, but not the City of San Leandro. As discussed in the next paragraph, the City of San Leandro Environmental Services Section is designated as the City's Certified Unified Program Agency.

San Leandro Environmental Services Section

The City of San Leandro Environmental Services Section is designated as the City's Certified Unified Program Agency, which is overseen by the California Environmental Protection Agency and coordinates the regulation of hazardous materials and hazardous wastes in the City. The Certified Unified Program Agency ensures the consistent application of statewide standards during administrative, permitting, inspection, and enforcement activities associated with hazardous materials and hazardous wastes. If a business operated at the project site would use and store

hazardous materials and generate hazardous wastes, the Certified Unified Program Agency would require the electronic submittal of chemical and facility information, a Hazardous Materials Business Plan, and hazardous waste generator permits to the California Environmental Reporting System online database. If operations at the project site would include the treatment, storage, and/or disposal of hazardous waste, the City Environmental Services Section would regulate these activities under a tiered permitting system.

The Certified Unified Program Agency, through the Hazardous Materials Office, regulates USTs containing hazardous materials, including installation, operation and maintenance, temporary closure, and removal and disposal of USTs. Additionally, the Certified Unified Program Agency holds the responsibility and authority to implement the Aboveground Petroleum Storage Act, which regulates aboveground petroleum storage tanks through administrative requirements, permitting, inspections, and enforcement. Any aboveground or underground storage tanks present at the project site would be managed by the City Environmental Services Section.

The Hazardous Materials Office administers the California Accidental Release Prevention Program, which aims to reduce the likelihood and impact of accidental releases of regulated toxic and flammable substances through administrative and operational procedures, and facility inspections. If the facility located on the project site would be regulated under the California Accidental Release Prevention Program, the facility would file a written Risk Management Plan with the City Environmental Services Section.

City of San Leandro General Plan

The Environmental Hazards Element of the City of San Leandro General Plan includes the following goals and policies that aim to reduce potential damage from hazardous materials:

Goal EH-5: Protect local residents and workers from the risks associated with hazardous materials.

> **Policy EH-5.1: Regulatory Compliance.** Work with the appropriate county, regional, state, and federal agencies to develop and implement programs for hazardous waste reduction, hazardous material facility siting, hazardous waste handling and disposal, public education, and regulatory compliance.
>
> **Policy EH-5.2: Clean-Up of Contaminated Sites.** Ensure that the necessary steps are taken to clean up residual hazardous wastes on any contaminated sites proposed for redevelopment or reuse. Require soil evaluations as needed to ensure that risks are assessed and appropriate remediation is provided.
>
> **Policy EH-5.3: Design of Storage and Handling Areas.** Require that all hazardous material storage and handling areas are designed to minimize the possibility of environmental contamination and adverse off-site impacts. Enforce and implement relevant state and federal codes regarding spill containment facilities around storage tanks.
>
> **Policy EH-5.7: Hazardous Building Materials.** Ensure the safe and proper handling of hazardous building materials, such as friable asbestos and lead based paint. If such materials are disturbed during building renovation or demolition, they should be handled and disposed of in a manner that protects human health and the environment.

4.2.3 Impact Analysis

a. Methodology and Thresholds of Significance

According to *CEQA Guidelines* Appendix G, impacts related to hazards and hazardous materials are considered significant if implementation of the proposed project would:

1. Create a significant hazard to the public or the environment through the routine transport, use, or disposal of hazardous materials;
2. Create a significant hazard to the public or the environment through reasonably foreseeable upset and accident conditions involving the release of hazardous materials into the environment;
3. Emit hazardous emissions or handle hazardous or acutely hazardous materials, substances, or waste within one-quarter mile of an existing or proposed school;
4. Be located on a site which is included on a list of hazardous materials sites compiled pursuant to Government Code Section 65962.5 and, as a result, would create a significant hazard to the public or the environment;
5. For a project located within an airport land use plan or, where such a plan has not been adopted, within two miles of a public airport or public use airport, result in a safety hazard or excessive noise for people residing or working in the project area;
6. Impair implementation of or physically interfere with an adopted emergency response plan or emergency evacuation plan; or
7. Expose people or structures, either directly or indirectly, to a significant risk of loss, injury, or death involving wildland fires.

CEQA checklist items 1, 3, and 5 through 7 were found to be less than significant in the Initial Study (Appendix A). Therefore, these topics will not be discussed further in this section.

Threshold 2:	Would the project create a significant hazard to the public or the environment through reasonably foreseeable upset and accident conditions involving the release of hazardous materials into the environment?
Threshold 4:	Would the project be located on a site that is included on a list of hazardous material sites compiled pursuant to Government Code Section 65962.5 and, as a result, would it create a significant hazard to the public or the environment?

Impact HAZ-1 **THE PROJECT HAS THE POTENTIAL TO CREATE A SIGNIFICANT HAZARD TO THE PUBLIC OR THE ENVIRONMENT THROUGH REASONABLY FORESEEABLE UPSET AND ACCIDENT CONDITIONS INVOLVING THE RELEASE OF HAZARDOUS MATERIALS INTO THE ENVIRONMENT DUE TO POTENTIAL HAZARDOUS MATERIALS THAT MAY BE PRESENT IN THE EXISTING ON-SITE STRUCTURES AND SOILS AND GROUNDWATER. IN ADDITION, BECAUSE OF EXISTING SOIL AND GROUNDWATER CONTAMINATION, THE SITE IS ON A LIST COMPILED PURSUANT TO GOVERNMENT CODE SECTION 65962.5. THIS IMPACT WOULD BE POTENTIALLY SIGNIFICANT BUT MITIGABLE.**

Project Construction

Project construction would require the transport of construction equipment and fuels to the project site. This equipment and fuel, such as diesel fuel and gasoline, would be stored on-site for the duration of construction. If these fuels and other hazardous equipment fluids, such as motor oil, were to leak or be spilled they could create substantial hazards to the public or the environment.

For example, if a diesel fuel spill were to occur during project construction, the fuel could become runoff and discharge to surface waters, which would be a substantial hazard to the environment. Construction of the project would require ground disturbance over an area exceeding 1 acre. Therefore, the project applicant must develop and implement a Stormwater Pollution Prevention Plan (SWPPP), pursuant to state regulations. The SWPPP must include containment and clean-up measures to implement in the event of a leak or spill of construction fluids, such as equipment diesel fuel. Mandatory implementation of the SWPPP would reduce potential impacts associated with release of substantial hazards from construction equipment and fluids to less than significant.

Asbestos is a naturally occurring fibrous material that was extensively used as a fireproofing and insulating agent in building construction materials before such uses were banned by the U.S. Environmental Protection Agency in the 1970s. Asbestos-containing materials (ACMs) were commonly used for insulation of heating ducts as well as ceiling and floor tiles. Undisturbed ACMs contained within building materials present no significant health risk because there is no exposure pathway. However, once these tiny fibers are disturbed, they can become airborne and become a respiratory hazard. The proposed project would involve the demolition of existing vacant structures on the project site. Project demolition activities would have potential to expose construction workers to asbestos containing materials due to the age of the existing structures. Additionally, construction workers could also be exposed to lead-based paint during demolition of existing structures. Lead is hazardous to human health.

Lead-based paint and other lead-containing materials associated with the proposed project would be required to be handled in compliance with Cal/OSHA regulations regarding lead-based paints and materials. The California Code of Regulations, Section 1532.1, requires testing, monitoring, containment, and disposal of lead-based paints and materials, such that exposure levels do not exceed Cal/OSHA standards. Compliance with applicable Cal/OSHA regulations would ensure impacts related to lead-based paint would be less than significant.

Friable ACMs are regulated as a hazardous air pollutant under the Clean Air Act, and the Bay Area Air Quality Management District regulates ACM in Regulation 11, Rule 2, which governs the proper handling and disposal of ACM for demolition activities. As a worker safety hazard, ACMs are also regulated under the authority of Cal/OSHA. In structures slated for demolition, ACMs would be abated in accordance with state and federal regulations prior to the start of demolition activities and in compliance with all applicable existing rules and regulations. However, if construction workers are unaware of the potential presence of ACMs, regulations may not be properly implemented, leaving workers vulnerable to exposure to ACMs, as well as lead. Likewise, people working or living nearby could also be exposed to ACMs in dust from construction. This would be a significant impact because it could affect health. Implementation of Mitigation Measure HAZ-1 is required. Mitigation Measure HAZ-1 requires visual inspection/pre-demolition surveys to confirm the presence of ACMs and lead-based paint.

In association with existing on-site contamination, a Land Use Covenant was filed with Alameda County in 2012 to ensure that the site is not used for the following land uses: residences, hospitals for humans, public or private school for persons under 21 years of age, and day care center for children. The Land Use Covenant requires DTSC approval of planned future use of groundwater at the project site and a Soil Management Plan prior to planned disturbance of subsurface soil in two limited areas of the site. To address this, RMD Environmental Solutions prepared a Soil and Groundwater Management Plan for the site (RMD Environmental Solutions 2021; Appendix D).

The Soil and Groundwater Management Plan identifies two areas within the project site where residual contamination levels are of concern. These areas are referred to as the “land use restriction

areas" and are shown above as a small circular area on Figure 4.2-2. Soil and groundwater within the restricted areas could contain detectable concentrations of trichloroethene, a human-made chemical that is hazardous to human health. These compounds are referred to as chemicals of potential concern. According to the Land Use Covenant, elevated concentrations of the trichloroethene in soil could be encountered during construction activities at depths of less than 6 feet below ground surface within the land use restriction areas (Appendix D). Therefore, project construction activities involving excavation, such as construction of the proposed building foundation or buried utility connections, could disturb contaminated soils or groundwater and expose construction workers to trichloroethene. Because contaminated soils generally exist on-site at depths greater than 6 feet below ground surface outside of the mapped land use restriction areas, other shallow ground disturbance elsewhere on the project site during project construction would have less potential to disturb contaminated soils and expose construction workers to contamination. Nonetheless, the potential for construction workers to be exposed to contaminated soil or groundwater during project construction would be a potentially significant. Implementation of Mitigation Measure HAZ-2 is required, which requires implementation of the Revised Soil and Groundwater Management Plan during construction.

Likewise, project construction would generate dust. If soils from the contamination areas are stockpiled on site and become airborne dust, either from wind erosion or construction equipment, off-site receptors could be exposed, as well as project construction workers. Reuse of contaminated soils as fill material on site is prohibited, but if mistakenly used it could also expose workers to contamination, as well as future employees of the proposed building. Similarly, dewatering could be required if groundwater is encountered. Improper discharge of groundwater removed during dewatering would be a substantial hazard to the environment. Impacts would be potentially significant, and implementation of Mitigation Measure HAZ-2 and Mitigation Measure HAZ-3 is required. Mitigation Measure HAZ-3 requires containment of dewatering effluent and obtaining a discharge permit is released from containment.

Project construction would require the demolition of some or all existing groundwater monitoring wells that were previously installed as part of the remediation actions on-site. According to the Land Use Covenant for the project site, these wells should be maintained and monitored as an ongoing remediation activity. With the potential demolition of wells during project construction, there would be no way to monitor if prior remediation activities have continued to be effective. Contamination levels could increase without knowledge of such increases, resulting in the migration of contaminants through the groundwater aquifer(s). This would be a potentially substantial hazard to the environment. Impacts would be potentially significant, and implementation of Mitigation Measure HAZ-4 is required. Mitigation Measure HAZ-4 requires protection of the groundwater well network.

Project Operation

As described above in Section 4.2.1, *Setting*, the Land Use Covenant for the project site prohibits the following land uses: residences, hospitals for humans, public or private school for persons under 21 years of age, and day care center for children. The proposed project would not be developed or used for these land uses, consistent with the Land Use Covenant restrictions. Future industrial tenants could potentially use and store hazardous materials at the project site, depending on the specific tenant or tenants. The use and storage of hazardous materials would be subject to federal and state regulations. Depending on the quantity of hazardous materials stored or used on-site, additional permits and oversight would be required, such as permits from the City. Regulatory

requirements would ensure that hazardous materials are properly handled, stored, and disposed of in such a way as not present environmental and health hazards.

During project operation, vapors from contaminated soil and groundwater underlying the site could potentially infiltrate the proposed building, including spaces within the building where employees would be routinely present. The accumulation of vapors in the breathing zone inside the building could present a potential hazard to human health. Therefore, the potential for soil vapor intrusion during operation would be a potentially significant impact. Implementation of Mitigation Measure HAZ-5 is required. Mitigation Measure HAZ-5 requires an engineered vapor barrier to be employed to further protect against possible vapor intrusion of chemicals of potential concern into the proposed building.

Stormwater runoff would be treated on site in bioretention areas to meet the current Alameda County C.3 stormwater regulations. The bioretention areas would slow runoff and aid infiltration in order to reduce the amount of runoff discharge to the City's storm drain system. However, if improperly designed, the bioretention areas could result in contaminants leaching from soil into groundwater or result in migration of the existing contamination plume within groundwater. At least one of the proposed bioretention swales would be located partially within a land use restriction area where trichloroethene concentrations exceed MCLs. Migration or leaching of contamination would be a potentially significant environmental impact, and implementation of Mitigation Measure HAZ-6 is required. Mitigation Measure HAZ-6 requires bioretention areas to be designed and constructed in such a way as to protect groundwater aquifers from contamination.

Mitigation Measures

HAZ-1 Project Demolition Activities

In conformance with State and local laws, a visual inspection/pre-demolition survey, and possible sampling, shall be conducted prior to the demolition of on-site building(s) to determine the presence of asbestos-containing materials (ACMs) and/or lead-based paint. Documentation of the survey shall be provided to the City of San Leandro prior to commencement of demolition activities.

During demolition activities, all building materials containing lead-based paint shall be removed in accordance with Cal/OSHA Lead in Title 8, California Code of Regulations (CCR), Section 1532.1, including employee training, employee air monitoring, and dust control. Any debris or soil containing lead-based paint or coatings shall be disposed of at landfills that meet acceptance criteria for the type of lead being disposed.

All potentially friable asbestos containing materials (ACMs) shall be removed in accordance with National Emission Standards for Air Pollution (NESHAP) guidelines prior to demolition or renovation activities that may disturb ACMs. All demolition activities shall be undertaken in accordance with Cal/OSHA standards contained in Title 8, CCR, Section 1529, to protect workers from asbestos exposure.

A registered asbestos abatement contractor shall be retained to remove and dispose of ACMs identified in the asbestos survey performed for the site in accordance with the standards stated above in this mitigation measure. Materials containing more than one-percent asbestos are also subject to Bay Area Air Quality Management District regulations. Removal of materials containing more than one-percent asbestos shall be completed in accordance with Bay Area Air Quality Management District requirements and notifications.

Based on Cal/OSHA rules and regulations, the following conditions shall be implemented to limit impacts to construction workers:

- Prior to commencement of demolition activities, a building survey, including sampling and testing, shall be completed to identify and quantify building materials containing lead-based paint.
- During demolition activities, all building materials containing lead-based paint shall be removed in accordance with Cal/OSHA Lead in Construction Standard, Title 8, CCR, Section 1532.1, including employee training, employee air monitoring and dust control.
- Any debris or soil containing lead-based paint or coatings shall be disposed of at landfills that meet acceptance criteria for the type of waste being disposed.

HAZ-2 Implementation of the Revised Soil and Groundwater Management Plan and DTSC Regulatory Oversight

The project shall implement the appropriate handling procedures and worker health and safety measures during excavating or dewatering activities as described in the site-specific Revised Soil and Groundwater Management Plan developed by RMD Environmental Solutions for the project in June 2021 (included as Appendix D to this EIR). Measures included in the Revised Soil and Groundwater Management Plan to control potential hazardous contamination and exposure include, but are not limited to the following:

- Construction contractors shall implement dust control mitigation measures during construction activities at the project site to minimize the generation of dust. Examples of dust control measures that shall be implemented include routinely applying water or non-toxic soil stabilizers to exposed soils while performing grading and excavation activities; sweeping (with wet power sweepers) paved access roads, parking areas, and staging areas; covering or otherwise stabilizing soil stockpiles at the end of each workday; And suspending construction activities that cause visible dust plumes and odors to extend beyond project site boundaries. Some additional dust control mitigation measures listed in the Soil and Groundwater Management Plan include limiting construction vehicle and equipment speeds to 15 miles per hours when operated on exposed soils and removing visible loose soils from vehicles before leaving the project site.
- To prevent or minimize construction equipment from tracking polluted spoils off the site onto roadways, trucks used to transport soil will be loaded in a manner to minimize soil spillage and fugitive dust. Examples of ways to load trucks to minimize spillage and dust include loading the truck bed to less than full capacity and covering the bed of truck after it has been loaded.
- Construction equipment shall be cleaned prior to movement out of active work zones in impacted areas. The equipment wheels/tires shall be cleaned by means of shovels and stiff-bristled brooms or brushes until they are fully cleaned. Upon completion of cleaning, debris shall be placed in the appropriate transportation vessel and the plastic sheeting shall be disposed. If washing water is required, decontamination wash water shall be profiled and transported to an appropriate disposal or recycling facility. Equipment exiting the project site shall be inspected and logged for compliance with the site decontamination requirements.
- A construction Health and Safety Plan shall be prepared by the project applicant or its general contractor for the proposed project in accordance with Federal and State Occupational Safety and Health Administration (OSHA) standards for hazardous waste operations (29 Code of Federal Regulations [CFR] 1910.1208 and 8 California Code of Regulations [CCR] 5192,

respectively). Subcontractors shall either adopt the General Contractor's Health and Safety Plan or prepare their own Health and Safety Plan satisfying the same regulatory requirements. The General Contractor shall be responsible for verifying that onsite construction workers and visitors have read and adhere to the procedures established in the Health and Safety Plan. A copy of the Health and Safety Plan shall be kept onsite during redevelopment activities. In the event that unanticipated conditions occur at the site, the General Contractor shall be responsible for modifying the Health and Safety Plan accordingly.

- Field screening of soil shall be conducted continuously during ground disturbing activities using a calibrated handheld photoionization detector or other organic vapor meter. Field screening using a photoionization detector shall be conducted by properly trained General Contractor and/or Environmental Consultant personnel. Based on the field screening, excavated soil shall be separated into stockpiles in three categories: 1) Background Soil: No visual and odor indicators, and photoionization detector measurements that are consistent with background levels. Photoionization detector readings of up to 5 parts per million by volume (ppmv) shall be considered background levels. These soils can be characterized for onsite reuse, if applicable; 2) Interim Soil: No visual and odor indicators, and photoionization detector measurements between 5 ppmv and 50 ppmv. These soils can be characterized for onsite reuse, if applicable; and 3) Contaminated Soil: Staining and odor indicators present, and/or photoionization detector measurements of more than 50 ppmv. These soils shall be further evaluated and are likely to be characterized for offsite disposal.
- If soil exhibiting evidence of contamination (e.g., visual and odor indicators, and photoionization detector measurements of more than 50 ppmv), is encountered during ground disturbing activities, the project applicant and/or General Contractor shall cease ground disturbing activities in the area and delineate the area with barricades or fencing, stakes and plastic sheeting as appropriate, and signage to notify onsite workers and visitors of access restrictions. The General Contractor shall notify the Property Owner and Environmental Consultant. Upon notification, the Environmental Consultant shall implement and/or provide oversight.
- Stormwater pollution controls shall be implemented by the project applicant and/or General Contractor to minimize sediment runoff in stormwater. Best Management Practices including grading the site and installing stormwater control measures such as temporary earth berms or erecting silt fences around the perimeter of exposed soil at the site, shall be implemented to prevent erosion and sediment runoff from the site. Straw bale barriers or sediment traps shall be required to protect any existing catch basins or drainage channels.
- During project construction activities, soil and/or groundwater sampling, removal and management of discovered underground structures (e.g., storage tanks), chemical analysis and proper disposal of contaminated materials, and soil import activities shall be documented in a daily field log by the project applicant and/or General Contractor and/or Environmental Consultant. At the completion of the construction activities, a Construction Completion Report shall be prepared by the Environmental Consultant for submittal to DTSC that summarizes the soil and groundwater handling activities.

The DTSC shall continue to be utilized for agency oversight of assessment and remediation of the project site through completion of construction activities. In addition to implementing the Revised Soil and Groundwater Management Plan, prior to commencement of construction and grading activities at the project site, the project applicant shall implement and/or complete the following tasks, and other tasks if requested by DTSC, regarding the open Site Cleanup Program Case:

- Implement the November 19, 2020 Redevelopment-Related Groundwater Monitoring Well Network Modification Work Plan, as approved by DTSC on May 26, 2021
- Implement the October 5, 2021 Revised Vapor Intrusion Mitigation System Implementation Work Plan, as approved by DTSC on December 1, 2021
- Implement the October 21, 2021 Revised Community Air Monitoring Plan (CAMP), as approved by DTSC on December 1, 2021
- Prepare a Five Year Remedial Action Review Report for the years 2019-2023 as specified in a DTSC letter dated May 3, 2022
- Implement the August 30, 2022 Soil Vapor Probe Destruction Workplan, as approved by DTSC on September 29, 2022

Upon submittal or completion of the information above, and in accordance with the 2012 Land Use Covenant, DTSC may require actions such as: development of subsurface investigation workplans; completion of soil, soil vapor, and/or groundwater subsurface investigations; installation of soil vapor or groundwater monitoring wells; soil excavation and offsite disposal; completion of human health risk assessments; and/or completion of remediation reports or case closure documents.

Subsurface soil, soil vapor, and groundwater investigations, if required, shall be conducted in accordance with a sampling plan that shall be reviewed and approved by the DTSC.

The DTSC approval documents shall be submitted to and reviewed by the City prior to issuing grading permits.[1]

HAZ-3 Construction Dewatering Requirements

Construction dewatering effluent, if produced, shall be pumped into holding tanks or United Nations (UN)-rated 55-gallon drums with appropriate labeling and secondary containment. If dewatering effluent would be discharged to an existing storm drain or drains, a National Pollutant Discharge Elimination System (NPDES) permit shall be obtained from the Regional Water Quality Control Board. If dewatering effluent would be discharged to the San Leandro Water Pollution Control Plant, an industrial pre-treatment permit shall be obtained from the San Leandro Environmental Services Section.

Chemical analysis shall be performed in accordance with the receiving facility's requirements prior to discharge. If concentrations exceed the limits established for the discharge point, the dewatering effluent shall either be (1) transferred into a vacuum truck or properly labeled UN-rated 55-gallon drums and transported offsite for disposal at an appropriately licensed disposal facility; or (2) treated and discharged following sampling and analysis to confirm compliance with permit requirements.

HAZ-4 Groundwater Monitoring Well Protection

A November 19, 2020 Redevelopment-Related Groundwater Monitoring Well Network Modification Work Plan (RMD Environmental Solutions 2020c), which was approved in 2021 DTSC letter, was prepared to reduce the potential for damaged or lost wells during development of the project site. Based on available development plans at that time, the monitoring wells were designated for either:

[1] The DTSC may determine that the San Francisco Bay RWQCB or the City of San Leandro may be best suited to perform the cleanup oversight agency duties for the assessment and/or remediation of the project. Should the cleanup oversight agency be transferred from the DTSC to the San Francisco Bay RWQCB or the CUPA, this and other mitigation measures shall still apply.

1. Protection in areas where minimal grade changes are anticipated. These monitoring wells shall be marked with paint and/or installation of delineators/snow fencing/bollards. The project applicant and/or General Contractor shall protect these groundwater monitoring wells and maintain access to the wells for routine monitoring to the extent practicable; or
2. Destruction in areas within the building footprint and areas with substantial grade changes.

The DTSC shall be notified of changes to these designations based on modifications to the development plans and/or input from the project applicant and/or General Contractor with rationale for wells that do not warrant replacement. Prior to removal or installation of any wells, permits shall be acquired from the Alameda County Public Works Agency.

HAZ-5 Engineered Vapor Barrier Requirement

An engineered vapor barrier shall be employed to further protect against possible vapor intrusion of chemicals of potential concern into the proposed building. The vapor barrier shall be designed to meet the needs of the building. Vapor barriers are generally constructed using membranes constructed with high-density polyethylene or other polyolefin-based resins. The vapor barrier shall be resistant to volatile organic compounds. The vapor barrier shall meet the American Society for Testing and Materials guideline for a vapor barrier and have a permeance rating of 0.1 perms or less. The thickness and strength of the vapor barrier shall be based on the needs for the building, but the architect and contractor shall use a material strong enough to easily withstand the building construction and other building considerations. The selected vapor barrier shall be approved by the DTSC or Regional Water Quality Control Board prior to installation. Written approval from either the DTSC or Regional Water Quality Control Board shall be provided to the City of San Leandro before building permits are issued.

HAZ-6 Bioretention Design Coordination

The project applicant shall consult with the City of San Leandro on location and/or design of the on-site bioretention basins to ensure protection of the groundwater basin, which may include, but is not limited to, locating the basins outside of the restricted areas or use of a liner in the detention basin. The final design and location of the on-site bioretention basins shall demonstrate that groundwater would be protected from contamination. If bioretention basins are proposed in the restricted areas, DTSC and/or the San Francisco Bay RWQCB shall also approve the design of the bioretention basins.

Significance After Mitigation

Mitigation Measure HAZ-1 would reduce impacts by requiring testing to indicate whether lead-based paint or asbestos is present in the structures slated for demolition. If lead or asbestos is detected, these materials would be abated in accordance with state, federal, and local regulations to ensure they would not be released to the environment or impair human health. Therefore, the impact related to ACMs and lead would be less than significant with mitigation implemented.

With incorporation of Mitigation Measure HAZ-2, the provisions of the approved Soil and Groundwater Management Plan for the site would reduce potential hazardous materials impacts associated with the past on-site contamination during project construction. Additionally, implementation of Mitigation Measure HAZ-3 would protect the health of construction workers and the environment during construction dewatering activities. Impacts related to release and exposure

of hazardous materials during construction would be reduced to less than significant levels with implementation of these mitigation measures.

With incorporation of Mitigation Measure HAZ-4, the existing groundwater monitoring well network would be maintained or modified only with written approval of the DTSC. This would ensure that soil and groundwater contamination does not become more severe over the operational life of the project. Likewise, implementation of Mitigation Measure HAZ-5 would require installation of a vapor barrier approved by the DTSC or Regional Water Quality Control Board to protect the health of operational workers and occupants. Impacts related to release and exposure of hazardous materials during operation would be reduced to less than significant levels with implementation of these mitigation measures.

Mitigation Measures HAZ-6 would require coordination with local agencies to ensure that groundwater quality is protected and reduce the environmental impact associated with the existing contamination that may be affected by the bioretention basins.

Overall, with implementation of Mitigation Measure HAZ-1 through HAZ-6, impacts would be reduced to less than significant levels.

4.2.4 Cumulative Impacts

A project's environmental impacts are "cumulatively considerable" if the "incremental effects of an individual project are significant when viewed in connection with the effects of past projects, the effects of other current projects, and the effects of probable future projects" (*CEQA Guidelines* Section 15065[a][3]). The geographic scope for cumulative hazardous materials impacts is limited to projects within San Leandro that are west of Interstate 880. This geographic scope is appropriate for hazardous materials because risks associated with hazards and hazardous materials occur largely in a site-specific and localized context as adverse impacts from a hazardous materials release or spill diminish in magnitude with distance. Cumulative development in the vicinity of the project site is identified in Table 3-1. Continued urban development has the potential to increase exposure to hazards. However, overall, hazards and hazardous materials impacts associated with individual developments are site specific in nature and must be addressed on a case-by-case basis. The magnitude of hazards for individual projects would depend upon the location, type, and size of development and the specific hazards associated with individual sites. Since hazards and hazardous materials are required to be examined as part of the permit application and environmental review process, it is anticipated that potential impacts associated with individual projects will be adequately addressed and mitigated prior to permit approval. Compliance with regulatory requirements would avoid potential hazard impacts associated with cumulative development. With adherence to existing policies and other local, regional, state, and federal regulations, no significant cumulative human or environmental health impacts are anticipated.

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4.3 Noise and Vibration

This section analyzes the project's potential noise and vibration impacts. The analysis contains a description of the existing noise setting, a discussion of both the temporary noise impacts related to construction activity and long-term impacts associated with project operations, and mitigation to reduce impacts, as applicable. Vibration impacts are analyzed related to construction activity only since project operation would not generate substantial vibration. Operational vibration is typically associated with projects involving heavy rail, blasting, pile driving, etc. These types of operational activities would not be facilitated by the project as designed.

The analysis presented in this section is based on the following technical studies, which are included as appendices to this EIR:

- Evaluation of Site Sound Emissions: Ostergaard Acoustical Associates 2024 (Appendix E)
- Noise Letter Report: Rincon Consultants 2024 (Appendix F)

The Evaluation of Site Sound Emissions was provided by the project applicant. Accordingly, Rincon Consultants conducted a peer review of the study at the request of the City of San Leandro to ensure its methodology and results and conclusions were appropriate and accurate.

4.3.1 Setting

a. Overview of Sound Measurement

Sound is a vibratory disturbance created by a moving or vibrating source, which is capable of being detected by the hearing organs. Noise is defined as sound that is loud, unpleasant, unexpected, or undesired and may therefore be classified as a more specific group of sounds. The effects of noise on people can include general annoyance, interference with speech communication, sleep disturbance, and, in the extreme, hearing impairment (California Department of Transportation [Caltrans] 2013).

Noise levels are commonly measured in decibels (dB) using the A-weighted sound pressure level (dBA). The A-weighting scale is an adjustment to the actual sound pressure levels so they are consistent with the human hearing response, which is most sensitive to frequencies around 4,000 Hertz and less sensitive to frequencies around and below 100 Hertz. Decibels are measured on a logarithmic scale that quantifies sound intensity in a manner similar to the Richter scale used to measure earthquake magnitudes. A doubling of the energy of a noise source, such as doubling of traffic volume, would increase the noise level by 3 dBA; reducing the energy in half would result in a 3 dBA decrease (Crocker 2007).

Human perception of noise has no simple correlation with sound energy: the perception of sound is not linear in terms of dBA or in terms of sound energy. Two sources do not "sound twice as loud" as one source. It is widely accepted the average healthy ear can barely perceive changes of 3 dBA, increase or decrease (i.e., twice or half the sound energy, respectively); a change of 5 dBA is readily perceptible (eight times the sound energy); and an increase (or decrease) of 10 dBA sounds twice (half) as loud (10.5 times the sound energy) (Crocker 2007).

Sound changes in both level and frequency spectrum as it travels from the source to the receiver. The most obvious change is the decrease in level as the distance from the source increases. The manner by which noise reduces with distance depends on factors such as the type of sources (e.g.,

point or line, the path the sound will travel, site conditions, and obstructions). Noise levels from a point source typically attenuate, or drop off, at a rate of 6 dBA per doubling of distance (e.g., construction, industrial machinery, ventilation units) (Occupational Safety and Health Administration [OSHA] 2023; Caltrans 2013). Noise from a line source (e.g., roadway, pipeline, railroad) typically attenuates at about 3 dBA per doubling of distance (Caltrans 2013). The propagation of noise is also affected by the intervening ground, known as ground absorption. A hard site, such as a parking lot or smooth body of water, receives no additional ground attenuation and the changes in noise levels with distance (drop-off rate) result from the geometric spreading of the source. An additional ground attenuation value of 1.5 dBA per doubling of distance applies to a soft site (e.g., soft dirt, grass, or scattered bushes and trees) (Caltrans 2013). Noise levels may also be reduced by intervening structures; the amount of attenuation provided by this "shielding" depends on the size of the object and the frequencies of the noise levels. Natural terrain features such as hills and dense woods, and human-made features such as buildings and walls, can substantially alter noise levels.

The impact of noise is not a function of loudness alone. The time of day when noise occurs and the duration of the noise are also important factors of a project's noise impact. Most noise that lasts for more than a few seconds is variable in its intensity. Consequently, a variety of noise descriptors have been developed. One of the most frequently used noise metrics is the equivalent noise level (L_{eq}); it considers both duration and sound power level. Typically, L_{eq} is summed over a one-hour period. L_{max} is the highest sound pressure level within the sampling period, and L_{min} is the lowest sound pressure level within the measuring period (Crocker 2007).

Noise occurring at night tends to be more disturbing than that occurring during the day. Community noise is usually measured using Day-Night Average Level (L_{dn}), which is the 24-hour average noise level with a +10 dBA penalty for noise occurring during nighttime (10:00 p.m. to 7:00 a.m.) hours; it is also measured using Community Noise Equivalent Level (CNEL), which is the 24-hour average noise level with a +5 dBA penalty for noise occurring from 7:00 p.m. to 10:00 p.m. and a +10 dBA penalty for noise occurring from 10:00 p.m. to 7:00 a.m. (Caltrans 2013). Noise levels described by L_{dn} and CNEL usually differ by about 1 dBA. The relationship between the peak-hour L_{eq} value and the L_{dn}/CNEL depends on the distribution of traffic during the day, evening, and night. Quiet suburban areas typically have CNEL noise levels in the range of 40 to 50 dBA, while areas near arterial streets are in the 50 to 60-plus CNEL range. Normal conversational levels are in the 60 to 65 dBA L_{eq} range; ambient noise levels greater than 65 dBA L_{eq} can interrupt conversations (Federal Transit Administration 2018).

b. Vibration

Groundborne vibration of concern in environmental analysis consists of the oscillatory waves that move from a source through the ground to adjacent structures. The number of cycles per second of oscillation makes up the vibration frequency, described in terms of Hertz. The frequency of a vibrating object describes how rapidly it oscillates. The normal frequency range of most groundborne vibration that can be felt by the human body starts from a low frequency of less than 1 Hertz and goes to a high of about 200 Hertz (Crocker 2007).

While people have varying sensitivities to vibrations at different frequencies, in general they are most sensitive to low-frequency vibration. Vibration in buildings, such as from nearby construction activities, may cause windows, items on shelves, and pictures on walls to rattle. Vibration of building components can also take the form of an audible low-frequency rumbling noise, referred to as groundborne noise. Groundborne noise is usually only a problem when the originating vibration

spectrum is dominated by frequencies in the upper end of the range (60 to 200 Hertz), or when foundations or utilities, such as sewer and water pipes, physically connect the structure and the vibration source (Federal Transit Administration 2018). Although groundborne vibration is sometimes noticeable in outdoor environments, it is almost never annoying to people who are outdoors. The primary concern associated with vibration is that it can be intrusive and annoying to building occupants and vibration-sensitive land uses.

Vibration energy spreads out as it travels through the ground, causing the vibration level to diminish with distance away from the source. High-frequency vibrations diminish more rapidly than low frequencies, so low frequencies tend to dominate the spectrum at large distances from the source. Discontinuities in the soil strata can also cause diffractions or channeling effects that affect the propagation of vibration over long distances (Caltrans 2020). When a building is impacted by vibration, a ground-to-foundation coupling loss will usually reduce the overall vibration level. However, under rare circumstances, the ground-to-foundation coupling may amplify the vibration level due to structural resonances of the floors and walls.

Vibration amplitudes are usually expressed in peak particle velocity (PPV) or root mean squared vibration velocity. The PPV and root mean squared velocity are normally described in inches per second (in/sec) PPV is defined as the maximum instantaneous positive or negative peak of a vibration signal. PPV is often used in monitoring of blasting vibration because it is related to the stresses that are experienced by buildings (Caltrans 2020).

c. Existing Noise Setting

Sensitive Receivers

Noise exposure goals for various types of land uses reflect the varying noise sensitivities associated with those uses. The San Leandro General Plan Environmental Hazards Element identifies noise-sensitive land uses as residential land uses, schools, and open space and recreation areas (City of San Leandro 2016a). The nearest sensitive receiver is a residential subdivision located approximately 510 feet northeast of the project site boundary.

The residential subdivision approximately 510 feet northeast of the project site boundary is also the nearest vibration sensitive receiver for human annoyance. The nearest structure to the project site where vibration could occur is approximately 10 feet north and south of the site boundary.

Ambient Noise Setting

The dominant sources of noise in the project site vicinity is vehicular traffic on Doolittle Drive, train operations on nearby railroad tracks, and aircraft noise from the Oakland International Airport.

The easternmost portion of the project site is within the 60 DBA CNEL contour of the Oakland International Airport (Alameda County Community Development Department 2010). According to the San Leandro General Plan Environmental Hazards Element, the eastern most of area of the project site is within the 60 dBA CNEL contour of Doolittle Drive (City of San Leandro 2016a). The easternmost area of the project site experiences noise levels of approximately 60 to 65 dBA CNEL because of traffic noise on Doolittle Drive and aircraft noise at Oakland International Airport.

The central and western areas of the project site are not within noise contours of the Oakland International Airport (Alameda County Community Development Department 2010). The central and western areas of the project site are also not near through roadways. Therefore, it is reasonable to assume noise levels in these areas of the project site are generally below or near 60 dBA CNEL.

However, there is an active railroad corridor approximately 400 feet east of the project site. When trains pass by the site, there would be a temporary increase in ambient noise levels in the project site. According to the Federal Transit Administration, diesel locomotives traveling at speeds of 50 miles per hour generate noise levels of approximately 92 dBA when measured approximately 50 feet from the railroad track (Federal Transit Administration 2018). Based on an attenuation rate of 3 dBA per doubling of distance from the source, trains using the tracks east of the project site would generate noise levels of approximately 83 dBA at the eastern project site boundary. In the central areas of the project site (approximately 800 feet from the tracks), train noise would be approximately 80 dBA. Additionally, although the project site is not in the noise contours of the Oakland International Airport, freight aircraft do arrive and depart the airport using routes that pass over or near the project site (Alameda County Community Development Department 2010). Similar to intermittent train operations, these freight aircraft operations would cause a temporary increase in ambient noise levels in the project site.

The nearest sensitive receptors to the project site, which are the residences to the northeast, are within the 60 dBA CNEL contour of Interstate 880 (City of San Leandro 2016a). However, Interstate 880 is east of these sensitive receptors; Interstate 880 does not separate the project from these sensitive receptors. However, there are multiple other residential buildings between these receptors and Interstate 880 that would cause freeway traffic noise level to attenuate before reaching these sensitive receptors, and this attenuation is not accounted for in the noise contour mapping of the General Plan. Accordingly, ambient noise levels at the nearest sensitive receptors to the project site are likely slightly below 60 dBA.

4.3.2 Regulatory Setting

a. State Regulations

California regulates freeway noise, sets standards for sound transmission, provides occupational noise control criteria, identifies noise standards, and provides guidance for local land use compatibility. California law requires each county and city to adopt a General Plan that includes a Noise Element prepared based on guidelines adopted by the Governor's Office of Planning and Research. The purpose of the Noise Element is to limit the exposure of the community to excessive noise levels. CEQA requires known environmental effects of a project be analyzed, including environmental noise impacts, including airport noise.

California Building Code

California Code of Regulations (CCR) Title 24, Building Standards Administrative Code, Part 2 and the California Building Code codify the State noise insulation standards. These noise standards apply to new construction in California to control interior noise levels as they are affected by exterior noise sources. The regulations specify that acoustical studies must be prepared when noise-sensitive structures, such as residential buildings, schools, or hospitals, are developed near major transportation noise sources, and where such sources create an exterior noise level of 60 dBA CNEL or higher. Acoustical studies that accompany building plans for noise-sensitive land uses must demonstrate that the structure has been designed to limit interior noise in habitable rooms to an acceptable level of 45 dBA CNEL.

The 2022 State of California's Green Building Standards Code contains mandatory measures for non-residential building construction in Section 5.507 on Environmental Comfort. These noise standards are applied to new construction in California for controlling interior noise levels resulting from

exterior noise sources. The regulations specify that acoustical studies must be prepared when non-residential structures are developed in areas where the exterior noise levels exceed 65 dBA CNEL, such as within the noise contour of an airport, freeway, or railroad.

California General Plan Guidelines

The California General Plan Guidelines, published by the Governor's Office of Planning and Research, indicate acceptable, specific land use types in areas with specific noise exposure. The guidelines also offer adjustment factors that may be used to arrive at noise acceptability standards that reflect the noise control goals of the community, the particular community's sensitivity to noise, and the community's assessment of the relative importance of noise pollution. These guidelines are advisory, and local jurisdictions have the responsibility to set specific noise standards based on local conditions. See the discussion below, under the "City of San Leandro General Plan," for the compatibility guidelines adopted by the City.

b. Local Regulations

City of San Leandro General Plan

The San Leandro 2035 General Plan was adopted by the City of San Leandro on in September 2016. Noise and vibration are addressed in the Environmental Hazards Element, which is Chapter 7 of the General Plan. The Environmental Hazards Element provides goals, objectives, policies, and actions to help protect citizens of San Leandro from excessive and incompatible noise and vibration.

General Plan goals and policies applicable to the proposed project are included below:

Goal EH-7: Ensure that noise associated with the day-to-day activities of San Leandro residents and businesses does not impede the peace and quiet of the community.

> **Policy EH-7.1: Noise Compatibility Table.** Ensure that potential noise impacts are considered when new development is proposed. Projects that could significantly increase noise levels should incorporate mitigation measures to reduce such impacts. Apply the standards shown in Chart 7-2 when evaluating applications for future development. Chart 7-2 specifies the maximum noise levels that are normally acceptable, conditionally acceptable, and normally unacceptable for new development.
>
> **Policy EH-7.3: Residential Exterior Noise Standard.** Strive to maintain an exterior noise level of no more than 60 dB Ldn in residential areas. Recognizing that some San Leandro neighborhoods already exceed this noise level, encourage a variety of noise abatement measures that benefit these areas.
>
> **Policy EH-7.4: Degradation of Ambient Noise Levels.** If a neighborhood is well within acceptable noise standards, do not automatically allow noise levels to degrade to the maximum tolerable levels shown in Chart 7-2. A project's noise impacts should be evaluated based on the potential for adverse community response, as well as its conformance to the adopted standards. For CEQA purposes, an increase of 3 dB Ldn should generally be considered a significant adverse impact.
>
> **Policy EH-7.5: Noise-Sensitive Uses.** Discourage noise-sensitive uses such as hospitals, schools, and rest homes from locating in areas with very high noise levels unless sufficient noise mitigation and buffering can be provided. Conversely, discourage new uses likely to produce

high levels of noise from locating in areas where noise-sensitive uses would be adversely impacted.

Policy EH-7.9: Vibration Impacts. Limit the potential for vibration impacts from construction and ongoing operations to disturb sensitive uses such as housing and schools.

Goal EH-8: Reduce the effects of surface transportation noise, including vehicular noise and noise associated with railroad and BART traffic.

Policy EH-8.3: Site Planning and Building Design. Require new development or redevelopment near freeways, arterials, BART, and major bus routes to incorporate site planning and architectural design measures that reduce the exposure of future building occupants to traffic noise.

Chart 7-2 in Environmental Hazards Element provides noise compatibility guidelines for land uses based on State of California guidelines. The guidelines identify those areas where various uses are acceptable, conditionally acceptable, normally unacceptable, or clearly unacceptable based on ambient noise levels. Chart 7-2 of the General Plan is provided as Figure 4.3-1.

San Leandro Municipal Code

Chapter 4-1 of the San Leandro Municipal Code provides restrictions and regulations for noise within San Leandro. The noise-related code does not contain numerical noise level limits and is aimed more at prohibiting “disturbing, excessive and offensive noises” so as to abate public nuisances relative to noise. The following section forms the framework for these nuisance-related restrictions.

Section 4-1-110 of the San Leandro Municipal Code establishes a general prohibition of noise which causes discomfort or annoyance to reasonable persons of normal sensitivity. The factors which should be considered in determining whether a violation of this section exists include but are not limited to the sound level of the objectionable and ambient noise, the proximity of the noise to residential property, and the duration of the noise.

Section 4-1-115 of the San Leandro Municipal Code prohibits certain acts related to noise, such as construction-related noise near residential uses outside of the hours of 7 a.m. and 7 p.m. on weekdays and 8 a.m. and 7 p.m. on weekends. Noise within public parks and noise that conflicts with residential uses is also prohibited.

Section 4-1-505 of the San Leandro Municipal Code restricts the hours of operation of vehicles with sound amplifying equipment to 10:00 a.m. through 7:00 p.m. Pursuant to Section 4-1-505, the volume of amplified sound shall be controlled so that it will not be audible for a distance in excess of 200 feet from the vehicle and so that said volume is not unreasonably loud, raucous, jarring, disturbing, or a nuisance to persons within the area of audibility.

Neither the City of San Leandro nor the County of Alameda has specific and/or quantitative regulatory standards for construction or operational vibration sources. San Leandro Zoning Code Part IV, Article 16, Division 3, Provision 4-1670B, Vibration, requires that no use, activity, or process produce vibrations that are perceptible without instruments by a reasonable person at the property lines of a site. This performance standard applies to all land use classifications in all zoning districts.

4.3.3 Impact Analysis

a. Methodology

The analysis of noise impacts considers the effects of both temporary construction-related noise and long-term noise associated with operation of the project. The potential for short-term construction and long-term operational noise impacts was assessed at noise-sensitive receptors closest to the project site (i.e., the residences approximately 510 feet northeast of the project site).

Construction Noise

Construction noise levels in the project vicinity would fluctuate depending on the particular type, number, and duration of usage for the various pieces of equipment. The effects of construction noise depend largely on the types of construction activities occurring on a given day, noise levels generated by those activities, distances to noise-sensitive receptors, and the existing ambient noise environment in the vicinity of the receptors. Construction generally occurs in several discrete stages, with each stage varying the equipment mix and equipment usage rates. These construction stages alter the characteristics of the noise environment generated on the project site and in the surrounding community for the duration of the construction stage. Construction stages for development of this project were assumed to include demolition, site preparation, grading, building construction, paving and painting (architectural coating).

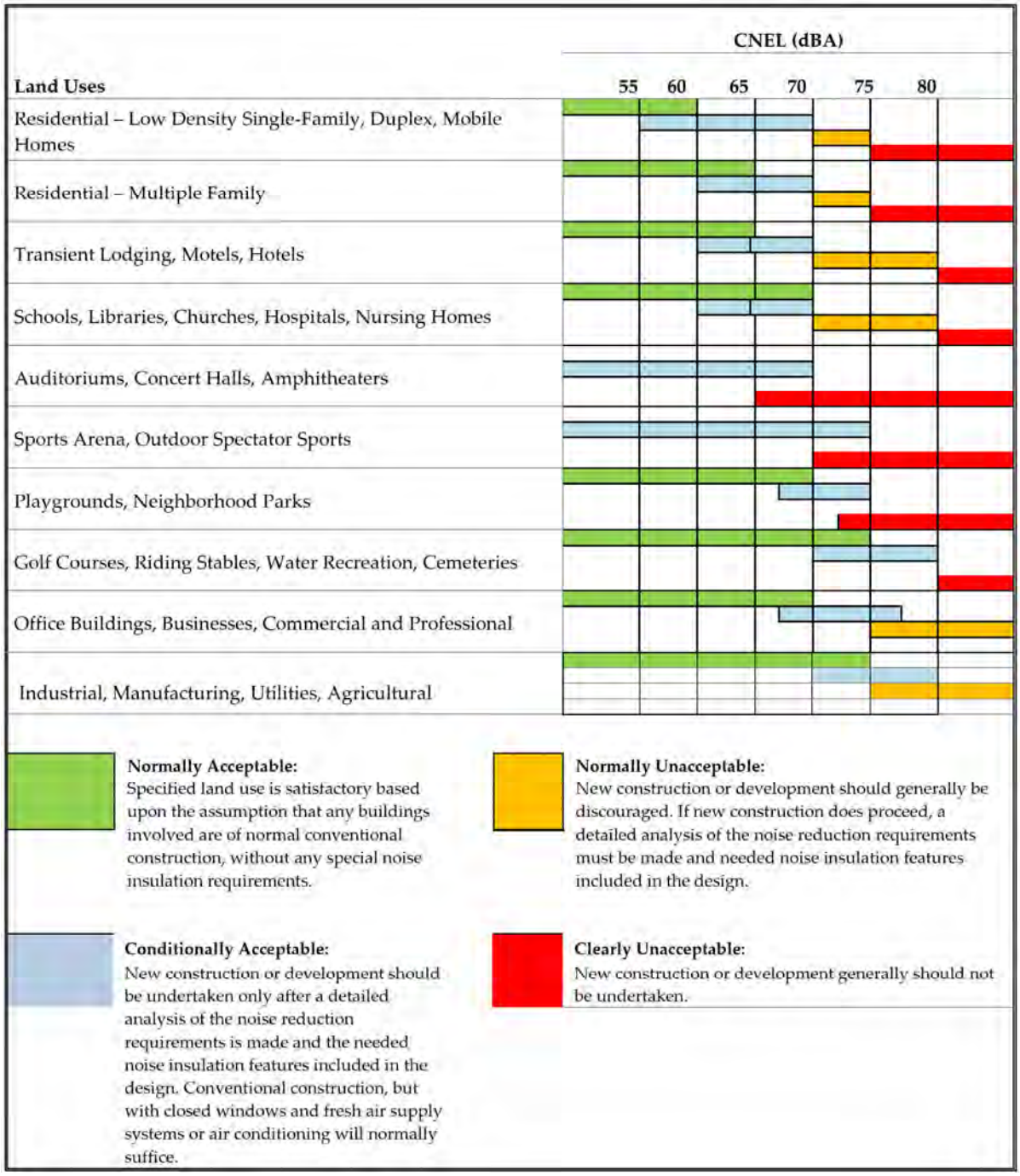
For purposes of construction noise assessment, construction equipment can be considered to operate in two modes, stationary and mobile. As a general rule, stationary equipment operates in one location for one or more days at a time, with either a fixed-power operation, such as, pumps, generators, and compressors, or a variable noise operation, such as pile drivers, rock drills, and pavement breakers. Mobile equipment moves around the construction site with power applied in cyclic fashion, such as bulldozers, graders, and loaders (Federal Transit Administration 2018). Noise impacts from stationary equipment are assessed from the center of the equipment, while noise impacts for mobile construction equipment are assessed from the center of the equipment activity area (i.e., construction site).

Although specific construction requirements for build-out of the proposed project are currently unknown, it is anticipated that typical construction sources such as backhoes, compressors, bulldozers, excavators, loaders and other related equipment would be utilized during project construction, based on input from the project applicant. Based on the reference noise levels, usage rates, fleet mixes and operational characteristics discussed above, overall hourly average noise levels attributable to project construction activities were calculated for the project. Construction noise levels were predicted using reference noise emission data and operational parameters contained in the FHWA Roadway Construction Noise Model, Version 1.1 (Reherman, et. al. 2006), and the Federal Transit Administration guidance manual (Federal Transit Administration 2018).

Vibration

Construction activities on the project site may result in varying degrees of temporary ground vibration, depending on the specific construction equipment used and operations involved. Groundborne vibration attenuates rapidly, even over short distances. The attenuation of groundborne vibration as it propagates from source to receptor through intervening soils and rock strata can be estimated with expressions found in Federal Transit Administration and Caltrans guidance.

Figure 4.3-1 City of San Leandro Land Use Compatibility Noise Guidelines



Source: City of San Leandro 2016

Construction vibration levels were calculated at the sensitive receptor nearest to the project site, residences to the northeast, to determine whether project construction would generate vibration levels that would cause human annoyance at the receptors or physical damage to nearby structures. Vibration levels were estimated for construction equipment expected to be used during project construction and were based on the vibration source levels for construction equipment from the Federal Transit Administration Transit Noise and Vibration Assessment (2018). Construction vibration levels were then calculated at distances of approximately 510 feet (the distance between the location of on-site vibratory equipment and the residential receptors) and at 30 feet (the distance between the location of on-site vibratory equipment, considering site constraints, and the nearest structures).

Operational Noise

Mechanical equipment associated with the operation of warehouse uses generally consists of heating, ventilation, and air-conditioning (HVAC) equipment. Mechanical equipment is often mounted on rooftops, partially enclosed at grade adjacent to buildings, or located within mechanical equipment rooms. Noise levels generated by the HVAC and other mechanical equipment vary substantially depending on unit size, efficiency, location, type of rotating or reciprocating components, and orientation of openings. For the analysis in the EIR, it was assumed up to 14 rooftop HVAC units would operate on-site. The rationale for this assumption is described in Appendix E. Each HVAC unit was assumed to be at a height of approximately 4 feet above the rooftop of the proposed building. Acoustical modelling software, specifically CadnaA, was used to model the noise associated with HVAC operation.

Additionally, CadnaA was used to model noise that would result from truck operations on the project site, given the project is a warehouse that includes docks for trucks. Trucks were modelled at various on-site locations, including along the eastern site boundary, closest to the nearest sensitive receptors. The noise reference value used to model trucks was 79 dBA at 50 feet away. As described in Appendix E, this sound level was determined by looking at a wide variety of truck activity, such as truck movement, air brakes, back-up alarms, and coupling/decoupling, and distilling it to a single conservative maximum level and spectrum. The height of a truck source for all truck activity was modelled at a conservative height of 8 feet above grade. The full range of model inputs and assumptions used for on-site truck noise is described in Appendix E.

Long-term operation of the proposed project would generate an increase in traffic volumes on the local roadway network in the project vicinity. Consequently, noise levels from this vehicular and truck traffic along affected roadway segments would have the potential to increase. To assess the effect of project-generated traffic increases, traffic noise levels were modeled for roadway segments in the project vicinity based on the FHWA Highway Traffic Noise Model prediction methodologies (Reherman, et. al. 2006).

Traffic volumes and the distribution of those volumes were obtained from the forecasted traffic volumes in the City's General Plan EIR. Average daily trip volumes resulting from the project were calculated by summing all traffic movements for both the a.m. and p.m peak hours, existing on or turning on to a particular roadway segment during the peak-hour and multiplying the total peak-hour volume by a "k-factor" of 5. Peak hours consist of 7:00 to 9:00 a.m and 4:00 to 6:00 p.m. Average vehicle speeds on local area roadways were assumed to be consistent with posted speed limits and remain as such with or without implementation of the proposed project.

b. Thresholds of Significance

According to *CEQA Guidelines* Appendix G, impacts related to noise and vibration are considered significant if implementation of the proposed project would:

1. Result in generation of a substantial temporary or permanent increase in ambient noise levels in the vicinity of the project in excess of standards established in the local general plan or noise ordinance, or applicable standards of other agencies;
2. Result in generation of excessive groundborne vibration or groundborne noise levels; or
3. For a project located within the vicinity of a private airstrip or an airport land use plan or, where such a plan has not been adopted, within two miles of a public airport or public use airport, expose people residing or working in the project area to excessive noise levels.

Construction Noise

The City of San Leandro has not adopted specific quantitative standards or limits related to construction noise. However, Section 4-1-115 of the San Leandro Municipal Code prohibits certain acts related to noise, such as construction-related noise near residential uses outside of the hours of 7 a.m. and 7 p.m. on weekdays and 8 a.m. and 7 p.m. on weekends. Noise within public parks and noise that conflicts with residential uses is also prohibited. Policy EH-7.4 of the General Plan states that an increase of 3 dB Ldn at residential land uses is a significant adverse impact for purposes of CEQA. Therefore, construction noise would be considered significant if it occurs outside of the hours specified in the San Leandro Municipal Code and would also increase noise levels by 3 dBA or greater at the nearest residence to the project site.

In addition to the San Leandro Municipal Code and the City's General Plan policies, the Federal Transit Administration has developed guidance for determining if construction of a project would expose various land uses to significant noise levels or if a project would result in a substantial temporary increase in noise levels. Based on Federal Transit Administration guidance, a significant impact would occur if project-generated construction noise exceeds the 8-hour 80 dBA Leq noise limit at residences (Federal Transit Administration 2018).

On-Site Operation Noise

As described in Appendix E, on-site HVAC noise would be considered significant if it exceeds 50 dBA. Noise from on-site truck operations would be considered if it exceeds 55 dBA. As described in Appendix E, these thresholds are based on maintaining existing noise levels at the residences northeast of the project site. By maintaining existing noise levels at the residences northeast of the project site, this threshold would also be consistent with Policy EH-7.4 of the General Plan, which states that an increase of 3 dB Ldn at residential land uses is a significant adverse impact for purposes of CEQA.

Traffic Noise

Most people can detect changes in sound levels of approximately 3 dBA under normal, quiet conditions, and changes of 1 to 3 dBA are detectable under quiet, controlled conditions. Changes of less than 1 dBA are usually indiscernible to most people. A change of 5 dBA is readily discernible to most people in an exterior environment. Based on this, the following thresholds of significance are used to assess traffic noise impacts at the nearest sensitive receptors:

- Greater than 1.5 dBA increase for ambient noise environments of 65 dBA CNEL and higher;

- Greater that 3 dBA increase for ambient noise environments of 60–64 CNEL; and
- Greater than 5 dBA increase for ambient noise environments of less than 60 dBA CNEL.

Vibration

The City of San Leandro has not adopted a significance quantitative threshold to assess vibration impacts during construction and operation. However, San Leandro Zoning Code Part IV, Article 16, Division 3, Provision 4-1670B, Vibration, requires that no use, activity, or process produce vibrations that are perceptible without instruments by a reasonable person at the property lines of a site. Caltrans recommends a 0.2 in/sec PPV as the threshold of human annoyance for vibration (Caltrans 2020). Accordingly, vibration would be considered significant if it results in vibration levels of 0.2 in/sec or greater at the project site boundary.

In addition to human annoyance threshold, this analysis also considers the damage that groundborne vibration could do to existing structures in the project area. Based on information contained in the 2018 FTA *Transit Noise and Vibration Impact Assessment Manual*, groundborne vibration levels that could induce potential architectural damage to buildings are identified in Table 4.3-1. Based on FTA recommendations, limiting vibration levels to below 0.5 in/sec peak particle velocity (PPV) at reinforced concrete, steel, or timber with no plaster (which would apply to the industrial structures nearest the project site) would prevent architectural damage. If vibration levels exceed 0.5 in/sec PPV at the nearest structures, impacts would be considered potentially significant.

Table 4.3-1 Groundborne Vibration Architectural Damage Thresholds

Building Category	PPV (in/sec)
Reinforced concrete, steel, or timber (no plaster)	0.5
Engineered concrete and masonry (no plaster)	0.3
Non-engineered timber and masonry buildings	0.2
Buildings extremely susceptible to vibration damage	0.12

Source: FTA 2018
PPV = peak particle velocity
in/sec = inches per second

Threshold 1: Would the project result in generation of a substantial temporary or permanent increase in ambient noise levels in the vicinity of the project in excess of standards established in the local general plan or noise ordinance, or applicable standards of other agencies?

IMPACT NOI-1 CONSTRUCTION AND OPERATION OF THE PROPOSED PROJECT WOULD GENERATE NOISE, INCREASING AMBIENT NOISE LEVELS NEAR THE PROJECT SITE. CONSTRUCTION NOISE WOULD BE TEMPORARY AND BELOW THRESHOLDS OF SIGNIFICANCE. TRAFFIC NOISE DURING OPERATION WOULD ALSO BE BELOW SIGNIFICANCE THRESHOLDS; HOWEVER, ON-SITE OPERATIONAL NOISE WOULD EXCEED THRESHOLDS ESTABLISHED FOR THE NEAREST SENSITIVE RECEPTOR. IMPACTS WOULD BE POTENTIALLY SIGNIFICANT BUT MITIGABLE.

Project Construction

Project construction would consist of several different stages, including demolition, site preparation, grading, building construction, and paving. These construction activities or stages can generate

noise levels ranging from 72 dBA to 84 dBA at distances of approximately 50 feet away from the construction site (Reherman, et. al. 2006). These noise levels would attenuate before reaching the nearest sensitive receptor, approximately 510 feet northeast of the project site. As described in the analysis methodology above, project construction noise was modeled at this nearest sensitive receptor. Results of the modeling are shown in Table 4.3-2, below.

Table 4.3-2 Estimated Noise Levels by Project Construction Phase

Construction Phase	Reference Noise Level at 50 Feet (DBA Leq)	Noise Level at Nearest Sensitive Receptor (DBA Leq)
Demolition	82	62
Site Preparation	83	63
Grading	84	64
Building Construction	78	58
Paving	78	58

Source: Federal Highway Administration Roadway Construction Noise Model (see Appendix F)

As shown in Table 4.3-2, construction noise levels would be loudest during the grading stage. Noise levels during this stage would be approximately 64 DBA Leq at the nearest sensitive receptor. The estimated noise level of 64 DBA Leq is well below the Federal Transit Administration construction noise standard, which is 80 DBA Leq. In addition to being well below the Federal Transit Administration standard, project construction activities must also comply with Section 4-1-115 of the San Leandro Municipal Code, prohibiting construction activities outside of the hours of 7 a.m. and 7 p.m. on weekdays and 8 a.m. and 7 p.m. on weekends. This would prevent construction noise from reaching the nearest residence at night when most people are at home and sleeping and most sensitive to noise. Accordingly, because construction noise levels would be below thresholds of significance (i.e., 80 dBA Leq) and occur when most people are awake or away at work, school, or other daytime activities out of the residence, project construction noise impacts would be less than significant.

On-Site Project Operations

Routine or typical operations at the project site would generate noise. Examples of operational noise include rooftop HVAC equipment, trucks maneuvering or otherwise operating on-site, employees talking or shouting, garage doors rolling up or closing, among many other activities. Generally, the highest noise levels would result from HVAC equipment and trucks operating on-site, as these things generate higher noise levels than employees having a discussion outside of the proposed building, for example.

Rooftop HVAC equipment produces noise that is nominally steady in nature, and hence will not vary substantially over time. According to the noise study prepared for project operations (Appendix E), rooftop HVAC noise levels would be up to approximately 50 dBA on the project site. However, as shown in Figure 4.3-2, below, these noise levels would quickly attenuate to below 40 dBA outside of the project site. Because project HVAC noise levels would attenuate to 40 dBA or less proximate to the project site, HVAC noise levels would attenuate even more at distances of approximately 510 feet from the project site, which is where the nearest sensitive receptor is located. Therefore, rooftop HVAC noise from project operations would attenuate below ambient noise levels at the nearest sensitive receptor, resulting in no discernible change in noise level at the receptor.

On-site truck activity would routinely generate engine noises, as well as noise associated with air brakes, back-up alarms, and coupling/decoupling of trailers. When distilled down to a single maximum noise level, truck noise in typical dock and trailer parking areas can routinely produce maximum sound levels of approximately 79 dBA at distances of approximately 50 feet away. In the rare event that two trucks operate in the same spot and time, noise levels would increase by approximately 3 dBA (Ostergaard Acoustical Associates 2024; Appendix E).

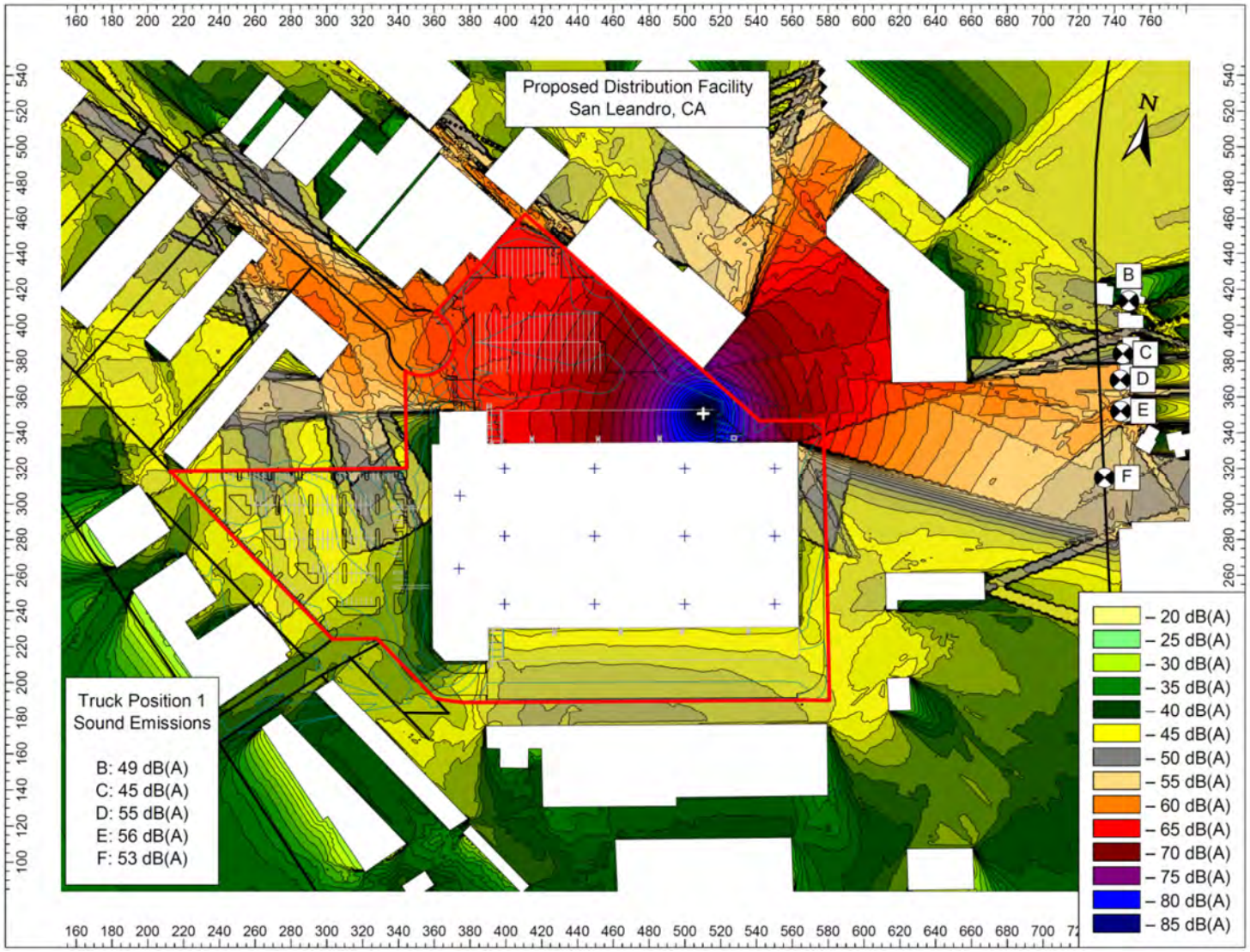
Trucks would operate at various locations on the project site, which would affect the distance between the truck activity and nearest sensitive receptor, as well as the number and types of intervening structures between the trucks and receptor. The on-site location where trucks would have the potential to result in the highest noise levels at the nearest sensitive receptor is along the northern side of the proposed building at proposed loading docks. When trucks operate in this area of the project site, noise levels at the nearest sensitive receptor would be approximately 56 dBA. The estimated 56 dBA noise level at the nearest sensitive receptor includes on-site truck activity noise combined with rooftop HVAC noise. Truck activities on other areas of the site would generate noise levels below 56 dBA at the nearest sensitive receptor (Ostergaard Acoustical Associates 2024; Appendix E). Figure 4.3-3, Figure 4.3-4, and Figure 4.3-5 show noise levels associated with truck activity at different areas of the project site.

Noise levels of 56 dBA at the nearest residence would exceed the significance threshold of 55 dBA. Because on-site operational noise would exceed the threshold of 55 dBA, impacts would be potentially significant, and mitigation is required.

Figure 4.3-2 Estimated Rooftop HVAC Noise Levels near Project Site

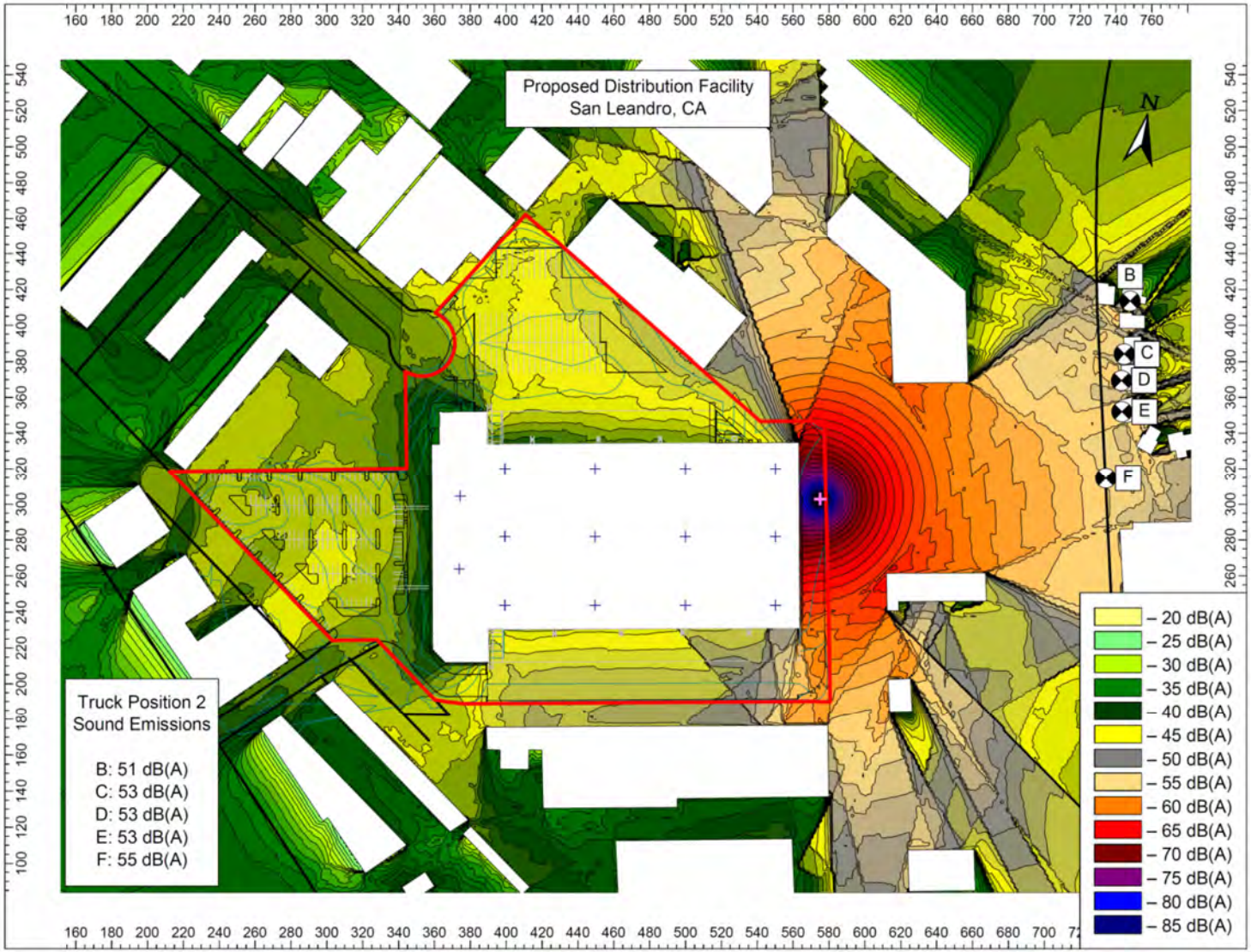
Source: Evaluation of Site Sound Emissions: Ostergaard Acoustical Associates 2024 (Appendix E)

Figure 4.3-3 Estimated Truck Operations and HVAC Noise Levels near Project Site: North Side of Building



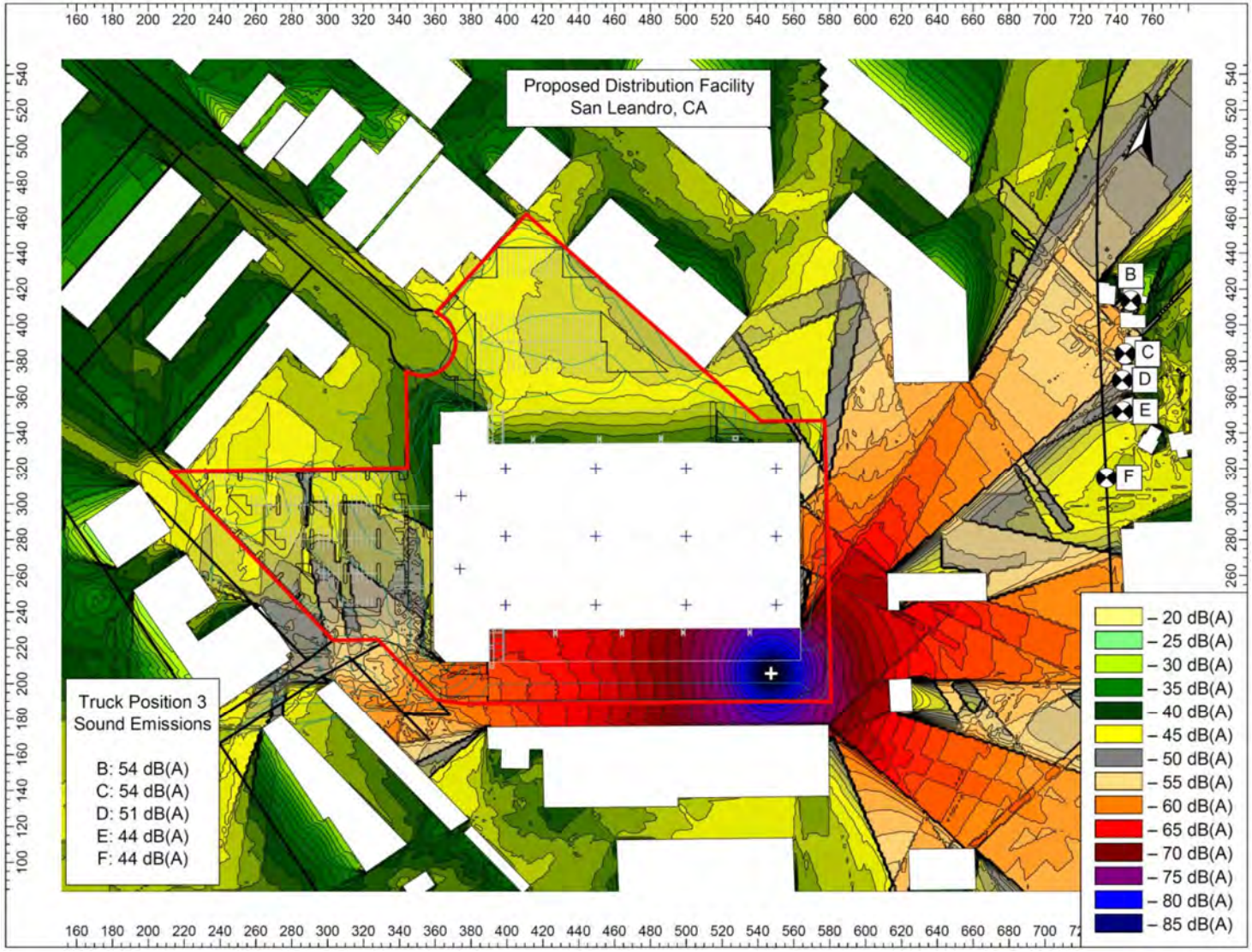
Source: Evaluation of Site Sound Emissions: Ostergaard Acoustical Associates 2024 (Appendix E)

Figure 4.3-4 Estimated Truck Operations and HVAC Noise Levels near Project Site: East Side of Building



Source: Evaluation of Site Sound Emissions: Ostergaard Acoustical Associates 2024 (Appendix E)

Figure 4.3-5 Estimated Truck Operations and HVAC Noise Levels near Project Site: South Side of Building



Source: Evaluation of Site Sound Emissions: Ostergaard Acoustical Associates 2024 (Appendix E)

Traffic Noise

Based on the Transportation Impact Analysis prepared for the proposed project by Kimley-Horn and Associates in 2024 (see Appendix C), the proposed project would generate up to 1,543 additional daily vehicle trips on project area roads. These additional trips would increase traffic noise on roadways. Specifically, the existing average daily trips on Doolittle Drive, between Adams Avenue to Davis Street, is 29,400 trips. The addition of 1,543 daily vehicle trips would result in an increase in traffic noise that would be approximately 0.2 dBA CNEL. As stated in the City of San Leandro General Plan Update Draft EIR (City of San Leandro 2016b), the existing ambient noise level for Doolittle Drive, between Adams Avenue to Davis Street, is 71.8 dBA at 50 feet. The estimated 0.2 dBA CNEL increase resulting from project trips on this street would be below 1.5 dBA, which is the significance threshold for roadways with ambient noise levels of 65 dBA CNEL or higher (Appendix F). Accordingly, traffic noise would result in less than significant noise impacts.

Mitigation Measures

NOI-1 On-Site Noise Barrier

The applicant shall install a permanent noise barrier along the property boundary that is oriented in a northwest-southeast direction and separates the project site from APN 77A-742-3-2. The noise barrier shall be a solid fence or wall design and no less than 8 feet tall. The noise barrier shall be no less that 140 feet in length, beginning at the southernmost end of this property boundary.

Significance After Mitigation

CadnaA was used to model noise that would result from truck operations on the project site with implementation of Mitigation Measure NOI-1 requiring installation of an 8-foot-tall solid sound fence along 140 feet of the northeastern property boundary. With a sound fence in this location, on-site noise levels at the nearest sensitive receptor would be reduced to 50 dBA. Noise levels of 50 dBA would be below the threshold of 55 dBA. Accordingly, with implementation of Mitigation Measure NOI-1, impacts would be less than significant.

Threshold 2:	Would the project result in generation of excessive groundborne vibration or groundborne noise levels?

IMPACT NOI-2 OPERATION OF THE PROJECT WOULD NOT GENERATE SUBSTANTIAL GROUNDBORNE VIBRATION, BUT PROJECT CONSTRUCTION WOULD GENERATE GROUNDBORNE VIBRATION. CONSTRUCTION VIBRATION LEVELS WOULD EXCEED THRESHOLDS OF STRUCTURAL DAMAGE AT NEARBY EXISTING BUILDINGS. IMPACTS WOULD BE POTENTIAL SIGNIFICANT BUT MITIGABLE.

Project Construction

Project construction activities would have the potential to generate ground-borne vibration affecting nearby receptors. Construction activities known to generate excessive groundborne vibration, such as pile driving and blasting, would not be used to construct the proposed project. However, project construction would use heavy machinery that generates vibration, notably a vibratory roller used during on-site paving activities. The FTA has published the vibration levels for typical construction equipment at distances of 25 feet from the equipment (FTA 2018). These vibration levels include:

- Vibratory roller: 0.21 in/sec PPV
- Large bulldozer: 0.089 in/sec PPV
- Loaded trucks: 0.076 in/sec PPV
- Small bulldozer: 0.003 in/sec PPV
- Static roller: 0.050 in/sec PPV

The vibratory roller would create the most vibration at 0.21 in/sec PPV at 25 feet away, which is 0.01 in/sec PPV above the threshold of significance for human annoyance. With Caltrans recommending a 0.2 in/sec PPV as the threshold of human annoyance for vibration (Caltrans 2020),vibration levels from project construction would be well below this threshold because the nearest residential receptors are approximately 510 feet away. As shown in Table 4.3-3, below, vibration levels are well below 0.2 at distances of only 35 feet away from the project site (Appendix F).

Although construction vibration would not exceed levels of annoyance at the nearest residences to the project site, vibration levels would increase at the nearest structures to the site, regardless of whether or not occupants would be annoyed by vibration. Based on the project site plan, it is assumed the vibratory roller would be used within 10 feet of the nearest off-site industrial structures to the north and west of the project site during paving activities. Table 4.3-3 shows the estimated vibration levels for various pieces of construction equipment, including a vibratory roller, at the industrial structure approximately 10 feet away. Table 4.3-3 also shows the estimated vibration levels at other existing nearby industrial structures.

Table 4.3-3 Estimated Construction Vibration Levels (in/sec PPV)

Equipment	Reference Level 25 feet	Industrial Buildings to the North and West 10 feet	Industrial Building to the South 35 feet	Industrial Building to the East 95 feet
Vibratory Roller	0.210	0.830	0.127	0.028
Large Bulldozer	0.089	0.352	0.054	0.012
Loaded Trucks	0.076	0.300	0.046	0.010
Small Bulldozer	0.003	0.198	0.030	0.007
Static Roller	0.050	0.012	0.002	<0.001
Threshold for Structural Damage	-	0.5	0.5	0.5
Threshold Exceeded?	**-**	**Yes**	**No**	**No**

Source: FTA 2018 (see Appendix F)
PPV = peak particle velocity
in/sec = inches per second

As shown in Table 4.3-3, vibration levels during project construction would exceed the threshold for structural damage at the existing industrial buildings approximately 10 feet away from the project site. Impacts would be potentially significant and implementation of Mitigation Measure NOI-2 is required.

Project Operation

Project operation activities would not have the potential to generate substantial groundborne vibration. Vibration levels during project operation would result in less than significant impacts.

Mitigation Measures

NOI-2 Static Roller Requirement

The project applicant and/or its construction contractors shall use of a static roller in lieu of a vibratory roller for paving activities within 15 feet of the existing off-site buildings to the north and west of the project site. City staff shall verify that this requirement is incorporated into construction plans prior to issuance of a building permit and verified in the field.

Significance After Mitigation

Mitigation Measure NOI-2 would reduce vibration impacts by requiring use of a static roller when conducting paving activities near existing buildings. As shown in Table 4.3-3, vibration levels from a static roller at 10 feet away would be 0.012 in/sec PPV, which is below the threshold of 0.5 in/sec PPV. Therefore, the impact related vibration-induced structural damage would be less than significant with mitigation implemented.

Threshold 3:	For a project located within the vicinity of a private airstrip or an airport land use plan or, where such a plan has not been adopted, within two miles of a public airport or public use airport, would the project expose people residing or working in the project area to excessive noise levels?

IMPACT NOI-3 THE PROJECT WOULD RESULT IN EMPLOYMENT OPPORTUNITIES WITHIN AREAS THAT OCCUR INSIDE OF NOISE CONTOURS OF THE OAKLAND INTERNATIONAL AIRPORT. HOWEVER, THE PROJECT SITE WOULD BE WITHIN THE 60 DBA NOISE CONTOUR, AND 60 DBA IS NOT AN EXCESSIVE NOISE LEVEL. THEREFORE, PEOPLE WORKING IN THE PROJECT SITE WOULD NOT BE EXPOSED TO EXCESSIVE AIRPORT NOISE, AND IMPACTS WOULD BE LESS THAN SIGNIFICANT.

As described above in Section 4.3.1, *Setting*, the easternmost portion of the project site is within the 60 DBA CNEL contour of the Oakland International Airport (Alameda County Community Development Department 2010). According to the Occupational Safety and Health Administration, 60 dBA is the noise level typical of a conversation (Occupational Safety and Health Administration 2023). Conversational noise is common and not excessive or damaging to hearing. Therefore, people working in the project area would not be exposed to excessive airport noise levels. Impacts would be less than significant.

Mitigation Measures

No mitigation measures are required.

Significance After Mitigation

Impacts would be less than significant without mitigation.

4.3.4 Cumulative Impacts

A project's environmental impacts are "cumulatively considerable" if the "incremental effects of an individual project are significant when viewed in connection with the effects of past projects, the effects of other current projects, and the effects of probable future projects" (*CEQA Guidelines* Section 15065[a][3]). The geographic scope for cumulative noise impacts is limited to the area within approximately 600 feet of the project site. This geographic scope is appropriate for noise

impacts, because as discussed above in Impact NOI-1, project noise would attenuate close to existing ambient levels at sensitive receptors at distances of 510 feet from the project site. By extending the cumulative impacts assessment area to 600 feet, project noise would attenuate and not combine with other more distance noise sources.

Several of the cumulative development projects listed in Table 3-1 are within the geographic scope of the cumulative impacts analysis. For example, the project identified as 1091 Doolittle Drive is approximately 600 feet southwest of the project site. If construction of this project and the proposed project occur concurrently, construction equipment noise could be louder than if either of these projects were constructed at a separate point in time. When two identical sources of noise operate concurrently, such as two bulldozers, the increased noise from the activity is approximately 3 dBA. However, because cumulative projects are even farther from the nearest sensitive receptors to the project site than the project site is to these receptors, increase cumulative noise would attenuate before reaching these receptors. For example, the noise from equipment operated at the aforementioned cumulative project at 1091 Doolittle Drive would attenuate before reaching the project site. Therefore, noise from cumulative projects would be less than the construction noise on-site, resulting in no discernible increase in noise at the nearest sensitive receptors than would occur from the proposed project, alone. Similarly, vibration from construction equipment would also attenuate. Accordingly, cumulative noise and vibration impacts resulting from construction activities would be less than significant.

Ambient noise levels in the project area, including at the sensitive residential receptors closest to the project site are effectively the result of operation of past and current projects in the area, including businesses, other residences, aircraft operations, roadways, railroad, and other prominent noise sources in the area. Despite the abundance of noise sources in the area, noise levels at the nearest sensitive receptors to the project site are generally within the 50 to 60 dBA range, which is comparable to noise levels of a conversation. The reasonably foreseeable future projects listed in Table 3-1 of this EIR would potentially increase ambient noise levels in the cumulative assessment area, depending on whether or not the noise levels from individual projects exceed or are equal to ambient noise levels. However, the projects listed in Table 3-1 are generally further from the nearest sensitive receptors to the project site than the project site is to these receptors. Therefore, on-site operational noises generated from these projects would attenuate to below existing ambient noise levels at the sensitive residential receptors. The reasonably foreseeable future projects would generate additional vehicle trips, which could increase traffic noise. However, the future projects are scattered throughout the cumulative impacts assessment area, which means that the vehicle trips would use a variety of roadways and not entirely pass by the nearest sensitive receptors to the project site. Additionally, a doubling of traffic volumes is generally required for a discernible difference in ambient noise levels from roadways. Traffic noise at the nearest sensitive receptors to the project site is affected by Interstate 880, which has tens of thousands of vehicle trips per day. Reasonably foreseeable future projects would not double the amount of vehicle trips in the area given that Interstate 880 is in the area. Cumulative impacts from operation of cumulative projects would be less than significant.

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4.4 Transportation

This section of the EIR analyzes transportation impacts associated with the proposed project. This section describes the local transportation network, including active transportation modes (i.e., pedestrian and bicycle), and describes vehicle miles traveled (VMT). This section of the EIR is based on a Transportation Impact Analysis prepared for the project by Kimley Horn. The Transportation Impact Analysis, which is dated January 2024, is provided as Appendix C to this EIR.

4.4.1 Setting

a. Roadway Network

The major roadways in the vicinity of the project site include Interstate 880 and a network of arterial, collector, and local streets. The major roadways in the vicinity of the project site are described below.

- **Interstate 880.** Interstate 880 is a north-south freeway that connects Interstate 280 and State Route 17 to the south to Interstate 80 and Interstate 580 to the north. Within the project area, the roadway consists of six southbound lanes (including one HOV lane) and four northbound lanes. Interstate 880 serves as regional access to the project site. The posted speed limit on I-880 within the project area is 65 miles per hour.
- **Doolittle Drive.** Doolittle Drive is a north-south arterial road. It connects to Otis Drive and Fernside Boulevard to the north and Belvedere Avenue to the south. The roadway within the project area is two lanes in each direction and has a center two-way left-turn lane (TWLTL). Doolittle Drive is State Route 61. It serves mainly industrial uses along the corridor. Within the project area, the speed limit on Doolittle Drive is 45 miles per hour.
- **Davis Street.** Davis Street is a four-lane, east-west arterial which runs between Business Center Drive to the west and E 14th Street to the east. The roadway serves residential and commercial uses and is State Route 112. Within the project area, the speed limit on Davis Street is 35 miles per hour.
- **Adams Avenue.** Adams Avenue is a two-lane, east-west collector between Doolittle Drive to the south and Bigge Street to the north. The roadway includes Class II bike lanes and on-street parking and serves industrial uses. Within the project area, the speed limit on Adams Avenue is 35 miles per hour.
- **Hester Street.** Hester Street is a two-lane, north-south local road connecting the project site to Adams Avenue. The roadway includes on-street parking and serves industrial uses. Within the project area, there is no posted speed limit but given the classification of the road, it is assumed that the speed limit is 25 miles per hour.
- **Airport Access Road.** Airport Access Road is a five-lane, minor collector that connects to Bessie Coleman Drive to the south and Hegenberger Road to the north. The roadway provides access to the Oakland International Airport. Within the project area, there is no posted speed limit but given the classification of the road, it is assumed that the speed limit is 35 miles per hour.
- **98th Avenue.** 98th Avenue is a minor arterial which connects to Bessie Coleman Drive to the west and Golf Links Road to the east. The roadway within the project area consists of six lanes and serves multiple uses. Within the project area, the posted speed limit is 30 miles per hour.

b. Transit, Bicycle, and Pedestrian Facilities

The Alameda-Contra Costa Transit District (AC Transit) operates bus routes 34, 35, 73, 98, and 805 within the project area. The nearest bus stop to the project site is located at the intersection of Westgate Parkway and Davis Street, which is approximately 0.9 mile southeast of the project site. The San Leandro Bay Area Rapid Transit (BART) station, which serves the Blue, Green, and Orange BART lines, is located approximately 2.1 miles east of the project site. The San Leandro LINKS shuttle is a free shuttle to and from the San Leandro BART station that operates a North Loop and South Loop. The North Loop runs along Davis Street from the BART station to Marina Boulevard, Merced Street, Williams Street, Doolittle Drive, and Davis Street. There is an existing stop located at Doolittle Drive and Davis Street, approximately 0.4 mile south of the project site. Pedestrians can travel between the LINKS bus stop and the project site using the existing sidewalks located along both sides of Davis Street.

Bicycle lanes in the project area include Class II bicycle lanes on both Doolittle Drive and Adams Avenue. More regionally, the bicycle lane on Doolittle Drive connects to a larger network of bicycle facilities providing bicycle access to other areas of San Leandro most distant from the project site, such as areas east of Interstate 880. Class II bicycle lanes are established lanes along streets using striping and painted patterns, such as painting a portion of the asphalt roadway a color to denote its use for bicycle travel (Caltrans 2020).

There are existing continuous sidewalks on both sides of Doolittle Drive adjacent to the project site where pedestrians can access the site, as well as existing continuous sidewalks on both sides of Adams Avenue and on the east side of Hester Street. There are also existing crosswalks along the east, south, and west legs at the signalized intersection of Doolittle Drive and Davis Street, and existing crosswalks on the east and south legs at the signalized intersection of Doolittle Drive and Adams Street.

c. Vehicle Miles Traveled

Vehicle miles traveled (VMT) measures the amount of travel for all vehicles in a geographic region over a given period of time, typically a one-year period. It is calculated as the sum of the number of miles traveled by each vehicle (Williams, et.al. 2016). VMT can be quantified in numerous ways depending on how the VMT data is to be applied, such as total annual VMT, VMT per capita, or VMT per employee. VMT per employee means the average commute trip length, in miles, made by employees over a set period, multiplied by the number of vehicle commute trips per employee.

The Alameda County Transportation Commission has developed maps displaying estimates of VMT per employee based on traffic analysis zone (TAZ) estimates from the Alameda Countywide Travel Demand Model. Based on the VMT per Employee map for the TAZs within the Central Planning Area, which is the planning area where the project site is located, the VMT per employee in 2020 provided by the Alameda County Transportation Commission is 15.34 miles. Based on the VMT per Employee table for the Central Planning Area in 2040 provided by the Alameda County Transportation Commission, the project is located in a TAZ with a VMT of 16.08 miles (Appendix C, page 15). The average VMT per employee in the overall Central Planning Area is 19.2 miles in 2020 and 19.1 miles in 2040, as shown on Page 16 of the Transportation Impact Analysis (Appendix C).

4.4.2 Regulatory Setting

a. Federal Regulations

The federal government routinely funds roadway and other transportation projects and also recognizes VMT as a transportation planning measurement. However, there are no federal transportation regulations applicable to this analysis.

b. State Regulations

Senate Bill 743

On September 27, 2013, California Governor Jerry Brown signed Senate Bill (SB) 743 into law and started a process that changes transportation impact analysis as part of CEQA compliance. SB 743 requires the Governor's Office of Planning and Research (OPR) to identify new metrics for identifying and mitigating transportation impacts within CEQA. In January 2018, OPR transmitted its proposed CEQA Guidelines implementing SB 743 to the California Natural Resources Agency for adoption, and in January 2019 the Natural Resources Agency finalized updates to the CEQA Guidelines, which incorporated SB 743 modifications. As of July 1, 2020, localities are required to rely on vehicle miles traveled (VMT), instead of traffic delay, as the primary metric for evaluating transportation impacts in CEQA documents. Under SB 743, automobile delay, as described solely by level of service or traffic congestion, shall not be considered a significant environmental impact except for certain types of transportation projects (Public Resource Code, § 21099 (b)(2)).

State CEQA Guidelines Section 15064.3

Originating from SB 743, Section 15064.3 of the State CEQA Guidelines establishes VMT as the most appropriate measure of transportation impacts, shifting away from the level of service analysis that evaluated a project's impacts on traffic conditions on nearby roadways and intersections. The primary components of new section 15064.3 include:

- Identifies VMT (amount and distance of automobile traffic attributable to a project) as the most appropriate measure of transportation impacts;
- Declares that a project's effect on automobile delay shall not constitute a significant environmental impact except for projects increasing roadway capacity;
- Creates a rebuttable presumption of no significant transportation impacts for (a) land use projects within one-half mile of either an existing major transit stop or a stop along an existing high quality transit corridor, (b) land use projects that reduce VMT below existing conditions, and (c) transportation projects that reduce or have no impact on VMT;
- Allows a lead agency to qualitatively evaluate VMT if existing models are not available; and
- Gives lead agencies discretion to select a methodology to evaluate a project's VMT but requires lead agencies to document that methodology in the environmental document prepared for the project.

In December 2018, OPR issued a *Technical Advisory on Evaluating Transportation Impacts in CEQA* (OPR 2018). The technical advisory contains technical recommendations regarding assessment of VMT, thresholds of significance, and mitigation measures. The technical advisory suggests a significance threshold for VMT that is based on state mandated GHG emission reduction targets. The technical advisory recommends a quantitative per capita or per employee VMT that is 15

percent below that of existing development as a possible threshold of significance that would comply with the state's long-term climate goals.

California Assembly Bill 32, Senate Bill 32, and Senate Bill 375

The "California Global Warming Solutions Act of 2006" (AB 32) outlines California's major legislative initiative for reducing GHG emissions. AB 32 codifies the statewide goal of reducing GHG emissions to 1990 levels by 2020, a reduction of approximately 15 percent below emissions expected under a "business as usual" scenario. On September 8, 2016, the governor signed Senate Bill 32 (SB 32) into law, extending the California Global Warming Solutions Act of 2006 by requiring the state to further reduce GHG emissions to 40 percent below 1990 levels by 2030 (the other provisions of AB 32 remain unchanged).

The Sustainable Communities and Climate Protection Act of 2008 (SB 375), signed in August 2008, enhances the state's ability to reach AB 32 goals by directing CARB to develop regional GHG emission reduction targets to be achieved from passenger vehicles by 2020 and 2035. SB 375 aligns regional transportation planning efforts, regional GHG reduction targets, and affordable housing allocations. Metropolitan Planning Organizations (MPOs) are required to adopt a Sustainable Communities Strategy (SCS), which allocates land uses in the MPO's Regional Transportation Plan (RTP). Qualified projects consistent with an approved SCS or Alternative Planning Strategy (categorized as "transit priority projects") can receive incentives to streamline CEQA processing.

On March 22, 2018, CARB adopted updated regional targets for reducing GHG emissions from 2005 levels by 2020 and 2035. ABAG was assigned a 19 percent reduction in per capita GHG emissions from passenger vehicles by 2035. SB 375 also provides the option for the coordinated development of subregional plans by the subregional councils of governments and the county transportation commissions to meet SB 375 requirements. On October 21, 2021, ABAG formally adopted the RTP/SCS titled Plan Bay Area 2050, which meets the requirements of SB 375.

c. Local Regulations

Alameda County Transportation Commission

The Alameda County Transportation Commission coordinates transportation planning efforts throughout Alameda County and programs local, regional, State and federal funding for project implementation. It prepares the CMP, a program mandated by California law to describe the strategies to address congestion problems on the CMP network, which includes state highways and principal arterials. The CMP requires analysis of Metropolitan Transportation System (MTS) roadway and transit system and uses level-of-service standards as a means to measure congestion and has established level-of-service standards to determine how local governments meet the standards of the CMP.

The Alameda County Transportation Commission also develops and manages the Countywide travel demand model, which is used for estimating future volumes and VMT based on future land uses and the future roadway network. The Alameda County Transportation Commission has developed maps displaying estimates of VMT per employee based on traffic analysis zone (TAZ) estimates from the Alameda Countywide Travel Demand Model.

City of San Leandro 2035 General Plan

The San Leandro 2035 General Plan Transportation Element establishes the following applicable goals and policies relevant to transportation:

Policy T-1.2: Mitigation of Development Impacts. Require developers to address the impacts that their projects will have on the City's transportation system. A variety of mitigation measures, including impact fees, street improvements, traffic signal and Intelligent Transportation Systems (ITS) improvements, transportation demand management (TDM) measures, and improvement of non-automobile transportation modes, should be considered.

Policy T-1.10: Reduced Trip Generation. Encourage local employers to develop programs that promote ridesharing, flextime and telecommuting, bicycle use, and other modes of transportation that reduce the number and distance of vehicle trips generated.

Policy T-2.6: Building Design and Site Planning. Ensure that the site planning and design of new development promotes the use of non-auto modes of transportation by including amenities such as sidewalks, bike lockers, and bus shelters.

Policy T-3.5: Accommodation of Bicycles and Pedestrians. Require new development to incorporate design features that make walking, bicycling, and other forms of nonmotorized transportation more convenient and attractive. Facilities for bicycles and pedestrians, including secured bicycle parking, clearly marked crosswalks, well-lit streets and sidewalks, landscaping, and street furniture should be provided within new employment areas, shopping destinations, multi-modal transportation facilities, and community facilities.

Policy T-6.7: Siting of Businesses with Truck Traffic. To the extent feasible, locate businesses projected to generate large amounts of truck traffic away from residential areas. Ingress and egress for such businesses should be designed to minimize the possibility of truck traffic impacting residential streets.

The Transportation Element also establishes a tiered Level of Service (LOS) system. LOS is a measure of the quality or performance of a transportation system based on factors such as travel time, traffic volume, and congestion. LOS is typically evaluated on a scale of "A," corresponding to no congestion and free-flowing traffic, to "F," corresponding to extreme congestion and delays. For planning purposes, LOS D is the minimum acceptable service level for intersections outside of designated Priority Development Areas and LOS E is the minimum acceptable service level for intersections within designated Priority Development Areas.

4.4.3 Impact Analysis

a. Methodology

The analysis presented herein is derived primarily from a Transportation Analysis prepared by Kimley-Horn for the proposed project, included as Appendix C to this EIR. The Transportation Impact Analysis assesses the VMT impacts of the project, as well as other transportation-related impacts. The VMT generated by the proposed project was estimated by referring to VMT estimates produced by the Alameda County Transportation Commission for 2020 and 2040. The Alameda County Transportation Commission developed their VMT estimates on a TAZ basis using the Alameda Countywide Travel Model. The average VMT of the TAZ containing the proposed project was compared against the significance thresholds to determine the severity of VMT impacts.

The Transportation Impact Analysis also includes a sight distance analysis for the proposed project driveways to determine if project vehicles exiting the driveways would have adequate sight distance to prevent traffic safety hazards. Intersection sight distance for the project driveways was evaluated using methodology from the American Association of State Highway and Transportation Officials, which is called *A Policy on Geometric Design of Highway and Street, 7th Edition*. Sight distance for each project driveway was determined based on the proposed project site plan and the following American Association of State Highway and Transportation Officials intersection sight distance criteria formula:

$$\text{Intersection Sight Distance} = 1.47 \text{ X } V_{major} \text{ X } t_g$$

In the above formula, V_{major} is the design speed of the major road and tg is the time gap for the vehicle to exit the project driveway and enter the major road.

b. Thresholds of Significance

According to CEQA Guidelines Appendix G, impacts related to transportation and circulation from the proposed project would be significant if the project would:

1. Conflict with a program, plan, ordinance or policy addressing the circulation system, including transit, roadway, bicycle, and pedestrian facilities;
2. Conflict or be inconsistent with CEQA Guidelines section 15064.3, subdivision (b);
3. Substantially increase hazards due to a geometric design feature (e.g., sharp curves or dangerous intersections) or incompatible uses (e.g., farm equipment); or
4. Result in inadequate emergency access.

CEQA checklist items 1 and 4 were found to be less than significant in the Initial Study (Appendix A). Therefore, no further analysis is warranted, and these topics will not be discussed further in this section.

Threshold 2:	Would the project conflict or be inconsistent with CEQA Guidelines section 15064.3, subdivision (b)?

IMPACT TRA-1 THE PROJECT WOULD GENERATE VMT THAT IS MORE THAN 15 PERCENT BELOW THE AVERAGE VMT PER EMPLOYEE IN THE PROJECT AREA THEREFORE, THE PROPOSED PROJECT WOULD NOT CONFLICT WITH CEQA GUIDELINES SECTION 15064.3, SUBDIVISION (B), AND IMPACTS WOULD BE LESS THAN SIGNIFICANT.

According to the Transportation Impact Analysis (Appendix C) and the Alameda County Transportation Commission (2019), the project site is in a TAZ with a VMT of 15.34 per employee in 2020. Therefore, the Transportation Analysis determined that the proposed project would also generate 15.34 VMT per employee, consistent with the 2020 VMT of the TAZ (see Appendix C). This is a reasonable assumption because the TAZ covers a limited area surrounding the project site that is characterized by warehouses and industrial land uses, consistent with the proposed project. In other words, the proposed project would be in a TAZ that the Alameda County Transportation Commission indicates has an average VMT per employee of 15.34, and because the project would be a warehouse use similar to much of the other land uses in the TAZ, would be consistent with the average VMT per employee of 15.34. It should be noted that the Alameda County Transportation Commission VMT maps are consistent with methodology specified by the Governor's Office of Planning and Research (Appendix C). The project VMT of 15.34 miles per employee is below the

2020 VMT threshold of 16.3 miles per employee. Therefore, the proposed project would not conflict or be inconsistent with CEQA Guidelines Section 15064.3, subdivision (b), as it pertains to VMT. Impacts would be less than significant.

Mitigation Measures

No mitigation measures are required.

Significance After Mitigation

Impacts would be less than significant without mitigation.

Threshold 3:	Would the project substantially increase hazards due to a geometric design feature (e.g., sharp curves or dangerous intersections) or incompatible uses (e.g., farm equipment)?

IMPACT TRA-2 THE PROJECT WOULD INTRODUCE TRACTOR TRAILERS ENTERING INTO ROADWAY TRAFFIC VIA DRIVEWAYS. HOWEVER, SUFFICIENT SIGHT DISTANCE EXISTS TO PREVENT TRACTOR TRAILERS EXISTING THE PROJECT SITE FROM CREATING HAZARDS RELATED TO DANGEROUS INTERSECTIONS. IMPACTS WOULD BE LESS THAN SIGNIFICANT.

Project operations would involve the use of tractor trailers, in addition to standard passenger vehicles used for worker commute trips. Tractor trailers would use both proposed driveways on Hester Street, as well as the driveway on Doolittle Drive. Because tractor trailers typically have slower acceleration speeds than standard passenger vehicles, they could create potential hazards when exiting the project driveway onto Doolittle Drive, where other vehicles are travelling at posted speed limits presumably. This hazard would not exist at driveways on Hester Street because the driveways would be at the end of Hester Street where there are no vehicles traveling through at posted speed limits.

According to the Transportation Impact Analysis (Appendix C), the sight distance criteria for trucks making a right-turn from the driveway onto Doolittle Drive is 625 feet and the sight distance criteria for trucks making a left-turn is 750 feet. The Transportation Impact Analysis determines that these sight distances should be clear of obstructions, thereby providing the necessary sight distance for tractor trailers to exit the driveway onto Doolittle Drive without increasing hazards. Impacts would be less than significant.

Mitigation Measures

No mitigation measures are required.

Significance After Mitigation

Impacts would be less than significant without mitigation.

4.4.4 Cumulative Impacts

The geographic scope used for the assessment of cumulative impacts related to transportation consists of the Central Planning Area, which is the transportation planning area used by the Alameda County Transportation Commission. The Central Planning Area includes the City of San Leandro and other surrounding areas generally adjacent to San Leandro. The Central Planning Area is an acceptable geographic scope for this analysis because it is the average VMT per employee

within this area on which the impact significance thresholds are based (see *Thresholds of Significance* in Section 4.4.3, *Impact Analys*is, above).

The analysis of cumulative transportation impacts does not use the list of reasonably foreseeable projects presented in Table 3-1 of this EIR. Instead, the analysis is based on VMT per employee that Alameda County Transportation Commission anticipates in the Central Planning Area in 2040. This approach is used for the analysis because it is more comprehensive of the growth and associated VMT that could result in the Central Planning Area rather than from the handful of projects in Table 3-1.

According to the Transportation Impact Analysis (Appendix C), the project site is in a TAZ that will have a VMT of 16.08 miles per employee in 2040. Therefore, the Transportation Analysis determined that the proposed project would also generate 16.08 VMT per employee, consistent with the 2040 VMT of the TAZ (see Appendix C). This is a reasonable assumption because the TAZ covers a limited area surrounding the project site that is characterized by warehouses and industrial land uses, consistent with the proposed project. The project VMT of 16.08 miles per employee is below the 2040 VMT threshold of 16.2 miles per employee. Therefore, the proposed project would not result in cumulatively considerable impacts as a result of a conflict or inconsistency with CEQA Guidelines Section 15064.3, subdivision (b), as it pertains to VMT. Cumulative impacts would be less than significant.

Impacts related to traffic hazards, such as geometric design features or incompatible uses are generally site- or project-specific hazards. The traffic hazards of a particular project are unique to the circumstances of that project within its surroundings and the proposed project type, for example, if the project would require farm tractors to operate on roadways. The potential traffic hazards of the proposed project include tractor trailers that would exit the project site using the driveway on Doolittle Drive. As described above in Impact TRA-2, there would be sufficient sight distance at the intersection of this driveway and Doolittle Drive such that substantial traffic hazards would not exist. Because the traffic hazards of cumulative projects generally do not combine and become more severe, and because the project would not substantially increase hazards, cumulative impacts would be less than significant.

5 Other CEQA Required Discussions

This section discusses growth-inducing impacts and irreversible environmental impacts that would be caused by the proposed project.

5.1 Growth Inducement

Section 15126(d) of the CEQA Guidelines requires a discussion of a proposed project's potential to foster economic or population growth, including ways in which a project could remove an obstacle to growth. Growth does not necessarily create significant physical changes to the environment. However, depending upon the type, magnitude, and location of growth, it can result in significant adverse environmental effects. The proposed project's growth inducing potential is therefore considered significant if project-induced growth could result in significant physical effects in one or more environmental issue areas.

5.1.1 Population Growth

The proposed project would generate employment opportunities during construction. However, as construction would be temporary, few people would be expected to relocate to the area permanently for project construction jobs. Instead, construction workers would be expected to be drawn from the existing regional work force, which is robust in the San Francisco Bay Area. Therefore, construction of the project would not induce substantial population growth.

The project would involve the operation of a new warehouse which would create jobs. Job creation could indirectly cause population growth through employee relocations to the region. However, the project also includes demolishing existing industrial buildings, eliminating the potential jobs provided by business that could operate within them. Additionally, as discussed in Section 14, *Population and Housing*, of the Initial Study (Appendix A), the project site is located in a dense urban area and many of the warehouse employees would likely be drawn from the local population regardless of the job creation potential of existing on-site vacant buildings. Some employees may relocate to the area as a result of job opportunities resulting from operation of the proposed project; however, a substantial change in employment growth in the area would not occur.

5.1.2 Economic Growth

As described above in Section 5.1.1, *Population Growth*, and in Section 14, *Population and Housing*, of the Initial Study (Appendix A), the proposed project would not generate substantial population growth. Most employment opportunities resulting from the project would be filled by people already in the San Francisco Bay Area. As the project workforce would consist primarily of people already residing in the region, there would be no substantial economic growth associated with population growth, such as increased demand for housing, retail goods, or commercial services.

The project is located on an infill site that is largely surrounded by industrial and commercial uses. Development of the project site with a warehouse and incidental office space would be consistent with surrounding land uses. Therefore, the proposed project would not influence development patterns in the project area, such as redevelopment of surrounding properties with new uses that could generate additional economic growth.

Overall, the proposed project would not induce substantial economic expansion to the extent that direct physical environmental effects would result. Moreover, the environmental effects associated with future development in or around the City of San Leandro would be addressed as part of the CEQA environmental review for such development projects.

5.1.3 Removal of Obstacles to Growth

The project site is an infill property located adjacent to urbanized areas of the City of San Leandro. As discussed in Section 19, *Utilities and Service Systems*, of the Initial Study (Appendix A), there are existing water, wastewater treatment, stormwater drainage, electric power, natural gas, and telecommunication facilities at the project site that are available to serve the project. The project would not require the extension of, or add substantial capacity to, roads or other infrastructure that would facilitate or accommodate development beyond the project site. Because the project does not involve or require the extension of new infrastructure through or to undeveloped areas, or increase infrastructure capacity in such a way as to facilitate or accommodate growth beyond the project site, project implementation would not remove an obstacle to growth.

5.2 Irreversible Environmental Effects

The CEQA Guidelines require that EIRs contain a discussion of significant irreversible environmental changes. This section addresses non-renewable resources, the commitment of future generations to the proposed uses, and irreversible impacts associated with the proposed project.

Construction and operation of the project would involve an irreversible commitment of construction materials and non-renewable energy resources. The project would involve the use of building materials and energy, some of which are non-renewable resources, to construct the overall building floor area. Consumption of these resources would occur with nearly all development in the region and are not unique to the proposed project.

The proposed project would also irreversibly increase local demand for non-renewable energy resources such as petroleum products and natural gas. However, increasingly efficient building design would offset this demand to some degree by reducing energy demands of the project. The project would be required to comply with standards set forth in California Building Code (CBC) Title 24, which would minimize the wasteful, inefficient, or unnecessary consumption of energy resources during operation**.** CALGreen (as codified in CCR Title 24, Part 11) requires implementation of energy-efficient light fixtures and building materials into the design of new construction projects. Furthermore, the 2022 Building Energy Efficiency Standards (CBC Title 24, Part 6) requires newly constructed buildings to meet energy performance standards set by the CEC. These standards are specifically crafted for new buildings to achieve energy efficient performance. The standards are updated every three years, and each iteration increases energy efficiency standards.

The City adopted a Reach Code in January 2023 that requires efficiency beyond CalGreen, which would be applicable to the proposed project. Furthermore, the project would continue to reduce its use of nonrenewable energy resources as the percentage of electricity generated by renewable resources provided by PG&E continues to increase to comply with state requirements through Senate Bill 100, which requires electricity providers to increase procurement from eligible renewable energy resources to 33 percent of total retail sales by 2020, 60 percent by 2030, and 100 percent by 2045.

Additional vehicle trips associated with the proposed project would incrementally increase local traffic and regional air pollutant and GHG emissions. However, as discussed in Section 3, *Air Quality*, and Section 7, *Greenhouse Gas Emissions*, of the Initial Study (Appendix A), development and vehicle trips generated from the project would not generate air quality or GHG emissions that would result in a significant impact. However, as discussed in Section 4.1, *Greenhouse Gas Emissions*, the project would include new natural gas connections, which would be a long-term source of GHG emissions. Impacts would be significant and unavoidable.

The project would also require a commitment of law enforcement, fire protection, water supply, wastewater treatment, and solid waste disposal services. However, as discussed in Section 15, *Public Services*, and Section 19, *Utilities and Service Systems*, of the Initial Study, impacts to these service systems would not be significant.

CEQA requires decision makers to balance the benefits of a proposed project against its unavoidable environmental risks in determining whether to approve a project. The analysis contained in this EIR concludes that the proposed project would result in impacts that are less than significant or less than significant with mitigation, except for potential impacts from GHG emissions. As described in Section 4.1, *Greenhouse Gas Emissions*, and below in 6.3, *Significant and Unavoidable Impacts*, implementation of the project would result in potentially significant unavoidable impacts, including cumulative impacts, due to GHG emissions.

5.3 Significant and Unavoidable Impacts

As described in Section 4.1, *Greenhouse Gas Emissions*, the proposed project would have a significant impact related to greenhouse gas emissions and resultant climate change. Specifically, the proposed project includes a natural gas connection and the potential for natural gas to be used as part of project operations, depending on the potential tenant(s). According to the Bay Area Air Quality Management District, projects that include natural gas appliances or natural gas plumbing should be found to make a significant climate impact because it will hinder California's efforts to address climate change (Bay Area Air Quality Management District 2022).

The City is unable to implement mitigation to reduce this significant impact based on a recent court case titled California Restaurant Association v. City of Berkeley. Briefly, in this case, the California Restaurant Association sued Berkeley in the U.S. District Court for the Northern District of California, arguing among other things that the federal Energy Policy and Conservation Act (EPCA) preempted the City's ordinance banning natural gas in new buildings. The District Court dismissed the California Restaurant Association's challenge. However, the Ninth Circuit reversed the District Court, holding that EPCA expressly preempts state and local regulations concerning the energy use of many natural gas appliances. The Ninth Circuit concluded that EPCA preempted Berkeley's ban of natural gas, because it prohibited the onsite installation of natural gas infrastructure necessary to support natural gas appliances covered under the EPCA. Accordingly, based on the decision of the Ninth Circuit in California Restaurant Association v. City of Berkeley, the City of San Leandro can only encourage but cannot require the project applicant to eliminate natural gas from the proposed project.

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6 Alternatives

As required by Section 15126.6 of the *CEQA Guidelines*, this EIR examines a range of reasonable alternatives to the proposed project that would attain most of the basic project objectives but would avoid or substantially lessen the significant adverse impacts.

As discussed in Section 2, *Project Description*, the project applicant's objectives for the proposed project are as follows:

- Increase the economic base of the City's industrial corridor by maximizing the productive use of the City's industrial land, which is currently underutilized;
- Create a modern warehouse that contributes to the aesthetics of the surrounding area through the redevelopment of an obsolete and underutilized property;
- Create a new, efficient and updated warehouse that is attractive to future tenants, by incorporating the state's green building design and building health and safety standards;
- Maintain and protect the City's inventory of larger-scale industrial sites with easy access to freeways, rails, airports, and seaports; and
- Support and retain existing industrial uses and employment in the City of San Leandro's industrial sector.

Included in this analysis are three alternatives, including the CEQA-required "no project" alternative, that involve changes to the project that would reduce the project-related potentially significant environmental impacts as identified in this EIR. Alternatives have been developed to provide a reasonable range of options to consider that would help decision makers and the public understand the general implications of revising or eliminating certain components of the proposed project.

The following alternatives are evaluated in this EIR:

- Alternative 1: No Project
- Alternative 2: No Natural Gas
- Alternative 3: Airport Parking Land Use

Detailed descriptions of the alternatives are included in the impact analysis for each alternative in Sections 6.2 through 6.4.

6.1 Potentially Significant Impacts

According to Section 15126.6(b) of the *CEQA Guidelines*, the discussion of EIR alternatives shall focus on alternatives to the project or its location which are capable of avoiding or substantially lessening significant effects of the project. The City prepared an Initial Study and this EIR to analyze the project for potentially significant impacts related to each of the environmental issues or resource areas contained in Appendix G of the State CEQA Guidelines (see Appendix A to this EIR). The results of the Initial Study and EIR analyses determined that the proposed project would have potentially significant and unavoidable impacts related to greenhouse gas (GHG) emissions (see Section 4.1, *Greenhouse Gas Emissions*).

Additionally, mitigation measures are identified in this EIR (including the Initial Study provided as Appendix A) for the following topics that would reduce the respective potentially significant impacts of the project to less than significant levels:

- Air Quality, specifically effects related to fugitive dust during project construction (mitigated to less-than-significant level by Mitigation Measure AQ-1)
- Biological Resources, specifically effects on migratory nesting birds, including their nests (mitigated to less-than-significant impact level by Mitigation Measure BIO-1)
- Cultural Resources, specifically effects related to previously unidentified subsurface resources (mitigated to less-than-significant impact level by Mitigation Measures CR-1)
- Hazards and Hazardous Materials, specifically effects related to exposure of project construction personnel to lead paint and/or asbestos containing materials during demolition of existing structures hazardous (mitigated to less-than-significant impact level by Mitigation Measure HAZ-1)
- Hazards and Hazardous Materials, specifically effects related to exposure of persons or groundwater to hazardous contamination (contaminated soil, soil vapor, etc.) during construction and operation (mitigated to less-than-significant impact level by Mitigation Measures HAZ-2 through HAZ-6)
- Noise and Vibration, specifically effects on sensitive residential noise receptors as a result of on-site HVAC and truck movements on the project site (mitigated to less-than-significant level by Mitigation Measure NOI-1)
- Noise and Vibration, specifically effects of construction vibration on structures nearest the project site (mitigated to less-than-significant level by Mitigation Measure NOI-2)
- Tribal Cultural Resources, specifically effects related to the unanticipated discovery of tribal cultural resources during construction of the project (mitigated to less-than-significant level by Mitigation Measure TCR-1)

6.2 Alternative 1: No Project Alternative

The No Project Alternative assumes that the two existing industrial masonry buildings would remain on the project site. These buildings are currently vacant. The City has no applications on file for occupancy of the buildings; therefore, this analysis assumes the buildings would remain vacant under this alternative. The project applicant or another person or organization could submit an application for occupancy of one or both buildings in the future. Granting an occupancy permit for a business or activity allowed by-right within the existing Industrial General zoning district of the site would be a ministerial permit, and CEQA may not be applicable.

The No Project Alternative would not fulfill any of the project objectives.

6.2.1 Impact Analysis

a. Air Quality

The No Project Alternative would not require or involve demolition or construction activities. Therefore, implementation of the No Project Alternative would not generate fugitive dust emissions from construction activities. Because the existing on-site buildings would remain vacant under this alternative, there would be no regular or routine operational emissions. The No Project Alternative would have no impacts on air quality.

The proposed project's impacts related to air quality would be less than significant with mitigation (see *Air Quality* in the Initial Study; Appendix A). Because the No Project Alternative would have no impact on air quality, the impacts of this alternative would be reduced compared to the proposed project, and no mitigation measures would be required.

b. Biological Resources

The No Project Alternative would not involve demolition of the existing on-site structures. This alternative would also not require construction activities. Therefore, implementation of the No Project Alternative would not have the potential to directly destroy or damage migratory bird nests or disrupt nesting from construction activities. The No Project Alternative would have no impact on biological resources.

The proposed project's impacts related to biological resources would be less than significant with mitigation (see *Biological Resources* in the Initial Study; Appendix A). Because the No Project Alternative would have no impact on biological resources, the impacts of this alternative would be reduced compared to the proposed project, and no mitigation measures would be required.

c. Cultural Resources

The No Project Alternative would not require grading, excavation, or other construction activities. Implementation of the No Project Alternative would preserve on-site conditions, which is primarily either structures or asphalt pavement. Accordingly, the No Project Alternative would have no potential to encounter and damage or destroy previously unidentified subsurface cultural resources. The No Project Alternative would have no impact on cultural resources.

The proposed project's impacts related to cultural resources would be less than significant with mitigation (see *Cultural Resources* in the Initial Study; Appendix A). Because the No Project Alternative would have no impact on cultural resources, the impacts of this alternative would be reduced compared to the proposed project, and no mitigation measures would be required.

d. Greenhouse Gas Emissions

The No Project Alternative would not require construction activities. Because no construction equipment would be operated, the potential GHG emissions resulting from equipment associated with the proposed project would be avoided. Additionally, because existing on-site buildings would remain vacant under this alternative, the No Project Alternative would not be a long-term source of GHG emissions. For example, the No Project Alternative would not generate vehicle trips or consume energy, both of which would generate GHG emissions if they were to occur. Because the No Project Alternative would not generate GHG emissions, it would not conflict with a plan, policy, or regulation adopted for the purpose of reducing the emissions of greenhouse gases. Accordingly, the No Project Alternative would have no impacts related to GHG emissions.

The proposed project's impacts, including the cumulative impacts, related to greenhouse GHG emissions would be potentially significant and unavoidable (see Section 4.1, *Greenhouse Gas Emissions*). Because the No Project Alternative would have no impacts related to greenhouse gas emissions, the impacts of this alternative would be reduced compared to the proposed project, and no mitigation measures would be required.

e. Hazards and Hazardous Materials

Under the No Project Alternative, there would be no demolition of the existing on-site structures and no new construction. The existing buildings would remain vacant with no occupants. Therefore, there would be no impacts related to potential exposure to lead or asbestos-containing materials. Additionally, the proposed project would not be constructed, including bioretention areas for stormwater management. Therefore, the No Project Alternative would have no potential to create new preferential pathways for existing on-site contamination to migrate into deeper groundwater aquifers or to become airborne as dust during construction activities. Because the proposed building would not be constructed, it also would not be occupied and there would be no potential for vapor intrusion risk. Existing remediation and monitoring activities, such as the existing network of monitoring wells on the site, would continue until the DTSC or other regulatory agency with oversight deems the project site a closed case in terms of remediation. Accordingly, the No Project Alternative would have no impacts related to hazards and hazardous materials.

As described in Section 4.2, *Hazards and Hazardous Materials*, the proposed project would have potentially significant but mitigable impacts related to hazards materials and hazardous contamination. Because the No Project Alternative would have no impact, impacts of this alternative would be reduced compared to the proposed project and no mitigation would be required.

f. Noise and Vibration

The No Project Alternative would not generate temporary increases in noise because this alternative would not involve construction activities. Because no construction would occur on-site, there would be no potential for the No Project Alternative to generate groundborne vibration. Additionally, the existing on-site buildings would remain vacant, which would generate no long-term or permanent noise or vibration. While the property owner could visit the site, the operation of a single vehicle would have no discernible effects on noise levels at the nearest sensitive receptors approximately 510 feet from the project site, as these receptors are close to streets with hundreds to thousands of vehicle trips per day (e.g., Davis Street, Interstate 880, etc.). The No Project Alternative would have no impacts on noise and vibration.

As described in Section 4.3, *Noise and Vibration*, the proposed project would have potentially significant but mitigable impacts related to noise and vibration. Because the No Project Alternative would have no impact, impacts of this alternative would be reduced compared to the proposed project and no mitigation would be required.

g. Tribal Cultural Resources

The No Project Alternative would not require grading, excavation, or other construction activities. Implementation of the No Project Alternative would preserve on-site conditions, which is primarily either structures or asphalt pavement. Accordingly, the No Project Alternative would have no potential to encounter and damage or destroy previously unidentified tribal cultural resources. The No Project Alternative would have no impact on tribal cultural resources.

The proposed project's impacts related to tribal cultural resources would be less than significant with mitigation (see *Tribal Cultural Resources* in the Initial Study; Appendix A). Because the No Project Alternative would have no impact on tribal cultural resources, the impacts of this alternative would be reduced compared to the proposed project, and no mitigation measures would be required.

6.3 Alternative 2: No Natural Gas Alternative

Under the No Natural Gas Alternative, the proposed industrial building would be constructed on the project site, nearly consistent with the proposed project. Alternative 2 assumes that the industrial building and associated surface parking lot would be approximately the same size and design as the proposed project, which would require the same demolition and construction activities as the proposed project. Once construction is complete, Alternative 2 assumes the same on-site operations would occur as with the proposed project, with the exception of natural gas consumption. Under this alternative, natural gas connections would not be provided on the project site. Therefore, potential future occupants and uses in the new industrial building would not consume natural gas, as natural gas would be unavailable on the project site. Alternative 2 would instead require on-site building operations to rely entirely on electricity for energy.

The No Natural Gas Alternative would fulfill most project objectives but not all objectives. For example, this alternative would develop an industrial building with easy access to freeways and airports, while also supporting industrial employment opportunities within the city's industrial sector. Alternative 2 would also contribute to the aesthetics of the surrounding area because the vacant and aging existing buildings on-site would be demolished and replaced with a new building. However, Alternative 2 may not fulfill the objective of creating a warehouse that is attractive to future tenants to the same extent as the proposed project. While it is reasonable to assume a new warehouse proximate to freeways, rail, and the Oakland International Airport would be attractive to many tenants, the elimination of natural gas utility may deter some tenants from leasing or purchasing the warehouse, as natural gas could be critical to their business or operations. For example, businesses that manufacture products such as paper, glass, and steel typically use natural gas. Natural gas is also a raw input material for businesses that produce hydrogen fuel (Natural Gas Supply Association 2023).

6.3.1 Impact Analysis

a. Air Quality

The No Natural Gas Alternative would require virtually the same demolition and construction activities as the proposed project. These construction activities would have the potential to generate fugitive dust emissions. Fugitive dust emissions would increase the amount of particulate matter in the air, resulting in a potentially significant impact. Implementation of Mitigation Measure AQ-1 (see *Air Quality* in the Initial Study; Appendix A) would be required. With implementation of Mitigation Measure AQ-1, impacts from construction of Alternative 2 would be reduced to a less than significant level.

Operation of Alternative 2 would generate emissions of air pollutants. For example, Alternative 2 would involve the operation of trucks and vehicles on the project site, and operation of these trucks and vehicles would generate emissions of pollutants, such as carbon monoxide. The No Natural Gas Alternative would not generate emissions from the combustion of natural gas; however, generation of electricity used for this alternative would generate emissions. The amount of operational emissions of Alternative 2 would be similar to the proposed project given that there would be little difference in operations between this alternative and the proposed project, other than this alternative avoiding natural gas emissions. Without natural gas emissions, there would be an incremental decrease in operational emissions compared to the proposed project, which would include emissions from combustion of natural gas. The operational emissions of the proposed

project would not exceed thresholds of significance, and because operational emissions would be reduced with this alternative, significance thresholds would also not be exceeded by Alternative 2. Therefore, operation of Alternative 2 would also have less than significant impacts related to air quality.

The proposed project's impacts related to air quality would be less than significant with mitigation (see *Air Quality* in the Initial Study; Appendix A). Because the No Project Alternative would have approximately the same construction and reduced operational impacts on air quality, the impacts of this alternative would be slightly reduced compared to the proposed project. Implementation of Mitigation Measure AQ-1 would be required for Alternative 2.

b. Biological Resources

The No Natural Gas Alternative would involve demolition of the existing on-site structures and require construction equipment and workers to operate across the entire project site, similar to the proposed project. These activities would have the potential to directly damage or destroy active nests of migratory bird species or cause birds to abandon nests. This impact would be potentially significant and implementation of mitigation is required.

The proposed project's impacts related to biological resources would be potentially significant due to the possibility for demolition and construction activities to impact migratory nesting birds. Implementation of Mitigation Measure BIO-1 in the Initial Study, which is provided as Appendix A to this EIR, would reduce biological resources impacts to less than significant levels. Implementation of this mitigation measure would also be required for Alternative 2. Within implementation of Mitigation Measure BIO-1, biological resources impacts of Alternative 2 would be reduced to less than significant levels, and impacts would be similar compared to the proposed project.

c. Cultural Resources

The No Natural Gas Alternative would involve construction and ground disturbance across the entire project site, similar to the proposed project. During construction, grading of the site and excavation required for utility connections and the foundation of the new building would have the potential to uncover and disturb previously unknown or unidentified archaeological resources or human remains. Disturbance or damage to archaeological resources would be a potentially significant but mitigable impact. Implementation of the Mitigation Measure CR-1 in the Initial Study section titled *Cultural Resources* would be required for this alternative (see Appendix A). Implementation of mitigation measures would reduce impacts to archaeological resources to less than significant levels. Compliance with existing regulations, such as Public Resources Code Section 5097.98, would prevent significant impacts related to discovery of human remains. Compared to the proposed project the No Natural Gas Alternative would result in similar impacts to cultural resources, because the proposed project would have a similar grading and demolition program and therefore would also result in potentially significant impacts to archaeological resources that would be reduced to less than significant levels with implementation of Mitigation Measure CR-1.

d. Greenhouse Gas Emissions

The No Project Alternative would generate GHG emissions during construction, similar to the proposed project. Because the No Natural Gas Alternative would involve construction of the same sized building and surface parking areas as the proposed project, and would involve the same amount of demolition, temporary construction emissions would be similar between Alternative 2

and the proposed project. As described in Section 4.1, *Greenhouse Gas Emissions*, construction would not generate GHG emissions that result in significant impacts on the environment.

Operation of Alternative 2 would generate GHG emissions. For example, operations would routinely involve the use of tractor trailers given the warehouse design of the proposed building. However, while the new building would generate vehicle and truck trips, the VMT generated from the project would be at least 15 percent below the average existing VMT in the area. This would be below the BAAQMD's threshold of significance for GHG impacts related to transportation emissions. Additionally, under Alternative 2, no natural gas would be provided to the project site. By avoiding new natural gas connections to the site, Alternative 2 would avoid the long-term GHG emissions associated with natural gas combustion. With the absence of natural gas, Alternative 2 would not exceed the BAAQMD's threshold of significance for GHG emissions from new buildings. With the new building relying on electricity without natural gas, the No Natural Gas Alternative would not conflict with an applicable plan, policy, or regulation adopted for the purpose of reducing the emissions of GHGs.

The No Natural Gas Alternative would generate GHG emissions but would not conflict with BAAQMD thresholds of significance or an applicable plan, policy, or regulation adopted for the purpose of reducing the emissions of GHGs. Accordingly, the GHG impacts of Alternative 2, including cumulative impacts, would be less than significant, and mitigation would not be required. The less than significant GHG impacts of Alternative 2 would be reduced compared to the proposed project, which would result in potentially significant and unavoidable GHG impacts.

e. Hazards and Hazardous Materials

Similar to the proposed project, the No Natural Gas Alternative would require demolition of the existing on-site buildings, which could contain lead paint or asbestos containing materials. There would be potential for construction workers to be exposed to these hazards accidentally during demolition. Impacts would be potentially significant, and implementation of mitigation would be required.

Construction of Alternative 2 would involve excavation, such as construction of the proposed building foundation or buried utility connections, similar to the proposed project. Excavation and grading could disturb contaminated soils or groundwater and expose construction workers to hazardous materials present as contamination. Because contaminated soils generally exist on-site at depths greater than 6 feet below ground surface outside of the mapped land use restriction areas, the risk of exposure would be low across most of the site, but construction would also occur within the land use restriction areas. Likewise, construction would generate dust. If soils from the contamination areas are stockpiled on site and become airborne dust, either from wind erosion or construction equipment, off-site receptors could be exposed, as well as construction workers. Construction of Alternative 2 would also require the demolition of the existing groundwater monitoring wells that were previously installed as part of the remediation actions on-site. Impacts would be potentially significant, and implementation of mitigation would be required.

During operation of Alternative 2, vapors from contaminated soil and groundwater underlying the site could potentially infiltrate the proposed building, including spaces within the building where employees would be routinely present, similar to the proposed project. The accumulation of vapors in the breathing zone inside the building could present a potential hazard to human health. Additionally, Alternative 2 would include bioretention areas where stormwater would collect during operation and be allowed to infiltrate the ground surface. This would have the potential to create a

pathway for hazardous contamination to migrate through soil layers and potentially reach other groundwater aquifers. Impacts would be potentially significant.

The potentially significant impacts of Alternative 2 related to hazards and hazardous materials would be reduced to less than significant levels with implementation of mitigation measures HAZ-1 through HAZ-6 in Section 4.2, *Hazardous and Hazardous Materials*. These mitigation measures are also required for the proposed project and would reduce proposed project impacts to less than significant levels. Accordingly, the potential hazards and hazardous materials impacts of the No Natural Gas Alternative would be similar to the potential impacts of the proposed project.

f. Noise and Vibration

The No Natural Gas Alternative would generate temporary increases in noise during demolition and construction activities, similar to the proposed project. The types of construction activities and equipment and the construction duration of this alternative would be the same as the proposed project, as Alternative 2 would construct the same project except no natural gas would be provided to the site. As described in Section 4.3, *Noise and Vibration*, construction noise levels would be below thresholds of significance at the nearest sensitive receptors to the project site. Accordingly, the temporary noise impacts of the No Natural Gas Alternative would be less than significant. However, the temporary groundborne vibration from construction activities would be potentially significant, same as the those of the proposed project.

On-site operations under this alternative would be the same as the proposed project in terms of on-site truck and vehicle operations, HVAC equipment, and trip generation on project area roads. Accordingly, the resulting noise levels at the nearest sensitive receptors to the project site would be the same under Alternative 2 as they would be under the proposed project. As described in Section 4.3, *Noise and Vibration*, when trucks operate on the eastern side of the proposed building, the combined noise of these trucks and rooftop HVAC equipment would generate noise levels of approximately 56 dBA at the nearest sensitive receptors to the project site. The threshold of significance is 55 dBA, and therefore operations on the east side of the building would be potentially significant.

The potentially significant impacts of Alternative 2 related to noise and vibration would be reduced to less than significant levels with implementation of mitigation measures NOI-1 and NOI-2 in Section 4.3, *Noise and Vibration*. These mitigation measures would also be required for the proposed project and would reduce the proposed project's noise impacts to less than significant levels. Accordingly, the potential noise and vibration impacts of the No Natural Gas Alternative would be similar compared to the potential impacts of the proposed project.

g. Tribal Cultural Resources

The No Natural Gas Alternative would involve construction and ground disturbance across the entire project site similar to the proposed project. During construction, grading of the site and excavation required for utility connections and the foundation of the new building would have the potential to uncover and disturb previously unknown or unidentified tribal cultural resources. Disturbance or damage to tribal cultural resources would be a potentially significant but mitigable impact. Implementation of Mitigation Measure TCR-1 in the Initial Study section titled *Tribal Cultural Resources* would be required for this alternative (see Appendix A). Implementation of mitigation measures would reduce impacts to tribal cultural resources to less than significant levels. Compared to the proposed project the No Natural Gas Alternative would result in similar impacts to tribal cultural resources, because the proposed project would also have potentially significant impacts to

archaeological resources that would be reduced to less than significant levels with implementation of Mitigation Measure TCR-1.

6.4 Alternative 3: Airport Parking Land Use Alternative

Under the Airport Parking Land Use Alternative, the proposed industrial building would be constructed on the project site, nearly consistent with the proposed project. Alternative 3 assumes that the industrial building and associated surface parking lot would be approximately the same size and design as the proposed project, which would require the same demolition and construction activities as the proposed project. Once construction is complete, Alternative 3 assumes the proposed building would not operate as a warehouse. Instead, the building would operate as covered vehicle parking serving the Oakland International Airport. The new surface parking areas would also be for airport parking. Because the building would not operate as a warehouse, more surface parking would be provided on-site compared to the proposed project because larger parking spaces and areas for tractor trailer maneuvers would be eliminated from the project design.

Because the building would be used for vehicle parking and storage, there would not be many people working inside of the building. Some workers, such as parking attendants, maintenance workers and cashiers, may be present, but generally the building would be dedicated to vehicle circulation and parking. Accordingly, Alternative 3 assumes that the new building would not include natural gas connections, as there would not be demand to heat internal spaces used solely for vehicle parking and storage that could not generally be met with electric heat.

The Airport Parking Land Use Alternative would fulfill the project objective to create a modern warehouse structure that contributes to the aesthetics of the surrounding area through the redevelopment of an obsolete and underutilized property, although the building would not operate as a warehouse. Alternative 3 would not fulfill the other objectives of the project, which are generally centered on creating industrial employment and industrial productivity, which would not be accomplished from airport parking.

6.4.1 Impact Analysis

a. Air Quality

The Airport Parking Land Use Alternative would require demolition and construction activities, similar to the proposed project. These construction activities would have the potential to generate fugitive dust emissions. Fugitive dust emissions would increase the amount of particulate matter in the air, resulting in a potentially significant impact. Implementation of Mitigation Measure AQ-1 (see *Air Quality* in the Initial Study; Appendix A) would be required. With implementation of Mitigation Measure AQ-1, impacts from construction of Alternative 3 would be reduced to a less than significant level.

Operation of Alternative 3 would generate emissions of air pollutants. For example, Alternative 3 would involve the passenger vehicles operating on the project site as they travel to and from parking spaces. While Alternative 3 would not affect the number of people arriving or departing from the Oakland International Airport, it could increase the number of vehicle trips associated with the airport. Specifically, the availability of more parking spaces proximate to the airport created by Alternative 3 could make it appealing to choose to drive to flights rather than use transit or rideshare options. However, unlike the proposed project, vehicle trips resulting from Alternative 3 would generally be traditional gasoline-powered vehicles instead of diesel. Diesel engines generally

emit emissions compared to the same number of gasoline-powered engines. Therefore, mobile source emissions would be comparable the proposed project. Additionally, the Airport Parking Land Use Alternative would not generate emissions from the combustion of natural gas; however, generation of electricity used for this alternative would generate emissions. However, airport parking would require minimal electricity, as there would be fewer on-site operational activities than warehousing or industrial uses. Electricity would be required primarily for lighting and ancillary uses such as electric vehicle charging, vehicle cleaning and administrative offices to support the parking operation. Therefore, operation of Alternative 3 would have less than significant impacts related to air quality.

Overall, the Airport Parking Land Use Alternative would have reduced air quality impacts compared with the proposed project's impacts, and impacts would be less than significant. The reduction in the severity of impacts would be primarily due to reduced emissions from operations. The operations of an active warehouse with diesel trucks under the proposed project would generate more air quality emissions than Alternative 3, which would avoid these emissions.

b. Biological Resources

The Airport Parking Land Use Alternative would involve demolition of the existing on-site structures and require construction equipment and workers to operate across the entire project site, similar to the proposed project. These activities would have the potential to directly damage or destroy active nests of migratory bird species or cause birds to abandon nests. This impact would be potentially significant and implementation of mitigation would be required.

The proposed project's impacts related to biological resources would be potentially significant due to the possibility for demolition and construction activities to impact migratory nesting birds. Implementation of Mitigation Measure BIO-1 in the Initial Study, which is provided as Appendix A to this EIR, would reduce biological resources impacts to less than significant levels. Implementation of this mitigation measure would also be required for Alternative 3. Within implementation of Mitigation Measure BIO-1, biological resources impacts of Alternative 3 would be reduced to less than significant levels, and impacts would be similar to those of the proposed project.

c. Cultural Resources

The Airport Parking Land Use Alternative would involve construction and ground disturbance across the entire project site, similar to the proposed project. During construction, grading of the site and excavation required for utility connections and the foundation of the new building would have the potential to uncover and disturb previously unknown or unidentified archaeological resources or human remains. Disturbance or damage to archaeological resources would be a potentially significant but mitigable impact. Implementation of the Mitigation Measure CR-1 in the Initial Study section titled *Cultural Resources* would be required for this alternative (see Appendix A). Implementation of this mitigation measure would reduce impacts to archaeological resources to less than significant. Compliance with existing regulations, such as Public Resources Code Section 5097.98, would prevent significant impacts related to discovery of human remains. Compared to the proposed project the Airport Parking Land Use Alternative would result in similar impacts to cultural resources, because the proposed project would also have potentially significant impacts to archaeological resources that would be reduced to less than significant levels with implementation of Mitigation Measure CR-1.

d. Greenhouse Gas Emissions

The Airport Parking Land Use Alternative would generate GHG emissions during construction. Because the Airport Parking Land Use Alternative would involve construction of the same sized building and surface parking areas as the proposed project, and would involve the same amount of demolition, temporary construction emissions would be similar between Alternative 3 and the proposed project. As described in Section 4.1, *Greenhouse Gas Emissions*, construction would not generate GHG emissions that result in significant impacts on the environment.

Operation of Alternative 3 would generate GHG emissions. Most operational emissions would be attributed to vehicles traveling on-site while parking. However, these vehicle trips would occur elsewhere in the general project vicinity regardless of the potential implementation of this alternative, as people driving to the Oakland International Airport would need to park their vehicles near the airport. This alternative could induce trips as people choose to drive and park at the project site rather than use transit for the airport. However, the number of induced trips would be minimal given that there is already an abundance of vehicle parking opportunities proximate to the airport. Therefore, the Airport Parking Land Use Alternative would not generate substantial new VMT, as it would not generate a substantial number of new vehicle trips that would have otherwise not occurred without the implementation of the alternative. This would be below the BAAQMD's threshold of significance for GHG impacts related to transportation emissions. Additionally, under Alternative 3, no natural gas would be provided to the project site. By avoiding new natural gas connections to the site, Alternative 3 would avoid the long-term GHG emissions associated with natural gas combustion. With the absence of natural gas, Alternative 3 would not exceed the BAAQMD's threshold of significance for GHG emissions from new buildings. With the new building relying on electricity without natural gas, the Airport Parking Land Use Alternative would not conflict with an applicable plan, policy, or regulation adopted for the purpose of reducing the emissions of GHGs.

The Airport Parking Land Use Alternative would generate GHG emissions but would not conflict with BAAQMD thresholds of significance or an applicable plan, policy, or regulation adopted for the purpose of reducing the emissions of GHGs. Accordingly, the GHG impacts of Alternative 3, including cumulative impacts, would be less than significant, and mitigation would not be required. The less than significant GHG impacts of Alternative 3 would be reduced compared to the proposed project, which would have potentially significant and unavoidable GHG impacts.

e. Hazards and Hazardous Materials

The Airport Parking Land Use Alternative would require demolition of the existing on-site buildings, similar to the proposed project, which could contain lead paint or asbestos containing materials. There would be potential for construction workers to be exposed to these hazards accidentally during demolition. Impacts would be potentially significant, and implementation of mitigation would be required.

Construction of Alternative 3 would involve excavation, such as construction of the proposed building foundation or buried utility connections, similar to the proposed project. Excavation and grading could disturb contaminated soils or groundwater and expose construction workers to hazardous materials present as contamination. Likewise, construction would generate dust. If soils from the contamination areas are stockpiled on site and become airborne dust, either from wind erosion or construction equipment, off-site receptors could be exposed, as well as construction workers. Construction of Alternative 3 would also require the demolition of the existing

groundwater monitoring wells that were previously installed as part of the remediation actions on-site. Impacts would be potentially significant, and implementation of mitigation would be required.

During operation of Alternative 3, vapors from contaminated soil and groundwater underlying the site could potentially infiltrate the proposed building, similar to the proposed project. While there would not be many workers routinely present inside of the building, parking attendants may be present inside the building. Likewise, customers using the building to park their cars would also be exposed to vapors briefly. The accumulation of vapors in the breathing zone inside the building could present a potential hazard to human health. Additionally, Alternative 3 would include bioretention areas where stormwater would collect during operation and be allowed to infiltrate the ground surface. This would have the potential to create a pathway for hazardous contamination to migrate through soil layers and potentially reach other groundwater aquifers. Impacts would be potentially significant.

The potentially significant impacts of Alternative 3 related to hazards and hazardous materials would be reduced to less than significant levels with implementation of mitigation measures HAZ-1 through HAZ-6 in Section 4.2, *Hazardous and Hazardous Materials*. These mitigation measures would also be required for the proposed project and would reduce the proposed project's impacts to less than significant levels. Accordingly, the potential hazards and hazardous materials impacts of the Airport Parking Land Use Alternative would be similar to the potential impacts of the proposed project.

f. Noise and Vibration

The Airport Parking Land Use Alternative would generate temporary increases in noise during demolition and construction activities, similar to the proposed project. The types of construction activities and equipment and the construction duration of this alternative would be the same as the proposed project, as Alternative 3 would involve similar construction, except no natural gas would be provided to the site. As described in Section 4.3, *Noise and Vibration*, construction noise levels would be below thresholds of significance at the nearest sensitive receptors to the project site. Accordingly, the temporary noise impacts of the Airport Parking Land Use Alternative would be less than significant and similar to those of the proposed project. However, the temporary groundborne vibration from construction activities would be potentially significant.

On-site operations under this alternative would not include tractor trailers, which generate more noise than passenger vehicles due to air brakes, larger diesel engines, back-up alarms, and trailer coupling/decoupling activities. As described in Section 4.3, *Noise and Vibration*, when trucks operate on the eastern side of the proposed building, the combined noise of these trucks and rooftop HVAC equipment would generate noise levels of approximately 56 dBA at the nearest sensitive receptors to the project site. Therefore, it is reasonable to assume that noise levels from operation of the Airport Parking Land Use Alternative would be below 56 dBA at the nearest sensitive receptor, because this alternative would not include truck noise. The threshold of significance is 55 dBA, which would not be exceeded by Alternative 3. Accordingly, the impacts of operation noise of Alternative 3 would be less than significant and reduced compared to those of the proposed project.

The potentially significant impacts of Alternative 3 related to vibration would be reduced to less than significant levels with implementation of Mitigation Measure NOI-2 in Section 4.3, *Noise and Vibration*. This mitigation measure would also be required for the proposed project and would reduce proposed project impacts to less than significant levels. While both Alternative 3 and the proposed project would have less than significant noise and vibration impacts with mitigation, impacts of Alternative 3 would be reduced when compared to the potential impacts of the proposed

project. Impacts would be reduced because Alternative 3 would result in reduced operational noise impacts.

g. Tribal Cultural Resources

The Airport Parking Land Use Alternative would involve construction and ground disturbance across the entire project site, similar to the proposed project. During construction, grading of the site and excavation required for utility connections and the foundation of the new building would have the potential to uncover and disturb previously unknown or unidentified tribal cultural resources. Disturbance or damage to tribal cultural resources would be a potentially significant but mitigable impact. Implementation of the Mitigation Measure TCR-1 in the Initial Study section titled *Tribal Cultural Resources* would be required for this alternative (see Appendix A). Implementation of mitigation measures would reduce impacts to tribal cultural resources to less than significant levels. Compared to the proposed project the Airport Parking Land Use Alternative would result in similar impacts to tribal cultural resources, because the proposed project would also have potentially significant impacts to archaeological resources that would be reduced to less than significant levels with implementation of mitigation.

6.5 Alternatives Considered but Eliminated

Section 15126.6 of the *CEQA Guidelines* states that:

> "An EIR shall describe a range of reasonable alternatives to the project, or to the location of the project, which would feasibly attain most of the basic objectives of the project but would avoid or substantially lessen the significant effects of the project, and evaluate the comparative merits of the alternatives. An EIR need not consider every conceivable alternative to a project. Rather it must consider a reasonable range of potentially feasible alternatives that will foster informed decision making and public participation. An EIR is not required to consider alternatives which are infeasible.
>
> The lead agency is responsible for selecting a range of project alternatives for examination and must publicly disclose its reasoning for selecting those alternatives. There is no ironclad rule governing the nature or scope of the alternatives to be discussed other than the rule of reason."

Among the factors that may be used to eliminate alternatives from detailed consideration in an EIR are: (1) failure to meet most of the basic project objectives, (2) infeasibility, or (3) inability to avoid significant environmental impacts. Among the factors that may be taken into account when addressing the feasibility of alternatives are site suitability, economic viability, availability of infrastructure, general plan consistency, other plans or regulatory limitations, jurisdictional boundaries (projects with a regionally significant impact should consider the regional context), and whether the proponent can reasonably acquire, control or otherwise have access to the alternative site (or the site is already owned by the proponent). An EIR need not consider an alternative whose effect cannot be reasonably ascertained and whose implementation is remote and speculative.

The California Supreme Court, in Citizens of Goleta Valley v. Board of Supervisors (1990), indicated that a discussion of alternative sites is needed if the project "may be feasibly accomplished in a successful manner considering the economic, environmental, social, and technological factors involved" at another site. Several criteria form the basis of whether alternative sites need to be considered in detail. These criteria take the form of the following questions:

1. Could the size and other characteristics of another site physically accommodate the project?
2. Is another site reasonably available for acquisition?
3. Is the timing of carrying out development on an alternative site reasonable for the applicant?
4. Is the project economically feasible on another site?
5. What are the land use designation(s) of alternative sites?
6. Does the lead agency have jurisdiction over alternative sites? and
7. Are there any social, technological, or other factors which may make the consideration of alternative sites infeasible?

Site characteristics that could support a project that meets the project objectives include appropriate size to accommodate an economically viable industrial building; proximity to freeways, rails and airports in the San Francisco Bay Area; and proximity to other industrial, warehousing, and logistics land uses to avoid land use conflicts. In order to accommodate the needed industrial use, the building must be located on a property or contiguous properties measuring approximately 14 acres or larger. This size is needed to accommodate the building plus provide the space for tractor trailers to operate and park safely on the site alongside worker vehicles used for daily commutes. Additionally, the property must be zoned Industrial General or for industrial uses that allow for warehouses and logistics.

Initially the City of San Leandro considered analyzing an alternative that involved locating the project on an alternate site. However, the alternate site alternative was dismissed from further consideration because there are few if any properties that are 14 acres or larger, vacant, available to the project applicant, and proximate to freeways and the Oakland International Airport. The project applicant owns other land in the region, but these holdings are generally smaller than the project site and would not facilitate the proposed project without displacing ongoing operations or for other reasons related to site characteristics as listed above. For these reasons the alternate site alternative was dismissed from further consideration.

6.6 Environmentally Superior Alternative

Table 6-1 indicates whether each alternative's environmental impact is greater than, less than, or similar to that of the proposed project for each of the issue areas studied in this section of the EIR. Based on the alternatives analysis provided above, Alternative 1 would be the environmentally superior alternative, though it is the No Project Alternative, and therefore would not meet the objectives of the proposed project. The environmentally superior development alternative would be Alternative 3, as it would reduce impacts in the categories of air quality, greenhouse gas emissions, hazards and hazardous materials, and noise. Alternative 3, however, would not meet all the objectives of the proposed project, such as establishing providing industrial productivity and employment in San Leandro that is near freeways and airports. Alternative 2 would meet most of the project objectives but would not reduce project impacts to the same extent as Alternative 3. None of the alternatives analyzed above would result in significant or unavoidable impacts; thus, all alternatives would avoid the proposed project's significant and unavoidable impacts related to GHG emissions, which are the only significant and unavoidable impacts identified for the proposed project.

Table 6-1 Impact Comparison of Alternatives

Issue	Proposed Project Impact Classification[1]	Alternative 1: No Project Alternative	Alternative 2: No Natural Gas Alternative	Alternative 3: Airport Parking Land Use Alternative
Air Quality	Less than Significant with Mitigation	+	+	+
Biological Resources	Less than Significant with Mitigation	+	=	=
Cultural Resources	Less than Significant with Mitigation	+	=	=
Greenhouse Gas Emissions	Significant and Unavoidable	+	+	+
Hazards and Hazardous Materials	Less than Significant with Mitigation	+	=	+
Noise and Vibration	Less than Significant with Mitigation	+	=	+
Tribal Cultural Resources	Less than Significant with Mitigation	+	=	=

[1] Most severe level of impact determination for proposed project is presented in this table.
+ Superior to the proposed project (reduced level of impact)
- Inferior to the proposed project (increased level of impact)
= Similar level of impact to the proposed project

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Appendix A

Initial Study

880 Doolittle Drive Industrial Project

Initial Study

PLN22-0039

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Initial Study

1. Project Title

880 Doolittle Drive Industrial Project
PLN22-0039

2. Lead Agency Name and Address

City of San Leandro
835 E. 14th Street
San Leandro, California 94577

3. Contact Person and Phone Number

Cindy Lemaire, AICP, CNU-A
Senior Planner
(510) 577-3348

4. Project Location

The project site is located at 880 Doolittle Drive, which is on the east side of Doolittle Drive just east of adjacent properties with frontage on Doolittle Drive, approximately 0.2 mile north of its intersection with Davis Street, in San Leandro. The project site measures approximately 14.14 acres and consists of two Assessor's parcels: APN 77A-0741-004-02 and 77A-0741-005-00. Existing access to the project site is from a driveway on Doolittle Drive. Access to the site is also provided from a driveway at the southern terminus of Hester Street, which is a public street north of the project site. Figure 1 shows the site location in a regional context. Figure 2 shows an aerial view of the location of the site relative to the surrounding area. The aerial photograph shown in Figure 2 is outdated in that is shows vehicles on-site. The buildings on site are currently vacant with no active operations.

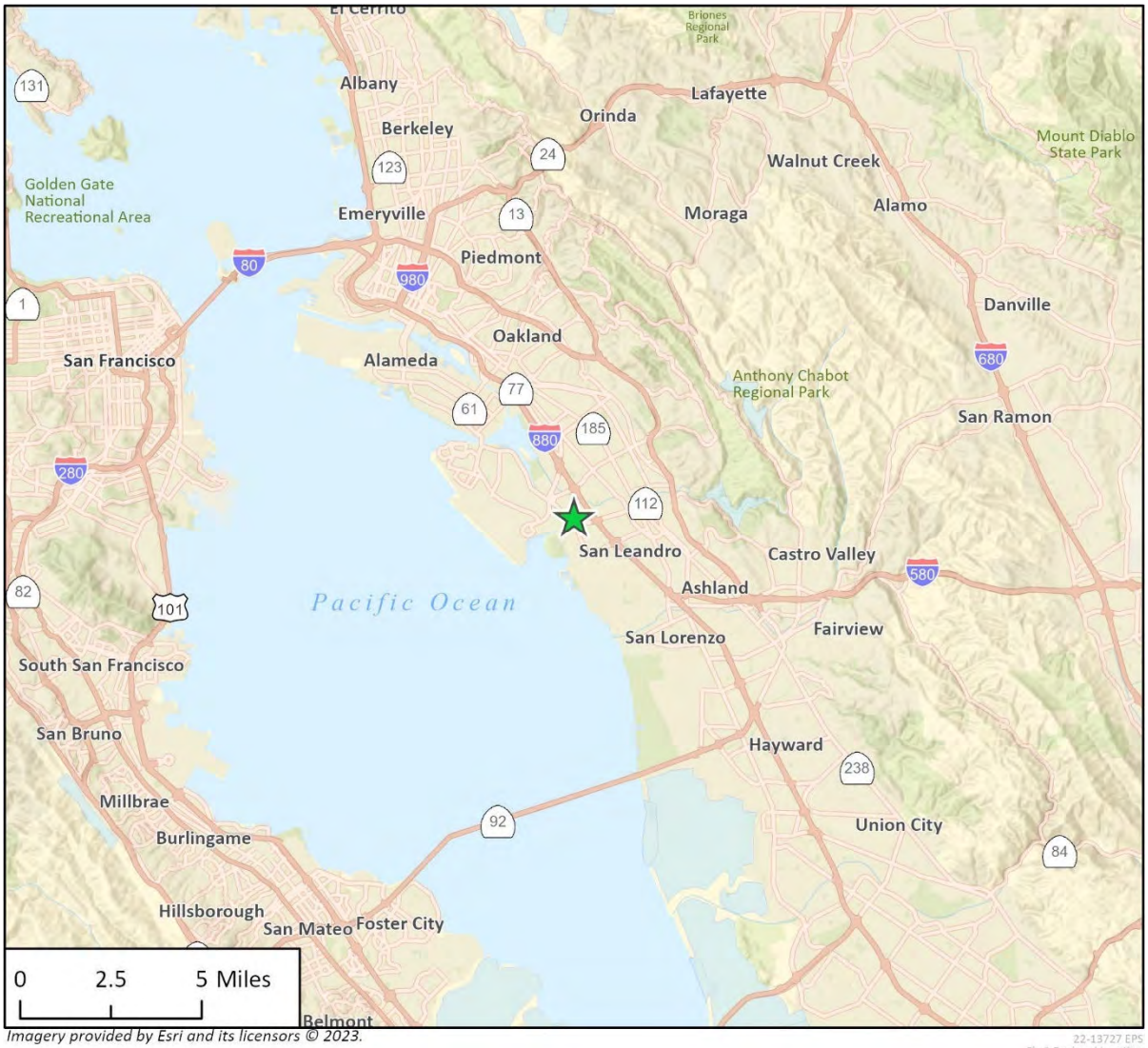
5. Project Sponsor's Name and Address

Prologis
Claudia Tarpin, Director, Development
(510)-656-1900

6. General Plan Designation

The project site is designated as General Industrial in the San Leandro 2035 General Plan (City of San Leandro 2016). According to the Land Use Element of the 2035 General Plan, areas designated as General Industrial may contain a wide range of manufacturing, transportation, food and beverage processing, technology, warehousing, vehicle storage, office-flex, and distribution uses. A limited range of commercial uses are also permitted in these areas.

Figure 1 Regional Location



Imagery provided by Esri and its licensors © 2023.

22-13727 EPS
Fig 1 Regional Location

Project Location

N

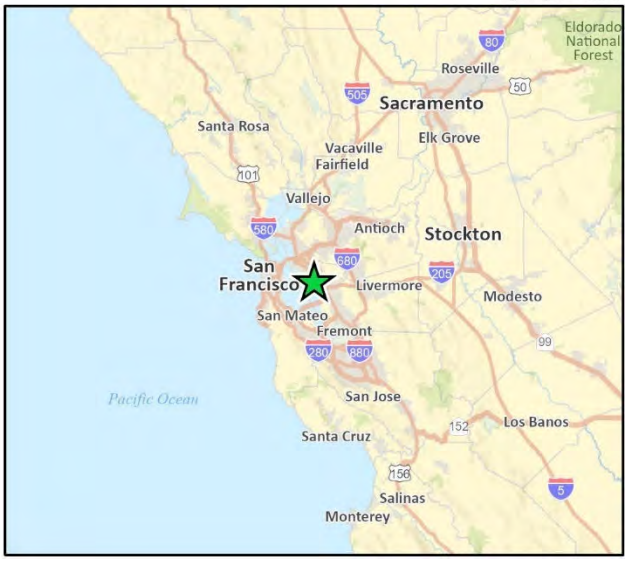


Figure 2 Project Location

Imagery provided by Microsoft Bing and its licensors © 2023.

22-13727 EPS
Fig 2 Project Location

7. Zoning

The project site is in the Industrial General (IG)zoning district. A variety of commercial and industrial land uses are permitted by right in the IG zone. Sample uses include automobile parts sales, business and trade schools, food processing, laboratories, big-box retail sales, and warehouses (San Leandro Municipal Code Section 2.12.200).

8. Description of Project

The proposed project consists of consolidating the two parcels comprising the project site into a single parcel, demolishing existing vacant structures, and developing a new industrial shell building on the site. The proposed project also includes a new surface parking lot, internal circulation roadways, new utility connections, and landscaping. The major components of the proposed project are described below.

Property Consolidation and Demolition

The project site comprises two separate parcels, identified as APNs 77A-0741-004-02 and 77A-0741-005-00. The proposed project includes merging these two parcels into a single parcel. The new parcel would measure approximately 14.14 acres.

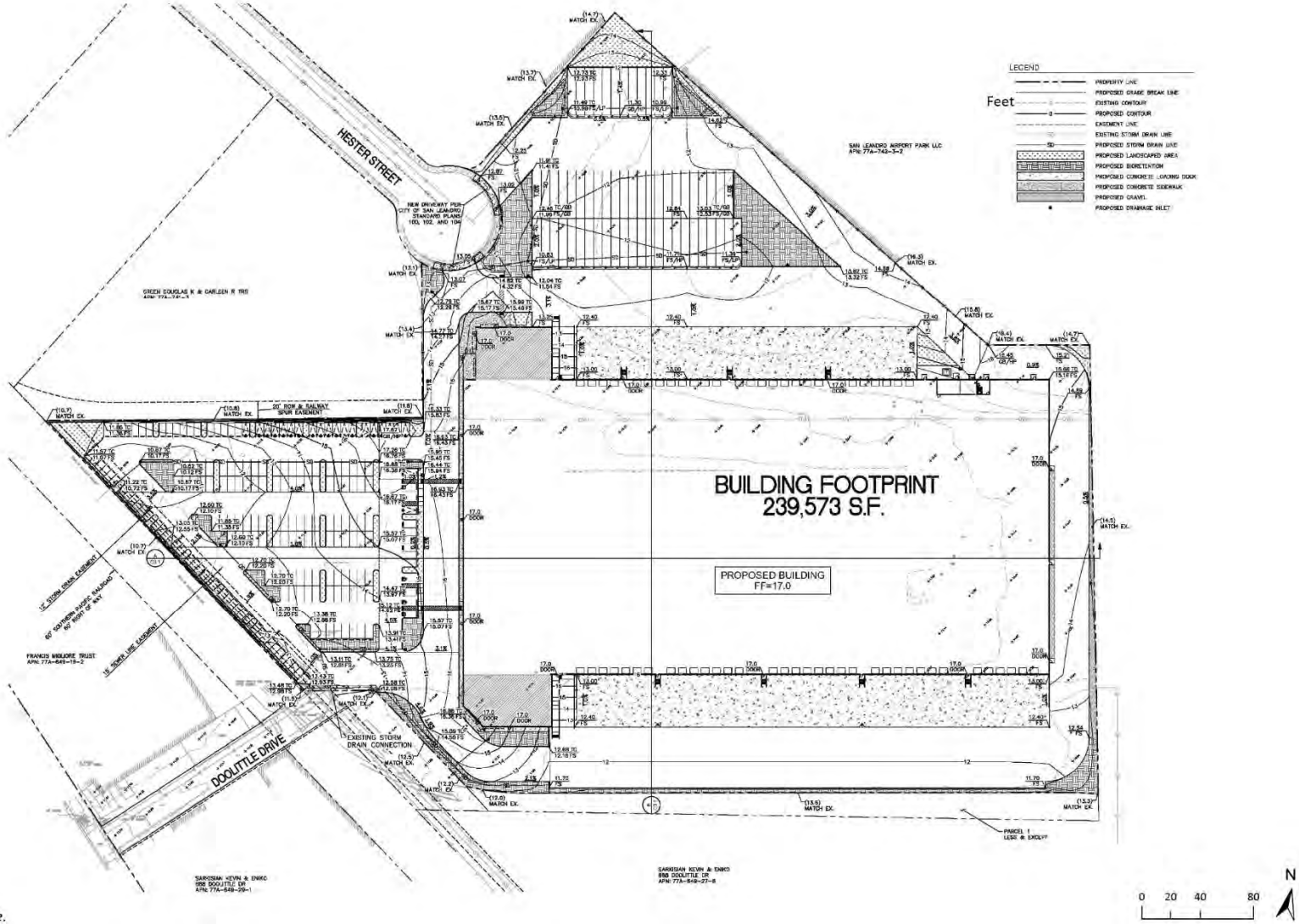
Site preparation activities would commence with demolition of the two existing vacant structures on site, as well as all associated surface parking, landscaping, and internal circulation and driveways on the site. Existing utility connections would be completely removed or abandoned in place in accordance with local and state regulations, in coordination with utility providers. Demolition materials, such as solid waste from the existing structures and asphalt pavement, would be disposed of at permitted or licensed facilities in accordance with local and state regulations. Demolition would last approximately 2 months.

Industrial Development

After approximately 6 months following demolition of existing structures, the proposed project would include construction of a new warehouse with supporting office space. The proposed warehouse is approximately 244,573 square feet, comprised of a 229,573 square-foot of warehouse and 15,000 square feet of associated office space. Approximately 10,000 square feet of office space would be provided on the ground floor alongside the warehouse use. The remaining 5,000 square feet of office space would be on a mezzanine level of the warehouse. The footprint of the warehouse and office use would be 239,753 square feet. The proposed office space would be located in the building. The proposed warehouse would be positioned within the project site to comply with the City's minimum frontage setback requirement of 10 feet. The proposed floor area ratio (FAR) is 0.40 and the maximum building height would be 50 feet with an interior clear height of 40 feet. Figure 3, which is a conceptual site plan, shows the location of the proposed warehouse on the project site.

As shown on Figure 3Figure 3, sixty-four loading docks are proposed, 27 on the north side and 37 on the south side of the building. In addition to dock doors, traditional doors for egress and ingress to the building would be provided for each of the two office spaces within the proposed warehouse. Traditional doors would be provided on the north side of the building and south side of the building, next to dock doors.

Figure 3 Conceptual Site Plan



Source: HPA Architecture.

The exterior of the proposed warehouse would be constructed of a mix of materials, including concrete panels, corrugated and noncorrugated metal panels, wood finish/trim, and glazing. Glazing refers to the glass installed in the building such as windows. Glazing would be a mix of insulated glass installed over concrete and other materials, and glass installed over openings to serve as traditional windows. Generally, given the proposed warehouse use, exterior windows would be limited to the office use areas of the buildings. Figure 4 shows conceptual elevations of the proposed building, including identifying the various exterior finishes and glazing that would be used.

The building would be constructed for a speculative tenant or tenants; the project is intended for occupancy by uses consistent with the site's General Industrial designation, as well as those uses permitted under the site's Industrial General zoning classification. The proposed shell building would be designed to accommodate a future industrial tenant who may perform interior improvements to accommodate their specific needs.

Circulation/Access and Parking

Access to the project site would be from the driveway on Doolittle Drive in the southwest area of the site, and from the end of Hester Street in the northern area of the site, as shown on Figure 3. Although these are both existing driveways, the proposed project would include reconstruction of the driveways to meet City standards and current ADA requirements. This would involve repairs as needed of the driveway from Doolittle Drive. New curb cuts would be provided at the cul-de-sac on Hester Street, which would also include reconstructing (i.e., replacement of) portions of the sidewalk along the project site frontage on Hester Street. Additionally, a new, second, driveway to the site would be constructed at the end of Hester Street, providing a total of three driveways.

The proposed driveways would lead to internal access and circulation roads that encircle the proposed warehouse as well as surface parking areas that would be provided on the west and north sides of the warehouse. The internal circulation roads are designed to comply with standards for passenger vehicles, tractor-trailers, and emergency equipment like fire engines and ambulances. The internal circulation road would be wide enough to allow tractor trailers to maneuver in reverse into loading docks on the north and south side of the warehouse, as shown on Figure 3.

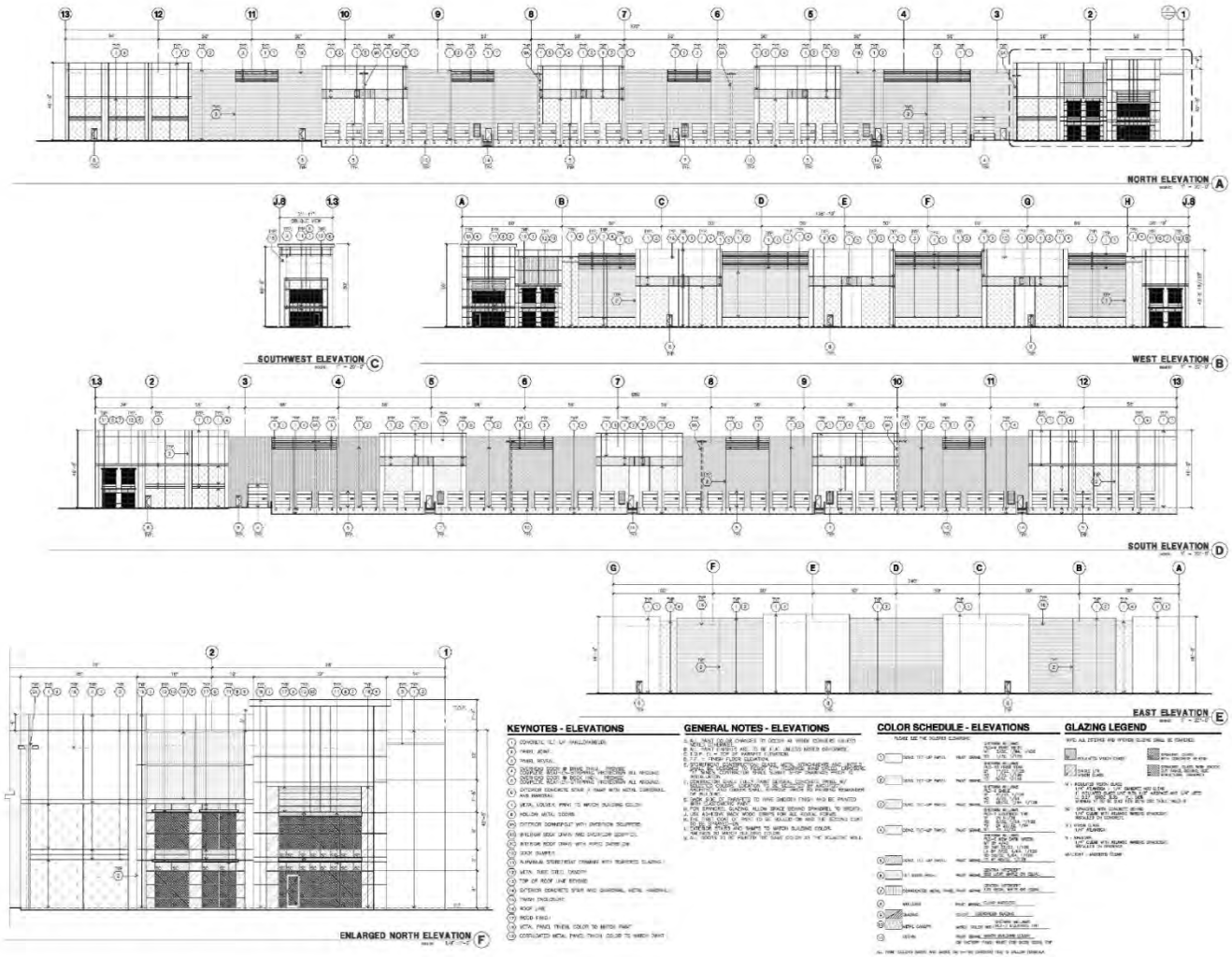
The proposed project would include two main surface parking areas. The lot on the west side of the building would consist primarily of parking spaces for passenger vehicles. A total of 204 parking spaces would be provided for passenger vehicles, consisting of the following:

- 116 standard parking spaces (9 feet by 18.5 feet)
- 57 spaces for compact cars (8 feet by 16 feet)
- 3 standard accessible spaces
- 3 standard accessible van space
- 4 clean air spaces
- 21 electric vehicle spaces

The other main surface parking area would be on the north side of the warehouse, as shown on Figure 3. This parking area would consist of 59 spaces sized for tractor trailers. Tractor trailer parking spaces would be 10 feet by 53 feet each.

In addition to vehicle parking, the proposed project would also provide on-site bicycle parking. A total of 24 bicycle parking spaces would be provided in the vicinity of the office main entrance, including 12 short-term spaces and 12 long-term spaces.

Figure 4 Conceptual Warehouse Elevations



Source: HPA Architecture.

Landscaping

Approximately 41,592 square feet of landscaping would be provided throughout the site including along the perimeter of the site to provide screening and a buffer between adjoining properties and land uses as well as in parking islands. No landscaping is proposed on the east side of the warehouse, which faces Carden Street and other commercial and industrial land uses. Instead, the project would include rock mulch at the eastern project site boundary. Where landscaping is installed, it would consist mostly of shrubs, providing either visual accents or screening, depending on planting density. Landscaping would also include new trees. New trees would be planted amongst shrubs along much of the site boundary, but also in landscaped parking islands within the surface parking area designed for passenger vehicles. Trees would also be planted around the proposed driveways on Hester Street, near the surface parking area designed for trailers. Trees would be a mix of conifers and deciduous species. Landscaping shrubs and trees would consist of species native to California.

The project landscaping areas would also function as bioswale areas to treat stormwater runoff. The bioswales would be planted with a mix of native grasses, low shrubs, and sod. These bioswale areas are described in more detail below in the Utilities section of this project description.

Utilities

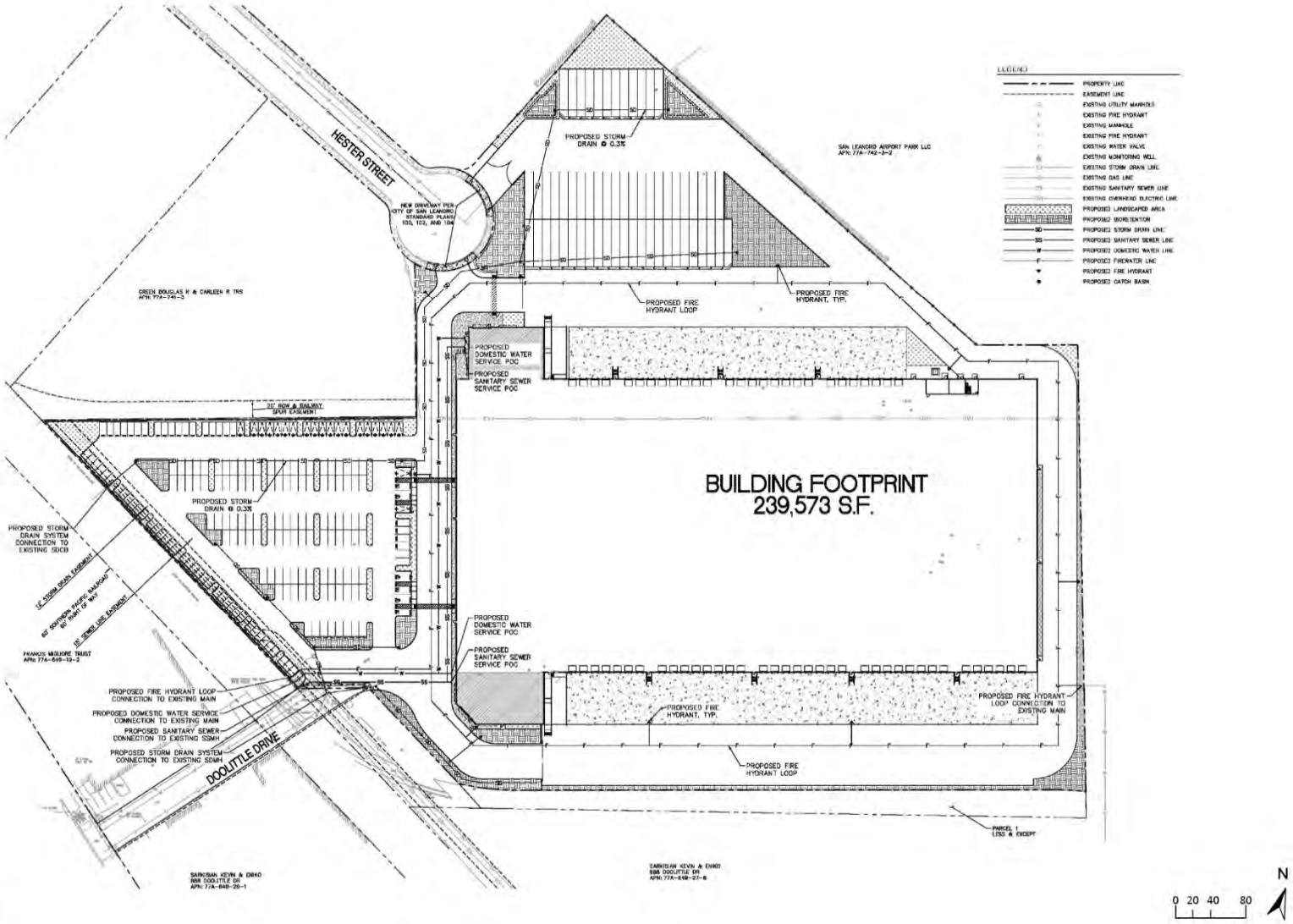
Potable water service for the project would be provided by the East Bay Municipal Utility District (EBMUD), the City of San Leandro potable water service provider. A new water connection would be constructed on site and connect to an existing water main that is beneath the surface of the existing driveway at Doolittle Drive. Generally, the new water connection would be located beneath the new surface parking area on the west side of the proposed warehouse, as shown on Figure 5. A new fire hydrant pipeline would also connect to the existing water main in the project area in accordance with City code and requirements.

Sanitary sewer service for the project would be provided by the City's Sewer Department. Similar to the water line, a new sanitary sewer line would connect the proposed warehouse and an existing sanitary sewer main through the driveway on Doolittle Drive, as shown on Figure 5.

Stormwater runoff would be treated on site to meet the current Alameda County C.3 stormwater regulations before being discharged to the existing storm drain system. On-site treatment would occur with a series of bioswales, as shown on Figure 5. The bioswales are designed to capture and slow/pool runoff from impervious surfaces, functioning as bioretention areas. The bioswales would include approximately 18 inches of biotreatment soils and an underlying approximately 12 inches of permeable gravels. The bioswales will be vegetated with a native bioretention grass. Runoff collects and infiltrates the biotreatment soil, reducing the volume of runoff discharged into the storm drain system. Slowing the velocity of runoff by directing it into bioswales also allows solids to settle out before the runoff is discharged into the storm drain system. After entering on-site bioswales, treated runoff that infiltrates the soil would enter storm drain inlets installed in each bioswale. As shown on Figure 5, the inlets would connect to a storm drain pipeline installed beneath new surface parking areas and connect to an existing storm drain through the Doolittle Drive driveway.

Electricity at the project site would be provided by Pacific Gas & Electric, which provides services to the project area. The proposed project would also include natural gas energy, also provided by Pacific Gas & Electric.

Figure 5 Preliminary Utility Plan



Source: HPA Architecture.

Construction and Grading

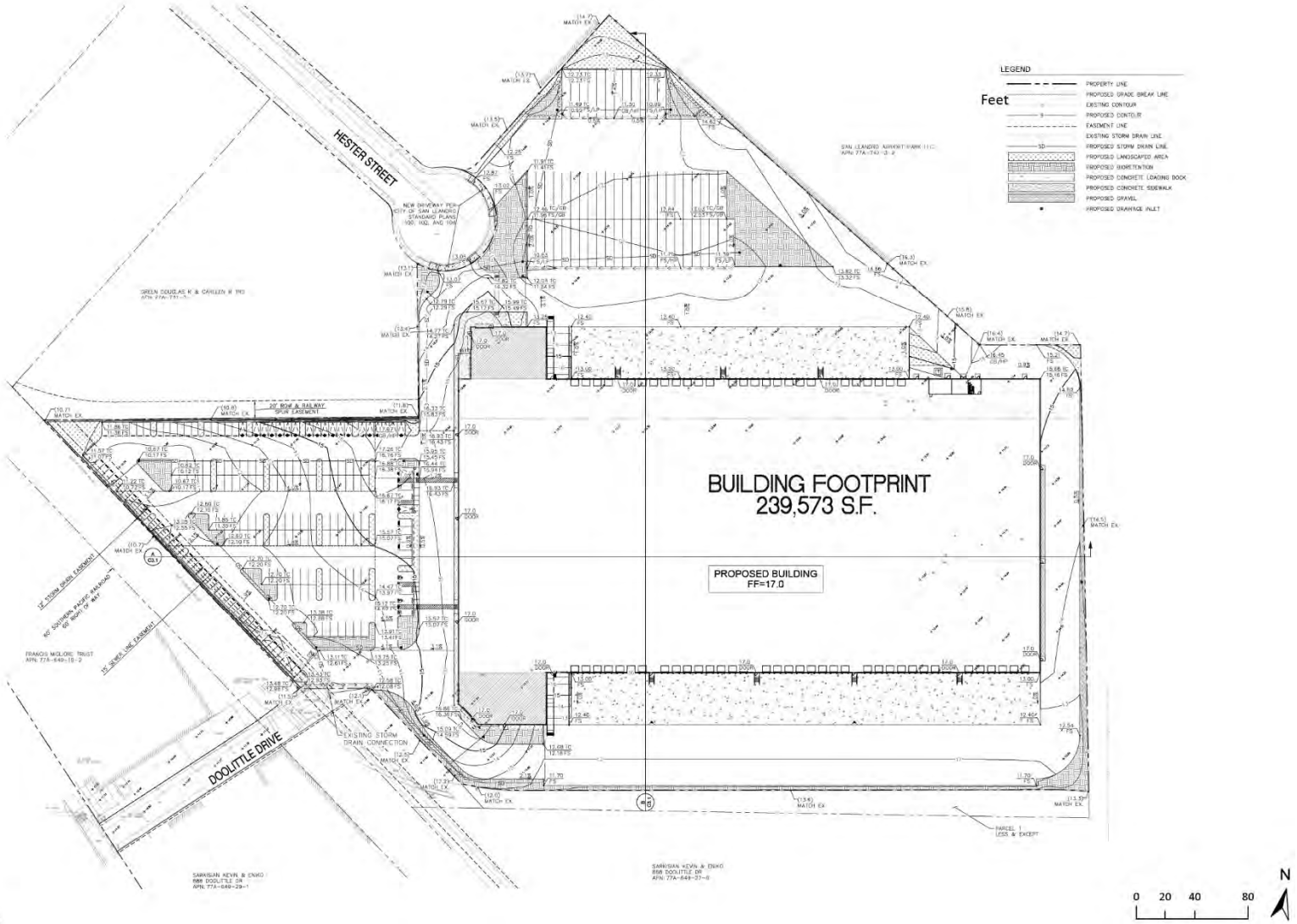
The timing of project construction would be determined by market forces and other considerations, such as weather or availability of workforce. However, it is anticipated that construction would begin in 2024 with demolition of existing vacant structures and related infrastructure, such as utilities and surface parking.

Site grading would occur following demolition of the existing development on the project site, which totals approximately 212,000 square feet of structures. The site is relatively level, which minimizes the amount of grading included in the proposed project. Generally, grading would be designed to slope in a west-southwest direction across the site, which would allow stormwater runoff to flow into bioswale areas and then continue into the City's storm drain system using gravity rather than mechanical forces. Elevations on the project site following grading would vary between approximately 10 feet and 17 feet above mean sea level. Preliminary grading design shows a balanced site The conceptual grading plan for the proposed project is shown on Figure 6.

Project construction would commence following grading. Construction would include excavation and trenching to install buried utility connections, such as new water, sanitary sewer, and storm drain laterals. The foundation of the warehouse would be poured followed by framing and construction of the walls, interior spaces, and exterior. Paving of surface parking areas, driveways, and internal access roads would also occur during project construction, as well as construction of new sidewalk on site frontage along Hester Street. Additionally, repaving of a small off-site area between the existing off-site railroad tracks and the project site would be conducted. Following construction, new landscaping would be planted or installed. Assuming construction of the project is continuous, construction would occur over approximately 18 months, with 6 of those months being a period of inactivity following demolition that is associated with construction contracting.

Construction staging would occur on-site. A variety of typical construction equipment would be used, such as backhoes, dump trucks, excavators, pavers, and dozers. A crawler crane with a boom height of up to approximately 161 feet would also be required. During construction, up to five existing trees just off the project site at the terminus of Hester Street would be removed.

Figure 6 Conceptual Grading Plan



Source: HPA Architecture.

9. Project Objectives

CEQA Guidelines Section 15124(b) requires an EIR to include a statement of objectives sought by the project. The objectives assist the City, as the lead agency, in developing a reasonable range of alternatives to be evaluated in the EIR. The project objectives also aid decision-makers in preparing findings or, if necessary, a statement of overriding considerations. The statement of objectives also includes the underlying purpose of the Project and the Project benefits.

The underlying purpose of the proposed project is to provide a modern industrial warehouse with ancillary office using sustainable and environmentally superior practices within the existing industrialized portion of the City. The proposed project would accommodate the need for additional large warehouse uses in the City and in Alameda County, while enhancing the economic vitality of the City.

The City and the applicant have the following objectives for the project:

- Increase the economic base of the City's industrial corridor by maximizing the productive use of the City's industrial land, which is currently underutilized;
- Create a modern warehouse that contributes to the aesthetics of the surrounding area through the redevelopment of an obsolete and underutilized property;
- Create a new, efficient and updated warehouse that is attractive to future tenants, by incorporating the state's green building design and building health and safety standards;
- Maintain and protect the City's inventory of larger-scale industrial sites with easy access to freeways, rails, airports, and seaports; and
- Support and retain existing industrial uses and employment in the City of San Leandro's industrial sector.

10. Surrounding Land Uses and Setting

The project site is nearly entirely developed. Existing on-site development consists of an approximately 207,000 square-foot industrial masonry building, an approximately 4,700 square-foot industrial masonry building, and paved surface parking lots, including a large surface parking lot covering approximately the northern half of the site. These existing buildings are vacant, which are the circumstances used for the environmental baseline in this document. Unpaved or undeveloped portions of the site are limited to small islands of landscaping, such as a strip of landscaping around the cul-de-sac at the end of Hester Street and landscaping along the easternmost project site boundary. Existing landscaping is a mix of non-native and weedy ground cover consisting of ruderal grass. Representative photographs of existing site conditions are shown on Figure 7.

The project is located on an infill site that is largely surrounded by industrial and commercial uses. Land adjacent to the northern boundary of the project site is developed with a mix of commercial and industrial land uses, including but not limited to, tool vendors, screen printing shops, machine shops, and sign shops. Carden Street separates the project site from land uses to the east, which are comprised of trucking businesses, a landscape company, metal supplier, and other commercial/industrial businesses. There are inactive railroad tracks adjacent to the south and west of the site, and there is an active railroad corridor approximately 400 feet east of the project site.

Figure 7 Existing Conditions: Representative Photographs

Existing driveway connection between Doolittle Drive and the project site. The view in this photograph is northeast, toward the project site with Doolittle Drive behind the camera.

Typical existing development on the project site, incuding existing vacant structures, fencing, ashpalt parking and driving surfaces, and signage. The view in this photograph is east toward where the driveway from Doolittle Drive crosses into the project site.

Figure 7 Existing Conditions: Representative Photographs (Continued)

Typical existing development on the project site, incuding existing vacant structures, ashpalt parking and driving surfaces, and ruderal vegetation. The view in this photograph is southwest facing existing buildings with the camera positioned in the northern area of ths site.

Typical existing development on the project site, incuding existing vacant structures, overhead utilities, ashpalt parking and driving surfaces, and tractor trailers. The view in this photograph is south facing existing buildings with the camera positioned in the northern area of ths site.

Figure 7 Existing Conditions: Representative Photographs (Continued)

Typical existing developmen ton the project site, incuding an existing vacant structure, fencing, ashpalt parking and driving surfaces, as well as off-site railroad tracks along the southern site boundary. The view in this photograph is east.

The terminus of Hester Street and the existing driveway connection between Hester Street and the project site. Existing development on the project site is visible in the background. The view in this photograph is southeast toward the project site.

The southern boundary of the project site is adjacent to an existing railroad track and its associated right-of-way, as shown in Figure 7. The railroad tracks are out of service, as evidenced by the vegetation and topsoil covering the tracks in many locations near the project site. Commercial and industrial development occurs beyond the railroad track, farther south of the project site. The existing driveway access to the site from Doolittle Drive crosses the railroad track, which also adjoins most of the western boundary of the project site; a portion of the site's western boundary includes the 60-foot-wide Southern Pacific Railroad right-of-way, as well as a 12-foot-wide storm drain easement and a 15-foot-wide sewer easement. Commercial and industrial land uses occur just west of the project site and adjoining railroad track, fronting on Doolittle Drive. A golf course and Oakland International Airport occur further to the west of the project site. The freight and corporate aircraft runways at Oakland International Airport are approximately 4,050 feet northwest of the project site.

Views into the site are largely limited to those from Doolittle Drive and the Hester Street cul-de-sac, within the industrial corridor. The nearest known residential uses to the project site are located approximately 500 feet northeast of the project site. Additional industrial development and active railroad tracks lie in between the project site and the residential areas. The site is in proximity to I-880 via Davis Street, a major arterial for the City.

The San Francisco Bay shoreline is approximately 3,000 feet southwest of the project site. The area between the project site and the shoreline is dominated by warehousing and other industrial uses, along with waste management and the City's wastewater treatment facilities.

11. Other Public Agencies Whose Approval is Required

The project site is approximately 4,050 feet away from the nearest runways at Oakland International Airport. Due to this proximity, pursuant to Federal Aviation Regulations Part 77, a No Hazard Determination for the warehouse was issued from the Federal Aviation Administration pursuant to Federal Aviation Regulations Part 77, because the proposed warehouse would have a maximum height of 50 feet, exceeding the 43 feet maximum permitted at this distance from the airport runway. The applicant submitted the project to the FAA, who determined that a building height of 50 feet does not present a hazard to air navigation. An additional No Hazard Determination may also be needed for the use of project construction equipment exceeding 43 feet in height.

In addition to coordination and determinations from the FAA, the proposed project will also require multiple permits and approvals from the City of San Leandro. City permits required include:

- Use Permit
- Site Plan Review
- Height Exception
- Building Permit
- Grading Permit
- Tree Removal Permit

12. Have California Native American Tribes Traditionally and Culturally Affiliated with the Project Area Requested Consultation Pursuant to Public Resources Code Section 21080.3.1?

No California Native American Tribes have submitted requests to the City of San Leandro for consultation on CEQA projects pursuant to Public Resources Code Section 21080.3.1.

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Environmental Factors Potentially Affected

This project would potentially affect the environmental factors checked below, involving at least one impact that is "Potentially Significant" or "Less than Significant with Mitigation Incorporated" as indicated by the checklist on the following pages.

☐	Aesthetics	☐	Agriculture and Forestry Resources	■	Air Quality
■	Biological Resources	■	Cultural Resources	☐	Energy
☐	Geology and Soils	■	Greenhouse Gas Emissions	■	Hazards and Hazardous Materials
☐	Hydrology and Water Quality	☐	Land Use and Planning	☐	Mineral Resources
■	Noise	☐	Population and Housing	☐	Public Services
☐	Recreation	■	Transportation	■	Tribal Cultural Resources
☐	Utilities and Service Systems	☐	Wildfire	■	Mandatory Findings of Significance

Determination

Based on this initial evaluation:

☐ I find that the proposed project COULD NOT have a significant effect on the environment, and a NEGATIVE DECLARATION will be prepared.

☐ I find that although the proposed project could have a significant effect on the environment, there will not be a significant effect in this case because revisions to the project have been made by or agreed to by the project proponent. A MITIGATED NEGATIVE DECLARATION will be prepared.

■ I find that the proposed project MAY have a significant effect on the environment, and an ENVIRONMENTAL IMPACT REPORT is required.

☐ I find that the proposed project MAY have a "potentially significant impact" or "less than significant with mitigation incorporated" impact on the environment, but at least one effect (1) has been adequately analyzed in an earlier document pursuant to applicable legal standards, and (2) has been addressed by mitigation measures based on the earlier analysis as described on attached sheets. An ENVIRONMENTAL IMPACT REPORT is required, but it must analyze only the effects that remain to be addressed.

☐ I find that although the proposed project could have a significant effect on the environment, because all potential significant effects (a) have been analyzed adequately in an earlier EIR or NEGATIVE DECLARATION pursuant to applicable standards, and (b) have been avoided or mitigated pursuant to that earlier EIR or NEGATIVE DECLARATION, including revisions or mitigation measures that are imposed upon the proposed project, nothing further is required.

Signature	Date
Printed Name	Title

Environmental Checklist

1 Aesthetics

	Potentially Significant Impact	Less than Significant with Mitigation Incorporated	Less-than - Significant Impact	No Impact
Except as provided in Public Resources Code Section 21099, would the project:				
a. Have a substantial adverse effect on a scenic vista?	☐	☐	☐	■
b. Substantially damage scenic resources, including but not limited to, trees, rock outcroppings, and historic buildings within a state scenic highway?	☐	☐	☐	■
c. In non-urbanized areas, substantially degrade the existing visual character or quality of public views of the site and its surroundings? (Public views are those that are experienced from a publicly accessible vantage point). If the project is in an urbanized area, would the project conflict with applicable zoning and other regulations governing scenic quality?	☐	☐	■	☐
d. Create a new source of substantial light or glare that would adversely affect daytime or nighttime views in the area?	☐	☐	■	☐

Setting

The project site is nearly entirely developed. Existing on-site development consists of an approximately 207,000 square-foot industrial masonry building, an approximately 4,700 square-foot industrial masonry building, and paved surface parking lots, including a large surface parking lot covering the northern approximately half of the site. Unpaved or undeveloped portions of the site are limited to small islands of landscaping, such as a strip of landscaping around the cul-de-sac at the end of Hester Street and landscaping along the easternmost project site boundary. Existing landscaping is a mix of non-native and weedy ground cover consisting of grassland. Representative photographs of existing site conditions are shown on Figure 7. The existing buildings on-site are vacant.

The nearest officially designated or eligible State Scenic Highway is Interstate 580, which is officially designated as a State Scenic Highway north of San Leandro Creek and eligible for designation south of San Leandro Creek (California Department of Transportation 2018). The project site is approximately 3.6 miles northwest of the officially designated portion and approximately 2.7 miles

west of the eligible portion at their closest points. Due to intervening development and distance, the project site is not visible from either segment of Interstate 580.

A scenic vista is usually defined as a panoramic view from an elevated position or a long-range view from a public vantage point. This can include views of natural features or of the built environment, when architecture and landscaped boulevards offer high-value views of an area considered important to the sense of place. The San Leandro 2035 General Plan does not formally recognize specific scenic vistas in the city. However, the General Plan does designate scenic views, which the City has identified as aesthetic priorities that contribute to a sense of place. These scenic views include long-range views of the San Francisco Bay to the west and views of hills above Interstate 580 to the east.

Regulatory Setting

San Leandro 2035 General Plan

The following Land Use Element policy of the San Leandro 2035 General Plan includes the following policies that are relevant to the proposed project.

LAND USE ELEMENT

Policy CD-6.8 Improve the visual appearance of the City's commercial and industrial areas by applying high standards of architectural design and landscaping for new commercial and industrial development and the re-use or remodeling of existing commercial and industrial buildings.

Policy LU-8.5: Maintain areas in the City that are appropriate for lumberyards, construction suppliers, automotive repair shops, and other commercial uses that are industrial in character or that are typically located in industrial areas. While development standards in these areas should respect the operational characteristics of these uses, they should still promote aesthetic improvements, adequate buffering for nearby uses, traffic safety, and a more positive visual image.

San Leandro Municipal Code

The project site is currently zoned as Industrial General. San Leandro Municipal Code establishes use and development regulations for industrial districts. These regulations are summarized below in Table 1.

Table 1 Industrial General Development Regulations

Feature	Requirement
Minimum Lot Area	5,000 square feet
Minimum Lot Width	50 feet
Minimum Setback	20 feet (required for structures over 40 feet in height)
Maximum Height	Up to 50 feet with approval by the Zoning Enforcement Official
Maximum Lot Coverage	75%, Floor Area Ratio (FAR) of 1.0
Minimum Site Landscaping	5%

The following section of San Leandro Municipal Code would also be applicable to the project.

Section 4.08.156 **Lighting**. Outdoor lighting in a landscaped parking area shall not employ a light source higher than 12 feet. Outdoor parking area lighting shall create no cone of direct illumination greater than 60 degrees from a light source higher than six feet and shall not directly shine onto an adjacent street. Maximum illumination at ground level shall be three foot candles and shall not exceed one-half foot candles in an R district.

Impact Analysis

a. Would the project have a substantial adverse effect on a scenic vista?

The San Leandro 2035 General Plan does not formally recognize specific scenic vistas in the city. However, the General Plan does designate scenic views, which the City has identified as aesthetic priorities that contribute to a sense of place. These scenic views include long-range views of the San Francisco Bay to the west and views of hills above Interstate 580 to the east. Due to intervening development and distance, there are no views of the San Francisco Bay through the project site from public viewpoints. Views of the hills above Interstate 580 are also obstructed by intervening development and landscaping. The project would replace existing buildings with a new one; views of the surrounding area would remain similar to the views currently available through the project site following implementation of the project. The proposed project would not substantially alter these views nor obstruct scenic views. The project would not result in a substantial adverse effect on a scenic vista, and there would be no impact.

NO IMPACT

b. Would the project substantially damage scenic resources, including but not limited to, trees, rock outcroppings, and historic buildings within a state scenic highway?

Interstate 580 is a designated State Scenic Highway north of San Leandro Creek and eligible for designation south of San Leandro Creek (California Department of Transportation 2018). Due to intervening development and distance, the project site is not visible from either highway segment. Therefore, implementation of the project would have no effect on scenic resources in view of a State Scenic Highway. There would be no impact to scenic resources within a State Scenic Highway.

NO IMPACT

c. Would the project substantially degrade the existing visual character or quality of public views of the site and its surroundings? (Public views are those that are experienced from a publicly accessible vantage point). If the project is in an urbanized area, would the project conflict with applicable zoning and other regulations governing scenic quality?

The project site is in an urbanized area as defined in the CEQA Guidelines. The project site is currently developed with a parking lot and existing industrial buildings which would be demolished as part of the proposed project. The project site is within a fully developed area surrounded by other industrial uses and commercial uses. Table 2 and Table 3 below show policies and standards from the City's General Plan and the San Leandro Municipal Code that govern scenic quality and demonstrates the project's consistency with both.

Table 2 Project Consistency with General Plan and Municipal Code

Policy/Standard	Project Consistency
City of San Leandro 2035 General Plan	
Policy CD-6.8. Improve the visual appearance of the City's commercial and industrial areas by applying high standards of architectural design and landscaping for new commercial and industrial development and the re-use or remodeling of existing commercial and industrial buildings.	The project would achieve a high standard of architectural design through the use of concrete and metal panels, wooden trim, and glazing. The project would also incorporate landscaping on site including native trees and shrubs along the project boundary to provide a buffer between the project site and surrounding uses and enhance the overall appearance of the site.
Policy LU-8.5. Maintain areas in the City that are appropriate for lumberyards, construction suppliers, automotive repair shops, and other commercial uses that are industrial in character or that are typically located in industrial areas. While development standards in these areas should respect the operational characteristics of these uses, they should still promote aesthetic improvements, adequate buffering for nearby uses, traffic safety, and a more positive visual image.	**Consistent.** The project would involve construction and operation of a warehouse structure. Existing land uses surrounding the project site include industrial and commercial uses. Therefore, the proposed warehouse would be consistent with the existing commercial and industrial character of the project site surroundings. Additionally, as described in the *Project Description,* the proposed warehouse's exterior would include concrete painted off-white and beige neutral colors, wood paneling, and metal trim, which would result in aesthetic improvements compared to existing conditions and promote a positive visual image in the project area. Therefore, the project would be consistent with this policy.

Source: City of San Leandro 2016

The project would involve combining the two existing parcels into a single lot. Table 3 below demonstrates that the proposed project would be in compliance with Industrial General standards, specifically those that regulate scale and massing, pursuant to San Leandro Zoning Code Section 2.12.300. Compliance with these standards would ensure that the scale and massing of the proposed project would be limited as required by the San Leandro Zoning Code; these standards regulate visual character related to scale and massing and would ensure that the project would be designed to be visually compatible with the surrounding area.

Table 3 Project Consistency with City Zoning Requirements

Feature	Zoning Requirements	Proposed Warehouse Feature[1]
Minimum Lot Area	5,000 square feet	238,573 square feet
Minimum Lot Width	50 feet	300 feet
Minimum Setback	20 feet (required for structures over 40 feet in height)	39 feet minimum
Maximum Height	Up to 50 feet with Zoning Enforcement Official approval	50 feet
Maximum Lot Coverage	Floor Area Ratio (FAR) of up to 1.0	FAR of 0.4
Minimum Site Landscaping	5%	7%

As shown above, the project would be consistent with applicable San Leandro General Plan policies and standards related to aesthetics. The project would comply with applicable San Leandro Zoning Code standards. Impacts would be less than significant.

LESS-THAN-SIGNIFICANT IMPACT

d. Would the project create a new source of substantial light or glare that would adversely affect daytime or nighttime views in the area?

The project site is in an urban area with moderate levels of existing lighting. Lighting sources around the project site include wall-mounted security lights on adjacent buildings, streetlights on neighboring streets such as Doolittle Drive, Hester Street, and Carden Street, and lights from vehicles on parking lots and roads near the project site. The primary source of glare in the area is sunlight reflected off light-colored and reflective building materials and finishes, and metallic and glass surfaces of existing buildings on-site and buildings and vehicles parked adjacent to the project site. The Oakland International Airport also includes many exterior lights.

The proposed warehouse building would be constructed of similar materials as the existing building on site and others in the vicinity. The proposed project would also include a parking lot and loading dock, similar to the existing development on site. Therefore, the project would not introduce a new source of substantial light or glare that is different from or greater than the light and glare already existing on and around the site. Further, the project would be located in a commercial area with existing sources of light and reflection and would not adversely affect daytime views of the area. The project would be required to comply with applicable provisions of San Leandro Zoning Code Section 4.08.156, which sets requirements for lighting, and additional nighttime lighting at the project site would be consistent with surrounding land uses. The project site is not surrounded by residences and there are no parks or similar recreational or gathering spaces adjacent to the site. The project would not substantially alter light and glare conditions in the vicinity. Therefore, impacts related to project light and glare would be less than significant.

LESS-THAN-SIGNIFICANT IMPACT

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2 Agriculture and Forestry Resources

	Potentially Significant Impact	Less than Significant with Mitigation Incorporated	Less-than - Significant Impact	No Impact
Would the project:				
a. Convert Prime Farmland, Unique Farmland, or Farmland of Statewide Importance (Farmland), as shown on maps prepared pursuant to the Farmland Mapping and Monitoring Program of the California Resources Agency, to non-agricultural use?	☐	☐	☐	■
b. Conflict with existing zoning for agricultural use or a Williamson Act contract?	☐	☐	☐	■
c. Conflict with existing zoning for, or cause rezoning of, forest land (as defined in Public Resources Code Section 12220(g)); timberland (as defined by Public Resources Code Section 4526); or timberland zoned Timberland Production (as defined by Government Code Section 51104(g))?	☐	☐	☐	■
d. Result in the loss of forest land or conversion of forest land to non-forest use?	☐	☐	☐	■
e. Involve other changes in the existing environment which, due to their location or nature, could result in conversion of Farmland to non-agricultural use or conversion of forest land to non-forest use?	☐	☐	☐	■

Setting

The project site is located within an urban area of San Leandro. The site was previously developed and is zoned for Industrial Uses.

The California Department of Conservation (DOC) manages the Farmland Mapping and Monitoring Program to assess and record suitability of land for agricultural purposes. In each county, the land is analyzed for soil and irrigation quality. The highest quality land is designated as Prime Farmland. According to the Alameda County Important Farmland Map prepared by the DOC, the project site and vicinity are designated as Urban and Built-Up Land and the site does not have any identified agriculture or forest land (DOC 2018).

Regulatory Setting

The DOC's Farmland Mapping and Monitoring Program (FMMP) monitors the conversion of the State's farmland to and from agricultural use. County-level data is collected, and a series of maps are prepared that identify eight classifications and uses based on a minimum mapping unit size of 10 acres. The program also produces a biennial report on the amount of land converted from agricultural to non-agricultural use. The program maintains an inventory of State agricultural land and updates the Important Farmland Series Maps every two years. The FMMP is an informational service only and does not constitute State regulation of local land use decisions. Agricultural land is rated according to several variables, including soil quality and irrigation status with Prime Farmland being considered the most optimal for farming practices. Other FMMP designations include Farmland of Local Importance, Grazing Land, and Water.

Land Conservation Act

Better known as the "Williamson Act" (California Administrative Code Section 51200 et seq.), the California Land Conservation Act of 1965 creates a legal arrangement whereby private landowners' contract with local governments to voluntarily restrict land to agricultural and open space uses, protecting it from unnecessary or premature conversion to urban uses. In return, restricted parcels are assessed for property tax purposes at a rate consistent with their actual use rather than potential market value, which saves landowners from 20 percent to 75 percent in property tax liability each year.

Generally, Williamson Act contracts have an initial term of ten years, with renewal occurring automatically each year thereafter. The contracts run with the land and are binding on all succeeding landowners. Land must be in an agricultural preserve to enter into a Williamson Act contract. Agricultural preserves under Williamson Act contract contain at least 100 contiguous acres of agricultural land unless specific findings are made.

Non-renewal initiations are requested either by the landowner or the local government and are often filed in anticipation of converting farmland to other uses. Most contracted land is terminated through non-renewal. Upon the expiration of the contract, the restrictions are removed and the property tax assessment, which had been gradually increasing over the previous nine-year non-renewal period, returns to full market value.

To characterize the environmental baseline for agricultural resources, Important Farmland Maps produced by the DOC were reviewed. Unless otherwise expressed, the future use of "Important Farmland" specifically includes the following definitions provided by the DOC:

Prime Farmland: Land which has the best combination of physical and chemical characteristics for producing crops. It has the soil quality, growing season, and moisture supply needed to produce sustained high yields of crops when treated and managed, including water management, according to current farming standards.

Unique Farmland: Land of lesser quality soils used for the production of specific high economic value crops. It has the special combination of soil quality, location, growing season and moisture supply needed to produce sustained high quality or high yields of a specific crop when treated and managed according to current farming methods. It is usually irrigated but may include non-irrigated orchards or vineyards as found in some climatic zones in California. Examples of crops include oranges, olives, avocados, rice, grapes and cut flowers.

Farmland of Local Importance: Land of importance to the local agricultural economy as determined by each county's board of supervisors following recommendations by a local advisory committee.

PRC Section 12220(g) defines forest land as:

> …land that can support 10-percent native tree cover of any species, including hardwoods, under natural conditions, and that allows for management of one or more forest resources, including timber, aesthetics, fish and wildlife, biodiversity, water quality, recreation, and other public benefits.

PRC Section 4526 defines timberland as:

> …land, other than land owned by the federal government and land designated by the board as experimental forest land, which is available for, and capable of, growing a crop of trees of a commercial species used to produce lumber and other forest products, including Christmas trees. Commercial species shall be determined by the board on a district basis.

Government Code Section 51104(g) defines a timberland production zone as:

> …an area which has been zoned pursuant to Section 51112 or 51113 and is devoted to and used for growing and harvesting timber, or for growing and harvesting timber and compatible uses, as defined in subdivision (h).

Impact Analysis

a. Would the project convert Prime Farmland, Unique Farmland, or Farmland of Statewide Importance (Farmland), as shown on maps prepared pursuant to the Farmland Mapping and Monitoring Program of the California Resources Agency, to non-agricultural use?

The project site is not designated as, is not adjacent to, and is not proximate to lands classified as Prime Farmland, Unique Farmland, or Farmland of Statewide Importance, as shown by maps prepared by the DOC's Farmland Mapping and Monitoring Program maps (DOC 2018). The project would not involve any rezoning and would therefore not convert farmland to non-agricultural use. The project would have no impact on Prime Farmland, Unique Farmland, or Farmland of Statewide Importance.

NO IMPACT

b. Would the project conflict with existing zoning for agricultural use or a Williamson Act contract?

The project site and surrounding areas are not subject to Williamson Act contracts (DOC 2022). Therefore, no Williamson Act contracts would be affected by the project. The project would have no impact.

NO IMPACT

c. *Would the project conflict with existing zoning for, or cause rezoning of, forest land (as defined in Public Resources Code Section 12220(g)); timberland (as defined by Public Resources Code Section 4526); or timberland zoned Timberland Production (as defined by Government Code Section 51104(g))?*

d. *Would the project result in the loss of forest land or conversion of forest land to non-forest use?*

e. *Would the project involve other changes in the existing environment which, due to their location or nature, could result in conversion of Farmland to non-agricultural use or conversion of forest land to non-forest use?*

The project site does not currently provide forest and timber resources and would not be used for forest and timber resources. The project site does not contain trees and the site itself is not considered forest or timberland (California Department of Fish and Wildlife 2021). The project would remove up to five street trees just off of the project site, within the right-of-way of Hester Street. However, these trees are not a forest. As such, the project would not convert forest or timberland uses, and no impact would occur as a result of the project.

NO IMPACT

3 Air Quality

	Potentially Significant Impact	Less than Significant with Mitigation Incorporated	Less-than - Significant Impact	No Impact
Would the project:				
a. Conflict with or obstruct implementation of the applicable air quality plan?	☐	☐	■	☐
b. Result in a cumulatively considerable net increase of any criteria pollutant for which the project region is non-attainment under an applicable federal or state ambient air quality standard?	☐	■	☐	☐
c. Expose sensitive receptors to substantial pollutant concentrations?	☐	☐	■	☐
d. Result in other emissions (such as those leading to odors) adversely affecting a substantial number of people?	☐	☐	■	☐

Kimley Horn and Associates prepared an Air Quality Assessment (Appendix A) for the proposed project in November 2023. Kimley Horn and Associates also prepared a Health Risk Assessment for the project in November 2023 (Appendix B). Both documents were peer reviewed by Rincon Consultants, Inc. on behalf of the City. This section of the Initial Study is largely based on the Air Quality Assessment and Health Risk Assessment.

Overview of Air Pollution

The federal and State Clean Air Acts (CAA) mandate the control and reduction of certain air pollutants. Under these laws, the U.S. Environmental Protection Agency (USEPA) and the California Air Resources Board (CARB) have established the National Ambient Air Quality Standards and the California Ambient Air Quality Standards for "criteria pollutants" and other pollutants. Some pollutants are emitted directly from a source (e.g., vehicle tailpipe, an exhaust stack of a factory, etc.) into the atmosphere, including carbon monoxide, volatile organic compounds (VOC)/reactive organic gases (ROG),[1] nitrogen oxides (NO_X), particulate matter with diameters of ten microns or less (PM_{10}) and 2.5 microns or less ($PM_{2.5}$), sulfur dioxide, and lead. Other pollutants are created indirectly through chemical reactions in the atmosphere, such as ozone, which is created by atmospheric chemical and photochemical reactions primarily between ROG and NO_X. Secondary pollutants include oxidants, ozone, and sulfate and nitrate particulates (smog).

Air pollutant emissions are generated primarily by stationary and mobile sources. Stationary sources can be divided into two major subcategories:

[1] CARB defines VOC and ROG similarly as, "any compound of carbon excluding carbon monoxide, carbon dioxide, carbonic acid, metallic carbides or carbonates, and ammonium carbonate," with the exception that VOC are compounds that participate in atmospheric photochemical reactions. For the purposes of this analysis, ROG and VOC are considered comparable in terms of mass emissions, and the term ROG is used in this IS-MND.

- Point sources occur at a specific location and are often identified by an exhaust vent or stack. Examples include boilers or combustion equipment that produce electricity or generate heat.
- Area sources are widely distributed and include such sources as residential and commercial water heaters, painting operations, lawn mowers, agricultural fields, landfills, and some consumer products.

Mobile sources refer to emissions from motor vehicles, including tailpipe and evaporative emissions, and can also be divided into two major subcategories:

- On-road sources that may be legally operated on roadways and highways.
- Off-road sources include aircraft, ships, trains, and self-propelled construction equipment.
- Air pollutants can also be generated by the natural environment, such as when high winds suspend fine dust particles.

Air Quality Standards and Attainment

The project site is located in the San Francisco Bay Area Air Basin, which is under the jurisdiction of the Bay Area Air Quality Management District (BAAQMD). BAAQMD has jurisdiction over much of the nine-county Bay Area, including Alameda County. As the local air quality management agency, BAAQMD is required to monitor air pollutant levels to ensure that the National Ambient Air Quality Standards and California Ambient Air Quality Standards are met and, if they are not met, to develop strategies to meet the standards. Depending on whether the standards are met or exceeded, the San Francisco Bay Area Air Basin is classified as being in “attainment” or “nonattainment.” In areas designated as non-attainment for one or more air pollutants, a cumulative air quality impact exists for those air pollutants, and the human health impacts associated with these criteria pollutants, presented in Table 4, are already occurring in that area as part of the environmental baseline condition.

Under state law, air districts are required to prepare a plan for air quality improvement for pollutants for which the district is in non-compliance. The San Francisco Bay Area Air Basin is designated a nonattainment area for the federal 8-hour ozone standard, federal $PM_{2.5}$ 24-hour standards, state 8-hour and 1-hour ozone standards, state PM_{10} annual and 24-hour standards, and the state $PM_{2.5}$ annual standard (BAAQMD 2022). This nonattainment status is a result of several factors, such as mobile sources, wood burning, industrial combustion, and dust, in the San Francisco Bay Area Air Basin.

Table 4 Health Effects Associated with Non-Attainment Criteria Pollutants

Pollutant	Adverse Effects
Ozone	(1) Short-term exposures: (a) pulmonary function decrements and localized lung edema in humans and animals and (b) risk to public health implied by alterations in pulmonary morphology and host defense in animals; (2) long-term exposures: risk to public health implied by altered connective tissue metabolism and altered pulmonary morphology in animals after long-term exposures and pulmonary function decrements in chronically exposed humans; (3) vegetation damage; and (4) property damage.
Suspended particulate matter (PM_{10})	(1) Excess deaths from short-term and long-term exposures; (2) excess seasonal declines in pulmonary function, especially in children; (3) asthma exacerbation and possibly induction; (4) adverse birth outcomes including low birth weight; (5) increased infant mortality; (6) increased respiratory symptoms in children such as cough and bronchitis; and (7) increased hospitalization for both cardiovascular and respiratory disease (including asthma).[1]

Pollutant	Adverse Effects
Suspended particulate matter ($PM_{2.5}$)	(1) Excess deaths from short- and long-term exposures; (2) excess seasonal declines in pulmonary function, especially in children; (3) asthma exacerbation and possibly induction; (4) adverse birth outcomes, including low birth weight; (5) increased infant mortality; (6) increased respiratory symptoms in children, such as cough and bronchitis; and (7) increased hospitalization for both cardiovascular and respiratory disease, including asthma.

Source: United States Environmental Protection Agency 2021

Toxic Air Contaminants

Toxic air contaminants (TACs) are a diverse group of air pollutants that may cause or contribute to an increase in deaths or serious illness, or that may pose a present or potential hazard to human health. TACs include both organic and inorganic chemical substances that may be emitted from a variety of common sources, including gasoline stations, motor vehicles, dry cleaners, industrial operations, painting operations, and research and teaching facilities. One of the main sources of TACs in California is diesel engine exhaust that contains solid material known as diesel particulate matter (DPM). More than 90 percent of DPM is less than one micron in diameter (about 1/70th the diameter of a human hair) and thus is a subset of $PM_{2.5}$. Because of their extremely small size, these particles can be inhaled and eventually trapped in the bronchial and alveolar regions of the lungs (CARB 2022).

TACs are different than criteria pollutants because ambient air quality standards have not been established for TACs. TACs occurring at extremely low levels may still cause health effects and it is typically difficult to identify levels of exposure that do not produce adverse health effects. TAC impacts are described by carcinogenic risk and by chronic (i.e., long duration) and acute (i.e., severe but of short duration) adverse effects on human health.

TACs include both organic and inorganic chemical substances. While DPM is a main source, TACs may be emitted from a variety of common sources, including gasoline stations, motor vehicles, dry cleaners, industrial operations, painting operations, and research and teaching facilities. People exposed to toxic air pollutants at sufficient concentrations and durations may have an increased chance of developing cancer or experiencing other serious health effects. These health effects can include damage to the immune system, as well as neurological, reproductive (e.g., reduced fertility), developmental, respiratory, and other health problems (USEPA 2020).

Regulatory Setting

California Clean Air Act

The California CAA, signed into law in 1988, requires all areas of the State to achieve and maintain the California Ambient Air Quality Standards by the earliest practical date. CARB is the State air pollution control agency and is a part of CalEPA. CARB is the agency responsible for coordination and oversight of State and local air pollution control programs in California, and for implementing the requirements of the California CAA. CARB overseas local district compliance with federal and California laws, approves local air quality plans, submits the State implementation plans to the U.S. EPA, monitors air quality, determines and updates area designations and maps, and sets emissions standards for new mobile sources, consumer products, small utility engines, off-road vehicles, and fuels.

California Low-Emission Vehicle Program

CARB first adopted Low-Emission Vehicle (LEV) program standards in 1990. These first LEV standards ran from 1994 through 2003. LEV II regulations, running from 2004 through 2010, represent continuing progress in emission reductions. As the State's passenger vehicle fleet continues to grow and more sport utility vehicles and pickup trucks are used as passenger cars rather than work vehicles, the more stringent LEV II standards were adopted to provide reductions necessary for California to meet federally mandated clean air goals outlined in the 1994 SIP. In 2012, CARB adopted the LEV III amendments to California's LEV regulations. These amendments, also known as the Advanced Clean Car Program, include more stringent emission standards for model years 2017 through 2025 for both criteria pollutants and greenhouse gas (GHG) emissions for new passenger vehicles.

California On-Road Heavy-Duty Vehicle Program

CARB has adopted standards for emissions from various types of new on-road heavy-duty vehicles. Section 1956.8, Title 13, California Code of Regulations contains California's emission standards for on-road heavy-duty engines and vehicles, and test procedures. CARB has also adopted programs to reduce emissions from in-use heavy-duty vehicles including the Heavy-Duty Diesel Vehicle Idling Reduction Program, the Heavy-Duty Diesel In-Use Compliance Program, the Public Bus Fleet Rule and Engine Standards, and the School Bus Program and others.

Verified Diesel Emission Control Strategies

USEPA and CARB tiered off-road emission standards only apply to new engines and off-road equipment can last several years. CARB has developed Verified Diesel Emission Control Strategies (VDECS), which are devices, systems, or strategies used to achieve the highest level of pollution control from existing off-road vehicles, to help reduce emissions from existing engines. VDECS are designed primarily for the reduction of diesel PM emissions and have been verified by CARB. There are three levels of VDECS, the most effective of which is the Level 3 VDECS. Tier 4 engines are not required to install VDECS because they already meet the emissions standards for lower tiered equipment with installed controls.

California Diesel Risk Reduction Plan

CARB Diesel Risk Reduction Plan has led to the adoption of new state regulatory standards for all new on-road, off-road, and stationary diesel-fueled engines and vehicles to reduce DPM emissions by about 90 percent overall from year 2000 levels. The projected emission benefits associated with the full implementation of this plan, including federal measures, are reductions in DPM emissions and associated cancer risks of 75 percent by 2010, and 85 percent by 2020.

Tanner Air Toxics Act and Air Toxics Hot Spots Information and Assessment Act

Toxic Air Contaminants (TACs) in California are primarily regulated through the Tanner Air Toxics Act (AB 1807) and the Air Toxics Hot Spots Information and Assessment Act of 1987 (AB 2588), also known as the Hot Spots Act. To date, CARB has identified more than 21 TACs and has adopted the USEPA list of Hazardous Air Pollutants (HAPs) as TACs.

Air Quality Management

Because the San Francisco Bay Area Air Basin currently exceeds the federal ozone and $PM_{2.5}$ standards and the state ozone, PM_{10}, and $PM_{2.5}$ standards, BAAQMD is required to implement strategies to reduce pollutant levels to achieve attainment of the National Ambient Air Quality Standards and California Ambient Air Quality Standards. BAAQMD adopted the 2017 Clean Air Plan (2017 Plan) as an update to the 2010 Clean Air Plan. The 2017 Plan provides a regional strategy to protect public health and the climate. Consistent with the greenhouse gas (GHG) reduction targets adopted by the state, the 2017 Plan lays the groundwork for a long-term effort to reduce Bay Area GHG emissions to 40 percent below 1990 levels by 2030 and 80 percent below 1990 levels by 2050. To fulfill state ozone planning requirements, the 2017 control strategy includes all feasible measures to reduce emissions of ozone precursors (ROG and NO_X) and reduce transport of ozone and its precursors to neighboring air basins. In addition, the 2017 Plan builds upon and enhances BAAQMD's efforts to reduce emissions of fine particulate matter and toxic air contaminants (TAC) (BAAQMD 2017).

Sensitive receptors are facilities or land uses that include members of the population who are particularly sensitive to the effects of air pollutants, such as children, the elderly, and people with illnesses. According to BAAQMD, sensitive receptors are defined as facilities or land uses that include members of the population that are particularly sensitive to the effects of air pollutants, such as children, the elderly, and people with illnesses. Examples include schools, hospitals and residential areas (BAAQMD 2017). The nearest sensitive receivers are residences approximately 500 feet northeast of the project site. The next nearest sensitive receptor is the Metropolitan Golf Links Course, which is approximately 700 feet west of the project site (Appendix A).

City of San Leandro General Plan

The current City of San Leandro General Plan contains objectives and policies that minimize air pollutant emissions and reduce population exposed to significant health risk. The following objectives and policies from the City's General Plan are relevant to air quality and apply to the project:

Policy EH-3.1: **Clean Air Plan Implementation.** Cooperate with the appropriate regional, state, and federal agencies to implement the regional Clean Air Plan and enforce air quality standards.

Policy EH-3.2: **Transportation Control Measures.** Promote strategies that help improve air quality and reduce greenhouse gas emissions by reducing the necessity of driving. These strategies include more reliable public transportation demand management (TDM) programs, better provisions for bicyclists and pedestrians, and encouraging mixed use and higher density development around transit stations.

Policy EH-3.3: **Land Use Compatibility.** Discourage new uses with potential adverse air quality impacts, including the mission of toxic air contaminants and fine particulates, near residential neighborhoods, schools, hospitals, nursing homes, and other locations where public health could potentially be affected.

Policy EH-3.4: **Design, Construction, and Operation.** Require new development to be designed and constructed in a way that reduces the potential for future air quality problems, such as odors and the emission of any and all air pollutants. This should be done by:

a) Requiring construction and grading practices that minimize airborne dust and particulate matter;
b) Ensuring that best available control technology is used for operations that could generate air pollutants;
c) Encouraging energy conservation and low-polluting energy sources;
d) Promoting landscaping and tree planting to absorb carbon monoxide and other pollutants;
e) Implementing the complementary strategies to reduce greenhouse gases identified in the Climate Action Plan.

Policy EH-3.9: **Alternative Fuels Vehicles.** Promote the development of infrastructure which supports the use of alternative fuel (i.e., electric) vehicles, including electric charging stations and preferential parking for electric vehicles.

Policy EH-5.4: **Separation from Sensitive Uses.** Provide adequate and safe separation between areas where hazardous materials are present and sensitive uses such as schools, residences, and public facilities. Zoning and other development regulations should include performance standards to avoid safety hazards and achieve compatibility between uses.

Policy LU-10.2: **Off-Site Impacts.** Consider the setting and context of each site when evaluating proposals for development in industrial areas. The potential for impacts on adjacent uses, including the potential for land use conflicts and increased parking demand and truck traffic, should be a key consideration.

Significance Thresholds

The BAAQMD has adopted guidelines for quantifying and determining the significance of air quality emissions in its *California Environmental Quality Act Air Quality Guidelines* (BAAQMD 2022). BAAQMD recommends that lead agencies determine appropriate air quality emissions thresholds of significance based on substantial evidence in the record. BAAQMD's significance thresholds in the updated 2022 *CEQA Air Quality Guidelines* for project operations within the San Francisco Bay Area Air Basin are the most appropriate thresholds for use in determining air quality impacts of the project. BAAQMD developed screening criteria to provide lead agencies and project applicants with a conservative indication of whether a project could result in potentially significant air quality impacts.

Table 5 presents the significance thresholds for construction and operational-related criteria air pollutant and precursor emissions used for the purposes of this analysis. These represent the levels at which a project's individual emissions of criteria air pollutants or precursors would result in a cumulatively considerable contribution to the San Francisco Bay Area Air Basin existing air quality conditions. For the purposes of this analysis, the project would result in a significant impact if construction or operational emissions would exceed any of the thresholds shown in Table 5.

Table 5 Criteria Air Pollutant Significance Thresholds

	Construction Thresholds	Operational Thresholds	
Pollutant	Average Daily Emissions (lbs/day)	Average Daily Emissions (lbs/day)	Maximum Annual Emissions (tons/year)
ROG	54	54	10

	Construction Thresholds	Operational Thresholds	
Pollutant	**Average Daily Emissions (lbs/day)**	**Average Daily Emissions (lbs/day)**	**Maximum Annual Emissions (tons/year)**
NO_X	54	54	10
PM_{10}	82 (exhaust)	82	15
$PM_{2.5}$	54 (exhaust)	54	10
Fugitive Dust	Construction Dust Ordinance or other Best Management Practices	Not Applicable	

OG = reactive organic gases, NO_X = nitrogen oxides, PM_{10} = particulate matter 10 microns in diameter or less, $PM_{2.5}$ = particulate matter 2.5 microns in diameter or less; lbs/day = pounds per day, BAAQMD = Bay Area Air Quality Management District

Source: BAAQMD 2022

BAAQMD maintains rules and regulations to regulate sources of air pollution. Applicable rules and regulations are listed below. Additionally, BAAQMD does not have quantitative thresholds for fugitive dust emissions during construction. Instead, BAAQMD recommends Best Management Practices (BMPs) be implemented to reduce fugitive dust emissions, which are also listed below.

BAAQMD Rules and Regulations

REGULATION 2, RULE 1 (PERMITS–GENERAL REQUIREMENTS)

The BAAQMD regulates new sources of air pollution and the modification and operation of existing sources through the issuances of authorities to construct and permits to operate. Regulation 2, Rule 1 provides an orderly procedure which the project would be required to comply with to receive authorities to construct or permits to operate from the BAAQMD, for new sources of air pollutants, as applicable.

REGULATION 2, RULE 5 (NEW SOURCE REVIEW PERMITTING)

The BAAQMD regulates backup emergency generators, fire pumps, and other sources of TACs through its New Source Review (Regulation 2, Rule 5) permitting process. Although emergency generators are intended to be used only during periods of power outages, monthly testing of each generator is required. BAAQMD limits testing to no more than 50 hours per year. Each emergency generator installed is assumed to meet a minimum of Tier 2 emission standards (before control measures). As part of the permitting process, the BAAQMD limits the excess cancer risk from any facility to no more than 10 per 1-million-population for any permits that are applied for within a 2-year period, and would require any source that would result in an excess cancer risk greater than 1 per 1 million to install Best Available Control Technology for Toxics.

REGULATION 6, RULE 1 (PARTICULATE MATTER–GENERAL REQUIREMENTS)

The BAAQMD regulates PM emissions through Regulation 6 by means of establishing limitations on emission rates, emissions concentrations, and emission visibility and opacity. Regulation 6, Rule 1 provides existing standards for PM emissions that could result during project construction or operation that the project would be required to comply with, as applicable, such as the prohibition of emissions from any source for a period or aggregate periods of more than 3 minutes in any hour which are equal to or greater than 20 percent opacity.

REGULATION 6, RULE 6, (PARTICULATE MATTER–PROHIBITION OF TRACKOUT)

One rule by which the BAAQMD regulates PM includes Regulation 6, Rule 6, which prohibits PM trackout during project construction and operation. Regulation 6, Rule 6 requires the prevention or timely cleanup of trackout of solid materials onto paved public roads outside the boundaries of large bulk material sites, large construction sites, and large disturbed surface sides such as landfills.

REGULATION 8, RULE 3 (ARCHITECTURAL COATINGS)

This rule governs the manufacture, distribution, and sale of architectural coatings and limits the reactive organic gases content in paints and paint solvents. Although this rule does not directly apply to the project, it does dictate the ROG content of paint available for use during the construction.

REGULATION 8, RULE 15 (EMULSIFIED AND LIQUID ASPHALTS)

This rule dictates the reactive organic gases content of asphalt available for use during construction through regulating the sale and use of asphalt and limits the ROG content in asphalt. Although this rule does not directly apply to the project, it does dictate the ROG content of asphalt for use during the construction.

REGULATION 9, RULE 8 (ORGANIC COMPOUNDS)

This rule limits the emissions of nitrogen oxides and carbon monoxide from stationary internal combustion engines with an output rated by the manufacturer at more than 50 brake horsepower.

BAAQMD Best Management Practices for Construction-Related Fugitive Dust Emissions

The applicant shall require all construction contractors to implement the basic construction mitigation measures recommended by BAAQMD to reduce fugitive dust emissions. Emission reduction measures will include, at a minimum, the following measures:

- All exposed surfaces (e.g., parking areas, staging areas, soil piles, graded areas, and unpaved access roads) shall be watered two times per day.
- All haul trucks transporting soil, sand, or other loose material off-site shall be covered.
- All visible mud or dirt track-out onto adjacent public roads shall be removed using wet power vacuum street sweepers at least once per day. The use of dry power sweeping is prohibited.
- All vehicle speeds on unpaved roads shall be limited to 15 mph.
- All roadways, driveways, and sidewalks to be paved shall be completed as soon as possible. Building pads shall be laid as soon as possible after grading unless seeding or soil binders are used.
- All excavation, grading, and/or demolition activities shall be suspended when average wind speeds exceed 20 mph.
- All trucks and equipment, including their tires, shall be washed off prior to leaving the site.
- Unpaved roads providing access to sites located 100 feet or further from a paved road shall be treated with a 6- to 12-inch compacted layer of wood chips, mulch, or gravel.
- Publicly visible signs shall be posted with the telephone number and name of the person to contact at the lead agency regarding dust complaints. This person shall respond and take corrective action within 48 hours. The Air District's General Air Pollution Complaints number shall also be visible to ensure compliance with applicable regulations.

In the absence of a qualified Community Risk Reduction Plan,2 BAAQMD has established the following *Thresholds of Significance* for local community risks and hazards associated with TACs and PM2.5 for assessing individual source impacts at a local level. Impacts would be significant if:

- The project would result in an increased cancer risk of > 10 in one million
- The project would result in an increased non-cancer (i.e., Chronic or Acute) risk of > 1.0 Hazard Index
- The project would result in an ambient $PM_{2.5}$ concentration increase of > 0.3 µg/m^3 annual average

A project would be considered to have a cumulatively considerable impact if the aggregate total of current and proposed TAC sources within a 1,000 feet radius of the project fence-line in addition to the project would exceed the *Cumulative Thresholds of Significance*. Impacts would be significant if:

- The project would result in an increased cancer risk of > 100 in one million
- The project would result in an increased non-cancer (i.e., Chronic or Acute) risk of > 10 Hazard Index
- The project would result in an ambient $PM_{2.5}$ concentration increase of > 0.8 µg/m^3 annual average

Excess cancer risks are defined as those occurring in excess of or above and beyond those risks that would normally be associated with a location or activity if toxic pollutants were not present. Non-carcinogenic health effects are expressed as a hazard index, which is the ratio of expected exposure levels to an acceptable reference exposure level.

BAAQMD defines sensitive receptors as facilities or land uses that include members of the population that are particularly sensitive to the effects of air pollutants, such as children, the elderly, and those with pre-existing health problems. These facilities include schools, parks, daycare centers and pre-schools, medical care facilities, and residential communities (BAAQMD 2022). The nearest sensitive receivers are residences approximately 500 feet northeast of the project site.

BAAQMD establishes operational screening criteria for criteria air pollutants and precursors. If a project meets the screening criteria outlined in Section 4.1.2 and Table 4-1 of the BAAQMD CEQA Guidelines (BAAQMD 2022), the project would not result in the generation of operational-related criteria air pollutants and/or precursors that exceed the emissions thresholds shown in Table 5 above. Although the proposed project would not exceed the size screening level of 452,000 square feet for warehouse projects, the project would include operation of a backup generator, which would be subject to BAAQMD rules and regulations. Therefore, an air quality analysis and quantification of operational project-generated air pollutants is required and provided as Appendix A.

Methodology

Construction emissions modeled include emissions generated by construction equipment used on site and emissions generated by vehicle trips associated with construction, such as workers and vendor trips (Appendix A). Project construction was analyzed based on the applicant-provided information regarding the construction schedule and types of construction equipment used.

[2] The goal of a Community Risk Reduction Plan is to bring TAC and $PM_{2.5}$ concentrations for the entire community covered by the Plan down to acceptable levels as identified by the local jurisdiction and approved by the Air District. This approach provides local agencies a proactive alternative to addressing communities with high levels of risk on a project-by-project approach. The Air District has developed detailed guidelines for preparing Community Risk Reduction Plans which can be found on the Air District web site at: https://www.baaqmd.gov/~/media/files/planning-and-research/ceqa/draft_community_risk_reduction_plan_guidelines_may_2010.pdf

Standardized assumptions were used where project-specific information was unknown. This analysis also includes all applicable regulatory standards the project would be required to comply with. In particular, the project would comply with the 2022 Building Energy Efficiency Standards (Energy Code), CalGreen, the City of San Leandro's General Plan, and BAAQMD's rules and regulations. Specifically, the project would be required to comply with BAAQMD Regulation 8, Rule 3, which limits the quantity of volatile organic compounds in architectural coatings.

Operational emissions modeled include mobile source emissions (i.e., passenger vehicle and truck emissions), and area source emissions (Appendix A). Mobile source emissions are generated by vehicle trips to and from the project site. CalEEMod default fleet mixes were adjusted to reflect light-duty and heavy-duty truck activity at the proposed warehouse, and the model considers emissions from idling in addition to vehicle travel. Mobile source emissions accounted for traffic that would result from the project, which was obtained from the project's Transportation Impact Analysis report prepared by Kimley Horn in January 2024. The Transportation Impact Analysis is included as Appendix F. Area source emissions are generated by landscape maintenance equipment, consumer products and architectural coatings. There would also be local air pollutant emissions associated with energy sources, because the project would utilize natural gas.

Impact Analysis

a. Would the project conflict with or obstruct implementation of the applicable air quality plan?

The 2017 Clean Air Plan does not include control measures that apply directly to individual development projects. Instead, the control strategy includes control measures related to stationary sources, transportation, energy, buildings, agriculture, natural and working lands, waste management, water, and super GHG-pollutants. The 2017 Plan focuses on two goals:

- Protect air quality and health at the regional and local scale by attaining all national and state air quality standards and eliminating disparities among Bay Area communities in cancer health risk from TACs
- Protect the climate by reducing Bay Area GHG emissions to 40 percent below 1990 levels by 2030, and 80 percent below 1990 levels by 2050

Under BAAQMD's methodology, a determination of consistency with the 2017 Plan should demonstrate that a project:

- Supports the primary goals of the air quality plan
- Includes applicable control measures from the air quality plan
- Does not disrupt or hinder implementation of any air quality plan control measures

A project that would not support the 2017 Plan's goals would not be considered consistent with the 2017 Plan. On an individual project basis, consistency with BAAQMD quantitative thresholds is interpreted as demonstrating support for the clean air plan's goals.

The project would include applicable control measures from the 2017 Plan. Applicable control measures such as green building construction, waste diversion, and water conservation would indicate support for the clean air plan goals on an individual project basis. The proposed project would include construction of 21 electric vehicle charging stations. Additionally, the proposed project includes natural gas connections, creating the potential for emissions from combustion of natural gas (see Appendix A). As shown in the response to CEQA checklist questions b and c (see below), the proposed project would not result in exceedances of BAAQMD 2017 thresholds for criteria air pollutants and thus, would not disrupt or hinder implementation of 2017 Clean Air Plan

control measures. The proposed project would replace an existing vacant warehouse on-site and not induce substantial new population growth exceeding projections for the area. Therefore, the proposed project would be consistent with the criteria of the 2017 Clean Air Plan. Impacts would be less than significant.

LESS-THAN-SIGNIFICANT IMPACT

b. Would the project result in a cumulatively considerable net increase of any criteria pollutant for which the project region is non-attainment under an applicable federal or state ambient air quality standard?

The San Francisco Bay Area Air Basin is designated as a nonattainment area for the National Ambient Air Quality Standards for ozone and PM 2.5, and the California Ambient Air Quality Standards for ozone, PM_{10} and $PM_{2.5}$. The following subsections discuss emissions associated with construction and operation of the proposed project.

CONSTRUCTION EMISSIONS

Project construction would temporarily generate air pollutant emissions associated with fugitive dust (PM_{10} and $PM_{2.5}$) and exhaust emissions from heavy construction equipment and construction vehicles in addition to ROG emissions that would be released during the drying phase of architectural coating. Table 6 summarizes the estimated maximum daily emissions of pollutants during project construction.

Table 6 Estimated Daily Construction Emissions of the Project

	Estimated Maximum Daily Emissions (lbs/day)			
Construction Activity	**ROG**	**NO_X**	**Exhaust PM_{10}**	**Exhaust $PM_{2.5}$**
2024	3.36	37.60	1.39	1.30
2025	43.72	18.51	0.62	0.59
BAAQMD Thresholds	**54**	**54**	**82**	**54**
Threshold Exceeded?	No	No	No	No

ROG = reactive organic gases, NO_X = nitrogen oxides, PM_{10} = particulate matter 10 microns in diameter or less, $PM_{2.5}$ = particulate matter 2.5 microns in diameter or less; lbs/day = pounds per day, BAAQMD = Bay Area Air Quality Management District

Notes: All emissions modeling was completed using CalEEMod in accordance with applicant-provided information and data. Emissions presented are the highest of the winter and summer modeled emissions.

See Appendix A for model inputs and corresponding output results.

As shown in Table 6, construction-related emissions would not exceed BAAQMD thresholds. Therefore, project construction would not result in a cumulatively considerable net increase of a criteria pollutant for which the project region is non-attainment under an applicable federal or state ambient air quality standard.

Table 6 does not present fugitive dust emissions that would result from construction equipment operating on bare soil. Site preparation and grading, for example, may cause wind-blown dust that could contribute particulate matter into the local atmosphere. BAAQMD does not have quantitative thresholds for fugitive dust emissions during construction. Instead, BAAQMD recommends Best Management Practices (BMPs) be implemented to reduce fugitive dust emissions. The proposed project does not include these BMPs. Accordingly, construction impacts would be potentially significant. Implementation of Mitigation Measure AQ-1 is required.

OPERATIONAL EMISSIONS

Operation of the project would generate criteria air pollutant emissions associated with area sources (e.g., architectural coatings, consumer products, and landscaping equipment), energy sources (i.e., nonrenewable energy sources) and mobile sources (i.e., vehicle trips and truck trips to and from the project site). Table 7 summarizes the project's maximum annual operational emissions by emission source and maximum daily operational emissions.

Table 7 Estimated Operational Daily Emissions of the Project

	Emissions (lbs/day)			
Emissions Source	**ROG**	**NO_x**	**PM_{10}**	**$PM_{2.5}$**
Annual Emissions (tons/year)				
Area	6.14	<0.01	<0.01	<0.01
Energy	0.19	1.72	0.13	0.13
Mobile	1.88	18.96	0.22	0.21
Generators	3.38	9.42	0.50	0.50
Off-Road Equipment	1.10	8.58	0.15	0.13
Total Emissions	**12.69**	**38.68**	**1.00**	**0.97**
Significance Threshold (pounds/day)	54	54	82	54
Threshold Exceeded?	**No**	**No**	**No**	**No**

ROG = reactive organic gases, NO_X = nitrogen oxides, PM_{10} = particulate matter 10 microns in diameter or less, $PM_{2.5}$ = particulate matter 2.5 microns or less in diameter; lbs/day = pounds per day, BAAQMD = Bay Area Air Quality Management District

Note: The updated emissions modeling was completed using CalEEMod in accordance with applicant-provided information and data. Some numbers may not add up due to rounding. Emissions presented are the highest of the winter and summer modeled emissions. See Appendix A for model input and corresponding output results.

As shown in Table 7, the estimated operational emissions of the project would not exceed BAAQMD thresholds for criteria pollutants. Therefore, project operation would not result in a cumulatively considerable net increase of a criteria pollutant for which the project region is in non-attainment.

Mitigation Measure

AQ-1 BAAQMD Best Management Practices for Construction-Related Fugitive Dust Emissions

The project applicant shall require all construction contractors to implement the basic construction mitigation measures recommended by BAAQMD to reduce fugitive dust emissions. Emission reduction measures will include, at a minimum, the following measures:

1. All exposed surfaces (e.g., parking areas, staging areas, soil piles, graded areas, and unpaved access roads) shall be watered two times per day.
2. All haul trucks transporting soil, sand, or other loose material off-site shall be covered.
3. All visible mud or dirt track-out onto adjacent public roads shall be removed using wet power vacuum street sweepers at least once per day. The use of dry power sweeping is prohibited.
4. All vehicle speeds on unpaved roads shall be limited to 15 mph.
5. All roadways, driveways, and sidewalks to be paved shall be completed as soon as possible. Building pads shall be laid as soon as possible after grading unless seeding or soil binders are used.

6. All excavation, grading, and/or demolition activities shall be suspended when average wind speeds exceed 20 mph.
7. All trucks and equipment, including their tires, shall be washed off prior to leaving the site.
8. Unpaved roads providing access to sites located 100 feet or further from a paved road shall be treated with a 6- to 12-inch compacted layer of wood chips, mulch, or gravel.
9. Publicly visible signs shall be posted with the telephone number and name of the person to contact at the lead agency regarding dust complaints. This person shall respond and take corrective action within 48 hours. The Air District's General Air Pollution Complaints number shall also be visible to ensure compliance with applicable regulations.

Impacts would be less than significant with implementation of Mitigation Measure AQ-1.

LESS THAN SIGNIFICANT WITH MITIGATION INCORPORATED

c. Would the project expose sensitive receptors to substantial pollutant concentrations?

Kimley Horn and Associates conducted an assessment of potential health impacts to surrounding sensitive receptors resulting from construction toxic air contaminants (TAC) emissions, using the methodology described under *Methodology* in this section. The detailed assessment is provided in Appendix B.

The following four criteria based on BAAQMD health risk and hazard significance thresholds were applied to determine if the proposed project would significantly impact the exposure of sensitive receptors to project emissions (Appendix B). The project would have a significant impact if:

- Construction of the project would generate toxic air contaminants (TACs) that exceed health risk significance thresholds;
- The cumulative health impact would exceed cumulative health risk significance thresholds;
- Operation of the project would result in an exceedance of the health risk significance thresholds;
- A carbon monoxide (CO) hotspot assessment demonstrates that the project would result in a CO hotspot which would exceed ambient air quality standards.

BAAQMD provides guidance for evaluating impacts from TACs in its CEQA Air Quality Guidelines document. As noted therein, an incremental cancer risk of greater than 10 cases per million at the Maximally Exposed Individual (MEI) will result in a significant impact. The BAAQMD considers exposure to annual PM2.5 concentrations that exceed 0.3 µg/m3 from a single source to be significant. The BAAQMD significance threshold for non-cancer hazards is 1.0.

PROJECT CONSTRUCTION HEALTH RISK ASSESSMENT

Certain population groups, such as children, the elderly, and people with health problems, are particularly sensitive to air pollution. Therefore, the majority of sensitive receptor locations are schools, hospitals, and residences. Sensitive receptors in the project vicinity include single- and multi-family residences located 500 feet northeast of the project site. Construction equipment and associated heavy-duty truck traffic generate diesel exhaust, which is a known TAC. Diesel exhaust from construction equipment operating at the site poses a health risk to nearby sensitive receptors.

Project construction would generate diesel particulate matter (DPM) emissions from the use of off-road diesel equipment required for grading and excavation, paving, and other construction activities. For construction activity, DPM is the primary TAC of concern. On-road diesel-powered

haul trucks traveling to and from the construction area to deliver materials and equipment are less of a concern because they would not stay on the site for long durations. Accordingly, they would also not operate for long durations in proximity to nearby sensitive receptors. Diesel exhaust from construction equipment operating at the site poses a health risk to nearby sensitive receptors. Construction is temporary and would be transient throughout the site (i.e. move from location to location) and would not generate emissions in a fixed location for extended periods of time.

Construction is subject to and would comply with California regulations (e.g., California Code of Regulations, Title 13, Division 3, Article 1, Chapter 10, Sections 2485 and 2449), which reduce DPM and criteria pollutant emissions from in-use off-road diesel-fueled vehicles and limit the idling of heavy-duty construction equipment to no more than five minutes. These regulations would further reduce nearby sensitive receptors' exposure to temporary and variable DPM emissions.

The PM2.5 emissions rates in grams per second from project construction were calculated from the total annual on-site exhaust emissions reported in CalEEMod (0.20 tons). Annual emissions were converted to grams per second and these emissions rates were input into AERMOD. Although project construction would occur for over a period of 17 months, the health risk computation was performed to determine the risk of developing an excess cancer risk calculated on a 3-year exposure scenario as recommended by the BAAQMD, and thus is conservative.

As noted above, maximum (i.e., worst case) PM2.5 exhaust construction emissions over the entire project construction period were used in AERMOD to approximate construction DPM emissions. Risk levels were calculated with the CARB Hotspots Analysis and Reporting Program (HARP) Risk Assessment Standalone Tool (RAST) based on the California Office of Environmental Health Hazard Assessment (OEHHA) guidance document, Air Toxics Hot Spots Program Risk Assessment Guidelines (February 2015). Results of this assessment are summarized in Table 8 below. Table 8 refers to Maximally Impacted Receptor. BAAQMD developed a set of guidelines and thresholds for estimating health risks resulting from exposure to TACs at the Maximally Impacted Receptor. For the proposed project, the MIR includes single family residences located approximately 500 feet northeast of the project site. Table 8 also shows the health risk for recreation users in the area, such as the golf course approximately 700 feet from the project site, and the risk for project workers.

Table 8 Construction Risk

	Cancer Risk (risk per million)	Chronic Non-Cancer Hazard Index[1]	Acute Hazard	TAC Concentration (micrograms per cubic meter)
Residential Maximally Impacted Receptor	0.53	0.001	0.071	0.004
Recreation	0.07	0.000	0.037	0.001
Project Worker	0.91	0.006	0.219	0.028
Significance Threshold	**10**	**1**	**1.0**	**0.3**
Threshold Exceeded?	**No**	**No**	**No**	**No**

MIR = Maximally Impacted Receptor

TAC = toxic air contaminants

[1] Chronic non-cancer hazard index was estimated by dividing the annual DPM concentration (as PM2.5 exhaust) by the DPM reference exposure level of 5 micrograms per cubic meter

Threshold source: BAAQMD 2022. See Appendix B for the cancer health risk model output results. This assessment uses outputs from the CalEEMod modeling conducted using a previous model version, which estimated greater construction emissions than the updated CalEEMod outputs attached to the end of Appendix B. Therefore, this cancer risk assessment is more conservative in that is utilizes greater estimated emissions.

As shown above, the proposed project's construction emissions would not exceed applicable BAAQMD significance thresholds at the Maximally Impacted Receptor. Project construction would not result in significant health impacts to nearby sensitive receptors.

OPERATIONAL HEALTH RISK ASSESSMENT

Vehicle DPM emissions were estimated using emission factors for course particulate matter less than 2.5 microns in diameter (PM2.5) generated with the EMFAC developed by CARB. EMFAC is a mathematical model that was developed to calculate emission rates from motor vehicles that operate on highways, freeways, and local roads in California and is commonly used by CARB to project changes in future emissions from on-road mobile sources.

For this project, annual average PM2.5 emission factors were generated by running EMFAC for vehicles in the BAAQMD within Alameda County. EMFAC generates emission factors in terms of grams of pollutant emitted per vehicle activity and can calculate a matrix of emission factors at specific values of vehicle speed, temperature, and relative humidity. The model was run for heavy-duty diesel vehicles traveling along Doolittle Drive, Adams Avenue, Hester Street, and Davis Street, as well as circulating the project site and idling at proposed loading areas on-site. Additionally, the operational run included one emergency generator.

Based on the AERMOD outputs, the highest expected annual average diesel PM2.5 emission concentrations from diesel truck traffic near sensitive receptors would be 0.001 µg/m3. The calculations conservatively assume no cleaner technology with lower emissions in future years. As shown in Table 9 below, the calculated carcinogenic risk resulting from the project is 0.31 per million for workers, 0.15 per million for recreation, and 0.11 per million for residents which are all below the BAAQMD threshold of 10 per million. Acute and chronic hazards also would be below the BAAQMD significance threshold of 1.0, as shown in Table 9.

Table 9 Operational Risk

	Cancer Risk (risk per million)	Chronic Non-Cancer Hazard Index[1]	Acute Hazard	TAC Concentration (micrograms per cubic meter)
Residential Maximally Impacted Receptor	0.11	0.0001	0.005	0.002
Recreation	0.15	0.0002	0.011	0.003
Project Worker	0.31	0.0002	0.021	0.006
Significance Threshold	**10 in one million**	**1.0**	**1.0**	**0.3**
Threshold Exceeded?	**No**	**No**	**No**	**No**

MIR = Maximally Impacted Receptor

TAC = toxic air contaminants

[1] Chronic non-cancer hazard index was estimated by dividing the annual DPM concentration (as PM2.5 exhaust) by the DPM reference exposure level of 5 micrograms per cubic meter

Threshold source: BAAQMD 2022. See Appendix B for the cancer health risk model output results. This assessment uses outputs from the CalEEMod modeling conducted using a previous model version, which estimated greater construction emissions than the updated CalEEMod outputs attached to the end of Appendix B. Therefore, this cancer risk assessment is more conservative in that is utilizes greater estimated emissions.

As shown in Table 9, the proposed project's operational emissions would not exceed applicable BAAQMD significance thresholds at the Maximally Impacted Receptor. Project operation would not result in significant health impacts to nearby sensitive receptors.

CUMULATIVE HEALTH RISK ASSESSMENT

As discussed in the Health Risk Assessment prepared by Kimley Horn and Associates, stationary sources within a 1,000-foot-radius of the project site were identified using BAAQMD's Stationary Source GIS Maps and consultation with the BAAQMD. As shown in Table 10, the cumulative impacts related to cancer risk and hazard would be less than cumulatively considerable and within acceptable limits (Appendix B) Additionally, cumulative residential PM2.5 would not exceed the BAAQMD's cumulative threshold of 0.8 µg/m^3, the primary contributor to those concentrations is the existing PCC Structural manufacturing site near the project area. The facility has a high PM2.5 of 0.374 µg/m^3. The PCC Structural facility source represents approximately 60 percent of the total concentrations and are unrelated to the project. The project would represent less than 0.17 percent of total cumulative PM2.5 in the project area. Therefore, the project's cumulative impacts would be less than significant.

Table 10 2020 Cumulative Health Risk

Emission Sources	PM2.5 (µg/m^3)	Cancer Risk (per million)	Hazard
Project Mobile Emissions	0.002	0.11	0.0003
Major Street Sources	0.024	1.065	0.096
Highway Sources	0.190	11.550	0.840
Railway Sources	0.008	5.483	0.032
Stationary Source – California General Partnership	0.000	0.092	0.000
Stationary Source – PCC Structural	0.374	3.302	0.382
Stationary Source – Avis Service Center	0.000	0.000	0.000
Cumulative Health Risk Values	**0.618**	**22.61**	**1.350**
BAAQMD Threshold	0.8	100	10
Threshold Exceeded?	**No**	**No**	**No**

Source: Appendix B

CO HOTSPOTS

CO emissions from traffic generated by the proposed project are a concern at the local level because congested intersections can result in high, localized concentrations of CO referred to as CO hotspots. BAAQMD recommends comparing a project's attributes with the following screening criteria as a first step to evaluating whether the project would result in the generation of CO concentrations that would substantially contribute to an exceedance of the *Thresholds of*

Significance. The project would result in a less than significant impact to localized CO concentrations if:

1. The project is consistent with an applicable congestion management program established by the county congestion management agency for designated roads or highways, the regional transportation plan, and local congestion management agency plans;
2. The project would not increase traffic volumes at affected intersections to more than 44,000 vehicles per hour; or
3. Project-generated traffic would not increase traffic volumes at affected intersections to more than 24,000 vehicles per hour where vertical and/or horizontal mixing is substantially limited (e.g., tunnel, parking garage, underpass, natural or urban street canyon, below-grade roadway).

Based on the Traffic Impact Analysis (Appendix F) for the proposed project, the proposed project would not change level of service at intersections subject to the Alameda Congestion Management Plan. The Transportation Impact Analysis indicates that the proposed project would not result in deficiencies at intersections subject to the Alameda Congestion Management Plan that would not otherwise be deficient without the project. Additionally, no intersections in the project area would have traffic volumes exceeding 44,000 vehicles per hour. The busiest intersection studied in the Traffic Impact Analysis is the intersection of Davis Street and the ramps for I-880. At this intersection traffic volumes do not exceed 4,000 during peak hour, which is commonly called “rush hour.” The proposed project would generate approximately 1,543 vehicle trips daily (including 46 truck trips), which would not increase traffic volumes at an intersection to 24,000 vehicles per hour. Therefore, localized CO emissions would not be significant.

Overall, the proposed project would not expose sensitive receptors to substantial pollutant concentrations and impacts would be less than significant.

LESS-THAN-SIGNIFICANT IMPACT

d. Would the project result in other emissions (such as those leading to odors) adversely affecting a substantial number of people?

During construction activities, heavy equipment and vehicles would emit odors associated with vehicle and engine exhaust and during idling. However, these odors would be intermittent and temporary and would cease upon completion of construction activities, and odors would disperse with distance. Overall, project construction would not generate other emissions, such as those leading to odors, affecting a substantial number of people. Construction-related impacts would be less than significant.

Table 5-4 in the BAAQMD 2022 CEQA Air Quality Guidelines provides screening distances for land uses that have the potential to generate substantial odor complaints. The uses in the table include wastewater treatment plants, landfills or transfer stations, refineries, composting facilities, confined animal facilities, food processing facility, smelting plants, and chemical manufacturing facilities (BAAQMD 2022). Warehouse buildings are not included in this list, and operation of the project would not generate other emissions, such as those leading to odors, which would affect a substantial number of people. Furthermore, truck idling at the proposed warehouse would be limited to 5 minutes at any location as required by CARB’s Commercial Vehicle Idling Airborne Toxics Control Measure, which would minimize generation of odors from trucks at the project site. Impacts would be less than significant.

LESS-THAN-SIGNIFICANT IMPACT

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4 Biological Resources

	Potentially Significant Impact	Less than Significant with Mitigation Incorporated	Less-than - Significant Impact	No Impact
Would the project:				
a. Have a substantial adverse effect, either directly or through habitat modifications, on any species identified as a candidate, sensitive, or special status species in local or regional plans, policies, or regulations, or by the California Department of Fish and Wildlife or U.S. Fish and Wildlife Service?	☐	■	☐	☐
b. Have a substantial adverse effect on any riparian habitat or other sensitive natural community identified in local or regional plans, policies, or regulations, or by the California Department of Fish and Wildlife or U.S. Fish and Wildlife Service?	☐	☐	☐	■
c. Have a substantial adverse effect on state or federally protected wetlands (including, but not limited to, marsh, vernal pool, coastal, etc.) through direct removal, filling, hydrological interruption, or other means?	☐	☐	☐	■
d. Interfere substantially with the movement of any native resident or migratory fish or wildlife species or with established native resident or migratory wildlife corridors, or impede the use of native wildlife nursery sites?	☐	☐	☐	■
e. Conflict with any local policies or ordinances protecting biological resources, such as a tree preservation policy or ordinance?	☐	☐	■	☐
f. Conflict with the provisions of an adopted Habitat Conservation Plan, Natural Community Conservation Plan, or other approved local, regional, or state habitat conservation plan?	☐	☐	☐	■

The analysis in this section is largely based on a Biological Resources Analysis prepared by Moore Biological Consultants in September 2022 which was peer reviewed by Rincon Consultants on behalf of the City in October 2023. The Biological Resources Assessment is provided as Appendix C.

Setting

The project site is currently developed with industrial buildings that are vacant. The site is in an urbanized area, surrounded by paved parking lots, commercial and industrial buildings, and landscaped areas and trees. The site is approximately 2.5 miles east of the San Francisco Bay, 5.8 miles northwest of San Lorenzo Creek, and 2.5 miles west of San Leandro Creek. The site is relatively flat with an elevation of approximately 10 feet.

There are five street trees along the driveway from Hester Street, however there are no other trees on the project site. Vegetation within the site consists of narrow fringes of ruderal grassland along fence lines and along the extreme edges of buildings within the site. Ruderal grassland best describes the highly disturbed upland vegetation found within the site.

Wetlands, riparian zones, and other natural communities do not occur on the project site. There were no mammals or signs of mammals observed during the site visit and the existing buildings did not show signs of roosting bats nor are they suitable for bat habitat due to the fact that they are metal structures without attics. The likelihood of occurrence of listed, candidate, and other special-status species in the site is generally low (Appendix C).

While the project site does not support special status species or trees, existing trees on Hester Street and elsewhere near the project site could contain bird nests. Migratory nesting birds are protected under the Migratory Bird Treaty Act (MBTA). Protected birds include all common songbirds, waterfowl, shorebirds, hawks, owls, eagles, ravens, crows, native doves and pigeons, swifts, martins, swallows, and others, including their body parts (feathers, plumes, etc.), nests, and eggs.

Regulatory Setting

Federal and State

Regulatory authority over biological resources is shared by federal, state, and local agencies under a variety of laws, ordinances, regulations, and statutes. Primary authority for biological resources lies with the land use control and planning authority of local jurisdictions (in this instance, the City of San Leandro).

The California Department of Fish and Wildlife (CDFW) is a trustee agency for biological resources throughout the state under CEQA and has direct jurisdiction under the California Fish and Game Code (CFGC). Under the California Endangered Species Act and the federal Endangered Species Act, the CDFW and the U.S. Fish and Wildlife Service (USFWS), respectively, have direct regulatory authority over species formally listed as threatened or endangered (and listed as rare for CDFW). Native and/or migratory bird species are protected under the CFGC Sections 3503, 3503.5, and 3511.

Statutes in the Clean Water Act (CWA), CFGC, and CCR protect wetlands and riparian habitat. The U.S. Army Corps of Engineers (USACE) has regulatory authority over wetlands and waters of the United States under Section 404 of the CWA. The State Water Resources Control Board (SWRCB) and the nine Regional Water Quality Control Boards (RWQCBs) ensure water quality protection in California pursuant to Section 401 of the CWA and Section 13263 of the Porter-Cologne Water Quality Control Act. The CDFW regulates waters of the State under the CFGC Section 1600 et seq.

Special-status species are those plants and animals: 1) listed, proposed for listing, or candidates for listing as Threatened or Endangered by the USFWS and the National Marine Fisheries Service

(NMFS) under the federal Endangered Species Act; 2) listed or proposed for listing as Rare, Threatened, or Endangered by the CDFW under the California Endangered Species Act; 3) recognized as California Species of Special Concern by the CDFW; 4) afforded protection under CFGC; and 5) occurring on Lists 1 and 2 of the CDFW California Rare Plant Rank (CRPR) system.

Local

Chapter 5-2 of the San Leandro Municipal Code establishes tree preservation requirements that would apply to the project. Section 5-2-205 establishes all street trees within the city as property of the City, and Section 5-2-220 outlines requirements for street tree planting and replacement.

SAN LEANDRO MUNICIPAL CODE SECTION 5-2-220

(a) Upon approval of the Director, any person may undertake privately, or by agreement with a private nursery or tree service, the planting of a street tree provided that the location, species and manner of planting are acceptable to the Director.

(b) The Director shall prepare a list of those tree species which are acceptable for use as street trees. The Director shall also establish such criteria relating to the location and manner of planting such street trees as will protect public safety and public and private improvement.

(c) All new planting of street trees as replacements for street trees existing on the effective date of this Chapter shall conform to the species and planting criteria set forth in subsection (b) of this section.

(d) There may be imposed a condition of approval for all parcel and subdivision maps that the subdivider plant street trees at such locations and in such manner as may be determined by the Director.

Impact Analysis

a. Would the project have a substantial adverse effect, either directly or through habitat modifications, on any species identified as a candidate, sensitive, or special status species in local or regional plans, policies, or regulations, or by the California Department of Fish and Wildlife or U.S. Fish and Wildlife Service?

As described in the *Setting* section above, the project site is in an urbanized area of San Leandro and is currently fully developed with structures, surface parking lots, roadways, and limited perimeter landscaping, including ruderal grassland (Appendix C). Dominant grass species observed in the site include oats (*Avena* sp.), common mallow (*Malva neglecta*), fireweed (*Epilobium brachycarpum*), prickly lettuce (*Lactuca serriola*), field bindweed (*Convolvulus arvensis*) and common sow thistle (*Sonchus oleraceus*). The project site contains 5 street trees on Hester Street, which together do not meet the characteristics of a woodland.

The proposed project would involve construction work near street trees just off the project site near the driveway that connects to Hester Street which may affect protected nesting birds in existing trees. For example, construction noise could result in adult birds abandoning their nests. Project construction would also potentially require the removal of these trees, resulting in loss of nests if present. Impacts to migratory nesting birds would be potentially significant and implementation of Mitigation Measure BIO-1 is required.

Mitigation Measure

BIO-1 Nesting Bird Avoidance and Minimization Measures

The following avoidance and minimization measures shall be implemented during project construction activities:

- Initial site disturbance shall occur outside the general avian nesting season (February 1 through September 15), if feasible.
- If initial site disturbance occurs in a work area within the general avian nesting season indicated above, a qualified biologist shall conduct a pre-construction nesting bird survey no more than 14 days prior to initial disturbances in the work area. The survey shall include the entire area of disturbance area plus a 50-foot buffer (relevant to non-raptor species) and 300-foot buffer (relevant to raptors) around the site. If active nests are located, all construction work shall be conducted outside a buffer zone from the nest to be determined by the qualified biologist. The buffer should be a minimum of 50 feet for non-raptor bird species and at least 300 feet for raptor species. Larger buffers may be required and/or smaller buffers may be established depending upon the species, status of the nest, and construction activities occurring in the vicinity of the nest. The buffer area(s) shall be closed to all construction personnel and equipment until the adults and young are no longer reliant on the nest site. A qualified biologist shall confirm that breeding/nesting is completed and young have fledged the nest prior to removal of the buffer.
- If construction activities in a given work area cease for more than 14 days, additional surveys shall be conducted for the work area. If active nests are located, the aforementioned buffer zone measures shall be implemented.

Significance After Mitigation

Implementation of Mitigation Measure BIO-1 would reduce the potential for project construction activities to result in the loss of active bird nests through a pre-construction nesting bird survey and establishment of avoidance buffers around active nests, if present. Implementation of this measure would reduce this project impact to a less than significant level. This mitigation measure will be included in the EIR's Executive Summary and in the project's Mitigation Monitoring and Reporting Program.

LESS THAN SIGNIFICANT WITH MITIGATION INCORPORATED

b. Would the project have a substantial adverse effect on any riparian habitat or other sensitive natural community identified in local or regional plans, policies, or regulations, or by the California Department of Fish and Wildlife or U.S. Fish and Wildlife Service?

d. Would the project interfere substantially with the movement of any native resident or migratory fish or wildlife species or with established native resident or migratory wildlife corridors, or impede the use of native wildlife nursery sites?

The project site is developed with vacant industrial uses and asphalt pavement, with small, isolated patches of grass. The site does not contain riparian habitat and is not located within a known regional wildlife movement corridor or other sensitive biological area as indicated by the USFWS Critical Habitat portal (USFWS 2022). The project site is fenced and surrounded by urban development, precluding its use as a wildlife movement corridor or wildlife nursery site.

Accordingly, the proposed project would have no impact on riparian habitat, sensitive natural communities, migratory fish, migratory corridors, or native wildlife nursery sites.

NO IMPACT

c. Would the project have a substantial adverse effect on state or federally protected wetlands (including, but not limited to, marsh, vernal pool, coastal, etc.) through direct removal, filling, hydrological interruption, or other means?

The National Wetlands Inventory (NWI) was reviewed to determine if wetland and/or non-wetland waters had been previously documented and mapped on or in the vicinity of the project site (USFWS 2020). No such features occur on or adjacent to the project site according to the NWI mapper. This is consistent with observable conditions on site, which consist of structures and asphalt pavement, precluding wetlands (Appendix C). As described in *Setting,* the nearest creeks (San Leandro Creek and San Lorenzo Creek) are approximately 5.8 miles and 2.5 miles from the project site, respectively. Construction and operation of the proposed project would not involve or require the direct removal, filling, hydrological interruption, or other means to the bed, bank, channel, or adjacent upland area of any creek or wetland. No impact would occur.

NO IMPACT

e. Would the project conflict with any local policies or ordinances protecting biological resources, such as a tree preservation policy or ordinance?

As described in the *Project Description*, construction activities associated with the proposed project would require the removal of up to five street trees. According to the Biological Resources Assessment (Appendix C), these trees are not protected by ordinance. Landscaping would also include new trees. New trees would be planted amongst shrubs along much of the site boundary, but also in landscaped parking islands within the surface parking area designed for passenger vehicles. Trees would also be planted around the proposed driveways on Hester Street, near the surface parking area designed for trailers. Trees would be a mix of conifers and deciduous species. Landscaping shrubs and trees would consist of species native to California. Therefore, the project would not conflict with policies regarding tree preservation in San Leandro Municipal Code. There would be no impact.

LESS-THAN-SIGNIFICANT IMPACT

f. Would the project conflict with the provisions of an adopted Habitat Conservation Plan, Natural Community Conservation Plan, or other approved local, regional, or state habitat conservation plan?

The project site is not located in an adopted Habitat Conservation Plan, Natural Community Conservation Plan, or other approved local, regional, or state habitat conservation plan (City of San Leandro 2016a). Therefore, the project would not conflict with such a plan and no impact would occur.

NO IMPACT

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5 Cultural Resources

	Potentially Significant Impact	Less than Significant with Mitigation Incorporated	Less-than - Significant Impact	No Impact
Would the project:				
a. Cause a substantial adverse change in the significance of a historical resource pursuant to §15064.5?	☐	☐	☐	■
b. Cause a substantial adverse change in the significance of an archaeological resource pursuant to §15064.5?	☐	■	☐	☐
c. Disturb any human remains, including those interred outside of formal cemeteries?	☐	☐	■	☐

This section provides an analysis of the project's impacts on cultural resources, including historical and archaeological resources, as well as human remains. This section is based largely on a Cultural Resources Memorandum that Basin Research Associates prepared for the proposed project in April 2024. The Cultural Resources Memorandum, which Rincon Consultants peer reviewed on behalf of the City, is included as Appendix D to this Initial Study.

Setting

According to the Cultural Resources Memorandum prepared by Basin Research Associates, none of the existing buildings on site qualify as an eligible historical resource (Appendix D). Additionally, no listed or known potential National Register of Historic Places and/or California Register of Historical Resources are located on or adjacent to the project site. No other significant or potentially significant local, state or federal cultural resources/historic properties, landmarks, points of interest, etc. have been identified on or immediately adjacent to the project site according to the Cultural Resources Memorandum.

The project site has been disturbed by development and demolition since approximately 1946, and substantial development surrounds the project site in all directions. No prehistoric-period archaeological or built environment resources were identified during the field survey on the project site (Appendix D). According to soil borings conducted for the geotechnical report (see Appendix E), undocumented fill material comprises soils on-site to depths ranging 1.5 to 7 feet below ground surface.

Regulatory Setting

CEQA requires a lead agency to determine whether a project may have a significant effect on historical resources (Public Resources Code [PRC], Section 21084.1). A historical resource is a resource listed in, or determined to be eligible for listing in, the California Register of Historical Resources (CRHR); a resource included in a local register of historical resources; or any object,

building, structure, site, area, place, record, or manuscript a lead agency determines to be historically significant (CEQA Guidelines, Section 15064.5[a] [1-3]).

A resource is considered historically significant in the California Register of Historical Resources if it:

1. Is associated with events that have made a significant contribution to the broad patterns of California's history and cultural heritage;
2. Is associated with the lives of persons important in our past;
3. Embodies the distinctive characteristics of a type, period, region, or method of construction, or represents the work of an important creative individual, or possesses high artistic values; or
4. Has yielded, or may be likely to yield, information important in prehistory or history.

In addition, if it can be demonstrated that a project would cause damage to a unique archaeological resource, the lead agency may require reasonable efforts be made to permit any or all of these resources to be preserved in place or left in an undisturbed state. To the extent that resources cannot be left undisturbed, mitigation measures are required (PRC, Section 21083.2[a], [b]).

PRC, Section 21083.2(g) defines a unique archaeological resource as an archaeological artifact, object, or site about which it can be clearly demonstrated that, without merely adding to the current body of knowledge, there is a high probability that it:

1. Contains information needed to answer important scientific research questions and that there is a demonstrable public interest in that information;
2. Has a special and particular quality such as being the oldest of its type or the best available example of its type; or
3. Is directly associated with a scientifically recognized important prehistoric or historic event or person.

Methodology

Basin Research Associates conducted a prehistoric and historic sire records and literature search for a 0.25-mile radius from the project site. This included a records search of the California Historical Resources Information System (CHRIS) and of the Northwest Information Center (NWIC) at Sonoma State University on December 8, 2020. Basin Research Associates sent a Sacred Lands File (SLF) search request to the native American Heritage Commission (NAHC) in 2020 as well.

On December 14, 2020 Dr. Colin I. Busby completed an archaeological and built environment field review of the project site. Existing structures within the project site were also evaluated for eligibility for the NRHP and CRHR.

Impact Analysis

a. Would the project cause a substantial adverse change in the significance of a historical resource pursuant to §15064.5?

According to the Cultural Resources Memorandum prepared by Basin Research Associates, there are no historical resources within the project site or adjacent to the project site. Accordingly, because historical resources do not exist in or adjacent to the project site, the proposed project would have no impact on historical resources.

NO IMPACT

b. Would the project cause a substantial adverse change in the significance of an archaeological resource pursuant to §15064.5?

According to the Cultural Resources Memorandum prepared by Basin Research Associates, there are no known archaeological resources within the project site. The site was previously graded for construction of the existing parking areas and buildings, and undocumented fill material comprises soils on-site to depths ranging 1.5 to 7 feet below ground surface, reducing the likelihood of intact below-ground resources, and the proposed project does not include below-ground space and would not require excavation substantially below previous disturbance. However, it is always possible that unanticipated archaeological deposits could be encountered and damaged during ground-disturbing activities. In the event that uncovering and damaging an unanticipated archaeological deposit occurs, the impact would be potentially significant. Accordingly, implementation of Mitigation Measure CR-1 would be required.

Mitigation Measures

CR-1 Unanticipated Discovery of Cultural Resources

In the event that archaeological resources are unexpectedly encountered during ground-disturbing activities, work within 50 feet of the find shall halt and an archaeologist meeting the Secretary of the Interior's Professional Qualifications Standards for archaeology (National Park Service 1983) shall be contacted immediately to evaluate the find. If the resource is determined by the qualified archaeologist to be prehistoric, then a Native American representative shall also be contacted to participate in the evaluation of the resource. If the qualified archaeologist and/or Native American representative determines it to be appropriate, archaeological testing for CRHR eligibility shall be completed. If the resource proves to be eligible for the CRHR and impacts to the resource cannot be avoided via project redesign, a qualified archaeologist shall prepare a data recovery plan tailored to the physical nature and characteristics of the resource, per the requirements of CCR Guidelines Section 15126.4(b)(3)(C). The data recovery plan shall identify data recovery excavation methods, measurable objectives, and data thresholds to reduce any significant impacts to cultural resources related to the resource. Pursuant to the data recovery plan, the qualified archaeologist and Native American representative, as appropriate, shall recover and document the scientifically consequential information that justifies the resource's significance. The City shall review and approve the treatment plan and archaeological testing as appropriate, and the resulting documentation shall be submitted to the regional repository of the CHRIS, per CCR Guidelines Section 15126.4(b)(3)(C).

Significance After Mitigation

Mitigation Measure CR-1 includes procedures for the appropriate handling of unanticipated discoveries of cultural resources. Implementation of Mitigation Measure CR-1 would reduce potential impacts to archeological resources to a less-than-significant level. This mitigation measure will be included in the EIR's Executive Summary and in the project's Mitigation Monitoring and Reporting Program.

LESS THAN SIGNIFICANT WITH MITIGATION INCORPORATED

c. Would the project disturb any human remains, including those interred outside of dedicated cemeteries?

The cultural resources records search did not identify cemeteries or archaeological resources containing human remains within the project site (Appendix D). However, the discovery of human remains is always a possibility during ground disturbing activities, as would be required for development of the proposed project. Human burials outside of dedicated cemeteries often occur in prehistoric archaeological contexts. In addition to being potential archaeological resources, human burials have specific provisions for treatment in California Public Resources Code Section 5097. Additionally, the California Health and Safety Code (Sections 7050.5, 7051, and 7054) has specific provisions for the protection of human burial remains. Existing regulations address the illegality of interfering with human burial remains, and protects them from disturbance, vandalism, or destruction. Public Resources Code Section 5097.98 also addresses the disposition of Native American burials, protects such remains, and establishes the NAHC as the entity to resolve any related disputes.

If human remains are found, the State of California Health and Safety Code Section 7050.5 states that no further disturbance may occur until the County coroner has made a determination of origin and disposition pursuant to Public Resources Code Section 5097.98. In the event of an unanticipated discovery of human remains, the County coroner must be notified immediately. If the human remains are determined to be prehistoric, the coroner will notify the NAHC, which will determine and notify a most likely descendant (MLD). The MLD must complete the inspection of the site within 48 hours of notification and may recommend scientific removal and nondestructive analysis of human remains and items associated with Native American burials. Compliance with Public Resources Code Section 5097.98 and State of California Health and Safety Code Section 7050.5 would ensure that impacts to human remains are less than significant.

NO IMPACT

6 Energy

	Potentially Significant Impact	Less than Significant with Mitigation Incorporated	Less-than - Significant Impact	No Impact
Would the project:				
a. Result in a potentially significant environmental impact due to wasteful, inefficient, or unnecessary consumption of energy resources, during project construction or operation?	☐	☐	■	☐
b. Conflict with or obstruct a state or local plan for renewable energy or energy efficiency?	☐	☐	■	☐

Setting

Electricity is primarily consumed by the built environment for lighting, appliances, heating and cooling systems, and other uses such as industrial processes in addition to being consumed by alternative fuel vehicles. Most of California's electricity is generated in state, with approximately 30 percent imported from the northwest and southwest regions of the United States in 2020 (California Energy Commission [CEC] 2021a). In addition, approximately 33 percent of California's electricity supply in 2020 came from renewable energy sources, such as wind, solar photovoltaic, geothermal, and biomass (CEC 2021a). In 2018, Senate Bill 100 accelerated the state's Renewable Portfolio Standards Program, codified in the Public Utilities Act, by requiring electricity providers to increase procurement from eligible renewable energy and zero-carbon resources to 33 percent of total retail sales by 2020, 60 percent by 2030, and 100 percent by 2045.

The smallest scale at which energy consumption information is readily available in California is at the county level. Therefore, energy consumption in Alameda County is used herein to characterize the existing consumption of electricity and natural gas in San Leandro. According to the California Energy Commission (CEC), Alameda County consumed approximately 10,395 GWh of electricity in 2022 from residential and non-residential uses (CEC 2022a). San Leandro is served by East Bay Community Energy (EBCE), which supplies electricity to all accounts (residential, business, and municipal) and is delivered through Pacific Gas and Electric (PG&E) infrastructure. EBCE buys power mainly from clean sources like wind, solar, and hydropower. 'BCE's Board of Directors established the goal of purchasing 100 percent clean power for all customers by 2030 (EBCE 2022). Alameda County consumed approximately 377 million therms of natural gas in 2019 in both residential and non-residential uses (CEC 2022b).

Petroleum fuels are primarily consumed by on-road vehicles and trucks and off-road equipment in addition to some industrial processes, with California being one of the top petroleum-producing states in the nation (CEC 2021b). Gasoline, which is used by light-duty cars, pickup trucks, and sport utility vehicles, is the most used transportation fuel in California with 12.6 billion gallons sold in 2020 (CEC 2021c). Diesel, which is used primarily by heavy duty-trucks, delivery vehicles, buses, trains, ships, boats and barges, farm equipment, and heavy-duty construction and military vehicles,

is the second most used fuel in California with 1.7 billion gallons sold in 2021 (CEC 2021c). Table 11 summarizes the petroleum fuel consumption for Alameda County, in which the project site would be located, as compared to statewide consumption.

Table 11 2020 Annual Gasoline and Diesel Consumption

Fuel Type	Alameda County (millions of gallons)	California (millions of gallons)	Proportion of Statewide Consumption[1]
Gasoline	492	13,818	3.5%
Diesel	53	1,883	2.8%

[1] For reference, the population of Alameda County (1,651,979 persons) is approximately 4.2 percent of the population of California (39,185,605 persons) (California Department of Finance 2022).
Source: CEC 2021c

Energy consumption is directly related to environmental quality in that the consumption of nonrenewable energy resources releases criteria air pollutant and GHG emissions into the atmosphere. The environmental impacts of air pollutant and GHG emissions associated with the project's energy consumption are discussed in detail in Section 3, *Air Quality*, and Section 8, *Greenhouse Gas Emissions*, respectively.

Regulatory Setting

Title 24, California Code of Regulations (CCR)

CCR, Title 24, Part 6, is California's Energy Efficiency Standards for Residential and Non-Residential Buildings. The CEC established Title 24 in 1978 in response to a legislative mandate to create uniform building codes to reduce California's energy consumption and provide energy efficiency standards for residential and nonresidential buildings. The standards are updated on an approximately three-year cycle to allow consideration and possible incorporation of new efficient technologies and methods. In 2019, the CEC updated Title 24 standards with more stringent requirements effective January 1, 2020. All buildings for which an application for a building permit is submitted on or after January 1, 2020 must follow the 2019 standards. The 2022 update was adopted August 11, 2021 and goes into effect January 1, 2023. Energy efficient buildings require less electricity; therefore, increased energy efficiency reduces fossil fuel consumption and decreases GHG emissions. The building efficiency standards are enforced through the local plan check and building permit process. Local government agencies may adopt and enforce additional energy standards for new buildings as reasonably necessary due to local climatologic, geologic, or topographic conditions, provided that these standards exceed those provided in Title 24.

Part 6 (Building Energy Efficiency Standards)

Part 6 of Title 24 contains the 2016 Building Energy Efficiency Standards for new residential and CCR Title 24, Part 6 is the Building Energy Efficiency Standards or California Energy Code. This code, originally enacted in 1978, establishes energy-efficiency standards for residential and non-residential buildings in order to reduce California's energy demand. New construction and major renovations must demonstrate their compliance with the current Energy Code through submittal and approval of a Title 24 Compliance Report to the local building permit review authority and the California Energy Commission (CEC). The 2022 Energy Code encourages efficient electric heat pumps, establishes electric-ready requirements, expands solar and battery storage standards, and other stricter requirements.

California Green Building Standards Code (2022), CCR Title 24, Part 11

California's green building code, referred to as CALGreen, was developed to provide a consistent approach to green building within the State. CALGreen lays out the minimum requirements for newly constructed residential and nonresidential buildings to reduce GHG emissions through improved efficiency and process improvements. The requirements pertain to energy efficiency (in excess of the California Energy Code requirements), water conservation, material conservation, and internal air contaminants. It also includes voluntary tiers to further encourage building practices that improve public health, safety, and general welfare by promoting a more sustainable design.

Plan Bay Area 2050

Plan Bay Area 2050 is a State-mandated, integrated long-range transportation, land-use, and housing plan, known as a Regional Transportation Plan/Sustainable Communities Strategy (RTP/SCS), that would support a growing economy, provide more housing and transportation choices, and reduce transportation-related pollution in the nine-county San Francisco Bay Area (ABAG/MTC 2021). Plan Bay Area 2050 focuses on advancing equity and improving resiliency in the Bay Area by creating strategies in the following four elements: Housing, Economy, Transportation, and Environment. Strategies include allowing higher-density in proximity to transit-corridors, optimizing the existing roadway network, creating complete streets, providing subsides for public transit, and reducing climate emissions, which will reduce overall per capita energy use from non-renewable resources.

San Leandro Municipal Code

San Leandro's Municipal Code Chapter 7.5.7, Energy Code, mandates the implementation of California Building Standards Code, Title 24, Part 6, the California Energy Code, which has specific requirements for building design to reduce energy consumption. Some of the measures in the California Energy Code include the use of certain building materials to ensure a greater degree of energy efficiency during building operation and construction and energy efficiency standards for appliances, lighting amenities, and water fixtures, among other project components. San Leandro's Municipal Code Chapter 3.19 requires all new municipal building projects to meet the United States Green Building Council LEED Silver rating. San Leandro Municipal Code Chapter 7.5.6, Green Building Code, adopts California Building Standards Code, Title 24, part 11, Green Building Standards Code (CALGreen).

San Leandro 2021 Climate Action Plan

In July 2021, the City of San Leandro adopted an update to its Climate Action Plan (CAP), a citywide strategy to reduce greenhouse gas emissions (GHG). Chapter 4 of the CAP includes strategies that target energy reduction through energy efficiency and conservation, including prioritizing increasing and installing renewable energy generation systems and energy storage systems on rental homes, multi-family buildings, and affordable housing; reducing automobile dependency and increasing transit-oriented development; and committing to developing a reach code limiting natural gas use in new construction, or as directed by the State or regional agencies(City of San Leandro 2021).

2035 General Plan

There are several energy-related policies of the 2035 General Plan in the Open Space and Conservation, Environmental Hazards, Land Use, and Transportation Elements. Policies include using best practices for energy conservation in building and construction, using renewable energy sources

where possible, utilizing energy-reducing transportation strategies and alternative fuel vehicles, reducing VMT and increasing active transportation options, and reducing emissions.

Impact Analysis

a. Would the project result in a potentially significant environmental impact due to wasteful, inefficient, or unnecessary consumption of energy resources, during project construction or operation?

Construction of the proposed project would result in short-term consumption of energy from the use of construction equipment and processes. Energy use during construction would be primarily from fuel consumption to operate heavy equipment, light-duty vehicles, machinery, and generators. Energy use during construction would be temporary in nature, and construction equipment used would be typical of industrial and warehouse construction projects, such as standard backhoes and dump trucks. It is reasonable to assume contractors would avoid wasteful, inefficient, and unnecessary fuel consumption during construction to reduce construction costs. Construction of the project would comply with the California Air Resources Board's In-Use Off-Road Diesel-Fueled Fleets Regulation, which imposes limits on idling and restricts the use of older vehicles, which are typically less fuel efficient compared with newer vehicles and equipment. The CALGreen Building Standards Code, which are mandatory, includes specific requirements related to recycling, construction materials, and energy efficiency standards that would apply to construction of the proposed project to minimize wasteful, inefficient, and unnecessary energy consumption.

Operational energy use would include the use of transportation fuel. California requires that all motorists use California Reformulated Gasoline, a cleaner formulation of gasoline that results in lower emissions of ozone, CO and other air pollutants when burned. While the proposed project would result in vehicle trips, the trips would be due to the introduction of new employees associated with the proposed project. It is reasonable to assume that employees associated with the proposed project would be employed elsewhere if not at the project site. Therefore, the energy consumption of transportation fuels occurs regardless of the proposed project, and the fuel consumed for vehicle trips would not be wasteful or excessive.

In addition to transportation energy use, operation of the project would consume electricity for building power, lighting, and water conveyance, among other operational requirements. The proposed project would negligibly increase the amount of electricity consumed in San Leandro because the project is a warehouse that would be used primarily for storage of goods with only minimal office space. Additionally, the proposed project would utilize natural gas for heat, also consuming energy.

The project would be required to comply with all standards set in the latest iteration of the California Building Standards Code (California Code of Regulations Title 24), which would minimize the wasteful, inefficient, or unnecessary consumption of energy resources by the built environment during operation. California's CalGreen standards (California Code of Regulations Title 24, Part 11) require implementation of energy-efficient light fixtures and building materials into the design of new construction projects. The City of San Leandro also requires new construction to comply with the California Green Building Standards Code and incorporates requirements to be consistent with the City's greenhouse gas reduction goals. Further, the 2022 Building Energy Efficiency Standards (California Code of Regulations Title 24, Part 6) require newly constructed buildings to meet energy performance standards set by the CEC. These standards are specifically crafted for new buildings to result in energy efficient performance so that the buildings do not result in wasteful, inefficient, or

unnecessary consumption of energy. Therefore, it would be expected that building energy consumption associated with the proposed project would not be more inefficient, wasteful, or unnecessary than for any other similar buildings in the region. Pursuant to CalGreen, all plumbing fixtures used for the proposed project would be high-efficiency fixtures, which would minimize the potential inefficient or wasteful consumption of energy related to water and wastewater.

Project operation would not result in potentially significant environmental effects due to the wasteful, inefficient, or unnecessary consumption of energy, and impacts would be less than significant.

LESS-THAN-SIGNIFICANT IMPACT

b. Would the project conflict with or obstruct a state or local plan for renewable energy or energy efficiency?

The City of San Leandro's 2035 General Plan and Climate Action Plan (CAP) include energy conservation and energy efficiency strategies intended to enable the State and the City to achieve GHG reduction and energy conservation goals. As shown in Table 12 and Table 13, the project would be consistent with (and not conflict with nor obstruct) State and local renewable energy and energy efficiency plans.

Table 12 Project Consistency with State Renewable Energy and Energy Efficiency Plans

Renewable Energy or Energy Efficiency Plan	Proposed Project Consistency
2019 Integrated Energy Policy Report. The 2019 report highlights the implementation of California's innovative policies and the role they have played in establishing a clean energy economy, as well as provides more detail on several key energy policies, including decarbonizing buildings, increasing energy efficiency savings, and integrating more renewable energy into the electricity system.	**Consistent.** The project would be required to comply with San Leandro Municipal Code Chapter 7.5.7, which mandates the implementation of Title 24. Further, electricity would be provided either by PG&E or EBCE, which source some or all their power from renewable sources. Given these features, the project would involve reduced GHG emissions from power, an increase in energy efficiency savings, and integration of more renewable energy into the electricity system. Therefore, the project would not conflict with or obstruct implementation of the 2019 Integrated Energy Policy Report.
California Renewable Portfolio Standard. California's RPS obligates investor-owned utilities, energy service providers, and community choice aggregators to procure 33 percent total retail sales of electricity from renewable energy sources by 2020, 60 percent by 2030, and 100 percent by 2045.	**Consistent.** EBCE and PG&E supply electricity in the city and they are required to generate electricity that would increase renewable energy resources to 60 percent by 2030 and 100 percent by 2045. EBCE already has an option for residents to source 100 percent renewable energy. Because PCE and PG&E would provide electricity service to the project site, the project would not conflict with or obstruct implementation of the California Renewable Portfolio Standard.
Energy Action Plan. In the October 2005, the CEC and CPUC updated their energy policy vision by adding some important dimensions to the policy areas included in the original EAP, such as the emerging importance of climate change, transportation-related energy issues, and research and development activities. The CEC adopted an update to the EAP II in February 2008 that supplements the earlier EAPs and examines the state's ongoing actions in the context of global climate change. The nine major action areas in the EAP include energy efficiency, demand response, renewable energy, electricity	**Consistent.** Development facilitated by the project would be required to comply with San Leandro Municipal Code Chapter 7.5.7, which mandates the implementation of Title 24. Further, electricity would be provided either by PG&E or EBCE, which source some or all their power from renewable sources. While the project would also utilize natural gas, electricity would power most of the project. Given these features, the project would involve reduced GHG emissions from power, an increase in energy efficiency savings, and integration of more renewable energy into the electricity system. Therefore, the project would not conflict with or obstruct implementation of the EAP.

Renewable Energy or Energy Efficiency Plan	Proposed Project Consistency
adequacy/reliability/infrastructure, electricity market structure, natural gas supply/demand/infrastructure, transportation fuels supply/demand/infrastructure, research/development/demonstration, and climate change.	
AB 1007: State Alternative Fuels Plans. The State Alternative Fuels Plan assessed various alternative fuels and developed fuel portfolios to meet California's goals to reduce petroleum consumption, increase alternative fuels use, reduce GHG emissions, and increase in-state production of biofuels without causing a significant degradation of public health and environmental quality. **Bioenergy Action Plan, EO S-06-06.** The EO establishes the following targets to increase the production and use of bioenergy, including ethanol and biodiesel fuels made from renewable resources: produce a minimum of 20 percent of its biofuels in California by 2010, 40 percent by 2020, and 75 percent by 2050.	**Consistent**. The project would not interfere with or obstruct the production of biofuels in California. Vehicles used by future project site tenants would be fueled by gasoline and diesel fuels blended with ethanol and biodiesel fuels as required by CARB regulations. Therefore, the project would not conflict with or obstruct implementation of the Bioenergy Action Plan or the State Alternative Fuels Plan.
Title 24, CCR – Part 6 (Building Energy Efficiency Standards) and Part 11 (CALGreen). The 2022 Building Energy Efficiency Standards move toward cutting energy use in new homes by more than 50 percent and will require installation of solar photovoltaic systems for single-family homes and multi-family buildings of three stories and less. The CALGreen Standards establish green building criteria for residential and nonresidential projects. The 2022 Standards include the following: increasing the number of parking spaces that must be prewired for electric vehicle chargers in residential development; requiring all residential development to adhere to the Model Water Efficient Landscape Ordinance; and requiring more appropriate sizing of HVAC ducts.	**Consistent.** The project would be required to comply with San Leandro Municipal Code Chapter 7.5.7, which mandates the implementation of Title 24. Therefore, the project would not conflict with or obstruct implementation of the Title 24 standards. The project would also be required to comply with CALGreen standards pursuant to Section 7-5-600 of the San Leandro Municipal Code. Therefore, the project would not conflict with or obstruct implementation of CALGreen.

Table 13 Project Consistency with the 2035 General Plan and Climate Action Plan

Renewable Energy or Energy Efficiency Plan	Proposed Project Consistency
General Plan Policies	
Goal OSC-8: Energy. Promote the efficient use of energy and the increased use of renewable energy by San Leandro residents and businesses. **Policy OSC-8.2: Planning and Building Practices.** Encourage construction, landscaping, and site planning practices that minimize heating and cooling costs and ensure that energy is efficiently used. Local building codes and other City regulations and procedures should meet or exceed state and federal standards for energy conservation and efficiency and support the City's greenhouse gas reduction goals.	**Consistent.** The project would be required to comply with San Leandro Municipal Code Chapter 7.5.7, which mandates the implementation of Title 24. The project would be required to use efficient lighting and appliances. EBCE and PG&E supply electricity in the city and they are required to generate electricity that would increase renewable energy resources to 60 percent by 2030 and 100 percent by 2045. EBCE already has an option with 100 percent renewable energy sources, which is the default option for businesses and residences. Because EBCE and PG&E would provide electricity service to the project site, the project would be consistent with the general plan's goals and policies regarding energy efficiency and renewable energy mix.
Climate Action Plan Measures	

Renewable Energy or Energy Efficiency Plan	Proposed Project Consistency
Measure RE-1: Encourage San Leandro households and businesses to switch from PG&E electricity supplies to East Bay Community Energy, and commit to defaulting to Renewable 100 tier for 100-percent renewable energy.	**Consistent.** EBCE and PG&E supply electricity in the City and they are required to generate electricity that would increase renewable energy resources to 60 percent by 2030 and 100 percent by 2045. EBCE already has an option for residents to source 100 percent renewable energy. Because PCE and PG&E would provide electricity service to the project site, the project would not conflict with or obstruct implementation of the City's CAP. The project would be required to comply with San Leandro Municipal Code Chapter 7.5.7, which mandates the implementation of Title 24. Therefore, the project would not conflict with or obstruct implementation of the Title 24 standards.

Source: City of San Leandro 2016, 2021

As shown in Table 12 and Table 13, The project would be consistent with State plans and the City's adopted energy conservation and efficiency strategies contained in the 2035 General Plan, San Leandro Municipal Code, and the City's CAP. Therefore, impacts would be less than significant.

LESS-THAN-SIGNIFICANT IMPACT

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7 Geology and Soils

	Potentially Significant Impact	Less than Significant with Mitigation Incorporated	Less-than - Significant Impact	No Impact
Would the project:				
a. Directly or indirectly cause potential substantial adverse effects, including the risk of loss, injury, or death involving:				
1. Rupture of a known earthquake fault, as delineated on the most recent Alquist-Priolo Earthquake Fault Zoning Map issued by the State Geologist for the area or based on other substantial evidence of a known fault?	☐	☐	■	☐
2. Strong seismic ground shaking?	☐	☐	■	☐
3. Seismic-related ground failure, including liquefaction?	☐	☐	■	☐
4. Landslides?	☐	☐	■	☐
b. Result in substantial soil erosion or the loss of topsoil?	☐	☐	■	☐
c. Be located on a geologic unit or soil that is unstable, or that would become unstable as a result of the project, and potentially result in on- or off-site landslide, lateral spreading, subsidence, liquefaction, or collapse?	☐	☐	■	☐
d. Be located on expansive soil, as defined in Table 18-1-B of the Uniform Building Code (1994), creating substantial direct or indirect risks to life or property?	☐	☐	■	☐
e. Have soils incapable of adequately supporting the use of septic tanks or alternative wastewater disposal systems where sewers are not available for the disposal of wastewater?	☐	☐	☐	■
f. Directly or indirectly destroy a unique paleontological resource or site or unique geologic feature?	☐	☐	■	☐

Analysis in this section is based in part on the geotechnical investigation prepared for the project by Cornerstone Earth Group in September 2020. The geotechnical investigation is included as Appendix E.

Setting

Active faults are defined by the State of California to be a fault that has surface displacement within the Holocene time (approximately the last 10,000 years). Potentially active faults as defined by the State of California to be a fault that has shown evidence of surface displacement during the Quaternary (last 1.6 million years). Any fault that is sufficiently active describes a fault that has some evidence of Holocene displacement on one or more of its segments or branches. Associated issues with earthquakes include liquefaction, which is the rapid transformation of sediment to a fluid-like state. It occurs when water-saturated, loose to medium dense, relatively clay-free sands and silts are subjected to earthquake ground motion.

The Bay Area contains both active and potentially active faults. Major active faults near the project site are the Hayward, San Andreas, Rodgers Creek, and Calaveras. The project site itself is not located within an Earthquake Fault Zone (Appendix E).

The project site is within a state-designated liquefaction hazard zone and soils encountered on the project site indicated they are potentially liquefiable (Appendix E).

Expansive soils are soils that swell in density and volume as they absorb water and contract as they lose water. Associated problems include cracking and deterioration of roadway surface, as they expand and contract during seasonal wet and dry cycles. The project site does have highly expansive clay soils approximately three to seven feet below the surface (Appendix E). The soils encountered on site have a high expansion potential which indicates they are potentially liquefiable soils.

Regulatory Setting

Alquist-Priolo Earthquake Fault Zoning Act

Following the 1989 Loma Prieta earthquake, the Seismic Hazards Mapping Act (SHMA) was passed by the California legislature in 1990. The SHMA (PRC Chapter 7.8, Section 2690-2699.6) directs the Department of Conservation, California Geological Survey to identify and map areas prone to liquefaction, earthquake-induced landslides and amplified ground shaking. It also requires that agencies only approve projects in seismic hazard zones following site-specific geotechnical investigations to determine if the identified hazard is present and the inclusion of appropriate mitigation to reduce earthquake-related hazards.

Seismic Hazards Mapping Act

The Seismic Hazards Mapping Act of 1990 was enacted, in part, to address seismic hazards not included in the Alquist-Priolo Act, including strong ground shaking, landslides, and liquefaction. Under the Alquist-Priolo Act, the State Geologist is responsible for identifying and mapping seismic hazards. CGS Special Publication 117, adopted in 1997 by the State Mining and Geology Board, constitutes guidelines for evaluating seismic hazards other than surface faulting and for recommending mitigation measures as required by PRC Section 2695(a). In accordance with the mapping criteria, the CGS seismic hazard zone maps identifies areas with the potential for a ground shaking event that corresponds to 10 percent probability of exceedance in 50 years.

The purpose of the Seismic Hazards Mapping Act is to reduce the threat to public health and safety and to minimize the loss of life and property by identifying and mitigating seismic hazards. Cities, counties, and state agencies are directed to use seismic hazard zone maps developed by CGS in their land-use planning and permitting processes. The Seismic Hazards Mapping Act requires site-specific geotechnical investigations prior to permitting most urban development projects in seismic hazard zones.

California Building Code

The California Building Code, Title 24, Part 2, provides building codes and standards for the design and construction of structures in California. The purpose of the California Building Code is to establish minimum standards to safeguard the public health, safety, and general welfare through structural strength, means of egress facilities, and general stability by controlling the design, construction, quality of materials, use and occupancy, location, and maintenance of building and structures. The California Building Code contains specific requirements for seismic safety, excavation, foundations, retaining walls, soil conditions, and site demolition. It also regulates grading activities, including drainage and erosion control. Chapter 16 of the California Building Code contains definitions of seismic sources and the procedure used to calculate seismic forces on structures.

The California Building Code is updated every three years by order of the legislature, with supplements published in intervening years. State law mandates that local governments enforce the California Building Code. In addition, a city and/or county may establish more restrictive building standards reasonably necessary because of local climatic, geological, or topographical conditions. The 2022 California Building Code is based on the International Building Code.

City of San Leandro 2035 General Plan

Policy EH-1. **Risk Management.** Minimize risks from geologic, seismic, flood, and climate change-related hazards by ensuring the appropriate location, site planning, and design of new development. The City's development review process, and its engineering and building standards, should ensure that new construction is designed to minimize the potential for damage.

Impact Analysis

a.1. Would the project directly or indirectly cause potential substantial adverse effects, including the risk of loss, injury, or death involving rupture of a known earthquake fault, as delineated on the most recent Alquist-Priolo Earthquake Fault Zoning Map issued by the State Geologist for the area or based on other substantial evidence of a known fault?

The project site is not within an Earthquake Fault Zone as defined by the Alquist-Priolo Earthquake Fault Zoning Act, and no known active or potentially active faults exist on the site (Appendix E). The nearest mapped active fault, the Hayward Fault, is approximately one mile east of the project site (CGS 2016). Direct ground rupture of a known earthquake fault would be unlikely because no faults are known to occur in the project site. Impacts would be less than significant.

LESS-THAN-SIGNIFICANT IMPACT

a.2. Would the project directly or indirectly cause potential substantial adverse effects, including the risk of loss, injury, or death involving strong seismic ground shaking?

The nearest mapped active fault, the Hayward Fault, is approximately one mile east of the project site. The United States Geological Survey (USGS) has stated that there is a 72 percent chance of at least one magnitude 6.7 or greater earthquake striking the San Francisco Bay region between 2014 and 2043 (USGS 2016). Therefore, the site could be subjected to at least one moderate to severe earthquake that would cause strong ground shaking. Project construction would be required to comply with the seismic safety requirements in the International Building Code, the California Building Code, and the City of San Leandro Building Code, which include standards to reduce the potential for seismic damage to buildings. Compliance with such requirements would reduce seismic ground shaking impacts to the maximum extent practicable with current engineering methods. In addition, the project includes only warehouse and office uses and does not include habitable space. Therefore, impacts related to strong seismic ground shaking would be less than significant.

LESS-THAN-SIGNIFICANT IMPACT

a.3. Would the project directly or indirectly cause potential substantial adverse effects, including the risk of loss, injury, or death involving seismic-related ground failure, including liquefaction?

c. Would the project be located on a geologic unit or soil that is unstable, or that would become unstable as a result of the project, and potentially result in on- or off-site landslide, lateral spreading, subsidence, liquefaction, or collapse?

The geotechnical investigation prepared for the project (Appendix E) analyzed the potential for liquefaction induced settlements and provided recommendations for the design of the proposed structure's foundation. This report indicated that the project site is located in an identified liquefaction zone according to maps prepared by CGS, and included recommendations for the proposed structure's foundation such as the use of shallow foundations. Furthermore, pursuant to San Leandro Municipal Code Section 7-5-100, the City of San Leandro adopted the California Building Code; Section 1803.1.1.3 of the California Building Code states that the building department of each locality (in this case the San Leandro Building & Safety Division) would need to approve the soil investigation or geotechnical investigation (Appendix E) if it determines that the recommended action is likely to prevent structural damage. As a condition of the building permit, the approved recommended action must be incorporated into project construction. Therefore, pursuant to the San Leandro Municipal Code and the California Building Code, the recommendations included in the geotechnical investigation (Appendix E) would be incorporated into the design of the project and verified by the City prior to issuance of a building permit. In addition, the project includes only warehouse and office uses and does not include habitable space. With adherence to San Leandro Municipal Code, the California Building Code, and implementation of recommendations in the design-level geotechnical investigation, impacts would be less than significant.

LESS-THAN-SIGNIFICANT IMPACT

a.4. Would the project directly or indirectly cause potential substantial adverse effects, including the risk of loss, injury, or death involving landslides?

Earthquakes can trigger landslides that may cause injuries and damage many types of structures. Landslides are typically a hazard on or near slopes or hillside areas, rather than on level or nearly level areas, like the project site. The project site is not within an area mapped as having landslides

(CGS 2019). While the project includes grading, the final grade would not include steep or substantial slopes. Therefore, the project has a low potential for slope instability occurring at the site, and impacts would be less than significant.

LESS-THAN-SIGNIFICANT IMPACT

b. Would the project result in substantial soil erosion or the loss of topsoil?

Project construction, particularly grading and site preparation, could result in erosion and loss of topsoil from the project site. The project developer would be required to follow applicable California Building Code and San Leandro Municipal Code requirements to reduce soil erosion, including San Leandro Municipal Code Section 7-12-230, which requires erosion and sedimentation control measures and drainage plans to be prepared by a civil engineer and submitted to the City for approval prior to issuance of a grading permit. Where appropriate, the control measures must include measures including, but not limited to, short-term erosion control planting, waterproof slope covers, stormwater retention basins, and devices to trap, store, and filter sediment during project construction and operation. Project construction would also disturb more than 1 acre of land, which mandates preparation and implementation of a Stormwater Pollution Prevention Plan (SWPPP), pursuant to state regulations. The SWPPP must contain measures that are implemented at the site to prevent soil erosion and soil loss. Compliance with federal, State, and City regulations would reduce impacts related to soil erosion and the loss of topsoil to less-than-significant levels.

LESS-THAN-SIGNIFICANT IMPACT

d. Would the project be located on expansive soil, as defined in Table 1-B of the Uniform Building Code (1994), creating substantial direct or indirect risks to life or property?

Expansive soils are those that have a potential to undergo significant changes in volume, either shrinking or swelling, due to their composition and moisture content. Periodic shrinking and swelling of expansive soils can cause extensive damage to other structures and roads constructed on these soils. According to the geotechnical report for the project site, there are highly expansive soils near the ground surface of the project site. The geotechnical report recommends that to reduce the potential for damage associated with these expansive soils, foundation slabs on grade should have sufficient reinforcement and be supported by a layer of non-expansive fill. The geotechnical report also includes additional recommendations to reduce the impact of expansive soils on site including the limiting of watering of vegetation on site. As discussed under Threshold a.3. and Threshold c above, pursuant to the San Leandro Municipal Code and the California Building Code, the recommendations included in the geotechnical investigation (Appendix E) must be incorporated into the design of the project and verified by the City prior to issuance of a building permit. In addition, the project includes only warehouse and office uses and does not include habitable space. With incorporation of these recommendations and adherence to applicable regulations such as the California Building Code, impacts would be less than significant.

LESS-THAN-SIGNIFICANT IMPACT

e. Would the project have soils incapable of adequately supporting the use of septic tanks or alternative wastewater disposal systems where sewers are not available for the disposal of wastewater?

The project site would be served by the municipal sewer system and would not require the installation of an on-site septic tank or alternate wastewater treatment systems. Therefore, no impacts from septic systems or alternative wastewater disposal systems would occur.

NO IMPACT

f. Would the project directly or indirectly destroy a unique paleontological resource or site or unique geologic feature?

Paleontological resources, or fossils, are the evidence of once-living organisms preserved in the rock record. They include both the fossilized remains of ancient plants and animals and the traces thereof (e.g., trackways, imprints, burrows, etc.). Paleontological resources are not found in "soil" but are contained within the geologic deposits or bedrock that underlies the soil layer. Typically, fossils are greater than 5,000 years old (i.e., older than middle Holocene in age) and are typically preserved in sedimentary rocks. Although rare, fossils can also be preserved in volcanic rocks and low-grade metamorphic rocks under certain conditions (Society of Vertebrate Paleontology [SVP] 2010). Fossils occur in a non-continuous and often unpredictable distribution within some sedimentary units, and the potential for fossils to occur within sedimentary units depends on several factors. It is possible to evaluate the potential for geologic units to contain scientifically important paleontological resources, and therefore evaluate the potential for impacts to those resources and provide mitigation for paleontological resources if they are discovered during construction of a development project.

According to soil borings conducted for the geotechnical report, undocumented fill material comprises soils on-site to depths ranging 1.5 to 7 feet below ground surface. Therefore, excavation required for construction of the proposed project would occur mostly within fill material. As fill material, there is no potential for paleontological resources because such resources predate fill material generated by humans. However, in areas where undocumented fill is shallow or not present, the underlying geology is late-Holocene-era Basin deposits (United States Geologic Survey 2020). The Holocene era began approximately 11,700 years before present day, and late-Holocene era is even more recent. According to the United States Bureau of Land Management, geologic units generally 10,000 years of age or younger haw low potential for fossils (2016). Given the Holocene era dates back only 11,700 years, and the underlying geology on the site is late-Holocene era, the potential for paleontological resources is low. Impacts to paleontological resources would be less than significant.

LESS-THAN-SIGNIFICANT IMPACT

8 Greenhouse Gas Emissions

	Potentially Significant Impact	Less than Significant with Mitigation Incorporated	Less-than - Significant Impact	No Impact
Would the project:				
a. Generate greenhouse gas emissions, either directly or indirectly, that may have a significant impact on the environment?	■	☐	☐	☐
b. Conflict with an applicable plan, policy, or regulation adopted for the purpose of reducing the emissions of greenhouse gases?	■	☐	☐	☐

Overview of Climate Change and Greenhouse Gases

Climate change is the observed increase in the average temperature of the Earth's atmosphere and oceans along with other substantial changes in climate (such as wind patterns, precipitation, and storms) over an extended period of time. Climate change is the result of numerous, cumulative sources of GHG emissions contributing to the "greenhouse effect," a natural occurrence which takes place in Earth's atmosphere and helps regulate the temperature of the planet. The majority of radiation from the sun hits Earth's surface and warms it. The surface, in turn, radiates heat back towards the atmosphere in the form of infrared radiation. Gases and clouds in the atmosphere trap and prevent some of this heat from escaping into space and re-radiate it in all directions.

GHG emissions occur both naturally and as a result of human activities, such as fossil fuel burning, decomposition of landfill wastes, raising livestock, deforestation, and some agricultural practices. GHGs produced by human activities include carbon dioxide (CO_2), methane, nitrous oxide, hydrofluorocarbons, perfluorocarbons, and sulfur hexafluoride. Different types of GHGs have varying global warming potentials (GWP). The GWP of a GHG is the potential of a gas or aerosol to trap heat in the atmosphere over a specified timescale (generally, 100 years). Because GHGs absorb different amounts of heat, a common reference gas (CO_2) is used to relate the amount of heat absorbed to the amount of the gas emitted, referred to as "carbon dioxide equivalent" (CO_2e), which is the amount of GHG emitted multiplied by its GWP. Carbon dioxide has a 100-year GWP of one. By contrast, methane has a GWP of 30, meaning its global warming effect is 30 times greater than CO_2 on a molecule per molecule basis (Intergovernmental Panel on Climate Change [IPCC] 2022).[3]

The principal climate change gases resulting from human activity that enter and accumulate in the atmosphere are listed below:

[3] The Intergovernmental Panel on Climate Change's (2022) *Sixth Assessment Report* determined that methane has a GWP of 30. However, the 2017 Climate Change Scoping Plan published by the California Air Resources Board uses a GWP of 25 for methane, consistent with the Intergovernmental Panel on Climate Change's (2007) *Fourth Assessment Report*. Therefore, this analysis utilizes a GWP of 25.

- **Carbon Dioxide.** CO_2 enters the atmosphere through the burning of fossil fuels (oil, natural gas, and coal), solid waste, trees and wood products, and chemical reactions (e.g., the manufacture of cement). CO_2 is also removed from the atmosphere (or "sequestered") when it is absorbed by plants as part of the biological carbon cycle.
- **Methane.** CH_4 is emitted during the production and transport of coal, natural gas, and oil. CH4 emissions also result from livestock and agricultural practices and the decay of organic waste in municipal solid waste landfills.
- **Nitrous Oxide.** N_2O is emitted during agricultural and industrial activities as well as during combustion of fossil fuels and solid waste.
- **Hydrofluorocarbons (HFC).** HFCs are one of several high global warming potential (GWP) gases that are not naturally occurring and are generated from industrial processes. HFC (refrigerant) emissions from vehicle air conditioning systems occur due to leakage, losses during recharging, or release from scrapping vehicles at end of their useful life.
- **Perfluorocarbons (PFC).** PFCs are another high GWP gas that are not naturally occurring and are generated in a variety of industrial processes.
- **Sulfur Hexafluoride (SF_6).** SF_6 is another high GWP gas that is not naturally occurring and is generated in a variety of industrial processes.

There are uncertainties as to exactly what the climate changes will be in various local areas of the earth. There are also uncertainties associated with the magnitude and timing of other consequences of a warmer planet: sea level rise, spread of certain diseases out of their usual geographic range, the effect on agricultural production, water supply, sustainability of ecosystems, increased strength and frequency of storms, extreme heat events, increased air pollution episodes, and the consequence of these effects on the economy.

Regulatory Setting

California Global Warming Solutions Act of 2006 (Assembly Bill 32, and Senate Bill 32, and Assembly Bill 1279)

The "California Global Warming Solutions Act of 2006," (Assembly Bill [AB] 32), outlines California's major legislative initiative for reducing GHG emissions. AB 32 codifies the statewide goal of reducing GHG emissions to 1990 levels by 2020 and requires CARB to prepare a Scoping Plan that outlines the main state strategies for reducing GHG emissions to meet the 2020 deadline. In addition, AB 32 requires CARB to adopt regulations to require reporting and verification of statewide GHG emissions. Based on this guidance, CARB approved a 1990 statewide GHG level and 2020 target of 431 million metric tons (MMT) of carbon dioxide equivalents (CO_2e), which was achieved in 2016. CARB approved the Scoping Plan on December 11, 2008, which included GHG emission reduction strategies related to energy efficiency, water use, and recycling and solid waste, among others (CARB 2009). Many of the GHG reduction measures included in the Scoping Plan (e.g., Low Carbon Fuel Standard, Advanced Clean Car standards, and Cap-and-Trade) have been adopted since the Scoping Plan's approval.

On September 8, 2016, the governor signed Senate Bill (SB) 32 into law, extending the California Global Warming Solutions Act of 2006 by requiring the state to further reduce GHG emissions to 40 percent below 1990 levels by 2030 (the other provisions of AB 32 remain unchanged). On December 14, 2017, the CARB adopted the 2017 Scoping Plan, which provides a framework for achieving the 2030 target. The 2017 Scoping Plan relies on the continuation and expansion of existing policies and regulations, such as the Cap-and-Trade Program, and implementation of

recently adopted policies and legislation, such as SB 1383 and SB 100 (discussed later). The 2017 Scoping Plan also puts an increased emphasis on innovation, adoption of existing technology, and strategic investment to support its strategies. As with the 2013 Scoping Plan update, the 2017 Scoping Plan does not provide project-level thresholds for land use development. Instead, it recommends that local governments adopt policies and locally appropriate quantitative thresholds consistent with statewide per capita goals of six MT CO_2e by 2030 and two MT CO_2e by 2050 (CARB 2017). As stated in the 2017 Scoping Plan, these goals may be appropriate for plan-level analyses (city, county, sub-regional, or regional level), but not for specific individual projects because they include all emissions sectors in the state (CARB 2017).

AB 1279, "The California Climate Crisis Act," was passed on September 16, 2022 and declares the State would achieve net zero GHG emissions as soon as possible, but no later than 2045, and to achieve and maintain net negative GHG emissions thereafter. In addition, the bill states that the State would reduce GHG emissions by 85 percent below 1990 levels no later than 2045. CARB's 2022 Scoping Plan for achieving Carbon Neutrality lays out a path to achieve AB 1279 targets and SB 32 (CARB 2022). The actions and outcomes in the 2022 Scoping Plan would achieve significant reductions in fossil fuel combustion by deploying clean technologies and fuels, further reductions in short-lived climate pollutants, support for sustainable development, increased action on natural and working lands to reduce emissions and sequester carbon, and the capture and storage of carbon.

City of San Leandro 2035 General Plan

The City of San Leandro's 2035 General Plan, adopted in September 2016, lists several GHG-reduction goals, policies, and actions as part of the Transportation Element and Open Space, Parks, and Conservation Element that support the goal of reducing GHG emissions. The following goals and policies are applicable to the proposed project (City of San Leandro 2016):

Policy T-5.2 **Evaluating Development Impacts.** Use vehicle miles traveled (VMT) as the primary metric for evaluating the transportation impacts of new development proposals. Traffic impact studies may also consider the total number of trips generated and the resulting impact on traffic volumes and congestion (e.g., "Level of Service"), but VMT shall provide the primary basis for determining appropriate mitigation measures.

Goal OSC-7 Promote recycling, water conservation, green building, and other programs which reduce greenhouse gas emissions and create a more sustainable environment.

- **Policy OSC-7.8** **Green Building.** Promote green building in new construction and remodels.

Goal OSC-8 Promote the efficient use of energy and the increased use of renewable energy by San Leandro residents and businesses.

- **Policy OSC-8.1** **Conservation and Energy Efficiency.** Strongly advocate for increased energy conservation by San Leandro residents and businesses, and ensure that the City itself is a conservation role model.
- **Policy OSC-8.2** **Planning and Building Practices.** Encourage construction, landscaping, and site planning practices that minimize heating and cooling costs and ensure that energy is efficiently used. Local building codes and other City regulations and procedures should meet or exceed state and federal standards for energy conservation and efficiency, and support the City's greenhouse gas reduction goals.

San Leandro 2021 Climate Action Plan

The City of San Leandro updated and approved its Climate Action Plan (CAP) in July 2021, which outlines strategies for reducing GHG emissions through various activities, including but not limited to water conservation, energy conservation, land use design and orientation, transportation-oriented development, and renewable energy source use. According to the CAP, "The CAP is prepared consistent with CEQA Guidelines for Plans for the Reduction of Greenhouse Gas Emissions (CEQA Guidelines Section 15183.5). Additionally, the CAP meets the criteria from the BAAQMD CEQA Thresholds for Evaluating the Significance of Climate Impacts from Land Use Projects and Plans, as described under *Significance Thresholds.* This allows the 2021 CAP to support and streamline environmental review of GHG emissions related to future development projects within the city." Therefore, a project that would comply with the goals and policies of the City's CAP would have less-than-significant GHG impacts

City of San Leandro Municipal Code

Section 3.24.400 of the San Leandro Municipal Code requires commercial business organic waste generators and multi-family dwelling units to participate in organic waste collection services. These uses must subscribe to collection services for compost containers, recycling containers, and landfill containers.

Section 7.5.600 of the San Leandro Municipal Code requires compliance with the California Green Building Code, Title 24, Part 11, which details requirements for energy conservation and green design. Section 7.5.700 of the San Leandro Municipal Code requires compliance with the California Energy Code, Title 24, Part 6, which details requirements for the use of energy-efficient design and technologies as well as provisions for incorporating renewable energy resources into building design.

Significance Thresholds

Individual projects do not generate sufficient GHG emissions to influence climate change directly. However, physical changes caused by a project can contribute incrementally to significant cumulative effects, even if individual changes resulting from a project are limited. The issue of climate change typically involves an analysis of whether a project's contribution towards an impact would be cumulatively considerable. "Cumulatively considerable" means the incremental effects of an individual project are significant when considered in conjunction with the effects of past projects, other current projects, and probable future projects (*CEQA Guidelines* Section 15064[h][1]).

According to *CEQA Guidelines* Section 15183.5(b), projects can tier from a qualified GHG reduction plan, which allows for project-level evaluation of GHG emissions through the comparison of the project's consistency with the GHG reduction policies included in a qualified GHG reduction plan. This approach is considered by the Association of Environmental Professionals (2016) in its white paper, *Beyond Newhall and 2020: A Field Guide to New CEQA Greenhouse Gas Thresholds and Climate Action Plan Targets for California*, to be the most defensible approach presently available under CEQA to determine the significance of a project's GHG emissions.

The 2022 BAAQMD *CEQA Thresholds for Evaluating the Significance of Climate Impacts From Land Use Projects and Plans* guidance document contains two approaches for determining significance of GHGs (BAAQMD 2022). The two approaches are as follows:

1. Projects must include, at a minimum, the following project design elements:

Buildings

- The project will not include natural gas appliances or natural gas plumbing (in both residential and nonresidential development).
- The project will not result in any wasteful, inefficient, or unnecessary energy usage as determined by the analysis required under CEQA Section 21100(b)(3) and Section 15126.2(b) of the State CEQA Guidelines.

Transportation

- Achieve a reduction in project-generated vehicle miles traveled (VMT) below the regional average consistent with the current version of the California Climate Change Scoping Plan (currently 15 percent) or meet a locally adopted Senate Bill 743 VMT target, reflecting the recommendations provided in the Governor's Office of Planning and Research's Technical Advisory on Evaluating Transportation Impacts in CEQA:
  - Residential projects: 15 percent below the existing VMT per capita
  - Office projects: 15 percent below the existing VMT per employee
  - Retail projects: no net increase in existing VMT
- Achieve compliance with off-street electric vehicle requirements in the most recently adopted version of CALGreen Tier

2. Projects must be consistent with a local GHG reduction strategy that meets the criteria under State CEQA Guidelines Section 15183.5(b).

This analysis will evaluate the project in terms of consistency with the San Leandro 2021 Climate Action Plan, a local GHG reduction strategy that contains all of the components required under Criterion 2 above.

Impact Analysis

a. Would the project generate GHG emissions, either directly or indirectly, that may have a significant impact on the environment?

b. Conflict with an applicable plan, policy, or regulation adopted for the purpose of reducing the emissions of greenhouse gases?

The City of San Leandro has selected to use approach 1 specified by BAAQMD for determining the significance of GHG emissions. As stated above in *Significance Thresholds*, new buildings must not include natural gas. The proposed project would include natural gas. The proposed project would also generate vehicle trips, generating vehicle miles traveled. The vehicle miles traveled by project employee may not be at least 15 percent below existing average VMT in the area, thereby also potentially exceeding BAAQMD thresholds of significance. Accordingly, this impact would be potentially significant and will be evaluated in an EIR.

POTENTIALLY SIGNIFICANT IMPACT

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9 Hazards and Hazardous Materials

	Potentially Significant Impact	Less than Significant with Mitigation Incorporated	Less-than - Significant Impact	No Impact
Would the project:				
a. Create a significant hazard to the public or the environment through the routine transport, use, or disposal of hazardous materials?	☐	☐	■	☐
b. Create a significant hazard to the public or the environment through reasonably foreseeable upset and accident conditions involving the release of hazardous materials into the environment?	■	☐	☐	☐
c. Emit hazardous emissions or handle hazardous or acutely hazardous materials, substances, or waste within 0.25 mile of an existing or proposed school?	☐	☐	■	☐
d. Be located on a site that is included on a list of hazardous material sites compiled pursuant to Government Code Section 65962.5 and, as a result, would it create a significant hazard to the public or the environment?	■	☐	☐	☐
e. For a project located in an airport land use plan or, where such a plan has not been adopted, within two miles of a public airport or public use airport, would the project result in a safety hazard or excessive noise for people residing or working in the project area?	☐	☐	■	☐
f. Impair implementation of or physically interfere with an adopted emergency response plan or emergency evacuation plan?	☐	☐	☐	■
g. Expose people or structures, either directly or indirectly, to a significant risk of loss, injury, or death involving wildland fires?	☐	☐	☐	■

Setting

The following resources were reviewed to determine if hazardous materials may be present at the project site:

- Department of Toxic Substances Control (DTSC) Online Cortese List of Hazardous Waste and Substances Sites (DTSC 2023; California Environmental Protection Agency 2021a, 2021b)
- California State Water Resources Control Board (SWRCB) GeoTracker (SWRCB 2023)
- List of solid waste disposal sites identified by Water Board with waste constituents above hazardous waste levels outside the waste management unit
- List of "active" CDO and CAO from the SWRCB
- List of hazardous waste facilities subject to corrective action pursuant to Section 25187.5 of the Health and Safety Code, identified by DTSC.

A search of the above listed government databases and environmental records compiled pursuant to Government Code Section 65962.5 revealed that the project site is a hazardous materials site. Both the Envirostor and Geotracker Databases list the site due to former aerospace manufacturing and maintenance that occurred on site. The Geotracker database indicates the site is undergoing remediation while the Envirostor database classifies the site as a State Response Site which was certified for operation and maintenance in 2013 with land use restrictions. Land use restrictions at the project site are laid out in a Land Use Covenant prepared by the California Department of Toxic Substances Control (DTSC).

There are no schools within 0.25 mile of the project site, the closest school is Garfield Elementary School, approximately 1.5 miles southwest of the site.

Regulatory Setting

Department of Toxic Substances Control

As a department of CalEPA, the DTSC regulates hazardous waste, cleans up existing contamination, and looks for ways to reduce the hazardous waste produced in California. DTSC regulates hazardous waste in California primarily under the authority of the Resource Conservation and Recovery Act (RCRA) and the California Health and Safety Code.

DTSC also administers the California Hazardous Waste Control Law (HWCL) to regulate hazardous wastes. While the HWCL is generally more stringent than RCRA, until the USEPA approves the California program, both state and federal laws apply in California. The HWCL lists 791 chemicals and approximately 300 common materials that may be hazardous; establishes criteria for identifying, packaging, and labeling hazardous wastes; prescribes management controls; establishes permit requirements for treatment, storage, disposal, and transportation; and identifies some wastes that cannot be disposed of in landfills.

Government Code Section 65962.5 requires the DTSC, the State Department of Health Services, SWRCB, and the California Department of Resources Recycling and Recovery (CalRecycle) compile and annually update lists of hazardous waste sites and land designated as hazardous waste sites throughout the state. The Secretary for Environmental Protection consolidates the information submitted by these agencies and distributes it to each city and county where sites on the lists are located. Before the lead agency accepts an application for any development project as complete, the applicant must consult these lists to determine if the site at issue is included.

If any soil is excavated from a site containing hazardous materials, it is considered a hazardous waste if it exceeds specific criteria in Title 22 of the CCR. Remediation of hazardous wastes found at a site may be required if excavation of these materials is performed, or if certain other soil disturbing activities would occur. Even if soil or groundwater at a contaminated site does not have the characteristics required to be defined as hazardous waste, remediation of the site may be required by regulatory agencies subject to jurisdictional authority. Cleanup requirements are determined on a case-by-case basis by the agency taking jurisdiction.

Regional Water Quality Control Board

The Regional Water Quality Control Board (RWQCB) regulates discharges and releases to surface and groundwater in the project area. The RWQCB generally oversees cases involving groundwater contamination. The County of Alameda Department of Environmental Health handles most leaking underground storage tank cases, so the RWQCB may oversee cases involving other groundwater contaminants, i.e., Spills, Leaks, Incidents, and Clean-up cases. In the case of spills at a project site, the responsible party would notify the County of Alameda, RWQCB, or DTSC and a lead would be determined.

RWQCB has established guidelines used to evaluate the potential risk associated with chemicals found in soil or groundwater where a release of hazardous materials has occurred called Environmental Screening Levels (ESLs). ESLs were developed to expedite the identification and evaluation of potential environmental concerns at contaminated sites. ESLs address soil, groundwater, soil gas, and indoor air and cover a range of concerns (e.g., impacts to drinking water, aquatic habitat, and vapor intrusion).

San Leandro Environmental Services Section

The City of San Leandro Environmental Services Section is designated as the City's Certified Unified Program Agency (CUPA), which is overseen by the California Environmental Protection Agency and coordinates the regulation of hazardous materials and hazardous wastes in the City. CUPA ensures the consistent application of statewide standards during administrative, permitting, inspection, and enforcement activities associated with hazardous materials and hazardous wastes. If a business operated at the project site would use and store hazardous materials and generate hazardous wastes, CUPA would require the electronic submittal of chemical and facility information, a Hazardous Materials Business Plan, and hazardous waste generator permits to the California Environmental Reporting System online database. If operations at the project site would include the treatment, storage, and/or disposal of hazardous waste, the City Environmental Services Section would regulate these activities under a tiered permitting system.

CUPA, through the Hazardous Materials Office, regulates USTs containing hazardous materials, including installation, operation and maintenance, temporary closure, and removal and disposal of USTs. Additionally, CUPA holds the responsibility and authority to implement the Aboveground Petroleum Storage Act, which regulates aboveground petroleum storage tanks through administrative requirements, permitting, inspections, and enforcement. Any aboveground or underground storage tanks present at the project site would be managed by the City Environmental Services Section.

The Hazardous Materials Office administers the California Accidental Release Prevention (CalARP) Program, which aims to reduce the likelihood and impact of accidental releases of regulated toxic and flammable substances through administrative and operational procedures, and facility

inspections. If the facility located on the project site would be regulated under the CalARP Program, the facility would file a written Risk Management Plan with the City Environmental Services Section.

San Leandro 2035 General Plan

The following Environmental Hazards Element policies of the San Leandro 2035 General Plan reduce potential hazards related to hazardous materials.

ENVIRONMENTAL HAZARDS ELEMENT

Goal EH-5 Protect local residents and workers from the risks associated with hazardous materials.

Policy EH-5.1 **Regulatory Compliance.** Work with the appropriate county, regional, state, and federal agencies to develop and implement programs for hazardous waste reduction, hazardous material facility siting, hazardous waste handling and disposal, public education, and regulatory compliance.

Policy EH-5.2 **Clean-Up of Contaminated Sites.** Ensure that the necessary steps are taken to clean up residual hazardous wastes on any contaminated sites proposed for redevelopment or reuse. Require soil evaluations as needed to ensure that risks are assessed and appropriate remediation is provided.

Policy EH-5.4 **Separation from Sensitive Uses.** Provide adequate and safe separation between areas where hazardous materials are present and sensitive uses such as schools, residences, and public facilities. Zoning and other development regulations should include performance standards to avoid safety hazards and achieve compatibility between uses.

Impact Analysis

a. Would the project create a significant hazard to the public or the environment through the routine transport, use, or disposal of hazardous materials?

Project construction would be a one-time event not requiring routine activities. While the project is in the General Industrial zoning district and industrial tenants are possible, the proposed project is a new warehouse. Warehouses do not have the facilities for manufacturing or refinement of hazardous materials, such as a chemical factory or oil refinery. Commercial warehouse structures typically do not routinely use or store large quantities of hazardous materials other than those typically used for office cleaning, maintenance, and landscaping. The proposed project does not include the construction of underground or above-ground storage tanks, like those typically used to store fuel or other hazardous substances. If the operation of the proposed project would require routine handling of hazardous materials, the use, storage, and disposal of hazardous materials would be regulated through the RCRA which is implemented by DTSC. Transport of hazardous materials, during the operation of the proposed project, would be required to be transported under U.S. Department of Transportation (USDOT) regulations (USDOT Hazardous Materials Transport Act, 49 Code of Federal Regulations), which stipulate the types of containers, labeling, and other restrictions to be used in the movement of such material on interstate highways. In the case of spills at a project site, the responsible party would notify the County of Alameda, RWQCB, or DTSC and a lead would be determined. Therefore, project operation would not involve the use, storage,

transportation, or disposal of substantial quantities of hazardous materials and would not result in the release of such materials into the environment. Impacts would be less than significant.

LESS-THAN-SIGNIFICANT IMPACT

b. Would the project create a significant hazard to the public or the environment through reasonably foreseeable upset and accident conditions involving the release of hazardous materials into the environment?

d. Would the project be located on a site that is included on a list of hazardous material sites compiled pursuant to Government Code Section 65962.5 and, as a result, would it create a significant hazard to the public or the environment?

Project construction would include the temporary transport, storage, use, or disposal of potentially hazardous materials including fuels, lubricating fluids, cleaners, and solvents. If spilled, these substances could pose a risk to the environment and to human health. However, the transport, storage, use, or disposal of hazardous materials is subject to various federal, state, and local regulations designed to reduce risks associated with hazardous materials, including potential risks associated with upset or accident conditions. Hazardous materials would be required to be transported under U.S. Department of Transportation (USDOT) regulations (USDOT Hazardous Materials Transport Act, 49 Code of Federal Regulations), which stipulate the types of containers, labeling, and other restrictions to be used in the movement of such material on interstate highways. In addition, the use, storage, and disposal of hazardous materials are regulated through the RCRA. DTSC is responsible for implementing the RCRA program, as well as California's own hazardous waste laws. DTSC regulates hazardous waste, cleans up existing contamination, and looks for ways to control and reduce the hazardous waste produced in California. It does this primarily under the authority of RCRA and in accordance with the HWCL (California H&SC Division 20, Chapter 6.5) and the Hazardous Waste Control Regulations (Title 22, California Code of Regulations, Divisions 4 and 4.5). DTSC also oversees permitting, inspection, compliance, and corrective action programs to ensure that hazardous waste managers follow federal and state requirements and other laws that affect hazardous waste specific to handling, storage, transportation, disposal, treatment, reduction, cleanup, and emergency planning. Project construction would disturb more than one acre of land. Accordingly, the project applicant must develop and implement a SWPPP, pursuant to state regulations. The SWPPP must contain measures that are implemented at the site to prevent soil erosion and soil loss. The SWPPP must also contain measures to implement in the event of a leak or spill of construction fluids, such as equipment diesel fuel. Compliance with existing regulations would reduce the risk of potential release of hazardous materials used during construction.

Asbestos is a naturally occurring fibrous material that was extensively used as a fireproofing and insulating agent in building construction materials before such uses were banned by the USEPA in the 1970s. Asbestos-containing materials (ACMs) were commonly used for insulation of heating ducts as well as ceiling and floor tiles. Undisturbed ACMs contained within building materials present no significant health risk because there is no exposure pathway. However, once these tiny fibers are disturbed, they can become airborne and become a respiratory hazard. The proposed project would involve the demolition of existing vacant structures on the project site. Project demolition activities would have potential to expose construction workers to asbestos containing materials. Additionally, construction workers could also be exposed to lead-based paint during demolition of existing structures. Lead is hazardous to human health.

As described in *Setting*, above, the project site is included on a list of hazardous material sites compiled pursuant to Government Code Section 65962.5. The Geotracker database indicates the site is undergoing remediation while the Envirostor database classifies the site as a State Response Site which was certified for operation and maintenance in 2013 with land use restrictions. The proposed construction of an industrial building and parking on site complies with the restricted uses allowed on the project site. However, the land use covenant requires a soil management plan for excavations exceeding certain depths. This suggests there is potential for either contaminated soil or groundwater, or both, to be encountered during project construction. If construction workers are exposed to contaminated materials during construction or if these materials are released into the environment, impacts would be potentially significant. Likewise, exposure to lead-based paint or asbestos would also be a potentially significant impact. Accordingly, this impact will be further evaluated in the EIR.

POTENTIALLY SIGNIFICANT IMPACT

c. Would the project emit hazardous emissions or handle hazardous or acutely hazardous materials, substances, or waste within 0.25 mile of an existing or proposed school?

There are no schools within 0.25 mile of the project site, the closest school is Garfield Elementary School, approximately 1.5 miles southwest of the site. Though potentially hazardous materials, substances, and waste such as fuels, lubricants, solvents, and oils could be used during project construction, the transport, use and storage of hazardous materials would be required to be conducted in accordance with all applicable State and federal laws, such as the Hazardous Materials Transportation Act, RCRA, the California Hazardous Material Management Act, and the CCR, Title 22. The project would have a less than significant impact on hazardous materials, substances, or waste emissions within 0.25 mile of an existing or proposed school.

LESS-THAN-SIGNIFICANT IMPACT

e. For a project located within an airport land use plan or, where such a plan has not been adopted, within two miles of a public airport or public use airport, would the project result in a safety hazard or excessive noise for people residing or working in the project area?

The project site is approximately 2.5 miles east of Oakland International Airport and 6.6 miles north of the Hayward Executive Airport. The project site is within the Oakland Airport Influence Area but is not within a noise or safety compatibility zone of the Oakland Airport. The project site is located primarily in the Outer Approach Zone (Zone 4), where warehouses and distribution facilities are a compatible use assuming employment does not exceed 100 employees per acre (Alameda County Community Development Agency 2010; Alameda County Airport Land Use Commission 2010). Additionally, the project applicant submitted the project to the FAA, who determined that a proposed building height of 50 feet does not present a hazard to air navigation. Therefore, the project would not result in a safety hazard or excessive noise for people working in the project area as a result of airport operations. Impacts would be less than significant.

LESS-THAN-SIGNIFICANT IMPACT

f. Would the project impair implementation of or physically interfere with an adopted emergency response plan or emergency evacuation plan?

Project construction would not require the closure of nearby roads and would not result in the need for detours. Construction activities would be limited to the project site and equipment and vehicles

would be stationed within the site. The proposed project would not obstruct existing roadways or require the construction of new roadways. The project would modify Hester Street with driveways; however, the driveways would be at the end of Hester Street, avoiding the need to close Hester Street to through traffic. Therefore, the proposed project would not block emergency response or evacuation routes or interfere with adopted emergency response and emergency evacuation plans. No impact would occur.

NO IMPACT

g. Would the project expose people or structures, either directly or indirectly, to a significant risk of loss, injury, or death involving wildland fires?

The project site is in a developed, urbanized area surrounded by commercial development and roadways. No wildlands or densely vegetated areas are located nearby that would represent a significant fire hazard. The project does not fall within a High Fire Hazard Severity Zone or Very High Fire Hazard Severity Zone for wildland fires; the nearest Fire Hazard Severity Zone is approximately 3 miles west of the project site (CALFIRE 2023). As discussed further in Section 20, *Wildfire*, the project would not expose people or structures to significant hazards related to wildland fires and there would be no impact.

NO IMPACT

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10 Hydrology and Water Quality

	Potentially Significant Impact	Less than Significant with Mitigation Incorporated	Less-than - Significant Impact	No Impact
Would the project:				
a. Violate any water quality standards or waste discharge requirements or otherwise substantially degrade surface or ground water quality?	☐	☐	■	☐
b. Substantially decrease groundwater supplies or interfere substantially with groundwater recharge such that the project may impede sustainable groundwater management of the basin?	☐	☐	■	☐
c. Substantially alter the existing drainage pattern of the site or area, including through the alteration of the course of a stream or river or through the addition of impervious surfaces, in a manner which would:				
(i) Result in substantial erosion or siltation on- or off-site;	☐	☐	■	☐
(ii) Substantially increase the rate or amount of surface runoff in a manner which would result in flooding on- or off-site;	☐	☐	■	☐
(iii) Create or contribute runoff water which would exceed the capacity of existing or planned stormwater drainage systems or provide substantial additional sources of polluted runoff; or	☐	☐	■	☐
(iv) Impede or redirect flood flows?	☐	☐	■	☐
d. In flood hazard, tsunami, or seiche zones, risk release of pollutants due to project inundation?	☐	☐	■	☐
e. Conflict with or obstruct implementation of a water quality control plan or sustainable groundwater management plan?	☐	☐	■	☐

Setting

The City of San Leandro overlies the Santa Clara Valley (East Bay Plain) Groundwater Subbasin, which is bounded by San Pablo Bay to the north, the Diablo Range to the east, the San Francisco Bay to the west, and a groundwater divide near the City of Hayward to the south (California's Groundwater 2004).

The project site is approximately 14.14 acres and generally flat. The proposed project would include the construction of bioswales, new stormwater inlets, and a new stormwater drain which would connect to an existing storm drain main that exists beneath the surface of the existing site driveway from Doolittle Drive.

The project site is approximately 2.5 miles east of the San Francisco Bay, 5.8 miles northwest of San Lorenzo Creek, and 2.5 miles west of San Leandro Creek. Both creeks flow to the west and terminate in the San Francisco Bay. The City of San Leandro receives approximately 21 inches of rain annually, with rainfall concentrated in the winter months (National Oceanic and Atmospheric Administration 2022).

The Federal Emergency Management Agency (FEMA) produces Flood Insurance Rate Maps that delineate special flood hazard zones, generally referred to as the 100-year floodplain. According to the Flood Insurance Rate Map that covers the project area (Map Panel #06001C0252H), the project site is not within 100-year floodplain (Federal Emergency Management Agency 2018). The eastern most area of the project site is mapped as an area of minimal flood hazard and having a less than 0.2 percent annual chance to be inundated by flood waters as a result of a storm event, also known as the 500-year flood event. Additionally, the project site is located approximately 2.5 miles east of the San Francisco Bay and is within a tsunami zone, as shown in the Alameda County Tsunami Hazard Areas (California Department of Conservation 2021). Accordingly, though unlikely, the project site could be inundated, especially when compounded with expected sea-level rise into the future.

Regulatory Setting

Clean Water Act

Congress enacted the CWA, formerly the Federal Water Pollution Control Act of 1972, with the intent of restoring and maintaining the chemical, physical, and biological integrity of the waters of the U.S. The CWA requires states to set standards to protect, maintain, and restore water quality through the regulation of point source and non-point source discharges to surface water. The National Pollutant Discharge Elimination System (NPDES) permit process regulates those discharges (CWA Section 402). NPDES permitting authority is administered by the SWRCB and its nine RWQCBs. The project site is in a watershed administered by the San Francisco Bay RWQCB (San Francisco Bay RWQCB 2022).

California Porter Cologne Water Quality Control Act

The Porter Cologne Water Quality Control Act of 1967 requires the SWRCB and the nine RWQCBs to adopt water quality criteria to protect State waters. These criteria include the identification of beneficial uses, narrative and numerical water quality standards, and implementation procedures. The criteria for state waters in the region are contained in the *Water Quality Objectives* Chapter of the Basin Plan for the San Francisco Bay RWQCB (San Francisco Bay RWQCB 2017). The Water Quality Control Plan, or Basin Plan, protects designated beneficial uses of State waters through the

issuance of Waste Discharge Requirements and through the development of total maximum daily loads. Anyone proposing to discharge waste that could affect the quality of the waters of the State must make a report of the waste discharge to the RWQCB or SWRCB, as appropriate, in compliance with Porter-Cologne.

Alameda County Clean Water Program

The City of San Leandro is a member agency of the Alameda County Clean Water Program (ACCWP), which was established in response to federal stormwater NPDES regulations. Pursuant to the ACCWP Stormwater C.3 Technical Guidance (ACCWP 2017), projects that create or replace 10,000 square feet or more of impervious surface must comply with Provision C.3, which requires incorporation of appropriate source control, site design, and stormwater treatment measures in new development and redevelopment projects to address stormwater runoff pollutant discharges and prevent increases in runoff flows. The proposed project would be subject to this provision and would be required to implement appropriate measures.

Municipal Regional Permit Provision C.3

The San Francisco Bay RWQCB re-issued the Municipal Regional Stormwater NPDES Permit (MRP) in 2015 to regulate stormwater discharges from municipalities and local agencies (co-permittees) in Alameda, Contra Costa, San Mateo, and Santa Clara counties. Under Provision C.3 of the MRP, new and redevelopment projects that create or replace 10,000 square feet or more of impervious surface area are required to implement site design, source control, and Low Impact Development (LID)-based stormwater treatment controls to treat post-construction stormwater runoff. LID-based treatment controls are intended to maintain or restore the site's natural hydrologic functions, maximizing opportunities for infiltration and evapotranspiration, and using stormwater as a resource (e.g., rainwater harvesting for non-potable uses). The MRP also requires that stormwater treatment measures are properly installed, operated, and maintained. In addition, the City would require a Stormwater Treatment Measures and Hydromodifications Management Controls Maintenance Agreement.

In addition to water quality controls, the MRP requires new development and redevelopment projects that create or replace one acre or more of impervious surface to manage development-related increases in peak runoff flow, volume, and duration, where such hydromodification is likely to cause increased erosion, silt pollutant generation, or other impacts to local rivers, streams, and creeks. Projects may be deemed exempt from these requirements if they do not meet the minimized size threshold, drain into tidally influenced areas or directly into the Bay, or drain into hardened channels, or if they are infill projects in subwatersheds or catchment areas that are greater than or equal to 65 percent impervious.

The project would be required to comply with all requirements in the MRP. This permit was reissued the Regional Water Quality Control Board in May 2022.

City of San Leandro Municipal Code

Chapter 3-15 of San Leandro Municipal Code regulates discharges into the City's stormwater system. Chapter 3-15 requires implementation of stormwater and erosion best management practices and compliance with the CWA and NPDES permits to eliminate non-stormwater discharges to the municipal separate storm sewer. Further, Chapter 7-12 of San Leandro Municipal Code requires development projects to submit erosion and sedimentation control plans and drainage plans to the City for approval prior to project construction.

City of San Leandro 2035 General Plan

The following policies are applicable to the proposed project:

OSC-7.2 **Water Conservation.** Promote the efficient use of existing water supplies through a variety of water conservation measures, including the use of recycled water for landscaping.

OSC-7.3 **Drought Tolerant Landscaping.** Encourage the use of native vegetation and Bay-friendly landscaping and enforce the State Department of Water Resources Model Water Efficient Landscape Ordinance.

Impact Analysis

a. Would the project violate any water quality standards or waste discharge requirements or otherwise substantially degrade surface or ground water quality?

b. Would the project substantially decrease groundwater supplies or interfere substantially with groundwater recharge such that the project may impede sustainable groundwater management of the basin?

e. Would the project conflict with or obstruct implementation of a water quality control plan or sustainable groundwater management plan?

CONSTRUCTION

During grading activities, the soils on the project site would be exposed to wind and water erosion that could transport sediments into local stormwater drainages. Also, accidental spills of fluids or fuels from construction vehicles and equipment, or miscellaneous construction materials and debris, could be mobilized and transported off-site in overland flow. These contaminant sources could degrade the water quality of receiving water bodies (e.g., San Francisco Bay), potentially resulting in a violation of water quality standards.

As part of Section 402 of the CWA, the USEPA has established regulations under the National Pollution Discharge Elimination System (NPDES) program to control both construction and operation (occupancy) stormwater discharges. The federal CWA was first adopted in 1972 and is intended to protect and preserve water supply and quality in the “waters of the nation.” In the Bay Area, the San Francisco Regional Water Quality Control Board (RWQCB) administers the NPDES permitting program and is responsible for developing permitting requirements. The proposed project would be subject to the San Francisco Bay Region Municipal Regional Stormwater National Pollutant Discharge Elimination System (NPDES) Permit (MRP) – NPDES Permit Order No. R2-2015-0049, and the provisions set forth in Section C.3 New Development and Redevelopment. Under the conditions of the permitting program, the applicant would be required to eliminate or reduce non-stormwater discharges to waters of the nation, develop and implement a Stormwater Pollution Prevention Plan (SWPPP) for construction activities, and perform inspections of the stormwater pollution prevention measures and control practices to ensure conformance with the site SWPPP. Because the proposed project would disturb at least one acre of land, the project must provide stormwater treatment and would be required to obtain coverage under the General Permit for Discharges of Storm Water Associated with Construction Activity (Construction General Permit Order 2009-0009-DWQ or 2009-0009-DWQ General Permit).

Further, in accordance with San Leandro Municipal Code Chapter 7-12 (Grading, Excavations and Fill), all grading activities must be conducted in a manner that will minimize the potential for erosion from the site. If requested by the City engineer, the project applicant would be required to staff the project site during storms to prevent erosion and sedimentation of project soils (Section 7-12-305). In accordance with Section 7-12-600 of the San Leandro Municipal Code, construction erosion and sedimentation control facilities must be completely in place during the wet season in San Leandro (October 15th through April 15th). In accordance with Section 3-15-215 of the San Leandro Municipal Code, construction contractors performing work in the City shall endeavor, whenever possible, to provide filter materials at the catch basin to retain any debris and dirt flowing into the City's storm sewer system. Therefore, with compliance with construction-related water quality and erosion control requirements, construction of the proposed project would not violate water quality standards. Impacts resulting from project construction would be less than significant.

OPERATION

Currently the project site is developed with impervious surfaces that do not allow precipitation to infiltrate the ground surface, such as the existing industrial buildings and asphalt parking lots. Runoff from these impervious surfaces can carry a variety of pollutants, including oil and grease, metals, sediment, and pesticide residues from roadways, parking lots, and rooftops for when the site was active, and depositing them into adjacent or nearby waterways via the storm drain system.

Following construction, the proposed warehouse and associated surface parking and internal access roads would be impervious. Consistent with existing conditions, precipitation falling onto these impervious surfaces would become runoff and potentially mobilize urban pollutants, such as oil and grease from the proposed parking areas on-site. However, compared to existing conditions, the project would reduce the amount of impervious surfaces on-site through the construction of approximately 18,000 square feet of landscaped areas, which would function as vegetated bioretention areas for stormwater runoff. Vegetated bio-filtration systems are designed to slow down velocity, reduce volume, and retain pollutants of stormwater runoff using a combination of plants and filter media such as sand, gravel, compost, and soil (Guo 2009; Lim et al. 2015). They enhance natural processes such as sedimentation, filtration, sorption, plant and microbial uptake, and biodegradation (EPA 1999). Accordingly, the proposed project would potentially improve water quality during operation, as on-site filtration would be provided.

Stormwater runoff that does not infiltrate the ground surface in the proposed bioretention areas would discharge from the bioretention areas into the City's existing storm drain system. Stormwater discharge during operation is regulated by the Municipal Separate Storm Sewer System (MS4) Permit, issued by the RWQCB, pursuant to NPDES regulations. Water quality in stormwater runoff is regulated locally by the Alameda County Clean Water Program, which includes the C.3 provisions set by the San Francisco Bay RWQCB. Provision C.3 of the MRP addresses post-construction stormwater requirements for new development and redevelopment projects that add and/or replace 10,000 square feet or more of impervious area. Because the proposed project would replace in excess of 10,000 square feet of the impervious surface of the project site, it must comply with the C.3 provisions set by the RWQCB (also a requirement pursuant to San Leandro Municipal Code Chapter 3-15). Therefore, the proposed project must meet certain criteria including: 1) incorporate site design, source control, and stormwater treatment measures into the project design; 2) minimize the discharge of pollutants in stormwater runoff and non-stormwater discharge; and 3) minimize increases in runoff flows as compared to pre-development conditions. A Stormwater Control Plan (SCP) that details the site control, source control, and stormwater measures that would be implemented at the site must be submitted to the City. In addition, Low Impact Development (LID)

requirements apply. In accordance with the C.3 requirements, the project is designed to direct runoff from the warehouse building roof, sidewalks, and surface parking areas into on-site landscaped bioretention areas to treat runoff before entering the stormwater system.

Given required compliance to the provisions of NPDES Section C.3, the SWPPP, and the stormwater control plan, the proposed project would not result in adverse effects on water quality and or in the violation of water quality standards or waste discharge requirements during construction or operation. Therefore, the proposed project would have a less than significant impact on water quality. With implementation of the measures contained in these plans, excessive stormwater runoff, substantial erosion or siltation on- or off-site would not occur and the potential for the project to violate water quality standards and substantially degrade water quality would be reduced.

The proposed project would connect to the City of San Leandro's sanitary sewer system, which conveys wastewater to the City's Water Pollution Control Plant. Effluent, which refers to wastewater that has undergone treatment at the Water Pollution Control Plant, is discharged into the San Francisco Bay under a permit with the RWQCB. Since the Water Pollution Control Plant is considered a publicly owned treatment facility, operational discharge flows treated at the Water Pollution Control Plant must comply with applicable water discharge requirements issued by the RWQCB. Compliance with conditions or permit requirements established by the City as well as water discharge requirements outlined by the RWQCB would ensure that wastewater discharges coming from the project site and treated by the Water Pollution Control Plant system would not exceed applicable RWQCB wastewater treatment requirements. Mandatory compliance with the permit requirements would prevent stormwater runoff and effluent discharges from violating water quality standards or substantially degrading water quality. Thus, the proposed project would not conflict with or obstruct implementation of a water quality control plan.

Compared to existing conditions, the proposed project would increase the potential for groundwater recharge. Potential groundwater recharge would increase due to the bioretention areas that would be constructed on-site to allow for the infiltration of precipitation and stormwater runoff. Additionally, the proposed project does not include use of groundwater supplies, as the City of San Leandro receives its water from the East Bay Municipal Utility District. The East Bay Municipal Utility District acquires it water from a variety of surface sources, with the primary source being a series of reservoirs in the Mokelumne River watershed (East Bay Municipal Utility District 2021). Although there is no adopted sustainable groundwater management plan for the groundwater basin underlying the project site, because the proposed project would allow for infiltration and not use groundwater, it would not conflict with such a plan. Impacts would be less than significant.

LESS-THAN-SIGNIFICANT IMPACT

c.(i) Would the project substantially alter the existing drainage pattern of the site or area, including through the alteration of the course of a stream or river or through the addition of impervious surfaces, in a manner which would result in substantial erosion or siltation on- or off-site?

c.(ii) Would the project substantially alter the existing drainage pattern of the site or area, including through the alteration of the course of a stream or river or through the addition of impervious surfaces, in a manner which would substantially increase the rate or amount of surface runoff in a manner which would result in flooding on- or off-site?

c.(iii) Would the project substantially alter the existing drainage pattern of the site or area, including through the alteration of the course of a stream or river or through the addition of impervious surfaces, in a manner that would create or contribute runoff water which would exceed the capacity of existing or planned stormwater drainage systems or provide substantial additional sources of polluted runoff?

c.(iv) Would the project substantially alter the existing drainage pattern of the site or area, including through the alteration of the course of a stream or river or through the addition of impervious surfaces, in a manner which would impede or redirect flood flows?

The proposed project would not alter the course of a stream or river. Rivers and streams, as well as other wetlands, do not occur on or adjacent to the project site or on Hester Street, which comprise the entire area where project construction would occur.

The proposed project would alter the existing drainage pattern of the site. However, the alterations would increase infiltration of precipitation and stormwater runoff through the addition of pervious landscaping that function as bioretention areas. The bioretention areas would be vegetated to prevent erosion of mobilization of soil within the bioretention areas. Other areas of the project site would be impervious surfaces, such as the proposed warehouse and parking areas, where soils are covered and not subject to erosion. Vegetated bioretention systems, like those included in the proposed project, are designed to slow down the velocity and reduce the volume of stormwater runoff using a combination of plants and filter media such as sand, gravel, compost, and soil (Guo 2009; Lim et al. 2015). Additionally, the project would be required to incorporate stormwater control measures and NPDES permit requirements to reduce the amount of runoff that would enter the storm drain system compared to existing conditions. Accordingly, the proposed project would not substantially increase the rate or amount of surface runoff in a manner which would result in flooding on- or off-site. Vegetated bioretention areas also filter stormwater to reduce the concentration of pollutants mobilized in runoff, thereby reducing pollution in runoff that is discharged into receiving waters via the City's storm drain system. Compared with existing conditions, the bioretention areas would increase flood storage on the project site, which currently provides no areas to capture stormwater flows. Accordingly, impacts would be less than significant.

LESS-THAN-SIGNIFICANT IMPACT

d. In flood hazard, tsunami, or seiche zones, would the project risk release of pollutants due to project inundation?

The project is subject to inundation from a 500-year flood event, as well as a tsunami. The proposed project is a new warehouse. Warehouses do not have the facilities for manufacturing or refinement of hazardous materials, such as a chemical factory or oil refinery, which would pose a substantial risk of release of pollutants if inundated. Commercial warehouse structures typically do not routinely use or store large quantities of hazardous materials and pollutants other than those typically used for office cleaning, maintenance, and landscaping. The proposed project does not include the construction of storage tanks, like those typically used to store fuel or other hazardous substances, which would be damaged and leak during periods of inundation. Wastewater from the project would immediately be conveyed to the City's existing sanitary sewer system. Therefore, potential inundation of the project would not result in substantial release of pollutants into the environment. Additionally, existing conditions on the site are subject to inundation, and thus the project would not substantially alter existing conditions. Impacts would be less than significant.

LESS-THAN-SIGNIFICANT IMPACT

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11 Land Use and Planning

	Potentially Significant Impact	Less than Significant with Mitigation Incorporated	Less-than - Significant Impact	No Impact
Would the project:				
a. Physically divide an established community?	☐	☐	☐	■
b. Cause a significant environmental impact due to a conflict with any land use plan, policy, or regulation adopted for the purpose of avoiding or mitigating an environmental effect?	☐	☐	■	☐

Setting

As stated in the *Project Description*, the project site has a General Plan land use designation of General Industrial and is zoned as General Industrial (IG). According to the Land Use Element of the 2035 General Plan, areas designated as General Industrial may contain a wide range of manufacturing, transportation, food and beverage processing, technology, warehousing, vehicle storage, office-flex, and distribution uses. A limited range of commercial uses also is permitted in these areas (City of San Leandro 2016). IG zones include but are not limited to commercial and industrial land uses. For example, automobile parts sales, business and trade schools, food processing, laboratories, big-box retail sales, and warehouses are allowable in the IG zoning district. Pursuant to Chapter 2.12 of the San Leandro Municipal Code, allowable intensity on the project site is up to 1 FAR, and maximum building height is 35 feet, but up to 50 feet with City approval.

The project site is within the planning area of the Airport Land Use Compatibility Plan for the Oakland Internation Airport (Alameda County Community Development Department 2010). The project site is located primarily in the Outer Approach Zone (Zone 4), where warehouses and distribution facilities are compatible uses. Warehouses and distribution facilities are compatible uses when there will be at most 100 employees per acre and that at least 20 percent of the parcel will be vacant land, including parking areas (Alameda County Community Development Department 2010).

Impact Analysis

a. Would the project physically divide an established community?

The project would involve redevelopment of an existing site. No new roads, linear infrastructure, or other development features are proposed that would divide an established community or limit movement, travel, or social interaction between established land uses. Project construction would not physically divide an established community. There would be no impact related to physically dividing established communities.

NO IMPACT

b. Would the project cause a significant environmental impact due to a conflict with any land use plan, policy, or regulation adopted for the purpose of avoiding or mitigating an environmental effect?

SAN LEANDRO 2035 GENERAL PLAN

The project site has a General Plan land use designation of General Industrial. Warehouses are among the uses envisioned for the General Industrial designation; the project would therefore be consistent with the General Plan land use designation for the site.

The City's General Plan contains several land use policies with the purpose of avoiding or mitigating environmental impacts. Table 14 shows applicable General Plan land use policies that aim to avoid or mitigate environmental impacts and the project's consistency with those policies.

Table 14 Project Consistency with San Leandro 2035 General Plan Land Use Policies

General Plan Policy	Project Consistency
Policy LU 1.14. Construction Impacts. Ensure that construction activities are regulated and monitored in a manner that minimizes the potential for adverse off-site impacts such as noise, dust, erosion, exposure to hazardous materials, and truck traffic.	**Consistent.** The project would comply with existing applicable regulations that would minimize impacts to noise, dust, erosion, and exposure to hazardous materials. As discussed in Section 3, *Air Quality*, project construction would not exceed applicable thresholds for particulate matter and would not result in a significant impact related to dust or air quality. As discussed in Section 10, *Hydrology and Water Quality*, the project would be required to comply with Section 3-15 and Section 7-12 of the San Leandro Municipal Code, which outline construction erosion and stormwater best management practices and require the preparation of an erosion and sedimentation control plan during construction. As concluded therein, the project would not result in substantial erosion or runoff. As discussed in Section 9, *Hazards and Hazardous Materials*, the project would not result in the release of hazardous materials to the environment and would not expose project occupants to substantial hazards and hazardous materials, including during construction. As discussed in Section 13, *Noise*, construction noise would not result in substantial adverse effects on the nearest sensitive receptors. Therefore, the proposed project would be consistent with this General Plan policy.
Policy LU-10.2. Off-Site Impacts. Consider the setting and context of each site evaluating proposals for development in industrial areas. The potential for impacts on adjacent uses, including the potential for land use conflicts and increased parking demand and truck traffic, should be a key consideration.	**Consistent.** The project would involve development of a 239,573 square-foot warehouse, which would be consistent with surrounding land uses, including commercial and industrial land uses to the north such as tool vendors, screen printing shops, machine shops, and sign shops; commercial and industrial land uses to the east such as several trucking businesses, a landscape company, metal supplier, and other commercial/industrial businesses that operate adjacent to the eastern project site boundary; an existing un-used railroad track and commercial and industrial development to the south; and more commercial and industrial land uses to the west. The proposed project would not include rezoning and therefore would be consistent with the City's IG zoning district, and would not result in a land use conflict. The proposed project would include two main surface parking areas: one area on the west side of the building closer to the proposed office uses, and one area on the north side of the warehouse. The area on the west side of the building would include 204 parking spaces for passenger vehicles, and the area north of the warehouse would include 59 parking spaces for tractor trailers. This exceeds the 160 parking spaces required by City parking standards pursuant to San Leandro Municipal Code Section 4.08.108(D).

	Additionally, the project site already contains a warehouse. The proposed warehouse would be consistent with past on-site uses, though these uses are no longer operational. Therefore, the proposed project would not have substantial new off-site impacts. The proposed project is consistent with this General Plan policy.

Source: City of San Leandro 2016a

As shown in Table 14, the project would be generally consistent with applicable City's General Plan policies that aim to avoid or mitigate environmental effects.

San Leandro Municipal Code

The project site is in the IG zoning district. A variety of commercial and industrial land uses are permitted by right in the IG zone, including warehouses; the project would therefore be consistent with the General Plan land use designation for the site.

The San Leandro Municipal Code contains several regulations that intend to avoid or mitigate environmental impacts in San Leandro. Table 15 shows policies that aim to avoid or mitigate environmental effects and the project's consistency with those regulations.

Table 15 Project Consistency with the San Leandro Municipal Code

San Leandro Municipal Code	Project Consistency
Section 7-5-600. Section 7-5-600 adopts the California Green Building Standards Code (CALGreen) as the Green Building Code of San Leandro.	**Consistent.** As described in Section 6, *Energy*, the project would be required to implement the California Green Building Standards Code.
Chapter 5-2. Chapter 5-2 establishes that street trees in San Leandro are property of the City, and outlines requirements for removal and planting of street trees.	**Consistent.** As described in the Project Description, construction activities associated with the proposed project would require the removal of up to five street trees. These trees are not protected under the City's tree ordinance. Additionally, the project would involve replacing the trees with trees that are native species to California. Therefore, the project would not conflict with this chapter of the San Leandro Municipal Code.
Chapter 3-15. Chapter 3-15 contains standards and requirements for development projects to avoid non-stormwater discharges into the municipal separate storm sewer. **Chapter 7-12.** Chapter 7-12 contains standards and permit requirements for grading and excavation, and requires preparation of an erosion and sedimentation control plan and drainage plan in order to reduce water quality impacts of stormwater runoff from the site for the life of the project.	**Consistent.** As described in the Project Description and Section 10, *Hydrology and Water Quality*, the project would be required to comply with NPDES permit requirements, C.3 Stormwater Guidelines, and would involve the construction of bioswales throughout the site, generally within surface parking areas, but also adjacent to the proposed warehouse and internal access roads. Bioswales would be designed to capture and slow/pool runoff from impervious surface. As runoff collects in the bioswales, infiltration into the underlying ground would occur, reducing the volume of runoff that continues toward discharge into the storm drain system. Slowing the velocity of runoff by directing it into bioswales also allows sediment and other solids and suspended pollutants to settle out before the runoff is discharged into the storm drain system. After entering on-site bioswales, treated runoff that does infiltrate the ground would enter new storm drain inlets installed in each bioswale. The inlets would connect to a new storm drain pipeline connected beneath new surface parking areas and internal access roads. The new storm drain pipeline would connect to an existing

	storm drain main that exists beneath the surface of the existing site driveway from Doolittle Drive. The project would also be required to comply with grading and excavation regulations established by the City and obtain appropriate permits prior to project approval. The project would be consistent with these chapters of the San Leandro Municipal Code.
Chapter 3-22. Chapter 3-22 outlines Bay-friendly landscaping requirements for projects in San Leandro, which consists of native, low-water use vegetation.	**Consistent.** As described in the Project Description, the project would include the planting of conifers and deciduous species which are categorized as low-water use vegetation. In addition, the proposed project would be required to meet the Model Water Efficient Landscape Ordinance (MWELO) and include water efficient landscaping for plantings throughout the project site.

Source: San Leandro Municipal Code 2022

As shown in Table 15, the project would be consistent with the San Leandro Municipal Code and applicable building codes that intend to avoid or mitigate environmental impacts. Impacts would be less than significant.

LESS-THAN-SIGNIFICANT IMPACT

12 Mineral Resources

	Potentially Significant Impact	Less than Significant with Mitigation Incorporated	Less-than - Significant Impact	No Impact
Would the project:				
a. Result in the loss of availability of a known mineral resource that would be of value to the region and the residents of the state?	☐	☐	☐	■
b. Result in the loss of availability of a locally important mineral resource recovery site delineated on a local general plan, specific plan, or other land use plan?	☐	☐	☐	■

Setting

According to mapping completed by the State of California for suitability of use as construction materials, it was determined that no minerals or aggregate resources of statewide importance are located within San Leandro (California Department of Conservation 1996). In addition, there are no natural gas, oil, or geothermal resources identified in or adjacent to San Leandro.

Regulatory Setting

Surface Mining and Reclamation Act of 1975

Pursuant to the mandate of the Surface Mining and Reclamation Act of 1975, the State Mining and Geology Board requires all cities to incorporate into their general plans mapped mineral resources designations approved by the State Mining and Geology Board.

Impact Analysis

a. Would the project result in the loss of availability of a known mineral resource that would be of value to the region and the residents of the state?

b. Would the project result in the loss of availability of a locally important mineral resource recovery site delineated on a local general plan, specific plan, or other land use plan?

The project site and surrounding properties are part of an urbanized area with no current oil or gas extraction. San Leandro's 2035 General Plan does not identify mineral deposits of regional significance within the city (City of San Leandro 2016a). No mineral resource activities would be altered or displaced by the proposed project. There would be no impact.

NO IMPACT

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13 Noise

	Potentially Significant Impact	Less than Significant with Mitigation Incorporated	Less-than - Significant Impact	No Impact
Would the project result in:				
a. Generation of a substantial temporary or permanent increase in ambient noise levels in the vicinity of the project in excess of standards established in the local general plan or noise ordinance, or applicable standards of other agencies?	■	☐	☐	☐
b. Generation of excessive groundborne vibration or groundborne noise levels?	■	☐	☐	☐
c. For a project located within the vicinity of a private airstrip or an airport land use plan or, where such a plan has not been adopted, within two miles of a public airport or public use airport, would the project expose people residing or working in the project area to excessive noise levels?	■	☐	☐	☐

Noise Fundamentals

The unit of measurement used to describe a noise level is the decibel (dB). However, the human ear is not equally sensitive to all frequencies within the sound spectrum. Therefore, a method called "A-weighting" is used to filter noise frequencies that are not audible to the human ear. A-weighting approximates the frequency response of the average young ear when listening to most ordinary everyday sounds. When people make relative judgments of the loudness or annoyance of a sound, their judgments correlate well with the "A-weighted" levels of those sounds. Therefore, the A-weighted noise scale is used for measurements and standards involving the human perception of noise. In this analysis, all noise levels are A-weighted, and the abbreviation "dBA" is understood to identify the A weighted decibel.

Decibels are measured on a logarithmic scale that quantifies sound intensity in a manner similar to the Richter scale used for earthquake magnitudes. A 10 dB increase represents a 10-fold increase in sound intensity, a 20 dB increase is a 100-fold intensity increase, a 30 dB increase is a 1,000-fold intensity increase, etc. Similarly, a doubling of a noise source, such as doubling of traffic volume, would increase the noise level by 3 dB; a halving of the noise source would result in a 3 dB decrease.

Human perception of noise has no simple correlation with acoustical energy. The perception of noise is not linear in terms of dBA or in terms of acoustical energy. Two equivalent noise sources combined do not sound twice as loud as one source. It is widely accepted that the average healthy ear can barely perceive changes of 3 dBA (increase or decrease); that a change of 5 dBA is readily

perceptible; and that an increase or decrease of 10 dBA sounds twice (half) as loud (California Department of Transportation 2013).

Descriptors

The impact of noise is not a function of loudness alone. The time of day when noise occurs and the duration of the noise are also important. In addition, most noise that lasts for more than a few seconds is variable in its intensity. Consequently, a variety of noise descriptors has been developed. The noise descriptors used for this analysis are the one-hour equivalent noise level (L_{eq}) and the community noise equivalent level (CNEL).

The L_{eq} is the level of a steady sound that, in a specific time period and at a specific location, has the same A-weighted sound energy as the time-varying sound. For example, $L_{eq(1h)}$ is the equivalent noise level over a 1-hour period and $L_{eq(8h)}$ is the equivalent noise level over an 8-hour period. $L_{eq(1h)}$ is a common metric for limiting nuisance noise, whereas $L_{eq(8h)}$ is a common metric for evaluating construction noise.

The CNEL is a 24-hour equivalent sound level. The CNEL calculation applies an additional 5 dBA penalty to noise occurring during evening hours (between 7:00 p.m. and 10:00 p.m.) and an additional 10 dBA penalty to noise occurring during the night (between 10:00 p.m. and 7:00 a.m.). These increases for certain times are intended to account for the added sensitivity of humans to noise during the evening and night.

Propagation

Sound from a small, localized source (approximating a “point” source) radiates uniformly outward as it travels away from the source in a spherical pattern, known as geometric spreading. The sound level decreases or drops off at a rate of 6 dBA for each doubling of distance.

Traffic noise is not a single, stationary point source of sound. Over some time interval, the movement of vehicles makes the source of the sound appear to emanate from a line (line source) rather than a point. The drop-off rate for a line source is 3 dBA for each doubling of distance.

Vibration

Groundborne vibration of concern in environmental analysis consists of the oscillatory waves that move from a source through the ground to adjacent structures. The number of cycles per second of oscillation makes up the vibration frequency, described in terms of hertz (Hz). The frequency of a vibrating object describes how rapidly it oscillates. The normal frequency range of most groundborne vibration that can be felt by the human body is from a low of less than 1 Hz up to a high of about 200 Hz.

While people have varying sensitivities to vibrations at different frequencies, in general they are most sensitive to low-frequency vibration. Vibration in buildings, such as from nearby construction activities, may cause windows, items on shelves, and pictures on walls to rattle. Vibration of building components can also take the form of an audible low-frequency rumbling noise, referred to as groundborne noise. Groundborne noise may result in adverse effects, such as building damage, when the originating vibration spectrum is dominated by frequencies in the upper end of the range (60 to 200 Hz). Vibration may also damage infrastructure when foundations or utilities, such as sewer and water pipes, physically connect the structure and the vibration source (Federal Transit Administration 2018). Although groundborne vibration is sometimes noticeable in outdoor environments, it is almost never annoying to people who are outdoors. The primary concern from

vibration is that it can be intrusive and annoying to building occupants and vibration-sensitive land uses.

Vibration energy spreads out as it travels through the ground, causing the vibration level to diminish with distance away from the source. High-frequency vibrations diminish much more rapidly than low frequencies, so low frequencies tend to dominate the spectrum at large distances from the source. Discontinuities in the soil strata can also cause diffractions or channeling effects that affect the propagation of vibration over long distances (California Department of Transportation 2013). When a building is impacted by vibration, a ground-to-foundation coupling loss will usually reduce the overall vibration level. However, under rare circumstances, the ground-to-foundation coupling may actually amplify the vibration level due to structural resonances of the floors and walls.

Vibration amplitudes are usually expressed in peak particle velocity (ppv) or RMS vibration velocity. The ppv and RMS velocity are normally described in inches per second (in/sec). The ppv is defined as the maximum instantaneous positive or negative peak of a vibration signal. The Federal Transit Administration established standards for vibration impact assessments These guidelines are published in its Transit Noise and Vibration Impact Assessment Manual and are summarized below in Table 16.

Table 16 Federal Transit Administration Construction Vibration Impact Criteria

Building Category	in./sec. ppv
Reinforced – Concrete, Steel, or Timber (no plaster)	0.5
Engineered Concrete and Masonry (no plaster)	0.3
Non-engineered Timber and Masonry Buildings	0.2
Buildings Extremely Susceptible to Vibration Damage	0.12

Source: Federal Transit Administration 2018 I

Regulatory Setting

California Code of Regulations

The CCR, Title 24, Section 1207.4 requires interior noise levels attributable to exterior sources to be at or below 45 dBA in any habitable room of a development based on the noise metric used in the noise element of the local general plan. All residential windows, exterior doors, and exterior wall assemblies would be required to have sound transmission class ratings that would ensure adequate attenuation of noise at a range of frequencies. The Environmental Hazards Element of the City of San Leandro 2035 General Plan uses a noise metric of CNEL, consistent with the reference level for State noise law. Therefore, interior noise levels of the project would need to be at or below 45 dBA CNEL to be compliant with CCR requirements.

City of San Leandro 2035 General Plan

The Environmental Hazards Element of the General Plan provides goals, policies, and program to assure the appropriateness of new development with the noise environment of San Leandro. Table 17 shows the General Plan's land use compatibility chart. Applicable goals and policies are as follows:

Goal NOI-1 Ensure that noise associated with the day-to-day activities of San Leandro residents and businesses does not impede the peace and quiet of the community.

EH-7.1 **Noise Compatibility Table.** Ensure that potential noise impacts are considered when new development is proposed. Projects that could significantly increase noise levels should incorporate mitigation measures to reduce such impacts. Apply the standards shown in Chart 7-2 when evaluating applications for future development. Chart 7-2 specifies the maximum noise levels that are normally acceptable, conditionally acceptable, and normally unacceptable for new development.

Table 17 City of San Leandro Noise and Land use Compatibility Guidelines

	Community Noise Exposure (CNEL dBA)			
Land Use Category	**Normally Acceptable**	**Conditionally Acceptable**	**Normally Unacceptable**	**Clearly Unacceptable**
Residential: Low Density, Single-family, Duplex, Mobile Homes	<60	55-70	70-75	75<
Residential: Multi Family	<65	60-70	70-75	75<
Transient lodging (hotels/motels)	<60	60-70	70-80	80<
Schools, Libraries, Churches, Hospitals, Nursing Homes	<70	60-70	70-80	80<
Auditoriums, Concert Halls, Amphitheaters	NA	70>	NA	65<
Playgrounds, Neighborhood Parks	<70	70-80	NA	7.25<
Golf Courses, Riding Stables, Water Recreation, Cemeteries	<75	70-80	NA	80<
Office Buildings, Business Commercial and Professional	<70	67.5-75	75<	NA
Industrial, Manufacturing, Utilities, Agriculture	<75	70-80	75<	NA

Source: City of San Leandro 2016a

City of San Leandro Municipal Code

Chapter 4-1 of the City's Municipal Code provides restrictions and regulations for noise within San Leandro. The noise-related code does not contain numerical noise level limits and is aimed more at prohibiting "disturbing, excessive and offensive noises" so as to abate public nuisances relative to noise. The following section forms the framework for these nuisance-related restrictions.

Section 4-1-110 of San Leandro Municipal Code establishes a general prohibition of noise which causes discomfort or annoyance to reasonable persons of normal sensitivity. The factors which should be considered in determining whether a violation of this section exists include but are not limited to the sound level of the objectionable and ambient noise, the proximity of the noise to residential property, and the duration of the noise.

Section 4-1-115 prohibits certain acts related to noise, such as construction-related noise near residential uses outside of the hours of 7 a.m. and 7 p.m. on weekdays and 8 a.m. and 7 p.m. on weekends. Noise within public parks and noise that conflicts with residential uses is also prohibited.

Neither the City of San Leandro nor the County of Alameda has specific and/or quantitative regulatory standards for construction or operational vibration sources. San Leandro Zoning Code Part IV, Article 16, Division 3, Provision 4-1670B, Vibration, requires that no use, activity, or process

produce vibrations that are perceptible without instruments by a reasonable person at the property lines of a site. This performance standard applies to all land use classifications in all zoning districts.

Project Noise Setting

Sensitive Receivers

Noise exposure goals for various types of land uses reflect the varying noise sensitivities associated with those uses. The San Leandro General Plan Environmental Hazards Element identifies noise-sensitive land uses as residential land uses, schools, and open space and recreation areas (City of San Leandro 2016b). The nearest sensitive receiver is a residential subdivision located approximately 500 feet northeast of the project site boundary.

Impact Analysis

a. Would the project result in generation of a substantial temporary or permanent increase in ambient noise levels in the vicinity of the project in excess of standards established in the local general plan or noise ordinance, or applicable standards of other agencies?

b. Would the project result in generation of excessive groundborne vibration or groundborne noise levels?

c. For a project located within the vicinity of a private airstrip or an airport land use plan or, where such a plan has not been adopted, within two miles of a public airport or public use airport, would the project expose people residing or working in the project area to excessive noise levels?

The proposed project would involve the use of heavy equipment during project construction. According to the Federal Transit Administration, heavy equipment commonly used for construction can exceed 80 dBA at distances of 50 feet from the equipment. Some equipment can exceed 90 or even 100 dBA (Federal Transit Administration 2018). Construction equipment and construction truck trips on local streets could result in exceedance of noise standards at sensitive noise receptors in the vicinity of the project site.

During project operation, given the warehouse use and provision of tractor trailer parking on the site, tractor trailers could utilize routes passing near sensitive receptors, such as the nearest residences to the project site. Tractor trailers would potentially cause substantial noise and groundborne vibration at sensitive receptors.

The project site is in proximity to the Oakland International Airport; people working at the project site would be exposed to airport noise.

For these reasons, the noise impacts of the project would be potentially significant and will be evaluated in the EIR.

POTENTIALLY SIGNIFICANT IMPACT

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14 Population and Housing

	Potentially Significant Impact	Less than Significant with Mitigation Incorporated	Less-than - Significant Impact	No Impact
Would the project:				
a. Induce substantial unplanned population growth in an area, either directly (e.g., by proposing new homes and businesses) or indirectly (e.g., through extension of roads or other infrastructure)?	☐	☐	■	☐
b. Displace substantial numbers of existing people or housing, necessitating the construction of replacement housing elsewhere?	☐	☐	☐	■

Setting

According to the California Department of Finance (DOF), San Leandro had an estimated population of 87,497 people with 33,223 housing units as of January 2023 (DOF 2023). The average number of persons per household is estimated at 2.70. The City of San Leandro General Plan Environmental Impact Report provides projections for the City's population through the year 2030. The population of San Leandro is projected to be 103,300 by the year 2035 (City of San Leandro 2016b).

Impact Analysis

a. Would the project induce substantial unplanned population growth in an area, either directly (for example, by proposing new homes and businesses) or indirectly (for example, through extension of roads or other infrastructure)?

The project would not involve the extension of roads or other infrastructure that would lead to unplanned growth; the new warehouse would be constructed within City limits and connected to existing infrastructure systems and would not lead to unplanned indirect growth in the area. No new dwelling units are proposed; therefore, the project would not directly induce population growth in the City. The project would involve the construction of a new warehouse which would create jobs. Job creation could indirectly cause population growth through employee relocations to the project area. However, the project also includes demolishing existing industrial buildings, eliminating the potential jobs provided by business that could operate within them. Additionally, the project site is located in a dense urban area and many of these employees would likely be drawn from the local population regardless of the job creation potential of existing on-site vacant buildings. Some employees may relocate to the area as a result of job opportunities resulting from the proposed project; however, a substantial change in employment growth in the area would not occur.

As discussed in Section 11, *Land Use and Planning,* the proposed project is consistent with the General Plan's IG land use designation and would not induce substantial growth beyond what was

considered in the General Plan assumptions for the area. The project would be within the growth envisioned under the City's General Plan and would not result in substantial population growth. Impacts would be less than significant.

LESS-THAN-SIGNIFICANT IMPACT

b. Would the project displace substantial numbers of existing people or housing, necessitating the construction of replacement housing elsewhere?

There are no residences on the project site. The project would not displace existing people or housing and no impact would occur.

NO IMPACT

15 Public Services

	Potentially Significant Impact	Less than Significant with Mitigation Incorporated	Less-than - Significant Impact	No Impact
a. Would the project result in substantial adverse physical impacts associated with the provision of new or physically altered governmental facilities, or the need for new or physically altered governmental facilities, the construction of which could cause significant environmental impacts, in order to maintain acceptable service ratios, response times or other performance objectives for any of the public services:				
1 Fire protection?	☐	☐	■	☐
2 Police protection?	☐	☐	■	☐
3 Schools?	☐	☐	■	☐
4 Parks?	☐	☐	■	☐
5 Other public facilities?	☐	☐	■	☐

Setting

The Alameda County Fire Department (ACFD) provides fire protection and emergency medical service to San Leandro. ACFD is divided into four branches: Operations, Special Operations, Fire Prevention, and Administrative Support Services (ACFD 2023a). ACFD operates six fire stations in San Leandro (Station Nos. 9 through 13 and 24) (ACFD 2023b). The closest fire station to the project site is ACFD Station No. 10, located 0.8 miles south of the project site at 2149 Williams Street (ACFD 2023b).

The San Leandro Police Department (SLPD) provides law enforcement services for the city. SLPD has one police station located at San Leandro City Hall at 835 East 14th Street, approximately 1.6 miles northeast of the project site. As of 2019, SLPD is staffed by 90 sworn personnel and 44 civilian employees (SLPD 2019).

The San Leandro Unified School District (SLUSD) and San Lorenzo Unified School District provide public educational services to San Leandro. SLUSD serves approximately 8,696 students across eight elementary schools, two middle schools, two high schools, and one adult education school (SLUSD 2022). According to SLUSD's 2022 Developer Fee Justification Study, the district is under capacity, with enrollment availability for 1,146 additional students. Broken down by grade level, kindergarten through 6th grade facilities are under capacity by 703 students, 7th through 8th grades are under capacity for 532 students, and 9th through 12th grade facilities are over capacity by 110 students (SLUSD 2022). San Lorenzo Unified School District, specifically Dayton Elementary School and

Corvalis Elementary School, serve a small portion of southwestern San Leandro (San Lorenzo Unified School District 2022).

The City of San Leandro Public Works Department maintains neighborhood parks, special use recreation areas, community parks, and golf courses in the city, totaling 382.8 acres of improved parkland. The City's General Plan Open Space, Parks, and Conservation Element outlines a goal to provide at least 5 acres of improved parkland for every 1,000 residents (City of San Leandro 2016a). As discussed in Section 14, *Population and Housing,* the population of San Leandro is currently estimated at 87,497 people; therefore, the City has approximately 4.37 acres of improved parkland per 1,000 residents.[4]

Regulatory Setting

San Leandro 2035 General Plan

The City of San Leandro's 2035 General Plan Community Services and Facilities Element addresses the provision of community services, including fire protection and police protection. Additionally, the element emphasizes the importance of reducing risk and the effects of disaster prevention and/or preparedness (City of San Leandro 2016a). The following policies found within the element are applicable to fire and police protection services within the City:

Goal CSF-1. Provide and maintain high-quality police, fire, and emergency medical services.

Policy CSF-1.1 Maintain high-quality police and fire protection services through the most efficient and effective possible means. The following minimum level of service standards for police and fire response time (exclusive of dispatch time) shall be maintained: (a) Police Services: 5 minute response time for 90 percent of all Priority One calls; (b) Fire Services: 5 minute response time for first due company for 90 percent of all emergency incidents, excluding freeway responses (3 firefighters including at least one paramedic); 10 minute response time for 90 percent for a full first alarm assignment response (17 firefighters).

Policy CSF-1.5 Require Police and Fire Department review of proposed development plans to ensure that sufficient provisions for emergency access and response are made, fire code requirements are satisfied, and adequate levels of service can be provided.

The Community Services and Facilities Element also addresses parkland, open space, and recreational facilities in and nearby San Leandro. The following policies found within the element are applicable to recreational facilities within the City:

Goal OSC-2 Develop additional parkland in the city to better meet existing needs and to respond to future needs.

Policy OSC-2.1 Achieve the following service standard for parks: (a) At least 5.00 acres of improved parkland per 1,000 residents; (b) A park within one-half mile of each San Leandro resident.

[4] 382.8 acres of improved parkland divided by 87,497 thousand residents in San Leandro is approximately 4.37 acres.

San Leandro Municipal Code

Section 7-5-800 adopts the California Fire Code, which contains regulations for safeguarding life and property from the hazards of fire and explosion; dangerous conditions arising from the storage, handling, and use of hazardous materials; and hazardous conditions in the use of occupancy of buildings. Development within San Leandro would be required to comply with the requirements on the California Fire Code.

Article 8 of Title 7 of the San Leandro Municipal Code enables the City Council to require dedication of lands deemed necessary for the purpose of constructing schools necessary to assure the residents of a subdivision have adequate elementary school service as a condition of final map approval for a subdivision.

San Leandro Municipal Code Chapter 7-13 establishes the City's park facilities development impact fee which, pursuant to Government Code Section 66001, allows the City to apply fees to new development to pay for new or renovated park facilities. Development in San Leandro is required to pay appropriate park development fees. Further, San Leandro Municipal Code Section 7-1-810 requires that as a condition of approval of a tentative map or parcel map, subdivisions are required to offer to dedicate parkland, pay a fee in lieu, or a combination of both (at the option of the City).

Impact Analysis

a. Would the project result in substantial adverse physical impacts associated with the provision of new or physically altered governmental facilities, or the need for new or physically altered governmental facilities, the construction of which could cause significant environmental impacts, in order to maintain acceptable service ratios, response times or other performance objectives for any of the public services:

1 Fire protection?

2 Police Protection?

ACFD and SLPD currently support the project site and would continue to provide fire and police protection services to the project site, as they did when on-site development was operational. As the project would not introduce a new use or activity onto the project site associated with substantially increased calls for services (e.g., nursing home, rehabilitation facility), and because the project would not result in substantial population or employment growth within the area (see Section 14, *Population and Housing*), it would not result in substantially increased demand for fire or police protection services on the site. Therefore, the project would not result in the need for new or physically altered fire or police protection facilities, and impacts would be less than significant.

LESS-THAN-SIGNIFICANT IMPACT

a. Would the project result in substantial adverse physical impacts associated with the provision of new or physically altered governmental facilities, or the need for new or physically altered governmental facilities, the construction of which could cause significant environmental impacts, in order to maintain acceptable service ratios, response times or other performance objectives for any of the public services:

3 Schools?

The project includes construction warehouse and would not include residential development. The project would not result in substantial population or employment growth within the area, and new

employment positions would be anticipated to be filled by the local labor force. Substantial numbers of people would not be expected to have to relocate into the project area to fill employment generated by the project (see Section 14, *Population and Housing*). Thus, a substantial increase in the number of school-aged children as a result of the project would not occur. Therefore, the project would not generate a substantial number of new students, and impacts would be less than significant.

LESS-THAN-SIGNIFICANT IMPACT

a. Would the project result in substantial adverse physical impacts associated with the provision of new or physically altered governmental facilities, or the need for new or physically altered governmental facilities, the construction of which could cause significant environmental impacts, in order to maintain acceptable service ratios, response times or other performance objectives for any of the public services:

4 Parks?

5 Other public facilities?

The proposed project does not include residential development which would generate an increased demand for parks or other public facilities, such as libraries. Additionally, the project applicant would be required to pay City park facilities development impact fees pursuant to San Leandro Municipal Code Chapter 7-13, which would support the addition of new parks or renovations to existing parks. Therefore, impacts to parks and recreational facilities would be less than significant, as would impacts to other public facilities.

LESS-THAN-SIGNIFICANT IMPACT

16 Recreation

	Potentially Significant Impact	Less than Significant with Mitigation Incorporated	Less-than - Significant Impact	No Impact
a. Would the project increase the use of existing neighborhood and regional parks or other recreational facilities such that substantial physical deterioration of the facility would occur or be accelerated?	☐	☐	■	☐
b. Does the project include recreational facilities or require the construction or expansion of recreational facilities which might have an adverse physical effect on the environment?	☐	☐	■	☐

Setting

As discussed in Section 15, *Public Services,* the City of San Leandro Public Works Department maintains approximately 382.8 acres of improved parkland, and that there are approximately 4.37 acres of improved parkland per 1,000 residents. The nearest park to the project site is Warden Park. located approximately 0.3-mile northeast of the project site.

Regulatory Setting

Quimby Act

California Government Code Section 66477, also known as the Quimby Act, was enacted by the California legislature in 1965. The Quimby Act authorizes cities and counties to enact ordinances requiring the dedication of land, or the payment of fees for park and/or recreational facilities in lieu thereof, or both, by developers of residential subdivisions as a condition to the approval of a tentative tract map or parcel map. See Section 15, *Public Services*, subsection *Regulatory Setting* for additional policies and regulations relevant to recreation.

Impact Analysis

a. Would the project increase the use of existing neighborhood and regional parks or other recreational facilities such that substantial physical deterioration of the facility would occur or be accelerated?

b. Does the project include recreational facilities or require the construction or expansion of recreational facilities which might have an adverse physical effect on the environment?

The project would not include recreational facilities. As the project would replace an existing industrial use with a new industrial use, the project would not generate substantially increased demand for parks or other recreational facilities. This impact would be less than significant.

LESS-THAN-SIGNIFICANT IMPACT

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17 Transportation

	Potentially Significant Impact	Less than Significant with Mitigation Incorporated	Less-than - Significant Impact	No Impact
Would the project:				
a. Conflict with a program, plan, ordinance or policy addressing the circulation system, including transit, roadway, bicycle and pedestrian facilities?	☐	☐	■	☐
b. Conflict or be inconsistent with CEQA Guidelines section 15064.3, subdivision (b)?	■	☐	☐	☐
c. Substantially increase hazards due to a geometric design feature (e.g., sharp curves or dangerous intersections) or incompatible use (e.g., farm equipment)?	■	☐	☐	☐
d. Result in inadequate emergency access?	☐	☐	■	☐

The information and analysis included in this section is based upon the Transportation Impact Analysis (TIA) report prepared by Kimley Horn in January 2024. The report is included as Appendix F.

Setting

The site is located along Doolittle Drive, which is locally accessible via Davis Street, Adams Avenue, and Hester Street. Regional access is available to the site from I-880, which is approximately 0.4 miles west of the site. The following descriptions are provided for roadways that would provide access to the site and are most likely to serve most of the project's generated vehicle, bicycle, pedestrian and transit traffic.

Existing Roadway Network

- **I-880** is a nine-lane, north-south freeway that connects San Leandro with nearby cities, such as Hayward and Oakland, and regional destinations, such as Fremont and San Jose. It also provides access to the greater freeway network with direct connections to Interstate 280 and State Route 17 to the south to Interstate 80 and Interstate 580 to the north. Within the study area, the roadway consists of six southbound lanes (including one HOV lane) and four northbound lanes. I-880 serves as regional access to the project site. The posted speed limit on I-880 within the study area is 65 mph.
- **Doolittle Drive** is a north-south arterial. It connects to Otis Drive and Fernside Boulevard to the north and Belvedere Avenue to the south. The roadway within the study area is two lanes in each direction and has a center two-way left-turn lane (TWLTL). It serves mainly industrial uses along the corridor. Within the study area, the speed limit on Doolittle Drive is 45 miles per hour.

- **Davis Street** is a four-lane, east-west arterial which runs between Business Center Drive and E 14th Street. The roadway serves residential and commercial uses. Within the study area, the speed limit on Davis Street is 35 miles per hour.
- **Adams Avenue** is a two-lane, east-west collector between Doolittle Drive and Bigge Street. The roadway includes Class II bike lanes and on-street parking and serves industrial uses. Within the study area, the speed limit on Adams Avenue is 35 miles per hour.
- **Hester Street** is a two-lane, north-south local road connecting to Adams Avenue. The roadway includes onstreet parking and serves industrial uses. Within the study area, there is no posted speed limit but given the classification of the road, it is assumed that the speed limit is 25 miles per hour.
- **Airport Access Road** is a five-lane, minor collector that connects to Bessie Coleman Drive and Hegenberger Road. The roadway provides access to the Oakland International Airport. Within the study area, there is no posted speed limit but given the classification of the road, it is assumed that the speed limit is 35 miles per hour.
- **98th Avenue** is a minor arterial which connects to Bessie Coleman Drive to the west and Golf Links Road to the east. The roadway within the study area consists of six-lanes and serves multiple uses. Within the study area, the posted speed limit is 30 miles per hour.

Existing Bicycle Facilities

Bicycle facilities are defined by the following four classes by the California Department of Transportation Highway Design Manual:

- **Class I (Bike Path):** Provides a completely separate facility designed for the exclusive use of bicyclists and pedestrians with crossing points minimized. Bike paths typically serve corridors not served by streets and highways or where wide right of way exists, permitting such facilities to be constructed away from the influence of parallel streets.
- **Class II (Bike Lane):** Provides a restricted right-of-way designated lane for the exclusive or semi-exclusive use of bicycles with through travel by motor vehicles or pedestrians prohibited, but with vehicle parking and cross-flows by pedestrians and motorists permitted. Bike lanes are established along streets in corridors where there is significant bicycle demand, and where there are distinct needs that can be served by them.
- **Class III (Bike Route):** Shared facilities which provide continuity to other bicycle facilities (usually Class II bikeways) or designate preferred routes through high demand corridors.
- **Class IV (Separated Bikeways):** Provides an exclusive right-of-way including a separation required between the separated bikeway and the through vehicular traffic.

There are sections of Class II bikes lanes in the project vicinity. There are marked Class II bike lanes along Adams Avenue and Doolittle Drive.

There are also Class III bike routes that provide connections between bike lane facilities. One Class III bike route in the vicinity of the project site is located along Doolittle Drive between Davis Street and Carden Street.

Existing Pedestrian Facilities

There are existing continuous sidewalks on both sides of Doolittle Drive adjacent to the project site where pedestrians can access the site, as well as existing continuous sidewalks on both sides of Adams Avenue and on the east side of Hester Street. There are also existing crosswalks along the east, south, and west legs at the signalized intersection of Doolittle Drive and Davis Street, and

existing crosswalks on the east and south legs at the signalized intersection of Doolittle Drive and Adams Street.

Within the project site, there are marked pedestrian crosswalks connecting the accessible parking spaces to the sidewalks along the west side of the building. These sidewalks along the west side of the building provide access to the office spaces.

Existing Transit Facilities

The transit system in the study area includes bus and rail services provided by Alameda-Contra Costa Transit District (AC Transit) and Bay Area Rapid Transit (BART). AC transit operates five routes within the project area: Routes 34, 35, 73, 98, and 805. The nearest bus stop is located at the intersection of Westgate Parkway and Davis Street, which is approximately 0.9 miles southeast of the project site. The San Leandro BART station, which serves the Blue, Green, and Orange BART lines, is located within 2.1 miles east of the project site. The San Leandro LINKS shuttle is a free shuttle to and from the San Leandro BART station that operates a North Loop and South Loop. The North Loop runs along Davis Street from the BART station to Marina Boulevard, Merced Street, Williams Street, Doolittle Drive, and Davis Street. There is an existing stop located at Doolittle Drive and Davis Street. Pedestrians can travel between the LINKS bus stop and the project site using the existing sidewalks located along both sides of Davis Street.

Regulatory Setting

The determination of significance for project impacts is based on applicable policies, regulations, goals, and guidelines defined by the City of San Leandro, Santa Clara County, the Metropolitan Transportation Commission, and the State.

State Regulations

SENATE BILL 743

On September 27, 2013, SB 743 was signed into law. The legislature found that with the adoption of the Sustainable Communities and Climate Protection Act of 2008 (SB 375), the State had signaled its commitment to encourage land use and transportation planning decisions and investments that reduce vehicle miles traveled and thereby contribute to the reduction of greenhouse gas emissions, as required by the California Global Warming Solutions Act of 2006 (AB 32). In December 2018, the Governor's Office of Planning and Research (OPR) finalized new CEQA guidelines (CEQA Guidelines section 15064.3), that identify VMT as the most appropriate criteria to evaluate a project's transportation impacts.

In November 2017, OPR released a technical advisory containing recommendations regarding the assessment of VMT, proposed thresholds of significance, and potential mitigation measures for lead agencies to use while implementing the required changes contained in Senate Bill 743 (SB 743). Also in November 2017, OPR released the proposed text for Section 15064.3, "Determining the Significance of Transportation Impacts," which summarized the criteria for analyzing transportation impacts for land use projects and transportation projects and directs lead agencies to "choose the most appropriate methodology to evaluate a project's vehicle miles traveled, including whether to express the change in absolute terms, per capita, per household or in any other measure." OPR recommends that for most instances a per service population threshold should be adopted and that a fifteen percent reduction below that of existing development would be a reasonable threshold.

CALIFORNIA ASSEMBLY BILL 32, SENATE BILL 32, AND SENATE BILL 375

The "California Global Warming Solutions Act of 2006" (AB 32) outlines California's major legislative initiative for reducing GHG emissions. AB 32 codifies the statewide goal of reducing GHG emissions to 1990 levels by 2020, a reduction of approximately 15 percent below emissions expected under a "business as usual" scenario. On September 8, 2016, the governor signed Senate Bill 32 (SB 32) into law, extending the California Global Warming Solutions Act of 2006 by requiring the state to further reduce GHG emissions to 40 percent below 1990 levels by 2030 (the other provisions of AB 32 remain unchanged).

The Sustainable Communities and Climate Protection Act of 2008 (SB 375), signed in August 2008, enhances the state's ability to reach AB 32 goals by directing CARB to develop regional GHG emission reduction targets to be achieved from passenger vehicles by 2020 and 2035. SB 375 aligns regional transportation planning efforts, regional GHG reduction targets, and affordable housing allocations. Metropolitan Planning Organizations (MPOs) are required to adopt a Sustainable Communities Strategy (SCS), which allocates land uses in the MPO's Regional Transportation Plan (RTP). Qualified projects consistent with an approved SCS or Alternative Planning Strategy (categorized as "transit priority projects") can receive incentives to streamline CEQA processing.

On March 22, 2018, CARB adopted updated regional targets for reducing GHG emissions from 2005 levels by 2020 and 2035. ABAG was assigned a 19 percent reduction in per capita GHG emissions from passenger vehicles by 2035. SB 375 also provides the option for the coordinated development of subregional plans by the subregional councils of governments and the county transportation commissions to meet SB 375 requirements. On October 21, 2021, ABAG formally adopted the RTP/SCS titled Plan Bay Area 2050, which meets the requirements of SB 375.

Local Regulations

SAN LEANDRO 2035 GENERAL PLAN TRANSPORTATION ELEMENT

The San Leandro 2035 General Plan Transportation Element establishes the following applicable goals and policies relevant to transportation:

Policy T-1.2 **Mitigation of Development Impacts.** Require developers to address the impacts that their projects will have on the City's transportation system. A variety of mitigation measures, including impact fees, street improvements, traffic signal and Intelligent Transportation Systems (ITS) improvements, transportation demand management (TDM) measures, and improvement of non-automobile transportation modes, should be considered.

Policy T-1.10 **Reduced Trip Generation.** Encourage local employers to develop programs that promote ridesharing, flextime and telecommuting, bicycle use, and other modes of transportation that reduce the number and distance of vehicle trips generated.

Policy T-2.6 **Building Design and Site Planning.** Ensure that the site planning and design of new development promotes the use of non-auto modes of transportation by including amenities such as sidewalks, bike lockers, and bus shelters.

Policy T-3.5. **Accommodation of Bicycles and Pedestrians.** Require new development to incorporate design features that make walking, bicycling, and other forms of nonmotorized transportation more convenient and attractive. Facilities for bicycles and pedestrians, including secured bicycle parking, clearly marked crosswalks, well-

lit streets and sidewalks, landscaping, and street furniture should be provided within new employment areas, shopping destinations, multi-modal transportation facilities, and community facilities.

Policy T-6.7 Siting of Businesses with Truck Traffic. To the extent feasible, locate businesses projected to generate large amounts of truck traffic away from residential areas. Ingress and egress for such businesses should be designed to minimize the possibility of truck traffic impacting residential streets.

The Transportation Element also establishes a tiered Level of Service (LOS) system. LOS is a measure of the quality or performance of a transportation system based on factors such as travel time, traffic volume, and congestion. LOS is typically evaluated on a scale of "A," corresponding to no congestion and free-flowing traffic, to "F," corresponding to extreme congestion and delays. For planning purposes, LOS D is the minimum acceptable service level for intersections outside of designated Priority Development Areas and LOS E is the minimum acceptable service level for intersections within designated Priority Development Areas.

Screening Criteria and Thresholds of Significance

Since the City of San Leandro has not adopted VMT impact thresholds of significance, the Alameda County Transportation Commission (ACTC) VMT impact thresholds are used to evaluate VMT impacts. This is generally consistent with OPR's technical advisory, which provided recommended metrics and impact thresholds for residential, office, and retail projects, since they tend to have the greatest influence of land use projects on VMT in California.

Given that the project would include warehouse uses, it was assumed that the employee VMT for this project would have a similar VMT as an employee for an office use. Therefore, the TIA analyzed this project as an office project.

Impact Analysis

a. Would the project conflict with a program, plan, ordinance or policy addressing the circulation system, including transit, roadway, bicycle and pedestrian facilities?

Trip Generation

Trip generation refers to the process of estimating the amount of vehicular traffic a project would add to the surrounding roadway system. Kimley Horn developed estimated project trip generation for the proposed project based on published trip generation rates from the Institute of Transportation Engineers' (ITE) publication *Trip Generation Manual (11th Edition).* Table 18 shows the trips expected to be generated by the proposed project.

Table 18 Project Trip Generation

		AM Peak Hour			PM Peak Hour		
Vehicle Type	**Daily Trips**	**In**	**Out**	**Total**	**In**	**Out**	**Total**
Passenger Car	1,497	167	36	203	110	172	282
Truck	46	2	3	5	2	3	5
Total New Trips	**1,543**	**169**	**39**	**208**	**112**	**175**	**287**

Source: Appendix F

ROADWAYS

Pursuant to SB 743 and CEQA Guidelines Section 15064.3, congestion on roadways is not considered a significant impact pursuant to CEQA. Additional congestion as a result of project implementation would not result in significant impacts under CEQA. While SB 743 prohibits the use of level of service or automobile delay in the determination of environmental significance, the City's General Plan Transportation Element has LOS standards that it desires to maintain, as described under *Local Regulations*. For informational purposes, a LOS analysis has been performed in accordance with City standards; this analysis is not used for the purpose of determining impacts under CEQA. According to the City of San Leandro, an adverse effect on intersection operations occurs when the analysis demonstrates that a project would cause an intersection to operate at LOS D or lower outside of Priority Development Areas. The project site is not within a Priority Development Area and would be subject to this threshold.

Table 19 shows the existing LOS of intersections near the project site and the projected LOS of these intersections with the project and other cumulative development in the project area.

Table 19 Project and Cumulative Development Intersection Level of Service

	Existing LOS		Near Term plus Project LOS		Cumulative plus Project LOS		
Intersection	**AM**	**PM**	**AM**	**PM**	**AM**	**PM**	**Impact?**
Doolittle Drive/West Project Driveway (Worst Approach)	C	B	C	C	D	D	No
Hester Street/North Project Driveway (Worst Approach)	A	A	B	B	B	B	No
Hester Street/Adams Avenue (Worst Approach)	B	B	B	B	C	B	No
Doolittle Drive/Adams Avenue	B	B	B	B	B	C	No
Doolittle Drive/Davis Street	**F**	D	**F**	**E**	**F**	**F**	Yes
Davis Street/SB I-880 Ramps	B	B	B	B	B	C	No
Davis Street/NB I-880 Ramps	B	B	B	B	B	C	No
Airport Access Road/98th Avenue	C	D	C	D	**E**	**F**	Yes

Bold denotes exceeds City standard

Source: Appendix F

As shown in Table 19, the Doolittle Drive and Davis Street intersection would operate below LOS D during AM and PM peak hours for all scenarios, and the Airport Access Road and 98th Avenue intersection would operate below LOS D during AM and PM peak hours for the cumulative plus project scenario. However, these effects to LOS at these intersections would be projected to occur without implementation of the project, and the project would negligibly contribute to LOS effects at these intersections. Therefore, the proposed project would not result in substantially adverse effects related to LOS, and the project would be consistent with the City's General Plan.

PUBLIC TRANSIT FACILITIES

The project would generate public transit trips on existing transit services near the project site. Because the project would not be expected to substantially increase vehicle traffic or vehicle speed

in the existing roadway network around the project site, the project would not result in delays or interruptions to existing transit services. According to the TIA, since the LINKS route serves as a sufficient transit facility in proximity to the project along Davis Street to nearby uses, no additional transit facilities would be required to be constructed (Appendix F). The project would not include features that would conflict with City of regional plans, policies, or ordinances pertaining to public transit. No significant impacts to transit facilities would occur, and the project would not conflict with the City's General Plan.

BICYCLE FACILITIES

An impact would occur to bicycle facilities if the proposed project were to disrupt existing bicycle facilities or be inconsistent with adopted City standards. There are several bike facilities in the vicinity of the project site which future employees would have access to, as described under *Existing Bicycle Facilities.* Because the project would not be anticipated to substantially increase vehicle traffic or vehicle speed in the existing roadway network around the project site, the bicycle level of traffic stress would not substantially change as a result of the project. Further, the project would provide 12 short-term bicycle parking spaces and 12 long-term bicycle parking spaces for a total of 24 bicycle parking spaces. The project would not include features that would be hazardous to bicycles, nor would it generate bicycle demand that would exceed the capacity of the area's bicycle network. Although the project could facilitate industrial or logistics uses involving large vehicles like tractor trailers, which could conflict with bicycle safety, this is consistent with existing industrial uses near the project site. The project would not conflict with City or regional plans, policies or ordinances pertaining to bicycle facilities or travel (Appendix F). No significant impacts to bicycle facilities would occur.

PEDESTRIAN FACILITIES

An impact to pedestrian facilities would occur if the project were to disrupt existing pedestrian facilities or be inconsistent with pedestrian system plans, guidelines, or policies. Because the project would not be anticipated to substantially increase vehicle traffic or vehicle speed in the existing roadway network around the project site, the pedestrian facilities in the project site vicinity would not be substantially diminished as a result of the project. The project would include several pedestrian improvements to the site including lighting, internal sidewalks, improved landscaping, and pedestrian amenities. New sidewalks would also be constructed as part of the project along the project site frontage on Hester Street. Adequate street lighting would be provided by additional proposed street lighting and internal lighting on the project site. Therefore, no impact to pedestrian facilities would occur.

Table 20 below describes project consistency with applicable policies from the San Leandro General Plan Transportation Element.

Table 20 Project Consistency with General Plan Transportation Element

Policy	Consistency
Policy T-1.2. Mitigation of Development Impacts. Require developers to address the impacts that their projects will have on the City's transportation system. A variety of mitigation measures, including impact fees, street improvements, traffic signal and Intelligent Transportation Systems (ITS) improvements, transportation demand management (TDM) measures, and improvement of non-automobile transportation modes, should be considered.	**Consistent.** The project applicant would be required to pay development impact fees pursuant to Chapter 7-11 of the San Leandro Municipal Code.

Policy	Consistency
Policy T-1.10. Reduced Trip Generation. Encourage local employers to develop programs that promote ridesharing, flextime and telecommuting, bicycle use, and other modes of transportation that reduce the number and distance of vehicle trips generated.	**Consistent.** The project would include 24 bicycle parking spaces and would be located near public transit stops, which would encourage alternative modes of transportation. Additionally, as discussed under *Roadways,* the project would not generate a number of trips that would adversely affect the LOS of intersections near the project site.
Policy T-2.6. Building Design and Site Planning. Ensure that the site planning and design of new development promotes the use of non-auto modes of transportation by including amenities such as sidewalks, bike lockers, and bus shelters.	**Consistent**. The project would include 24 bicycle parking spaces and improved sidewalks.
Policy T-3.5. Accommodation of Bicycles and Pedestrians. Require new development to incorporate design features that make walking, bicycling, and other forms of nonmotorized transportation more convenient and attractive. Facilities for bicycles and pedestrians, including secured bicycle parking, clearly marked crosswalks, well-lit streets and sidewalks, landscaping, and street furniture should be provided within new employment areas, shopping destinations, multi-modal transportation facilities, and community facilities.	**Consistent**. The project would include 24 bicycle parking spaces, maintaining existing sidewalks, and exterior lighting to accommodate bicycles and pedestrians.
Policy T-6.7. Siting of Businesses with Truck Traffic. To the extent feasible, locate businesses projected to generate large amounts of truck traffic away from residential areas. Ingress and egress for such businesses should be designed to minimize the possibility of truck traffic impacting residential streets**.**	**Consistent**. As shown in Table 18, the project would generate approximately 1,497 passenger vehicle trips and 46 truck trips per day. The project site would utilize two driveways for ingress and egress on the northwestern and southwestern portions of the site, away from the residential subdivision located 500 feet northeast of the project site, and a total of 64 loading docks would be constructed, 27 on the north side and 37 on the south side of the warehouse.

Source: City of San Leandro 2016

The project would be consistent with the San Leandro General Plan Transportation Element. Impacts would be less than significant.

LESS-THAN-SIGNIFICANT IMPACT

b. Would the project conflict or be inconsistent with CEQA Guidelines section 15064.3, subdivision (b)?

As described under Setting, CEQA Guidelines Section 15064.3 identifies VMT as the most appropriate criteria to evaluate a project's transportation impacts. As discussed in the TIA, based on the VMT per Employee map for the East Planning Area in year 2020 provided by the ACTC, the project is located in an area with a VMT equal to 15.34. The target VMT, which is 15 percent below the average, for East Planning Area, Alameda County, and Bay Area Region is 16.3, 13.5, and 15.4 respectively. Since the proposed project exceeds the Alameda County threshold, the project could result in a potentially significant VMT impact. Therefore, this impact would be potentially significant and this issue will be analyzed further in an EIR.

POTENTIALLY SIGNIFICANT IMPACT

c. Would the project substantially increase hazards due to a geometric design feature (e.g., sharp curves or dangerous intersections) or incompatible use (e.g., farm equipment)?

Currently, vehicle access to the project site is from a driveway on Doolittle Drive and a driveway on Hester Street. The proposed project would maintain these driveways while adding an additional driveway on Hester Street, for a total of three driveways. No other intersections would be modified. Therefore, ingress and egress to the project site would not create dangerous intersections. In addition, according to the TIA, the sight triangles at the driveway along Doolittle Drive are clear of obstructions for a vehicle exiting the driveway to observe oncoming northbound and southbound vehicles along Doolittle Drive. The driveways on Hester Street are and would be at the end of Hester Street, reducing the amount of vehicle traffic passing the driveways.

The project site is in an industrial area of San Leandro. While the project could involve industrial or logistic tenants using large trucks, large trucks such as tractor trailers already operate on project area roadways. However, compared to existing conditions which are a vacant site, the project would generate vehicle trips, including both passenger vehicles and large truck trips. More vehicles would utilize the driveway between Doolittle Drive and the project site during project operation, according to the TIA (Appendix F). The TIA recommends installation of a traffic signal at the intersection of this driveway and Doolittle Drive. The proposed project does not include installation of a traffic signal at this intersection. Accordingly, impacts would be potentially significant, and this issue will be analyzed further in an EIR.

POTENTIALLY SIGNIFICANT IMPACT

d. Would the project result in inadequate emergency access?

The project would not require lane or road closures during construction. During operation, emergency access to the project site would be available via the driveways along Doolittle Drive and Hester Street. The internal circulation roads would be suitable for fire engines and ambulances, and emergency vehicles would be able to circulate through the entirety of the project site, including to access fire hydrants along the borders of the warehouse. The project would provide adequate emergency access, and impacts would be less than significant.

LESS-THAN-SIGNIFICANT IMPACT

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18 Tribal Cultural Resources

	Potentially Significant Impact	Less than Significant with Mitigation Incorporated	Less-than - Significant Impact	No Impact
Would the project cause a substantial adverse change in the significance of a tribal cultural resource, defined in a Public Resources Code Section 21074 as either a site, feature, place, or cultural landscape that is geographically defined in terms of the size and scope of the landscape, sacred place, or object with cultural value to a California Native American tribe, and that is:				
a. Listed or eligible for listing in the California Register of Historical Resources, or in a local register of historical resources as defined in Public Resources Code Section 5020.1(k)?	☐	■	☐	☐
b. A resource determined by the lead agency, in its discretion and supported by substantial evidence, to be significant pursuant to criteria set forth in subdivision (c) of Public Resources Code Section 5024.1? In applying the criteria set forth in subdivision (c) of Public Resources Code Section 5024.1, the lead agency shall consider the significance of the resource to a California Native American tribe.	☐	■	☐	☐

Setting

There are no tribes within the City of San Leandro. Therefore, AB 52 consultation was not required or conducted by the City. No known tribal cultural resources exist on the project site.

Regulatory Setting

Assembly Bill 52

As of July 1, 2015, California Assembly Bill 52 of 2014 (AB 52) was enacted and expands CEQA by defining a new resource category, “tribal cultural resources.” AB 52 establishes that “A project with an effect that may cause a substantial adverse change in the significance of a tribal cultural resource is a project that may have a significant effect on the environment” (PRC Section 21084.2). It further

states that the lead agency shall establish measures to avoid impacts that would alter the significant characteristics of a tribal cultural resource, when feasible (PRC Section 21084.3).

PRC Section 21074 (a)(1)(A) and (B) defines tribal cultural resources as "sites, features, places, cultural landscapes, sacred places, and objects with cultural value to a California Native American tribe" and is:

1. Listed or eligible for listing in the California Register of Historical Resources, or in a local register of historical resources as defined in Public Resources Code section 5020.1(k), or
2. A resource determined by the lead agency, in its discretion and supported by substantial evidence, to be significant pursuant to criteria set forth in subdivision (c) of Public Resources Code Section 5024.1. In applying these criteria, the lead agency shall consider the significance of the resource to a California Native American tribe.

AB 52 establishes a formal consultation process for California Tribes regarding those resources. The consultation process must be completed before a CEQA document can be certified. Under AB 52, lead agencies are required to "begin consultation with a California Native American Tribe that is traditionally and culturally affiliated with the geographic area of the proposed project." Native American tribes to be included in the process are those that have requested notice of projects proposed within the jurisdiction of the lead agency.

Impact Assessment

a. Would the project cause a substantial adverse change in the significance of a tribal cultural resource as defined in Public Resources Code Section 21074 that is listed or eligible for listing in the California Register of Historical Resources, or in a local register of historical resources as defined in Public Resources Code Section 5020.1(k)?

b. Would the project cause a substantial adverse change in the significance of a tribal cultural resource as defined in Public Resources Code 21074 that is a resource determined by the lead agency, in its discretion and supported by substantial evidence, to be significant pursuant to criteria set forth in subdivision (c) of Public Resources Code Section 5024.1?

As described in Section 5, *Cultural Resources,* neither the cultural resources records search nor Sacred Lands File search identified cultural resources listed on or eligible for listing on the CRHR or a local register within the project site. However, there is always potential to uncover buried archaeological resources, including tribal cultural resources during ground disturbing activities, such as excavation required for project construction. If project construction activities encounter and damage or destroy a tribal cultural resource or resources, impacts would be potentially significant. Implementation of Mitigation Measure TCR-1 would be required.

Mitigation Measures

TCR-1 Unanticipated Discovery of Tribal Cultural Resources

In the event that cultural resources of Native American origin are identified during project construction, all earth-disturbing work within 50 feet of the find shall be temporarily suspended or redirected until an archaeologist has evaluated the nature and significance of the find as a cultural resource and an appropriate local Native American representative is consulted. If the City, in consultation with local Native American tribes, determines that the resource is a tribal cultural resource and thus significant under CEQA, a mitigation plan shall be prepared and implemented in

accordance with state guidelines and in consultation with local Native American group(s). The plan shall include avoidance of the resource or, if avoidance of the resource is infeasible, the plan shall outline the appropriate treatment of the resource in coordination with the appropriate local Native American tribal representative and, if applicable, a qualified archaeologist. The plan shall include measures to ensure the find is treated in a manner that respectfully retains, to the degree feasible, the qualities that render the resource of significance to the local Native American group(s). Examples of appropriate mitigation for tribal cultural resources include, but are not limited to, protecting the cultural character and integrity of the resource, protecting traditional use of the resource, protecting the confidentiality of the resource, or heritage recovery.

Significance After Mitigation

Implementation of Mitigation Measure TCR-1 would minimize impacts to tribal cultural resources encountered during project construction. Impacts would be less than significant with mitigation implemented. This mitigation measure will be included in the EIR's Executive Summary and in the project's Mitigation Monitoring and Reporting Program.

LESS THAN SIGNIFICANT WITH MITIGATION INCORPORATED

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19 Utilities and Service Systems

	Potentially Significant Impact	Less than Significant with Mitigation Incorporated	Less-than - Significant Impact	No Impact
Would the project:				
a. Require or result in the relocation or construction of new or expanded water, wastewater treatment or storm water drainage, electric power, natural gas, or telecommunications facilities, the construction or relocation of which could cause significant environmental effects?	☐	☐	■	☐
b. Have sufficient water supplies available to serve the project and reasonably foreseeable future development during normal, dry and multiple dry years?	☐	☐	■	☐
c. Result in a determination by the wastewater treatment provider which serves or may serve the project that it has adequate capacity to serve the project's projected demand in addition to the provider's existing commitments?	☐	☐	■	☐
d. Generate solid waste in excess of State or local standards, or in excess of the capacity of local infrastructure, or otherwise impair the attainment of solid waste reduction goals?	☐	☐	■	☐
e. Comply with federal, state, and local management and reduction statutes and regulations related to solid waste?	☐	☐	■	☐

Setting

Potable Water

Water service to the City of San Leandro is provided by the East Bay Municipal Utility District (EBMUD), a public utility. EBMUD is responsible for service connections and water delivery to most of Alameda County and much of Contra Costa County. San Leandro comprises about 6 percent of the EMBUD's customer base and uses about 5 percent of its water. As discussed in Section 10, *Hydrology and Water Quality,* approximately 90 percent of the EBMUD water supply originates from the Sierra Nevada via the Mokelumne River watershed, with the other 10 percent sourced from runoff on East Bay Area watershed lands. Water delivered to San Leandro customers is treated at the Orinda or Upper San Leandro water treatment plants (EBMUD 2021).

Each water district adopts an Urban Water Management Plan (UWMP), which is a long-range planning document used to assess current and projected water usage, water supply planning and conservation and recycling efforts. The EBMUD adopted a 2020 UWMP and a 2020 Water Shortage Contingency Plan which determined that under base condition assumptions, EBMUD can meet customer demand out to 2050 during normal years and single dry years; however, during multi-year droughts, even with customer demand reduction measures in place, EBMUD will need to obtain supplemental supplies to meet customer demands (EBMUD 2021). Projections are summarized across the different water supply scenarios through the year 2050 in Table 21.

Table 21 EBMUD Normal and Dry Year Supply and Demand Comparison 2020-2050

EBMUD Planning Level of Demand	2020	2025	2030	2035	2040	2045	2050
Normal Year							
Mokelumne Supply (mgd)	>181	>186	>190	>194	>201	>209	>218
Demand (taf)	181	186	190	194	201	209	218
Need for Water (taf)	**0**	**0**	**0**	**0**	**0**	**0**	**0**
Single Dry Year							
Mokelumne Supply (mgd)	121	126	129	132	138	144	151
CVP Supplies (mgd)	60	60	60	60	60	60	60
Total Supplies (mgd)	181	186	189	192	198	204	211
Voluntary Rationing (%)	0	0	1	1	2	2	3
Need for Water (taf)	**0**	**0**	**0**	**0**	**0**	**0**	**0**
Second Dry Year							
Mokelumne Supply (mgd)	82	86	89	92	98	104	111
CVP Supplies (mgd)	74	74	74	74	74	74	74
Total Supplies (mgd)	156	161	164	167	172	178	185
Mandatory Rationing (%)	13	13	13	14	14	14	15
Need for Water (taf)	**0**	**0**	**0**	**0**	**0**	**0**	**0**
Third Dry Year							
Mokelumne Supply (mgd)	141	145	146	145	132	118	105
CVP Supplies (mgd)	12	12	12	12	12	12	12
Total Supplies (mgd)	153	157	158	157	144	130	117
Mandatory Rationing (%)	15	15	15	15	15	15	15
Need for Water – Base Condition (taf)	0	0	0	0	28	52	75
Need for Water – High Demand Scenario (taf)	**0**	**0**	**21**	**35**	**60**	**97**	**125**
Need for Water – Extreme Drought Scenario (taf)	**0**	**0**	**0**	**13**	**32**	**55**	**84**

mgd = million gallons per day
taf = thousand acre-feet
CVP = Central Valley Project
Source: EBMUD 2021

EBMUD distributes its water through a system of pipelines, storage reservoirs, water treatment plants, and pumping plants Within the EBMUD service area, the water distribution network includes 4,200 miles of pipe, 167 water distribution reservoirs, and 131 water pumping plants. EBMUD's water supply system delivers 325 mgd to its 1.4 million customers and has a capacity of 830 million gallons (EBMUD 2021, City of San Leandro 2016b).

There are currently no major water storage facilities in San Leandro. Rather, the city is served by nearby facilities in Castro Valley and Oakland, including the Dunsmuir Reservoir just outside the northeastern city limits. Pipelines in San Leandro range from 4 to 36 inches in diameter. EBMUD operates and maintains all water distribution lines within the city and is responsible for all facilities up to the location of the water meter (City of San Leandro 2016b).

Wastewater

The city's sewer system consists of approximately 130 miles of pipe, ranging from 6 inches to 42 inches in diameter, and 13 remote lift stations. The City maintains roughly two thirds of the sewers within the city limits, primarily serving the northern portion of the city. The remainder of the city, including the project site, is served by the Oro Loma Sanitary District (OLSD). The San Francisco RWQCB established wastewater treatment requirements for the OLSD wastewater treatment plant and the EBDA outfall in an NPDES Permit (Order No. R2-2012-0004), adopted in 2012. The NPDES Order sets a framework for operation of the plant and effluent from the plant (City of San Leandro 2016b).

The OLSD serves a population of approximately 47,945, which includes residents and businesses. OLSD and Castro Valley Sanitary District jointly own OLSD's treatment plant, which has a permitted capacity of 20 mgd and treats an average dry weather flow of 12 mgd (OLSD 2023).

Stormwater

The City of San Leandro Department of Public Works owns and maintains 175 miles of storm drain conduits throughout the city. The city's storm drain system feeds into a larger system owned and operated by the Alameda County Flood Control and Water Conservation District. Stormwater from the project site drains west to Washington Avenue, where it is collected by storm drains into the City's stormwater system. Stormwater runoff is collected and disposed of by an integrated system of storm drains, inlets, curbside gutters, catch basins, drainage ditches, and man-made channels. Ultimately, stormwater that enters the City's system drains to the San Francisco Bay (City of San Leandro 2023).

Solid Waste

The City of San Leandro has two distinct service areas for refuse and recycling services: San Leandro Sanitary District and Oro Loma Sanitary District. The two service providers that serve these areas are Alameda County Industries (City's franchisee) and Waste Management of Alameda County (OLSD's franchisee). As of 2019, the City's solid waste was sent to seven landfills, as summarized below in Table 22. About 81 percent of San Leandro's solid waste was sent to the Altamont Landfill Resource Recovery Facility and the Vasco Road Sanitary Landfill (CalRecycle 2019).

Table 22 Estimated Landfill Capacities and Closure Date

Landfill Facility	Permitted Capacity (cubic yards)	Remaining Capacity (cubic yards)	Maximum Permitted Throughput (tons per day)	Anticipated Closure Date
Altamont Landfill Resource Recovery Facility	124,400,000	65,400,000	11,150	2070
Fink Road Landfill	14,640,000	7,184,701	2,400	2023[1]
North County Landfill and Recycling Center	41,200,000	35,400,000	825	2048
Potrero Hills Landfill	83,100,000	13,872,000	4,330	2048
Recology Hay Road Landfill	37,000,000	30,433,000	2,400	2077
Redwood Landfill	26,077,000	26,000,000	2,300	2036
Vasco Road Sanitary Landfill	40,207,100	11,560,000	2,518	2051

CalRecycle identifies Maximum Permitted Throughput only in Tons/Day, while Maximum Permitted Capacity and Remaining Capacity are only provided in Cubic Yards; therefore, standard conversion factors provided by the EPA (U.S. EPA 2016) are used to provide all figures in both Tons and Cubic Yards. EPA identifies a standard conversion factor for Municipal Solid Waste (MSW) compacted to "Landfill Density" of 1,700 pounds per cubic yard, equating to approximately 0.8 ton per cubic yard of compacted MSW.

[1] Fink Road Landfill has an estimated cease operation date of December 1, 2023

Source: United States Environmental Protection Agency 2016

Source: CalRecycle 2019

Other Utilities

Electricity would be provided to the project site by EBCE via Pacific Gas and Electric Company (PG&E) infrastructure. Infrastructure capable of supporting electric and telecommunications is present at the project site and in the project vicinity.

Regulatory Setting

State

CALIFORNIA GREEN BUILDING STANDARDS CODE

Part 11 of the Title 24 Building Standards is referred to as the California Green Building Standards (CALGreen) Code and was developed to help the State achieve its GHG reduction goals under HSC Division 25.5 (e.g., AB 32) by codifying standards for reducing building-related energy, water, and resource demand, which in turn reduces GHG emissions from energy consumption, water storage and delivery, and other resource consumption activities. The purpose of the CALGreen Code is to "improve public health, safety and general welfare by enhancing the design and construction of buildings through the use of building concepts having a positive environmental impact and encouraging sustainable construction practices in the following categories: (1) planning and design; (2) energy efficiency; (3) water efficiency and conservation; (4) material conservation and resource efficiency; and (5) environmental air quality." The CALGreen Code is not intended to substitute for or be identified as meeting the certification requirements of any green building program that is not established and adopted by the California Building Standards Commission. The CALGreen Code establishes mandatory measures for new residential and non-residential buildings. Such mandatory measures include energy efficiency, water conservation, material conservation, planning and design, and overall environmental quality.

On August 11, 2021, the CEC adopted the 2022 Title 24 Standards, which went into effect on January 1, 2023. The 2022 standards continue to improve upon the previous (2019) Title 24

standards for new construction of, and additions and alterations to, residential and non-residential buildings (CEC 2023a). The 2022 Title 24 Standards "build on California's technology innovations, encouraging energy efficient approaches to encourage building decarbonization, emphasizing in particular on heat pumps for space heating and water heating. This set of Energy Codes also extends the benefits of photovoltaic and battery storage systems and other demand flexible technology to work in combinations with heat pumps to enable California buildings to be responsive to climate change. This Energy code also strengthens ventilation standards to improve indoor air quality. This update provides crucial steps in the state's progress toward 100 percent clean carbon neutrality by midcentury" (CEC 2023b). The 2022 Energy Code is anticipated to reduce GHG emissions by 10 MMT of CO_2e over the next 30 years and result in approximately 1.5 billion dollars in consumer savings (CEC 2023c). Compliance with Title 24 is enforced through the building permit process.

ASSEMBLY BILL (AB) 939

The California Integrated Waste Management Act (AB 939, Sher, Chapter 1095, Statutes of 1989 as amended [IWMA]) made all California cities, counties, and approved regional solid waste management agencies responsible for enacting plans and implementing programs to divert 25 percent of their solid waste by 1995 and 50 percent by year 2000. Later legislation mandates the 50 percent diversion requirement be achieved every year. The California Department of Resources Recycling and Recovery (CalRecycle) oversees and provides assistance to local governments as they develop and implement plans to meet the mandates of the IWMA and subsequent legislation.

City of San Leandro

SAN LEANDRO 2035 GENERAL PLAN

The following policies of the City's General Plan are related to the provision of utilities and service systems in San Leandro:

Policy CSF-6.2 **Fair Share Costs.** Require future development to pay its fair share of the cost of improving the water, sewer, storm drainage, and other infrastructure systems needed to serve that development. Development impact fees, development agreements, and other appropriate forms of mitigation should be used to cover the costs of upgrading or expanding public infrastructure.

Policy CSF-6.4 **Wastewater Collection and Treatment.** Maintain efficient, environmentally sound, and cost-effective wastewater collection and treatment services in San Leandro.

Policy CSF-6.5 **Capacity.** Maintain adequate capacity at the San Leandro wastewater treatment plant to accommodate projected levels of growth within the service area and encourage the Oro Loma Sanitary District to do the same. Support efforts to maintain and/or improve the high quality of treated effluent at both plants and increase the feasibility and cost-effectiveness of using recycled wastewater for non-potable purposes.

SAN LEANDRO STORMWATER MANAGEMENT AND DISCHARGE CONTROL ORDINANCE

The City of San Leandro manages stormwater and regulates discharge into storm drains through a Storm Water Management and Discharge Control Ordinance. The City adheres to the SWRCB requirements for permitting for specific types of industrial and construction activities, such as obtaining a NPDES permit prior to construction.

Impact Analysis

a. Would the project require or result in the relocation or construction of new or expanded water, wastewater treatment or storm water drainage, electric power, natural gas, or telecommunications facilities, the construction or relocation of which could cause significant environmental effects?

b. Would the project have sufficient water supplies available to serve the project and reasonably foreseeable future development during normal, dry and multiple dry years?

c. Would the project result in a determination by the wastewater treatment provider which serves or may serve the project that it has adequate capacity to serve the project's projected demand in addition to the provider's existing commitments?

WATER

The project would generate water demand at the project site. The estimated water usage for project operation would be approximately 1,006,000 gallons per year. This estimation is based on water duty factors of 15 gallons per square foot of office space per year and 3.4 gallons per square foot of warehouse space per year (US Energy Information Administration 2017).[5]

1,006,000 gallons per year equates to approximately 0.003 mgd, which would represent less than 0.003 percent of projected EBMUD water supplies across normal, single dry, and multiple dry years. As determined in the EBMUD UWMP, there is adequate water supply available to serve anticipated growth within Alameda County through the year 2050. EBMUD adopted a 2020 Water Shortage Contingency Plan which aims to protect the water supply in the event of an emergency such as a drought or earthquake, and to implement and enforce regulations and restrictions for managing a water shortage (EBMUD 2020). The project would not require or result in the relocation or construction of new or expanded water facilities, and the project would have sufficient water supplies available to serve the project during normal, dry, and multiple dry years. Impacts would be less than significant.

WASTEWATER

Conservatively assuming that the project's sewer flow would be 100 percent of its anticipated water use, the project would generate approximately 1,006,000 gallons of wastewater per year. The project would be served by OLSD and would have a connection to the OLSD sewer system, which directs wastewater to the treatment plant jointly owned by OLSD and Castro Valley Sanitary District. The treatment plant has a permitted capacity of 20 mgd and treats an average dry weather flow of 12.4 mgd (OLSD 2022). Therefore, the OLSD treatment plant has approximately 7.6 mgd of remaining capacity.

The 1,006,000 gallons of wastewater per year generated by the project equates to approximately 1 million gallons per year, or less than 0.003 mgd. This daily wastewater generation rate would represent less than 0.03 percent of the OLSD treatment plant's remaining capacity. Additionally, the project applicant would be required to submit a sanitary sewer plan to the OLSD for approval, and obtain an OLSD district permit prior to connecting to the OLSD sewer system. The project would not

[5] 15 gallons per square foot of office space per year, multiplied by 15,000 square feet of office space, equals 225,000 gallons per year. 3.4 gallons per square foot of warehouse space per year, multiplied by 229,573 square feet of warehouse space, equals approximately 781,000 gallons per year. 225,000 gallons per year plus 781,000 gallons per year equals approximately 1,006,000 gallons per year.

require or result in the relocation or construction of new or expanded wastewater facilities, and would be served by a wastewater treatment provider with adequate capacity for the project's projected demand. Impacts would be less than significant.

STORMWATER

Although the site is currently vacant, precipitation falling on the existing impervious surfaces at the site generate stormwater runoff and discharge to the City's storm drain system. The project would continue to connect to the existing storm drain system operated and maintained by the City of San Leandro. As discussed in Section 10, *Hydrology and Water Quality,* the project would decrease the amount of impervious surfaces at the project site compared to existing conditions due to the inclusion of increased landscaping, so that the amount of runoff would decrease. Stormwater runoff from the impervious project surfaces, such as the proposed warehouse, surface parking areas, and internal access roads would be treated on-site before discharging to the existing storm drain system. On-site treatment would occur with a series of bioswales. Bioswales would be constructed throughout the site, generally within surface parking areas, but also adjacent to the proposed warehouse and internal access roads. Bioswales would be designed to capture and slow/pool runoff from impervious surface. As runoff collects in the bioswales, infiltration into the underlying ground would occur, reducing the volume of runoff that continues toward discharge into the storm drain system. Slowing the velocity of runoff by directing it into bioswales also allows sediment and other solids and suspended pollutants to settle out before the runoff is discharged into the storm drain system. After entering on-site bioswales, treated runoff that does infiltrate the ground would enter new storm drain inlets installed in each bioswale. The inlets would connect to a new storm drain pipeline connected beneath new surface parking areas and internal access roads. The new storm drain pipeline would connect to an existing storm drain main that exists beneath the surface of the existing site driveway from Doolittle Drive. Additionally, the project would also be required to comply with NPDES permit requirements and C.3 Stormwater Guidelines. Impacts would be less than significant.

ELECTRICITY, NATURAL GAS, AND TELECOMMUNICATIONS

As discussed in Section 6, *Energy*, the project would not result in the wasteful, inefficient, or unnecessary consumption of energy. In addition, the project would not require the construction of new electric power, natural gas, or telecommunications facilities because it is located in an urban area already served by those utilities and would not require additional capacity.

Therefore, the project would not result in significant environmental impacts due to the construction of new utility facilities. Impacts would be less than significant.

LESS-THAN-SIGNIFICANT IMPACT

d. Would the project generate solid waste in excess of State or local standards, or in excess of the capacity of local infrastructure, or otherwise impair the attainment of solid waste reduction goals?

e. Would the project comply with federal, state, and local management and reduction statutes and regulations related to solid waste?

The proposed project would generate solid waste during construction and operation. During construction, the current CalGreen code would require that 65 percent of construction and demolition debris be diverted. Handling of debris and waste generated during construction would

be subject to CalGreen requirements and Chapter 3-7 of San Leandro Municipal Code, which would require the project applicant to submit a Debris Recycling Statement. This statement would require the applicant to report the estimated volume or weight of construction debris, the amount of debris that was diverted via reuse or recycling, and information regarding the facility the applicant proposed to use to salvage, collect, or receive diverted material. Therefore, the project would not impair the attainment of solid waste reduction goals.

Operation of the project would generate an estimated 3,350 pounds of solid waste per day. This estimation is based on solid waste generation rates provided by CalRecycle, which estimate that office uses generate 6 pounds of solid waste per 1,000 square feet per day and warehouse uses generate 1.42 pounds per 100 square feet per day (CalRecycle 2015).[6] The generated 3,350 pounds of solid waste per day would equate to 1.68 tons per day or 613 tons per year.

Solid waste from the project site would be collected by Waste Management of Alameda County and likely sent to the Altamont Landfill Resource Recovery Facility. Table 23 shows the project's estimated solid waste generation and the remaining capacity of these landfills (CalRecycle 2019).

Table 23 Generated Solid Waste and Estimated Landfill Capacity

Project Solid Waste Generation (tons/day)	Permitted Throughput of Altamont (tons/day)	Remaining Capacity of Altamont (cubic yards)
1.68	11,150	65,400,000

Source: CalRecycle 2019

Project generated waste per day would be less than 0.02 percent of Altamont Landfill's allowable waste limit and project generated waste annually would be less than 0.0007 percent of Altamont Landfill's remaining capacity. The project would be required to comply with City and State plans and policies to reduce solid waste generation, including a requirement to divert at least 50 percent of solid waste and recyclables as required by Assembly Bill 939. The project's incremental increase in solid waste would not adversely affect solid waste facilities. Impacts would be less than significant.

LESS-THAN-SIGNIFICANT IMPACT

[6] 6 pounds per 1,000 square feet of office space per day, multiplied by 15,000 square feet of office use, is 90 pounds of solid waste generated per day by office uses. 1.42 pounds per 100 square feet of warehouse space per day, multiplied by 229,573 square feet of warehouse use, is approximately 3,260 pounds per day. 90 pounds plus 3,260 pounds is approximately 3,350 pounds of solid waste generated by the project per day.

20 Wildfire

	Potentially Significant Impact	Less than Significant with Mitigation Incorporated	Less-than - Significant Impact	No Impact
If located in or near state responsibility areas or lands classified as very high fire hazard severity zones, would the project:				
a. Substantially impair an adopted emergency response plan or emergency evacuation plan?	☐	☐	☐	■
b. Due to slope, prevailing winds, and other factors, exacerbate wildfire risks and thereby expose project occupants to pollutant concentrations from a wildfire or the uncontrolled spread of a wildfire?	☐	☐	☐	■
c. Require the installation or maintenance of associated infrastructure (such as roads, fuel breaks, emergency water sources, power lines or other utilities) that may exacerbate fire risk or that may result in temporary or ongoing impacts to the environment?	☐	☐	☐	■
d. Expose people or structures to significant risks, including downslopes or downstream flooding or landslides, as a result of runoff, post-fire slope instability, or drainage changes?	☐	☐	☐	■

Setting

According to maps prepared by the California Department of Forestry and Fire Protection (CAL FIRE), most of San Leandro is within a Local Responsibility Area and is not located within a Fire Hazard Severity Zone. However, small portions of the city along its eastern border are classified as Very High Fire Hazard Severity Zones within Local Responsibility Areas (CAL FIRE 2006). The project site is not within a Fire Hazard Severity Zone and is located approximately 2.7 miles west of the nearest Very High Fire Hazard Severity Zone.

Impact Analysis

a. If located in or near state responsibility areas or lands classified as very high fire hazard severity zones, would the project substantially impair an adopted emergency response plan or emergency evacuation plan?

b. If located in or near state responsibility areas or lands classified as very high fire hazard severity zones, would the project, due to slope, prevailing winds, and other factors, exacerbate wildfire risks and thereby expose project occupants to pollutant concentrations from a wildfire or the uncontrolled spread of a wildfire?

c. If located in or near state responsibility areas or lands classified as very high fire hazard severity zones, would the project require the installation or maintenance of associated infrastructure (such as roads, fuel breaks, emergency water sources, power lines or other utilities) that may exacerbate fire risk or that may result in temporary or ongoing impacts to the environment?

d. If located in or near state responsibility areas or lands classified as very high fire hazard severity zones, would the project expose people or structures to significant risks, including downslopes or downstream flooding or landslides, as a result of runoff, post-fire slope instability, or drainage changes?

The project site is not in a CAL FIRE designated Very High Fire Hazard Severity Zone and is located approximately 3 miles west of the nearest Very High Fire Hazard Severity Zone (CALFIRE 2023). The project site is separated from the nearest Very High Fire Hazard Severity Zone by urban development, which does not facilitate the spread of wildfire due to the lack of wildland fuels. Additionally, the prevailing wind direction in San Leandro is west to east for nine months of the year and from north to south for three months of the year (WeatherSpark 2023); therefore, prevailing winds would blow wildfires away from the project site and from the city toward the East Bay Hills.

Project implementation would not impair an adopted emergency response plan or emergency evacuation plan, as discussed in Section 9, *Hazards and Hazardous Materials,* or exacerbate wildfire risks. Further, the project would not require the installation or maintenance of associated infrastructure that may exacerbate fire risk or expose people or structures to significant risks, including downslopes or downstream flooding or landslides, as a result of runoff, post fire slope instability, or drainage changes in or near state responsibility areas or lands classified as very high fire severity zones. No impact would occur.

NO IMPACT

21 Mandatory Findings of Significance

	Potentially Significant Impact	Less than Significant with Mitigation Incorporated	Less-than - Significant Impact	No Impact
Does the project:				
a. Have the potential to substantially degrade the quality of the environment, substantially reduce the habitat of a fish or wildlife species, cause a fish or wildlife population to drop below self-sustaining levels, threaten to eliminate a plant or animal community, substantially reduce the number or restrict the range of a rare or endangered plant or animal or eliminate important examples of the major periods of California history or prehistory?	■	☐	☐	☐
b. Have impacts that are individually limited, but cumulatively considerable? ("Cumulatively considerable" means that the incremental effects of a project are considerable when viewed in connection with the effects of past projects, the effects of other current projects, and the effects of probable future projects)?	■	☐	☐	☐
c. Have environmental effects which will cause substantial adverse effects on human beings, either directly or indirectly?	■	☐	☐	☐

a. Does the project have the potential to substantially degrade the quality of the environment, substantially reduce the habitat of a fish or wildlife species, cause a fish or wildlife population to drop below self-sustaining levels, threaten to eliminate a plant or animal community, substantially reduce the number or restrict the range of a rare or endangered plant or animal or eliminate important examples of the major periods of California history or prehistory?

As discussed in Section 4, *Biological Resources*, the project would not substantially reduce the habitat of a fish or wildlife species; cause a fish or wildlife species population to drop below self-sustaining levels; threaten to eliminate a plant or animal community; or reduce the number or restrict the range of a rare or endangered plant or animal. The project could result in potentially significant impacts to nesting birds. Implementation of Mitigation Measure BIO-1 would reduce impacts to protected birds and bats to less than significant levels.

As discussed in Section 5, *Cultural Resources*, and Section 7, *Geology and Soils,* no historical, archaeological, or paleontological resources were identified on site. Additionally, as discussed in Section 18, *Tribal Cultural Resources,* there are no known tribal cultural resources within the project site. Nevertheless, it is always possible to encounter cultural, paleontological, or tribal cultural resources during ground disturbing activities. Implementation of mitigation measures CR-1, GEO-1, and TCR-1 would reduce impacts to previously undiscovered cultural, tribal cultural resources, and paleontological resources to less than significant levels by providing a process for evaluating and, as necessary, avoiding impacts to any resources found during construction. Therefore, impacts to important examples of California history or prehistory would be less than significant.

LESS THAN SIGNIFICANT WITH MITIGATION INCORPORATED

b. Does the project have impacts that are individually limited, but cumulatively considerable? ("Cumulatively considerable" means that the incremental effects of a project are considerable when viewed in connection with the effects of past projects, the effects of other current projects, and the effects of probable future projects)?

As defined in *CEQA Guidelines* Section 15335, "cumulative impacts" refer to two or more individual impacts that, when considered together, are substantial or will compound other environmental impacts. San Leandro is an urbanized area with ongoing projects throughout the City. As discussed in Section 1, *Aesthetics*, through Section 20, *Wildfire*, most of the potential impacts of the proposed project would be less than significant, either with or without mitigation, depending on the specific impact. These less than significant impacts would not have considerable contributions to a significant cumulative impact because they're either site specific, such as impacts to paleontological resources, or because the project is consistent with standards and programs, such as zoning standards established in the San Leandro Municipal Code pertaining to aesthetics. Other less than significant impacts would not contribute to potentially significant impacts because they have negligible impacts to existing conditions, such as impacts to population and housing, public services, and recreation. However, the potentially significant impacts identified in this Initial Study are severe enough that they could have a considerable contribution to a significant impact, when combined with the impacts from other nearby projects in San Leandro. The cumulative impacts of the proposed project will be evaluated in the EIR for the following impacts of CEQA topics:

- Hazards and Hazardous Materials
- Noise
- Transportation

POTENTIALLY SIGNIFICANT IMPACT

c. Does the project have environmental effects which will cause substantial adverse effects on human beings, either directly or indirectly?

In general, impacts to human beings are associated with air quality, geology and soils, greenhouse gas emissions, hazards and hazardous materials, noise, and wildfire impacts. As discussed in Section 3, *Air Quality,* the project would not have significant air quality impacts on humans. The project would also not have significant impacts on humans related to geology and soils or greenhouse gas emissions, as discussed in Section 7, *Geology and Soils*, and Section 8, *Greenhouse Gas Emissions*, respectively. Wildfire impacts would also be less than significant (see Section 20, *Wildfire*). As discussed in Section 9, *Hazards and Hazardous Materials*, impacts related to groundwater, vapor, or soil contamination would be potentially significant as a result of project implementation and will be

further evaluated in the EIR. Likewise, the potential noise and vibration impacts of the project, as discussed in Section 13, *Noise*, would be potentially significant and will be evaluated in the EIR.

POTENTIALLY SIGNIFICANT IMPACT

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Appendix A

Air Quality Assessment

Air Quality Assessment
880 Doolittle Drive Project
City of San Leandro, California

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Appendix A: Air Quality Modeling Data

LIST OF ABBREVIATED TERMS

AQMP	air quality management plan
AB	Assembly Bill
ADT	average daily traffic
BAAQMD	Bay Area Air Quality Management District
CAPCOA	California Air Pollution Control Officers Association
CARB	California Air Resources Board
CAAQS	California Ambient Air Quality Standards
CCAA	California Clean Air Act
CalEEMod	California Emissions Estimator Model
CEQA	California Environmental Quality Act
CO	carbon monoxide
cy	cubic yards
DPM	diesel particulate matter
EPA	Environmental Protection Agency
FCAA	Federal Clean Air Act
H_2S	hydrogen sulfide
Pb	Lead
LST	local significance threshold
$\mu g/m^3$	micrograms per cubic meter
mg/m^3	milligrams per cubic meter
NAAQS	National Ambient Air Quality Standards
NO_2	nitrogen dioxide
NO_x	nitrogen oxide
O_3	Ozone
PM_{10}	particulate matter less than 10 microns in diameter
$PM_{2.5}$	particulate matter less than 2.5 microns in diameter
ppm	parts per million
ROG	reactive organic gases
RTP/SCS	Regional Transportation Plan/Sustainable Communities Strategy
SB	Senate Bill
SRA	source receptor area
SF	square foot
SO_{4-2}	Sulfates
SO_2	sulfur dioxide
TAC	toxic air contaminant
C_2H_3Cl	vinyl chloride
VOC	volatile organic compound

1 INTRODUCTION

This report describes the air quality conditions in the Project area. The current condition and air quality is used as the baseline against which to compare potential impacts of the Project. The purpose of this Air Quality Assessment is to evaluate potential short- and long-term noise impacts resulting from implementation of the proposed 880 Doolittle Drive Project (proposed Project) in the City of San Leandro.

1.1 PROJECT LOCATION

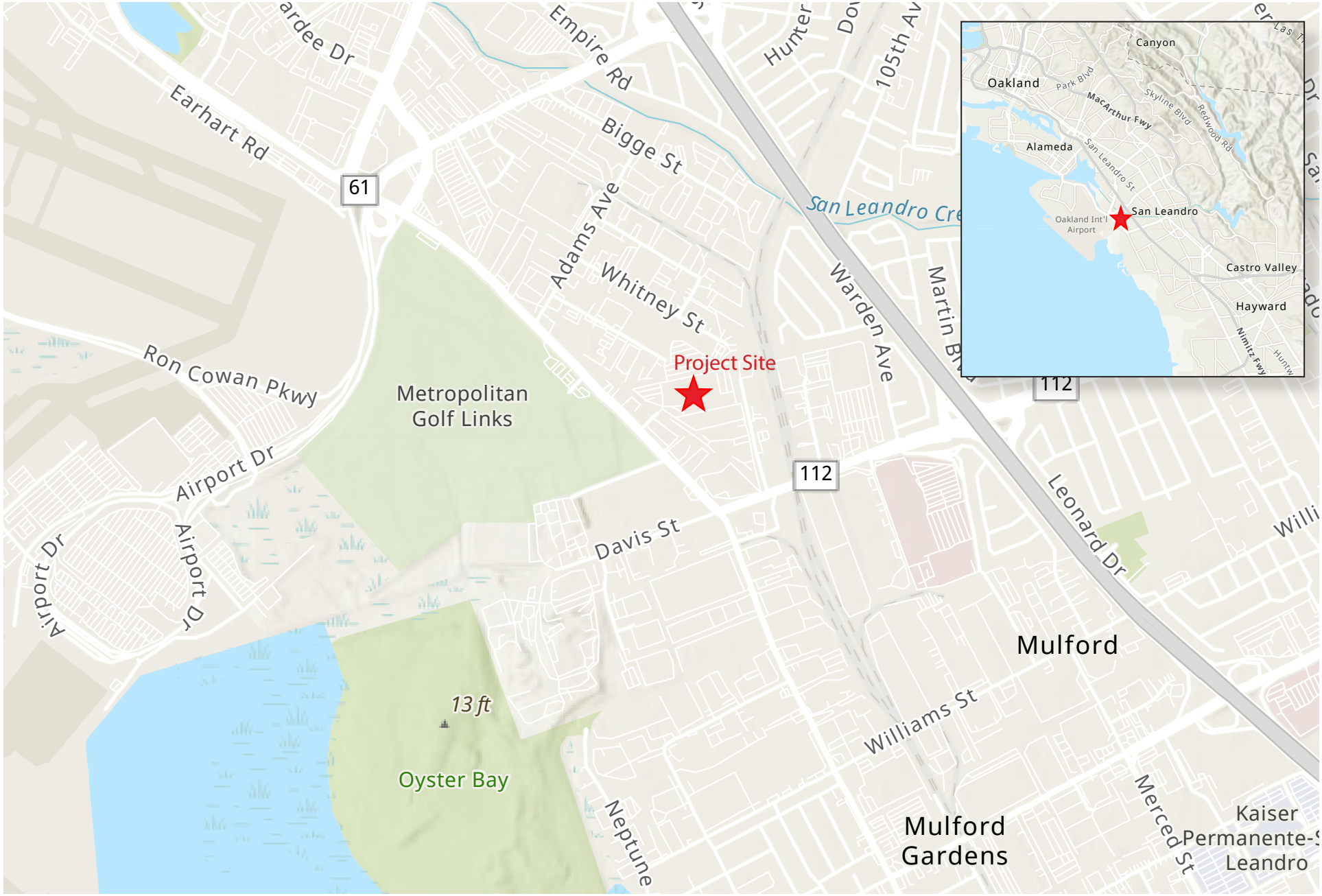
The proposed Project is located at 880 Doolittle Drive, on the approximately 14.14-acre property (APNs # 77A-0741-004-02 and 77A-0741-005-00), in the City of San Leandro. Figure 1: Regional Vicinity and Figure 2: Site Vicinity depict the Project site in a regional and local context. The Project site is located in an urban area with a mix of surrounding uses including commercial, office, residential and industrial uses. The southern boundary comprises an existing railroad with commercial development beyond. The Project site's existing land use designation is General Industrial (IG) and existing zoning designation is General Industrial (IG) Zoning District. The Project site is currently developed with an approximately 212,000 square foot (sf) industrial use building and associated parking.

1.2 PROJECT DESCRIPTION

The proposed Project would demolish the existing 212,000 sf of on-site industrial use buildings and construct an approximately 244,573[1] sf new warehouse. The proposed development would contain approximately 15,000 sf of ancillary office use, of which 5,000 sf of office use would be mezzanine level, refer to Figure 3: Project Site Plan. Sixty-four loading docks would be constructed as part of the proposed warehouse, 27 on the north side and 37 on the southside of the building. The proposed Project would include surface parking with 204 parking spaces, including 6 ADA stalls. Fifty-nine trailer stalls will also be provided and located to the north of the proposed warehouse building. Vehicular access to the Project site would be provided via three driveways. The two existing driveways (at Doolittle Drive and Hester Street) would be maintained, and a third driveway would be added from Hester Street.

The Project proposes several surface improvements, including new landscaping and reconfigured parking areas. Per City requirements (Municipal Code Section 2.12.320), proposed landscaping would comprise five percent of the Project site. The Project site has a general plan land use designation of General Industrial (IG) and is zoned Industrial General (IG). The IG designation may contain a wide range of manufacturing, transportation, food and beverage processing, technology, warehousing, vehicle storage, office-flex, and distribution uses. The IG zone permits new storage or wholesale/retail distribution facility warehouse uses with the approval of a conditional use permit (CUP).

[1] The modeling includes a more conservative 245,200 sf warehouse. The project size has decreased since the initial modeling.



Source: USGS, 2022

Figure 1: Regional Location Map

880 Doolittle Drive Project

Not to scale

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Source: Nearmap, 2022

Figure 2: Project Vicinity Map

880 Doolittle Drive Project

Not to scale

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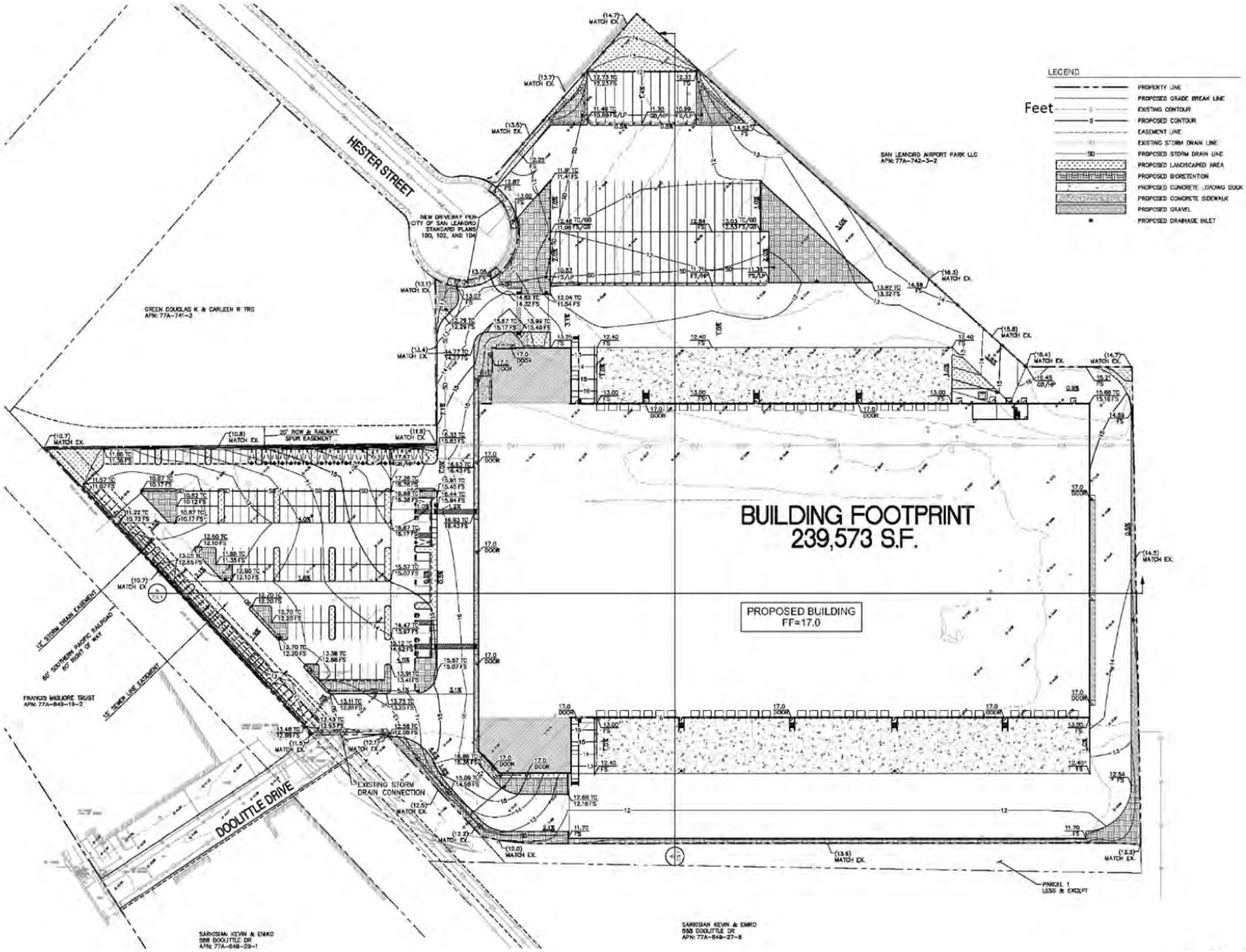

Source: HPA Architecture, 2022

Figure 3: Conceptual Site Plan

880 Doolittle Drive Project

Not to scale

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2 ENVIRONMENTAL SETTING

2.1 CLIMATE AND METEOROLOGY

The California Air Resources Board (CARB) divides the State into 15 air basins that share similar meteorological and topographical features. The Project is located within the San Francisco Bay Area Air Basin (Basin). This Basin comprises all of Alameda, Contra Costa, Marin, Napa, San Francisco, San Mateo, and Santa Clara counties, the southern portion of Sonoma County, and the southwestern portion of Solano County. Air quality in this area is determined by such natural factors as topography, meteorology, and climate, in addition to the presence of existing air pollution sources and ambient conditions. These factors along with applicable regulations are discussed below. The Bay Area Air Quality Management District (BAAQMD) is responsible for local control and monitoring of criteria air pollutants throughout the Basin.

Climate, or the average weather condition, affects air quality in several ways. Wind patterns can remove or add air pollutants emitted by stationary or mobile sources. Inversion, a condition where warm air traps cooler air underneath it, can hold pollutants near the ground by limiting upward mixing (dilution). Topography also affects the local climate, as valleys often trap emissions by limiting lateral dispersal.

The inversions typical of winter, called radiation inversions, are formed as heat quickly radiates from the earth's surface after sunset, causing the air in contact with it to rapidly cool. Radiation inversions are strongest on clear, low-wind, cold winter nights, allowing the build-up of such pollutants as carbon monoxide and particulate matter. When wind speeds are low, there is little mechanical turbulence to mix the air, resulting in a layer of warm air over a layer of cooler air next to the ground. During radiation inversions downwind transport is slow, the mixing depths are shallow, and turbulence is minimal, all factors which contribute to ozone formation.

The frequency of hot, sunny days during the summer months in the Basin is another important factor that affects air pollution potential. It is at the higher temperatures that ozone is formed. In the presence of ultraviolet sunlight and warm temperatures, reactive organic gases and oxides of nitrogen react to form secondary photochemical pollutants, including ozone.

The climate is dominated by the location and strength of a semi-permanent, subtropical high-pressure cell. In the summer, the Pacific cell is centered over the northeastern Pacific Ocean, resulting in stable meteorological conditions and a steady northwesterly wind flow. Upwelling of cold ocean water from below the surface because of the northwesterly flow produces a band of cold water off the coast which results in condensation and the presence of fog and stratus clouds along the coast. In the winter, the high-pressure cell weakens and shifts southward, resulting in increased wind flow offshore, the absence of upwelling, and the occurrence of storms.

The Basin is characterized by moderately wet winters (November through March) and dry summers. The rainfall in the mountains reaches 40 inches while the valley sees less than 16 inches. Generally, coastal temperatures can be 35 degrees Fahrenheit cooler than temperatures 15 to 20 miles inland. At night, this contrast usually decreases to less than 10 degrees Fahrenheit. In the winter, the relationship of minimum and maximum temperatures is reversed.

The Project site is located in the City of San Leandro and Alameda County, in the East Bay region of the San Francisco Bay Area. The area has a generally mild climate, with average high temperatures in the mid 80's Fahrenheit in the summer and high 50's Fahrenheit in the winter. The annual rainfall is approximately 21 inches in the County, primarily between October and May. The regulatory section below discusses the various buffer zones around sources of air pollution sufficient to avoid adverse health and nuisance impacts on nearby receptors.

2.2 AIR POLLUTANTS OF PRIMARY CONCERN

The air pollutants emitted into the ambient air by stationary and mobile sources are regulated by federal and state laws. These regulated air pollutants are known as "criteria air pollutants" and are categorized into primary and secondary pollutants. Primary air pollutants are those that are emitted directly from sources. Carbon monoxide (CO), reactive organic gases (ROG), nitrogen oxide (NO_X), sulfur dioxide (SO_2), coarse particulate matter (PM_{10}), fine particulate matter ($PM_{2.5}$), and lead are primary air pollutants. Of these, CO, NO_X, SO_2, PM_{10}, and $PM_{2.5}$ are criteria pollutants. ROG and NO_X are criteria pollutant precursors and go on to form secondary criteria pollutants through chemical and photochemical reactions in the atmosphere. For example, the criteria pollutant ozone (O_3) is formed by a chemical reaction between ROG and NO_X in the presence of sunlight. O_3 and nitrogen dioxide (NO_2) are the principal secondary pollutants. Sources and health effects commonly associated with criteria pollutants are summarized in Table 1: Air Contaminants and Associated Public Health Concerns.

Ozone, or smog, is not emitted directly into the environment, but is formed in the atmosphere by complex chemical reactions between ROG and NO_X in the presence of sunlight. Ozone formation is greatest on warm, windless, sunny days. The main sources of NO_X and ROG, often referred to as ozone precursors, are combustion processes (including motor vehicle engines) the evaporation of solvents, paints, and fuels, and biogenic sources. Automobiles are the single largest source of ozone precursors in the Basin. Tailpipe emissions of ROG are highest during cold starts, hard acceleration, stop-and-go conditions, and slow speeds. They decline as speeds increase up to about 50 miles per hour (mph), then increase again at high speeds and high engine loads. ROG emissions associated with evaporation of unburned fuel depend on vehicle and ambient temperature cycles. Nitrogen oxide emissions exhibit a different curve; emissions decrease as the vehicle approaches 30 mph and then begin to increase with increasing speeds.

Ozone levels usually build up during the day and peak in the afternoon hours. Short-term exposure can irritate the eyes and cause constriction of the airways. Besides causing shortness of breath, it can aggravate existing respiratory diseases such as asthma, bronchitis and emphysema. Chronic exposure to high ozone levels can permanently damage lung tissue. Ozone can also damage plants and trees, and materials such as rubber and fabrics.

Table 1: Air Contaminants and Associated Public Health Concerns

Pollutant	Major Man-Made Sources	Human Health Effects
Particulate Matter (PM_{10} and $PM_{2.5}$)	Power plants, steel mills, chemical plants, unpaved roads and parking lots, wood-burning stoves and fireplaces, automobiles and others.	Increased respiratory symptoms, such as irritation of the airways, coughing, or difficulty breathing; asthma; chronic bronchitis; irregular heartbeat; nonfatal heart attacks; and premature death in people with heart or lung disease. Impairs visibility.
Ozone (O_3)	Formed by a chemical reaction between reactive organic gases/volatile organic compounds (ROG or VOC)[1] and nitrogen oxides (NO_X) in the presence of sunlight. Motor vehicle exhaust industrial emissions, gasoline storage and transport, solvents, paints and landfills.	Irritates and causes inflammation of the mucous membranes and lung airways; causes wheezing, coughing, and pain when inhaling deeply; decreases lung capacity; aggravates lung and heart problems. Damages plants; reduces crop yield.
Sulfur Dioxide (SO_2)	A colorless gas formed when fuel containing sulfur is burned and when gasoline is extracted from oil. Examples are petroleum refineries, cement manufacturing, metal processing facilities, locomotives, and ships.	Respiratory irritant. Aggravates lung and heart problems. In the presence of moisture and oxygen, sulfur dioxide converts to sulfuric acid which can damage marble, iron and steel. Damages crops and natural vegetation. Impairs visibility. Precursor to acid rain.
Carbon Monoxide (CO)	An odorless, colorless gas formed when carbon in fuel is not burned completely; a component of motor vehicle exhaust.	Reduces the ability of blood to deliver oxygen to vital tissues, affecting the cardiovascular and nervous system. Impairs vision, causes dizziness, and can lead to unconsciousness or death.
Nitrogen Dioxide (NO_2)	A reddish-brown gas formed during fuel combustion for motor vehicles and industrial sources. Sources include motor vehicles, electric utilities, and other sources that burn fuel.	Respiratory irritant; aggravates lung and heart problems. Precursor to ozone. Contributes to global warming and nutrient overloading which deteriorates water quality. Causes brown discoloration of the atmosphere.
Lead (Pb)	Lead is a metal found naturally in the environment as well as in manufactured products. The major sources of lead emissions have historically been motor vehicles (such as cars and trucks) and industrial sources. Due to the phase out of leaded gasoline, metals processing is the major source of lead emissions to the air today. The highest levels of lead in air are generally found near lead smelters. Other stationary sources are waste incinerators, utilities, and lead-acid battery manufacturers.	Exposure to lead occurs mainly through inhalation of air and ingestion of lead in food, water, soil, or dust. It accumulates in the blood, bones, and soft tissues and can adversely affect the kidneys, liver, nervous system, and other organs. Excessive exposure to lead may cause neurological impairments such as seizures, mental retardation, and behavioral disorders. Even at low doses, lead exposure is associated with damage to the nervous systems of fetuses and young children, resulting in learning deficits and lowered IQ.

[1] Volatile Organic Compounds (VOCs or Reactive Organic Gases [ROG]) are hydrocarbons/organic gases that are formed solely of hydrogen and carbon. There are several subsets of organic gases including ROGs and VOCs. Both ROGs and VOCs are emitted from the incomplete combustion of hydrocarbons or other carbon-based fuels. The major sources of hydrocarbons are combustion engine exhaust, oil refineries, and oil-fueled power plants; other common sources are petroleum fuels, solvents, dry cleaning solutions, and paint (via evaporation).

Source: California Air Pollution Control Officers Association (CAPCOA), *Health Effects*, capcoa.org/health-effects/, accessed December 2022.

Toxic Air Contaminants

Toxic air contaminants (TACs) are airborne substances that can cause short-term (acute) or long-term (chronic or carcinogenic, i.e., cancer causing) adverse human health effects (i.e., injury or illness). TACs include both organic and inorganic chemical substances. They may be emitted from a variety of common sources including gasoline stations, automobiles, dry cleaners, industrial operations, and painting operations. The current California list of TACs includes more than 200 compounds, including particulate emissions from diesel-fueled engines.

CARB identified diesel particulate matter (DPM) as a toxic air contaminant. DPM differs from other TACs in that it is not a single substance but rather a complex mixture of hundreds of substances. Diesel exhaust is a complex mixture of particles and gases produced when an engine burns diesel fuel. DPM is a concern because it causes lung cancer; many compounds found in diesel exhaust are carcinogenic. DPM includes the particle-phase constituents in diesel exhaust. The chemical composition and particle sizes of DPM vary between different engine types (heavy-duty, light-duty), engine operating conditions (idle, accelerate, decelerate), fuel formulations (high/low sulfur fuel), and the year of the engine. Some short-term (acute) effects of diesel exhaust include eye, nose, throat, and lung irritation, and diesel exhaust can cause coughs, headaches, light-headedness, and nausea. DPM poses the greatest health risk among the TACs. Almost all diesel exhaust particle mass is 10 microns or less in diameter. Because of their extremely small size, these particles can be inhaled and eventually trapped in the bronchial and alveolar regions of the lung.

2.3 AMBIENT AIR QUALITY

CARB monitors ambient air quality at approximately 250 air monitoring stations across the state. Air quality monitoring stations usually measure pollutant concentrations ten feet above ground level; therefore, air quality is often referred to in terms of ground-level concentrations. Existing levels of ambient air quality, historical trends, and projections near the Project site are documented by measurements made by the Bay Area Air Quality Management District (BAAAQMD)'s air pollution regulatory agency that maintains air quality monitoring stations, which process ambient air quality measurements.

Ozone (O_3) and particulate matter (PM_{10} and $PM_{2.5}$) are pollutants of concern in the BAAQMD. The closest air monitoring station to the Project site that monitors ambient concentrations of these pollutants is the Oakland-9925 International Boulevard Monitoring Station located approximately 2.9 miles northeast of the Project site. Table 2: Ambient Air Quality Data lists the monitored maximum concentrations and number of exceedances of federal or state air quality standards for

each year between 2020 to 2022. Particulate matter ($PM_{2.5}$) was exceeded in 2020 at the closest monitoring station.

Table 2: Ambient Air Quality Data

Pollutant	Oakland-9925 International Boulevard [1]		
	2020	2021	2022
Ozone (O_3)			
1-hour Maximum Concentration (ppm)	0.090	0.083	0.069
8-hour Maximum Concentration (ppm)	0.066	0.061	0.055
Number of Days Standard Exceeded			
CAAQS 1-hour (>0.09 ppm)	0	0	0
NAAQS 8-hour (>0.070 ppm)	0	0	0
Nitrogen Dioxide (NO_2)			
1-hour Maximum Concentration (ppm)	0.0592	0.0487	0.0508
Number of Days Standard Exceeded			
NAAQS 1-hour (>0.100 ppm)	0	0	0
CAAQS 1-hour (>0.18 ppm)	0	0	0
Particulate Matter Less Than 2.5 Microns ($PM_{2.5}$)			
National 24-hour Maximum Concentration	167.7	33.0	25.7
State 24-hour Maximum Concentration	167.7	33.0	25.7
Number of Days Standard Exceeded			
NAAQS 24-hour (>150 µg/m^3)	11	0	0
CAAQS 24-hour (>50 µg/m^3)	-	-	-

NAAQS = National Ambient Air Quality Standards; CAAQS = California Ambient Air Quality Standards; ppm = parts per million; µg/m^3 = micrograms per cubic meter; NM = not measured
[1] Measurements taken at the Oakland – 9925 International Boulevard Monitoring Station located at 9925 International Boulevard, Oakland, California 94603 (CARB# 07448).

Source: All pollutant measurements are from the CARB Aerometric Data Analysis and Management system database (arb.ca.gov/adam) except for CO, which were retrieved from the CARB Air Quality and Meteorological Information System (https://www.arb.ca.gov/aqmis2/aqdselect.php, https://www.arb.ca.gov/qaweb/siteinfo.php).

2.4 SENSITIVE RECEPTORS

Sensitive populations are more susceptible to the effects of air pollution than the general population. Sensitive receptors in proximity to localized sources of toxics are of particular concern. Land uses considered sensitive receptors include residences, schools, playgrounds, childcare centers, long-term health care facilities, rehabilitation centers, convalescent centers, and retirement homes.

The Project site is located at the end of Doolittle Drive in the City of San Leandro. The surrounding land uses are predominantly general industrial and industrial park, with single-family residences located to the northeast. Table 3: Sensitive Receptors, lists the distances and locations of nearby sensitive receptors. Figure 4: Sensitive Receptor Locations shows location of the nearest sensitive receptors.

Table 3: Sensitive Receptors

Receptor Description	Distance and Direction from the Project Site
1 Single-Family Residences	500 feet northeast
2 Metropolitan Golf Links Course	700 feet west
3 Holiday Inn	0.50 miles north

Source: Google Earth, 2023.

Source: Nearmap, 2022

Figure 4: Sensitive Receptor Locations

880 Doolittle Drive Project

Not to scale

Kimley»Horn
Expect More. Experience Better.

3 REGULATORY SETTING

3.1 FEDERAL AND STATE

Federal Clean Air Act

Air quality is federally protected by the Federal Clean Air Act (FCAA) and its amendments. Under the FCAA, the EPA developed the primary and secondary National Ambient Air Quality Standards (NAAQS) for the criteria air pollutants including ozone, NO_2, CO, SO_2, PM_{10}, $PM_{2.5}$, and lead. Depending on whether the standards are met or exceeded, the local air basin is classified as in "attainment" or "nonattainment." Some areas are unclassified, which means no monitoring data are available. Unclassified areas are considered to be in attainment. Proposed projects in or near nonattainment areas could be subject to more stringent air-permitting requirements. The FCAA requires that each state prepare a State Implementation Plan (SIP) to demonstrate how it will attain the NAAQS within the federally imposed deadlines.

The U.S. Environmental Protection Agency (EPA) has designated enforcement of air pollution control regulations to the individual states. Applicable federal standards are summarized in Table 4: State and Federal Ambient Air Quality Standards.

California Air Resources Board

CARB administers California's air quality policy. The California Ambient Air Quality Standards (CAAQS) were established in 1969 pursuant to the Mulford-Carrell Act. These standards, included with the NAAQS in Table 4, are generally more stringent and apply to more pollutants than the NAAQS. In addition to the criteria pollutants, CAAQS have been established for visibility reducing particulates, hydrogen sulfide, and sulfates. In general, the Bay Area experiences low concentrations of most pollutants when compared to federal standards, except for O_3 and PM, for which standards are exceeded periodically. With respect to federal standards, the Bay Area's attainment status for 8-hour ozone is classified as "marginal nonattainment" and "nonattainment" for $PM_{2.5}$. The region is also considered to be in nonattainment with the CAAQS for PM_{10} and $PM_{2.5}$. Area sources generate the majority of these airborne particulate emissions. The Basin is considered in attainment or unclassified with respect to the CO, NO_2 and SO_2 NAAQS and CAAQS.

The California Clean Air Act (CCAA), which was approved in 1988, requires that each local air district prepare and maintain an Air Quality Management Plan (AQMP) to achieve compliance with CAAQS. These AQMPs also serve as the basis for the preparation of the SIP for meeting federal clean air standards for the State of California. Like the EPA, CARB also designates areas within California as either attainment or nonattainment for each criteria pollutant based on whether the CAAQS have been achieved. Under the CCAA, areas are designated as nonattainment for a pollutant if air quality data shows that a state standard for the pollutant was violated at least once during the previous three calendar years. Exceedances that are affected by highly irregular or infrequent events such as wildfires, volcanoes, etc. are not considered violations of a State standard, and are not used as a basis for designating areas as nonattainment. The applicable State standards are summarized in Table 4.

Table 4: State and Federal Ambient Air Quality Standards

Pollutant	Averaging Time	State Standards[1]		Federal Standards[2]	
		Concentration	Attainment Status	Concentration[3]	Attainment Status
Ozone (O_3)	8 Hour	0.070 ppm (137 µg/m³)	N[9]	0.070 ppm	N[4]
	1 Hour	0.09 ppm (180 µg/m³)	N	NA	N/A[5]
Carbon Monoxide (CO)	8 Hour	9.0 ppm (10 mg/m³)	A	9 ppm (10 mg/m³)	A[6]
	1 Hour	20 ppm (23 mg/m³)	A	35 ppm (40 mg/m³)	A
Nitrogen Dioxide (NO_2)	1 Hour	0.18 ppm (339 µg/m³)	A	0.100 ppm[11]	U
	Annual Arithmetic Mean	0.030 ppm (57 µg/m³)	-	0.053 ppm (100 µg/m³)	A
Sulfur Dioxide[12] (SO_2)	24 Hour	0.04 ppm (105 µg/m³)	A	0.14 ppm (365 µg/m³)	A
	1 Hour	0.25 ppm (655 µg/m³)	A	0.075 ppm (196 µg/m³)	A
	Annual Arithmetic Mean	NA	-	0.03 ppm (80 µg/m³)	A
Particulate Matter (PM_{10})	24-Hour	50 µg/m³	N	150 µg/m³	-U
	Annual Arithmetic Mean	20 µg/m³	N[7]	NA	-
Fine Particulate Matter ($PM_{2.5}$) [15]	24-Hour	NA	-	35 µg/m³	U/A
	Annual Arithmetic Mean	12 µg/m³	N[7]	12 µg/m³	N
Sulfates (SO_{4-2})	24 Hour	25 µg/m³	A	NA	-
Lead (Pb)[13, 14]	30-Day Average	1.5 µg/m³	-	NA	A
	Calendar Quarter	NA	-	1.5 µg/m³	A
	Rolling 3-Month Average	NA	-	0.15 µg/m³	-
Hydrogen Sulfide (H_2S)	1 Hour	0.03 ppm (42 µg/m³)	U	NA	-
Vinyl Chloride (C_2H_3Cl)	24 Hour	0.01 ppm (26 µg/m³)	-	NA	-
Visibility Reducing Particles[8]	8 Hour (10:00 to 18:00 PST)	-	U	-	-

A = attainment; N = nonattainment; U = unclassified; N/A = not applicable or no applicable standard; ppm = parts per million; µg/m³ = micrograms per cubic meter; mg/m³ = milligrams per cubic meter; – = not indicated or no information available.

1. California standards for ozone, carbon monoxide (except Lake Tahoe), sulfur dioxide (1-hour and 24-hour), nitrogen dioxide, suspended particulate matter - PM_{10}, and visibility reducing particles are values that are not to be exceeded. The standards for sulfates, Lake Tahoe carbon monoxide, lead, hydrogen sulfide, and vinyl chloride are not to be equaled or exceeded. If the standard is for a 1-hour, 8-hour or 24-hour average (i.e., all standards except for lead and the PM_{10} annual standard), then some measurements may be excluded. In particular, measurements are excluded that CARB determines would occur less than once per year on the average. The Lake Tahoe CO standard is 6.0 ppm, a level one-half the national standard and two-thirds the state standard.
2. National standards shown are the "primary standards" designed to protect public health. National standards other than for ozone, particulates and those based on annual averages are not to be exceeded more than once a year. The 1-hour ozone standard is attained if, during the most recent three-year period, the average number of days per year with maximum hourly concentrations above the standard is equal to or less than one. The 8-hour ozone standard is attained when the 3-year average of the 4th highest daily concentrations is 0.070 ppm (70 ppb) or less. The 24-hour PM_{10} standard is attained when the 3-year average of the 99th percentile of monitored concentrations is less than 150 µg/m₃. The 24-hour $PM_{2.5}$ standard is attained when the 3-year average of 98th percentiles is less than 35 µg/m³.
   Except for the national particulate standards, annual standards are met if the annual average falls below the standard at every site. The national annual particulate standard for PM_{10} is met if the 3-year average falls below the standard at every site. The annual $PM_{2.5}$ standard is met if the 3-year average of annual averages spatially-averaged across officially designed clusters of sites falls below the standard.
3. National air quality standards are set by the EPA at levels determined to be protective of public health with an adequate margin of safety.

4. On October 1, 2015, the national 8-hour ozone primary and secondary standards were lowered from 0.075 to 0.070 ppm. An area will meet the standard if the fourth-highest maximum daily 8-hour ozone concentration per year, averaged over three years, is equal to or less than 0.070 ppm. EPA will make recommendations on attainment designations by October 1, 2016, and issue final designations October 1, 2017. Nonattainment areas will have until 2020 to late 2037 to meet the health standard, with attainment dates varying based on the ozone level in the area.
5. The national 1-hour ozone standard was revoked by U.S. EPA on June 15, 2005.
6. In April 1998, the Bay Area was redesignated to attainment for the national 8-hour carbon monoxide standard.
7 In June 2002, CARB established new annual standards for $PM_{2.5}$ and PM_{10}.
8 Statewide VRP Standard (except Lake Tahoe Air Basin): Particles in sufficient amount to produce an extinction coefficient of 0.23 per kilometer when the relative humidity is less than 70 percent. This standard is intended to limit the frequency and severity of visibility impairment due to regional haze and is equivalent to a 10-mile nominal visual range.
9. The 8-hour CA ozone standard was approved by the Air Resources Board on April 28, 2005 and became effective on May 17, 2006.
10. On January 9, 2013, EPA issued a final rule to determine that the Bay Area attains the 24-hour $PM_{2.5}$ national standard. This EPA rule suspends key SIP requirements as long as monitoring data continues to show that the Bay Area attains the standard. Despite this EPA action, the Bay Area will continue to be designated as "nonattainment" for the national 24-hour $PM_{2.5}$ standard until such time as the Air District submits a "redesignation request" and a "maintenance plan" to EPA, and EPA approves the proposed redesignation.
11. To attain this standard, the 3-year average of the 98th percentile of the daily maximum 1-hour average at each monitor within an area must not exceed 0.100ppm (effective January 22, 2010). The US Environmental Protection Agency (EPA) expects to make a designation for the Bay Area by the end of 2017.
12. On June 2, 2010, the U.S. EPA established a new 1-hour SO_2 standard, effective August 23, 2010, which is based on the 3-year average of the annual 99th percentile of 1-hour daily maximum concentrations. The existing 0.030 ppm annual and 0.14 ppm 24-hour SO_2 NAAQS however must continue to be used until one year following U.S. EPA initial designations of the new 1-hour SO_2 NAAQS.
13. CARB has identified lead and vinyl chloride as 'toxic air contaminants' with no threshold level of exposure below which there are no adverse health effects determined.
14. National lead standard, rolling 3-month average: final rule signed October 15, 2008. Final designations effective December 31, 2011.
15. In December 2012, EPA strengthened the annual $PM_{2.5}$ National Ambient Air Quality Standards (NAAQS) from 15.0 to 12.0 micrograms per cubic meter ($\mu g/m^3$). In December 2014, EPA issued final area designations for the 2012 primary annual $PM_{2.5}$ NAAQS. Areas designated "unclassifiable/attainment" must continue to take steps to prevent their air quality from deteriorating to unhealthy levels. The effective date of this standard is April 15, 2015.

Source: Bay Area Air Quality Management District, *Air Quality Standards and Attainment Status*, 2017 http://www.baaqmd.gov/research-and-data/air-quality-standards-and-attainment-status.

3.2 REGIONAL

Bay Area Air Quality Management District

The BAAQMD is the regional agency with jurisdiction over the nine-county region located in the Basin. The Association of Bay Area Governments (ABAG), Metropolitan Transportation Commission (MTC), county transportation agencies, cities and counties, and various nongovernmental organizations also join in the efforts to improve air quality through a variety of programs. These programs include the adoption of regulations and policies, as well as implementation of extensive education and public outreach programs.

Clean Air Plan

Air quality plans developed to meet federal requirements are referred to as State Implementation Plans. The federal and state Clean Air Acts require plans to be developed for areas designated as nonattainment (with the exception of areas designated as nonattainment for the state PM_{10} standard). The BAAQMD is responsible for developing a Clean Air Plan, which guides the region's air quality planning efforts to attain the CAAQS. The BAAQMD adopted the 2017 Clean Air Plan: Spare the Air, Cool the Climate on April 19, 2019, by the BAAQMD.

BAAQMD periodically develops air quality plans that outline the regional strategy to improve air quality and protect the climate. The most recent plan, 2017 Bay Area Clean Air Plan, includes a wide range of control measures designed to reduce emissions of air pollutants and GHGs, including the following

examples that may be relevant to this Project: reduce emissions of toxic air contaminants by adopting more stringent limits and methods for evaluating toxic risks; implement pricing measures to reduce travel demand; accelerate the widespread adoption of electric vehicles; promote the use of clean fuels; promote energy efficiency in both new and existing buildings; and promote the switch from natural gas to electricity for space and water heating in Bay Area buildings.

The 2017 Clean Air Plan provides a regional strategy to protect public health and protect the climate. To protect public health, the plan describes how the BAAQMD will continue progress toward attaining all state and federal air quality standards and eliminating health risk disparities from exposure to air pollution among Bay Area communities. To protect the climate, the 2017 Clean Air Plan defines a vision for transitioning the region to a post-carbon economy needed to achieve ambitious greenhouse gas (GHG) reduction targets for 2030 and 2050 and provides a regional climate protection strategy that will put the Bay Area on a pathway to achieve those GHG reduction targets. The 2017 Clean Air Plan contains district-wide control measures to reduce ozone precursor emissions (i.e., ROG and NO_X), particulate matter, TACs, and greenhouse gas emissions. The Bay Area 2017 Clean Air Plan updates the Bay Area 2010 Clean Air Plan in accordance with the requirements of the California Clean Air Act to implement "all feasible measures" to reduce ozone; provides a control strategy to reduce ozone, PM, TACs, and greenhouse gases in a single, integrated plan; reviews progress in improving air quality in recent years; and establishes emission control measures to be adopted or implemented in both the short term and through 2050.

The 2017 Clean Air Plan includes a wide range of control measures designed to decrease emissions of the air pollutants that are most harmful to Bay Area residents, such as particulate matter, ozone, and toxic air contaminants; to reduce emissions of methane and other "super-GHGs" that are potent climate pollutants in the near-term; and to decrease emissions of carbon dioxide by reducing fossil fuel combustion.

The following BAAQMD rules would limit emissions of air pollutants from construction and operation of the Project:

- Regulation 8, Rule 3 – Architectural Coatings. This rule governs the manufacture, distribution, and sale of architectural coatings and limits the reactive organic gases content in paints and paint solvents. Although this rule does not directly apply to the Project, it does dictate the ROG content of paint available for use during the construction.

- Regulation 8, Rule 15 – Emulsified and Liquid Asphalts. This rule dictates the reactive organic gases content of asphalt available for use during construction through regulating the sale and use of asphalt and limits the ROG content in asphalt. Although this rule does not directly apply to the Project, it does dictate the ROG content of asphalt for use during the construction.

- Regulation 9, Rule 8 – Organic Compounds. This rule limits the emissions of nitrogen oxides and carbon monoxide from stationary internal combustion engines with an output rated by the manufacturer at more than 50 brake horsepower.

BAAQMD prepared an Ozone Attainment Demonstration Plan to satisfy the federal 1-hour ozone planning requirement because of the Air Basin's nonattainment for federal and State ozone standards. The U.S. EPA revoked the 1-hour ozone standard and adopted an 8-hour ozone standard. The BAAQMD will address the new federal 8-hour ozone planning requirements once they are established.

3.3 LOCAL

City of San Leandro 2035 General Plan

The San Leandro General Plan includes the following policies intended to control or reduce air pollution impacts:

Environmental Hazards Element

Goal EH-3 Promote and participate in efforts to improve the region's air quality.

Policy EH-3.1 Clean Air Plan Implementation. Cooperate with the appropriate regional, state, and federal agencies to implement the regional Clean Air Plan and enforce air quality standards.

Policy EH-3.2 Transportation Control Measures. Promote strategies that help improve air quality and reduce greenhouse gas emissions by reducing the necessity of driving. These strategies include more reliable public transportation, carpooling and vanpooling programs, employer transportation demand management (TDM) programs, better provisions for bicyclists and pedestrians, and encouraging mixed use and higher density development around transit stations.

Policy EH-3.3 Land Use Compatibility. Discourage new uses with potential adverse air quality impacts, including the emission of toxic air contaminants and fine particulates, near residential neighborhoods, schools, hospitals, nursing homes, and other locations where public health could potentially be affected.

Policy EH-3.4 Design, Construction, and Operation. Require new development to be designed and constructed in a way that reduces the potential for future air quality problems, such as odors and the emission of any and all air pollutants. This should be done by: (a) Requiring construction and grading practices that minimize airborne dust and particulate matter; (b) Ensuring that best available control technology is used for operations that could generate air pollutants; (c) Encouraging energy conservation and low-polluting energy sources; (d) Promoting landscaping and tree planting to absorb carbon monoxide and other pollutants; and (e) Implementing the complementary strategies to reduce greenhouse gases identified in the Climate Action Plan.

Policy EH-3.9 Alternative Fuel Vehicles. Promote the development of infrastructure which supports the use of alternative fuel (i.e., electric) vehicles, including electric charging stations and preferential parking for electric vehicles.

4 SIGNIFICANCE CRITERIA AND METHODOLOGY

4.1 AIR QUALITY THRESHOLDS

State CEQA Guidelines Appendix G

Based upon the criteria derived from State CEQA Guidelines Appendix G, a project normally would have a significant effect on the environment if it would:

AQ-1 Conflict with or obstruct implementation of the applicable air quality plan?

AQ-2 Result in a cumulatively considerable net increase of any criteria pollutant for which the project region is non-attainment under an applicable federal or state ambient air quality standard?

AQ-3 Expose sensitive receptors to substantial pollutant concentrations?

AQ-4 Result in other emissions (such as those leading to odors) adversely affecting a substantial number of people?

Air Quality Thresholds

Under the California Environmental Quality Act (CEQA), the Bay Area Air Quality Management District (BAAQMD) is an expert commenting agency on air quality within its jurisdiction or impacting its jurisdiction. Under the Federal Clean Air Act (FCAA), the BAAQMD has adopted Federal attainment plans for O_3 and $PM_{2.5}$. The BAAQMD reviews projects to ensure that they would not: (1) cause or contribute to any new violation of any air quality standard; (2) increase the frequency or severity of any existing violation of any air quality standard; or (3) delay timely attainment of any air quality standard or any required interim emission reductions or other milestones of any Federal attainment plan.

The BAAQMD Options and Justification Report (dated October 2009) establishes thresholds based on substantial evidence, and the thresholds are consistent with the thresholds outlined within the 2010/2011 BAAQMD CEQA Air Quality Guidelines (and current 2017 CEQA Air Quality Guidelines). The thresholds have been developed by the BAAQMD in order to attain State and Federal ambient air quality standards. Therefore, projects below these thresholds would not violate an air quality standard and would not contribute substantially to an existing or projected air quality violation.

The BAAQMD's CEQA Air Quality Guidelines provides significance thresholds for both construction and operation of projects. Ultimately the lead agency determines the thresholds of significance for impacts. However, if a project proposes development in excess of the established thresholds, as outlined in Table 5: Bay Area Air Quality Management District Emissions Thresholds, a significant air quality impact may occur and additional analysis is warranted to fully assess the significance of impacts.

Table 5: Bay Area Air Quality Management District Emissions Thresholds

Criteria Air Pollutants and Precursors (Regional)	Construction-Related	Operational-Related	
	Average Daily Emissions (pounds/day)	Average Daily Emission (pounds/day)	Annual Average Emission (tons/year)
Reactive Organic Gases (ROG)	54	54	10
Nitrogen Oxides (NO_X)	54	54	10
Coarse Particulates (PM_{10})	82 (exhaust)	82	15
Fine Particulates ($PM_{2.5}$)	54 (exhaust)	54	10
PM_{10} / $PM_{2.5}$ (fugitive dust)	Best Management Practices	None	
Local CO	None	9.0 ppm (8-hour average) 20.0 ppm (1-hour average)	
Source: Bay Area Air Quality Management District, 2017 CEQA Air Quality Guidelines, 2017.			

4.2 METHODOLOGY

This air quality impact analysis considers construction and operational impacts associated with the Project. Where criteria air pollutant quantification was required, emissions were modeled using the California Emissions Estimator Model (CalEEMod). CalEEMod is a statewide land use emissions computer model designed to quantify potential criteria pollutant emissions associated with both construction and operations from a variety of land use projects. Air quality impacts were assessed according to methodologies recommended by CARB and the BAAQMD.

Construction equipment, trucks, worker vehicles, and ground-disturbing activities associated with Project construction would generate emissions of criteria air pollutants and precursors. Air quality impacts were assessed according to CARB and BAAQMD recommended methodologies. Daily regional construction emissions are estimated by assuming construction occurs at the earliest feasible date (i.e., a conservative estimate of construction activities) and applying off-road, fugitive dust, and on-road emissions factors in CalEEMod. The CalEEMod included BAAQMD dust mitigation measures as well as changes to vehicle trip lengths and fleet mix based on traffic data provided.

Project operations would result in emissions of area sources (consumer products), energy sources (natural gas usage), and mobile sources (motor vehicles from Project generated vehicle trips). Project-generated increases in operational emissions would be predominantly associated with motor vehicle use. The increase of traffic over existing conditions as a result of the Project was obtained from the Project's Transportation Impact Analysis prepared by Kimley-Horn (December 2022). Other operational emissions from area, energy, and stationary sources were quantified in CalEEMod based on land use activity data.

As discussed above, the BAAQMD provides significance thresholds for emissions associated with proposed Project construction and operations. The proposed Project's construction and operational emissions are compared to the daily criteria pollutant emissions significance thresholds in order to determine the significance of the Project's impact on regional air quality.

5 POTENTIAL IMPACTS AND MITIGATION

5.1 AIR QUALITY ANALYSIS

Threshold AQ-1: Would the Project conflict with or obstruct implementation of the applicable air quality plan?

BAAQMD's most recently adopted plan, the Clean Air Plan, in the Basin outlines how the San Francisco area will attain air quality standards, reduce population exposure and protect public health, and reduce GHG emissions.

The Clean Air Plan assumptions for projected air emissions and pollutants in San Leandro are based on the San Leandro 2035 General Plan Land Use Designation Map which designates the Project site use as General Industrial (IG). The Project site is zoned General Industrial (IG). may contain a wide range of manufacturing, transportation, food and beverage processing, technology, warehousing, vehicle storage, office-flex, and distribution uses. The IG zone permits new storage or wholesale/retail distribution facility warehouse uses with the approval of a conditional use permit (CUP). The Project would be consistent with the development assumptions for the land use. The proposed Project consists of 245,200 sf of industrial space consistent with the 2035 General Plan land use designation and would not increase the regional population growth or cause changes in vehicle traffic that would obstruct implementation of the Clean Air Plan in the San Francisco Bay Area Basin.

As described below, construction and operational air quality emissions generated by the proposed Project would not exceed the BAAQMD's emissions thresholds. Since the proposed Project would not exceed these thresholds, the proposed Project would not be considered by the BAAQMD to be a substantial emitter of criteria air pollutants, and would not contribute to any non-attainment areas in the Basin.

The Project is anticipated to generate jobs within the City. Association of Bay Area Governments (ABAG) predicts that job opportunities in San Leandro will grow to be 106,585 by the year 2040. The Project is consistent with the City's General Plan and only slightly larger than the existing industrial use. The Project would generate some new jobs but would be within the ABAG growth projections for the City. Therefore, the Project would not exceed the level of population or housing in regional planning efforts. Additionally, the proposed Project would not significantly affect regional vehicle miles travelled pursuant to the CEQA Guidelines (Section 15206). Therefore, population growth from the Project would be consistent with ABAG's projections for the City and within the City's General Plan.

A project would be consistent with the 2017 Clean Air Plan if it would not exceed the growth assumptions in the plan. The primary method of determining consistency with the 2017 Clean Air Plan growth assumptions is consistency with the General Plan land use designations and zoning designations for the site. It should be noted that the Clean Air Plan does not make a specific assumption for development on the site, but bases assumptions on growth in population, travel, and business, based on socioeconomic forecasts. As noted above, the Project would not exceed the growth assumptions in the General Plan. Therefore, the growth assumptions in the Clean Air Plan would not be exceeded.

In addition, projects are considered consistent with the 2017 Clean Air Plan if they incorporate all applicable and feasible control measures from the 2017 Clean Air Plan and would not disrupt or hinder implementation of 2017 Clean Air Plan control measures.

The Project is consistent with the 2017 Clean Air Plan policies that are applicable to the Project site. As discussed in Table 6: Project Consistency with Applicable Clean Air Plan Control Measures, the Project would comply with City, State, and regional requirements.

Table 6: Project Consistency with Applicable Clean Air Plan Control Measures

Control Measure	Project Consistency
Stationary Source Control Measures	
SS21: New Source Review of Toxic Air Contaminants	**Consistent**. The Project would not include new stationary uses that would generate new sources of TAC that would impact nearby sensitive receptors.
SS25: Coatings, Solvents, Lubricants, Sealants and Adhesives	**Consistent**. The Project would comply with Regulation 8, Rule 3: Architectural Coatings, which would dictate the ROG content of paint available for use during construction.
SS26: Surface Prep and Cleaning Solvent	
SS29: Asphaltic Concrete	**Consistent**. Paving activities associated with the Project would be required to utilize asphalt that does not exceed BAAQMD emission standards in Regulation 8, Rule 15.
SS31: General Particulate Matter Emissions Limitation	**Consistent**. This control measure is implemented by the BAAQMD through Regulation 6, Rule 1. This Rule Limits the quantity of particulate matter in the atmosphere by controlling emission rates, concentration, visible emissions and opacity. The Project would be required to comply with applicable BAAQMD rules.
SS32: Emergency Back-up Generators	**Consistent**. Use of back-up generators by the Project is currently not anticipated. However, if emergency generators were to be installed, they would be required to meet the BAAQMD's emissions standards for back-up generators.
SS34: Wood Smoke	**Consistent**. The Project would comply with BAAQMD Regulation 6, Rule 3 and prohibit the construction of wood burning appliances/ fireplaces.
SS36: Particulate Matter from Trackout	**Consistent**. Mud and dirt that may be tracked out onto the nearby public roads during construction activities would be removed promptly by the contractor based on BAAQMD's requirements.
SS37: Particulate Matter from Asphalt Operations	**Consistent**. Paving and roofing activities associated with the Project would be required to utilize best management practices to minimize the particulate matter created from the transport and application of road and roofing asphalt.
SS38: Fugitive Dust	**Consistent**. Material stockpiling and track out during grading activities as well as smoke and fumes from paving and roofing asphalt operations would be required to utilize best management practices, such as watering exposed surfaces twice a day, covering haul trucks, keeping vehicle speeds on unpaved roads under 15 mph, to minimize the creation of fugitive dust.
SS40: Odors	**Consistent**. The Project is an industrial development and is not anticipated to generate odors. The Project would comply with BAAQMD Regulation 7 to strengthen odor standards and enhance enforceability.

Control Measure	Project Consistency
Transportation Control Measures	
TR2: Trip Reduction Programs	**Consistent**. The Project is an industrial facility that would require on-site employees and delivery vehicle trips. The Project is an infill development, in the vicinity of different land use types, and located within 2,000 feet of transit stops along Davis Street, which would encourage alternative transportation modes. This would help reduce vehicle miles traveled (VMT) and mobile greenhouse gas emissions.
TR8: Ridesharing and Last-Mile Connections	
TR9: Bicycle and Pedestrian Access Facilities	**Consistent**. Bicycle facilities in the area include Doolittle Drive and Adams Avenue which provide Class II bike lanes with buffered striping to separate the vehicle and bike travel way. Most of these corridors feature green paint markings in potential conflict areas and at signalized intersections. Bicycle parking in the surrounding area is limited to private commercial and industrial lots. The proposed Project would include 24 bicycle parking spaces as well as bicycle access on the driveway.
TR10: Land Use Strategies	**Consistent**. This measure is a BAAQMD funding tool to maintain and disseminate information on current climate action plans and other local best practices and collaborate with regional partners to identify innovative funding mechanisms to help local governments address air quality and climate change in their general plans. In addition, the proposed Project site is located within 2,000 feet of transit stops at Westgate Parkway / Davis Street. Therefore, these employment opportunities would be easily accessible via transit, furthering the City's General Plan goals to support a healthy community, reduce traffic congestion and decrease greenhouse gas emissions and energy consumption. The Project would not conflict with implementation of this measure.
TR13: Parking Policies	**Consistent**. The proposed Project would create approximately 204 new parking spaces. The proposed parking is sufficient for the proposed use.
TR19: Medium and Heavy Duty Trucks	**Consistent.** The Project includes a warehousing use that would generate truck trips. However, per the Transportation Impact Analysis (December 2022) prepared for the Project there would be approximately 47 daily truck trips. The Project would not conflict with the implementation of this measure.
TR22: Construction, Freight and Farming Equipment	**Consistent**. The Project would comply through implementation of the BAAQMD standard condition, which requires construction equipment to be properly maintained.
Energy and Climate Control Measures	
EN1: Decarbonize Electricity Generation	**Consistent**. The Project would be constructed in accordance with the latest California Building Code and green building regulations/CalGreen. The proposed development would be constructed in compliance with the City's General Plan Policy 7-9.1 implementing Green Building Standards.
EN2: Decrease Electricity Demand	
Buildings Control Measures	
BL1: Green Buildings	**Consistent**. The Project would be constructed in accordance with the latest California Building Code and green building regulations/CalGreen.
L2: Decarbonize Buildings	

Control Measure	Project Consistency
BL4: Urban Heat Island Mitigation	**Consistent**. The Project would demolish the existing warehouse building. The Project would include landscaping to mitigate the urban heat island effect.
Natural and Working Lands Control Measures	
NW2: Urban Tree Planting	**Not Applicable**. The Project site includes existing warehouse building. The Project includes landscaping with native vegetation and trees.
Waste Management Control Measures	
WA1: Landfills	**Consistent**. The waste service provider for the Project would be required to meet the AB 341 and SB 939, 1374, and 1383 requirements that require waste service providers to divert and recycle waste. Per Cal Green requirements the Project would recycle construction waste.
WA3: Green Waste Diversion	
WA4: Recycling and Waste Reduction	
Water Control Measures	
WR2: Support Water Conservation	**Consistent**. The Project would implement water conservation measures and low flow fixtures as required by Title 24, CalGreen, and the City of San Leandro's Municipal Code Chapter 3.22 Bay-Friendly Landscaping Requirements For City Projects, which includes various specifications for plant types, water features, and irrigation design etc.
Source: BAAQMD, Clean Air Plan, 2017 and Kimley-Horn & Associates, 2023.	

The addition of new jobs as a result of the proposed Project would be within the ABAG growth projections for the City by 2040. Therefore, population growth from the Project would be consistent with ABAG's projections for the City and the City's General Plan. Thus, the Project would not exceed the assumptions in the General Plan or the Clean Air Plan.

Mitigation Measures: No mitigation is required.

Level of Significance: Less than significant impact.

Threshold AQ-2: Would the Project result in a cumulatively considerable net increase of any criteria pollutant for which the project region is non-attainment under an applicable federal or state ambient air quality standard?

Construction Emissions

Project construction activities would generate short-term emissions of criteria air pollutants. The criteria pollutants of primary concern within the Project area include ozone-precursor pollutants (i.e., ROG and NO_X) and PM_{10} and $PM_{2.5}$. Construction-generated emissions are short term and temporary, lasting only while construction activities occur, but would be considered a significant air quality impact if the volume of pollutants generated exceeds the BAAQMD's thresholds of significance.

Construction results in the temporary generation of emissions during demolition, site preparation, site grading, road paving, motor vehicle exhaust associated with construction equipment and worker trips, and the movement of construction equipment, especially on unpaved surfaces. Emissions of airborne particulate matter are largely dependent on the amount of ground disturbance associated with site preparation activities, as well as weather conditions and the appropriate application of water.

The duration of construction activities associated with the Project are estimated to last approximately 17 months, beginning in March 2024 and concluding at the end of July 2025. The Project's construction-related emissions were calculated using the BAAQMD-approved CalEEMod computer program, which is designed to model emissions for land use development projects, based on typical construction requirements. Project demolition and site preparation are anticipated to begin in March 2024 and last approximately two months. Project grading is anticipated to begin in May 2024 and last approximately one months and would import approximately 15,000 cubic yards (cy) of soil. Paving was modeled to be completed July 2025 and Architectural Coating to be completed in July 2025. The exact construction timeline is unknown; however, to be conservative, earlier dates were utilized in the modeling. This approach is conservative given that emissions factors decrease in future years due to regulatory and technological improvements and fleet turnover. See Appendix A for additional information regarding the construction assumptions used in this analysis. The Project's predicted maximum daily construction-related emissions are summarized in Table 7: Construction-Related Emissions.

Table 7: Construction-Related Emissions

Construction Year	Pollutant (maximum pounds per day)[1]					
	Reactive Organic Gases (ROG)	Nitrogen Oxide (NO_x)	Exhaust		Fugitive Dust	
			Coarse Particulate Matter (PM_{10})	Fine Particulate Matter ($PM_{2.5}$)	Coarse Particulate Matter (PM_{10})	Fine Particulate Matter ($PM_{2.5}$)
2024	3.36	37.60	1.39	1.30	8.54	4.36
2025	43.72	18.51	0.62	0.59	3.23	0.88
Maximum	**43.72**	**37.60**	**1.39**	**1.30**	**8.54**	**4.36**
BAAQMD Significance Threshold [2, 3]	*54*	*54*	*82*	*54*	*BMPs*	*BMPs*
Exceed BAAQMD Threshold?	**No**	**No**	**No**	**No**	**N/A**	**N/A**

1. Emissions were calculated using CalEEMod 2020.4.0. Mitigated emissions include compliance with the BAAQMD's Basic Construction Mitigation Measures Recommended for All Projects and the City of San José Environmental Standard Conditions. These measures include the following: water exposed surfaces two times daily; cover haul trucks; clean track outs with wet powered vacuum street sweepers; limit speeds on unpaved roads to 15 miles per hour; complete paving as soon as possible after grading; limit idle times to 5 minutes; properly maintain mobile and other construction equipment; and post a publicly visible sign with contact information to register dust complaints and take corrective action within 48 hours.
2. Bay Area Air Quality Management District, California Environmental Quality Act Air Quality Guidelines, updated May 2017.
3. BMPs = Best Management Practices. The BAAQMD recommends the implementation of all Basic Construction Mitigation Measures, whether or not construction-related emissions exceed applicable significance thresholds. Implementation of Basic Construction Mitigation measures are considered to mitigate fugitive dust emissions to be less than significant.

Source: Refer to the CalEEMod outputs provided in Appendix A.

Fugitive Dust Emissions. Fugitive dust emissions are associated with land clearing, ground excavation, cut-and-fill operations, demolition, and truck travel on unpaved roadways. Dust emissions also vary substantially from day to day, depending on the level of activity, the specific operations, and weather conditions. Fugitive dust emissions may have a substantial, temporary impact on local air quality. In addition, fugitive dust may be a nuisance to those living and working in the Project vicinity. Uncontrolled dust from construction can become a nuisance and potential health hazard to those living and working nearby. The BAAQMD recommends the implementation of all Basic Construction Control Measures, whether or not construction-related emissions exceed applicable significance.

Construction Equipment and Worker Vehicle Exhaust. Exhaust emission factors for typical diesel-powered heavy equipment are based on the CalEEMod program defaults. Variables factored into estimating the total construction emissions include: level of activity, length of construction period, number of pieces/types of equipment in use, site characteristics, weather conditions, number of construction personnel, and the amount of materials to be transported onsite or offsite. Exhaust emissions from construction activities include emissions associated with the transport of machinery and supplies to and from the Project site, emissions produced on site as the equipment is used, and emissions from trucks transporting materials and workers to and from the site. Emitted pollutants would include ROG, NO_X, PM_{10}, and $PM_{2.5}$. The BAAQMD recommends the implementation of all Basic Construction Control Measures, whether or not construction-related emissions exceed applicable significance thresholds. As detailed in Table 7, Project construction emissions would not exceed the BAAQMD thresholds and construction emissions would not result in a potentially significant impact.

ROG Emissions. In addition to gaseous and particulate emissions, the application of asphalt and surface coatings creates ROG emissions, which are O_3 precursors. In accordance with the methodology prescribed by the BAAQMD, the ROG emissions associated with paving have been quantified with CalEEMod. The highest concentration of ROG emissions would be generated from architectural coating beginning in Summer 2025 and lasting approximately three months. This phase includes the interior and exterior painting as well as striping of all paved parking areas and driveways. Paints would be required to comply with BAAQMD Regulation 8, Rule 3: Architectural Coating. Regulation 8, Rule 3 provides specifications on painting practices and regulates the ROG content of paint.

Summary. As shown in Table 7, all criteria pollutant emissions would remain below their respective thresholds. BAAQMD considers fugitive dust emissions to be potentially significant without implementation of the Construction Control Measures which help control fugitive dust. NO_X emissions are primarily generated by engine combustion in construction equipment, haul trucks, and employee commuting, requiring the use of newer construction equipment with better emissions controls would reduce construction-related NO_X emissions. With implementation of BAAQMD's Basic Construction Control Measures, the proposed Project's construction would not worsen ambient air quality, create additional violations of federal and state standards, or delay the Basin's goal for meeting attainment standards. Impacts would be less than significant.

Operational Emissions

Operational emissions for industrial developments are typically generated from mobile sources (burning of fossil fuels in cars); energy sources (cooling and heating); and area sources (landscape equipment and household products). Table 8: Maximum Daily Project Operational Emissions shows that the Project's maximum emissions would not exceed BAAQMD operational thresholds.

Table 8: Maximum Daily Project Operational Emissions

Emissions Source	Pollutant (maximum pounds per day)[1]					
	Reactive Organic Gases (ROG)	Nitrogen Oxides (NO_X)	Exhaust		Fugitive Dust	
			Coarse Particulate Matter (PM_{10})	Fine Particulate Matter ($PM_{2.5}$)	Coarse Particulate Matter (PM_{10})	Fine Particulate Matter ($PM_{2.5}$)
Area	6.14	0.00	0.00	0.00	0.00	0.00
Energy	0.19	1.72	0.13	0.13	0.00	0.00
Mobile	1.88	18.96	0.22	0.21	13.75	3.67
Generators	3.38	9.42	0.50	0.50	0.00	0.00
Off-Road Equipment	1.10	8.58	0.15	0.13	0.00	0.00
Total Project Emissions	**12.69**	**38.68**	**1.00**	**0.97**	**13.75**	**3.67**
BAAQMD Significance Threshold[2]	*54*	*54*	*82*	*54*	*N/A*	*N/A*
BAAQMD Threshold Exceeded?	**No**	**No**	**No**	**No**	**N/A**	**N/A**

1. Emissions were calculated using CalEEMod 2020.4.0.
2. Bay Area Air Quality Management District, *California Environmental Quality Act Air Quality Guidelines*, 2017.

Source: Refer to the CalEEMod outputs provided in Appendix A

Area Source Emissions Area source emissions would be generated due to the use consumer products, architectural coating, and landscaping.

Energy Source Emissions. Energy source emissions would be generated as a result of electricity and natural gas usage associated with the Project. The primary use of electricity and natural gas by the Project would be for space heating and cooling, water heating, ventilation, lighting, appliances, and electronics.

Mobile Sources. Mobile sources are emissions from motor vehicles, including tailpipe and evaporative emissions. Depending upon the pollutant being discussed, the potential air quality impact may be of either regional or local concern. For example, ROG, NO_X, PM_{10}, and $PM_{2.5}$ are all pollutants of regional concern (NO_X and ROG react with sunlight to form O_3 [photochemical smog], and wind currents readily transport PM_{10} and $PM_{2.5}$). However, CO tends to be a localized pollutant, dispersing rapidly at the source.

Project-generated vehicle emissions have been estimated using CalEEMod. Trip generation rates associated with the Project were based on the Project Transportation Impact Analysis prepared by Kimley-Horn (December 2022). Based on the Transportation Impact Analysis, the Project would result in a total of 1,579 new daily vehicle trips. This includes 1,532 auto trips, and 47 heavy-duty truck trips.

Total Operational Emissions. As indicated in Table 8, Project operational emissions would not exceed BAAQMD thresholds. As noted above, the BAAQMD has set its CEQA significance threshold based on the trigger levels for the federal NSR Program and BAAQMD's Regulation 2, Rule 2 for new or modified sources. The NSR Program was created to ensure projects are consistent with attainment of health-based federal ambient air quality standards. The federal ambient air quality standards establish the levels of air quality necessary, with an adequate margin of safety, to protect the public health. Therefore, the Project would not violate any air quality standards or contribute substantially to an existing or projected air quality violation and no criteria pollutant health impacts would occur. Project operational emissions would be less than significant.

Cumulative Short-Term Emissions

The SFBAAB is designated nonattainment for O_3, PM_{10}, and $PM_{2.5}$ for State standards and nonattainment for O_3 and $PM_{2.5}$ for Federal standards. As in Table 7, the Project's construction-related emissions by themselves would not have the potential to exceed the BAAQMD significance thresholds for any of the criteria pollutants. The BAAQMD developed the construction thresholds of significance based on the level above which a project's individual emissions would result in a cumulatively considerable contribution to the Basin's existing air quality conditions. Therefore, a project that exceeds the BAAQMD thresholds would also be a cumulatively considerable contribution to a significant cumulative impact.[2]

Project-related construction emissions would not be cumulatively considerable because they do not exceed BAAQMD project level thresholds. Since BAAQMD thresholds indicate whether an individual project's emissions have the potential to affect cumulative regional air quality, it can be expected that an individual project that exceeds these thresholds would result in a cumulative short-term impact. Project level cumulative construction emissions would not exceed threshold. Furthermore, the BAAQMD recommends Basic Construction Mitigation Measures for all projects whether construction-related emissions exceed the thresholds of significance. Other projects would comply with the recommended measures through individual CEQA review and through compliance with BAAQMD Regulations. Compliance with BAAQMD construction-related mitigation requirements are considered to reduce cumulative impacts at a Basin-wide level. As a result, construction emissions associated with the Project would not result in a cumulatively considerable contribution to significant cumulative air quality impacts.

Cumulative Long-Term Impacts

The BAAQMD has not established separate significance thresholds for cumulative operational emissions. The nature of air emissions is largely a cumulative impact. As a result, no single project is sufficient in size, by itself, to result in nonattainment of ambient air quality standards. Instead, a project's individual emissions contribute to existing cumulatively significant adverse air quality impacts. The BAAQMD developed the operational thresholds of significance based on the level above which a project's individual emissions would result in a cumulatively considerable contribution to the Basin's existing air quality conditions. Therefore, a project that exceeds the BAAQMD operational thresholds would also be a cumulatively considerable contribution to a significant cumulative impact.

As shown in Table 8, the Project's operational emissions would not exceed BAAQMD thresholds. As a result, operational emissions associated with the Project would not result in a cumulatively considerable contribution to significant cumulative air quality impacts.

Level of Significance: Less than significant impact with compliance with BAAQMD's Basic Construction Control Measures and City policies.

[2] In developing thresholds of significance for air pollutants, BAAQMD considered the emission levels for which a project's individual emissions would be cumulatively considerable. If a project exceeds the identified significance thresholds, its emissions would be cumulatively considerable, resulting in significant adverse air quality impacts to the region's existing air quality conditions (BAAQMD CEQA Guidelines page 2-1).

Threshold AQ-3: Would the Project expose sensitive receptors to substantial pollutant concentrations?

Sensitive land uses are defined as facilities or land uses that include members of the population that are particularly sensitive to the effects of air pollutants, such as children, the elderly, and people with illnesses. Examples of these sensitive receptors are residences, schools, hospitals, and daycare centers. The State CEQA Guidelines indicate that a potentially significant impact could occur if a project would expose sensitive receptors to substantial pollutant concentrations.

Construction Toxic Air Contaminants

Construction equipment and associated heavy-duty truck traffic generates diesel exhaust which is a known Toxic Air Contaminants (TAC). Diesel exhaust from construction equipment operating at the site poses a health risk to nearby sensitive receptors. However, the use of diesel-powered construction equipment would be episodic and would occur in various phases throughout the Project site. Construction is subject to and would comply with California regulations (e.g., California Code of Regulations, Title 13, Division 3, Article 1, Chapter 10, Sections 2485 and 2449), which reduce DPM and criteria pollutant emissions from in-use off-road diesel-fueled vehicles and limit the idling of heavy-duty construction equipment to no more than five minutes. These regulations would further reduce nearby sensitive receptors' exposure to temporary and variable DPM emissions.

As noted in the Health Risk Assessment (HRA) prepared by Kimley-Horn (2023), maximum (worst case) $PM_{2.5}$ exhaust construction emissions over the entire construction period were used in AERMOD to approximate construction DPM emissions. See the HRA for additional methodology on the modeling analysis. Risk levels were calculated with the CARB Hotspots Analysis and Reporting Program (HARP) Risk Assessment Standalone Tool (RAST) based on the California Office of Environmental Health Hazard Assessment (OEHHA) guidance document, Air Toxics Hot Spots Program Risk Assessment Guidelines (February 2015). Results of this assessment are summarized in Table 9: Construction Risk.

Table 9: Construction Risk

Exposure Scenarios	Pollutant Concentration ($\mu g/m^3$)	Cancer Risk (per million)	Chronic Hazard	Acute Hazard
Worker	0.028	0.91	0.006	0.219
Recreation	0.001	0.07	<0.001	0.037
Resident	0.004	0.53	0.001	0.071
BAAQMD Threshold	*0.3*	*10*	*1.0*	*1.0*
Threshold Exceeded?	**No**	**No**	**No**	**No**
Refer to Appendix A.				

Maximum concentration of $PM_{2.5}$ during construction would be 0.028 $\mu g/m^3$, which would not exceed the BAAQMD threshold of 0.3 $\mu g/m^3$. The highest calculated carcinogenic risk from Project construction would be 0.91 per one million for workers, 0.07 per million for recreation, and 0.53 per million for residents which would all be below the BAAQMD threshold of 10 in one million. The maximally exposed individuals (MEI) during construction are the closest sensitive receptors to the Project site, which are the residences 500 feet northeast of the Project site, the Metropolitan Golf Links Course 700 feet west of the Project site, and employees at nearby businesses (see sensitive receptor #1 in *Figure 4*). Non-cancer hazards for DPM

would be below BAAQMD thresholds, with a chronic hazard index computed at 0.006 and an acute hazard index of 0.219. Acute and chronic hazards would be below the BAAQMD significance threshold of 1.0. As described above, worst-case construction risk levels based on screening-level modeling (AERMOD) and conservative assumptions would be below the BAAQMD's thresholds for construction and construction risk levels would be less than significant.

Operational Health Risk Analysis

The Project includes the construction of one industrial building. According to the Transportation Impact Analysis (December 2022) prepared by Kimley-Horn, the Project would include passenger vehicles and trucks. The Project is anticipated to generate 1,579 new daily trips. Of which, the Project would generate 47 truck trips. As shown in Table 10: Operational Risk Assessment Results, the calculated carcinogenic risk resulting from the Project is 0.31 per million for workers, 0.15 per million for recreation, and 0.11 per million for residents which are all below the BAAQMD threshold of 10 per million. Acute and chronic hazards also would be below the BAAQMD significance threshold of 1.0. Operational impacts would be less than significant.

Table 10: Operational Risk Assessment Results

Exposure Scenario	Pollutant Concentration (µg/m³)	Maximum Cancer Risk (Risk per Million)	Chronic Noncancer Hazard	Acute Noncancer Hazard
Worker	0.006	0.31	0.0002	0.021
Recreation	0.003	0.15	0.0002	0.011
Resident	0.002	0.11	0.0001	0.005
Threshold	*NA*	*10 in one million*	*1.0*	*1.0*
Exceed Threshold?	**No**	**No**	**No**	**No**

Refer to Appendix A.
1. The maximum cancer would be experienced for workers based on worst-case exposure durations for the Project, 95th percentile breathing rates, and 30-year averaging time.

The pollutant concentrations modeled in AERMOD represent the exposure levels outdoors. The BAAQMD conservatively does not include indoor exposure adjustments for residents. However, the typical person spends the majority of time indoors rather than remaining outdoors in the same location for 24 hours a day.[3] Therefore, the AERMOD outdoor pollutant concentrations are not necessarily representative of actual exposure at the Project site, and tend to overestimate exposure.

Cumulative Health Risk Analysis

In addition to mobile sources, stationary sources within a 1,000-foot radius of the Project site were reviewed using BAAQMD's Stationary Source Screening Analysis Tools. There were two stationary sources located within a 1,000-foot radius of the Project site, as indicated in Table 11: Cumulative Operational Health Risk.

[3] California Air Resources Board Research Division and University of California, Berkeley, *Activity Patterns of California Residents,* May 1991. The study indicates that on average, adults and adolescents in California spent almost 15 hours per day inside their homes, and 6 hours in other indoor locations, for a total of 21 hours (87% of the day). Approximately two hours per day were spent in transit, and just over one hour per day was spent in outdoor locations.

Table 11: Cumulative Operational Health Risk

Emissions Sources	$PM_{2.5}$ (µg/m³)	Cancer Risk (per million	Hazard
Project Mobile Emissions	0.002	0.11	0.0003
Major Street Sources[1]	0.024	1.07	0.096
Highway Sources[1]	0.190	11.55	0.840
Railway Sources[1]	0.008	5.48	0.032
Stationary Sources			
California General Partnership	0.000	0.10	0.000
PCC Structural	0.374	3.30	0.382
Cumulative Health Risk Values	**0.618**	**22.61**	**1.350**
BAAQMD Cumulative Threshold	*0.8*	*100*	*10*
Threshold Exceeded?	**No**	**No**	**No**

1. BAAQMD GIS data.
Source: BAAQMD's Stationary Source Data and GIS Mapping Tools, 2021.

As described above in Table 11, cumulative impacts related to cancer risk and hazard would be less than cumulatively considerable and within acceptable limits. Additionally, cumulative residential $PM_{2.5}$ would not exceed the BAAQMD's cumulative threshold of 0.8 µg/m³. The primary contributor to those concentrations is the existing PCC Structural manufacturing site near the Project area. The facility has a $PM_{2.5}$ (0.374 µg/m³). The PCC Structural facility source represent approximately 60 percent of the total concentrations and are completely unrelated to the Project. The Project represents less than 0.17 percent of total cumulative $PM_{2.5}$ in the Project area. Therefore, the Project's cumulative impacts would be less than significant.

Carbon Monoxide Hotspots

The primary mobile-source criteria pollutant of local concern is carbon monoxide. Concentrations of CO are a direct function of the number of vehicles, length of delay, and traffic flow conditions. Transport of this criteria pollutant is extremely limited; CO disperses rapidly with distance from the source under normal meteorological conditions. Under certain meteorological conditions, however, CO concentrations close to congested intersections that experience high levels of traffic and elevated background concentrations may reach unhealthy levels, affecting nearby sensitive receptors. Areas of high CO concentrations, or "hot spots," are typically associated with intersections that are projected to operate at unacceptable levels of service during the peak commute hours. CO concentration modeling is therefore typically conducted for intersections that are projected to operate at unacceptable levels of service during peak commute hours.

The Basin is designated as in attainment for carbon monoxide (CO). Emissions and ambient concentrations of CO have decreased dramatically in the Basin with the introduction of the catalytic converter in 1975. No exceedances of the CAAQS or NAAQS for CO have been recorded at nearby monitoring stations since 1991. As a result, the BAAQMD screening criteria notes that CO impacts may be determined to be less than significant if a project would not increase traffic volumes at local intersections to more than 44,000 vehicles per hour, or 24,000 vehicles per hour for locations in heavily urban areas, where "urban canyons"

formed by buildings tend to reduce air circulation. Traffic would increase along surrounding roadways during long-term operational activities.

According to the Transportation Impact Analysis prepared for the Project (December 2022), the Project would generate 1,579 daily trips. The Project's effects to existing vehicle distribution and travel speeds would be nominal. For the cumulative plus project scenario analyzed in the traffic analysis, the highest peak hour intersection would be approximately 5,500 vehicles per hour. Therefore, the Project would not involve intersections with more than 44,000 vehicles per hour. As a result, the Project would not have the potential to create a CO hotspot and impacts would be less than significant.

Mitigation Measures: No mitigation is required.

Level of Significance: Less than significant impact.

Threshold AQ-4: Would the Project result in other emissions (such as those leading to odors) adversely affecting a substantial number of people?

Construction

Construction activities associated with the Project may generate detectable odors from heavy duty equipment (i.e., diesel exhaust), as well as from architectural coatings and asphalt off-gassing. Odors generated from the referenced sources are common in the man-made environment and are not known to be substantially offensive to adjacent receptors. Any construction-related odors would be short-term in nature and cease upon Project completion. As a result, impacts to existing adjacent land uses from construction-related odors would be short-term in duration and therefore would be less than significant.

Operational

BAAQMD has established odor screening thresholds for land uses that have the potential to generate substantial odor complaints, including wastewater treatment plants, landfills or transfer stations, composting facilities, confined animal facilities, food manufacturing, and chemical plants. BAAQMD's thresholds for odors are qualitative based on BAAQMD's Regulation 7, Odorous Substances. This rule places general limitations on odorous substances and specific emission limitations on certain odorous compounds.

The Project includes a 245,200 sf warehouse building which is not anticipated to generate odors. None of the above listed odor generating uses are located near the Project site. Impacts would be less than significant.

Mitigation Measures: Compliance with General Plan Policies and applicable state and local law would reduce impacts associated with odors to a less than significant level. No additional site-specific mitigation measures are required.

Level of Significance: Less than significant impact.

5.2 CUMULATIVE SETTING, IMPACTS, AND MITIGATION MEASURES

Cumulative Setting

The cumulative setting for air quality includes the City and the Air Basin. The Air Basin is designated as a nonattainment area for state standards of ozone, PM_{10}, and $PM_{2.5}$ and federal standards of ozone and $PM_{2.5}$, attainment and serious maintenance for federal PM_{10} standards, and is designated as unclassified or attainment for all other pollutants. Cumulative growth in population and vehicle use could inhibit efforts to improve regional air quality and attain the ambient air quality standards.

Cumulative Impacts and Mitigation Measures

The BAAQMD CEQA Air Quality Guidelines do not include separate significance thresholds for cumulative operational emissions. However, with respect to regional air pollution, the development of the Project would result in population growth that is consistent with ABAG projections and the City General Plan. Therefore, the Project would be consistent with the 2017 Clean Air Plan that uses ABAG population forecasts.

As described in threshold AQ-1 above, the Project would also be consistent with the appropriate 2017 Clean Air Plan control measures, which are provided to reduce air quality emissions for the entire Bay Area region. Additionally, the discussion in threshold AQ-2 and AQ-3 address cumulative impacts and demonstrate that the Project would not exceed the applicable BAAQMD thresholds for construction or operations with implementation of Standard Development Requirements. Threshold AQ-4 describes that the Project would not generate emissions that produce a substantial odor. The BAAQMD CEQA Air Quality Guidelines note that the nature of air emissions is largely a cumulative impact. As a result, no single project is sufficient in size by itself to result in nonattainment of ambient air quality standards. Instead, a project's individual emissions contribute to existing cumulatively significant adverse air quality impacts. Consistency with the 2017 Clean Air Plan control measures would ensure that the Project would not cumulatively contribute to air quality impacts in the Basin. Therefore, impacts would be less than significant.

Mitigation Measures: No mitigation is required.

Level of Significance: Less than significant impact.

6 REFERENCES

1. Bay Area Air Quality Management District, *Planning Healthy Places*, 2016.
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3. Bay Area Air Quality Management District, *Clean Air Plan*, 2017.
4. Bay Area Air Quality Management District, *Air Quality Standards and Attainment Status,* 2017.
5. Bay Area Air Quality Management District, *Current Rules*, 2017.
6. California Air Pollution Control Officers Association (CAPCOA), *Health Effects*, 2018.
7. California Air Pollution Control Officers Association (CAPCOA), *Health Risk Assessments for Proposed Land Use Projects*, 2009.
8. California Air Resources Board, *Aerometric Data Analysis and Measurement System (ADAM) Top Four Summaries from 2015 to 2017*, 2018.
9. California Air Resources Board, *Air Quality and Land Use Handbook: A Community Health Perspective*, 2005.
10. California Air Resources Board, *Current Air Quality Standards*, 2016.
11. California Air Resources Board, *Risk Reduction Plan to Reduce Particulate Matter Emissions from Diesel-Fueled Engines and Vehicles*, 2000.
12. City of San Leandro, 2035 *General Plan,* 2016.
13. City of San Leandro, *Municipal Code*, 2022.
14. Federal Highway Administration*, Interim Guidance on Mobile Source Air Toxic Analysis in NEPA Documents,* 2016.
15. Kimley-Horn & Associates, *880 Doolittle Drive Project Transportation Impact Analysis*, December 2022.
16. MS Testing Services, *Asbestos Survey Report,* February 2021.
17. Office of Environmental Health Hazard Assessment, *Air Toxics Hot Spots Program Risk Assessment Guidelines*, 2015.
18. United States Environmental Protection Agency, *National Ambient Air Quality Standards Table*, 2016.
19. United States Environmental Protection Agency, *Nonattainment Areas for Criteria Pollutants*, 2018.
20. United States Environmental Protection Agency, *Policy Assessment for the Review of the Lead National Ambient Air Quality Standards*, 2013.

Appendix A

Air Quality Modeling Data

880 Doolittle Project - Alameda County, Annual

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Applied

880 Doolittle Project

Alameda County, Annual

1.0 Project Characteristics

1.1 Land Usage

Land Uses	Size	Metric	Lot Acreage	Floor Surface Area	Population
Manufacturing	245.20	1000sqft	5.63	245,200.00	0
Parking Lot	401.79	1000sqft	9.22	401,790.00	0

1.2 Other Project Characteristics

Urbanization	Urban	**Wind Speed (m/s)**	2.2	**Precipitation Freq (Days)**	63
Climate Zone	4			**Operational Year**	2025
Utility Company	Pacific Gas and Electric Company				
CO2 Intensity (lb/MWhr)	203.98	**CH4 Intensity (lb/MWhr)**	0.033	**N2O Intensity (lb/MWhr)**	0.004

1.3 User Entered Comments & Non-Default Data

Project Characteristics -

Land Use -

Construction Phase - Anticipated construction schedule

Demolition -

Grading -

Vehicle Trips - Per transportation analysis

Construction Off-road Equipment Mitigation - BAAQMD rule compliance

Water Mitigation -

Waste Mitigation - Per AB 393

Fleet Mix - antcipated fleet mix

Off-road Equipment - crushing and reusing all materials onsite

Date: 12/23/2022 9:32 AM

880 Doolittle Project - Alameda County, Annual

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Applied

Off-road Equipment -

Table Name	Column Name	Default Value	New Value
tblConstDustMitigation	CleanPavedRoadPercentReduction	0	6
tblConstDustMitigation	WaterUnpavedRoadMoistureContent	0	12
tblConstDustMitigation	WaterUnpavedRoadVehicleSpeed	0	15
tblConstructionPhase	NumDays	20.00	66.00
tblConstructionPhase	NumDays	300.00	195.00
tblConstructionPhase	NumDays	20.00	44.00
tblConstructionPhase	NumDays	30.00	46.00
tblConstructionPhase	NumDays	20.00	43.00
tblConstructionPhase	NumDays	10.00	42.00
tblConstructionPhase	PhaseEndDate	9/11/2025	7/31/2025
tblConstructionPhase	PhaseEndDate	7/17/2025	6/2/2025
tblConstructionPhase	PhaseEndDate	3/28/2024	5/1/2024
tblConstructionPhase	PhaseEndDate	5/23/2024	9/2/2024
tblConstructionPhase	PhaseEndDate	8/14/2025	7/31/2025
tblConstructionPhase	PhaseEndDate	4/11/2024	6/28/2024
tblConstructionPhase	PhaseStartDate	8/15/2025	5/1/2025
tblConstructionPhase	PhaseStartDate	5/24/2024	9/3/2024
tblConstructionPhase	PhaseStartDate	4/12/2024	7/1/2024
tblConstructionPhase	PhaseStartDate	7/18/2025	6/3/2025
tblConstructionPhase	PhaseStartDate	3/29/2024	5/2/2024
tblFleetMix	HHD	0.01	0.00
tblFleetMix	HHD	0.01	1.00
tblFleetMix	LDA	0.57	1.00
tblFleetMix	LDA	0.57	0.00
tblFleetMix	LDT1	0.06	0.00
tblFleetMix	LDT1	0.06	0.00

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tblFleetMix	LDT2	0.18	0.00
tblFleetMix	LDT2	0.18	0.00
tblFleetMix	LHD1	0.02	0.00
tblFleetMix	LHD1	0.02	0.00
tblFleetMix	LHD2	5.2110e-003	0.00
tblFleetMix	LHD2	5.2110e-003	0.00
tblFleetMix	MCY	0.02	0.00
tblFleetMix	MCY	0.02	0.00
tblFleetMix	MDV	0.11	0.00
tblFleetMix	MDV	0.11	0.00
tblFleetMix	MH	2.4230e-003	0.00
tblFleetMix	MH	2.4230e-003	0.00
tblFleetMix	MHD	0.01	0.00
tblFleetMix	MHD	0.01	0.00
tblFleetMix	OBUS	7.9000e-004	0.00
tblFleetMix	OBUS	7.9000e-004	0.00
tblFleetMix	SBUS	3.4300e-004	0.00
tblFleetMix	SBUS	3.4300e-004	0.00
tblFleetMix	UBUS	5.6000e-004	0.00
tblFleetMix	UBUS	5.6000e-004	0.00
tblGrading	MaterialExported	0.00	15,000.00
tblOffRoadEquipment	OffRoadEquipmentType		Other Construction Equipment
tblOffRoadEquipment	OffRoadEquipmentType		Tractors/Loaders/Backhoes
tblOffRoadEquipment	OffRoadEquipmentType		Generator Sets
tblVehicleTrips	CC_TL	7.30	0.00
tblVehicleTrips	CC_TTP	28.00	0.00
tblVehicleTrips	CNW_TL	7.30	65.50
tblVehicleTrips	CNW_TTP	13.00	0.00
tblVehicleTrips	CNW_TTP	0.00	100.00

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tblVehicleTrips	CW_TL	9.50	0.00
tblVehicleTrips	CW_TTP	59.00	100.00
tblVehicleTrips	DV_TP	5.00	0.00
tblVehicleTrips	PB_TP	3.00	0.00
tblVehicleTrips	PR_TP	92.00	100.00
tblVehicleTrips	PR_TP	0.00	100.00
tblVehicleTrips	ST_TR	6.42	6.25
tblVehicleTrips	ST_TR	0.00	0.12
tblVehicleTrips	SU_TR	5.09	6.25
tblVehicleTrips	SU_TR	0.00	0.12
tblVehicleTrips	WD_TR	3.93	6.25
tblVehicleTrips	WD_TR	0.00	0.12

2.0 Emissions Summary

2.1 Overall Construction

Unmitigated Construction

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Year	tons/yr										MT/yr					
2024	0.3010	3.0726	2.7774	7.8500e-003	1.1573	0.1162	1.2735	0.3982	0.1080	0.5062	0.0000	714.7053	714.7053	0.1207	0.0385	729.1974
2025	1.5187	1.1797	1.6545	4.2400e-003	0.1718	0.0416	0.2134	0.0466	0.0391	0.0857	0.0000	386.3891	386.3891	0.0482	0.0188	393.1834
Maximum	**1.5187**	**3.0726**	**2.7774**	**7.8500e-003**	**1.1573**	**0.1162**	**1.2735**	**0.3982**	**0.1080**	**0.5062**	**0.0000**	**714.7053**	**714.7053**	**0.1207**	**0.0385**	**729.1974**

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Mitigated Construction

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Year	tons/yr										MT/yr					
2024	0.3010	3.0726	2.7774	7.8500e-003	0.5874	0.1162	0.7036	0.1957	0.1080	0.3037	0.0000	714.7048	714.7048	0.1207	0.0385	729.1969
2025	1.5187	1.1797	1.6545	4.2400e-003	0.1633	0.0416	0.2049	0.0445	0.0391	0.0836	0.0000	386.3888	386.3888	0.0482	0.0188	393.1832
Maximum	**1.5187**	**3.0726**	**2.7774**	**7.8500e-003**	**0.5874**	**0.1162**	**0.7036**	**0.1957**	**0.1080**	**0.3037**	**0.0000**	**714.7048**	**714.7048**	**0.1207**	**0.0385**	**729.1969**

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio-CO2	Total CO2	CH4	N20	CO2e
Percent Reduction	**0.00**	**0.00**	**0.00**	**0.00**	**43.52**	**0.00**	**38.90**	**46.01**	**0.00**	**34.57**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**

Quarter	Start Date	End Date	Maximum Unmitigated ROG + NOX (tons/quarter)	Maximum Mitigated ROG + NOX (tons/quarter)
1	3-1-2024	5-31-2024	1.2305	1.2305
2	6-1-2024	8-31-2024	1.2057	1.2057
3	9-1-2024	11-30-2024	0.6921	0.6921
4	12-1-2024	2-28-2025	0.6492	0.6492
5	3-1-2025	5-31-2025	1.1164	1.1164
6	6-1-2025	8-31-2025	1.1594	1.1594
		Highest	1.2305	1.2305

2.2 Overall Operational

Unmitigated Operational

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	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Area	1.1204	5.0000e-005	5.9300e-003	0.0000		2.0000e-005	2.0000e-005		2.0000e-005	2.0000e-005	0.0000	0.0116	0.0116	3.0000e-005	0.0000	0.0123
Energy	0.0346	0.3147	0.2643	1.8900e-003		0.0239	0.0239		0.0239	0.0239	0.0000	539.3348	539.3348	0.0384	0.0101	543.3162
Mobile	0.3020	3.6011	4.7322	0.0293	2.4117	0.0400	2.4517	0.6455	0.0380	0.6835	0.0000	2,820.4217	2,820.4217	0.0667	0.2752	2,904.0914
Waste						0.0000	0.0000		0.0000	0.0000	61.7194	0.0000	61.7194	3.6475	0.0000	152.9072
Water						0.0000	0.0000		0.0000	0.0000	17.9891	28.3879	46.3770	1.8522	0.0442	105.8498
Total	**1.4570**	**3.9158**	**5.0025**	**0.0312**	**2.4117**	**0.0640**	**2.4757**	**0.6455**	**0.0619**	**0.7075**	**79.7085**	**3,388.1560**	**3,467.8645**	**5.6049**	**0.3295**	**3,706.1770**

Mitigated Operational

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Area	1.1204	5.0000e-005	5.9300e-003	0.0000		2.0000e-005	2.0000e-005		2.0000e-005	2.0000e-005	0.0000	0.0116	0.0116	3.0000e-005	0.0000	0.0123
Energy	0.0346	0.3147	0.2643	1.8900e-003		0.0239	0.0239		0.0239	0.0239	0.0000	539.3348	539.3348	0.0384	0.0101	543.3162
Mobile	0.3020	3.6011	4.7322	0.0293	2.4117	0.0400	2.4517	0.6455	0.0380	0.6835	0.0000	2,820.4217	2,820.4217	0.0667	0.2752	2,904.0914
Waste						0.0000	0.0000		0.0000	0.0000	30.8597	0.0000	30.8597	1.8238	0.0000	76.4536
Water						0.0000	0.0000		0.0000	0.0000	14.3913	22.7103	37.1016	1.4818	0.0354	84.6799

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Total	**1.4570**	**3.9158**	**5.0025**	**0.0312**	**2.4117**	**0.0640**	**2.4757**	**0.6455**	**0.0619**	**0.7075**	**45.2510**	**3,382.4784**	**3,427.7294**	**3.4107**	**0.3207**	**3,608.5534**

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio-CO2	Total CO2	CH4	N20	CO2e
Percent Reduction	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**43.23**	**0.17**	**1.16**	**39.15**	**2.68**	**2.63**

3.0 Construction Detail

Construction Phase

Phase Number	Phase Name	Phase Type	Start Date	End Date	Num Days Week	Num Days	Phase Description
1	Demolition	Demolition	3/1/2024	5/1/2024	5	44	
2	Site Preparation	Site Preparation	5/2/2024	6/28/2024	5	42	
3	Grading	Grading	7/1/2024	9/2/2024	5	46	
4	Building Construction	Building Construction	9/3/2024	6/2/2025	5	195	
5	Paving	Paving	6/3/2025	7/31/2025	5	43	
6	Architectural Coating	Architectural Coating	5/1/2025	7/31/2025	5	66	

Acres of Grading (Site Preparation Phase): 63

Acres of Grading (Grading Phase): 138

Acres of Paving: 9.22

Residential Indoor: 0; Residential Outdoor: 0; Non-Residential Indoor: 367,800; Non-Residential Outdoor: 122,600; Striped Parking Area: 24,107

OffRoad Equipment

Phase Name	Offroad Equipment Type	Amount	Usage Hours	Horse Power	Load Factor
Demolition	Concrete/Industrial Saws	1	8.00	81	0.73
Demolition	Excavators	3	8.00	158	0.38
Demolition	Rubber Tired Dozers	2	8.00	247	0.40

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Site Preparation	Rubber Tired Dozers	3	8.00	247	0.40
Site Preparation	Tractors/Loaders/Backhoes	4	8.00	97	0.37
Grading	Excavators	2	8.00	158	0.38
Grading	Graders	1	8.00	187	0.41
Grading	Rubber Tired Dozers	1	8.00	247	0.40
Grading	Tractors/Loaders/Backhoes	2	8.00	97	0.37
Building Construction	Cranes	1	7.00	231	0.29
Building Construction	Forklifts	3	8.00	89	0.20
Building Construction	Generator Sets	1	8.00	84	0.74
Building Construction	Tractors/Loaders/Backhoes	3	7.00	97	0.37
Building Construction	Welders	1	8.00	46	0.45
Paving	Pavers	2	8.00	130	0.42
Paving	Paving Equipment	2	8.00	132	0.36
Paving	Rollers	2	8.00	80	0.38
Architectural Coating	Air Compressors	1	6.00	78	0.48
Grading	Scrapers	2	8.00	367	0.48
Demolition	Other Construction Equipment	1	8.00	172	0.42
Demolition	Tractors/Loaders/Backhoes	1	8.00	97	0.37
Demolition	Generator Sets	1	8.00	84	0.74

Trips and VMT

Phase Name	Offroad Equipment Count	Worker Trip Number	Vendor Trip Number	Hauling Trip Number	Worker Trip Length	Vendor Trip Length	Hauling Trip Length	Worker Vehicle Class	Vendor Vehicle Class	Hauling Vehicle Class
Demolition	9	23.00	0.00	3,283.00	10.80	7.30	20.00	LD_Mix	HDT_Mix	HHDT
Site Preparation	7	18.00	0.00	0.00	10.80	7.30	20.00	LD_Mix	HDT_Mix	HHDT
Grading	8	20.00	0.00	1,875.00	10.80	7.30	20.00	LD_Mix	HDT_Mix	HHDT
Building Construction	9	272.00	106.00	0.00	10.80	7.30	20.00	LD_Mix	HDT_Mix	HHDT
Paving	6	15.00	0.00	0.00	10.80	7.30	20.00	LD_Mix	HDT_Mix	HHDT

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Architectural Coating	1	54.00	0.00	0.00	10.80	7.30	20.00	LD_Mix	HDT_Mix	HHDT

3.1 Mitigation Measures Construction

Replace Ground Cover

Water Exposed Area

Water Unpaved Roads

Reduce Vehicle Speed on Unpaved Roads

Clean Paved Roads

3.2 Demolition - 2024

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Fugitive Dust					0.3552	0.0000	0.3552	0.0538	0.0000	0.0538	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	0.0661	0.6178	0.6516	1.2000e-003		0.0287	0.0287		0.0268	0.0268	0.0000	105.1884	105.1884	0.0272	0.0000	105.8693
Total	**0.0661**	**0.6178**	**0.6516**	**1.2000e-003**	**0.3552**	**0.0287**	**0.3839**	**0.0538**	**0.0268**	**0.0806**	**0.0000**	**105.1884**	**105.1884**	**0.0272**	**0.0000**	**105.8693**

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e

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Category	tons/yr										MT/yr					
Hauling	3.3800e-003	0.2166	0.0492	9.6000e-004	0.0278	1.8600e-003	0.0297	7.6600e-003	1.7800e-003	9.4300e-003	0.0000	94.2476	94.2476	2.0400e-003	0.0149	98.7367
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	1.2400e-003	8.1000e-004	0.0105	3.0000e-005	4.0000e-003	2.0000e-005	4.0200e-003	1.0600e-003	2.0000e-005	1.0800e-003	0.0000	3.0764	3.0764	8.0000e-005	8.0000e-005	3.1028
Total	**4.6200e-003**	**0.2175**	**0.0597**	**9.9000e-004**	**0.0318**	**1.8800e-003**	**0.0337**	**8.7200e-003**	**1.8000e-003**	**0.0105**	**0.0000**	**97.3240**	**97.3240**	**2.1200e-003**	**0.0150**	**101.8395**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Fugitive Dust					0.1519	0.0000	0.1519	0.0230	0.0000	0.0230	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	0.0661	0.6178	0.6516	1.2000e-003		0.0287	0.0287		0.0268	0.0268	0.0000	105.1882	105.1882	0.0272	0.0000	105.8692
Total	**0.0661**	**0.6178**	**0.6516**	**1.2000e-003**	**0.1519**	**0.0287**	**0.1805**	**0.0230**	**0.0268**	**0.0498**	**0.0000**	**105.1882**	**105.1882**	**0.0272**	**0.0000**	**105.8692**

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e

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Category	tons/yr										MT/yr					
Hauling	3.3800e-003	0.2166	0.0492	9.6000e-004	0.0266	1.8600e-003	0.0284	7.3500e-003	1.7800e-003	9.1200e-003	0.0000	94.2476	94.2476	2.0400e-003	0.0149	98.7367
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	1.2400e-003	8.1000e-004	0.0105	3.0000e-005	3.7900e-003	2.0000e-005	3.8100e-003	1.0100e-003	2.0000e-005	1.0300e-003	0.0000	3.0764	3.0764	8.0000e-005	8.0000e-005	3.1028
Total	**4.6200e-003**	**0.2175**	**0.0597**	**9.9000e-004**	**0.0304**	**1.8800e-003**	**0.0322**	**8.3600e-003**	**1.8000e-003**	**0.0102**	**0.0000**	**97.3240**	**97.3240**	**2.1200e-003**	**0.0150**	**101.8395**

3.3 Site Preparation - 2024

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Fugitive Dust					0.4128	0.0000	0.4128	0.2122	0.0000	0.2122	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	0.0559	0.5707	0.3851	8.0000e-004		0.0258	0.0258		0.0238	0.0238	0.0000	70.2598	70.2598	0.0227	0.0000	70.8279
Total	**0.0559**	**0.5707**	**0.3851**	**8.0000e-004**	**0.4128**	**0.0258**	**0.4386**	**0.2122**	**0.0238**	**0.2359**	**0.0000**	**70.2598**	**70.2598**	**0.0227**	**0.0000**	**70.8279**

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e

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Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	9.2000e-004	6.1000e-004	7.8700e-003	2.0000e-005	2.9900e-003	1.0000e-005	3.0000e-003	8.0000e-004	1.0000e-005	8.1000e-004	0.0000	2.2982	2.2982	6.0000e-005	6.0000e-005	2.3179
Total	**9.2000e-004**	**6.1000e-004**	**7.8700e-003**	**2.0000e-005**	**2.9900e-003**	**1.0000e-005**	**3.0000e-003**	**8.0000e-004**	**1.0000e-005**	**8.1000e-004**	**0.0000**	**2.2982**	**2.2982**	**6.0000e-005**	**6.0000e-005**	**2.3179**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Fugitive Dust					0.1765	0.0000	0.1765	0.0907	0.0000	0.0907	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	0.0559	0.5707	0.3851	8.0000e-004		0.0258	0.0258		0.0238	0.0238	0.0000	70.2598	70.2598	0.0227	0.0000	70.8278
Total	**0.0559**	**0.5707**	**0.3851**	**8.0000e-004**	**0.1765**	**0.0258**	**0.2023**	**0.0907**	**0.0238**	**0.1144**	**0.0000**	**70.2598**	**70.2598**	**0.0227**	**0.0000**	**70.8278**

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e

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Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	9.2000e-004	6.1000e-004	7.8700e-003	2.0000e-005	2.8300e-003	1.0000e-005	2.8500e-003	7.6000e-004	1.0000e-005	7.7000e-004	0.0000	2.2982	2.2982	6.0000e-005	6.0000e-005	2.3179
Total	**9.2000e-004**	**6.1000e-004**	**7.8700e-003**	**2.0000e-005**	**2.8300e-003**	**1.0000e-005**	**2.8500e-003**	**7.6000e-004**	**1.0000e-005**	**7.7000e-004**	**0.0000**	**2.2982**	**2.2982**	**6.0000e-005**	**6.0000e-005**	**2.3179**

3.4 Grading - 2024

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Fugitive Dust					0.2125	0.0000	0.2125	0.0842	0.0000	0.0842	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	0.0740	0.7447	0.6376	1.4300e-003		0.0307	0.0307		0.0283	0.0283	0.0000	125.3949	125.3949	0.0406	0.0000	126.4088
Total	**0.0740**	**0.7447**	**0.6376**	**1.4300e-003**	**0.2125**	**0.0307**	**0.2432**	**0.0842**	**0.0283**	**0.1124**	**0.0000**	**125.3949**	**125.3949**	**0.0406**	**0.0000**	**126.4088**

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e

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EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Applied

Category	tons/yr										MT/yr					
Hauling	1.9300e-003	0.1237	0.0281	5.5000e-004	0.0159	1.0600e-003	0.0170	4.3700e-003	1.0100e-003	5.3900e-003	0.0000	53.8271	53.8271	1.1700e-003	8.5100e-003	56.3909
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	1.1200e-003	7.4000e-004	9.5800e-003	3.0000e-005	3.6400e-003	2.0000e-005	3.6600e-003	9.7000e-004	2.0000e-005	9.8000e-004	0.0000	2.7967	2.7967	8.0000e-005	7.0000e-005	2.8208
Total	**3.0500e-003**	**0.1245**	**0.0377**	**5.8000e-004**	**0.0195**	**1.0800e-003**	**0.0206**	**5.3400e-003**	**1.0300e-003**	**6.3700e-003**	**0.0000**	**56.6238**	**56.6238**	**1.2500e-003**	**8.5800e-003**	**59.2116**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Fugitive Dust					0.0909	0.0000	0.0909	0.0360	0.0000	0.0360	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	0.0740	0.7447	0.6376	1.4300e-003		0.0307	0.0307		0.0283	0.0283	0.0000	125.3948	125.3948	0.0406	0.0000	126.4086
Total	**0.0740**	**0.7447**	**0.6376**	**1.4300e-003**	**0.0909**	**0.0307**	**0.1216**	**0.0360**	**0.0283**	**0.0642**	**0.0000**	**125.3948**	**125.3948**	**0.0406**	**0.0000**	**126.4086**

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e

880 Doolittle Project - Alameda County, Annual

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Applied

Category	tons/yr										MT/yr					
Hauling	1.9300e-003	0.1237	0.0281	5.5000e-004	0.0152	1.0600e-003	0.0162	4.2000e-003	1.0100e-003	5.2100e-003	0.0000	53.8271	53.8271	1.1700e-003	8.5100e-003	56.3909
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	1.1200e-003	7.4000e-004	9.5800e-003	3.0000e-005	3.4500e-003	2.0000e-005	3.4700e-003	9.2000e-004	2.0000e-005	9.4000e-004	0.0000	2.7967	2.7967	8.0000e-005	7.0000e-005	2.8208
Total	**3.0500e-003**	**0.1245**	**0.0377**	**5.8000e-004**	**0.0186**	**1.0800e-003**	**0.0197**	**5.1200e-003**	**1.0300e-003**	**6.1500e-003**	**0.0000**	**56.6238**	**56.6238**	**1.2500e-003**	**8.5800e-003**	**59.2116**

3.5 Building Construction - 2024

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Off-Road	0.0633	0.5781	0.6952	1.1600e-003		0.0264	0.0264		0.0248	0.0248	0.0000	99.6951	99.6951	0.0236	0.0000	100.2845
Total	**0.0633**	**0.5781**	**0.6952**	**1.1600e-003**		**0.0264**	**0.0264**		**0.0248**	**0.0248**	**0.0000**	**99.6951**	**99.6951**	**0.0236**	**0.0000**	**100.2845**

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					

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EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Applied

Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	4.5000e-003	0.2001	0.0591	9.0000e-004	0.0299	1.2100e-003	0.0312	8.6600e-003	1.1600e-003	9.8200e-003	0.0000	86.8109	86.8109	1.2000e-003	0.0130	90.7169
Worker	0.0286	0.0187	0.2436	7.6000e-004	0.0925	4.6000e-004	0.0929	0.0246	4.2000e-004	0.0250	0.0000	71.1101	71.1101	1.9500e-003	1.8900e-003	71.7209
Total	**0.0331**	**0.2188**	**0.3027**	**1.6600e-003**	**0.1224**	**1.6700e-003**	**0.1241**	**0.0333**	**1.5800e-003**	**0.0348**	**0.0000**	**157.9210**	**157.9210**	**3.1500e-003**	**0.0149**	**162.4378**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Off-Road	0.0633	0.5781	0.6952	1.1600e-003		0.0264	0.0264		0.0248	0.0248	0.0000	99.6950	99.6950	0.0236	0.0000	100.2844
Total	**0.0633**	**0.5781**	**0.6952**	**1.1600e-003**		**0.0264**	**0.0264**		**0.0248**	**0.0248**	**0.0000**	**99.6950**	**99.6950**	**0.0236**	**0.0000**	**100.2844**

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Applied

Vendor	4.5000e-003	0.2001	0.0591	9.0000e-004	0.0287	1.2100e-003	0.0299	8.3500e-003	1.1600e-003	9.5100e-003	0.0000	86.8109	86.8109	1.2000e-003	0.0130	90.7169
Worker	0.0286	0.0187	0.2436	7.6000e-004	0.0877	4.6000e-004	0.0881	0.0234	4.2000e-004	0.0239	0.0000	71.1101	71.1101	1.9500e-003	1.8900e-003	71.7209
Total	**0.0331**	**0.2188**	**0.3027**	**1.6600e-003**	**0.1164**	**1.6700e-003**	**0.1180**	**0.0318**	**1.5800e-003**	**0.0334**	**0.0000**	**157.9210**	**157.9210**	**3.1500e-003**	**0.0149**	**162.4378**

3.5 Building Construction - 2025

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Off-Road	0.0745	0.6796	0.8766	1.4700e-003		0.0288	0.0288		0.0271	0.0271	0.0000	126.3961	126.3961	0.0297	0.0000	127.1389
Total	**0.0745**	**0.6796**	**0.8766**	**1.4700e-003**		**0.0288**	**0.0288**		**0.0271**	**0.0271**	**0.0000**	**126.3961**	**126.3961**	**0.0297**	**0.0000**	**127.1389**

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	5.5800e-003	0.2534	0.0737	1.1200e-003	0.0380	1.5400e-003	0.0395	0.0110	1.4700e-003	0.0125	0.0000	108.0674	108.0674	1.5200e-003	0.0162	112.9324

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EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Applied

Worker	0.0340	0.0214	0.2899	9.3000e-004	0.1172	5.6000e-004	0.1178	0.0312	5.1000e-004	0.0317	0.0000	87.9697	87.9697	2.2400e-003	2.2400e-003	88.6940
Total	**0.0396**	**0.2748**	**0.3636**	**2.0500e-003**	**0.1552**	**2.1000e-003**	**0.1573**	**0.0422**	**1.9800e-003**	**0.0441**	**0.0000**	**196.0371**	**196.0371**	**3.7600e-003**	**0.0184**	**201.6263**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Off-Road	0.0745	0.6796	0.8766	1.4700e-003		0.0288	0.0288		0.0271	0.0271	0.0000	126.3960	126.3960	0.0297	0.0000	127.1388
Total	**0.0745**	**0.6796**	**0.8766**	**1.4700e-003**		**0.0288**	**0.0288**		**0.0271**	**0.0271**	**0.0000**	**126.3960**	**126.3960**	**0.0297**	**0.0000**	**127.1388**

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	5.5800e-003	0.2534	0.0737	1.1200e-003	0.0364	1.5400e-003	0.0379	0.0106	1.4700e-003	0.0121	0.0000	108.0674	108.0674	1.5200e-003	0.0162	112.9324
Worker	0.0340	0.0214	0.2899	9.3000e-004	0.1111	5.6000e-004	0.1117	0.0297	5.1000e-004	0.0302	0.0000	87.9697	87.9697	2.2400e-003	2.2400e-003	88.6940

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Applied

Total	**0.0396**	**0.2748**	**0.3636**	**2.0500e-003**	**0.1475**	**2.1000e-003**	**0.1496**	**0.0403**	**1.9800e-003**	**0.0423**	**0.0000**	**196.0371**	**196.0371**	**3.7600e-003**	**0.0184**	**201.6263**

3.6 Paving - 2025

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Off-Road	0.0197	0.1845	0.3134	4.9000e-004		9.0000e-003	9.0000e-003		8.2800e-003	8.2800e-003	0.0000	43.0414	43.0414	0.0139	0.0000	43.3894
Paving	0.0121					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Total	**0.0318**	**0.1845**	**0.3134**	**4.9000e-004**		**9.0000e-003**	**9.0000e-003**		**8.2800e-003**	**8.2800e-003**	**0.0000**	**43.0414**	**43.0414**	**0.0139**	**0.0000**	**43.3894**

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	7.4000e-004	4.7000e-004	6.3100e-003	2.0000e-005	2.5500e-003	1.0000e-005	2.5600e-003	6.8000e-004	1.0000e-005	6.9000e-004	0.0000	1.9138	1.9138	5.0000e-005	5.0000e-005	1.9296

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EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Applied

Total	**7.4000e-004**	**4.7000e-004**	**6.3100e-003**	**2.0000e-005**	**2.5500e-003**	**1.0000e-005**	**2.5600e-003**	**6.8000e-004**	**1.0000e-005**	**6.9000e-004**	**0.0000**	**1.9138**	**1.9138**	**5.0000e-005**	**5.0000e-005**	**1.9296**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Off-Road	0.0197	0.1845	0.3134	4.9000e-004		9.0000e-003	9.0000e-003		8.2800e-003	8.2800e-003	0.0000	43.0414	43.0414	0.0139	0.0000	43.3894
Paving	0.0121					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Total	**0.0318**	**0.1845**	**0.3134**	**4.9000e-004**		**9.0000e-003**	**9.0000e-003**		**8.2800e-003**	**8.2800e-003**	**0.0000**	**43.0414**	**43.0414**	**0.0139**	**0.0000**	**43.3894**

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	7.4000e-004	4.7000e-004	6.3100e-003	2.0000e-005	2.4200e-003	1.0000e-005	2.4300e-003	6.5000e-004	1.0000e-005	6.6000e-004	0.0000	1.9138	1.9138	5.0000e-005	5.0000e-005	1.9296

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EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Applied

Total	**7.4000e-004**	**4.7000e-004**	**6.3100e-003**	**2.0000e-005**	**2.4200e-003**	**1.0000e-005**	**2.4300e-003**	**6.5000e-004**	**1.0000e-005**	**6.6000e-004**	**0.0000**	**1.9138**	**1.9138**	**5.0000e-005**	**5.0000e-005**	**1.9296**

3.7 Architectural Coating - 2025

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Archit. Coating	1.3624					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	5.6400e-003	0.0378	0.0597	1.0000e-004		1.7000e-003	1.7000e-003		1.7000e-003	1.7000e-003	0.0000	8.4257	8.4257	4.6000e-004	0.0000	8.4372
Total	**1.3680**	**0.0378**	**0.0597**	**1.0000e-004**		**1.7000e-003**	**1.7000e-003**		**1.7000e-003**	**1.7000e-003**	**0.0000**	**8.4257**	**8.4257**	**4.6000e-004**	**0.0000**	**8.4372**

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	4.0900e-003	2.5700e-003	0.0348	1.1000e-004	0.0141	7.0000e-005	0.0142	3.7500e-003	6.0000e-005	3.8100e-003	0.0000	10.5749	10.5749	2.7000e-004	2.7000e-004	10.6619

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EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Applied

Total	**4.0900e-003**	**2.5700e-003**	**0.0348**	**1.1000e-004**	**0.0141**	**7.0000e-005**	**0.0142**	**3.7500e-003**	**6.0000e-005**	**3.8100e-003**	**0.0000**	**10.5749**	**10.5749**	**2.7000e-004**	**2.7000e-004**	**10.6619**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Archit. Coating	1.3624					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	5.6400e-003	0.0378	0.0597	1.0000e-004		1.7000e-003	1.7000e-003		1.7000e-003	1.7000e-003	0.0000	8.4257	8.4257	4.6000e-004	0.0000	8.4372
Total	**1.3680**	**0.0378**	**0.0597**	**1.0000e-004**		**1.7000e-003**	**1.7000e-003**		**1.7000e-003**	**1.7000e-003**	**0.0000**	**8.4257**	**8.4257**	**4.6000e-004**	**0.0000**	**8.4372**

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	4.0900e-003	2.5700e-003	0.0348	1.1000e-004	0.0134	7.0000e-005	0.0134	3.5700e-003	6.0000e-005	3.6300e-003	0.0000	10.5749	10.5749	2.7000e-004	2.7000e-004	10.6619

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EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Applied

Total	**4.0900e-003**	**2.5700e-003**	**0.0348**	**1.1000e-004**	**0.0134**	**7.0000e-005**	**0.0134**	**3.5700e-003**	**6.0000e-005**	**3.6300e-003**	**0.0000**	**10.5749**	**10.5749**	**2.7000e-004**	**2.7000e-004**	**10.6619**

4.0 Operational Detail - Mobile

4.1 Mitigation Measures Mobile

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Mitigated	0.3020	3.6011	4.7322	0.0293	2.4117	0.0400	2.4517	0.6455	0.0380	0.6835	0.0000	2,820.4217	2,820.4217	0.0667	0.2752	2,904.0914
Unmitigated	0.3020	3.6011	4.7322	0.0293	2.4117	0.0400	2.4517	0.6455	0.0380	0.6835	0.0000	2,820.4217	2,820.4217	0.0667	0.2752	2,904.0914

4.2 Trip Summary Information

	Average Daily Trip Rate			Unmitigated	Mitigated
Land Use	Weekday	Saturday	Sunday	Annual VMT	Annual VMT
Manufacturing	1,532.50	1,532.50	1532.50	5,299,385	5,299,385
Parking Lot	47.01	47.01	47.01	1,120,799	1,120,799
Total	1,579.51	1,579.51	1,579.51	6,420,184	6,420,184

4.3 Trip Type Information

	Miles			Trip %			Trip Purpose %		
Land Use	H-W or C-W	H-S or C-C	H-O or C-NW	H-W or C-W	H-S or C-C	H-O or C-NW	Primary	Diverted	Pass-by

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Applied

Manufacturing	9.50	7.30	7.30	100.00	0.00	0.00	100	0	0
Parking Lot	0.00	0.00	65.50	0.00	0.00	100.00	100	0	0

4.4 Fleet Mix

Land Use	LDA	LDT1	LDT2	MDV	LHD1	LHD2	MHD	HHD	OBUS	UBUS	MCY	SBUS	MH
Manufacturing	1.000000	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000
Parking Lot	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	1.000000	0.000000	0.000000	0.000000	0.000000	0.000000

5.0 Energy Detail

Historical Energy Use: N

5.1 Mitigation Measures Energy

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Electricity Mitigated						0.0000	0.0000		0.0000	0.0000	0.0000	196.7746	196.7746	0.0318	3.8600e-003	198.7204
Electricity Unmitigated						0.0000	0.0000		0.0000	0.0000	0.0000	196.7746	196.7746	0.0318	3.8600e-003	198.7204
NaturalGas Mitigated	0.0346	0.3147	0.2643	1.8900e-003		0.0239	0.0239		0.0239	0.0239	0.0000	342.5602	342.5602	6.5700e-003	6.2800e-003	344.5959
NaturalGas Unmitigated	0.0346	0.3147	0.2643	1.8900e-003		0.0239	0.0239		0.0239	0.0239	0.0000	342.5602	342.5602	6.5700e-003	6.2800e-003	344.5959

5.2 Energy by Land Use - NaturalGas

Unmitigated

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EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Applied

	NaturalGas Use	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Land Use	kBTU/yr	tons/yr										MT/yr					
Manufacturing	6.41934e+006	0.0346	0.3147	0.2643	1.8900e-003		0.0239	0.0239		0.0239	0.0239	0.0000	342.5602	342.5602	6.5700e-003	6.2800e-003	344.5959
Parking Lot	0	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Total		**0.0346**	**0.3147**	**0.2643**	**1.8900e-003**		**0.0239**	**0.0239**		**0.0239**	**0.0239**	**0.0000**	**342.5602**	**342.5602**	**6.5700e-003**	**6.2800e-003**	**344.5959**

Mitigated

	NaturalGas Use	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Land Use	kBTU/yr	tons/yr										MT/yr					
Manufacturing	6.41934e+006	0.0346	0.3147	0.2643	1.8900e-003		0.0239	0.0239		0.0239	0.0239	0.0000	342.5602	342.5602	6.5700e-003	6.2800e-003	344.5959
Parking Lot	0	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Total		**0.0346**	**0.3147**	**0.2643**	**1.8900e-003**		**0.0239**	**0.0239**		**0.0239**	**0.0239**	**0.0000**	**342.5602**	**342.5602**	**6.5700e-003**	**6.2800e-003**	**344.5959**

5.3 Energy by Land Use - Electricity

Unmitigated

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EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Applied

	Electricity Use	Total CO2	CH4	N2O	CO2e
Land Use	kWh/yr	MT/yr			
Manufacturing	1.98612e+006	183.7633	0.0297	3.6000e-003	185.5804
Parking Lot	140627	13.0113	2.1000e-003	2.6000e-004	13.1400
Total		**196.7746**	**0.0318**	**3.8600e-003**	**198.7204**

Mitigated

	Electricity Use	Total CO2	CH4	N2O	CO2e
Land Use	kWh/yr	MT/yr			
Manufacturing	1.98612e+006	183.7633	0.0297	3.6000e-003	185.5804
Parking Lot	140627	13.0113	2.1000e-003	2.6000e-004	13.1400
Total		**196.7746**	**0.0318**	**3.8600e-003**	**198.7204**

6.0 Area Detail

6.1 Mitigation Measures Area

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EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Applied

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Mitigated	1.1204	5.0000e-005	5.9300e-003	0.0000		2.0000e-005	2.0000e-005		2.0000e-005	2.0000e-005	0.0000	0.0116	0.0116	3.0000e-005	0.0000	0.0123
Unmitigated	1.1204	5.0000e-005	5.9300e-003	0.0000		2.0000e-005	2.0000e-005		2.0000e-005	2.0000e-005	0.0000	0.0116	0.0116	3.0000e-005	0.0000	0.0123

6.2 Area by SubCategory

Unmitigated

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
SubCategory	tons/yr										MT/yr					
Architectural Coating	0.1362					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Consumer Products	0.9836					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Landscaping	5.5000e-004	5.0000e-005	5.9300e-003	0.0000		2.0000e-005	2.0000e-005		2.0000e-005	2.0000e-005	0.0000	0.0116	0.0116	3.0000e-005	0.0000	0.0123
Total	**1.1204**	**5.0000e-005**	**5.9300e-003**	**0.0000**		**2.0000e-005**	**2.0000e-005**		**2.0000e-005**	**2.0000e-005**	**0.0000**	**0.0116**	**0.0116**	**3.0000e-005**	**0.0000**	**0.0123**

Mitigated

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EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Applied

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
SubCategory	tons/yr										MT/yr					
Architectural Coating	0.1362					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Consumer Products	0.9836					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Landscaping	5.5000e-004	5.0000e-005	5.9300e-003	0.0000		2.0000e-005	2.0000e-005		2.0000e-005	2.0000e-005	0.0000	0.0116	0.0116	3.0000e-005	0.0000	0.0123
Total	**1.1204**	**5.0000e-005**	**5.9300e-003**	**0.0000**		**2.0000e-005**	**2.0000e-005**		**2.0000e-005**	**2.0000e-005**	**0.0000**	**0.0116**	**0.0116**	**3.0000e-005**	**0.0000**	**0.0123**

7.0 Water Detail

7.1 Mitigation Measures Water

Install Low Flow Bathroom Faucet

Install Low Flow Kitchen Faucet

Install Low Flow Toilet

Install Low Flow Shower

Use Water Efficient Irrigation System

	Total CO2	CH4	N2O	CO2e
Category	MT/yr			
Mitigated	37.1016	1.4818	0.0354	84.6799

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EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Applied

Unmitigated	46.3770	1.8522	0.0442	105.8498

7.2 Water by Land Use

Unmitigated

	Indoor/Outdoor Use	Total CO2	CH4	N2O	CO2e
Land Use	Mgal	MT/yr			
Manufacturing	56.7025 / 0	46.3770	1.8522	0.0442	105.8498
Parking Lot	0 / 0	0.0000	0.0000	0.0000	0.0000
Total		**46.3770**	**1.8522**	**0.0442**	**105.8498**

Mitigated

	Indoor/Outdoor Use	Total CO2	CH4	N2O	CO2e
Land Use	Mgal	MT/yr			
Manufacturing	45.362 / 0	37.1016	1.4818	0.0354	84.6799
Parking Lot	0 / 0	0.0000	0.0000	0.0000	0.0000
Total		**37.1016**	**1.4818**	**0.0354**	**84.6799**

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EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Applied

8.0 Waste Detail

8.1 Mitigation Measures Waste

Institute Recycling and Composting Services

Category/Year

	Total CO2	CH4	N2O	CO2e
	MT/yr			
Mitigated	30.8597	1.8238	0.0000	76.4536
Unmitigated	61.7194	3.6475	0.0000	152.9072

8.2 Waste by Land Use

Unmitigated

	Waste Disposed	Total CO2	CH4	N2O	CO2e
Land Use	tons	MT/yr			
Manufacturing	304.05	61.7194	3.6475	0.0000	152.9072
Parking Lot	0	0.0000	0.0000	0.0000	0.0000

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EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Applied

Total		**61.7194**	**3.6475**	**0.0000**	**152.9072**

Mitigated

	Waste Disposed	Total CO2	CH4	N2O	CO2e
Land Use	tons	MT/yr			
Manufacturing	152.025	30.8597	1.8238	0.0000	76.4536
Parking Lot	0	0.0000	0.0000	0.0000	0.0000
Total		**30.8597**	**1.8238**	**0.0000**	**76.4536**

9.0 Operational Offroad

Equipment Type	Number	Hours/Day	Days/Year	Horse Power	Load Factor	Fuel Type

10.0 Stationary Equipment

Fire Pumps and Emergency Generators

Equipment Type	Number	Hours/Day	Hours/Year	Horse Power	Load Factor	Fuel Type

Boilers

Equipment Type	Number	Heat Input/Day	Heat Input/Year	Boiler Rating	Fuel Type

User Defined Equipment

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EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Applied

Equipment Type	Number

11.0 Vegetation

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EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Applied

880 Doolittle Project

Alameda County, Summer

1.0 Project Characteristics

1.1 Land Usage

Land Uses	Size	Metric	Lot Acreage	Floor Surface Area	Population
Manufacturing	245.20	1000sqft	5.63	245,200.00	0
Parking Lot	401.79	1000sqft	9.22	401,790.00	0

1.2 Other Project Characteristics

Urbanization	Urban	**Wind Speed (m/s)**	2.2	**Precipitation Freq (Days)**	63
Climate Zone	4			**Operational Year**	2025
Utility Company	Pacific Gas and Electric Company				
CO2 Intensity (lb/MWhr)	203.98	**CH4 Intensity (lb/MWhr)**	0.033	**N2O Intensity (lb/MWhr)**	0.004

1.3 User Entered Comments & Non-Default Data

Project Characteristics -

Land Use -

Construction Phase - Anticipated construction schedule

Demolition -

Grading -

Vehicle Trips - Per transportation analysis

Construction Off-road Equipment Mitigation - BAAQMD rule compliance

Water Mitigation -

Waste Mitigation - Per AB 393

Fleet Mix - antcipated fleet mix

Off-road Equipment - crushing and reusing all materials onsite

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EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Applied

Off-road Equipment -

Table Name	Column Name	Default Value	New Value
tblConstDustMitigation	CleanPavedRoadPercentReduction	0	6
tblConstDustMitigation	WaterUnpavedRoadMoistureContent	0	12
tblConstDustMitigation	WaterUnpavedRoadVehicleSpeed	0	15
tblConstructionPhase	NumDays	20.00	66.00
tblConstructionPhase	NumDays	300.00	195.00
tblConstructionPhase	NumDays	20.00	44.00
tblConstructionPhase	NumDays	30.00	46.00
tblConstructionPhase	NumDays	20.00	43.00
tblConstructionPhase	NumDays	10.00	42.00
tblConstructionPhase	PhaseEndDate	9/11/2025	7/31/2025
tblConstructionPhase	PhaseEndDate	7/17/2025	6/2/2025
tblConstructionPhase	PhaseEndDate	3/28/2024	5/1/2024
tblConstructionPhase	PhaseEndDate	5/23/2024	9/2/2024
tblConstructionPhase	PhaseEndDate	8/14/2025	7/31/2025
tblConstructionPhase	PhaseEndDate	4/11/2024	6/28/2024
tblConstructionPhase	PhaseStartDate	8/15/2025	5/1/2025
tblConstructionPhase	PhaseStartDate	5/24/2024	9/3/2024
tblConstructionPhase	PhaseStartDate	4/12/2024	7/1/2024
tblConstructionPhase	PhaseStartDate	7/18/2025	6/3/2025
tblConstructionPhase	PhaseStartDate	3/29/2024	5/2/2024
tblFleetMix	HHD	0.01	0.00
tblFleetMix	HHD	0.01	1.00
tblFleetMix	LDA	0.57	1.00
tblFleetMix	LDA	0.57	0.00
tblFleetMix	LDT1	0.06	0.00
tblFleetMix	LDT1	0.06	0.00

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EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Applied

tblFleetMix	LDT2	0.18	0.00
tblFleetMix	LDT2	0.18	0.00
tblFleetMix	LHD1	0.02	0.00
tblFleetMix	LHD1	0.02	0.00
tblFleetMix	LHD2	5.2110e-003	0.00
tblFleetMix	LHD2	5.2110e-003	0.00
tblFleetMix	MCY	0.02	0.00
tblFleetMix	MCY	0.02	0.00
tblFleetMix	MDV	0.11	0.00
tblFleetMix	MDV	0.11	0.00
tblFleetMix	MH	2.4230e-003	0.00
tblFleetMix	MH	2.4230e-003	0.00
tblFleetMix	MHD	0.01	0.00
tblFleetMix	MHD	0.01	0.00
tblFleetMix	OBUS	7.9000e-004	0.00
tblFleetMix	OBUS	7.9000e-004	0.00
tblFleetMix	SBUS	3.4300e-004	0.00
tblFleetMix	SBUS	3.4300e-004	0.00
tblFleetMix	UBUS	5.6000e-004	0.00
tblFleetMix	UBUS	5.6000e-004	0.00
tblGrading	MaterialExported	0.00	15,000.00
tblOffRoadEquipment	OffRoadEquipmentType		Other Construction Equipment
tblOffRoadEquipment	OffRoadEquipmentType		Tractors/Loaders/Backhoes
tblOffRoadEquipment	OffRoadEquipmentType		Generator Sets
tblVehicleTrips	CC_TL	7.30	0.00
tblVehicleTrips	CC_TTP	28.00	0.00
tblVehicleTrips	CNW_TL	7.30	65.50
tblVehicleTrips	CNW_TTP	13.00	0.00
tblVehicleTrips	CNW_TTP	0.00	100.00

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EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Applied

tblVehicleTrips	CW_TL	9.50	0.00
tblVehicleTrips	CW_TTP	59.00	100.00
tblVehicleTrips	DV_TP	5.00	0.00
tblVehicleTrips	PB_TP	3.00	0.00
tblVehicleTrips	PR_TP	92.00	100.00
tblVehicleTrips	PR_TP	0.00	100.00
tblVehicleTrips	ST_TR	6.42	6.25
tblVehicleTrips	ST_TR	0.00	0.12
tblVehicleTrips	SU_TR	5.09	6.25
tblVehicleTrips	SU_TR	0.00	0.12
tblVehicleTrips	WD_TR	3.93	6.25
tblVehicleTrips	WD_TR	0.00	0.12

2.0 Emissions Summary

2.1 Overall Construction (Maximum Daily Emission)

Unmitigated Construction

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Year	lb/day										lb/day					
2024	3.3564	37.6004	32.3558	0.1001	19.8049	1.3882	21.0349	10.1417	1.2980	11.2733	0.0000	10,155.4746	10,155.4746	2.0031	0.7496	10,415.6344
2025	43.7205	18.5140	26.0632	0.0723	3.3965	0.6195	4.0160	0.9172	0.5860	1.5032	0.0000	7,303.1929	7,303.1929	0.7397	0.3772	7,433.0484
Maximum	**43.7205**	**37.6004**	**32.3558**	**0.1001**	**19.8049**	**1.3882**	**21.0349**	**10.1417**	**1.2980**	**11.2733**	**0.0000**	**10,155.4746**	**10,155.4746**	**2.0031**	**0.7496**	**10,415.6344**

880 Doolittle Project - Alameda County, Summer

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Applied

Mitigated Construction

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Year	lb/day										lb/day					
2024	3.3564	37.6004	32.3558	0.1001	8.5435	1.3882	9.7736	4.3561	1.2980	5.4878	0.0000	10,155.4746	10,155.4746	2.0031	0.7496	10,415.6344
2025	43.7205	18.5140	26.0632	0.0723	3.2261	0.6195	3.8456	0.8754	0.5860	1.4614	0.0000	7,303.1929	7,303.1929	0.7397	0.3772	7,433.0484
Maximum	**43.7205**	**37.6004**	**32.3558**	**0.1001**	**8.5435**	**1.3882**	**9.7736**	**4.3561**	**1.2980**	**5.4878**	**0.0000**	**10,155.4746**	**10,155.4746**	**2.0031**	**0.7496**	**10,415.6344**

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio-CO2	Total CO2	CH4	N20	CO2e
Percent Reduction	**0.00**	**0.00**	**0.00**	**0.00**	**49.27**	**0.00**	**45.63**	**52.69**	**0.00**	**45.61**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**

2.2 Overall Operational

Unmitigated Operational

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Area	6.1422	6.0000e-004	0.0659	0.0000		2.3000e-004	2.3000e-004		2.3000e-004	2.3000e-004		0.1416	0.1416	3.7000e-004		0.1508
Energy	0.1897	1.7242	1.4484	0.0104		0.1310	0.1310		0.1310	0.1310		2,069.0849	2,069.0849	0.0397	0.0379	2,081.3805
Mobile	1.8750	18.9601	27.3271	0.1668	13.7542	0.2202	13.9744	3.6704	0.2090	3.8794		17,706.2274	17,706.2274	0.3870	1.6524	18,208.3226

880 Doolittle Project - Alameda County, Summer

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Applied

Total	**8.2068**	**20.6849**	**28.8413**	**0.1772**	**13.7542**	**0.3515**	**14.1057**	**3.6704**	**0.3402**	**4.0107**		**19,775.4539**	**19,775.4539**	**0.4270**	**1.6904**	**20,289.8539**

Mitigated Operational

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Area	6.1422	6.0000e-004	0.0659	0.0000		2.3000e-004	2.3000e-004		2.3000e-004	2.3000e-004		0.1416	0.1416	3.7000e-004		0.1508
Energy	0.1897	1.7242	1.4484	0.0104		0.1310	0.1310		0.1310	0.1310		2,069.0849	2,069.0849	0.0397	0.0379	2,081.3805
Mobile	1.8750	18.9601	27.3271	0.1668	13.7542	0.2202	13.9744	3.6704	0.2090	3.8794		17,706.2274	17,706.2274	0.3870	1.6524	18,208.3226
Total	**8.2068**	**20.6849**	**28.8413**	**0.1772**	**13.7542**	**0.3515**	**14.1057**	**3.6704**	**0.3402**	**4.0107**		**19,775.4539**	**19,775.4539**	**0.4270**	**1.6904**	**20,289.8539**

	ROG	**NOx**	**CO**	**SO2**	**Fugitive PM10**	**Exhaust PM10**	**PM10 Total**	**Fugitive PM2.5**	**Exhaust PM2.5**	**PM2.5 Total**	**Bio- CO2**	**NBio-CO2**	**Total CO2**	**CH4**	**N20**	**CO2e**
Percent Reduction	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**

3.0 Construction Detail

Construction Phase

Phase Number	Phase Name	Phase Type	Start Date	End Date	Num Days Week	Num Days	Phase Description
1	Demolition	Demolition	3/1/2024	5/1/2024	5	44	
2	Site Preparation	Site Preparation	5/2/2024	6/28/2024	5	42	
3	Grading	Grading	7/1/2024	9/2/2024	5	46	

880 Doolittle Project - Alameda County, Summer

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Applied

4	Building Construction	Building Construction	9/3/2024	6/2/2025	5	195	
5	Paving	Paving	6/3/2025	7/31/2025	5	43	
6	Architectural Coating	Architectural Coating	5/1/2025	7/31/2025	5	66	

Acres of Grading (Site Preparation Phase): 63

Acres of Grading (Grading Phase): 138

Acres of Paving: 9.22

Residential Indoor: 0; Residential Outdoor: 0; Non-Residential Indoor: 367,800; Non-Residential Outdoor: 122,600; Striped Parking Area: 24,107

OffRoad Equipment

Phase Name	Offroad Equipment Type	Amount	Usage Hours	Horse Power	Load Factor
Demolition	Concrete/Industrial Saws	1	8.00	81	0.73
Demolition	Excavators	3	8.00	158	0.38
Demolition	Rubber Tired Dozers	2	8.00	247	0.40
Site Preparation	Rubber Tired Dozers	3	8.00	247	0.40
Site Preparation	Tractors/Loaders/Backhoes	4	8.00	97	0.37
Grading	Excavators	2	8.00	158	0.38
Grading	Graders	1	8.00	187	0.41
Grading	Rubber Tired Dozers	1	8.00	247	0.40
Grading	Tractors/Loaders/Backhoes	2	8.00	97	0.37
Building Construction	Cranes	1	7.00	231	0.29
Building Construction	Forklifts	3	8.00	89	0.20
Building Construction	Generator Sets	1	8.00	84	0.74
Building Construction	Tractors/Loaders/Backhoes	3	7.00	97	0.37
Building Construction	Welders	1	8.00	46	0.45
Paving	Pavers	2	8.00	130	0.42
Paving	Paving Equipment	2	8.00	132	0.36
Paving	Rollers	2	8.00	80	0.38

880 Doolittle Project - Alameda County, Summer

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Applied

Architectural Coating	Air Compressors	1	6.00	78	0.48
Grading	Scrapers	2	8.00	367	0.48
Demolition	Other Construction Equipment	1	8.00	172	0.42
Demolition	Tractors/Loaders/Backhoes	1	8.00	97	0.37
Demolition	Generator Sets	1	8.00	84	0.74

Trips and VMT

Phase Name	Offroad Equipment Count	Worker Trip Number	Vendor Trip Number	Hauling Trip Number	Worker Trip Length	Vendor Trip Length	Hauling Trip Length	Worker Vehicle Class	Vendor Vehicle Class	Hauling Vehicle Class
Demolition	9	23.00	0.00	3,283.00	10.80	7.30	20.00	LD_Mix	HDT_Mix	HHDT
Site Preparation	7	18.00	0.00	0.00	10.80	7.30	20.00	LD_Mix	HDT_Mix	HHDT
Grading	8	20.00	0.00	1,875.00	10.80	7.30	20.00	LD_Mix	HDT_Mix	HHDT
Building Construction	9	272.00	106.00	0.00	10.80	7.30	20.00	LD_Mix	HDT_Mix	HHDT
Paving	6	15.00	0.00	0.00	10.80	7.30	20.00	LD_Mix	HDT_Mix	HHDT
Architectural Coating	1	54.00	0.00	0.00	10.80	7.30	20.00	LD_Mix	HDT_Mix	HHDT

3.1 Mitigation Measures Construction

Replace Ground Cover

Water Exposed Area

Water Unpaved Roads

Reduce Vehicle Speed on Unpaved Roads

Clean Paved Roads

3.2 Demolition - 2024

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e

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880 Doolittle Project - Alameda County, Summer

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Applied

Category	lb/day										lb/day					
Fugitive Dust					16.1470	0.0000	16.1470	2.4448	0.0000	2.4448			0.0000			0.0000
Off-Road	3.0046	28.0819	29.6196	0.0547		1.3030	1.3030		1.2165	1.2165		5,270.4686	5,270.4686	1.3648		5,304.5878
Total	**3.0046**	**28.0819**	**29.6196**	**0.0547**	**16.1470**	**1.3030**	**17.4500**	**2.4448**	**1.2165**	**3.6613**		**5,270.4686**	**5,270.4686**	**1.3648**		**5,304.5878**

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.1581	9.4860	2.2214	0.0437	1.3070	0.0843	1.3913	0.3584	0.0807	0.4391		4,720.1004	4,720.1004	0.1025	0.7458	4,944.9222
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000
Worker	0.0597	0.0325	0.5148	1.6000e-003	0.1889	9.0000e-004	0.1898	0.0501	8.3000e-004	0.0510		164.9056	164.9056	3.9200e-003	3.7600e-003	166.1244
Total	**0.2178**	**9.5185**	**2.7362**	**0.0453**	**1.4959**	**0.0852**	**1.5811**	**0.4086**	**0.0815**	**0.4900**		**4,885.0060**	**4,885.0060**	**0.1065**	**0.7496**	**5,111.0466**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e

880 Doolittle Project - Alameda County, Summer

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Applied

Category	lb/day										lb/day					
Fugitive Dust					6.9028	0.0000	6.9028	1.0452	0.0000	1.0452			0.0000			0.0000
Off-Road	3.0046	28.0819	29.6196	0.0547		1.3030	1.3030		1.2165	1.2165	0.0000	5,270.4686	5,270.4686	1.3648		5,304.5878
Total	**3.0046**	**28.0819**	**29.6196**	**0.0547**	**6.9028**	**1.3030**	**8.2059**	**1.0452**	**1.2165**	**2.2616**	**0.0000**	**5,270.4686**	**5,270.4686**	**1.3648**		**5,304.5878**

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.1581	9.4860	2.2214	0.0437	1.2478	0.0843	1.3321	0.3439	0.0807	0.4245		4,720.1004	4,720.1004	0.1025	0.7458	4,944.9222
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000
Worker	0.0597	0.0325	0.5148	1.6000e-003	0.1791	9.0000e-004	0.1800	0.0477	8.3000e-004	0.0485		164.9056	164.9056	3.9200e-003	3.7600e-003	166.1244
Total	**0.2178**	**9.5185**	**2.7362**	**0.0453**	**1.4269**	**0.0852**	**1.5121**	**0.3916**	**0.0815**	**0.4731**		**4,885.0060**	**4,885.0060**	**0.1065**	**0.7496**	**5,111.0466**

3.3 Site Preparation - 2024

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e

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880 Doolittle Project - Alameda County, Summer

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Applied

Category	lb/day										lb/day					
Fugitive Dust					19.6570	0.0000	19.6570	10.1025	0.0000	10.1025			0.0000			0.0000
Off-Road	2.6609	27.1760	18.3356	0.0381		1.2294	1.2294		1.1310	1.1310		3,688.0100	3,688.0100	1.1928		3,717.8294
Total	**2.6609**	**27.1760**	**18.3356**	**0.0381**	**19.6570**	**1.2294**	**20.8864**	**10.1025**	**1.1310**	**11.2335**		**3,688.0100**	**3,688.0100**	**1.1928**		**3,717.8294**

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000
Worker	0.0467	0.0254	0.4029	1.2500e-003	0.1479	7.1000e-004	0.1486	0.0392	6.5000e-004	0.0399		129.0566	129.0566	3.0700e-003	2.9400e-003	130.0104
Total	**0.0467**	**0.0254**	**0.4029**	**1.2500e-003**	**0.1479**	**7.1000e-004**	**0.1486**	**0.0392**	**6.5000e-004**	**0.0399**		**129.0566**	**129.0566**	**3.0700e-003**	**2.9400e-003**	**130.0104**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e

880 Doolittle Project - Alameda County, Summer

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Applied

Category	lb/day										lb/day					
Fugitive Dust					8.4034	0.0000	8.4034	4.3188	0.0000	4.3188			0.0000			0.0000
Off-Road	2.6609	27.1760	18.3356	0.0381		1.2294	1.2294		1.1310	1.1310	0.0000	3,688.0100	3,688.0100	1.1928		3,717.8294
Total	**2.6609**	**27.1760**	**18.3356**	**0.0381**	**8.4034**	**1.2294**	**9.6327**	**4.3188**	**1.1310**	**5.4498**	**0.0000**	**3,688.0100**	**3,688.0100**	**1.1928**		**3,717.8294**

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000
Worker	0.0467	0.0254	0.4029	1.2500e-003	0.1402	7.1000e-004	0.1409	0.0373	6.5000e-004	0.0380		129.0566	129.0566	3.0700e-003	2.9400e-003	130.0104
Total	**0.0467**	**0.0254**	**0.4029**	**1.2500e-003**	**0.1402**	**7.1000e-004**	**0.1409**	**0.0373**	**6.5000e-004**	**0.0380**		**129.0566**	**129.0566**	**3.0700e-003**	**2.9400e-003**	**130.0104**

3.4 Grading - 2024

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e

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EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Applied

Category	lb/day										lb/day					
Fugitive Dust					9.2405	0.0000	9.2405	3.6593	0.0000	3.6593			0.0000			0.0000
Off-Road	3.2181	32.3770	27.7228	0.0621		1.3354	1.3354		1.2286	1.2286		6,009.7487	6,009.7487	1.9437		6,058.3405
Total	**3.2181**	**32.3770**	**27.7228**	**0.0621**	**9.2405**	**1.3354**	**10.5759**	**3.6593**	**1.2286**	**4.8879**		**6,009.7487**	**6,009.7487**	**1.9437**		**6,058.3405**

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0864	5.1821	1.2136	0.0239	0.7140	0.0461	0.7601	0.1958	0.0441	0.2399		2,578.5554	2,578.5554	0.0560	0.4074	2,701.3739
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000
Worker	0.0519	0.0283	0.4476	1.3900e-003	0.1643	7.8000e-004	0.1651	0.0436	7.2000e-004	0.0443		143.3962	143.3962	3.4100e-003	3.2700e-003	144.4560
Total	**0.1383**	**5.2104**	**1.6612**	**0.0253**	**0.8783**	**0.0468**	**0.9251**	**0.2394**	**0.0448**	**0.2842**		**2,721.9516**	**2,721.9516**	**0.0594**	**0.4107**	**2,845.8299**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e

880 Doolittle Project - Alameda County, Summer

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Applied

Category	lb/day										lb/day					
Fugitive Dust					3.9503	0.0000	3.9503	1.5644	0.0000	1.5644			0.0000			0.0000
Off-Road	3.2181	32.3770	27.7228	0.0621		1.3354	1.3354		1.2286	1.2286	0.0000	6,009.7487	6,009.7487	1.9437		6,058.3405
Total	**3.2181**	**32.3770**	**27.7228**	**0.0621**	**3.9503**	**1.3354**	**5.2857**	**1.5644**	**1.2286**	**2.7929**	**0.0000**	**6,009.7487**	**6,009.7487**	**1.9437**		**6,058.3405**

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0864	5.1821	1.2136	0.0239	0.6817	0.0461	0.7277	0.1879	0.0441	0.2319		2,578.5554	2,578.5554	0.0560	0.4074	2,701.3739
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000
Worker	0.0519	0.0283	0.4476	1.3900e-003	0.1557	7.8000e-004	0.1565	0.0415	7.2000e-004	0.0422		143.3962	143.3962	3.4100e-003	3.2700e-003	144.4560
Total	**0.1383**	**5.2104**	**1.6612**	**0.0253**	**0.8374**	**0.0468**	**0.8842**	**0.2294**	**0.0448**	**0.2741**		**2,721.9516**	**2,721.9516**	**0.0594**	**0.4107**	**2,845.8299**

3.5 Building Construction - 2024

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e

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EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Applied

Category	lb/day										lb/day					
Off-Road	1.4716	13.4438	16.1668	0.0270		0.6133	0.6133		0.5769	0.5769		2,555.6989	2,555.6989	0.6044		2,570.8077
Total	**1.4716**	**13.4438**	**16.1668**	**0.0270**		**0.6133**	**0.6133**		**0.5769**	**0.5769**		**2,555.6989**	**2,555.6989**	**0.6044**		**2,570.8077**

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.1072	4.4874	1.3544	0.0208	0.7184	0.0282	0.7466	0.2069	0.0270	0.2338		2,223.8250	2,223.8250	0.0309	0.3330	2,323.8393
Worker	0.7058	0.3845	6.0877	0.0189	2.2344	0.0107	2.2451	0.5927	9.8200e-003	0.6025		1,950.1880	1,950.1880	0.0464	0.0445	1,964.6021
Total	**0.8130**	**4.8719**	**7.4422**	**0.0397**	**2.9528**	**0.0389**	**2.9917**	**0.7995**	**0.0368**	**0.8363**		**4,174.0130**	**4,174.0130**	**0.0773**	**0.3775**	**4,288.4414**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					

880 Doolittle Project - Alameda County, Summer

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Applied

Off-Road	1.4716	13.4438	16.1668	0.0270		0.6133	0.6133		0.5769	0.5769	0.0000	2,555.6989	2,555.6989	0.6044		2,570.8077
Total	**1.4716**	**13.4438**	**16.1668**	**0.0270**		**0.6133**	**0.6133**		**0.5769**	**0.5769**	**0.0000**	**2,555.6989**	**2,555.6989**	**0.6044**		**2,570.8077**

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.1072	4.4874	1.3544	0.0208	0.6877	0.0282	0.7159	0.1993	0.0270	0.2263		2,223.8250	2,223.8250	0.0309	0.3330	2,323.8393
Worker	0.7058	0.3845	6.0877	0.0189	2.1179	0.0107	2.1286	0.5641	9.8200e-003	0.5739		1,950.1880	1,950.1880	0.0464	0.0445	1,964.6021
Total	**0.8130**	**4.8719**	**7.4422**	**0.0397**	**2.8056**	**0.0389**	**2.8445**	**0.7634**	**0.0368**	**0.8002**		**4,174.0130**	**4,174.0130**	**0.0773**	**0.3775**	**4,288.4414**

3.5 Building Construction - 2025

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Off-Road	1.3674	12.4697	16.0847	0.0270		0.5276	0.5276		0.4963	0.4963		2,556.4744	2,556.4744	0.6010		2,571.4981

880 Doolittle Project - Alameda County, Summer

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Applied

Total	**1.3674**	**12.4697**	**16.0847**	**0.0270**		**0.5276**	**0.5276**		**0.4963**	**0.4963**		**2,556.4744**	**2,556.4744**	**0.6010**		**2,571.4981**

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.1050	4.4835	1.3324	0.0205	0.7184	0.0282	0.7467	0.2069	0.0270	0.2339		2,184.1886	2,184.1886	0.0309	0.3272	2,282.4752
Worker	0.6620	0.3465	5.7045	0.0183	2.2344	0.0102	2.2446	0.5927	9.4000e-003	0.6021		1,903.2340	1,903.2340	0.0421	0.0417	1,916.7183
Total	**0.7669**	**4.8300**	**7.0369**	**0.0387**	**2.9529**	**0.0384**	**2.9913**	**0.7995**	**0.0364**	**0.8359**		**4,087.4226**	**4,087.4226**	**0.0730**	**0.3690**	**4,199.1935**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Off-Road	1.3674	12.4697	16.0847	0.0270		0.5276	0.5276		0.4963	0.4963	0.0000	2,556.4744	2,556.4744	0.6010		2,571.4981
Total	**1.3674**	**12.4697**	**16.0847**	**0.0270**		**0.5276**	**0.5276**		**0.4963**	**0.4963**	**0.0000**	**2,556.4744**	**2,556.4744**	**0.6010**		**2,571.4981**

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EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Applied

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.1050	4.4835	1.3324	0.0205	0.6878	0.0282	0.7160	0.1993	0.0270	0.2263		2,184.1886	2,184.1886	0.0309	0.3272	2,282.4752
Worker	0.6620	0.3465	5.7045	0.0183	2.1179	0.0102	2.1281	0.5641	9.4000e-003	0.5735		1,903.2340	1,903.2340	0.0421	0.0417	1,916.7183
Total	**0.7669**	**4.8300**	**7.0369**	**0.0387**	**2.8057**	**0.0384**	**2.8441**	**0.7634**	**0.0364**	**0.7998**		**4,087.4226**	**4,087.4226**	**0.0730**	**0.3690**	**4,199.1935**

3.6 Paving - 2025

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Off-Road	0.9152	8.5816	14.5780	0.0228		0.4185	0.4185		0.3850	0.3850		2,206.7452	2,206.7452	0.7137		2,224.5878
Paving	0.5618					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Total	**1.4769**	**8.5816**	**14.5780**	**0.0228**		**0.4185**	**0.4185**		**0.3850**	**0.3850**		**2,206.7452**	**2,206.7452**	**0.7137**		**2,224.5878**

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EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Applied

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000
Worker	0.0365	0.0191	0.3146	1.0100e-003	0.1232	5.6000e-004	0.1238	0.0327	5.2000e-004	0.0332		104.9578	104.9578	2.3200e-003	2.3000e-003	105.7014
Total	**0.0365**	**0.0191**	**0.3146**	**1.0100e-003**	**0.1232**	**5.6000e-004**	**0.1238**	**0.0327**	**5.2000e-004**	**0.0332**		**104.9578**	**104.9578**	**2.3200e-003**	**2.3000e-003**	**105.7014**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Off-Road	0.9152	8.5816	14.5780	0.0228		0.4185	0.4185		0.3850	0.3850	0.0000	2,206.7452	2,206.7452	0.7137		2,224.5878
Paving	0.5618					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Total	**1.4769**	**8.5816**	**14.5780**	**0.0228**		**0.4185**	**0.4185**		**0.3850**	**0.3850**	**0.0000**	**2,206.7452**	**2,206.7452**	**0.7137**		**2,224.5878**

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EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Applied

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000
Worker	0.0365	0.0191	0.3146	1.0100e-003	0.1168	5.6000e-004	0.1174	0.0311	5.2000e-004	0.0316		104.9578	104.9578	2.3200e-003	2.3000e-003	105.7014
Total	**0.0365**	**0.0191**	**0.3146**	**1.0100e-003**	**0.1168**	**5.6000e-004**	**0.1174**	**0.0311**	**5.2000e-004**	**0.0316**		**104.9578**	**104.9578**	**2.3200e-003**	**2.3000e-003**	**105.7014**

3.7 Architectural Coating - 2025

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Archit. Coating	41.2838					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Off-Road	0.1709	1.1455	1.8091	2.9700e-003		0.0515	0.0515		0.0515	0.0515		281.4481	281.4481	0.0154		281.8319
Total	**41.4547**	**1.1455**	**1.8091**	**2.9700e-003**		**0.0515**	**0.0515**		**0.0515**	**0.0515**		**281.4481**	**281.4481**	**0.0154**		**281.8319**

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EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Applied

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000
Worker	0.1314	0.0688	1.1325	3.6300e-003	0.4436	2.0300e-003	0.4456	0.1177	1.8700e-003	0.1195		377.8479	377.8479	8.3600e-003	8.2800e-003	380.5250
Total	**0.1314**	**0.0688**	**1.1325**	**3.6300e-003**	**0.4436**	**2.0300e-003**	**0.4456**	**0.1177**	**1.8700e-003**	**0.1195**		**377.8479**	**377.8479**	**8.3600e-003**	**8.2800e-003**	**380.5250**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Archit. Coating	41.2838					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Off-Road	0.1709	1.1455	1.8091	2.9700e-003		0.0515	0.0515		0.0515	0.0515	0.0000	281.4481	281.4481	0.0154		281.8319
Total	**41.4547**	**1.1455**	**1.8091**	**2.9700e-003**		**0.0515**	**0.0515**		**0.0515**	**0.0515**	**0.0000**	**281.4481**	**281.4481**	**0.0154**		**281.8319**

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EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Applied

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000
Worker	0.1314	0.0688	1.1325	3.6300e-003	0.4205	2.0300e-003	0.4225	0.1120	1.8700e-003	0.1139		377.8479	377.8479	8.3600e-003	8.2800e-003	380.5250
Total	**0.1314**	**0.0688**	**1.1325**	**3.6300e-003**	**0.4205**	**2.0300e-003**	**0.4225**	**0.1120**	**1.8700e-003**	**0.1139**		**377.8479**	**377.8479**	**8.3600e-003**	**8.2800e-003**	**380.5250**

4.0 Operational Detail - Mobile

4.1 Mitigation Measures Mobile

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Mitigated	1.8750	18.9601	27.3271	0.1668	13.7542	0.2202	13.9744	3.6704	0.2090	3.8794		17,706.2274	17,706.2274	0.3870	1.6524	18,208.3226

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Applied

Unmitigated	1.8750	18.9601	27.3271	0.1668	13.7542	0.2202	13.9744	3.6704	0.2090	3.8794		17,706.2274	17,706.227	0.3870	1.6524	18,208.322

4.2 Trip Summary Information

	Average Daily Trip Rate			Unmitigated	Mitigated
Land Use	Weekday	Saturday	Sunday	Annual VMT	Annual VMT
Manufacturing	1,532.50	1,532.50	1532.50	5,299,385	5,299,385
Parking Lot	47.01	47.01	47.01	1,120,799	1,120,799
Total	1,579.51	1,579.51	1,579.51	6,420,184	6,420,184

4.3 Trip Type Information

	Miles			Trip %			Trip Purpose %		
Land Use	H-W or C-W	H-S or C-C	H-O or C-NW	H-W or C-W	H-S or C-C	H-O or C-NW	Primary	Diverted	Pass-by
Manufacturing	9.50	7.30	7.30	100.00	0.00	0.00	100	0	0
Parking Lot	0.00	0.00	65.50	0.00	0.00	100.00	100	0	0

4.4 Fleet Mix

Land Use	LDA	LDT1	LDT2	MDV	LHD1	LHD2	MHD	HHD	OBUS	UBUS	MCY	SBUS	MH
Manufacturing	1.000000	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	0.00000
Parking Lot	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	1.000000	0.000000	0.000000	0.000000	0.000000	0.00000

5.0 Energy Detail

Historical Energy Use: N

5.1 Mitigation Measures Energy

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EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Applied

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
NaturalGas Mitigated	0.1897	1.7242	1.4484	0.0104		0.1310	0.1310		0.1310	0.1310		2,069.0849	2,069.0849	0.0397	0.0379	2,081.3805
NaturalGas Unmitigated	0.1897	1.7242	1.4484	0.0104		0.1310	0.1310		0.1310	0.1310		2,069.0849	2,069.0849	0.0397	0.0379	2,081.3805

5.2 Energy by Land Use - NaturalGas

Unmitigated

	NaturalGas Use	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Land Use	kBTU/yr	lb/day										lb/day					
Manufacturing	17587.2	0.1897	1.7242	1.4484	0.0104		0.1310	0.1310		0.1310	0.1310		2,069.0849	2,069.0849	0.0397	0.0379	2,081.3805
Parking Lot	0	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000
Total		**0.1897**	**1.7242**	**1.4484**	**0.0104**		**0.1310**	**0.1310**		**0.1310**	**0.1310**		**2,069.0849**	**2,069.0849**	**0.0397**	**0.0379**	**2,081.3805**

Mitigated

	NaturalGas Use	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Land Use	kBTU/yr	lb/day										lb/day					

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Applied

Manufacturing	17.5872	0.1897	1.7242	1.4484	0.0104		0.1310	0.1310		0.1310	0.1310		2,069.0849	2,069.0849	0.0397	0.0379	2,081.3805
Parking Lot	0	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000
Total		**0.1897**	**1.7242**	**1.4484**	**0.0104**		**0.1310**	**0.1310**		**0.1310**	**0.1310**		**2,069.0849**	**2,069.0849**	**0.0397**	**0.0379**	**2,081.3805**

6.0 Area Detail

6.1 Mitigation Measures Area

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Mitigated	6.1422	6.0000e-004	0.0659	0.0000		2.3000e-004	2.3000e-004		2.3000e-004	2.3000e-004		0.1416	0.1416	3.7000e-004		0.1508
Unmitigated	6.1422	6.0000e-004	0.0659	0.0000		2.3000e-004	2.3000e-004		2.3000e-004	2.3000e-004		0.1416	0.1416	3.7000e-004		0.1508

6.2 Area by SubCategory

Unmitigated

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
SubCategory	lb/day										lb/day					

880 Doolittle Project - Alameda County, Summer

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Applied

Architectural Coating	0.7465					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Consumer Products	5.3896					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Landscaping	6.0700e-003	6.0000e-004	0.0659	0.0000		2.3000e-004	2.3000e-004		2.3000e-004	2.3000e-004		0.1416	0.1416	3.7000e-004		0.1508
Total	**6.1422**	**6.0000e-004**	**0.0659**	**0.0000**		**2.3000e-004**	**2.3000e-004**		**2.3000e-004**	**2.3000e-004**		**0.1416**	**0.1416**	**3.7000e-004**		**0.1508**

Mitigated

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
SubCategory	lb/day										lb/day					
Architectural Coating	0.7465					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Consumer Products	5.3896					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Landscaping	6.0700e-003	6.0000e-004	0.0659	0.0000		2.3000e-004	2.3000e-004		2.3000e-004	2.3000e-004		0.1416	0.1416	3.7000e-004		0.1508
Total	**6.1422**	**6.0000e-004**	**0.0659**	**0.0000**		**2.3000e-004**	**2.3000e-004**		**2.3000e-004**	**2.3000e-004**		**0.1416**	**0.1416**	**3.7000e-004**		**0.1508**

7.0 Water Detail

7.1 Mitigation Measures Water

Install Low Flow Bathroom Faucet

Install Low Flow Kitchen Faucet

Install Low Flow Toilet

880 Doolittle Project - Alameda County, Summer

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Applied

Install Low Flow Shower

Use Water Efficient Irrigation System

8.0 Waste Detail

8.1 Mitigation Measures Waste

Institute Recycling and Composting Services

9.0 Operational Offroad

Equipment Type	Number	Hours/Day	Days/Year	Horse Power	Load Factor	Fuel Type

10.0 Stationary Equipment

Fire Pumps and Emergency Generators

Equipment Type	Number	Hours/Day	Hours/Year	Horse Power	Load Factor	Fuel Type

Boilers

Equipment Type	Number	Heat Input/Day	Heat Input/Year	Boiler Rating	Fuel Type

User Defined Equipment

Equipment Type	Number

11.0 Vegetation

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EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Applied

880 Doolittle Project

Alameda County, Winter

1.0 Project Characteristics

1.1 Land Usage

Land Uses	Size	Metric	Lot Acreage	Floor Surface Area	Population
Manufacturing	245.20	1000sqft	5.63	245,200.00	0
Parking Lot	401.79	1000sqft	9.22	401,790.00	0

1.2 Other Project Characteristics

Urbanization	Urban	**Wind Speed (m/s)**	2.2	**Precipitation Freq (Days)**	63
Climate Zone	4			**Operational Year**	2025
Utility Company	Pacific Gas and Electric Company				
CO2 Intensity (lb/MWhr)	203.98	**CH4 Intensity (lb/MWhr)**	0.033	**N2O Intensity (lb/MWhr)**	0.004

1.3 User Entered Comments & Non-Default Data

Project Characteristics -

Land Use -

Construction Phase - Anticipated construction schedule

Demolition -

Grading -

Vehicle Trips - Per transportation analysis

Construction Off-road Equipment Mitigation - BAAQMD rule compliance

Water Mitigation -

Waste Mitigation - Per AB 393

Fleet Mix - antcipated fleet mix

Off-road Equipment - crushing and reusing all materials onsite

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EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Applied

Off-road Equipment -

Table Name	Column Name	Default Value	New Value
tblConstDustMitigation	CleanPavedRoadPercentReduction	0	6
tblConstDustMitigation	WaterUnpavedRoadMoistureContent	0	12
tblConstDustMitigation	WaterUnpavedRoadVehicleSpeed	0	15
tblConstructionPhase	NumDays	20.00	66.00
tblConstructionPhase	NumDays	300.00	195.00
tblConstructionPhase	NumDays	20.00	44.00
tblConstructionPhase	NumDays	30.00	46.00
tblConstructionPhase	NumDays	20.00	43.00
tblConstructionPhase	NumDays	10.00	42.00
tblConstructionPhase	PhaseEndDate	9/11/2025	7/31/2025
tblConstructionPhase	PhaseEndDate	7/17/2025	6/2/2025
tblConstructionPhase	PhaseEndDate	3/28/2024	5/1/2024
tblConstructionPhase	PhaseEndDate	5/23/2024	9/2/2024
tblConstructionPhase	PhaseEndDate	8/14/2025	7/31/2025
tblConstructionPhase	PhaseEndDate	4/11/2024	6/28/2024
tblConstructionPhase	PhaseStartDate	8/15/2025	5/1/2025
tblConstructionPhase	PhaseStartDate	5/24/2024	9/3/2024
tblConstructionPhase	PhaseStartDate	4/12/2024	7/1/2024
tblConstructionPhase	PhaseStartDate	7/18/2025	6/3/2025
tblConstructionPhase	PhaseStartDate	3/29/2024	5/2/2024
tblFleetMix	HHD	0.01	0.00
tblFleetMix	HHD	0.01	1.00
tblFleetMix	LDA	0.57	1.00
tblFleetMix	LDA	0.57	0.00
tblFleetMix	LDT1	0.06	0.00
tblFleetMix	LDT1	0.06	0.00

880 Doolittle Project - Alameda County, Winter

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Applied

tblFleetMix	LDT2	0.18	0.00
tblFleetMix	LDT2	0.18	0.00
tblFleetMix	LHD1	0.02	0.00
tblFleetMix	LHD1	0.02	0.00
tblFleetMix	LHD2	5.2110e-003	0.00
tblFleetMix	LHD2	5.2110e-003	0.00
tblFleetMix	MCY	0.02	0.00
tblFleetMix	MCY	0.02	0.00
tblFleetMix	MDV	0.11	0.00
tblFleetMix	MDV	0.11	0.00
tblFleetMix	MH	2.4230e-003	0.00
tblFleetMix	MH	2.4230e-003	0.00
tblFleetMix	MHD	0.01	0.00
tblFleetMix	MHD	0.01	0.00
tblFleetMix	OBUS	7.9000e-004	0.00
tblFleetMix	OBUS	7.9000e-004	0.00
tblFleetMix	SBUS	3.4300e-004	0.00
tblFleetMix	SBUS	3.4300e-004	0.00
tblFleetMix	UBUS	5.6000e-004	0.00
tblFleetMix	UBUS	5.6000e-004	0.00
tblGrading	MaterialExported	0.00	15,000.00
tblOffRoadEquipment	OffRoadEquipmentType		Other Construction Equipment
tblOffRoadEquipment	OffRoadEquipmentType		Tractors/Loaders/Backhoes
tblOffRoadEquipment	OffRoadEquipmentType		Generator Sets
tblVehicleTrips	CC_TL	7.30	0.00
tblVehicleTrips	CC_TTP	28.00	0.00
tblVehicleTrips	CNW_TL	7.30	65.50
tblVehicleTrips	CNW_TTP	13.00	0.00
tblVehicleTrips	CNW_TTP	0.00	100.00

880 Doolittle Project - Alameda County, Winter

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Applied

tblVehicleTrips	CW_TL	9.50	0.00
tblVehicleTrips	CW_TTP	59.00	100.00
tblVehicleTrips	DV_TP	5.00	0.00
tblVehicleTrips	PB_TP	3.00	0.00
tblVehicleTrips	PR_TP	92.00	100.00
tblVehicleTrips	PR_TP	0.00	100.00
tblVehicleTrips	ST_TR	6.42	6.25
tblVehicleTrips	ST_TR	0.00	0.12
tblVehicleTrips	SU_TR	5.09	6.25
tblVehicleTrips	SU_TR	0.00	0.12
tblVehicleTrips	WD_TR	3.93	6.25
tblVehicleTrips	WD_TR	0.00	0.12

2.0 Emissions Summary

2.1 Overall Construction (Maximum Daily Emission)

Unmitigated Construction

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Year	lb/day										lb/day					
2024	3.3518	38.1661	32.3697	0.1000	19.8049	1.3883	21.0349	10.1417	1.2981	11.2733	0.0000	10,148.8743	10,148.8743	2.0033	0.7510	10,409.4618
2025	43.7329	18.8804	25.8840	0.0708	3.3965	0.6196	4.0161	0.9172	0.5861	1.5033	0.0000	7,144.0251	7,144.0251	0.7413	0.3858	7,276.6200
Maximum	**43.7329**	**38.1661**	**32.3697**	**0.1000**	**19.8049**	**1.3883**	**21.0349**	**10.1417**	**1.2981**	**11.2733**	**0.0000**	**10,148.8743**	**10,148.8743**	**2.0033**	**0.7510**	**10,409.4618**

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EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Applied

Mitigated Construction

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Year	lb/day										lb/day					
2024	3.3518	38.1661	32.3697	0.1000	8.5435	1.3883	9.7736	4.3561	1.2981	5.4878	0.0000	10,148.8743	10,148.8743	2.0033	0.7510	10,409.4618
2025	43.7329	18.8804	25.8840	0.0708	3.2261	0.6196	3.8457	0.8754	0.5861	1.4615	0.0000	7,144.0251	7,144.0251	0.7413	0.3858	7,276.6200
Maximum	**43.7329**	**38.1661**	**32.3697**	**0.1000**	**8.5435**	**1.3883**	**9.7736**	**4.3561**	**1.2981**	**5.4878**	**0.0000**	**10,148.8743**	**10,148.8743**	**2.0033**	**0.7510**	**10,409.4618**

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio-CO2	Total CO2	CH4	N20	CO2e
Percent Reduction	**0.00**	**0.00**	**0.00**	**0.00**	**49.27**	**0.00**	**45.63**	**52.69**	**0.00**	**45.61**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**

2.2 Overall Operational

Unmitigated Operational

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Area	6.1422	6.0000e-004	0.0659	0.0000		2.3000e-004	2.3000e-004		2.3000e-004	2.3000e-004		0.1416	0.1416	3.7000e-004		0.1508
Energy	0.1897	1.7242	1.4484	0.0104		0.1310	0.1310		0.1310	0.1310		2,069.0849	2,069.0849	0.0397	0.0379	2,081.3805
Mobile	1.6369	20.2653	27.0900	0.1605	13.7542	0.2203	13.9745	3.6704	0.2090	3.8795		17,046.1820	17,046.1820	0.4188	1.6814	17,557.7122

880 Doolittle Project - Alameda County, Winter

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Applied

Total	**7.9687**	**21.9901**	**28.6043**	**0.1708**	**13.7542**	**0.3516**	**14.1057**	**3.6704**	**0.3403**	**4.0108**		**19,115.4085**	**19,115.4085**	**0.4588**	**1.7193**	**19,639.2435**

Mitigated Operational

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Area	6.1422	6.0000e-004	0.0659	0.0000		2.3000e-004	2.3000e-004		2.3000e-004	2.3000e-004		0.1416	0.1416	3.7000e-004		0.1508
Energy	0.1897	1.7242	1.4484	0.0104		0.1310	0.1310		0.1310	0.1310		2,069.0849	2,069.0849	0.0397	0.0379	2,081.3805
Mobile	1.6369	20.2653	27.0900	0.1605	13.7542	0.2203	13.9745	3.6704	0.2090	3.8795		17,046.1820	17,046.1820	0.4188	1.6814	17,557.7122
Total	**7.9687**	**21.9901**	**28.6043**	**0.1708**	**13.7542**	**0.3516**	**14.1057**	**3.6704**	**0.3403**	**4.0108**		**19,115.4085**	**19,115.4085**	**0.4588**	**1.7193**	**19,639.2435**

	ROG	**NOx**	**CO**	**SO2**	**Fugitive PM10**	**Exhaust PM10**	**PM10 Total**	**Fugitive PM2.5**	**Exhaust PM2.5**	**PM2.5 Total**	**Bio- CO2**	**NBio-CO2**	**Total CO2**	**CH4**	**N20**	**CO2e**
Percent Reduction	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**

3.0 Construction Detail

Construction Phase

Phase Number	Phase Name	Phase Type	Start Date	End Date	Num Days Week	Num Days	Phase Description
1	Demolition	Demolition	3/1/2024	5/1/2024	5	44	
2	Site Preparation	Site Preparation	5/2/2024	6/28/2024	5	42	
3	Grading	Grading	7/1/2024	9/2/2024	5	46	

880 Doolittle Project - Alameda County, Winter

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Applied

4	Building Construction	Building Construction	9/3/2024	6/2/2025	5	195	
5	Paving	Paving	6/3/2025	7/31/2025	5	43	
6	Architectural Coating	Architectural Coating	5/1/2025	7/31/2025	5	66	

Acres of Grading (Site Preparation Phase): 63

Acres of Grading (Grading Phase): 138

Acres of Paving: 9.22

Residential Indoor: 0; Residential Outdoor: 0; Non-Residential Indoor: 367,800; Non-Residential Outdoor: 122,600; Striped Parking Area: 24,107

OffRoad Equipment

Phase Name	Offroad Equipment Type	Amount	Usage Hours	Horse Power	Load Factor
Demolition	Concrete/Industrial Saws	1	8.00	81	0.73
Demolition	Excavators	3	8.00	158	0.38
Demolition	Rubber Tired Dozers	2	8.00	247	0.40
Site Preparation	Rubber Tired Dozers	3	8.00	247	0.40
Site Preparation	Tractors/Loaders/Backhoes	4	8.00	97	0.37
Grading	Excavators	2	8.00	158	0.38
Grading	Graders	1	8.00	187	0.41
Grading	Rubber Tired Dozers	1	8.00	247	0.40
Grading	Tractors/Loaders/Backhoes	2	8.00	97	0.37
Building Construction	Cranes	1	7.00	231	0.29
Building Construction	Forklifts	3	8.00	89	0.20
Building Construction	Generator Sets	1	8.00	84	0.74
Building Construction	Tractors/Loaders/Backhoes	3	7.00	97	0.37
Building Construction	Welders	1	8.00	46	0.45
Paving	Pavers	2	8.00	130	0.42
Paving	Paving Equipment	2	8.00	132	0.36
Paving	Rollers	2	8.00	80	0.38

880 Doolittle Project - Alameda County, Winter

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Applied

Architectural Coating	Air Compressors	1	6.00	78	0.48
Grading	Scrapers	2	8.00	367	0.48
Demolition	Other Construction Equipment	1	8.00	172	0.42
Demolition	Tractors/Loaders/Backhoes	1	8.00	97	0.37
Demolition	Generator Sets	1	8.00	84	0.74

Trips and VMT

Phase Name	Offroad Equipment Count	Worker Trip Number	Vendor Trip Number	Hauling Trip Number	Worker Trip Length	Vendor Trip Length	Hauling Trip Length	Worker Vehicle Class	Vendor Vehicle Class	Hauling Vehicle Class
Demolition	9	23.00	0.00	3,283.00	10.80	7.30	20.00	LD_Mix	HDT_Mix	HHDT
Site Preparation	7	18.00	0.00	0.00	10.80	7.30	20.00	LD_Mix	HDT_Mix	HHDT
Grading	8	20.00	0.00	1,875.00	10.80	7.30	20.00	LD_Mix	HDT_Mix	HHDT
Building Construction	9	272.00	106.00	0.00	10.80	7.30	20.00	LD_Mix	HDT_Mix	HHDT
Paving	6	15.00	0.00	0.00	10.80	7.30	20.00	LD_Mix	HDT_Mix	HHDT
Architectural Coating	1	54.00	0.00	0.00	10.80	7.30	20.00	LD_Mix	HDT_Mix	HHDT

3.1 Mitigation Measures Construction

Replace Ground Cover

Water Exposed Area

Water Unpaved Roads

Reduce Vehicle Speed on Unpaved Roads

Clean Paved Roads

3.2 Demolition - 2024

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e

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EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Applied

Category	lb/day										lb/day					
Fugitive Dust					16.1470	0.0000	16.1470	2.4448	0.0000	2.4448			0.0000			0.0000
Off-Road	3.0046	28.0819	29.6196	0.0547		1.3030	1.3030		1.2165	1.2165		5,270.4686	5,270.4686	1.3648		5,304.5878
Total	**3.0046**	**28.0819**	**29.6196**	**0.0547**	**16.1470**	**1.3030**	**17.4500**	**2.4448**	**1.2165**	**3.6613**		**5,270.4686**	**5,270.4686**	**1.3648**		**5,304.5878**

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.1477	10.0438	2.2537	0.0438	1.3070	0.0844	1.3914	0.3584	0.0808	0.4392		4,725.2997	4,725.2997	0.1020	0.7467	4,950.3601
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000
Worker	0.0609	0.0404	0.4964	1.4800e-003	0.1889	9.0000e-004	0.1898	0.0501	8.3000e-004	0.0510		153.1060	153.1060	4.5000e-003	4.3500e-003	154.5138
Total	**0.2086**	**10.0842**	**2.7501**	**0.0453**	**1.4959**	**0.0853**	**1.5813**	**0.4086**	**0.0816**	**0.4901**		**4,878.4057**	**4,878.4057**	**0.1065**	**0.7510**	**5,104.8739**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e

880 Doolittle Project - Alameda County, Winter

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Applied

Category	lb/day										lb/day					
Fugitive Dust					6.9028	0.0000	6.9028	1.0452	0.0000	1.0452			0.0000			0.0000
Off-Road	3.0046	28.0819	29.6196	0.0547		1.3030	1.3030		1.2165	1.2165	0.0000	5,270.4686	5,270.4686	1.3648		5,304.5878
Total	**3.0046**	**28.0819**	**29.6196**	**0.0547**	**6.9028**	**1.3030**	**8.2059**	**1.0452**	**1.2165**	**2.2616**	**0.0000**	**5,270.4686**	**5,270.4686**	**1.3648**		**5,304.5878**

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.1477	10.0438	2.2537	0.0438	1.2478	0.0844	1.3322	0.3439	0.0808	0.4247		4,725.2997	4,725.2997	0.1020	0.7467	4,950.3601
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000
Worker	0.0609	0.0404	0.4964	1.4800e-003	0.1791	9.0000e-004	0.1800	0.0477	8.3000e-004	0.0485		153.1060	153.1060	4.5000e-003	4.3500e-003	154.5138
Total	**0.2086**	**10.0842**	**2.7501**	**0.0453**	**1.4269**	**0.0853**	**1.5122**	**0.3916**	**0.0816**	**0.4732**		**4,878.4057**	**4,878.4057**	**0.1065**	**0.7510**	**5,104.8739**

3.3 Site Preparation - 2024

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e

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880 Doolittle Project - Alameda County, Winter

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Applied

Category	lb/day										lb/day					
Fugitive Dust					19.6570	0.0000	19.6570	10.1025	0.0000	10.1025			0.0000			0.0000
Off-Road	2.6609	27.1760	18.3356	0.0381		1.2294	1.2294		1.1310	1.1310		3,688.0100	3,688.0100	1.1928		3,717.8294
Total	**2.6609**	**27.1760**	**18.3356**	**0.0381**	**19.6570**	**1.2294**	**20.8864**	**10.1025**	**1.1310**	**11.2335**		**3,688.0100**	**3,688.0100**	**1.1928**		**3,717.8294**

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000
Worker	0.0476	0.0316	0.3885	1.1600e-003	0.1479	7.1000e-004	0.1486	0.0392	6.5000e-004	0.0399		119.8221	119.8221	3.5200e-003	3.4000e-003	120.9239
Total	**0.0476**	**0.0316**	**0.3885**	**1.1600e-003**	**0.1479**	**7.1000e-004**	**0.1486**	**0.0392**	**6.5000e-004**	**0.0399**		**119.8221**	**119.8221**	**3.5200e-003**	**3.4000e-003**	**120.9239**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e

880 Doolittle Project - Alameda County, Winter

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Applied

Category	lb/day										lb/day					
Fugitive Dust					8.4034	0.0000	8.4034	4.3188	0.0000	4.3188			0.0000			0.0000
Off-Road	2.6609	27.1760	18.3356	0.0381		1.2294	1.2294		1.1310	1.1310	0.0000	3,688.0100	3,688.0100	1.1928		3,717.8294
Total	**2.6609**	**27.1760**	**18.3356**	**0.0381**	**8.4034**	**1.2294**	**9.6327**	**4.3188**	**1.1310**	**5.4498**	**0.0000**	**3,688.0100**	**3,688.0100**	**1.1928**		**3,717.8294**

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000
Worker	0.0476	0.0316	0.3885	1.1600e-003	0.1402	7.1000e-004	0.1409	0.0373	6.5000e-004	0.0380		119.8221	119.8221	3.5200e-003	3.4000e-003	120.9239
Total	**0.0476**	**0.0316**	**0.3885**	**1.1600e-003**	**0.1402**	**7.1000e-004**	**0.1409**	**0.0373**	**6.5000e-004**	**0.0380**		**119.8221**	**119.8221**	**3.5200e-003**	**3.4000e-003**	**120.9239**

3.4 Grading - 2024

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e

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880 Doolittle Project - Alameda County, Winter

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Applied

Category	lb/day										lb/day					
Fugitive Dust					9.2405	0.0000	9.2405	3.6593	0.0000	3.6593			0.0000			0.0000
Off-Road	3.2181	32.3770	27.7228	0.0621		1.3354	1.3354		1.2286	1.2286		6,009.7487	6,009.7487	1.9437		6,058.3405
Total	**3.2181**	**32.3770**	**27.7228**	**0.0621**	**9.2405**	**1.3354**	**10.5759**	**3.6593**	**1.2286**	**4.8879**		**6,009.7487**	**6,009.7487**	**1.9437**		**6,058.3405**

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0807	5.4869	1.2312	0.0239	0.7140	0.0461	0.7601	0.1958	0.0441	0.2399		2,581.3958	2,581.3958	0.0557	0.4079	2,704.3446
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000
Worker	0.0529	0.0351	0.4317	1.2900e-003	0.1643	7.8000e-004	0.1651	0.0436	7.2000e-004	0.0443		133.1356	133.1356	3.9100e-003	3.7800e-003	134.3599
Total	**0.1336**	**5.5220**	**1.6629**	**0.0252**	**0.8783**	**0.0469**	**0.9252**	**0.2394**	**0.0448**	**0.2842**		**2,714.5314**	**2,714.5314**	**0.0596**	**0.4117**	**2,838.7044**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e

880 Doolittle Project - Alameda County, Winter

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Applied

Category	lb/day										lb/day					
Fugitive Dust					3.9503	0.0000	3.9503	1.5644	0.0000	1.5644			0.0000			0.0000
Off-Road	3.2181	32.3770	27.7228	0.0621		1.3354	1.3354		1.2286	1.2286	0.0000	6,009.7487	6,009.7487	1.9437		6,058.3405
Total	**3.2181**	**32.3770**	**27.7228**	**0.0621**	**3.9503**	**1.3354**	**5.2857**	**1.5644**	**1.2286**	**2.7929**	**0.0000**	**6,009.7487**	**6,009.7487**	**1.9437**		**6,058.3405**

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0807	5.4869	1.2312	0.0239	0.6817	0.0461	0.7278	0.1879	0.0441	0.2320		2,581.3958	2,581.3958	0.0557	0.4079	2,704.3446
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000
Worker	0.0529	0.0351	0.4317	1.2900e-003	0.1557	7.8000e-004	0.1565	0.0415	7.2000e-004	0.0422		133.1356	133.1356	3.9100e-003	3.7800e-003	134.3599
Total	**0.1336**	**5.5220**	**1.6629**	**0.0252**	**0.8374**	**0.0469**	**0.8843**	**0.2294**	**0.0448**	**0.2742**		**2,714.5314**	**2,714.5314**	**0.0596**	**0.4117**	**2,838.7044**

3.5 Building Construction - 2024

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e

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880 Doolittle Project - Alameda County, Winter

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Applied

Category	lb/day										lb/day					
Off-Road	1.4716	13.4438	16.1668	0.0270		0.6133	0.6133		0.5769	0.5769		2,555.6989	2,555.6989	0.6044		2,570.8077
Total	**1.4716**	**13.4438**	**16.1668**	**0.0270**		**0.6133**	**0.6133**		**0.5769**	**0.5769**		**2,555.6989**	**2,555.6989**	**0.6044**		**2,570.8077**

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.1020	4.7541	1.3998	0.0209	0.7184	0.0283	0.7467	0.2069	0.0271	0.2339		2,227.6064	2,227.6064	0.0306	0.3339	2,327.8636
Worker	0.7196	0.4773	5.8709	0.0176	2.2344	0.0107	2.2451	0.5927	9.8200e-003	0.6025		1,810.6445	1,810.6445	0.0532	0.0514	1,827.2942
Total	**0.8217**	**5.2314**	**7.2707**	**0.0384**	**2.9528**	**0.0390**	**2.9918**	**0.7995**	**0.0369**	**0.8364**		**4,038.2509**	**4,038.2509**	**0.0838**	**0.3853**	**4,155.1577**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					

880 Doolittle Project - Alameda County, Winter

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Applied

Off-Road	1.4716	13.4438	16.1668	0.0270		0.6133	0.6133		0.5769	0.5769	0.0000	2,555.6989	2,555.6989	0.6044		2,570.8077
Total	**1.4716**	**13.4438**	**16.1668**	**0.0270**		**0.6133**	**0.6133**		**0.5769**	**0.5769**	**0.0000**	**2,555.6989**	**2,555.6989**	**0.6044**		**2,570.8077**

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.1020	4.7541	1.3998	0.0209	0.6877	0.0283	0.7160	0.1993	0.0271	0.2264		2,227.6064	2,227.6064	0.0306	0.3339	2,327.8636
Worker	0.7196	0.4773	5.8709	0.0176	2.1179	0.0107	2.1286	0.5641	9.8200e-003	0.5739		1,810.6445	1,810.6445	0.0532	0.0514	1,827.2942
Total	**0.8217**	**5.2314**	**7.2707**	**0.0384**	**2.8056**	**0.0390**	**2.8446**	**0.7634**	**0.0369**	**0.8003**		**4,038.2509**	**4,038.2509**	**0.0838**	**0.3853**	**4,155.1577**

3.5 Building Construction - 2025

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Off-Road	1.3674	12.4697	16.0847	0.0270		0.5276	0.5276		0.4963	0.4963		2,556.4744	2,556.4744	0.6010		2,571.4981

880 Doolittle Project - Alameda County, Winter

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Applied

Total	**1.3674**	**12.4697**	**16.0847**	**0.0270**		**0.5276**	**0.5276**		**0.4963**	**0.4963**		**2,556.4744**	**2,556.4744**	**0.6010**		**2,571.4981**

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0997	4.7497	1.3771	0.0205	0.7184	0.0283	0.7467	0.2069	0.0271	0.2339		2,187.9365	2,187.9365	0.0306	0.3280	2,286.4577
Worker	0.6767	0.4301	5.5177	0.0170	2.2344	0.0102	2.2446	0.5927	9.4000e-003	0.6021		1,767.3043	1,767.3043	0.0484	0.0482	1,782.8786
Total	**0.7764**	**5.1798**	**6.8948**	**0.0375**	**2.9529**	**0.0385**	**2.9914**	**0.7995**	**0.0365**	**0.8360**		**3,955.2408**	**3,955.2408**	**0.0790**	**0.3762**	**4,069.3363**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Off-Road	1.3674	12.4697	16.0847	0.0270		0.5276	0.5276		0.4963	0.4963	0.0000	2,556.4744	2,556.4744	0.6010		2,571.4981
Total	**1.3674**	**12.4697**	**16.0847**	**0.0270**		**0.5276**	**0.5276**		**0.4963**	**0.4963**	**0.0000**	**2,556.4744**	**2,556.4744**	**0.6010**		**2,571.4981**

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880 Doolittle Project - Alameda County, Winter

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Applied

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0997	4.7497	1.3771	0.0205	0.6878	0.0283	0.7160	0.1993	0.0271	0.2264		2,187.9365	2,187.9365	0.0306	0.3280	2,286.4577
Worker	0.6767	0.4301	5.5177	0.0170	2.1179	0.0102	2.1281	0.5641	9.4000e-003	0.5735		1,767.3043	1,767.3043	0.0484	0.0482	1,782.8786
Total	**0.7764**	**5.1798**	**6.8948**	**0.0375**	**2.8057**	**0.0385**	**2.8442**	**0.7634**	**0.0365**	**0.7999**		**3,955.2408**	**3,955.2408**	**0.0790**	**0.3762**	**4,069.3363**

3.6 Paving - 2025

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Off-Road	0.9152	8.5816	14.5780	0.0228		0.4185	0.4185		0.3850	0.3850		2,206.7452	2,206.7452	0.7137		2,224.5878
Paving	0.5618					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Total	**1.4769**	**8.5816**	**14.5780**	**0.0228**		**0.4185**	**0.4185**		**0.3850**	**0.3850**		**2,206.7452**	**2,206.7452**	**0.7137**		**2,224.5878**

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880 Doolittle Project - Alameda County, Winter

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Applied

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000
Worker	0.0373	0.0237	0.3043	9.4000e-004	0.1232	5.6000e-004	0.1238	0.0327	5.2000e-004	0.0332		97.4616	97.4616	2.6700e-003	2.6600e-003	98.3205
Total	**0.0373**	**0.0237**	**0.3043**	**9.4000e-004**	**0.1232**	**5.6000e-004**	**0.1238**	**0.0327**	**5.2000e-004**	**0.0332**		**97.4616**	**97.4616**	**2.6700e-003**	**2.6600e-003**	**98.3205**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Off-Road	0.9152	8.5816	14.5780	0.0228		0.4185	0.4185		0.3850	0.3850	0.0000	2,206.7452	2,206.7452	0.7137		2,224.5878
Paving	0.5618					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Total	**1.4769**	**8.5816**	**14.5780**	**0.0228**		**0.4185**	**0.4185**		**0.3850**	**0.3850**	**0.0000**	**2,206.7452**	**2,206.7452**	**0.7137**		**2,224.5878**

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880 Doolittle Project - Alameda County, Winter

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Applied

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000
Worker	0.0373	0.0237	0.3043	9.4000e-004	0.1168	5.6000e-004	0.1174	0.0311	5.2000e-004	0.0316		97.4616	97.4616	2.6700e-003	2.6600e-003	98.3205
Total	**0.0373**	**0.0237**	**0.3043**	**9.4000e-004**	**0.1168**	**5.6000e-004**	**0.1174**	**0.0311**	**5.2000e-004**	**0.0316**		**97.4616**	**97.4616**	**2.6700e-003**	**2.6600e-003**	**98.3205**

3.7 Architectural Coating - 2025

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Archit. Coating	41.2838					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Off-Road	0.1709	1.1455	1.8091	2.9700e-003		0.0515	0.0515		0.0515	0.0515		281.4481	281.4481	0.0154		281.8319
Total	**41.4547**	**1.1455**	**1.8091**	**2.9700e-003**		**0.0515**	**0.0515**		**0.0515**	**0.0515**		**281.4481**	**281.4481**	**0.0154**		**281.8319**

Date: 12/23/2022 9:29 AM

880 Doolittle Project - Alameda County, Winter

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Applied

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000
Worker	0.1344	0.0854	1.0954	3.3700e-003	0.4436	2.0300e-003	0.4456	0.1177	1.8700e-003	0.1195		350.8619	350.8619	9.6100e-003	9.5700e-003	353.9538
Total	**0.1344**	**0.0854**	**1.0954**	**3.3700e-003**	**0.4436**	**2.0300e-003**	**0.4456**	**0.1177**	**1.8700e-003**	**0.1195**		**350.8619**	**350.8619**	**9.6100e-003**	**9.5700e-003**	**353.9538**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Archit. Coating	41.2838					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Off-Road	0.1709	1.1455	1.8091	2.9700e-003		0.0515	0.0515		0.0515	0.0515	0.0000	281.4481	281.4481	0.0154		281.8319
Total	**41.4547**	**1.1455**	**1.8091**	**2.9700e-003**		**0.0515**	**0.0515**		**0.0515**	**0.0515**	**0.0000**	**281.4481**	**281.4481**	**0.0154**		**281.8319**

880 Doolittle Project - Alameda County, Winter

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Applied

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000
Worker	0.1344	0.0854	1.0954	3.3700e-003	0.4205	2.0300e-003	0.4225	0.1120	1.8700e-003	0.1139		350.8619	350.8619	9.6100e-003	9.5700e-003	353.9538
Total	**0.1344**	**0.0854**	**1.0954**	**3.3700e-003**	**0.4205**	**2.0300e-003**	**0.4225**	**0.1120**	**1.8700e-003**	**0.1139**		**350.8619**	**350.8619**	**9.6100e-003**	**9.5700e-003**	**353.9538**

4.0 Operational Detail - Mobile

4.1 Mitigation Measures Mobile

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Mitigated	1.6369	20.2653	27.0900	0.1605	13.7542	0.2203	13.9745	3.6704	0.2090	3.8795		17,046.1820	17,046.1820	0.4188	1.6814	17,557.7122

880 Doolittle Project - Alameda County, Winter

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Applied

Unmitigated	1.6369	20.2653	27.0900	0.1605	13.7542	0.2203	13.9745	3.6704	0.2090	3.8795		17,046.1820	17,046.182	0.4188	1.6814	17,557.712

4.2 Trip Summary Information

	Average Daily Trip Rate			Unmitigated	Mitigated
Land Use	Weekday	Saturday	Sunday	Annual VMT	Annual VMT
Manufacturing	1,532.50	1,532.50	1532.50	5,299,385	5,299,385
Parking Lot	47.01	47.01	47.01	1,120,799	1,120,799
Total	1,579.51	1,579.51	1,579.51	6,420,184	6,420,184

4.3 Trip Type Information

	Miles			Trip %			Trip Purpose %		
Land Use	H-W or C-W	H-S or C-C	H-O or C-NW	H-W or C-W	H-S or C-C	H-O or C-NW	Primary	Diverted	Pass-by
Manufacturing	9.50	7.30	7.30	100.00	0.00	0.00	100	0	0
Parking Lot	0.00	0.00	65.50	0.00	0.00	100.00	100	0	0

4.4 Fleet Mix

Land Use	LDA	LDT1	LDT2	MDV	LHD1	LHD2	MHD	HHD	OBUS	UBUS	MCY	SBUS	MH
Manufacturing	1.000000	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	0.00000
Parking Lot	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	1.000000	0.000000	0.000000	0.000000	0.000000	0.00000

5.0 Energy Detail

Historical Energy Use: N

5.1 Mitigation Measures Energy

880 Doolittle Project - Alameda County, Winter

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Applied

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
NaturalGas Mitigated	0.1897	1.7242	1.4484	0.0104		0.1310	0.1310		0.1310	0.1310		2,069.0849	2,069.0849	0.0397	0.0379	2,081.3805
NaturalGas Unmitigated	0.1897	1.7242	1.4484	0.0104		0.1310	0.1310		0.1310	0.1310		2,069.0849	2,069.0849	0.0397	0.0379	2,081.3805

5.2 Energy by Land Use - NaturalGas

Unmitigated

	NaturalGas Use	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Land Use	kBTU/yr	lb/day										lb/day					
Manufacturing	17587.2	0.1897	1.7242	1.4484	0.0104		0.1310	0.1310		0.1310	0.1310		2,069.0849	2,069.0849	0.0397	0.0379	2,081.3805
Parking Lot	0	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000
Total		**0.1897**	**1.7242**	**1.4484**	**0.0104**		**0.1310**	**0.1310**		**0.1310**	**0.1310**		**2,069.0849**	**2,069.0849**	**0.0397**	**0.0379**	**2,081.3805**

Mitigated

	NaturalGas Use	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Land Use	kBTU/yr	lb/day										lb/day					

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Applied

Manufacturing	17.5872	0.1897	1.7242	1.4484	0.0104		0.1310	0.1310		0.1310	0.1310		2,069.0849	2,069.0849	0.0397	0.0379	2,081.3805
Parking Lot	0	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000
Total		**0.1897**	**1.7242**	**1.4484**	**0.0104**		**0.1310**	**0.1310**		**0.1310**	**0.1310**		**2,069.0849**	**2,069.0849**	**0.0397**	**0.0379**	**2,081.3805**

6.0 Area Detail

6.1 Mitigation Measures Area

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Mitigated	6.1422	6.0000e-004	0.0659	0.0000		2.3000e-004	2.3000e-004		2.3000e-004	2.3000e-004		0.1416	0.1416	3.7000e-004		0.1508
Unmitigated	6.1422	6.0000e-004	0.0659	0.0000		2.3000e-004	2.3000e-004		2.3000e-004	2.3000e-004		0.1416	0.1416	3.7000e-004		0.1508

6.2 Area by SubCategory

Unmitigated

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
SubCategory	lb/day										lb/day					

880 Doolittle Project - Alameda County, Winter

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Applied

Architectural Coating	0.7465					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Consumer Products	5.3896					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Landscaping	6.0700e-003	6.0000e-004	0.0659	0.0000		2.3000e-004	2.3000e-004		2.3000e-004	2.3000e-004		0.1416	0.1416	3.7000e-004		0.1508
Total	**6.1422**	**6.0000e-004**	**0.0659**	**0.0000**		**2.3000e-004**	**2.3000e-004**		**2.3000e-004**	**2.3000e-004**		**0.1416**	**0.1416**	**3.7000e-004**		**0.1508**

Mitigated

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
SubCategory	lb/day										lb/day					
Architectural Coating	0.7465					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Consumer Products	5.3896					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Landscaping	6.0700e-003	6.0000e-004	0.0659	0.0000		2.3000e-004	2.3000e-004		2.3000e-004	2.3000e-004		0.1416	0.1416	3.7000e-004		0.1508
Total	**6.1422**	**6.0000e-004**	**0.0659**	**0.0000**		**2.3000e-004**	**2.3000e-004**		**2.3000e-004**	**2.3000e-004**		**0.1416**	**0.1416**	**3.7000e-004**		**0.1508**

7.0 Water Detail

7.1 Mitigation Measures Water

Install Low Flow Bathroom Faucet

Install Low Flow Kitchen Faucet

Install Low Flow Toilet

880 Doolittle Project - Alameda County, Winter

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Applied

Install Low Flow Shower

Use Water Efficient Irrigation System

8.0 Waste Detail

8.1 Mitigation Measures Waste

Institute Recycling and Composting Services

9.0 Operational Offroad

Equipment Type	Number	Hours/Day	Days/Year	Horse Power	Load Factor	Fuel Type

10.0 Stationary Equipment

Fire Pumps and Emergency Generators

Equipment Type	Number	Hours/Day	Hours/Year	Horse Power	Load Factor	Fuel Type

Boilers

Equipment Type	Number	Heat Input/Day	Heat Input/Year	Boiler Rating	Fuel Type

User Defined Equipment

Equipment Type	Number

11.0 Vegetation

Model Output: OFFROAD2021 (v1.0.3) Emissions Inventory
Region Type: County
Region: Alameda
Calendar Year: 2025
Scenario: All Adopted Rules - Exhaust
Vehicle Classification: OFFROAD2021 Equipment Types
Units: tons/day for Emissions, gallons/year for Fuel, hours/year for Activity, Horsepower-hours/year for Horsepower-hours

Region	Calendar Ye:	Vehicle Category	Model Year	Horsepower	Fuel	HC_tpd	ROG_tpd	TOG_tpd	CO_tpd	NOx_tpd	CO2_tpd	PM10_tpd	PM2.5_tpd	SOx_tpd	NH3_tpd	Fuel Consumptior	Total_Activit	Total_Population	Horsepower_Hours_hhpy
Alameda	2025	Industrial - Forklifts	2025	100	Diesel	4.94176E-05	5.97953E-05	7.11614E-05	0.0025997	0.0011212	0.4419685	7.64293E-06	7.031E-06	4.08474E-06	3.60729E-06	14339.18088	17301.688	21.39495125	1379921.359

g/hph

	HC	ROG	TOG	CO	Nox	CO2	PM10	PM2_5	Sox	NH3	Fuel_gphr
2025	0.011858328	0.014348577	0.017075992	0.6238235	0.2690417	106.05542	0.001834008	0.0016873	0.000980179	0.00086561	3440851.361

Project Forklifts	5	
HP	89	
Hours per Day	12	
Days per Year	365	
1 pound =	453.5924	grams

Emissions Source	ROG	NOX	CO	SO2	PM10	PM2.5	CO2	metric tons/yr	PM10 tons/yr
Forklift Emissions	0.17	3.11	7.20	0.01	0.02	0.02	1,225	203	0.004

Based on emission rates obtained from CARB OFFROAD Version 1.0.3.
Number of forklifts per SCAQMD High Cube Warehouse Truck Trip Study White Paper Summary of Business Survey Results, June 2014.

Model Output: OFFROAD2021 (v1.0.3) Emissions Inventory
Region Type: County
Region: Alameda
Calendar Year: 2025
Scenario: All Adopted Rules - Exhaust
Vehicle Classification: OFFROAD2021 Equipment Types
Units: tons/day for Emissions, gallons/year for Fuel, hours/year for Activity, Horsepower-hours/year for Horsepower-hours

Region	Calendar Ye	Vehicle Category	Model Year	Horsepower B	Fuel	HC_tpd	ROG_tpd	TOG_tpd	CO_tpd	NOx_tpd	CO2_tpd	PM10_tpd	PM2.5_tpd	SOx_tpd	NH3_tpd	Fuel Consumption	Total_Activ	Total_Population	Horsepower_Hours_hhpy
Alameda	2025	Airport Ground Support - Cargo Loader	Aggregate	Aggregate	Diesel	0.000196174	0.00023737	0.00028249	0.004899	0.002411	0.890846	8.38678E-05	7.71584E-05	8.23042E-06	7.27096E-06	28902.50204	14228.45	29.80847884	1666655.073
Alameda	2025	Airport Ground Support - Cargo Tractor	Aggregate	Aggregate	Diesel	0.000332026	0.000401752	0.000478118	0.003831	0.003332	0.726877	0.000185275	0.000170453	6.71037E-06	5.93267E-06	23582.71218	13368.79	19.76605014	1258467.47
Alameda	2025	Airport Ground Support - Misc - Cargo Tractor	Aggregate	Aggregate	Gasoline	0.006933588	0.006377514	0.007629991	0.675615	0.033137	7.364745	0.000513488	0.000387968	6.08041E-05	0.000112034	319802.05	61374.75	45.42	5830601.25

g/hph

	HC	ROG	TOG	CO	Nox	CO2	PM10	PM2_5	Sox	NH3	Fuel_gphr
2025	0.038975445	0.047160289	0.056124641	0.9732985	0.4790538	176.99157	0.016662705	0.015329689	0.001635206	0.001444581	5742296.562
	0.087362752	0.105708929	0.125802362	1.0079949	0.8768078	191.25581	0.048749517	0.044849556	0.001765634	0.001561004	6205083.964
	0.393768168	0.362187961	0.433317849	38.36913	1.8818867	418.25415	0.029161683	0.022033272	0.003453148	0.006362579	18162005.71

	HC	ROG	TOG	CO	Nox	CO2	PM10	PM2_5	Sox	NH3	Fuel_gphr
2025	1.161798739	1.405776474	1.672990184	29.012548	14.279864	5275.8495	0.49668989	0.456954699	0.048742991	0.043060774	171169125.6
	1.726816529	2.089448	2.486615801	19.924077	17.331028	3780.3718	0.963585403	0.886498571	0.034899608	0.030854887	122650000.8
	17.88495018	16.45057717	19.68129669	1742.7259	85.475296	18997.104	1.324523655	1.000751206	0.156842	0.288988344	824918299.5
	20.77356544	19.94580165	23.84090267	1791.6625	117.08619	28053.325	2.784798948	2.344204475	0.240484598	0.362904005	1118737426
	0.218681704	0.209967899	0.250971324	18.860692	1.2325572	295.31516	0.029315361	0.024677258	0.002531563	0.003820262	11776861.66

Project Yard Trucks	1	
HP	190	
Hours per Day	12	
Days per Year	365	
1 pound =	453.5924	grams

Emissions Source	ROG	NOX	CO	SO2	PM10	PM2.5	CO2	MT/yr	PM10 tons/yr
Project Yard Trucks	0.93	5.47	83.69	0.01	0.13	0.11	1310.32	216.94	0.024

Based on aggregated emission rates obtained from CARB OFFROAD Version 1.0.1
Number of yard trucks/hostlers per SCAQMD High Cube Warehouse Truck Trip Study White Paper Summary of Business Survey Results, June 201

Emergency Backup Generator Emissions

	Fuel Type	Quantity	HP	LF	Hours/Year per Unit	Hours per Day	HP-hr per day	Total hp-hr per year
Standard Generator	Diesel	2	750	0.74	50	1	1,500	75,000

	HC	ROG	TOG	CO	NO_X	CO_2	PM_{10}	$PM_{2.5}$	PM	SO_X
Emissions Rates (g/hp-hr)	0.14	1.0205827	1.1249089	2.6	2.85	521.63114	0.15	0.15	0.15	0.00494
Pounds/Day	0.46	3.38	3.72	8.60	9.42	1725.00	0.50	0.50	0.50	0.02
Tons/Year	0.01	0.08	0.09	0.21	0.24	43.12	0.01	0.01	0.01	0.00
Metric tons/year						39.12				

Source: Emissions rates from CalEEMod Guide Appenix D, Table 12.1

Appendix B

Health Risk Assessment

Health Risk Assessment
880 Doolittle Drive Project
City of San Leandro, California

Kimley»Horn
Expect More. Experience Better.

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APPENDIX
Appendix A: Modeling Data

LIST OF ABBREVIATED TERMS

A	absorption factor from inhalation
ACES	Advanced Collaborative Emissions Study
ASF	age sensitivity factor
AB	Assembly Bill
APN	Assessor's Parcel Number
APS	auxiliary power system
AT	averaging time
ATCM	Air Toxic Control Measure
BAAQMD	Bay Area Air Quality Management District
CARB	California Air Resources Board
CCAA	California Clean Air Act
CEQA	California Environmental Quality Act
CPF	cancer potency factor
C_{air}	air concentration from model
C_i	air concentration of substance
DBR	daily breathing rate
DOORS	Diesel Off-Road Reporting System
DPM	Diesel Particulate Matter
DRRP	Diesel Risk Reduction Plan
Dose-air	dose through inhalation
EMFAC	Emissions Factor Model
ED	exposure duration
EF	exposure frequency
°F	Fahrenheit
FCAA	Federal Clean Air Act
FAH	fraction of time spent at home
GVWR	gross vehicle weight rating
HAP	hazardous air pollutant
HQ	health quotient
HRA	health risk assessment
kg	kilograms
L	liter
MICR	Maximum Individual Cancer Risk
mg	milligrams
$\mu g/m^3$	micrograms per cubic meter
MSAT	Mobile Source Air Toxic
NAAQS	National Ambient Air Quality Standards
NED	National Elevation Dataset
NESHAP	National Emissions Standards for Hazardous Air Pollutants
NO_2	nitrogen dioxide
NO_X	nitrogen oxides
O_3	ozone
OEHHA	Office Environmental Health Hazard Assessment
PM	particulate matter
PM_{10}	particulate matter less than 10 microns in diameter
$PM_{2.5}$	particulate matter less than 2.5 microns in diameter
PERP	Portable Equipment Registration Program
REL	Reference Exposure Level
REL_i	Reference Exposure Level of substance
$Risk_{inh\text{-}res}$	residential inhalation cancer risk
SB	Senate Bill
T-BACT	toxics best available control technology
TAC	Toxic Air Contaminant
U.S. EPA	United States Environmental Protection Agency
VMT	vehicle miles traveled

1 INTRODUCTION

The purpose of this Health Risk Assessment (HRA) is to evaluate potential health risks associated with Toxic Air Contaminants (TAC) including Diesel Particulate Matter (DPM) resulting from the implementation of the proposed 880 Doolittle Drive Project (Project) in San Leandro. This HRA was prepared in accordance with the requirements of the Bay Area Air Quality Management District (BAAQMD) and guidance from the Office of Environmental Health Hazard Assessment (OEHHA) to determine if health risks are likely to occur from the Project. Technical data is included as see Appendix A.

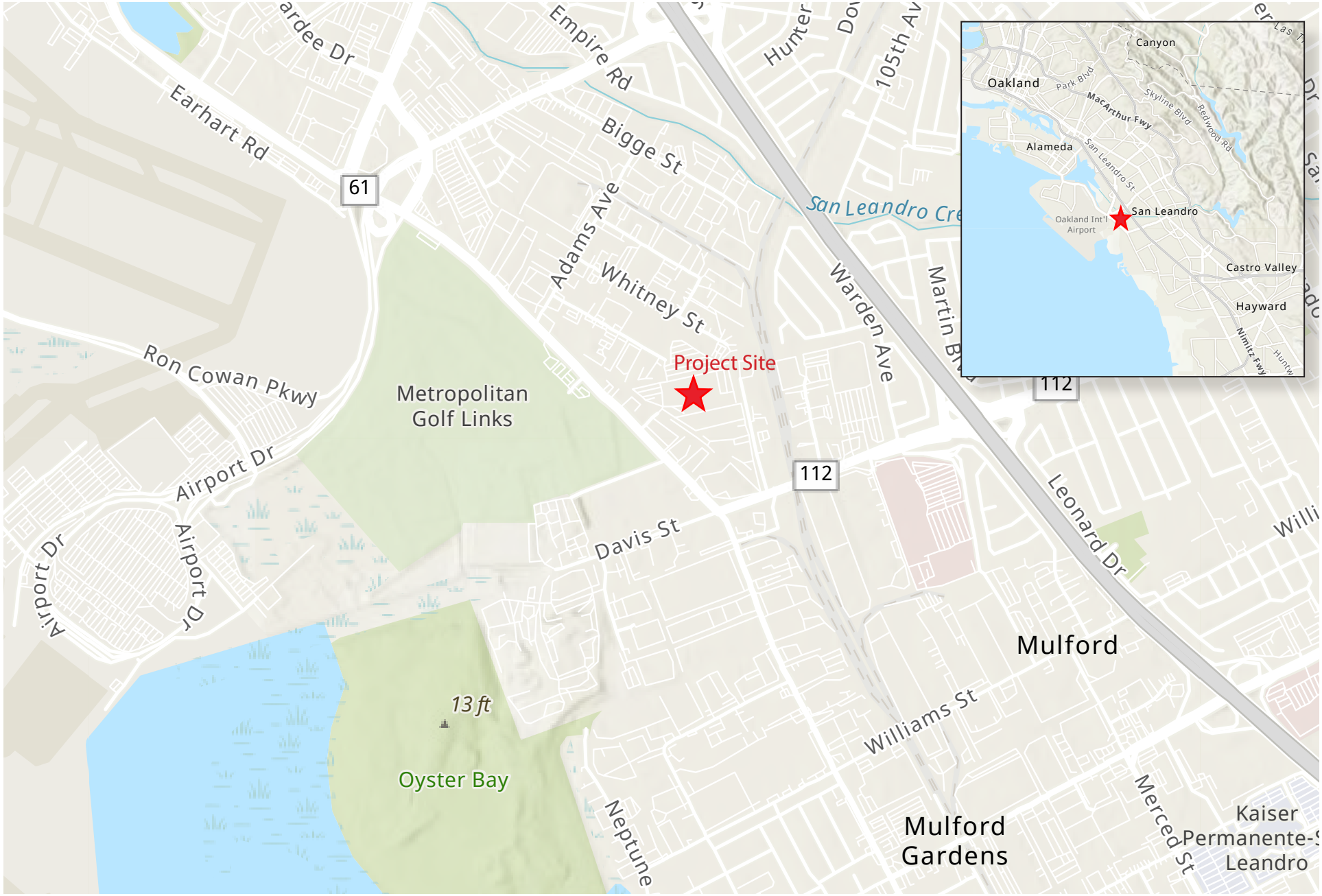
1.1 Project Location

The proposed Project is located at 880 Doolittle Drive, on the approximately 14.14-acre property (APNs # 77A-0741-004-02 and 77A-0741-005-00), in the City of San Leandro. Figure 1: Regional Vicinity and Figure 2: Site Vicinity depict the Project site in a regional and local context. The Project site is located in an urban area with a mix of surrounding uses including commercial, office, residential and industrial uses. The southern boundary comprises an existing railroad with commercial development beyond. The Project site's existing land use designation is General Industrial (IG) and existing zoning designation is General Industrial (IG) Zoning District. The Project site is currently developed with an approximately 212,000 square foot (sf) industrial use building and associated parking.

1.2 Project Description

The proposed Project would demolish the existing 212,000 sf of on-site industrial use buildings and construct an approximately 244,573 sf new warehouse. The proposed development would contain approximately 15,000 sf of ancillary office use, of which 5,000 sf of office use would be mezzanine level, refer to Figure 3: Project Site Plan. The footprint of the warehouse and office use is 239,753 sf. Sixty-four loading docks would be constructed as part of the proposed warehouse, 27 on the north side and 37 on the southside of the building. The proposed Project would include surface parking with 204 parking spaces, including 6 ADA stalls. Fifty-nine trailer stalls will also be provided and located to the north of the proposed warehouse building. Vehicular access to the Project site would be provided via three driveways. The two existing driveways (at Doolittle Drive and Hester Street) would be maintained, and a third driveway would be added from Hester Street.

The Project proposes several surface improvements, including new landscaping and reconfigured parking areas. Per City requirements (Municipal Code Section 2.12.320), proposed landscaping would comprise five percent of the Project site. The Project site has a general plan land use designation of General Industrial (IG) and is zoned Industrial General (IG). The IG designation may contain a wide range of manufacturing, transportation, food and beverage processing, technology, warehousing, vehicle storage, office-flex, and distribution uses. The IG zone permits new storage or wholesale/retail distribution facility warehouse uses with the approval of a conditional use permit (CUP).



Source: USGS, 2022

Figure 1: Regional Location Map

880 Doolittle Drive Project

Not to scale

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Source: Nearmap, 2022

Figure 2: Project Vicinity Map

880 Doolittle Drive Project

Not to scale

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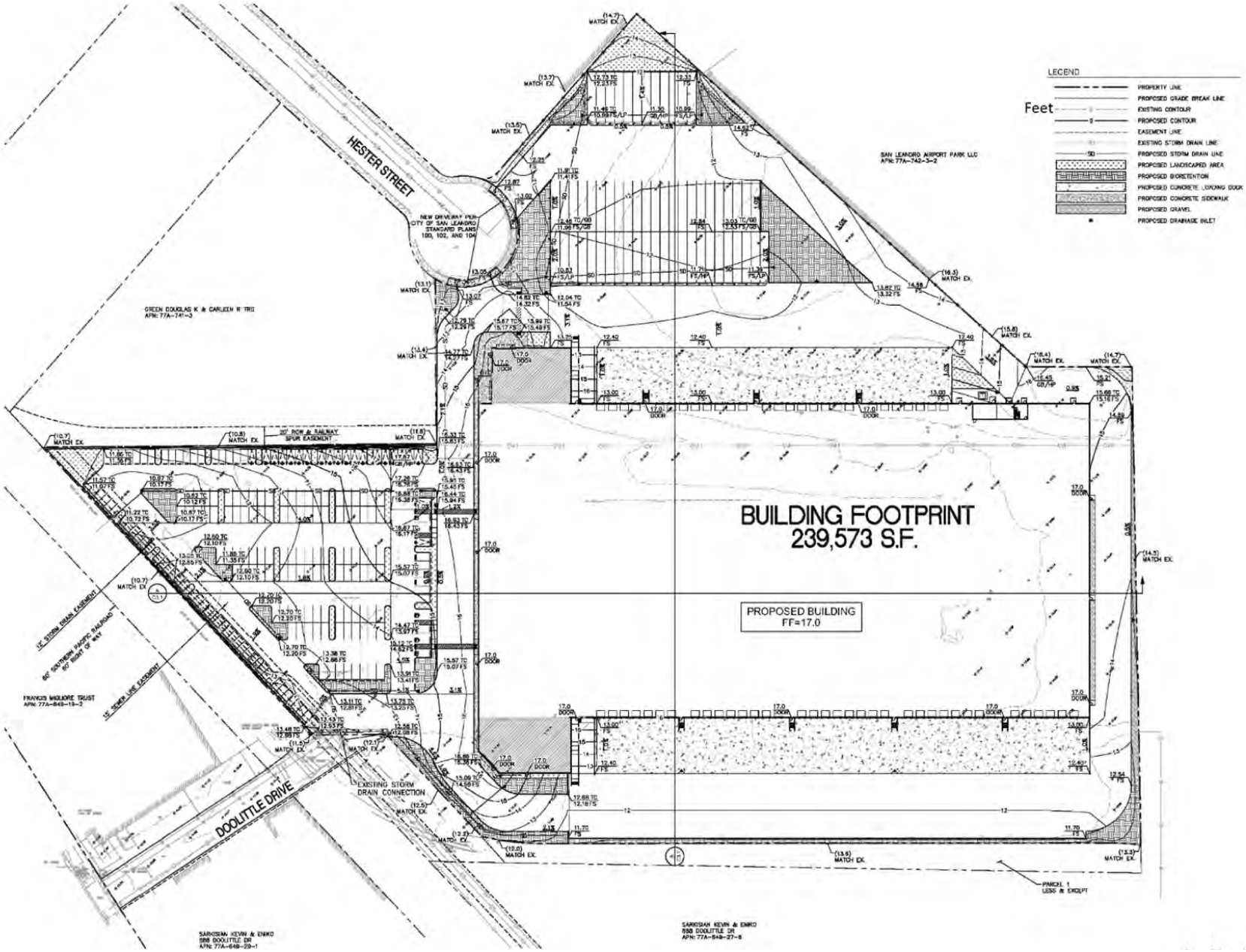

Source: HPA Architecture, 2022

Figure 3: Conceptual Site Plan

880 Doolittle Drive Project

Not to scale

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2 ENVIRONMENTAL SETTING

2.1 Climate

The Project is within the San Francisco Bay Area Air Basin (SFBAAB), which comprises all of Alameda, Contra Costa, Marin, Napa, San Francisco, San Mateo, and Santa Clara counties, the southern portion of Sonoma, and the southwestern portion of Solano County. SFBAAB is characterized by complex terrain, consisting of coastal mountain ranges, inland valleys, and bays, which distort normal wind flow patterns. The Coast Range splits resulting in a western coast gap, Golden Gate, and an eastern coast gap, Carquinez Strait, which allow air to flow in and out of the SFBAAB and the Central Valley.

The climate is dominated by the strength and location of a semi-permanent, subtropical high-pressure cell. During the summer, the Pacific high-pressure cell is centered over the northeastern Pacific Ocean resulting in stable meteorological conditions and a steady northwesterly wind flow. Upwelling of cold ocean water from below to the surface because of the northwesterly flow produces a band of cold water off the California coast. The cool and moisture-laden air approaching the coast from the Pacific Ocean is further cooled by the presence of the cold-water band resulting in condensation and the presence of fog and stratus clouds along the Northern California coast.

In the winter, the Pacific high-pressure cell weakens and shifts southward resulting in wind flow offshore, the absence of upwelling, and the occurrence of storms. Weak inversions coupled with moderate winds result in a low air pollution potential.

2.2 Toxic Air Contaminants

Toxic Air Contaminants (TACs) are airborne substances capable of causing short-term (acute) and long-term (chronic or carcinogenic, i.e., cancer causing) adverse human health effects (i.e., injury or illness). TACs include both organic and inorganic chemical substances. They may be emitted from a variety of common sources including gasoline stations, automobiles, dry cleaners, industrial operations, and painting operations. The current California list of TACs includes approximately 200 compounds, including particulate emissions from diesel-fueled engines.

Hazardous Air Pollutants (HAP) is a term used by the Federal Clean Air Act (FCAA) that includes a variety of pollutants generated or emitted by industrial production activities. Identified as TACs under the California Clean Air Act (CCAA), have been singled out through ambient air quality data as being the most substantial health risk in California. Direct exposure to these pollutants has been shown to cause cancer, birth defects, damage to the brain and nervous system, and respiratory disorders. The California Air Resources Board (CARB) provides emission inventories for only the larger air basins.

Industrial facilities and mobile sources are significant sources of TACs. The electronics industry, including semiconductor manufacturing, has the potential to contaminate both air and water due to the highly toxic chlorinated solvents commonly used in semiconductor production processes. In addition to industrial sources, various common urban facilities also produce TAC emissions, such as gasoline stations (benzene), hospitals (ethylene oxide), and dry cleaners (perchloroethylene). Automobile exhaust also contains TACs such as benzene and 1,3-butadiene. Diesel particulate matter (DPM) was identified as a TAC by CARB in 1998. DPM differs from other TACs in that it is not a single substance but rather a complex mixture of

hundreds of substances. BAAQMD research indicates that mobile-source emissions of DPM, benzene, and 1,3-butadiene represent a substantial portion of the ambient background risk from TACs in the SFBAAB.

TACs do not have ambient air quality standards because no safe levels of TACs can be determined. Instead, TAC impacts are evaluated by calculating the health risks associated with a given exposure. The requirements of the Air Toxic "Hot Spots" Information and Assessment Act (Assembly Bill [AB] 2588) apply to facilities that use, produce, or emit toxic chemicals. Facilities subject to the toxic emission inventory requirements of the act must prepare and submit toxic emission inventory plans and reports, and periodically update those reports.

Toxic contaminants often result from fugitive emissions during fuel storage and transfer activities, and from leaking valves and pipes. For example, the electronics industry, including semiconductor manufacturing, uses highly toxic chlorinated solvents in semiconductor production processes. Sources of air toxics go beyond industry, however. Automobile exhaust also contains toxic air pollutants such as benzene and 1,3-butadiene.

In California, on-road diesel-fueled engines contribute approximately 24 percent of the statewide total DPM emissions, with an additional 71 percent attributed to other mobile sources such as construction and mining equipment, agricultural equipment, and transport refrigeration units. Stationary sources contribute about 5 percent of total DPM. CARB has developed several plans and programs to reduce diesel emissions such as the Diesel Risk Reduction Plan (DRRP), the Statewide Portable Equipment Registration Program (PERP), and the Diesel Off-Road Reporting System (DOORS). The PERP and DOORS programs allow owners or operators of portable engines and certain other types of equipment to register their units to operate their equipment throughout California without having to obtain individual permits from local air districts.

As stated above, diesel exhaust and many individual substances contained in it (including arsenic, benzene, formaldehyde, and nickel) have the potential to contribute to mutations in cells that can lead to cancer. Long-term exposure to diesel exhaust particles poses the highest cancer risk of any TAC evaluated by OEHHA. CARB estimates that about 70 percent of the cancer risk that the average Californian faces from breathing toxic air pollutants stems from diesel exhaust particles.

Exposure to diesel exhaust can have immediate health effects. Diesel exhaust can irritate the eyes, nose, throat, and lungs, and it can cause coughs, headaches, lightheadedness, and nausea. In studies with human volunteers, diesel exhaust particles made people with allergies more susceptible to the materials to which they are allergic, such as dust and pollen. Exposure to diesel exhaust also causes inflammation in the lungs, which may aggravate chronic respiratory symptoms and increase the frequency or intensity of asthma attacks.

Diesel engines are a major source of fine particulate pollution. The elderly and people with emphysema, asthma, and chronic heart and lung disease are especially sensitive to fine-particle pollution. Numerous studies have linked elevated particle levels in the air to increased hospital admissions, emergency room visits, asthma attacks, and premature deaths among those suffering from respiratory problems. Because children's lungs and respiratory systems are still developing, they are also more susceptible than healthy adults to fine particles. Exposure to fine particles is associated with increased frequency of childhood

illnesses and can also reduce lung function in children. California has identified diesel exhaust particles as a carcinogen.

2.3 Sensitive Receptors

Sensitive populations are more susceptible to the effects of air pollution than the general population. Sensitive receptors in proximity to localized sources of toxics are of particular concern. Land uses considered sensitive receptors include residences, schools, playgrounds, childcare centers, long-term health care facilities, rehabilitation centers, convalescent centers, and retirement homes.

The Project site is located at the end of Doolittle Drive in the City of San Leandro. The surrounding land uses are predominantly general industrial and industrial park, with single-family residences located to the northeast. Table 1: Sensitive Receptors, lists the distances and locations of nearby sensitive receptors. See Figure 4: Sensitive Receptor Locations for locations of nearest sensitive receptors.

Table 1: Sensitive Receptors

Receptor Description	Distance and Direction from the Project Site
Single-Family Residences	500 feet northeast
Metropolitan Golf Links Course	700 feet west
Holiday Inn	0.50 miles north
Source: Google Earth, 2022.	

Source: Nearmap, 2022

Figure 4: Sensitive Receptor Locations

880 Doolittle Drive Project

Not to scale

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3 REGULATORY SETTING

3.1 Federal

Federal Clean Air Act

The FCAA was amended in 1990 to address the numerous air pollutants that are known to cause or may reasonably be anticipated to cause adverse effects to human health or adverse environmental effects. 188 specific pollutants and chemical groups were initially identified as HAPs, and the list has been modified over time. The FCAA Amendments included new regulatory programs to control acid deposition and for the issuance of stationary source operating permits.

In 2001, the United States Environmental Protection Agency (U.S. EPA) issued its first Mobile Source Air Toxics Rule, which identified 21 mobile source air toxic (MSAT) compounds as being HAPs that required regulation. A subset of six of these MSAT compounds were identified as having the greatest influence on health: benzene, 1,3-butadiene, formaldehyde, acrolein, acetaldehyde, and DPM. More recently, the U.S. EPA issued a second MSAT Rule in February 2007, which generally supported the findings in the first rule and provided additional recommendations of compounds having the greatest impact on health. The rule also identified several engine emission certification standards that must be implemented. Unlike the criteria pollutants, toxics do not have National Ambient Air Quality Standards (NAAQS) making evaluation of their impacts less uniform.

National Emissions Standards for Hazardous Air Pollutants (NESHAPs) were incorporated into a greatly expanded program for controlling toxic air pollutants. The provisions for attainment and maintenance of the NAAQS were substantially modified and expanded. Other revisions included provisions regarding stratospheric ozone protection, increased enforcement authority, and expanded research programs.

Section 112 of the FCAA Amendments governs the federal control program for HAPs. NESHAPs are issued to limit the release of specified HAPs from specific industrial sectors. These standards are technology-based, meaning that they represent the best available control technology an industrial sector could afford. The level of emissions controls required by NESHAPs are not based on health risk considerations because allowable releases and resulting concentrations have not been determined to be safe for the public. The FCAA does not establish air quality standards for HAPs that define legally acceptable concentrations of these pollutants in ambient air.

Federal Emissions Standards for On-Road Trucks

To reduce emissions from on-road, heavy-duty diesel trucks, the U.S. EPA established a series of increasingly strict emission standards for new engines, starting in 1988. The U.S. EPA promulgated the final and cleanest standards with the 2007 Heavy-Duty Highway Rule.[1] The PM emission standard of 0.01 gram per horsepower-hour (g/hp-hr) is required for new vehicles beginning with model year 2007. Also, the NO_X and nonmethane hydrocarbon (NMHC) standards of 0.20 g/hp-hr and 0.14 g/hp-hr, respectively,

[1] United States Environmental Protection Agency (U.S. EPA), *Control of Air Pollution from New Motor Vehicles: Heavy-Duty Engine and Vehicle Standards and Highway Diesel Fuel Sulfur Control Requirements*, Final Rule. 40 Code of Federal Regulations, Parts 69, 80, and 86. January 18, 2001.

were phased in together between 2007 and 2010 on a percent of sales basis: 50 percent from 2007 to 2009 and 100 percent in 2010.

Emission Standards for Nonroad Diesel Engines

To reduce emissions from off-road diesel equipment, the U.S. EPA established a series of cleaner emission standards for new off-road diesel engines. Tier 1 standards were phased in from 1996 to 2000 (year of manufacture), depending on the engine horsepower category. Tier 2 standards were phased in from 2001 to 2006. Tier 3 standards were phased in from 2006 to 2008. Tier 4 standards, which generally require add-on emission control equipment to attain them, are being phased in from 2008 to 2015.

3.2 State of California

California Air Resources Board

CARB's statewide comprehensive air toxics program was established in 1983 with AB 1807 the Toxic Air Contaminant Identification and Control Act (Tanner Air Toxics Act of 1983). AB 1807 created California's program to reduce exposure to air toxics and sets forth a formal procedure for CARB to designate substances as TACs. Once a TAC is identified, CARB adopts an airborne toxics control measure (ATCM) for sources that emit designated TACs. If there is a safe threshold for a substance at which there is no toxic effect, the control measure must reduce exposure to below that threshold. If there is no safe threshold, the measure must incorporate toxics best available control technology (T-BACT) to minimize emissions.

CARB also administers the State's mobile source emissions control program and oversees air quality programs established by State statute, such as AB 2588. Under AB 2588, TAC emissions from individual facilities are quantified and prioritized by the air quality management district or air pollution control district. High priority facilities are required to perform a health risk assessment and, if specific thresholds are exceeded, required to communicate the results to the public in the form of notices and public meetings. In September 1992, the AB 2588 was amended by Senate Bill (SB) 1731 which required facilities that pose a significant health risk to the community to reduce their risk through a risk management plan.

Diesel Risk Reduction Plan

The identification of DPM as a TAC in 1998 led CARB to adopt the Risk Reduction Plan to Reduce Particulate Matter Emissions from Diesel-Fueled Engines and Vehicles (DRRP) in October 2000. The DRRP's goals include an 85 percent reduction in DPM by 2020 from the 2000 baseline[2]. CARB estimates that emissions of DPM in 2035 will be less than half those in 2010, further reducing statewide cancer risk and non-cancer health effects.[3] The DRRP includes regulations to establish cleaner new diesel engines, cleaner in-use diesel engines (retrofits), and cleaner diesel fuel.

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[2] California Air Resources Board, *Risk Reduction Plan to Reduce Particulate Matter Emissions from Diesel-Fueled Engines and Vehicles*, October 2000.

[3] California Air Resources Board, *Overview: Diesel Exhaust & Health*, available at: https://ww2.arb.ca.gov/resources/overview-diesel-exhaust-and-health, accessed on April 2021.

Truck and Bus Regulation Reducing Emissions from Existing Diesel Vehicles

On December 12, 2008, CARB approved the Truck and Bus Regulation to significantly reduce PM and NO_X emissions from existing diesel vehicles operating in California. The regulation requires PM retrofits on all diesel trucks and buses that operate in California (i.e., existing vehicles are required to be upgraded to reduce emissions). Heavier trucks must be retrofitted with PM filters beginning January 1, 2012, and older trucks must be replaced starting January 1, 2015. By January 1, 2023, nearly all trucks and buses would need to have 2010 model year engines or equivalent.

The regulation applies to most privately-owned and federally-owned diesel fueled trucks and buses and to privately and publicly owned school buses with a gross vehicle weight rating (GVWR) greater than 14,000 pounds. Small fleets with three or fewer diesel trucks can delay compliance for heavier trucks and there are several extensions for low-mileage construction trucks, early PM filter retrofits, adding cleaner vehicles, and other situations. Privately and publicly owned school buses have different requirements.

Heavy-Duty Vehicle Idling Emission Reduction Program

The purpose of the CARB ATCM to Limit Diesel-Fueled Commercial Motor Vehicle Idling is to reduce public exposure to diesel particulate matter and criteria pollutants by limiting the idling of diesel-fueled commercial vehicles. The driver of any vehicle subject to this ATCM is prohibited from idling the vehicle's primary diesel engine for greater than five minutes at any location and is prohibited from idling a diesel-fueled auxiliary power system (APS) for more than five minutes to power a heater, air conditioner, or any ancillary equipment on the vehicle if it has a sleeper berth and the truck is located within 100 feet of a restricted area (homes and schools).

CARB Final Regulation Order, Requirements to Reduce Idling Emissions from New and In-Use Trucks, beginning in 2008, would require that new 2008 and subsequent model-year heavy-duty diesel engines be equipped with an engine shutdown system that automatically shuts down the engine after 300 seconds of continuous idling operation once the vehicle is stopped, the transmission is set to "neutral" or "park", and the parking brake is engaged.

CalEnviroScreen

OEHHA has developed CalEnviroScreen 4.0, which is a mapping tool that helps identify California communities that are most affected by many sources of pollution, and where people are often especially vulnerable to pollution's effects. CalEnviroScreen uses environmental, health, and socioeconomic information to produce scores for every census tract in the State. The scores are mapped so that different communities can be compared. An area with a high score is one that experiences a much higher pollution burden than areas with low scores.

According to CalEnviroScreen, the Project site is located within Census Tract 6001441503, which is within the 40-45 percentile. However, the nearest sensitive receptors to the east are located within the 25-30 percentile (Census Tract 6001443321) and 15-20 percentile (Census Tract 6001443322). It should be noted that the CalEnviroScreen scores are not an expression of health risk, and do not provide quantitative information on increases in cumulative impacts for specific sites or projects. Further, as a comparative

screening tool, the results do not provide a basis for determining when differences between scores are significant in relation to public health or the environment.

CARB Advanced Clean Truck Regulation

CARB adopted the Advanced Clean Truck Regulation in June 2020 requiring truck manufacturers to transition from diesel trucks and vans to electric zero-emission trucks beginning in 2024. By 2045, every new truck sold in California is required to be zero-emission. This rule directly addresses disproportionate risks and health and pollution burdens and puts California on the path for an all zero-emission short-haul drayage fleet in ports and railyards by 2035, and zero-emission "last-mile" delivery trucks and vans by 2040. The Advanced Clean Truck Regulation accelerates the transition of zero-emission medium-and heavy-duty vehicles from Class 2b to Class 8. The regulation has two components including a manufacturer sales requirement, and a reporting requirement:

- Zero-Emission Truck Sales: Manufacturers who certify Class 2b through 8 chassis or complete vehicles with combustion engines are required to sell zero-emission trucks as an increasing percentage of their annual California sales from 2024 to 2035. By 2035, zero-emission truck/chassis sales need to be 55 percent of Class 2b – 3 truck sales, 75 percent of Class 4 – 8 straight truck sales, and 40 percent of truck tractor sales.
- Company and Fleet Reporting: Large employers including retailers, manufacturers, brokers and others would be required to report information about shipments and shuttle services. Fleet owners, with 50 or more trucks, would be required to report about their existing fleet operations. This information would help identify future strategies to ensure that fleets purchase available zero-emission trucks and place them in service where suitable to meet their needs.

Executive Order N-79-20

Signed in September 2020, Executive Order N-79-20 establishes as a goal that where feasible, all new passenger cars and trucks, as well as all drayage/cargo trucks and off-road vehicles and equipment, sold in California, will be zero-emission by 2035. The executive order sets a similar goal requiring that all medium and heavy-duty vehicles will be zero-emission by 2045 where feasible. It also directs CARB to develop and propose rulemaking for passenger vehicles and trucks, medium-and heavy-duty fleets where feasible, drayage trucks, and off-road vehicles and equipment "requiring increasing volumes" of new zero emission vehicles (ZEVs) "towards the target of 100 percent." The executive order directs the California Environmental Protection Agency, the California Geologic Energy Management Division (CalGEM), and the California Natural Resources Agency to transition and repurpose oil production facilities with a goal toward meeting carbon neutrality by 2045. Executive Order N-79-20 builds upon the CARB Advanced Clean Trucks regulation, which was adopted by CARB in July 2020.

3.3 Regional

Bay Area Air Quality Management District

The BAAQMD is the regional agency tasked with managing air quality in the region and has regulated TACs since the 1980s. The CCAA provides the BAAQMD with the authority to manage transportation activities at indirect sources and regulate stationary source emissions. Indirect sources of pollution are generated when minor sources collectively emit a substantial amount of pollution. An example of this would be the motor vehicles at an intersection, a mall, and on highways. As a State agency, CARB regulates motor

vehicles and fuels for their emissions. The BAAQMD has published California Environmental Quality Act (CEQA) Air Quality Guidelines that are used in this assessment to evaluate air quality impacts of projects.

Under BAAQMD Regulation 2-1 (General Permit Requirements), Regulation 2-2 (New Source Review), and Regulation 2-5 (New Source Review of Toxic Air Contaminants), all nonexempt sources that possess the potential to emit TACs are required to obtain permits from BAAQMD. Permits may be granted to these operations if they are constructed and operated in accordance with applicable regulations, including new source review standards and air toxics control measures. The BAAQMD limits emissions and public exposure to TACs through a number of programs. Section 301 of Regulation 2, Rule 2 requires Best Available Control Technology (BACT) is triggered for any new or modified source with the potential to emit specific levels of pollutants. The BAAQMD prioritizes TAC-emitting stationary sources for regulation based on the quantity and toxicity of the TAC emissions and the proximity of the facilities to sensitive receptors.

Community Air Risk Evaluation Program

The BAAQMD's Community Air Risk Evaluation (CARE) program estimates and reports both local and regional impacts of TACs in the Bay Area. The objective of the CARE Program is to reduce health impacts linked to local air quality. The goals of the CARE Program are to: (1) identify areas where air pollution contributes most to health impacts and where populations are most vulnerable to air pollution; (2) apply sound scientific methods and strategies to reduce health impacts in these areas; and (3) engage community groups and other agencies to develop additional actions to reduce local health impacts. Information from the CARE program is used by the BAAQMD to design and focus effective mitigation measures in areas with highest impacts.

4 SIGNIFICANCE CRITERIA AND METHODOLOGY

4.1 Health Risk Analysis Thresholds

Project health risks are determined by examining the types and levels of air toxics generated and the associated impacts on factors that affect air quality. The BAAQMD publishes the California Environmental Quality Act (CEQA) Air Quality Guidelines, which were most recently updated in April 2022. The BAAQMD thresholds for air toxic emissions that are used for this project are shown below:

Individual Projects:

- **Excess Cancer Risk:** Emit contaminants that exceed the maximum individual cancer risk of 10 in one million.
- **Non-Cancer Risk:** Emit contaminants that exceed the maximum hazard quotient of 1.0 in one million.
- **Ambient $PM_{2.5}$ Concentration:** Incremental increase in average annual $PM_{2.5}$ concentration of greater than 0.3 $\mu g/m^3$

Cumulative Thresholds:

- **Excess Cancer Risk:** Emit contaminants that would contribute to cumulative emissions, resulting in an exceedance of the maximum individual cancer risk of 100 in one million.
- **Non-Cancer Risk:** Emit contaminants that that would contribute to cumulative emissions, resulting in an exceedance of the maximum hazard quotient of 10.0 in one million.
- **Ambient $PM_{2.5}$ Concentration:** Incremental increase in average cumulative annual $PM_{2.5}$ concentration of greater than 0.8 $\mu g/m^3$

Cancer risk is expressed in terms of expected incremental incidence per million population. The BAAQMD has established an individual project incidence rate of 10 persons per million as the maximum acceptable incremental cancer risk. This threshold serves to determine if a given project has a potentially significant development-specific and cumulative impact. The 10 in one million standard is a health-protective significance threshold. A risk level of 10 in one million implies a likelihood that up to 10 persons, out of one million equally exposed people would contract cancer if exposed continuously (24 hours per day) to the levels of toxic air contaminants over a specified duration of time. This risk would be an excess cancer that is in addition to any cancer risk borne by a person not exposed to these air toxics. To put this risk in perspective, the risk of dying from accidental drowning is 1,000 in one million which is 100 times more than the BAAQMD's threshold of 10 in one million.

The BAAQMD has also established non-carcinogenic risk parameters for use in HRAs. Noncarcinogenic risks are quantified by calculating a hazard index (HI), expressed as the ratio between the ambient pollutant concentration and its toxicity or Reference Exposure Level (REL). An REL is a concentration at or below which health effects are not likely to occur. A HI less than 1.0 means that adverse health effects are not expected. Within this analysis, non-carcinogenic exposures of less than 1.0 are considered less than significant.

The 2022 BAAQMD CEQA Air Quality Guidelines recommend assessing impacts within 1,000 feet of the Project. The 1,000-foot radius is consistent with findings in CARB's Air Quality and Land Use Handbook (2005) and the California Health & Safety Code §42301.6 (Notice for Possible Source Near School). The CARB Air Quality and Land Use Handbook found that TAC concentrations are reduced substantially at a distance 1,000 feet downwind from sources such as freeways or large distribution centers.

4.2 Methodology

This HRA evaluates potential health risks associated with the emission of diesel particulate matter resulting from the implementation of the proposed Project. Construction equipment and associated heavy-duty truck traffic generate diesel exhaust, which is a known TAC. Diesel exhaust from construction equipment operating at the site poses a health risk to nearby sensitive receptors. Operational activities would also include the use of heavy-duty diesel trucks.

Construction Risk

Construction would generate DPM emissions from the use of off-road diesel equipment required for demolition, grading and excavation, paving, and other construction activities. For construction activity, DPM is the primary toxic air contaminant of concern. On-road diesel-powered haul trucks traveling to and from the construction area to deliver materials and equipment are less of a concern because they would not stay on the site for long durations. Diesel exhaust from construction equipment operating at the site potentially poses a health risk to nearby sensitive receptors. The closest sensitive receptors to the Project site are the residences 500 feet northeast of the Project site. However, the risk to offsite workers (approximately 100 feet) and those at the nearest recreational facility (approximately 400 feet) were evaluated as well.

Health-related risks associated with diesel-exhaust emissions are primarily linked to long-term exposure and the associated risk of contracting cancer. The use of diesel-powered construction equipment would be episodic and would occur throughout the Project site. Construction activities would limit idling to no more than five minutes, which would further reduce nearby sensitive receptors' exposure to temporary and variable DPM emissions. Furthermore, even during the most intense year of construction, emissions of DPM would be generated from different locations on the Project site rather than in a single location because different types of construction activities (e.g., site preparation and building construction) would not occur at the same place at the same time.

Operational Sources

The truck traffic from the Project could also result in pollutant concentrations at existing receptors (including sensitive receptors, offsite workers, and recreators). Average daily trips from truck traffic to the Project were obtained from the Project Trip Generation Analysis (November 2022). Emission rates for vehicle running and idling for $PM_{2.5}$ (DPM) was calculated using trip data and CARB 2021 EMission FACtor model version 1.0.2 (EMFAC)[4] data for Alameda County; refer to Appendix A. The emissions rate was calculated using 2025 emissions factors since Project construction would be completed in 2025. This approach is conservative as it assumes no cleaner technology in future years.

[4] California Air Resources Board, *EMFAC 2021 Web Database,* www.arb.ca.gov/emfac/2021/, accessed December 2022.

Dispersion Modeling

The air dispersion modeling for the operational risk assessment was performed using U.S. EPA AERMOD dispersion model. AERMOD is a steady-state, multiple-source, Gaussian dispersion model designed for use with emission sources situated in terrain where ground elevations can exceed the stack heights of the emission sources (not a factor in this case). AERMOD requires hourly meteorological data consisting of wind vector, wind speed, temperature, stability class, and mixing height. AERMOD regulatory defaults, the "Urban" modeling option for the County, and "Elevated" terrain were used for this analysis. In addition, National Elevation Dataset (NED) terrain data was imported into AERMOD for the Project. Surface and upper air meteorological data is provided by CARB. Surface and upper air meteorological data from the Oakland International Airport Station was selected as being the most representative for meteorology based on proximity to the Project site.

The emission sources in the model are line volume sources (comprised of smaller adjacent volume sources) for the loading dock idling areas, on-site truck circulation, and off-site routes. The trailer loading areas for the site (as shown on Figure 3) are located on the north and south side of the building. Heavy duty vehicle emissions were assigned a release height of 10 feet (3.11 meters), a plume height of 20.4 feet (6.22 meters). A release height of 10 feet is the average stack height for trucks and the plume height is based on U.S. EPA guidance for vehicle volume sources. A point source was included for the emergency backup generator. Building downwash effect was applied to the proposed building.

AERMOD was run to obtain the peak 1-hour, 24-hour and annual (period) average concentration in micrograms per cubic meter ($\mu g/m^3$) at the nearby receivers (as shown on Figure 4*)*. The annual average concentrations were used to calculate the Maximum Individual Cancer Risk (MICR), the maximum chronic HI. To achieve these goals, a receptor grid was placed over the Project site to cover the zone of impact. Due to the size of the Project site, nearby sensitive receptors were modeled with a 50-meter (164.04-foot) grid spacing. In addition, National Elevation Dataset (NED) terrain data was imported into AERMOD for the Project. The modeling and analysis was prepared in accordance with the BAAQMD Modeling Guidance for AERMOD[5].

Project construction would occur for over a period of up to 17 months. However, the health risk computation was performed to determine the risk of developing an excess cancer risk calculated on a 3-year exposure scenario as recommended by the BAAQMD, and thus is conservative.[6] The cancer risk calculations were based on applying age sensitivity weighting factors for each emissions period modeled. Age-sensitivity factors reflect the greater sensitivity of infants and small children to cancer causing TACs. The chronic and carcinogenic health risk calculations are based on the standardized equations contained in the OEHHA Guidance Manual. Only the risk associated with the worst-case location of the proposed Project was assessed.

Maximum (worst case) $PM_{2.5}$ exhaust construction emissions over the entire construction period were used in AERMOD to approximate construction DPM emissions. Risk levels were calculated according to the California Office of Environmental Health Hazard Assessment (OEHHA) guidance document, *Air Toxics Hot Spots Program Risk Assessment Guidelines* (February 2015).

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5 Bay Area Air Quality Management District, *BAAQMD Air Toxics NSR Program Health Risk Assessment (HRA) Guidelines*, January 2016.

6 The BAAQMD recommends that the cancer risk be evaluated assuming that the average daily dose for short-term exposure lasts a minimum of three years for Projects lasting three years or less (BAAQMD, *BAAQMD Air Toxics NSR Program Health Risk Assessment Guidelines*, December 2016).

Note that the concentration estimate developed using this methodology is conservative and is not a specific prediction of the actual concentrations that would occur at the Project site at any given point in time. Actual 1-hour and annual average concentrations are dependent on many variables, including specific distances during time periods of adverse meteorology. A health risk computation was performed to determine the risk of developing an excess cancer risk calculated on these worst-case exposure duration scenarios. The chronic and carcinogenic health risk calculations are based on the standardized equations contained in the OEHHA Guidance Manual. Only the risk associated with the worst-case location of the Project was assessed.

Risk and Hazard Assessment

Cancer Risk. Based on the OEHHA methodology, residential inhalation cancer risk from annual average DPM and benzene concentrations are calculated by multiplying the daily inhalation dose, cancer potency factor, age sensitivity factor (ASF), frequency of time spent at home, and exposure duration divided by averaging time, yielding the excess cancer risk. These factors are discussed in more detail below. It is important to note that exposure duration is based on continual heavy truck operations along nearby roadways. Exposure through inhalation (Dose-air) is a function of breathing rate, exposure frequency, and concentration of substance in the air. To estimate cancer risk, the dose was estimated by applying the following formula to each ground-level concentration:

$$\text{Dose-air} = C_{air}*(BR/BW)*A*EF*10^{-6}$$

Where:

Dose-air	=	dose through inhalation (mg/kg/day)
C_{air}	=	air concentration (µg/m^3) from air dispersion model
(BR/BW)	=	daily breathing rate normalized to body weight (L/kg bodyweight-day)
A	=	inhalation absorption factor (unitless)
EF	=	exposure frequency (approximately 350 days per year for residential)
10^{-6}	=	conversion factor (micrograms to milligrams, liters to cubic meters)

OEHHA developed ASFs to consider the increased sensitivity to carcinogens during early-life exposure. In the absence of chemical-specific data, OEHHA recommends a default ASF presented in Table 2: Default Age Sensitivity Factors, Fraction of Time at Home, and Daily Breathing Rates. Fraction of time at home (FAH) during the day is used to adjust exposure duration and cancer risk from a specific facility's emissions, based on the assumption that exposure to the facility's emissions are not occurring away from home. OEHHA recommends the FAH values presented in Table 2.

Table 2: Default Age Sensitivity Factors, Fraction of Time at Home, and Daily Breathing Rates

Age	Default Age Sensitivity Factor[1] (ASF)	Fraction of Time at Home (FAH)	Daily Breathing Rate (L/kg BW-day[2])
Third trimester to age 2 years	10	85%	361
Ages 2 through 15 years	3	72%	1,090
Ages 16 and greater	1	73%	745

1. Accounts for potential increased sensitivity to carcinogens during childhood.
2. 95th percentile daily breathing rate normalized to body weight (L/kg body weight-day)
Source: California Office of Environmental Health Hazard Assessment, *Air Toxics Program Guidance Manual for the Preparation of Health Risk Assessments*, February 2015 and BAAQMD, *Air Toxics NSR Program HRA Guidelines*, December 2016.

To estimate the cancer risk, the dose is multiplied by the cancer potency factor, the ASF, the exposure duration divided by averaging time, and the frequency of time spent at home (for residents only):

$$Risk_{inh\text{-}res} = (Dose_{air}*CPF*ASF*(ED/AT)*FAH)$$

Where:

$Risk_{inh\text{-}res}$ = residential inhalation cancer risk (potential chances per million)

$Dose_{air}$ = daily dose through inhalation (mg/kg-day)

CPF = inhalation cancer potency factor (mg/kg-day^{-1})

ASF = age sensitivity factor for a specified age group (unitless)

ED = exposure duration (in years) for a specified age group

AT = averaging time of lifetime cancer risk (years)

FAH = Fraction of time spent at home (unitless)

Chronic Non-Cancer Hazard. Non-cancer chronic impacts are calculated by dividing the annual average concentration by the REL for that substance. The REL is defined as the concentration at which no adverse non-cancer health effects are anticipated. The following equation was used to determine the non-cancer risk:

$$\text{Hazard Quotient} = C_i/REL_i$$

Where:

Ci = Concentration in the air of substance i (annual average concentration in µg/m^3)

RELi = Chronic noncancer Reference Exposure Level for substance i (µg/m^3)

Acute Non-Cancer Hazard. The potential for acute non-cancer hazards is evaluated by comparing the maximum short-term exposure level to an acute REL. RELs are designed to protect sensitive individuals within the population. The calculation of acute non-cancer impacts is similar to the procedure for chronic non-cancer impacts. The equation is as follows:

$$\text{Acute HQ} = \text{Maximum Hourly Air Concentration } (\mu g/m^3) \text{ / Acute REL } (\mu g/m^3)$$

Health Risk Computation

A health risk computation was performed to determine the risk of developing an excess cancer risk calculated on a 30-year exposure scenario using CARB's Risk Assessment Stand Alone Tool (RAST). Health risk were analyzed at the point of maximum impact and are a conservative estimate. The pollutant concentrations are then used to estimate the long-term cancer health risk to an individual as well as the non-cancer chronic health index.

The off-site impacts would occur from the diesel trucks accessing the proposed Project. The cancer and chronic health risks are based on the annual average concentration of $PM_{2.5}$. As DPM does not have short-term toxicity values, acute risks were not calculated for this Project. The chronic and carcinogenic health risk calculations are based on the standardized equations contained in the U.S. EPA *Human Health Evaluation Manual* (1991) and the OEHHA Guidance Manual (2015).

5 POTENTIAL HEALTH RISK IMPACTS

CARB identified DPM as a TAC in 1998. Mobile sources (including trucks, buses, automobiles, trains, ships, and farm equipment) are by far the largest source of diesel emissions. The exhaust from diesel engines includes hundreds of different gaseous and particulate components, many of which are toxic. Diesel exhaust is composed of two phases, either gas or particulate – both contribute to the risk. The gas phase is composed of many of the urban TACs, such as acetaldehyde, acrolein, benzene, 1,3-butadiene, formaldehyde, and polycyclic aromatic hydrocarbons. The particulate phase has many different types that can be classified by size or composition. The sizes of diesel particulates of greatest health concern are fine and ultrafine particles. These particles may be composed of elemental carbon with adsorbed compounds such as organics, sulfates, nitrates, metals, and other trace elements. Diesel exhaust is emitted from a broad range of on- and off-road diesel engines. As the Project includes construction near sensitive receptors and proposes heavy-duty trucks operations within the BAAQMD 1,000-foot zone of influence, a quantitative analysis of health risk impacts from TACs was performed for both Project construction and operations.

5.1 Construction Health Risk Analysis

Construction equipment and associated heavy-duty truck traffic generate diesel exhaust, which is a known toxic air contaminants (TAC). Diesel exhaust from construction equipment operating at the site poses a health risk to nearby sensitive receptors. The closest sensitive receptors to the Project site are the single-family residences approximately 500 feet northeast. BAAQMD provides guidance for evaluating impacts from TACs in its CEQA Air Quality Guidelines document. As noted therein, an incremental cancer risk of greater than 10 cases per million at the Maximally Exposed Individual (MEI) will result in a significant impact. The BAAQMD considers exposure to annual $PM_{2.5}$ concentrations that exceed 0.3 $\mu g/m^3$ from a single source to be significant. The BAAQMD significance threshold for non-cancer hazards is 1.0.

Project construction would generate diesel particulate matter (DPM) emissions from the use of off-road diesel equipment required for grading and excavation, paving, and other construction activities. For construction activity, DPM is the primary toxic air contaminant of concern. On-road diesel-powered haul trucks traveling to and from the construction area to deliver materials and equipment are less of a concern because they would not stay on the site for long durations. Diesel exhaust from construction equipment operating at the site poses a health risk to nearby sensitive receptors.

The amount to which the receptors are exposed (a function of concentration and duration of exposure) is the primary factor used to determine health risk (i.e., potential exposure to TAC emission levels that exceed applicable standards). On-road diesel-powered haul trucks traveling to and from the construction area to deliver materials and equipment are less of a concern because they would not stay on the site for long durations. Construction is temporary and would be transient throughout the site (i.e. move from location to location) and would not generate emissions in a fixed location for extended periods of time.

Construction is subject to and would comply with California regulations (e.g., California Code of Regulations, Title 13, Division 3, Article 1, Chapter 10, Sections 2485 and 2449), which reduce DPM and criteria pollutant emissions from in-use off-road diesel-fueled vehicles and limit the idling of heavy-duty construction equipment to no more than five minutes. These regulations would further reduce nearby sensitive receptors' exposure to temporary and variable DPM emissions. Given the temporary and

intermittent nature of construction activities likely to occur within specific locations in the Project site (i.e., construction is not likely to occur in any one location for an extended time), the dose of DPM of any one receptor is exposed to would be limited.

$PM_{2.5}$ construction emissions rates in grams per second were calculated from the total annual on-site exhaust emissions reported in CalEEMod (0.20 tons) total during construction. Annual emissions were converted to grams per second and these emissions rates were input into AERMOD. Although Project construction would occur for over a period of 17 months, the health risk computation was performed to determine the risk of developing an excess cancer risk calculated on a 3-year exposure scenario as recommended by the BAAQMD, and thus is conservative.[7]

As noted above, maximum (worst case) $PM_{2.5}$ exhaust construction emissions over the entire construction period were used in AERMOD to approximate construction DPM emissions. Risk levels were calculated with the CARB Hotspots Analysis and Reporting Program (HARP) Risk Assessment Standalone Tool (RAST) based on the California Office of Environmental Health Hazard Assessment (OEHHA) guidance document, Air Toxics Hot Spots Program Risk Assessment Guidelines (February 2015). Results of this assessment are summarized in Table 3: Construction Risk.

Table 3: Construction Risk

Exposure Scenarios	Pollutant Concentration ($\mu g/m^3$)	Cancer Risk (per million)	Chronic Hazard
Worker	0.028	0.91	0.006
Recreation	0.001	0.07	0.000
Resident	0.004	0.53	0.001
BAAQMD Threshold	*0.3*	*10*	*1.0*
Threshold Exceeded?	**No**	**No**	**No**
Refer to Appendix A: Modeling data.			

Maximum concentration of $PM_{2.5}$ during construction would be 0.028 $\mu g/m^3$, which would not exceed the BAAQMD threshold of 0.3 $\mu g/m^3$. The highest calculated carcinogenic risk from Project construction would be 0.91 per one million for workers, 0.07 per million for recreation users, and 0.53 per one million for residents which would all be below the BAAQMD threshold of 10 in one million. The MEI during construction are the closest sensitive receptors to the Project site, which are the residences 500 feet northeast of the Project site, the Metropolitan Golf Links Course 700 feet west of the Project site, and employees at nearby businesses (see sensitive receptor #1 in *Figure 4*). Non-cancer hazards for DPM would be below BAAQMD thresholds, with a chronic hazard index computed at a maximum of 0.006 for workers. Therefore, all chronic hazards would be below the BAAQMD significance threshold of 1.0. As described above, worst-case construction risk levels based on screening-level modeling (AERMOD) and conservative assumptions would be below the BAAQMD's thresholds for construction and construction risk levels would be less than significant.

Mitigation Measures: No mitigation is required.

[7] The BAAQMD recommends that the cancer risk be evaluated assuming that the average daily dose for short-term exposure lasts a minimum of three years for Projects lasting three years or less (BAAQMD, *BAAQMD Air Toxics NSR Program Health Risk Assessment Guidelines*, December 2016).

Level of Significance: Less than significant.

5.2 Operational Health Risk Analysis

Vehicle DPM emissions were estimated using emission factors for course particulate matter less than 2.5 microns in diameter ($PM_{2.5}$) generated with the EMFAC developed by CARB. EMFAC is a mathematical model that was developed to calculate emission rates from motor vehicles that operate on highways, freeways, and local roads in California and is commonly used by CARB to project changes in future emissions from on-road mobile sources. EMFAC, incorporates regional motor vehicle data, information and estimates regarding the distribution of vehicle miles traveled (VMT) by speed, and number of starts per day. The model includes the emissions benefits of the truck and bus rule and the previously adopted rules for other on-road diesel equipment.

For this Project, annual average $PM_{2.5}$ emission factors were generated by running EMFAC for vehicles in the BAAQMD within the Alameda County. EMFAC generates emission factors in terms of grams of pollutant emitted per vehicle activity and can calculate a matrix of emission factors at specific values of vehicle speed, temperature, and relative humidity. The model was run for heavy-duty diesel vehicles traveling along Doolittle Drive, Adams Avenue, Hester Street, and Davis Street, as well as circulating the Project site and idling at proposed loading areas. Additionally, the operational run included one emergency generator.

Based on the AERMOD outputs, the highest expected annual average diesel $PM_{2.5}$ emission concentrations from diesel truck traffic near sensitive receptors would be 0.001 µg/m^3. The calculations conservatively assume no cleaner technology with lower emissions in future years. As shown in Table 4: Operational Risk Assessment Results, the calculated carcinogenic risk resulting from the Project is 0.31 per million for workers, 0.15 per million for recreation, and 0.11 per million for residents which are all below the BAAQMD threshold of 10 per million. Chronic hazards also would be below the BAAQMD significance threshold of 1.0.

Table 4: Operational Risk Assessment Results

Exposure Scenario	Pollutant Concentration (µg/m^3)	Maximum Cancer Risk (Risk per Million)	Chronic Noncancer Hazard
Worker	0.006	0.31	0.0002
Recreation	0.003	0.15	0.0002
Resident	0.002	0.11	0.0001
Threshold	*NA*	*10 in one million*	*1.0*
Exceed Threshold?	**No**	**No**	**No**

1. Refer to Appendix A: Modeling Data.
2. The maximum cancer would be experienced for workers based on worst-case exposure durations for the Project, 95th percentile breathing rates, and 30-year averaging time.

The pollutant concentrations modeled in AERMOD represent the exposure levels outdoors. The BAAQMD conservatively does not include indoor exposure adjustments for residents. However, the typical person spends the majority of time indoors rather than remaining outdoors in the same location for 24 hours a

day.[8] Therefore, the AERMOD outdoor pollutant concentrations are not necessarily representative of actual exposure at the Project site, and tend to overestimate exposure.

Cumulative On-Site Health Impacts

In addition to mobile sources, stationary sources within a 1,000-foot-radius of the Project site were identified using BAAQMD's Stationary Source GIS Maps and consultation with the BAAQMD. Table 5: Cumulative Health Risk shows TACs generated from the Project, major street, highway, rail, and stationary sources within a 1,000-foot-radius.

Table 5: Cumulative Health Risk

Emissions Sources	$PM_{2.5}$ (µg/m³)	Cancer Risk (per million)	Hazard
Project Construction Emissions	0.028	0.91	0.006
Project Mobile Emissions	0.002	0.11	0.0003
Major Street Sources[1]	0.024	1.065	0.096
Highway Sources[1]	0.190	11.550	0.840
Railway Sources[1]	0.008	5.483	0.032
Stationary Sources			
California General Partnership	0.000	0.092	0.000
PCC Structural	0.374	3.302	0.382
Avis Service Center	0.000	0.000	0.000
Cumulative Health Risk Values	**0.646**	**23.52**	**1.356**
BAAQMD Cumulative Threshold	*0.8*	*100*	*10*
Threshold Exceeded?	**No**	**No**	**No**

1. BAAQMD GIS data.
Source: BAAQMD's Stationary Source Data and GIS Mapping Tools, 2021.

As described above in Table 5, cumulative impacts related to cancer risk and hazard would be less than cumulatively considerable and within acceptable limits. Additionally, cumulative residential $PM_{2.5}$ would not exceed the BAAQMD's cumulative threshold of 0.8 µg/m³, the primary contributor to those concentrations is the existing PCC Structural manufacturing site near the Project area. The facility has a high $PM_{2.5}$ (0.374 µg/m³). The PCC Structural facility source represent approximately 60 percent of the total concentrations and are completely unrelated to the Project. The Project represents less than 0.17 percent of total cumulative $PM_{2.5}$ in the Project area. Therefore, the Project's cumulative impacts would be less than significant.

[8] California Air Resources Board Research Division and University of California, Berkeley, *Activity Patterns of California Residents,* May 1991. The study indicates that on average, adults and adolescents in California spent almost 15 hours per day inside their homes, and 6 hours in other indoor locations, for a total of 21 hours (87% of the day). Approximately two hours per day were spent in transit, and just over one hour per day was spent in outdoor locations.

Mitigation Measures: None required.

Level of Significance: Less than significant and less than cumulatively considerable impacts.

6 REFERENCES

1. Bay Area Air Quality Management District, *BAAQMD Air Toxics NSR Program Health Risk Assessment (HRA) Guidelines*, January 2016.
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6. California Air Resources Board, *Meteorological Files*, Available at: https://ww3.arb.ca.gov/toxics/harp/metfiles2.htm, accessed April 2021.
7. California Air Resources Board, *Risk Reduction Plan to Reduce Particulate Matter Emissions from Diesel-Fueled Engines and Vehicles*, October 2000.
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10. California Office of Environmental Health Hazard Assessment, *CalEnviroScreen 3.0*, https://oehha.ca.gov/calenviroscreen/report/calenviroscreen-30, accessed April 2021.
11. City of San Leandro, 2035 *General Plan,* 2016.
12. City of San Leandro, *Municipal Code*, 2022.
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14. Lakes Environmental, *AERMOD View Gaussian Plume Air Dispersion Model*, Version 11.0.1
15. Ralph Propper, et al., *Ambient and Emission Trends of Toxic Air Contaminants in California*, Environmental Science and Technology, September 2015.
16. United States Environmental Protection Agency, *Exposure Factors Handbook: 2011 Edition*, September 2011.

Appendix A

Modeling Data

Construction - Unmitigated

	$PM_{2.5}$ Exhaust Onsite		
Year	**Tons/Year**	**g/s**	**Weighted Average On-Site Rate**
2024	1.04E-01	0.002983	0.002195809
2025	3.71E-02	0.001067	

	2024	**2025**	**Total**
Const Duration (Days):	218	152	370

	Trips		**Miles**		**Weighted**
	Vendor	**Hauling**	**Vendor**	**Hauling**	**Trip length**
2024	46	5158	7.3	20	19.89
2025	60	0	7.3	20	7.30

	$PM_{2.5}$ Exhaust Off-Site			
	Tons/Year	**g/s**	**g/s per mile**	**Weighted Average Off-Site Rate**
2024	4.42E-03	0.000127	6.39331E-06	7.09E-06
2025	2.05E-03	0.000059	8.0783E-06	

Construction Route	**Length (meters)**	**Length (Miles)**	**Emissions (g/sec per mile)**	**Emission Rate (g/sec)**
Doolittle Driveway	121	0.08	7.09E-06	5.33E-07
Hester Street	456.5	0.28	7.09E-06	2.01E-06
Adams Ave	114	0.07	7.09E-06	5.02E-07
Doolittle Drive	931.8	0.58	7.09E-06	4.10E-06
Davis Street	671	0.42	7.09E-06	2.95E-06

On-Site Construction Emissions

Year	**Phase**	**tons/yr Exhaust $PM_{2.5}$**
2024	Demolition	0.0268
2024	Site Prep	2.38E-02
2024	Grading	2.83E-02
2024	Building	2.48E-02
	Total	1.04E-01
2025	Building	0.0271
2025	Arch Coating	1.70E-03
2025	Paving	8.28E-03
	Total	0.03708

Off-Site Construction Emissions

Year	**Phase**	**tons/yr Exhaust $PM_{2.5}$**
2024	Demolition	1.80E-03
2024	Site Prep	1.00E-05
2024	Grading	1.03E-03
2024	Building	1.58E-03
	Total	4.42E-03
2025	Building	1.98E-03
2025	Arch Coating	6.00E-05
2025	Paving	1.00E-05
	Total	2.05E-03

Construction

	µg/m³		
	1 hr	24 hr	Period
Project (worker)	5.47E-01	7.01E-02	2.80E-02
Project (rec)	9.36E-02	1.38E-02	6.00E-04
Project (resident)	1.78E-01	2.13E-02	4.40E-03

HARP 2 Risk Summary (worker)

INDEX	POLID		CONC	Cancer INH_RISK	Per 1 million	Chronic RESP	Acute CONC	RESP
1	9901	Diesel ExhPM	2.80E-02	9.11E-07	0.91	5.60E-03	5.47E-01	0.00E+00
2	107028	Acrolein	0.00E+00	0.00E+00		0.00E+00	5.47E-01	2.19E-01

HARP 2 Risk Summary (recreation)

INDEX	POLID		CONC	Cancer INH_RISK	Per 1 million	Chronic RESP	Acute CONC	RESP
1	9901	Diesel ExhPM	6.00E-04	7.20E-08	0.07	1.20E-04	9.36E-02	0.00E+00
2	107028	Acrolein	0.00E+00	0.00E+00		0.00E+00	9.36E-02	3.74E-02

HARP 2 Risk Summary (resident)

INDEX	POLID		CONC	Cancer INH_RISK	Per 1 million	Chronic RESP	Acute CONC	RESP
1	9901	Diesel ExhPM	4.40E-03	5.28E-07	0.53	8.80E-04	1.78E-01	0.00E+00
2	107028	Acrolein	0.00E+00	0.00E+00		0.00E+00	1.78E-01	7.12E-02

Operations

	µg/m³		
	1 hr	24 hr	Period
Project (Worker)	0.0516	0.0139	0.0012
Project (Recreation)	0.0272	0.0075	0.0009
Project (Resident)	1.16E-02	7.10E-03	5.00E-04

HARP 2 Risk Summary (worker)

INDEX	POLID		CONC	Cancer INH_RISK	Per 1 million	Chronic RESP	Acute CONC	RESP
1	9901	Diesel ExhPM	1.20E-03	3.12E-07	0.31	2.40E-04	5.16E-02	0.00E+00
2	107028	Acrolein	0.00E+00	0.00E+00		0.00E+00	5.16E-02	2.06E-02

HARP 2 Risk Summary (recreation)

INDEX	POLID		CONC	Cancer INH_RISK	Per 1 million	Chronic RESP	Acute CONC	RESP
1	9901	Diesel ExhPM	9.00E-04	1.51E-07	0.15	1.80E-04	2.72E-02	0.00E+00
2	107028	Acrolein	0.00E+00	0.00E+00		0.00E+00	2.72E-02	1.09E-02

HARP 2 Risk Summary (resident)

INDEX	POLID		CONC	Cancer INH_RISK	Per 1 million	Chronic RESP	Acute CONC	RESP
1	9901	Diesel ExhPM	5.00E-04	1.05E-07	0.11	1.00E-04	1.16E-02	0.00E+00
2	107028	Acrolein	0.00E+00	0.00E+00		0.00E+00	1.16E-02	4.64E-03

Operational Emissions Rates Calculations

Truck Route Emissions	Speed (mph)	Trips (veh/day)	Emission Factor (g/mi)	Length (meters)	Length (mi/veh)	Emissions (g/day)	Emission Rate (g/sec)
Doolittle Drive	25	47	0.00044	931.8	0.58	1.21E-02	1.40E-07
Adams Ave	25	47	0.00044	114	0.07	1.48E-03	1.71E-08
Hester Street	25	47	0.00044	456.5	0.28	5.93E-03	6.86E-08
Davis Street	25	47	0.00044	671	0.42	8.72E-03	1.01E-07
On-Site Travel	15	47	0.00051	600.3	0.37	8.92E-03	1.03E-07

Loading Dock Idling	Speed (mph)	Trips (veh/day)	Emission Factor (g/hr)	Duration (hr/veh)	Emissions (g/day)	Emission Rate (g/sec)
Loading Area (north)	Idle	10	2.04502E-05	0.25	4.93E-05	5.70E-10
Loading Area (south)	Idle	14	2.04502E-05	0.25	7.09E-05	8.20E-10

Source: EMFAC2021 (v1.0.1) Emission Rates
Region Type: County
Region: Santa Clara (SF)
Calendar Year: 2025
Season: Annual
Vehicle Classification: EMFAC2007 Categories
Units: miles/day for CVMT and EVMT, trips/day for Trips, kWh/day for Energy Consumption, g/mile for RUNEX, PMBW and PMTW, g/trip for STREX, HOTSOAK and RI

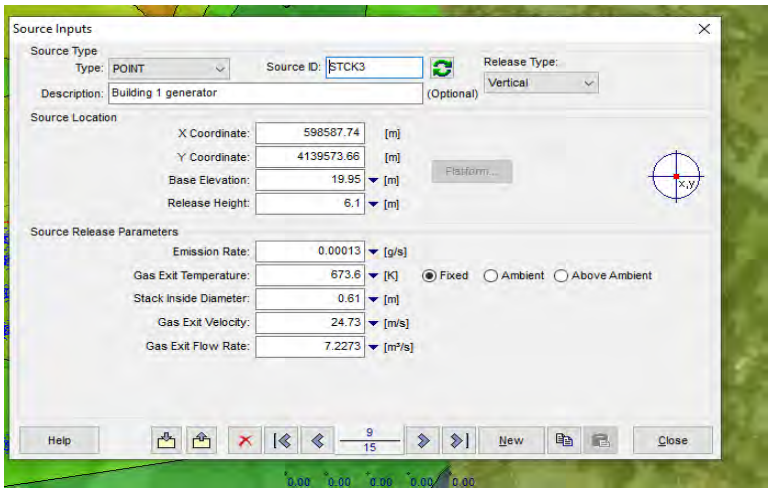
	Speed (mph)		
Idle (g/trip)	15	25	45
2.045E-05	0.000508702	0.000444744	0.000386692

Region	Calendar Y	Vehicle Cat	Model Year	Speed	Fuel	Population	Total VMT	Trips	PM2.5_IDLEX	
Alameda	2025	HHDT	Aggregate	Aggregate	Gasoline	6.587036146	866.5446439	131.7934192	0	0
Alameda	2025	HHDT	Aggregate	Aggregate	Diesel	14386.56788	1818729.408	230139.3928	0.000459012	6.60361
Alameda	2025	HHDT	Aggregate	Aggregate	Electricity	90.78791991	10234.56318	1340.975556	0	0
Alameda	2025	HHDT	Aggregate	Aggregate	Natural Gas	1088.373943	75208.5745	11711.53467	3.95617E-05	0.043058
Alameda	2025	LHDT2	Aggregate	Aggregate	Gasoline	2642.532308	96603.42272	39369.79401	0	0
Alameda	2025	LHDT2	Aggregate	Aggregate	Diesel	4066.470296	165207.4735	51151.0807	0.000120117	0.488453
Alameda	2025	LHDT2	Aggregate	Aggregate	Electricity	42.68505741	2798.596435	566.0439083	0	0
Alameda	2025	MHDT	Aggregate	Aggregate	Gasoline	1612.599975	84199.09574	32264.90031	0	0
Alameda	2025	MHDT	Aggregate	Aggregate	Diesel	14347.80967	601174.9321	175547.9575	0.000279757	4.0139
Alameda	2025	MHDT	Aggregate	Aggregate	Electricity	114.3683345	5978.325429	1470.762287	0	0
Alameda	2025	MHDT	Aggregate	Aggregate	Natural Gas	158.2385165	7563.711613	1510.395925	3.2425E-06	0.000513

Region	Calendar Y	Vehicle Cat	Model Year	Speed	Fuel	Total VMT	PM2.5_RUNEX	
Alameda	2025	HHDT	Aggregate	15	Gasoline	23.03030904	5.72875E-08	1.31935E-06
Alameda	2025	HHDT	Aggregate	15	Diesel	31517.34404	0.000346364	10.91646309
Alameda	2025	HHDT	Aggregate	15	Electricity	201.9890907	0	0
Alameda	2025	HHDT	Aggregate	15	Natural Gas	2990.951106	1.19098E-05	0.035621567
Alameda	2025	LHDT2	Aggregate	15	Gasoline	16758.85667	3.21658E-05	0.539061963
Alameda	2025	LHDT2	Aggregate	15	Diesel	22287.39595	0.001132035	25.23011181
Alameda	2025	LHDT2	Aggregate	15	Electricity	409.2088499	0	0
Alameda	2025	MHDT	Aggregate	15	Gasoline	2961.715081	8.85656E-06	0.026230597
Alameda	2025	MHDT	Aggregate	15	Diesel	31509.58507	0.00059916	18.87929387
Alameda	2025	MHDT	Aggregate	15	Electricity	294.0198459	0	0
Alameda	2025	MHDT	Aggregate	15	Natural Gas	397.1993255	1.18212E-06	0.000469537

Region	Calendar Y	Vehicle Cat	Model Year	Speed	Fuel	Total VMT	PM2.5_RUNEX	
Alameda	2025	HHDT	Aggregate	25	Gasoline	30.18617859	3.88434E-08	1.17253E-06
Alameda	2025	HHDT	Aggregate	25	Diesel	38380.17189	0.000303967	11.66631436
Alameda	2025	HHDT	Aggregate	25	Electricity	241.7727991	0	0
Alameda	2025	HHDT	Aggregate	25	Natural Gas	3088.189545	8.24105E-06	0.025449921
Alameda	2025	LHDT2	Aggregate	25	Gasoline	14915.47878	1.82831E-05	0.272700842
Alameda	2025	LHDT2	Aggregate	25	Diesel	25066.02222	0.000884779	22.17788328
Alameda	2025	LHDT2	Aggregate	25	Electricity	426.8109478	0	0
Alameda	2025	MHDT	Aggregate	25	Gasoline	3751.269626	5.81734E-06	0.021822423
Alameda	2025	MHDT	Aggregate	25	Diesel	57435.90102	0.000523732	30.08099895
Alameda	2025	MHDT	Aggregate	25	Electricity	500.7328656	0	0
Alameda	2025	MHDT	Aggregate	25	Natural Gas	619.4513732	1.11961E-06	0.000693547

	PM2.5 (exhaust)		
	Tons/year	grams/year	grams/sec
Stationary Source	0.0181	16420.0485	0.000521271
each generator	0.000130318		



Road Dust Calculations

E = [k(sL)^0.91 x (W)^1.02]*(1-P/4N)

	PM_{10}	$PM_{2.5}$	
E =			emission factor
k =	0.0022	0.00054	particle size multiplier (lb/VMT)
sL =	0.032	0.032	surface silt loading
W =	26	26	average vehicle weight (tons)
P =	62	62	Number of days per year with >0.01 inches of rain
N =	365	365	Days per period
	0.91	0.91	
	1.02	1.02	

Source	Daily VMT	PM_{10} Emission Factor	$PM_{2.5}$ Emissions Factor	Road Dust Emissions (lbs/day)	
				PM_{10}	$PM_{2.5}$
Truck Road Dust	47	0.002549977	0.000625903	0.11984893	0.0294175
Truck Tire Wear	47	6.06056E-05	1.51514E-05	0.00284846	0.0007121
Truck Break Wear	47	0.000158493	5.54726E-05	0.00744918	0.0026072
Total				0.13	0.03

g/s: 0.00068326 0.0001719 per mile

	Length (M)	Length (mi)	percent	Scaled Emissions Rate
Doolittle Drive	931.8	0.58	0.43	7.3687E-05
Adams Ave	114	0.07	0.05	9.01516E-06
Hester Street	456.5	0.28	0.21	3.61002E-05
Davis Street	671	0.42	0.31	5.30629E-05
Total		1.35		

	$\mu g/m^3$		
	1 hr	24 hr	Period
Project (Resident)	4.10E-03	1.50E-03	6.00E-04
Project (Recreation)	8.00E-03	4.40E-03	1.70E-03
Project (worker)	2.15E-02	1.43E-02	5.40E-03

Source: EMFAC2021 (v1.0.2) Emission Rates
Region Type: Sub-Area
Region: Alameda (SF)
Calendar Year: 2025
Season: Annual
Vehicle Classification: EMFAC2007 Categories
Units: miles/day for CVMT and EVMT, trips/day for Trips, g/mile for RUNEX, PMBW and PMTW, g/trip for STREX, HOTSOAK and RUNLOSS, g/vehicle/day for IDLEX and DIURN. PHEV calculated based on total VMT.

	PM10	PM2.5	PM10	PM2.5
	g/mi	g/mi	lb/mi	lb/mi
TW g/mi:	0.027490228	0.006872557	6.06056E-05	1.51514E-05
BW g/mi:	0.071891243	0.025161935	0.000158493	5.54726E-05

Region	Calendar Y	Vehicle Cat	Model Yea	Speed	Fuel	Population	Total VMT	CVMT	EVMT	Trips	PM10_PMTW	PM10_PMBW	TW	BW	PM2.5_PMTW	PM2.5_PMBW	TW	BW
Alameda (S	2025	HHDT	Aggregate	Aggregate	Gasoline	6.587036	866.5446439	866.5446439	0	131.7934192	0.020000006	0.088051416	17.33089785	76.30048	0.005000001	0.030817996	4.332724	26.70517
Alameda (S	2025	HHDT	Aggregate	Aggregate	Diesel	14386.57	1818729.408	1818729.408	0	230139.3928	0.035524523	0.077579606	64609.49457	141096.3	0.008881131	0.027152862	16152.37	49383.71
Alameda (S	2025	HHDT	Aggregate	Aggregate	Electricity	90.78792	10234.56318	0	10234.56	1340.975556	0.035024424	0.040077248	358.4596753	410.1731	0.008756106	0.014027037	89.61492	143.5606
Alameda (S	2025	HHDT	Aggregate	Aggregate	Natural Ga	1088.374	75208.5745	75208.5745	0	11711.53467	0.03600001	0.118406911	2707.509458	8905.215	0.009000003	0.041442419	676.8774	3116.825
Alameda (S	2025	LHDT2	Aggregate	Aggregate	Gasoline	2642.532	96603.42272	96603.42272	0	39369.79401	0.008000002	0.091000026	772.8276041	8790.914	0.002000001	0.031850009	193.2069	3076.82
Alameda (S	2025	LHDT2	Aggregate	Aggregate	Diesel	4066.47	165207.4735	165207.4735	0	51151.0807	0.012000003	0.091000026	1982.490252	15033.88	0.003000001	0.031850009	495.6226	5261.86
Alameda (S	2025	LHDT2	Aggregate	Aggregate	Electricity	42.68506	2798.596435	0	2798.596	566.0439083	0.008000002	0.045500013	22.38877792	127.3362	0.002000001	0.015925005	5.597194	44.56766
Alameda (S	2025	MHDT	Aggregate	Aggregate	Gasoline	1612.6	84199.09574	84199.09574	0	32264.90031	0.012000003	0.04501744	1010.389438	3790.428	0.003000001	0.015756104	252.5974	1326.65
Alameda (S	2025	MHDT	Aggregate	Aggregate	Diesel	14347.81	601174.9321	601174.9321	0	175547.9575	0.012000003	0.045761827	7214.101253	27510.86	0.003000001	0.016016639	1803.525	9628.802
Alameda (S	2025	MHDT	Aggregate	Aggregate	Electricity	114.3683	5978.325429	0	5978.325	1470.762287	0.012000003	0.022807202	71.73992571	136.3489	0.003000001	0.007982521	17.93498	47.72211
Alameda (S	2025	MHDT	Aggregate	Aggregate	Natural Ga	158.2385	7563.711613	7563.711613	0	1510.395925	0.012000003	0.045864333	90.76456537	346.9046	0.003000001	0.016052517	22.69114	121.4166

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** AERMOD Input Produced by:
** AERMOD View Ver. 11.0.1
** Lakes Environmental Software Inc.
** Date: 1/12/2023
** File: C:\Lakes\AERMOD View\880 Doolittle\880 Doolittle.ADI
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** AERMOD Control Pathway
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   AVERTIME 1 8 24 PERIOD
   URBANOPT 1649000 Alameda_County
   POLLUTID PM_2.5
   RUNORNOT RUN
   ERRORFIL "880 Doolittle.err"
CO FINISHED
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** AERMOD Source Pathway
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SO STARTING
** Source Location **
** Source ID - Type - X Coord. - Y Coord. **
** -------------------------------------------------------------------
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** LINE VOLUME Source ID = SLINE1
** DESCRSRC Construction
** PREFIX
** Length of Side = 8.50
** Configuration = Adjacent
** Emission Rate = 0.002195809
** Vertical Dimension = 6.22
** SZINIT = 2.89
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LOCATION	L0000600	VOLUME	571440.060	4175034.293	3.56
LOCATION	L0000601	VOLUME	571432.699	4175038.543	3.52
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LOCATION	L0000645	VOLUME	571548.546	4175178.620	4.96
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LOCATION	L0000647	VOLUME	571563.324	4175170.216	4.88
LOCATION	L0000648	VOLUME	571570.713	4175166.015	4.81
LOCATION	L0000649	VOLUME	571578.102	4175161.813	4.69

LOCATION	L0000650	VOLUME	571585.491	4175157.612	4.58
LOCATION	L0000651	VOLUME	571592.880	4175153.410	4.47
LOCATION	L0000652	VOLUME	571600.269	4175149.209	4.38
LOCATION	L0000653	VOLUME	571607.658	4175145.007	4.29
LOCATION	L0000654	VOLUME	571615.047	4175140.805	4.21
LOCATION	L0000655	VOLUME	571622.436	4175136.604	4.15
LOCATION	L0000656	VOLUME	571629.825	4175132.402	4.15
LOCATION	L0000657	VOLUME	571637.214	4175128.201	4.15
LOCATION	L0000658	VOLUME	571641.719	4175121.695	4.15
LOCATION	L0000659	VOLUME	571644.186	4175113.561	4.16
LOCATION	L0000660	VOLUME	571646.654	4175105.427	4.16
LOCATION	L0000661	VOLUME	571649.121	4175097.293	4.16
LOCATION	L0000662	VOLUME	571651.589	4175089.159	4.17
LOCATION	L0000663	VOLUME	571654.057	4175081.025	4.18
LOCATION	L0000664	VOLUME	571656.524	4175072.891	4.18
LOCATION	L0000665	VOLUME	571658.992	4175064.757	4.18
LOCATION	L0000666	VOLUME	571661.459	4175056.623	4.17
LOCATION	L0000667	VOLUME	571663.927	4175048.489	4.16
LOCATION	L0000668	VOLUME	571666.395	4175040.355	4.12
LOCATION	L0000669	VOLUME	571668.862	4175032.221	4.06
LOCATION	L0000670	VOLUME	571671.330	4175024.087	4.00
LOCATION	L0000671	VOLUME	571666.266	4175020.485	3.97
LOCATION	L0000672	VOLUME	571657.924	4175018.855	3.97
LOCATION	L0000673	VOLUME	571649.581	4175017.225	3.96
LOCATION	L0000674	VOLUME	571641.239	4175015.595	3.96
LOCATION	L0000675	VOLUME	571632.897	4175013.965	3.97
LOCATION	L0000676	VOLUME	571624.555	4175012.335	3.97
LOCATION	L0000677	VOLUME	571616.212	4175010.704	3.96
LOCATION	L0000678	VOLUME	571607.870	4175009.074	3.95
LOCATION	L0000679	VOLUME	571599.528	4175007.444	3.93
LOCATION	L0000680	VOLUME	571591.186	4175005.814	3.92
LOCATION	L0000681	VOLUME	571582.844	4175004.184	3.92
LOCATION	L0000682	VOLUME	571574.501	4175002.554	3.91
LOCATION	L0000683	VOLUME	571566.470	4175003.173	3.91
LOCATION	L0000684	VOLUME	571558.884	4175007.006	3.91
LOCATION	L0000685	VOLUME	571551.297	4175010.840	3.92
LOCATION	L0000686	VOLUME	571543.710	4175014.673	3.90
LOCATION	L0000687	VOLUME	571536.124	4175018.506	3.83
LOCATION	L0000688	VOLUME	571528.537	4175022.339	3.77
LOCATION	L0000689	VOLUME	571520.951	4175026.172	3.73
LOCATION	L0000690	VOLUME	571513.364	4175030.006	3.73
LOCATION	L0000691	VOLUME	571505.777	4175033.839	3.73
LOCATION	L0000692	VOLUME	571498.191	4175037.672	3.73
LOCATION	L0000693	VOLUME	571490.604	4175041.505	3.73
LOCATION	L0000694	VOLUME	571483.018	4175045.339	3.74
LOCATION	L0000695	VOLUME	571475.431	4175049.172	3.73
LOCATION	L0000696	VOLUME	571467.844	4175053.005	3.71
LOCATION	L0000697	VOLUME	571460.258	4175056.838	3.69
LOCATION	L0000698	VOLUME	571463.073	4175059.727	3.69
LOCATION	L0000699	VOLUME	571471.226	4175062.131	3.72

LOCATION	L0000700	VOLUME	571479.379	4175064.535	3.74
LOCATION	L0000701	VOLUME	571487.532	4175066.939	3.75
LOCATION	L0000702	VOLUME	571495.685	4175069.343	3.77
LOCATION	L0000703	VOLUME	571503.838	4175071.747	3.79
LOCATION	L0000704	VOLUME	571511.991	4175074.151	3.81
LOCATION	L0000705	VOLUME	571520.144	4175076.556	3.82
LOCATION	L0000706	VOLUME	571528.297	4175078.960	3.83
LOCATION	L0000707	VOLUME	571536.449	4175081.364	3.83
LOCATION	L0000708	VOLUME	571544.602	4175083.768	3.84
LOCATION	L0000709	VOLUME	571547.691	4175087.975	3.84
LOCATION	L0000710	VOLUME	571542.891	4175094.990	3.84
LOCATION	L0000711	VOLUME	571538.092	4175102.005	3.84
LOCATION	L0000712	VOLUME	571533.292	4175109.020	3.87
LOCATION	L0000713	VOLUME	571528.492	4175116.035	3.92
LOCATION	L0000714	VOLUME	571523.692	4175123.050	3.98
LOCATION	L0000715	VOLUME	571518.892	4175130.065	4.03
LOCATION	L0000716	VOLUME	571514.092	4175137.080	4.08
LOCATION	L0000717	VOLUME	571509.293	4175144.096	4.18
LOCATION	L0000718	VOLUME	571504.493	4175151.111	4.26
LOCATION	L0000719	VOLUME	571510.029	4175155.121	4.37
LOCATION	L0000720	VOLUME	571517.842	4175158.469	4.49
LOCATION	L0000721	VOLUME	571525.654	4175161.817	4.60
LOCATION	L0000722	VOLUME	571532.894	4175159.770	4.60
LOCATION	L0000723	VOLUME	571539.831	4175154.857	4.53
LOCATION	L0000724	VOLUME	571546.767	4175149.943	4.44
LOCATION	L0000725	VOLUME	571553.703	4175145.030	4.34
LOCATION	L0000726	VOLUME	571560.639	4175140.117	4.23
LOCATION	L0000727	VOLUME	571567.576	4175135.204	4.14
LOCATION	L0000728	VOLUME	571574.512	4175130.291	4.10
LOCATION	L0000729	VOLUME	571581.448	4175125.378	4.06
LOCATION	L0000730	VOLUME	571588.384	4175120.465	4.03
LOCATION	L0000731	VOLUME	571595.320	4175115.551	4.01
LOCATION	L0000732	VOLUME	571602.257	4175110.638	4.01
LOCATION	L0000733	VOLUME	571609.193	4175105.725	4.01
LOCATION	L0000734	VOLUME	571614.359	4175099.485	4.03
LOCATION	L0000735	VOLUME	571617.135	4175091.450	4.04
LOCATION	L0000736	VOLUME	571619.910	4175083.416	4.05
LOCATION	L0000737	VOLUME	571622.686	4175075.382	4.06
LOCATION	L0000738	VOLUME	571625.461	4175067.348	4.07
LOCATION	L0000739	VOLUME	571628.236	4175059.314	4.07
LOCATION	L0000740	VOLUME	571631.012	4175051.280	4.08
LOCATION	L0000741	VOLUME	571633.787	4175043.246	4.07
LOCATION	L0000742	VOLUME	571632.576	4175037.396	4.05
LOCATION	L0000743	VOLUME	571624.311	4175035.413	4.03
LOCATION	L0000744	VOLUME	571616.046	4175033.429	4.01
LOCATION	L0000745	VOLUME	571607.780	4175031.445	3.99
LOCATION	L0000746	VOLUME	571599.515	4175029.462	3.97
LOCATION	L0000747	VOLUME	571591.250	4175027.478	3.96
LOCATION	L0000748	VOLUME	571582.985	4175025.494	3.95
LOCATION	L0000749	VOLUME	571574.923	4175024.959	3.94

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   LOCATION L0000750     VOLUME   571567.523 4175029.142 3.92
   LOCATION L0000751     VOLUME   571560.123 4175033.324 3.90
   LOCATION L0000752     VOLUME   571552.723 4175037.507 3.89
   LOCATION L0000753     VOLUME   571545.323 4175041.689 3.87
   LOCATION L0000754     VOLUME   571537.924 4175045.872 3.85
   LOCATION L0000755     VOLUME   571530.524 4175050.054 3.83
   LOCATION L0000756     VOLUME   571523.124 4175054.237 3.82
   LOCATION L0000757     VOLUME   571529.868 4175056.939 3.83
   LOCATION L0000758     VOLUME   571537.973 4175059.499 3.84
   LOCATION L0000759     VOLUME   571546.079 4175062.058 3.85
   LOCATION L0000760     VOLUME   571554.184 4175064.618 3.86
   LOCATION L0000761     VOLUME   571562.289 4175067.178 3.87
   LOCATION L0000762     VOLUME   571570.395 4175069.737 3.89
   LOCATION L0000763     VOLUME   571578.500 4175072.297 3.91
   LOCATION L0000764     VOLUME   571586.606 4175074.856 3.93
** End of LINE VOLUME Source ID = SLINE1
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** Line Source Represented by Adjacent Volume Sources
** LINE VOLUME Source ID = SLINE2
** DESCRSRC Doolittle Driveway Hauling
** PREFIX
** Length of Side = 8.50
** Configuration = Adjacent
** Emission Rate = 5.33E-07
** Vertical Dimension = 6.22
** SZINIT = 2.89
** Nodes = 2
** 571457.211, 4175012.475, 3.53, 3.11, 3.95
** 571370.494, 4174928.103, 3.55, 3.11, 3.95
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   LOCATION L0000248     VOLUME   571454.165 4175009.511 3.54
   LOCATION L0000249     VOLUME   571448.073 4175003.583 3.55
   LOCATION L0000250     VOLUME   571441.981 4174997.656 3.54
   LOCATION L0000251     VOLUME   571435.888 4174991.728 3.53
   LOCATION L0000252     VOLUME   571429.796 4174985.801 3.53
   LOCATION L0000253     VOLUME   571423.704 4174979.874 3.53
   LOCATION L0000254     VOLUME   571417.612 4174973.946 3.55
   LOCATION L0000255     VOLUME   571411.519 4174968.019 3.56
   LOCATION L0000256     VOLUME   571405.427 4174962.091 3.56
   LOCATION L0000257     VOLUME   571399.335 4174956.164 3.54
   LOCATION L0000258     VOLUME   571393.243 4174950.236 3.57
   LOCATION L0000259     VOLUME   571387.150 4174944.309 3.57
   LOCATION L0000260     VOLUME   571381.058 4174938.381 3.56
   LOCATION L0000261     VOLUME   571374.966 4174932.454 3.53
** End of LINE VOLUME Source ID = SLINE2
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** Line Source Represented by Adjacent Volume Sources
** LINE VOLUME Source ID = SLINE3
** DESCRSRC Hester Street Hauling
** PREFIX
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** Length of Side = 8.50
** Configuration = Adjacent
** Emission Rate = 2.01E-06
** Vertical Dimension = 6.22
** SZINIT = 2.89
** Nodes = 2
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** 571067.156, 4175396.512, 3.59, 3.11, 3.95
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   LOCATION L0000262     VOLUME   571459.686 4175171.978 4.07
   LOCATION L0000263     VOLUME   571452.308 4175176.199 4.00
   LOCATION L0000264     VOLUME   571444.930 4175180.419 3.95
   LOCATION L0000265     VOLUME   571437.552 4175184.639 3.91
   LOCATION L0000266     VOLUME   571430.174 4175188.860 3.88
   LOCATION L0000267     VOLUME   571422.795 4175193.080 3.85
   LOCATION L0000268     VOLUME   571415.417 4175197.301 3.83
   LOCATION L0000269     VOLUME   571408.039 4175201.521 3.82
   LOCATION L0000270     VOLUME   571400.661 4175205.742 3.80
   LOCATION L0000271     VOLUME   571393.283 4175209.962 3.75
   LOCATION L0000272     VOLUME   571385.905 4175214.183 3.68
   LOCATION L0000273     VOLUME   571378.526 4175218.403 3.61
   LOCATION L0000274     VOLUME   571371.148 4175222.623 3.56
   LOCATION L0000275     VOLUME   571363.770 4175226.844 3.55
   LOCATION L0000276     VOLUME   571356.392 4175231.064 3.54
   LOCATION L0000277     VOLUME   571349.014 4175235.285 3.52
   LOCATION L0000278     VOLUME   571341.635 4175239.505 3.53
   LOCATION L0000279     VOLUME   571334.257 4175243.726 3.56
   LOCATION L0000280     VOLUME   571326.879 4175247.946 3.57
   LOCATION L0000281     VOLUME   571319.501 4175252.167 3.60
   LOCATION L0000282     VOLUME   571312.123 4175256.387 3.65
   LOCATION L0000283     VOLUME   571304.744 4175260.608 3.69
   LOCATION L0000284     VOLUME   571297.366 4175264.828 3.73
   LOCATION L0000285     VOLUME   571289.988 4175269.048 3.75
   LOCATION L0000286     VOLUME   571282.610 4175273.269 3.77
   LOCATION L0000287     VOLUME   571275.232 4175277.489 3.77
   LOCATION L0000288     VOLUME   571267.853 4175281.710 3.77
   LOCATION L0000289     VOLUME   571260.475 4175285.930 3.79
   LOCATION L0000290     VOLUME   571253.097 4175290.151 3.81
   LOCATION L0000291     VOLUME   571245.719 4175294.371 3.83
   LOCATION L0000292     VOLUME   571238.341 4175298.592 3.83
   LOCATION L0000293     VOLUME   571230.962 4175302.812 3.81
   LOCATION L0000294     VOLUME   571223.584 4175307.032 3.77
   LOCATION L0000295     VOLUME   571216.206 4175311.253 3.73
   LOCATION L0000296     VOLUME   571208.828 4175315.473 3.72
   LOCATION L0000297     VOLUME   571201.450 4175319.694 3.72
   LOCATION L0000298     VOLUME   571194.071 4175323.914 3.73
   LOCATION L0000299     VOLUME   571186.693 4175328.135 3.73
   LOCATION L0000300     VOLUME   571179.315 4175332.355 3.73
   LOCATION L0000301     VOLUME   571171.937 4175336.576 3.73
   LOCATION L0000302     VOLUME   571164.559 4175340.796 3.73
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   LOCATION L0000303     VOLUME   571157.180 4175345.017 3.74
   LOCATION L0000304     VOLUME   571149.802 4175349.237 3.75
   LOCATION L0000305     VOLUME   571142.424 4175353.457 3.80
   LOCATION L0000306     VOLUME   571135.046 4175357.678 3.83
   LOCATION L0000307     VOLUME   571127.668 4175361.898 3.85
   LOCATION L0000308     VOLUME   571120.289 4175366.119 3.82
   LOCATION L0000309     VOLUME   571112.911 4175370.339 3.79
   LOCATION L0000310     VOLUME   571105.533 4175374.560 3.76
   LOCATION L0000311     VOLUME   571098.155 4175378.780 3.71
   LOCATION L0000312     VOLUME   571090.777 4175383.001 3.68
   LOCATION L0000313     VOLUME   571083.398 4175387.221 3.65
   LOCATION L0000314     VOLUME   571076.020 4175391.441 3.60
   LOCATION L0000315     VOLUME   571068.642 4175395.662 3.57
** End of LINE VOLUME Source ID = SLINE3
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** Line Source Represented by Adjacent Volume Sources
** LINE VOLUME Source ID = SLINE4
** DESCRSRC Adams Ave
** PREFIX
** Length of Side = 8.50
** Configuration = Adjacent
** Emission Rate = 5.02E-07
** Vertical Dimension = 6.22
** SZINIT = 2.89
** Nodes = 2
** 571063.895, 4175388.359, 3.58, 3.11, 3.95
** 571000.304, 4175293.788, 2.90, 3.11, 3.95
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   LOCATION L0000317     VOLUME   571056.780 4175377.779 3.54
   LOCATION L0000318     VOLUME   571052.037 4175370.725 3.54
   LOCATION L0000319     VOLUME   571047.294 4175363.672 3.55
   LOCATION L0000320     VOLUME   571042.551 4175356.618 3.54
   LOCATION L0000321     VOLUME   571037.808 4175349.564 3.53
   LOCATION L0000322     VOLUME   571033.065 4175342.511 3.54
   LOCATION L0000323     VOLUME   571028.322 4175335.457 3.54
   LOCATION L0000324     VOLUME   571023.579 4175328.403 3.58
   LOCATION L0000325     VOLUME   571018.836 4175321.350 3.61
   LOCATION L0000326     VOLUME   571014.093 4175314.296 3.60
   LOCATION L0000327     VOLUME   571009.350 4175307.242 3.45
   LOCATION L0000328     VOLUME   571004.607 4175300.189 3.24
** End of LINE VOLUME Source ID = SLINE4
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** Line Source Represented by Adjacent Volume Sources
** LINE VOLUME Source ID = SLINE5
** DESCRSRC Doolittle Drive Hauling
** PREFIX
** Length of Side = 8.50
** Configuration = Adjacent
** Emission Rate = 4.1E-06
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** Vertical Dimension = 6.22
** SZINIT = 2.89
** Nodes = 2
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** 571672.084, 4174648.097, 4.09, 3.11, 3.95
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   LOCATION L0000330     VOLUME   571007.887 4175283.345 2.95
   LOCATION L0000331     VOLUME   571014.030 4175277.470 3.03
   LOCATION L0000332     VOLUME   571020.173 4175271.595 3.14
   LOCATION L0000333     VOLUME   571026.316 4175265.720 3.27
   LOCATION L0000334     VOLUME   571032.459 4175259.845 3.34
   LOCATION L0000335     VOLUME   571038.601 4175253.970 3.37
   LOCATION L0000336     VOLUME   571044.744 4175248.095 3.38
   LOCATION L0000337     VOLUME   571050.887 4175242.220 3.40
   LOCATION L0000338     VOLUME   571057.030 4175236.345 3.38
   LOCATION L0000339     VOLUME   571063.172 4175230.470 3.36
   LOCATION L0000340     VOLUME   571069.315 4175224.595 3.37
   LOCATION L0000341     VOLUME   571075.458 4175218.720 3.42
   LOCATION L0000342     VOLUME   571081.601 4175212.845 3.42
   LOCATION L0000343     VOLUME   571087.744 4175206.970 3.40
   LOCATION L0000344     VOLUME   571093.886 4175201.095 3.36
   LOCATION L0000345     VOLUME   571100.029 4175195.220 3.32
   LOCATION L0000346     VOLUME   571106.172 4175189.344 3.33
   LOCATION L0000347     VOLUME   571112.315 4175183.469 3.38
   LOCATION L0000348     VOLUME   571118.458 4175177.594 3.42
   LOCATION L0000349     VOLUME   571124.600 4175171.719 3.45
   LOCATION L0000350     VOLUME   571130.743 4175165.844 3.47
   LOCATION L0000351     VOLUME   571136.886 4175159.969 3.56
   LOCATION L0000352     VOLUME   571143.029 4175154.094 3.64
   LOCATION L0000353     VOLUME   571149.171 4175148.219 3.66
   LOCATION L0000354     VOLUME   571155.314 4175142.344 3.65
   LOCATION L0000355     VOLUME   571161.457 4175136.469 3.62
   LOCATION L0000356     VOLUME   571167.600 4175130.594 3.61
   LOCATION L0000357     VOLUME   571173.743 4175124.719 3.60
   LOCATION L0000358     VOLUME   571179.885 4175118.844 3.57
   LOCATION L0000359     VOLUME   571186.028 4175112.969 3.55
   LOCATION L0000360     VOLUME   571192.171 4175107.094 3.51
   LOCATION L0000361     VOLUME   571198.314 4175101.219 3.48
   LOCATION L0000362     VOLUME   571204.456 4175095.344 3.51
   LOCATION L0000363     VOLUME   571210.599 4175089.469 3.55
   LOCATION L0000364     VOLUME   571216.742 4175083.593 3.58
   LOCATION L0000365     VOLUME   571222.885 4175077.718 3.57
   LOCATION L0000366     VOLUME   571229.028 4175071.843 3.56
   LOCATION L0000367     VOLUME   571235.170 4175065.968 3.67
   LOCATION L0000368     VOLUME   571241.313 4175060.093 3.72
   LOCATION L0000369     VOLUME   571247.456 4175054.218 3.72
   LOCATION L0000370     VOLUME   571253.599 4175048.343 3.69
   LOCATION L0000371     VOLUME   571259.741 4175042.468 3.67
   LOCATION L0000372     VOLUME   571265.884 4175036.593 3.73
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LOCATION	L0000373	VOLUME	571272.027	4175030.718	3.84
LOCATION	L0000374	VOLUME	571278.170	4175024.843	3.94
LOCATION	L0000375	VOLUME	571284.313	4175018.968	3.94
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LOCATION	L0000377	VOLUME	571296.598	4175007.218	3.76
LOCATION	L0000378	VOLUME	571302.741	4175001.343	3.66
LOCATION	L0000379	VOLUME	571308.884	4174995.468	3.68
LOCATION	L0000380	VOLUME	571315.026	4174989.593	3.68
LOCATION	L0000381	VOLUME	571321.169	4174983.718	3.66
LOCATION	L0000382	VOLUME	571327.312	4174977.842	3.66
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LOCATION	L0000400	VOLUME	571437.882	4174872.091	3.75
LOCATION	L0000401	VOLUME	571444.025	4174866.216	3.76
LOCATION	L0000402	VOLUME	571450.168	4174860.341	3.76
LOCATION	L0000403	VOLUME	571456.310	4174854.466	3.76
LOCATION	L0000404	VOLUME	571462.453	4174848.591	3.76
LOCATION	L0000405	VOLUME	571468.596	4174842.716	3.75
LOCATION	L0000406	VOLUME	571474.739	4174836.841	3.74
LOCATION	L0000407	VOLUME	571480.881	4174830.966	3.72
LOCATION	L0000408	VOLUME	571487.024	4174825.091	3.71
LOCATION	L0000409	VOLUME	571493.167	4174819.216	3.72
LOCATION	L0000410	VOLUME	571499.310	4174813.341	3.72
LOCATION	L0000411	VOLUME	571505.453	4174807.466	3.74
LOCATION	L0000412	VOLUME	571511.595	4174801.591	3.77
LOCATION	L0000413	VOLUME	571517.738	4174795.716	3.81
LOCATION	L0000414	VOLUME	571523.881	4174789.841	3.82
LOCATION	L0000415	VOLUME	571530.024	4174783.966	3.81
LOCATION	L0000416	VOLUME	571536.166	4174778.091	3.82
LOCATION	L0000417	VOLUME	571542.309	4174772.216	3.84
LOCATION	L0000418	VOLUME	571548.452	4174766.341	3.87
LOCATION	L0000419	VOLUME	571554.595	4174760.465	3.82
LOCATION	L0000420	VOLUME	571560.738	4174754.590	3.79
LOCATION	L0000421	VOLUME	571566.880	4174748.715	3.79
LOCATION	L0000422	VOLUME	571573.023	4174742.840	3.80

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   LOCATION L0000424     VOLUME   571585.309 4174731.090 3.81
   LOCATION L0000425     VOLUME   571591.451 4174725.215 3.83
   LOCATION L0000426     VOLUME   571597.594 4174719.340 3.86
   LOCATION L0000427     VOLUME   571603.737 4174713.465 3.89
   LOCATION L0000428     VOLUME   571609.880 4174707.590 3.92
   LOCATION L0000429     VOLUME   571616.023 4174701.715 3.95
   LOCATION L0000430     VOLUME   571622.165 4174695.840 3.98
   LOCATION L0000431     VOLUME   571628.308 4174689.965 3.98
   LOCATION L0000432     VOLUME   571634.451 4174684.090 3.99
   LOCATION L0000433     VOLUME   571640.594 4174678.215 4.00
   LOCATION L0000434     VOLUME   571646.736 4174672.340 4.03
   LOCATION L0000435     VOLUME   571652.879 4174666.465 4.04
   LOCATION L0000436     VOLUME   571659.022 4174660.590 4.05
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   LOCATION L0000438     VOLUME   571671.308 4174648.839 4.08
** End of LINE VOLUME Source ID = SLINE5
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** Line Source Represented by Adjacent Volume Sources
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** DESCRSRC
** PREFIX
** Length of Side = 8.50
** Configuration = Adjacent
** Emission Rate = 2.95E-06
** Vertical Dimension = 6.22
** SZINIT = 2.89
** Nodes = 2
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** 572301.470, 4174889.416, 7.12, 3.11, 3.95
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   LOCATION L0000444     VOLUME   571714.415 4174677.045 4.53
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   LOCATION L0000446     VOLUME   571730.401 4174682.828 4.66
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   LOCATION L0000448     VOLUME   571746.387 4174688.611 4.75
   LOCATION L0000449     VOLUME   571754.381 4174691.502 4.64
   LOCATION L0000450     VOLUME   571762.374 4174694.394 4.54
   LOCATION L0000451     VOLUME   571770.367 4174697.285 4.47
   LOCATION L0000452     VOLUME   571778.360 4174700.177 4.52
   LOCATION L0000453     VOLUME   571786.353 4174703.069 4.56
   LOCATION L0000454     VOLUME   571794.346 4174705.960 4.61
   LOCATION L0000455     VOLUME   571802.339 4174708.852 4.69
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   LOCATION L0000457     VOLUME   571818.325 4174714.635 4.88
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LOCATION	L0000462	VOLUME	571858.290	4174729.092	5.23
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LOCATION	L0000507	VOLUME	572217.978	4174859.212	6.85

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   LOCATION L0000509     VOLUME   572233.964 4174864.995 6.98
   LOCATION L0000510     VOLUME   572241.957 4174867.887 7.02
   LOCATION L0000511     VOLUME   572249.950 4174870.778 7.05
   LOCATION L0000512     VOLUME   572257.943 4174873.670 7.09
   LOCATION L0000513     VOLUME   572265.936 4174876.561 7.09
   LOCATION L0000514     VOLUME   572273.929 4174879.453 7.11
   LOCATION L0000515     VOLUME   572281.922 4174882.344 7.14
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** Source Parameters **
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SRCPARAM	L0000698	0.00000889	3.11	3.95	2.89
SRCPARAM	L0000699	0.00000889	3.11	3.95	2.89
SRCPARAM	L0000700	0.00000889	3.11	3.95	2.89
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SRCPARAM	L0000703	0.00000889	3.11	3.95	2.89
SRCPARAM	L0000704	0.00000889	3.11	3.95	2.89

SRCPARAM	L0000705	0.00000889	3.11	3.95	2.89
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SRCPARAM	L0000707	0.00000889	3.11	3.95	2.89
SRCPARAM	L0000708	0.00000889	3.11	3.95	2.89
SRCPARAM	L0000709	0.00000889	3.11	3.95	2.89
SRCPARAM	L0000710	0.00000889	3.11	3.95	2.89
SRCPARAM	L0000711	0.00000889	3.11	3.95	2.89
SRCPARAM	L0000712	0.00000889	3.11	3.95	2.89
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SRCPARAM	L0000714	0.00000889	3.11	3.95	2.89
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SRCPARAM	L0000718	0.00000889	3.11	3.95	2.89
SRCPARAM	L0000719	0.00000889	3.11	3.95	2.89
SRCPARAM	L0000720	0.00000889	3.11	3.95	2.89
SRCPARAM	L0000721	0.00000889	3.11	3.95	2.89
SRCPARAM	L0000722	0.00000889	3.11	3.95	2.89
SRCPARAM	L0000723	0.00000889	3.11	3.95	2.89
SRCPARAM	L0000724	0.00000889	3.11	3.95	2.89
SRCPARAM	L0000725	0.00000889	3.11	3.95	2.89
SRCPARAM	L0000726	0.00000889	3.11	3.95	2.89
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SRCPARAM	L0000728	0.00000889	3.11	3.95	2.89
SRCPARAM	L0000729	0.00000889	3.11	3.95	2.89
SRCPARAM	L0000730	0.00000889	3.11	3.95	2.89
SRCPARAM	L0000731	0.00000889	3.11	3.95	2.89
SRCPARAM	L0000732	0.00000889	3.11	3.95	2.89
SRCPARAM	L0000733	0.00000889	3.11	3.95	2.89
SRCPARAM	L0000734	0.00000889	3.11	3.95	2.89
SRCPARAM	L0000735	0.00000889	3.11	3.95	2.89
SRCPARAM	L0000736	0.00000889	3.11	3.95	2.89
SRCPARAM	L0000737	0.00000889	3.11	3.95	2.89
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SRCPARAM	L0000748	0.00000889	3.11	3.95	2.89
SRCPARAM	L0000749	0.00000889	3.11	3.95	2.89
SRCPARAM	L0000750	0.00000889	3.11	3.95	2.89
SRCPARAM	L0000751	0.00000889	3.11	3.95	2.89
SRCPARAM	L0000752	0.00000889	3.11	3.95	2.89
SRCPARAM	L0000753	0.00000889	3.11	3.95	2.89
SRCPARAM	L0000754	0.00000889	3.11	3.95	2.89

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   SRCPARAM L0000758     0.00000889      3.11      3.95      2.89
   SRCPARAM L0000759     0.00000889      3.11      3.95      2.89
   SRCPARAM L0000760     0.00000889      3.11      3.95      2.89
   SRCPARAM L0000761     0.00000889      3.11      3.95      2.89
   SRCPARAM L0000762     0.00000889      3.11      3.95      2.89
   SRCPARAM L0000763     0.00000889      3.11      3.95      2.89
   SRCPARAM L0000764     0.00000889      3.11      3.95      2.89
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** LINE VOLUME Source ID = SLINE2
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   SRCPARAM L0000249     0.00000003807      3.11      3.95      2.89
   SRCPARAM L0000250     0.00000003807      3.11      3.95      2.89
   SRCPARAM L0000251     0.00000003807      3.11      3.95      2.89
   SRCPARAM L0000252     0.00000003807      3.11      3.95      2.89
   SRCPARAM L0000253     0.00000003807      3.11      3.95      2.89
   SRCPARAM L0000254     0.00000003807      3.11      3.95      2.89
   SRCPARAM L0000255     0.00000003807      3.11      3.95      2.89
   SRCPARAM L0000256     0.00000003807      3.11      3.95      2.89
   SRCPARAM L0000257     0.00000003807      3.11      3.95      2.89
   SRCPARAM L0000258     0.00000003807      3.11      3.95      2.89
   SRCPARAM L0000259     0.00000003807      3.11      3.95      2.89
   SRCPARAM L0000260     0.00000003807      3.11      3.95      2.89
   SRCPARAM L0000261     0.00000003807      3.11      3.95      2.89
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** LINE VOLUME Source ID = SLINE3
   SRCPARAM L0000262     0.00000003722      3.11      3.95      2.89
   SRCPARAM L0000263     0.00000003722      3.11      3.95      2.89
   SRCPARAM L0000264     0.00000003722      3.11      3.95      2.89
   SRCPARAM L0000265     0.00000003722      3.11      3.95      2.89
   SRCPARAM L0000266     0.00000003722      3.11      3.95      2.89
   SRCPARAM L0000267     0.00000003722      3.11      3.95      2.89
   SRCPARAM L0000268     0.00000003722      3.11      3.95      2.89
   SRCPARAM L0000269     0.00000003722      3.11      3.95      2.89
   SRCPARAM L0000270     0.00000003722      3.11      3.95      2.89
   SRCPARAM L0000271     0.00000003722      3.11      3.95      2.89
   SRCPARAM L0000272     0.00000003722      3.11      3.95      2.89
   SRCPARAM L0000273     0.00000003722      3.11      3.95      2.89
   SRCPARAM L0000274     0.00000003722      3.11      3.95      2.89
   SRCPARAM L0000275     0.00000003722      3.11      3.95      2.89
   SRCPARAM L0000276     0.00000003722      3.11      3.95      2.89
   SRCPARAM L0000277     0.00000003722      3.11      3.95      2.89
   SRCPARAM L0000278     0.00000003722      3.11      3.95      2.89
   SRCPARAM L0000279     0.00000003722      3.11      3.95      2.89
   SRCPARAM L0000280     0.00000003722      3.11      3.95      2.89
   SRCPARAM L0000281     0.00000003722      3.11      3.95      2.89
   SRCPARAM L0000282     0.00000003722      3.11      3.95      2.89
   SRCPARAM L0000283     0.00000003722      3.11      3.95      2.89
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   SRCPARAM L0000284     0.00000003722      3.11      3.95      2.89
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   SRCPARAM L0000286     0.00000003722      3.11      3.95      2.89
   SRCPARAM L0000287     0.00000003722      3.11      3.95      2.89
   SRCPARAM L0000288     0.00000003722      3.11      3.95      2.89
   SRCPARAM L0000289     0.00000003722      3.11      3.95      2.89
   SRCPARAM L0000290     0.00000003722      3.11      3.95      2.89
   SRCPARAM L0000291     0.00000003722      3.11      3.95      2.89
   SRCPARAM L0000292     0.00000003722      3.11      3.95      2.89
   SRCPARAM L0000293     0.00000003722      3.11      3.95      2.89
   SRCPARAM L0000294     0.00000003722      3.11      3.95      2.89
   SRCPARAM L0000295     0.00000003722      3.11      3.95      2.89
   SRCPARAM L0000296     0.00000003722      3.11      3.95      2.89
   SRCPARAM L0000297     0.00000003722      3.11      3.95      2.89
   SRCPARAM L0000298     0.00000003722      3.11      3.95      2.89
   SRCPARAM L0000299     0.00000003722      3.11      3.95      2.89
   SRCPARAM L0000300     0.00000003722      3.11      3.95      2.89
   SRCPARAM L0000301     0.00000003722      3.11      3.95      2.89
   SRCPARAM L0000302     0.00000003722      3.11      3.95      2.89
   SRCPARAM L0000303     0.00000003722      3.11      3.95      2.89
   SRCPARAM L0000304     0.00000003722      3.11      3.95      2.89
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   SRCPARAM L0000306     0.00000003722      3.11      3.95      2.89
   SRCPARAM L0000307     0.00000003722      3.11      3.95      2.89
   SRCPARAM L0000308     0.00000003722      3.11      3.95      2.89
   SRCPARAM L0000309     0.00000003722      3.11      3.95      2.89
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   SRCPARAM L0000311     0.00000003722      3.11      3.95      2.89
   SRCPARAM L0000312     0.00000003722      3.11      3.95      2.89
   SRCPARAM L0000313     0.00000003722      3.11      3.95      2.89
   SRCPARAM L0000314     0.00000003722      3.11      3.95      2.89
   SRCPARAM L0000315     0.00000003722      3.11      3.95      2.89
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** LINE VOLUME Source ID = SLINE4
   SRCPARAM L0000316     0.00000003862      3.11      3.95      2.89
   SRCPARAM L0000317     0.00000003862      3.11      3.95      2.89
   SRCPARAM L0000318     0.00000003862      3.11      3.95      2.89
   SRCPARAM L0000319     0.00000003862      3.11      3.95      2.89
   SRCPARAM L0000320     0.00000003862      3.11      3.95      2.89
   SRCPARAM L0000321     0.00000003862      3.11      3.95      2.89
   SRCPARAM L0000322     0.00000003862      3.11      3.95      2.89
   SRCPARAM L0000323     0.00000003862      3.11      3.95      2.89
   SRCPARAM L0000324     0.00000003862      3.11      3.95      2.89
   SRCPARAM L0000325     0.00000003862      3.11      3.95      2.89
   SRCPARAM L0000326     0.00000003862      3.11      3.95      2.89
   SRCPARAM L0000327     0.00000003862      3.11      3.95      2.89
   SRCPARAM L0000328     0.00000003862      3.11      3.95      2.89
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** LINE VOLUME Source ID = SLINE5
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SRCPARAM L0000331	0.00000003727	3.11	3.95	2.89
SRCPARAM L0000332	0.00000003727	3.11	3.95	2.89
SRCPARAM L0000333	0.00000003727	3.11	3.95	2.89
SRCPARAM L0000334	0.00000003727	3.11	3.95	2.89
SRCPARAM L0000335	0.00000003727	3.11	3.95	2.89
SRCPARAM L0000336	0.00000003727	3.11	3.95	2.89
SRCPARAM L0000337	0.00000003727	3.11	3.95	2.89
SRCPARAM L0000338	0.00000003727	3.11	3.95	2.89
SRCPARAM L0000339	0.00000003727	3.11	3.95	2.89
SRCPARAM L0000340	0.00000003727	3.11	3.95	2.89
SRCPARAM L0000341	0.00000003727	3.11	3.95	2.89
SRCPARAM L0000342	0.00000003727	3.11	3.95	2.89
SRCPARAM L0000343	0.00000003727	3.11	3.95	2.89
SRCPARAM L0000344	0.00000003727	3.11	3.95	2.89
SRCPARAM L0000345	0.00000003727	3.11	3.95	2.89
SRCPARAM L0000346	0.00000003727	3.11	3.95	2.89
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SRCPARAM L0000351	0.00000003727	3.11	3.95	2.89
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SRCPARAM L0000353	0.00000003727	3.11	3.95	2.89
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SRCPARAM L0000363	0.00000003727	3.11	3.95	2.89
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SRCPARAM L0000366	0.00000003727	3.11	3.95	2.89
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SRCPARAM L0000379	0.00000003727	3.11	3.95	2.89

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SRCPARAM L0000429	0.00000003727	3.11	3.95	2.89

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** LINE VOLUME Source ID = SLINE6
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   SRCPARAM L0000454     0.00000003734      3.11      3.95      2.89
   SRCPARAM L0000455     0.00000003734      3.11      3.95      2.89
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   SRCPARAM L0000469     0.00000003734      3.11      3.95      2.89
   SRCPARAM L0000470     0.00000003734      3.11      3.95      2.89
   SRCPARAM L0000471     0.00000003734      3.11      3.95      2.89
   SRCPARAM L0000472     0.00000003734      3.11      3.95      2.89
   SRCPARAM L0000473     0.00000003734      3.11      3.95      2.89
   SRCPARAM L0000474     0.00000003734      3.11      3.95      2.89
   SRCPARAM L0000475     0.00000003734      3.11      3.95      2.89
   SRCPARAM L0000476     0.00000003734      3.11      3.95      2.89
   SRCPARAM L0000477     0.00000003734      3.11      3.95      2.89
```

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   SRCPARAM L0000478     0.00000003734      3.11      3.95      2.89
   SRCPARAM L0000479     0.00000003734      3.11      3.95      2.89
   SRCPARAM L0000480     0.00000003734      3.11      3.95      2.89
   SRCPARAM L0000481     0.00000003734      3.11      3.95      2.89
   SRCPARAM L0000482     0.00000003734      3.11      3.95      2.89
   SRCPARAM L0000483     0.00000003734      3.11      3.95      2.89
   SRCPARAM L0000484     0.00000003734      3.11      3.95      2.89
   SRCPARAM L0000485     0.00000003734      3.11      3.95      2.89
   SRCPARAM L0000486     0.00000003734      3.11      3.95      2.89
   SRCPARAM L0000487     0.00000003734      3.11      3.95      2.89
   SRCPARAM L0000488     0.00000003734      3.11      3.95      2.89
   SRCPARAM L0000489     0.00000003734      3.11      3.95      2.89
   SRCPARAM L0000490     0.00000003734      3.11      3.95      2.89
   SRCPARAM L0000491     0.00000003734      3.11      3.95      2.89
   SRCPARAM L0000492     0.00000003734      3.11      3.95      2.89
   SRCPARAM L0000493     0.00000003734      3.11      3.95      2.89
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   SRCPARAM L0000495     0.00000003734      3.11      3.95      2.89
   SRCPARAM L0000496     0.00000003734      3.11      3.95      2.89
   SRCPARAM L0000497     0.00000003734      3.11      3.95      2.89
   SRCPARAM L0000498     0.00000003734      3.11      3.95      2.89
   SRCPARAM L0000499     0.00000003734      3.11      3.95      2.89
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   SRCPARAM L0000501     0.00000003734      3.11      3.95      2.89
   SRCPARAM L0000502     0.00000003734      3.11      3.95      2.89
   SRCPARAM L0000503     0.00000003734      3.11      3.95      2.89
   SRCPARAM L0000504     0.00000003734      3.11      3.95      2.89
   SRCPARAM L0000505     0.00000003734      3.11      3.95      2.89
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   SRCPARAM L0000508     0.00000003734      3.11      3.95      2.89
   SRCPARAM L0000509     0.00000003734      3.11      3.95      2.89
   SRCPARAM L0000510     0.00000003734      3.11      3.95      2.89
   SRCPARAM L0000511     0.00000003734      3.11      3.95      2.89
   SRCPARAM L0000512     0.00000003734      3.11      3.95      2.89
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   SRCPARAM L0000514     0.00000003734      3.11      3.95      2.89
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   SRCPARAM L0000516     0.00000003734      3.11      3.95      2.89
   SRCPARAM L0000517     0.00000003734      3.11      3.95      2.89
** ----------------------------------------------------------------------
   URBANSRC ALL

** Variable Emissions Type: "By Hour-of-Day (HROFDY)"
** Variable Emission Scenario: "Scenario 1"
   EMISFACT L0000518     HROFDY 0.0 0.0 0.0 0.0 0.0 0.0
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   EMISFACT L0000518     HROFDY 0.0 0.0 0.0 0.0 0.0 0.0
   EMISFACT L0000519     HROFDY 0.0 0.0 0.0 0.0 0.0 0.0
```

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EMISFACT L0000520     HROFDY 0.0 0.0 0.0 0.0 0.0 0.0
EMISFACT L0000520     HROFDY 0.0 0.0 1.0 1.0 1.0 1.0
EMISFACT L0000520     HROFDY 1.0 1.0 1.0 1.0 0.0 0.0
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EMISFACT L0000521     HROFDY 1.0 1.0 1.0 1.0 0.0 0.0
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EMISFACT L0000525     HROFDY 1.0 1.0 1.0 1.0 0.0 0.0
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EMISFACT L0000531     HROFDY 1.0 1.0 1.0 1.0 0.0 0.0
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EMISFACT L0000534     HROFDY 1.0 1.0 1.0 1.0 0.0 0.0
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EMISFACT L0000544     HROFDY 0.0 0.0 0.0 0.0 0.0 0.0
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```

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EMISFACT L0000706     HROFDY 1.0 1.0 1.0 1.0 0.0 0.0
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EMISFACT L0000250     HROFDY 1.0 1.0 1.0 1.0 0.0 0.0
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EMISFACT L0000251     HROFDY 1.0 1.0 1.0 1.0 0.0 0.0
EMISFACT L0000251     HROFDY 0.0 0.0 0.0 0.0 0.0 0.0
EMISFACT L0000252     HROFDY 0.0 0.0 0.0 0.0 0.0 0.0
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EMISFACT L0000253     HROFDY 1.0 1.0 1.0 1.0 0.0 0.0
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EMISFACT L0000314     HROFDY 1.0 1.0 1.0 1.0 0.0 0.0
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EMISFACT L0000513     HROFDY 1.0 1.0 1.0 1.0 0.0 0.0
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   EMISFACT L0000516     HROFDY 0.0 0.0 0.0 0.0 0.0 0.0
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   EMISFACT L0000516     HROFDY 0.0 0.0 0.0 0.0 0.0 0.0
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SO FINISHED
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** AERMOD Receptor Pathway
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RE FINISHED
**
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** AERMOD Meteorology Pathway
****************************************
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   PROFFILE "880 Doolittle.PFL"
   SURFDATA 23230 2013 OAKLAND/WSO_AP
   UAIRDATA 23230 2013 OAKLAND/WSO_AP
   PROFBASE 5.0 METERS
ME FINISHED
**
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** AERMOD Output Pathway
****************************************
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**
OU STARTING
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   RECTABLE 1 1ST
   RECTABLE 8 1ST
   RECTABLE 24 1ST
** Auto-Generated Plotfiles
   PLOTFILE 1 ALL 1ST "880 Doolittle.AD\01H1GALL.PLT" 31
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   PLOTFILE 8 ALL 1ST "880 Doolittle.AD\08H1GALL.PLT" 32
   PLOTFILE 24 ALL 1ST "880 Doolittle.AD\24H1GALL.PLT" 33
   PLOTFILE PERIOD ALL "880 Doolittle.AD\PE00GALL.PLT" 34
   SUMMFILE "880 Doolittle.sum"
OU FINISHED
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** Project Parameters
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** DESCPTN  UTM: Universal Transverse Mercator
** DATUM    World Geodetic System 1984
** DTMRGN   Global Definition
** UNITS    m
** ZONE     10
** ZONEINX  0
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** AERMOD Input Produced by:
** AERMOD View Ver. 11.0.1
** Lakes Environmental Software Inc.
** Date: 1/12/2023
** File: C:\Lakes\AERMOD View\880 Doolittle\880 Doolittle.ADI
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** AERMOD Control Pathway
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   MODELOPT DFAULT CONC
   AVERTIME 1 8 24 PERIOD
   URBANOPT 1649000 Alameda_County
   POLLUTID PM_2.5
   RUNORNOT RUN
   ERRORFIL "880 Doolittle.err"
CO FINISHED
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** AERMOD Source Pathway
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SO STARTING
** Source Location **
** Source ID - Type - X Coord. - Y Coord. **
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** LINE VOLUME Source ID = SLINE1
** DESCRSRC Construction
** PREFIX
** Length of Side = 8.50
** Configuration = Adjacent
** Emission Rate = 0.002195809
** Vertical Dimension = 6.22
** SZINIT = 2.89
** Nodes = 21
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** 571498.914, 4175239.548, 4.48, 3.11, 3.95
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** 571710.952, 4174990.993, 3.81, 3.11, 3.95
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   LOCATION L0000520     VOLUME   571486.451 4175215.934 4.43
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   LOCATION L0000523     VOLUME   571498.354 4175238.485 4.51
   LOCATION L0000524     VOLUME   571505.382 4175236.164 4.61
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   LOCATION L0000528     VOLUME   571535.508 4175220.403 5.01
   LOCATION L0000529     VOLUME   571543.039 4175216.463 5.09
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   LOCATION L0000532     VOLUME   571565.634 4175204.642 5.20
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   LOCATION L0000549     VOLUME   571680.878 4175127.881 4.40
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LOCATION	L0000559	VOLUME	571699.117	4175044.861	4.16
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LOCATION	L0000589	VOLUME	571521.033	4174987.541	3.66
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LOCATION	L0000595	VOLUME	571476.866	4175013.042	3.59
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LOCATION	L0000720	VOLUME	571517.842	4175158.469	4.49
LOCATION	L0000721	VOLUME	571525.654	4175161.817	4.60
LOCATION	L0000722	VOLUME	571532.894	4175159.770	4.60
LOCATION	L0000723	VOLUME	571539.831	4175154.857	4.53
LOCATION	L0000724	VOLUME	571546.767	4175149.943	4.44
LOCATION	L0000725	VOLUME	571553.703	4175145.030	4.34
LOCATION	L0000726	VOLUME	571560.639	4175140.117	4.23
LOCATION	L0000727	VOLUME	571567.576	4175135.204	4.14
LOCATION	L0000728	VOLUME	571574.512	4175130.291	4.10
LOCATION	L0000729	VOLUME	571581.448	4175125.378	4.06
LOCATION	L0000730	VOLUME	571588.384	4175120.465	4.03
LOCATION	L0000731	VOLUME	571595.320	4175115.551	4.01
LOCATION	L0000732	VOLUME	571602.257	4175110.638	4.01
LOCATION	L0000733	VOLUME	571609.193	4175105.725	4.01
LOCATION	L0000734	VOLUME	571614.359	4175099.485	4.03
LOCATION	L0000735	VOLUME	571617.135	4175091.450	4.04
LOCATION	L0000736	VOLUME	571619.910	4175083.416	4.05
LOCATION	L0000737	VOLUME	571622.686	4175075.382	4.06
LOCATION	L0000738	VOLUME	571625.461	4175067.348	4.07
LOCATION	L0000739	VOLUME	571628.236	4175059.314	4.07
LOCATION	L0000740	VOLUME	571631.012	4175051.280	4.08
LOCATION	L0000741	VOLUME	571633.787	4175043.246	4.07
LOCATION	L0000742	VOLUME	571632.576	4175037.396	4.05
LOCATION	L0000743	VOLUME	571624.311	4175035.413	4.03
LOCATION	L0000744	VOLUME	571616.046	4175033.429	4.01
LOCATION	L0000745	VOLUME	571607.780	4175031.445	3.99
LOCATION	L0000746	VOLUME	571599.515	4175029.462	3.97
LOCATION	L0000747	VOLUME	571591.250	4175027.478	3.96
LOCATION	L0000748	VOLUME	571582.985	4175025.494	3.95
LOCATION	L0000749	VOLUME	571574.923	4175024.959	3.94

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   LOCATION L0000750     VOLUME   571567.523 4175029.142 3.92
   LOCATION L0000751     VOLUME   571560.123 4175033.324 3.90
   LOCATION L0000752     VOLUME   571552.723 4175037.507 3.89
   LOCATION L0000753     VOLUME   571545.323 4175041.689 3.87
   LOCATION L0000754     VOLUME   571537.924 4175045.872 3.85
   LOCATION L0000755     VOLUME   571530.524 4175050.054 3.83
   LOCATION L0000756     VOLUME   571523.124 4175054.237 3.82
   LOCATION L0000757     VOLUME   571529.868 4175056.939 3.83
   LOCATION L0000758     VOLUME   571537.973 4175059.499 3.84
   LOCATION L0000759     VOLUME   571546.079 4175062.058 3.85
   LOCATION L0000760     VOLUME   571554.184 4175064.618 3.86
   LOCATION L0000761     VOLUME   571562.289 4175067.178 3.87
   LOCATION L0000762     VOLUME   571570.395 4175069.737 3.89
   LOCATION L0000763     VOLUME   571578.500 4175072.297 3.91
   LOCATION L0000764     VOLUME   571586.606 4175074.856 3.93
** End of LINE VOLUME Source ID = SLINE1
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** Line Source Represented by Adjacent Volume Sources
** LINE VOLUME Source ID = SLINE2
** DESCRSRC Doolittle Driveway Hauling
** PREFIX
** Length of Side = 8.50
** Configuration = Adjacent
** Emission Rate = 5.33E-07
** Vertical Dimension = 6.22
** SZINIT = 2.89
** Nodes = 2
** 571457.211, 4175012.475, 3.53, 3.11, 3.95
** 571370.494, 4174928.103, 3.55, 3.11, 3.95
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   LOCATION L0000248     VOLUME   571454.165 4175009.511 3.54
   LOCATION L0000249     VOLUME   571448.073 4175003.583 3.55
   LOCATION L0000250     VOLUME   571441.981 4174997.656 3.54
   LOCATION L0000251     VOLUME   571435.888 4174991.728 3.53
   LOCATION L0000252     VOLUME   571429.796 4174985.801 3.53
   LOCATION L0000253     VOLUME   571423.704 4174979.874 3.53
   LOCATION L0000254     VOLUME   571417.612 4174973.946 3.55
   LOCATION L0000255     VOLUME   571411.519 4174968.019 3.56
   LOCATION L0000256     VOLUME   571405.427 4174962.091 3.56
   LOCATION L0000257     VOLUME   571399.335 4174956.164 3.54
   LOCATION L0000258     VOLUME   571393.243 4174950.236 3.57
   LOCATION L0000259     VOLUME   571387.150 4174944.309 3.57
   LOCATION L0000260     VOLUME   571381.058 4174938.381 3.56
   LOCATION L0000261     VOLUME   571374.966 4174932.454 3.53
** End of LINE VOLUME Source ID = SLINE2
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** Line Source Represented by Adjacent Volume Sources
** LINE VOLUME Source ID = SLINE3
** DESCRSRC Hester Street Hauling
** PREFIX
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** Length of Side = 8.50
** Configuration = Adjacent
** Emission Rate = 2.01E-06
** Vertical Dimension = 6.22
** SZINIT = 2.89
** Nodes = 2
** 571463.376, 4175169.868, 4.11, 3.11, 3.95
** 571067.156, 4175396.512, 3.59, 3.11, 3.95
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   LOCATION L0000262     VOLUME   571459.686 4175171.978 4.07
   LOCATION L0000263     VOLUME   571452.308 4175176.199 4.00
   LOCATION L0000264     VOLUME   571444.930 4175180.419 3.95
   LOCATION L0000265     VOLUME   571437.552 4175184.639 3.91
   LOCATION L0000266     VOLUME   571430.174 4175188.860 3.88
   LOCATION L0000267     VOLUME   571422.795 4175193.080 3.85
   LOCATION L0000268     VOLUME   571415.417 4175197.301 3.83
   LOCATION L0000269     VOLUME   571408.039 4175201.521 3.82
   LOCATION L0000270     VOLUME   571400.661 4175205.742 3.80
   LOCATION L0000271     VOLUME   571393.283 4175209.962 3.75
   LOCATION L0000272     VOLUME   571385.905 4175214.183 3.68
   LOCATION L0000273     VOLUME   571378.526 4175218.403 3.61
   LOCATION L0000274     VOLUME   571371.148 4175222.623 3.56
   LOCATION L0000275     VOLUME   571363.770 4175226.844 3.55
   LOCATION L0000276     VOLUME   571356.392 4175231.064 3.54
   LOCATION L0000277     VOLUME   571349.014 4175235.285 3.52
   LOCATION L0000278     VOLUME   571341.635 4175239.505 3.53
   LOCATION L0000279     VOLUME   571334.257 4175243.726 3.56
   LOCATION L0000280     VOLUME   571326.879 4175247.946 3.57
   LOCATION L0000281     VOLUME   571319.501 4175252.167 3.60
   LOCATION L0000282     VOLUME   571312.123 4175256.387 3.65
   LOCATION L0000283     VOLUME   571304.744 4175260.608 3.69
   LOCATION L0000284     VOLUME   571297.366 4175264.828 3.73
   LOCATION L0000285     VOLUME   571289.988 4175269.048 3.75
   LOCATION L0000286     VOLUME   571282.610 4175273.269 3.77
   LOCATION L0000287     VOLUME   571275.232 4175277.489 3.77
   LOCATION L0000288     VOLUME   571267.853 4175281.710 3.77
   LOCATION L0000289     VOLUME   571260.475 4175285.930 3.79
   LOCATION L0000290     VOLUME   571253.097 4175290.151 3.81
   LOCATION L0000291     VOLUME   571245.719 4175294.371 3.83
   LOCATION L0000292     VOLUME   571238.341 4175298.592 3.83
   LOCATION L0000293     VOLUME   571230.962 4175302.812 3.81
   LOCATION L0000294     VOLUME   571223.584 4175307.032 3.77
   LOCATION L0000295     VOLUME   571216.206 4175311.253 3.73
   LOCATION L0000296     VOLUME   571208.828 4175315.473 3.72
   LOCATION L0000297     VOLUME   571201.450 4175319.694 3.72
   LOCATION L0000298     VOLUME   571194.071 4175323.914 3.73
   LOCATION L0000299     VOLUME   571186.693 4175328.135 3.73
   LOCATION L0000300     VOLUME   571179.315 4175332.355 3.73
   LOCATION L0000301     VOLUME   571171.937 4175336.576 3.73
   LOCATION L0000302     VOLUME   571164.559 4175340.796 3.73
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   LOCATION L0000303     VOLUME   571157.180 4175345.017 3.74
   LOCATION L0000304     VOLUME   571149.802 4175349.237 3.75
   LOCATION L0000305     VOLUME   571142.424 4175353.457 3.80
   LOCATION L0000306     VOLUME   571135.046 4175357.678 3.83
   LOCATION L0000307     VOLUME   571127.668 4175361.898 3.85
   LOCATION L0000308     VOLUME   571120.289 4175366.119 3.82
   LOCATION L0000309     VOLUME   571112.911 4175370.339 3.79
   LOCATION L0000310     VOLUME   571105.533 4175374.560 3.76
   LOCATION L0000311     VOLUME   571098.155 4175378.780 3.71
   LOCATION L0000312     VOLUME   571090.777 4175383.001 3.68
   LOCATION L0000313     VOLUME   571083.398 4175387.221 3.65
   LOCATION L0000314     VOLUME   571076.020 4175391.441 3.60
   LOCATION L0000315     VOLUME   571068.642 4175395.662 3.57
** End of LINE VOLUME Source ID = SLINE3
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** Line Source Represented by Adjacent Volume Sources
** LINE VOLUME Source ID = SLINE4
** DESCRSRC Adams Ave
** PREFIX
** Length of Side = 8.50
** Configuration = Adjacent
** Emission Rate = 5.02E-07
** Vertical Dimension = 6.22
** SZINIT = 2.89
** Nodes = 2
** 571063.895, 4175388.359, 3.58, 3.11, 3.95
** 571000.304, 4175293.788, 2.90, 3.11, 3.95
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   LOCATION L0000316     VOLUME   571061.523 4175384.833 3.55
   LOCATION L0000317     VOLUME   571056.780 4175377.779 3.54
   LOCATION L0000318     VOLUME   571052.037 4175370.725 3.54
   LOCATION L0000319     VOLUME   571047.294 4175363.672 3.55
   LOCATION L0000320     VOLUME   571042.551 4175356.618 3.54
   LOCATION L0000321     VOLUME   571037.808 4175349.564 3.53
   LOCATION L0000322     VOLUME   571033.065 4175342.511 3.54
   LOCATION L0000323     VOLUME   571028.322 4175335.457 3.54
   LOCATION L0000324     VOLUME   571023.579 4175328.403 3.58
   LOCATION L0000325     VOLUME   571018.836 4175321.350 3.61
   LOCATION L0000326     VOLUME   571014.093 4175314.296 3.60
   LOCATION L0000327     VOLUME   571009.350 4175307.242 3.45
   LOCATION L0000328     VOLUME   571004.607 4175300.189 3.24
** End of LINE VOLUME Source ID = SLINE4
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** Line Source Represented by Adjacent Volume Sources
** LINE VOLUME Source ID = SLINE5
** DESCRSRC Doolittle Drive Hauling
** PREFIX
** Length of Side = 8.50
** Configuration = Adjacent
** Emission Rate = 4.1E-06
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** Vertical Dimension = 6.22
** SZINIT = 2.89
** Nodes = 2
** 570998.673, 4175292.158, 2.86, 3.11, 3.95
** 571672.084, 4174648.097, 4.09, 3.11, 3.95
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   LOCATION L0000330     VOLUME   571007.887 4175283.345 2.95
   LOCATION L0000331     VOLUME   571014.030 4175277.470 3.03
   LOCATION L0000332     VOLUME   571020.173 4175271.595 3.14
   LOCATION L0000333     VOLUME   571026.316 4175265.720 3.27
   LOCATION L0000334     VOLUME   571032.459 4175259.845 3.34
   LOCATION L0000335     VOLUME   571038.601 4175253.970 3.37
   LOCATION L0000336     VOLUME   571044.744 4175248.095 3.38
   LOCATION L0000337     VOLUME   571050.887 4175242.220 3.40
   LOCATION L0000338     VOLUME   571057.030 4175236.345 3.38
   LOCATION L0000339     VOLUME   571063.172 4175230.470 3.36
   LOCATION L0000340     VOLUME   571069.315 4175224.595 3.37
   LOCATION L0000341     VOLUME   571075.458 4175218.720 3.42
   LOCATION L0000342     VOLUME   571081.601 4175212.845 3.42
   LOCATION L0000343     VOLUME   571087.744 4175206.970 3.40
   LOCATION L0000344     VOLUME   571093.886 4175201.095 3.36
   LOCATION L0000345     VOLUME   571100.029 4175195.220 3.32
   LOCATION L0000346     VOLUME   571106.172 4175189.344 3.33
   LOCATION L0000347     VOLUME   571112.315 4175183.469 3.38
   LOCATION L0000348     VOLUME   571118.458 4175177.594 3.42
   LOCATION L0000349     VOLUME   571124.600 4175171.719 3.45
   LOCATION L0000350     VOLUME   571130.743 4175165.844 3.47
   LOCATION L0000351     VOLUME   571136.886 4175159.969 3.56
   LOCATION L0000352     VOLUME   571143.029 4175154.094 3.64
   LOCATION L0000353     VOLUME   571149.171 4175148.219 3.66
   LOCATION L0000354     VOLUME   571155.314 4175142.344 3.65
   LOCATION L0000355     VOLUME   571161.457 4175136.469 3.62
   LOCATION L0000356     VOLUME   571167.600 4175130.594 3.61
   LOCATION L0000357     VOLUME   571173.743 4175124.719 3.60
   LOCATION L0000358     VOLUME   571179.885 4175118.844 3.57
   LOCATION L0000359     VOLUME   571186.028 4175112.969 3.55
   LOCATION L0000360     VOLUME   571192.171 4175107.094 3.51
   LOCATION L0000361     VOLUME   571198.314 4175101.219 3.48
   LOCATION L0000362     VOLUME   571204.456 4175095.344 3.51
   LOCATION L0000363     VOLUME   571210.599 4175089.469 3.55
   LOCATION L0000364     VOLUME   571216.742 4175083.593 3.58
   LOCATION L0000365     VOLUME   571222.885 4175077.718 3.57
   LOCATION L0000366     VOLUME   571229.028 4175071.843 3.56
   LOCATION L0000367     VOLUME   571235.170 4175065.968 3.67
   LOCATION L0000368     VOLUME   571241.313 4175060.093 3.72
   LOCATION L0000369     VOLUME   571247.456 4175054.218 3.72
   LOCATION L0000370     VOLUME   571253.599 4175048.343 3.69
   LOCATION L0000371     VOLUME   571259.741 4175042.468 3.67
   LOCATION L0000372     VOLUME   571265.884 4175036.593 3.73
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LOCATION	L0000373	VOLUME	571272.027	4175030.718	3.84
LOCATION	L0000374	VOLUME	571278.170	4175024.843	3.94
LOCATION	L0000375	VOLUME	571284.313	4175018.968	3.94
LOCATION	L0000376	VOLUME	571290.455	4175013.093	3.87
LOCATION	L0000377	VOLUME	571296.598	4175007.218	3.76
LOCATION	L0000378	VOLUME	571302.741	4175001.343	3.66
LOCATION	L0000379	VOLUME	571308.884	4174995.468	3.68
LOCATION	L0000380	VOLUME	571315.026	4174989.593	3.68
LOCATION	L0000381	VOLUME	571321.169	4174983.718	3.66
LOCATION	L0000382	VOLUME	571327.312	4174977.842	3.66
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LOCATION	L0000388	VOLUME	571364.169	4174942.592	3.61
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LOCATION	L0000394	VOLUME	571401.025	4174907.342	3.68
LOCATION	L0000395	VOLUME	571407.168	4174901.467	3.71
LOCATION	L0000396	VOLUME	571413.311	4174895.592	3.72
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LOCATION	L0000398	VOLUME	571425.596	4174883.842	3.70
LOCATION	L0000399	VOLUME	571431.739	4174877.967	3.73
LOCATION	L0000400	VOLUME	571437.882	4174872.091	3.75
LOCATION	L0000401	VOLUME	571444.025	4174866.216	3.76
LOCATION	L0000402	VOLUME	571450.168	4174860.341	3.76
LOCATION	L0000403	VOLUME	571456.310	4174854.466	3.76
LOCATION	L0000404	VOLUME	571462.453	4174848.591	3.76
LOCATION	L0000405	VOLUME	571468.596	4174842.716	3.75
LOCATION	L0000406	VOLUME	571474.739	4174836.841	3.74
LOCATION	L0000407	VOLUME	571480.881	4174830.966	3.72
LOCATION	L0000408	VOLUME	571487.024	4174825.091	3.71
LOCATION	L0000409	VOLUME	571493.167	4174819.216	3.72
LOCATION	L0000410	VOLUME	571499.310	4174813.341	3.72
LOCATION	L0000411	VOLUME	571505.453	4174807.466	3.74
LOCATION	L0000412	VOLUME	571511.595	4174801.591	3.77
LOCATION	L0000413	VOLUME	571517.738	4174795.716	3.81
LOCATION	L0000414	VOLUME	571523.881	4174789.841	3.82
LOCATION	L0000415	VOLUME	571530.024	4174783.966	3.81
LOCATION	L0000416	VOLUME	571536.166	4174778.091	3.82
LOCATION	L0000417	VOLUME	571542.309	4174772.216	3.84
LOCATION	L0000418	VOLUME	571548.452	4174766.341	3.87
LOCATION	L0000419	VOLUME	571554.595	4174760.465	3.82
LOCATION	L0000420	VOLUME	571560.738	4174754.590	3.79
LOCATION	L0000421	VOLUME	571566.880	4174748.715	3.79
LOCATION	L0000422	VOLUME	571573.023	4174742.840	3.80

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   LOCATION L0000423     VOLUME   571579.166 4174736.965 3.80
   LOCATION L0000424     VOLUME   571585.309 4174731.090 3.81
   LOCATION L0000425     VOLUME   571591.451 4174725.215 3.83
   LOCATION L0000426     VOLUME   571597.594 4174719.340 3.86
   LOCATION L0000427     VOLUME   571603.737 4174713.465 3.89
   LOCATION L0000428     VOLUME   571609.880 4174707.590 3.92
   LOCATION L0000429     VOLUME   571616.023 4174701.715 3.95
   LOCATION L0000430     VOLUME   571622.165 4174695.840 3.98
   LOCATION L0000431     VOLUME   571628.308 4174689.965 3.98
   LOCATION L0000432     VOLUME   571634.451 4174684.090 3.99
   LOCATION L0000433     VOLUME   571640.594 4174678.215 4.00
   LOCATION L0000434     VOLUME   571646.736 4174672.340 4.03
   LOCATION L0000435     VOLUME   571652.879 4174666.465 4.04
   LOCATION L0000436     VOLUME   571659.022 4174660.590 4.05
   LOCATION L0000437     VOLUME   571665.165 4174654.714 4.06
   LOCATION L0000438     VOLUME   571671.308 4174648.839 4.08
** End of LINE VOLUME Source ID = SLINE5
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** Line Source Represented by Adjacent Volume Sources
** LINE VOLUME Source ID = SLINE6
** DESCRSRC
** PREFIX
** Length of Side = 8.50
** Configuration = Adjacent
** Emission Rate = 2.95E-06
** Vertical Dimension = 6.22
** SZINIT = 2.89
** Nodes = 2
** 571670.453, 4174661.141, 4.07, 3.11, 3.95
** 572301.470, 4174889.416, 7.12, 3.11, 3.95
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   LOCATION L0000440     VOLUME   571682.443 4174665.478 4.12
   LOCATION L0000441     VOLUME   571690.436 4174668.370 4.17
   LOCATION L0000442     VOLUME   571698.429 4174671.262 4.26
   LOCATION L0000443     VOLUME   571706.422 4174674.153 4.40
   LOCATION L0000444     VOLUME   571714.415 4174677.045 4.53
   LOCATION L0000445     VOLUME   571722.408 4174679.936 4.61
   LOCATION L0000446     VOLUME   571730.401 4174682.828 4.66
   LOCATION L0000447     VOLUME   571738.394 4174685.719 4.73
   LOCATION L0000448     VOLUME   571746.387 4174688.611 4.75
   LOCATION L0000449     VOLUME   571754.381 4174691.502 4.64
   LOCATION L0000450     VOLUME   571762.374 4174694.394 4.54
   LOCATION L0000451     VOLUME   571770.367 4174697.285 4.47
   LOCATION L0000452     VOLUME   571778.360 4174700.177 4.52
   LOCATION L0000453     VOLUME   571786.353 4174703.069 4.56
   LOCATION L0000454     VOLUME   571794.346 4174705.960 4.61
   LOCATION L0000455     VOLUME   571802.339 4174708.852 4.69
   LOCATION L0000456     VOLUME   571810.332 4174711.743 4.78
   LOCATION L0000457     VOLUME   571818.325 4174714.635 4.88
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LOCATION	L0000458	VOLUME	571826.318	4174717.526	4.95
LOCATION	L0000459	VOLUME	571834.311	4174720.418	5.03
LOCATION	L0000460	VOLUME	571842.304	4174723.309	5.10
LOCATION	L0000461	VOLUME	571850.297	4174726.201	5.17
LOCATION	L0000462	VOLUME	571858.290	4174729.092	5.23
LOCATION	L0000463	VOLUME	571866.283	4174731.984	5.29
LOCATION	L0000464	VOLUME	571874.276	4174734.876	5.34
LOCATION	L0000465	VOLUME	571882.269	4174737.767	5.38
LOCATION	L0000466	VOLUME	571890.263	4174740.659	5.41
LOCATION	L0000467	VOLUME	571898.256	4174743.550	5.49
LOCATION	L0000468	VOLUME	571906.249	4174746.442	5.57
LOCATION	L0000469	VOLUME	571914.242	4174749.333	5.66
LOCATION	L0000470	VOLUME	571922.235	4174752.225	5.69
LOCATION	L0000471	VOLUME	571930.228	4174755.116	5.72
LOCATION	L0000472	VOLUME	571938.221	4174758.008	5.74
LOCATION	L0000473	VOLUME	571946.214	4174760.899	5.79
LOCATION	L0000474	VOLUME	571954.207	4174763.791	5.83
LOCATION	L0000475	VOLUME	571962.200	4174766.683	5.85
LOCATION	L0000476	VOLUME	571970.193	4174769.574	5.86
LOCATION	L0000477	VOLUME	571978.186	4174772.466	5.87
LOCATION	L0000478	VOLUME	571986.179	4174775.357	5.90
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LOCATION	L0000481	VOLUME	572010.158	4174784.032	5.94
LOCATION	L0000482	VOLUME	572018.151	4174786.923	5.95
LOCATION	L0000483	VOLUME	572026.144	4174789.815	5.95
LOCATION	L0000484	VOLUME	572034.138	4174792.706	5.95
LOCATION	L0000485	VOLUME	572042.131	4174795.598	5.94
LOCATION	L0000486	VOLUME	572050.124	4174798.490	5.95
LOCATION	L0000487	VOLUME	572058.117	4174801.381	6.00
LOCATION	L0000488	VOLUME	572066.110	4174804.273	6.05
LOCATION	L0000489	VOLUME	572074.103	4174807.164	6.11
LOCATION	L0000490	VOLUME	572082.096	4174810.056	6.16
LOCATION	L0000491	VOLUME	572090.089	4174812.947	6.21
LOCATION	L0000492	VOLUME	572098.082	4174815.839	6.26
LOCATION	L0000493	VOLUME	572106.075	4174818.730	6.31
LOCATION	L0000494	VOLUME	572114.068	4174821.622	6.37
LOCATION	L0000495	VOLUME	572122.061	4174824.513	6.47
LOCATION	L0000496	VOLUME	572130.054	4174827.405	6.59
LOCATION	L0000497	VOLUME	572138.047	4174830.297	6.69
LOCATION	L0000498	VOLUME	572146.040	4174833.188	6.72
LOCATION	L0000499	VOLUME	572154.033	4174836.080	6.71
LOCATION	L0000500	VOLUME	572162.026	4174838.971	6.69
LOCATION	L0000501	VOLUME	572170.020	4174841.863	6.64
LOCATION	L0000502	VOLUME	572178.013	4174844.754	6.61
LOCATION	L0000503	VOLUME	572186.006	4174847.646	6.62
LOCATION	L0000504	VOLUME	572193.999	4174850.537	6.67
LOCATION	L0000505	VOLUME	572201.992	4174853.429	6.73
LOCATION	L0000506	VOLUME	572209.985	4174856.320	6.78
LOCATION	L0000507	VOLUME	572217.978	4174859.212	6.85

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   LOCATION L0000509     VOLUME   572233.964 4174864.995 6.98
   LOCATION L0000510     VOLUME   572241.957 4174867.887 7.02
   LOCATION L0000511     VOLUME   572249.950 4174870.778 7.05
   LOCATION L0000512     VOLUME   572257.943 4174873.670 7.09
   LOCATION L0000513     VOLUME   572265.936 4174876.561 7.09
   LOCATION L0000514     VOLUME   572273.929 4174879.453 7.11
   LOCATION L0000515     VOLUME   572281.922 4174882.344 7.14
   LOCATION L0000516     VOLUME   572289.915 4174885.236 7.16
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   SRCPARAM L0000251     0.00000003807      3.11      3.95      2.89
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   SRCPARAM L0000253     0.00000003807      3.11      3.95      2.89
   SRCPARAM L0000254     0.00000003807      3.11      3.95      2.89
   SRCPARAM L0000255     0.00000003807      3.11      3.95      2.89
   SRCPARAM L0000256     0.00000003807      3.11      3.95      2.89
   SRCPARAM L0000257     0.00000003807      3.11      3.95      2.89
   SRCPARAM L0000258     0.00000003807      3.11      3.95      2.89
   SRCPARAM L0000259     0.00000003807      3.11      3.95      2.89
   SRCPARAM L0000260     0.00000003807      3.11      3.95      2.89
   SRCPARAM L0000261     0.00000003807      3.11      3.95      2.89
** ------------------------------------------------------------------
** LINE VOLUME Source ID = SLINE3
   SRCPARAM L0000262     0.00000003722      3.11      3.95      2.89
   SRCPARAM L0000263     0.00000003722      3.11      3.95      2.89
   SRCPARAM L0000264     0.00000003722      3.11      3.95      2.89
   SRCPARAM L0000265     0.00000003722      3.11      3.95      2.89
   SRCPARAM L0000266     0.00000003722      3.11      3.95      2.89
   SRCPARAM L0000267     0.00000003722      3.11      3.95      2.89
   SRCPARAM L0000268     0.00000003722      3.11      3.95      2.89
   SRCPARAM L0000269     0.00000003722      3.11      3.95      2.89
   SRCPARAM L0000270     0.00000003722      3.11      3.95      2.89
   SRCPARAM L0000271     0.00000003722      3.11      3.95      2.89
   SRCPARAM L0000272     0.00000003722      3.11      3.95      2.89
   SRCPARAM L0000273     0.00000003722      3.11      3.95      2.89
   SRCPARAM L0000274     0.00000003722      3.11      3.95      2.89
   SRCPARAM L0000275     0.00000003722      3.11      3.95      2.89
   SRCPARAM L0000276     0.00000003722      3.11      3.95      2.89
   SRCPARAM L0000277     0.00000003722      3.11      3.95      2.89
   SRCPARAM L0000278     0.00000003722      3.11      3.95      2.89
   SRCPARAM L0000279     0.00000003722      3.11      3.95      2.89
   SRCPARAM L0000280     0.00000003722      3.11      3.95      2.89
   SRCPARAM L0000281     0.00000003722      3.11      3.95      2.89
   SRCPARAM L0000282     0.00000003722      3.11      3.95      2.89
   SRCPARAM L0000283     0.00000003722      3.11      3.95      2.89
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   SRCPARAM L0000284     0.00000003722      3.11      3.95      2.89
   SRCPARAM L0000285     0.00000003722      3.11      3.95      2.89
   SRCPARAM L0000286     0.00000003722      3.11      3.95      2.89
   SRCPARAM L0000287     0.00000003722      3.11      3.95      2.89
   SRCPARAM L0000288     0.00000003722      3.11      3.95      2.89
   SRCPARAM L0000289     0.00000003722      3.11      3.95      2.89
   SRCPARAM L0000290     0.00000003722      3.11      3.95      2.89
   SRCPARAM L0000291     0.00000003722      3.11      3.95      2.89
   SRCPARAM L0000292     0.00000003722      3.11      3.95      2.89
   SRCPARAM L0000293     0.00000003722      3.11      3.95      2.89
   SRCPARAM L0000294     0.00000003722      3.11      3.95      2.89
   SRCPARAM L0000295     0.00000003722      3.11      3.95      2.89
   SRCPARAM L0000296     0.00000003722      3.11      3.95      2.89
   SRCPARAM L0000297     0.00000003722      3.11      3.95      2.89
   SRCPARAM L0000298     0.00000003722      3.11      3.95      2.89
   SRCPARAM L0000299     0.00000003722      3.11      3.95      2.89
   SRCPARAM L0000300     0.00000003722      3.11      3.95      2.89
   SRCPARAM L0000301     0.00000003722      3.11      3.95      2.89
   SRCPARAM L0000302     0.00000003722      3.11      3.95      2.89
   SRCPARAM L0000303     0.00000003722      3.11      3.95      2.89
   SRCPARAM L0000304     0.00000003722      3.11      3.95      2.89
   SRCPARAM L0000305     0.00000003722      3.11      3.95      2.89
   SRCPARAM L0000306     0.00000003722      3.11      3.95      2.89
   SRCPARAM L0000307     0.00000003722      3.11      3.95      2.89
   SRCPARAM L0000308     0.00000003722      3.11      3.95      2.89
   SRCPARAM L0000309     0.00000003722      3.11      3.95      2.89
   SRCPARAM L0000310     0.00000003722      3.11      3.95      2.89
   SRCPARAM L0000311     0.00000003722      3.11      3.95      2.89
   SRCPARAM L0000312     0.00000003722      3.11      3.95      2.89
   SRCPARAM L0000313     0.00000003722      3.11      3.95      2.89
   SRCPARAM L0000314     0.00000003722      3.11      3.95      2.89
   SRCPARAM L0000315     0.00000003722      3.11      3.95      2.89
** ---------------------------------------------------------------------
** LINE VOLUME Source ID = SLINE4
   SRCPARAM L0000316     0.00000003862      3.11      3.95      2.89
   SRCPARAM L0000317     0.00000003862      3.11      3.95      2.89
   SRCPARAM L0000318     0.00000003862      3.11      3.95      2.89
   SRCPARAM L0000319     0.00000003862      3.11      3.95      2.89
   SRCPARAM L0000320     0.00000003862      3.11      3.95      2.89
   SRCPARAM L0000321     0.00000003862      3.11      3.95      2.89
   SRCPARAM L0000322     0.00000003862      3.11      3.95      2.89
   SRCPARAM L0000323     0.00000003862      3.11      3.95      2.89
   SRCPARAM L0000324     0.00000003862      3.11      3.95      2.89
   SRCPARAM L0000325     0.00000003862      3.11      3.95      2.89
   SRCPARAM L0000326     0.00000003862      3.11      3.95      2.89
   SRCPARAM L0000327     0.00000003862      3.11      3.95      2.89
   SRCPARAM L0000328     0.00000003862      3.11      3.95      2.89
** ---------------------------------------------------------------------
** LINE VOLUME Source ID = SLINE5
   SRCPARAM L0000329     0.00000003727      3.11      3.95      2.89
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SRCPARAM L0000330	0.00000003727	3.11	3.95	2.89
SRCPARAM L0000331	0.00000003727	3.11	3.95	2.89
SRCPARAM L0000332	0.00000003727	3.11	3.95	2.89
SRCPARAM L0000333	0.00000003727	3.11	3.95	2.89
SRCPARAM L0000334	0.00000003727	3.11	3.95	2.89
SRCPARAM L0000335	0.00000003727	3.11	3.95	2.89
SRCPARAM L0000336	0.00000003727	3.11	3.95	2.89
SRCPARAM L0000337	0.00000003727	3.11	3.95	2.89
SRCPARAM L0000338	0.00000003727	3.11	3.95	2.89
SRCPARAM L0000339	0.00000003727	3.11	3.95	2.89
SRCPARAM L0000340	0.00000003727	3.11	3.95	2.89
SRCPARAM L0000341	0.00000003727	3.11	3.95	2.89
SRCPARAM L0000342	0.00000003727	3.11	3.95	2.89
SRCPARAM L0000343	0.00000003727	3.11	3.95	2.89
SRCPARAM L0000344	0.00000003727	3.11	3.95	2.89
SRCPARAM L0000345	0.00000003727	3.11	3.95	2.89
SRCPARAM L0000346	0.00000003727	3.11	3.95	2.89
SRCPARAM L0000347	0.00000003727	3.11	3.95	2.89
SRCPARAM L0000348	0.00000003727	3.11	3.95	2.89
SRCPARAM L0000349	0.00000003727	3.11	3.95	2.89
SRCPARAM L0000350	0.00000003727	3.11	3.95	2.89
SRCPARAM L0000351	0.00000003727	3.11	3.95	2.89
SRCPARAM L0000352	0.00000003727	3.11	3.95	2.89
SRCPARAM L0000353	0.00000003727	3.11	3.95	2.89
SRCPARAM L0000354	0.00000003727	3.11	3.95	2.89
SRCPARAM L0000355	0.00000003727	3.11	3.95	2.89
SRCPARAM L0000356	0.00000003727	3.11	3.95	2.89
SRCPARAM L0000357	0.00000003727	3.11	3.95	2.89
SRCPARAM L0000358	0.00000003727	3.11	3.95	2.89
SRCPARAM L0000359	0.00000003727	3.11	3.95	2.89
SRCPARAM L0000360	0.00000003727	3.11	3.95	2.89
SRCPARAM L0000361	0.00000003727	3.11	3.95	2.89
SRCPARAM L0000362	0.00000003727	3.11	3.95	2.89
SRCPARAM L0000363	0.00000003727	3.11	3.95	2.89
SRCPARAM L0000364	0.00000003727	3.11	3.95	2.89
SRCPARAM L0000365	0.00000003727	3.11	3.95	2.89
SRCPARAM L0000366	0.00000003727	3.11	3.95	2.89
SRCPARAM L0000367	0.00000003727	3.11	3.95	2.89
SRCPARAM L0000368	0.00000003727	3.11	3.95	2.89
SRCPARAM L0000369	0.00000003727	3.11	3.95	2.89
SRCPARAM L0000370	0.00000003727	3.11	3.95	2.89
SRCPARAM L0000371	0.00000003727	3.11	3.95	2.89
SRCPARAM L0000372	0.00000003727	3.11	3.95	2.89
SRCPARAM L0000373	0.00000003727	3.11	3.95	2.89
SRCPARAM L0000374	0.00000003727	3.11	3.95	2.89
SRCPARAM L0000375	0.00000003727	3.11	3.95	2.89
SRCPARAM L0000376	0.00000003727	3.11	3.95	2.89
SRCPARAM L0000377	0.00000003727	3.11	3.95	2.89
SRCPARAM L0000378	0.00000003727	3.11	3.95	2.89
SRCPARAM L0000379	0.00000003727	3.11	3.95	2.89

SRCPARAM L0000380	0.00000003727	3.11	3.95	2.89
SRCPARAM L0000381	0.00000003727	3.11	3.95	2.89
SRCPARAM L0000382	0.00000003727	3.11	3.95	2.89
SRCPARAM L0000383	0.00000003727	3.11	3.95	2.89
SRCPARAM L0000384	0.00000003727	3.11	3.95	2.89
SRCPARAM L0000385	0.00000003727	3.11	3.95	2.89
SRCPARAM L0000386	0.00000003727	3.11	3.95	2.89
SRCPARAM L0000387	0.00000003727	3.11	3.95	2.89
SRCPARAM L0000388	0.00000003727	3.11	3.95	2.89
SRCPARAM L0000389	0.00000003727	3.11	3.95	2.89
SRCPARAM L0000390	0.00000003727	3.11	3.95	2.89
SRCPARAM L0000391	0.00000003727	3.11	3.95	2.89
SRCPARAM L0000392	0.00000003727	3.11	3.95	2.89
SRCPARAM L0000393	0.00000003727	3.11	3.95	2.89
SRCPARAM L0000394	0.00000003727	3.11	3.95	2.89
SRCPARAM L0000395	0.00000003727	3.11	3.95	2.89
SRCPARAM L0000396	0.00000003727	3.11	3.95	2.89
SRCPARAM L0000397	0.00000003727	3.11	3.95	2.89
SRCPARAM L0000398	0.00000003727	3.11	3.95	2.89
SRCPARAM L0000399	0.00000003727	3.11	3.95	2.89
SRCPARAM L0000400	0.00000003727	3.11	3.95	2.89
SRCPARAM L0000401	0.00000003727	3.11	3.95	2.89
SRCPARAM L0000402	0.00000003727	3.11	3.95	2.89
SRCPARAM L0000403	0.00000003727	3.11	3.95	2.89
SRCPARAM L0000404	0.00000003727	3.11	3.95	2.89
SRCPARAM L0000405	0.00000003727	3.11	3.95	2.89
SRCPARAM L0000406	0.00000003727	3.11	3.95	2.89
SRCPARAM L0000407	0.00000003727	3.11	3.95	2.89
SRCPARAM L0000408	0.00000003727	3.11	3.95	2.89
SRCPARAM L0000409	0.00000003727	3.11	3.95	2.89
SRCPARAM L0000410	0.00000003727	3.11	3.95	2.89
SRCPARAM L0000411	0.00000003727	3.11	3.95	2.89
SRCPARAM L0000412	0.00000003727	3.11	3.95	2.89
SRCPARAM L0000413	0.00000003727	3.11	3.95	2.89
SRCPARAM L0000414	0.00000003727	3.11	3.95	2.89
SRCPARAM L0000415	0.00000003727	3.11	3.95	2.89
SRCPARAM L0000416	0.00000003727	3.11	3.95	2.89
SRCPARAM L0000417	0.00000003727	3.11	3.95	2.89
SRCPARAM L0000418	0.00000003727	3.11	3.95	2.89
SRCPARAM L0000419	0.00000003727	3.11	3.95	2.89
SRCPARAM L0000420	0.00000003727	3.11	3.95	2.89
SRCPARAM L0000421	0.00000003727	3.11	3.95	2.89
SRCPARAM L0000422	0.00000003727	3.11	3.95	2.89
SRCPARAM L0000423	0.00000003727	3.11	3.95	2.89
SRCPARAM L0000424	0.00000003727	3.11	3.95	2.89
SRCPARAM L0000425	0.00000003727	3.11	3.95	2.89
SRCPARAM L0000426	0.00000003727	3.11	3.95	2.89
SRCPARAM L0000427	0.00000003727	3.11	3.95	2.89
SRCPARAM L0000428	0.00000003727	3.11	3.95	2.89
SRCPARAM L0000429	0.00000003727	3.11	3.95	2.89

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   SRCPARAM L0000430     0.00000003727      3.11      3.95      2.89
   SRCPARAM L0000431     0.00000003727      3.11      3.95      2.89
   SRCPARAM L0000432     0.00000003727      3.11      3.95      2.89
   SRCPARAM L0000433     0.00000003727      3.11      3.95      2.89
   SRCPARAM L0000434     0.00000003727      3.11      3.95      2.89
   SRCPARAM L0000435     0.00000003727      3.11      3.95      2.89
   SRCPARAM L0000436     0.00000003727      3.11      3.95      2.89
   SRCPARAM L0000437     0.00000003727      3.11      3.95      2.89
   SRCPARAM L0000438     0.00000003727      3.11      3.95      2.89
** ----------------------------------------------------------------------
** LINE VOLUME Source ID = SLINE6
   SRCPARAM L0000439     0.00000003734      3.11      3.95      2.89
   SRCPARAM L0000440     0.00000003734      3.11      3.95      2.89
   SRCPARAM L0000441     0.00000003734      3.11      3.95      2.89
   SRCPARAM L0000442     0.00000003734      3.11      3.95      2.89
   SRCPARAM L0000443     0.00000003734      3.11      3.95      2.89
   SRCPARAM L0000444     0.00000003734      3.11      3.95      2.89
   SRCPARAM L0000445     0.00000003734      3.11      3.95      2.89
   SRCPARAM L0000446     0.00000003734      3.11      3.95      2.89
   SRCPARAM L0000447     0.00000003734      3.11      3.95      2.89
   SRCPARAM L0000448     0.00000003734      3.11      3.95      2.89
   SRCPARAM L0000449     0.00000003734      3.11      3.95      2.89
   SRCPARAM L0000450     0.00000003734      3.11      3.95      2.89
   SRCPARAM L0000451     0.00000003734      3.11      3.95      2.89
   SRCPARAM L0000452     0.00000003734      3.11      3.95      2.89
   SRCPARAM L0000453     0.00000003734      3.11      3.95      2.89
   SRCPARAM L0000454     0.00000003734      3.11      3.95      2.89
   SRCPARAM L0000455     0.00000003734      3.11      3.95      2.89
   SRCPARAM L0000456     0.00000003734      3.11      3.95      2.89
   SRCPARAM L0000457     0.00000003734      3.11      3.95      2.89
   SRCPARAM L0000458     0.00000003734      3.11      3.95      2.89
   SRCPARAM L0000459     0.00000003734      3.11      3.95      2.89
   SRCPARAM L0000460     0.00000003734      3.11      3.95      2.89
   SRCPARAM L0000461     0.00000003734      3.11      3.95      2.89
   SRCPARAM L0000462     0.00000003734      3.11      3.95      2.89
   SRCPARAM L0000463     0.00000003734      3.11      3.95      2.89
   SRCPARAM L0000464     0.00000003734      3.11      3.95      2.89
   SRCPARAM L0000465     0.00000003734      3.11      3.95      2.89
   SRCPARAM L0000466     0.00000003734      3.11      3.95      2.89
   SRCPARAM L0000467     0.00000003734      3.11      3.95      2.89
   SRCPARAM L0000468     0.00000003734      3.11      3.95      2.89
   SRCPARAM L0000469     0.00000003734      3.11      3.95      2.89
   SRCPARAM L0000470     0.00000003734      3.11      3.95      2.89
   SRCPARAM L0000471     0.00000003734      3.11      3.95      2.89
   SRCPARAM L0000472     0.00000003734      3.11      3.95      2.89
   SRCPARAM L0000473     0.00000003734      3.11      3.95      2.89
   SRCPARAM L0000474     0.00000003734      3.11      3.95      2.89
   SRCPARAM L0000475     0.00000003734      3.11      3.95      2.89
   SRCPARAM L0000476     0.00000003734      3.11      3.95      2.89
   SRCPARAM L0000477     0.00000003734      3.11      3.95      2.89
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   SRCPARAM L0000479     0.00000003734      3.11      3.95      2.89
   SRCPARAM L0000480     0.00000003734      3.11      3.95      2.89
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   SRCPARAM L0000482     0.00000003734      3.11      3.95      2.89
   SRCPARAM L0000483     0.00000003734      3.11      3.95      2.89
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   SRCPARAM L0000486     0.00000003734      3.11      3.95      2.89
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   SRCPARAM L0000495     0.00000003734      3.11      3.95      2.89
   SRCPARAM L0000496     0.00000003734      3.11      3.95      2.89
   SRCPARAM L0000497     0.00000003734      3.11      3.95      2.89
   SRCPARAM L0000498     0.00000003734      3.11      3.95      2.89
   SRCPARAM L0000499     0.00000003734      3.11      3.95      2.89
   SRCPARAM L0000500     0.00000003734      3.11      3.95      2.89
   SRCPARAM L0000501     0.00000003734      3.11      3.95      2.89
   SRCPARAM L0000502     0.00000003734      3.11      3.95      2.89
   SRCPARAM L0000503     0.00000003734      3.11      3.95      2.89
   SRCPARAM L0000504     0.00000003734      3.11      3.95      2.89
   SRCPARAM L0000505     0.00000003734      3.11      3.95      2.89
   SRCPARAM L0000506     0.00000003734      3.11      3.95      2.89
   SRCPARAM L0000507     0.00000003734      3.11      3.95      2.89
   SRCPARAM L0000508     0.00000003734      3.11      3.95      2.89
   SRCPARAM L0000509     0.00000003734      3.11      3.95      2.89
   SRCPARAM L0000510     0.00000003734      3.11      3.95      2.89
   SRCPARAM L0000511     0.00000003734      3.11      3.95      2.89
   SRCPARAM L0000512     0.00000003734      3.11      3.95      2.89
   SRCPARAM L0000513     0.00000003734      3.11      3.95      2.89
   SRCPARAM L0000514     0.00000003734      3.11      3.95      2.89
   SRCPARAM L0000515     0.00000003734      3.11      3.95      2.89
   SRCPARAM L0000516     0.00000003734      3.11      3.95      2.89
   SRCPARAM L0000517     0.00000003734      3.11      3.95      2.89
** ----------------------------------------------------------------------
   URBANSRC ALL

** Variable Emissions Type: "By Hour-of-Day (HROFDY)"
** Variable Emission Scenario: "Scenario 1"
   EMISFACT L0000518     HROFDY 0.0 0.0 0.0 0.0 0.0 0.0
   EMISFACT L0000518     HROFDY 0.0 0.0 1.0 1.0 1.0 1.0
   EMISFACT L0000518     HROFDY 1.0 1.0 1.0 1.0 0.0 0.0
   EMISFACT L0000518     HROFDY 0.0 0.0 0.0 0.0 0.0 0.0
   EMISFACT L0000519     HROFDY 0.0 0.0 0.0 0.0 0.0 0.0
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EMISFACT L0000519     HROFDY 0.0 0.0 1.0 1.0 1.0 1.0
EMISFACT L0000519     HROFDY 1.0 1.0 1.0 1.0 0.0 0.0
EMISFACT L0000519     HROFDY 0.0 0.0 0.0 0.0 0.0 0.0
EMISFACT L0000520     HROFDY 0.0 0.0 0.0 0.0 0.0 0.0
EMISFACT L0000520     HROFDY 0.0 0.0 1.0 1.0 1.0 1.0
EMISFACT L0000520     HROFDY 1.0 1.0 1.0 1.0 0.0 0.0
EMISFACT L0000520     HROFDY 0.0 0.0 0.0 0.0 0.0 0.0
EMISFACT L0000521     HROFDY 0.0 0.0 0.0 0.0 0.0 0.0
EMISFACT L0000521     HROFDY 0.0 0.0 1.0 1.0 1.0 1.0
EMISFACT L0000521     HROFDY 1.0 1.0 1.0 1.0 0.0 0.0
EMISFACT L0000521     HROFDY 0.0 0.0 0.0 0.0 0.0 0.0
EMISFACT L0000522     HROFDY 0.0 0.0 0.0 0.0 0.0 0.0
EMISFACT L0000522     HROFDY 0.0 0.0 1.0 1.0 1.0 1.0
EMISFACT L0000522     HROFDY 1.0 1.0 1.0 1.0 0.0 0.0
EMISFACT L0000522     HROFDY 0.0 0.0 0.0 0.0 0.0 0.0
EMISFACT L0000523     HROFDY 0.0 0.0 0.0 0.0 0.0 0.0
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EMISFACT L0000718     HROFDY 1.0 1.0 1.0 1.0 0.0 0.0
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EMISFACT L0000719     HROFDY 0.0 0.0 0.0 0.0 0.0 0.0
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EMISFACT L0000461     HROFDY 1.0 1.0 1.0 1.0 0.0 0.0
EMISFACT L0000461     HROFDY 0.0 0.0 0.0 0.0 0.0 0.0
EMISFACT L0000462     HROFDY 0.0 0.0 0.0 0.0 0.0 0.0
EMISFACT L0000462     HROFDY 0.0 0.0 1.0 1.0 1.0 1.0
EMISFACT L0000462     HROFDY 1.0 1.0 1.0 1.0 0.0 0.0
EMISFACT L0000462     HROFDY 0.0 0.0 0.0 0.0 0.0 0.0
EMISFACT L0000463     HROFDY 0.0 0.0 0.0 0.0 0.0 0.0
EMISFACT L0000463     HROFDY 0.0 0.0 1.0 1.0 1.0 1.0
EMISFACT L0000463     HROFDY 1.0 1.0 1.0 1.0 0.0 0.0
EMISFACT L0000463     HROFDY 0.0 0.0 0.0 0.0 0.0 0.0
EMISFACT L0000464     HROFDY 0.0 0.0 0.0 0.0 0.0 0.0
EMISFACT L0000464     HROFDY 0.0 0.0 1.0 1.0 1.0 1.0
EMISFACT L0000464     HROFDY 1.0 1.0 1.0 1.0 0.0 0.0
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EMISFACT L0000464     HROFDY 0.0 0.0 0.0 0.0 0.0 0.0
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EMISFACT L0000465     HROFDY 1.0 1.0 1.0 1.0 0.0 0.0
EMISFACT L0000465     HROFDY 0.0 0.0 0.0 0.0 0.0 0.0
EMISFACT L0000466     HROFDY 0.0 0.0 0.0 0.0 0.0 0.0
EMISFACT L0000466     HROFDY 0.0 0.0 1.0 1.0 1.0 1.0
EMISFACT L0000466     HROFDY 1.0 1.0 1.0 1.0 0.0 0.0
EMISFACT L0000466     HROFDY 0.0 0.0 0.0 0.0 0.0 0.0
EMISFACT L0000467     HROFDY 0.0 0.0 0.0 0.0 0.0 0.0
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EMISFACT L0000468     HROFDY 0.0 0.0 0.0 0.0 0.0 0.0
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EMISFACT L0000468     HROFDY 1.0 1.0 1.0 1.0 0.0 0.0
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EMISFACT L0000469     HROFDY 0.0 0.0 0.0 0.0 0.0 0.0
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EMISFACT L0000514     HROFDY 1.0 1.0 1.0 1.0 0.0 0.0
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   EMISFACT L0000517     HROFDY 0.0 0.0 0.0 0.0 0.0 0.0
   SRCGROUP ALL
SO FINISHED
**
****************************************
** AERMOD Receptor Pathway
****************************************
**
**
RE STARTING
   INCLUDED "880 Doolittle.rou"
RE FINISHED
**
****************************************
** AERMOD Meteorology Pathway
****************************************
**
**
ME STARTING
   SURFFILE "880 Doolittle.SFC"
   PROFFILE "880 Doolittle.PFL"
   SURFDATA 23230 2013 OAKLAND/WSO_AP
   UAIRDATA 23230 2013 OAKLAND/WSO_AP
   PROFBASE 5.0 METERS
ME FINISHED
**
****************************************
** AERMOD Output Pathway
****************************************
**
**
OU STARTING
   RECTABLE ALLAVE 1ST
   RECTABLE 1 1ST
   RECTABLE 8 1ST
   RECTABLE 24 1ST
** Auto-Generated Plotfiles
   PLOTFILE 1 ALL 1ST "880 Doolittle.AD\01H1GALL.PLT" 31
```

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   PLOTFILE 8 ALL 1ST "880 Doolittle.AD\08H1GALL.PLT" 32
   PLOTFILE 24 ALL 1ST "880 Doolittle.AD\24H1GALL.PLT" 33
   PLOTFILE PERIOD ALL "880 Doolittle.AD\PE00GALL.PLT" 34
   SUMMFILE "880 Doolittle.sum"
OU FINISHED


  *** Message Summary For AERMOD Model Setup ***

  --------- Summary of Total Messages --------

 A Total of            0 Fatal Error Message(s)
 A Total of            2 Warning Message(s)
 A Total of            0 Informational Message(s)


    ******** FATAL ERROR MESSAGES ********
               ***  NONE  ***


    ********   WARNING MESSAGES   ********
 ME W186    3287       MEOPEN: THRESH_1MIN 1-min ASOS wind speed threshold used
      0.50
 ME W187    3287       MEOPEN: ADJ_U* Option for Stable Low Winds used in AERMET


 ***********************************
 *** SETUP Finishes Successfully ***
 ***********************************

↑ *** AERMOD - VERSION 22112  ***   *** C:\Lakes\AERMOD View\880 Doolittle\880
Doolittle.isc                 ***        01/12/23
 *** AERMET - VERSION  18081 ***   ***
                        ***        15:42:55

                                   PAGE   1
 *** MODELOPTs:    RegDFAULT  CONC  ELEV  URBAN  ADJ_U*

                                            ***     MODEL SETUP OPTIONS SUMMARY
  ***
 - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - -
- - - - - - - - - - - - - - - - - - - - - -

 ** Model Options Selected:
      * Model Uses Regulatory DEFAULT Options
      * Model Is Setup For Calculation of Average CONCentration Values.
      * NO GAS DEPOSITION Data Provided.
      * NO PARTICLE DEPOSITION Data Provided.
      * Model Uses NO DRY DEPLETION. DDPLETE  =  F
      * Model Uses NO WET DEPLETION. WETDPLT  =  F
```

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      * Stack-tip Downwash.
      * Model Accounts for ELEVated Terrain Effects.
      * Use Calms Processing Routine.
      * Use Missing Data Processing Routine.
      * No Exponential Decay.
      * Model Uses URBAN Dispersion Algorithm for the SBL for   517 Source(s),
        for Total of    1 Urban Area(s):
   Urban Population =   1649000.0 ;  Urban Roughness Length =  1.000 m
      * Urban Roughness Length of 1.0 Meter Used.
      * ADJ_U*   - Use ADJ_U* option for SBL in AERMET
      * CCVR_Sub - Meteorological data includes CCVR substitutions
      * TEMP_Sub - Meteorological data includes TEMP substitutions
      * Model Assumes No FLAGPOLE Receptor Heights.
      * The User Specified a Pollutant Type of: PM_2.5

 **Model Calculates  3 Short Term Average(s) of:   1-HR   8-HR  24-HR
     and Calculates PERIOD Averages

 **This Run Includes:    517 Source(s);       1 Source Group(s); and     314
Receptor(s)

                with:      0 POINT(s), including
                           0 POINTCAP(s) and      0 POINTHOR(s)
                 and:    517 VOLUME source(s)
                 and:      0 AREA type source(s)
                 and:      0 LINE source(s)
                 and:      0 RLINE/RLINEXT source(s)
                 and:      0 OPENPIT source(s)
                 and:      0 BUOYANT LINE source(s) with a total of     0 line(s)
                 and:      0 SWPOINT source(s)


 **Model Set To Continue RUNning After the Setup Testing.

 **The AERMET Input Meteorological Data Version Date:  18081

 **Output Options Selected:
          Model Outputs Tables of PERIOD Averages by Receptor
          Model Outputs Tables of Highest Short Term Values by Receptor (RECTABLE
Keyword)
          Model Outputs External File(s) of High Values for Plotting (PLOTFILE
Keyword)
          Model Outputs Separate Summary File of High Ranked Values (SUMMFILE
Keyword)

 **NOTE:  The Following Flags May Appear Following CONC Values:  c for Calm Hours
                                                                 m for Missing
Hours
                                                                 b for Both Calm
and Missing Hours
```

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 **Misc. Inputs:  Base Elev. for Pot. Temp. Profile (m MSL) =     5.00 ;  Decay
Coef. =    0.000     ;  Rot. Angle =     0.0
                  Emission Units = GRAMS/SEC                              ;
Emission Rate Unit Factor =   0.10000E+07
                  Output Units   = MICROGRAMS/M**3

 **Approximate Storage Requirements of Model =      3.9 MB of RAM.

 **Input Runstream File:          aermod.inp

 **Output Print File:             aermod.out


 **Detailed Error/Message File:   880 Doolittle.err

 **File for Summary of Results:   880 Doolittle.sum

 *** AERMOD - VERSION 22112  ***   *** C:\Lakes\AERMOD View\880 Doolittle\880
Doolittle.isc                 ***        01/12/23
 *** AERMET - VERSION  18081 ***   ***
                       ***        15:42:55

                                  PAGE   2
 *** MODELOPTs:    RegDFAULT  CONC  ELEV  URBAN  ADJ_U*


                                                   *** VOLUME SOURCE DATA ***

               NUMBER EMISSION RATE                    BASE    RELEASE    INIT.
INIT.   URBAN  EMISSION RATE
   SOURCE       PART.  (GRAMS/SEC)     X        Y      ELEV.   HEIGHT      SY
SZ     SOURCE  SCALAR VARY
     ID         CATS.               (METERS) (METERS) (METERS) (METERS) (METERS)
(METERS)             BY
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 L0000518         0   0.88900E-05  571478.5 4175200.9     4.3     3.11     3.95
2.89     YES   HROFDY
 L0000519         0   0.88900E-05  571482.5 4175208.4     4.4     3.11     3.95
2.89     YES   HROFDY
 L0000520         0   0.88900E-05  571486.5 4175215.9     4.4     3.11     3.95
2.89     YES   HROFDY
 L0000521         0   0.88900E-05  571490.4 4175223.5     4.5     3.11     3.95
2.89     YES   HROFDY
 L0000522         0   0.88900E-05  571494.4 4175231.0     4.5     3.11     3.95
2.89     YES   HROFDY
 L0000523         0   0.88900E-05  571498.4 4175238.5     4.5     3.11     3.95
2.89     YES   HROFDY
```

L0000524	0	0.88900E-05	571505.4	4175236.2	4.6	3.11	3.95	2.89	YES	HROFDY
L0000525	0	0.88900E-05	571512.9	4175232.2	4.7	3.11	3.95	2.89	YES	HROFDY
L0000526	0	0.88900E-05	571520.4	4175228.3	4.8	3.11	3.95	2.89	YES	HROFDY
L0000527	0	0.88900E-05	571528.0	4175224.3	4.9	3.11	3.95	2.89	YES	HROFDY
L0000528	0	0.88900E-05	571535.5	4175220.4	5.0	3.11	3.95	2.89	YES	HROFDY
L0000529	0	0.88900E-05	571543.0	4175216.5	5.1	3.11	3.95	2.89	YES	HROFDY
L0000530	0	0.88900E-05	571550.6	4175212.5	5.1	3.11	3.95	2.89	YES	HROFDY
L0000531	0	0.88900E-05	571558.1	4175208.6	5.2	3.11	3.95	2.89	YES	HROFDY
L0000532	0	0.88900E-05	571565.6	4175204.6	5.2	3.11	3.95	2.89	YES	HROFDY
L0000533	0	0.88900E-05	571573.2	4175200.7	5.2	3.11	3.95	2.89	YES	HROFDY
L0000534	0	0.88900E-05	571580.7	4175196.8	5.2	3.11	3.95	2.89	YES	HROFDY
L0000535	0	0.88900E-05	571588.2	4175192.8	5.1	3.11	3.95	2.89	YES	HROFDY
L0000536	0	0.88900E-05	571595.8	4175188.9	5.0	3.11	3.95	2.89	YES	HROFDY
L0000537	0	0.88900E-05	571603.3	4175184.9	4.9	3.11	3.95	2.89	YES	HROFDY
L0000538	0	0.88900E-05	571610.8	4175181.0	4.8	3.11	3.95	2.89	YES	HROFDY
L0000539	0	0.88900E-05	571618.4	4175177.1	4.7	3.11	3.95	2.89	YES	HROFDY
L0000540	0	0.88900E-05	571625.9	4175173.1	4.7	3.11	3.95	2.89	YES	HROFDY
L0000541	0	0.88900E-05	571633.4	4175169.2	4.7	3.11	3.95	2.89	YES	HROFDY
L0000542	0	0.88900E-05	571640.9	4175165.2	4.6	3.11	3.95	2.89	YES	HROFDY
L0000543	0	0.88900E-05	571648.5	4175161.3	4.6	3.11	3.95	2.89	YES	HROFDY
L0000544	0	0.88900E-05	571656.0	4175157.4	4.6	3.11	3.95	2.89	YES	HROFDY
L0000545	0	0.88900E-05	571663.5	4175153.4	4.6	3.11	3.95	2.89	YES	HROFDY
L0000546	0	0.88900E-05	571671.1	4175149.5	4.5	3.11	3.95	2.89	YES	HROFDY
L0000547	0	0.88900E-05	571677.2	4175144.5	4.5	3.11	3.95	2.89	YES	HROFDY
L0000548	0	0.88900E-05	571679.1	4175136.2	4.4	3.11	3.95	2.89	YES	HROFDY

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 L0000549         0   0.88900E-05  571680.9 4175127.9     4.4     3.11     3.95
2.89     YES   HROFDY
 L0000550         0   0.88900E-05  571682.7 4175119.6     4.4     3.11     3.95
2.89     YES   HROFDY
 L0000551         0   0.88900E-05  571684.5 4175111.3     4.4     3.11     3.95
2.89     YES   HROFDY
 L0000552         0   0.88900E-05  571686.4 4175103.0     4.3     3.11     3.95
2.89     YES   HROFDY
 L0000553         0   0.88900E-05  571688.2 4175094.7     4.3     3.11     3.95
2.89     YES   HROFDY
 L0000554         0   0.88900E-05  571690.0 4175086.4     4.3     3.11     3.95
2.89     YES   HROFDY
 L0000555         0   0.88900E-05  571691.8 4175078.1     4.3     3.11     3.95
2.89     YES   HROFDY
 L0000556         0   0.88900E-05  571693.6 4175069.8     4.3     3.11     3.95
2.89     YES   HROFDY
 L0000557         0   0.88900E-05  571695.5 4175061.5     4.2     3.11     3.95
2.89     YES   HROFDY
```



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                                                   *** VOLUME SOURCE DATA ***

               NUMBER EMISSION RATE                    BASE    RELEASE    INIT.
INIT.   URBAN  EMISSION RATE
   SOURCE       PART.  (GRAMS/SEC)     X        Y      ELEV.   HEIGHT      SY
SZ     SOURCE  SCALAR VARY
     ID         CATS.               (METERS) (METERS) (METERS) (METERS) (METERS)
(METERS)             BY
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 L0000558         0   0.88900E-05  571697.3 4175053.2     4.2     3.11     3.95
2.89     YES   HROFDY
 L0000559         0   0.88900E-05  571699.1 4175044.9     4.2     3.11     3.95
2.89     YES   HROFDY
 L0000560         0   0.88900E-05  571700.9 4175036.6     4.1     3.11     3.95
2.89     YES   HROFDY
 L0000561         0   0.88900E-05  571702.8 4175028.3     4.0     3.11     3.95
2.89     YES   HROFDY
 L0000562         0   0.88900E-05  571704.6 4175020.0     4.0     3.11     3.95
2.89     YES   HROFDY
 L0000563         0   0.88900E-05  571706.4 4175011.7     3.9     3.11     3.95
2.89     YES   HROFDY
```

L0000564	0	0.88900E-05	571708.2	4175003.4	3.9	3.11	3.95	2.89	YES	HROFDY
L0000565	0	0.88900E-05	571710.1	4174995.0	3.8	3.11	3.95	2.89	YES	HROFDY
L0000566	0	0.88900E-05	571706.7	4174990.1	3.8	3.11	3.95	2.89	YES	HROFDY
L0000567	0	0.88900E-05	571698.4	4174988.4	3.8	3.11	3.95	2.89	YES	HROFDY
L0000568	0	0.88900E-05	571690.0	4174986.7	3.8	3.11	3.95	2.89	YES	HROFDY
L0000569	0	0.88900E-05	571681.7	4174985.0	3.8	3.11	3.95	2.89	YES	HROFDY
L0000570	0	0.88900E-05	571673.4	4174983.4	3.8	3.11	3.95	2.89	YES	HROFDY
L0000571	0	0.88900E-05	571665.0	4174981.7	3.8	3.11	3.95	2.89	YES	HROFDY
L0000572	0	0.88900E-05	571656.7	4174980.0	3.8	3.11	3.95	2.89	YES	HROFDY
L0000573	0	0.88900E-05	571648.4	4174978.3	3.8	3.11	3.95	2.89	YES	HROFDY
L0000574	0	0.88900E-05	571640.1	4174976.6	3.8	3.11	3.95	2.89	YES	HROFDY
L0000575	0	0.88900E-05	571631.7	4174974.9	3.8	3.11	3.95	2.89	YES	HROFDY
L0000576	0	0.88900E-05	571623.4	4174973.2	3.8	3.11	3.95	2.89	YES	HROFDY
L0000577	0	0.88900E-05	571615.1	4174971.5	3.8	3.11	3.95	2.89	YES	HROFDY
L0000578	0	0.88900E-05	571606.7	4174969.8	3.8	3.11	3.95	2.89	YES	HROFDY
L0000579	0	0.88900E-05	571598.4	4174968.1	3.8	3.11	3.95	2.89	YES	HROFDY
L0000580	0	0.88900E-05	571590.1	4174966.4	3.8	3.11	3.95	2.89	YES	HROFDY
L0000581	0	0.88900E-05	571581.7	4174964.7	3.8	3.11	3.95	2.89	YES	HROFDY
L0000582	0	0.88900E-05	571573.4	4174963.0	3.7	3.11	3.95	2.89	YES	HROFDY
L0000583	0	0.88900E-05	571565.2	4174962.0	3.7	3.11	3.95	2.89	YES	HROFDY
L0000584	0	0.88900E-05	571557.8	4174966.3	3.7	3.11	3.95	2.89	YES	HROFDY
L0000585	0	0.88900E-05	571550.5	4174970.5	3.7	3.11	3.95	2.89	YES	HROFDY
L0000586	0	0.88900E-05	571543.1	4174974.8	3.7	3.11	3.95	2.89	YES	HROFDY
L0000587	0	0.88900E-05	571535.8	4174979.0	3.7	3.11	3.95	2.89	YES	HROFDY
L0000588	0	0.88900E-05	571528.4	4174983.3	3.7	3.11	3.95	2.89	YES	HROFDY

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 L0000589         0   0.88900E-05  571521.0 4174987.5     3.7     3.11     3.95
2.89     YES   HROFDY
 L0000590         0   0.88900E-05  571513.7 4174991.8     3.6     3.11     3.95
2.89     YES   HROFDY
 L0000591         0   0.88900E-05  571506.3 4174996.0     3.6     3.11     3.95
2.89     YES   HROFDY
 L0000592         0   0.88900E-05  571498.9 4175000.3     3.6     3.11     3.95
2.89     YES   HROFDY
 L0000593         0   0.88900E-05  571491.6 4175004.5     3.6     3.11     3.95
2.89     YES   HROFDY
 L0000594         0   0.88900E-05  571484.2 4175008.8     3.6     3.11     3.95
2.89     YES   HROFDY
 L0000595         0   0.88900E-05  571476.9 4175013.0     3.6     3.11     3.95
2.89     YES   HROFDY
 L0000596         0   0.88900E-05  571469.5 4175017.3     3.6     3.11     3.95
2.89     YES   HROFDY
 L0000597         0   0.88900E-05  571462.1 4175021.5     3.6     3.11     3.95
2.89     YES   HROFDY
```



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                                                   *** VOLUME SOURCE DATA ***

               NUMBER EMISSION RATE                    BASE    RELEASE    INIT.
INIT.   URBAN  EMISSION RATE
   SOURCE       PART.  (GRAMS/SEC)     X        Y      ELEV.   HEIGHT      SY
SZ     SOURCE  SCALAR VARY
     ID         CATS.               (METERS) (METERS) (METERS) (METERS) (METERS)
(METERS)             BY
 - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - -
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 L0000598         0   0.88900E-05  571454.8 4175025.8     3.6     3.11     3.95
2.89     YES   HROFDY
 L0000599         0   0.88900E-05  571447.4 4175030.0     3.6     3.11     3.95
2.89     YES   HROFDY
 L0000600         0   0.88900E-05  571440.1 4175034.3     3.6     3.11     3.95
2.89     YES   HROFDY
 L0000601         0   0.88900E-05  571432.7 4175038.5     3.5     3.11     3.95
2.89     YES   HROFDY
 L0000602         0   0.88900E-05  571425.3 4175042.8     3.5     3.11     3.95
2.89     YES   HROFDY
 L0000603         0   0.88900E-05  571418.0 4175047.0     3.4     3.11     3.95
2.89     YES   HROFDY
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L0000604	0	0.88900E-05	571410.6	4175051.3	3.4	3.11	3.95	2.89	YES	HROFDY
L0000605	0	0.88900E-05	571403.3	4175055.5	3.4	3.11	3.95	2.89	YES	HROFDY
L0000606	0	0.88900E-05	571395.9	4175059.8	3.3	3.11	3.95	2.89	YES	HROFDY
L0000607	0	0.88900E-05	571388.5	4175064.0	3.3	3.11	3.95	2.89	YES	HROFDY
L0000608	0	0.88900E-05	571381.2	4175068.3	3.3	3.11	3.95	2.89	YES	HROFDY
L0000609	0	0.88900E-05	571373.8	4175072.5	3.3	3.11	3.95	2.89	YES	HROFDY
L0000610	0	0.88900E-05	571370.1	4175076.0	3.3	3.11	3.95	2.89	YES	HROFDY
L0000611	0	0.88900E-05	571378.6	4175076.9	3.3	3.11	3.95	2.89	YES	HROFDY
L0000612	0	0.88900E-05	571387.0	4175077.7	3.4	3.11	3.95	2.89	YES	HROFDY
L0000613	0	0.88900E-05	571395.5	4175078.6	3.4	3.11	3.95	2.89	YES	HROFDY
L0000614	0	0.88900E-05	571403.9	4175079.5	3.4	3.11	3.95	2.89	YES	HROFDY
L0000615	0	0.88900E-05	571412.4	4175080.3	3.4	3.11	3.95	2.89	YES	HROFDY
L0000616	0	0.88900E-05	571420.9	4175081.2	3.5	3.11	3.95	2.89	YES	HROFDY
L0000617	0	0.88900E-05	571429.3	4175082.0	3.5	3.11	3.95	2.89	YES	HROFDY
L0000618	0	0.88900E-05	571437.8	4175082.9	3.6	3.11	3.95	2.89	YES	HROFDY
L0000619	0	0.88900E-05	571446.2	4175083.8	3.6	3.11	3.95	2.89	YES	HROFDY
L0000620	0	0.88900E-05	571454.7	4175084.6	3.6	3.11	3.95	2.89	YES	HROFDY
L0000621	0	0.88900E-05	571463.1	4175085.5	3.7	3.11	3.95	2.89	YES	HROFDY
L0000622	0	0.88900E-05	571471.6	4175086.3	3.7	3.11	3.95	2.89	YES	HROFDY
L0000623	0	0.88900E-05	571480.1	4175087.2	3.7	3.11	3.95	2.89	YES	HROFDY
L0000624	0	0.88900E-05	571488.5	4175088.1	3.8	3.11	3.95	2.89	YES	HROFDY
L0000625	0	0.88900E-05	571494.9	4175090.3	3.8	3.11	3.95	2.89	YES	HROFDY
L0000626	0	0.88900E-05	571492.6	4175098.5	3.8	3.11	3.95	2.89	YES	HROFDY
L0000627	0	0.88900E-05	571490.2	4175106.6	3.8	3.11	3.95	2.89	YES	HROFDY
L0000628	0	0.88900E-05	571487.8	4175114.8	3.8	3.11	3.95	2.89	YES	HROFDY

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 L0000629         0   0.88900E-05  571485.5 4175123.0     3.9     3.11     3.95
2.89     YES   HROFDY
 L0000630         0   0.88900E-05  571483.1 4175131.1     3.9     3.11     3.95
2.89     YES   HROFDY
 L0000631         0   0.88900E-05  571480.7 4175139.3     4.0     3.11     3.95
2.89     YES   HROFDY
 L0000632         0   0.88900E-05  571478.4 4175147.4     4.1     3.11     3.95
2.89     YES   HROFDY
 L0000633         0   0.88900E-05  571476.0 4175155.6     4.1     3.11     3.95
2.89     YES   HROFDY
 L0000634         0   0.88900E-05  571473.6 4175163.8     4.2     3.11     3.95
2.89     YES   HROFDY
 L0000635         0   0.88900E-05  571473.6 4175170.9     4.2     3.11     3.95
2.89     YES   HROFDY
 L0000636         0   0.88900E-05  571481.1 4175174.8     4.3     3.11     3.95
2.89     YES   HROFDY
 L0000637         0   0.88900E-05  571488.7 4175178.7     4.4     3.11     3.95
2.89     YES   HROFDY
↑ *** AERMOD - VERSION 22112  ***   *** C:\Lakes\AERMOD View\880 Doolittle\880
Doolittle.isc                 ***        01/12/23
 *** AERMET - VERSION  18081 ***   ***
                       ***       15:42:55

                                 PAGE   5
 *** MODELOPTs:    RegDFAULT  CONC  ELEV  URBAN  ADJ_U*


                                                   *** VOLUME SOURCE DATA ***

               NUMBER EMISSION RATE                    BASE    RELEASE    INIT.
INIT.   URBAN  EMISSION RATE
   SOURCE       PART.  (GRAMS/SEC)     X        Y      ELEV.   HEIGHT      SY
SZ     SOURCE  SCALAR VARY
     ID         CATS.               (METERS) (METERS) (METERS) (METERS) (METERS)
(METERS)             BY
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- - - - - - - - - - - - - - - - - - - -

 L0000638         0   0.88900E-05  571496.3 4175182.6     4.5     3.11     3.95
2.89     YES   HROFDY
 L0000639         0   0.88900E-05  571503.8 4175186.4     4.6     3.11     3.95
2.89     YES   HROFDY
 L0000640         0   0.88900E-05  571511.4 4175190.3     4.8     3.11     3.95
2.89     YES   HROFDY
 L0000641         0   0.88900E-05  571519.0 4175194.2     4.9     3.11     3.95
2.89     YES   HROFDY
 L0000642         0   0.88900E-05  571526.4 4175191.2     4.9     3.11     3.95
2.89     YES   HROFDY
 L0000643         0   0.88900E-05  571533.8 4175187.0     5.0     3.11     3.95
2.89     YES   HROFDY
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L0000644	0	0.88900E-05	571541.2	4175182.8	5.0	3.11	3.95	2.89	YES	HROFDY
L0000645	0	0.88900E-05	571548.5	4175178.6	5.0	3.11	3.95	2.89	YES	HROFDY
L0000646	0	0.88900E-05	571555.9	4175174.4	4.9	3.11	3.95	2.89	YES	HROFDY
L0000647	0	0.88900E-05	571563.3	4175170.2	4.9	3.11	3.95	2.89	YES	HROFDY
L0000648	0	0.88900E-05	571570.7	4175166.0	4.8	3.11	3.95	2.89	YES	HROFDY
L0000649	0	0.88900E-05	571578.1	4175161.8	4.7	3.11	3.95	2.89	YES	HROFDY
L0000650	0	0.88900E-05	571585.5	4175157.6	4.6	3.11	3.95	2.89	YES	HROFDY
L0000651	0	0.88900E-05	571592.9	4175153.4	4.5	3.11	3.95	2.89	YES	HROFDY
L0000652	0	0.88900E-05	571600.3	4175149.2	4.4	3.11	3.95	2.89	YES	HROFDY
L0000653	0	0.88900E-05	571607.7	4175145.0	4.3	3.11	3.95	2.89	YES	HROFDY
L0000654	0	0.88900E-05	571615.0	4175140.8	4.2	3.11	3.95	2.89	YES	HROFDY
L0000655	0	0.88900E-05	571622.4	4175136.6	4.1	3.11	3.95	2.89	YES	HROFDY
L0000656	0	0.88900E-05	571629.8	4175132.4	4.1	3.11	3.95	2.89	YES	HROFDY
L0000657	0	0.88900E-05	571637.2	4175128.2	4.1	3.11	3.95	2.89	YES	HROFDY
L0000658	0	0.88900E-05	571641.7	4175121.7	4.1	3.11	3.95	2.89	YES	HROFDY
L0000659	0	0.88900E-05	571644.2	4175113.6	4.2	3.11	3.95	2.89	YES	HROFDY
L0000660	0	0.88900E-05	571646.7	4175105.4	4.2	3.11	3.95	2.89	YES	HROFDY
L0000661	0	0.88900E-05	571649.1	4175097.3	4.2	3.11	3.95	2.89	YES	HROFDY
L0000662	0	0.88900E-05	571651.6	4175089.2	4.2	3.11	3.95	2.89	YES	HROFDY
L0000663	0	0.88900E-05	571654.1	4175081.0	4.2	3.11	3.95	2.89	YES	HROFDY
L0000664	0	0.88900E-05	571656.5	4175072.9	4.2	3.11	3.95	2.89	YES	HROFDY
L0000665	0	0.88900E-05	571659.0	4175064.8	4.2	3.11	3.95	2.89	YES	HROFDY
L0000666	0	0.88900E-05	571661.5	4175056.6	4.2	3.11	3.95	2.89	YES	HROFDY
L0000667	0	0.88900E-05	571663.9	4175048.5	4.2	3.11	3.95	2.89	YES	HROFDY
L0000668	0	0.88900E-05	571666.4	4175040.4	4.1	3.11	3.95	2.89	YES	HROFDY

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 L0000669         0   0.88900E-05  571668.9 4175032.2     4.1     3.11     3.95
2.89     YES   HROFDY
 L0000670         0   0.88900E-05  571671.3 4175024.1     4.0     3.11     3.95
2.89     YES   HROFDY
 L0000671         0   0.88900E-05  571666.3 4175020.5     4.0     3.11     3.95
2.89     YES   HROFDY
 L0000672         0   0.88900E-05  571657.9 4175018.9     4.0     3.11     3.95
2.89     YES   HROFDY
 L0000673         0   0.88900E-05  571649.6 4175017.2     4.0     3.11     3.95
2.89     YES   HROFDY
 L0000674         0   0.88900E-05  571641.2 4175015.6     4.0     3.11     3.95
2.89     YES   HROFDY
 L0000675         0   0.88900E-05  571632.9 4175014.0     4.0     3.11     3.95
2.89     YES   HROFDY
 L0000676         0   0.88900E-05  571624.6 4175012.3     4.0     3.11     3.95
2.89     YES   HROFDY
 L0000677         0   0.88900E-05  571616.2 4175010.7     4.0     3.11     3.95
2.89     YES   HROFDY
↑ *** AERMOD - VERSION 22112  ***   *** C:\Lakes\AERMOD View\880 Doolittle\880
Doolittle.isc                 ***        01/12/23
 *** AERMET - VERSION  18081 ***   ***
                       ***       15:42:55

                                 PAGE   6
 *** MODELOPTs:    RegDFAULT  CONC  ELEV  URBAN  ADJ_U*


                                                   *** VOLUME SOURCE DATA ***

               NUMBER EMISSION RATE                    BASE    RELEASE    INIT.
INIT.   URBAN  EMISSION RATE
   SOURCE       PART.  (GRAMS/SEC)     X        Y      ELEV.   HEIGHT      SY
SZ     SOURCE  SCALAR VARY
     ID         CATS.               (METERS) (METERS) (METERS) (METERS) (METERS)
(METERS)             BY
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 L0000678         0   0.88900E-05  571607.9 4175009.1     3.9     3.11     3.95
2.89     YES   HROFDY
 L0000679         0   0.88900E-05  571599.5 4175007.4     3.9     3.11     3.95
2.89     YES   HROFDY
 L0000680         0   0.88900E-05  571591.2 4175005.8     3.9     3.11     3.95
2.89     YES   HROFDY
 L0000681         0   0.88900E-05  571582.8 4175004.2     3.9     3.11     3.95
2.89     YES   HROFDY
 L0000682         0   0.88900E-05  571574.5 4175002.6     3.9     3.11     3.95
2.89     YES   HROFDY
 L0000683         0   0.88900E-05  571566.5 4175003.2     3.9     3.11     3.95
2.89     YES   HROFDY
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L0000684	0	0.88900E-05	571558.9	4175007.0	3.9	3.11	3.95	2.89	YES	HROFDY
L0000685	0	0.88900E-05	571551.3	4175010.8	3.9	3.11	3.95	2.89	YES	HROFDY
L0000686	0	0.88900E-05	571543.7	4175014.7	3.9	3.11	3.95	2.89	YES	HROFDY
L0000687	0	0.88900E-05	571536.1	4175018.5	3.8	3.11	3.95	2.89	YES	HROFDY
L0000688	0	0.88900E-05	571528.5	4175022.3	3.8	3.11	3.95	2.89	YES	HROFDY
L0000689	0	0.88900E-05	571521.0	4175026.2	3.7	3.11	3.95	2.89	YES	HROFDY
L0000690	0	0.88900E-05	571513.4	4175030.0	3.7	3.11	3.95	2.89	YES	HROFDY
L0000691	0	0.88900E-05	571505.8	4175033.8	3.7	3.11	3.95	2.89	YES	HROFDY
L0000692	0	0.88900E-05	571498.2	4175037.7	3.7	3.11	3.95	2.89	YES	HROFDY
L0000693	0	0.88900E-05	571490.6	4175041.5	3.7	3.11	3.95	2.89	YES	HROFDY
L0000694	0	0.88900E-05	571483.0	4175045.3	3.7	3.11	3.95	2.89	YES	HROFDY
L0000695	0	0.88900E-05	571475.4	4175049.2	3.7	3.11	3.95	2.89	YES	HROFDY
L0000696	0	0.88900E-05	571467.8	4175053.0	3.7	3.11	3.95	2.89	YES	HROFDY
L0000697	0	0.88900E-05	571460.3	4175056.8	3.7	3.11	3.95	2.89	YES	HROFDY
L0000698	0	0.88900E-05	571463.1	4175059.7	3.7	3.11	3.95	2.89	YES	HROFDY
L0000699	0	0.88900E-05	571471.2	4175062.1	3.7	3.11	3.95	2.89	YES	HROFDY
L0000700	0	0.88900E-05	571479.4	4175064.5	3.7	3.11	3.95	2.89	YES	HROFDY
L0000701	0	0.88900E-05	571487.5	4175066.9	3.8	3.11	3.95	2.89	YES	HROFDY
L0000702	0	0.88900E-05	571495.7	4175069.3	3.8	3.11	3.95	2.89	YES	HROFDY
L0000703	0	0.88900E-05	571503.8	4175071.7	3.8	3.11	3.95	2.89	YES	HROFDY
L0000704	0	0.88900E-05	571512.0	4175074.2	3.8	3.11	3.95	2.89	YES	HROFDY
L0000705	0	0.88900E-05	571520.1	4175076.6	3.8	3.11	3.95	2.89	YES	HROFDY
L0000706	0	0.88900E-05	571528.3	4175079.0	3.8	3.11	3.95	2.89	YES	HROFDY
L0000707	0	0.88900E-05	571536.4	4175081.4	3.8	3.11	3.95	2.89	YES	HROFDY
L0000708	0	0.88900E-05	571544.6	4175083.8	3.8	3.11	3.95	2.89	YES	HROFDY

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 L0000709         0   0.88900E-05  571547.7 4175088.0     3.8     3.11     3.95
2.89     YES   HROFDY
 L0000710         0   0.88900E-05  571542.9 4175095.0     3.8     3.11     3.95
2.89     YES   HROFDY
 L0000711         0   0.88900E-05  571538.1 4175102.0     3.8     3.11     3.95
2.89     YES   HROFDY
 L0000712         0   0.88900E-05  571533.3 4175109.0     3.9     3.11     3.95
2.89     YES   HROFDY
 L0000713         0   0.88900E-05  571528.5 4175116.0     3.9     3.11     3.95
2.89     YES   HROFDY
 L0000714         0   0.88900E-05  571523.7 4175123.0     4.0     3.11     3.95
2.89     YES   HROFDY
 L0000715         0   0.88900E-05  571518.9 4175130.1     4.0     3.11     3.95
2.89     YES   HROFDY
 L0000716         0   0.88900E-05  571514.1 4175137.1     4.1     3.11     3.95
2.89     YES   HROFDY
 L0000717         0   0.88900E-05  571509.3 4175144.1     4.2     3.11     3.95
2.89     YES   HROFDY
↑ *** AERMOD - VERSION 22112  ***   *** C:\Lakes\AERMOD View\880 Doolittle\880
Doolittle.isc                 ***        01/12/23
 *** AERMET - VERSION  18081 ***   ***
                       ***       15:42:55

                                 PAGE   7
 *** MODELOPTs:    RegDFAULT  CONC  ELEV  URBAN  ADJ_U*


                                                *** VOLUME SOURCE DATA ***

               NUMBER EMISSION RATE                    BASE    RELEASE    INIT.
INIT.   URBAN  EMISSION RATE
   SOURCE       PART.  (GRAMS/SEC)     X        Y      ELEV.   HEIGHT      SY
SZ     SOURCE  SCALAR VARY
     ID         CATS.               (METERS) (METERS) (METERS) (METERS) (METERS)
(METERS)             BY
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- - - - - - - - - - - - - - - - - - - - -

 L0000718         0   0.88900E-05  571504.5 4175151.1     4.3     3.11     3.95
2.89     YES   HROFDY
 L0000719         0   0.88900E-05  571510.0 4175155.1     4.4     3.11     3.95
2.89     YES   HROFDY
 L0000720         0   0.88900E-05  571517.8 4175158.5     4.5     3.11     3.95
2.89     YES   HROFDY
 L0000721         0   0.88900E-05  571525.7 4175161.8     4.6     3.11     3.95
2.89     YES   HROFDY
 L0000722         0   0.88900E-05  571532.9 4175159.8     4.6     3.11     3.95
2.89     YES   HROFDY
 L0000723         0   0.88900E-05  571539.8 4175154.9     4.5     3.11     3.95
2.89     YES   HROFDY
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L0000724	0	0.88900E-05	571546.8	4175149.9	4.4	3.11	3.95	2.89	YES	HROFDY
L0000725	0	0.88900E-05	571553.7	4175145.0	4.3	3.11	3.95	2.89	YES	HROFDY
L0000726	0	0.88900E-05	571560.6	4175140.1	4.2	3.11	3.95	2.89	YES	HROFDY
L0000727	0	0.88900E-05	571567.6	4175135.2	4.1	3.11	3.95	2.89	YES	HROFDY
L0000728	0	0.88900E-05	571574.5	4175130.3	4.1	3.11	3.95	2.89	YES	HROFDY
L0000729	0	0.88900E-05	571581.4	4175125.4	4.1	3.11	3.95	2.89	YES	HROFDY
L0000730	0	0.88900E-05	571588.4	4175120.5	4.0	3.11	3.95	2.89	YES	HROFDY
L0000731	0	0.88900E-05	571595.3	4175115.6	4.0	3.11	3.95	2.89	YES	HROFDY
L0000732	0	0.88900E-05	571602.3	4175110.6	4.0	3.11	3.95	2.89	YES	HROFDY
L0000733	0	0.88900E-05	571609.2	4175105.7	4.0	3.11	3.95	2.89	YES	HROFDY
L0000734	0	0.88900E-05	571614.4	4175099.5	4.0	3.11	3.95	2.89	YES	HROFDY
L0000735	0	0.88900E-05	571617.1	4175091.4	4.0	3.11	3.95	2.89	YES	HROFDY
L0000736	0	0.88900E-05	571619.9	4175083.4	4.0	3.11	3.95	2.89	YES	HROFDY
L0000737	0	0.88900E-05	571622.7	4175075.4	4.1	3.11	3.95	2.89	YES	HROFDY
L0000738	0	0.88900E-05	571625.5	4175067.3	4.1	3.11	3.95	2.89	YES	HROFDY
L0000739	0	0.88900E-05	571628.2	4175059.3	4.1	3.11	3.95	2.89	YES	HROFDY
L0000740	0	0.88900E-05	571631.0	4175051.3	4.1	3.11	3.95	2.89	YES	HROFDY
L0000741	0	0.88900E-05	571633.8	4175043.2	4.1	3.11	3.95	2.89	YES	HROFDY
L0000742	0	0.88900E-05	571632.6	4175037.4	4.0	3.11	3.95	2.89	YES	HROFDY
L0000743	0	0.88900E-05	571624.3	4175035.4	4.0	3.11	3.95	2.89	YES	HROFDY
L0000744	0	0.88900E-05	571616.0	4175033.4	4.0	3.11	3.95	2.89	YES	HROFDY
L0000745	0	0.88900E-05	571607.8	4175031.4	4.0	3.11	3.95	2.89	YES	HROFDY
L0000746	0	0.88900E-05	571599.5	4175029.5	4.0	3.11	3.95	2.89	YES	HROFDY
L0000747	0	0.88900E-05	571591.2	4175027.5	4.0	3.11	3.95	2.89	YES	HROFDY
L0000748	0	0.88900E-05	571583.0	4175025.5	3.9	3.11	3.95	2.89	YES	HROFDY

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 L0000749         0   0.88900E-05  571574.9 4175025.0     3.9     3.11     3.95
2.89     YES   HROFDY
 L0000750         0   0.88900E-05  571567.5 4175029.1     3.9     3.11     3.95
2.89     YES   HROFDY
 L0000751         0   0.88900E-05  571560.1 4175033.3     3.9     3.11     3.95
2.89     YES   HROFDY
 L0000752         0   0.88900E-05  571552.7 4175037.5     3.9     3.11     3.95
2.89     YES   HROFDY
 L0000753         0   0.88900E-05  571545.3 4175041.7     3.9     3.11     3.95
2.89     YES   HROFDY
 L0000754         0   0.88900E-05  571537.9 4175045.9     3.8     3.11     3.95
2.89     YES   HROFDY
 L0000755         0   0.88900E-05  571530.5 4175050.1     3.8     3.11     3.95
2.89     YES   HROFDY
 L0000756         0   0.88900E-05  571523.1 4175054.2     3.8     3.11     3.95
2.89     YES   HROFDY
 L0000757         0   0.88900E-05  571529.9 4175056.9     3.8     3.11     3.95
2.89     YES   HROFDY
```



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                                                   *** VOLUME SOURCE DATA ***

               NUMBER EMISSION RATE                    BASE    RELEASE    INIT.
INIT.   URBAN  EMISSION RATE
   SOURCE       PART.  (GRAMS/SEC)     X        Y      ELEV.   HEIGHT      SY
SZ     SOURCE  SCALAR VARY
     ID         CATS.               (METERS) (METERS) (METERS) (METERS) (METERS)
(METERS)             BY
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 L0000758         0   0.88900E-05  571538.0 4175059.5     3.8     3.11     3.95
2.89     YES   HROFDY
 L0000759         0   0.88900E-05  571546.1 4175062.1     3.8     3.11     3.95
2.89     YES   HROFDY
 L0000760         0   0.88900E-05  571554.2 4175064.6     3.9     3.11     3.95
2.89     YES   HROFDY
 L0000761         0   0.88900E-05  571562.3 4175067.2     3.9     3.11     3.95
2.89     YES   HROFDY
 L0000762         0   0.88900E-05  571570.4 4175069.7     3.9     3.11     3.95
2.89     YES   HROFDY
 L0000763         0   0.88900E-05  571578.5 4175072.3     3.9     3.11     3.95
2.89     YES   HROFDY
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L0000764	0	0.88900E-05	571586.6	4175074.9	3.9	3.11	3.95	2.89	YES	HROFDY
L0000248	0	0.38070E-07	571454.2	4175009.5	3.5	3.11	3.95	2.89	YES	HROFDY
L0000249	0	0.38070E-07	571448.1	4175003.6	3.5	3.11	3.95	2.89	YES	HROFDY
L0000250	0	0.38070E-07	571442.0	4174997.7	3.5	3.11	3.95	2.89	YES	HROFDY
L0000251	0	0.38070E-07	571435.9	4174991.7	3.5	3.11	3.95	2.89	YES	HROFDY
L0000252	0	0.38070E-07	571429.8	4174985.8	3.5	3.11	3.95	2.89	YES	HROFDY
L0000253	0	0.38070E-07	571423.7	4174979.9	3.5	3.11	3.95	2.89	YES	HROFDY
L0000254	0	0.38070E-07	571417.6	4174973.9	3.5	3.11	3.95	2.89	YES	HROFDY
L0000255	0	0.38070E-07	571411.5	4174968.0	3.6	3.11	3.95	2.89	YES	HROFDY
L0000256	0	0.38070E-07	571405.4	4174962.1	3.6	3.11	3.95	2.89	YES	HROFDY
L0000257	0	0.38070E-07	571399.3	4174956.2	3.5	3.11	3.95	2.89	YES	HROFDY
L0000258	0	0.38070E-07	571393.2	4174950.2	3.6	3.11	3.95	2.89	YES	HROFDY
L0000259	0	0.38070E-07	571387.2	4174944.3	3.6	3.11	3.95	2.89	YES	HROFDY
L0000260	0	0.38070E-07	571381.1	4174938.4	3.6	3.11	3.95	2.89	YES	HROFDY
L0000261	0	0.38070E-07	571375.0	4174932.5	3.5	3.11	3.95	2.89	YES	HROFDY
L0000262	0	0.37220E-07	571459.7	4175172.0	4.1	3.11	3.95	2.89	YES	HROFDY
L0000263	0	0.37220E-07	571452.3	4175176.2	4.0	3.11	3.95	2.89	YES	HROFDY
L0000264	0	0.37220E-07	571444.9	4175180.4	3.9	3.11	3.95	2.89	YES	HROFDY
L0000265	0	0.37220E-07	571437.6	4175184.6	3.9	3.11	3.95	2.89	YES	HROFDY
L0000266	0	0.37220E-07	571430.2	4175188.9	3.9	3.11	3.95	2.89	YES	HROFDY
L0000267	0	0.37220E-07	571422.8	4175193.1	3.8	3.11	3.95	2.89	YES	HROFDY
L0000268	0	0.37220E-07	571415.4	4175197.3	3.8	3.11	3.95	2.89	YES	HROFDY
L0000269	0	0.37220E-07	571408.0	4175201.5	3.8	3.11	3.95	2.89	YES	HROFDY
L0000270	0	0.37220E-07	571400.7	4175205.7	3.8	3.11	3.95	2.89	YES	HROFDY
L0000271	0	0.37220E-07	571393.3	4175210.0	3.8	3.11	3.95	2.89	YES	HROFDY

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 L0000272         0   0.37220E-07  571385.9 4175214.2     3.7     3.11     3.95
2.89     YES   HROFDY
 L0000273         0   0.37220E-07  571378.5 4175218.4     3.6     3.11     3.95
2.89     YES   HROFDY
 L0000274         0   0.37220E-07  571371.1 4175222.6     3.6     3.11     3.95
2.89     YES   HROFDY
 L0000275         0   0.37220E-07  571363.8 4175226.8     3.5     3.11     3.95
2.89     YES   HROFDY
 L0000276         0   0.37220E-07  571356.4 4175231.1     3.5     3.11     3.95
2.89     YES   HROFDY
 L0000277         0   0.37220E-07  571349.0 4175235.3     3.5     3.11     3.95
2.89     YES   HROFDY
 L0000278         0   0.37220E-07  571341.6 4175239.5     3.5     3.11     3.95
2.89     YES   HROFDY
 L0000279         0   0.37220E-07  571334.3 4175243.7     3.6     3.11     3.95
2.89     YES   HROFDY
 L0000280         0   0.37220E-07  571326.9 4175247.9     3.6     3.11     3.95
2.89     YES   HROFDY
```



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                                                   *** VOLUME SOURCE DATA ***

               NUMBER EMISSION RATE                    BASE    RELEASE    INIT.
INIT.   URBAN  EMISSION RATE
   SOURCE       PART.  (GRAMS/SEC)     X        Y      ELEV.   HEIGHT      SY
SZ     SOURCE  SCALAR VARY
     ID         CATS.               (METERS) (METERS) (METERS) (METERS) (METERS)
(METERS)             BY
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 L0000281         0   0.37220E-07  571319.5 4175252.2     3.6     3.11     3.95
2.89     YES   HROFDY
 L0000282         0   0.37220E-07  571312.1 4175256.4     3.6     3.11     3.95
2.89     YES   HROFDY
 L0000283         0   0.37220E-07  571304.7 4175260.6     3.7     3.11     3.95
2.89     YES   HROFDY
 L0000284         0   0.37220E-07  571297.4 4175264.8     3.7     3.11     3.95
2.89     YES   HROFDY
 L0000285         0   0.37220E-07  571290.0 4175269.0     3.8     3.11     3.95
2.89     YES   HROFDY
 L0000286         0   0.37220E-07  571282.6 4175273.3     3.8     3.11     3.95
2.89     YES   HROFDY
```

L0000287	0	0.37220E-07	571275.2	4175277.5	3.8	3.11	3.95	2.89	YES	HROFDY
L0000288	0	0.37220E-07	571267.9	4175281.7	3.8	3.11	3.95	2.89	YES	HROFDY
L0000289	0	0.37220E-07	571260.5	4175285.9	3.8	3.11	3.95	2.89	YES	HROFDY
L0000290	0	0.37220E-07	571253.1	4175290.2	3.8	3.11	3.95	2.89	YES	HROFDY
L0000291	0	0.37220E-07	571245.7	4175294.4	3.8	3.11	3.95	2.89	YES	HROFDY
L0000292	0	0.37220E-07	571238.3	4175298.6	3.8	3.11	3.95	2.89	YES	HROFDY
L0000293	0	0.37220E-07	571231.0	4175302.8	3.8	3.11	3.95	2.89	YES	HROFDY
L0000294	0	0.37220E-07	571223.6	4175307.0	3.8	3.11	3.95	2.89	YES	HROFDY
L0000295	0	0.37220E-07	571216.2	4175311.3	3.7	3.11	3.95	2.89	YES	HROFDY
L0000296	0	0.37220E-07	571208.8	4175315.5	3.7	3.11	3.95	2.89	YES	HROFDY
L0000297	0	0.37220E-07	571201.5	4175319.7	3.7	3.11	3.95	2.89	YES	HROFDY
L0000298	0	0.37220E-07	571194.1	4175323.9	3.7	3.11	3.95	2.89	YES	HROFDY
L0000299	0	0.37220E-07	571186.7	4175328.1	3.7	3.11	3.95	2.89	YES	HROFDY
L0000300	0	0.37220E-07	571179.3	4175332.4	3.7	3.11	3.95	2.89	YES	HROFDY
L0000301	0	0.37220E-07	571171.9	4175336.6	3.7	3.11	3.95	2.89	YES	HROFDY
L0000302	0	0.37220E-07	571164.6	4175340.8	3.7	3.11	3.95	2.89	YES	HROFDY
L0000303	0	0.37220E-07	571157.2	4175345.0	3.7	3.11	3.95	2.89	YES	HROFDY
L0000304	0	0.37220E-07	571149.8	4175349.2	3.8	3.11	3.95	2.89	YES	HROFDY
L0000305	0	0.37220E-07	571142.4	4175353.5	3.8	3.11	3.95	2.89	YES	HROFDY
L0000306	0	0.37220E-07	571135.0	4175357.7	3.8	3.11	3.95	2.89	YES	HROFDY
L0000307	0	0.37220E-07	571127.7	4175361.9	3.8	3.11	3.95	2.89	YES	HROFDY
L0000308	0	0.37220E-07	571120.3	4175366.1	3.8	3.11	3.95	2.89	YES	HROFDY
L0000309	0	0.37220E-07	571112.9	4175370.3	3.8	3.11	3.95	2.89	YES	HROFDY
L0000310	0	0.37220E-07	571105.5	4175374.6	3.8	3.11	3.95	2.89	YES	HROFDY
L0000311	0	0.37220E-07	571098.2	4175378.8	3.7	3.11	3.95	2.89	YES	HROFDY

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 L0000312         0   0.37220E-07  571090.8 4175383.0     3.7     3.11     3.95
2.89     YES   HROFDY
 L0000313         0   0.37220E-07  571083.4 4175387.2     3.6     3.11     3.95
2.89     YES   HROFDY
 L0000314         0   0.37220E-07  571076.0 4175391.4     3.6     3.11     3.95
2.89     YES   HROFDY
 L0000315         0   0.37220E-07  571068.6 4175395.7     3.6     3.11     3.95
2.89     YES   HROFDY
 L0000316         0   0.38620E-07  571061.5 4175384.8     3.5     3.11     3.95
2.89     YES   HROFDY
 L0000317         0   0.38620E-07  571056.8 4175377.8     3.5     3.11     3.95
2.89     YES   HROFDY
 L0000318         0   0.38620E-07  571052.0 4175370.7     3.5     3.11     3.95
2.89     YES   HROFDY
 L0000319         0   0.38620E-07  571047.3 4175363.7     3.5     3.11     3.95
2.89     YES   HROFDY
 L0000320         0   0.38620E-07  571042.6 4175356.6     3.5     3.11     3.95
2.89     YES   HROFDY
↑ *** AERMOD - VERSION 22112  ***   *** C:\Lakes\AERMOD View\880 Doolittle\880
Doolittle.isc                 ***        01/12/23
 *** AERMET - VERSION  18081 ***   ***
                       ***        15:42:55

                                  PAGE  10
 *** MODELOPTs:    RegDFAULT  CONC  ELEV  URBAN  ADJ_U*


                                                  *** VOLUME SOURCE DATA ***

               NUMBER EMISSION RATE                    BASE    RELEASE    INIT.
INIT.   URBAN  EMISSION RATE
   SOURCE       PART.  (GRAMS/SEC)     X        Y      ELEV.   HEIGHT      SY
SZ     SOURCE  SCALAR VARY
     ID         CATS.               (METERS) (METERS) (METERS) (METERS) (METERS)
(METERS)             BY
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 L0000321         0   0.38620E-07  571037.8 4175349.6     3.5     3.11     3.95
2.89     YES   HROFDY
 L0000322         0   0.38620E-07  571033.1 4175342.5     3.5     3.11     3.95
2.89     YES   HROFDY
 L0000323         0   0.38620E-07  571028.3 4175335.5     3.5     3.11     3.95
2.89     YES   HROFDY
 L0000324         0   0.38620E-07  571023.6 4175328.4     3.6     3.11     3.95
2.89     YES   HROFDY
 L0000325         0   0.38620E-07  571018.8 4175321.3     3.6     3.11     3.95
2.89     YES   HROFDY
 L0000326         0   0.38620E-07  571014.1 4175314.3     3.6     3.11     3.95
2.89     YES   HROFDY
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L0000327	0	0.38620E-07	571009.4	4175307.2	3.4	3.11	3.95	2.89	YES	HROFDY
L0000328	0	0.38620E-07	571004.6	4175300.2	3.2	3.11	3.95	2.89	YES	HROFDY
L0000329	0	0.37270E-07	571001.7	4175289.2	2.9	3.11	3.95	2.89	YES	HROFDY
L0000330	0	0.37270E-07	571007.9	4175283.3	2.9	3.11	3.95	2.89	YES	HROFDY
L0000331	0	0.37270E-07	571014.0	4175277.5	3.0	3.11	3.95	2.89	YES	HROFDY
L0000332	0	0.37270E-07	571020.2	4175271.6	3.1	3.11	3.95	2.89	YES	HROFDY
L0000333	0	0.37270E-07	571026.3	4175265.7	3.3	3.11	3.95	2.89	YES	HROFDY
L0000334	0	0.37270E-07	571032.5	4175259.8	3.3	3.11	3.95	2.89	YES	HROFDY
L0000335	0	0.37270E-07	571038.6	4175254.0	3.4	3.11	3.95	2.89	YES	HROFDY
L0000336	0	0.37270E-07	571044.7	4175248.1	3.4	3.11	3.95	2.89	YES	HROFDY
L0000337	0	0.37270E-07	571050.9	4175242.2	3.4	3.11	3.95	2.89	YES	HROFDY
L0000338	0	0.37270E-07	571057.0	4175236.3	3.4	3.11	3.95	2.89	YES	HROFDY
L0000339	0	0.37270E-07	571063.2	4175230.5	3.4	3.11	3.95	2.89	YES	HROFDY
L0000340	0	0.37270E-07	571069.3	4175224.6	3.4	3.11	3.95	2.89	YES	HROFDY
L0000341	0	0.37270E-07	571075.5	4175218.7	3.4	3.11	3.95	2.89	YES	HROFDY
L0000342	0	0.37270E-07	571081.6	4175212.8	3.4	3.11	3.95	2.89	YES	HROFDY
L0000343	0	0.37270E-07	571087.7	4175207.0	3.4	3.11	3.95	2.89	YES	HROFDY
L0000344	0	0.37270E-07	571093.9	4175201.1	3.4	3.11	3.95	2.89	YES	HROFDY
L0000345	0	0.37270E-07	571100.0	4175195.2	3.3	3.11	3.95	2.89	YES	HROFDY
L0000346	0	0.37270E-07	571106.2	4175189.3	3.3	3.11	3.95	2.89	YES	HROFDY
L0000347	0	0.37270E-07	571112.3	4175183.5	3.4	3.11	3.95	2.89	YES	HROFDY
L0000348	0	0.37270E-07	571118.5	4175177.6	3.4	3.11	3.95	2.89	YES	HROFDY
L0000349	0	0.37270E-07	571124.6	4175171.7	3.4	3.11	3.95	2.89	YES	HROFDY
L0000350	0	0.37270E-07	571130.7	4175165.8	3.5	3.11	3.95	2.89	YES	HROFDY
L0000351	0	0.37270E-07	571136.9	4175160.0	3.6	3.11	3.95	2.89	YES	HROFDY

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 L0000352         0   0.37270E-07  571143.0 4175154.1     3.6     3.11     3.95
2.89     YES   HROFDY
 L0000353         0   0.37270E-07  571149.2 4175148.2     3.7     3.11     3.95
2.89     YES   HROFDY
 L0000354         0   0.37270E-07  571155.3 4175142.3     3.6     3.11     3.95
2.89     YES   HROFDY
 L0000355         0   0.37270E-07  571161.5 4175136.5     3.6     3.11     3.95
2.89     YES   HROFDY
 L0000356         0   0.37270E-07  571167.6 4175130.6     3.6     3.11     3.95
2.89     YES   HROFDY
 L0000357         0   0.37270E-07  571173.7 4175124.7     3.6     3.11     3.95
2.89     YES   HROFDY
 L0000358         0   0.37270E-07  571179.9 4175118.8     3.6     3.11     3.95
2.89     YES   HROFDY
 L0000359         0   0.37270E-07  571186.0 4175113.0     3.5     3.11     3.95
2.89     YES   HROFDY
 L0000360         0   0.37270E-07  571192.2 4175107.1     3.5     3.11     3.95
2.89     YES   HROFDY
```



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                                                   *** VOLUME SOURCE DATA ***

               NUMBER EMISSION RATE                    BASE    RELEASE    INIT.
INIT.   URBAN  EMISSION RATE
   SOURCE       PART.  (GRAMS/SEC)     X        Y      ELEV.   HEIGHT      SY
SZ     SOURCE  SCALAR VARY
     ID         CATS.               (METERS) (METERS) (METERS) (METERS) (METERS)
(METERS)             BY
 - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - -
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 L0000361         0   0.37270E-07  571198.3 4175101.2     3.5     3.11     3.95
2.89     YES   HROFDY
 L0000362         0   0.37270E-07  571204.5 4175095.3     3.5     3.11     3.95
2.89     YES   HROFDY
 L0000363         0   0.37270E-07  571210.6 4175089.5     3.5     3.11     3.95
2.89     YES   HROFDY
 L0000364         0   0.37270E-07  571216.7 4175083.6     3.6     3.11     3.95
2.89     YES   HROFDY
 L0000365         0   0.37270E-07  571222.9 4175077.7     3.6     3.11     3.95
2.89     YES   HROFDY
 L0000366         0   0.37270E-07  571229.0 4175071.8     3.6     3.11     3.95
2.89     YES   HROFDY
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L0000367	0	0.37270E-07	571235.2	4175066.0	3.7	3.11	3.95	2.89	YES	HROFDY
L0000368	0	0.37270E-07	571241.3	4175060.1	3.7	3.11	3.95	2.89	YES	HROFDY
L0000369	0	0.37270E-07	571247.5	4175054.2	3.7	3.11	3.95	2.89	YES	HROFDY
L0000370	0	0.37270E-07	571253.6	4175048.3	3.7	3.11	3.95	2.89	YES	HROFDY
L0000371	0	0.37270E-07	571259.7	4175042.5	3.7	3.11	3.95	2.89	YES	HROFDY
L0000372	0	0.37270E-07	571265.9	4175036.6	3.7	3.11	3.95	2.89	YES	HROFDY
L0000373	0	0.37270E-07	571272.0	4175030.7	3.8	3.11	3.95	2.89	YES	HROFDY
L0000374	0	0.37270E-07	571278.2	4175024.8	3.9	3.11	3.95	2.89	YES	HROFDY
L0000375	0	0.37270E-07	571284.3	4175019.0	3.9	3.11	3.95	2.89	YES	HROFDY
L0000376	0	0.37270E-07	571290.5	4175013.1	3.9	3.11	3.95	2.89	YES	HROFDY
L0000377	0	0.37270E-07	571296.6	4175007.2	3.8	3.11	3.95	2.89	YES	HROFDY
L0000378	0	0.37270E-07	571302.7	4175001.3	3.7	3.11	3.95	2.89	YES	HROFDY
L0000379	0	0.37270E-07	571308.9	4174995.5	3.7	3.11	3.95	2.89	YES	HROFDY
L0000380	0	0.37270E-07	571315.0	4174989.6	3.7	3.11	3.95	2.89	YES	HROFDY
L0000381	0	0.37270E-07	571321.2	4174983.7	3.7	3.11	3.95	2.89	YES	HROFDY
L0000382	0	0.37270E-07	571327.3	4174977.8	3.7	3.11	3.95	2.89	YES	HROFDY
L0000383	0	0.37270E-07	571333.5	4174972.0	3.7	3.11	3.95	2.89	YES	HROFDY
L0000384	0	0.37270E-07	571339.6	4174966.1	3.7	3.11	3.95	2.89	YES	HROFDY
L0000385	0	0.37270E-07	571345.7	4174960.2	3.7	3.11	3.95	2.89	YES	HROFDY
L0000386	0	0.37270E-07	571351.9	4174954.3	3.6	3.11	3.95	2.89	YES	HROFDY
L0000387	0	0.37270E-07	571358.0	4174948.5	3.6	3.11	3.95	2.89	YES	HROFDY
L0000388	0	0.37270E-07	571364.2	4174942.6	3.6	3.11	3.95	2.89	YES	HROFDY
L0000389	0	0.37270E-07	571370.3	4174936.7	3.6	3.11	3.95	2.89	YES	HROFDY
L0000390	0	0.37270E-07	571376.5	4174930.8	3.5	3.11	3.95	2.89	YES	HROFDY
L0000391	0	0.37270E-07	571382.6	4174925.0	3.5	3.11	3.95	2.89	YES	HROFDY

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 L0000392         0   0.37270E-07  571388.7 4174919.1     3.5     3.11     3.95
2.89     YES   HROFDY
 L0000393         0   0.37270E-07  571394.9 4174913.2     3.6     3.11     3.95
2.89     YES   HROFDY
 L0000394         0   0.37270E-07  571401.0 4174907.3     3.7     3.11     3.95
2.89     YES   HROFDY
 L0000395         0   0.37270E-07  571407.2 4174901.5     3.7     3.11     3.95
2.89     YES   HROFDY
 L0000396         0   0.37270E-07  571413.3 4174895.6     3.7     3.11     3.95
2.89     YES   HROFDY
 L0000397         0   0.37270E-07  571419.5 4174889.7     3.7     3.11     3.95
2.89     YES   HROFDY
 L0000398         0   0.37270E-07  571425.6 4174883.8     3.7     3.11     3.95
2.89     YES   HROFDY
 L0000399         0   0.37270E-07  571431.7 4174878.0     3.7     3.11     3.95
2.89     YES   HROFDY
 L0000400         0   0.37270E-07  571437.9 4174872.1     3.8     3.11     3.95
2.89     YES   HROFDY
```



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                                                   *** VOLUME SOURCE DATA ***

               NUMBER EMISSION RATE                    BASE    RELEASE    INIT.
INIT.   URBAN  EMISSION RATE
   SOURCE       PART.  (GRAMS/SEC)     X        Y      ELEV.   HEIGHT      SY
SZ     SOURCE  SCALAR VARY
     ID         CATS.               (METERS) (METERS) (METERS) (METERS) (METERS)
(METERS)             BY
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 L0000401         0   0.37270E-07  571444.0 4174866.2     3.8     3.11     3.95
2.89     YES   HROFDY
 L0000402         0   0.37270E-07  571450.2 4174860.3     3.8     3.11     3.95
2.89     YES   HROFDY
 L0000403         0   0.37270E-07  571456.3 4174854.5     3.8     3.11     3.95
2.89     YES   HROFDY
 L0000404         0   0.37270E-07  571462.5 4174848.6     3.8     3.11     3.95
2.89     YES   HROFDY
 L0000405         0   0.37270E-07  571468.6 4174842.7     3.8     3.11     3.95
2.89     YES   HROFDY
 L0000406         0   0.37270E-07  571474.7 4174836.8     3.7     3.11     3.95
2.89     YES   HROFDY
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L0000407	0	0.37270E-07	571480.9	4174831.0	3.7	3.11	3.95	2.89	YES	HROFDY
L0000408	0	0.37270E-07	571487.0	4174825.1	3.7	3.11	3.95	2.89	YES	HROFDY
L0000409	0	0.37270E-07	571493.2	4174819.2	3.7	3.11	3.95	2.89	YES	HROFDY
L0000410	0	0.37270E-07	571499.3	4174813.3	3.7	3.11	3.95	2.89	YES	HROFDY
L0000411	0	0.37270E-07	571505.5	4174807.5	3.7	3.11	3.95	2.89	YES	HROFDY
L0000412	0	0.37270E-07	571511.6	4174801.6	3.8	3.11	3.95	2.89	YES	HROFDY
L0000413	0	0.37270E-07	571517.7	4174795.7	3.8	3.11	3.95	2.89	YES	HROFDY
L0000414	0	0.37270E-07	571523.9	4174789.8	3.8	3.11	3.95	2.89	YES	HROFDY
L0000415	0	0.37270E-07	571530.0	4174784.0	3.8	3.11	3.95	2.89	YES	HROFDY
L0000416	0	0.37270E-07	571536.2	4174778.1	3.8	3.11	3.95	2.89	YES	HROFDY
L0000417	0	0.37270E-07	571542.3	4174772.2	3.8	3.11	3.95	2.89	YES	HROFDY
L0000418	0	0.37270E-07	571548.5	4174766.3	3.9	3.11	3.95	2.89	YES	HROFDY
L0000419	0	0.37270E-07	571554.6	4174760.5	3.8	3.11	3.95	2.89	YES	HROFDY
L0000420	0	0.37270E-07	571560.7	4174754.6	3.8	3.11	3.95	2.89	YES	HROFDY
L0000421	0	0.37270E-07	571566.9	4174748.7	3.8	3.11	3.95	2.89	YES	HROFDY
L0000422	0	0.37270E-07	571573.0	4174742.8	3.8	3.11	3.95	2.89	YES	HROFDY
L0000423	0	0.37270E-07	571579.2	4174737.0	3.8	3.11	3.95	2.89	YES	HROFDY
L0000424	0	0.37270E-07	571585.3	4174731.1	3.8	3.11	3.95	2.89	YES	HROFDY
L0000425	0	0.37270E-07	571591.5	4174725.2	3.8	3.11	3.95	2.89	YES	HROFDY
L0000426	0	0.37270E-07	571597.6	4174719.3	3.9	3.11	3.95	2.89	YES	HROFDY
L0000427	0	0.37270E-07	571603.7	4174713.5	3.9	3.11	3.95	2.89	YES	HROFDY
L0000428	0	0.37270E-07	571609.9	4174707.6	3.9	3.11	3.95	2.89	YES	HROFDY
L0000429	0	0.37270E-07	571616.0	4174701.7	3.9	3.11	3.95	2.89	YES	HROFDY
L0000430	0	0.37270E-07	571622.2	4174695.8	4.0	3.11	3.95	2.89	YES	HROFDY
L0000431	0	0.37270E-07	571628.3	4174690.0	4.0	3.11	3.95	2.89	YES	HROFDY

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 L0000432         0   0.37270E-07  571634.5 4174684.1     4.0     3.11     3.95
2.89     YES   HROFDY
 L0000433         0   0.37270E-07  571640.6 4174678.2     4.0     3.11     3.95
2.89     YES   HROFDY
 L0000434         0   0.37270E-07  571646.7 4174672.3     4.0     3.11     3.95
2.89     YES   HROFDY
 L0000435         0   0.37270E-07  571652.9 4174666.5     4.0     3.11     3.95
2.89     YES   HROFDY
 L0000436         0   0.37270E-07  571659.0 4174660.6     4.0     3.11     3.95
2.89     YES   HROFDY
 L0000437         0   0.37270E-07  571665.2 4174654.7     4.1     3.11     3.95
2.89     YES   HROFDY
 L0000438         0   0.37270E-07  571671.3 4174648.8     4.1     3.11     3.95
2.89     YES   HROFDY
 L0000439         0   0.37340E-07  571674.5 4174662.6     4.1     3.11     3.95
2.89     YES   HROFDY
 L0000440         0   0.37340E-07  571682.4 4174665.5     4.1     3.11     3.95
2.89     YES   HROFDY
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                                                   *** VOLUME SOURCE DATA ***

               NUMBER EMISSION RATE                    BASE    RELEASE    INIT.
INIT.   URBAN  EMISSION RATE
   SOURCE       PART.  (GRAMS/SEC)     X        Y      ELEV.   HEIGHT      SY
SZ     SOURCE  SCALAR VARY
     ID         CATS.               (METERS) (METERS) (METERS) (METERS) (METERS)
(METERS)             BY
 - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - -
- - - - - - - - - - - - - - - - - - - - -

 L0000441         0   0.37340E-07  571690.4 4174668.4     4.2     3.11     3.95
2.89     YES   HROFDY
 L0000442         0   0.37340E-07  571698.4 4174671.3     4.3     3.11     3.95
2.89     YES   HROFDY
 L0000443         0   0.37340E-07  571706.4 4174674.2     4.4     3.11     3.95
2.89     YES   HROFDY
 L0000444         0   0.37340E-07  571714.4 4174677.0     4.5     3.11     3.95
2.89     YES   HROFDY
 L0000445         0   0.37340E-07  571722.4 4174679.9     4.6     3.11     3.95
2.89     YES   HROFDY
 L0000446         0   0.37340E-07  571730.4 4174682.8     4.7     3.11     3.95
2.89     YES   HROFDY
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L0000447	0	0.37340E-07	571738.4	4174685.7	4.7	3.11	3.95	2.89	YES	HROFDY
L0000448	0	0.37340E-07	571746.4	4174688.6	4.8	3.11	3.95	2.89	YES	HROFDY
L0000449	0	0.37340E-07	571754.4	4174691.5	4.6	3.11	3.95	2.89	YES	HROFDY
L0000450	0	0.37340E-07	571762.4	4174694.4	4.5	3.11	3.95	2.89	YES	HROFDY
L0000451	0	0.37340E-07	571770.4	4174697.3	4.5	3.11	3.95	2.89	YES	HROFDY
L0000452	0	0.37340E-07	571778.4	4174700.2	4.5	3.11	3.95	2.89	YES	HROFDY
L0000453	0	0.37340E-07	571786.4	4174703.1	4.6	3.11	3.95	2.89	YES	HROFDY
L0000454	0	0.37340E-07	571794.3	4174706.0	4.6	3.11	3.95	2.89	YES	HROFDY
L0000455	0	0.37340E-07	571802.3	4174708.9	4.7	3.11	3.95	2.89	YES	HROFDY
L0000456	0	0.37340E-07	571810.3	4174711.7	4.8	3.11	3.95	2.89	YES	HROFDY
L0000457	0	0.37340E-07	571818.3	4174714.6	4.9	3.11	3.95	2.89	YES	HROFDY
L0000458	0	0.37340E-07	571826.3	4174717.5	5.0	3.11	3.95	2.89	YES	HROFDY
L0000459	0	0.37340E-07	571834.3	4174720.4	5.0	3.11	3.95	2.89	YES	HROFDY
L0000460	0	0.37340E-07	571842.3	4174723.3	5.1	3.11	3.95	2.89	YES	HROFDY
L0000461	0	0.37340E-07	571850.3	4174726.2	5.2	3.11	3.95	2.89	YES	HROFDY
L0000462	0	0.37340E-07	571858.3	4174729.1	5.2	3.11	3.95	2.89	YES	HROFDY
L0000463	0	0.37340E-07	571866.3	4174732.0	5.3	3.11	3.95	2.89	YES	HROFDY
L0000464	0	0.37340E-07	571874.3	4174734.9	5.3	3.11	3.95	2.89	YES	HROFDY
L0000465	0	0.37340E-07	571882.3	4174737.8	5.4	3.11	3.95	2.89	YES	HROFDY
L0000466	0	0.37340E-07	571890.3	4174740.7	5.4	3.11	3.95	2.89	YES	HROFDY
L0000467	0	0.37340E-07	571898.3	4174743.5	5.5	3.11	3.95	2.89	YES	HROFDY
L0000468	0	0.37340E-07	571906.2	4174746.4	5.6	3.11	3.95	2.89	YES	HROFDY
L0000469	0	0.37340E-07	571914.2	4174749.3	5.7	3.11	3.95	2.89	YES	HROFDY
L0000470	0	0.37340E-07	571922.2	4174752.2	5.7	3.11	3.95	2.89	YES	HROFDY
L0000471	0	0.37340E-07	571930.2	4174755.1	5.7	3.11	3.95	2.89	YES	HROFDY

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 L0000472         0   0.37340E-07  571938.2 4174758.0     5.7     3.11     3.95
2.89     YES   HROFDY
 L0000473         0   0.37340E-07  571946.2 4174760.9     5.8     3.11     3.95
2.89     YES   HROFDY
 L0000474         0   0.37340E-07  571954.2 4174763.8     5.8     3.11     3.95
2.89     YES   HROFDY
 L0000475         0   0.37340E-07  571962.2 4174766.7     5.8     3.11     3.95
2.89     YES   HROFDY
 L0000476         0   0.37340E-07  571970.2 4174769.6     5.9     3.11     3.95
2.89     YES   HROFDY
 L0000477         0   0.37340E-07  571978.2 4174772.5     5.9     3.11     3.95
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 L0000478         0   0.37340E-07  571986.2 4174775.4     5.9     3.11     3.95
2.89     YES   HROFDY
 L0000479         0   0.37340E-07  571994.2 4174778.2     5.9     3.11     3.95
2.89     YES   HROFDY
 L0000480         0   0.37340E-07  572002.2 4174781.1     5.9     3.11     3.95
2.89     YES   HROFDY
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```
                                                   *** VOLUME SOURCE DATA ***

               NUMBER EMISSION RATE                    BASE    RELEASE    INIT.
INIT.   URBAN  EMISSION RATE
   SOURCE       PART.  (GRAMS/SEC)     X        Y      ELEV.   HEIGHT      SY
SZ     SOURCE  SCALAR VARY
     ID         CATS.               (METERS) (METERS) (METERS) (METERS) (METERS)
(METERS)             BY
 - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - -
- - - - - - - - - - - - - - - - - - - - -

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2.89     YES   HROFDY
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2.89     YES   HROFDY
 L0000483         0   0.37340E-07  572026.1 4174789.8     6.0     3.11     3.95
2.89     YES   HROFDY
 L0000484         0   0.37340E-07  572034.1 4174792.7     6.0     3.11     3.95
2.89     YES   HROFDY
 L0000485         0   0.37340E-07  572042.1 4174795.6     5.9     3.11     3.95
2.89     YES   HROFDY
 L0000486         0   0.37340E-07  572050.1 4174798.5     6.0     3.11     3.95
2.89     YES   HROFDY
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L0000487	0	0.37340E-07	572058.1	4174801.4	6.0	3.11	3.95	2.89	YES	HROFDY
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L0000489	0	0.37340E-07	572074.1	4174807.2	6.1	3.11	3.95	2.89	YES	HROFDY
L0000490	0	0.37340E-07	572082.1	4174810.1	6.2	3.11	3.95	2.89	YES	HROFDY
L0000491	0	0.37340E-07	572090.1	4174812.9	6.2	3.11	3.95	2.89	YES	HROFDY
L0000492	0	0.37340E-07	572098.1	4174815.8	6.3	3.11	3.95	2.89	YES	HROFDY
L0000493	0	0.37340E-07	572106.1	4174818.7	6.3	3.11	3.95	2.89	YES	HROFDY
L0000494	0	0.37340E-07	572114.1	4174821.6	6.4	3.11	3.95	2.89	YES	HROFDY
L0000495	0	0.37340E-07	572122.1	4174824.5	6.5	3.11	3.95	2.89	YES	HROFDY
L0000496	0	0.37340E-07	572130.1	4174827.4	6.6	3.11	3.95	2.89	YES	HROFDY
L0000497	0	0.37340E-07	572138.0	4174830.3	6.7	3.11	3.95	2.89	YES	HROFDY
L0000498	0	0.37340E-07	572146.0	4174833.2	6.7	3.11	3.95	2.89	YES	HROFDY
L0000499	0	0.37340E-07	572154.0	4174836.1	6.7	3.11	3.95	2.89	YES	HROFDY
L0000500	0	0.37340E-07	572162.0	4174839.0	6.7	3.11	3.95	2.89	YES	HROFDY
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L0000502	0	0.37340E-07	572178.0	4174844.8	6.6	3.11	3.95	2.89	YES	HROFDY
L0000503	0	0.37340E-07	572186.0	4174847.6	6.6	3.11	3.95	2.89	YES	HROFDY
L0000504	0	0.37340E-07	572194.0	4174850.5	6.7	3.11	3.95	2.89	YES	HROFDY
L0000505	0	0.37340E-07	572202.0	4174853.4	6.7	3.11	3.95	2.89	YES	HROFDY
L0000506	0	0.37340E-07	572210.0	4174856.3	6.8	3.11	3.95	2.89	YES	HROFDY
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L0000508	0	0.37340E-07	572226.0	4174862.1	6.9	3.11	3.95	2.89	YES	HROFDY
L0000509	0	0.37340E-07	572234.0	4174865.0	7.0	3.11	3.95	2.89	YES	HROFDY
L0000510	0	0.37340E-07	572242.0	4174867.9	7.0	3.11	3.95	2.89	YES	HROFDY
L0000511	0	0.37340E-07	572250.0	4174870.8	7.0	3.11	3.95	2.89	YES	HROFDY

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 L0000512         0   0.37340E-07  572257.9 4174873.7     7.1     3.11     3.95
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2.89     YES   HROFDY
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Doolittle.isc                 ***        01/12/23
 *** AERMET - VERSION  18081 ***   ***
                       ***        15:42:55

                                  PAGE  15
 *** MODELOPTs:    RegDFAULT  CONC  ELEV  URBAN  ADJ_U*


                                          *** SOURCE IDs DEFINING SOURCE GROUPS
***

 SRCGROUP ID                                                SOURCE IDs
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*** MODELOPTs: RegDFAULT CONC ELEV URBAN ADJ_U*

*** SOURCE IDs DEFINING SOURCE GROUPS ***

SRCGROUP ID	SOURCE IDs

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Doolittle.isc                 ***        01/12/23
 *** AERMET - VERSION  18081 ***   ***
                       ***        15:42:55

                                  PAGE  17
 *** MODELOPTs:    RegDFAULT  CONC  ELEV  URBAN  ADJ_U*


                                          *** SOURCE IDs DEFINING SOURCE GROUPS
***

 SRCGROUP ID                                                SOURCE IDs
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*** MODELOPTs: RegDFAULT CONC ELEV URBAN ADJ_U*

*** SOURCE IDs DEFINING SOURCE GROUPS ***

SRCGROUP ID	SOURCE IDs

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                                          *** SOURCE IDs DEFINED AS URBAN SOURCES
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  URBAN ID   URBAN POP                                     SOURCE IDs
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             L0000574    , L0000575    , L0000576    , L0000577    , L0000578    ,
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             L0000582    , L0000583    , L0000584    , L0000585    , L0000586    ,
L0000587    , L0000588    , L0000589    ,

             L0000590    , L0000591    , L0000592    , L0000593    , L0000594    ,
L0000595    , L0000596    , L0000597    ,

             L0000598    , L0000599    , L0000600    , L0000601    , L0000602    ,
L0000603    , L0000604    , L0000605    ,

             L0000606    , L0000607    , L0000608    , L0000609    , L0000610    ,
L0000611    , L0000612    , L0000613    ,

             L0000614    , L0000615    , L0000616    , L0000617    , L0000618    ,
L0000619    , L0000620    , L0000621    ,

             L0000622    , L0000623    , L0000624    , L0000625    , L0000626    ,
L0000627    , L0000628    , L0000629    ,

             L0000630    , L0000631    , L0000632    , L0000633    , L0000634    ,
L0000635    , L0000636    , L0000637    ,

             L0000638    , L0000639    , L0000640    , L0000641    , L0000642    ,
L0000643    , L0000644    , L0000645    ,

             L0000646    , L0000647    , L0000648    , L0000649    , L0000650    ,
L0000651    , L0000652    , L0000653    ,

             L0000654    , L0000655    , L0000656    , L0000657    , L0000658    ,
L0000659    , L0000660    , L0000661    ,

             L0000662    , L0000663    , L0000664    , L0000665    , L0000666    ,
L0000667    , L0000668    , L0000669    ,

             L0000670    , L0000671    , L0000672    , L0000673    , L0000674    ,
L0000675    , L0000676    , L0000677    ,
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*** SOURCE IDs DEFINED AS URBAN SOURCES ***

URBAN ID	URBAN POP	SOURCE IDs
		L0000678 , L0000679 , L0000680 , L0000681 , L0000682 , L0000683 , L0000684 , L0000685 ,
		L0000686 , L0000687 , L0000688 , L0000689 , L0000690 , L0000691 , L0000692 , L0000693 ,
		L0000694 , L0000695 , L0000696 , L0000697 , L0000698 , L0000699 , L0000700 , L0000701 ,
		L0000702 , L0000703 , L0000704 , L0000705 , L0000706 , L0000707 , L0000708 , L0000709 ,
		L0000710 , L0000711 , L0000712 , L0000713 , L0000714 , L0000715 , L0000716 , L0000717 ,
		L0000718 , L0000719 , L0000720 , L0000721 , L0000722 , L0000723 , L0000724 , L0000725 ,
		L0000726 , L0000727 , L0000728 , L0000729 , L0000730 , L0000731 , L0000732 , L0000733 ,
		L0000734 , L0000735 , L0000736 , L0000737 , L0000738 , L0000739 , L0000740 , L0000741 ,
		L0000742 , L0000743 , L0000744 , L0000745 , L0000746 , L0000747 , L0000748 , L0000749 ,
		L0000750 , L0000751 , L0000752 , L0000753 , L0000754 , L0000755 , L0000756 , L0000757 ,
		L0000758 , L0000759 , L0000760 , L0000761 , L0000762 , L0000763 , L0000764 , L0000248 ,
		L0000249 , L0000250 , L0000251 , L0000252 , L0000253 , L0000254 , L0000255 , L0000256 ,
		L0000257 , L0000258 , L0000259 , L0000260 , L0000261 , L0000262 , L0000263 , L0000264 ,
		L0000265 , L0000266 , L0000267 , L0000268 , L0000269 , L0000270 , L0000271 , L0000272 ,

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             L0000273    , L0000274    , L0000275    , L0000276    , L0000277    ,
L0000278    , L0000279    , L0000280    ,

             L0000281    , L0000282    , L0000283    , L0000284    , L0000285    ,
L0000286    , L0000287    , L0000288    ,

             L0000289    , L0000290    , L0000291    , L0000292    , L0000293    ,
L0000294    , L0000295    , L0000296    ,

             L0000297    , L0000298    , L0000299    , L0000300    , L0000301    ,
L0000302    , L0000303    , L0000304    ,

             L0000305    , L0000306    , L0000307    , L0000308    , L0000309    ,
L0000310    , L0000311    , L0000312    ,

             L0000313    , L0000314    , L0000315    , L0000316    , L0000317    ,
L0000318    , L0000319    , L0000320    ,
```



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                                        *** SOURCE IDs DEFINED AS URBAN SOURCES
***

  URBAN ID   URBAN POP                                   SOURCE IDs
  --------   ---------                                   ----------


             L0000321    , L0000322    , L0000323    , L0000324    , L0000325    ,
L0000326    , L0000327    , L0000328    ,

             L0000329    , L0000330    , L0000331    , L0000332    , L0000333    ,
L0000334    , L0000335    , L0000336    ,

             L0000337    , L0000338    , L0000339    , L0000340    , L0000341    ,
L0000342    , L0000343    , L0000344    ,

             L0000345    , L0000346    , L0000347    , L0000348    , L0000349    ,
L0000350    , L0000351    , L0000352    ,

             L0000353    , L0000354    , L0000355    , L0000356    , L0000357    ,
L0000358    , L0000359    , L0000360    ,

             L0000361    , L0000362    , L0000363    , L0000364    , L0000365    ,
L0000366    , L0000367    , L0000368    ,
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             L0000369    , L0000370    , L0000371    , L0000372    , L0000373    ,
L0000374    , L0000375    , L0000376    ,

             L0000377    , L0000378    , L0000379    , L0000380    , L0000381    ,
L0000382    , L0000383    , L0000384    ,

             L0000385    , L0000386    , L0000387    , L0000388    , L0000389    ,
L0000390    , L0000391    , L0000392    ,

             L0000393    , L0000394    , L0000395    , L0000396    , L0000397    ,
L0000398    , L0000399    , L0000400    ,

             L0000401    , L0000402    , L0000403    , L0000404    , L0000405    ,
L0000406    , L0000407    , L0000408    ,

             L0000409    , L0000410    , L0000411    , L0000412    , L0000413    ,
L0000414    , L0000415    , L0000416    ,

             L0000417    , L0000418    , L0000419    , L0000420    , L0000421    ,
L0000422    , L0000423    , L0000424    ,

             L0000425    , L0000426    , L0000427    , L0000428    , L0000429    ,
L0000430    , L0000431    , L0000432    ,

             L0000433    , L0000434    , L0000435    , L0000436    , L0000437    ,
L0000438    , L0000439    , L0000440    ,

             L0000441    , L0000442    , L0000443    , L0000444    , L0000445    ,
L0000446    , L0000447    , L0000448    ,

             L0000449    , L0000450    , L0000451    , L0000452    , L0000453    ,
L0000454    , L0000455    , L0000456    ,

             L0000457    , L0000458    , L0000459    , L0000460    , L0000461    ,
L0000462    , L0000463    , L0000464    ,

             L0000465    , L0000466    , L0000467    , L0000468    , L0000469    ,
L0000470    , L0000471    , L0000472    ,

             L0000473    , L0000474    , L0000475    , L0000476    , L0000477    ,
L0000478    , L0000479    , L0000480    ,
```

*** SOURCE IDs DEFINED AS URBAN SOURCES ***

URBAN ID	URBAN POP	SOURCE IDs

L0000481 , L0000482 , L0000483 , L0000484 , L0000485 , L0000486 , L0000487 , L0000488 ,

L0000489 , L0000490 , L0000491 , L0000492 , L0000493 , L0000494 , L0000495 , L0000496 ,

L0000497 , L0000498 , L0000499 , L0000500 , L0000501 , L0000502 , L0000503 , L0000504 ,

L0000505 , L0000506 , L0000507 , L0000508 , L0000509 , L0000510 , L0000511 , L0000512 ,

L0000513 , L0000514 , L0000515 , L0000516 , L0000517 ,

*** MODELOPTs: RegDFAULT CONC ELEV URBAN ADJ_U*

* SOURCE EMISSION RATE SCALARS WHICH VARY FOR EACH HOUR OF THE DAY *

HOUR	SCALAR	HOUR	SCALAR	HOUR	SCALAR	HOUR	SCALAR	HOUR	SCALAR	HOUR	SCALAR
1	.00000E+00	2	.00000E+00	3	.00000E+00	4	.00000E+00	5	.00000E+00	6	.00000E+00
7	.00000E+00	8	.00000E+00	9	.10000E+01	10	.10000E+01	11	.10000E+01	12	.10000E+01
13	.10000E+01	14	.10000E+01	15	.10000E+01	16	.10000E+01	17	.00000E+00	18	.00000E+00
19	.00000E+00	20	.00000E+00	21	.00000E+00	22	.00000E+00	23	.00000E+00	24	.00000E+00

SOURCE ID = L0000518 ; SOURCE TYPE = VOLUME :

SOURCE ID = L0000519 ; SOURCE TYPE = VOLUME :

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      1   .00000E+00      2   .00000E+00      3   .00000E+00      4   .00000E+00
   5   .00000E+00      6   .00000E+00
      7   .00000E+00      8   .00000E+00      9   .10000E+01     10   .10000E+01
  11   .10000E+01     12   .10000E+01
     13   .10000E+01     14   .10000E+01     15   .10000E+01     16   .10000E+01
  17   .00000E+00     18   .00000E+00
     19   .00000E+00     20   .00000E+00     21   .00000E+00     22   .00000E+00
  23   .00000E+00     24   .00000E+00


 SOURCE ID = L0000520     ; SOURCE TYPE = VOLUME   :
      1   .00000E+00      2   .00000E+00      3   .00000E+00      4   .00000E+00
   5   .00000E+00      6   .00000E+00
      7   .00000E+00      8   .00000E+00      9   .10000E+01     10   .10000E+01
  11   .10000E+01     12   .10000E+01
     13   .10000E+01     14   .10000E+01     15   .10000E+01     16   .10000E+01
  17   .00000E+00     18   .00000E+00
     19   .00000E+00     20   .00000E+00     21   .00000E+00     22   .00000E+00
  23   .00000E+00     24   .00000E+00


 SOURCE ID = L0000521     ; SOURCE TYPE = VOLUME   :
      1   .00000E+00      2   .00000E+00      3   .00000E+00      4   .00000E+00
   5   .00000E+00      6   .00000E+00
      7   .00000E+00      8   .00000E+00      9   .10000E+01     10   .10000E+01
  11   .10000E+01     12   .10000E+01
     13   .10000E+01     14   .10000E+01     15   .10000E+01     16   .10000E+01
  17   .00000E+00     18   .00000E+00
     19   .00000E+00     20   .00000E+00     21   .00000E+00     22   .00000E+00
  23   .00000E+00     24   .00000E+00


 SOURCE ID = L0000522     ; SOURCE TYPE = VOLUME   :
      1   .00000E+00      2   .00000E+00      3   .00000E+00      4   .00000E+00
   5   .00000E+00      6   .00000E+00
      7   .00000E+00      8   .00000E+00      9   .10000E+01     10   .10000E+01
  11   .10000E+01     12   .10000E+01
     13   .10000E+01     14   .10000E+01     15   .10000E+01     16   .10000E+01
  17   .00000E+00     18   .00000E+00
     19   .00000E+00     20   .00000E+00     21   .00000E+00     22   .00000E+00
  23   .00000E+00     24   .00000E+00
```

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                              * SOURCE EMISSION RATE SCALARS WHICH VARY FOR EACH HOUR
OF THE DAY *

     HOUR    SCALAR      HOUR    SCALAR      HOUR    SCALAR      HOUR    SCALAR
 HOUR    SCALAR      HOUR    SCALAR
 - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - -
- - - - - - - - - - - - - - - - - - - - - - - - -


 SOURCE ID = L0000523     ; SOURCE TYPE = VOLUME   :
       1   .00000E+00      2   .00000E+00      3   .00000E+00      4   .00000E+00
   5   .00000E+00      6   .00000E+00
       7   .00000E+00      8   .00000E+00      9   .10000E+01     10   .10000E+01
  11   .10000E+01     12   .10000E+01
      13   .10000E+01     14   .10000E+01     15   .10000E+01     16   .10000E+01
  17   .00000E+00     18   .00000E+00
      19   .00000E+00     20   .00000E+00     21   .00000E+00     22   .00000E+00
  23   .00000E+00     24   .00000E+00


 SOURCE ID = L0000524     ; SOURCE TYPE = VOLUME   :
       1   .00000E+00      2   .00000E+00      3   .00000E+00      4   .00000E+00
   5   .00000E+00      6   .00000E+00
       7   .00000E+00      8   .00000E+00      9   .10000E+01     10   .10000E+01
  11   .10000E+01     12   .10000E+01
      13   .10000E+01     14   .10000E+01     15   .10000E+01     16   .10000E+01
  17   .00000E+00     18   .00000E+00
      19   .00000E+00     20   .00000E+00     21   .00000E+00     22   .00000E+00
  23   .00000E+00     24   .00000E+00


 SOURCE ID = L0000525     ; SOURCE TYPE = VOLUME   :
       1   .00000E+00      2   .00000E+00      3   .00000E+00      4   .00000E+00
   5   .00000E+00      6   .00000E+00
       7   .00000E+00      8   .00000E+00      9   .10000E+01     10   .10000E+01
  11   .10000E+01     12   .10000E+01
      13   .10000E+01     14   .10000E+01     15   .10000E+01     16   .10000E+01
  17   .00000E+00     18   .00000E+00
      19   .00000E+00     20   .00000E+00     21   .00000E+00     22   .00000E+00
  23   .00000E+00     24   .00000E+00


 SOURCE ID = L0000526     ; SOURCE TYPE = VOLUME   :
       1   .00000E+00      2   .00000E+00      3   .00000E+00      4   .00000E+00
   5   .00000E+00      6   .00000E+00
       7   .00000E+00      8   .00000E+00      9   .10000E+01     10   .10000E+01
  11   .10000E+01     12   .10000E+01
      13   .10000E+01     14   .10000E+01     15   .10000E+01     16   .10000E+01
  17   .00000E+00     18   .00000E+00
      19   .00000E+00     20   .00000E+00     21   .00000E+00     22   .00000E+00
```

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  23   .00000E+00     24   .00000E+00


 SOURCE ID = L0000527     ; SOURCE TYPE = VOLUME   :
       1   .00000E+00      2   .00000E+00      3   .00000E+00      4   .00000E+00
   5   .00000E+00      6   .00000E+00
       7   .00000E+00      8   .00000E+00      9   .10000E+01     10   .10000E+01
  11   .10000E+01     12   .10000E+01
      13   .10000E+01     14   .10000E+01     15   .10000E+01     16   .10000E+01
  17   .00000E+00     18   .00000E+00
      19   .00000E+00     20   .00000E+00     21   .00000E+00     22   .00000E+00
  23   .00000E+00     24   .00000E+00

↟ *** AERMOD - VERSION 22112  ***   *** C:\Lakes\AERMOD View\880 Doolittle\880
Doolittle.isc                 ***        01/12/23
 *** AERMET - VERSION  18081 ***   ***
                       ***        15:42:55

                                  PAGE  25
 *** MODELOPTs:    RegDFAULT  CONC  ELEV  URBAN  ADJ_U*

                            * SOURCE EMISSION RATE SCALARS WHICH VARY FOR EACH HOUR
OF THE DAY *

     HOUR    SCALAR      HOUR    SCALAR      HOUR    SCALAR      HOUR    SCALAR
 HOUR    SCALAR      HOUR    SCALAR
 - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - -
- - - - - - - - - - - - - - - - - - - - - - - - -


 SOURCE ID = L0000528     ; SOURCE TYPE = VOLUME   :
       1   .00000E+00      2   .00000E+00      3   .00000E+00      4   .00000E+00
   5   .00000E+00      6   .00000E+00
       7   .00000E+00      8   .00000E+00      9   .10000E+01     10   .10000E+01
  11   .10000E+01     12   .10000E+01
      13   .10000E+01     14   .10000E+01     15   .10000E+01     16   .10000E+01
  17   .00000E+00     18   .00000E+00
      19   .00000E+00     20   .00000E+00     21   .00000E+00     22   .00000E+00
  23   .00000E+00     24   .00000E+00


 SOURCE ID = L0000529     ; SOURCE TYPE = VOLUME   :
       1   .00000E+00      2   .00000E+00      3   .00000E+00      4   .00000E+00
   5   .00000E+00      6   .00000E+00
       7   .00000E+00      8   .00000E+00      9   .10000E+01     10   .10000E+01
  11   .10000E+01     12   .10000E+01
      13   .10000E+01     14   .10000E+01     15   .10000E+01     16   .10000E+01
  17   .00000E+00     18   .00000E+00
      19   .00000E+00     20   .00000E+00     21   .00000E+00     22   .00000E+00
  23   .00000E+00     24   .00000E+00
```

```
 SOURCE ID = L0000530     ; SOURCE TYPE = VOLUME   :
       1   .00000E+00      2   .00000E+00      3   .00000E+00      4   .00000E+00
   5   .00000E+00      6   .00000E+00
       7   .00000E+00      8   .00000E+00      9   .10000E+01     10   .10000E+01
  11   .10000E+01     12   .10000E+01
      13   .10000E+01     14   .10000E+01     15   .10000E+01     16   .10000E+01
  17   .00000E+00     18   .00000E+00
      19   .00000E+00     20   .00000E+00     21   .00000E+00     22   .00000E+00
  23   .00000E+00     24   .00000E+00


 SOURCE ID = L0000531     ; SOURCE TYPE = VOLUME   :
       1   .00000E+00      2   .00000E+00      3   .00000E+00      4   .00000E+00
   5   .00000E+00      6   .00000E+00
       7   .00000E+00      8   .00000E+00      9   .10000E+01     10   .10000E+01
  11   .10000E+01     12   .10000E+01
      13   .10000E+01     14   .10000E+01     15   .10000E+01     16   .10000E+01
  17   .00000E+00     18   .00000E+00
      19   .00000E+00     20   .00000E+00     21   .00000E+00     22   .00000E+00
  23   .00000E+00     24   .00000E+00


 SOURCE ID = L0000532     ; SOURCE TYPE = VOLUME   :
       1   .00000E+00      2   .00000E+00      3   .00000E+00      4   .00000E+00
   5   .00000E+00      6   .00000E+00
       7   .00000E+00      8   .00000E+00      9   .10000E+01     10   .10000E+01
  11   .10000E+01     12   .10000E+01
      13   .10000E+01     14   .10000E+01     15   .10000E+01     16   .10000E+01
  17   .00000E+00     18   .00000E+00
      19   .00000E+00     20   .00000E+00     21   .00000E+00     22   .00000E+00
  23   .00000E+00     24   .00000E+00
```



```
                            * SOURCE EMISSION RATE SCALARS WHICH VARY FOR EACH HOUR
OF THE DAY *

     HOUR    SCALAR      HOUR    SCALAR      HOUR    SCALAR      HOUR    SCALAR
 HOUR    SCALAR      HOUR    SCALAR
 - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - -
- - - - - - - - - - - - - - - - - - - - - - - - -
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```
SOURCE ID = L0000533     ; SOURCE TYPE = VOLUME   :
      1   .00000E+00      2   .00000E+00      3   .00000E+00      4   .00000E+00
  5   .00000E+00      6   .00000E+00
      7   .00000E+00      8   .00000E+00      9   .10000E+01     10   .10000E+01
 11   .10000E+01     12   .10000E+01
     13   .10000E+01     14   .10000E+01     15   .10000E+01     16   .10000E+01
 17   .00000E+00     18   .00000E+00
     19   .00000E+00     20   .00000E+00     21   .00000E+00     22   .00000E+00
 23   .00000E+00     24   .00000E+00


SOURCE ID = L0000534     ; SOURCE TYPE = VOLUME   :
      1   .00000E+00      2   .00000E+00      3   .00000E+00      4   .00000E+00
  5   .00000E+00      6   .00000E+00
      7   .00000E+00      8   .00000E+00      9   .10000E+01     10   .10000E+01
 11   .10000E+01     12   .10000E+01
     13   .10000E+01     14   .10000E+01     15   .10000E+01     16   .10000E+01
 17   .00000E+00     18   .00000E+00
     19   .00000E+00     20   .00000E+00     21   .00000E+00     22   .00000E+00
 23   .00000E+00     24   .00000E+00


SOURCE ID = L0000535     ; SOURCE TYPE = VOLUME   :
      1   .00000E+00      2   .00000E+00      3   .00000E+00      4   .00000E+00
  5   .00000E+00      6   .00000E+00
      7   .00000E+00      8   .00000E+00      9   .10000E+01     10   .10000E+01
 11   .10000E+01     12   .10000E+01
     13   .10000E+01     14   .10000E+01     15   .10000E+01     16   .10000E+01
 17   .00000E+00     18   .00000E+00
     19   .00000E+00     20   .00000E+00     21   .00000E+00     22   .00000E+00
 23   .00000E+00     24   .00000E+00


SOURCE ID = L0000536     ; SOURCE TYPE = VOLUME   :
      1   .00000E+00      2   .00000E+00      3   .00000E+00      4   .00000E+00
  5   .00000E+00      6   .00000E+00
      7   .00000E+00      8   .00000E+00      9   .10000E+01     10   .10000E+01
 11   .10000E+01     12   .10000E+01
     13   .10000E+01     14   .10000E+01     15   .10000E+01     16   .10000E+01
 17   .00000E+00     18   .00000E+00
     19   .00000E+00     20   .00000E+00     21   .00000E+00     22   .00000E+00
 23   .00000E+00     24   .00000E+00


SOURCE ID = L0000537     ; SOURCE TYPE = VOLUME   :
      1   .00000E+00      2   .00000E+00      3   .00000E+00      4   .00000E+00
  5   .00000E+00      6   .00000E+00
      7   .00000E+00      8   .00000E+00      9   .10000E+01     10   .10000E+01
 11   .10000E+01     12   .10000E+01
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      13   .10000E+01     14   .10000E+01     15   .10000E+01     16   .10000E+01
  17   .00000E+00     18   .00000E+00
      19   .00000E+00     20   .00000E+00     21   .00000E+00     22   .00000E+00
  23   .00000E+00     24   .00000E+00

 *** AERMOD - VERSION 22112  ***   *** C:\Lakes\AERMOD View\880 Doolittle\880
Doolittle.isc                 ***        01/12/23
 *** AERMET - VERSION  18081 ***   ***
                       ***        15:42:55

                                  PAGE  27
 *** MODELOPTs:    RegDFAULT  CONC  ELEV  URBAN  ADJ_U*

                            * SOURCE EMISSION RATE SCALARS WHICH VARY FOR EACH HOUR
OF THE DAY *

     HOUR    SCALAR      HOUR    SCALAR      HOUR    SCALAR      HOUR    SCALAR
 HOUR    SCALAR      HOUR    SCALAR
 - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - -
- - - - - - - - - - - - - - - - - - - - - - - -


 SOURCE ID = L0000538     ; SOURCE TYPE = VOLUME   :
       1   .00000E+00      2   .00000E+00      3   .00000E+00      4   .00000E+00
   5   .00000E+00      6   .00000E+00
       7   .00000E+00      8   .00000E+00      9   .10000E+01     10   .10000E+01
  11   .10000E+01     12   .10000E+01
      13   .10000E+01     14   .10000E+01     15   .10000E+01     16   .10000E+01
  17   .00000E+00     18   .00000E+00
      19   .00000E+00     20   .00000E+00     21   .00000E+00     22   .00000E+00
  23   .00000E+00     24   .00000E+00


 SOURCE ID = L0000539     ; SOURCE TYPE = VOLUME   :
       1   .00000E+00      2   .00000E+00      3   .00000E+00      4   .00000E+00
   5   .00000E+00      6   .00000E+00
       7   .00000E+00      8   .00000E+00      9   .10000E+01     10   .10000E+01
  11   .10000E+01     12   .10000E+01
      13   .10000E+01     14   .10000E+01     15   .10000E+01     16   .10000E+01
  17   .00000E+00     18   .00000E+00
      19   .00000E+00     20   .00000E+00     21   .00000E+00     22   .00000E+00
  23   .00000E+00     24   .00000E+00


 SOURCE ID = L0000540     ; SOURCE TYPE = VOLUME   :
       1   .00000E+00      2   .00000E+00      3   .00000E+00      4   .00000E+00
   5   .00000E+00      6   .00000E+00
       7   .00000E+00      8   .00000E+00      9   .10000E+01     10   .10000E+01
  11   .10000E+01     12   .10000E+01
      13   .10000E+01     14   .10000E+01     15   .10000E+01     16   .10000E+01
```

```
  17   .00000E+00     18   .00000E+00
      19   .00000E+00     20   .00000E+00     21   .00000E+00     22   .00000E+00
  23   .00000E+00     24   .00000E+00


 SOURCE ID = L0000541     ; SOURCE TYPE = VOLUME   :
       1   .00000E+00      2   .00000E+00      3   .00000E+00      4   .00000E+00
   5   .00000E+00      6   .00000E+00
       7   .00000E+00      8   .00000E+00      9   .10000E+01     10   .10000E+01
  11   .10000E+01     12   .10000E+01
      13   .10000E+01     14   .10000E+01     15   .10000E+01     16   .10000E+01
  17   .00000E+00     18   .00000E+00
      19   .00000E+00     20   .00000E+00     21   .00000E+00     22   .00000E+00
  23   .00000E+00     24   .00000E+00


 SOURCE ID = L0000542     ; SOURCE TYPE = VOLUME   :
       1   .00000E+00      2   .00000E+00      3   .00000E+00      4   .00000E+00
   5   .00000E+00      6   .00000E+00
       7   .00000E+00      8   .00000E+00      9   .10000E+01     10   .10000E+01
  11   .10000E+01     12   .10000E+01
      13   .10000E+01     14   .10000E+01     15   .10000E+01     16   .10000E+01
  17   .00000E+00     18   .00000E+00
      19   .00000E+00     20   .00000E+00     21   .00000E+00     22   .00000E+00
  23   .00000E+00     24   .00000E+00

 *** AERMOD - VERSION 22112  ***   *** C:\Lakes\AERMOD View\880 Doolittle\880
Doolittle.isc                 ***        01/12/23
 *** AERMET - VERSION  18081 ***   ***
                       ***        15:42:55

                                  PAGE  28
 *** MODELOPTs:    RegDFAULT  CONC  ELEV  URBAN  ADJ_U*

                            * SOURCE EMISSION RATE SCALARS WHICH VARY FOR EACH HOUR
OF THE DAY *

     HOUR    SCALAR      HOUR    SCALAR      HOUR    SCALAR      HOUR    SCALAR
 HOUR    SCALAR      HOUR    SCALAR
 - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - -
- - - - - - - - - - - - - - - - - - - - - - - - -


 SOURCE ID = L0000543     ; SOURCE TYPE = VOLUME   :
       1   .00000E+00      2   .00000E+00      3   .00000E+00      4   .00000E+00
   5   .00000E+00      6   .00000E+00
       7   .00000E+00      8   .00000E+00      9   .10000E+01     10   .10000E+01
  11   .10000E+01     12   .10000E+01
      13   .10000E+01     14   .10000E+01     15   .10000E+01     16   .10000E+01
  17   .00000E+00     18   .00000E+00
```

```
     19   .00000E+00     20   .00000E+00     21   .00000E+00     22   .00000E+00
  23   .00000E+00     24   .00000E+00


 SOURCE ID = L0000544     ; SOURCE TYPE = VOLUME   :
      1   .00000E+00      2   .00000E+00      3   .00000E+00      4   .00000E+00
   5   .00000E+00      6   .00000E+00
      7   .00000E+00      8   .00000E+00      9   .10000E+01     10   .10000E+01
  11   .10000E+01     12   .10000E+01
     13   .10000E+01     14   .10000E+01     15   .10000E+01     16   .10000E+01
  17   .00000E+00     18   .00000E+00
     19   .00000E+00     20   .00000E+00     21   .00000E+00     22   .00000E+00
  23   .00000E+00     24   .00000E+00


 SOURCE ID = L0000545     ; SOURCE TYPE = VOLUME   :
      1   .00000E+00      2   .00000E+00      3   .00000E+00      4   .00000E+00
   5   .00000E+00      6   .00000E+00
      7   .00000E+00      8   .00000E+00      9   .10000E+01     10   .10000E+01
  11   .10000E+01     12   .10000E+01
     13   .10000E+01     14   .10000E+01     15   .10000E+01     16   .10000E+01
  17   .00000E+00     18   .00000E+00
     19   .00000E+00     20   .00000E+00     21   .00000E+00     22   .00000E+00
  23   .00000E+00     24   .00000E+00


 SOURCE ID = L0000546     ; SOURCE TYPE = VOLUME   :
      1   .00000E+00      2   .00000E+00      3   .00000E+00      4   .00000E+00
   5   .00000E+00      6   .00000E+00
      7   .00000E+00      8   .00000E+00      9   .10000E+01     10   .10000E+01
  11   .10000E+01     12   .10000E+01
     13   .10000E+01     14   .10000E+01     15   .10000E+01     16   .10000E+01
  17   .00000E+00     18   .00000E+00
     19   .00000E+00     20   .00000E+00     21   .00000E+00     22   .00000E+00
  23   .00000E+00     24   .00000E+00


 SOURCE ID = L0000547     ; SOURCE TYPE = VOLUME   :
      1   .00000E+00      2   .00000E+00      3   .00000E+00      4   .00000E+00
   5   .00000E+00      6   .00000E+00
      7   .00000E+00      8   .00000E+00      9   .10000E+01     10   .10000E+01
  11   .10000E+01     12   .10000E+01
     13   .10000E+01     14   .10000E+01     15   .10000E+01     16   .10000E+01
  17   .00000E+00     18   .00000E+00
     19   .00000E+00     20   .00000E+00     21   .00000E+00     22   .00000E+00
  23   .00000E+00     24   .00000E+00

↑ *** AERMOD - VERSION 22112  ***   *** C:\Lakes\AERMOD View\880 Doolittle\880
Doolittle.isc                 ***        01/12/23
 *** AERMET - VERSION  18081 ***   ***
```

*** MODELOPTs: RegDFAULT CONC ELEV URBAN ADJ_U*

* SOURCE EMISSION RATE SCALARS WHICH VARY FOR EACH HOUR OF THE DAY *

```
     HOUR    SCALAR      HOUR    SCALAR      HOUR    SCALAR      HOUR    SCALAR
 HOUR    SCALAR      HOUR    SCALAR
 - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - -
- - - - - - - - - - - - - - - - - - - - - - - - -


 SOURCE ID = L0000548     ; SOURCE TYPE = VOLUME   :
       1   .00000E+00      2   .00000E+00      3   .00000E+00      4   .00000E+00
   5   .00000E+00      6   .00000E+00
       7   .00000E+00      8   .00000E+00      9   .10000E+01     10   .10000E+01
  11   .10000E+01     12   .10000E+01
      13   .10000E+01     14   .10000E+01     15   .10000E+01     16   .10000E+01
  17   .00000E+00     18   .00000E+00
      19   .00000E+00     20   .00000E+00     21   .00000E+00     22   .00000E+00
  23   .00000E+00     24   .00000E+00


 SOURCE ID = L0000549     ; SOURCE TYPE = VOLUME   :
       1   .00000E+00      2   .00000E+00      3   .00000E+00      4   .00000E+00
   5   .00000E+00      6   .00000E+00
       7   .00000E+00      8   .00000E+00      9   .10000E+01     10   .10000E+01
  11   .10000E+01     12   .10000E+01
      13   .10000E+01     14   .10000E+01     15   .10000E+01     16   .10000E+01
  17   .00000E+00     18   .00000E+00
      19   .00000E+00     20   .00000E+00     21   .00000E+00     22   .00000E+00
  23   .00000E+00     24   .00000E+00


 SOURCE ID = L0000550     ; SOURCE TYPE = VOLUME   :
       1   .00000E+00      2   .00000E+00      3   .00000E+00      4   .00000E+00
   5   .00000E+00      6   .00000E+00
       7   .00000E+00      8   .00000E+00      9   .10000E+01     10   .10000E+01
  11   .10000E+01     12   .10000E+01
      13   .10000E+01     14   .10000E+01     15   .10000E+01     16   .10000E+01
  17   .00000E+00     18   .00000E+00
      19   .00000E+00     20   .00000E+00     21   .00000E+00     22   .00000E+00
  23   .00000E+00     24   .00000E+00


 SOURCE ID = L0000551     ; SOURCE TYPE = VOLUME   :
       1   .00000E+00      2   .00000E+00      3   .00000E+00      4   .00000E+00
   5   .00000E+00      6   .00000E+00
```

```
      7   .00000E+00      8   .00000E+00      9   .10000E+01     10   .10000E+01
  11   .10000E+01     12   .10000E+01
     13   .10000E+01     14   .10000E+01     15   .10000E+01     16   .10000E+01
  17   .00000E+00     18   .00000E+00
     19   .00000E+00     20   .00000E+00     21   .00000E+00     22   .00000E+00
  23   .00000E+00     24   .00000E+00


 SOURCE ID = L0000552     ; SOURCE TYPE = VOLUME   :
      1   .00000E+00      2   .00000E+00      3   .00000E+00      4   .00000E+00
   5   .00000E+00      6   .00000E+00
      7   .00000E+00      8   .00000E+00      9   .10000E+01     10   .10000E+01
  11   .10000E+01     12   .10000E+01
     13   .10000E+01     14   .10000E+01     15   .10000E+01     16   .10000E+01
  17   .00000E+00     18   .00000E+00
     19   .00000E+00     20   .00000E+00     21   .00000E+00     22   .00000E+00
  23   .00000E+00     24   .00000E+00

↑ *** AERMOD - VERSION 22112  ***   *** C:\Lakes\AERMOD View\880 Doolittle\880
Doolittle.isc                 ***        01/12/23
 *** AERMET - VERSION  18081 ***   ***
                       ***        15:42:55

                                  PAGE  30
 *** MODELOPTs:    RegDFAULT  CONC  ELEV  URBAN  ADJ_U*

                            * SOURCE EMISSION RATE SCALARS WHICH VARY FOR EACH HOUR
OF THE DAY *

     HOUR    SCALAR      HOUR    SCALAR      HOUR    SCALAR      HOUR    SCALAR
 HOUR    SCALAR      HOUR    SCALAR
 - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - -
- - - - - - - - - - - - - - - - - - - - - - - - -


 SOURCE ID = L0000553     ; SOURCE TYPE = VOLUME   :
      1   .00000E+00      2   .00000E+00      3   .00000E+00      4   .00000E+00
   5   .00000E+00      6   .00000E+00
      7   .00000E+00      8   .00000E+00      9   .10000E+01     10   .10000E+01
  11   .10000E+01     12   .10000E+01
     13   .10000E+01     14   .10000E+01     15   .10000E+01     16   .10000E+01
  17   .00000E+00     18   .00000E+00
     19   .00000E+00     20   .00000E+00     21   .00000E+00     22   .00000E+00
  23   .00000E+00     24   .00000E+00


 SOURCE ID = L0000554     ; SOURCE TYPE = VOLUME   :
      1   .00000E+00      2   .00000E+00      3   .00000E+00      4   .00000E+00
   5   .00000E+00      6   .00000E+00
      7   .00000E+00      8   .00000E+00      9   .10000E+01     10   .10000E+01
```

```
 11   .10000E+01     12   .10000E+01
     13   .10000E+01     14   .10000E+01     15   .10000E+01     16   .10000E+01
 17   .00000E+00     18   .00000E+00
     19   .00000E+00     20   .00000E+00     21   .00000E+00     22   .00000E+00
 23   .00000E+00     24   .00000E+00


SOURCE ID = L0000555     ; SOURCE TYPE = VOLUME   :
      1   .00000E+00      2   .00000E+00      3   .00000E+00      4   .00000E+00
  5   .00000E+00      6   .00000E+00
      7   .00000E+00      8   .00000E+00      9   .10000E+01     10   .10000E+01
 11   .10000E+01     12   .10000E+01
     13   .10000E+01     14   .10000E+01     15   .10000E+01     16   .10000E+01
 17   .00000E+00     18   .00000E+00
     19   .00000E+00     20   .00000E+00     21   .00000E+00     22   .00000E+00
 23   .00000E+00     24   .00000E+00


SOURCE ID = L0000556     ; SOURCE TYPE = VOLUME   :
      1   .00000E+00      2   .00000E+00      3   .00000E+00      4   .00000E+00
  5   .00000E+00      6   .00000E+00
      7   .00000E+00      8   .00000E+00      9   .10000E+01     10   .10000E+01
 11   .10000E+01     12   .10000E+01
     13   .10000E+01     14   .10000E+01     15   .10000E+01     16   .10000E+01
 17   .00000E+00     18   .00000E+00
     19   .00000E+00     20   .00000E+00     21   .00000E+00     22   .00000E+00
 23   .00000E+00     24   .00000E+00


SOURCE ID = L0000557     ; SOURCE TYPE = VOLUME   :
      1   .00000E+00      2   .00000E+00      3   .00000E+00      4   .00000E+00
  5   .00000E+00      6   .00000E+00
      7   .00000E+00      8   .00000E+00      9   .10000E+01     10   .10000E+01
 11   .10000E+01     12   .10000E+01
     13   .10000E+01     14   .10000E+01     15   .10000E+01     16   .10000E+01
 17   .00000E+00     18   .00000E+00
     19   .00000E+00     20   .00000E+00     21   .00000E+00     22   .00000E+00
 23   .00000E+00     24   .00000E+00
```



```
                            * SOURCE EMISSION RATE SCALARS WHICH VARY FOR EACH HOUR
OF THE DAY *
```

```
    HOUR    SCALAR      HOUR    SCALAR      HOUR    SCALAR      HOUR    SCALAR
 HOUR    SCALAR      HOUR    SCALAR
 - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - -
- - - - - - - - - - - - - - - - - - - - - - - - -


 SOURCE ID = L0000558     ; SOURCE TYPE = VOLUME   :
       1   .00000E+00      2   .00000E+00      3   .00000E+00      4   .00000E+00
   5   .00000E+00      6   .00000E+00
       7   .00000E+00      8   .00000E+00      9   .10000E+01     10   .10000E+01
  11   .10000E+01     12   .10000E+01
      13   .10000E+01     14   .10000E+01     15   .10000E+01     16   .10000E+01
  17   .00000E+00     18   .00000E+00
      19   .00000E+00     20   .00000E+00     21   .00000E+00     22   .00000E+00
  23   .00000E+00     24   .00000E+00


 SOURCE ID = L0000559     ; SOURCE TYPE = VOLUME   :
       1   .00000E+00      2   .00000E+00      3   .00000E+00      4   .00000E+00
   5   .00000E+00      6   .00000E+00
       7   .00000E+00      8   .00000E+00      9   .10000E+01     10   .10000E+01
  11   .10000E+01     12   .10000E+01
      13   .10000E+01     14   .10000E+01     15   .10000E+01     16   .10000E+01
  17   .00000E+00     18   .00000E+00
      19   .00000E+00     20   .00000E+00     21   .00000E+00     22   .00000E+00
  23   .00000E+00     24   .00000E+00


 SOURCE ID = L0000560     ; SOURCE TYPE = VOLUME   :
       1   .00000E+00      2   .00000E+00      3   .00000E+00      4   .00000E+00
   5   .00000E+00      6   .00000E+00
       7   .00000E+00      8   .00000E+00      9   .10000E+01     10   .10000E+01
  11   .10000E+01     12   .10000E+01
      13   .10000E+01     14   .10000E+01     15   .10000E+01     16   .10000E+01
  17   .00000E+00     18   .00000E+00
      19   .00000E+00     20   .00000E+00     21   .00000E+00     22   .00000E+00
  23   .00000E+00     24   .00000E+00


 SOURCE ID = L0000561     ; SOURCE TYPE = VOLUME   :
       1   .00000E+00      2   .00000E+00      3   .00000E+00      4   .00000E+00
   5   .00000E+00      6   .00000E+00
       7   .00000E+00      8   .00000E+00      9   .10000E+01     10   .10000E+01
  11   .10000E+01     12   .10000E+01
      13   .10000E+01     14   .10000E+01     15   .10000E+01     16   .10000E+01
  17   .00000E+00     18   .00000E+00
      19   .00000E+00     20   .00000E+00     21   .00000E+00     22   .00000E+00
  23   .00000E+00     24   .00000E+00
```

```
 SOURCE ID = L0000562     ; SOURCE TYPE = VOLUME   :
       1   .00000E+00      2   .00000E+00      3   .00000E+00      4   .00000E+00
   5   .00000E+00      6   .00000E+00
       7   .00000E+00      8   .00000E+00      9   .10000E+01     10   .10000E+01
  11   .10000E+01     12   .10000E+01
      13   .10000E+01     14   .10000E+01     15   .10000E+01     16   .10000E+01
  17   .00000E+00     18   .00000E+00
      19   .00000E+00     20   .00000E+00     21   .00000E+00     22   .00000E+00
  23   .00000E+00     24   .00000E+00

↑ *** AERMOD - VERSION 22112  ***   *** C:\Lakes\AERMOD View\880 Doolittle\880
Doolittle.isc                 ***        01/12/23
 *** AERMET - VERSION  18081 ***   ***
                        ***        15:42:55

                                   PAGE  32
 *** MODELOPTs:    RegDFAULT  CONC  ELEV  URBAN  ADJ_U*

                            * SOURCE EMISSION RATE SCALARS WHICH VARY FOR EACH HOUR
OF THE DAY *

     HOUR    SCALAR      HOUR    SCALAR      HOUR    SCALAR      HOUR    SCALAR
 HOUR    SCALAR      HOUR    SCALAR
 - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - -
- - - - - - - - - - - - - - - - - - - - - - - - -


 SOURCE ID = L0000563     ; SOURCE TYPE = VOLUME   :
       1   .00000E+00      2   .00000E+00      3   .00000E+00      4   .00000E+00
   5   .00000E+00      6   .00000E+00
       7   .00000E+00      8   .00000E+00      9   .10000E+01     10   .10000E+01
  11   .10000E+01     12   .10000E+01
      13   .10000E+01     14   .10000E+01     15   .10000E+01     16   .10000E+01
  17   .00000E+00     18   .00000E+00
      19   .00000E+00     20   .00000E+00     21   .00000E+00     22   .00000E+00
  23   .00000E+00     24   .00000E+00


 SOURCE ID = L0000564     ; SOURCE TYPE = VOLUME   :
       1   .00000E+00      2   .00000E+00      3   .00000E+00      4   .00000E+00
   5   .00000E+00      6   .00000E+00
       7   .00000E+00      8   .00000E+00      9   .10000E+01     10   .10000E+01
  11   .10000E+01     12   .10000E+01
      13   .10000E+01     14   .10000E+01     15   .10000E+01     16   .10000E+01
  17   .00000E+00     18   .00000E+00
      19   .00000E+00     20   .00000E+00     21   .00000E+00     22   .00000E+00
  23   .00000E+00     24   .00000E+00


 SOURCE ID = L0000565     ; SOURCE TYPE = VOLUME   :
```

```
      1   .00000E+00      2   .00000E+00      3   .00000E+00      4   .00000E+00
   5   .00000E+00      6   .00000E+00
      7   .00000E+00      8   .00000E+00      9   .10000E+01     10   .10000E+01
  11   .10000E+01     12   .10000E+01
     13   .10000E+01     14   .10000E+01     15   .10000E+01     16   .10000E+01
  17   .00000E+00     18   .00000E+00
     19   .00000E+00     20   .00000E+00     21   .00000E+00     22   .00000E+00
  23   .00000E+00     24   .00000E+00


 SOURCE ID = L0000566     ; SOURCE TYPE = VOLUME   :
      1   .00000E+00      2   .00000E+00      3   .00000E+00      4   .00000E+00
   5   .00000E+00      6   .00000E+00
      7   .00000E+00      8   .00000E+00      9   .10000E+01     10   .10000E+01
  11   .10000E+01     12   .10000E+01
     13   .10000E+01     14   .10000E+01     15   .10000E+01     16   .10000E+01
  17   .00000E+00     18   .00000E+00
     19   .00000E+00     20   .00000E+00     21   .00000E+00     22   .00000E+00
  23   .00000E+00     24   .00000E+00


 SOURCE ID = L0000567     ; SOURCE TYPE = VOLUME   :
      1   .00000E+00      2   .00000E+00      3   .00000E+00      4   .00000E+00
   5   .00000E+00      6   .00000E+00
      7   .00000E+00      8   .00000E+00      9   .10000E+01     10   .10000E+01
  11   .10000E+01     12   .10000E+01
     13   .10000E+01     14   .10000E+01     15   .10000E+01     16   .10000E+01
  17   .00000E+00     18   .00000E+00
     19   .00000E+00     20   .00000E+00     21   .00000E+00     22   .00000E+00
  23   .00000E+00     24   .00000E+00
```



```
                              * SOURCE EMISSION RATE SCALARS WHICH VARY FOR EACH HOUR
OF THE DAY *

     HOUR    SCALAR      HOUR    SCALAR      HOUR    SCALAR      HOUR    SCALAR
 HOUR    SCALAR      HOUR    SCALAR
 - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - -
- - - - - - - - - - - - - - - - - - - - - - - - -


 SOURCE ID = L0000568     ; SOURCE TYPE = VOLUME   :
      1   .00000E+00      2   .00000E+00      3   .00000E+00      4   .00000E+00
```

```
  5   .00000E+00      6   .00000E+00
      7   .00000E+00      8   .00000E+00      9   .10000E+01     10   .10000E+01
 11   .10000E+01     12   .10000E+01
     13   .10000E+01     14   .10000E+01     15   .10000E+01     16   .10000E+01
 17   .00000E+00     18   .00000E+00
     19   .00000E+00     20   .00000E+00     21   .00000E+00     22   .00000E+00
 23   .00000E+00     24   .00000E+00


SOURCE ID = L0000569     ; SOURCE TYPE = VOLUME   :
      1   .00000E+00      2   .00000E+00      3   .00000E+00      4   .00000E+00
  5   .00000E+00      6   .00000E+00
      7   .00000E+00      8   .00000E+00      9   .10000E+01     10   .10000E+01
 11   .10000E+01     12   .10000E+01
     13   .10000E+01     14   .10000E+01     15   .10000E+01     16   .10000E+01
 17   .00000E+00     18   .00000E+00
     19   .00000E+00     20   .00000E+00     21   .00000E+00     22   .00000E+00
 23   .00000E+00     24   .00000E+00


SOURCE ID = L0000570     ; SOURCE TYPE = VOLUME   :
      1   .00000E+00      2   .00000E+00      3   .00000E+00      4   .00000E+00
  5   .00000E+00      6   .00000E+00
      7   .00000E+00      8   .00000E+00      9   .10000E+01     10   .10000E+01
 11   .10000E+01     12   .10000E+01
     13   .10000E+01     14   .10000E+01     15   .10000E+01     16   .10000E+01
 17   .00000E+00     18   .00000E+00
     19   .00000E+00     20   .00000E+00     21   .00000E+00     22   .00000E+00
 23   .00000E+00     24   .00000E+00


SOURCE ID = L0000571     ; SOURCE TYPE = VOLUME   :
      1   .00000E+00      2   .00000E+00      3   .00000E+00      4   .00000E+00
  5   .00000E+00      6   .00000E+00
      7   .00000E+00      8   .00000E+00      9   .10000E+01     10   .10000E+01
 11   .10000E+01     12   .10000E+01
     13   .10000E+01     14   .10000E+01     15   .10000E+01     16   .10000E+01
 17   .00000E+00     18   .00000E+00
     19   .00000E+00     20   .00000E+00     21   .00000E+00     22   .00000E+00
 23   .00000E+00     24   .00000E+00


SOURCE ID = L0000572     ; SOURCE TYPE = VOLUME   :
      1   .00000E+00      2   .00000E+00      3   .00000E+00      4   .00000E+00
  5   .00000E+00      6   .00000E+00
      7   .00000E+00      8   .00000E+00      9   .10000E+01     10   .10000E+01
 11   .10000E+01     12   .10000E+01
     13   .10000E+01     14   .10000E+01     15   .10000E+01     16   .10000E+01
 17   .00000E+00     18   .00000E+00
     19   .00000E+00     20   .00000E+00     21   .00000E+00     22   .00000E+00
```

```
  23   .00000E+00     24   .00000E+00

↑ *** AERMOD - VERSION 22112  ***   *** C:\Lakes\AERMOD View\880 Doolittle\880
Doolittle.isc                 ***        01/12/23
 *** AERMET - VERSION  18081 ***   ***
                       ***        15:42:55

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 *** MODELOPTs:    RegDFAULT  CONC  ELEV  URBAN  ADJ_U*

                           * SOURCE EMISSION RATE SCALARS WHICH VARY FOR EACH HOUR
OF THE DAY *

     HOUR    SCALAR      HOUR    SCALAR      HOUR    SCALAR      HOUR    SCALAR
 HOUR    SCALAR      HOUR    SCALAR
 - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - -
- - - - - - - - - - - - - - - - - - - - - - - - -


 SOURCE ID = L0000573     ; SOURCE TYPE = VOLUME   :
       1   .00000E+00      2   .00000E+00      3   .00000E+00      4   .00000E+00
   5   .00000E+00      6   .00000E+00
       7   .00000E+00      8   .00000E+00      9   .10000E+01     10   .10000E+01
  11   .10000E+01     12   .10000E+01
      13   .10000E+01     14   .10000E+01     15   .10000E+01     16   .10000E+01
  17   .00000E+00     18   .00000E+00
      19   .00000E+00     20   .00000E+00     21   .00000E+00     22   .00000E+00
  23   .00000E+00     24   .00000E+00


 SOURCE ID = L0000574     ; SOURCE TYPE = VOLUME   :
       1   .00000E+00      2   .00000E+00      3   .00000E+00      4   .00000E+00
   5   .00000E+00      6   .00000E+00
       7   .00000E+00      8   .00000E+00      9   .10000E+01     10   .10000E+01
  11   .10000E+01     12   .10000E+01
      13   .10000E+01     14   .10000E+01     15   .10000E+01     16   .10000E+01
  17   .00000E+00     18   .00000E+00
      19   .00000E+00     20   .00000E+00     21   .00000E+00     22   .00000E+00
  23   .00000E+00     24   .00000E+00


 SOURCE ID = L0000575     ; SOURCE TYPE = VOLUME   :
       1   .00000E+00      2   .00000E+00      3   .00000E+00      4   .00000E+00
   5   .00000E+00      6   .00000E+00
       7   .00000E+00      8   .00000E+00      9   .10000E+01     10   .10000E+01
  11   .10000E+01     12   .10000E+01
      13   .10000E+01     14   .10000E+01     15   .10000E+01     16   .10000E+01
  17   .00000E+00     18   .00000E+00
      19   .00000E+00     20   .00000E+00     21   .00000E+00     22   .00000E+00
  23   .00000E+00     24   .00000E+00
```

```
 SOURCE ID = L0000576     ; SOURCE TYPE = VOLUME   :
       1   .00000E+00      2   .00000E+00      3   .00000E+00      4   .00000E+00
   5   .00000E+00      6   .00000E+00
       7   .00000E+00      8   .00000E+00      9   .10000E+01     10   .10000E+01
  11   .10000E+01     12   .10000E+01
      13   .10000E+01     14   .10000E+01     15   .10000E+01     16   .10000E+01
  17   .00000E+00     18   .00000E+00
      19   .00000E+00     20   .00000E+00     21   .00000E+00     22   .00000E+00
  23   .00000E+00     24   .00000E+00


 SOURCE ID = L0000577     ; SOURCE TYPE = VOLUME   :
       1   .00000E+00      2   .00000E+00      3   .00000E+00      4   .00000E+00
   5   .00000E+00      6   .00000E+00
       7   .00000E+00      8   .00000E+00      9   .10000E+01     10   .10000E+01
  11   .10000E+01     12   .10000E+01
      13   .10000E+01     14   .10000E+01     15   .10000E+01     16   .10000E+01
  17   .00000E+00     18   .00000E+00
      19   .00000E+00     20   .00000E+00     21   .00000E+00     22   .00000E+00
  23   .00000E+00     24   .00000E+00

 *** AERMOD - VERSION 22112  ***   *** C:\Lakes\AERMOD View\880 Doolittle\880
Doolittle.isc                 ***        01/12/23
 *** AERMET - VERSION  18081 ***   ***
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                                  PAGE  35
 *** MODELOPTs:    RegDFAULT  CONC  ELEV  URBAN  ADJ_U*

                            * SOURCE EMISSION RATE SCALARS WHICH VARY FOR EACH HOUR
OF THE DAY *

     HOUR    SCALAR      HOUR    SCALAR      HOUR    SCALAR      HOUR    SCALAR
 HOUR    SCALAR      HOUR    SCALAR
 - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - -
- - - - - - - - - - - - - - - - - - - - - - - - -


 SOURCE ID = L0000578     ; SOURCE TYPE = VOLUME   :
       1   .00000E+00      2   .00000E+00      3   .00000E+00      4   .00000E+00
   5   .00000E+00      6   .00000E+00
       7   .00000E+00      8   .00000E+00      9   .10000E+01     10   .10000E+01
  11   .10000E+01     12   .10000E+01
      13   .10000E+01     14   .10000E+01     15   .10000E+01     16   .10000E+01
  17   .00000E+00     18   .00000E+00
      19   .00000E+00     20   .00000E+00     21   .00000E+00     22   .00000E+00
  23   .00000E+00     24   .00000E+00
```

```
 SOURCE ID = L0000579     ; SOURCE TYPE = VOLUME   :
       1   .00000E+00      2   .00000E+00      3   .00000E+00      4   .00000E+00
   5   .00000E+00      6   .00000E+00
       7   .00000E+00      8   .00000E+00      9   .10000E+01     10   .10000E+01
  11   .10000E+01     12   .10000E+01
      13   .10000E+01     14   .10000E+01     15   .10000E+01     16   .10000E+01
  17   .00000E+00     18   .00000E+00
      19   .00000E+00     20   .00000E+00     21   .00000E+00     22   .00000E+00
  23   .00000E+00     24   .00000E+00


 SOURCE ID = L0000580     ; SOURCE TYPE = VOLUME   :
       1   .00000E+00      2   .00000E+00      3   .00000E+00      4   .00000E+00
   5   .00000E+00      6   .00000E+00
       7   .00000E+00      8   .00000E+00      9   .10000E+01     10   .10000E+01
  11   .10000E+01     12   .10000E+01
      13   .10000E+01     14   .10000E+01     15   .10000E+01     16   .10000E+01
  17   .00000E+00     18   .00000E+00
      19   .00000E+00     20   .00000E+00     21   .00000E+00     22   .00000E+00
  23   .00000E+00     24   .00000E+00


 SOURCE ID = L0000581     ; SOURCE TYPE = VOLUME   :
       1   .00000E+00      2   .00000E+00      3   .00000E+00      4   .00000E+00
   5   .00000E+00      6   .00000E+00
       7   .00000E+00      8   .00000E+00      9   .10000E+01     10   .10000E+01
  11   .10000E+01     12   .10000E+01
      13   .10000E+01     14   .10000E+01     15   .10000E+01     16   .10000E+01
  17   .00000E+00     18   .00000E+00
      19   .00000E+00     20   .00000E+00     21   .00000E+00     22   .00000E+00
  23   .00000E+00     24   .00000E+00


 SOURCE ID = L0000582     ; SOURCE TYPE = VOLUME   :
       1   .00000E+00      2   .00000E+00      3   .00000E+00      4   .00000E+00
   5   .00000E+00      6   .00000E+00
       7   .00000E+00      8   .00000E+00      9   .10000E+01     10   .10000E+01
  11   .10000E+01     12   .10000E+01
      13   .10000E+01     14   .10000E+01     15   .10000E+01     16   .10000E+01
  17   .00000E+00     18   .00000E+00
      19   .00000E+00     20   .00000E+00     21   .00000E+00     22   .00000E+00
  23   .00000E+00     24   .00000E+00
```

```
 *** MODELOPTs:    RegDFAULT  CONC  ELEV  URBAN  ADJ_U*

                            * SOURCE EMISSION RATE SCALARS WHICH VARY FOR EACH HOUR
OF THE DAY *

     HOUR    SCALAR      HOUR    SCALAR      HOUR    SCALAR      HOUR    SCALAR
 HOUR    SCALAR      HOUR    SCALAR
 - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - -
- - - - - - - - - - - - - - - - - - - - - - - -


 SOURCE ID = L0000583     ; SOURCE TYPE = VOLUME   :
       1   .00000E+00      2   .00000E+00      3   .00000E+00      4   .00000E+00
   5   .00000E+00      6   .00000E+00
       7   .00000E+00      8   .00000E+00      9   .10000E+01     10   .10000E+01
  11   .10000E+01     12   .10000E+01
      13   .10000E+01     14   .10000E+01     15   .10000E+01     16   .10000E+01
  17   .00000E+00     18   .00000E+00
      19   .00000E+00     20   .00000E+00     21   .00000E+00     22   .00000E+00
  23   .00000E+00     24   .00000E+00


 SOURCE ID = L0000584     ; SOURCE TYPE = VOLUME   :
       1   .00000E+00      2   .00000E+00      3   .00000E+00      4   .00000E+00
   5   .00000E+00      6   .00000E+00
       7   .00000E+00      8   .00000E+00      9   .10000E+01     10   .10000E+01
  11   .10000E+01     12   .10000E+01
      13   .10000E+01     14   .10000E+01     15   .10000E+01     16   .10000E+01
  17   .00000E+00     18   .00000E+00
      19   .00000E+00     20   .00000E+00     21   .00000E+00     22   .00000E+00
  23   .00000E+00     24   .00000E+00


 SOURCE ID = L0000585     ; SOURCE TYPE = VOLUME   :
       1   .00000E+00      2   .00000E+00      3   .00000E+00      4   .00000E+00
   5   .00000E+00      6   .00000E+00
       7   .00000E+00      8   .00000E+00      9   .10000E+01     10   .10000E+01
  11   .10000E+01     12   .10000E+01
      13   .10000E+01     14   .10000E+01     15   .10000E+01     16   .10000E+01
  17   .00000E+00     18   .00000E+00
      19   .00000E+00     20   .00000E+00     21   .00000E+00     22   .00000E+00
  23   .00000E+00     24   .00000E+00


 SOURCE ID = L0000586     ; SOURCE TYPE = VOLUME   :
       1   .00000E+00      2   .00000E+00      3   .00000E+00      4   .00000E+00
   5   .00000E+00      6   .00000E+00
       7   .00000E+00      8   .00000E+00      9   .10000E+01     10   .10000E+01
  11   .10000E+01     12   .10000E+01
      13   .10000E+01     14   .10000E+01     15   .10000E+01     16   .10000E+01
```

```
  17   .00000E+00     18   .00000E+00
      19   .00000E+00     20   .00000E+00     21   .00000E+00     22   .00000E+00
  23   .00000E+00     24   .00000E+00


 SOURCE ID = L0000587     ; SOURCE TYPE = VOLUME   :
       1   .00000E+00      2   .00000E+00      3   .00000E+00      4   .00000E+00
   5   .00000E+00      6   .00000E+00
       7   .00000E+00      8   .00000E+00      9   .10000E+01     10   .10000E+01
  11   .10000E+01     12   .10000E+01
      13   .10000E+01     14   .10000E+01     15   .10000E+01     16   .10000E+01
  17   .00000E+00     18   .00000E+00
      19   .00000E+00     20   .00000E+00     21   .00000E+00     22   .00000E+00
  23   .00000E+00     24   .00000E+00

 *** AERMOD - VERSION 22112  ***   *** C:\Lakes\AERMOD View\880 Doolittle\880
Doolittle.isc                 ***        01/12/23
 *** AERMET - VERSION  18081 ***   ***
                        ***        15:42:55

                                   PAGE  37
 *** MODELOPTs:    RegDFAULT  CONC  ELEV  URBAN  ADJ_U*

                            * SOURCE EMISSION RATE SCALARS WHICH VARY FOR EACH HOUR
OF THE DAY *

     HOUR    SCALAR      HOUR    SCALAR      HOUR    SCALAR      HOUR    SCALAR
 HOUR    SCALAR      HOUR    SCALAR
 - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - -
- - - - - - - - - - - - - - - - - - - - - - - - -


 SOURCE ID = L0000588     ; SOURCE TYPE = VOLUME   :
       1   .00000E+00      2   .00000E+00      3   .00000E+00      4   .00000E+00
   5   .00000E+00      6   .00000E+00
       7   .00000E+00      8   .00000E+00      9   .10000E+01     10   .10000E+01
  11   .10000E+01     12   .10000E+01
      13   .10000E+01     14   .10000E+01     15   .10000E+01     16   .10000E+01
  17   .00000E+00     18   .00000E+00
      19   .00000E+00     20   .00000E+00     21   .00000E+00     22   .00000E+00
  23   .00000E+00     24   .00000E+00


 SOURCE ID = L0000589     ; SOURCE TYPE = VOLUME   :
       1   .00000E+00      2   .00000E+00      3   .00000E+00      4   .00000E+00
   5   .00000E+00      6   .00000E+00
       7   .00000E+00      8   .00000E+00      9   .10000E+01     10   .10000E+01
  11   .10000E+01     12   .10000E+01
      13   .10000E+01     14   .10000E+01     15   .10000E+01     16   .10000E+01
  17   .00000E+00     18   .00000E+00
```

```
     19   .00000E+00     20   .00000E+00     21   .00000E+00     22   .00000E+00
  23   .00000E+00     24   .00000E+00


 SOURCE ID = L0000590     ; SOURCE TYPE = VOLUME   :
      1   .00000E+00      2   .00000E+00      3   .00000E+00      4   .00000E+00
   5   .00000E+00      6   .00000E+00
      7   .00000E+00      8   .00000E+00      9   .10000E+01     10   .10000E+01
  11   .10000E+01     12   .10000E+01
     13   .10000E+01     14   .10000E+01     15   .10000E+01     16   .10000E+01
  17   .00000E+00     18   .00000E+00
     19   .00000E+00     20   .00000E+00     21   .00000E+00     22   .00000E+00
  23   .00000E+00     24   .00000E+00


 SOURCE ID = L0000591     ; SOURCE TYPE = VOLUME   :
      1   .00000E+00      2   .00000E+00      3   .00000E+00      4   .00000E+00
   5   .00000E+00      6   .00000E+00
      7   .00000E+00      8   .00000E+00      9   .10000E+01     10   .10000E+01
  11   .10000E+01     12   .10000E+01
     13   .10000E+01     14   .10000E+01     15   .10000E+01     16   .10000E+01
  17   .00000E+00     18   .00000E+00
     19   .00000E+00     20   .00000E+00     21   .00000E+00     22   .00000E+00
  23   .00000E+00     24   .00000E+00


 SOURCE ID = L0000592     ; SOURCE TYPE = VOLUME   :
      1   .00000E+00      2   .00000E+00      3   .00000E+00      4   .00000E+00
   5   .00000E+00      6   .00000E+00
      7   .00000E+00      8   .00000E+00      9   .10000E+01     10   .10000E+01
  11   .10000E+01     12   .10000E+01
     13   .10000E+01     14   .10000E+01     15   .10000E+01     16   .10000E+01
  17   .00000E+00     18   .00000E+00
     19   .00000E+00     20   .00000E+00     21   .00000E+00     22   .00000E+00
  23   .00000E+00     24   .00000E+00
```



```
                            * SOURCE EMISSION RATE SCALARS WHICH VARY FOR EACH HOUR
OF THE DAY *

     HOUR    SCALAR      HOUR    SCALAR      HOUR    SCALAR      HOUR    SCALAR
 HOUR    SCALAR      HOUR    SCALAR
 - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - -
```

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- - - - - - - - - - - - - - - - - - - - - - - -


 SOURCE ID = L0000593     ; SOURCE TYPE = VOLUME   :
       1   .00000E+00      2   .00000E+00      3   .00000E+00      4   .00000E+00
   5   .00000E+00      6   .00000E+00
       7   .00000E+00      8   .00000E+00      9   .10000E+01     10   .10000E+01
  11   .10000E+01     12   .10000E+01
      13   .10000E+01     14   .10000E+01     15   .10000E+01     16   .10000E+01
  17   .00000E+00     18   .00000E+00
      19   .00000E+00     20   .00000E+00     21   .00000E+00     22   .00000E+00
  23   .00000E+00     24   .00000E+00


 SOURCE ID = L0000594     ; SOURCE TYPE = VOLUME   :
       1   .00000E+00      2   .00000E+00      3   .00000E+00      4   .00000E+00
   5   .00000E+00      6   .00000E+00
       7   .00000E+00      8   .00000E+00      9   .10000E+01     10   .10000E+01
  11   .10000E+01     12   .10000E+01
      13   .10000E+01     14   .10000E+01     15   .10000E+01     16   .10000E+01
  17   .00000E+00     18   .00000E+00
      19   .00000E+00     20   .00000E+00     21   .00000E+00     22   .00000E+00
  23   .00000E+00     24   .00000E+00


 SOURCE ID = L0000595     ; SOURCE TYPE = VOLUME   :
       1   .00000E+00      2   .00000E+00      3   .00000E+00      4   .00000E+00
   5   .00000E+00      6   .00000E+00
       7   .00000E+00      8   .00000E+00      9   .10000E+01     10   .10000E+01
  11   .10000E+01     12   .10000E+01
      13   .10000E+01     14   .10000E+01     15   .10000E+01     16   .10000E+01
  17   .00000E+00     18   .00000E+00
      19   .00000E+00     20   .00000E+00     21   .00000E+00     22   .00000E+00
  23   .00000E+00     24   .00000E+00


 SOURCE ID = L0000596     ; SOURCE TYPE = VOLUME   :
       1   .00000E+00      2   .00000E+00      3   .00000E+00      4   .00000E+00
   5   .00000E+00      6   .00000E+00
       7   .00000E+00      8   .00000E+00      9   .10000E+01     10   .10000E+01
  11   .10000E+01     12   .10000E+01
      13   .10000E+01     14   .10000E+01     15   .10000E+01     16   .10000E+01
  17   .00000E+00     18   .00000E+00
      19   .00000E+00     20   .00000E+00     21   .00000E+00     22   .00000E+00
  23   .00000E+00     24   .00000E+00


 SOURCE ID = L0000597     ; SOURCE TYPE = VOLUME   :
       1   .00000E+00      2   .00000E+00      3   .00000E+00      4   .00000E+00
   5   .00000E+00      6   .00000E+00
```

```
      7   .00000E+00      8   .00000E+00      9   .10000E+01     10   .10000E+01
  11   .10000E+01     12   .10000E+01
     13   .10000E+01     14   .10000E+01     15   .10000E+01     16   .10000E+01
  17   .00000E+00     18   .00000E+00
     19   .00000E+00     20   .00000E+00     21   .00000E+00     22   .00000E+00
  23   .00000E+00     24   .00000E+00

↑ *** AERMOD - VERSION 22112  ***   *** C:\Lakes\AERMOD View\880 Doolittle\880
Doolittle.isc                 ***        01/12/23
 *** AERMET - VERSION  18081 ***   ***
                       ***        15:42:55

                                  PAGE  39
 *** MODELOPTs:    RegDFAULT  CONC  ELEV  URBAN  ADJ_U*

                           * SOURCE EMISSION RATE SCALARS WHICH VARY FOR EACH HOUR
OF THE DAY *

     HOUR    SCALAR      HOUR    SCALAR      HOUR    SCALAR      HOUR    SCALAR
 HOUR    SCALAR      HOUR    SCALAR
 - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - -
- - - - - - - - - - - - - - - - - - - - - - - -


 SOURCE ID = L0000598     ; SOURCE TYPE = VOLUME   :
      1   .00000E+00      2   .00000E+00      3   .00000E+00      4   .00000E+00
   5   .00000E+00      6   .00000E+00
      7   .00000E+00      8   .00000E+00      9   .10000E+01     10   .10000E+01
  11   .10000E+01     12   .10000E+01
     13   .10000E+01     14   .10000E+01     15   .10000E+01     16   .10000E+01
  17   .00000E+00     18   .00000E+00
     19   .00000E+00     20   .00000E+00     21   .00000E+00     22   .00000E+00
  23   .00000E+00     24   .00000E+00


 SOURCE ID = L0000599     ; SOURCE TYPE = VOLUME   :
      1   .00000E+00      2   .00000E+00      3   .00000E+00      4   .00000E+00
   5   .00000E+00      6   .00000E+00
      7   .00000E+00      8   .00000E+00      9   .10000E+01     10   .10000E+01
  11   .10000E+01     12   .10000E+01
     13   .10000E+01     14   .10000E+01     15   .10000E+01     16   .10000E+01
  17   .00000E+00     18   .00000E+00
     19   .00000E+00     20   .00000E+00     21   .00000E+00     22   .00000E+00
  23   .00000E+00     24   .00000E+00


 SOURCE ID = L0000600     ; SOURCE TYPE = VOLUME   :
      1   .00000E+00      2   .00000E+00      3   .00000E+00      4   .00000E+00
   5   .00000E+00      6   .00000E+00
      7   .00000E+00      8   .00000E+00      9   .10000E+01     10   .10000E+01
```

```
  11   .10000E+01     12   .10000E+01
      13   .10000E+01     14   .10000E+01     15   .10000E+01     16   .10000E+01
  17   .00000E+00     18   .00000E+00
      19   .00000E+00     20   .00000E+00     21   .00000E+00     22   .00000E+00
  23   .00000E+00     24   .00000E+00


 SOURCE ID = L0000601     ; SOURCE TYPE = VOLUME   :
       1   .00000E+00      2   .00000E+00      3   .00000E+00      4   .00000E+00
   5   .00000E+00      6   .00000E+00
       7   .00000E+00      8   .00000E+00      9   .10000E+01     10   .10000E+01
  11   .10000E+01     12   .10000E+01
      13   .10000E+01     14   .10000E+01     15   .10000E+01     16   .10000E+01
  17   .00000E+00     18   .00000E+00
      19   .00000E+00     20   .00000E+00     21   .00000E+00     22   .00000E+00
  23   .00000E+00     24   .00000E+00


 SOURCE ID = L0000602     ; SOURCE TYPE = VOLUME   :
       1   .00000E+00      2   .00000E+00      3   .00000E+00      4   .00000E+00
   5   .00000E+00      6   .00000E+00
       7   .00000E+00      8   .00000E+00      9   .10000E+01     10   .10000E+01
  11   .10000E+01     12   .10000E+01
      13   .10000E+01     14   .10000E+01     15   .10000E+01     16   .10000E+01
  17   .00000E+00     18   .00000E+00
      19   .00000E+00     20   .00000E+00     21   .00000E+00     22   .00000E+00
  23   .00000E+00     24   .00000E+00

 *** AERMOD - VERSION 22112  ***   *** C:\Lakes\AERMOD View\880 Doolittle\880
Doolittle.isc                 ***        01/12/23
 *** AERMET - VERSION  18081 ***   ***
                        ***       15:42:55

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 *** MODELOPTs:    RegDFAULT  CONC  ELEV  URBAN  ADJ_U*

                            * SOURCE EMISSION RATE SCALARS WHICH VARY FOR EACH HOUR
OF THE DAY *

     HOUR    SCALAR      HOUR    SCALAR      HOUR    SCALAR      HOUR    SCALAR
 HOUR    SCALAR      HOUR    SCALAR
 - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - -
- - - - - - - - - - - - - - - - - - - - - - - - -


 SOURCE ID = L0000603     ; SOURCE TYPE = VOLUME   :
       1   .00000E+00      2   .00000E+00      3   .00000E+00      4   .00000E+00
   5   .00000E+00      6   .00000E+00
       7   .00000E+00      8   .00000E+00      9   .10000E+01     10   .10000E+01
  11   .10000E+01     12   .10000E+01
```

```
     13   .10000E+01     14   .10000E+01     15   .10000E+01     16   .10000E+01
 17   .00000E+00     18   .00000E+00
     19   .00000E+00     20   .00000E+00     21   .00000E+00     22   .00000E+00
 23   .00000E+00     24   .00000E+00


SOURCE ID = L0000604     ; SOURCE TYPE = VOLUME   :
      1   .00000E+00      2   .00000E+00      3   .00000E+00      4   .00000E+00
  5   .00000E+00      6   .00000E+00
      7   .00000E+00      8   .00000E+00      9   .10000E+01     10   .10000E+01
 11   .10000E+01     12   .10000E+01
     13   .10000E+01     14   .10000E+01     15   .10000E+01     16   .10000E+01
 17   .00000E+00     18   .00000E+00
     19   .00000E+00     20   .00000E+00     21   .00000E+00     22   .00000E+00
 23   .00000E+00     24   .00000E+00


SOURCE ID = L0000605     ; SOURCE TYPE = VOLUME   :
      1   .00000E+00      2   .00000E+00      3   .00000E+00      4   .00000E+00
  5   .00000E+00      6   .00000E+00
      7   .00000E+00      8   .00000E+00      9   .10000E+01     10   .10000E+01
 11   .10000E+01     12   .10000E+01
     13   .10000E+01     14   .10000E+01     15   .10000E+01     16   .10000E+01
 17   .00000E+00     18   .00000E+00
     19   .00000E+00     20   .00000E+00     21   .00000E+00     22   .00000E+00
 23   .00000E+00     24   .00000E+00


SOURCE ID = L0000606     ; SOURCE TYPE = VOLUME   :
      1   .00000E+00      2   .00000E+00      3   .00000E+00      4   .00000E+00
  5   .00000E+00      6   .00000E+00
      7   .00000E+00      8   .00000E+00      9   .10000E+01     10   .10000E+01
 11   .10000E+01     12   .10000E+01
     13   .10000E+01     14   .10000E+01     15   .10000E+01     16   .10000E+01
 17   .00000E+00     18   .00000E+00
     19   .00000E+00     20   .00000E+00     21   .00000E+00     22   .00000E+00
 23   .00000E+00     24   .00000E+00


SOURCE ID = L0000607     ; SOURCE TYPE = VOLUME   :
      1   .00000E+00      2   .00000E+00      3   .00000E+00      4   .00000E+00
  5   .00000E+00      6   .00000E+00
      7   .00000E+00      8   .00000E+00      9   .10000E+01     10   .10000E+01
 11   .10000E+01     12   .10000E+01
     13   .10000E+01     14   .10000E+01     15   .10000E+01     16   .10000E+01
 17   .00000E+00     18   .00000E+00
     19   .00000E+00     20   .00000E+00     21   .00000E+00     22   .00000E+00
 23   .00000E+00     24   .00000E+00
```

*** MODELOPTs: RegDFAULT CONC ELEV URBAN ADJ_U*

* SOURCE EMISSION RATE SCALARS WHICH VARY FOR EACH HOUR OF THE DAY *

HOUR	SCALAR	HOUR	SCALAR	HOUR	SCALAR	HOUR	SCALAR	HOUR	SCALAR	HOUR	SCALAR
1	.00000E+00	2	.00000E+00	3	.00000E+00	4	.00000E+00	5	.00000E+00	6	.00000E+00
7	.00000E+00	8	.00000E+00	9	.10000E+01	10	.10000E+01	11	.10000E+01	12	.10000E+01
13	.10000E+01	14	.10000E+01	15	.10000E+01	16	.10000E+01	17	.00000E+00	18	.00000E+00
19	.00000E+00	20	.00000E+00	21	.00000E+00	22	.00000E+00	23	.00000E+00	24	.00000E+00

SOURCE ID = L0000608 ; SOURCE TYPE = VOLUME :

HOUR	SCALAR	HOUR	SCALAR	HOUR	SCALAR	HOUR	SCALAR	HOUR	SCALAR	HOUR	SCALAR
1	.00000E+00	2	.00000E+00	3	.00000E+00	4	.00000E+00	5	.00000E+00	6	.00000E+00
7	.00000E+00	8	.00000E+00	9	.10000E+01	10	.10000E+01	11	.10000E+01	12	.10000E+01
13	.10000E+01	14	.10000E+01	15	.10000E+01	16	.10000E+01	17	.00000E+00	18	.00000E+00
19	.00000E+00	20	.00000E+00	21	.00000E+00	22	.00000E+00	23	.00000E+00	24	.00000E+00

SOURCE ID = L0000609 ; SOURCE TYPE = VOLUME :

HOUR	SCALAR	HOUR	SCALAR	HOUR	SCALAR	HOUR	SCALAR	HOUR	SCALAR	HOUR	SCALAR
1	.00000E+00	2	.00000E+00	3	.00000E+00	4	.00000E+00	5	.00000E+00	6	.00000E+00
7	.00000E+00	8	.00000E+00	9	.10000E+01	10	.10000E+01	11	.10000E+01	12	.10000E+01
13	.10000E+01	14	.10000E+01	15	.10000E+01	16	.10000E+01	17	.00000E+00	18	.00000E+00
19	.00000E+00	20	.00000E+00	21	.00000E+00	22	.00000E+00	23	.00000E+00	24	.00000E+00

SOURCE ID = L0000610 ; SOURCE TYPE = VOLUME :

HOUR	SCALAR	HOUR	SCALAR	HOUR	SCALAR	HOUR	SCALAR	HOUR	SCALAR	HOUR	SCALAR
1	.00000E+00	2	.00000E+00	3	.00000E+00	4	.00000E+00	5	.00000E+00	6	.00000E+00
7	.00000E+00	8	.00000E+00	9	.10000E+01	10	.10000E+01	11	.10000E+01	12	.10000E+01
13	.10000E+01	14	.10000E+01	15	.10000E+01	16	.10000E+01	17	.00000E+00	18	.00000E+00
19	.00000E+00	20	.00000E+00	21	.00000E+00	22	.00000E+00	23	.00000E+00	24	.00000E+00

SOURCE ID = L0000611 ; SOURCE TYPE = VOLUME :

```
      1   .00000E+00      2   .00000E+00      3   .00000E+00      4   .00000E+00
   5   .00000E+00      6   .00000E+00
      7   .00000E+00      8   .00000E+00      9   .10000E+01     10   .10000E+01
  11   .10000E+01     12   .10000E+01
     13   .10000E+01     14   .10000E+01     15   .10000E+01     16   .10000E+01
  17   .00000E+00     18   .00000E+00
     19   .00000E+00     20   .00000E+00     21   .00000E+00     22   .00000E+00
  23   .00000E+00     24   .00000E+00


 SOURCE ID = L0000612     ; SOURCE TYPE = VOLUME   :
      1   .00000E+00      2   .00000E+00      3   .00000E+00      4   .00000E+00
   5   .00000E+00      6   .00000E+00
      7   .00000E+00      8   .00000E+00      9   .10000E+01     10   .10000E+01
  11   .10000E+01     12   .10000E+01
     13   .10000E+01     14   .10000E+01     15   .10000E+01     16   .10000E+01
  17   .00000E+00     18   .00000E+00
     19   .00000E+00     20   .00000E+00     21   .00000E+00     22   .00000E+00
  23   .00000E+00     24   .00000E+00

↑ *** AERMOD - VERSION 22112  ***   *** C:\Lakes\AERMOD View\880 Doolittle\880
Doolittle.isc                 ***        01/12/23
 *** AERMET - VERSION  18081 ***   ***
                        ***        15:42:55

                                   PAGE  42
 *** MODELOPTs:    RegDFAULT  CONC  ELEV  URBAN  ADJ_U*

                            * SOURCE EMISSION RATE SCALARS WHICH VARY FOR EACH HOUR
OF THE DAY *

     HOUR    SCALAR      HOUR    SCALAR      HOUR    SCALAR      HOUR    SCALAR
 HOUR    SCALAR      HOUR    SCALAR
 - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - -
- - - - - - - - - - - - - - - - - - - - - - - - -


 SOURCE ID = L0000613     ; SOURCE TYPE = VOLUME   :
      1   .00000E+00      2   .00000E+00      3   .00000E+00      4   .00000E+00
   5   .00000E+00      6   .00000E+00
      7   .00000E+00      8   .00000E+00      9   .10000E+01     10   .10000E+01
  11   .10000E+01     12   .10000E+01
     13   .10000E+01     14   .10000E+01     15   .10000E+01     16   .10000E+01
  17   .00000E+00     18   .00000E+00
     19   .00000E+00     20   .00000E+00     21   .00000E+00     22   .00000E+00
  23   .00000E+00     24   .00000E+00


 SOURCE ID = L0000614     ; SOURCE TYPE = VOLUME   :
      1   .00000E+00      2   .00000E+00      3   .00000E+00      4   .00000E+00
```

```
  5   .00000E+00      6   .00000E+00
      7   .00000E+00      8   .00000E+00      9   .10000E+01     10   .10000E+01
 11   .10000E+01     12   .10000E+01
     13   .10000E+01     14   .10000E+01     15   .10000E+01     16   .10000E+01
 17   .00000E+00     18   .00000E+00
     19   .00000E+00     20   .00000E+00     21   .00000E+00     22   .00000E+00
 23   .00000E+00     24   .00000E+00


SOURCE ID = L0000615     ; SOURCE TYPE = VOLUME   :
      1   .00000E+00      2   .00000E+00      3   .00000E+00      4   .00000E+00
  5   .00000E+00      6   .00000E+00
      7   .00000E+00      8   .00000E+00      9   .10000E+01     10   .10000E+01
 11   .10000E+01     12   .10000E+01
     13   .10000E+01     14   .10000E+01     15   .10000E+01     16   .10000E+01
 17   .00000E+00     18   .00000E+00
     19   .00000E+00     20   .00000E+00     21   .00000E+00     22   .00000E+00
 23   .00000E+00     24   .00000E+00


SOURCE ID = L0000616     ; SOURCE TYPE = VOLUME   :
      1   .00000E+00      2   .00000E+00      3   .00000E+00      4   .00000E+00
  5   .00000E+00      6   .00000E+00
      7   .00000E+00      8   .00000E+00      9   .10000E+01     10   .10000E+01
 11   .10000E+01     12   .10000E+01
     13   .10000E+01     14   .10000E+01     15   .10000E+01     16   .10000E+01
 17   .00000E+00     18   .00000E+00
     19   .00000E+00     20   .00000E+00     21   .00000E+00     22   .00000E+00
 23   .00000E+00     24   .00000E+00


SOURCE ID = L0000617     ; SOURCE TYPE = VOLUME   :
      1   .00000E+00      2   .00000E+00      3   .00000E+00      4   .00000E+00
  5   .00000E+00      6   .00000E+00
      7   .00000E+00      8   .00000E+00      9   .10000E+01     10   .10000E+01
 11   .10000E+01     12   .10000E+01
     13   .10000E+01     14   .10000E+01     15   .10000E+01     16   .10000E+01
 17   .00000E+00     18   .00000E+00
     19   .00000E+00     20   .00000E+00     21   .00000E+00     22   .00000E+00
 23   .00000E+00     24   .00000E+00
```



```
                            * SOURCE EMISSION RATE SCALARS WHICH VARY FOR EACH HOUR
```

```
OF THE DAY *

     HOUR    SCALAR      HOUR    SCALAR      HOUR    SCALAR      HOUR    SCALAR
 HOUR    SCALAR      HOUR    SCALAR
 - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - -
- - - - - - - - - - - - - - - - - - - - - - - -


 SOURCE ID = L0000618     ; SOURCE TYPE = VOLUME   :
       1   .00000E+00      2   .00000E+00      3   .00000E+00      4   .00000E+00
   5   .00000E+00      6   .00000E+00
       7   .00000E+00      8   .00000E+00      9   .10000E+01     10   .10000E+01
  11   .10000E+01     12   .10000E+01
      13   .10000E+01     14   .10000E+01     15   .10000E+01     16   .10000E+01
  17   .00000E+00     18   .00000E+00
      19   .00000E+00     20   .00000E+00     21   .00000E+00     22   .00000E+00
  23   .00000E+00     24   .00000E+00


 SOURCE ID = L0000619     ; SOURCE TYPE = VOLUME   :
       1   .00000E+00      2   .00000E+00      3   .00000E+00      4   .00000E+00
   5   .00000E+00      6   .00000E+00
       7   .00000E+00      8   .00000E+00      9   .10000E+01     10   .10000E+01
  11   .10000E+01     12   .10000E+01
      13   .10000E+01     14   .10000E+01     15   .10000E+01     16   .10000E+01
  17   .00000E+00     18   .00000E+00
      19   .00000E+00     20   .00000E+00     21   .00000E+00     22   .00000E+00
  23   .00000E+00     24   .00000E+00


 SOURCE ID = L0000620     ; SOURCE TYPE = VOLUME   :
       1   .00000E+00      2   .00000E+00      3   .00000E+00      4   .00000E+00
   5   .00000E+00      6   .00000E+00
       7   .00000E+00      8   .00000E+00      9   .10000E+01     10   .10000E+01
  11   .10000E+01     12   .10000E+01
      13   .10000E+01     14   .10000E+01     15   .10000E+01     16   .10000E+01
  17   .00000E+00     18   .00000E+00
      19   .00000E+00     20   .00000E+00     21   .00000E+00     22   .00000E+00
  23   .00000E+00     24   .00000E+00


 SOURCE ID = L0000621     ; SOURCE TYPE = VOLUME   :
       1   .00000E+00      2   .00000E+00      3   .00000E+00      4   .00000E+00
   5   .00000E+00      6   .00000E+00
       7   .00000E+00      8   .00000E+00      9   .10000E+01     10   .10000E+01
  11   .10000E+01     12   .10000E+01
      13   .10000E+01     14   .10000E+01     15   .10000E+01     16   .10000E+01
  17   .00000E+00     18   .00000E+00
      19   .00000E+00     20   .00000E+00     21   .00000E+00     22   .00000E+00
  23   .00000E+00     24   .00000E+00
```

```
 SOURCE ID = L0000622     ; SOURCE TYPE = VOLUME   :
       1   .00000E+00      2   .00000E+00      3   .00000E+00      4   .00000E+00
   5   .00000E+00      6   .00000E+00
       7   .00000E+00      8   .00000E+00      9   .10000E+01     10   .10000E+01
  11   .10000E+01     12   .10000E+01
      13   .10000E+01     14   .10000E+01     15   .10000E+01     16   .10000E+01
  17   .00000E+00     18   .00000E+00
      19   .00000E+00     20   .00000E+00     21   .00000E+00     22   .00000E+00
  23   .00000E+00     24   .00000E+00

↑ *** AERMOD - VERSION 22112  ***   *** C:\Lakes\AERMOD View\880 Doolittle\880
Doolittle.isc                 ***        01/12/23
 *** AERMET - VERSION  18081 ***   ***
                       ***        15:42:55

                                  PAGE  44
 *** MODELOPTs:    RegDFAULT  CONC  ELEV  URBAN  ADJ_U*

                            * SOURCE EMISSION RATE SCALARS WHICH VARY FOR EACH HOUR
OF THE DAY *

     HOUR    SCALAR      HOUR    SCALAR      HOUR    SCALAR      HOUR    SCALAR
 HOUR    SCALAR      HOUR    SCALAR
 - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - -
- - - - - - - - - - - - - - - - - - - - - - - -


 SOURCE ID = L0000623     ; SOURCE TYPE = VOLUME   :
       1   .00000E+00      2   .00000E+00      3   .00000E+00      4   .00000E+00
   5   .00000E+00      6   .00000E+00
       7   .00000E+00      8   .00000E+00      9   .10000E+01     10   .10000E+01
  11   .10000E+01     12   .10000E+01
      13   .10000E+01     14   .10000E+01     15   .10000E+01     16   .10000E+01
  17   .00000E+00     18   .00000E+00
      19   .00000E+00     20   .00000E+00     21   .00000E+00     22   .00000E+00
  23   .00000E+00     24   .00000E+00


 SOURCE ID = L0000624     ; SOURCE TYPE = VOLUME   :
       1   .00000E+00      2   .00000E+00      3   .00000E+00      4   .00000E+00
   5   .00000E+00      6   .00000E+00
       7   .00000E+00      8   .00000E+00      9   .10000E+01     10   .10000E+01
  11   .10000E+01     12   .10000E+01
      13   .10000E+01     14   .10000E+01     15   .10000E+01     16   .10000E+01
  17   .00000E+00     18   .00000E+00
      19   .00000E+00     20   .00000E+00     21   .00000E+00     22   .00000E+00
  23   .00000E+00     24   .00000E+00
```

```
 SOURCE ID = L0000625     ; SOURCE TYPE = VOLUME   :
       1   .00000E+00      2   .00000E+00      3   .00000E+00      4   .00000E+00
   5   .00000E+00      6   .00000E+00
       7   .00000E+00      8   .00000E+00      9   .10000E+01     10   .10000E+01
  11   .10000E+01     12   .10000E+01
      13   .10000E+01     14   .10000E+01     15   .10000E+01     16   .10000E+01
  17   .00000E+00     18   .00000E+00
      19   .00000E+00     20   .00000E+00     21   .00000E+00     22   .00000E+00
  23   .00000E+00     24   .00000E+00


 SOURCE ID = L0000626     ; SOURCE TYPE = VOLUME   :
       1   .00000E+00      2   .00000E+00      3   .00000E+00      4   .00000E+00
   5   .00000E+00      6   .00000E+00
       7   .00000E+00      8   .00000E+00      9   .10000E+01     10   .10000E+01
  11   .10000E+01     12   .10000E+01
      13   .10000E+01     14   .10000E+01     15   .10000E+01     16   .10000E+01
  17   .00000E+00     18   .00000E+00
      19   .00000E+00     20   .00000E+00     21   .00000E+00     22   .00000E+00
  23   .00000E+00     24   .00000E+00


 SOURCE ID = L0000627     ; SOURCE TYPE = VOLUME   :
       1   .00000E+00      2   .00000E+00      3   .00000E+00      4   .00000E+00
   5   .00000E+00      6   .00000E+00
       7   .00000E+00      8   .00000E+00      9   .10000E+01     10   .10000E+01
  11   .10000E+01     12   .10000E+01
      13   .10000E+01     14   .10000E+01     15   .10000E+01     16   .10000E+01
  17   .00000E+00     18   .00000E+00
      19   .00000E+00     20   .00000E+00     21   .00000E+00     22   .00000E+00
  23   .00000E+00     24   .00000E+00
```



```
                            * SOURCE EMISSION RATE SCALARS WHICH VARY FOR EACH HOUR
OF THE DAY *

     HOUR    SCALAR      HOUR    SCALAR      HOUR    SCALAR      HOUR    SCALAR
 HOUR    SCALAR      HOUR    SCALAR
 - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - -
- - - - - - - - - - - - - - - - - - - - - - - - -
```

```
SOURCE ID = L0000628     ; SOURCE TYPE = VOLUME   :
      1   .00000E+00      2   .00000E+00      3   .00000E+00      4   .00000E+00
  5   .00000E+00      6   .00000E+00
      7   .00000E+00      8   .00000E+00      9   .10000E+01     10   .10000E+01
 11   .10000E+01     12   .10000E+01
     13   .10000E+01     14   .10000E+01     15   .10000E+01     16   .10000E+01
 17   .00000E+00     18   .00000E+00
     19   .00000E+00     20   .00000E+00     21   .00000E+00     22   .00000E+00
 23   .00000E+00     24   .00000E+00


SOURCE ID = L0000629     ; SOURCE TYPE = VOLUME   :
      1   .00000E+00      2   .00000E+00      3   .00000E+00      4   .00000E+00
  5   .00000E+00      6   .00000E+00
      7   .00000E+00      8   .00000E+00      9   .10000E+01     10   .10000E+01
 11   .10000E+01     12   .10000E+01
     13   .10000E+01     14   .10000E+01     15   .10000E+01     16   .10000E+01
 17   .00000E+00     18   .00000E+00
     19   .00000E+00     20   .00000E+00     21   .00000E+00     22   .00000E+00
 23   .00000E+00     24   .00000E+00


SOURCE ID = L0000630     ; SOURCE TYPE = VOLUME   :
      1   .00000E+00      2   .00000E+00      3   .00000E+00      4   .00000E+00
  5   .00000E+00      6   .00000E+00
      7   .00000E+00      8   .00000E+00      9   .10000E+01     10   .10000E+01
 11   .10000E+01     12   .10000E+01
     13   .10000E+01     14   .10000E+01     15   .10000E+01     16   .10000E+01
 17   .00000E+00     18   .00000E+00
     19   .00000E+00     20   .00000E+00     21   .00000E+00     22   .00000E+00
 23   .00000E+00     24   .00000E+00


SOURCE ID = L0000631     ; SOURCE TYPE = VOLUME   :
      1   .00000E+00      2   .00000E+00      3   .00000E+00      4   .00000E+00
  5   .00000E+00      6   .00000E+00
      7   .00000E+00      8   .00000E+00      9   .10000E+01     10   .10000E+01
 11   .10000E+01     12   .10000E+01
     13   .10000E+01     14   .10000E+01     15   .10000E+01     16   .10000E+01
 17   .00000E+00     18   .00000E+00
     19   .00000E+00     20   .00000E+00     21   .00000E+00     22   .00000E+00
 23   .00000E+00     24   .00000E+00


SOURCE ID = L0000632     ; SOURCE TYPE = VOLUME   :
      1   .00000E+00      2   .00000E+00      3   .00000E+00      4   .00000E+00
  5   .00000E+00      6   .00000E+00
      7   .00000E+00      8   .00000E+00      9   .10000E+01     10   .10000E+01
 11   .10000E+01     12   .10000E+01
     13   .10000E+01     14   .10000E+01     15   .10000E+01     16   .10000E+01
```

```
  17   .00000E+00     18   .00000E+00
      19   .00000E+00     20   .00000E+00     21   .00000E+00     22   .00000E+00
  23   .00000E+00     24   .00000E+00

↟ *** AERMOD - VERSION 22112  ***   *** C:\Lakes\AERMOD View\880 Doolittle\880
Doolittle.isc                 ***        01/12/23
 *** AERMET - VERSION  18081 ***   ***
                       ***        15:42:55

                                  PAGE  46
 *** MODELOPTs:    RegDFAULT  CONC  ELEV  URBAN  ADJ_U*

                            * SOURCE EMISSION RATE SCALARS WHICH VARY FOR EACH HOUR
OF THE DAY *

     HOUR    SCALAR      HOUR    SCALAR      HOUR    SCALAR      HOUR    SCALAR
 HOUR    SCALAR      HOUR    SCALAR
 - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - -
- - - - - - - - - - - - - - - - - - - - - - - - -


 SOURCE ID = L0000633     ; SOURCE TYPE = VOLUME   :
       1   .00000E+00      2   .00000E+00      3   .00000E+00      4   .00000E+00
   5   .00000E+00      6   .00000E+00
       7   .00000E+00      8   .00000E+00      9   .10000E+01     10   .10000E+01
  11   .10000E+01     12   .10000E+01
      13   .10000E+01     14   .10000E+01     15   .10000E+01     16   .10000E+01
  17   .00000E+00     18   .00000E+00
      19   .00000E+00     20   .00000E+00     21   .00000E+00     22   .00000E+00
  23   .00000E+00     24   .00000E+00


 SOURCE ID = L0000634     ; SOURCE TYPE = VOLUME   :
       1   .00000E+00      2   .00000E+00      3   .00000E+00      4   .00000E+00
   5   .00000E+00      6   .00000E+00
       7   .00000E+00      8   .00000E+00      9   .10000E+01     10   .10000E+01
  11   .10000E+01     12   .10000E+01
      13   .10000E+01     14   .10000E+01     15   .10000E+01     16   .10000E+01
  17   .00000E+00     18   .00000E+00
      19   .00000E+00     20   .00000E+00     21   .00000E+00     22   .00000E+00
  23   .00000E+00     24   .00000E+00


 SOURCE ID = L0000635     ; SOURCE TYPE = VOLUME   :
       1   .00000E+00      2   .00000E+00      3   .00000E+00      4   .00000E+00
   5   .00000E+00      6   .00000E+00
       7   .00000E+00      8   .00000E+00      9   .10000E+01     10   .10000E+01
  11   .10000E+01     12   .10000E+01
      13   .10000E+01     14   .10000E+01     15   .10000E+01     16   .10000E+01
  17   .00000E+00     18   .00000E+00
```

```
     19   .00000E+00     20   .00000E+00     21   .00000E+00     22   .00000E+00
  23   .00000E+00     24   .00000E+00


 SOURCE ID = L0000636     ; SOURCE TYPE = VOLUME   :
      1   .00000E+00      2   .00000E+00      3   .00000E+00      4   .00000E+00
   5   .00000E+00      6   .00000E+00
      7   .00000E+00      8   .00000E+00      9   .10000E+01     10   .10000E+01
  11   .10000E+01     12   .10000E+01
     13   .10000E+01     14   .10000E+01     15   .10000E+01     16   .10000E+01
  17   .00000E+00     18   .00000E+00
     19   .00000E+00     20   .00000E+00     21   .00000E+00     22   .00000E+00
  23   .00000E+00     24   .00000E+00


 SOURCE ID = L0000637     ; SOURCE TYPE = VOLUME   :
      1   .00000E+00      2   .00000E+00      3   .00000E+00      4   .00000E+00
   5   .00000E+00      6   .00000E+00
      7   .00000E+00      8   .00000E+00      9   .10000E+01     10   .10000E+01
  11   .10000E+01     12   .10000E+01
     13   .10000E+01     14   .10000E+01     15   .10000E+01     16   .10000E+01
  17   .00000E+00     18   .00000E+00
     19   .00000E+00     20   .00000E+00     21   .00000E+00     22   .00000E+00
  23   .00000E+00     24   .00000E+00
```



```
                            * SOURCE EMISSION RATE SCALARS WHICH VARY FOR EACH HOUR
OF THE DAY *

     HOUR    SCALAR      HOUR    SCALAR      HOUR    SCALAR      HOUR    SCALAR
 HOUR    SCALAR      HOUR    SCALAR
 - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - -
- - - - - - - - - - - - - - - - - - - - - - - - -


 SOURCE ID = L0000638     ; SOURCE TYPE = VOLUME   :
      1   .00000E+00      2   .00000E+00      3   .00000E+00      4   .00000E+00
   5   .00000E+00      6   .00000E+00
      7   .00000E+00      8   .00000E+00      9   .10000E+01     10   .10000E+01
  11   .10000E+01     12   .10000E+01
     13   .10000E+01     14   .10000E+01     15   .10000E+01     16   .10000E+01
  17   .00000E+00     18   .00000E+00
     19   .00000E+00     20   .00000E+00     21   .00000E+00     22   .00000E+00
```

```
 23   .00000E+00     24   .00000E+00


SOURCE ID = L0000639     ; SOURCE TYPE = VOLUME   :
      1   .00000E+00      2   .00000E+00      3   .00000E+00      4   .00000E+00
  5   .00000E+00      6   .00000E+00
      7   .00000E+00      8   .00000E+00      9   .10000E+01     10   .10000E+01
 11   .10000E+01     12   .10000E+01
     13   .10000E+01     14   .10000E+01     15   .10000E+01     16   .10000E+01
 17   .00000E+00     18   .00000E+00
     19   .00000E+00     20   .00000E+00     21   .00000E+00     22   .00000E+00
 23   .00000E+00     24   .00000E+00


SOURCE ID = L0000640     ; SOURCE TYPE = VOLUME   :
      1   .00000E+00      2   .00000E+00      3   .00000E+00      4   .00000E+00
  5   .00000E+00      6   .00000E+00
      7   .00000E+00      8   .00000E+00      9   .10000E+01     10   .10000E+01
 11   .10000E+01     12   .10000E+01
     13   .10000E+01     14   .10000E+01     15   .10000E+01     16   .10000E+01
 17   .00000E+00     18   .00000E+00
     19   .00000E+00     20   .00000E+00     21   .00000E+00     22   .00000E+00
 23   .00000E+00     24   .00000E+00


SOURCE ID = L0000641     ; SOURCE TYPE = VOLUME   :
      1   .00000E+00      2   .00000E+00      3   .00000E+00      4   .00000E+00
  5   .00000E+00      6   .00000E+00
      7   .00000E+00      8   .00000E+00      9   .10000E+01     10   .10000E+01
 11   .10000E+01     12   .10000E+01
     13   .10000E+01     14   .10000E+01     15   .10000E+01     16   .10000E+01
 17   .00000E+00     18   .00000E+00
     19   .00000E+00     20   .00000E+00     21   .00000E+00     22   .00000E+00
 23   .00000E+00     24   .00000E+00


SOURCE ID = L0000642     ; SOURCE TYPE = VOLUME   :
      1   .00000E+00      2   .00000E+00      3   .00000E+00      4   .00000E+00
  5   .00000E+00      6   .00000E+00
      7   .00000E+00      8   .00000E+00      9   .10000E+01     10   .10000E+01
 11   .10000E+01     12   .10000E+01
     13   .10000E+01     14   .10000E+01     15   .10000E+01     16   .10000E+01
 17   .00000E+00     18   .00000E+00
     19   .00000E+00     20   .00000E+00     21   .00000E+00     22   .00000E+00
 23   .00000E+00     24   .00000E+00

 *** AERMOD - VERSION 22112  ***   *** C:\Lakes\AERMOD View\880 Doolittle\880
Doolittle.isc                 ***        01/12/23
 *** AERMET - VERSION  18081 ***   ***
                       ***        15:42:55
```

```
 *** MODELOPTs:    RegDFAULT  CONC  ELEV  URBAN  ADJ_U*

                              * SOURCE EMISSION RATE SCALARS WHICH VARY FOR EACH HOUR
OF THE DAY *

     HOUR    SCALAR      HOUR    SCALAR      HOUR    SCALAR      HOUR    SCALAR
 HOUR    SCALAR      HOUR    SCALAR
 - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - -
- - - - - - - - - - - - - - - - - - - - - - - -


 SOURCE ID = L0000643     ; SOURCE TYPE = VOLUME   :
       1   .00000E+00      2   .00000E+00      3   .00000E+00      4   .00000E+00
   5   .00000E+00      6   .00000E+00
       7   .00000E+00      8   .00000E+00      9   .10000E+01     10   .10000E+01
  11   .10000E+01     12   .10000E+01
      13   .10000E+01     14   .10000E+01     15   .10000E+01     16   .10000E+01
  17   .00000E+00     18   .00000E+00
      19   .00000E+00     20   .00000E+00     21   .00000E+00     22   .00000E+00
  23   .00000E+00     24   .00000E+00


 SOURCE ID = L0000644     ; SOURCE TYPE = VOLUME   :
       1   .00000E+00      2   .00000E+00      3   .00000E+00      4   .00000E+00
   5   .00000E+00      6   .00000E+00
       7   .00000E+00      8   .00000E+00      9   .10000E+01     10   .10000E+01
  11   .10000E+01     12   .10000E+01
      13   .10000E+01     14   .10000E+01     15   .10000E+01     16   .10000E+01
  17   .00000E+00     18   .00000E+00
      19   .00000E+00     20   .00000E+00     21   .00000E+00     22   .00000E+00
  23   .00000E+00     24   .00000E+00


 SOURCE ID = L0000645     ; SOURCE TYPE = VOLUME   :
       1   .00000E+00      2   .00000E+00      3   .00000E+00      4   .00000E+00
   5   .00000E+00      6   .00000E+00
       7   .00000E+00      8   .00000E+00      9   .10000E+01     10   .10000E+01
  11   .10000E+01     12   .10000E+01
      13   .10000E+01     14   .10000E+01     15   .10000E+01     16   .10000E+01
  17   .00000E+00     18   .00000E+00
      19   .00000E+00     20   .00000E+00     21   .00000E+00     22   .00000E+00
  23   .00000E+00     24   .00000E+00


 SOURCE ID = L0000646     ; SOURCE TYPE = VOLUME   :
       1   .00000E+00      2   .00000E+00      3   .00000E+00      4   .00000E+00
   5   .00000E+00      6   .00000E+00
       7   .00000E+00      8   .00000E+00      9   .10000E+01     10   .10000E+01
```

```
  11   .10000E+01     12   .10000E+01
      13   .10000E+01     14   .10000E+01     15   .10000E+01     16   .10000E+01
  17   .00000E+00     18   .00000E+00
      19   .00000E+00     20   .00000E+00     21   .00000E+00     22   .00000E+00
  23   .00000E+00     24   .00000E+00


 SOURCE ID = L0000647     ; SOURCE TYPE = VOLUME   :
       1   .00000E+00      2   .00000E+00      3   .00000E+00      4   .00000E+00
   5   .00000E+00      6   .00000E+00
       7   .00000E+00      8   .00000E+00      9   .10000E+01     10   .10000E+01
  11   .10000E+01     12   .10000E+01
      13   .10000E+01     14   .10000E+01     15   .10000E+01     16   .10000E+01
  17   .00000E+00     18   .00000E+00
      19   .00000E+00     20   .00000E+00     21   .00000E+00     22   .00000E+00
  23   .00000E+00     24   .00000E+00

 *** AERMOD - VERSION 22112  ***   *** C:\Lakes\AERMOD View\880 Doolittle\880
Doolittle.isc                 ***        01/12/23
 *** AERMET - VERSION  18081 ***   ***
                       ***        15:42:55

                                  PAGE  49
 *** MODELOPTs:    RegDFAULT  CONC  ELEV  URBAN  ADJ_U*

                            * SOURCE EMISSION RATE SCALARS WHICH VARY FOR EACH HOUR
OF THE DAY *

     HOUR    SCALAR      HOUR    SCALAR      HOUR    SCALAR      HOUR    SCALAR
 HOUR    SCALAR      HOUR    SCALAR
 - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - -
- - - - - - - - - - - - - - - - - - - - - - - - -


 SOURCE ID = L0000648     ; SOURCE TYPE = VOLUME   :
       1   .00000E+00      2   .00000E+00      3   .00000E+00      4   .00000E+00
   5   .00000E+00      6   .00000E+00
       7   .00000E+00      8   .00000E+00      9   .10000E+01     10   .10000E+01
  11   .10000E+01     12   .10000E+01
      13   .10000E+01     14   .10000E+01     15   .10000E+01     16   .10000E+01
  17   .00000E+00     18   .00000E+00
      19   .00000E+00     20   .00000E+00     21   .00000E+00     22   .00000E+00
  23   .00000E+00     24   .00000E+00


 SOURCE ID = L0000649     ; SOURCE TYPE = VOLUME   :
       1   .00000E+00      2   .00000E+00      3   .00000E+00      4   .00000E+00
   5   .00000E+00      6   .00000E+00
       7   .00000E+00      8   .00000E+00      9   .10000E+01     10   .10000E+01
  11   .10000E+01     12   .10000E+01
```

```
     13   .10000E+01     14   .10000E+01     15   .10000E+01     16   .10000E+01
  17   .00000E+00     18   .00000E+00
     19   .00000E+00     20   .00000E+00     21   .00000E+00     22   .00000E+00
  23   .00000E+00     24   .00000E+00


 SOURCE ID = L0000650     ; SOURCE TYPE = VOLUME   :
       1   .00000E+00      2   .00000E+00      3   .00000E+00      4   .00000E+00
   5   .00000E+00      6   .00000E+00
       7   .00000E+00      8   .00000E+00      9   .10000E+01     10   .10000E+01
  11   .10000E+01     12   .10000E+01
     13   .10000E+01     14   .10000E+01     15   .10000E+01     16   .10000E+01
  17   .00000E+00     18   .00000E+00
     19   .00000E+00     20   .00000E+00     21   .00000E+00     22   .00000E+00
  23   .00000E+00     24   .00000E+00


 SOURCE ID = L0000651     ; SOURCE TYPE = VOLUME   :
       1   .00000E+00      2   .00000E+00      3   .00000E+00      4   .00000E+00
   5   .00000E+00      6   .00000E+00
       7   .00000E+00      8   .00000E+00      9   .10000E+01     10   .10000E+01
  11   .10000E+01     12   .10000E+01
     13   .10000E+01     14   .10000E+01     15   .10000E+01     16   .10000E+01
  17   .00000E+00     18   .00000E+00
     19   .00000E+00     20   .00000E+00     21   .00000E+00     22   .00000E+00
  23   .00000E+00     24   .00000E+00


 SOURCE ID = L0000652     ; SOURCE TYPE = VOLUME   :
       1   .00000E+00      2   .00000E+00      3   .00000E+00      4   .00000E+00
   5   .00000E+00      6   .00000E+00
       7   .00000E+00      8   .00000E+00      9   .10000E+01     10   .10000E+01
  11   .10000E+01     12   .10000E+01
     13   .10000E+01     14   .10000E+01     15   .10000E+01     16   .10000E+01
  17   .00000E+00     18   .00000E+00
     19   .00000E+00     20   .00000E+00     21   .00000E+00     22   .00000E+00
  23   .00000E+00     24   .00000E+00

↑ *** AERMOD - VERSION 22112  ***   *** C:\Lakes\AERMOD View\880 Doolittle\880
Doolittle.isc                 ***        01/12/23
 *** AERMET - VERSION  18081 ***   ***
                        ***        15:42:55

                                   PAGE  50
 *** MODELOPTs:    RegDFAULT  CONC  ELEV  URBAN  ADJ_U*

                            * SOURCE EMISSION RATE SCALARS WHICH VARY FOR EACH HOUR
OF THE DAY *

     HOUR    SCALAR      HOUR    SCALAR      HOUR    SCALAR      HOUR    SCALAR
```

```
 HOUR     SCALAR       HOUR     SCALAR
 - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - -
- - - - - - - - - - - - - - - - - - - - - - - -


 SOURCE ID = L0000653     ; SOURCE TYPE = VOLUME   :
       1   .00000E+00       2   .00000E+00       3   .00000E+00       4   .00000E+00
   5   .00000E+00       6   .00000E+00
       7   .00000E+00       8   .00000E+00       9   .10000E+01      10   .10000E+01
  11   .10000E+01      12   .10000E+01
      13   .10000E+01      14   .10000E+01      15   .10000E+01      16   .10000E+01
  17   .00000E+00      18   .00000E+00
      19   .00000E+00      20   .00000E+00      21   .00000E+00      22   .00000E+00
  23   .00000E+00      24   .00000E+00


 SOURCE ID = L0000654     ; SOURCE TYPE = VOLUME   :
       1   .00000E+00       2   .00000E+00       3   .00000E+00       4   .00000E+00
   5   .00000E+00       6   .00000E+00
       7   .00000E+00       8   .00000E+00       9   .10000E+01      10   .10000E+01
  11   .10000E+01      12   .10000E+01
      13   .10000E+01      14   .10000E+01      15   .10000E+01      16   .10000E+01
  17   .00000E+00      18   .00000E+00
      19   .00000E+00      20   .00000E+00      21   .00000E+00      22   .00000E+00
  23   .00000E+00      24   .00000E+00


 SOURCE ID = L0000655     ; SOURCE TYPE = VOLUME   :
       1   .00000E+00       2   .00000E+00       3   .00000E+00       4   .00000E+00
   5   .00000E+00       6   .00000E+00
       7   .00000E+00       8   .00000E+00       9   .10000E+01      10   .10000E+01
  11   .10000E+01      12   .10000E+01
      13   .10000E+01      14   .10000E+01      15   .10000E+01      16   .10000E+01
  17   .00000E+00      18   .00000E+00
      19   .00000E+00      20   .00000E+00      21   .00000E+00      22   .00000E+00
  23   .00000E+00      24   .00000E+00


 SOURCE ID = L0000656     ; SOURCE TYPE = VOLUME   :
       1   .00000E+00       2   .00000E+00       3   .00000E+00       4   .00000E+00
   5   .00000E+00       6   .00000E+00
       7   .00000E+00       8   .00000E+00       9   .10000E+01      10   .10000E+01
  11   .10000E+01      12   .10000E+01
      13   .10000E+01      14   .10000E+01      15   .10000E+01      16   .10000E+01
  17   .00000E+00      18   .00000E+00
      19   .00000E+00      20   .00000E+00      21   .00000E+00      22   .00000E+00
  23   .00000E+00      24   .00000E+00


 SOURCE ID = L0000657     ; SOURCE TYPE = VOLUME   :
```

```
      1   .00000E+00      2   .00000E+00      3   .00000E+00      4   .00000E+00
   5   .00000E+00      6   .00000E+00
      7   .00000E+00      8   .00000E+00      9   .10000E+01     10   .10000E+01
  11   .10000E+01     12   .10000E+01
     13   .10000E+01     14   .10000E+01     15   .10000E+01     16   .10000E+01
  17   .00000E+00     18   .00000E+00
     19   .00000E+00     20   .00000E+00     21   .00000E+00     22   .00000E+00
  23   .00000E+00     24   .00000E+00

↑ *** AERMOD - VERSION 22112  ***   *** C:\Lakes\AERMOD View\880 Doolittle\880
Doolittle.isc                 ***        01/12/23
 *** AERMET - VERSION  18081 ***   ***
                       ***        15:42:55

                                  PAGE  51
 *** MODELOPTs:    RegDFAULT  CONC  ELEV  URBAN  ADJ_U*

                            * SOURCE EMISSION RATE SCALARS WHICH VARY FOR EACH HOUR
OF THE DAY *

     HOUR    SCALAR      HOUR    SCALAR      HOUR    SCALAR      HOUR    SCALAR
 HOUR    SCALAR      HOUR    SCALAR
 - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - -
- - - - - - - - - - - - - - - - - - - - - - - - -


 SOURCE ID = L0000658     ; SOURCE TYPE = VOLUME   :
      1   .00000E+00      2   .00000E+00      3   .00000E+00      4   .00000E+00
   5   .00000E+00      6   .00000E+00
      7   .00000E+00      8   .00000E+00      9   .10000E+01     10   .10000E+01
  11   .10000E+01     12   .10000E+01
     13   .10000E+01     14   .10000E+01     15   .10000E+01     16   .10000E+01
  17   .00000E+00     18   .00000E+00
     19   .00000E+00     20   .00000E+00     21   .00000E+00     22   .00000E+00
  23   .00000E+00     24   .00000E+00


 SOURCE ID = L0000659     ; SOURCE TYPE = VOLUME   :
      1   .00000E+00      2   .00000E+00      3   .00000E+00      4   .00000E+00
   5   .00000E+00      6   .00000E+00
      7   .00000E+00      8   .00000E+00      9   .10000E+01     10   .10000E+01
  11   .10000E+01     12   .10000E+01
     13   .10000E+01     14   .10000E+01     15   .10000E+01     16   .10000E+01
  17   .00000E+00     18   .00000E+00
     19   .00000E+00     20   .00000E+00     21   .00000E+00     22   .00000E+00
  23   .00000E+00     24   .00000E+00


 SOURCE ID = L0000660     ; SOURCE TYPE = VOLUME   :
      1   .00000E+00      2   .00000E+00      3   .00000E+00      4   .00000E+00
```

```
   5   .00000E+00      6   .00000E+00
       7   .00000E+00      8   .00000E+00      9   .10000E+01     10   .10000E+01
  11   .10000E+01     12   .10000E+01
      13   .10000E+01     14   .10000E+01     15   .10000E+01     16   .10000E+01
  17   .00000E+00     18   .00000E+00
      19   .00000E+00     20   .00000E+00     21   .00000E+00     22   .00000E+00
  23   .00000E+00     24   .00000E+00


 SOURCE ID = L0000661     ; SOURCE TYPE = VOLUME   :
       1   .00000E+00      2   .00000E+00      3   .00000E+00      4   .00000E+00
   5   .00000E+00      6   .00000E+00
       7   .00000E+00      8   .00000E+00      9   .10000E+01     10   .10000E+01
  11   .10000E+01     12   .10000E+01
      13   .10000E+01     14   .10000E+01     15   .10000E+01     16   .10000E+01
  17   .00000E+00     18   .00000E+00
      19   .00000E+00     20   .00000E+00     21   .00000E+00     22   .00000E+00
  23   .00000E+00     24   .00000E+00


 SOURCE ID = L0000662     ; SOURCE TYPE = VOLUME   :
       1   .00000E+00      2   .00000E+00      3   .00000E+00      4   .00000E+00
   5   .00000E+00      6   .00000E+00
       7   .00000E+00      8   .00000E+00      9   .10000E+01     10   .10000E+01
  11   .10000E+01     12   .10000E+01
      13   .10000E+01     14   .10000E+01     15   .10000E+01     16   .10000E+01
  17   .00000E+00     18   .00000E+00
      19   .00000E+00     20   .00000E+00     21   .00000E+00     22   .00000E+00
  23   .00000E+00     24   .00000E+00

 *** AERMOD - VERSION 22112  ***   *** C:\Lakes\AERMOD View\880 Doolittle\880
Doolittle.isc                 ***        01/12/23
 *** AERMET - VERSION  18081 ***   ***
                        ***        15:42:55

                                   PAGE  52
 *** MODELOPTs:    RegDFAULT  CONC  ELEV  URBAN  ADJ_U*

                            * SOURCE EMISSION RATE SCALARS WHICH VARY FOR EACH HOUR
OF THE DAY *

     HOUR    SCALAR      HOUR    SCALAR      HOUR    SCALAR      HOUR    SCALAR
 HOUR    SCALAR      HOUR    SCALAR
 - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - -
- - - - - - - - - - - - - - - - - - - - - - - - -


 SOURCE ID = L0000663     ; SOURCE TYPE = VOLUME   :
       1   .00000E+00      2   .00000E+00      3   .00000E+00      4   .00000E+00
   5   .00000E+00      6   .00000E+00
```

```
      7   .00000E+00      8   .00000E+00      9   .10000E+01     10   .10000E+01
 11   .10000E+01     12   .10000E+01
     13   .10000E+01     14   .10000E+01     15   .10000E+01     16   .10000E+01
 17   .00000E+00     18   .00000E+00
     19   .00000E+00     20   .00000E+00     21   .00000E+00     22   .00000E+00
 23   .00000E+00     24   .00000E+00


SOURCE ID = L0000664     ; SOURCE TYPE = VOLUME   :
      1   .00000E+00      2   .00000E+00      3   .00000E+00      4   .00000E+00
  5   .00000E+00      6   .00000E+00
      7   .00000E+00      8   .00000E+00      9   .10000E+01     10   .10000E+01
 11   .10000E+01     12   .10000E+01
     13   .10000E+01     14   .10000E+01     15   .10000E+01     16   .10000E+01
 17   .00000E+00     18   .00000E+00
     19   .00000E+00     20   .00000E+00     21   .00000E+00     22   .00000E+00
 23   .00000E+00     24   .00000E+00


SOURCE ID = L0000665     ; SOURCE TYPE = VOLUME   :
      1   .00000E+00      2   .00000E+00      3   .00000E+00      4   .00000E+00
  5   .00000E+00      6   .00000E+00
      7   .00000E+00      8   .00000E+00      9   .10000E+01     10   .10000E+01
 11   .10000E+01     12   .10000E+01
     13   .10000E+01     14   .10000E+01     15   .10000E+01     16   .10000E+01
 17   .00000E+00     18   .00000E+00
     19   .00000E+00     20   .00000E+00     21   .00000E+00     22   .00000E+00
 23   .00000E+00     24   .00000E+00


SOURCE ID = L0000666     ; SOURCE TYPE = VOLUME   :
      1   .00000E+00      2   .00000E+00      3   .00000E+00      4   .00000E+00
  5   .00000E+00      6   .00000E+00
      7   .00000E+00      8   .00000E+00      9   .10000E+01     10   .10000E+01
 11   .10000E+01     12   .10000E+01
     13   .10000E+01     14   .10000E+01     15   .10000E+01     16   .10000E+01
 17   .00000E+00     18   .00000E+00
     19   .00000E+00     20   .00000E+00     21   .00000E+00     22   .00000E+00
 23   .00000E+00     24   .00000E+00


SOURCE ID = L0000667     ; SOURCE TYPE = VOLUME   :
      1   .00000E+00      2   .00000E+00      3   .00000E+00      4   .00000E+00
  5   .00000E+00      6   .00000E+00
      7   .00000E+00      8   .00000E+00      9   .10000E+01     10   .10000E+01
 11   .10000E+01     12   .10000E+01
     13   .10000E+01     14   .10000E+01     15   .10000E+01     16   .10000E+01
 17   .00000E+00     18   .00000E+00
     19   .00000E+00     20   .00000E+00     21   .00000E+00     22   .00000E+00
 23   .00000E+00     24   .00000E+00
```

*** MODELOPTs: RegDFAULT CONC ELEV URBAN ADJ_U*

* SOURCE EMISSION RATE SCALARS WHICH VARY FOR EACH HOUR OF THE DAY *

HOUR	SCALAR	HOUR	SCALAR	HOUR	SCALAR	HOUR	SCALAR	HOUR	SCALAR	HOUR	SCALAR
1	.00000E+00	2	.00000E+00	3	.00000E+00	4	.00000E+00	5	.00000E+00	6	.00000E+00
7	.00000E+00	8	.00000E+00	9	.10000E+01	10	.10000E+01	11	.10000E+01	12	.10000E+01
13	.10000E+01	14	.10000E+01	15	.10000E+01	16	.10000E+01	17	.00000E+00	18	.00000E+00
19	.00000E+00	20	.00000E+00	21	.00000E+00	22	.00000E+00	23	.00000E+00	24	.00000E+00

SOURCE ID = L0000668 ; SOURCE TYPE = VOLUME :

HOUR	SCALAR	HOUR	SCALAR	HOUR	SCALAR	HOUR	SCALAR	HOUR	SCALAR	HOUR	SCALAR
1	.00000E+00	2	.00000E+00	3	.00000E+00	4	.00000E+00	5	.00000E+00	6	.00000E+00
7	.00000E+00	8	.00000E+00	9	.10000E+01	10	.10000E+01	11	.10000E+01	12	.10000E+01
13	.10000E+01	14	.10000E+01	15	.10000E+01	16	.10000E+01	17	.00000E+00	18	.00000E+00
19	.00000E+00	20	.00000E+00	21	.00000E+00	22	.00000E+00	23	.00000E+00	24	.00000E+00

SOURCE ID = L0000669 ; SOURCE TYPE = VOLUME :

HOUR	SCALAR	HOUR	SCALAR	HOUR	SCALAR	HOUR	SCALAR	HOUR	SCALAR	HOUR	SCALAR
1	.00000E+00	2	.00000E+00	3	.00000E+00	4	.00000E+00	5	.00000E+00	6	.00000E+00
7	.00000E+00	8	.00000E+00	9	.10000E+01	10	.10000E+01	11	.10000E+01	12	.10000E+01
13	.10000E+01	14	.10000E+01	15	.10000E+01	16	.10000E+01	17	.00000E+00	18	.00000E+00
19	.00000E+00	20	.00000E+00	21	.00000E+00	22	.00000E+00	23	.00000E+00	24	.00000E+00

SOURCE ID = L0000670 ; SOURCE TYPE = VOLUME :

HOUR	SCALAR	HOUR	SCALAR	HOUR	SCALAR	HOUR	SCALAR	HOUR	SCALAR	HOUR	SCALAR
1	.00000E+00	2	.00000E+00	3	.00000E+00	4	.00000E+00	5	.00000E+00	6	.00000E+00
7	.00000E+00	8	.00000E+00	9	.10000E+01	10	.10000E+01	11	.10000E+01	12	.10000E+01
13	.10000E+01	14	.10000E+01	15	.10000E+01	16	.10000E+01	17	.00000E+00	18	.00000E+00
19	.00000E+00	20	.00000E+00	21	.00000E+00	22	.00000E+00	23	.00000E+00	24	.00000E+00

```
 SOURCE ID = L0000671     ; SOURCE TYPE = VOLUME   :
       1   .00000E+00      2   .00000E+00      3   .00000E+00      4   .00000E+00
   5   .00000E+00      6   .00000E+00
       7   .00000E+00      8   .00000E+00      9   .10000E+01     10   .10000E+01
  11   .10000E+01     12   .10000E+01
      13   .10000E+01     14   .10000E+01     15   .10000E+01     16   .10000E+01
  17   .00000E+00     18   .00000E+00
      19   .00000E+00     20   .00000E+00     21   .00000E+00     22   .00000E+00
  23   .00000E+00     24   .00000E+00


 SOURCE ID = L0000672     ; SOURCE TYPE = VOLUME   :
       1   .00000E+00      2   .00000E+00      3   .00000E+00      4   .00000E+00
   5   .00000E+00      6   .00000E+00
       7   .00000E+00      8   .00000E+00      9   .10000E+01     10   .10000E+01
  11   .10000E+01     12   .10000E+01
      13   .10000E+01     14   .10000E+01     15   .10000E+01     16   .10000E+01
  17   .00000E+00     18   .00000E+00
      19   .00000E+00     20   .00000E+00     21   .00000E+00     22   .00000E+00
  23   .00000E+00     24   .00000E+00

 *** AERMOD - VERSION 22112  ***   *** C:\Lakes\AERMOD View\880 Doolittle\880
Doolittle.isc                 ***        01/12/23
 *** AERMET - VERSION  18081 ***   ***
                       ***        15:42:55

                                  PAGE  54
 *** MODELOPTs:    RegDFAULT  CONC  ELEV  URBAN  ADJ_U*

                            * SOURCE EMISSION RATE SCALARS WHICH VARY FOR EACH HOUR
OF THE DAY *

     HOUR    SCALAR      HOUR    SCALAR      HOUR    SCALAR      HOUR    SCALAR
 HOUR    SCALAR      HOUR    SCALAR
 - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - -
- - - - - - - - - - - - - - - - - - - - - - - - -


 SOURCE ID = L0000673     ; SOURCE TYPE = VOLUME   :
       1   .00000E+00      2   .00000E+00      3   .00000E+00      4   .00000E+00
   5   .00000E+00      6   .00000E+00
       7   .00000E+00      8   .00000E+00      9   .10000E+01     10   .10000E+01
  11   .10000E+01     12   .10000E+01
      13   .10000E+01     14   .10000E+01     15   .10000E+01     16   .10000E+01
  17   .00000E+00     18   .00000E+00
      19   .00000E+00     20   .00000E+00     21   .00000E+00     22   .00000E+00
  23   .00000E+00     24   .00000E+00
```

```
 SOURCE ID = L0000674     ; SOURCE TYPE = VOLUME   :
       1   .00000E+00      2   .00000E+00      3   .00000E+00      4   .00000E+00
   5   .00000E+00      6   .00000E+00
       7   .00000E+00      8   .00000E+00      9   .10000E+01     10   .10000E+01
  11   .10000E+01     12   .10000E+01
      13   .10000E+01     14   .10000E+01     15   .10000E+01     16   .10000E+01
  17   .00000E+00     18   .00000E+00
      19   .00000E+00     20   .00000E+00     21   .00000E+00     22   .00000E+00
  23   .00000E+00     24   .00000E+00


 SOURCE ID = L0000675     ; SOURCE TYPE = VOLUME   :
       1   .00000E+00      2   .00000E+00      3   .00000E+00      4   .00000E+00
   5   .00000E+00      6   .00000E+00
       7   .00000E+00      8   .00000E+00      9   .10000E+01     10   .10000E+01
  11   .10000E+01     12   .10000E+01
      13   .10000E+01     14   .10000E+01     15   .10000E+01     16   .10000E+01
  17   .00000E+00     18   .00000E+00
      19   .00000E+00     20   .00000E+00     21   .00000E+00     22   .00000E+00
  23   .00000E+00     24   .00000E+00


 SOURCE ID = L0000676     ; SOURCE TYPE = VOLUME   :
       1   .00000E+00      2   .00000E+00      3   .00000E+00      4   .00000E+00
   5   .00000E+00      6   .00000E+00
       7   .00000E+00      8   .00000E+00      9   .10000E+01     10   .10000E+01
  11   .10000E+01     12   .10000E+01
      13   .10000E+01     14   .10000E+01     15   .10000E+01     16   .10000E+01
  17   .00000E+00     18   .00000E+00
      19   .00000E+00     20   .00000E+00     21   .00000E+00     22   .00000E+00
  23   .00000E+00     24   .00000E+00


 SOURCE ID = L0000677     ; SOURCE TYPE = VOLUME   :
       1   .00000E+00      2   .00000E+00      3   .00000E+00      4   .00000E+00
   5   .00000E+00      6   .00000E+00
       7   .00000E+00      8   .00000E+00      9   .10000E+01     10   .10000E+01
  11   .10000E+01     12   .10000E+01
      13   .10000E+01     14   .10000E+01     15   .10000E+01     16   .10000E+01
  17   .00000E+00     18   .00000E+00
      19   .00000E+00     20   .00000E+00     21   .00000E+00     22   .00000E+00
  23   .00000E+00     24   .00000E+00
```

```
                              * SOURCE EMISSION RATE SCALARS WHICH VARY FOR EACH HOUR
OF THE DAY *

     HOUR    SCALAR      HOUR    SCALAR      HOUR    SCALAR      HOUR    SCALAR
 HOUR    SCALAR      HOUR    SCALAR
 - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - -
- - - - - - - - - - - - - - - - - - - - - - - - -


 SOURCE ID = L0000678     ; SOURCE TYPE = VOLUME   :
       1   .00000E+00      2   .00000E+00      3   .00000E+00      4   .00000E+00
   5   .00000E+00      6   .00000E+00
       7   .00000E+00      8   .00000E+00      9   .10000E+01     10   .10000E+01
  11   .10000E+01     12   .10000E+01
      13   .10000E+01     14   .10000E+01     15   .10000E+01     16   .10000E+01
  17   .00000E+00     18   .00000E+00
      19   .00000E+00     20   .00000E+00     21   .00000E+00     22   .00000E+00
  23   .00000E+00     24   .00000E+00


 SOURCE ID = L0000679     ; SOURCE TYPE = VOLUME   :
       1   .00000E+00      2   .00000E+00      3   .00000E+00      4   .00000E+00
   5   .00000E+00      6   .00000E+00
       7   .00000E+00      8   .00000E+00      9   .10000E+01     10   .10000E+01
  11   .10000E+01     12   .10000E+01
      13   .10000E+01     14   .10000E+01     15   .10000E+01     16   .10000E+01
  17   .00000E+00     18   .00000E+00
      19   .00000E+00     20   .00000E+00     21   .00000E+00     22   .00000E+00
  23   .00000E+00     24   .00000E+00


 SOURCE ID = L0000680     ; SOURCE TYPE = VOLUME   :
       1   .00000E+00      2   .00000E+00      3   .00000E+00      4   .00000E+00
   5   .00000E+00      6   .00000E+00
       7   .00000E+00      8   .00000E+00      9   .10000E+01     10   .10000E+01
  11   .10000E+01     12   .10000E+01
      13   .10000E+01     14   .10000E+01     15   .10000E+01     16   .10000E+01
  17   .00000E+00     18   .00000E+00
      19   .00000E+00     20   .00000E+00     21   .00000E+00     22   .00000E+00
  23   .00000E+00     24   .00000E+00


 SOURCE ID = L0000681     ; SOURCE TYPE = VOLUME   :
       1   .00000E+00      2   .00000E+00      3   .00000E+00      4   .00000E+00
   5   .00000E+00      6   .00000E+00
       7   .00000E+00      8   .00000E+00      9   .10000E+01     10   .10000E+01
  11   .10000E+01     12   .10000E+01
      13   .10000E+01     14   .10000E+01     15   .10000E+01     16   .10000E+01
  17   .00000E+00     18   .00000E+00
```

```
     19   .00000E+00     20   .00000E+00     21   .00000E+00     22   .00000E+00
  23   .00000E+00     24   .00000E+00


 SOURCE ID = L0000682     ; SOURCE TYPE = VOLUME   :
       1   .00000E+00      2   .00000E+00      3   .00000E+00      4   .00000E+00
   5   .00000E+00      6   .00000E+00
       7   .00000E+00      8   .00000E+00      9   .10000E+01     10   .10000E+01
  11   .10000E+01     12   .10000E+01
     13   .10000E+01     14   .10000E+01     15   .10000E+01     16   .10000E+01
  17   .00000E+00     18   .00000E+00
     19   .00000E+00     20   .00000E+00     21   .00000E+00     22   .00000E+00
  23   .00000E+00     24   .00000E+00

↑ *** AERMOD - VERSION 22112  ***   *** C:\Lakes\AERMOD View\880 Doolittle\880
Doolittle.isc                 ***        01/12/23
 *** AERMET - VERSION  18081 ***   ***
                       ***        15:42:55

                                  PAGE  56
 *** MODELOPTs:    RegDFAULT  CONC  ELEV  URBAN  ADJ_U*

                            * SOURCE EMISSION RATE SCALARS WHICH VARY FOR EACH HOUR
OF THE DAY *

     HOUR    SCALAR      HOUR    SCALAR      HOUR    SCALAR      HOUR    SCALAR
 HOUR    SCALAR      HOUR    SCALAR
 - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - -
- - - - - - - - - - - - - - - - - - - - - - - - -


 SOURCE ID = L0000683     ; SOURCE TYPE = VOLUME   :
       1   .00000E+00      2   .00000E+00      3   .00000E+00      4   .00000E+00
   5   .00000E+00      6   .00000E+00
       7   .00000E+00      8   .00000E+00      9   .10000E+01     10   .10000E+01
  11   .10000E+01     12   .10000E+01
     13   .10000E+01     14   .10000E+01     15   .10000E+01     16   .10000E+01
  17   .00000E+00     18   .00000E+00
     19   .00000E+00     20   .00000E+00     21   .00000E+00     22   .00000E+00
  23   .00000E+00     24   .00000E+00


 SOURCE ID = L0000684     ; SOURCE TYPE = VOLUME   :
       1   .00000E+00      2   .00000E+00      3   .00000E+00      4   .00000E+00
   5   .00000E+00      6   .00000E+00
       7   .00000E+00      8   .00000E+00      9   .10000E+01     10   .10000E+01
  11   .10000E+01     12   .10000E+01
     13   .10000E+01     14   .10000E+01     15   .10000E+01     16   .10000E+01
  17   .00000E+00     18   .00000E+00
     19   .00000E+00     20   .00000E+00     21   .00000E+00     22   .00000E+00
```

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  23   .00000E+00     24   .00000E+00


 SOURCE ID = L0000685     ; SOURCE TYPE = VOLUME   :
       1   .00000E+00      2   .00000E+00      3   .00000E+00      4   .00000E+00
   5   .00000E+00      6   .00000E+00
       7   .00000E+00      8   .00000E+00      9   .10000E+01     10   .10000E+01
  11   .10000E+01     12   .10000E+01
      13   .10000E+01     14   .10000E+01     15   .10000E+01     16   .10000E+01
  17   .00000E+00     18   .00000E+00
      19   .00000E+00     20   .00000E+00     21   .00000E+00     22   .00000E+00
  23   .00000E+00     24   .00000E+00


 SOURCE ID = L0000686     ; SOURCE TYPE = VOLUME   :
       1   .00000E+00      2   .00000E+00      3   .00000E+00      4   .00000E+00
   5   .00000E+00      6   .00000E+00
       7   .00000E+00      8   .00000E+00      9   .10000E+01     10   .10000E+01
  11   .10000E+01     12   .10000E+01
      13   .10000E+01     14   .10000E+01     15   .10000E+01     16   .10000E+01
  17   .00000E+00     18   .00000E+00
      19   .00000E+00     20   .00000E+00     21   .00000E+00     22   .00000E+00
  23   .00000E+00     24   .00000E+00


 SOURCE ID = L0000687     ; SOURCE TYPE = VOLUME   :
       1   .00000E+00      2   .00000E+00      3   .00000E+00      4   .00000E+00
   5   .00000E+00      6   .00000E+00
       7   .00000E+00      8   .00000E+00      9   .10000E+01     10   .10000E+01
  11   .10000E+01     12   .10000E+01
      13   .10000E+01     14   .10000E+01     15   .10000E+01     16   .10000E+01
  17   .00000E+00     18   .00000E+00
      19   .00000E+00     20   .00000E+00     21   .00000E+00     22   .00000E+00
  23   .00000E+00     24   .00000E+00
```



```
                            * SOURCE EMISSION RATE SCALARS WHICH VARY FOR EACH HOUR
OF THE DAY *

     HOUR    SCALAR      HOUR    SCALAR      HOUR    SCALAR      HOUR    SCALAR
 HOUR    SCALAR      HOUR    SCALAR
 - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - -
- - - - - - - - - - - - - - - - - - - - - - - -
```

```
SOURCE ID = L0000688     ; SOURCE TYPE = VOLUME   :
      1   .00000E+00      2   .00000E+00      3   .00000E+00      4   .00000E+00
  5   .00000E+00      6   .00000E+00
      7   .00000E+00      8   .00000E+00      9   .10000E+01     10   .10000E+01
 11   .10000E+01     12   .10000E+01
     13   .10000E+01     14   .10000E+01     15   .10000E+01     16   .10000E+01
 17   .00000E+00     18   .00000E+00
     19   .00000E+00     20   .00000E+00     21   .00000E+00     22   .00000E+00
 23   .00000E+00     24   .00000E+00


SOURCE ID = L0000689     ; SOURCE TYPE = VOLUME   :
      1   .00000E+00      2   .00000E+00      3   .00000E+00      4   .00000E+00
  5   .00000E+00      6   .00000E+00
      7   .00000E+00      8   .00000E+00      9   .10000E+01     10   .10000E+01
 11   .10000E+01     12   .10000E+01
     13   .10000E+01     14   .10000E+01     15   .10000E+01     16   .10000E+01
 17   .00000E+00     18   .00000E+00
     19   .00000E+00     20   .00000E+00     21   .00000E+00     22   .00000E+00
 23   .00000E+00     24   .00000E+00


SOURCE ID = L0000690     ; SOURCE TYPE = VOLUME   :
      1   .00000E+00      2   .00000E+00      3   .00000E+00      4   .00000E+00
  5   .00000E+00      6   .00000E+00
      7   .00000E+00      8   .00000E+00      9   .10000E+01     10   .10000E+01
 11   .10000E+01     12   .10000E+01
     13   .10000E+01     14   .10000E+01     15   .10000E+01     16   .10000E+01
 17   .00000E+00     18   .00000E+00
     19   .00000E+00     20   .00000E+00     21   .00000E+00     22   .00000E+00
 23   .00000E+00     24   .00000E+00


SOURCE ID = L0000691     ; SOURCE TYPE = VOLUME   :
      1   .00000E+00      2   .00000E+00      3   .00000E+00      4   .00000E+00
  5   .00000E+00      6   .00000E+00
      7   .00000E+00      8   .00000E+00      9   .10000E+01     10   .10000E+01
 11   .10000E+01     12   .10000E+01
     13   .10000E+01     14   .10000E+01     15   .10000E+01     16   .10000E+01
 17   .00000E+00     18   .00000E+00
     19   .00000E+00     20   .00000E+00     21   .00000E+00     22   .00000E+00
 23   .00000E+00     24   .00000E+00


SOURCE ID = L0000692     ; SOURCE TYPE = VOLUME   :
      1   .00000E+00      2   .00000E+00      3   .00000E+00      4   .00000E+00
  5   .00000E+00      6   .00000E+00
      7   .00000E+00      8   .00000E+00      9   .10000E+01     10   .10000E+01
```

```
  11   .10000E+01     12   .10000E+01
      13   .10000E+01     14   .10000E+01     15   .10000E+01     16   .10000E+01
  17   .00000E+00     18   .00000E+00
      19   .00000E+00     20   .00000E+00     21   .00000E+00     22   .00000E+00
  23   .00000E+00     24   .00000E+00

↑ *** AERMOD - VERSION 22112  ***   *** C:\Lakes\AERMOD View\880 Doolittle\880
Doolittle.isc                 ***        01/12/23
 *** AERMET - VERSION  18081 ***   ***
                       ***        15:42:55

                                  PAGE  58
 *** MODELOPTs:    RegDFAULT  CONC  ELEV  URBAN  ADJ_U*

                            * SOURCE EMISSION RATE SCALARS WHICH VARY FOR EACH HOUR
OF THE DAY *

     HOUR    SCALAR      HOUR    SCALAR      HOUR    SCALAR      HOUR    SCALAR
 HOUR    SCALAR      HOUR    SCALAR
 - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - -
- - - - - - - - - - - - - - - - - - - - - - - -


 SOURCE ID = L0000693     ; SOURCE TYPE = VOLUME   :
       1   .00000E+00      2   .00000E+00      3   .00000E+00      4   .00000E+00
   5   .00000E+00      6   .00000E+00
       7   .00000E+00      8   .00000E+00      9   .10000E+01     10   .10000E+01
  11   .10000E+01     12   .10000E+01
      13   .10000E+01     14   .10000E+01     15   .10000E+01     16   .10000E+01
  17   .00000E+00     18   .00000E+00
      19   .00000E+00     20   .00000E+00     21   .00000E+00     22   .00000E+00
  23   .00000E+00     24   .00000E+00


 SOURCE ID = L0000694     ; SOURCE TYPE = VOLUME   :
       1   .00000E+00      2   .00000E+00      3   .00000E+00      4   .00000E+00
   5   .00000E+00      6   .00000E+00
       7   .00000E+00      8   .00000E+00      9   .10000E+01     10   .10000E+01
  11   .10000E+01     12   .10000E+01
      13   .10000E+01     14   .10000E+01     15   .10000E+01     16   .10000E+01
  17   .00000E+00     18   .00000E+00
      19   .00000E+00     20   .00000E+00     21   .00000E+00     22   .00000E+00
  23   .00000E+00     24   .00000E+00


 SOURCE ID = L0000695     ; SOURCE TYPE = VOLUME   :
       1   .00000E+00      2   .00000E+00      3   .00000E+00      4   .00000E+00
   5   .00000E+00      6   .00000E+00
       7   .00000E+00      8   .00000E+00      9   .10000E+01     10   .10000E+01
  11   .10000E+01     12   .10000E+01
```

```
     13   .10000E+01     14   .10000E+01     15   .10000E+01     16   .10000E+01
  17   .00000E+00     18   .00000E+00
     19   .00000E+00     20   .00000E+00     21   .00000E+00     22   .00000E+00
  23   .00000E+00     24   .00000E+00


 SOURCE ID = L0000696     ; SOURCE TYPE = VOLUME   :
      1   .00000E+00      2   .00000E+00      3   .00000E+00      4   .00000E+00
   5   .00000E+00      6   .00000E+00
      7   .00000E+00      8   .00000E+00      9   .10000E+01     10   .10000E+01
  11   .10000E+01     12   .10000E+01
     13   .10000E+01     14   .10000E+01     15   .10000E+01     16   .10000E+01
  17   .00000E+00     18   .00000E+00
     19   .00000E+00     20   .00000E+00     21   .00000E+00     22   .00000E+00
  23   .00000E+00     24   .00000E+00


 SOURCE ID = L0000697     ; SOURCE TYPE = VOLUME   :
      1   .00000E+00      2   .00000E+00      3   .00000E+00      4   .00000E+00
   5   .00000E+00      6   .00000E+00
      7   .00000E+00      8   .00000E+00      9   .10000E+01     10   .10000E+01
  11   .10000E+01     12   .10000E+01
     13   .10000E+01     14   .10000E+01     15   .10000E+01     16   .10000E+01
  17   .00000E+00     18   .00000E+00
     19   .00000E+00     20   .00000E+00     21   .00000E+00     22   .00000E+00
  23   .00000E+00     24   .00000E+00

*** AERMOD - VERSION 22112  ***   *** C:\Lakes\AERMOD View\880 Doolittle\880
Doolittle.isc                 ***        01/12/23
 *** AERMET - VERSION  18081 ***   ***
                       ***        15:42:55

                                  PAGE  59
 *** MODELOPTs:    RegDFAULT  CONC  ELEV  URBAN  ADJ_U*

                            * SOURCE EMISSION RATE SCALARS WHICH VARY FOR EACH HOUR
OF THE DAY *

     HOUR    SCALAR      HOUR    SCALAR      HOUR    SCALAR      HOUR    SCALAR
 HOUR    SCALAR      HOUR    SCALAR
 - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - -
- - - - - - - - - - - - - - - - - - - - - - - - -


 SOURCE ID = L0000698     ; SOURCE TYPE = VOLUME   :
      1   .00000E+00      2   .00000E+00      3   .00000E+00      4   .00000E+00
   5   .00000E+00      6   .00000E+00
      7   .00000E+00      8   .00000E+00      9   .10000E+01     10   .10000E+01
  11   .10000E+01     12   .10000E+01
     13   .10000E+01     14   .10000E+01     15   .10000E+01     16   .10000E+01
```

```
 17   .00000E+00     18   .00000E+00
     19   .00000E+00     20   .00000E+00     21   .00000E+00     22   .00000E+00
 23   .00000E+00     24   .00000E+00


SOURCE ID = L0000699     ; SOURCE TYPE = VOLUME   :
      1   .00000E+00      2   .00000E+00      3   .00000E+00      4   .00000E+00
  5   .00000E+00      6   .00000E+00
      7   .00000E+00      8   .00000E+00      9   .10000E+01     10   .10000E+01
 11   .10000E+01     12   .10000E+01
     13   .10000E+01     14   .10000E+01     15   .10000E+01     16   .10000E+01
 17   .00000E+00     18   .00000E+00
     19   .00000E+00     20   .00000E+00     21   .00000E+00     22   .00000E+00
 23   .00000E+00     24   .00000E+00


SOURCE ID = L0000700     ; SOURCE TYPE = VOLUME   :
      1   .00000E+00      2   .00000E+00      3   .00000E+00      4   .00000E+00
  5   .00000E+00      6   .00000E+00
      7   .00000E+00      8   .00000E+00      9   .10000E+01     10   .10000E+01
 11   .10000E+01     12   .10000E+01
     13   .10000E+01     14   .10000E+01     15   .10000E+01     16   .10000E+01
 17   .00000E+00     18   .00000E+00
     19   .00000E+00     20   .00000E+00     21   .00000E+00     22   .00000E+00
 23   .00000E+00     24   .00000E+00


SOURCE ID = L0000701     ; SOURCE TYPE = VOLUME   :
      1   .00000E+00      2   .00000E+00      3   .00000E+00      4   .00000E+00
  5   .00000E+00      6   .00000E+00
      7   .00000E+00      8   .00000E+00      9   .10000E+01     10   .10000E+01
 11   .10000E+01     12   .10000E+01
     13   .10000E+01     14   .10000E+01     15   .10000E+01     16   .10000E+01
 17   .00000E+00     18   .00000E+00
     19   .00000E+00     20   .00000E+00     21   .00000E+00     22   .00000E+00
 23   .00000E+00     24   .00000E+00


SOURCE ID = L0000702     ; SOURCE TYPE = VOLUME   :
      1   .00000E+00      2   .00000E+00      3   .00000E+00      4   .00000E+00
  5   .00000E+00      6   .00000E+00
      7   .00000E+00      8   .00000E+00      9   .10000E+01     10   .10000E+01
 11   .10000E+01     12   .10000E+01
     13   .10000E+01     14   .10000E+01     15   .10000E+01     16   .10000E+01
 17   .00000E+00     18   .00000E+00
     19   .00000E+00     20   .00000E+00     21   .00000E+00     22   .00000E+00
 23   .00000E+00     24   .00000E+00
```

*** MODELOPTs: RegDFAULT CONC ELEV URBAN ADJ_U*

* SOURCE EMISSION RATE SCALARS WHICH VARY FOR EACH HOUR OF THE DAY *

```
    HOUR    SCALAR      HOUR    SCALAR      HOUR    SCALAR      HOUR    SCALAR
 HOUR    SCALAR      HOUR    SCALAR
 - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - -
- - - - - - - - - - - - - - - - - - - - - - - -


 SOURCE ID = L0000703     ; SOURCE TYPE = VOLUME   :
      1   .00000E+00      2   .00000E+00      3   .00000E+00      4   .00000E+00
   5   .00000E+00      6   .00000E+00
      7   .00000E+00      8   .00000E+00      9   .10000E+01     10   .10000E+01
  11   .10000E+01     12   .10000E+01
     13   .10000E+01     14   .10000E+01     15   .10000E+01     16   .10000E+01
  17   .00000E+00     18   .00000E+00
     19   .00000E+00     20   .00000E+00     21   .00000E+00     22   .00000E+00
  23   .00000E+00     24   .00000E+00


 SOURCE ID = L0000704     ; SOURCE TYPE = VOLUME   :
      1   .00000E+00      2   .00000E+00      3   .00000E+00      4   .00000E+00
   5   .00000E+00      6   .00000E+00
      7   .00000E+00      8   .00000E+00      9   .10000E+01     10   .10000E+01
  11   .10000E+01     12   .10000E+01
     13   .10000E+01     14   .10000E+01     15   .10000E+01     16   .10000E+01
  17   .00000E+00     18   .00000E+00
     19   .00000E+00     20   .00000E+00     21   .00000E+00     22   .00000E+00
  23   .00000E+00     24   .00000E+00


 SOURCE ID = L0000705     ; SOURCE TYPE = VOLUME   :
      1   .00000E+00      2   .00000E+00      3   .00000E+00      4   .00000E+00
   5   .00000E+00      6   .00000E+00
      7   .00000E+00      8   .00000E+00      9   .10000E+01     10   .10000E+01
  11   .10000E+01     12   .10000E+01
     13   .10000E+01     14   .10000E+01     15   .10000E+01     16   .10000E+01
  17   .00000E+00     18   .00000E+00
     19   .00000E+00     20   .00000E+00     21   .00000E+00     22   .00000E+00
  23   .00000E+00     24   .00000E+00


 SOURCE ID = L0000706     ; SOURCE TYPE = VOLUME   :
      1   .00000E+00      2   .00000E+00      3   .00000E+00      4   .00000E+00
```

```
   5   .00000E+00      6   .00000E+00
       7   .00000E+00      8   .00000E+00      9   .10000E+01     10   .10000E+01
  11   .10000E+01     12   .10000E+01
      13   .10000E+01     14   .10000E+01     15   .10000E+01     16   .10000E+01
  17   .00000E+00     18   .00000E+00
      19   .00000E+00     20   .00000E+00     21   .00000E+00     22   .00000E+00
  23   .00000E+00     24   .00000E+00


 SOURCE ID = L0000707     ; SOURCE TYPE = VOLUME   :
       1   .00000E+00      2   .00000E+00      3   .00000E+00      4   .00000E+00
   5   .00000E+00      6   .00000E+00
       7   .00000E+00      8   .00000E+00      9   .10000E+01     10   .10000E+01
  11   .10000E+01     12   .10000E+01
      13   .10000E+01     14   .10000E+01     15   .10000E+01     16   .10000E+01
  17   .00000E+00     18   .00000E+00
      19   .00000E+00     20   .00000E+00     21   .00000E+00     22   .00000E+00
  23   .00000E+00     24   .00000E+00

 *** AERMOD - VERSION 22112  ***   *** C:\Lakes\AERMOD View\880 Doolittle\880
Doolittle.isc                 ***        01/12/23
 *** AERMET - VERSION  18081 ***   ***
                       ***        15:42:55

                                  PAGE  61
 *** MODELOPTs:    RegDFAULT  CONC  ELEV  URBAN  ADJ_U*

                            * SOURCE EMISSION RATE SCALARS WHICH VARY FOR EACH HOUR
OF THE DAY *

     HOUR    SCALAR      HOUR    SCALAR      HOUR    SCALAR      HOUR    SCALAR
 HOUR    SCALAR      HOUR    SCALAR
 - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - -
- - - - - - - - - - - - - - - - - - - - - - - -


 SOURCE ID = L0000708     ; SOURCE TYPE = VOLUME   :
       1   .00000E+00      2   .00000E+00      3   .00000E+00      4   .00000E+00
   5   .00000E+00      6   .00000E+00
       7   .00000E+00      8   .00000E+00      9   .10000E+01     10   .10000E+01
  11   .10000E+01     12   .10000E+01
      13   .10000E+01     14   .10000E+01     15   .10000E+01     16   .10000E+01
  17   .00000E+00     18   .00000E+00
      19   .00000E+00     20   .00000E+00     21   .00000E+00     22   .00000E+00
  23   .00000E+00     24   .00000E+00


 SOURCE ID = L0000709     ; SOURCE TYPE = VOLUME   :
       1   .00000E+00      2   .00000E+00      3   .00000E+00      4   .00000E+00
   5   .00000E+00      6   .00000E+00
```

```
      7   .00000E+00      8   .00000E+00      9   .10000E+01     10   .10000E+01
  11   .10000E+01     12   .10000E+01
     13   .10000E+01     14   .10000E+01     15   .10000E+01     16   .10000E+01
  17   .00000E+00     18   .00000E+00
     19   .00000E+00     20   .00000E+00     21   .00000E+00     22   .00000E+00
  23   .00000E+00     24   .00000E+00


 SOURCE ID = L0000710     ; SOURCE TYPE = VOLUME   :
      1   .00000E+00      2   .00000E+00      3   .00000E+00      4   .00000E+00
   5   .00000E+00      6   .00000E+00
      7   .00000E+00      8   .00000E+00      9   .10000E+01     10   .10000E+01
  11   .10000E+01     12   .10000E+01
     13   .10000E+01     14   .10000E+01     15   .10000E+01     16   .10000E+01
  17   .00000E+00     18   .00000E+00
     19   .00000E+00     20   .00000E+00     21   .00000E+00     22   .00000E+00
  23   .00000E+00     24   .00000E+00


 SOURCE ID = L0000711     ; SOURCE TYPE = VOLUME   :
      1   .00000E+00      2   .00000E+00      3   .00000E+00      4   .00000E+00
   5   .00000E+00      6   .00000E+00
      7   .00000E+00      8   .00000E+00      9   .10000E+01     10   .10000E+01
  11   .10000E+01     12   .10000E+01
     13   .10000E+01     14   .10000E+01     15   .10000E+01     16   .10000E+01
  17   .00000E+00     18   .00000E+00
     19   .00000E+00     20   .00000E+00     21   .00000E+00     22   .00000E+00
  23   .00000E+00     24   .00000E+00


 SOURCE ID = L0000712     ; SOURCE TYPE = VOLUME   :
      1   .00000E+00      2   .00000E+00      3   .00000E+00      4   .00000E+00
   5   .00000E+00      6   .00000E+00
      7   .00000E+00      8   .00000E+00      9   .10000E+01     10   .10000E+01
  11   .10000E+01     12   .10000E+01
     13   .10000E+01     14   .10000E+01     15   .10000E+01     16   .10000E+01
  17   .00000E+00     18   .00000E+00
     19   .00000E+00     20   .00000E+00     21   .00000E+00     22   .00000E+00
  23   .00000E+00     24   .00000E+00
```



```
                            * SOURCE EMISSION RATE SCALARS WHICH VARY FOR EACH HOUR
OF THE DAY *
```

```
    HOUR    SCALAR      HOUR    SCALAR      HOUR    SCALAR      HOUR    SCALAR
HOUR    SCALAR      HOUR    SCALAR
- - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - -
- - - - - - - - - - - - - - - - - - - - - - - - -


SOURCE ID = L0000713     ; SOURCE TYPE = VOLUME   :
      1   .00000E+00      2   .00000E+00      3   .00000E+00      4   .00000E+00
  5   .00000E+00      6   .00000E+00
      7   .00000E+00      8   .00000E+00      9   .10000E+01     10   .10000E+01
 11   .10000E+01     12   .10000E+01
     13   .10000E+01     14   .10000E+01     15   .10000E+01     16   .10000E+01
 17   .00000E+00     18   .00000E+00
     19   .00000E+00     20   .00000E+00     21   .00000E+00     22   .00000E+00
 23   .00000E+00     24   .00000E+00


SOURCE ID = L0000714     ; SOURCE TYPE = VOLUME   :
      1   .00000E+00      2   .00000E+00      3   .00000E+00      4   .00000E+00
  5   .00000E+00      6   .00000E+00
      7   .00000E+00      8   .00000E+00      9   .10000E+01     10   .10000E+01
 11   .10000E+01     12   .10000E+01
     13   .10000E+01     14   .10000E+01     15   .10000E+01     16   .10000E+01
 17   .00000E+00     18   .00000E+00
     19   .00000E+00     20   .00000E+00     21   .00000E+00     22   .00000E+00
 23   .00000E+00     24   .00000E+00


SOURCE ID = L0000715     ; SOURCE TYPE = VOLUME   :
      1   .00000E+00      2   .00000E+00      3   .00000E+00      4   .00000E+00
  5   .00000E+00      6   .00000E+00
      7   .00000E+00      8   .00000E+00      9   .10000E+01     10   .10000E+01
 11   .10000E+01     12   .10000E+01
     13   .10000E+01     14   .10000E+01     15   .10000E+01     16   .10000E+01
 17   .00000E+00     18   .00000E+00
     19   .00000E+00     20   .00000E+00     21   .00000E+00     22   .00000E+00
 23   .00000E+00     24   .00000E+00


SOURCE ID = L0000716     ; SOURCE TYPE = VOLUME   :
      1   .00000E+00      2   .00000E+00      3   .00000E+00      4   .00000E+00
  5   .00000E+00      6   .00000E+00
      7   .00000E+00      8   .00000E+00      9   .10000E+01     10   .10000E+01
 11   .10000E+01     12   .10000E+01
     13   .10000E+01     14   .10000E+01     15   .10000E+01     16   .10000E+01
 17   .00000E+00     18   .00000E+00
     19   .00000E+00     20   .00000E+00     21   .00000E+00     22   .00000E+00
 23   .00000E+00     24   .00000E+00
```

```
 SOURCE ID = L0000717     ; SOURCE TYPE = VOLUME   :
       1   .00000E+00      2   .00000E+00      3   .00000E+00      4   .00000E+00
   5   .00000E+00      6   .00000E+00
       7   .00000E+00      8   .00000E+00      9   .10000E+01     10   .10000E+01
  11   .10000E+01     12   .10000E+01
      13   .10000E+01     14   .10000E+01     15   .10000E+01     16   .10000E+01
  17   .00000E+00     18   .00000E+00
      19   .00000E+00     20   .00000E+00     21   .00000E+00     22   .00000E+00
  23   .00000E+00     24   .00000E+00

↑ *** AERMOD - VERSION 22112  ***   *** C:\Lakes\AERMOD View\880 Doolittle\880
Doolittle.isc                 ***        01/12/23
 *** AERMET - VERSION  18081 ***   ***
                       ***        15:42:55

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 *** MODELOPTs:    RegDFAULT  CONC  ELEV  URBAN  ADJ_U*

                            * SOURCE EMISSION RATE SCALARS WHICH VARY FOR EACH HOUR
OF THE DAY *

     HOUR    SCALAR      HOUR    SCALAR      HOUR    SCALAR      HOUR    SCALAR
 HOUR    SCALAR      HOUR    SCALAR
 - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - -
- - - - - - - - - - - - - - - - - - - - - - - - -


 SOURCE ID = L0000718     ; SOURCE TYPE = VOLUME   :
       1   .00000E+00      2   .00000E+00      3   .00000E+00      4   .00000E+00
   5   .00000E+00      6   .00000E+00
       7   .00000E+00      8   .00000E+00      9   .10000E+01     10   .10000E+01
  11   .10000E+01     12   .10000E+01
      13   .10000E+01     14   .10000E+01     15   .10000E+01     16   .10000E+01
  17   .00000E+00     18   .00000E+00
      19   .00000E+00     20   .00000E+00     21   .00000E+00     22   .00000E+00
  23   .00000E+00     24   .00000E+00


 SOURCE ID = L0000719     ; SOURCE TYPE = VOLUME   :
       1   .00000E+00      2   .00000E+00      3   .00000E+00      4   .00000E+00
   5   .00000E+00      6   .00000E+00
       7   .00000E+00      8   .00000E+00      9   .10000E+01     10   .10000E+01
  11   .10000E+01     12   .10000E+01
      13   .10000E+01     14   .10000E+01     15   .10000E+01     16   .10000E+01
  17   .00000E+00     18   .00000E+00
      19   .00000E+00     20   .00000E+00     21   .00000E+00     22   .00000E+00
  23   .00000E+00     24   .00000E+00
```

```
 SOURCE ID = L0000720     ; SOURCE TYPE = VOLUME   :
       1   .00000E+00      2   .00000E+00      3   .00000E+00      4   .00000E+00
   5   .00000E+00      6   .00000E+00
       7   .00000E+00      8   .00000E+00      9   .10000E+01     10   .10000E+01
  11   .10000E+01     12   .10000E+01
      13   .10000E+01     14   .10000E+01     15   .10000E+01     16   .10000E+01
  17   .00000E+00     18   .00000E+00
      19   .00000E+00     20   .00000E+00     21   .00000E+00     22   .00000E+00
  23   .00000E+00     24   .00000E+00


 SOURCE ID = L0000721     ; SOURCE TYPE = VOLUME   :
       1   .00000E+00      2   .00000E+00      3   .00000E+00      4   .00000E+00
   5   .00000E+00      6   .00000E+00
       7   .00000E+00      8   .00000E+00      9   .10000E+01     10   .10000E+01
  11   .10000E+01     12   .10000E+01
      13   .10000E+01     14   .10000E+01     15   .10000E+01     16   .10000E+01
  17   .00000E+00     18   .00000E+00
      19   .00000E+00     20   .00000E+00     21   .00000E+00     22   .00000E+00
  23   .00000E+00     24   .00000E+00


 SOURCE ID = L0000722     ; SOURCE TYPE = VOLUME   :
       1   .00000E+00      2   .00000E+00      3   .00000E+00      4   .00000E+00
   5   .00000E+00      6   .00000E+00
       7   .00000E+00      8   .00000E+00      9   .10000E+01     10   .10000E+01
  11   .10000E+01     12   .10000E+01
      13   .10000E+01     14   .10000E+01     15   .10000E+01     16   .10000E+01
  17   .00000E+00     18   .00000E+00
      19   .00000E+00     20   .00000E+00     21   .00000E+00     22   .00000E+00
  23   .00000E+00     24   .00000E+00
```



```
                            * SOURCE EMISSION RATE SCALARS WHICH VARY FOR EACH HOUR
OF THE DAY *

     HOUR    SCALAR      HOUR    SCALAR      HOUR    SCALAR      HOUR    SCALAR
 HOUR    SCALAR      HOUR    SCALAR
 - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - -
- - - - - - - - - - - - - - - - - - - - - - - -


 SOURCE ID = L0000723     ; SOURCE TYPE = VOLUME   :
```

```
     1   .00000E+00      2   .00000E+00      3   .00000E+00      4   .00000E+00
  5   .00000E+00      6   .00000E+00
     7   .00000E+00      8   .00000E+00      9   .10000E+01     10   .10000E+01
 11   .10000E+01     12   .10000E+01
    13   .10000E+01     14   .10000E+01     15   .10000E+01     16   .10000E+01
 17   .00000E+00     18   .00000E+00
    19   .00000E+00     20   .00000E+00     21   .00000E+00     22   .00000E+00
 23   .00000E+00     24   .00000E+00


SOURCE ID = L0000724     ; SOURCE TYPE = VOLUME   :
     1   .00000E+00      2   .00000E+00      3   .00000E+00      4   .00000E+00
  5   .00000E+00      6   .00000E+00
     7   .00000E+00      8   .00000E+00      9   .10000E+01     10   .10000E+01
 11   .10000E+01     12   .10000E+01
    13   .10000E+01     14   .10000E+01     15   .10000E+01     16   .10000E+01
 17   .00000E+00     18   .00000E+00
    19   .00000E+00     20   .00000E+00     21   .00000E+00     22   .00000E+00
 23   .00000E+00     24   .00000E+00


SOURCE ID = L0000725     ; SOURCE TYPE = VOLUME   :
     1   .00000E+00      2   .00000E+00      3   .00000E+00      4   .00000E+00
  5   .00000E+00      6   .00000E+00
     7   .00000E+00      8   .00000E+00      9   .10000E+01     10   .10000E+01
 11   .10000E+01     12   .10000E+01
    13   .10000E+01     14   .10000E+01     15   .10000E+01     16   .10000E+01
 17   .00000E+00     18   .00000E+00
    19   .00000E+00     20   .00000E+00     21   .00000E+00     22   .00000E+00
 23   .00000E+00     24   .00000E+00


SOURCE ID = L0000726     ; SOURCE TYPE = VOLUME   :
     1   .00000E+00      2   .00000E+00      3   .00000E+00      4   .00000E+00
  5   .00000E+00      6   .00000E+00
     7   .00000E+00      8   .00000E+00      9   .10000E+01     10   .10000E+01
 11   .10000E+01     12   .10000E+01
    13   .10000E+01     14   .10000E+01     15   .10000E+01     16   .10000E+01
 17   .00000E+00     18   .00000E+00
    19   .00000E+00     20   .00000E+00     21   .00000E+00     22   .00000E+00
 23   .00000E+00     24   .00000E+00


SOURCE ID = L0000727     ; SOURCE TYPE = VOLUME   :
     1   .00000E+00      2   .00000E+00      3   .00000E+00      4   .00000E+00
  5   .00000E+00      6   .00000E+00
     7   .00000E+00      8   .00000E+00      9   .10000E+01     10   .10000E+01
 11   .10000E+01     12   .10000E+01
    13   .10000E+01     14   .10000E+01     15   .10000E+01     16   .10000E+01
 17   .00000E+00     18   .00000E+00
```

```
     19   .00000E+00     20   .00000E+00     21   .00000E+00     22   .00000E+00
  23   .00000E+00     24   .00000E+00

🡅 *** AERMOD - VERSION 22112  ***   *** C:\Lakes\AERMOD View\880 Doolittle\880
Doolittle.isc                 ***        01/12/23
 *** AERMET - VERSION  18081 ***   ***
                       ***        15:42:55

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 *** MODELOPTs:    RegDFAULT  CONC  ELEV  URBAN  ADJ_U*

                            * SOURCE EMISSION RATE SCALARS WHICH VARY FOR EACH HOUR
OF THE DAY *

     HOUR    SCALAR      HOUR    SCALAR      HOUR    SCALAR      HOUR    SCALAR
 HOUR    SCALAR      HOUR    SCALAR
 - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - -
- - - - - - - - - - - - - - - - - - - - - - - -


 SOURCE ID = L0000728     ; SOURCE TYPE = VOLUME   :
       1   .00000E+00      2   .00000E+00      3   .00000E+00      4   .00000E+00
   5   .00000E+00      6   .00000E+00
       7   .00000E+00      8   .00000E+00      9   .10000E+01     10   .10000E+01
  11   .10000E+01     12   .10000E+01
      13   .10000E+01     14   .10000E+01     15   .10000E+01     16   .10000E+01
  17   .00000E+00     18   .00000E+00
      19   .00000E+00     20   .00000E+00     21   .00000E+00     22   .00000E+00
  23   .00000E+00     24   .00000E+00


 SOURCE ID = L0000729     ; SOURCE TYPE = VOLUME   :
       1   .00000E+00      2   .00000E+00      3   .00000E+00      4   .00000E+00
   5   .00000E+00      6   .00000E+00
       7   .00000E+00      8   .00000E+00      9   .10000E+01     10   .10000E+01
  11   .10000E+01     12   .10000E+01
      13   .10000E+01     14   .10000E+01     15   .10000E+01     16   .10000E+01
  17   .00000E+00     18   .00000E+00
      19   .00000E+00     20   .00000E+00     21   .00000E+00     22   .00000E+00
  23   .00000E+00     24   .00000E+00


 SOURCE ID = L0000730     ; SOURCE TYPE = VOLUME   :
       1   .00000E+00      2   .00000E+00      3   .00000E+00      4   .00000E+00
   5   .00000E+00      6   .00000E+00
       7   .00000E+00      8   .00000E+00      9   .10000E+01     10   .10000E+01
  11   .10000E+01     12   .10000E+01
      13   .10000E+01     14   .10000E+01     15   .10000E+01     16   .10000E+01
  17   .00000E+00     18   .00000E+00
      19   .00000E+00     20   .00000E+00     21   .00000E+00     22   .00000E+00
```

```
  23   .00000E+00     24   .00000E+00


 SOURCE ID = L0000731     ; SOURCE TYPE = VOLUME   :
       1   .00000E+00      2   .00000E+00      3   .00000E+00      4   .00000E+00
   5   .00000E+00      6   .00000E+00
       7   .00000E+00      8   .00000E+00      9   .10000E+01     10   .10000E+01
  11   .10000E+01     12   .10000E+01
      13   .10000E+01     14   .10000E+01     15   .10000E+01     16   .10000E+01
  17   .00000E+00     18   .00000E+00
      19   .00000E+00     20   .00000E+00     21   .00000E+00     22   .00000E+00
  23   .00000E+00     24   .00000E+00


 SOURCE ID = L0000732     ; SOURCE TYPE = VOLUME   :
       1   .00000E+00      2   .00000E+00      3   .00000E+00      4   .00000E+00
   5   .00000E+00      6   .00000E+00
       7   .00000E+00      8   .00000E+00      9   .10000E+01     10   .10000E+01
  11   .10000E+01     12   .10000E+01
      13   .10000E+01     14   .10000E+01     15   .10000E+01     16   .10000E+01
  17   .00000E+00     18   .00000E+00
      19   .00000E+00     20   .00000E+00     21   .00000E+00     22   .00000E+00
  23   .00000E+00     24   .00000E+00

 *** AERMOD - VERSION 22112  ***   *** C:\Lakes\AERMOD View\880 Doolittle\880
Doolittle.isc                 ***        01/12/23
 *** AERMET - VERSION  18081 ***   ***
                        ***        15:42:55

                                   PAGE  66
 *** MODELOPTs:    RegDFAULT  CONC  ELEV  URBAN  ADJ_U*

                            * SOURCE EMISSION RATE SCALARS WHICH VARY FOR EACH HOUR
OF THE DAY *

     HOUR    SCALAR      HOUR    SCALAR      HOUR    SCALAR      HOUR    SCALAR
 HOUR    SCALAR      HOUR    SCALAR
 - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - -
- - - - - - - - - - - - - - - - - - - - - - - - -


 SOURCE ID = L0000733     ; SOURCE TYPE = VOLUME   :
       1   .00000E+00      2   .00000E+00      3   .00000E+00      4   .00000E+00
   5   .00000E+00      6   .00000E+00
       7   .00000E+00      8   .00000E+00      9   .10000E+01     10   .10000E+01
  11   .10000E+01     12   .10000E+01
      13   .10000E+01     14   .10000E+01     15   .10000E+01     16   .10000E+01
  17   .00000E+00     18   .00000E+00
      19   .00000E+00     20   .00000E+00     21   .00000E+00     22   .00000E+00
  23   .00000E+00     24   .00000E+00
```

```
 SOURCE ID = L0000734     ; SOURCE TYPE = VOLUME   :
       1   .00000E+00      2   .00000E+00      3   .00000E+00      4   .00000E+00
   5   .00000E+00      6   .00000E+00
       7   .00000E+00      8   .00000E+00      9   .10000E+01     10   .10000E+01
  11   .10000E+01     12   .10000E+01
      13   .10000E+01     14   .10000E+01     15   .10000E+01     16   .10000E+01
  17   .00000E+00     18   .00000E+00
      19   .00000E+00     20   .00000E+00     21   .00000E+00     22   .00000E+00
  23   .00000E+00     24   .00000E+00


 SOURCE ID = L0000735     ; SOURCE TYPE = VOLUME   :
       1   .00000E+00      2   .00000E+00      3   .00000E+00      4   .00000E+00
   5   .00000E+00      6   .00000E+00
       7   .00000E+00      8   .00000E+00      9   .10000E+01     10   .10000E+01
  11   .10000E+01     12   .10000E+01
      13   .10000E+01     14   .10000E+01     15   .10000E+01     16   .10000E+01
  17   .00000E+00     18   .00000E+00
      19   .00000E+00     20   .00000E+00     21   .00000E+00     22   .00000E+00
  23   .00000E+00     24   .00000E+00


 SOURCE ID = L0000736     ; SOURCE TYPE = VOLUME   :
       1   .00000E+00      2   .00000E+00      3   .00000E+00      4   .00000E+00
   5   .00000E+00      6   .00000E+00
       7   .00000E+00      8   .00000E+00      9   .10000E+01     10   .10000E+01
  11   .10000E+01     12   .10000E+01
      13   .10000E+01     14   .10000E+01     15   .10000E+01     16   .10000E+01
  17   .00000E+00     18   .00000E+00
      19   .00000E+00     20   .00000E+00     21   .00000E+00     22   .00000E+00
  23   .00000E+00     24   .00000E+00


 SOURCE ID = L0000737     ; SOURCE TYPE = VOLUME   :
       1   .00000E+00      2   .00000E+00      3   .00000E+00      4   .00000E+00
   5   .00000E+00      6   .00000E+00
       7   .00000E+00      8   .00000E+00      9   .10000E+01     10   .10000E+01
  11   .10000E+01     12   .10000E+01
      13   .10000E+01     14   .10000E+01     15   .10000E+01     16   .10000E+01
  17   .00000E+00     18   .00000E+00
      19   .00000E+00     20   .00000E+00     21   .00000E+00     22   .00000E+00
  23   .00000E+00     24   .00000E+00

↑ *** AERMOD - VERSION 22112  ***   *** C:\Lakes\AERMOD View\880 Doolittle\880
Doolittle.isc                 ***        01/12/23
 *** AERMET - VERSION  18081 ***   ***
                        ***       15:42:55
```

```
*** MODELOPTs:    RegDFAULT  CONC  ELEV  URBAN  ADJ_U*

                          * SOURCE EMISSION RATE SCALARS WHICH VARY FOR EACH HOUR
OF THE DAY *

     HOUR    SCALAR      HOUR    SCALAR      HOUR    SCALAR      HOUR    SCALAR
 HOUR    SCALAR      HOUR    SCALAR
 - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - -
- - - - - - - - - - - - - - - - - - - - - - - - -


 SOURCE ID = L0000738     ; SOURCE TYPE = VOLUME   :
       1   .00000E+00      2   .00000E+00      3   .00000E+00      4   .00000E+00
   5   .00000E+00      6   .00000E+00
       7   .00000E+00      8   .00000E+00      9   .10000E+01     10   .10000E+01
  11   .10000E+01     12   .10000E+01
      13   .10000E+01     14   .10000E+01     15   .10000E+01     16   .10000E+01
  17   .00000E+00     18   .00000E+00
      19   .00000E+00     20   .00000E+00     21   .00000E+00     22   .00000E+00
  23   .00000E+00     24   .00000E+00


 SOURCE ID = L0000739     ; SOURCE TYPE = VOLUME   :
       1   .00000E+00      2   .00000E+00      3   .00000E+00      4   .00000E+00
   5   .00000E+00      6   .00000E+00
       7   .00000E+00      8   .00000E+00      9   .10000E+01     10   .10000E+01
  11   .10000E+01     12   .10000E+01
      13   .10000E+01     14   .10000E+01     15   .10000E+01     16   .10000E+01
  17   .00000E+00     18   .00000E+00
      19   .00000E+00     20   .00000E+00     21   .00000E+00     22   .00000E+00
  23   .00000E+00     24   .00000E+00


 SOURCE ID = L0000740     ; SOURCE TYPE = VOLUME   :
       1   .00000E+00      2   .00000E+00      3   .00000E+00      4   .00000E+00
   5   .00000E+00      6   .00000E+00
       7   .00000E+00      8   .00000E+00      9   .10000E+01     10   .10000E+01
  11   .10000E+01     12   .10000E+01
      13   .10000E+01     14   .10000E+01     15   .10000E+01     16   .10000E+01
  17   .00000E+00     18   .00000E+00
      19   .00000E+00     20   .00000E+00     21   .00000E+00     22   .00000E+00
  23   .00000E+00     24   .00000E+00


 SOURCE ID = L0000741     ; SOURCE TYPE = VOLUME   :
       1   .00000E+00      2   .00000E+00      3   .00000E+00      4   .00000E+00
   5   .00000E+00      6   .00000E+00
       7   .00000E+00      8   .00000E+00      9   .10000E+01     10   .10000E+01
  11   .10000E+01     12   .10000E+01
```

```
     13   .10000E+01     14   .10000E+01     15   .10000E+01     16   .10000E+01
  17   .00000E+00     18   .00000E+00
     19   .00000E+00     20   .00000E+00     21   .00000E+00     22   .00000E+00
  23   .00000E+00     24   .00000E+00


 SOURCE ID = L0000742     ; SOURCE TYPE = VOLUME   :
       1   .00000E+00      2   .00000E+00      3   .00000E+00      4   .00000E+00
   5   .00000E+00      6   .00000E+00
       7   .00000E+00      8   .00000E+00      9   .10000E+01     10   .10000E+01
  11   .10000E+01     12   .10000E+01
     13   .10000E+01     14   .10000E+01     15   .10000E+01     16   .10000E+01
  17   .00000E+00     18   .00000E+00
     19   .00000E+00     20   .00000E+00     21   .00000E+00     22   .00000E+00
  23   .00000E+00     24   .00000E+00

↑ *** AERMOD - VERSION 22112  ***   *** C:\Lakes\AERMOD View\880 Doolittle\880
Doolittle.isc                 ***        01/12/23
 *** AERMET - VERSION  18081 ***   ***
                       ***        15:42:55

                                  PAGE  68
 *** MODELOPTs:    RegDFAULT  CONC  ELEV  URBAN  ADJ_U*

                           * SOURCE EMISSION RATE SCALARS WHICH VARY FOR EACH HOUR
OF THE DAY *

     HOUR    SCALAR      HOUR    SCALAR      HOUR    SCALAR      HOUR    SCALAR
 HOUR    SCALAR      HOUR    SCALAR
 - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - -
- - - - - - - - - - - - - - - - - - - - - - - -


 SOURCE ID = L0000743     ; SOURCE TYPE = VOLUME   :
       1   .00000E+00      2   .00000E+00      3   .00000E+00      4   .00000E+00
   5   .00000E+00      6   .00000E+00
       7   .00000E+00      8   .00000E+00      9   .10000E+01     10   .10000E+01
  11   .10000E+01     12   .10000E+01
     13   .10000E+01     14   .10000E+01     15   .10000E+01     16   .10000E+01
  17   .00000E+00     18   .00000E+00
     19   .00000E+00     20   .00000E+00     21   .00000E+00     22   .00000E+00
  23   .00000E+00     24   .00000E+00


 SOURCE ID = L0000744     ; SOURCE TYPE = VOLUME   :
       1   .00000E+00      2   .00000E+00      3   .00000E+00      4   .00000E+00
   5   .00000E+00      6   .00000E+00
       7   .00000E+00      8   .00000E+00      9   .10000E+01     10   .10000E+01
  11   .10000E+01     12   .10000E+01
     13   .10000E+01     14   .10000E+01     15   .10000E+01     16   .10000E+01
```

```
 17   .00000E+00     18   .00000E+00
     19   .00000E+00     20   .00000E+00     21   .00000E+00     22   .00000E+00
 23   .00000E+00     24   .00000E+00


SOURCE ID = L0000745     ; SOURCE TYPE = VOLUME   :
      1   .00000E+00      2   .00000E+00      3   .00000E+00      4   .00000E+00
  5   .00000E+00      6   .00000E+00
      7   .00000E+00      8   .00000E+00      9   .10000E+01     10   .10000E+01
 11   .10000E+01     12   .10000E+01
     13   .10000E+01     14   .10000E+01     15   .10000E+01     16   .10000E+01
 17   .00000E+00     18   .00000E+00
     19   .00000E+00     20   .00000E+00     21   .00000E+00     22   .00000E+00
 23   .00000E+00     24   .00000E+00


SOURCE ID = L0000746     ; SOURCE TYPE = VOLUME   :
      1   .00000E+00      2   .00000E+00      3   .00000E+00      4   .00000E+00
  5   .00000E+00      6   .00000E+00
      7   .00000E+00      8   .00000E+00      9   .10000E+01     10   .10000E+01
 11   .10000E+01     12   .10000E+01
     13   .10000E+01     14   .10000E+01     15   .10000E+01     16   .10000E+01
 17   .00000E+00     18   .00000E+00
     19   .00000E+00     20   .00000E+00     21   .00000E+00     22   .00000E+00
 23   .00000E+00     24   .00000E+00


SOURCE ID = L0000747     ; SOURCE TYPE = VOLUME   :
      1   .00000E+00      2   .00000E+00      3   .00000E+00      4   .00000E+00
  5   .00000E+00      6   .00000E+00
      7   .00000E+00      8   .00000E+00      9   .10000E+01     10   .10000E+01
 11   .10000E+01     12   .10000E+01
     13   .10000E+01     14   .10000E+01     15   .10000E+01     16   .10000E+01
 17   .00000E+00     18   .00000E+00
     19   .00000E+00     20   .00000E+00     21   .00000E+00     22   .00000E+00
 23   .00000E+00     24   .00000E+00

*** AERMOD - VERSION 22112  ***   *** C:\Lakes\AERMOD View\880 Doolittle\880
Doolittle.isc                 ***        01/12/23
 *** AERMET - VERSION  18081 ***   ***
                       ***        15:42:55

                                  PAGE  69
 *** MODELOPTs:    RegDFAULT  CONC  ELEV  URBAN  ADJ_U*

                            * SOURCE EMISSION RATE SCALARS WHICH VARY FOR EACH HOUR
OF THE DAY *

     HOUR    SCALAR      HOUR    SCALAR      HOUR    SCALAR      HOUR    SCALAR
 HOUR    SCALAR      HOUR    SCALAR
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 - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - -
- - - - - - - - - - - - - - - - - - - - - - - - -


 SOURCE ID = L0000748      ; SOURCE TYPE = VOLUME    :
       1   .00000E+00       2   .00000E+00       3   .00000E+00       4   .00000E+00
   5   .00000E+00       6   .00000E+00
       7   .00000E+00       8   .00000E+00       9   .10000E+01      10   .10000E+01
  11   .10000E+01      12   .10000E+01
      13   .10000E+01      14   .10000E+01      15   .10000E+01      16   .10000E+01
  17   .00000E+00      18   .00000E+00
      19   .00000E+00      20   .00000E+00      21   .00000E+00      22   .00000E+00
  23   .00000E+00      24   .00000E+00


 SOURCE ID = L0000749      ; SOURCE TYPE = VOLUME    :
       1   .00000E+00       2   .00000E+00       3   .00000E+00       4   .00000E+00
   5   .00000E+00       6   .00000E+00
       7   .00000E+00       8   .00000E+00       9   .10000E+01      10   .10000E+01
  11   .10000E+01      12   .10000E+01
      13   .10000E+01      14   .10000E+01      15   .10000E+01      16   .10000E+01
  17   .00000E+00      18   .00000E+00
      19   .00000E+00      20   .00000E+00      21   .00000E+00      22   .00000E+00
  23   .00000E+00      24   .00000E+00


 SOURCE ID = L0000750      ; SOURCE TYPE = VOLUME    :
       1   .00000E+00       2   .00000E+00       3   .00000E+00       4   .00000E+00
   5   .00000E+00       6   .00000E+00
       7   .00000E+00       8   .00000E+00       9   .10000E+01      10   .10000E+01
  11   .10000E+01      12   .10000E+01
      13   .10000E+01      14   .10000E+01      15   .10000E+01      16   .10000E+01
  17   .00000E+00      18   .00000E+00
      19   .00000E+00      20   .00000E+00      21   .00000E+00      22   .00000E+00
  23   .00000E+00      24   .00000E+00


 SOURCE ID = L0000751      ; SOURCE TYPE = VOLUME    :
       1   .00000E+00       2   .00000E+00       3   .00000E+00       4   .00000E+00
   5   .00000E+00       6   .00000E+00
       7   .00000E+00       8   .00000E+00       9   .10000E+01      10   .10000E+01
  11   .10000E+01      12   .10000E+01
      13   .10000E+01      14   .10000E+01      15   .10000E+01      16   .10000E+01
  17   .00000E+00      18   .00000E+00
      19   .00000E+00      20   .00000E+00      21   .00000E+00      22   .00000E+00
  23   .00000E+00      24   .00000E+00


 SOURCE ID = L0000752      ; SOURCE TYPE = VOLUME    :
       1   .00000E+00       2   .00000E+00       3   .00000E+00       4   .00000E+00
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```
   5   .00000E+00      6   .00000E+00
       7   .00000E+00      8   .00000E+00      9   .10000E+01     10   .10000E+01
  11   .10000E+01     12   .10000E+01
      13   .10000E+01     14   .10000E+01     15   .10000E+01     16   .10000E+01
  17   .00000E+00     18   .00000E+00
      19   .00000E+00     20   .00000E+00     21   .00000E+00     22   .00000E+00
  23   .00000E+00     24   .00000E+00
```



```
                            * SOURCE EMISSION RATE SCALARS WHICH VARY FOR EACH HOUR
OF THE DAY *

     HOUR    SCALAR      HOUR    SCALAR      HOUR    SCALAR      HOUR    SCALAR
 HOUR    SCALAR      HOUR    SCALAR
 - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - -
- - - - - - - - - - - - - - - - - - - - - - -


 SOURCE ID = L0000753     ; SOURCE TYPE = VOLUME   :
       1   .00000E+00      2   .00000E+00      3   .00000E+00      4   .00000E+00
   5   .00000E+00      6   .00000E+00
       7   .00000E+00      8   .00000E+00      9   .10000E+01     10   .10000E+01
  11   .10000E+01     12   .10000E+01
      13   .10000E+01     14   .10000E+01     15   .10000E+01     16   .10000E+01
  17   .00000E+00     18   .00000E+00
      19   .00000E+00     20   .00000E+00     21   .00000E+00     22   .00000E+00
  23   .00000E+00     24   .00000E+00


 SOURCE ID = L0000754     ; SOURCE TYPE = VOLUME   :
       1   .00000E+00      2   .00000E+00      3   .00000E+00      4   .00000E+00
   5   .00000E+00      6   .00000E+00
       7   .00000E+00      8   .00000E+00      9   .10000E+01     10   .10000E+01
  11   .10000E+01     12   .10000E+01
      13   .10000E+01     14   .10000E+01     15   .10000E+01     16   .10000E+01
  17   .00000E+00     18   .00000E+00
      19   .00000E+00     20   .00000E+00     21   .00000E+00     22   .00000E+00
  23   .00000E+00     24   .00000E+00


 SOURCE ID = L0000755     ; SOURCE TYPE = VOLUME   :
       1   .00000E+00      2   .00000E+00      3   .00000E+00      4   .00000E+00
   5   .00000E+00      6   .00000E+00
```

```
      7   .00000E+00      8   .00000E+00      9   .10000E+01     10   .10000E+01
  11   .10000E+01     12   .10000E+01
     13   .10000E+01     14   .10000E+01     15   .10000E+01     16   .10000E+01
  17   .00000E+00     18   .00000E+00
     19   .00000E+00     20   .00000E+00     21   .00000E+00     22   .00000E+00
  23   .00000E+00     24   .00000E+00


 SOURCE ID = L0000756     ; SOURCE TYPE = VOLUME   :
      1   .00000E+00      2   .00000E+00      3   .00000E+00      4   .00000E+00
   5   .00000E+00      6   .00000E+00
      7   .00000E+00      8   .00000E+00      9   .10000E+01     10   .10000E+01
  11   .10000E+01     12   .10000E+01
     13   .10000E+01     14   .10000E+01     15   .10000E+01     16   .10000E+01
  17   .00000E+00     18   .00000E+00
     19   .00000E+00     20   .00000E+00     21   .00000E+00     22   .00000E+00
  23   .00000E+00     24   .00000E+00


 SOURCE ID = L0000757     ; SOURCE TYPE = VOLUME   :
      1   .00000E+00      2   .00000E+00      3   .00000E+00      4   .00000E+00
   5   .00000E+00      6   .00000E+00
      7   .00000E+00      8   .00000E+00      9   .10000E+01     10   .10000E+01
  11   .10000E+01     12   .10000E+01
     13   .10000E+01     14   .10000E+01     15   .10000E+01     16   .10000E+01
  17   .00000E+00     18   .00000E+00
     19   .00000E+00     20   .00000E+00     21   .00000E+00     22   .00000E+00
  23   .00000E+00     24   .00000E+00

↑ *** AERMOD - VERSION 22112  ***   *** C:\Lakes\AERMOD View\880 Doolittle\880
Doolittle.isc                 ***        01/12/23
 *** AERMET - VERSION  18081 ***   ***
                        ***        15:42:55

                                   PAGE  71
 *** MODELOPTs:    RegDFAULT  CONC  ELEV  URBAN  ADJ_U*

                            * SOURCE EMISSION RATE SCALARS WHICH VARY FOR EACH HOUR
OF THE DAY *

     HOUR    SCALAR      HOUR    SCALAR      HOUR    SCALAR      HOUR    SCALAR
 HOUR    SCALAR      HOUR    SCALAR
 - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - -
- - - - - - - - - - - - - - - - - - - - - - - - -


 SOURCE ID = L0000758     ; SOURCE TYPE = VOLUME   :
      1   .00000E+00      2   .00000E+00      3   .00000E+00      4   .00000E+00
   5   .00000E+00      6   .00000E+00
      7   .00000E+00      8   .00000E+00      9   .10000E+01     10   .10000E+01
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 11   .10000E+01     12   .10000E+01
     13   .10000E+01     14   .10000E+01     15   .10000E+01     16   .10000E+01
 17   .00000E+00     18   .00000E+00
     19   .00000E+00     20   .00000E+00     21   .00000E+00     22   .00000E+00
 23   .00000E+00     24   .00000E+00


SOURCE ID = L0000759     ; SOURCE TYPE = VOLUME   :
      1   .00000E+00      2   .00000E+00      3   .00000E+00      4   .00000E+00
  5   .00000E+00      6   .00000E+00
      7   .00000E+00      8   .00000E+00      9   .10000E+01     10   .10000E+01
 11   .10000E+01     12   .10000E+01
     13   .10000E+01     14   .10000E+01     15   .10000E+01     16   .10000E+01
 17   .00000E+00     18   .00000E+00
     19   .00000E+00     20   .00000E+00     21   .00000E+00     22   .00000E+00
 23   .00000E+00     24   .00000E+00


SOURCE ID = L0000760     ; SOURCE TYPE = VOLUME   :
      1   .00000E+00      2   .00000E+00      3   .00000E+00      4   .00000E+00
  5   .00000E+00      6   .00000E+00
      7   .00000E+00      8   .00000E+00      9   .10000E+01     10   .10000E+01
 11   .10000E+01     12   .10000E+01
     13   .10000E+01     14   .10000E+01     15   .10000E+01     16   .10000E+01
 17   .00000E+00     18   .00000E+00
     19   .00000E+00     20   .00000E+00     21   .00000E+00     22   .00000E+00
 23   .00000E+00     24   .00000E+00


SOURCE ID = L0000761     ; SOURCE TYPE = VOLUME   :
      1   .00000E+00      2   .00000E+00      3   .00000E+00      4   .00000E+00
  5   .00000E+00      6   .00000E+00
      7   .00000E+00      8   .00000E+00      9   .10000E+01     10   .10000E+01
 11   .10000E+01     12   .10000E+01
     13   .10000E+01     14   .10000E+01     15   .10000E+01     16   .10000E+01
 17   .00000E+00     18   .00000E+00
     19   .00000E+00     20   .00000E+00     21   .00000E+00     22   .00000E+00
 23   .00000E+00     24   .00000E+00


SOURCE ID = L0000762     ; SOURCE TYPE = VOLUME   :
      1   .00000E+00      2   .00000E+00      3   .00000E+00      4   .00000E+00
  5   .00000E+00      6   .00000E+00
      7   .00000E+00      8   .00000E+00      9   .10000E+01     10   .10000E+01
 11   .10000E+01     12   .10000E+01
     13   .10000E+01     14   .10000E+01     15   .10000E+01     16   .10000E+01
 17   .00000E+00     18   .00000E+00
     19   .00000E+00     20   .00000E+00     21   .00000E+00     22   .00000E+00
 23   .00000E+00     24   .00000E+00
```

*** MODELOPTs: RegDFAULT CONC ELEV URBAN ADJ_U*

* SOURCE EMISSION RATE SCALARS WHICH VARY FOR EACH HOUR OF THE DAY *

HOUR	SCALAR	HOUR	SCALAR	HOUR	SCALAR	HOUR	SCALAR	HOUR	SCALAR	HOUR	SCALAR
1	.00000E+00	2	.00000E+00	3	.00000E+00	4	.00000E+00	5	.00000E+00	6	.00000E+00
7	.00000E+00	8	.00000E+00	9	.10000E+01	10	.10000E+01	11	.10000E+01	12	.10000E+01
13	.10000E+01	14	.10000E+01	15	.10000E+01	16	.10000E+01	17	.00000E+00	18	.00000E+00
19	.00000E+00	20	.00000E+00	21	.00000E+00	22	.00000E+00	23	.00000E+00	24	.00000E+00

SOURCE ID = L0000763 ; SOURCE TYPE = VOLUME :

HOUR	SCALAR	HOUR	SCALAR	HOUR	SCALAR	HOUR	SCALAR	HOUR	SCALAR	HOUR	SCALAR
1	.00000E+00	2	.00000E+00	3	.00000E+00	4	.00000E+00	5	.00000E+00	6	.00000E+00
7	.00000E+00	8	.00000E+00	9	.10000E+01	10	.10000E+01	11	.10000E+01	12	.10000E+01
13	.10000E+01	14	.10000E+01	15	.10000E+01	16	.10000E+01	17	.00000E+00	18	.00000E+00
19	.00000E+00	20	.00000E+00	21	.00000E+00	22	.00000E+00	23	.00000E+00	24	.00000E+00

SOURCE ID = L0000764 ; SOURCE TYPE = VOLUME :

HOUR	SCALAR	HOUR	SCALAR	HOUR	SCALAR	HOUR	SCALAR	HOUR	SCALAR	HOUR	SCALAR
1	.00000E+00	2	.00000E+00	3	.00000E+00	4	.00000E+00	5	.00000E+00	6	.00000E+00
7	.00000E+00	8	.00000E+00	9	.10000E+01	10	.10000E+01	11	.10000E+01	12	.10000E+01
13	.10000E+01	14	.10000E+01	15	.10000E+01	16	.10000E+01	17	.00000E+00	18	.00000E+00
19	.00000E+00	20	.00000E+00	21	.00000E+00	22	.00000E+00	23	.00000E+00	24	.00000E+00

SOURCE ID = L0000248 ; SOURCE TYPE = VOLUME :

HOUR	SCALAR	HOUR	SCALAR	HOUR	SCALAR	HOUR	SCALAR	HOUR	SCALAR	HOUR	SCALAR
1	.00000E+00	2	.00000E+00	3	.00000E+00	4	.00000E+00	5	.00000E+00	6	.00000E+00
7	.00000E+00	8	.00000E+00	9	.10000E+01	10	.10000E+01	11	.10000E+01	12	.10000E+01
13	.10000E+01	14	.10000E+01	15	.10000E+01	16	.10000E+01	17	.00000E+00	18	.00000E+00
19	.00000E+00	20	.00000E+00	21	.00000E+00	22	.00000E+00	23	.00000E+00	24	.00000E+00

```
 SOURCE ID = L0000249     ; SOURCE TYPE = VOLUME   :
       1   .00000E+00      2   .00000E+00      3   .00000E+00      4   .00000E+00
   5   .00000E+00      6   .00000E+00
       7   .00000E+00      8   .00000E+00      9   .10000E+01     10   .10000E+01
  11   .10000E+01     12   .10000E+01
      13   .10000E+01     14   .10000E+01     15   .10000E+01     16   .10000E+01
  17   .00000E+00     18   .00000E+00
      19   .00000E+00     20   .00000E+00     21   .00000E+00     22   .00000E+00
  23   .00000E+00     24   .00000E+00


 SOURCE ID = L0000250     ; SOURCE TYPE = VOLUME   :
       1   .00000E+00      2   .00000E+00      3   .00000E+00      4   .00000E+00
   5   .00000E+00      6   .00000E+00
       7   .00000E+00      8   .00000E+00      9   .10000E+01     10   .10000E+01
  11   .10000E+01     12   .10000E+01
      13   .10000E+01     14   .10000E+01     15   .10000E+01     16   .10000E+01
  17   .00000E+00     18   .00000E+00
      19   .00000E+00     20   .00000E+00     21   .00000E+00     22   .00000E+00
  23   .00000E+00     24   .00000E+00

 *** AERMOD - VERSION 22112  ***   *** C:\Lakes\AERMOD View\880 Doolittle\880
Doolittle.isc                 ***        01/12/23
 *** AERMET - VERSION  18081 ***   ***
                       ***        15:42:55

                                  PAGE  73
 *** MODELOPTs:    RegDFAULT  CONC  ELEV  URBAN  ADJ_U*

                            * SOURCE EMISSION RATE SCALARS WHICH VARY FOR EACH HOUR
OF THE DAY *

     HOUR    SCALAR      HOUR    SCALAR      HOUR    SCALAR      HOUR    SCALAR
 HOUR    SCALAR      HOUR    SCALAR
 - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - -
- - - - - - - - - - - - - - - - - - - - - - - - -


 SOURCE ID = L0000251     ; SOURCE TYPE = VOLUME   :
       1   .00000E+00      2   .00000E+00      3   .00000E+00      4   .00000E+00
   5   .00000E+00      6   .00000E+00
       7   .00000E+00      8   .00000E+00      9   .10000E+01     10   .10000E+01
  11   .10000E+01     12   .10000E+01
      13   .10000E+01     14   .10000E+01     15   .10000E+01     16   .10000E+01
  17   .00000E+00     18   .00000E+00
      19   .00000E+00     20   .00000E+00     21   .00000E+00     22   .00000E+00
  23   .00000E+00     24   .00000E+00


 SOURCE ID = L0000252     ; SOURCE TYPE = VOLUME   :
```

```
      1   .00000E+00      2   .00000E+00      3   .00000E+00      4   .00000E+00
  5   .00000E+00      6   .00000E+00
      7   .00000E+00      8   .00000E+00      9   .10000E+01     10   .10000E+01
 11   .10000E+01     12   .10000E+01
     13   .10000E+01     14   .10000E+01     15   .10000E+01     16   .10000E+01
 17   .00000E+00     18   .00000E+00
     19   .00000E+00     20   .00000E+00     21   .00000E+00     22   .00000E+00
 23   .00000E+00     24   .00000E+00


 SOURCE ID = L0000253     ; SOURCE TYPE = VOLUME   :
      1   .00000E+00      2   .00000E+00      3   .00000E+00      4   .00000E+00
  5   .00000E+00      6   .00000E+00
      7   .00000E+00      8   .00000E+00      9   .10000E+01     10   .10000E+01
 11   .10000E+01     12   .10000E+01
     13   .10000E+01     14   .10000E+01     15   .10000E+01     16   .10000E+01
 17   .00000E+00     18   .00000E+00
     19   .00000E+00     20   .00000E+00     21   .00000E+00     22   .00000E+00
 23   .00000E+00     24   .00000E+00


 SOURCE ID = L0000254     ; SOURCE TYPE = VOLUME   :
      1   .00000E+00      2   .00000E+00      3   .00000E+00      4   .00000E+00
  5   .00000E+00      6   .00000E+00
      7   .00000E+00      8   .00000E+00      9   .10000E+01     10   .10000E+01
 11   .10000E+01     12   .10000E+01
     13   .10000E+01     14   .10000E+01     15   .10000E+01     16   .10000E+01
 17   .00000E+00     18   .00000E+00
     19   .00000E+00     20   .00000E+00     21   .00000E+00     22   .00000E+00
 23   .00000E+00     24   .00000E+00


 SOURCE ID = L0000255     ; SOURCE TYPE = VOLUME   :
      1   .00000E+00      2   .00000E+00      3   .00000E+00      4   .00000E+00
  5   .00000E+00      6   .00000E+00
      7   .00000E+00      8   .00000E+00      9   .10000E+01     10   .10000E+01
 11   .10000E+01     12   .10000E+01
     13   .10000E+01     14   .10000E+01     15   .10000E+01     16   .10000E+01
 17   .00000E+00     18   .00000E+00
     19   .00000E+00     20   .00000E+00     21   .00000E+00     22   .00000E+00
 23   .00000E+00     24   .00000E+00
```

```
                              * SOURCE EMISSION RATE SCALARS WHICH VARY FOR EACH HOUR
OF THE DAY *

     HOUR    SCALAR      HOUR    SCALAR      HOUR    SCALAR      HOUR    SCALAR
 HOUR    SCALAR      HOUR    SCALAR
 - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - -
- - - - - - - - - - - - - - - - - - - - - - - - -


 SOURCE ID = L0000256     ; SOURCE TYPE = VOLUME   :
       1   .00000E+00      2   .00000E+00      3   .00000E+00      4   .00000E+00
   5   .00000E+00      6   .00000E+00
       7   .00000E+00      8   .00000E+00      9   .10000E+01     10   .10000E+01
  11   .10000E+01     12   .10000E+01
      13   .10000E+01     14   .10000E+01     15   .10000E+01     16   .10000E+01
  17   .00000E+00     18   .00000E+00
      19   .00000E+00     20   .00000E+00     21   .00000E+00     22   .00000E+00
  23   .00000E+00     24   .00000E+00


 SOURCE ID = L0000257     ; SOURCE TYPE = VOLUME   :
       1   .00000E+00      2   .00000E+00      3   .00000E+00      4   .00000E+00
   5   .00000E+00      6   .00000E+00
       7   .00000E+00      8   .00000E+00      9   .10000E+01     10   .10000E+01
  11   .10000E+01     12   .10000E+01
      13   .10000E+01     14   .10000E+01     15   .10000E+01     16   .10000E+01
  17   .00000E+00     18   .00000E+00
      19   .00000E+00     20   .00000E+00     21   .00000E+00     22   .00000E+00
  23   .00000E+00     24   .00000E+00


 SOURCE ID = L0000258     ; SOURCE TYPE = VOLUME   :
       1   .00000E+00      2   .00000E+00      3   .00000E+00      4   .00000E+00
   5   .00000E+00      6   .00000E+00
       7   .00000E+00      8   .00000E+00      9   .10000E+01     10   .10000E+01
  11   .10000E+01     12   .10000E+01
      13   .10000E+01     14   .10000E+01     15   .10000E+01     16   .10000E+01
  17   .00000E+00     18   .00000E+00
      19   .00000E+00     20   .00000E+00     21   .00000E+00     22   .00000E+00
  23   .00000E+00     24   .00000E+00


 SOURCE ID = L0000259     ; SOURCE TYPE = VOLUME   :
       1   .00000E+00      2   .00000E+00      3   .00000E+00      4   .00000E+00
   5   .00000E+00      6   .00000E+00
       7   .00000E+00      8   .00000E+00      9   .10000E+01     10   .10000E+01
  11   .10000E+01     12   .10000E+01
      13   .10000E+01     14   .10000E+01     15   .10000E+01     16   .10000E+01
  17   .00000E+00     18   .00000E+00
      19   .00000E+00     20   .00000E+00     21   .00000E+00     22   .00000E+00
```

```
  23   .00000E+00     24   .00000E+00


 SOURCE ID = L0000260     ; SOURCE TYPE = VOLUME   :
       1   .00000E+00      2   .00000E+00      3   .00000E+00      4   .00000E+00
   5   .00000E+00      6   .00000E+00
       7   .00000E+00      8   .00000E+00      9   .10000E+01     10   .10000E+01
  11   .10000E+01     12   .10000E+01
      13   .10000E+01     14   .10000E+01     15   .10000E+01     16   .10000E+01
  17   .00000E+00     18   .00000E+00
      19   .00000E+00     20   .00000E+00     21   .00000E+00     22   .00000E+00
  23   .00000E+00     24   .00000E+00

↟ *** AERMOD - VERSION 22112  ***   *** C:\Lakes\AERMOD View\880 Doolittle\880
Doolittle.isc                 ***        01/12/23
 *** AERMET - VERSION  18081 ***   ***
                       ***        15:42:55

                                  PAGE  75
 *** MODELOPTs:    RegDFAULT  CONC  ELEV  URBAN  ADJ_U*

                            * SOURCE EMISSION RATE SCALARS WHICH VARY FOR EACH HOUR
OF THE DAY *

     HOUR    SCALAR      HOUR    SCALAR      HOUR    SCALAR      HOUR    SCALAR
 HOUR    SCALAR      HOUR    SCALAR
 - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - -
- - - - - - - - - - - - - - - - - - - - - - - - -


 SOURCE ID = L0000261     ; SOURCE TYPE = VOLUME   :
       1   .00000E+00      2   .00000E+00      3   .00000E+00      4   .00000E+00
   5   .00000E+00      6   .00000E+00
       7   .00000E+00      8   .00000E+00      9   .10000E+01     10   .10000E+01
  11   .10000E+01     12   .10000E+01
      13   .10000E+01     14   .10000E+01     15   .10000E+01     16   .10000E+01
  17   .00000E+00     18   .00000E+00
      19   .00000E+00     20   .00000E+00     21   .00000E+00     22   .00000E+00
  23   .00000E+00     24   .00000E+00


 SOURCE ID = L0000262     ; SOURCE TYPE = VOLUME   :
       1   .00000E+00      2   .00000E+00      3   .00000E+00      4   .00000E+00
   5   .00000E+00      6   .00000E+00
       7   .00000E+00      8   .00000E+00      9   .10000E+01     10   .10000E+01
  11   .10000E+01     12   .10000E+01
      13   .10000E+01     14   .10000E+01     15   .10000E+01     16   .10000E+01
  17   .00000E+00     18   .00000E+00
      19   .00000E+00     20   .00000E+00     21   .00000E+00     22   .00000E+00
  23   .00000E+00     24   .00000E+00
```

```
 SOURCE ID = L0000263     ; SOURCE TYPE = VOLUME   :
       1   .00000E+00      2   .00000E+00      3   .00000E+00      4   .00000E+00
   5   .00000E+00      6   .00000E+00
       7   .00000E+00      8   .00000E+00      9   .10000E+01     10   .10000E+01
  11   .10000E+01     12   .10000E+01
      13   .10000E+01     14   .10000E+01     15   .10000E+01     16   .10000E+01
  17   .00000E+00     18   .00000E+00
      19   .00000E+00     20   .00000E+00     21   .00000E+00     22   .00000E+00
  23   .00000E+00     24   .00000E+00


 SOURCE ID = L0000264     ; SOURCE TYPE = VOLUME   :
       1   .00000E+00      2   .00000E+00      3   .00000E+00      4   .00000E+00
   5   .00000E+00      6   .00000E+00
       7   .00000E+00      8   .00000E+00      9   .10000E+01     10   .10000E+01
  11   .10000E+01     12   .10000E+01
      13   .10000E+01     14   .10000E+01     15   .10000E+01     16   .10000E+01
  17   .00000E+00     18   .00000E+00
      19   .00000E+00     20   .00000E+00     21   .00000E+00     22   .00000E+00
  23   .00000E+00     24   .00000E+00


 SOURCE ID = L0000265     ; SOURCE TYPE = VOLUME   :
       1   .00000E+00      2   .00000E+00      3   .00000E+00      4   .00000E+00
   5   .00000E+00      6   .00000E+00
       7   .00000E+00      8   .00000E+00      9   .10000E+01     10   .10000E+01
  11   .10000E+01     12   .10000E+01
      13   .10000E+01     14   .10000E+01     15   .10000E+01     16   .10000E+01
  17   .00000E+00     18   .00000E+00
      19   .00000E+00     20   .00000E+00     21   .00000E+00     22   .00000E+00
  23   .00000E+00     24   .00000E+00
```



```
                            * SOURCE EMISSION RATE SCALARS WHICH VARY FOR EACH HOUR
OF THE DAY *

     HOUR    SCALAR      HOUR    SCALAR      HOUR    SCALAR      HOUR    SCALAR
 HOUR    SCALAR      HOUR    SCALAR
 - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - -
- - - - - - - - - - - - - - - - - - - - - - - - -
```

```
SOURCE ID = L0000266     ; SOURCE TYPE = VOLUME   :
      1   .00000E+00      2   .00000E+00      3   .00000E+00      4   .00000E+00
  5   .00000E+00      6   .00000E+00
      7   .00000E+00      8   .00000E+00      9   .10000E+01     10   .10000E+01
 11   .10000E+01     12   .10000E+01
     13   .10000E+01     14   .10000E+01     15   .10000E+01     16   .10000E+01
 17   .00000E+00     18   .00000E+00
     19   .00000E+00     20   .00000E+00     21   .00000E+00     22   .00000E+00
 23   .00000E+00     24   .00000E+00


SOURCE ID = L0000267     ; SOURCE TYPE = VOLUME   :
      1   .00000E+00      2   .00000E+00      3   .00000E+00      4   .00000E+00
  5   .00000E+00      6   .00000E+00
      7   .00000E+00      8   .00000E+00      9   .10000E+01     10   .10000E+01
 11   .10000E+01     12   .10000E+01
     13   .10000E+01     14   .10000E+01     15   .10000E+01     16   .10000E+01
 17   .00000E+00     18   .00000E+00
     19   .00000E+00     20   .00000E+00     21   .00000E+00     22   .00000E+00
 23   .00000E+00     24   .00000E+00


SOURCE ID = L0000268     ; SOURCE TYPE = VOLUME   :
      1   .00000E+00      2   .00000E+00      3   .00000E+00      4   .00000E+00
  5   .00000E+00      6   .00000E+00
      7   .00000E+00      8   .00000E+00      9   .10000E+01     10   .10000E+01
 11   .10000E+01     12   .10000E+01
     13   .10000E+01     14   .10000E+01     15   .10000E+01     16   .10000E+01
 17   .00000E+00     18   .00000E+00
     19   .00000E+00     20   .00000E+00     21   .00000E+00     22   .00000E+00
 23   .00000E+00     24   .00000E+00


SOURCE ID = L0000269     ; SOURCE TYPE = VOLUME   :
      1   .00000E+00      2   .00000E+00      3   .00000E+00      4   .00000E+00
  5   .00000E+00      6   .00000E+00
      7   .00000E+00      8   .00000E+00      9   .10000E+01     10   .10000E+01
 11   .10000E+01     12   .10000E+01
     13   .10000E+01     14   .10000E+01     15   .10000E+01     16   .10000E+01
 17   .00000E+00     18   .00000E+00
     19   .00000E+00     20   .00000E+00     21   .00000E+00     22   .00000E+00
 23   .00000E+00     24   .00000E+00


SOURCE ID = L0000270     ; SOURCE TYPE = VOLUME   :
      1   .00000E+00      2   .00000E+00      3   .00000E+00      4   .00000E+00
  5   .00000E+00      6   .00000E+00
      7   .00000E+00      8   .00000E+00      9   .10000E+01     10   .10000E+01
 11   .10000E+01     12   .10000E+01
```

```
     13   .10000E+01     14   .10000E+01     15   .10000E+01     16   .10000E+01
  17   .00000E+00     18   .00000E+00
     19   .00000E+00     20   .00000E+00     21   .00000E+00     22   .00000E+00
  23   .00000E+00     24   .00000E+00

 *** AERMOD - VERSION 22112  ***   *** C:\Lakes\AERMOD View\880 Doolittle\880
Doolittle.isc                 ***        01/12/23
 *** AERMET - VERSION  18081 ***   ***
                       ***        15:42:55

                                  PAGE  77
 *** MODELOPTs:    RegDFAULT  CONC  ELEV  URBAN  ADJ_U*

                            * SOURCE EMISSION RATE SCALARS WHICH VARY FOR EACH HOUR
OF THE DAY *

     HOUR    SCALAR      HOUR    SCALAR      HOUR    SCALAR      HOUR    SCALAR
 HOUR    SCALAR      HOUR    SCALAR
 - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - -
- - - - - - - - - - - - - - - - - - - - - - - -


 SOURCE ID = L0000271     ; SOURCE TYPE = VOLUME   :
      1   .00000E+00      2   .00000E+00      3   .00000E+00      4   .00000E+00
   5   .00000E+00      6   .00000E+00
      7   .00000E+00      8   .00000E+00      9   .10000E+01     10   .10000E+01
  11   .10000E+01     12   .10000E+01
     13   .10000E+01     14   .10000E+01     15   .10000E+01     16   .10000E+01
  17   .00000E+00     18   .00000E+00
     19   .00000E+00     20   .00000E+00     21   .00000E+00     22   .00000E+00
  23   .00000E+00     24   .00000E+00


 SOURCE ID = L0000272     ; SOURCE TYPE = VOLUME   :
      1   .00000E+00      2   .00000E+00      3   .00000E+00      4   .00000E+00
   5   .00000E+00      6   .00000E+00
      7   .00000E+00      8   .00000E+00      9   .10000E+01     10   .10000E+01
  11   .10000E+01     12   .10000E+01
     13   .10000E+01     14   .10000E+01     15   .10000E+01     16   .10000E+01
  17   .00000E+00     18   .00000E+00
     19   .00000E+00     20   .00000E+00     21   .00000E+00     22   .00000E+00
  23   .00000E+00     24   .00000E+00


 SOURCE ID = L0000273     ; SOURCE TYPE = VOLUME   :
      1   .00000E+00      2   .00000E+00      3   .00000E+00      4   .00000E+00
   5   .00000E+00      6   .00000E+00
      7   .00000E+00      8   .00000E+00      9   .10000E+01     10   .10000E+01
  11   .10000E+01     12   .10000E+01
     13   .10000E+01     14   .10000E+01     15   .10000E+01     16   .10000E+01
```

```
  17   .00000E+00     18   .00000E+00
      19   .00000E+00     20   .00000E+00     21   .00000E+00     22   .00000E+00
  23   .00000E+00     24   .00000E+00


 SOURCE ID = L0000274     ; SOURCE TYPE = VOLUME   :
       1   .00000E+00      2   .00000E+00      3   .00000E+00      4   .00000E+00
   5   .00000E+00      6   .00000E+00
       7   .00000E+00      8   .00000E+00      9   .10000E+01     10   .10000E+01
  11   .10000E+01     12   .10000E+01
      13   .10000E+01     14   .10000E+01     15   .10000E+01     16   .10000E+01
  17   .00000E+00     18   .00000E+00
      19   .00000E+00     20   .00000E+00     21   .00000E+00     22   .00000E+00
  23   .00000E+00     24   .00000E+00


 SOURCE ID = L0000275     ; SOURCE TYPE = VOLUME   :
       1   .00000E+00      2   .00000E+00      3   .00000E+00      4   .00000E+00
   5   .00000E+00      6   .00000E+00
       7   .00000E+00      8   .00000E+00      9   .10000E+01     10   .10000E+01
  11   .10000E+01     12   .10000E+01
      13   .10000E+01     14   .10000E+01     15   .10000E+01     16   .10000E+01
  17   .00000E+00     18   .00000E+00
      19   .00000E+00     20   .00000E+00     21   .00000E+00     22   .00000E+00
  23   .00000E+00     24   .00000E+00

 *** AERMOD - VERSION 22112  ***   *** C:\Lakes\AERMOD View\880 Doolittle\880
Doolittle.isc                 ***        01/12/23
 *** AERMET - VERSION  18081 ***   ***
                       ***        15:42:55

                                  PAGE  78
 *** MODELOPTs:    RegDFAULT  CONC  ELEV  URBAN  ADJ_U*

                            * SOURCE EMISSION RATE SCALARS WHICH VARY FOR EACH HOUR
OF THE DAY *

     HOUR    SCALAR      HOUR    SCALAR      HOUR    SCALAR      HOUR    SCALAR
 HOUR    SCALAR      HOUR    SCALAR
 - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - -
- - - - - - - - - - - - - - - - - - - - - - - - -


 SOURCE ID = L0000276     ; SOURCE TYPE = VOLUME   :
       1   .00000E+00      2   .00000E+00      3   .00000E+00      4   .00000E+00
   5   .00000E+00      6   .00000E+00
       7   .00000E+00      8   .00000E+00      9   .10000E+01     10   .10000E+01
  11   .10000E+01     12   .10000E+01
      13   .10000E+01     14   .10000E+01     15   .10000E+01     16   .10000E+01
  17   .00000E+00     18   .00000E+00
```

```
     19   .00000E+00     20   .00000E+00     21   .00000E+00     22   .00000E+00
  23   .00000E+00     24   .00000E+00


 SOURCE ID = L0000277     ; SOURCE TYPE = VOLUME   :
      1   .00000E+00      2   .00000E+00      3   .00000E+00      4   .00000E+00
   5   .00000E+00      6   .00000E+00
      7   .00000E+00      8   .00000E+00      9   .10000E+01     10   .10000E+01
  11   .10000E+01     12   .10000E+01
     13   .10000E+01     14   .10000E+01     15   .10000E+01     16   .10000E+01
  17   .00000E+00     18   .00000E+00
     19   .00000E+00     20   .00000E+00     21   .00000E+00     22   .00000E+00
  23   .00000E+00     24   .00000E+00


 SOURCE ID = L0000278     ; SOURCE TYPE = VOLUME   :
      1   .00000E+00      2   .00000E+00      3   .00000E+00      4   .00000E+00
   5   .00000E+00      6   .00000E+00
      7   .00000E+00      8   .00000E+00      9   .10000E+01     10   .10000E+01
  11   .10000E+01     12   .10000E+01
     13   .10000E+01     14   .10000E+01     15   .10000E+01     16   .10000E+01
  17   .00000E+00     18   .00000E+00
     19   .00000E+00     20   .00000E+00     21   .00000E+00     22   .00000E+00
  23   .00000E+00     24   .00000E+00


 SOURCE ID = L0000279     ; SOURCE TYPE = VOLUME   :
      1   .00000E+00      2   .00000E+00      3   .00000E+00      4   .00000E+00
   5   .00000E+00      6   .00000E+00
      7   .00000E+00      8   .00000E+00      9   .10000E+01     10   .10000E+01
  11   .10000E+01     12   .10000E+01
     13   .10000E+01     14   .10000E+01     15   .10000E+01     16   .10000E+01
  17   .00000E+00     18   .00000E+00
     19   .00000E+00     20   .00000E+00     21   .00000E+00     22   .00000E+00
  23   .00000E+00     24   .00000E+00


 SOURCE ID = L0000280     ; SOURCE TYPE = VOLUME   :
      1   .00000E+00      2   .00000E+00      3   .00000E+00      4   .00000E+00
   5   .00000E+00      6   .00000E+00
      7   .00000E+00      8   .00000E+00      9   .10000E+01     10   .10000E+01
  11   .10000E+01     12   .10000E+01
     13   .10000E+01     14   .10000E+01     15   .10000E+01     16   .10000E+01
  17   .00000E+00     18   .00000E+00
     19   .00000E+00     20   .00000E+00     21   .00000E+00     22   .00000E+00
  23   .00000E+00     24   .00000E+00

 *** AERMOD - VERSION 22112  ***   *** C:\Lakes\AERMOD View\880 Doolittle\880
Doolittle.isc                 ***        01/12/23
 *** AERMET - VERSION  18081 ***   ***
```

*** MODELOPTs: RegDFAULT CONC ELEV URBAN ADJ_U*

* SOURCE EMISSION RATE SCALARS WHICH VARY FOR EACH HOUR OF THE DAY *

```
     HOUR    SCALAR      HOUR    SCALAR      HOUR    SCALAR      HOUR    SCALAR
 HOUR    SCALAR      HOUR    SCALAR
 - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - -
- - - - - - - - - - - - - - - - - - - - - - - - -


 SOURCE ID = L0000281     ; SOURCE TYPE = VOLUME   :
       1   .00000E+00      2   .00000E+00      3   .00000E+00      4   .00000E+00
   5   .00000E+00      6   .00000E+00
       7   .00000E+00      8   .00000E+00      9   .10000E+01     10   .10000E+01
  11   .10000E+01     12   .10000E+01
      13   .10000E+01     14   .10000E+01     15   .10000E+01     16   .10000E+01
  17   .00000E+00     18   .00000E+00
      19   .00000E+00     20   .00000E+00     21   .00000E+00     22   .00000E+00
  23   .00000E+00     24   .00000E+00


 SOURCE ID = L0000282     ; SOURCE TYPE = VOLUME   :
       1   .00000E+00      2   .00000E+00      3   .00000E+00      4   .00000E+00
   5   .00000E+00      6   .00000E+00
       7   .00000E+00      8   .00000E+00      9   .10000E+01     10   .10000E+01
  11   .10000E+01     12   .10000E+01
      13   .10000E+01     14   .10000E+01     15   .10000E+01     16   .10000E+01
  17   .00000E+00     18   .00000E+00
      19   .00000E+00     20   .00000E+00     21   .00000E+00     22   .00000E+00
  23   .00000E+00     24   .00000E+00


 SOURCE ID = L0000283     ; SOURCE TYPE = VOLUME   :
       1   .00000E+00      2   .00000E+00      3   .00000E+00      4   .00000E+00
   5   .00000E+00      6   .00000E+00
       7   .00000E+00      8   .00000E+00      9   .10000E+01     10   .10000E+01
  11   .10000E+01     12   .10000E+01
      13   .10000E+01     14   .10000E+01     15   .10000E+01     16   .10000E+01
  17   .00000E+00     18   .00000E+00
      19   .00000E+00     20   .00000E+00     21   .00000E+00     22   .00000E+00
  23   .00000E+00     24   .00000E+00


 SOURCE ID = L0000284     ; SOURCE TYPE = VOLUME   :
       1   .00000E+00      2   .00000E+00      3   .00000E+00      4   .00000E+00
   5   .00000E+00      6   .00000E+00
```

```
      7   .00000E+00      8   .00000E+00      9   .10000E+01     10   .10000E+01
  11   .10000E+01     12   .10000E+01
     13   .10000E+01     14   .10000E+01     15   .10000E+01     16   .10000E+01
  17   .00000E+00     18   .00000E+00
     19   .00000E+00     20   .00000E+00     21   .00000E+00     22   .00000E+00
  23   .00000E+00     24   .00000E+00


 SOURCE ID = L0000285     ; SOURCE TYPE = VOLUME   :
      1   .00000E+00      2   .00000E+00      3   .00000E+00      4   .00000E+00
   5   .00000E+00      6   .00000E+00
      7   .00000E+00      8   .00000E+00      9   .10000E+01     10   .10000E+01
  11   .10000E+01     12   .10000E+01
     13   .10000E+01     14   .10000E+01     15   .10000E+01     16   .10000E+01
  17   .00000E+00     18   .00000E+00
     19   .00000E+00     20   .00000E+00     21   .00000E+00     22   .00000E+00
  23   .00000E+00     24   .00000E+00

↑ *** AERMOD - VERSION 22112  ***   *** C:\Lakes\AERMOD View\880 Doolittle\880
Doolittle.isc                 ***        01/12/23
 *** AERMET - VERSION  18081 ***   ***
                       ***        15:42:55

                                  PAGE  80
 *** MODELOPTs:    RegDFAULT  CONC  ELEV  URBAN  ADJ_U*

                            * SOURCE EMISSION RATE SCALARS WHICH VARY FOR EACH HOUR
OF THE DAY *

     HOUR    SCALAR      HOUR    SCALAR      HOUR    SCALAR      HOUR    SCALAR
 HOUR    SCALAR      HOUR    SCALAR
 - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - -
- - - - - - - - - - - - - - - - - - - - - - - - -


 SOURCE ID = L0000286     ; SOURCE TYPE = VOLUME   :
      1   .00000E+00      2   .00000E+00      3   .00000E+00      4   .00000E+00
   5   .00000E+00      6   .00000E+00
      7   .00000E+00      8   .00000E+00      9   .10000E+01     10   .10000E+01
  11   .10000E+01     12   .10000E+01
     13   .10000E+01     14   .10000E+01     15   .10000E+01     16   .10000E+01
  17   .00000E+00     18   .00000E+00
     19   .00000E+00     20   .00000E+00     21   .00000E+00     22   .00000E+00
  23   .00000E+00     24   .00000E+00


 SOURCE ID = L0000287     ; SOURCE TYPE = VOLUME   :
      1   .00000E+00      2   .00000E+00      3   .00000E+00      4   .00000E+00
   5   .00000E+00      6   .00000E+00
      7   .00000E+00      8   .00000E+00      9   .10000E+01     10   .10000E+01
```

```
 11   .10000E+01     12   .10000E+01
     13   .10000E+01     14   .10000E+01     15   .10000E+01     16   .10000E+01
 17   .00000E+00     18   .00000E+00
     19   .00000E+00     20   .00000E+00     21   .00000E+00     22   .00000E+00
 23   .00000E+00     24   .00000E+00


SOURCE ID = L0000288     ; SOURCE TYPE = VOLUME   :
      1   .00000E+00      2   .00000E+00      3   .00000E+00      4   .00000E+00
  5   .00000E+00      6   .00000E+00
      7   .00000E+00      8   .00000E+00      9   .10000E+01     10   .10000E+01
 11   .10000E+01     12   .10000E+01
     13   .10000E+01     14   .10000E+01     15   .10000E+01     16   .10000E+01
 17   .00000E+00     18   .00000E+00
     19   .00000E+00     20   .00000E+00     21   .00000E+00     22   .00000E+00
 23   .00000E+00     24   .00000E+00


SOURCE ID = L0000289     ; SOURCE TYPE = VOLUME   :
      1   .00000E+00      2   .00000E+00      3   .00000E+00      4   .00000E+00
  5   .00000E+00      6   .00000E+00
      7   .00000E+00      8   .00000E+00      9   .10000E+01     10   .10000E+01
 11   .10000E+01     12   .10000E+01
     13   .10000E+01     14   .10000E+01     15   .10000E+01     16   .10000E+01
 17   .00000E+00     18   .00000E+00
     19   .00000E+00     20   .00000E+00     21   .00000E+00     22   .00000E+00
 23   .00000E+00     24   .00000E+00


SOURCE ID = L0000290     ; SOURCE TYPE = VOLUME   :
      1   .00000E+00      2   .00000E+00      3   .00000E+00      4   .00000E+00
  5   .00000E+00      6   .00000E+00
      7   .00000E+00      8   .00000E+00      9   .10000E+01     10   .10000E+01
 11   .10000E+01     12   .10000E+01
     13   .10000E+01     14   .10000E+01     15   .10000E+01     16   .10000E+01
 17   .00000E+00     18   .00000E+00
     19   .00000E+00     20   .00000E+00     21   .00000E+00     22   .00000E+00
 23   .00000E+00     24   .00000E+00
```



```
                              * SOURCE EMISSION RATE SCALARS WHICH VARY FOR EACH HOUR
OF THE DAY *
```

```
    HOUR    SCALAR      HOUR    SCALAR      HOUR    SCALAR      HOUR    SCALAR
 HOUR    SCALAR      HOUR    SCALAR
 - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - -
- - - - - - - - - - - - - - - - - - - - - - - - -


 SOURCE ID = L0000291     ; SOURCE TYPE = VOLUME   :
       1   .00000E+00      2   .00000E+00      3   .00000E+00      4   .00000E+00
   5   .00000E+00      6   .00000E+00
       7   .00000E+00      8   .00000E+00      9   .10000E+01     10   .10000E+01
  11   .10000E+01     12   .10000E+01
      13   .10000E+01     14   .10000E+01     15   .10000E+01     16   .10000E+01
  17   .00000E+00     18   .00000E+00
      19   .00000E+00     20   .00000E+00     21   .00000E+00     22   .00000E+00
  23   .00000E+00     24   .00000E+00


 SOURCE ID = L0000292     ; SOURCE TYPE = VOLUME   :
       1   .00000E+00      2   .00000E+00      3   .00000E+00      4   .00000E+00
   5   .00000E+00      6   .00000E+00
       7   .00000E+00      8   .00000E+00      9   .10000E+01     10   .10000E+01
  11   .10000E+01     12   .10000E+01
      13   .10000E+01     14   .10000E+01     15   .10000E+01     16   .10000E+01
  17   .00000E+00     18   .00000E+00
      19   .00000E+00     20   .00000E+00     21   .00000E+00     22   .00000E+00
  23   .00000E+00     24   .00000E+00


 SOURCE ID = L0000293     ; SOURCE TYPE = VOLUME   :
       1   .00000E+00      2   .00000E+00      3   .00000E+00      4   .00000E+00
   5   .00000E+00      6   .00000E+00
       7   .00000E+00      8   .00000E+00      9   .10000E+01     10   .10000E+01
  11   .10000E+01     12   .10000E+01
      13   .10000E+01     14   .10000E+01     15   .10000E+01     16   .10000E+01
  17   .00000E+00     18   .00000E+00
      19   .00000E+00     20   .00000E+00     21   .00000E+00     22   .00000E+00
  23   .00000E+00     24   .00000E+00


 SOURCE ID = L0000294     ; SOURCE TYPE = VOLUME   :
       1   .00000E+00      2   .00000E+00      3   .00000E+00      4   .00000E+00
   5   .00000E+00      6   .00000E+00
       7   .00000E+00      8   .00000E+00      9   .10000E+01     10   .10000E+01
  11   .10000E+01     12   .10000E+01
      13   .10000E+01     14   .10000E+01     15   .10000E+01     16   .10000E+01
  17   .00000E+00     18   .00000E+00
      19   .00000E+00     20   .00000E+00     21   .00000E+00     22   .00000E+00
  23   .00000E+00     24   .00000E+00
```

```
 SOURCE ID = L0000295     ; SOURCE TYPE = VOLUME   :
       1   .00000E+00      2   .00000E+00      3   .00000E+00      4   .00000E+00
   5   .00000E+00      6   .00000E+00
       7   .00000E+00      8   .00000E+00      9   .10000E+01     10   .10000E+01
  11   .10000E+01     12   .10000E+01
      13   .10000E+01     14   .10000E+01     15   .10000E+01     16   .10000E+01
  17   .00000E+00     18   .00000E+00
      19   .00000E+00     20   .00000E+00     21   .00000E+00     22   .00000E+00
  23   .00000E+00     24   .00000E+00

 *** AERMOD - VERSION 22112  ***   *** C:\Lakes\AERMOD View\880 Doolittle\880
Doolittle.isc                 ***        01/12/23
 *** AERMET - VERSION  18081 ***   ***
                        ***        15:42:55

                                   PAGE  82
 *** MODELOPTs:    RegDFAULT  CONC  ELEV  URBAN  ADJ_U*

                            * SOURCE EMISSION RATE SCALARS WHICH VARY FOR EACH HOUR
OF THE DAY *

     HOUR    SCALAR      HOUR    SCALAR      HOUR    SCALAR      HOUR    SCALAR
 HOUR    SCALAR      HOUR    SCALAR
 - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - -
- - - - - - - - - - - - - - - - - - - - - - - - -


 SOURCE ID = L0000296     ; SOURCE TYPE = VOLUME   :
       1   .00000E+00      2   .00000E+00      3   .00000E+00      4   .00000E+00
   5   .00000E+00      6   .00000E+00
       7   .00000E+00      8   .00000E+00      9   .10000E+01     10   .10000E+01
  11   .10000E+01     12   .10000E+01
      13   .10000E+01     14   .10000E+01     15   .10000E+01     16   .10000E+01
  17   .00000E+00     18   .00000E+00
      19   .00000E+00     20   .00000E+00     21   .00000E+00     22   .00000E+00
  23   .00000E+00     24   .00000E+00


 SOURCE ID = L0000297     ; SOURCE TYPE = VOLUME   :
       1   .00000E+00      2   .00000E+00      3   .00000E+00      4   .00000E+00
   5   .00000E+00      6   .00000E+00
       7   .00000E+00      8   .00000E+00      9   .10000E+01     10   .10000E+01
  11   .10000E+01     12   .10000E+01
      13   .10000E+01     14   .10000E+01     15   .10000E+01     16   .10000E+01
  17   .00000E+00     18   .00000E+00
      19   .00000E+00     20   .00000E+00     21   .00000E+00     22   .00000E+00
  23   .00000E+00     24   .00000E+00


 SOURCE ID = L0000298     ; SOURCE TYPE = VOLUME   :
```

```
      1   .00000E+00      2   .00000E+00      3   .00000E+00      4   .00000E+00
   5   .00000E+00      6   .00000E+00
      7   .00000E+00      8   .00000E+00      9   .10000E+01     10   .10000E+01
  11   .10000E+01     12   .10000E+01
     13   .10000E+01     14   .10000E+01     15   .10000E+01     16   .10000E+01
  17   .00000E+00     18   .00000E+00
     19   .00000E+00     20   .00000E+00     21   .00000E+00     22   .00000E+00
  23   .00000E+00     24   .00000E+00


 SOURCE ID = L0000299     ; SOURCE TYPE = VOLUME   :
      1   .00000E+00      2   .00000E+00      3   .00000E+00      4   .00000E+00
   5   .00000E+00      6   .00000E+00
      7   .00000E+00      8   .00000E+00      9   .10000E+01     10   .10000E+01
  11   .10000E+01     12   .10000E+01
     13   .10000E+01     14   .10000E+01     15   .10000E+01     16   .10000E+01
  17   .00000E+00     18   .00000E+00
     19   .00000E+00     20   .00000E+00     21   .00000E+00     22   .00000E+00
  23   .00000E+00     24   .00000E+00


 SOURCE ID = L0000300     ; SOURCE TYPE = VOLUME   :
      1   .00000E+00      2   .00000E+00      3   .00000E+00      4   .00000E+00
   5   .00000E+00      6   .00000E+00
      7   .00000E+00      8   .00000E+00      9   .10000E+01     10   .10000E+01
  11   .10000E+01     12   .10000E+01
     13   .10000E+01     14   .10000E+01     15   .10000E+01     16   .10000E+01
  17   .00000E+00     18   .00000E+00
     19   .00000E+00     20   .00000E+00     21   .00000E+00     22   .00000E+00
  23   .00000E+00     24   .00000E+00
```



```
 *** MODELOPTs:    RegDFAULT  CONC  ELEV  URBAN  ADJ_U*

                            * SOURCE EMISSION RATE SCALARS WHICH VARY FOR EACH HOUR
OF THE DAY *

     HOUR    SCALAR      HOUR    SCALAR      HOUR    SCALAR      HOUR    SCALAR
 HOUR    SCALAR      HOUR    SCALAR
 - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - -
- - - - - - - - - - - - - - - - - - - - - - - - -


 SOURCE ID = L0000301     ; SOURCE TYPE = VOLUME   :
      1   .00000E+00      2   .00000E+00      3   .00000E+00      4   .00000E+00
```

```
  5   .00000E+00      6   .00000E+00
      7   .00000E+00      8   .00000E+00      9   .10000E+01     10   .10000E+01
 11   .10000E+01     12   .10000E+01
     13   .10000E+01     14   .10000E+01     15   .10000E+01     16   .10000E+01
 17   .00000E+00     18   .00000E+00
     19   .00000E+00     20   .00000E+00     21   .00000E+00     22   .00000E+00
 23   .00000E+00     24   .00000E+00


SOURCE ID = L0000302     ; SOURCE TYPE = VOLUME   :
      1   .00000E+00      2   .00000E+00      3   .00000E+00      4   .00000E+00
  5   .00000E+00      6   .00000E+00
      7   .00000E+00      8   .00000E+00      9   .10000E+01     10   .10000E+01
 11   .10000E+01     12   .10000E+01
     13   .10000E+01     14   .10000E+01     15   .10000E+01     16   .10000E+01
 17   .00000E+00     18   .00000E+00
     19   .00000E+00     20   .00000E+00     21   .00000E+00     22   .00000E+00
 23   .00000E+00     24   .00000E+00


SOURCE ID = L0000303     ; SOURCE TYPE = VOLUME   :
      1   .00000E+00      2   .00000E+00      3   .00000E+00      4   .00000E+00
  5   .00000E+00      6   .00000E+00
      7   .00000E+00      8   .00000E+00      9   .10000E+01     10   .10000E+01
 11   .10000E+01     12   .10000E+01
     13   .10000E+01     14   .10000E+01     15   .10000E+01     16   .10000E+01
 17   .00000E+00     18   .00000E+00
     19   .00000E+00     20   .00000E+00     21   .00000E+00     22   .00000E+00
 23   .00000E+00     24   .00000E+00


SOURCE ID = L0000304     ; SOURCE TYPE = VOLUME   :
      1   .00000E+00      2   .00000E+00      3   .00000E+00      4   .00000E+00
  5   .00000E+00      6   .00000E+00
      7   .00000E+00      8   .00000E+00      9   .10000E+01     10   .10000E+01
 11   .10000E+01     12   .10000E+01
     13   .10000E+01     14   .10000E+01     15   .10000E+01     16   .10000E+01
 17   .00000E+00     18   .00000E+00
     19   .00000E+00     20   .00000E+00     21   .00000E+00     22   .00000E+00
 23   .00000E+00     24   .00000E+00


SOURCE ID = L0000305     ; SOURCE TYPE = VOLUME   :
      1   .00000E+00      2   .00000E+00      3   .00000E+00      4   .00000E+00
  5   .00000E+00      6   .00000E+00
      7   .00000E+00      8   .00000E+00      9   .10000E+01     10   .10000E+01
 11   .10000E+01     12   .10000E+01
     13   .10000E+01     14   .10000E+01     15   .10000E+01     16   .10000E+01
 17   .00000E+00     18   .00000E+00
     19   .00000E+00     20   .00000E+00     21   .00000E+00     22   .00000E+00
```

```
  23   .00000E+00     24   .00000E+00

↑ *** AERMOD - VERSION 22112  ***   *** C:\Lakes\AERMOD View\880 Doolittle\880
Doolittle.isc                 ***        01/12/23
 *** AERMET - VERSION  18081 ***   ***
                       ***        15:42:55

                                  PAGE  84
 *** MODELOPTs:    RegDFAULT  CONC  ELEV  URBAN  ADJ_U*

                           * SOURCE EMISSION RATE SCALARS WHICH VARY FOR EACH HOUR
OF THE DAY *

     HOUR    SCALAR      HOUR    SCALAR      HOUR    SCALAR      HOUR    SCALAR
 HOUR    SCALAR      HOUR    SCALAR
 - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - -
- - - - - - - - - - - - - - - - - - - - - - - - -


 SOURCE ID = L0000306     ; SOURCE TYPE = VOLUME   :
       1   .00000E+00      2   .00000E+00      3   .00000E+00      4   .00000E+00
   5   .00000E+00      6   .00000E+00
       7   .00000E+00      8   .00000E+00      9   .10000E+01     10   .10000E+01
  11   .10000E+01     12   .10000E+01
      13   .10000E+01     14   .10000E+01     15   .10000E+01     16   .10000E+01
  17   .00000E+00     18   .00000E+00
      19   .00000E+00     20   .00000E+00     21   .00000E+00     22   .00000E+00
  23   .00000E+00     24   .00000E+00


 SOURCE ID = L0000307     ; SOURCE TYPE = VOLUME   :
       1   .00000E+00      2   .00000E+00      3   .00000E+00      4   .00000E+00
   5   .00000E+00      6   .00000E+00
       7   .00000E+00      8   .00000E+00      9   .10000E+01     10   .10000E+01
  11   .10000E+01     12   .10000E+01
      13   .10000E+01     14   .10000E+01     15   .10000E+01     16   .10000E+01
  17   .00000E+00     18   .00000E+00
      19   .00000E+00     20   .00000E+00     21   .00000E+00     22   .00000E+00
  23   .00000E+00     24   .00000E+00


 SOURCE ID = L0000308     ; SOURCE TYPE = VOLUME   :
       1   .00000E+00      2   .00000E+00      3   .00000E+00      4   .00000E+00
   5   .00000E+00      6   .00000E+00
       7   .00000E+00      8   .00000E+00      9   .10000E+01     10   .10000E+01
  11   .10000E+01     12   .10000E+01
      13   .10000E+01     14   .10000E+01     15   .10000E+01     16   .10000E+01
  17   .00000E+00     18   .00000E+00
      19   .00000E+00     20   .00000E+00     21   .00000E+00     22   .00000E+00
  23   .00000E+00     24   .00000E+00
```

```
 SOURCE ID = L0000309     ; SOURCE TYPE = VOLUME   :
       1   .00000E+00      2   .00000E+00      3   .00000E+00      4   .00000E+00
   5   .00000E+00      6   .00000E+00
       7   .00000E+00      8   .00000E+00      9   .10000E+01     10   .10000E+01
  11   .10000E+01     12   .10000E+01
      13   .10000E+01     14   .10000E+01     15   .10000E+01     16   .10000E+01
  17   .00000E+00     18   .00000E+00
      19   .00000E+00     20   .00000E+00     21   .00000E+00     22   .00000E+00
  23   .00000E+00     24   .00000E+00


 SOURCE ID = L0000310     ; SOURCE TYPE = VOLUME   :
       1   .00000E+00      2   .00000E+00      3   .00000E+00      4   .00000E+00
   5   .00000E+00      6   .00000E+00
       7   .00000E+00      8   .00000E+00      9   .10000E+01     10   .10000E+01
  11   .10000E+01     12   .10000E+01
      13   .10000E+01     14   .10000E+01     15   .10000E+01     16   .10000E+01
  17   .00000E+00     18   .00000E+00
      19   .00000E+00     20   .00000E+00     21   .00000E+00     22   .00000E+00
  23   .00000E+00     24   .00000E+00

 *** AERMOD - VERSION 22112  ***   *** C:\Lakes\AERMOD View\880 Doolittle\880
Doolittle.isc                 ***        01/12/23
 *** AERMET - VERSION  18081 ***   ***
                       ***        15:42:55

                                  PAGE  85
 *** MODELOPTs:    RegDFAULT  CONC  ELEV  URBAN  ADJ_U*

                            * SOURCE EMISSION RATE SCALARS WHICH VARY FOR EACH HOUR
OF THE DAY *

     HOUR    SCALAR      HOUR    SCALAR      HOUR    SCALAR      HOUR    SCALAR
 HOUR    SCALAR      HOUR    SCALAR
 - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - -
- - - - - - - - - - - - - - - - - - - - - - - - -


 SOURCE ID = L0000311     ; SOURCE TYPE = VOLUME   :
       1   .00000E+00      2   .00000E+00      3   .00000E+00      4   .00000E+00
   5   .00000E+00      6   .00000E+00
       7   .00000E+00      8   .00000E+00      9   .10000E+01     10   .10000E+01
  11   .10000E+01     12   .10000E+01
      13   .10000E+01     14   .10000E+01     15   .10000E+01     16   .10000E+01
  17   .00000E+00     18   .00000E+00
      19   .00000E+00     20   .00000E+00     21   .00000E+00     22   .00000E+00
  23   .00000E+00     24   .00000E+00
```

```
 SOURCE ID = L0000312     ; SOURCE TYPE = VOLUME   :
       1   .00000E+00      2   .00000E+00      3   .00000E+00      4   .00000E+00
   5   .00000E+00      6   .00000E+00
       7   .00000E+00      8   .00000E+00      9   .10000E+01     10   .10000E+01
  11   .10000E+01     12   .10000E+01
      13   .10000E+01     14   .10000E+01     15   .10000E+01     16   .10000E+01
  17   .00000E+00     18   .00000E+00
      19   .00000E+00     20   .00000E+00     21   .00000E+00     22   .00000E+00
  23   .00000E+00     24   .00000E+00


 SOURCE ID = L0000313     ; SOURCE TYPE = VOLUME   :
       1   .00000E+00      2   .00000E+00      3   .00000E+00      4   .00000E+00
   5   .00000E+00      6   .00000E+00
       7   .00000E+00      8   .00000E+00      9   .10000E+01     10   .10000E+01
  11   .10000E+01     12   .10000E+01
      13   .10000E+01     14   .10000E+01     15   .10000E+01     16   .10000E+01
  17   .00000E+00     18   .00000E+00
      19   .00000E+00     20   .00000E+00     21   .00000E+00     22   .00000E+00
  23   .00000E+00     24   .00000E+00


 SOURCE ID = L0000314     ; SOURCE TYPE = VOLUME   :
       1   .00000E+00      2   .00000E+00      3   .00000E+00      4   .00000E+00
   5   .00000E+00      6   .00000E+00
       7   .00000E+00      8   .00000E+00      9   .10000E+01     10   .10000E+01
  11   .10000E+01     12   .10000E+01
      13   .10000E+01     14   .10000E+01     15   .10000E+01     16   .10000E+01
  17   .00000E+00     18   .00000E+00
      19   .00000E+00     20   .00000E+00     21   .00000E+00     22   .00000E+00
  23   .00000E+00     24   .00000E+00


 SOURCE ID = L0000315     ; SOURCE TYPE = VOLUME   :
       1   .00000E+00      2   .00000E+00      3   .00000E+00      4   .00000E+00
   5   .00000E+00      6   .00000E+00
       7   .00000E+00      8   .00000E+00      9   .10000E+01     10   .10000E+01
  11   .10000E+01     12   .10000E+01
      13   .10000E+01     14   .10000E+01     15   .10000E+01     16   .10000E+01
  17   .00000E+00     18   .00000E+00
      19   .00000E+00     20   .00000E+00     21   .00000E+00     22   .00000E+00
  23   .00000E+00     24   .00000E+00
```

```
 *** MODELOPTs:    RegDFAULT  CONC  ELEV  URBAN  ADJ_U*

                            * SOURCE EMISSION RATE SCALARS WHICH VARY FOR EACH HOUR
OF THE DAY *

     HOUR    SCALAR      HOUR    SCALAR      HOUR    SCALAR      HOUR    SCALAR
 HOUR    SCALAR      HOUR    SCALAR
 - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - -
- - - - - - - - - - - - - - - - - - - - - - - -


 SOURCE ID = L0000316     ; SOURCE TYPE = VOLUME   :
       1   .00000E+00      2   .00000E+00      3   .00000E+00      4   .00000E+00
   5   .00000E+00      6   .00000E+00
       7   .00000E+00      8   .00000E+00      9   .10000E+01     10   .10000E+01
  11   .10000E+01     12   .10000E+01
      13   .10000E+01     14   .10000E+01     15   .10000E+01     16   .10000E+01
  17   .00000E+00     18   .00000E+00
      19   .00000E+00     20   .00000E+00     21   .00000E+00     22   .00000E+00
  23   .00000E+00     24   .00000E+00


 SOURCE ID = L0000317     ; SOURCE TYPE = VOLUME   :
       1   .00000E+00      2   .00000E+00      3   .00000E+00      4   .00000E+00
   5   .00000E+00      6   .00000E+00
       7   .00000E+00      8   .00000E+00      9   .10000E+01     10   .10000E+01
  11   .10000E+01     12   .10000E+01
      13   .10000E+01     14   .10000E+01     15   .10000E+01     16   .10000E+01
  17   .00000E+00     18   .00000E+00
      19   .00000E+00     20   .00000E+00     21   .00000E+00     22   .00000E+00
  23   .00000E+00     24   .00000E+00


 SOURCE ID = L0000318     ; SOURCE TYPE = VOLUME   :
       1   .00000E+00      2   .00000E+00      3   .00000E+00      4   .00000E+00
   5   .00000E+00      6   .00000E+00
       7   .00000E+00      8   .00000E+00      9   .10000E+01     10   .10000E+01
  11   .10000E+01     12   .10000E+01
      13   .10000E+01     14   .10000E+01     15   .10000E+01     16   .10000E+01
  17   .00000E+00     18   .00000E+00
      19   .00000E+00     20   .00000E+00     21   .00000E+00     22   .00000E+00
  23   .00000E+00     24   .00000E+00


 SOURCE ID = L0000319     ; SOURCE TYPE = VOLUME   :
       1   .00000E+00      2   .00000E+00      3   .00000E+00      4   .00000E+00
   5   .00000E+00      6   .00000E+00
       7   .00000E+00      8   .00000E+00      9   .10000E+01     10   .10000E+01
  11   .10000E+01     12   .10000E+01
      13   .10000E+01     14   .10000E+01     15   .10000E+01     16   .10000E+01
```

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  17   .00000E+00     18   .00000E+00
      19   .00000E+00     20   .00000E+00     21   .00000E+00     22   .00000E+00
  23   .00000E+00     24   .00000E+00


 SOURCE ID = L0000320     ; SOURCE TYPE = VOLUME   :
       1   .00000E+00      2   .00000E+00      3   .00000E+00      4   .00000E+00
   5   .00000E+00      6   .00000E+00
       7   .00000E+00      8   .00000E+00      9   .10000E+01     10   .10000E+01
  11   .10000E+01     12   .10000E+01
      13   .10000E+01     14   .10000E+01     15   .10000E+01     16   .10000E+01
  17   .00000E+00     18   .00000E+00
      19   .00000E+00     20   .00000E+00     21   .00000E+00     22   .00000E+00
  23   .00000E+00     24   .00000E+00

 *** AERMOD - VERSION 22112  ***   *** C:\Lakes\AERMOD View\880 Doolittle\880
Doolittle.isc                 ***        01/12/23
 *** AERMET - VERSION  18081 ***   ***
                        ***        15:42:55

                                   PAGE  87
 *** MODELOPTs:    RegDFAULT  CONC  ELEV  URBAN  ADJ_U*

                            * SOURCE EMISSION RATE SCALARS WHICH VARY FOR EACH HOUR
OF THE DAY *

     HOUR    SCALAR      HOUR    SCALAR      HOUR    SCALAR      HOUR    SCALAR
 HOUR    SCALAR      HOUR    SCALAR
 - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - -
- - - - - - - - - - - - - - - - - - - - - - - - -


 SOURCE ID = L0000321     ; SOURCE TYPE = VOLUME   :
       1   .00000E+00      2   .00000E+00      3   .00000E+00      4   .00000E+00
   5   .00000E+00      6   .00000E+00
       7   .00000E+00      8   .00000E+00      9   .10000E+01     10   .10000E+01
  11   .10000E+01     12   .10000E+01
      13   .10000E+01     14   .10000E+01     15   .10000E+01     16   .10000E+01
  17   .00000E+00     18   .00000E+00
      19   .00000E+00     20   .00000E+00     21   .00000E+00     22   .00000E+00
  23   .00000E+00     24   .00000E+00


 SOURCE ID = L0000322     ; SOURCE TYPE = VOLUME   :
       1   .00000E+00      2   .00000E+00      3   .00000E+00      4   .00000E+00
   5   .00000E+00      6   .00000E+00
       7   .00000E+00      8   .00000E+00      9   .10000E+01     10   .10000E+01
  11   .10000E+01     12   .10000E+01
      13   .10000E+01     14   .10000E+01     15   .10000E+01     16   .10000E+01
  17   .00000E+00     18   .00000E+00
```

```
     19   .00000E+00     20   .00000E+00     21   .00000E+00     22   .00000E+00
  23   .00000E+00     24   .00000E+00


 SOURCE ID = L0000323     ; SOURCE TYPE = VOLUME   :
       1   .00000E+00      2   .00000E+00      3   .00000E+00      4   .00000E+00
   5   .00000E+00      6   .00000E+00
       7   .00000E+00      8   .00000E+00      9   .10000E+01     10   .10000E+01
  11   .10000E+01     12   .10000E+01
     13   .10000E+01     14   .10000E+01     15   .10000E+01     16   .10000E+01
  17   .00000E+00     18   .00000E+00
     19   .00000E+00     20   .00000E+00     21   .00000E+00     22   .00000E+00
  23   .00000E+00     24   .00000E+00


 SOURCE ID = L0000324     ; SOURCE TYPE = VOLUME   :
       1   .00000E+00      2   .00000E+00      3   .00000E+00      4   .00000E+00
   5   .00000E+00      6   .00000E+00
       7   .00000E+00      8   .00000E+00      9   .10000E+01     10   .10000E+01
  11   .10000E+01     12   .10000E+01
     13   .10000E+01     14   .10000E+01     15   .10000E+01     16   .10000E+01
  17   .00000E+00     18   .00000E+00
     19   .00000E+00     20   .00000E+00     21   .00000E+00     22   .00000E+00
  23   .00000E+00     24   .00000E+00


 SOURCE ID = L0000325     ; SOURCE TYPE = VOLUME   :
       1   .00000E+00      2   .00000E+00      3   .00000E+00      4   .00000E+00
   5   .00000E+00      6   .00000E+00
       7   .00000E+00      8   .00000E+00      9   .10000E+01     10   .10000E+01
  11   .10000E+01     12   .10000E+01
     13   .10000E+01     14   .10000E+01     15   .10000E+01     16   .10000E+01
  17   .00000E+00     18   .00000E+00
     19   .00000E+00     20   .00000E+00     21   .00000E+00     22   .00000E+00
  23   .00000E+00     24   .00000E+00

↑ *** AERMOD - VERSION 22112  ***   *** C:\Lakes\AERMOD View\880 Doolittle\880
Doolittle.isc                 ***        01/12/23
 *** AERMET - VERSION  18081 ***   ***
                       ***        15:42:55

                                  PAGE  88
 *** MODELOPTs:    RegDFAULT  CONC  ELEV  URBAN  ADJ_U*

                            * SOURCE EMISSION RATE SCALARS WHICH VARY FOR EACH HOUR
OF THE DAY *

     HOUR    SCALAR      HOUR    SCALAR      HOUR    SCALAR      HOUR    SCALAR
 HOUR    SCALAR      HOUR    SCALAR
 - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - -
```

```
- - - - - - - - - - - - - - - - - - - - - - - -


 SOURCE ID = L0000326     ; SOURCE TYPE = VOLUME   :
       1   .00000E+00      2   .00000E+00      3   .00000E+00      4   .00000E+00
   5   .00000E+00      6   .00000E+00
       7   .00000E+00      8   .00000E+00      9   .10000E+01     10   .10000E+01
  11   .10000E+01     12   .10000E+01
      13   .10000E+01     14   .10000E+01     15   .10000E+01     16   .10000E+01
  17   .00000E+00     18   .00000E+00
      19   .00000E+00     20   .00000E+00     21   .00000E+00     22   .00000E+00
  23   .00000E+00     24   .00000E+00


 SOURCE ID = L0000327     ; SOURCE TYPE = VOLUME   :
       1   .00000E+00      2   .00000E+00      3   .00000E+00      4   .00000E+00
   5   .00000E+00      6   .00000E+00
       7   .00000E+00      8   .00000E+00      9   .10000E+01     10   .10000E+01
  11   .10000E+01     12   .10000E+01
      13   .10000E+01     14   .10000E+01     15   .10000E+01     16   .10000E+01
  17   .00000E+00     18   .00000E+00
      19   .00000E+00     20   .00000E+00     21   .00000E+00     22   .00000E+00
  23   .00000E+00     24   .00000E+00


 SOURCE ID = L0000328     ; SOURCE TYPE = VOLUME   :
       1   .00000E+00      2   .00000E+00      3   .00000E+00      4   .00000E+00
   5   .00000E+00      6   .00000E+00
       7   .00000E+00      8   .00000E+00      9   .10000E+01     10   .10000E+01
  11   .10000E+01     12   .10000E+01
      13   .10000E+01     14   .10000E+01     15   .10000E+01     16   .10000E+01
  17   .00000E+00     18   .00000E+00
      19   .00000E+00     20   .00000E+00     21   .00000E+00     22   .00000E+00
  23   .00000E+00     24   .00000E+00


 SOURCE ID = L0000329     ; SOURCE TYPE = VOLUME   :
       1   .00000E+00      2   .00000E+00      3   .00000E+00      4   .00000E+00
   5   .00000E+00      6   .00000E+00
       7   .00000E+00      8   .00000E+00      9   .10000E+01     10   .10000E+01
  11   .10000E+01     12   .10000E+01
      13   .10000E+01     14   .10000E+01     15   .10000E+01     16   .10000E+01
  17   .00000E+00     18   .00000E+00
      19   .00000E+00     20   .00000E+00     21   .00000E+00     22   .00000E+00
  23   .00000E+00     24   .00000E+00


 SOURCE ID = L0000330     ; SOURCE TYPE = VOLUME   :
       1   .00000E+00      2   .00000E+00      3   .00000E+00      4   .00000E+00
   5   .00000E+00      6   .00000E+00
```

```
      7   .00000E+00      8   .00000E+00      9   .10000E+01     10   .10000E+01
  11   .10000E+01     12   .10000E+01
     13   .10000E+01     14   .10000E+01     15   .10000E+01     16   .10000E+01
  17   .00000E+00     18   .00000E+00
     19   .00000E+00     20   .00000E+00     21   .00000E+00     22   .00000E+00
  23   .00000E+00     24   .00000E+00

 *** AERMOD - VERSION 22112  ***   *** C:\Lakes\AERMOD View\880 Doolittle\880
Doolittle.isc                 ***        01/12/23
 *** AERMET - VERSION  18081 ***   ***
                       ***        15:42:55

                                  PAGE  89
 *** MODELOPTs:    RegDFAULT  CONC  ELEV  URBAN  ADJ_U*

                           * SOURCE EMISSION RATE SCALARS WHICH VARY FOR EACH HOUR
OF THE DAY *

     HOUR    SCALAR      HOUR    SCALAR      HOUR    SCALAR      HOUR    SCALAR
 HOUR    SCALAR      HOUR    SCALAR
 - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - -
- - - - - - - - - - - - - - - - - - - - - - - -


 SOURCE ID = L0000331     ; SOURCE TYPE = VOLUME   :
      1   .00000E+00      2   .00000E+00      3   .00000E+00      4   .00000E+00
   5   .00000E+00      6   .00000E+00
      7   .00000E+00      8   .00000E+00      9   .10000E+01     10   .10000E+01
  11   .10000E+01     12   .10000E+01
     13   .10000E+01     14   .10000E+01     15   .10000E+01     16   .10000E+01
  17   .00000E+00     18   .00000E+00
     19   .00000E+00     20   .00000E+00     21   .00000E+00     22   .00000E+00
  23   .00000E+00     24   .00000E+00


 SOURCE ID = L0000332     ; SOURCE TYPE = VOLUME   :
      1   .00000E+00      2   .00000E+00      3   .00000E+00      4   .00000E+00
   5   .00000E+00      6   .00000E+00
      7   .00000E+00      8   .00000E+00      9   .10000E+01     10   .10000E+01
  11   .10000E+01     12   .10000E+01
     13   .10000E+01     14   .10000E+01     15   .10000E+01     16   .10000E+01
  17   .00000E+00     18   .00000E+00
     19   .00000E+00     20   .00000E+00     21   .00000E+00     22   .00000E+00
  23   .00000E+00     24   .00000E+00


 SOURCE ID = L0000333     ; SOURCE TYPE = VOLUME   :
      1   .00000E+00      2   .00000E+00      3   .00000E+00      4   .00000E+00
   5   .00000E+00      6   .00000E+00
      7   .00000E+00      8   .00000E+00      9   .10000E+01     10   .10000E+01
```

```
  11   .10000E+01     12   .10000E+01
      13   .10000E+01     14   .10000E+01     15   .10000E+01     16   .10000E+01
  17   .00000E+00     18   .00000E+00
      19   .00000E+00     20   .00000E+00     21   .00000E+00     22   .00000E+00
  23   .00000E+00     24   .00000E+00


 SOURCE ID = L0000334     ; SOURCE TYPE = VOLUME   :
       1   .00000E+00      2   .00000E+00      3   .00000E+00      4   .00000E+00
   5   .00000E+00      6   .00000E+00
       7   .00000E+00      8   .00000E+00      9   .10000E+01     10   .10000E+01
  11   .10000E+01     12   .10000E+01
      13   .10000E+01     14   .10000E+01     15   .10000E+01     16   .10000E+01
  17   .00000E+00     18   .00000E+00
      19   .00000E+00     20   .00000E+00     21   .00000E+00     22   .00000E+00
  23   .00000E+00     24   .00000E+00


 SOURCE ID = L0000335     ; SOURCE TYPE = VOLUME   :
       1   .00000E+00      2   .00000E+00      3   .00000E+00      4   .00000E+00
   5   .00000E+00      6   .00000E+00
       7   .00000E+00      8   .00000E+00      9   .10000E+01     10   .10000E+01
  11   .10000E+01     12   .10000E+01
      13   .10000E+01     14   .10000E+01     15   .10000E+01     16   .10000E+01
  17   .00000E+00     18   .00000E+00
      19   .00000E+00     20   .00000E+00     21   .00000E+00     22   .00000E+00
  23   .00000E+00     24   .00000E+00

 *** AERMOD - VERSION 22112  ***   *** C:\Lakes\AERMOD View\880 Doolittle\880
Doolittle.isc                 ***        01/12/23
 *** AERMET - VERSION  18081 ***   ***
                        ***        15:42:55

                                   PAGE  90
 *** MODELOPTs:    RegDFAULT  CONC  ELEV  URBAN  ADJ_U*

                            * SOURCE EMISSION RATE SCALARS WHICH VARY FOR EACH HOUR
OF THE DAY *

     HOUR    SCALAR      HOUR    SCALAR      HOUR    SCALAR      HOUR    SCALAR
 HOUR    SCALAR      HOUR    SCALAR
 - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - -
- - - - - - - - - - - - - - - - - - - - - - - - -


 SOURCE ID = L0000336     ; SOURCE TYPE = VOLUME   :
       1   .00000E+00      2   .00000E+00      3   .00000E+00      4   .00000E+00
   5   .00000E+00      6   .00000E+00
       7   .00000E+00      8   .00000E+00      9   .10000E+01     10   .10000E+01
  11   .10000E+01     12   .10000E+01
```

```
     13   .10000E+01     14   .10000E+01     15   .10000E+01     16   .10000E+01
 17   .00000E+00     18   .00000E+00
     19   .00000E+00     20   .00000E+00     21   .00000E+00     22   .00000E+00
 23   .00000E+00     24   .00000E+00


SOURCE ID = L0000337     ; SOURCE TYPE = VOLUME   :
      1   .00000E+00      2   .00000E+00      3   .00000E+00      4   .00000E+00
  5   .00000E+00      6   .00000E+00
      7   .00000E+00      8   .00000E+00      9   .10000E+01     10   .10000E+01
 11   .10000E+01     12   .10000E+01
     13   .10000E+01     14   .10000E+01     15   .10000E+01     16   .10000E+01
 17   .00000E+00     18   .00000E+00
     19   .00000E+00     20   .00000E+00     21   .00000E+00     22   .00000E+00
 23   .00000E+00     24   .00000E+00


SOURCE ID = L0000338     ; SOURCE TYPE = VOLUME   :
      1   .00000E+00      2   .00000E+00      3   .00000E+00      4   .00000E+00
  5   .00000E+00      6   .00000E+00
      7   .00000E+00      8   .00000E+00      9   .10000E+01     10   .10000E+01
 11   .10000E+01     12   .10000E+01
     13   .10000E+01     14   .10000E+01     15   .10000E+01     16   .10000E+01
 17   .00000E+00     18   .00000E+00
     19   .00000E+00     20   .00000E+00     21   .00000E+00     22   .00000E+00
 23   .00000E+00     24   .00000E+00


SOURCE ID = L0000339     ; SOURCE TYPE = VOLUME   :
      1   .00000E+00      2   .00000E+00      3   .00000E+00      4   .00000E+00
  5   .00000E+00      6   .00000E+00
      7   .00000E+00      8   .00000E+00      9   .10000E+01     10   .10000E+01
 11   .10000E+01     12   .10000E+01
     13   .10000E+01     14   .10000E+01     15   .10000E+01     16   .10000E+01
 17   .00000E+00     18   .00000E+00
     19   .00000E+00     20   .00000E+00     21   .00000E+00     22   .00000E+00
 23   .00000E+00     24   .00000E+00


SOURCE ID = L0000340     ; SOURCE TYPE = VOLUME   :
      1   .00000E+00      2   .00000E+00      3   .00000E+00      4   .00000E+00
  5   .00000E+00      6   .00000E+00
      7   .00000E+00      8   .00000E+00      9   .10000E+01     10   .10000E+01
 11   .10000E+01     12   .10000E+01
     13   .10000E+01     14   .10000E+01     15   .10000E+01     16   .10000E+01
 17   .00000E+00     18   .00000E+00
     19   .00000E+00     20   .00000E+00     21   .00000E+00     22   .00000E+00
 23   .00000E+00     24   .00000E+00
```

*** MODELOPTs: RegDFAULT CONC ELEV URBAN ADJ_U*

* SOURCE EMISSION RATE SCALARS WHICH VARY FOR EACH HOUR OF THE DAY *

```
    HOUR    SCALAR      HOUR    SCALAR      HOUR    SCALAR      HOUR    SCALAR
 HOUR    SCALAR      HOUR    SCALAR
 - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - -
- - - - - - - - - - - - - - - - - - - - - - - - -


 SOURCE ID = L0000341     ; SOURCE TYPE = VOLUME   :
       1   .00000E+00      2   .00000E+00      3   .00000E+00      4   .00000E+00
   5   .00000E+00      6   .00000E+00
       7   .00000E+00      8   .00000E+00      9   .10000E+01     10   .10000E+01
  11   .10000E+01     12   .10000E+01
      13   .10000E+01     14   .10000E+01     15   .10000E+01     16   .10000E+01
  17   .00000E+00     18   .00000E+00
      19   .00000E+00     20   .00000E+00     21   .00000E+00     22   .00000E+00
  23   .00000E+00     24   .00000E+00


 SOURCE ID = L0000342     ; SOURCE TYPE = VOLUME   :
       1   .00000E+00      2   .00000E+00      3   .00000E+00      4   .00000E+00
   5   .00000E+00      6   .00000E+00
       7   .00000E+00      8   .00000E+00      9   .10000E+01     10   .10000E+01
  11   .10000E+01     12   .10000E+01
      13   .10000E+01     14   .10000E+01     15   .10000E+01     16   .10000E+01
  17   .00000E+00     18   .00000E+00
      19   .00000E+00     20   .00000E+00     21   .00000E+00     22   .00000E+00
  23   .00000E+00     24   .00000E+00


 SOURCE ID = L0000343     ; SOURCE TYPE = VOLUME   :
       1   .00000E+00      2   .00000E+00      3   .00000E+00      4   .00000E+00
   5   .00000E+00      6   .00000E+00
       7   .00000E+00      8   .00000E+00      9   .10000E+01     10   .10000E+01
  11   .10000E+01     12   .10000E+01
      13   .10000E+01     14   .10000E+01     15   .10000E+01     16   .10000E+01
  17   .00000E+00     18   .00000E+00
      19   .00000E+00     20   .00000E+00     21   .00000E+00     22   .00000E+00
  23   .00000E+00     24   .00000E+00


 SOURCE ID = L0000344     ; SOURCE TYPE = VOLUME   :
```

```
      1   .00000E+00      2   .00000E+00      3   .00000E+00      4   .00000E+00
   5   .00000E+00      6   .00000E+00
      7   .00000E+00      8   .00000E+00      9   .10000E+01     10   .10000E+01
  11   .10000E+01     12   .10000E+01
     13   .10000E+01     14   .10000E+01     15   .10000E+01     16   .10000E+01
  17   .00000E+00     18   .00000E+00
     19   .00000E+00     20   .00000E+00     21   .00000E+00     22   .00000E+00
  23   .00000E+00     24   .00000E+00


 SOURCE ID = L0000345     ; SOURCE TYPE = VOLUME   :
      1   .00000E+00      2   .00000E+00      3   .00000E+00      4   .00000E+00
   5   .00000E+00      6   .00000E+00
      7   .00000E+00      8   .00000E+00      9   .10000E+01     10   .10000E+01
  11   .10000E+01     12   .10000E+01
     13   .10000E+01     14   .10000E+01     15   .10000E+01     16   .10000E+01
  17   .00000E+00     18   .00000E+00
     19   .00000E+00     20   .00000E+00     21   .00000E+00     22   .00000E+00
  23   .00000E+00     24   .00000E+00

↑ *** AERMOD - VERSION 22112  ***   *** C:\Lakes\AERMOD View\880 Doolittle\880
Doolittle.isc                 ***        01/12/23
 *** AERMET - VERSION  18081 ***   ***
                        ***        15:42:55

                                   PAGE  92
 *** MODELOPTs:    RegDFAULT  CONC  ELEV  URBAN  ADJ_U*

                            * SOURCE EMISSION RATE SCALARS WHICH VARY FOR EACH HOUR
OF THE DAY *

     HOUR    SCALAR      HOUR    SCALAR      HOUR    SCALAR      HOUR    SCALAR
 HOUR    SCALAR      HOUR    SCALAR
 - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - -
- - - - - - - - - - - - - - - - - - - - - - - - -


 SOURCE ID = L0000346     ; SOURCE TYPE = VOLUME   :
      1   .00000E+00      2   .00000E+00      3   .00000E+00      4   .00000E+00
   5   .00000E+00      6   .00000E+00
      7   .00000E+00      8   .00000E+00      9   .10000E+01     10   .10000E+01
  11   .10000E+01     12   .10000E+01
     13   .10000E+01     14   .10000E+01     15   .10000E+01     16   .10000E+01
  17   .00000E+00     18   .00000E+00
     19   .00000E+00     20   .00000E+00     21   .00000E+00     22   .00000E+00
  23   .00000E+00     24   .00000E+00


 SOURCE ID = L0000347     ; SOURCE TYPE = VOLUME   :
      1   .00000E+00      2   .00000E+00      3   .00000E+00      4   .00000E+00
```

```
  5   .00000E+00      6   .00000E+00
      7   .00000E+00      8   .00000E+00      9   .10000E+01     10   .10000E+01
 11   .10000E+01     12   .10000E+01
     13   .10000E+01     14   .10000E+01     15   .10000E+01     16   .10000E+01
 17   .00000E+00     18   .00000E+00
     19   .00000E+00     20   .00000E+00     21   .00000E+00     22   .00000E+00
 23   .00000E+00     24   .00000E+00


SOURCE ID = L0000348     ; SOURCE TYPE = VOLUME   :
      1   .00000E+00      2   .00000E+00      3   .00000E+00      4   .00000E+00
  5   .00000E+00      6   .00000E+00
      7   .00000E+00      8   .00000E+00      9   .10000E+01     10   .10000E+01
 11   .10000E+01     12   .10000E+01
     13   .10000E+01     14   .10000E+01     15   .10000E+01     16   .10000E+01
 17   .00000E+00     18   .00000E+00
     19   .00000E+00     20   .00000E+00     21   .00000E+00     22   .00000E+00
 23   .00000E+00     24   .00000E+00


SOURCE ID = L0000349     ; SOURCE TYPE = VOLUME   :
      1   .00000E+00      2   .00000E+00      3   .00000E+00      4   .00000E+00
  5   .00000E+00      6   .00000E+00
      7   .00000E+00      8   .00000E+00      9   .10000E+01     10   .10000E+01
 11   .10000E+01     12   .10000E+01
     13   .10000E+01     14   .10000E+01     15   .10000E+01     16   .10000E+01
 17   .00000E+00     18   .00000E+00
     19   .00000E+00     20   .00000E+00     21   .00000E+00     22   .00000E+00
 23   .00000E+00     24   .00000E+00


SOURCE ID = L0000350     ; SOURCE TYPE = VOLUME   :
      1   .00000E+00      2   .00000E+00      3   .00000E+00      4   .00000E+00
  5   .00000E+00      6   .00000E+00
      7   .00000E+00      8   .00000E+00      9   .10000E+01     10   .10000E+01
 11   .10000E+01     12   .10000E+01
     13   .10000E+01     14   .10000E+01     15   .10000E+01     16   .10000E+01
 17   .00000E+00     18   .00000E+00
     19   .00000E+00     20   .00000E+00     21   .00000E+00     22   .00000E+00
 23   .00000E+00     24   .00000E+00
```



```
                            * SOURCE EMISSION RATE SCALARS WHICH VARY FOR EACH HOUR
```

```
OF THE DAY *

     HOUR    SCALAR      HOUR    SCALAR      HOUR    SCALAR      HOUR    SCALAR
 HOUR    SCALAR      HOUR    SCALAR
 - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - -
- - - - - - - - - - - - - - - - - - - - - - - -


 SOURCE ID = L0000351     ; SOURCE TYPE = VOLUME   :
       1   .00000E+00      2   .00000E+00      3   .00000E+00      4   .00000E+00
   5   .00000E+00      6   .00000E+00
       7   .00000E+00      8   .00000E+00      9   .10000E+01     10   .10000E+01
  11   .10000E+01     12   .10000E+01
      13   .10000E+01     14   .10000E+01     15   .10000E+01     16   .10000E+01
  17   .00000E+00     18   .00000E+00
      19   .00000E+00     20   .00000E+00     21   .00000E+00     22   .00000E+00
  23   .00000E+00     24   .00000E+00


 SOURCE ID = L0000352     ; SOURCE TYPE = VOLUME   :
       1   .00000E+00      2   .00000E+00      3   .00000E+00      4   .00000E+00
   5   .00000E+00      6   .00000E+00
       7   .00000E+00      8   .00000E+00      9   .10000E+01     10   .10000E+01
  11   .10000E+01     12   .10000E+01
      13   .10000E+01     14   .10000E+01     15   .10000E+01     16   .10000E+01
  17   .00000E+00     18   .00000E+00
      19   .00000E+00     20   .00000E+00     21   .00000E+00     22   .00000E+00
  23   .00000E+00     24   .00000E+00


 SOURCE ID = L0000353     ; SOURCE TYPE = VOLUME   :
       1   .00000E+00      2   .00000E+00      3   .00000E+00      4   .00000E+00
   5   .00000E+00      6   .00000E+00
       7   .00000E+00      8   .00000E+00      9   .10000E+01     10   .10000E+01
  11   .10000E+01     12   .10000E+01
      13   .10000E+01     14   .10000E+01     15   .10000E+01     16   .10000E+01
  17   .00000E+00     18   .00000E+00
      19   .00000E+00     20   .00000E+00     21   .00000E+00     22   .00000E+00
  23   .00000E+00     24   .00000E+00


 SOURCE ID = L0000354     ; SOURCE TYPE = VOLUME   :
       1   .00000E+00      2   .00000E+00      3   .00000E+00      4   .00000E+00
   5   .00000E+00      6   .00000E+00
       7   .00000E+00      8   .00000E+00      9   .10000E+01     10   .10000E+01
  11   .10000E+01     12   .10000E+01
      13   .10000E+01     14   .10000E+01     15   .10000E+01     16   .10000E+01
  17   .00000E+00     18   .00000E+00
      19   .00000E+00     20   .00000E+00     21   .00000E+00     22   .00000E+00
  23   .00000E+00     24   .00000E+00
```

```
 SOURCE ID = L0000355     ; SOURCE TYPE = VOLUME   :
       1   .00000E+00      2   .00000E+00      3   .00000E+00      4   .00000E+00
   5   .00000E+00      6   .00000E+00
       7   .00000E+00      8   .00000E+00      9   .10000E+01     10   .10000E+01
  11   .10000E+01     12   .10000E+01
      13   .10000E+01     14   .10000E+01     15   .10000E+01     16   .10000E+01
  17   .00000E+00     18   .00000E+00
      19   .00000E+00     20   .00000E+00     21   .00000E+00     22   .00000E+00
  23   .00000E+00     24   .00000E+00
```



```
 *** MODELOPTs:    RegDFAULT  CONC  ELEV  URBAN  ADJ_U*

                            * SOURCE EMISSION RATE SCALARS WHICH VARY FOR EACH HOUR
OF THE DAY *

     HOUR    SCALAR      HOUR    SCALAR      HOUR    SCALAR      HOUR    SCALAR
 HOUR    SCALAR      HOUR    SCALAR
 - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - -
- - - - - - - - - - - - - - - - - - - - - - - - -


 SOURCE ID = L0000356     ; SOURCE TYPE = VOLUME   :
       1   .00000E+00      2   .00000E+00      3   .00000E+00      4   .00000E+00
   5   .00000E+00      6   .00000E+00
       7   .00000E+00      8   .00000E+00      9   .10000E+01     10   .10000E+01
  11   .10000E+01     12   .10000E+01
      13   .10000E+01     14   .10000E+01     15   .10000E+01     16   .10000E+01
  17   .00000E+00     18   .00000E+00
      19   .00000E+00     20   .00000E+00     21   .00000E+00     22   .00000E+00
  23   .00000E+00     24   .00000E+00


 SOURCE ID = L0000357     ; SOURCE TYPE = VOLUME   :
       1   .00000E+00      2   .00000E+00      3   .00000E+00      4   .00000E+00
   5   .00000E+00      6   .00000E+00
       7   .00000E+00      8   .00000E+00      9   .10000E+01     10   .10000E+01
  11   .10000E+01     12   .10000E+01
      13   .10000E+01     14   .10000E+01     15   .10000E+01     16   .10000E+01
  17   .00000E+00     18   .00000E+00
      19   .00000E+00     20   .00000E+00     21   .00000E+00     22   .00000E+00
  23   .00000E+00     24   .00000E+00
```

```
 SOURCE ID = L0000358     ; SOURCE TYPE = VOLUME   :
       1   .00000E+00      2   .00000E+00      3   .00000E+00      4   .00000E+00
   5   .00000E+00      6   .00000E+00
       7   .00000E+00      8   .00000E+00      9   .10000E+01     10   .10000E+01
  11   .10000E+01     12   .10000E+01
      13   .10000E+01     14   .10000E+01     15   .10000E+01     16   .10000E+01
  17   .00000E+00     18   .00000E+00
      19   .00000E+00     20   .00000E+00     21   .00000E+00     22   .00000E+00
  23   .00000E+00     24   .00000E+00


 SOURCE ID = L0000359     ; SOURCE TYPE = VOLUME   :
       1   .00000E+00      2   .00000E+00      3   .00000E+00      4   .00000E+00
   5   .00000E+00      6   .00000E+00
       7   .00000E+00      8   .00000E+00      9   .10000E+01     10   .10000E+01
  11   .10000E+01     12   .10000E+01
      13   .10000E+01     14   .10000E+01     15   .10000E+01     16   .10000E+01
  17   .00000E+00     18   .00000E+00
      19   .00000E+00     20   .00000E+00     21   .00000E+00     22   .00000E+00
  23   .00000E+00     24   .00000E+00


 SOURCE ID = L0000360     ; SOURCE TYPE = VOLUME   :
       1   .00000E+00      2   .00000E+00      3   .00000E+00      4   .00000E+00
   5   .00000E+00      6   .00000E+00
       7   .00000E+00      8   .00000E+00      9   .10000E+01     10   .10000E+01
  11   .10000E+01     12   .10000E+01
      13   .10000E+01     14   .10000E+01     15   .10000E+01     16   .10000E+01
  17   .00000E+00     18   .00000E+00
      19   .00000E+00     20   .00000E+00     21   .00000E+00     22   .00000E+00
  23   .00000E+00     24   .00000E+00
```



```
                            * SOURCE EMISSION RATE SCALARS WHICH VARY FOR EACH HOUR
OF THE DAY *

     HOUR    SCALAR      HOUR    SCALAR      HOUR    SCALAR      HOUR    SCALAR
 HOUR    SCALAR      HOUR    SCALAR
 - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - -
- - - - - - - - - - - - - - - - - - - - - - - - -
```

```
SOURCE ID = L0000361     ; SOURCE TYPE = VOLUME   :
      1   .00000E+00      2   .00000E+00      3   .00000E+00      4   .00000E+00
  5   .00000E+00      6   .00000E+00
      7   .00000E+00      8   .00000E+00      9   .10000E+01     10   .10000E+01
 11   .10000E+01     12   .10000E+01
     13   .10000E+01     14   .10000E+01     15   .10000E+01     16   .10000E+01
 17   .00000E+00     18   .00000E+00
     19   .00000E+00     20   .00000E+00     21   .00000E+00     22   .00000E+00
 23   .00000E+00     24   .00000E+00


SOURCE ID = L0000362     ; SOURCE TYPE = VOLUME   :
      1   .00000E+00      2   .00000E+00      3   .00000E+00      4   .00000E+00
  5   .00000E+00      6   .00000E+00
      7   .00000E+00      8   .00000E+00      9   .10000E+01     10   .10000E+01
 11   .10000E+01     12   .10000E+01
     13   .10000E+01     14   .10000E+01     15   .10000E+01     16   .10000E+01
 17   .00000E+00     18   .00000E+00
     19   .00000E+00     20   .00000E+00     21   .00000E+00     22   .00000E+00
 23   .00000E+00     24   .00000E+00


SOURCE ID = L0000363     ; SOURCE TYPE = VOLUME   :
      1   .00000E+00      2   .00000E+00      3   .00000E+00      4   .00000E+00
  5   .00000E+00      6   .00000E+00
      7   .00000E+00      8   .00000E+00      9   .10000E+01     10   .10000E+01
 11   .10000E+01     12   .10000E+01
     13   .10000E+01     14   .10000E+01     15   .10000E+01     16   .10000E+01
 17   .00000E+00     18   .00000E+00
     19   .00000E+00     20   .00000E+00     21   .00000E+00     22   .00000E+00
 23   .00000E+00     24   .00000E+00


SOURCE ID = L0000364     ; SOURCE TYPE = VOLUME   :
      1   .00000E+00      2   .00000E+00      3   .00000E+00      4   .00000E+00
  5   .00000E+00      6   .00000E+00
      7   .00000E+00      8   .00000E+00      9   .10000E+01     10   .10000E+01
 11   .10000E+01     12   .10000E+01
     13   .10000E+01     14   .10000E+01     15   .10000E+01     16   .10000E+01
 17   .00000E+00     18   .00000E+00
     19   .00000E+00     20   .00000E+00     21   .00000E+00     22   .00000E+00
 23   .00000E+00     24   .00000E+00


SOURCE ID = L0000365     ; SOURCE TYPE = VOLUME   :
      1   .00000E+00      2   .00000E+00      3   .00000E+00      4   .00000E+00
  5   .00000E+00      6   .00000E+00
      7   .00000E+00      8   .00000E+00      9   .10000E+01     10   .10000E+01
 11   .10000E+01     12   .10000E+01
     13   .10000E+01     14   .10000E+01     15   .10000E+01     16   .10000E+01
```

```
  17   .00000E+00     18   .00000E+00
      19   .00000E+00     20   .00000E+00     21   .00000E+00     22   .00000E+00
  23   .00000E+00     24   .00000E+00

 *** AERMOD - VERSION 22112  ***   *** C:\Lakes\AERMOD View\880 Doolittle\880
Doolittle.isc                 ***        01/12/23
 *** AERMET - VERSION  18081 ***   ***
                       ***        15:42:55

                                  PAGE  96
 *** MODELOPTs:    RegDFAULT  CONC  ELEV  URBAN  ADJ_U*

                            * SOURCE EMISSION RATE SCALARS WHICH VARY FOR EACH HOUR
OF THE DAY *

     HOUR    SCALAR      HOUR    SCALAR      HOUR    SCALAR      HOUR    SCALAR
 HOUR    SCALAR      HOUR    SCALAR
 - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - -
- - - - - - - - - - - - - - - - - - - - - - - -


 SOURCE ID = L0000366     ; SOURCE TYPE = VOLUME   :
       1   .00000E+00      2   .00000E+00      3   .00000E+00      4   .00000E+00
   5   .00000E+00      6   .00000E+00
       7   .00000E+00      8   .00000E+00      9   .10000E+01     10   .10000E+01
  11   .10000E+01     12   .10000E+01
      13   .10000E+01     14   .10000E+01     15   .10000E+01     16   .10000E+01
  17   .00000E+00     18   .00000E+00
      19   .00000E+00     20   .00000E+00     21   .00000E+00     22   .00000E+00
  23   .00000E+00     24   .00000E+00


 SOURCE ID = L0000367     ; SOURCE TYPE = VOLUME   :
       1   .00000E+00      2   .00000E+00      3   .00000E+00      4   .00000E+00
   5   .00000E+00      6   .00000E+00
       7   .00000E+00      8   .00000E+00      9   .10000E+01     10   .10000E+01
  11   .10000E+01     12   .10000E+01
      13   .10000E+01     14   .10000E+01     15   .10000E+01     16   .10000E+01
  17   .00000E+00     18   .00000E+00
      19   .00000E+00     20   .00000E+00     21   .00000E+00     22   .00000E+00
  23   .00000E+00     24   .00000E+00


 SOURCE ID = L0000368     ; SOURCE TYPE = VOLUME   :
       1   .00000E+00      2   .00000E+00      3   .00000E+00      4   .00000E+00
   5   .00000E+00      6   .00000E+00
       7   .00000E+00      8   .00000E+00      9   .10000E+01     10   .10000E+01
  11   .10000E+01     12   .10000E+01
      13   .10000E+01     14   .10000E+01     15   .10000E+01     16   .10000E+01
  17   .00000E+00     18   .00000E+00
```

```
     19   .00000E+00     20   .00000E+00     21   .00000E+00     22   .00000E+00
  23   .00000E+00     24   .00000E+00


 SOURCE ID = L0000369     ; SOURCE TYPE = VOLUME   :
      1   .00000E+00      2   .00000E+00      3   .00000E+00      4   .00000E+00
   5   .00000E+00      6   .00000E+00
      7   .00000E+00      8   .00000E+00      9   .10000E+01     10   .10000E+01
  11   .10000E+01     12   .10000E+01
     13   .10000E+01     14   .10000E+01     15   .10000E+01     16   .10000E+01
  17   .00000E+00     18   .00000E+00
     19   .00000E+00     20   .00000E+00     21   .00000E+00     22   .00000E+00
  23   .00000E+00     24   .00000E+00


 SOURCE ID = L0000370     ; SOURCE TYPE = VOLUME   :
      1   .00000E+00      2   .00000E+00      3   .00000E+00      4   .00000E+00
   5   .00000E+00      6   .00000E+00
      7   .00000E+00      8   .00000E+00      9   .10000E+01     10   .10000E+01
  11   .10000E+01     12   .10000E+01
     13   .10000E+01     14   .10000E+01     15   .10000E+01     16   .10000E+01
  17   .00000E+00     18   .00000E+00
     19   .00000E+00     20   .00000E+00     21   .00000E+00     22   .00000E+00
  23   .00000E+00     24   .00000E+00
```



```
                            * SOURCE EMISSION RATE SCALARS WHICH VARY FOR EACH HOUR
OF THE DAY *

     HOUR    SCALAR      HOUR    SCALAR      HOUR    SCALAR      HOUR    SCALAR
 HOUR    SCALAR      HOUR    SCALAR
 - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - -
- - - - - - - - - - - - - - - - - - - - - - - - -


 SOURCE ID = L0000371     ; SOURCE TYPE = VOLUME   :
      1   .00000E+00      2   .00000E+00      3   .00000E+00      4   .00000E+00
   5   .00000E+00      6   .00000E+00
      7   .00000E+00      8   .00000E+00      9   .10000E+01     10   .10000E+01
  11   .10000E+01     12   .10000E+01
     13   .10000E+01     14   .10000E+01     15   .10000E+01     16   .10000E+01
  17   .00000E+00     18   .00000E+00
     19   .00000E+00     20   .00000E+00     21   .00000E+00     22   .00000E+00
```

```
 23   .00000E+00     24   .00000E+00


SOURCE ID = L0000372     ; SOURCE TYPE = VOLUME   :
      1   .00000E+00      2   .00000E+00      3   .00000E+00      4   .00000E+00
  5   .00000E+00      6   .00000E+00
      7   .00000E+00      8   .00000E+00      9   .10000E+01     10   .10000E+01
 11   .10000E+01     12   .10000E+01
     13   .10000E+01     14   .10000E+01     15   .10000E+01     16   .10000E+01
 17   .00000E+00     18   .00000E+00
     19   .00000E+00     20   .00000E+00     21   .00000E+00     22   .00000E+00
 23   .00000E+00     24   .00000E+00


SOURCE ID = L0000373     ; SOURCE TYPE = VOLUME   :
      1   .00000E+00      2   .00000E+00      3   .00000E+00      4   .00000E+00
  5   .00000E+00      6   .00000E+00
      7   .00000E+00      8   .00000E+00      9   .10000E+01     10   .10000E+01
 11   .10000E+01     12   .10000E+01
     13   .10000E+01     14   .10000E+01     15   .10000E+01     16   .10000E+01
 17   .00000E+00     18   .00000E+00
     19   .00000E+00     20   .00000E+00     21   .00000E+00     22   .00000E+00
 23   .00000E+00     24   .00000E+00


SOURCE ID = L0000374     ; SOURCE TYPE = VOLUME   :
      1   .00000E+00      2   .00000E+00      3   .00000E+00      4   .00000E+00
  5   .00000E+00      6   .00000E+00
      7   .00000E+00      8   .00000E+00      9   .10000E+01     10   .10000E+01
 11   .10000E+01     12   .10000E+01
     13   .10000E+01     14   .10000E+01     15   .10000E+01     16   .10000E+01
 17   .00000E+00     18   .00000E+00
     19   .00000E+00     20   .00000E+00     21   .00000E+00     22   .00000E+00
 23   .00000E+00     24   .00000E+00


SOURCE ID = L0000375     ; SOURCE TYPE = VOLUME   :
      1   .00000E+00      2   .00000E+00      3   .00000E+00      4   .00000E+00
  5   .00000E+00      6   .00000E+00
      7   .00000E+00      8   .00000E+00      9   .10000E+01     10   .10000E+01
 11   .10000E+01     12   .10000E+01
     13   .10000E+01     14   .10000E+01     15   .10000E+01     16   .10000E+01
 17   .00000E+00     18   .00000E+00
     19   .00000E+00     20   .00000E+00     21   .00000E+00     22   .00000E+00
 23   .00000E+00     24   .00000E+00

 *** AERMOD - VERSION 22112  ***   *** C:\Lakes\AERMOD View\880 Doolittle\880
Doolittle.isc                 ***        01/12/23
 *** AERMET - VERSION  18081 ***   ***
                       ***        15:42:55
```

```
*** MODELOPTs:    RegDFAULT  CONC  ELEV  URBAN  ADJ_U*

                          * SOURCE EMISSION RATE SCALARS WHICH VARY FOR EACH HOUR
OF THE DAY *

    HOUR    SCALAR      HOUR    SCALAR      HOUR    SCALAR      HOUR    SCALAR
 HOUR    SCALAR      HOUR    SCALAR
 - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - -
- - - - - - - - - - - - - - - - - - - - - - - -


 SOURCE ID = L0000376     ; SOURCE TYPE = VOLUME   :
       1   .00000E+00      2   .00000E+00      3   .00000E+00      4   .00000E+00
   5   .00000E+00      6   .00000E+00
       7   .00000E+00      8   .00000E+00      9   .10000E+01     10   .10000E+01
  11   .10000E+01     12   .10000E+01
      13   .10000E+01     14   .10000E+01     15   .10000E+01     16   .10000E+01
  17   .00000E+00     18   .00000E+00
      19   .00000E+00     20   .00000E+00     21   .00000E+00     22   .00000E+00
  23   .00000E+00     24   .00000E+00


 SOURCE ID = L0000377     ; SOURCE TYPE = VOLUME   :
       1   .00000E+00      2   .00000E+00      3   .00000E+00      4   .00000E+00
   5   .00000E+00      6   .00000E+00
       7   .00000E+00      8   .00000E+00      9   .10000E+01     10   .10000E+01
  11   .10000E+01     12   .10000E+01
      13   .10000E+01     14   .10000E+01     15   .10000E+01     16   .10000E+01
  17   .00000E+00     18   .00000E+00
      19   .00000E+00     20   .00000E+00     21   .00000E+00     22   .00000E+00
  23   .00000E+00     24   .00000E+00


 SOURCE ID = L0000378     ; SOURCE TYPE = VOLUME   :
       1   .00000E+00      2   .00000E+00      3   .00000E+00      4   .00000E+00
   5   .00000E+00      6   .00000E+00
       7   .00000E+00      8   .00000E+00      9   .10000E+01     10   .10000E+01
  11   .10000E+01     12   .10000E+01
      13   .10000E+01     14   .10000E+01     15   .10000E+01     16   .10000E+01
  17   .00000E+00     18   .00000E+00
      19   .00000E+00     20   .00000E+00     21   .00000E+00     22   .00000E+00
  23   .00000E+00     24   .00000E+00


 SOURCE ID = L0000379     ; SOURCE TYPE = VOLUME   :
       1   .00000E+00      2   .00000E+00      3   .00000E+00      4   .00000E+00
   5   .00000E+00      6   .00000E+00
       7   .00000E+00      8   .00000E+00      9   .10000E+01     10   .10000E+01
```

```
  11   .10000E+01     12   .10000E+01
      13   .10000E+01     14   .10000E+01     15   .10000E+01     16   .10000E+01
  17   .00000E+00     18   .00000E+00
      19   .00000E+00     20   .00000E+00     21   .00000E+00     22   .00000E+00
  23   .00000E+00     24   .00000E+00


 SOURCE ID = L0000380     ; SOURCE TYPE = VOLUME   :
       1   .00000E+00      2   .00000E+00      3   .00000E+00      4   .00000E+00
   5   .00000E+00      6   .00000E+00
       7   .00000E+00      8   .00000E+00      9   .10000E+01     10   .10000E+01
  11   .10000E+01     12   .10000E+01
      13   .10000E+01     14   .10000E+01     15   .10000E+01     16   .10000E+01
  17   .00000E+00     18   .00000E+00
      19   .00000E+00     20   .00000E+00     21   .00000E+00     22   .00000E+00
  23   .00000E+00     24   .00000E+00

 *** AERMOD - VERSION 22112  ***   *** C:\Lakes\AERMOD View\880 Doolittle\880
Doolittle.isc                 ***        01/12/23
 *** AERMET - VERSION  18081 ***   ***
                       ***        15:42:55

                                  PAGE  99
 *** MODELOPTs:    RegDFAULT  CONC  ELEV  URBAN  ADJ_U*

                            * SOURCE EMISSION RATE SCALARS WHICH VARY FOR EACH HOUR
OF THE DAY *

     HOUR    SCALAR      HOUR    SCALAR      HOUR    SCALAR      HOUR    SCALAR
 HOUR    SCALAR      HOUR    SCALAR
 - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - -
- - - - - - - - - - - - - - - - - - - - - - - - -


 SOURCE ID = L0000381     ; SOURCE TYPE = VOLUME   :
       1   .00000E+00      2   .00000E+00      3   .00000E+00      4   .00000E+00
   5   .00000E+00      6   .00000E+00
       7   .00000E+00      8   .00000E+00      9   .10000E+01     10   .10000E+01
  11   .10000E+01     12   .10000E+01
      13   .10000E+01     14   .10000E+01     15   .10000E+01     16   .10000E+01
  17   .00000E+00     18   .00000E+00
      19   .00000E+00     20   .00000E+00     21   .00000E+00     22   .00000E+00
  23   .00000E+00     24   .00000E+00


 SOURCE ID = L0000382     ; SOURCE TYPE = VOLUME   :
       1   .00000E+00      2   .00000E+00      3   .00000E+00      4   .00000E+00
   5   .00000E+00      6   .00000E+00
       7   .00000E+00      8   .00000E+00      9   .10000E+01     10   .10000E+01
  11   .10000E+01     12   .10000E+01
```

```
     13   .10000E+01     14   .10000E+01     15   .10000E+01     16   .10000E+01
  17   .00000E+00     18   .00000E+00
     19   .00000E+00     20   .00000E+00     21   .00000E+00     22   .00000E+00
  23   .00000E+00     24   .00000E+00


 SOURCE ID = L0000383     ; SOURCE TYPE = VOLUME   :
      1   .00000E+00      2   .00000E+00      3   .00000E+00      4   .00000E+00
   5   .00000E+00      6   .00000E+00
      7   .00000E+00      8   .00000E+00      9   .10000E+01     10   .10000E+01
  11   .10000E+01     12   .10000E+01
     13   .10000E+01     14   .10000E+01     15   .10000E+01     16   .10000E+01
  17   .00000E+00     18   .00000E+00
     19   .00000E+00     20   .00000E+00     21   .00000E+00     22   .00000E+00
  23   .00000E+00     24   .00000E+00


 SOURCE ID = L0000384     ; SOURCE TYPE = VOLUME   :
      1   .00000E+00      2   .00000E+00      3   .00000E+00      4   .00000E+00
   5   .00000E+00      6   .00000E+00
      7   .00000E+00      8   .00000E+00      9   .10000E+01     10   .10000E+01
  11   .10000E+01     12   .10000E+01
     13   .10000E+01     14   .10000E+01     15   .10000E+01     16   .10000E+01
  17   .00000E+00     18   .00000E+00
     19   .00000E+00     20   .00000E+00     21   .00000E+00     22   .00000E+00
  23   .00000E+00     24   .00000E+00


 SOURCE ID = L0000385     ; SOURCE TYPE = VOLUME   :
      1   .00000E+00      2   .00000E+00      3   .00000E+00      4   .00000E+00
   5   .00000E+00      6   .00000E+00
      7   .00000E+00      8   .00000E+00      9   .10000E+01     10   .10000E+01
  11   .10000E+01     12   .10000E+01
     13   .10000E+01     14   .10000E+01     15   .10000E+01     16   .10000E+01
  17   .00000E+00     18   .00000E+00
     19   .00000E+00     20   .00000E+00     21   .00000E+00     22   .00000E+00
  23   .00000E+00     24   .00000E+00

↑ *** AERMOD - VERSION 22112  ***   *** C:\Lakes\AERMOD View\880 Doolittle\880
Doolittle.isc                 ***        01/12/23
 *** AERMET - VERSION  18081 ***   ***
                        ***        15:42:55

                                   PAGE 100
 *** MODELOPTs:    RegDFAULT  CONC  ELEV  URBAN  ADJ_U*

                            * SOURCE EMISSION RATE SCALARS WHICH VARY FOR EACH HOUR
OF THE DAY *

     HOUR    SCALAR      HOUR    SCALAR      HOUR    SCALAR      HOUR    SCALAR
```

```
 HOUR     SCALAR       HOUR     SCALAR
 - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - -
- - - - - - - - - - - - - - - - - - - - - - - -


 SOURCE ID = L0000386     ; SOURCE TYPE = VOLUME   :
       1   .00000E+00       2   .00000E+00       3   .00000E+00       4   .00000E+00
   5   .00000E+00       6   .00000E+00
       7   .00000E+00       8   .00000E+00       9   .10000E+01      10   .10000E+01
  11   .10000E+01      12   .10000E+01
      13   .10000E+01      14   .10000E+01      15   .10000E+01      16   .10000E+01
  17   .00000E+00      18   .00000E+00
      19   .00000E+00      20   .00000E+00      21   .00000E+00      22   .00000E+00
  23   .00000E+00      24   .00000E+00


 SOURCE ID = L0000387     ; SOURCE TYPE = VOLUME   :
       1   .00000E+00       2   .00000E+00       3   .00000E+00       4   .00000E+00
   5   .00000E+00       6   .00000E+00
       7   .00000E+00       8   .00000E+00       9   .10000E+01      10   .10000E+01
  11   .10000E+01      12   .10000E+01
      13   .10000E+01      14   .10000E+01      15   .10000E+01      16   .10000E+01
  17   .00000E+00      18   .00000E+00
      19   .00000E+00      20   .00000E+00      21   .00000E+00      22   .00000E+00
  23   .00000E+00      24   .00000E+00


 SOURCE ID = L0000388     ; SOURCE TYPE = VOLUME   :
       1   .00000E+00       2   .00000E+00       3   .00000E+00       4   .00000E+00
   5   .00000E+00       6   .00000E+00
       7   .00000E+00       8   .00000E+00       9   .10000E+01      10   .10000E+01
  11   .10000E+01      12   .10000E+01
      13   .10000E+01      14   .10000E+01      15   .10000E+01      16   .10000E+01
  17   .00000E+00      18   .00000E+00
      19   .00000E+00      20   .00000E+00      21   .00000E+00      22   .00000E+00
  23   .00000E+00      24   .00000E+00


 SOURCE ID = L0000389     ; SOURCE TYPE = VOLUME   :
       1   .00000E+00       2   .00000E+00       3   .00000E+00       4   .00000E+00
   5   .00000E+00       6   .00000E+00
       7   .00000E+00       8   .00000E+00       9   .10000E+01      10   .10000E+01
  11   .10000E+01      12   .10000E+01
      13   .10000E+01      14   .10000E+01      15   .10000E+01      16   .10000E+01
  17   .00000E+00      18   .00000E+00
      19   .00000E+00      20   .00000E+00      21   .00000E+00      22   .00000E+00
  23   .00000E+00      24   .00000E+00


 SOURCE ID = L0000390     ; SOURCE TYPE = VOLUME   :
```

```
      1   .00000E+00      2   .00000E+00      3   .00000E+00      4   .00000E+00
   5   .00000E+00      6   .00000E+00
      7   .00000E+00      8   .00000E+00      9   .10000E+01     10   .10000E+01
  11   .10000E+01     12   .10000E+01
     13   .10000E+01     14   .10000E+01     15   .10000E+01     16   .10000E+01
  17   .00000E+00     18   .00000E+00
     19   .00000E+00     20   .00000E+00     21   .00000E+00     22   .00000E+00
  23   .00000E+00     24   .00000E+00

↑ *** AERMOD - VERSION 22112  ***   *** C:\Lakes\AERMOD View\880 Doolittle\880
Doolittle.isc                 ***        01/12/23
 *** AERMET - VERSION  18081 ***   ***
                       ***        15:42:55

                                  PAGE 101
 *** MODELOPTs:    RegDFAULT  CONC  ELEV  URBAN  ADJ_U*

                            * SOURCE EMISSION RATE SCALARS WHICH VARY FOR EACH HOUR
OF THE DAY *

     HOUR    SCALAR      HOUR    SCALAR      HOUR    SCALAR      HOUR    SCALAR
 HOUR    SCALAR      HOUR    SCALAR
 - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - -
- - - - - - - - - - - - - - - - - - - - - - - - -


 SOURCE ID = L0000391     ; SOURCE TYPE = VOLUME   :
      1   .00000E+00      2   .00000E+00      3   .00000E+00      4   .00000E+00
   5   .00000E+00      6   .00000E+00
      7   .00000E+00      8   .00000E+00      9   .10000E+01     10   .10000E+01
  11   .10000E+01     12   .10000E+01
     13   .10000E+01     14   .10000E+01     15   .10000E+01     16   .10000E+01
  17   .00000E+00     18   .00000E+00
     19   .00000E+00     20   .00000E+00     21   .00000E+00     22   .00000E+00
  23   .00000E+00     24   .00000E+00


 SOURCE ID = L0000392     ; SOURCE TYPE = VOLUME   :
      1   .00000E+00      2   .00000E+00      3   .00000E+00      4   .00000E+00
   5   .00000E+00      6   .00000E+00
      7   .00000E+00      8   .00000E+00      9   .10000E+01     10   .10000E+01
  11   .10000E+01     12   .10000E+01
     13   .10000E+01     14   .10000E+01     15   .10000E+01     16   .10000E+01
  17   .00000E+00     18   .00000E+00
     19   .00000E+00     20   .00000E+00     21   .00000E+00     22   .00000E+00
  23   .00000E+00     24   .00000E+00


 SOURCE ID = L0000393     ; SOURCE TYPE = VOLUME   :
      1   .00000E+00      2   .00000E+00      3   .00000E+00      4   .00000E+00
```

```
   5   .00000E+00      6   .00000E+00
       7   .00000E+00      8   .00000E+00      9   .10000E+01     10   .10000E+01
  11   .10000E+01     12   .10000E+01
      13   .10000E+01     14   .10000E+01     15   .10000E+01     16   .10000E+01
  17   .00000E+00     18   .00000E+00
      19   .00000E+00     20   .00000E+00     21   .00000E+00     22   .00000E+00
  23   .00000E+00     24   .00000E+00


 SOURCE ID = L0000394     ; SOURCE TYPE = VOLUME   :
       1   .00000E+00      2   .00000E+00      3   .00000E+00      4   .00000E+00
   5   .00000E+00      6   .00000E+00
       7   .00000E+00      8   .00000E+00      9   .10000E+01     10   .10000E+01
  11   .10000E+01     12   .10000E+01
      13   .10000E+01     14   .10000E+01     15   .10000E+01     16   .10000E+01
  17   .00000E+00     18   .00000E+00
      19   .00000E+00     20   .00000E+00     21   .00000E+00     22   .00000E+00
  23   .00000E+00     24   .00000E+00


 SOURCE ID = L0000395     ; SOURCE TYPE = VOLUME   :
       1   .00000E+00      2   .00000E+00      3   .00000E+00      4   .00000E+00
   5   .00000E+00      6   .00000E+00
       7   .00000E+00      8   .00000E+00      9   .10000E+01     10   .10000E+01
  11   .10000E+01     12   .10000E+01
      13   .10000E+01     14   .10000E+01     15   .10000E+01     16   .10000E+01
  17   .00000E+00     18   .00000E+00
      19   .00000E+00     20   .00000E+00     21   .00000E+00     22   .00000E+00
  23   .00000E+00     24   .00000E+00

↑ *** AERMOD - VERSION 22112  ***   *** C:\Lakes\AERMOD View\880 Doolittle\880
Doolittle.isc                 ***        01/12/23
 *** AERMET - VERSION  18081 ***   ***
                        ***        15:42:55

                                   PAGE 102
 *** MODELOPTs:    RegDFAULT  CONC  ELEV  URBAN  ADJ_U*

                            * SOURCE EMISSION RATE SCALARS WHICH VARY FOR EACH HOUR
OF THE DAY *

     HOUR    SCALAR      HOUR    SCALAR      HOUR    SCALAR      HOUR    SCALAR
 HOUR    SCALAR      HOUR    SCALAR
 - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - -
- - - - - - - - - - - - - - - - - - - - - - - - -


 SOURCE ID = L0000396     ; SOURCE TYPE = VOLUME   :
       1   .00000E+00      2   .00000E+00      3   .00000E+00      4   .00000E+00
   5   .00000E+00      6   .00000E+00
```

```
      7   .00000E+00      8   .00000E+00      9   .10000E+01     10   .10000E+01
 11   .10000E+01     12   .10000E+01
     13   .10000E+01     14   .10000E+01     15   .10000E+01     16   .10000E+01
 17   .00000E+00     18   .00000E+00
     19   .00000E+00     20   .00000E+00     21   .00000E+00     22   .00000E+00
 23   .00000E+00     24   .00000E+00


SOURCE ID = L0000397     ; SOURCE TYPE = VOLUME   :
      1   .00000E+00      2   .00000E+00      3   .00000E+00      4   .00000E+00
  5   .00000E+00      6   .00000E+00
      7   .00000E+00      8   .00000E+00      9   .10000E+01     10   .10000E+01
 11   .10000E+01     12   .10000E+01
     13   .10000E+01     14   .10000E+01     15   .10000E+01     16   .10000E+01
 17   .00000E+00     18   .00000E+00
     19   .00000E+00     20   .00000E+00     21   .00000E+00     22   .00000E+00
 23   .00000E+00     24   .00000E+00


SOURCE ID = L0000398     ; SOURCE TYPE = VOLUME   :
      1   .00000E+00      2   .00000E+00      3   .00000E+00      4   .00000E+00
  5   .00000E+00      6   .00000E+00
      7   .00000E+00      8   .00000E+00      9   .10000E+01     10   .10000E+01
 11   .10000E+01     12   .10000E+01
     13   .10000E+01     14   .10000E+01     15   .10000E+01     16   .10000E+01
 17   .00000E+00     18   .00000E+00
     19   .00000E+00     20   .00000E+00     21   .00000E+00     22   .00000E+00
 23   .00000E+00     24   .00000E+00


SOURCE ID = L0000399     ; SOURCE TYPE = VOLUME   :
      1   .00000E+00      2   .00000E+00      3   .00000E+00      4   .00000E+00
  5   .00000E+00      6   .00000E+00
      7   .00000E+00      8   .00000E+00      9   .10000E+01     10   .10000E+01
 11   .10000E+01     12   .10000E+01
     13   .10000E+01     14   .10000E+01     15   .10000E+01     16   .10000E+01
 17   .00000E+00     18   .00000E+00
     19   .00000E+00     20   .00000E+00     21   .00000E+00     22   .00000E+00
 23   .00000E+00     24   .00000E+00


SOURCE ID = L0000400     ; SOURCE TYPE = VOLUME   :
      1   .00000E+00      2   .00000E+00      3   .00000E+00      4   .00000E+00
  5   .00000E+00      6   .00000E+00
      7   .00000E+00      8   .00000E+00      9   .10000E+01     10   .10000E+01
 11   .10000E+01     12   .10000E+01
     13   .10000E+01     14   .10000E+01     15   .10000E+01     16   .10000E+01
 17   .00000E+00     18   .00000E+00
     19   .00000E+00     20   .00000E+00     21   .00000E+00     22   .00000E+00
 23   .00000E+00     24   .00000E+00
```

*** MODELOPTs: RegDFAULT CONC ELEV URBAN ADJ_U*

* SOURCE EMISSION RATE SCALARS WHICH VARY FOR EACH HOUR OF THE DAY *

HOUR	SCALAR	HOUR	SCALAR	HOUR	SCALAR	HOUR	SCALAR	HOUR	SCALAR	HOUR	SCALAR
1	.00000E+00	2	.00000E+00	3	.00000E+00	4	.00000E+00	5	.00000E+00	6	.00000E+00
7	.00000E+00	8	.00000E+00	9	.10000E+01	10	.10000E+01	11	.10000E+01	12	.10000E+01
13	.10000E+01	14	.10000E+01	15	.10000E+01	16	.10000E+01	17	.00000E+00	18	.00000E+00
19	.00000E+00	20	.00000E+00	21	.00000E+00	22	.00000E+00	23	.00000E+00	24	.00000E+00

SOURCE ID = L0000401 ; SOURCE TYPE = VOLUME :

HOUR	SCALAR	HOUR	SCALAR	HOUR	SCALAR	HOUR	SCALAR	HOUR	SCALAR	HOUR	SCALAR
1	.00000E+00	2	.00000E+00	3	.00000E+00	4	.00000E+00	5	.00000E+00	6	.00000E+00
7	.00000E+00	8	.00000E+00	9	.10000E+01	10	.10000E+01	11	.10000E+01	12	.10000E+01
13	.10000E+01	14	.10000E+01	15	.10000E+01	16	.10000E+01	17	.00000E+00	18	.00000E+00
19	.00000E+00	20	.00000E+00	21	.00000E+00	22	.00000E+00	23	.00000E+00	24	.00000E+00

SOURCE ID = L0000402 ; SOURCE TYPE = VOLUME :

HOUR	SCALAR	HOUR	SCALAR	HOUR	SCALAR	HOUR	SCALAR	HOUR	SCALAR	HOUR	SCALAR
1	.00000E+00	2	.00000E+00	3	.00000E+00	4	.00000E+00	5	.00000E+00	6	.00000E+00
7	.00000E+00	8	.00000E+00	9	.10000E+01	10	.10000E+01	11	.10000E+01	12	.10000E+01
13	.10000E+01	14	.10000E+01	15	.10000E+01	16	.10000E+01	17	.00000E+00	18	.00000E+00
19	.00000E+00	20	.00000E+00	21	.00000E+00	22	.00000E+00	23	.00000E+00	24	.00000E+00

SOURCE ID = L0000403 ; SOURCE TYPE = VOLUME :

HOUR	SCALAR	HOUR	SCALAR	HOUR	SCALAR	HOUR	SCALAR	HOUR	SCALAR	HOUR	SCALAR
1	.00000E+00	2	.00000E+00	3	.00000E+00	4	.00000E+00	5	.00000E+00	6	.00000E+00
7	.00000E+00	8	.00000E+00	9	.10000E+01	10	.10000E+01	11	.10000E+01	12	.10000E+01
13	.10000E+01	14	.10000E+01	15	.10000E+01	16	.10000E+01	17	.00000E+00	18	.00000E+00
19	.00000E+00	20	.00000E+00	21	.00000E+00	22	.00000E+00	23	.00000E+00	24	.00000E+00

```
 SOURCE ID = L0000404     ; SOURCE TYPE = VOLUME   :
       1   .00000E+00      2   .00000E+00      3   .00000E+00      4   .00000E+00
   5   .00000E+00      6   .00000E+00
       7   .00000E+00      8   .00000E+00      9   .10000E+01     10   .10000E+01
  11   .10000E+01     12   .10000E+01
      13   .10000E+01     14   .10000E+01     15   .10000E+01     16   .10000E+01
  17   .00000E+00     18   .00000E+00
      19   .00000E+00     20   .00000E+00     21   .00000E+00     22   .00000E+00
  23   .00000E+00     24   .00000E+00


 SOURCE ID = L0000405     ; SOURCE TYPE = VOLUME   :
       1   .00000E+00      2   .00000E+00      3   .00000E+00      4   .00000E+00
   5   .00000E+00      6   .00000E+00
       7   .00000E+00      8   .00000E+00      9   .10000E+01     10   .10000E+01
  11   .10000E+01     12   .10000E+01
      13   .10000E+01     14   .10000E+01     15   .10000E+01     16   .10000E+01
  17   .00000E+00     18   .00000E+00
      19   .00000E+00     20   .00000E+00     21   .00000E+00     22   .00000E+00
  23   .00000E+00     24   .00000E+00

 *** AERMOD - VERSION 22112  ***   *** C:\Lakes\AERMOD View\880 Doolittle\880
Doolittle.isc                 ***        01/12/23
 *** AERMET - VERSION  18081 ***   ***
                       ***        15:42:55

                                  PAGE 104
 *** MODELOPTs:    RegDFAULT  CONC  ELEV  URBAN  ADJ_U*

                            * SOURCE EMISSION RATE SCALARS WHICH VARY FOR EACH HOUR
OF THE DAY *

     HOUR    SCALAR      HOUR    SCALAR      HOUR    SCALAR      HOUR    SCALAR
 HOUR    SCALAR      HOUR    SCALAR
 - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - -
- - - - - - - - - - - - - - - - - - - - - - - - - -


 SOURCE ID = L0000406     ; SOURCE TYPE = VOLUME   :
       1   .00000E+00      2   .00000E+00      3   .00000E+00      4   .00000E+00
   5   .00000E+00      6   .00000E+00
       7   .00000E+00      8   .00000E+00      9   .10000E+01     10   .10000E+01
  11   .10000E+01     12   .10000E+01
      13   .10000E+01     14   .10000E+01     15   .10000E+01     16   .10000E+01
  17   .00000E+00     18   .00000E+00
      19   .00000E+00     20   .00000E+00     21   .00000E+00     22   .00000E+00
  23   .00000E+00     24   .00000E+00
```

```
 SOURCE ID = L0000407     ; SOURCE TYPE = VOLUME   :
       1   .00000E+00      2   .00000E+00      3   .00000E+00      4   .00000E+00
   5   .00000E+00      6   .00000E+00
       7   .00000E+00      8   .00000E+00      9   .10000E+01     10   .10000E+01
  11   .10000E+01     12   .10000E+01
      13   .10000E+01     14   .10000E+01     15   .10000E+01     16   .10000E+01
  17   .00000E+00     18   .00000E+00
      19   .00000E+00     20   .00000E+00     21   .00000E+00     22   .00000E+00
  23   .00000E+00     24   .00000E+00


 SOURCE ID = L0000408     ; SOURCE TYPE = VOLUME   :
       1   .00000E+00      2   .00000E+00      3   .00000E+00      4   .00000E+00
   5   .00000E+00      6   .00000E+00
       7   .00000E+00      8   .00000E+00      9   .10000E+01     10   .10000E+01
  11   .10000E+01     12   .10000E+01
      13   .10000E+01     14   .10000E+01     15   .10000E+01     16   .10000E+01
  17   .00000E+00     18   .00000E+00
      19   .00000E+00     20   .00000E+00     21   .00000E+00     22   .00000E+00
  23   .00000E+00     24   .00000E+00


 SOURCE ID = L0000409     ; SOURCE TYPE = VOLUME   :
       1   .00000E+00      2   .00000E+00      3   .00000E+00      4   .00000E+00
   5   .00000E+00      6   .00000E+00
       7   .00000E+00      8   .00000E+00      9   .10000E+01     10   .10000E+01
  11   .10000E+01     12   .10000E+01
      13   .10000E+01     14   .10000E+01     15   .10000E+01     16   .10000E+01
  17   .00000E+00     18   .00000E+00
      19   .00000E+00     20   .00000E+00     21   .00000E+00     22   .00000E+00
  23   .00000E+00     24   .00000E+00


 SOURCE ID = L0000410     ; SOURCE TYPE = VOLUME   :
       1   .00000E+00      2   .00000E+00      3   .00000E+00      4   .00000E+00
   5   .00000E+00      6   .00000E+00
       7   .00000E+00      8   .00000E+00      9   .10000E+01     10   .10000E+01
  11   .10000E+01     12   .10000E+01
      13   .10000E+01     14   .10000E+01     15   .10000E+01     16   .10000E+01
  17   .00000E+00     18   .00000E+00
      19   .00000E+00     20   .00000E+00     21   .00000E+00     22   .00000E+00
  23   .00000E+00     24   .00000E+00
```



```
 *** MODELOPTs:    RegDFAULT  CONC  ELEV  URBAN  ADJ_U*
```

```
                              * SOURCE EMISSION RATE SCALARS WHICH VARY FOR EACH HOUR
OF THE DAY *

     HOUR    SCALAR      HOUR    SCALAR      HOUR    SCALAR      HOUR    SCALAR
 HOUR    SCALAR      HOUR    SCALAR
 - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - -
- - - - - - - - - - - - - - - - - - - - - - - - -


 SOURCE ID = L0000411     ; SOURCE TYPE = VOLUME   :
       1   .00000E+00      2   .00000E+00      3   .00000E+00      4   .00000E+00
   5   .00000E+00      6   .00000E+00
       7   .00000E+00      8   .00000E+00      9   .10000E+01     10   .10000E+01
  11   .10000E+01     12   .10000E+01
      13   .10000E+01     14   .10000E+01     15   .10000E+01     16   .10000E+01
  17   .00000E+00     18   .00000E+00
      19   .00000E+00     20   .00000E+00     21   .00000E+00     22   .00000E+00
  23   .00000E+00     24   .00000E+00


 SOURCE ID = L0000412     ; SOURCE TYPE = VOLUME   :
       1   .00000E+00      2   .00000E+00      3   .00000E+00      4   .00000E+00
   5   .00000E+00      6   .00000E+00
       7   .00000E+00      8   .00000E+00      9   .10000E+01     10   .10000E+01
  11   .10000E+01     12   .10000E+01
      13   .10000E+01     14   .10000E+01     15   .10000E+01     16   .10000E+01
  17   .00000E+00     18   .00000E+00
      19   .00000E+00     20   .00000E+00     21   .00000E+00     22   .00000E+00
  23   .00000E+00     24   .00000E+00


 SOURCE ID = L0000413     ; SOURCE TYPE = VOLUME   :
       1   .00000E+00      2   .00000E+00      3   .00000E+00      4   .00000E+00
   5   .00000E+00      6   .00000E+00
       7   .00000E+00      8   .00000E+00      9   .10000E+01     10   .10000E+01
  11   .10000E+01     12   .10000E+01
      13   .10000E+01     14   .10000E+01     15   .10000E+01     16   .10000E+01
  17   .00000E+00     18   .00000E+00
      19   .00000E+00     20   .00000E+00     21   .00000E+00     22   .00000E+00
  23   .00000E+00     24   .00000E+00


 SOURCE ID = L0000414     ; SOURCE TYPE = VOLUME   :
       1   .00000E+00      2   .00000E+00      3   .00000E+00      4   .00000E+00
   5   .00000E+00      6   .00000E+00
       7   .00000E+00      8   .00000E+00      9   .10000E+01     10   .10000E+01
  11   .10000E+01     12   .10000E+01
      13   .10000E+01     14   .10000E+01     15   .10000E+01     16   .10000E+01
  17   .00000E+00     18   .00000E+00
```

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     19   .00000E+00     20   .00000E+00     21   .00000E+00     22   .00000E+00
  23   .00000E+00     24   .00000E+00


 SOURCE ID = L0000415     ; SOURCE TYPE = VOLUME   :
      1   .00000E+00      2   .00000E+00      3   .00000E+00      4   .00000E+00
   5   .00000E+00      6   .00000E+00
      7   .00000E+00      8   .00000E+00      9   .10000E+01     10   .10000E+01
  11   .10000E+01     12   .10000E+01
     13   .10000E+01     14   .10000E+01     15   .10000E+01     16   .10000E+01
  17   .00000E+00     18   .00000E+00
     19   .00000E+00     20   .00000E+00     21   .00000E+00     22   .00000E+00
  23   .00000E+00     24   .00000E+00

↑ *** AERMOD - VERSION 22112  ***   *** C:\Lakes\AERMOD View\880 Doolittle\880
Doolittle.isc                 ***        01/12/23
 *** AERMET - VERSION  18081 ***   ***
                       ***        15:42:55

                                  PAGE 106
 *** MODELOPTs:    RegDFAULT  CONC  ELEV  URBAN  ADJ_U*

                            * SOURCE EMISSION RATE SCALARS WHICH VARY FOR EACH HOUR
OF THE DAY *

     HOUR    SCALAR      HOUR    SCALAR      HOUR    SCALAR      HOUR    SCALAR
 HOUR    SCALAR      HOUR    SCALAR
 - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - -
- - - - - - - - - - - - - - - - - - - - - - - - -


 SOURCE ID = L0000416     ; SOURCE TYPE = VOLUME   :
      1   .00000E+00      2   .00000E+00      3   .00000E+00      4   .00000E+00
   5   .00000E+00      6   .00000E+00
      7   .00000E+00      8   .00000E+00      9   .10000E+01     10   .10000E+01
  11   .10000E+01     12   .10000E+01
     13   .10000E+01     14   .10000E+01     15   .10000E+01     16   .10000E+01
  17   .00000E+00     18   .00000E+00
     19   .00000E+00     20   .00000E+00     21   .00000E+00     22   .00000E+00
  23   .00000E+00     24   .00000E+00


 SOURCE ID = L0000417     ; SOURCE TYPE = VOLUME   :
      1   .00000E+00      2   .00000E+00      3   .00000E+00      4   .00000E+00
   5   .00000E+00      6   .00000E+00
      7   .00000E+00      8   .00000E+00      9   .10000E+01     10   .10000E+01
  11   .10000E+01     12   .10000E+01
     13   .10000E+01     14   .10000E+01     15   .10000E+01     16   .10000E+01
  17   .00000E+00     18   .00000E+00
     19   .00000E+00     20   .00000E+00     21   .00000E+00     22   .00000E+00
```

```
  23   .00000E+00     24   .00000E+00


 SOURCE ID = L0000418     ; SOURCE TYPE = VOLUME   :
       1   .00000E+00      2   .00000E+00      3   .00000E+00      4   .00000E+00
   5   .00000E+00      6   .00000E+00
       7   .00000E+00      8   .00000E+00      9   .10000E+01     10   .10000E+01
  11   .10000E+01     12   .10000E+01
      13   .10000E+01     14   .10000E+01     15   .10000E+01     16   .10000E+01
  17   .00000E+00     18   .00000E+00
      19   .00000E+00     20   .00000E+00     21   .00000E+00     22   .00000E+00
  23   .00000E+00     24   .00000E+00


 SOURCE ID = L0000419     ; SOURCE TYPE = VOLUME   :
       1   .00000E+00      2   .00000E+00      3   .00000E+00      4   .00000E+00
   5   .00000E+00      6   .00000E+00
       7   .00000E+00      8   .00000E+00      9   .10000E+01     10   .10000E+01
  11   .10000E+01     12   .10000E+01
      13   .10000E+01     14   .10000E+01     15   .10000E+01     16   .10000E+01
  17   .00000E+00     18   .00000E+00
      19   .00000E+00     20   .00000E+00     21   .00000E+00     22   .00000E+00
  23   .00000E+00     24   .00000E+00


 SOURCE ID = L0000420     ; SOURCE TYPE = VOLUME   :
       1   .00000E+00      2   .00000E+00      3   .00000E+00      4   .00000E+00
   5   .00000E+00      6   .00000E+00
       7   .00000E+00      8   .00000E+00      9   .10000E+01     10   .10000E+01
  11   .10000E+01     12   .10000E+01
      13   .10000E+01     14   .10000E+01     15   .10000E+01     16   .10000E+01
  17   .00000E+00     18   .00000E+00
      19   .00000E+00     20   .00000E+00     21   .00000E+00     22   .00000E+00
  23   .00000E+00     24   .00000E+00
```



```
                            * SOURCE EMISSION RATE SCALARS WHICH VARY FOR EACH HOUR
OF THE DAY *

     HOUR    SCALAR      HOUR    SCALAR      HOUR    SCALAR      HOUR    SCALAR
 HOUR    SCALAR      HOUR    SCALAR
 - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - -
- - - - - - - - - - - - - - - - - - - - - - - - -
```

```
SOURCE ID = L0000421     ; SOURCE TYPE = VOLUME   :
      1   .00000E+00      2   .00000E+00      3   .00000E+00      4   .00000E+00
  5   .00000E+00      6   .00000E+00
      7   .00000E+00      8   .00000E+00      9   .10000E+01     10   .10000E+01
 11   .10000E+01     12   .10000E+01
     13   .10000E+01     14   .10000E+01     15   .10000E+01     16   .10000E+01
 17   .00000E+00     18   .00000E+00
     19   .00000E+00     20   .00000E+00     21   .00000E+00     22   .00000E+00
 23   .00000E+00     24   .00000E+00


SOURCE ID = L0000422     ; SOURCE TYPE = VOLUME   :
      1   .00000E+00      2   .00000E+00      3   .00000E+00      4   .00000E+00
  5   .00000E+00      6   .00000E+00
      7   .00000E+00      8   .00000E+00      9   .10000E+01     10   .10000E+01
 11   .10000E+01     12   .10000E+01
     13   .10000E+01     14   .10000E+01     15   .10000E+01     16   .10000E+01
 17   .00000E+00     18   .00000E+00
     19   .00000E+00     20   .00000E+00     21   .00000E+00     22   .00000E+00
 23   .00000E+00     24   .00000E+00


SOURCE ID = L0000423     ; SOURCE TYPE = VOLUME   :
      1   .00000E+00      2   .00000E+00      3   .00000E+00      4   .00000E+00
  5   .00000E+00      6   .00000E+00
      7   .00000E+00      8   .00000E+00      9   .10000E+01     10   .10000E+01
 11   .10000E+01     12   .10000E+01
     13   .10000E+01     14   .10000E+01     15   .10000E+01     16   .10000E+01
 17   .00000E+00     18   .00000E+00
     19   .00000E+00     20   .00000E+00     21   .00000E+00     22   .00000E+00
 23   .00000E+00     24   .00000E+00


SOURCE ID = L0000424     ; SOURCE TYPE = VOLUME   :
      1   .00000E+00      2   .00000E+00      3   .00000E+00      4   .00000E+00
  5   .00000E+00      6   .00000E+00
      7   .00000E+00      8   .00000E+00      9   .10000E+01     10   .10000E+01
 11   .10000E+01     12   .10000E+01
     13   .10000E+01     14   .10000E+01     15   .10000E+01     16   .10000E+01
 17   .00000E+00     18   .00000E+00
     19   .00000E+00     20   .00000E+00     21   .00000E+00     22   .00000E+00
 23   .00000E+00     24   .00000E+00


SOURCE ID = L0000425     ; SOURCE TYPE = VOLUME   :
      1   .00000E+00      2   .00000E+00      3   .00000E+00      4   .00000E+00
  5   .00000E+00      6   .00000E+00
      7   .00000E+00      8   .00000E+00      9   .10000E+01     10   .10000E+01
```

```
  11   .10000E+01     12   .10000E+01
      13   .10000E+01     14   .10000E+01     15   .10000E+01     16   .10000E+01
  17   .00000E+00     18   .00000E+00
      19   .00000E+00     20   .00000E+00     21   .00000E+00     22   .00000E+00
  23   .00000E+00     24   .00000E+00

↑ *** AERMOD - VERSION 22112  ***   *** C:\Lakes\AERMOD View\880 Doolittle\880
Doolittle.isc                 ***        01/12/23
 *** AERMET - VERSION  18081 ***   ***
                        ***        15:42:55

                                   PAGE 108
 *** MODELOPTs:    RegDFAULT  CONC  ELEV  URBAN  ADJ_U*

                            * SOURCE EMISSION RATE SCALARS WHICH VARY FOR EACH HOUR
OF THE DAY *

     HOUR    SCALAR      HOUR    SCALAR      HOUR    SCALAR      HOUR    SCALAR
 HOUR    SCALAR      HOUR    SCALAR
 - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - -
- - - - - - - - - - - - - - - - - - - - - - - -


 SOURCE ID = L0000426     ; SOURCE TYPE = VOLUME   :
       1   .00000E+00      2   .00000E+00      3   .00000E+00      4   .00000E+00
   5   .00000E+00      6   .00000E+00
       7   .00000E+00      8   .00000E+00      9   .10000E+01     10   .10000E+01
  11   .10000E+01     12   .10000E+01
      13   .10000E+01     14   .10000E+01     15   .10000E+01     16   .10000E+01
  17   .00000E+00     18   .00000E+00
      19   .00000E+00     20   .00000E+00     21   .00000E+00     22   .00000E+00
  23   .00000E+00     24   .00000E+00


 SOURCE ID = L0000427     ; SOURCE TYPE = VOLUME   :
       1   .00000E+00      2   .00000E+00      3   .00000E+00      4   .00000E+00
   5   .00000E+00      6   .00000E+00
       7   .00000E+00      8   .00000E+00      9   .10000E+01     10   .10000E+01
  11   .10000E+01     12   .10000E+01
      13   .10000E+01     14   .10000E+01     15   .10000E+01     16   .10000E+01
  17   .00000E+00     18   .00000E+00
      19   .00000E+00     20   .00000E+00     21   .00000E+00     22   .00000E+00
  23   .00000E+00     24   .00000E+00


 SOURCE ID = L0000428     ; SOURCE TYPE = VOLUME   :
       1   .00000E+00      2   .00000E+00      3   .00000E+00      4   .00000E+00
   5   .00000E+00      6   .00000E+00
       7   .00000E+00      8   .00000E+00      9   .10000E+01     10   .10000E+01
  11   .10000E+01     12   .10000E+01
```

```
     13   .10000E+01     14   .10000E+01     15   .10000E+01     16   .10000E+01
  17   .00000E+00     18   .00000E+00
     19   .00000E+00     20   .00000E+00     21   .00000E+00     22   .00000E+00
  23   .00000E+00     24   .00000E+00


 SOURCE ID = L0000429     ; SOURCE TYPE = VOLUME   :
      1   .00000E+00      2   .00000E+00      3   .00000E+00      4   .00000E+00
   5   .00000E+00      6   .00000E+00
      7   .00000E+00      8   .00000E+00      9   .10000E+01     10   .10000E+01
  11   .10000E+01     12   .10000E+01
     13   .10000E+01     14   .10000E+01     15   .10000E+01     16   .10000E+01
  17   .00000E+00     18   .00000E+00
     19   .00000E+00     20   .00000E+00     21   .00000E+00     22   .00000E+00
  23   .00000E+00     24   .00000E+00


 SOURCE ID = L0000430     ; SOURCE TYPE = VOLUME   :
      1   .00000E+00      2   .00000E+00      3   .00000E+00      4   .00000E+00
   5   .00000E+00      6   .00000E+00
      7   .00000E+00      8   .00000E+00      9   .10000E+01     10   .10000E+01
  11   .10000E+01     12   .10000E+01
     13   .10000E+01     14   .10000E+01     15   .10000E+01     16   .10000E+01
  17   .00000E+00     18   .00000E+00
     19   .00000E+00     20   .00000E+00     21   .00000E+00     22   .00000E+00
  23   .00000E+00     24   .00000E+00
```



```
 *** MODELOPTs:    RegDFAULT  CONC  ELEV  URBAN  ADJ_U*

                          * SOURCE EMISSION RATE SCALARS WHICH VARY FOR EACH HOUR
OF THE DAY *

     HOUR    SCALAR      HOUR    SCALAR      HOUR    SCALAR      HOUR    SCALAR
 HOUR    SCALAR      HOUR    SCALAR
 - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - -
- - - - - - - - - - - - - - - - - - - - - - - - -


 SOURCE ID = L0000431     ; SOURCE TYPE = VOLUME   :
      1   .00000E+00      2   .00000E+00      3   .00000E+00      4   .00000E+00
   5   .00000E+00      6   .00000E+00
      7   .00000E+00      8   .00000E+00      9   .10000E+01     10   .10000E+01
  11   .10000E+01     12   .10000E+01
     13   .10000E+01     14   .10000E+01     15   .10000E+01     16   .10000E+01
```

```
 17   .00000E+00     18   .00000E+00
     19   .00000E+00     20   .00000E+00     21   .00000E+00     22   .00000E+00
 23   .00000E+00     24   .00000E+00


SOURCE ID = L0000432     ; SOURCE TYPE = VOLUME   :
      1   .00000E+00      2   .00000E+00      3   .00000E+00      4   .00000E+00
  5   .00000E+00      6   .00000E+00
      7   .00000E+00      8   .00000E+00      9   .10000E+01     10   .10000E+01
 11   .10000E+01     12   .10000E+01
     13   .10000E+01     14   .10000E+01     15   .10000E+01     16   .10000E+01
 17   .00000E+00     18   .00000E+00
     19   .00000E+00     20   .00000E+00     21   .00000E+00     22   .00000E+00
 23   .00000E+00     24   .00000E+00


SOURCE ID = L0000433     ; SOURCE TYPE = VOLUME   :
      1   .00000E+00      2   .00000E+00      3   .00000E+00      4   .00000E+00
  5   .00000E+00      6   .00000E+00
      7   .00000E+00      8   .00000E+00      9   .10000E+01     10   .10000E+01
 11   .10000E+01     12   .10000E+01
     13   .10000E+01     14   .10000E+01     15   .10000E+01     16   .10000E+01
 17   .00000E+00     18   .00000E+00
     19   .00000E+00     20   .00000E+00     21   .00000E+00     22   .00000E+00
 23   .00000E+00     24   .00000E+00


SOURCE ID = L0000434     ; SOURCE TYPE = VOLUME   :
      1   .00000E+00      2   .00000E+00      3   .00000E+00      4   .00000E+00
  5   .00000E+00      6   .00000E+00
      7   .00000E+00      8   .00000E+00      9   .10000E+01     10   .10000E+01
 11   .10000E+01     12   .10000E+01
     13   .10000E+01     14   .10000E+01     15   .10000E+01     16   .10000E+01
 17   .00000E+00     18   .00000E+00
     19   .00000E+00     20   .00000E+00     21   .00000E+00     22   .00000E+00
 23   .00000E+00     24   .00000E+00


SOURCE ID = L0000435     ; SOURCE TYPE = VOLUME   :
      1   .00000E+00      2   .00000E+00      3   .00000E+00      4   .00000E+00
  5   .00000E+00      6   .00000E+00
      7   .00000E+00      8   .00000E+00      9   .10000E+01     10   .10000E+01
 11   .10000E+01     12   .10000E+01
     13   .10000E+01     14   .10000E+01     15   .10000E+01     16   .10000E+01
 17   .00000E+00     18   .00000E+00
     19   .00000E+00     20   .00000E+00     21   .00000E+00     22   .00000E+00
 23   .00000E+00     24   .00000E+00
```

* SOURCE EMISSION RATE SCALARS WHICH VARY FOR EACH HOUR OF THE DAY *

HOUR SCALAR HOUR SCALAR HOUR SCALAR HOUR SCALAR HOUR SCALAR HOUR SCALAR
- -

SOURCE ID = L0000436 ; SOURCE TYPE = VOLUME :

HOUR	SCALAR	HOUR	SCALAR	HOUR	SCALAR	HOUR	SCALAR	HOUR	SCALAR	HOUR	SCALAR
1	.00000E+00	2	.00000E+00	3	.00000E+00	4	.00000E+00	5	.00000E+00	6	.00000E+00
7	.00000E+00	8	.00000E+00	9	.10000E+01	10	.10000E+01	11	.10000E+01	12	.10000E+01
13	.10000E+01	14	.10000E+01	15	.10000E+01	16	.10000E+01	17	.00000E+00	18	.00000E+00
19	.00000E+00	20	.00000E+00	21	.00000E+00	22	.00000E+00	23	.00000E+00	24	.00000E+00

SOURCE ID = L0000437 ; SOURCE TYPE = VOLUME :

HOUR	SCALAR	HOUR	SCALAR	HOUR	SCALAR	HOUR	SCALAR	HOUR	SCALAR	HOUR	SCALAR
1	.00000E+00	2	.00000E+00	3	.00000E+00	4	.00000E+00	5	.00000E+00	6	.00000E+00
7	.00000E+00	8	.00000E+00	9	.10000E+01	10	.10000E+01	11	.10000E+01	12	.10000E+01
13	.10000E+01	14	.10000E+01	15	.10000E+01	16	.10000E+01	17	.00000E+00	18	.00000E+00
19	.00000E+00	20	.00000E+00	21	.00000E+00	22	.00000E+00	23	.00000E+00	24	.00000E+00

SOURCE ID = L0000438 ; SOURCE TYPE = VOLUME :

HOUR	SCALAR	HOUR	SCALAR	HOUR	SCALAR	HOUR	SCALAR	HOUR	SCALAR	HOUR	SCALAR
1	.00000E+00	2	.00000E+00	3	.00000E+00	4	.00000E+00	5	.00000E+00	6	.00000E+00
7	.00000E+00	8	.00000E+00	9	.10000E+01	10	.10000E+01	11	.10000E+01	12	.10000E+01
13	.10000E+01	14	.10000E+01	15	.10000E+01	16	.10000E+01	17	.00000E+00	18	.00000E+00
19	.00000E+00	20	.00000E+00	21	.00000E+00	22	.00000E+00	23	.00000E+00	24	.00000E+00

SOURCE ID = L0000439 ; SOURCE TYPE = VOLUME :

HOUR	SCALAR	HOUR	SCALAR	HOUR	SCALAR	HOUR	SCALAR
1	.00000E+00	2	.00000E+00	3	.00000E+00	4	.00000E+00

```
   5   .00000E+00      6   .00000E+00
       7   .00000E+00      8   .00000E+00      9   .10000E+01     10   .10000E+01
  11   .10000E+01     12   .10000E+01
      13   .10000E+01     14   .10000E+01     15   .10000E+01     16   .10000E+01
  17   .00000E+00     18   .00000E+00
      19   .00000E+00     20   .00000E+00     21   .00000E+00     22   .00000E+00
  23   .00000E+00     24   .00000E+00


 SOURCE ID = L0000440     ; SOURCE TYPE = VOLUME   :
       1   .00000E+00      2   .00000E+00      3   .00000E+00      4   .00000E+00
   5   .00000E+00      6   .00000E+00
       7   .00000E+00      8   .00000E+00      9   .10000E+01     10   .10000E+01
  11   .10000E+01     12   .10000E+01
      13   .10000E+01     14   .10000E+01     15   .10000E+01     16   .10000E+01
  17   .00000E+00     18   .00000E+00
      19   .00000E+00     20   .00000E+00     21   .00000E+00     22   .00000E+00
  23   .00000E+00     24   .00000E+00

🡅 *** AERMOD - VERSION 22112  ***   *** C:\Lakes\AERMOD View\880 Doolittle\880
Doolittle.isc                 ***        01/12/23
 *** AERMET - VERSION  18081 ***   ***
                        ***        15:42:55

                                   PAGE 111
 *** MODELOPTs:    RegDFAULT  CONC  ELEV  URBAN  ADJ_U*

                            * SOURCE EMISSION RATE SCALARS WHICH VARY FOR EACH HOUR
OF THE DAY *

     HOUR    SCALAR      HOUR    SCALAR      HOUR    SCALAR      HOUR    SCALAR
 HOUR    SCALAR      HOUR    SCALAR
 - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - -
- - - - - - - - - - - - - - - - - - - - - - - -


 SOURCE ID = L0000441     ; SOURCE TYPE = VOLUME   :
       1   .00000E+00      2   .00000E+00      3   .00000E+00      4   .00000E+00
   5   .00000E+00      6   .00000E+00
       7   .00000E+00      8   .00000E+00      9   .10000E+01     10   .10000E+01
  11   .10000E+01     12   .10000E+01
      13   .10000E+01     14   .10000E+01     15   .10000E+01     16   .10000E+01
  17   .00000E+00     18   .00000E+00
      19   .00000E+00     20   .00000E+00     21   .00000E+00     22   .00000E+00
  23   .00000E+00     24   .00000E+00


 SOURCE ID = L0000442     ; SOURCE TYPE = VOLUME   :
       1   .00000E+00      2   .00000E+00      3   .00000E+00      4   .00000E+00
   5   .00000E+00      6   .00000E+00
```

```
      7   .00000E+00      8   .00000E+00      9   .10000E+01     10   .10000E+01
  11   .10000E+01     12   .10000E+01
     13   .10000E+01     14   .10000E+01     15   .10000E+01     16   .10000E+01
  17   .00000E+00     18   .00000E+00
     19   .00000E+00     20   .00000E+00     21   .00000E+00     22   .00000E+00
  23   .00000E+00     24   .00000E+00


 SOURCE ID = L0000443     ; SOURCE TYPE = VOLUME   :
      1   .00000E+00      2   .00000E+00      3   .00000E+00      4   .00000E+00
   5   .00000E+00      6   .00000E+00
      7   .00000E+00      8   .00000E+00      9   .10000E+01     10   .10000E+01
  11   .10000E+01     12   .10000E+01
     13   .10000E+01     14   .10000E+01     15   .10000E+01     16   .10000E+01
  17   .00000E+00     18   .00000E+00
     19   .00000E+00     20   .00000E+00     21   .00000E+00     22   .00000E+00
  23   .00000E+00     24   .00000E+00


 SOURCE ID = L0000444     ; SOURCE TYPE = VOLUME   :
      1   .00000E+00      2   .00000E+00      3   .00000E+00      4   .00000E+00
   5   .00000E+00      6   .00000E+00
      7   .00000E+00      8   .00000E+00      9   .10000E+01     10   .10000E+01
  11   .10000E+01     12   .10000E+01
     13   .10000E+01     14   .10000E+01     15   .10000E+01     16   .10000E+01
  17   .00000E+00     18   .00000E+00
     19   .00000E+00     20   .00000E+00     21   .00000E+00     22   .00000E+00
  23   .00000E+00     24   .00000E+00


 SOURCE ID = L0000445     ; SOURCE TYPE = VOLUME   :
      1   .00000E+00      2   .00000E+00      3   .00000E+00      4   .00000E+00
   5   .00000E+00      6   .00000E+00
      7   .00000E+00      8   .00000E+00      9   .10000E+01     10   .10000E+01
  11   .10000E+01     12   .10000E+01
     13   .10000E+01     14   .10000E+01     15   .10000E+01     16   .10000E+01
  17   .00000E+00     18   .00000E+00
     19   .00000E+00     20   .00000E+00     21   .00000E+00     22   .00000E+00
  23   .00000E+00     24   .00000E+00
```



```
 *** MODELOPTs:    RegDFAULT  CONC  ELEV  URBAN  ADJ_U*

                              * SOURCE EMISSION RATE SCALARS WHICH VARY FOR EACH HOUR
OF THE DAY *
```

```
    HOUR    SCALAR      HOUR    SCALAR      HOUR    SCALAR      HOUR    SCALAR
 HOUR    SCALAR      HOUR    SCALAR
 - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - -
- - - - - - - - - - - - - - - - - - - - - - - - -


 SOURCE ID = L0000446     ; SOURCE TYPE = VOLUME   :
       1   .00000E+00      2   .00000E+00      3   .00000E+00      4   .00000E+00
   5   .00000E+00      6   .00000E+00
       7   .00000E+00      8   .00000E+00      9   .10000E+01     10   .10000E+01
  11   .10000E+01     12   .10000E+01
      13   .10000E+01     14   .10000E+01     15   .10000E+01     16   .10000E+01
  17   .00000E+00     18   .00000E+00
      19   .00000E+00     20   .00000E+00     21   .00000E+00     22   .00000E+00
  23   .00000E+00     24   .00000E+00


 SOURCE ID = L0000447     ; SOURCE TYPE = VOLUME   :
       1   .00000E+00      2   .00000E+00      3   .00000E+00      4   .00000E+00
   5   .00000E+00      6   .00000E+00
       7   .00000E+00      8   .00000E+00      9   .10000E+01     10   .10000E+01
  11   .10000E+01     12   .10000E+01
      13   .10000E+01     14   .10000E+01     15   .10000E+01     16   .10000E+01
  17   .00000E+00     18   .00000E+00
      19   .00000E+00     20   .00000E+00     21   .00000E+00     22   .00000E+00
  23   .00000E+00     24   .00000E+00


 SOURCE ID = L0000448     ; SOURCE TYPE = VOLUME   :
       1   .00000E+00      2   .00000E+00      3   .00000E+00      4   .00000E+00
   5   .00000E+00      6   .00000E+00
       7   .00000E+00      8   .00000E+00      9   .10000E+01     10   .10000E+01
  11   .10000E+01     12   .10000E+01
      13   .10000E+01     14   .10000E+01     15   .10000E+01     16   .10000E+01
  17   .00000E+00     18   .00000E+00
      19   .00000E+00     20   .00000E+00     21   .00000E+00     22   .00000E+00
  23   .00000E+00     24   .00000E+00


 SOURCE ID = L0000449     ; SOURCE TYPE = VOLUME   :
       1   .00000E+00      2   .00000E+00      3   .00000E+00      4   .00000E+00
   5   .00000E+00      6   .00000E+00
       7   .00000E+00      8   .00000E+00      9   .10000E+01     10   .10000E+01
  11   .10000E+01     12   .10000E+01
      13   .10000E+01     14   .10000E+01     15   .10000E+01     16   .10000E+01
  17   .00000E+00     18   .00000E+00
      19   .00000E+00     20   .00000E+00     21   .00000E+00     22   .00000E+00
  23   .00000E+00     24   .00000E+00
```

```
 SOURCE ID = L0000450     ; SOURCE TYPE = VOLUME   :
       1   .00000E+00      2   .00000E+00      3   .00000E+00      4   .00000E+00
   5   .00000E+00      6   .00000E+00
       7   .00000E+00      8   .00000E+00      9   .10000E+01     10   .10000E+01
  11   .10000E+01     12   .10000E+01
      13   .10000E+01     14   .10000E+01     15   .10000E+01     16   .10000E+01
  17   .00000E+00     18   .00000E+00
      19   .00000E+00     20   .00000E+00     21   .00000E+00     22   .00000E+00
  23   .00000E+00     24   .00000E+00

↑ *** AERMOD - VERSION 22112  ***   *** C:\Lakes\AERMOD View\880 Doolittle\880
Doolittle.isc                 ***        01/12/23
 *** AERMET - VERSION  18081 ***   ***
                       ***        15:42:55

                                  PAGE 113
 *** MODELOPTs:    RegDFAULT  CONC  ELEV  URBAN  ADJ_U*

                            * SOURCE EMISSION RATE SCALARS WHICH VARY FOR EACH HOUR
OF THE DAY *

     HOUR    SCALAR      HOUR    SCALAR      HOUR    SCALAR      HOUR    SCALAR
 HOUR    SCALAR      HOUR    SCALAR
 - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - -
- - - - - - - - - - - - - - - - - - - - - - - - -


 SOURCE ID = L0000451     ; SOURCE TYPE = VOLUME   :
       1   .00000E+00      2   .00000E+00      3   .00000E+00      4   .00000E+00
   5   .00000E+00      6   .00000E+00
       7   .00000E+00      8   .00000E+00      9   .10000E+01     10   .10000E+01
  11   .10000E+01     12   .10000E+01
      13   .10000E+01     14   .10000E+01     15   .10000E+01     16   .10000E+01
  17   .00000E+00     18   .00000E+00
      19   .00000E+00     20   .00000E+00     21   .00000E+00     22   .00000E+00
  23   .00000E+00     24   .00000E+00


 SOURCE ID = L0000452     ; SOURCE TYPE = VOLUME   :
       1   .00000E+00      2   .00000E+00      3   .00000E+00      4   .00000E+00
   5   .00000E+00      6   .00000E+00
       7   .00000E+00      8   .00000E+00      9   .10000E+01     10   .10000E+01
  11   .10000E+01     12   .10000E+01
      13   .10000E+01     14   .10000E+01     15   .10000E+01     16   .10000E+01
  17   .00000E+00     18   .00000E+00
      19   .00000E+00     20   .00000E+00     21   .00000E+00     22   .00000E+00
  23   .00000E+00     24   .00000E+00
```

```
 SOURCE ID = L0000453     ; SOURCE TYPE = VOLUME   :
       1   .00000E+00      2   .00000E+00      3   .00000E+00      4   .00000E+00
   5   .00000E+00      6   .00000E+00
       7   .00000E+00      8   .00000E+00      9   .10000E+01     10   .10000E+01
  11   .10000E+01     12   .10000E+01
      13   .10000E+01     14   .10000E+01     15   .10000E+01     16   .10000E+01
  17   .00000E+00     18   .00000E+00
      19   .00000E+00     20   .00000E+00     21   .00000E+00     22   .00000E+00
  23   .00000E+00     24   .00000E+00


 SOURCE ID = L0000454     ; SOURCE TYPE = VOLUME   :
       1   .00000E+00      2   .00000E+00      3   .00000E+00      4   .00000E+00
   5   .00000E+00      6   .00000E+00
       7   .00000E+00      8   .00000E+00      9   .10000E+01     10   .10000E+01
  11   .10000E+01     12   .10000E+01
      13   .10000E+01     14   .10000E+01     15   .10000E+01     16   .10000E+01
  17   .00000E+00     18   .00000E+00
      19   .00000E+00     20   .00000E+00     21   .00000E+00     22   .00000E+00
  23   .00000E+00     24   .00000E+00


 SOURCE ID = L0000455     ; SOURCE TYPE = VOLUME   :
       1   .00000E+00      2   .00000E+00      3   .00000E+00      4   .00000E+00
   5   .00000E+00      6   .00000E+00
       7   .00000E+00      8   .00000E+00      9   .10000E+01     10   .10000E+01
  11   .10000E+01     12   .10000E+01
      13   .10000E+01     14   .10000E+01     15   .10000E+01     16   .10000E+01
  17   .00000E+00     18   .00000E+00
      19   .00000E+00     20   .00000E+00     21   .00000E+00     22   .00000E+00
  23   .00000E+00     24   .00000E+00
```



```
                            * SOURCE EMISSION RATE SCALARS WHICH VARY FOR EACH HOUR
OF THE DAY *

     HOUR    SCALAR      HOUR    SCALAR      HOUR    SCALAR      HOUR    SCALAR
 HOUR    SCALAR      HOUR    SCALAR
 - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - -
- - - - - - - - - - - - - - - - - - - - - - - -


 SOURCE ID = L0000456     ; SOURCE TYPE = VOLUME   :
```

```
     1   .00000E+00      2   .00000E+00      3   .00000E+00      4   .00000E+00
  5   .00000E+00      6   .00000E+00
     7   .00000E+00      8   .00000E+00      9   .10000E+01     10   .10000E+01
 11   .10000E+01     12   .10000E+01
    13   .10000E+01     14   .10000E+01     15   .10000E+01     16   .10000E+01
 17   .00000E+00     18   .00000E+00
    19   .00000E+00     20   .00000E+00     21   .00000E+00     22   .00000E+00
 23   .00000E+00     24   .00000E+00


SOURCE ID = L0000457     ; SOURCE TYPE = VOLUME   :
     1   .00000E+00      2   .00000E+00      3   .00000E+00      4   .00000E+00
  5   .00000E+00      6   .00000E+00
     7   .00000E+00      8   .00000E+00      9   .10000E+01     10   .10000E+01
 11   .10000E+01     12   .10000E+01
    13   .10000E+01     14   .10000E+01     15   .10000E+01     16   .10000E+01
 17   .00000E+00     18   .00000E+00
    19   .00000E+00     20   .00000E+00     21   .00000E+00     22   .00000E+00
 23   .00000E+00     24   .00000E+00


SOURCE ID = L0000458     ; SOURCE TYPE = VOLUME   :
     1   .00000E+00      2   .00000E+00      3   .00000E+00      4   .00000E+00
  5   .00000E+00      6   .00000E+00
     7   .00000E+00      8   .00000E+00      9   .10000E+01     10   .10000E+01
 11   .10000E+01     12   .10000E+01
    13   .10000E+01     14   .10000E+01     15   .10000E+01     16   .10000E+01
 17   .00000E+00     18   .00000E+00
    19   .00000E+00     20   .00000E+00     21   .00000E+00     22   .00000E+00
 23   .00000E+00     24   .00000E+00


SOURCE ID = L0000459     ; SOURCE TYPE = VOLUME   :
     1   .00000E+00      2   .00000E+00      3   .00000E+00      4   .00000E+00
  5   .00000E+00      6   .00000E+00
     7   .00000E+00      8   .00000E+00      9   .10000E+01     10   .10000E+01
 11   .10000E+01     12   .10000E+01
    13   .10000E+01     14   .10000E+01     15   .10000E+01     16   .10000E+01
 17   .00000E+00     18   .00000E+00
    19   .00000E+00     20   .00000E+00     21   .00000E+00     22   .00000E+00
 23   .00000E+00     24   .00000E+00


SOURCE ID = L0000460     ; SOURCE TYPE = VOLUME   :
     1   .00000E+00      2   .00000E+00      3   .00000E+00      4   .00000E+00
  5   .00000E+00      6   .00000E+00
     7   .00000E+00      8   .00000E+00      9   .10000E+01     10   .10000E+01
 11   .10000E+01     12   .10000E+01
    13   .10000E+01     14   .10000E+01     15   .10000E+01     16   .10000E+01
 17   .00000E+00     18   .00000E+00
```

```
     19   .00000E+00     20   .00000E+00     21   .00000E+00     22   .00000E+00
  23   .00000E+00     24   .00000E+00

🡅 *** AERMOD - VERSION 22112  ***   *** C:\Lakes\AERMOD View\880 Doolittle\880
Doolittle.isc                 ***        01/12/23
 *** AERMET - VERSION  18081 ***   ***
                       ***        15:42:55

                                  PAGE 115
 *** MODELOPTs:    RegDFAULT  CONC  ELEV  URBAN  ADJ_U*

                            * SOURCE EMISSION RATE SCALARS WHICH VARY FOR EACH HOUR
OF THE DAY *

     HOUR    SCALAR      HOUR    SCALAR      HOUR    SCALAR      HOUR    SCALAR
 HOUR    SCALAR      HOUR    SCALAR
 - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - -
- - - - - - - - - - - - - - - - - - - - - - - -


 SOURCE ID = L0000461     ; SOURCE TYPE = VOLUME   :
       1   .00000E+00      2   .00000E+00      3   .00000E+00      4   .00000E+00
   5   .00000E+00      6   .00000E+00
       7   .00000E+00      8   .00000E+00      9   .10000E+01     10   .10000E+01
  11   .10000E+01     12   .10000E+01
      13   .10000E+01     14   .10000E+01     15   .10000E+01     16   .10000E+01
  17   .00000E+00     18   .00000E+00
      19   .00000E+00     20   .00000E+00     21   .00000E+00     22   .00000E+00
  23   .00000E+00     24   .00000E+00


 SOURCE ID = L0000462     ; SOURCE TYPE = VOLUME   :
       1   .00000E+00      2   .00000E+00      3   .00000E+00      4   .00000E+00
   5   .00000E+00      6   .00000E+00
       7   .00000E+00      8   .00000E+00      9   .10000E+01     10   .10000E+01
  11   .10000E+01     12   .10000E+01
      13   .10000E+01     14   .10000E+01     15   .10000E+01     16   .10000E+01
  17   .00000E+00     18   .00000E+00
      19   .00000E+00     20   .00000E+00     21   .00000E+00     22   .00000E+00
  23   .00000E+00     24   .00000E+00


 SOURCE ID = L0000463     ; SOURCE TYPE = VOLUME   :
       1   .00000E+00      2   .00000E+00      3   .00000E+00      4   .00000E+00
   5   .00000E+00      6   .00000E+00
       7   .00000E+00      8   .00000E+00      9   .10000E+01     10   .10000E+01
  11   .10000E+01     12   .10000E+01
      13   .10000E+01     14   .10000E+01     15   .10000E+01     16   .10000E+01
  17   .00000E+00     18   .00000E+00
      19   .00000E+00     20   .00000E+00     21   .00000E+00     22   .00000E+00
```

```
  23   .00000E+00     24   .00000E+00


 SOURCE ID = L0000464     ; SOURCE TYPE = VOLUME   :
       1   .00000E+00      2   .00000E+00      3   .00000E+00      4   .00000E+00
   5   .00000E+00      6   .00000E+00
       7   .00000E+00      8   .00000E+00      9   .10000E+01     10   .10000E+01
  11   .10000E+01     12   .10000E+01
      13   .10000E+01     14   .10000E+01     15   .10000E+01     16   .10000E+01
  17   .00000E+00     18   .00000E+00
      19   .00000E+00     20   .00000E+00     21   .00000E+00     22   .00000E+00
  23   .00000E+00     24   .00000E+00


 SOURCE ID = L0000465     ; SOURCE TYPE = VOLUME   :
       1   .00000E+00      2   .00000E+00      3   .00000E+00      4   .00000E+00
   5   .00000E+00      6   .00000E+00
       7   .00000E+00      8   .00000E+00      9   .10000E+01     10   .10000E+01
  11   .10000E+01     12   .10000E+01
      13   .10000E+01     14   .10000E+01     15   .10000E+01     16   .10000E+01
  17   .00000E+00     18   .00000E+00
      19   .00000E+00     20   .00000E+00     21   .00000E+00     22   .00000E+00
  23   .00000E+00     24   .00000E+00

↟ *** AERMOD - VERSION 22112  ***   *** C:\Lakes\AERMOD View\880 Doolittle\880
Doolittle.isc                 ***        01/12/23
 *** AERMET - VERSION  18081 ***   ***
                        ***        15:42:55

                                   PAGE 116
 *** MODELOPTs:    RegDFAULT  CONC  ELEV  URBAN  ADJ_U*

                            * SOURCE EMISSION RATE SCALARS WHICH VARY FOR EACH HOUR
OF THE DAY *

     HOUR    SCALAR      HOUR    SCALAR      HOUR    SCALAR      HOUR    SCALAR
 HOUR    SCALAR      HOUR    SCALAR
 - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - -
- - - - - - - - - - - - - - - - - - - - - - - - -


 SOURCE ID = L0000466     ; SOURCE TYPE = VOLUME   :
       1   .00000E+00      2   .00000E+00      3   .00000E+00      4   .00000E+00
   5   .00000E+00      6   .00000E+00
       7   .00000E+00      8   .00000E+00      9   .10000E+01     10   .10000E+01
  11   .10000E+01     12   .10000E+01
      13   .10000E+01     14   .10000E+01     15   .10000E+01     16   .10000E+01
  17   .00000E+00     18   .00000E+00
      19   .00000E+00     20   .00000E+00     21   .00000E+00     22   .00000E+00
  23   .00000E+00     24   .00000E+00
```

```
 SOURCE ID = L0000467     ; SOURCE TYPE = VOLUME   :
       1   .00000E+00      2   .00000E+00      3   .00000E+00      4   .00000E+00
   5   .00000E+00      6   .00000E+00
       7   .00000E+00      8   .00000E+00      9   .10000E+01     10   .10000E+01
  11   .10000E+01     12   .10000E+01
      13   .10000E+01     14   .10000E+01     15   .10000E+01     16   .10000E+01
  17   .00000E+00     18   .00000E+00
      19   .00000E+00     20   .00000E+00     21   .00000E+00     22   .00000E+00
  23   .00000E+00     24   .00000E+00


 SOURCE ID = L0000468     ; SOURCE TYPE = VOLUME   :
       1   .00000E+00      2   .00000E+00      3   .00000E+00      4   .00000E+00
   5   .00000E+00      6   .00000E+00
       7   .00000E+00      8   .00000E+00      9   .10000E+01     10   .10000E+01
  11   .10000E+01     12   .10000E+01
      13   .10000E+01     14   .10000E+01     15   .10000E+01     16   .10000E+01
  17   .00000E+00     18   .00000E+00
      19   .00000E+00     20   .00000E+00     21   .00000E+00     22   .00000E+00
  23   .00000E+00     24   .00000E+00


 SOURCE ID = L0000469     ; SOURCE TYPE = VOLUME   :
       1   .00000E+00      2   .00000E+00      3   .00000E+00      4   .00000E+00
   5   .00000E+00      6   .00000E+00
       7   .00000E+00      8   .00000E+00      9   .10000E+01     10   .10000E+01
  11   .10000E+01     12   .10000E+01
      13   .10000E+01     14   .10000E+01     15   .10000E+01     16   .10000E+01
  17   .00000E+00     18   .00000E+00
      19   .00000E+00     20   .00000E+00     21   .00000E+00     22   .00000E+00
  23   .00000E+00     24   .00000E+00


 SOURCE ID = L0000470     ; SOURCE TYPE = VOLUME   :
       1   .00000E+00      2   .00000E+00      3   .00000E+00      4   .00000E+00
   5   .00000E+00      6   .00000E+00
       7   .00000E+00      8   .00000E+00      9   .10000E+01     10   .10000E+01
  11   .10000E+01     12   .10000E+01
      13   .10000E+01     14   .10000E+01     15   .10000E+01     16   .10000E+01
  17   .00000E+00     18   .00000E+00
      19   .00000E+00     20   .00000E+00     21   .00000E+00     22   .00000E+00
  23   .00000E+00     24   .00000E+00

↑ *** AERMOD - VERSION 22112  ***   *** C:\Lakes\AERMOD View\880 Doolittle\880
Doolittle.isc                 ***        01/12/23
 *** AERMET - VERSION  18081 ***   ***
                        ***       15:42:55
```

```
*** MODELOPTs:    RegDFAULT  CONC  ELEV  URBAN  ADJ_U*

                          * SOURCE EMISSION RATE SCALARS WHICH VARY FOR EACH HOUR
OF THE DAY *

     HOUR    SCALAR      HOUR    SCALAR      HOUR    SCALAR      HOUR    SCALAR
 HOUR    SCALAR      HOUR    SCALAR
 - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - -
- - - - - - - - - - - - - - - - - - - - - - - - -


 SOURCE ID = L0000471     ; SOURCE TYPE = VOLUME   :
       1   .00000E+00      2   .00000E+00      3   .00000E+00      4   .00000E+00
   5   .00000E+00      6   .00000E+00
       7   .00000E+00      8   .00000E+00      9   .10000E+01     10   .10000E+01
  11   .10000E+01     12   .10000E+01
      13   .10000E+01     14   .10000E+01     15   .10000E+01     16   .10000E+01
  17   .00000E+00     18   .00000E+00
      19   .00000E+00     20   .00000E+00     21   .00000E+00     22   .00000E+00
  23   .00000E+00     24   .00000E+00


 SOURCE ID = L0000472     ; SOURCE TYPE = VOLUME   :
       1   .00000E+00      2   .00000E+00      3   .00000E+00      4   .00000E+00
   5   .00000E+00      6   .00000E+00
       7   .00000E+00      8   .00000E+00      9   .10000E+01     10   .10000E+01
  11   .10000E+01     12   .10000E+01
      13   .10000E+01     14   .10000E+01     15   .10000E+01     16   .10000E+01
  17   .00000E+00     18   .00000E+00
      19   .00000E+00     20   .00000E+00     21   .00000E+00     22   .00000E+00
  23   .00000E+00     24   .00000E+00


 SOURCE ID = L0000473     ; SOURCE TYPE = VOLUME   :
       1   .00000E+00      2   .00000E+00      3   .00000E+00      4   .00000E+00
   5   .00000E+00      6   .00000E+00
       7   .00000E+00      8   .00000E+00      9   .10000E+01     10   .10000E+01
  11   .10000E+01     12   .10000E+01
      13   .10000E+01     14   .10000E+01     15   .10000E+01     16   .10000E+01
  17   .00000E+00     18   .00000E+00
      19   .00000E+00     20   .00000E+00     21   .00000E+00     22   .00000E+00
  23   .00000E+00     24   .00000E+00


 SOURCE ID = L0000474     ; SOURCE TYPE = VOLUME   :
       1   .00000E+00      2   .00000E+00      3   .00000E+00      4   .00000E+00
   5   .00000E+00      6   .00000E+00
       7   .00000E+00      8   .00000E+00      9   .10000E+01     10   .10000E+01
  11   .10000E+01     12   .10000E+01
```

```
     13   .10000E+01     14   .10000E+01     15   .10000E+01     16   .10000E+01
  17   .00000E+00     18   .00000E+00
     19   .00000E+00     20   .00000E+00     21   .00000E+00     22   .00000E+00
  23   .00000E+00     24   .00000E+00


 SOURCE ID = L0000475     ; SOURCE TYPE = VOLUME   :
      1   .00000E+00      2   .00000E+00      3   .00000E+00      4   .00000E+00
   5   .00000E+00      6   .00000E+00
      7   .00000E+00      8   .00000E+00      9   .10000E+01     10   .10000E+01
  11   .10000E+01     12   .10000E+01
     13   .10000E+01     14   .10000E+01     15   .10000E+01     16   .10000E+01
  17   .00000E+00     18   .00000E+00
     19   .00000E+00     20   .00000E+00     21   .00000E+00     22   .00000E+00
  23   .00000E+00     24   .00000E+00
```



```
                           * SOURCE EMISSION RATE SCALARS WHICH VARY FOR EACH HOUR
OF THE DAY *

     HOUR    SCALAR      HOUR    SCALAR      HOUR    SCALAR      HOUR    SCALAR
 HOUR    SCALAR      HOUR    SCALAR
 - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - -
- - - - - - - - - - - - - - - - - - - - - - - -


 SOURCE ID = L0000476     ; SOURCE TYPE = VOLUME   :
      1   .00000E+00      2   .00000E+00      3   .00000E+00      4   .00000E+00
   5   .00000E+00      6   .00000E+00
      7   .00000E+00      8   .00000E+00      9   .10000E+01     10   .10000E+01
  11   .10000E+01     12   .10000E+01
     13   .10000E+01     14   .10000E+01     15   .10000E+01     16   .10000E+01
  17   .00000E+00     18   .00000E+00
     19   .00000E+00     20   .00000E+00     21   .00000E+00     22   .00000E+00
  23   .00000E+00     24   .00000E+00


 SOURCE ID = L0000477     ; SOURCE TYPE = VOLUME   :
      1   .00000E+00      2   .00000E+00      3   .00000E+00      4   .00000E+00
   5   .00000E+00      6   .00000E+00
      7   .00000E+00      8   .00000E+00      9   .10000E+01     10   .10000E+01
  11   .10000E+01     12   .10000E+01
     13   .10000E+01     14   .10000E+01     15   .10000E+01     16   .10000E+01
```

```
 17   .00000E+00     18   .00000E+00
     19   .00000E+00     20   .00000E+00     21   .00000E+00     22   .00000E+00
 23   .00000E+00     24   .00000E+00


SOURCE ID = L0000478     ; SOURCE TYPE = VOLUME   :
      1   .00000E+00      2   .00000E+00      3   .00000E+00      4   .00000E+00
  5   .00000E+00      6   .00000E+00
      7   .00000E+00      8   .00000E+00      9   .10000E+01     10   .10000E+01
 11   .10000E+01     12   .10000E+01
     13   .10000E+01     14   .10000E+01     15   .10000E+01     16   .10000E+01
 17   .00000E+00     18   .00000E+00
     19   .00000E+00     20   .00000E+00     21   .00000E+00     22   .00000E+00
 23   .00000E+00     24   .00000E+00


SOURCE ID = L0000479     ; SOURCE TYPE = VOLUME   :
      1   .00000E+00      2   .00000E+00      3   .00000E+00      4   .00000E+00
  5   .00000E+00      6   .00000E+00
      7   .00000E+00      8   .00000E+00      9   .10000E+01     10   .10000E+01
 11   .10000E+01     12   .10000E+01
     13   .10000E+01     14   .10000E+01     15   .10000E+01     16   .10000E+01
 17   .00000E+00     18   .00000E+00
     19   .00000E+00     20   .00000E+00     21   .00000E+00     22   .00000E+00
 23   .00000E+00     24   .00000E+00


SOURCE ID = L0000480     ; SOURCE TYPE = VOLUME   :
      1   .00000E+00      2   .00000E+00      3   .00000E+00      4   .00000E+00
  5   .00000E+00      6   .00000E+00
      7   .00000E+00      8   .00000E+00      9   .10000E+01     10   .10000E+01
 11   .10000E+01     12   .10000E+01
     13   .10000E+01     14   .10000E+01     15   .10000E+01     16   .10000E+01
 17   .00000E+00     18   .00000E+00
     19   .00000E+00     20   .00000E+00     21   .00000E+00     22   .00000E+00
 23   .00000E+00     24   .00000E+00
```



```
 *** MODELOPTs:    RegDFAULT  CONC  ELEV  URBAN  ADJ_U*

                            * SOURCE EMISSION RATE SCALARS WHICH VARY FOR EACH HOUR
OF THE DAY *

     HOUR    SCALAR      HOUR    SCALAR      HOUR    SCALAR      HOUR    SCALAR
 HOUR    SCALAR      HOUR    SCALAR
```

- -

```
SOURCE ID = L0000481      ; SOURCE TYPE = VOLUME    :
      1   .00000E+00       2   .00000E+00       3   .00000E+00       4   .00000E+00
  5   .00000E+00       6   .00000E+00
      7   .00000E+00       8   .00000E+00       9   .10000E+01      10   .10000E+01
 11   .10000E+01      12   .10000E+01
     13   .10000E+01      14   .10000E+01      15   .10000E+01      16   .10000E+01
 17   .00000E+00      18   .00000E+00
     19   .00000E+00      20   .00000E+00      21   .00000E+00      22   .00000E+00
 23   .00000E+00      24   .00000E+00

SOURCE ID = L0000482      ; SOURCE TYPE = VOLUME    :
      1   .00000E+00       2   .00000E+00       3   .00000E+00       4   .00000E+00
  5   .00000E+00       6   .00000E+00
      7   .00000E+00       8   .00000E+00       9   .10000E+01      10   .10000E+01
 11   .10000E+01      12   .10000E+01
     13   .10000E+01      14   .10000E+01      15   .10000E+01      16   .10000E+01
 17   .00000E+00      18   .00000E+00
     19   .00000E+00      20   .00000E+00      21   .00000E+00      22   .00000E+00
 23   .00000E+00      24   .00000E+00

SOURCE ID = L0000483      ; SOURCE TYPE = VOLUME    :
      1   .00000E+00       2   .00000E+00       3   .00000E+00       4   .00000E+00
  5   .00000E+00       6   .00000E+00
      7   .00000E+00       8   .00000E+00       9   .10000E+01      10   .10000E+01
 11   .10000E+01      12   .10000E+01
     13   .10000E+01      14   .10000E+01      15   .10000E+01      16   .10000E+01
 17   .00000E+00      18   .00000E+00
     19   .00000E+00      20   .00000E+00      21   .00000E+00      22   .00000E+00
 23   .00000E+00      24   .00000E+00

SOURCE ID = L0000484      ; SOURCE TYPE = VOLUME    :
      1   .00000E+00       2   .00000E+00       3   .00000E+00       4   .00000E+00
  5   .00000E+00       6   .00000E+00
      7   .00000E+00       8   .00000E+00       9   .10000E+01      10   .10000E+01
 11   .10000E+01      12   .10000E+01
     13   .10000E+01      14   .10000E+01      15   .10000E+01      16   .10000E+01
 17   .00000E+00      18   .00000E+00
     19   .00000E+00      20   .00000E+00      21   .00000E+00      22   .00000E+00
 23   .00000E+00      24   .00000E+00

SOURCE ID = L0000485      ; SOURCE TYPE = VOLUME    :
      1   .00000E+00       2   .00000E+00       3   .00000E+00       4   .00000E+00
```

```
   5   .00000E+00      6   .00000E+00
       7   .00000E+00      8   .00000E+00      9   .10000E+01     10   .10000E+01
  11   .10000E+01     12   .10000E+01
      13   .10000E+01     14   .10000E+01     15   .10000E+01     16   .10000E+01
  17   .00000E+00     18   .00000E+00
      19   .00000E+00     20   .00000E+00     21   .00000E+00     22   .00000E+00
  23   .00000E+00     24   .00000E+00
```



```
                            * SOURCE EMISSION RATE SCALARS WHICH VARY FOR EACH HOUR
OF THE DAY *

     HOUR    SCALAR      HOUR    SCALAR      HOUR    SCALAR      HOUR    SCALAR
 HOUR    SCALAR      HOUR    SCALAR
 - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - -
- - - - - - - - - - - - - - - - - - - - - - - -


 SOURCE ID = L0000486     ; SOURCE TYPE = VOLUME   :
       1   .00000E+00      2   .00000E+00      3   .00000E+00      4   .00000E+00
   5   .00000E+00      6   .00000E+00
       7   .00000E+00      8   .00000E+00      9   .10000E+01     10   .10000E+01
  11   .10000E+01     12   .10000E+01
      13   .10000E+01     14   .10000E+01     15   .10000E+01     16   .10000E+01
  17   .00000E+00     18   .00000E+00
      19   .00000E+00     20   .00000E+00     21   .00000E+00     22   .00000E+00
  23   .00000E+00     24   .00000E+00


 SOURCE ID = L0000487     ; SOURCE TYPE = VOLUME   :
       1   .00000E+00      2   .00000E+00      3   .00000E+00      4   .00000E+00
   5   .00000E+00      6   .00000E+00
       7   .00000E+00      8   .00000E+00      9   .10000E+01     10   .10000E+01
  11   .10000E+01     12   .10000E+01
      13   .10000E+01     14   .10000E+01     15   .10000E+01     16   .10000E+01
  17   .00000E+00     18   .00000E+00
      19   .00000E+00     20   .00000E+00     21   .00000E+00     22   .00000E+00
  23   .00000E+00     24   .00000E+00


 SOURCE ID = L0000488     ; SOURCE TYPE = VOLUME   :
       1   .00000E+00      2   .00000E+00      3   .00000E+00      4   .00000E+00
   5   .00000E+00      6   .00000E+00
```

```
      7   .00000E+00      8   .00000E+00      9   .10000E+01     10   .10000E+01
  11   .10000E+01     12   .10000E+01
     13   .10000E+01     14   .10000E+01     15   .10000E+01     16   .10000E+01
  17   .00000E+00     18   .00000E+00
     19   .00000E+00     20   .00000E+00     21   .00000E+00     22   .00000E+00
  23   .00000E+00     24   .00000E+00


 SOURCE ID = L0000489     ; SOURCE TYPE = VOLUME   :
      1   .00000E+00      2   .00000E+00      3   .00000E+00      4   .00000E+00
   5   .00000E+00      6   .00000E+00
      7   .00000E+00      8   .00000E+00      9   .10000E+01     10   .10000E+01
  11   .10000E+01     12   .10000E+01
     13   .10000E+01     14   .10000E+01     15   .10000E+01     16   .10000E+01
  17   .00000E+00     18   .00000E+00
     19   .00000E+00     20   .00000E+00     21   .00000E+00     22   .00000E+00
  23   .00000E+00     24   .00000E+00


 SOURCE ID = L0000490     ; SOURCE TYPE = VOLUME   :
      1   .00000E+00      2   .00000E+00      3   .00000E+00      4   .00000E+00
   5   .00000E+00      6   .00000E+00
      7   .00000E+00      8   .00000E+00      9   .10000E+01     10   .10000E+01
  11   .10000E+01     12   .10000E+01
     13   .10000E+01     14   .10000E+01     15   .10000E+01     16   .10000E+01
  17   .00000E+00     18   .00000E+00
     19   .00000E+00     20   .00000E+00     21   .00000E+00     22   .00000E+00
  23   .00000E+00     24   .00000E+00

↑ *** AERMOD - VERSION 22112  ***   *** C:\Lakes\AERMOD View\880 Doolittle\880
Doolittle.isc                 ***        01/12/23
 *** AERMET - VERSION  18081 ***   ***
                       ***        15:42:55

                                  PAGE 121
 *** MODELOPTs:    RegDFAULT  CONC  ELEV  URBAN  ADJ_U*

                            * SOURCE EMISSION RATE SCALARS WHICH VARY FOR EACH HOUR
OF THE DAY *

     HOUR    SCALAR      HOUR    SCALAR      HOUR    SCALAR      HOUR    SCALAR
 HOUR    SCALAR      HOUR    SCALAR
 - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - -
- - - - - - - - - - - - - - - - - - - - - - - - -


 SOURCE ID = L0000491     ; SOURCE TYPE = VOLUME   :
      1   .00000E+00      2   .00000E+00      3   .00000E+00      4   .00000E+00
   5   .00000E+00      6   .00000E+00
      7   .00000E+00      8   .00000E+00      9   .10000E+01     10   .10000E+01
```

```
 11   .10000E+01     12   .10000E+01
     13   .10000E+01     14   .10000E+01     15   .10000E+01     16   .10000E+01
 17   .00000E+00     18   .00000E+00
     19   .00000E+00     20   .00000E+00     21   .00000E+00     22   .00000E+00
 23   .00000E+00     24   .00000E+00


SOURCE ID = L0000492     ; SOURCE TYPE = VOLUME   :
      1   .00000E+00      2   .00000E+00      3   .00000E+00      4   .00000E+00
  5   .00000E+00      6   .00000E+00
      7   .00000E+00      8   .00000E+00      9   .10000E+01     10   .10000E+01
 11   .10000E+01     12   .10000E+01
     13   .10000E+01     14   .10000E+01     15   .10000E+01     16   .10000E+01
 17   .00000E+00     18   .00000E+00
     19   .00000E+00     20   .00000E+00     21   .00000E+00     22   .00000E+00
 23   .00000E+00     24   .00000E+00


SOURCE ID = L0000493     ; SOURCE TYPE = VOLUME   :
      1   .00000E+00      2   .00000E+00      3   .00000E+00      4   .00000E+00
  5   .00000E+00      6   .00000E+00
      7   .00000E+00      8   .00000E+00      9   .10000E+01     10   .10000E+01
 11   .10000E+01     12   .10000E+01
     13   .10000E+01     14   .10000E+01     15   .10000E+01     16   .10000E+01
 17   .00000E+00     18   .00000E+00
     19   .00000E+00     20   .00000E+00     21   .00000E+00     22   .00000E+00
 23   .00000E+00     24   .00000E+00


SOURCE ID = L0000494     ; SOURCE TYPE = VOLUME   :
      1   .00000E+00      2   .00000E+00      3   .00000E+00      4   .00000E+00
  5   .00000E+00      6   .00000E+00
      7   .00000E+00      8   .00000E+00      9   .10000E+01     10   .10000E+01
 11   .10000E+01     12   .10000E+01
     13   .10000E+01     14   .10000E+01     15   .10000E+01     16   .10000E+01
 17   .00000E+00     18   .00000E+00
     19   .00000E+00     20   .00000E+00     21   .00000E+00     22   .00000E+00
 23   .00000E+00     24   .00000E+00


SOURCE ID = L0000495     ; SOURCE TYPE = VOLUME   :
      1   .00000E+00      2   .00000E+00      3   .00000E+00      4   .00000E+00
  5   .00000E+00      6   .00000E+00
      7   .00000E+00      8   .00000E+00      9   .10000E+01     10   .10000E+01
 11   .10000E+01     12   .10000E+01
     13   .10000E+01     14   .10000E+01     15   .10000E+01     16   .10000E+01
 17   .00000E+00     18   .00000E+00
     19   .00000E+00     20   .00000E+00     21   .00000E+00     22   .00000E+00
 23   .00000E+00     24   .00000E+00
```

*** MODELOPTs: RegDFAULT CONC ELEV URBAN ADJ_U*

* SOURCE EMISSION RATE SCALARS WHICH VARY FOR EACH HOUR OF THE DAY *

HOUR	SCALAR	HOUR	SCALAR	HOUR	SCALAR	HOUR	SCALAR	HOUR	SCALAR	HOUR	SCALAR
1	.00000E+00	2	.00000E+00	3	.00000E+00	4	.00000E+00	5	.00000E+00	6	.00000E+00
7	.00000E+00	8	.00000E+00	9	.10000E+01	10	.10000E+01	11	.10000E+01	12	.10000E+01
13	.10000E+01	14	.10000E+01	15	.10000E+01	16	.10000E+01	17	.00000E+00	18	.00000E+00
19	.00000E+00	20	.00000E+00	21	.00000E+00	22	.00000E+00	23	.00000E+00	24	.00000E+00

SOURCE ID = L0000496 ; SOURCE TYPE = VOLUME :

HOUR	SCALAR	HOUR	SCALAR	HOUR	SCALAR	HOUR	SCALAR	HOUR	SCALAR	HOUR	SCALAR
1	.00000E+00	2	.00000E+00	3	.00000E+00	4	.00000E+00	5	.00000E+00	6	.00000E+00
7	.00000E+00	8	.00000E+00	9	.10000E+01	10	.10000E+01	11	.10000E+01	12	.10000E+01
13	.10000E+01	14	.10000E+01	15	.10000E+01	16	.10000E+01	17	.00000E+00	18	.00000E+00
19	.00000E+00	20	.00000E+00	21	.00000E+00	22	.00000E+00	23	.00000E+00	24	.00000E+00

SOURCE ID = L0000497 ; SOURCE TYPE = VOLUME :

HOUR	SCALAR	HOUR	SCALAR	HOUR	SCALAR	HOUR	SCALAR	HOUR	SCALAR	HOUR	SCALAR
1	.00000E+00	2	.00000E+00	3	.00000E+00	4	.00000E+00	5	.00000E+00	6	.00000E+00
7	.00000E+00	8	.00000E+00	9	.10000E+01	10	.10000E+01	11	.10000E+01	12	.10000E+01
13	.10000E+01	14	.10000E+01	15	.10000E+01	16	.10000E+01	17	.00000E+00	18	.00000E+00
19	.00000E+00	20	.00000E+00	21	.00000E+00	22	.00000E+00	23	.00000E+00	24	.00000E+00

SOURCE ID = L0000498 ; SOURCE TYPE = VOLUME :

HOUR	SCALAR	HOUR	SCALAR	HOUR	SCALAR	HOUR	SCALAR	HOUR	SCALAR	HOUR	SCALAR
1	.00000E+00	2	.00000E+00	3	.00000E+00	4	.00000E+00	5	.00000E+00	6	.00000E+00
7	.00000E+00	8	.00000E+00	9	.10000E+01	10	.10000E+01	11	.10000E+01	12	.10000E+01
13	.10000E+01	14	.10000E+01	15	.10000E+01	16	.10000E+01	17	.00000E+00	18	.00000E+00
19	.00000E+00	20	.00000E+00	21	.00000E+00	22	.00000E+00	23	.00000E+00	24	.00000E+00

```
 SOURCE ID = L0000499     ; SOURCE TYPE = VOLUME   :
       1   .00000E+00      2   .00000E+00      3   .00000E+00      4   .00000E+00
   5   .00000E+00      6   .00000E+00
       7   .00000E+00      8   .00000E+00      9   .10000E+01     10   .10000E+01
  11   .10000E+01     12   .10000E+01
      13   .10000E+01     14   .10000E+01     15   .10000E+01     16   .10000E+01
  17   .00000E+00     18   .00000E+00
      19   .00000E+00     20   .00000E+00     21   .00000E+00     22   .00000E+00
  23   .00000E+00     24   .00000E+00


 SOURCE ID = L0000500     ; SOURCE TYPE = VOLUME   :
       1   .00000E+00      2   .00000E+00      3   .00000E+00      4   .00000E+00
   5   .00000E+00      6   .00000E+00
       7   .00000E+00      8   .00000E+00      9   .10000E+01     10   .10000E+01
  11   .10000E+01     12   .10000E+01
      13   .10000E+01     14   .10000E+01     15   .10000E+01     16   .10000E+01
  17   .00000E+00     18   .00000E+00
      19   .00000E+00     20   .00000E+00     21   .00000E+00     22   .00000E+00
  23   .00000E+00     24   .00000E+00

 *** AERMOD - VERSION 22112  ***   *** C:\Lakes\AERMOD View\880 Doolittle\880
Doolittle.isc                 ***        01/12/23
 *** AERMET - VERSION  18081 ***   ***
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                                  PAGE 123
 *** MODELOPTs:    RegDFAULT  CONC  ELEV  URBAN  ADJ_U*

                            * SOURCE EMISSION RATE SCALARS WHICH VARY FOR EACH HOUR
OF THE DAY *

     HOUR    SCALAR      HOUR    SCALAR      HOUR    SCALAR      HOUR    SCALAR
 HOUR    SCALAR      HOUR    SCALAR
 - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - -
- - - - - - - - - - - - - - - - - - - - - - - - -


 SOURCE ID = L0000501     ; SOURCE TYPE = VOLUME   :
       1   .00000E+00      2   .00000E+00      3   .00000E+00      4   .00000E+00
   5   .00000E+00      6   .00000E+00
       7   .00000E+00      8   .00000E+00      9   .10000E+01     10   .10000E+01
  11   .10000E+01     12   .10000E+01
      13   .10000E+01     14   .10000E+01     15   .10000E+01     16   .10000E+01
  17   .00000E+00     18   .00000E+00
      19   .00000E+00     20   .00000E+00     21   .00000E+00     22   .00000E+00
  23   .00000E+00     24   .00000E+00


 SOURCE ID = L0000502     ; SOURCE TYPE = VOLUME   :
```

```
      1   .00000E+00      2   .00000E+00      3   .00000E+00      4   .00000E+00
  5   .00000E+00      6   .00000E+00
      7   .00000E+00      8   .00000E+00      9   .10000E+01     10   .10000E+01
 11   .10000E+01     12   .10000E+01
     13   .10000E+01     14   .10000E+01     15   .10000E+01     16   .10000E+01
 17   .00000E+00     18   .00000E+00
     19   .00000E+00     20   .00000E+00     21   .00000E+00     22   .00000E+00
 23   .00000E+00     24   .00000E+00


 SOURCE ID = L0000503     ; SOURCE TYPE = VOLUME   :
      1   .00000E+00      2   .00000E+00      3   .00000E+00      4   .00000E+00
  5   .00000E+00      6   .00000E+00
      7   .00000E+00      8   .00000E+00      9   .10000E+01     10   .10000E+01
 11   .10000E+01     12   .10000E+01
     13   .10000E+01     14   .10000E+01     15   .10000E+01     16   .10000E+01
 17   .00000E+00     18   .00000E+00
     19   .00000E+00     20   .00000E+00     21   .00000E+00     22   .00000E+00
 23   .00000E+00     24   .00000E+00


 SOURCE ID = L0000504     ; SOURCE TYPE = VOLUME   :
      1   .00000E+00      2   .00000E+00      3   .00000E+00      4   .00000E+00
  5   .00000E+00      6   .00000E+00
      7   .00000E+00      8   .00000E+00      9   .10000E+01     10   .10000E+01
 11   .10000E+01     12   .10000E+01
     13   .10000E+01     14   .10000E+01     15   .10000E+01     16   .10000E+01
 17   .00000E+00     18   .00000E+00
     19   .00000E+00     20   .00000E+00     21   .00000E+00     22   .00000E+00
 23   .00000E+00     24   .00000E+00


 SOURCE ID = L0000505     ; SOURCE TYPE = VOLUME   :
      1   .00000E+00      2   .00000E+00      3   .00000E+00      4   .00000E+00
  5   .00000E+00      6   .00000E+00
      7   .00000E+00      8   .00000E+00      9   .10000E+01     10   .10000E+01
 11   .10000E+01     12   .10000E+01
     13   .10000E+01     14   .10000E+01     15   .10000E+01     16   .10000E+01
 17   .00000E+00     18   .00000E+00
     19   .00000E+00     20   .00000E+00     21   .00000E+00     22   .00000E+00
 23   .00000E+00     24   .00000E+00
```

```
                              * SOURCE EMISSION RATE SCALARS WHICH VARY FOR EACH HOUR
OF THE DAY *

     HOUR    SCALAR      HOUR    SCALAR      HOUR    SCALAR      HOUR    SCALAR
 HOUR    SCALAR      HOUR    SCALAR
 - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - -
- - - - - - - - - - - - - - - - - - - - - - - - -


 SOURCE ID = L0000506     ; SOURCE TYPE = VOLUME   :
       1   .00000E+00      2   .00000E+00      3   .00000E+00      4   .00000E+00
   5   .00000E+00      6   .00000E+00
       7   .00000E+00      8   .00000E+00      9   .10000E+01     10   .10000E+01
  11   .10000E+01     12   .10000E+01
      13   .10000E+01     14   .10000E+01     15   .10000E+01     16   .10000E+01
  17   .00000E+00     18   .00000E+00
      19   .00000E+00     20   .00000E+00     21   .00000E+00     22   .00000E+00
  23   .00000E+00     24   .00000E+00


 SOURCE ID = L0000507     ; SOURCE TYPE = VOLUME   :
       1   .00000E+00      2   .00000E+00      3   .00000E+00      4   .00000E+00
   5   .00000E+00      6   .00000E+00
       7   .00000E+00      8   .00000E+00      9   .10000E+01     10   .10000E+01
  11   .10000E+01     12   .10000E+01
      13   .10000E+01     14   .10000E+01     15   .10000E+01     16   .10000E+01
  17   .00000E+00     18   .00000E+00
      19   .00000E+00     20   .00000E+00     21   .00000E+00     22   .00000E+00
  23   .00000E+00     24   .00000E+00


 SOURCE ID = L0000508     ; SOURCE TYPE = VOLUME   :
       1   .00000E+00      2   .00000E+00      3   .00000E+00      4   .00000E+00
   5   .00000E+00      6   .00000E+00
       7   .00000E+00      8   .00000E+00      9   .10000E+01     10   .10000E+01
  11   .10000E+01     12   .10000E+01
      13   .10000E+01     14   .10000E+01     15   .10000E+01     16   .10000E+01
  17   .00000E+00     18   .00000E+00
      19   .00000E+00     20   .00000E+00     21   .00000E+00     22   .00000E+00
  23   .00000E+00     24   .00000E+00


 SOURCE ID = L0000509     ; SOURCE TYPE = VOLUME   :
       1   .00000E+00      2   .00000E+00      3   .00000E+00      4   .00000E+00
   5   .00000E+00      6   .00000E+00
       7   .00000E+00      8   .00000E+00      9   .10000E+01     10   .10000E+01
  11   .10000E+01     12   .10000E+01
      13   .10000E+01     14   .10000E+01     15   .10000E+01     16   .10000E+01
  17   .00000E+00     18   .00000E+00
      19   .00000E+00     20   .00000E+00     21   .00000E+00     22   .00000E+00
```

```
  23   .00000E+00     24   .00000E+00


 SOURCE ID = L0000510     ; SOURCE TYPE = VOLUME   :
       1   .00000E+00      2   .00000E+00      3   .00000E+00      4   .00000E+00
   5   .00000E+00      6   .00000E+00
       7   .00000E+00      8   .00000E+00      9   .10000E+01     10   .10000E+01
  11   .10000E+01     12   .10000E+01
      13   .10000E+01     14   .10000E+01     15   .10000E+01     16   .10000E+01
  17   .00000E+00     18   .00000E+00
      19   .00000E+00     20   .00000E+00     21   .00000E+00     22   .00000E+00
  23   .00000E+00     24   .00000E+00

↑ *** AERMOD - VERSION 22112  ***   *** C:\Lakes\AERMOD View\880 Doolittle\880
Doolittle.isc                 ***        01/12/23
 *** AERMET - VERSION  18081 ***   ***
                       ***        15:42:55

                                  PAGE 125
 *** MODELOPTs:    RegDFAULT  CONC  ELEV  URBAN  ADJ_U*

                            * SOURCE EMISSION RATE SCALARS WHICH VARY FOR EACH HOUR
OF THE DAY *

     HOUR    SCALAR      HOUR    SCALAR      HOUR    SCALAR      HOUR    SCALAR
 HOUR    SCALAR      HOUR    SCALAR
 - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - -
- - - - - - - - - - - - - - - - - - - - - - - -


 SOURCE ID = L0000511     ; SOURCE TYPE = VOLUME   :
       1   .00000E+00      2   .00000E+00      3   .00000E+00      4   .00000E+00
   5   .00000E+00      6   .00000E+00
       7   .00000E+00      8   .00000E+00      9   .10000E+01     10   .10000E+01
  11   .10000E+01     12   .10000E+01
      13   .10000E+01     14   .10000E+01     15   .10000E+01     16   .10000E+01
  17   .00000E+00     18   .00000E+00
      19   .00000E+00     20   .00000E+00     21   .00000E+00     22   .00000E+00
  23   .00000E+00     24   .00000E+00


 SOURCE ID = L0000512     ; SOURCE TYPE = VOLUME   :
       1   .00000E+00      2   .00000E+00      3   .00000E+00      4   .00000E+00
   5   .00000E+00      6   .00000E+00
       7   .00000E+00      8   .00000E+00      9   .10000E+01     10   .10000E+01
  11   .10000E+01     12   .10000E+01
      13   .10000E+01     14   .10000E+01     15   .10000E+01     16   .10000E+01
  17   .00000E+00     18   .00000E+00
      19   .00000E+00     20   .00000E+00     21   .00000E+00     22   .00000E+00
  23   .00000E+00     24   .00000E+00
```

```
 SOURCE ID = L0000513     ; SOURCE TYPE = VOLUME   :
       1   .00000E+00      2   .00000E+00      3   .00000E+00      4   .00000E+00
   5   .00000E+00      6   .00000E+00
       7   .00000E+00      8   .00000E+00      9   .10000E+01     10   .10000E+01
  11   .10000E+01     12   .10000E+01
      13   .10000E+01     14   .10000E+01     15   .10000E+01     16   .10000E+01
  17   .00000E+00     18   .00000E+00
      19   .00000E+00     20   .00000E+00     21   .00000E+00     22   .00000E+00
  23   .00000E+00     24   .00000E+00


 SOURCE ID = L0000514     ; SOURCE TYPE = VOLUME   :
       1   .00000E+00      2   .00000E+00      3   .00000E+00      4   .00000E+00
   5   .00000E+00      6   .00000E+00
       7   .00000E+00      8   .00000E+00      9   .10000E+01     10   .10000E+01
  11   .10000E+01     12   .10000E+01
      13   .10000E+01     14   .10000E+01     15   .10000E+01     16   .10000E+01
  17   .00000E+00     18   .00000E+00
      19   .00000E+00     20   .00000E+00     21   .00000E+00     22   .00000E+00
  23   .00000E+00     24   .00000E+00


 SOURCE ID = L0000515     ; SOURCE TYPE = VOLUME   :
       1   .00000E+00      2   .00000E+00      3   .00000E+00      4   .00000E+00
   5   .00000E+00      6   .00000E+00
       7   .00000E+00      8   .00000E+00      9   .10000E+01     10   .10000E+01
  11   .10000E+01     12   .10000E+01
      13   .10000E+01     14   .10000E+01     15   .10000E+01     16   .10000E+01
  17   .00000E+00     18   .00000E+00
      19   .00000E+00     20   .00000E+00     21   .00000E+00     22   .00000E+00
  23   .00000E+00     24   .00000E+00
```



```
                            * SOURCE EMISSION RATE SCALARS WHICH VARY FOR EACH HOUR
OF THE DAY *

     HOUR    SCALAR      HOUR    SCALAR      HOUR    SCALAR      HOUR    SCALAR
 HOUR    SCALAR      HOUR    SCALAR
 - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - -
- - - - - - - - - - - - - - - - - - - - - - - - -
```

```
 SOURCE ID = L0000516     ; SOURCE TYPE = VOLUME   :
       1   .00000E+00      2   .00000E+00      3   .00000E+00      4   .00000E+00
   5   .00000E+00      6   .00000E+00
       7   .00000E+00      8   .00000E+00      9   .10000E+01     10   .10000E+01
  11   .10000E+01     12   .10000E+01
      13   .10000E+01     14   .10000E+01     15   .10000E+01     16   .10000E+01
  17   .00000E+00     18   .00000E+00
      19   .00000E+00     20   .00000E+00     21   .00000E+00     22   .00000E+00
  23   .00000E+00     24   .00000E+00


 SOURCE ID = L0000517     ; SOURCE TYPE = VOLUME   :
       1   .00000E+00      2   .00000E+00      3   .00000E+00      4   .00000E+00
   5   .00000E+00      6   .00000E+00
       7   .00000E+00      8   .00000E+00      9   .10000E+01     10   .10000E+01
  11   .10000E+01     12   .10000E+01
      13   .10000E+01     14   .10000E+01     15   .10000E+01     16   .10000E+01
  17   .00000E+00     18   .00000E+00
      19   .00000E+00     20   .00000E+00     21   .00000E+00     22   .00000E+00
  23   .00000E+00     24   .00000E+00

 *** AERMOD - VERSION 22112  ***   *** C:\Lakes\AERMOD View\880 Doolittle\880
Doolittle.isc                 ***        01/12/23
 *** AERMET - VERSION  18081 ***   ***
                       ***        15:42:55

                                  PAGE 127
 *** MODELOPTs:    RegDFAULT  CONC  ELEV  URBAN  ADJ_U*

                                          *** DISCRETE CARTESIAN RECEPTORS ***
                                       (X-COORD, Y-COORD, ZELEV, ZHILL, ZFLAG)
                                                    (METERS)

     ( 571066.3, 4174560.9,       2.5,       2.5,       0.0);         ( 571128.2,
4174560.9,       3.1,       3.1,       0.0);
     ( 571190.1, 4174560.9,       2.8,       2.8,       0.0);         ( 571252.0,
4174560.9,       2.9,       2.9,       0.0);
     ( 571313.9, 4174560.9,       2.8,       2.8,       0.0);         ( 571066.3,
4174608.2,       2.7,       2.7,       0.0);
     ( 571128.2, 4174608.2,       3.5,       3.5,       0.0);         ( 571190.1,
4174608.2,       3.0,       3.0,       0.0);
     ( 571252.0, 4174608.2,       3.0,       3.0,       0.0);         ( 571313.9,
4174608.2,       3.1,       3.1,       0.0);
     ( 571375.8, 4174608.2,       3.3,       3.3,       0.0);         ( 571437.7,
4174608.2,       3.3,       3.3,       0.0);
     ( 571499.6, 4174608.2,       3.3,       3.3,       0.0);         ( 571561.6,
4174608.2,       3.6,       3.6,       0.0);
     ( 571066.3, 4174655.4,       3.0,       3.0,       0.0);         ( 571128.2,
4174655.4,       2.8,       2.8,       0.0);
```

```
     ( 571190.1, 4174655.4,       2.9,       2.9,       0.0);         ( 571252.0,
4174655.4,       3.3,       3.3,       0.0);
     ( 571313.9, 4174655.4,       3.3,       3.3,       0.0);         ( 571375.8,
4174655.4,       3.5,       3.5,       0.0);
     ( 571437.7, 4174655.4,       3.4,       3.4,       0.0);         ( 571499.6,
4174655.4,       3.5,       3.5,       0.0);
     ( 571561.6, 4174655.4,       3.6,       3.6,       0.0);         ( 571623.5,
4174655.4,       3.9,       3.9,       0.0);
     ( 571685.4, 4174655.4,       4.1,       4.1,       0.0);         ( 571747.3,
4174655.4,       4.6,       4.6,       0.0);
     ( 571809.2, 4174655.4,       4.8,       4.8,       0.0);         ( 571871.1,
4174655.4,       5.2,       5.2,       0.0);
     ( 571066.3, 4174702.7,       3.6,       3.6,       0.0);         ( 571128.2,
4174702.7,       3.2,       3.2,       0.0);
     ( 571190.1, 4174702.7,       3.1,       3.1,       0.0);         ( 571252.0,
4174702.7,       3.4,       3.4,       0.0);
     ( 571313.9, 4174702.7,       3.1,       3.1,       0.0);         ( 571375.8,
4174702.7,       3.5,       3.5,       0.0);
     ( 571437.7, 4174702.7,       3.6,       3.6,       0.0);         ( 571499.6,
4174702.7,       3.6,       3.6,       0.0);
     ( 571561.6, 4174702.7,       3.5,       3.5,       0.0);         ( 571623.5,
4174702.7,       4.0,       4.0,       0.0);
     ( 571685.4, 4174702.7,       4.0,       4.0,       0.0);         ( 571871.1,
4174702.7,       5.2,       5.2,       0.0);
     ( 571066.3, 4174750.0,       3.2,       3.2,       0.0);         ( 571128.2,
4174750.0,       4.5,       4.5,       0.0);
     ( 571190.1, 4174750.0,       4.9,       4.9,       0.0);         ( 571252.0,
4174750.0,       3.9,       3.9,       0.0);
     ( 571313.9, 4174750.0,       3.2,       3.2,       0.0);         ( 571375.8,
4174750.0,       3.5,       3.5,       0.0);
     ( 571437.7, 4174750.0,       3.8,       3.8,       0.0);         ( 571499.6,
4174750.0,       3.8,       3.8,       0.0);
     ( 571561.6, 4174750.0,       3.8,       3.8,       0.0);         ( 571623.5,
4174750.0,       4.1,       4.1,       0.0);
     ( 571685.4, 4174750.0,       4.3,       4.3,       0.0);         ( 571747.3,
4174750.0,       4.1,       4.1,       0.0);
     ( 571809.2, 4174750.0,       4.7,       4.7,       0.0);         ( 571871.1,
4174750.0,       5.3,       5.3,       0.0);
     ( 571933.0, 4174750.0,       5.7,       5.7,       0.0);         ( 571994.9,
4174750.0,       6.2,       6.2,       0.0);
     ( 572056.8, 4174750.0,       5.8,       5.8,       0.0);         ( 572118.7,
4174750.0,       6.0,       6.0,       0.0);
     ( 572180.7, 4174750.0,       6.2,       6.2,       0.0);         ( 571066.3,
4174797.3,       4.0,       4.0,       0.0);
     ( 571128.2, 4174797.3,       5.4,       5.4,       0.0);         ( 571190.1,
4174797.3,       7.1,       7.1,       0.0);
     ( 571252.0, 4174797.3,       7.0,       7.0,       0.0);         ( 571313.9,
4174797.3,       4.3,       4.3,       0.0);
     ( 571375.8, 4174797.3,       3.5,       3.5,       0.0);         ( 571437.7,
4174797.3,       3.7,       3.7,       0.0);
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```
     ( 571499.6, 4174797.3,       3.7,       3.7,       0.0);         ( 571561.6,
4174797.3,       3.8,       3.8,       0.0);
     ( 571623.5, 4174797.3,       4.0,       4.0,       0.0);         ( 571685.4,
4174797.3,       4.1,       4.1,       0.0);
     ( 571747.3, 4174797.3,       4.0,       4.0,       0.0);         ( 571809.2,
4174797.3,       4.3,       4.3,       0.0);
     ( 571871.1, 4174797.3,       5.0,       5.0,       0.0);         ( 571933.0,
4174797.3,       5.5,       5.5,       0.0);
     ( 571994.9, 4174797.3,       5.8,       5.8,       0.0);         ( 572056.8,
4174797.3,       6.0,       6.0,       0.0);
     ( 572118.7, 4174797.3,       6.3,       6.3,       0.0);         ( 572180.7,
4174797.3,       6.4,       6.4,       0.0);
     ( 571066.3, 4174844.6,       6.2,       6.2,       0.0);         ( 571128.2,
4174844.6,       7.2,       7.2,       0.0);
     ( 571190.1, 4174844.6,       6.1,       6.1,       0.0);         ( 571252.0,
4174844.6,       6.1,       6.1,       0.0);
     ( 571313.9, 4174844.6,       5.1,       5.1,       0.0);         ( 571375.8,
4174844.6,       4.3,       4.3,       0.0);
     ( 571437.7, 4174844.6,       3.7,       3.7,       0.0);         ( 571499.6,
4174844.6,       3.8,       3.8,       0.0);
     ( 571561.6, 4174844.6,       3.7,       3.7,       0.0);         ( 571623.5,
4174844.6,       4.0,       4.0,       0.0);
     ( 571685.4, 4174844.6,       3.8,       3.8,       0.0);         ( 571747.3,
4174844.6,       3.9,       3.9,       0.0);
🡅 *** AERMOD - VERSION 22112  ***   *** C:\Lakes\AERMOD View\880 Doolittle\880
Doolittle.isc                 ***        01/12/23
 *** AERMET - VERSION  18081 ***   ***
                        ***        15:42:55

                                   PAGE 128
 *** MODELOPTs:    RegDFAULT  CONC  ELEV  URBAN  ADJ_U*

                                          *** DISCRETE CARTESIAN RECEPTORS ***
                                        (X-COORD, Y-COORD, ZELEV, ZHILL, ZFLAG)
                                                      (METERS)

     ( 571809.2, 4174844.6,       4.3,       4.3,       0.0);         ( 571871.1,
4174844.6,       4.9,       4.9,       0.0);
     ( 571933.0, 4174844.6,       5.1,       5.1,       0.0);         ( 571994.9,
4174844.6,       5.7,       5.7,       0.0);
     ( 572056.8, 4174844.6,       6.0,       6.0,       0.0);         ( 572118.7,
4174844.6,       6.4,       6.4,       0.0);
     ( 572180.7, 4174844.6,       6.6,       6.6,       0.0);         ( 571066.3,
4174891.8,       6.8,       6.8,       0.0);
     ( 571128.2, 4174891.8,       7.8,       7.8,       0.0);         ( 571190.1,
4174891.8,       4.6,       4.6,       0.0);
     ( 571252.0, 4174891.8,       4.8,       4.8,       0.0);         ( 571313.9,
4174891.8,       4.9,       4.9,       0.0);
     ( 571375.8, 4174891.8,       4.5,       4.5,       0.0);         ( 571499.6,
4174891.8,       4.0,       4.0,       0.0);
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(571561.6, 4174891.8, 3.8, 3.8, 0.0); (571623.5, 4174891.8, 3.9, 3.9, 0.0);
(571685.4, 4174891.8, 3.8, 3.8, 0.0); (571747.3, 4174891.8, 3.9, 3.9, 0.0);
(571809.2, 4174891.8, 4.6, 4.6, 0.0); (571871.1, 4174891.8, 4.9, 4.9, 0.0);
(571933.0, 4174891.8, 4.8, 4.8, 0.0); (571994.9, 4174891.8, 5.3, 5.3, 0.0);
(572056.8, 4174891.8, 6.2, 6.2, 0.0); (572118.7, 4174891.8, 6.4, 6.4, 0.0);
(572180.7, 4174891.8, 6.5, 6.5, 0.0); (571066.3, 4174939.1, 7.6, 7.6, 0.0);
(571128.2, 4174939.1, 6.6, 6.6, 0.0); (571190.1, 4174939.1, 3.4, 3.4, 0.0);
(571252.0, 4174939.1, 4.3, 4.3, 0.0); (571313.9, 4174939.1, 4.4, 4.4, 0.0);
(571375.8, 4174939.1, 3.5, 3.5, 0.0); (571437.7, 4174939.1, 3.8, 3.8, 0.0);
(571499.6, 4174939.1, 3.7, 3.7, 0.0); (571623.5, 4174939.1, 4.0, 4.0, 0.0);
(571685.4, 4174939.1, 4.0, 4.0, 0.0); (571747.3, 4174939.1, 4.0, 4.0, 0.0);
(571809.2, 4174939.1, 4.8, 4.8, 0.0); (571871.1, 4174939.1, 4.9, 4.9, 0.0);
(571933.0, 4174939.1, 5.0, 5.0, 0.0); (571994.9, 4174939.1, 5.5, 5.5, 0.0);
(572056.8, 4174939.1, 6.1, 6.1, 0.0); (572118.7, 4174939.1, 6.6, 6.6, 0.0);
(572180.7, 4174939.1, 6.5, 6.5, 0.0); (571066.3, 4174986.4, 7.4, 7.4, 0.0);
(571128.2, 4174986.4, 4.9, 7.4, 0.0); (571190.1, 4174986.4, 3.7, 3.7, 0.0);
(571252.0, 4174986.4, 4.0, 4.0, 0.0); (571313.9, 4174986.4, 3.7, 3.7, 0.0);
(571375.8, 4174986.4, 3.5, 3.5, 0.0); (571437.7, 4174986.4, 3.6, 3.6, 0.0);
(571809.2, 4174986.4, 4.9, 4.9, 0.0); (571871.1, 4174986.4, 5.1, 5.1, 0.0);
(571933.0, 4174986.4, 5.5, 5.5, 0.0); (571994.9, 4174986.4, 5.7, 5.7, 0.0);
(572056.8, 4174986.4, 6.2, 6.2, 0.0); (572118.7, 4174986.4, 6.7, 6.7, 0.0);
(572180.7, 4174986.4, 6.5, 6.5, 0.0); (571066.3, 4175033.7, 6.6, 6.6, 0.0);
(571128.2, 4175033.7, 5.5, 5.5, 0.0); (571190.1, 4175033.7, 4.5, 4.5, 0.0);
(571252.0, 4175033.7, 3.8, 3.8, 0.0); (571313.9, 4175033.7, 3.5, 3.5, 0.0);
(571375.8, 4175033.7, 3.4, 3.4, 0.0); (571747.3, 4175033.7, 4.5, 4.5, 0.0);

```
     ( 571809.2, 4175033.7,       4.7,       4.7,       0.0);         ( 571871.1,
4175033.7,       5.2,       5.2,       0.0);
     ( 571933.0, 4175033.7,       5.5,       5.5,       0.0);         ( 571994.9,
4175033.7,       6.0,       6.0,       0.0);
     ( 572056.8, 4175033.7,       6.4,       6.4,       0.0);         ( 572118.7,
4175033.7,       6.6,       6.6,       0.0);
     ( 572180.7, 4175033.7,       6.5,       6.5,       0.0);         ( 571066.3,
4175081.0,       6.2,       6.2,       0.0);
     ( 571128.2, 4175081.0,       5.5,       5.5,       0.0);         ( 571190.1,
4175081.0,       3.9,       3.9,       0.0);
     ( 571252.0, 4175081.0,       3.6,       3.6,       0.0);         ( 571313.9,
4175081.0,       3.3,       3.3,       0.0);
     ( 571747.3, 4175081.0,       4.5,       4.5,       0.0);         ( 571809.2,
4175081.0,       4.5,       4.5,       0.0);
     ( 571871.1, 4175081.0,       5.2,       5.2,       0.0);         ( 571933.0,
4175081.0,       5.5,       5.5,       0.0);
     ( 571994.9, 4175081.0,       6.1,       6.1,       0.0);         ( 572056.8,
4175081.0,       6.8,       6.8,       0.0);
     ( 572118.7, 4175081.0,       7.0,       7.0,       0.0);         ( 572180.7,
4175081.0,       6.7,       6.7,       0.0);
     ( 571066.3, 4175128.2,       5.1,       5.1,       0.0);         ( 571128.2,
4175128.2,       4.2,       4.2,       0.0);
     ( 571252.0, 4175128.2,       3.5,       3.5,       0.0);         ( 571313.9,
4175128.2,       3.2,       3.2,       0.0);
     ( 571375.8, 4175128.2,       3.8,       3.8,       0.0);         ( 571437.7,
4175128.2,       3.8,       3.8,       0.0);
*** AERMOD - VERSION 22112  ***   *** C:\Lakes\AERMOD View\880 Doolittle\880
Doolittle.isc                 ***        01/12/23
 *** AERMET - VERSION  18081 ***   ***
                       ***        15:42:55

                                  PAGE 129
 *** MODELOPTs:    RegDFAULT  CONC  ELEV  URBAN  ADJ_U*

                                          *** DISCRETE CARTESIAN RECEPTORS ***
                                       (X-COORD, Y-COORD, ZELEV, ZHILL, ZFLAG)
                                                   (METERS)

     ( 571747.3, 4175128.2,       4.6,       4.6,       0.0);         ( 571809.2,
4175128.2,       4.6,       4.6,       0.0);
     ( 571871.1, 4175128.2,       5.2,       5.2,       0.0);         ( 571933.0,
4175128.2,       5.6,       5.6,       0.0);
     ( 571994.9, 4175128.2,       6.1,       6.1,       0.0);         ( 572056.8,
4175128.2,       7.2,       7.2,       0.0);
     ( 572118.7, 4175128.2,       7.3,       7.3,       0.0);         ( 572180.7,
4175128.2,       7.0,       7.0,       0.0);
     ( 571066.3, 4175175.5,       3.5,       3.5,       0.0);         ( 571128.2,
4175175.5,       3.5,       3.5,       0.0);
     ( 571190.1, 4175175.5,       3.6,       3.6,       0.0);         ( 571252.0,
4175175.5,       3.5,       3.5,       0.0);
```

(571313.9, 4175175.5, 3.3, 3.3, 0.0); (571375.8, 4175175.5, 3.7, 3.7, 0.0);
(571747.3, 4175175.5, 4.8, 4.8, 0.0); (571809.2, 4175175.5, 5.0, 5.0, 0.0);
(571871.1, 4175175.5, 5.4, 5.4, 0.0); (571933.0, 4175175.5, 5.8, 5.8, 0.0);
(571994.9, 4175175.5, 6.6, 6.6, 0.0); (572056.8, 4175175.5, 7.0, 7.0, 0.0);
(572118.7, 4175175.5, 7.0, 7.0, 0.0); (572180.7, 4175175.5, 6.9, 6.9, 0.0);
(571066.3, 4175222.8, 3.3, 3.3, 0.0); (571128.2, 4175222.8, 3.4, 3.4, 0.0);
(571190.1, 4175222.8, 3.5, 3.5, 0.0); (571252.0, 4175222.8, 3.7, 3.7, 0.0);
(571313.9, 4175222.8, 3.6, 3.6, 0.0); (571375.8, 4175222.8, 3.6, 3.6, 0.0);
(571437.7, 4175222.8, 4.0, 4.0, 0.0); (571623.5, 4175222.8, 4.8, 4.8, 0.0);
(571685.4, 4175222.8, 4.4, 4.4, 0.0); (571747.3, 4175222.8, 4.9, 4.9, 0.0);
(571809.2, 4175222.8, 5.4, 5.4, 0.0); (571871.1, 4175222.8, 5.4, 5.4, 0.0);
(571933.0, 4175222.8, 5.7, 5.7, 0.0); (571994.9, 4175222.8, 6.3, 6.3, 0.0);
(572056.8, 4175222.8, 6.7, 6.7, 0.0); (572118.7, 4175222.8, 6.9, 6.9, 0.0);
(572180.7, 4175222.8, 6.8, 6.8, 0.0); (571066.3, 4175270.1, 3.6, 3.6, 0.0);
(571128.2, 4175270.1, 3.3, 3.3, 0.0); (571190.1, 4175270.1, 3.6, 3.6, 0.0);
(571252.0, 4175270.1, 3.9, 3.9, 0.0); (571313.9, 4175270.1, 3.7, 3.7, 0.0);
(571375.8, 4175270.1, 3.8, 3.8, 0.0); (571437.7, 4175270.1, 4.1, 4.1, 0.0);
(571499.6, 4175270.1, 4.3, 4.3, 0.0); (571561.6, 4175270.1, 4.5, 4.5, 0.0);
(571623.5, 4175270.1, 4.6, 4.6, 0.0); (571685.4, 4175270.1, 4.5, 4.5, 0.0);
(571747.3, 4175270.1, 4.9, 4.9, 0.0); (571809.2, 4175270.1, 5.7, 5.7, 0.0);
(571871.1, 4175270.1, 5.4, 5.4, 0.0); (571933.0, 4175270.1, 5.6, 5.6, 0.0);
(571994.9, 4175270.1, 6.0, 6.0, 0.0); (572056.8, 4175270.1, 6.3, 6.3, 0.0);
(572118.7, 4175270.1, 6.6, 6.6, 0.0); (572180.7, 4175270.1, 6.9, 6.9, 0.0);
(571066.3, 4175317.4, 3.8, 3.8, 0.0); (571128.2, 4175317.4, 4.0, 4.0, 0.0);
(571190.1, 4175317.4, 3.8, 3.8, 0.0); (571252.0, 4175317.4, 3.8, 3.8, 0.0);

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     ( 571313.9, 4175317.4,       4.0,       4.0,       0.0);         ( 571375.8,
4175317.4,       4.2,       4.2,       0.0);
     ( 571437.7, 4175317.4,       4.1,       4.1,       0.0);         ( 571499.6,
4175317.4,       4.1,       4.1,       0.0);
     ( 571561.6, 4175317.4,       4.2,       4.2,       0.0);         ( 571623.5,
4175317.4,       4.3,       4.3,       0.0);
     ( 571685.4, 4175317.4,       4.8,       4.8,       0.0);         ( 571747.3,
4175317.4,       5.4,       5.4,       0.0);
     ( 571809.2, 4175317.4,       5.8,       5.8,       0.0);         ( 571871.1,
4175317.4,       5.4,       5.4,       0.0);
     ( 571933.0, 4175317.4,       5.8,       5.8,       0.0);         ( 571994.9,
4175317.4,       6.0,       6.0,       0.0);
     ( 572056.8, 4175317.4,       6.4,       6.4,       0.0);         ( 572118.7,
4175317.4,       6.6,       6.6,       0.0);
     ( 572180.7, 4175317.4,       6.8,       6.8,       0.0);         ( 571066.3,
4175364.6,       3.6,       3.6,       0.0);
     ( 571128.2, 4175364.6,       3.8,       3.8,       0.0);         ( 571190.1,
4175364.6,       3.7,       3.7,       0.0);
     ( 571252.0, 4175364.6,       4.1,       4.1,       0.0);         ( 571313.9,
4175364.6,       4.2,       4.2,       0.0);
     ( 571375.8, 4175364.6,       4.1,       4.1,       0.0);         ( 571437.7,
4175364.6,       4.0,       4.0,       0.0);
     ( 571499.6, 4175364.6,       4.1,       4.1,       0.0);         ( 571561.6,
4175364.6,       4.2,       4.2,       0.0);
     ( 571623.5, 4175364.6,       4.5,       4.5,       0.0);         ( 571685.4,
4175364.6,       5.2,       5.2,       0.0);
     ( 571747.3, 4175364.6,       5.6,       5.6,       0.0);         ( 571809.2,
4175364.6,       5.8,       5.8,       0.0);
 *** AERMOD - VERSION 22112  ***   *** C:\Lakes\AERMOD View\880 Doolittle\880
Doolittle.isc                  ***        01/12/23
 *** AERMET - VERSION  18081 ***   ***
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 *** MODELOPTs:    RegDFAULT  CONC  ELEV  URBAN  ADJ_U*

                                                *** DISCRETE CARTESIAN RECEPTORS ***
                                              (X-COORD, Y-COORD, ZELEV, ZHILL, ZFLAG)
                                                              (METERS)

     ( 571871.1, 4175364.6,       5.5,       5.5,       0.0);         ( 571933.0,
4175364.6,       6.0,       6.0,       0.0);
     ( 571994.9, 4175364.6,       6.1,       6.1,       0.0);         ( 572056.8,
4175364.6,       6.4,       6.4,       0.0);
     ( 572118.7, 4175364.6,       6.7,       6.7,       0.0);         ( 572180.7,
4175364.6,       6.9,       6.9,       0.0);
     ( 571066.3, 4175411.9,       3.5,       3.5,       0.0);         ( 571128.2,
4175411.9,       3.9,       3.9,       0.0);
     ( 571190.1, 4175411.9,       3.9,       3.9,       0.0);         ( 571252.0,
4175411.9,       4.0,       4.0,       0.0);
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     ( 571313.9, 4175411.9,       3.9,       3.9,       0.0);         ( 571375.8,
4175411.9,       3.8,       3.8,       0.0);
     ( 571437.7, 4175411.9,       4.3,       4.3,       0.0);         ( 571499.6,
4175411.9,       4.4,       4.4,       0.0);
     ( 571561.6, 4175411.9,       4.3,       4.3,       0.0);         ( 571623.5,
4175411.9,       4.6,       4.6,       0.0);
     ( 571685.4, 4175411.9,       5.0,       5.0,       0.0);         ( 571747.3,
4175411.9,       5.5,       5.5,       0.0);
     ( 571809.2, 4175411.9,       5.8,       5.8,       0.0);         ( 571871.1,
4175411.9,       5.7,       5.7,       0.0);
     ( 571933.0, 4175411.9,       5.9,       5.9,       0.0);         ( 571994.9,
4175411.9,       6.3,       6.3,       0.0);
     ( 572056.8, 4175411.9,       6.5,       6.5,       0.0);         ( 572118.7,
4175411.9,       6.7,       6.7,       0.0);
     ( 572180.7, 4175411.9,       7.5,       7.5,       0.0);         ( 571066.3,
4175459.2,       3.6,       3.6,       0.0);
     ( 571128.2, 4175459.2,       3.7,       3.7,       0.0);         ( 571190.1,
4175459.2,       3.7,       3.7,       0.0);
     ( 571252.0, 4175459.2,       3.6,       3.6,       0.0);         ( 571313.9,
4175459.2,       3.6,       3.6,       0.0);
     ( 571375.8, 4175459.2,       4.0,       4.0,       0.0);         ( 571437.7,
4175459.2,       4.5,       4.5,       0.0);
     ( 571499.6, 4175459.2,       4.6,       4.6,       0.0);         ( 571561.6,
4175459.2,       4.3,       4.3,       0.0);
     ( 571623.5, 4175459.2,       4.7,       4.7,       0.0);         ( 571685.4,
4175459.2,       4.7,       4.7,       0.0);
     ( 571747.3, 4175459.2,       5.3,       5.3,       0.0);         ( 571809.2,
4175459.2,       5.6,       5.6,       0.0);
     ( 571871.1, 4175459.2,       5.7,       5.7,       0.0);         ( 571933.0,
4175459.2,       5.9,       5.9,       0.0);
     ( 571994.9, 4175459.2,       6.2,       6.2,       0.0);         ( 572056.8,
4175459.2,       6.5,       6.5,       0.0);
     ( 572118.7, 4175459.2,       6.9,       6.9,       0.0);         ( 572180.7,
4175459.2,       7.7,       7.7,       0.0);
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```
 *** MODELOPTs:    RegDFAULT  CONC  ELEV  URBAN  ADJ_U*

                     * SOURCE-RECEPTOR COMBINATIONS FOR WHICH CALCULATIONS MAY NOT BE PERFORMED *
                       LESS THAN 1.0 METER; WITHIN OPENPIT; OR BEYOND 80KM FOR FASTAREA/FASTALL


                                 SOURCE          - - RECEPTOR LOCATION - - DISTANCE
```

ID	XR (METERS)	YR (METERS)	(METERS)
L0000251	571437.7	4174986.4	-2.86
L0000252	571437.7	4174986.4	-0.54
L0000260	571375.8	4174939.1	-3.20
L0000261	571375.8	4174939.1	-1.77
L0000273	571375.8	4175222.8	-3.33
L0000274	571375.8	4175222.8	-3.82
L0000298	571190.1	4175317.4	-0.82
L0000307	571128.2	4175364.6	-5.70
L0000308	571128.2	4175364.6	-0.46
L0000339	571066.3	4175222.8	-0.22
L0000340	571066.3	4175222.8	-4.96
L0000349	571128.2	4175175.5	-3.27
L0000380	571313.9	4174986.4	-5.11
L0000381	571313.9	4174986.4	-0.75
L0000389	571375.8	4174939.1	-2.48
L0000390	571375.8	4174939.1	-0.19
L0000420	571561.6	4174750.0	-3.83
L0000421	571561.6	4174750.0	-3.01
L0000429	571623.5	4174702.7	-0.99
L0000430	571623.5	4174702.7	-1.49
L0000471	571933.0	4174750.0	-2.67
L0000486	572056.8	4174797.3	-1.68
L0000487	572056.8	4174797.3	

-4.19
L0000502 572180.7 4174844.6
-5.85
L0000503 572180.7 4174844.6
-2.31

*** MODELOPTs: RegDFAULT CONC ELEV URBAN ADJ_U*

*** METEOROLOGICAL DAYS SELECTED FOR PROCESSING ***
(1=YES; 0=NO)

```
1 1 1 1 1 1 1 1 1 1   1 1 1 1 1 1 1 1 1 1   1 1 1 1 1 1 1 1 1 1   1 1 1 1 1 1 1 1 1 1   1 1 1 1 1 1 1 1 1 1
1 1 1 1 1 1 1 1 1 1   1 1 1 1 1 1 1 1 1 1   1 1 1 1 1 1 1 1 1 1   1 1 1 1 1 1 1 1 1 1   1 1 1 1 1 1 1 1 1 1
1 1 1 1 1 1 1 1 1 1   1 1 1 1 1 1 1 1 1 1   1 1 1 1 1 1 1 1 1 1   1 1 1 1 1 1 1 1 1 1   1 1 1 1 1 1 1 1 1 1
1 1 1 1 1 1 1 1 1 1   1 1 1 1 1 1 1 1 1 1   1 1 1 1 1 1 1 1 1 1   1 1 1 1 1 1 1 1 1 1   1 1 1 1 1 1 1 1 1 1
1 1 1 1 1 1 1 1 1 1   1 1 1 1 1 1 1 1 1 1   1 1 1 1 1 1 1 1 1 1   1 1 1 1 1 1 1 1 1 1   1 1 1 1 1 1 1 1 1 1
1 1 1 1 1 1 1 1 1 1   1 1 1 1 1 1 1 1 1 1   1 1 1 1 1 1 1 1 1 1   1 1 1 1 1 1 1 1 1 1   1 1 1 1 1 1 1 1 1 1
1 1 1 1 1 1 1 1 1 1   1 1 1 1 1 1 1 1 1 1   1 1 1 1 1 1 1 1 1 1   1 1 1 1 1 1 1 1 1 1   1 1 1 1 1 1 1 1 1 1
1 1 1 1 1 1 1 1 1 1   1 1 1 1 1
```

NOTE: METEOROLOGICAL DATA ACTUALLY PROCESSED WILL ALSO DEPEND ON WHAT IS INCLUDED IN THE DATA FILE.

*** UPPER BOUND OF FIRST THROUGH FIFTH WIND SPEED CATEGORIES ***
(METERS/SEC)

1.54, 3.09, 5.14, 8.23, 10.80,

```
 *** MODELOPTs:    RegDFAULT  CONC  ELEV  URBAN  ADJ_U*

                                    *** UP TO THE FIRST 24 HOURS OF METEOROLOGICAL
DATA ***

   Surface file:   880 Doolittle.SFC
                  Met Version:  18081
   Profile file:   880 Doolittle.PFL

   Surface format: FREE

   Profile format: FREE

   Surface station no.:    23230                  Upper air station no.:    23230
                  Name: OAKLAND/WSO_AP                              Name:
OAKLAND/WSO_AP
                  Year:   2013                                      Year:   2013

 First 24 hours of scalar data
 YR MO DY JDY HR     H0     U*     W*  DT/DZ ZICNV ZIMCH  M-O LEN    Z0  BOWEN
ALBEDO  REF WS   WD     HT  REF TA     HT
- - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - -
- - - - - - - - - - - - - - - - - - - -
 13 01 01   1 01   -7.9  0.116 -9.000 -9.000 -999.   95.     18.0  0.04   0.38
1.00    1.76  999.   10.0  278.8    2.0
 13 01 01   1 02  -10.3  0.133 -9.000 -9.000 -999.  116.     20.6  0.04   0.38
1.00    2.03   32.   10.0  278.1    2.0
 13 01 01   1 03  -22.6  0.220 -9.000 -9.000 -999.  248.     53.3  0.08   0.38
1.00    2.81  111.   10.0  278.8    2.0
 13 01 01   1 04  -12.8  0.148 -9.000 -9.000 -999.  139.     24.2  0.04   0.38
1.00    2.25   59.   10.0  278.8    2.0
 13 01 01   1 05  -18.7  0.183 -9.000 -9.000 -999.  189.     37.0  0.04   0.38
1.00    2.74   46.   10.0  280.4    2.0
 13 01 01   1 06  -24.9  0.244 -9.000 -9.000 -999.  289.     65.3  0.04   0.38
1.00    3.59   29.   10.0  279.2    2.0
 13 01 01   1 07  -20.6  0.200 -9.000 -9.000 -999.  216.     44.2  0.04   0.38
1.00    2.98   58.   10.0  278.8    2.0
 13 01 01   1 08  -13.6  0.158 -9.000 -9.000 -999.  151.     27.5  0.08   0.38
0.73    2.06  100.   10.0  278.8    2.0
 13 01 01   1 09    2.9  0.198  0.145  0.005   38.  212.   -243.5  0.04   0.38
0.36    2.70   38.   10.0  281.4    2.0
 13 01 01   1 10   30.3  0.318  0.419  0.005   88.  430.    -96.6  0.04   0.38
0.23    4.20   49.   10.0  282.5    2.0
 13 01 01   1 11   51.4  0.425  0.653  0.008  197.  665.   -136.2  0.04   0.38
0.18    5.69   55.   10.0  284.2    2.0
 13 01 01   1 12   63.4  0.409  0.872  0.007  381.  628.    -98.4  0.04   0.38
0.17    5.41   39.   10.0  284.9    2.0
 13 01 01   1 13   65.4  0.584  1.066  0.005  674. 1071.   -277.3  0.04   0.38
0.16    7.96   43.   10.0  284.9    2.0
 13 01 01   1 14   57.7  0.597  1.105  0.005  850. 1105.   -334.8  0.04   0.38
```

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0.17    8.16   49.   10.0  285.9    2.0
 13 01 01   1 15   40.5  0.511  0.996  0.008  889.  886.   -300.4  0.04   0.38
0.20    6.98   51.   10.0  286.4    2.0
 13 01 01   1 16   15.0  0.468  0.718  0.008  894.  772.   -622.3  0.04   0.38
0.29    6.46   41.   10.0  285.4    2.0
 13 01 01   1 17  -31.4  0.404 -9.000 -9.000 -999.  620.    191.3  0.04   0.38
0.52    5.80   47.   10.0  283.8    2.0
 13 01 01   1 18  -29.2  0.289 -9.000 -9.000 -999.  381.     91.7  0.08   0.38
1.00    3.64   95.   10.0  282.5    2.0
 13 01 01   1 19  -33.0  0.324 -9.000 -9.000 -999.  443.    115.6  0.08   0.38
1.00    4.07   90.   10.0  280.4    2.0
 13 01 01   1 20  -29.0  0.283 -9.000 -9.000 -999.  363.     88.3  0.04   0.38
1.00    4.15   57.   10.0  279.2    2.0
 13 01 01   1 21  -17.9  0.182 -9.000 -9.000 -999.  191.     36.5  0.08   0.38
1.00    2.35   89.   10.0  279.2    2.0
 13 01 01   1 22  -14.1  0.161 -9.000 -9.000 -999.  156.     28.6  0.08   0.38
1.00    2.10  114.   10.0  279.9    2.0
 13 01 01   1 23  -10.1  0.136 -9.000 -9.000 -999.  120.     22.5  0.08   0.38
1.00    1.79   99.   10.0  279.9    2.0
 13 01 01   1 24   -8.8  0.123 -9.000 -9.000 -999.  104.     19.4  0.05   0.38
1.00    1.81  125.   10.0  278.8    2.0


 First hour of profile data
 YR MO DY HR HEIGHT F  WDIR    WSPD AMB_TMP sigmaA  sigmaW  sigmaV
 13 01 01 01   10.0 1 -999.    1.76   278.8   99.0  -99.00  -99.00

 F indicates top of profile (=1) or below (=0)
 *** AERMOD - VERSION 22112  ***   *** C:\Lakes\AERMOD View\880 Doolittle\880
Doolittle.isc                 ***        01/12/23
 *** AERMET - VERSION  18081 ***   ***
                       ***        15:42:55

                                  PAGE 134
 *** MODELOPTs:    RegDFAULT  CONC  ELEV  URBAN  ADJ_U*

                              *** THE PERIOD ( 43824 HRS) AVERAGE CONCENTRATION
VALUES FOR SOURCE GROUP: ALL      ***
                                  INCLUDING SOURCE(S):     L0000518    , L0000519
 , L0000520    , L0000521    , L0000522    ,
                 L0000523    , L0000524    , L0000525    , L0000526    , L0000527
 , L0000528    , L0000529    , L0000530    ,
                 L0000531    , L0000532    , L0000533    , L0000534    , L0000535
 , L0000536    , L0000537    , L0000538    ,
                 L0000539    , L0000540    , L0000541    , L0000542    , L0000543
 , L0000544    , L0000545    ,  . . .      ,

                                             *** DISCRETE CARTESIAN RECEPTOR POINTS
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** CONC OF PM_2.5 IN MICROGRAMS/M**3 **

X-COORD (M)	Y-COORD (M)	CONC	X-COORD (M)	Y-COORD (M)	CONC
571066.27	4174560.88	0.00012	571128.18	4174560.88	0.00013
571190.09	4174560.88	0.00015	571252.00	4174560.88	0.00016
571313.91	4174560.88	0.00016	571066.27	4174608.16	0.00013
571128.18	4174608.16	0.00015	571190.09	4174608.16	0.00017
571252.00	4174608.16	0.00019	571313.91	4174608.16	0.00020
571375.82	4174608.16	0.00020	571437.73	4174608.16	0.00021
571499.64	4174608.16	0.00021	571561.55	4174608.16	0.00021
571066.27	4174655.44	0.00014	571128.18	4174655.44	0.00017
571190.09	4174655.44	0.00020	571252.00	4174655.44	0.00022
571313.91	4174655.44	0.00024	571375.82	4174655.44	0.00026
571437.73	4174655.44	0.00026	571499.64	4174655.44	0.00027
571561.55	4174655.44	0.00028	571623.46	4174655.44	0.00030
571685.37	4174655.44	0.00039	571747.28	4174655.44	0.00037
571809.19	4174655.44	0.00039	571871.10	4174655.44	0.00045
571066.27	4174702.72	0.00015	571128.18	4174702.72	0.00018
571190.09	4174702.72	0.00022	571252.00	4174702.72	0.00026
571313.91	4174702.72	0.00030	571375.82	4174702.72	0.00033
571437.73	4174702.72	0.00035	571499.64	4174702.72	0.00036
571561.55	4174702.72	0.00038	571623.46	4174702.72	0.00045
571685.37	4174702.72	0.00046	571871.10	4174702.72	0.00072
571066.27	4174750.00	0.00016	571128.18	4174750.00	0.00020
571190.09	4174750.00	0.00025	571252.00		

4174750.00 0.00031
571313.91 4174750.00 0.00037 571375.82
4174750.00 0.00043
571437.73 4174750.00 0.00047 571499.64
4174750.00 0.00051
571561.55 4174750.00 0.00056 571623.46
4174750.00 0.00060
571685.37 4174750.00 0.00064 571747.28
4174750.00 0.00076
571809.19 4174750.00 0.00093 571871.10
4174750.00 0.00111
571933.01 4174750.00 0.00127 571994.92
4174750.00 0.00127
572056.83 4174750.00 0.00123 572118.74
4174750.00 0.00114
572180.65 4174750.00 0.00103 571066.27
4174797.28 0.00017
571128.18 4174797.28 0.00022 571190.09
4174797.28 0.00028
571252.00 4174797.28 0.00036 571313.91
4174797.28 0.00047
571375.82 4174797.28 0.00057 571437.73
4174797.28 0.00066
571499.64 4174797.28 0.00076 571561.55
4174797.28 0.00084
571623.46 4174797.28 0.00089 571685.37
4174797.28 0.00105
571747.28 4174797.28 0.00130 571809.19
4174797.28 0.00154
571871.10 4174797.28 0.00170 571933.01
4174797.28 0.00175
571994.92 4174797.28 0.00170 572056.83
4174797.28 0.00158
572118.74 4174797.28 0.00138 572180.65
4174797.28 0.00118
571066.27 4174844.56 0.00017 571128.18
4174844.56 0.00023

*** MODELOPTs: RegDFAULT CONC ELEV URBAN ADJ_U*

*** THE PERIOD (43824 HRS) AVERAGE CONCENTRATION VALUES FOR SOURCE GROUP: ALL ***
INCLUDING SOURCE(S): L0000518 , L0000519 , L0000520 , L0000521 , L0000522 ,
L0000523 , L0000524 , L0000525 , L0000526 , L0000527

```
 , L0000528    , L0000529    , L0000530    ,
                L0000531    , L0000532    , L0000533    , L0000534    , L0000535
 , L0000536    , L0000537    , L0000538    ,
                L0000539    , L0000540    , L0000541    , L0000542    , L0000543
 , L0000544    , L0000545    ,  . . .      ,
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*** DISCRETE CARTESIAN RECEPTOR POINTS ***

** CONC OF PM_2.5 IN MICROGRAMS/M**3 **

X-COORD (M)	Y-COORD (M)	CONC	X-COORD (M)	Y-COORD (M)	CONC
571190.09	4174844.56	0.00031	571252.00	4174844.56	0.00043
571313.91	4174844.56	0.00058	571375.82	4174844.56	0.00076
571437.73	4174844.56	0.00096	571499.64	4174844.56	0.00121
571561.55	4174844.56	0.00134	571623.46	4174844.56	0.00158
571685.37	4174844.56	0.00202	571747.28	4174844.56	0.00242
571809.19	4174844.56	0.00264	571871.10	4174844.56	0.00263
571933.01	4174844.56	0.00244	571994.92	4174844.56	0.00214
572056.83	4174844.56	0.00182	572118.74	4174844.56	0.00155
572180.65	4174844.56	0.00134	571066.27	4174891.84	0.00018
571128.18	4174891.84	0.00024	571190.09	4174891.84	0.00035
571252.00	4174891.84	0.00051	571313.91	4174891.84	0.00074
571375.82	4174891.84	0.00105	571499.64	4174891.84	0.00199
571561.55	4174891.84	0.00267	571623.46	4174891.84	0.00370
571685.37	4174891.84	0.00452	571747.28	4174891.84	0.00470
571809.19	4174891.84	0.00448	571871.10	4174891.84	0.00390
571933.01	4174891.84	0.00321	571994.92	4174891.84	0.00259
572056.83	4174891.84	0.00208	572118.74	4174891.84	0.00168

572180.65 4174891.84 0.00138 571066.27
4174939.12 0.00019
571128.18 4174939.12 0.00026 571190.09
4174939.12 0.00038
571252.00 4174939.12 0.00059 571313.91
4174939.12 0.00095
571375.82 4174939.12 0.00157 571437.73
4174939.12 0.00242
571499.64 4174939.12 0.00407 571623.46
4174939.12 0.01269
571685.37 4174939.12 0.01170 571747.28
4174939.12 0.00978
571809.19 4174939.12 0.00745 571871.10
4174939.12 0.00543
571933.01 4174939.12 0.00403 571994.92
4174939.12 0.00304
572056.83 4174939.12 0.00234 572118.74
4174939.12 0.00184
572180.65 4174939.12 0.00148 571066.27
4174986.40 0.00019
571128.18 4174986.40 0.00028 571190.09
4174986.40 0.00041
571252.00 4174986.40 0.00067 571313.91
4174986.40 0.00126
571375.82 4174986.40 0.00237 571437.73
4174986.40 0.00484
571809.19 4174986.40 0.01143 571871.10
4174986.40 0.00712
571933.01 4174986.40 0.00484 571994.92
4174986.40 0.00348
572056.83 4174986.40 0.00259 572118.74
4174986.40 0.00200
572180.65 4174986.40 0.00159 571066.27
4175033.68 0.00020
571128.18 4175033.68 0.00029 571190.09
4175033.68 0.00043
571252.00 4175033.68 0.00074 571313.91
4175033.68 0.00157
571375.82 4175033.68 0.00450 571747.28
4175033.68 0.02799
571809.19 4175033.68 0.01384 571871.10
4175033.68 0.00820
571933.01 4175033.68 0.00538 571994.92
4175033.68 0.00377
572056.83 4175033.68 0.00278 572118.74
4175033.68 0.00213
*** AERMOD - VERSION 22112 *** *** C:\Lakes\AERMOD View\880 Doolittle\880 Doolittle.isc *** 01/12/23
*** AERMET - VERSION 18081 *** ***
*** 15:42:55

```
 *** MODELOPTs:    RegDFAULT  CONC  ELEV  URBAN  ADJ_U*

                              *** THE PERIOD ( 43824 HRS) AVERAGE CONCENTRATION
VALUES FOR SOURCE GROUP: ALL      ***
                                  INCLUDING SOURCE(S):     L0000518    , L0000519
 , L0000520    , L0000521    , L0000522    ,
                 L0000523    , L0000524    , L0000525    , L0000526    , L0000527
 , L0000528    , L0000529    , L0000530    ,
                 L0000531    , L0000532    , L0000533    , L0000534    , L0000535
 , L0000536    , L0000537    , L0000538    ,
                 L0000539    , L0000540    , L0000541    , L0000542    , L0000543
 , L0000544    , L0000545    ,  . . .      ,

                                                *** DISCRETE CARTESIAN RECEPTOR POINTS
***

                                         ** CONC OF PM_2.5   IN MICROGRAMS/M**3
                    **

       X-COORD (M)   Y-COORD (M)        CONC                       X-COORD (M)
Y-COORD (M)        CONC
 - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - -
- - - - - - - - - - - - - - - - - - - - - - - - - - -
         572180.65    4175033.68        0.00169                      571066.27
4175080.96        0.00021
         571128.18    4175080.96        0.00030                      571190.09
4175080.96        0.00046
         571252.00    4175080.96        0.00083                      571313.91
4175080.96        0.00172
         571747.28    4175080.96        0.02576                      571809.19
4175080.96        0.01340
         571871.10    4175080.96        0.00809                      571933.01
4175080.96        0.00539
         571994.92    4175080.96        0.00381                      572056.83
4175080.96        0.00282
         572118.74    4175080.96        0.00217                      572180.65
4175080.96        0.00173
         571066.27    4175128.24        0.00022                      571128.18
4175128.24        0.00031
         571252.00    4175128.24        0.00081                      571313.91
4175128.24        0.00172
         571375.82    4175128.24        0.00488                      571437.73
4175128.24        0.01072
         571747.28    4175128.24        0.02104                      571809.19
4175128.24        0.01139
         571871.10    4175128.24        0.00719                      571933.01
4175128.24        0.00496
         571994.92    4175128.24        0.00360                      572056.83
```

4175128.24 0.00271
572118.74 4175128.24 0.00211 572180.65
4175128.24 0.00170
571066.27 4175175.52 0.00023 571128.18
4175175.52 0.00039
571190.09 4175175.52 0.00050 571252.00
4175175.52 0.00080
571313.91 4175175.52 0.00153 571375.82
4175175.52 0.00309
571747.28 4175175.52 0.01434 571809.19
4175175.52 0.00873
571871.10 4175175.52 0.00588 571933.01
4175175.52 0.00423
571994.92 4175175.52 0.00317 572056.83
4175175.52 0.00245
572118.74 4175175.52 0.00195 572180.65
4175175.52 0.00159
571066.27 4175222.80 0.00026 571128.18
4175222.80 0.00036
571190.09 4175222.80 0.00049 571252.00
4175222.80 0.00078
571313.91 4175222.80 0.00133 571375.82
4175222.80 0.00243
571437.73 4175222.80 0.00516 571623.46
4175222.80 0.01954
571685.37 4175222.80 0.01270 571747.28
4175222.80 0.00854
571809.19 4175222.80 0.00600 571871.10
4175222.80 0.00444
571933.01 4175222.80 0.00338 571994.92
4175222.80 0.00263
572056.83 4175222.80 0.00210 572118.74
4175222.80 0.00172
572180.65 4175222.80 0.00143 571066.27
4175270.08 0.00028
571128.18 4175270.08 0.00034 571190.09
4175270.08 0.00048
571252.00 4175270.08 0.00075 571313.91
4175270.08 0.00124
571375.82 4175270.08 0.00195 571437.73
4175270.08 0.00360
571499.64 4175270.08 0.00789 571561.55
4175270.08 0.00952
571623.46 4175270.08 0.00816 571685.37
4175270.08 0.00650
571747.28 4175270.08 0.00508 571809.19
4175270.08 0.00396
571871.10 4175270.08 0.00318 571933.01
4175270.08 0.00256
571994.92 4175270.08 0.00209 572056.83

4175270.08   0.00173
        572118.74   4175270.08   0.00145   572180.65
4175270.08   0.00123
        571066.27   4175317.36   0.00027   571128.18
4175317.36   0.00034

 *** MODELOPTs: RegDFAULT CONC ELEV URBAN ADJ_U*

*** THE PERIOD (43824 HRS) AVERAGE CONCENTRATION VALUES FOR SOURCE GROUP: ALL   ***

INCLUDING SOURCE(S):   L0000518   , L0000519   , L0000520   , L0000521   , L0000522   ,
L0000523   , L0000524   , L0000525   , L0000526   , L0000527   , L0000528   , L0000529   , L0000530   ,
L0000531   , L0000532   , L0000533   , L0000534   , L0000535   , L0000536   , L0000537   , L0000538   ,
L0000539   , L0000540   , L0000541   , L0000542   , L0000543   , L0000544   , L0000545   , . . .   ,

*** DISCRETE CARTESIAN RECEPTOR POINTS ***

** CONC OF PM_2.5   IN MICROGRAMS/M**3   **

X-COORD (M)	Y-COORD (M)	CONC	X-COORD (M)	Y-COORD (M)	CONC
571190.09	4175317.36	0.00051	571252.00	4175317.36	0.00074
571313.91	4175317.36	0.00103	571375.82	4175317.36	0.00156
571437.73	4175317.36	0.00246	571499.64	4175317.36	0.00360
571561.55	4175317.36	0.00416	571623.46	4175317.36	0.00407
571685.37	4175317.36	0.00363	571747.28	4175317.36	0.00312
571809.19	4175317.36	0.00264	571871.10	4175317.36	0.00225
571933.01	4175317.36	0.00190	571994.92	4175317.36	0.00161
572056.83	4175317.36	0.00138	572118.74	4175317.36	0.00119

572180.65 4175317.36 0.00103 571066.27
4175364.64 0.00030
571128.18 4175364.64 0.00039 571190.09
4175364.64 0.00049
571252.00 4175364.64 0.00064 571313.91
4175364.64 0.00088
571375.82 4175364.64 0.00124 571437.73
4175364.64 0.00171
571499.64 4175364.64 0.00215 571561.55
4175364.64 0.00239
571623.46 4175364.64 0.00241 571685.37
4175364.64 0.00226
571747.28 4175364.64 0.00205 571809.19
4175364.64 0.00182
571871.10 4175364.64 0.00162 571933.01
4175364.64 0.00141
571994.92 4175364.64 0.00124 572056.83
4175364.64 0.00109
572118.74 4175364.64 0.00096 572180.65
4175364.64 0.00085
571066.27 4175411.92 0.00025 571128.18
4175411.92 0.00033
571190.09 4175411.92 0.00043 571252.00
4175411.92 0.00057
571313.91 4175411.92 0.00075 571375.82
4175411.92 0.00098
571437.73 4175411.92 0.00123 571499.64
4175411.92 0.00145
571561.55 4175411.92 0.00156 571623.46
4175411.92 0.00159
571685.37 4175411.92 0.00153 571747.28
4175411.92 0.00143
571809.19 4175411.92 0.00131 571871.10
4175411.92 0.00120
571933.01 4175411.92 0.00108 571994.92
4175411.92 0.00096
572056.83 4175411.92 0.00086 572118.74
4175411.92 0.00078
572180.65 4175411.92 0.00070 571066.27
4175459.20 0.00023
571128.18 4175459.20 0.00030 571190.09
4175459.20 0.00039
571252.00 4175459.20 0.00050 571313.91
4175459.20 0.00063
571375.82 4175459.20 0.00078 571437.73
4175459.20 0.00092
571499.64 4175459.20 0.00104 571561.55
4175459.20 0.00111
571623.46 4175459.20 0.00112 571685.37
4175459.20 0.00110

```
         571747.28    4175459.20        0.00105                      571809.19
4175459.20        0.00099
         571871.10    4175459.20        0.00091                      571933.01
4175459.20        0.00084
         571994.92    4175459.20        0.00076                      572056.83
4175459.20        0.00070
         572118.74    4175459.20        0.00063                      572180.65
4175459.20        0.00058
🡅 *** AERMOD - VERSION 22112  ***   *** C:\Lakes\AERMOD View\880 Doolittle\880
Doolittle.isc                  ***        01/12/23
 *** AERMET - VERSION  18081 ***   ***
                       ***        15:42:55

                                  PAGE 138
 *** MODELOPTs:    RegDFAULT  CONC  ELEV  URBAN  ADJ_U*

                              *** THE   1ST HIGHEST  1-HR AVERAGE CONCENTRATION
VALUES FOR SOURCE GROUP:  ALL      ***
                                 INCLUDING SOURCE(S):     L0000518    , L0000519
 , L0000520    , L0000521    , L0000522    ,
                L0000523    , L0000524    , L0000525    , L0000526    , L0000527
 , L0000528    , L0000529    , L0000530    ,
                L0000531    , L0000532    , L0000533    , L0000534    , L0000535
 , L0000536    , L0000537    , L0000538    ,
                L0000539    , L0000540    , L0000541    , L0000542    , L0000543
 , L0000544    , L0000545    ,  . . .      ,

                                              *** DISCRETE CARTESIAN RECEPTOR POINTS
***

                                         ** CONC OF PM_2.5   IN MICROGRAMS/M**3
                    **

      X-COORD (M)  Y-COORD (M)        CONC     (YYMMDDHH)              X-COORD (M)
Y-COORD (M)        CONC     (YYMMDDHH)
 - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - -
- - - - - - - - - - - - - - - - - - - - - - - - - - - - - - -
        571066.27   4174560.88        0.04119  (17011709)                571128.18
 4174560.88        0.05456  (17011709)
        571190.09   4174560.88        0.06436  (17011709)                571252.00
 4174560.88        0.06726  (17011709)
        571313.91   4174560.88        0.06181  (17011709)                571066.27
 4174608.16        0.03695  (16012809)
        571128.18   4174608.16        0.05255  (17011709)                571190.09
 4174608.16        0.06657  (17011709)
        571252.00   4174608.16        0.07432  (17011709)                571313.91
 4174608.16        0.07285  (17011709)
        571375.82   4174608.16        0.06216  (17011709)                571437.73
 4174608.16        0.06798  (14012709)
        571499.64   4174608.16        0.07388  (17122409)                571561.55
```

4174608.16 0.09081 (17122409)
571066.27 4174655.44 0.03603 (16012809) 571128.18
4174655.44 0.04852 (17011709)
571190.09 4174655.44 0.06665 (17011709) 571252.00
4174655.44 0.08009 (17011709)
571313.91 4174655.44 0.08400 (17011709) 571375.82
4174655.44 0.07680 (17011709)
571437.73 4174655.44 0.07423 (14012709) 571499.64
4174655.44 0.08317 (17122409)
571561.55 4174655.44 0.10226 (17122409) 571623.46
4174655.44 0.11190 (17011209)
571685.37 4174655.44 0.10518 (17011209) 571747.28
4174655.44 0.07643 (16121309)
571809.19 4174655.44 0.09076 (16121309) 571871.10
4174655.44 0.08818 (16121309)
571066.27 4174702.72 0.04152 (14123109) 571128.18
4174702.72 0.04425 (16012809)
571190.09 4174702.72 0.06427 (17011709) 571252.00
4174702.72 0.08388 (17011709)
571313.91 4174702.72 0.09451 (17011709) 571375.82
4174702.72 0.09290 (17011709)
571437.73 4174702.72 0.08603 (17010509) 571499.64
4174702.72 0.09486 (17122409)
571561.55 4174702.72 0.11671 (17122409) 571623.46
4174702.72 0.12641 (17011209)
571685.37 4174702.72 0.11446 (17011209) 571871.10
4174702.72 0.09144 (16121309)
571066.27 4174750.00 0.04671 (14123109) 571128.18
4174750.00 0.04905 (14123109)
571190.09 4174750.00 0.05921 (17011709) 571252.00
4174750.00 0.08508 (17011709)
571313.91 4174750.00 0.10386 (17011709) 571375.82
4174750.00 0.10984 (17011709)
571437.73 4174750.00 0.10118 (17011709) 571499.64
4174750.00 0.11015 (17122409)
571561.55 4174750.00 0.13541 (17122409) 571623.46
4174750.00 0.14442 (17011209)
571685.37 4174750.00 0.12599 (17011209) 571747.28
4174750.00 0.11866 (16121309)
571809.19 4174750.00 0.11607 (16121309) 571871.10
4174750.00 0.09552 (14112116)
571933.01 4174750.00 0.09665 (14112116) 571994.92
4174750.00 0.08384 (14112116)
572056.83 4174750.00 0.06382 (14112116) 572118.74
4174750.00 0.04398 (14112116)
572180.65 4174750.00 0.03707 (16011816) 571066.27
4174797.28 0.04860 (14123109)
571128.18 4174797.28 0.05558 (14123109) 571190.09
4174797.28 0.05919 (14123109)
571252.00 4174797.28 0.08267 (17011709) 571313.91

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 4174797.28        0.11156  (17011709)
        571375.82   4174797.28        0.12714  (17011709)                571437.73
 4174797.28        0.12714  (17011709)
        571499.64   4174797.28        0.13104  (17122409)                571561.55
 4174797.28        0.16054  (17122409)
        571623.46   4174797.28        0.16693  (17011209)                571685.37
 4174797.28        0.14076  (17011209)
        571747.28   4174797.28        0.14154  (16121309)                571809.19
 4174797.28        0.12423  (16121309)
        571871.10   4174797.28        0.12640  (14112116)                571933.01
 4174797.28        0.10936  (14112116)
        571994.92   4174797.28        0.08119  (14112116)                572056.83
 4174797.28        0.05387  (14112116)
        572118.74   4174797.28        0.04782  (16011816)                572180.65
 4174797.28        0.04290  (16011816)
        571066.27   4174844.56        0.04591  (14123109)                571128.18
 4174844.56        0.05794  (14123109)
```



```
                              *** THE   1ST HIGHEST  1-HR AVERAGE CONCENTRATION
VALUES FOR SOURCE GROUP:  ALL      ***
                                 INCLUDING SOURCE(S):     L0000518    , L0000519
 , L0000520    , L0000521    , L0000522    ,
                L0000523    , L0000524    , L0000525    , L0000526    , L0000527
 , L0000528    , L0000529    , L0000530    ,
                L0000531    , L0000532    , L0000533    , L0000534    , L0000535
 , L0000536    , L0000537    , L0000538    ,
                L0000539    , L0000540    , L0000541    , L0000542    , L0000543
 , L0000544    , L0000545    ,  . . .      ,

                                            *** DISCRETE CARTESIAN RECEPTOR POINTS
***

                                         ** CONC OF PM_2.5   IN MICROGRAMS/M**3
                   **

      X-COORD (M)  Y-COORD (M)        CONC     (YYMMDDHH)              X-COORD (M)
Y-COORD (M)        CONC     (YYMMDDHH)
 - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - -
- - - - - - - - - - - - - - - - - - - - - - - - - - -
        571190.09   4174844.56        0.06788  (14123109)                571252.00
 4174844.56        0.07648  (17011709)
        571313.91   4174844.56        0.11640  (17011709)                571375.82
 4174844.56        0.14512  (17011709)
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571437.73 4174844.56 0.15651 (17011709) 571499.64
4174844.56 0.16005 (17010509)
571561.55 4174844.56 0.19777 (17122409) 571623.46
4174844.56 0.19639 (17011209)
571685.37 4174844.56 0.17125 (16121309) 571747.28
4174844.56 0.16584 (16121309)
571809.19 4174844.56 0.17233 (14112116) 571871.10
4174844.56 0.15030 (14112116)
571933.01 4174844.56 0.10824 (14112116) 571994.92
4174844.56 0.06824 (14112116)
572056.83 4174844.56 0.06038 (16011816) 572118.74
4174844.56 0.05222 (17010409)
572180.65 4174844.56 0.05082 (15121716) 571066.27
4174891.84 0.05157 (13012309)
571128.18 4174891.84 0.05618 (13012309) 571190.09
4174891.84 0.07160 (14123109)
571252.00 4174891.84 0.08631 (14123109) 571313.91
4174891.84 0.11730 (17011709)
571375.82 4174891.84 0.16425 (17011709) 571499.64
4174891.84 0.21103 (17010509)
571561.55 4174891.84 0.26072 (17122409) 571623.46
4174891.84 0.23884 (17011209)
571685.37 4174891.84 0.24860 (14112116) 571747.28
4174891.84 0.24931 (14112116)
571809.19 4174891.84 0.22186 (14112116) 571871.10
4174891.84 0.15246 (14112116)
571933.01 4174891.84 0.09286 (16011816) 571994.92
4174891.84 0.08112 (15121716)
572056.83 4174891.84 0.07448 (15121716) 572118.74
4174891.84 0.06628 (15121716)
572180.65 4174891.84 0.05804 (15121716) 571066.27
4174939.12 0.05566 (13012309)
571128.18 4174939.12 0.06535 (13012309) 571190.09
4174939.12 0.07563 (13012309)
571252.00 4174939.12 0.09358 (14123109) 571313.91
4174939.12 0.11748 (14123109)
571375.82 4174939.12 0.18348 (17011709) 571437.73
4174939.12 0.24030 (17011709)
571499.64 4174939.12 0.29872 (17010509) 571623.46
4174939.12 0.44762 (14112116)
571685.37 4174939.12 0.41684 (14112116) 571747.28
4174939.12 0.37243 (14112116)
571809.19 4174939.12 0.23575 (14112116) 571871.10
4174939.12 0.14387 (15121716)
571933.01 4174939.12 0.11777 (15121716) 571994.92
4174939.12 0.09636 (15121716)
572056.83 4174939.12 0.07937 (15121716) 572118.74
4174939.12 0.06559 (15121716)
572180.65 4174939.12 0.05406 (15121716) 571066.27
4174986.40 0.05801 (13010709)

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        571128.18   4174986.40        0.06630  (13010709)                571190.09
 4174986.40        0.08344  (13012309)
        571252.00   4174986.40        0.10572  (13012309)                571313.91
 4174986.40        0.13636  (14123109)
        571375.82   4174986.40        0.20336  (17011709)                571437.73
 4174986.40        0.32493  (17011709)
        571809.19   4174986.40        0.28205  (17111316)                571871.10
 4174986.40        0.18785  (17111316)
        571933.01   4174986.40        0.13757  (17111316)                571994.92
 4174986.40        0.10703  (17111316)
        572056.83   4174986.40        0.08607  (17111316)                572118.74
 4174986.40        0.07109  (17111316)
        572180.65   4174986.40        0.06020  (17111316)                571066.27
 4175033.68        0.06972  (13010709)
        571128.18   4175033.68        0.08276  (13010709)                571190.09
 4175033.68        0.10124  (13010709)
        571252.00   4175033.68        0.12951  (13010709)                571313.91
 4175033.68        0.18031  (13101209)
        571375.82   4175033.68        0.27785  (13101209)                571747.28
 4175033.68        0.54681  (17111316)
        571809.19   4175033.68        0.32806  (17111316)                571871.10
 4175033.68        0.22231  (17111316)
        571933.01   4175033.68        0.16297  (17111316)                571994.92
 4175033.68        0.12509  (17111316)
        572056.83   4175033.68        0.09936  (17111316)                572118.74
 4175033.68        0.08157  (16120809)
```



```
                              *** THE   1ST HIGHEST  1-HR AVERAGE CONCENTRATION
VALUES FOR SOURCE GROUP:  ALL      ***
                                 INCLUDING SOURCE(S):     L0000518    , L0000519
 , L0000520    , L0000521    , L0000522    ,
                L0000523    , L0000524    , L0000525    , L0000526    , L0000527
 , L0000528    , L0000529    , L0000530    ,
                L0000531    , L0000532    , L0000533    , L0000534    , L0000535
 , L0000536    , L0000537    , L0000538    ,
                L0000539    , L0000540    , L0000541    , L0000542    , L0000543
 , L0000544    , L0000545    ,  . . .      ,

                                            *** DISCRETE CARTESIAN RECEPTOR POINTS
***

                                         ** CONC OF PM_2.5   IN MICROGRAMS/M**3
                    **
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```
      X-COORD (M)  Y-COORD (M)        CONC     (YYMMDDHH)              X-COORD (M)
Y-COORD (M)        CONC     (YYMMDDHH)
 - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - -
- - - - - - - - - - - - - - - - - - - - - - - - - - - -
        572180.65   4175033.68        0.07201  (16120809)                571066.27
 4175080.96        0.07134  (13010709)
        571128.18   4175080.96        0.08529  (13010709)                571190.09
 4175080.96        0.10550  (13010709)
        571252.00   4175080.96        0.13725  (13010709)                571313.91
 4175080.96        0.20448  (13010709)
        571747.28   4175080.96        0.45571  (17111316)                571809.19
 4175080.96        0.29071  (17111316)
        571871.10   4175080.96        0.20388  (17111316)                571933.01
 4175080.96        0.15249  (17111316)
        571994.92   4175080.96        0.11809  (17111316)                572056.83
 4175080.96        0.10064  (16120809)
        572118.74   4175080.96        0.08865  (16120809)                572180.65
 4175080.96        0.07894  (16120809)
        571066.27   4175128.24        0.06270  (13010709)                571128.18
 4175128.24        0.07347  (13010709)
        571252.00   4175128.24        0.11227  (14011109)                571313.91
 4175128.24        0.17178  (13121709)
        571375.82   4175128.24        0.23438  (13121709)                571437.73
 4175128.24        0.34709  (15011209)
        571747.28   4175128.24        0.39894  (17111316)                571809.19
 4175128.24        0.24626  (17010616)
        571871.10   4175128.24        0.18337  (17010616)                571933.01
 4175128.24        0.15311  (14122409)
        571994.92   4175128.24        0.13125  (14122409)                572056.83
 4175128.24        0.11272  (14122409)
        572118.74   4175128.24        0.09706  (14122409)                572180.65
 4175128.24        0.08373  (14122409)
        571066.27   4175175.52        0.05427  (14011109)                571128.18
 4175175.52        0.06891  (14011109)
        571190.09   4175175.52        0.08658  (14011109)                571252.00
 4175175.52        0.11511  (13121709)
        571313.91   4175175.52        0.15119  (13121709)                571375.82
 4175175.52        0.19126  (13121709)
        571747.28   4175175.52        0.33241  (16121116)                571809.19
 4175175.52        0.23496  (17010616)
        571871.10   4175175.52        0.18114  (17010616)                571933.01
 4175175.52        0.14475  (17010616)
        571994.92   4175175.52        0.12659  (14122409)                572056.83
 4175175.52        0.11366  (14122409)
        572118.74   4175175.52        0.10226  (14122409)                572180.65
 4175175.52        0.09190  (14122409)
        571066.27   4175222.80        0.05983  (14011109)                571128.18
 4175222.80        0.07035  (14011109)
        571190.09   4175222.80        0.08998  (13121709)                571252.00
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 4175222.80        0.11430  (13121709)
        571313.91   4175222.80        0.13888  (13121709)                571375.82
 4175222.80        0.17861  (13121709)
        571437.73   4175222.80        0.27236  (16010809)                571623.46
 4175222.80        0.40859  (14122009)
        571685.37   4175222.80        0.33785  (15010909)                571747.28
 4175222.80        0.27987  (15010909)
        571809.19   4175222.80        0.22120  (16121116)                571871.10
 4175222.80        0.17834  (16121116)
        571933.01   4175222.80        0.14270  (16121116)                571994.92
 4175222.80        0.11523  (17010616)
        572056.83   4175222.80        0.09824  (17010616)                572118.74
 4175222.80        0.09210  (14122409)
        572180.65   4175222.80        0.08621  (14122409)                571066.27
 4175270.08        0.05816  (13121709)
        571128.18   4175270.08        0.07501  (13121709)                571190.09
 4175270.08        0.09229  (13121709)
        571252.00   4175270.08        0.10946  (15123009)                571313.91
 4175270.08        0.12856  (15123009)
        571375.82   4175270.08        0.17227  (13010509)                571437.73
 4175270.08        0.24359  (16010809)
        571499.64   4175270.08        0.46919  (14121216)                571561.55
 4175270.08        0.31171  (14121216)
        571623.46   4175270.08        0.27511  (14122009)                571685.37
 4175270.08        0.27067  (15010909)
        571747.28   4175270.08        0.24724  (15010909)                571809.19
 4175270.08        0.21272  (15010909)
        571871.10   4175270.08        0.17307  (14010709)                571933.01
 4175270.08        0.14021  (16121116)
        571994.92   4175270.08        0.11941  (16121116)                572056.83
 4175270.08        0.09928  (16121116)
        572118.74   4175270.08        0.08025  (17010616)                572180.65
 4175270.08        0.07130  (17010616)
        571066.27   4175317.36        0.06462  (13121709)                571128.18
 4175317.36        0.07784  (15123009)
```



```
                              *** THE   1ST HIGHEST  1-HR AVERAGE CONCENTRATION
VALUES FOR SOURCE GROUP:  ALL      ***
                                 INCLUDING SOURCE(S):     L0000518    , L0000519
 , L0000520    , L0000521    , L0000522    ,
                 L0000523    , L0000524    , L0000525    , L0000526    , L0000527
 , L0000528    , L0000529    , L0000530    ,
                 L0000531    , L0000532    , L0000533    , L0000534    , L0000535
```

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 , L0000536    , L0000537    , L0000538    ,
                L0000539    , L0000540    , L0000541    , L0000542    , L0000543
 , L0000544    , L0000545    ,  . . .      ,

                                                *** DISCRETE CARTESIAN RECEPTOR POINTS
***

                                            ** CONC OF PM_2.5   IN MICROGRAMS/M**3
                    **

      X-COORD (M)  Y-COORD (M)        CONC     (YYMMDDHH)              X-COORD (M)
Y-COORD (M)        CONC     (YYMMDDHH)
 - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - -
- - - - - - - - - - - - - - - - - - - - - - - - - - - - -
        571190.09   4175317.36        0.09048  (15123009)                571252.00
 4175317.36        0.10044  (15123009)
        571313.91   4175317.36        0.12833  (13010509)                571375.82
 4175317.36        0.16198  (16010809)
        571437.73   4175317.36        0.19520  (14010609)                571499.64
 4175317.36        0.27492  (14121216)
        571561.55   4175317.36        0.22069  (16121115)                571623.46
 4175317.36        0.17901  (16012116)
        571685.37   4175317.36        0.19936  (14122009)                571747.28
 4175317.36        0.20864  (15010909)
        571809.19   4175317.36        0.19728  (15010909)                571871.10
 4175317.36        0.17263  (15010909)
        571933.01   4175317.36        0.14362  (14010709)                571994.92
 4175317.36        0.11856  (14010709)
        572056.83   4175317.36        0.10035  (16121116)                572118.74
 4175317.36        0.08722  (16121116)
        572180.65   4175317.36        0.07309  (16121116)                571066.27
 4175364.64        0.06682  (15123009)
        571128.18   4175364.64        0.07599  (15123009)                571190.09
 4175364.64        0.08081  (15123009)
        571252.00   4175364.64        0.10166  (13010509)                571313.91
 4175364.64        0.12205  (16010809)
        571375.82   4175364.64        0.14271  (14010609)                571437.73
 4175364.64        0.14013  (14010609)
        571499.64   4175364.64        0.20056  (14122109)                571561.55
 4175364.64        0.16826  (16121115)
        571623.46   4175364.64        0.14177  (16012116)                571685.37
 4175364.64        0.13870  (14122009)
        571747.28   4175364.64        0.16077  (15010909)                571809.19
 4175364.64        0.17148  (15010909)
        571871.10   4175364.64        0.16466  (15010909)                571933.01
 4175364.64        0.14461  (15010909)
        571994.92   4175364.64        0.12259  (14010709)                572056.83
 4175364.64        0.10348  (14010709)
        572118.74   4175364.64        0.08395  (16121116)                572180.65
 4175364.64        0.07627  (16121116)
```

```
       571066.27   4175411.92        0.06411  (15123009)                571128.18
 4175411.92        0.06659  (15123009)
       571190.09   4175411.92        0.08308  (13010509)                571252.00
 4175411.92        0.09728  (16010809)
       571313.91   4175411.92        0.10981  (14010609)                571375.82
 4175411.92        0.11919  (14010609)
       571437.73   4175411.92        0.12065  (14122109)                571499.64
 4175411.92        0.16729  (14122109)
       571561.55   4175411.92        0.13720  (14122109)                571623.46
 4175411.92        0.11715  (16121409)
       571685.37   4175411.92        0.10698  (16012116)                571747.28
 4175411.92        0.11880  (14122009)
       571809.19   4175411.92        0.13661  (15010909)                571871.10
 4175411.92        0.14623  (15010909)
       571933.01   4175411.92        0.14085  (15010909)                571994.92
 4175411.92        0.12375  (15010909)
       572056.83   4175411.92        0.10662  (14010709)                572118.74
 4175411.92        0.09172  (14010709)
       572180.65   4175411.92        0.07406  (14010709)                571066.27
 4175459.20        0.05590  (15123009)
       571128.18   4175459.20        0.06921  (13010509)                571190.09
 4175459.20        0.08036  (13010509)
       571252.00   4175459.20        0.08980  (16010809)                571313.91
 4175459.20        0.09952  (14010609)
       571375.82   4175459.20        0.09354  (14010609)                571437.73
 4175459.20        0.11318  (14122109)
       571499.64   4175459.20        0.14375  (14122109)                571561.55
 4175459.20        0.11805  (14122109)
       571623.46   4175459.20        0.10503  (16121409)                571685.37
 4175459.20        0.09157  (16012116)
       571747.28   4175459.20        0.08151  (16012116)                571809.19
 4175459.20        0.10510  (14122009)
       571871.10   4175459.20        0.11961  (15010909)                571933.01
 4175459.20        0.12747  (15010909)
       571994.92   4175459.20        0.12254  (15010909)                572056.83
 4175459.20        0.10749  (15010909)
       572118.74   4175459.20        0.09398  (14010709)                572180.65
 4175459.20        0.08214  (14010709)
```



```
                              *** THE   1ST HIGHEST  8-HR AVERAGE CONCENTRATION
VALUES FOR SOURCE GROUP:  ALL      ***
                                 INCLUDING SOURCE(S):     L0000518    , L0000519
 , L0000520    , L0000521    , L0000522    ,
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                 L0000523    , L0000524    , L0000525    , L0000526    , L0000527
 , L0000528    , L0000529    , L0000530    ,
                 L0000531    , L0000532    , L0000533    , L0000534    , L0000535
 , L0000536    , L0000537    , L0000538    ,
                 L0000539    , L0000540    , L0000541    , L0000542    , L0000543
 , L0000544    , L0000545    ,  . . .      ,

                                                *** DISCRETE CARTESIAN RECEPTOR POINTS
***

                                            ** CONC OF PM_2.5   IN MICROGRAMS/M**3
                     **

      X-COORD (M)  Y-COORD (M)        CONC     (YYMMDDHH)              X-COORD (M)
Y-COORD (M)        CONC     (YYMMDDHH)
 - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - -
- - - - - - - - - - - - - - - - - - - - - - - - - - - - -
        571066.27   4174560.88        0.01010  (13010116)                571128.18
 4174560.88        0.01303  (15123116)
        571190.09   4174560.88        0.01554  (15123116)                571252.00
 4174560.88        0.01635  (15123116)
        571313.91   4174560.88        0.01508  (15123116)                571066.27
 4174608.16        0.01161  (13011416)
        571128.18   4174608.16        0.01307  (15123116)                571190.09
 4174608.16        0.01680  (15123116)
        571252.00   4174608.16        0.01895  (15123116)                571313.91
 4174608.16        0.01863  (15123116)
        571375.82   4174608.16        0.01580  (15123116)                571437.73
 4174608.16        0.01376  (17111716)
        571499.64   4174608.16        0.01410  (14123116)                571561.55
 4174608.16        0.01492  (14123116)
        571066.27   4174655.44        0.01320  (13011416)                571128.18
 4174655.44        0.01423  (13011416)
        571190.09   4174655.44        0.01756  (15123116)                571252.00
 4174655.44        0.02142  (15123116)
        571313.91   4174655.44        0.02261  (15123116)                571375.82
 4174655.44        0.02061  (15123116)
        571437.73   4174655.44        0.01702  (17111716)                571499.64
 4174655.44        0.01684  (14123116)
        571561.55   4174655.44        0.01776  (14123116)                571623.46
 4174655.44        0.01640  (16011116)
        571685.37   4174655.44        0.01969  (16120216)                571747.28
 4174655.44        0.02214  (16120216)
        571809.19   4174655.44        0.02100  (15121416)                571871.10
 4174655.44        0.02122  (15121416)
        571066.27   4174702.72        0.01426  (13011416)                571128.18
 4174702.72        0.01650  (13011416)
        571190.09   4174702.72        0.01770  (13011416)                571252.00
 4174702.72        0.02350  (15123116)
        571313.91   4174702.72        0.02685  (15123116)                571375.82
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 4174702.72        0.02642  (15123116)
       571437.73   4174702.72        0.02207  (15123116)                571499.64
 4174702.72        0.02069  (14123116)
       571561.55   4174702.72        0.02164  (14123116)                571623.46
 4174702.72        0.01976  (15110416)
       571685.37   4174702.72        0.02525  (16120216)                571871.10
 4174702.72        0.02511  (15111616)
       571066.27   4174750.00        0.01447  (13011416)                571128.18
 4174750.00        0.01815  (13011416)
       571190.09   4174750.00        0.02107  (13011416)                571252.00
 4174750.00        0.02488  (15123116)
       571313.91   4174750.00        0.03109  (15123116)                571375.82
 4174750.00        0.03316  (15123116)
       571437.73   4174750.00        0.03044  (15123116)                571499.64
 4174750.00        0.02639  (14123116)
       571561.55   4174750.00        0.02695  (14123116)                571623.46
 4174750.00        0.02620  (16120216)
       571685.37   4174750.00        0.03314  (16120216)                571747.28
 4174750.00        0.03367  (16120216)
       571809.19   4174750.00        0.03238  (15121416)                571871.10
 4174750.00        0.02849  (15111616)
       571933.01   4174750.00        0.02523  (13120316)                571994.92
 4174750.00        0.02218  (13120316)
       572056.83   4174750.00        0.01717  (13072216)                572118.74
 4174750.00        0.01518  (13072216)
       572180.65   4174750.00        0.01296  (14122916)                571066.27
 4174797.28        0.01351  (13011416)
       571128.18   4174797.28        0.01867  (13011416)                571190.09
 4174797.28        0.02366  (13011416)
       571252.00   4174797.28        0.02743  (13011416)                571313.91
 4174797.28        0.03501  (15123116)
       571375.82   4174797.28        0.04070  (15123116)                571437.73
 4174797.28        0.04105  (15123116)
       571499.64   4174797.28        0.03538  (14123116)                571561.55
 4174797.28        0.03537  (14123116)
       571623.46   4174797.28        0.03749  (16120216)                571685.37
 4174797.28        0.04410  (16120216)
       571747.28   4174797.28        0.04219  (15121416)                571809.19
 4174797.28        0.03811  (15121416)
       571871.10   4174797.28        0.03311  (13120316)                571933.01
 4174797.28        0.02927  (13120316)
       571994.92   4174797.28        0.02227  (13120316)                572056.83
 4174797.28        0.01892  (14122916)
       572118.74   4174797.28        0.01669  (14122916)                572180.65
 4174797.28        0.01404  (14122916)
       571066.27   4174844.56        0.01728c (16010216)                571128.18
 4174844.56        0.01908c (16010216)
↑ *** AERMOD - VERSION 22112  ***   *** C:\Lakes\AERMOD View\880 Doolittle\880
Doolittle.isc                  ***        01/12/23
 *** AERMET - VERSION  18081 ***   ***
```

*** MODELOPTs: RegDFAULT CONC ELEV URBAN ADJ_U*

*** THE 1ST HIGHEST 8-HR AVERAGE CONCENTRATION VALUES FOR SOURCE GROUP: ALL ***
INCLUDING SOURCE(S): L0000518 , L0000519 , L0000520 , L0000521 , L0000522 ,
L0000523 , L0000524 , L0000525 , L0000526 , L0000527 , L0000528 , L0000529 , L0000530 ,
L0000531 , L0000532 , L0000533 , L0000534 , L0000535 , L0000536 , L0000537 , L0000538 ,
L0000539 , L0000540 , L0000541 , L0000542 , L0000543 , L0000544 , L0000545 , . . . ,

*** DISCRETE CARTESIAN RECEPTOR POINTS ***

** CONC OF PM_2.5 IN MICROGRAMS/M**3 **

X-COORD (M)	Y-COORD (M)	CONC	(YYMMDDHH)	X-COORD (M)	Y-COORD (M)	CONC	(YYMMDDHH)
571190.09	4174844.56	0.02504	(13011416)	571252.00	4174844.56	0.03219	(13011416)
571313.91	4174844.56	0.03828	(15123116)	571375.82	4174844.56	0.04907	(15123116)
571437.73	4174844.56	0.05394	(15123116)	571499.64	4174844.56	0.05227	(15123116)
571561.55	4174844.56	0.04996	(14123116)	571623.46	4174844.56	0.05571	(16120216)
571685.37	4174844.56	0.05931	(16120216)	571747.28	4174844.56	0.05436	(15121416)
571809.19	4174844.56	0.04770	(13011016)	571871.10	4174844.56	0.04077	(13120316)
571933.01	4174844.56	0.03030	(13120316)	571994.92	4174844.56	0.02545	(14122916)
572056.83	4174844.56	0.02114	(14122916)	572118.74	4174844.56	0.01735c	(16012616)
572180.65	4174844.56	0.01427c	(16012616)	571066.27	4174891.84	0.02175c	(16010216)
571128.18	4174891.84	0.02505c	(16010216)	571190.09	4174891.84	0.02887c	(16010216)
571252.00	4174891.84	0.03555	(13011416)	571313.91	4174891.84	0.04589	(13011416)
571375.82	4174891.84	0.05882	(15123116)	571499.64	4174891.84	0.07740	(15123116)

571561.55 4174891.84 0.07923 (14123116) 571623.46
4174891.84 0.08594 (16120216)
571685.37 4174891.84 0.08084 (16120216) 571747.28
4174891.84 0.07241 (13011016)
571809.19 4174891.84 0.06101 (13120316) 571871.10
4174891.84 0.04434 (14122916)
571933.01 4174891.84 0.03569 (14122916) 571994.92
4174891.84 0.02764 (14122916)
572056.83 4174891.84 0.02156c (16012616) 572118.74
4174891.84 0.01675c (16012616)
572180.65 4174891.84 0.01361 (15062816) 571066.27
4174939.12 0.02536c (16010216)
571128.18 4174939.12 0.03060c (16010216) 571190.09
4174939.12 0.03726c (16010216)
571252.00 4174939.12 0.04532c (16010216) 571313.91
4174939.12 0.05410 (13011416)
571375.82 4174939.12 0.07071 (13011416) 571437.73
4174939.12 0.09376 (15123116)
571499.64 4174939.12 0.12062 (14123116) 571623.46
4174939.12 0.16252 (17010516)
571685.37 4174939.12 0.13571 (17010516) 571747.28
4174939.12 0.10418 (13120316)
571809.19 4174939.12 0.07461 (14122916) 571871.10
4174939.12 0.05208 (14122916)
571933.01 4174939.12 0.03650 (14122916) 571994.92
4174939.12 0.02654c (16012616)
572056.83 4174939.12 0.02123 (15082016) 572118.74
4174939.12 0.01768 (15082016)
572180.65 4174939.12 0.01480 (15082016) 571066.27
4174986.40 0.02579c (16010216)
571128.18 4174986.40 0.03297c (16010216) 571190.09
4174986.40 0.04310c (16010216)
571252.00 4174986.40 0.05803c (16010216) 571313.91
4174986.40 0.07623c (16010216)
571375.82 4174986.40 0.09733c (16010216) 571437.73
4174986.40 0.13639 (15123116)
571809.19 4174986.40 0.08410 (15092916) 571871.10
4174986.40 0.05552 (15092916)
571933.01 4174986.40 0.03977 (15032416) 571994.92
4174986.40 0.03065 (15032416)
572056.83 4174986.40 0.02430 (15032416) 572118.74
4174986.40 0.01969 (15032416)
572180.65 4174986.40 0.01644 (17092916) 571066.27
4175033.68 0.02237c (16010216)
571128.18 4175033.68 0.02956c (16010216) 571190.09
4175033.68 0.04105c (16010216)
571252.00 4175033.68 0.06163c (16010216) 571313.91
4175033.68 0.10317c (16010216)
571375.82 4175033.68 0.15492c (16010216) 571747.28
4175033.68 0.16799 (15021916)

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        571809.19   4175033.68        0.09695  (15032416)                571871.10
 4175033.68        0.06588  (15032416)
        571933.01   4175033.68        0.04769  (15032416)                571994.92
 4175033.68        0.03595  (15032416)
        572056.83   4175033.68        0.02797  (15032416)                572118.74
 4175033.68        0.02265  (15072516)
🡅 *** AERMOD - VERSION 22112  ***   *** C:\Lakes\AERMOD View\880 Doolittle\880
Doolittle.isc                 ***        01/12/23
 *** AERMET - VERSION  18081 ***   ***
                       ***        15:42:55

                                  PAGE 144
 *** MODELOPTs:    RegDFAULT  CONC  ELEV  URBAN  ADJ_U*

                              *** THE   1ST HIGHEST  8-HR AVERAGE CONCENTRATION
VALUES FOR SOURCE GROUP:  ALL      ***
                                 INCLUDING SOURCE(S):     L0000518    , L0000519
 , L0000520    , L0000521    , L0000522    ,
               L0000523    , L0000524    , L0000525    , L0000526    , L0000527
 , L0000528    , L0000529    , L0000530    ,
               L0000531    , L0000532    , L0000533    , L0000534    , L0000535
 , L0000536    , L0000537    , L0000538    ,
               L0000539    , L0000540    , L0000541    , L0000542    , L0000543
 , L0000544    , L0000545    ,  . . .      ,

                                                *** DISCRETE CARTESIAN RECEPTOR POINTS
***

                                          ** CONC OF PM_2.5   IN MICROGRAMS/M**3
                    **

      X-COORD (M)  Y-COORD (M)        CONC     (YYMMDDHH)              X-COORD (M)
Y-COORD (M)        CONC     (YYMMDDHH)
 - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - -
- - - - - - - - - - - - - - - - - - - - - - - - - - - -
        572180.65   4175033.68        0.01898  (15072516)                571066.27
 4175080.96        0.01699c (16010216)
        571128.18   4175080.96        0.02231c (16010216)                571190.09
 4175080.96        0.03065c (16010216)
        571252.00   4175080.96        0.04412c (16010216)                571313.91
 4175080.96        0.07680  (16011016)
        571747.28   4175080.96        0.17989  (15021916)                571809.19
 4175080.96        0.09398  (15021916)
        571871.10   4175080.96        0.06413  (13102416)                571933.01
 4175080.96        0.04713  (17052816)
        571994.92   4175080.96        0.03751  (17052816)                572056.83
 4175080.96        0.03044  (17052816)
        572118.74   4175080.96        0.02518  (17052816)                572180.65
 4175080.96        0.02114  (17052816)
        571066.27   4175128.24        0.01480  (14120216)                571128.18
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4175128.24 0.01941 (14120216)
571252.00 4175128.24 0.03622c (14113016) 571313.91
4175128.24 0.06558c (14113016)
571375.82 4175128.24 0.11541 (14122016) 571437.73
4175128.24 0.18110 (14122016)
571747.28 4175128.24 0.16763 (15021916) 571809.19
4175128.24 0.10012 (15021916)
571871.10 4175128.24 0.06231 (15021916) 571933.01
4175128.24 0.04613 (16041016)
571994.92 4175128.24 0.03678 (15080216) 572056.83
4175128.24 0.02949 (15080216)
572118.74 4175128.24 0.02428 (15051716) 572180.65
4175128.24 0.02018 (15051716)
571066.27 4175175.52 0.01472 (14120216) 571128.18
4175175.52 0.01812 (14120216)
571190.09 4175175.52 0.02522c (14113016) 571252.00
4175175.52 0.03730c (14113016)
571313.91 4175175.52 0.05058c (14113016) 571375.82
4175175.52 0.07746 (14122016)
571747.28 4175175.52 0.14470 (15021916) 571809.19
4175175.52 0.09428 (15021916)
571871.10 4175175.52 0.06458 (15021916) 571933.01
4175175.52 0.04463 (15021916)
571994.92 4175175.52 0.03635 (16041016) 572056.83
4175175.52 0.02992 (16041016)
572118.74 4175175.52 0.02457 (16041016) 572180.65
4175175.52 0.02113 (15051716)
571066.27 4175222.80 0.01395c (14113016) 571128.18
4175222.80 0.01890c (14113016)
571190.09 4175222.80 0.02574c (14113016) 571252.00
4175222.80 0.03346c (14113016)
571313.91 4175222.80 0.04422c (14113016) 571375.82
4175222.80 0.06785 (16100316)
571437.73 4175222.80 0.13589 (14122016) 571623.46
4175222.80 0.18345 (16121116)
571685.37 4175222.80 0.13694 (14010816) 571747.28
4175222.80 0.10128 (14010816)
571809.19 4175222.80 0.07650 (15021916) 571871.10
4175222.80 0.05853 (15021916)
571933.01 4175222.80 0.04408 (15021916) 571994.92
4175222.80 0.03534 (17042616)
572056.83 4175222.80 0.02894 (17042616) 572118.74
4175222.80 0.02450 (16041016)
572180.65 4175222.80 0.02114 (16041016) 571066.27
4175270.08 0.01465c (14113016)
571128.18 4175270.08 0.01893c (14113016) 571190.09
4175270.08 0.02365c (14113016)
571252.00 4175270.08 0.03055 (13010516) 571313.91
4175270.08 0.04237 (16100316)
571375.82 4175270.08 0.06378 (16100316) 571437.73

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 4175270.08        0.12243  (14122016)
        571499.64   4175270.08        0.21014  (14122016)                571561.55
 4175270.08        0.14474  (14122016)
        571623.46   4175270.08        0.11049  (16121116)                571685.37
 4175270.08        0.08952  (16121116)
        571747.28   4175270.08        0.07458  (14010816)                571809.19
 4175270.08        0.05899  (14010816)
        571871.10   4175270.08        0.04720  (15021916)                571933.01
 4175270.08        0.03890  (15021916)
        571994.92   4175270.08        0.03179  (17042616)                572056.83
 4175270.08        0.02795  (17042616)
        572118.74   4175270.08        0.02413  (17042616)                572180.65
 4175270.08        0.02051  (17042616)
        571066.27   4175317.36        0.01437c (14113016)                571128.18
 4175317.36        0.01733c (14113016)
🡅 *** AERMOD - VERSION 22112  ***   *** C:\Lakes\AERMOD View\880 Doolittle\880
Doolittle.isc                 ***        01/12/23
 *** AERMET - VERSION  18081 ***   ***
                       ***        15:42:55

                                  PAGE 145
 *** MODELOPTs:    RegDFAULT  CONC  ELEV  URBAN  ADJ_U*

                              *** THE   1ST HIGHEST  8-HR AVERAGE CONCENTRATION
VALUES FOR SOURCE GROUP:  ALL      ***
                                 INCLUDING SOURCE(S):     L0000518    , L0000519
 , L0000520    , L0000521    , L0000522    ,
               L0000523    , L0000524    , L0000525    , L0000526    , L0000527
 , L0000528    , L0000529    , L0000530    ,
               L0000531    , L0000532    , L0000533    , L0000534    , L0000535
 , L0000536    , L0000537    , L0000538    ,
               L0000539    , L0000540    , L0000541    , L0000542    , L0000543
 , L0000544    , L0000545    ,  . . .      ,

                                                  *** DISCRETE CARTESIAN RECEPTOR POINTS
***

                                        ** CONC OF PM_2.5   IN MICROGRAMS/M**3
                    **

      X-COORD (M)  Y-COORD (M)        CONC     (YYMMDDHH)              X-COORD (M)
Y-COORD (M)        CONC     (YYMMDDHH)
 - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - -
- - - - - - - - - - - - - - - - - - - - - - - - - - - - -
        571190.09   4175317.36        0.02276  (13010516)                571252.00
 4175317.36        0.02950  (16100316)
        571313.91   4175317.36        0.03930  (16100316)                571375.82
 4175317.36        0.05831  (14122016)
        571437.73   4175317.36        0.10217  (14122016)                571499.64
 4175317.36        0.11419  (14122016)
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571561.55 4175317.36 0.09997 (17020616) 571623.46
4175317.36 0.08023 (17012116)
571685.37 4175317.36 0.06096 (16121116) 571747.28
4175317.36 0.05444 (14010816)
571809.19 4175317.36 0.04703 (14010816) 571871.10
4175317.36 0.03990 (14010816)
571933.01 4175317.36 0.03236 (14010816) 571994.92
4175317.36 0.02710 (15021916)
572056.83 4175317.36 0.02397 (15052016) 572118.74
4175317.36 0.02157 (17042616)
572180.65 4175317.36 0.01954 (17042616) 571066.27
4175364.64 0.01333 (13010516)
571128.18 4175364.64 0.01775 (13010516) 571190.09
4175364.64 0.02195 (13010516)
571252.00 4175364.64 0.02712 (16100316) 571313.91
4175364.64 0.03397 (14122016)
571375.82 4175364.64 0.05449 (14122016) 571437.73
4175364.64 0.07805 (14122016)
571499.64 4175364.64 0.07255 (14122016) 571561.55
4175364.64 0.07437 (17012116)
571623.46 4175364.64 0.06339 (17012116) 571685.37
4175364.64 0.04491 (17020316)
571747.28 4175364.64 0.04000 (16021816) 571809.19
4175364.64 0.03732 (14010816)
571871.10 4175364.64 0.03388 (14010816) 571933.01
4175364.64 0.02940 (14010816)
571994.92 4175364.64 0.02421 (14010816) 572056.83
4175364.64 0.01969 (15021916)
572118.74 4175364.64 0.01832 (15052016) 572180.65
4175364.64 0.01704 (15052016)
571066.27 4175411.92 0.01408 (13010516) 571128.18
4175411.92 0.01708 (13010516)
571190.09 4175411.92 0.01997 (13010516) 571252.00
4175411.92 0.02381 (15122016)
571313.91 4175411.92 0.03319 (14122016) 571375.82
4175411.92 0.04812 (14122016)
571437.73 4175411.92 0.05849 (14122016) 571499.64
4175411.92 0.05127 (17020616)
571561.55 4175411.92 0.05741 (17012116) 571623.46
4175411.92 0.05127 (17012116)
571685.37 4175411.92 0.03673 (17012116) 571747.28
4175411.92 0.03445 (16021816)
571809.19 4175411.92 0.02955 (16021816) 571871.10
4175411.92 0.02825 (14010816)
571933.01 4175411.92 0.02627 (14010816) 571994.92
4175411.92 0.02300 (14010816)
572056.83 4175411.92 0.01908 (14010816) 572118.74
4175411.92 0.01553 (15090316)
572180.65 4175411.92 0.01408 (15052016) 571066.27
4175459.20 0.01365 (13010516)

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        571128.18   4175459.20        0.01580  (13010516)                571190.09
 4175459.20        0.01842  (15122016)
        571252.00   4175459.20        0.02140  (14122016)                571313.91
 4175459.20        0.03116  (14122016)
        571375.82   4175459.20        0.04075  (14122016)                571437.73
 4175459.20        0.04425  (14122016)
        571499.64   4175459.20        0.04038  (17020616)                571561.55
 4175459.20        0.04598  (17012116)
        571623.46   4175459.20        0.04183  (17012116)                571685.37
 4175459.20        0.03128  (17012116)
        571747.28   4175459.20        0.02982  (17020316)                571809.19
 4175459.20        0.02693  (17020316)
        571871.10   4175459.20        0.02277  (14010816)                571933.01
 4175459.20        0.02268  (14010816)
        571994.92   4175459.20        0.02125  (14010816)                572056.83
 4175459.20        0.01870  (14010816)
        572118.74   4175459.20        0.01561  (14010816)                572180.65
 4175459.20        0.01262  (15051616)
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 *** MODELOPTs:    RegDFAULT  CONC  ELEV  URBAN  ADJ_U*

                              *** THE   1ST HIGHEST 24-HR AVERAGE CONCENTRATION
VALUES FOR SOURCE GROUP:  ALL      ***
                                 INCLUDING SOURCE(S):     L0000518    , L0000519
 , L0000520    , L0000521    , L0000522    ,
               L0000523    , L0000524    , L0000525    , L0000526    , L0000527
 , L0000528    , L0000529    , L0000530    ,
               L0000531    , L0000532    , L0000533    , L0000534    , L0000535
 , L0000536    , L0000537    , L0000538    ,
               L0000539    , L0000540    , L0000541    , L0000542    , L0000543
 , L0000544    , L0000545    ,  . . .      ,

                                             *** DISCRETE CARTESIAN RECEPTOR POINTS
***

                                        ** CONC OF PM_2.5   IN MICROGRAMS/M**3
                    **

      X-COORD (M)  Y-COORD (M)        CONC     (YYMMDDHH)              X-COORD (M)
Y-COORD (M)        CONC     (YYMMDDHH)
 - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - -
- - - - - - - - - - - - - - - - - - - - - - - - -
        571066.27   4174560.88        0.00363c (15010124)                571128.18
 4174560.88        0.00453m (15123124)
        571190.09   4174560.88        0.00541m (15123124)                571252.00
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4174560.88 0.00569m (15123124)
571313.91 4174560.88 0.00524m (15123124) 571066.27
4174608.16 0.00391m (13010124)
571128.18 4174608.16 0.00455m (15123124) 571190.09
4174608.16 0.00584m (15123124)
571252.00 4174608.16 0.00659m (15123124) 571313.91
4174608.16 0.00648m (15123124)
571375.82 4174608.16 0.00550m (15123124) 571437.73
4174608.16 0.00459 (17111724)
571499.64 4174608.16 0.00490c (14123124) 571561.55
4174608.16 0.00575c (16011124)
571066.27 4174655.44 0.00440 (13011424) 571128.18
4174655.44 0.00483c (15010124)
571190.09 4174655.44 0.00611m (15123124) 571252.00
4174655.44 0.00745m (15123124)
571313.91 4174655.44 0.00786m (15123124) 571375.82
4174655.44 0.00717m (15123124)
571437.73 4174655.44 0.00567 (17111724) 571499.64
4174655.44 0.00586c (14123124)
571561.55 4174655.44 0.00676c (16011124) 571623.46
4174655.44 0.00729c (16011124)
571685.37 4174655.44 0.00665c (16011124) 571747.28
4174655.44 0.00738 (16120224)
571809.19 4174655.44 0.00700 (15121424) 571871.10
4174655.44 0.00707 (15121424)
571066.27 4174702.72 0.00475 (13011424) 571128.18
4174702.72 0.00550 (13011424)
571190.09 4174702.72 0.00626c (15010124) 571252.00
4174702.72 0.00817m (15123124)
571313.91 4174702.72 0.00934m (15123124) 571375.82
4174702.72 0.00919m (15123124)
571437.73 4174702.72 0.00768m (15123124) 571499.64
4174702.72 0.00720c (14123124)
571561.55 4174702.72 0.00812c (16011124) 571623.46
4174702.72 0.00863c (16011124)
571685.37 4174702.72 0.00842 (16120224) 571871.10
4174702.72 0.00837 (15111624)
571066.27 4174750.00 0.00482 (13011424) 571128.18
4174750.00 0.00605 (13011424)
571190.09 4174750.00 0.00702 (13011424) 571252.00
4174750.00 0.00865m (15123124)
571313.91 4174750.00 0.01081m (15123124) 571375.82
4174750.00 0.01154m (15123124)
571437.73 4174750.00 0.01059m (15123124) 571499.64
4174750.00 0.00918c (14123124)
571561.55 4174750.00 0.01003c (16011124) 571623.46
4174750.00 0.01035c (16011124)
571685.37 4174750.00 0.01105 (16120224) 571747.28
4174750.00 0.01122 (16120224)
571809.19 4174750.00 0.01079 (15121424) 571871.10

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 4174750.00        0.00950  (15111624)
        571933.01   4174750.00        0.00841  (13120324)                571994.92
 4174750.00        0.00739  (13120324)
        572056.83   4174750.00        0.00572  (13072224)                572118.74
 4174750.00        0.00506  (13072224)
        572180.65   4174750.00        0.00478b (15021724)                571066.27
 4174797.28        0.00450  (13011424)
        571128.18   4174797.28        0.00622  (13011424)                571190.09
 4174797.28        0.00789  (13011424)
        571252.00   4174797.28        0.00920c (15010124)                571313.91
 4174797.28        0.01218m (15123124)
        571375.82   4174797.28        0.01416m (15123124)                571437.73
 4174797.28        0.01428m (15123124)
        571499.64   4174797.28        0.01231c (14123124)                571561.55
 4174797.28        0.01271c (16011124)
        571623.46   4174797.28        0.01304c (16011124)                571685.37
 4174797.28        0.01470  (16120224)
        571747.28   4174797.28        0.01406  (15121424)                571809.19
 4174797.28        0.01270  (15121424)
        571871.10   4174797.28        0.01104  (13120324)                571933.01
 4174797.28        0.00976  (13120324)
        571994.92   4174797.28        0.00742  (13120324)                572056.83
 4174797.28        0.00670b (15021724)
        572118.74   4174797.28        0.00610b (15021724)                572180.65
 4174797.28        0.00522b (15021724)
        571066.27   4174844.56        0.00526c (16010224)                571128.18
 4174844.56        0.00581c (16010224)
 *** AERMOD - VERSION 22112  ***   *** C:\Lakes\AERMOD View\880 Doolittle\880
Doolittle.isc                 ***        01/12/23
 *** AERMET - VERSION  18081 ***   ***
                       ***        15:42:55

                                  PAGE 147
 *** MODELOPTs:    RegDFAULT  CONC  ELEV  URBAN  ADJ_U*

                              *** THE   1ST HIGHEST 24-HR AVERAGE CONCENTRATION
VALUES FOR SOURCE GROUP:  ALL      ***
                                 INCLUDING SOURCE(S):     L0000518    , L0000519
 , L0000520    , L0000521    , L0000522    ,
                 L0000523    , L0000524    , L0000525    , L0000526    , L0000527
 , L0000528    , L0000529    , L0000530    ,
                 L0000531    , L0000532    , L0000533    , L0000534    , L0000535
 , L0000536    , L0000537    , L0000538    ,
                 L0000539    , L0000540    , L0000541    , L0000542    , L0000543
 , L0000544    , L0000545    ,  . . .      ,

                                                *** DISCRETE CARTESIAN RECEPTOR POINTS
***

                                           ** CONC OF PM_2.5   IN MICROGRAMS/M**3
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**

X-COORD (M)	Y-COORD (M)	CONC	(YYMMDDHH)	X-COORD (M)	Y-COORD (M)	CONC	(YYMMDDHH)
571190.09	4174844.56	0.00835	(13011424)	571252.00	4174844.56	0.01073	(13011424)
571313.91	4174844.56	0.01332m	(15123124)	571375.82	4174844.56	0.01707m	(15123124)
571437.73	4174844.56	0.01876m	(15123124)	571499.64	4174844.56	0.01818m	(15123124)
571561.55	4174844.56	0.01738c	(14123124)	571623.46	4174844.56	0.01857	(16120224)
571685.37	4174844.56	0.01977	(16120224)	571747.28	4174844.56	0.01812	(15121424)
571809.19	4174844.56	0.01590	(13011024)	571871.10	4174844.56	0.01359	(13120324)
571933.01	4174844.56	0.01010	(13120324)	571994.92	4174844.56	0.00889b	(15021724)
572056.83	4174844.56	0.00764b	(15021724)	572118.74	4174844.56	0.00628b	(15021724)
572180.65	4174844.56	0.00507b	(15021724)	571066.27	4174891.84	0.00662c	(16010224)
571128.18	4174891.84	0.00762c	(16010224)	571190.09	4174891.84	0.00879c	(16010224)
571252.00	4174891.84	0.01185	(13011424)	571313.91	4174891.84	0.01605c	(15122624)
571375.82	4174891.84	0.02046m	(15123124)	571499.64	4174891.84	0.02692m	(15123124)
571561.55	4174891.84	0.02756c	(14123124)	571623.46	4174891.84	0.02865	(16120224)
571685.37	4174891.84	0.02695	(16120224)	571747.28	4174891.84	0.02414	(13011024)
571809.19	4174891.84	0.02034	(13120324)	571871.10	4174891.84	0.01478	(14122924)
571933.01	4174891.84	0.01240b	(15021724)	571994.92	4174891.84	0.00992b	(15021724)
572056.83	4174891.84	0.00770b	(15021724)	572118.74	4174891.84	0.00602c	(14050224)
572180.65	4174891.84	0.00496c	(14050224)	571066.27	4174939.12	0.00772c	(16010224)
571128.18	4174939.12	0.00931c	(16010224)	571190.09	4174939.12	0.01134c	(16010224)
571252.00	4174939.12	0.01379c	(16010224)	571313.91	4174939.12	0.01912c	(15122624)
571375.82	4174939.12	0.02697c	(15122624)	571437.73	4174939.12	0.03336c	(15122624)
571499.64	4174939.12	0.04195c	(14123124)	571623.46	4174939.12	0.05540c	(16011124)

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       571685.37   4174939.12        0.04544c (16011124)                571747.28
 4174939.12        0.03473  (13120324)
       571809.19   4174939.12        0.02509b (15021724)                571871.10
 4174939.12        0.01832b (15021724)
       571933.01   4174939.12        0.01340b (15021724)                571994.92
 4174939.12        0.00978b (15021724)
       572056.83   4174939.12        0.00738c (14050224)                572118.74
 4174939.12        0.00589  (15082024)
       572180.65   4174939.12        0.00493  (15082024)                571066.27
 4174986.40        0.00785c (16010224)
       571128.18   4174986.40        0.01003c (16010224)                571190.09
 4174986.40        0.01312c (16010224)
       571252.00   4174986.40        0.01766c (16010224)                571313.91
 4174986.40        0.02320c (16010224)
       571375.82   4174986.40        0.03610c (15122624)                571437.73
 4174986.40        0.05422c (15122624)
       571809.19   4174986.40        0.03039b (15021724)                571871.10
 4174986.40        0.01942b (15021724)
       571933.01   4174986.40        0.01326  (15032424)                571994.92
 4174986.40        0.01022  (15032424)
       572056.83   4174986.40        0.00810  (15032424)                572118.74
 4174986.40        0.00662c (15072524)
       572180.65   4174986.40        0.00564c (15072524)                571066.27
 4175033.68        0.00681c (16010224)
       571128.18   4175033.68        0.00900c (16010224)                571190.09
 4175033.68        0.01249c (16010224)
       571252.00   4175033.68        0.01876c (16010224)                571313.91
 4175033.68        0.03140c (16010224)
       571375.82   4175033.68        0.05264c (15122624)                571747.28
 4175033.68        0.06109c (15021924)
       571809.19   4175033.68        0.03232  (15032424)                571871.10
 4175033.68        0.02196  (15032424)
       571933.01   4175033.68        0.01590  (15032424)                571994.92
 4175033.68        0.01198  (15032424)
       572056.83   4175033.68        0.00957c (15072524)                572118.74
 4175033.68        0.00788c (15072524)
```



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 *** MODELOPTs:    RegDFAULT  CONC  ELEV  URBAN  ADJ_U*

                              *** THE   1ST HIGHEST 24-HR AVERAGE CONCENTRATION
VALUES FOR SOURCE GROUP:  ALL      ***
                                 INCLUDING SOURCE(S):     L0000518    , L0000519
 , L0000520    , L0000521    , L0000522    ,
                L0000523    , L0000524    , L0000525    , L0000526    , L0000527
 , L0000528    , L0000529    , L0000530    ,
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                 L0000531    , L0000532    , L0000533    , L0000534    , L0000535
 , L0000536    , L0000537    , L0000538    ,
                 L0000539    , L0000540    , L0000541    , L0000542    , L0000543
 , L0000544    , L0000545    ,  . . .      ,

                                                *** DISCRETE CARTESIAN RECEPTOR POINTS
***

                                            ** CONC OF PM_2.5   IN MICROGRAMS/M**3
                    **

      X-COORD (M)  Y-COORD (M)        CONC     (YYMMDDHH)              X-COORD (M)
Y-COORD (M)        CONC     (YYMMDDHH)
 - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - -
- - - - - - - - - - - - - - - - - - - - - - - - - - - -
        572180.65   4175033.68        0.00660c (15072524)                571066.27
 4175080.96        0.00546c (16123124)
        571128.18   4175080.96        0.00713c (16011024)                571190.09
 4175080.96        0.01008c (16011024)
        571252.00   4175080.96        0.01530c (16011024)                571313.91
 4175080.96        0.02793c (16011024)
        571747.28   4175080.96        0.06541c (15021924)                571809.19
 4175080.96        0.03417c (15021924)
        571871.10   4175080.96        0.02138  (13102424)                571933.01
 4175080.96        0.01571  (17052824)
        571994.92   4175080.96        0.01250  (17052824)                572056.83
 4175080.96        0.01015  (17052824)
        572118.74   4175080.96        0.00839  (17052824)                572180.65
 4175080.96        0.00705  (17052824)
        571066.27   4175128.24        0.00533c (16011024)                571128.18
 4175128.24        0.00689c (16011024)
        571252.00   4175128.24        0.01194  (14120224)                571313.91
 4175128.24        0.02087c (14113024)
        571375.82   4175128.24        0.03847  (14122024)                571437.73
 4175128.24        0.06037  (14122024)
        571747.28   4175128.24        0.06096c (15021924)                571809.19
 4175128.24        0.03641c (15021924)
        571871.10   4175128.24        0.02266c (15021924)                571933.01
 4175128.24        0.01538  (16041024)
        571994.92   4175128.24        0.01226  (15080224)                572056.83
 4175128.24        0.00983  (15080224)
        572118.74   4175128.24        0.00809  (15051724)                572180.65
 4175128.24        0.00673  (15051724)
        571066.27   4175175.52        0.00491  (14120224)                571128.18
 4175175.52        0.00604  (14120224)
        571190.09   4175175.52        0.00802c (14113024)                571252.00
 4175175.52        0.01187c (14113024)
        571313.91   4175175.52        0.01609c (14113024)                571375.82
 4175175.52        0.02582  (14122024)
        571747.28   4175175.52        0.05262c (15021924)                571809.19
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 4175175.52        0.03428c (15021924)
        571871.10   4175175.52        0.02348c (15021924)                571933.01
 4175175.52        0.01623c (15021924)
        571994.92   4175175.52        0.01212  (16041024)                572056.83
 4175175.52        0.00997  (16041024)
        572118.74   4175175.52        0.00819  (16041024)                572180.65
 4175175.52        0.00704  (15051724)
        571066.27   4175222.80        0.00444c (14113024)                571128.18
 4175222.80        0.00601c (14113024)
        571190.09   4175222.80        0.00819c (14113024)                571252.00
 4175222.80        0.01065c (14113024)
        571313.91   4175222.80        0.01451  (13010524)                571375.82
 4175222.80        0.02262  (16100324)
        571437.73   4175222.80        0.04530  (14122024)                571623.46
 4175222.80        0.06227c (14010824)
        571685.37   4175222.80        0.04980c (14010824)                571747.28
 4175222.80        0.03683c (14010824)
        571809.19   4175222.80        0.02782c (15021924)                571871.10
 4175222.80        0.02128c (15021924)
        571933.01   4175222.80        0.01603c (15021924)                571994.92
 4175222.80        0.01187c (15021924)
        572056.83   4175222.80        0.00965  (17042624)                572118.74
 4175222.80        0.00817  (16041024)
        572180.65   4175222.80        0.00705  (16041024)                571066.27
 4175270.08        0.00466c (14113024)
        571128.18   4175270.08        0.00602c (14113024)                571190.09
 4175270.08        0.00752c (14113024)
        571252.00   4175270.08        0.01018  (13010524)                571313.91
 4175270.08        0.01412  (16100324)
        571375.82   4175270.08        0.02126  (16100324)                571437.73
 4175270.08        0.04081  (14122024)
        571499.64   4175270.08        0.07005  (14122024)                571561.55
 4175270.08        0.04825  (14122024)
        571623.46   4175270.08        0.03683  (16121124)                571685.37
 4175270.08        0.03238c (14010824)
        571747.28   4175270.08        0.02712c (14010824)                571809.19
 4175270.08        0.02145c (14010824)
        571871.10   4175270.08        0.01716c (15021924)                571933.01
 4175270.08        0.01415c (15021924)
        571994.92   4175270.08        0.01131c (15021924)                572056.83
 4175270.08        0.00932  (17042624)
        572118.74   4175270.08        0.00804  (17042624)                572180.65
 4175270.08        0.00684  (17042624)
        571066.27   4175317.36        0.00457c (14113024)                571128.18
 4175317.36        0.00557  (13010524)
↑ *** AERMOD - VERSION 22112  ***   *** C:\Lakes\AERMOD View\880 Doolittle\880
Doolittle.isc                  ***        01/12/23
 *** AERMET - VERSION  18081 ***   ***
                       ***       15:42:55
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 *** MODELOPTs:    RegDFAULT  CONC  ELEV  URBAN  ADJ_U*

                              *** THE   1ST HIGHEST 24-HR AVERAGE CONCENTRATION
VALUES FOR SOURCE GROUP:  ALL      ***
                                 INCLUDING SOURCE(S):     L0000518    , L0000519
 , L0000520    , L0000521    , L0000522    ,
                 L0000523    , L0000524    , L0000525    , L0000526    , L0000527
 , L0000528    , L0000529    , L0000530    ,
                 L0000531    , L0000532    , L0000533    , L0000534    , L0000535
 , L0000536    , L0000537    , L0000538    ,
                 L0000539    , L0000540    , L0000541    , L0000542    , L0000543
 , L0000544    , L0000545    ,  . . .      ,

                                                *** DISCRETE CARTESIAN RECEPTOR POINTS
***

                                          ** CONC OF PM_2.5   IN MICROGRAMS/M**3
                    **

      X-COORD (M)  Y-COORD (M)        CONC     (YYMMDDHH)              X-COORD (M)
Y-COORD (M)        CONC     (YYMMDDHH)
 - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - -
- - - - - - - - - - - - - - - - - - - - - - - - - - - - -
        571190.09   4175317.36        0.00759  (13010524)                571252.00
 4175317.36        0.00983  (16100324)
        571313.91   4175317.36        0.01310  (16100324)                571375.82
 4175317.36        0.01944  (14122024)
        571437.73   4175317.36        0.03406  (14122024)                571499.64
 4175317.36        0.03806  (14122024)
        571561.55   4175317.36        0.03332  (17020624)                571623.46
 4175317.36        0.02674  (17012124)
        571685.37   4175317.36        0.02112c (14010824)                571747.28
 4175317.36        0.01980c (14010824)
        571809.19   4175317.36        0.01710c (14010824)                571871.10
 4175317.36        0.01451c (14010824)
        571933.01   4175317.36        0.01177c (14010824)                571994.92
 4175317.36        0.00986c (15021924)
        572056.83   4175317.36        0.00823c (15021924)                572118.74
 4175317.36        0.00719  (17042624)
        572180.65   4175317.36        0.00651  (17042624)                571066.27
 4175364.64        0.00444  (13010524)
        571128.18   4175364.64        0.00592  (13010524)                571190.09
 4175364.64        0.00732  (13010524)
        571252.00   4175364.64        0.00904  (16100324)                571313.91
 4175364.64        0.01132  (14122024)
        571375.82   4175364.64        0.01816  (14122024)                571437.73
 4175364.64        0.02602  (14122024)
        571499.64   4175364.64        0.02418  (14122024)                571561.55
 4175364.64        0.02479  (17012124)
```

571623.46 4175364.64 0.02113 (17012124) 571685.37
4175364.64 0.01497 (17020324)
571747.28 4175364.64 0.01454c (14010824) 571809.19
4175364.64 0.01357c (14010824)
571871.10 4175364.64 0.01232c (14010824) 571933.01
4175364.64 0.01069c (14010824)
571994.92 4175364.64 0.00880c (14010824) 572056.83
4175364.64 0.00716c (15021924)
572118.74 4175364.64 0.00617c (15021924) 572180.65
4175364.64 0.00568 (15052024)
571066.27 4175411.92 0.00469 (13010524) 571128.18
4175411.92 0.00569 (13010524)
571190.09 4175411.92 0.00666 (13010524) 571252.00
4175411.92 0.00794 (15122024)
571313.91 4175411.92 0.01106 (14122024) 571375.82
4175411.92 0.01604 (14122024)
571437.73 4175411.92 0.01950 (14122024) 571499.64
4175411.92 0.01709 (17020624)
571561.55 4175411.92 0.01914 (17012124) 571623.46
4175411.92 0.01709 (17012124)
571685.37 4175411.92 0.01224 (17012124) 571747.28
4175411.92 0.01148 (16021824)
571809.19 4175411.92 0.01058c (14010824) 571871.10
4175411.92 0.01027c (14010824)
571933.01 4175411.92 0.00955c (14010824) 571994.92
4175411.92 0.00836c (14010824)
572056.83 4175411.92 0.00694c (14010824) 572118.74
4175411.92 0.00552c (14010824)
572180.65 4175411.92 0.00475c (15021924) 571066.27
4175459.20 0.00455 (13010524)
571128.18 4175459.20 0.00527 (13010524) 571190.09
4175459.20 0.00614 (15122024)
571252.00 4175459.20 0.00713 (14122024) 571313.91
4175459.20 0.01039 (14122024)
571375.82 4175459.20 0.01358 (14122024) 571437.73
4175459.20 0.01475 (14122024)
571499.64 4175459.20 0.01346 (17020624) 571561.55
4175459.20 0.01533 (17012124)
571623.46 4175459.20 0.01394 (17012124) 571685.37
4175459.20 0.01043 (17012124)
571747.28 4175459.20 0.00994 (17020324) 571809.19
4175459.20 0.00898 (17020324)
571871.10 4175459.20 0.00828c (14010824) 571933.01
4175459.20 0.00825c (14010824)
571994.92 4175459.20 0.00773c (14010824) 572056.83
4175459.20 0.00680c (14010824)
572118.74 4175459.20 0.00568c (14010824) 572180.65
4175459.20 0.00458c (14010724)

*** THE SUMMARY OF MAXIMUM PERIOD (43824 HRS) RESULTS ***

** CONC OF PM_2.5 IN MICROGRAMS/M**3 **

GROUP ID	NETWORK	AVERAGE CONC	RECEPTOR (XR, YR, ZELEV, ZHILL, ZFLAG)	OF TYPE	GRID-ID
ALL	1ST HIGHEST VALUE IS	0.02799 AT	(571747.28, 4175033.68, 4.52, 4.52, 0.00)	DC	
	2ND HIGHEST VALUE IS	0.02576 AT	(571747.28, 4175080.96, 4.45, 4.45, 0.00)	DC	
	3RD HIGHEST VALUE IS	0.02104 AT	(571747.28, 4175128.24, 4.62, 4.62, 0.00)	DC	
	4TH HIGHEST VALUE IS	0.01954 AT	(571623.46, 4175222.80, 4.79, 4.79, 0.00)	DC	
	5TH HIGHEST VALUE IS	0.01434 AT	(571747.28, 4175175.52, 4.83, 4.83, 0.00)	DC	
	6TH HIGHEST VALUE IS	0.01384 AT	(571809.19, 4175033.68, 4.72, 4.72, 0.00)	DC	
	7TH HIGHEST VALUE IS	0.01340 AT	(571809.19, 4175080.96, 4.47, 4.47, 0.00)	DC	
	8TH HIGHEST VALUE IS	0.01270 AT	(571685.37, 4175222.80, 4.36, 4.36, 0.00)	DC	
	9TH HIGHEST VALUE IS	0.01269 AT	(571623.46, 4174939.12, 3.97, 3.97, 0.00)	DC	
	10TH HIGHEST VALUE IS	0.01170 AT	(571685.37, 4174939.12, 4.03, 4.03, 0.00)	DC	

*** RECEPTOR TYPES: GC = GRIDCART
GP = GRIDPOLR
DC = DISCCART
DP = DISCPOLR

*** MODELOPTs: RegDFAULT CONC ELEV URBAN ADJ_U*

*** THE SUMMARY OF HIGHEST 1-HR RESULTS ***

** CONC OF PM_2.5 IN MICROGRAMS/M**3 **

GROUP ID	AVERAGE CONC	NETWORK TYPE	GRID-ID	DATE (YYMMDDHH)	RECEPTOR (XR, YR, ZELEV, ZHILL, ZFLAG)
ALL HIGH 1ST HIGH VALUE IS	0.54681	ON	17111316:	AT (	571747.28, 4175033.68, 4.52, 4.52, 0.00) DC

*** RECEPTOR TYPES: GC = GRIDCART
GP = GRIDPOLR
DC = DISCCART
DP = DISCPOLR

*** AERMOD - VERSION 22112 *** *** C:\Lakes\AERMOD View\880 Doolittle\880 Doolittle.isc *** 01/12/23
*** AERMET - VERSION 18081 *** *** *** 15:42:55

*** MODELOPTs: RegDFAULT CONC ELEV URBAN ADJ_U*

*** THE SUMMARY OF HIGHEST 8-HR RESULTS ***

** CONC OF PM_2.5 IN MICROGRAMS/M**3 **

GROUP ID	AVERAGE CONC	NETWORK TYPE	GRID-ID	DATE (YYMMDDHH)	RECEPTOR (XR, YR, ZELEV, ZHILL, ZFLAG)
ALL HIGH 1ST HIGH VALUE IS	0.21014	ON	14122016:	AT (	571499.64, 4175270.08, 4.34, 4.34, 0.00) DC

```
 *** RECEPTOR TYPES:  GC = GRIDCART
                      GP = GRIDPOLR
                      DC = DISCCART
                      DP = DISCPOLR
↑ *** AERMOD - VERSION 22112  ***   *** C:\Lakes\AERMOD View\880 Doolittle\880
Doolittle.isc                 ***        01/12/23
 *** AERMET - VERSION  18081 ***   ***
                       ***        15:42:55

                                  PAGE 153
 *** MODELOPTs:    RegDFAULT  CONC  ELEV  URBAN  ADJ_U*

                                                *** THE SUMMARY OF HIGHEST 24-HR
RESULTS ***


                                   ** CONC OF PM_2.5   IN MICROGRAMS/M**3
                **

                                                          DATE
                                            NETWORK
GROUP ID                          AVERAGE CONC     (YYMMDDHH)             RECEPTOR
(XR, YR, ZELEV, ZHILL, ZFLAG)    OF TYPE  GRID-ID
- - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - -
- - - - - - - - - - - - - - - - - - - - - - - -

ALL      HIGH   1ST HIGH VALUE IS       0.07005  ON 14122024: AT (  571499.64,
4175270.08,     4.34,     4.34,    0.00)  DC


 *** RECEPTOR TYPES:  GC = GRIDCART
                      GP = GRIDPOLR
                      DC = DISCCART
                      DP = DISCPOLR
↑ *** AERMOD - VERSION 22112  ***   *** C:\Lakes\AERMOD View\880 Doolittle\880
Doolittle.isc                 ***        01/12/23
 *** AERMET - VERSION  18081 ***   ***
                       ***        15:42:55

                                  PAGE 154
 *** MODELOPTs:    RegDFAULT  CONC  ELEV  URBAN  ADJ_U*

 *** Message Summary : AERMOD Model Execution ***

  --------- Summary of Total Messages --------

 A Total of            0 Fatal Error Message(s)
 A Total of            2 Warning Message(s)
```

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A Total of         1143 Informational Message(s)

A Total of        43824 Hours Were Processed

A Total of          760 Calm Hours Identified

A Total of          383 Missing Hours Identified (  0.87 Percent)


   ******** FATAL ERROR MESSAGES ********
              ***  NONE  ***


   ********   WARNING MESSAGES   ********
ME W186    3287       MEOPEN: THRESH_1MIN 1-min ASOS wind speed threshold used
     0.50
ME W187    3287       MEOPEN: ADJ_U* Option for Stable Low Winds used in AERMET


   ************************************
   *** AERMOD Finishes Successfully ***
   ************************************
```

*HARP - HRACalc v22094 1/13/2023 10:59:43 AM - Chronic Risk - Input File: C:\Users\noemi.wyss\Desktop\HARP\880 Doolittle\Construction Worker\880Doolittle_Const_W_HRAInput.hra

INDEX	GRP1	GRP2	POLID	POLABBRE\	CONC	SCENARIO	CV	CNS	IMMUN	KIDNEY	GILV	REPRO/DE\	RESP	SKIN	EYE	BONE/TEETH
1			107028	Acrolein	0	NonCancer	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
2			9901	DieselExhP	0.028	NonCancer	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	5.60E-03	0.00E+00	0.00E+00	0.00E+00

ENDO	BLOOD	ODOR	GENERAL	DETAILS	INH_CONC	SOIL_DOSE	DERMAL_D	MMILK_DC	WATER_DC	FISH_DOSE	CROP_DOS	BEEF_DOSE	DAIRY_DOSE
0.00E+00	0.00E+00	0.00E+00	0.00E+00	*	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
0.00E+00	0.00E+00	0.00E+00	0.00E+00	*	2.80E-02	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00

PIG_DOSE	CHICKEN_D	EGG_DOSE	1ST_DRIVE	2ND_DRIVE	3RD_DRIVE	PASTURE_(	FISH_CONC	WATER_CONC
0.00E+00	0.00E+00	0.00E+00	INHALATIO	NA	NA	0.00E+00	0.00E+00	0.00E+00
0.00E+00	0.00E+00	0.00E+00	INHALATIO	NA	NA	0.00E+00	0.00E+00	0.00E+00

*HARP - HRACalc v22094 1/13/2023 10:59:43 AM - Acute Risk - Input File: C:\Users\noemi.wyss\Desktop\HARP\880 Doolittle\Construction Worker\880Doolittle_Const_W_HRAInput.hra

INDEX	GRP1	GRP2	POLID	POLABBRE\	CONC	SCENARIO	CV	CNS	IMMUN	KIDNEY	GILV	REPRO/DE\	RESP	SKIN	EYE	BONE/TEETH
1			107028	Acrolein	0.547	NonCancer	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	2.19E-01	0.00E+00	2.19E-01	0.00E+00
2			9901	DieselExhP	0.547	NonCancer	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00

ENDO	BLOOD	ODOR	GENERAL
0.00E+00	0.00E+00	0.00E+00	0.00E+00
0.00E+00	0.00E+00	0.00E+00	0.00E+00

*HARP - HRACalc v22094 1/13/2023 10:59:43 AM - Cancer Risk - Input File: C:\Users\noemi.wyss\Desktop\HARP\880 Doolittle\Construction Worker\880Doolittle_Const_W_HRAInput.hra

INDEX	GRP1	GRP2	POLID	POLABBRE	CONC	RISK_SUM	SCENARIO	DETAILS	INH_RISK	SOIL_RISK	DERMAL_R	MMILK_RIS	WATER_RI	FISH_RISK	CROP_RISK	BEEF_RISK
1			107028	Acrolein	0	0.00E+00	3YrCancerl	*	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
2			9901	DieselExhP	0.028	9.11E-07	3YrCancerl	*	9.11E-07	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00

DAIRY_RISI	PIG_RISK	CHICKEN_F	EGG_RISK	1ST_DRIVE	2ND_DRIVI	PASTURE_(	FISH_CONC	WATER_CONC
0.00E+00	0.00E+00	0.00E+00	0.00E+00	NA	NA	0.00E+00	0.00E+00	0.00E+00
0.00E+00	0.00E+00	0.00E+00	0.00E+00	NA	NA	0.00E+00	0.00E+00	0.00E+00

*HARP - HRACalc v22094 1/13/2023 10:58:46 AM - Chronic Risk - Input File: C:\Users\noemi.wyss\Desktop\HARP\880 Doolittle\Construction Res\880Doolittle_Const_Res_HRAInput.hra

INDEX	GRP1	GRP2	POLID	POLABBRE	CONC	SCENARIO	CV	CNS	IMMUN	KIDNEY	GILV	REPRO/DE	RESP	SKIN	EYE	BONE/TEET	ENDO
2			9901	DieselExhP	0.0044	NonCancer	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	8.80E-04	0.00E+00	0.00E+00	0.00E+00	0.00E+00
1			107028	Acrolein	0	NonCancer	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00

BLOOD	ODOR	GENERAL	DETAILS	INH_CONC	SOIL_DOSE	DERMAL_D	MMILK_DC	WATER_DC	FISH_DOSE	CROP_DOS	BEEF_DOSE	DAIRY_DO	PIG_DOSE	CHICKEN_DOSE
0.00E+00	0.00E+00	0.00E+00	*	4.40E-03	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
0.00E+00	0.00E+00	0.00E+00	*	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00

EGG_DOSE	1ST_DRIVE	2ND_DRIVI	3RD_DRIVE	PASTURE_(	FISH_CONC	WATER_CONC
0.00E+00	INHALATIO	NA	NA	0.00E+00	0.00E+00	0.00E+00
0.00E+00	INHALATIO	NA	NA	0.00E+00	0.00E+00	0.00E+00

*HARP - HRACalc v22094 1/13/2023 10:58:46 AM - Acute Risk - Input File: C:\Users\noemi.wyss\Desktop\HARP\880 Doolittle\Construction Res\880Doolittle_Const_Res_HRAInput.hra

INDEX	GRP1	GRP2	POLID	POLABBRE'	CONC	SCENARIO	CV	CNS	IMMUN	KIDNEY	GILV	REPRO/DE'	RESP	SKIN	EYE
2			9901	DieselExhP	0.178	NonCancer	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
1			107028	Acrolein	0.178	NonCancer	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	7.12E-02	0.00E+00	7.12E-02

BONE/TEE'	ENDO	BLOOD	ODOR	GENERAL
0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00

*HARP - HRACalc v22094 1/13/2023 10:58:46 AM - Cancer Risk - Input File: C:\Users\noemi.wyss\Desktop\HARP\880 Doolittle\Construction Res\880Doolittle_Const_Res_HRAInput.hra

INDEX	GRP1	GRP2	POLID	POLABBRE'	CONC	RISK_SUM	SCENARIO	DETAILS	INH_RISK	SOIL_RISK	DERMAL_R	MMILK_RIS	WATER_RI!	FISH_RISK	CROP_RISK	BEEF_RISK
2			9901	DieselExhP	0.0044	5.28E-07	3YrCancerI	*	5.28E-07	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
1			107028	Acrolein	0	0.00E+00	3YrCancerI	*	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00

DAIRY_RISI	PIG_RISK	CHICKEN_F	EGG_RISK	1ST_DRIVE	2ND_DRIVI	PASTURE_(	FISH_CONC	WATER_CONC
0.00E+00	0.00E+00	0.00E+00	0.00E+00	NA	NA	0.00E+00	0.00E+00	0.00E+00
0.00E+00	0.00E+00	0.00E+00	0.00E+00	NA	NA	0.00E+00	0.00E+00	0.00E+00

*HARP - HRACalc v22094 1/13/2023 10:55:13 AM - Chronic Risk - Input File: C:\Users\noemi.wyss\Desktop\HARP\880 Doolittle\Construction Rec\880Doolittle_Const_Rec_HRAInput.hra

INDEX	GRP1	GRP2	POLID	POLABBRE	CONC	SCENARIO	CV	CNS	IMMUN	KIDNEY	GILV	REPRO/DE	RESP	SKIN	EYE	BONE/TEET	ENDO
1			107028	Acrolein	0	NonCancer	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
2			9901	DieselExhP	0.0006	NonCancer	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	1.20E-04	0.00E+00	0.00E+00	0.00E+00	0.00E+00

BLOOD	ODOR	GENERAL	DETAILS	INH_CONC	SOIL_DOSE	DERMAL_D	MMILK_DC	WATER_DC	FISH_DOSE	CROP_DOS	BEEF_DOSE
0.00E+00	0.00E+00	0.00E+00	*	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
0.00E+00	0.00E+00	0.00E+00	*	6.00E-04	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00

DAIRY_DOS	PIG_DOSE	CHICKEN_D	EGG_DOSE	1ST_DRIVE	2ND_DRIVI	3RD_DRIVE	PASTURE_(	FISH_CONC	WATER_CONC
0.00E+00	0.00E+00	0.00E+00	0.00E+00	INHALATIO	NA	NA	0.00E+00	0.00E+00	0.00E+00
0.00E+00	0.00E+00	0.00E+00	0.00E+00	INHALATIO	NA	NA	0.00E+00	0.00E+00	0.00E+00

*HARP - HRACalc v22094 1/13/2023 10:55:13 AM - Acute Risk - Input File: C:\Users\noemi.wyss\Desktop\HARP\880 Doolittle\Construction Rec\880Doolittle_Const_Rec_HRAInput.hra

INDEX	GRP1	GRP2	POLID	POLABBRE'	CONC	SCENARIO	CV	CNS	IMMUN	KIDNEY	GILV	REPRO/DE'	RESP	SKIN
1			107028	Acrolein	0.0936	NonCancer	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	3.74E-02	0.00E+00
2			9901	DieselExhP	0.0936	NonCancer	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00

EYE	BONE/TEET	ENDO	BLOOD	ODOR	GENERAL
3.74E-02	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00

*HARP - HRACalc v22094 1/13/2023 10:55:13 AM - Cancer Risk - Input File: C:\Users\noemi.wyss\Desktop\HARP\880 Doolittle\Construction Rec\880Doolittle_Const_Rec_HRAInput.hra

INDEX	GRP1	GRP2	POLID	POLABBRE	CONC	RISK_SUM	SCENARIO	DETAILS	INH_RISK	SOIL_RISK	DERMAL_R	MMILK_RIS	WATER_RI	FISH_RISK	CROP_RISK	BEEF_RISK
1			107028	Acrolein	0	0.00E+00	3YrCancerI	*	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
2			9901	DieselExhP	0.0006	7.20E-08	3YrCancerI	*	7.20E-08	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00

DAIRY_RISI	PIG_RISK	CHICKEN_F	EGG_RISK	1ST_DRIVE	2ND_DRIVI	PASTURE_	FISH_CON(	WATER_CONC
0.00E+00	0.00E+00	0.00E+00	0.00E+00	NA	NA	0.00E+00	0.00E+00	0.00E+00
0.00E+00	0.00E+00	0.00E+00	0.00E+00	NA	NA	0.00E+00	0.00E+00	0.00E+00

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**
****************************************
**
** AERMOD Input Produced by:
** AERMOD View Ver. 11.0.1
** Lakes Environmental Software Inc.
** Date: 1/12/2023
** File: C:\Lakes\AERMOD View\880 Doolittle_Ops\880 Doolittle_Ops.ADI
**
****************************************
**
**
****************************************
** AERMOD Control Pathway
****************************************
**
**
CO STARTING
   TITLEONE C:\Lakes\AERMOD View\880 Doolittle_Ops\880 Doolittle_Ops.isc
   MODELOPT DFAULT CONC
   AVERTIME 1 8 24 PERIOD
   URBANOPT 1649000 Alameda_County
   POLLUTID PM_2.5
   RUNORNOT RUN
   ERRORFIL "880 Doolittle_Ops.err"
CO FINISHED
**
****************************************
** AERMOD Source Pathway
****************************************
**
**
SO STARTING
** Source Location **
** Source ID - Type - X Coord. - Y Coord. **
** ------------------------------------------------------------------
** Line Source Represented by Adjacent Volume Sources
** LINE VOLUME Source ID = SLINE2
** DESCRSRC Doolittle Driveway Hauling
** PREFIX
** Length of Side = 8.50
** Configuration = Adjacent
** Emission Rate = 5.33E-07
** Vertical Dimension = 6.22
** SZINIT = 2.89
** Nodes = 2
** 571457.211, 4175012.475, 3.53, 3.11, 3.95
** 571370.494, 4174928.103, 3.55, 3.11, 3.95
** ------------------------------------------------------------------
   LOCATION L0000248     VOLUME   571454.165 4175009.511 3.54
```

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   LOCATION L0000249     VOLUME   571448.073 4175003.583 3.55
   LOCATION L0000250     VOLUME   571441.981 4174997.656 3.54
   LOCATION L0000251     VOLUME   571435.888 4174991.728 3.53
   LOCATION L0000252     VOLUME   571429.796 4174985.801 3.53
   LOCATION L0000253     VOLUME   571423.704 4174979.874 3.53
   LOCATION L0000254     VOLUME   571417.612 4174973.946 3.55
   LOCATION L0000255     VOLUME   571411.519 4174968.019 3.56
   LOCATION L0000256     VOLUME   571405.427 4174962.091 3.56
   LOCATION L0000257     VOLUME   571399.335 4174956.164 3.54
   LOCATION L0000258     VOLUME   571393.243 4174950.236 3.57
   LOCATION L0000259     VOLUME   571387.150 4174944.309 3.57
   LOCATION L0000260     VOLUME   571381.058 4174938.381 3.56
   LOCATION L0000261     VOLUME   571374.966 4174932.454 3.53
** End of LINE VOLUME Source ID = SLINE2
** ----------------------------------------------------------------------
** Line Source Represented by Adjacent Volume Sources
** LINE VOLUME Source ID = SLINE3
** DESCRSRC Hester Street Trucks
** PREFIX
** Length of Side = 8.50
** Configuration = Adjacent
** Emission Rate = 6.86E-08
** Vertical Dimension = 6.22
** SZINIT = 2.89
** Nodes = 2
** 571463.376, 4175169.868, 4.11, 3.11, 3.95
** 571067.156, 4175396.512, 3.59, 3.11, 3.95
** ----------------------------------------------------------------------
   LOCATION L0000667     VOLUME   571459.686 4175171.978 4.07
   LOCATION L0000668     VOLUME   571452.308 4175176.199 4.00
   LOCATION L0000669     VOLUME   571444.930 4175180.419 3.95
   LOCATION L0000670     VOLUME   571437.552 4175184.639 3.91
   LOCATION L0000671     VOLUME   571430.174 4175188.860 3.88
   LOCATION L0000672     VOLUME   571422.795 4175193.080 3.85
   LOCATION L0000673     VOLUME   571415.417 4175197.301 3.83
   LOCATION L0000674     VOLUME   571408.039 4175201.521 3.82
   LOCATION L0000675     VOLUME   571400.661 4175205.742 3.80
   LOCATION L0000676     VOLUME   571393.283 4175209.962 3.75
   LOCATION L0000677     VOLUME   571385.905 4175214.183 3.68
   LOCATION L0000678     VOLUME   571378.526 4175218.403 3.61
   LOCATION L0000679     VOLUME   571371.148 4175222.623 3.56
   LOCATION L0000680     VOLUME   571363.770 4175226.844 3.55
   LOCATION L0000681     VOLUME   571356.392 4175231.064 3.54
   LOCATION L0000682     VOLUME   571349.014 4175235.285 3.52
   LOCATION L0000683     VOLUME   571341.635 4175239.505 3.53
   LOCATION L0000684     VOLUME   571334.257 4175243.726 3.56
   LOCATION L0000685     VOLUME   571326.879 4175247.946 3.57
   LOCATION L0000686     VOLUME   571319.501 4175252.167 3.60
   LOCATION L0000687     VOLUME   571312.123 4175256.387 3.65
   LOCATION L0000688     VOLUME   571304.744 4175260.608 3.69
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   LOCATION L0000689     VOLUME   571297.366 4175264.828 3.73
   LOCATION L0000690     VOLUME   571289.988 4175269.048 3.75
   LOCATION L0000691     VOLUME   571282.610 4175273.269 3.77
   LOCATION L0000692     VOLUME   571275.232 4175277.489 3.77
   LOCATION L0000693     VOLUME   571267.853 4175281.710 3.77
   LOCATION L0000694     VOLUME   571260.475 4175285.930 3.79
   LOCATION L0000695     VOLUME   571253.097 4175290.151 3.81
   LOCATION L0000696     VOLUME   571245.719 4175294.371 3.83
   LOCATION L0000697     VOLUME   571238.341 4175298.592 3.83
   LOCATION L0000698     VOLUME   571230.962 4175302.812 3.81
   LOCATION L0000699     VOLUME   571223.584 4175307.032 3.77
   LOCATION L0000700     VOLUME   571216.206 4175311.253 3.73
   LOCATION L0000701     VOLUME   571208.828 4175315.473 3.72
   LOCATION L0000702     VOLUME   571201.450 4175319.694 3.72
   LOCATION L0000703     VOLUME   571194.071 4175323.914 3.73
   LOCATION L0000704     VOLUME   571186.693 4175328.135 3.73
   LOCATION L0000705     VOLUME   571179.315 4175332.355 3.73
   LOCATION L0000706     VOLUME   571171.937 4175336.576 3.73
   LOCATION L0000707     VOLUME   571164.559 4175340.796 3.73
   LOCATION L0000708     VOLUME   571157.180 4175345.017 3.74
   LOCATION L0000709     VOLUME   571149.802 4175349.237 3.75
   LOCATION L0000710     VOLUME   571142.424 4175353.457 3.80
   LOCATION L0000711     VOLUME   571135.046 4175357.678 3.83
   LOCATION L0000712     VOLUME   571127.668 4175361.898 3.85
   LOCATION L0000713     VOLUME   571120.289 4175366.119 3.82
   LOCATION L0000714     VOLUME   571112.911 4175370.339 3.79
   LOCATION L0000715     VOLUME   571105.533 4175374.560 3.76
   LOCATION L0000716     VOLUME   571098.155 4175378.780 3.71
   LOCATION L0000717     VOLUME   571090.777 4175383.001 3.68
   LOCATION L0000718     VOLUME   571083.398 4175387.221 3.65
   LOCATION L0000719     VOLUME   571076.020 4175391.441 3.60
   LOCATION L0000720     VOLUME   571068.642 4175395.662 3.57
** End of LINE VOLUME Source ID = SLINE3
** ----------------------------------------------------------------------
** Line Source Represented by Adjacent Volume Sources
** LINE VOLUME Source ID = SLINE4
** DESCRSRC Adams Ave
** PREFIX
** Length of Side = 8.50
** Configuration = Adjacent
** Emission Rate = 1.71E-08
** Vertical Dimension = 6.22
** SZINIT = 2.89
** Nodes = 2
** 571063.895, 4175388.359, 3.58, 3.11, 3.95
** 571000.304, 4175293.788, 2.90, 3.11, 3.95
** ----------------------------------------------------------------------
   LOCATION L0000721     VOLUME   571061.523 4175384.833 3.55
   LOCATION L0000722     VOLUME   571056.780 4175377.779 3.54
   LOCATION L0000723     VOLUME   571052.037 4175370.725 3.54
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   LOCATION L0000724     VOLUME   571047.294 4175363.672 3.55
   LOCATION L0000725     VOLUME   571042.551 4175356.618 3.54
   LOCATION L0000726     VOLUME   571037.808 4175349.564 3.53
   LOCATION L0000727     VOLUME   571033.065 4175342.511 3.54
   LOCATION L0000728     VOLUME   571028.322 4175335.457 3.54
   LOCATION L0000729     VOLUME   571023.579 4175328.403 3.58
   LOCATION L0000730     VOLUME   571018.836 4175321.350 3.61
   LOCATION L0000731     VOLUME   571014.093 4175314.296 3.60
   LOCATION L0000732     VOLUME   571009.350 4175307.242 3.45
   LOCATION L0000733     VOLUME   571004.607 4175300.189 3.24
** End of LINE VOLUME Source ID = SLINE4
** ----------------------------------------------------------------------
** Line Source Represented by Adjacent Volume Sources
** LINE VOLUME Source ID = SLINE5
** DESCRSRC Doolittle Drive Trucks
** PREFIX
** Length of Side = 8.50
** Configuration = Adjacent
** Emission Rate = 1.4E-07
** Vertical Dimension = 6.22
** SZINIT = 2.89
** Nodes = 2
** 570998.673, 4175292.158, 2.86, 3.11, 3.95
** 571672.084, 4174648.097, 4.09, 3.11, 3.95
** ----------------------------------------------------------------------
   LOCATION L0000734     VOLUME   571001.745 4175289.220 2.87
   LOCATION L0000735     VOLUME   571007.887 4175283.345 2.95
   LOCATION L0000736     VOLUME   571014.030 4175277.470 3.03
   LOCATION L0000737     VOLUME   571020.173 4175271.595 3.14
   LOCATION L0000738     VOLUME   571026.316 4175265.720 3.27
   LOCATION L0000739     VOLUME   571032.459 4175259.845 3.34
   LOCATION L0000740     VOLUME   571038.601 4175253.970 3.37
   LOCATION L0000741     VOLUME   571044.744 4175248.095 3.38
   LOCATION L0000742     VOLUME   571050.887 4175242.220 3.40
   LOCATION L0000743     VOLUME   571057.030 4175236.345 3.38
   LOCATION L0000744     VOLUME   571063.172 4175230.470 3.36
   LOCATION L0000745     VOLUME   571069.315 4175224.595 3.37
   LOCATION L0000746     VOLUME   571075.458 4175218.720 3.42
   LOCATION L0000747     VOLUME   571081.601 4175212.845 3.42
   LOCATION L0000748     VOLUME   571087.744 4175206.970 3.40
   LOCATION L0000749     VOLUME   571093.886 4175201.095 3.36
   LOCATION L0000750     VOLUME   571100.029 4175195.220 3.32
   LOCATION L0000751     VOLUME   571106.172 4175189.344 3.33
   LOCATION L0000752     VOLUME   571112.315 4175183.469 3.38
   LOCATION L0000753     VOLUME   571118.458 4175177.594 3.42
   LOCATION L0000754     VOLUME   571124.600 4175171.719 3.45
   LOCATION L0000755     VOLUME   571130.743 4175165.844 3.47
   LOCATION L0000756     VOLUME   571136.886 4175159.969 3.56
   LOCATION L0000757     VOLUME   571143.029 4175154.094 3.64
   LOCATION L0000758     VOLUME   571149.171 4175148.219 3.66
```

LOCATION	L0000759	VOLUME	571155.314	4175142.344	3.65
LOCATION	L0000760	VOLUME	571161.457	4175136.469	3.62
LOCATION	L0000761	VOLUME	571167.600	4175130.594	3.61
LOCATION	L0000762	VOLUME	571173.743	4175124.719	3.60
LOCATION	L0000763	VOLUME	571179.885	4175118.844	3.57
LOCATION	L0000764	VOLUME	571186.028	4175112.969	3.55
LOCATION	L0000765	VOLUME	571192.171	4175107.094	3.51
LOCATION	L0000766	VOLUME	571198.314	4175101.219	3.48
LOCATION	L0000767	VOLUME	571204.456	4175095.344	3.51
LOCATION	L0000768	VOLUME	571210.599	4175089.469	3.55
LOCATION	L0000769	VOLUME	571216.742	4175083.593	3.58
LOCATION	L0000770	VOLUME	571222.885	4175077.718	3.57
LOCATION	L0000771	VOLUME	571229.028	4175071.843	3.56
LOCATION	L0000772	VOLUME	571235.170	4175065.968	3.67
LOCATION	L0000773	VOLUME	571241.313	4175060.093	3.72
LOCATION	L0000774	VOLUME	571247.456	4175054.218	3.72
LOCATION	L0000775	VOLUME	571253.599	4175048.343	3.69
LOCATION	L0000776	VOLUME	571259.741	4175042.468	3.67
LOCATION	L0000777	VOLUME	571265.884	4175036.593	3.73
LOCATION	L0000778	VOLUME	571272.027	4175030.718	3.84
LOCATION	L0000779	VOLUME	571278.170	4175024.843	3.94
LOCATION	L0000780	VOLUME	571284.313	4175018.968	3.94
LOCATION	L0000781	VOLUME	571290.455	4175013.093	3.87
LOCATION	L0000782	VOLUME	571296.598	4175007.218	3.76
LOCATION	L0000783	VOLUME	571302.741	4175001.343	3.66
LOCATION	L0000784	VOLUME	571308.884	4174995.468	3.68
LOCATION	L0000785	VOLUME	571315.026	4174989.593	3.68
LOCATION	L0000786	VOLUME	571321.169	4174983.718	3.66
LOCATION	L0000787	VOLUME	571327.312	4174977.842	3.66
LOCATION	L0000788	VOLUME	571333.455	4174971.967	3.70
LOCATION	L0000789	VOLUME	571339.598	4174966.092	3.70
LOCATION	L0000790	VOLUME	571345.740	4174960.217	3.66
LOCATION	L0000791	VOLUME	571351.883	4174954.342	3.60
LOCATION	L0000792	VOLUME	571358.026	4174948.467	3.60
LOCATION	L0000793	VOLUME	571364.169	4174942.592	3.61
LOCATION	L0000794	VOLUME	571370.311	4174936.717	3.58
LOCATION	L0000795	VOLUME	571376.454	4174930.842	3.52
LOCATION	L0000796	VOLUME	571382.597	4174924.967	3.52
LOCATION	L0000797	VOLUME	571388.740	4174919.092	3.54
LOCATION	L0000798	VOLUME	571394.883	4174913.217	3.65
LOCATION	L0000799	VOLUME	571401.025	4174907.342	3.68
LOCATION	L0000800	VOLUME	571407.168	4174901.467	3.71
LOCATION	L0000801	VOLUME	571413.311	4174895.592	3.72
LOCATION	L0000802	VOLUME	571419.454	4174889.717	3.72
LOCATION	L0000803	VOLUME	571425.596	4174883.842	3.70
LOCATION	L0000804	VOLUME	571431.739	4174877.967	3.73
LOCATION	L0000805	VOLUME	571437.882	4174872.091	3.75
LOCATION	L0000806	VOLUME	571444.025	4174866.216	3.76
LOCATION	L0000807	VOLUME	571450.168	4174860.341	3.76
LOCATION	L0000808	VOLUME	571456.310	4174854.466	3.76

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   LOCATION L0000809     VOLUME   571462.453 4174848.591 3.76
   LOCATION L0000810     VOLUME   571468.596 4174842.716 3.75
   LOCATION L0000811     VOLUME   571474.739 4174836.841 3.74
   LOCATION L0000812     VOLUME   571480.881 4174830.966 3.72
   LOCATION L0000813     VOLUME   571487.024 4174825.091 3.71
   LOCATION L0000814     VOLUME   571493.167 4174819.216 3.72
   LOCATION L0000815     VOLUME   571499.310 4174813.341 3.72
   LOCATION L0000816     VOLUME   571505.453 4174807.466 3.74
   LOCATION L0000817     VOLUME   571511.595 4174801.591 3.77
   LOCATION L0000818     VOLUME   571517.738 4174795.716 3.81
   LOCATION L0000819     VOLUME   571523.881 4174789.841 3.82
   LOCATION L0000820     VOLUME   571530.024 4174783.966 3.81
   LOCATION L0000821     VOLUME   571536.166 4174778.091 3.82
   LOCATION L0000822     VOLUME   571542.309 4174772.216 3.84
   LOCATION L0000823     VOLUME   571548.452 4174766.341 3.87
   LOCATION L0000824     VOLUME   571554.595 4174760.465 3.82
   LOCATION L0000825     VOLUME   571560.738 4174754.590 3.79
   LOCATION L0000826     VOLUME   571566.880 4174748.715 3.79
   LOCATION L0000827     VOLUME   571573.023 4174742.840 3.80
   LOCATION L0000828     VOLUME   571579.166 4174736.965 3.80
   LOCATION L0000829     VOLUME   571585.309 4174731.090 3.81
   LOCATION L0000830     VOLUME   571591.451 4174725.215 3.83
   LOCATION L0000831     VOLUME   571597.594 4174719.340 3.86
   LOCATION L0000832     VOLUME   571603.737 4174713.465 3.89
   LOCATION L0000833     VOLUME   571609.880 4174707.590 3.92
   LOCATION L0000834     VOLUME   571616.023 4174701.715 3.95
   LOCATION L0000835     VOLUME   571622.165 4174695.840 3.98
   LOCATION L0000836     VOLUME   571628.308 4174689.965 3.98
   LOCATION L0000837     VOLUME   571634.451 4174684.090 3.99
   LOCATION L0000838     VOLUME   571640.594 4174678.215 4.00
   LOCATION L0000839     VOLUME   571646.736 4174672.340 4.03
   LOCATION L0000840     VOLUME   571652.879 4174666.465 4.04
   LOCATION L0000841     VOLUME   571659.022 4174660.590 4.05
   LOCATION L0000842     VOLUME   571665.165 4174654.714 4.06
   LOCATION L0000843     VOLUME   571671.308 4174648.839 4.08
** End of LINE VOLUME Source ID = SLINE5
** ----------------------------------------------------------------------
** Line Source Represented by Adjacent Volume Sources
** LINE VOLUME Source ID = SLINE6
** DESCRSRC Davis Street Trucks
** PREFIX
** Length of Side = 8.50
** Configuration = Adjacent
** Emission Rate = 1.01E-07
** Vertical Dimension = 6.22
** SZINIT = 2.89
** Nodes = 2
** 571670.453, 4174661.141, 4.07, 3.11, 3.95
** 572301.470, 4174889.416, 7.12, 3.11, 3.95
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LOCATION	L0000844	VOLUME	571674.450	4174662.587	4.08
LOCATION	L0000845	VOLUME	571682.443	4174665.478	4.12
LOCATION	L0000846	VOLUME	571690.436	4174668.370	4.17
LOCATION	L0000847	VOLUME	571698.429	4174671.262	4.26
LOCATION	L0000848	VOLUME	571706.422	4174674.153	4.40
LOCATION	L0000849	VOLUME	571714.415	4174677.045	4.53
LOCATION	L0000850	VOLUME	571722.408	4174679.936	4.61
LOCATION	L0000851	VOLUME	571730.401	4174682.828	4.66
LOCATION	L0000852	VOLUME	571738.394	4174685.719	4.73
LOCATION	L0000853	VOLUME	571746.387	4174688.611	4.75
LOCATION	L0000854	VOLUME	571754.381	4174691.502	4.64
LOCATION	L0000855	VOLUME	571762.374	4174694.394	4.54
LOCATION	L0000856	VOLUME	571770.367	4174697.285	4.47
LOCATION	L0000857	VOLUME	571778.360	4174700.177	4.52
LOCATION	L0000858	VOLUME	571786.353	4174703.069	4.56
LOCATION	L0000859	VOLUME	571794.346	4174705.960	4.61
LOCATION	L0000860	VOLUME	571802.339	4174708.852	4.69
LOCATION	L0000861	VOLUME	571810.332	4174711.743	4.78
LOCATION	L0000862	VOLUME	571818.325	4174714.635	4.88
LOCATION	L0000863	VOLUME	571826.318	4174717.526	4.95
LOCATION	L0000864	VOLUME	571834.311	4174720.418	5.03
LOCATION	L0000865	VOLUME	571842.304	4174723.309	5.10
LOCATION	L0000866	VOLUME	571850.297	4174726.201	5.17
LOCATION	L0000867	VOLUME	571858.290	4174729.092	5.23
LOCATION	L0000868	VOLUME	571866.283	4174731.984	5.29
LOCATION	L0000869	VOLUME	571874.276	4174734.876	5.34
LOCATION	L0000870	VOLUME	571882.269	4174737.767	5.38
LOCATION	L0000871	VOLUME	571890.263	4174740.659	5.41
LOCATION	L0000872	VOLUME	571898.256	4174743.550	5.49
LOCATION	L0000873	VOLUME	571906.249	4174746.442	5.57
LOCATION	L0000874	VOLUME	571914.242	4174749.333	5.66
LOCATION	L0000875	VOLUME	571922.235	4174752.225	5.69
LOCATION	L0000876	VOLUME	571930.228	4174755.116	5.72
LOCATION	L0000877	VOLUME	571938.221	4174758.008	5.74
LOCATION	L0000878	VOLUME	571946.214	4174760.899	5.79
LOCATION	L0000879	VOLUME	571954.207	4174763.791	5.83
LOCATION	L0000880	VOLUME	571962.200	4174766.683	5.85
LOCATION	L0000881	VOLUME	571970.193	4174769.574	5.86
LOCATION	L0000882	VOLUME	571978.186	4174772.466	5.87
LOCATION	L0000883	VOLUME	571986.179	4174775.357	5.90
LOCATION	L0000884	VOLUME	571994.172	4174778.249	5.92
LOCATION	L0000885	VOLUME	572002.165	4174781.140	5.93
LOCATION	L0000886	VOLUME	572010.158	4174784.032	5.94
LOCATION	L0000887	VOLUME	572018.151	4174786.923	5.95
LOCATION	L0000888	VOLUME	572026.144	4174789.815	5.95
LOCATION	L0000889	VOLUME	572034.138	4174792.706	5.95
LOCATION	L0000890	VOLUME	572042.131	4174795.598	5.94
LOCATION	L0000891	VOLUME	572050.124	4174798.490	5.95
LOCATION	L0000892	VOLUME	572058.117	4174801.381	6.00
LOCATION	L0000893	VOLUME	572066.110	4174804.273	6.05

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   LOCATION L0000894     VOLUME   572074.103 4174807.164 6.11
   LOCATION L0000895     VOLUME   572082.096 4174810.056 6.16
   LOCATION L0000896     VOLUME   572090.089 4174812.947 6.21
   LOCATION L0000897     VOLUME   572098.082 4174815.839 6.26
   LOCATION L0000898     VOLUME   572106.075 4174818.730 6.31
   LOCATION L0000899     VOLUME   572114.068 4174821.622 6.37
   LOCATION L0000900     VOLUME   572122.061 4174824.513 6.47
   LOCATION L0000901     VOLUME   572130.054 4174827.405 6.59
   LOCATION L0000902     VOLUME   572138.047 4174830.297 6.69
   LOCATION L0000903     VOLUME   572146.040 4174833.188 6.72
   LOCATION L0000904     VOLUME   572154.033 4174836.080 6.71
   LOCATION L0000905     VOLUME   572162.026 4174838.971 6.69
   LOCATION L0000906     VOLUME   572170.020 4174841.863 6.64
   LOCATION L0000907     VOLUME   572178.013 4174844.754 6.61
   LOCATION L0000908     VOLUME   572186.006 4174847.646 6.62
   LOCATION L0000909     VOLUME   572193.999 4174850.537 6.67
   LOCATION L0000910     VOLUME   572201.992 4174853.429 6.73
   LOCATION L0000911     VOLUME   572209.985 4174856.320 6.78
   LOCATION L0000912     VOLUME   572217.978 4174859.212 6.85
   LOCATION L0000913     VOLUME   572225.971 4174862.104 6.92
   LOCATION L0000914     VOLUME   572233.964 4174864.995 6.98
   LOCATION L0000915     VOLUME   572241.957 4174867.887 7.02
   LOCATION L0000916     VOLUME   572249.950 4174870.778 7.05
   LOCATION L0000917     VOLUME   572257.943 4174873.670 7.09
   LOCATION L0000918     VOLUME   572265.936 4174876.561 7.09
   LOCATION L0000919     VOLUME   572273.929 4174879.453 7.11
   LOCATION L0000920     VOLUME   572281.922 4174882.344 7.14
   LOCATION L0000921     VOLUME   572289.915 4174885.236 7.16
   LOCATION L0000922     VOLUME   572297.908 4174888.127 7.18
** End of LINE VOLUME Source ID = SLINE6
** ----------------------------------------------------------------------
** Line Source Represented by Adjacent Volume Sources
** LINE VOLUME Source ID = SLINE7
** DESCRSRC Loading Area (South)
** PREFIX
** Length of Side = 8.50
** Configuration = Adjacent
** Emission Rate = 8.2E-10
** Vertical Dimension = 6.22
** SZINIT = 2.89
** Nodes = 2
** 571494.708, 4175028.040, 3.69, 3.11, 3.95
** 571665.764, 4175038.513, 4.14, 3.11, 3.95
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   LOCATION L0000631     VOLUME   571498.950 4175028.300 3.70
   LOCATION L0000632     VOLUME   571507.434 4175028.819 3.71
   LOCATION L0000633     VOLUME   571515.918 4175029.339 3.73
   LOCATION L0000634     VOLUME   571524.402 4175029.858 3.77
   LOCATION L0000635     VOLUME   571532.886 4175030.378 3.82
   LOCATION L0000636     VOLUME   571541.370 4175030.897 3.87
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   LOCATION L0000637     VOLUME   571549.854 4175031.416 3.89
   LOCATION L0000638     VOLUME   571558.338 4175031.936 3.90
   LOCATION L0000639     VOLUME   571566.823 4175032.455 3.91
   LOCATION L0000640     VOLUME   571575.307 4175032.975 3.92
   LOCATION L0000641     VOLUME   571583.791 4175033.494 3.94
   LOCATION L0000642     VOLUME   571592.275 4175034.014 3.96
   LOCATION L0000643     VOLUME   571600.759 4175034.533 3.98
   LOCATION L0000644     VOLUME   571609.243 4175035.053 4.00
   LOCATION L0000645     VOLUME   571617.727 4175035.572 4.02
   LOCATION L0000646     VOLUME   571626.211 4175036.091 4.04
   LOCATION L0000647     VOLUME   571634.695 4175036.611 4.05
   LOCATION L0000648     VOLUME   571643.180 4175037.130 4.06
   LOCATION L0000649     VOLUME   571651.664 4175037.650 4.08
   LOCATION L0000650     VOLUME   571660.148 4175038.169 4.10
** End of LINE VOLUME Source ID = SLINE7
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** Line Source Represented by Adjacent Volume Sources
** LINE VOLUME Source ID = SLINE8
** DESCRSRC Loading Area (North)
** PREFIX
** Length of Side = 8.50
** Configuration = Adjacent
** Emission Rate = 5.7E-10
** Vertical Dimension = 6.22
** SZINIT = 2.89
** Nodes = 2
** 571516.817, 4175121.132, 3.96, 3.11, 3.95
** 571650.054, 4175124.623, 4.19, 3.11, 3.95
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   LOCATION L0000651     VOLUME   571521.065 4175121.243 3.96
   LOCATION L0000652     VOLUME   571529.562 4175121.466 3.97
   LOCATION L0000653     VOLUME   571538.060 4175121.688 3.99
   LOCATION L0000654     VOLUME   571546.557 4175121.911 4.00
   LOCATION L0000655     VOLUME   571555.054 4175122.134 4.01
   LOCATION L0000656     VOLUME   571563.551 4175122.356 4.02
   LOCATION L0000657     VOLUME   571572.048 4175122.579 4.03
   LOCATION L0000658     VOLUME   571580.545 4175122.802 4.04
   LOCATION L0000659     VOLUME   571589.042 4175123.024 4.05
   LOCATION L0000660     VOLUME   571597.539 4175123.247 4.06
   LOCATION L0000661     VOLUME   571606.036 4175123.470 4.08
   LOCATION L0000662     VOLUME   571614.533 4175123.692 4.10
   LOCATION L0000663     VOLUME   571623.030 4175123.915 4.12
   LOCATION L0000664     VOLUME   571631.527 4175124.137 4.14
   LOCATION L0000665     VOLUME   571640.025 4175124.360 4.15
   LOCATION L0000666     VOLUME   571648.522 4175124.583 4.19
** End of LINE VOLUME Source ID = SLINE8
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** Line Source Represented by Adjacent Volume Sources
** LINE VOLUME Source ID = SLINE9
** DESCRSRC Onsite Circulation Trucks
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** PREFIX
** Length of Side = 8.50
** Configuration = Adjacent
** Emission Rate = 1.03E-07
** Vertical Dimension = 6.22
** SZINIT = 2.89
** Nodes = 6
** 571469.689, 4175168.841, 4.15, 3.11, 3.95
** 571482.489, 4175140.332, 3.98, 3.11, 3.95
** 571684.382, 4175143.241, 4.52, 3.11, 3.95
** 571700.673, 4175025.131, 3.99, 3.11, 3.95
** 571505.762, 4174992.549, 3.58, 3.11, 3.95
** 571462.125, 4175017.567, 3.56, 3.11, 3.95
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   LOCATION L0000560     VOLUME   571471.430 4175164.964 4.15
   LOCATION L0000561     VOLUME   571474.911 4175157.210 4.12
   LOCATION L0000562     VOLUME   571478.393 4175149.456 4.08
   LOCATION L0000563     VOLUME   571481.874 4175141.701 4.02
   LOCATION L0000564     VOLUME   571489.488 4175140.433 4.03
   LOCATION L0000565     VOLUME   571497.987 4175140.555 4.06
   LOCATION L0000566     VOLUME   571506.486 4175140.678 4.11
   LOCATION L0000567     VOLUME   571514.985 4175140.800 4.15
   LOCATION L0000568     VOLUME   571523.484 4175140.923 4.18
   LOCATION L0000569     VOLUME   571531.983 4175141.045 4.21
   LOCATION L0000570     VOLUME   571540.482 4175141.168 4.23
   LOCATION L0000571     VOLUME   571548.981 4175141.290 4.25
   LOCATION L0000572     VOLUME   571557.480 4175141.413 4.26
   LOCATION L0000573     VOLUME   571565.980 4175141.535 4.26
   LOCATION L0000574     VOLUME   571574.479 4175141.658 4.26
   LOCATION L0000575     VOLUME   571582.978 4175141.780 4.25
   LOCATION L0000576     VOLUME   571591.477 4175141.902 4.25
   LOCATION L0000577     VOLUME   571599.976 4175142.025 4.24
   LOCATION L0000578     VOLUME   571608.475 4175142.147 4.24
   LOCATION L0000579     VOLUME   571616.974 4175142.270 4.24
   LOCATION L0000580     VOLUME   571625.473 4175142.392 4.24
   LOCATION L0000581     VOLUME   571633.973 4175142.515 4.25
   LOCATION L0000582     VOLUME   571642.472 4175142.637 4.26
   LOCATION L0000583     VOLUME   571650.971 4175142.760 4.31
   LOCATION L0000584     VOLUME   571659.470 4175142.882 4.37
   LOCATION L0000585     VOLUME   571667.969 4175143.005 4.42
   LOCATION L0000586     VOLUME   571676.468 4175143.127 4.47
   LOCATION L0000587     VOLUME   571684.462 4175142.661 4.52
   LOCATION L0000588     VOLUME   571685.623 4175134.241 4.46
   LOCATION L0000589     VOLUME   571686.785 4175125.821 4.44
   LOCATION L0000590     VOLUME   571687.946 4175117.400 4.41
   LOCATION L0000591     VOLUME   571689.108 4175108.980 4.39
   LOCATION L0000592     VOLUME   571690.269 4175100.560 4.37
   LOCATION L0000593     VOLUME   571691.430 4175092.140 4.34
   LOCATION L0000594     VOLUME   571692.592 4175083.719 4.32
   LOCATION L0000595     VOLUME   571693.753 4175075.299 4.29
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   LOCATION L0000596     VOLUME   571694.915 4175066.879 4.25
   LOCATION L0000597     VOLUME   571696.076 4175058.459 4.22
   LOCATION L0000598     VOLUME   571697.238 4175050.038 4.18
   LOCATION L0000599     VOLUME   571698.399 4175041.618 4.13
   LOCATION L0000600     VOLUME   571699.560 4175033.198 4.08
   LOCATION L0000601     VOLUME   571700.321 4175025.072 4.02
   LOCATION L0000602     VOLUME   571691.937 4175023.671 3.99
   LOCATION L0000603     VOLUME   571683.554 4175022.269 3.98
   LOCATION L0000604     VOLUME   571675.170 4175020.868 3.97
   LOCATION L0000605     VOLUME   571666.786 4175019.466 3.96
   LOCATION L0000606     VOLUME   571658.403 4175018.065 3.96
   LOCATION L0000607     VOLUME   571650.019 4175016.663 3.96
   LOCATION L0000608     VOLUME   571641.635 4175015.262 3.96
   LOCATION L0000609     VOLUME   571633.252 4175013.861 3.96
   LOCATION L0000610     VOLUME   571624.868 4175012.459 3.97
   LOCATION L0000611     VOLUME   571616.484 4175011.058 3.96
   LOCATION L0000612     VOLUME   571608.101 4175009.656 3.95
   LOCATION L0000613     VOLUME   571599.717 4175008.255 3.94
   LOCATION L0000614     VOLUME   571591.333 4175006.853 3.93
   LOCATION L0000615     VOLUME   571582.950 4175005.452 3.92
   LOCATION L0000616     VOLUME   571574.566 4175004.050 3.92
   LOCATION L0000617     VOLUME   571566.182 4175002.649 3.91
   LOCATION L0000618     VOLUME   571557.799 4175001.248 3.89
   LOCATION L0000619     VOLUME   571549.415 4174999.846 3.87
   LOCATION L0000620     VOLUME   571541.031 4174998.445 3.82
   LOCATION L0000621     VOLUME   571532.648 4174997.043 3.75
   LOCATION L0000622     VOLUME   571524.264 4174995.642 3.68
   LOCATION L0000623     VOLUME   571515.880 4174994.240 3.64
   LOCATION L0000624     VOLUME   571507.497 4174992.839 3.61
   LOCATION L0000625     VOLUME   571499.914 4174995.902 3.59
   LOCATION L0000626     VOLUME   571492.540 4175000.130 3.59
   LOCATION L0000627     VOLUME   571485.166 4175004.358 3.59
   LOCATION L0000628     VOLUME   571477.792 4175008.585 3.58
   LOCATION L0000629     VOLUME   571470.418 4175012.813 3.57
   LOCATION L0000630     VOLUME   571463.044 4175017.041 3.58
** End of LINE VOLUME Source ID = SLINE9
   LOCATION STCK1        POINT      571669.670  4175058.280        4.190
** DESCRSRC Emergency generator
** Source Parameters **
** LINE VOLUME Source ID = SLINE2
   SRCPARAM L0000248     0.00000003807      3.11      3.95      2.89
   SRCPARAM L0000249     0.00000003807      3.11      3.95      2.89
   SRCPARAM L0000250     0.00000003807      3.11      3.95      2.89
   SRCPARAM L0000251     0.00000003807      3.11      3.95      2.89
   SRCPARAM L0000252     0.00000003807      3.11      3.95      2.89
   SRCPARAM L0000253     0.00000003807      3.11      3.95      2.89
   SRCPARAM L0000254     0.00000003807      3.11      3.95      2.89
   SRCPARAM L0000255     0.00000003807      3.11      3.95      2.89
   SRCPARAM L0000256     0.00000003807      3.11      3.95      2.89
   SRCPARAM L0000257     0.00000003807      3.11      3.95      2.89
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   SRCPARAM L0000258     0.00000003807      3.11      3.95      2.89
   SRCPARAM L0000259     0.00000003807      3.11      3.95      2.89
   SRCPARAM L0000260     0.00000003807      3.11      3.95      2.89
   SRCPARAM L0000261     0.00000003807      3.11      3.95      2.89
** ----------------------------------------------------------------------
** LINE VOLUME Source ID = SLINE3
   SRCPARAM L0000667     0.00000000127      3.11      3.95      2.89
   SRCPARAM L0000668     0.00000000127      3.11      3.95      2.89
   SRCPARAM L0000669     0.00000000127      3.11      3.95      2.89
   SRCPARAM L0000670     0.00000000127      3.11      3.95      2.89
   SRCPARAM L0000671     0.00000000127      3.11      3.95      2.89
   SRCPARAM L0000672     0.00000000127      3.11      3.95      2.89
   SRCPARAM L0000673     0.00000000127      3.11      3.95      2.89
   SRCPARAM L0000674     0.00000000127      3.11      3.95      2.89
   SRCPARAM L0000675     0.00000000127      3.11      3.95      2.89
   SRCPARAM L0000676     0.00000000127      3.11      3.95      2.89
   SRCPARAM L0000677     0.00000000127      3.11      3.95      2.89
   SRCPARAM L0000678     0.00000000127      3.11      3.95      2.89
   SRCPARAM L0000679     0.00000000127      3.11      3.95      2.89
   SRCPARAM L0000680     0.00000000127      3.11      3.95      2.89
   SRCPARAM L0000681     0.00000000127      3.11      3.95      2.89
   SRCPARAM L0000682     0.00000000127      3.11      3.95      2.89
   SRCPARAM L0000683     0.00000000127      3.11      3.95      2.89
   SRCPARAM L0000684     0.00000000127      3.11      3.95      2.89
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   SRCPARAM L0000688     0.00000000127      3.11      3.95      2.89
   SRCPARAM L0000689     0.00000000127      3.11      3.95      2.89
   SRCPARAM L0000690     0.00000000127      3.11      3.95      2.89
   SRCPARAM L0000691     0.00000000127      3.11      3.95      2.89
   SRCPARAM L0000692     0.00000000127      3.11      3.95      2.89
   SRCPARAM L0000693     0.00000000127      3.11      3.95      2.89
   SRCPARAM L0000694     0.00000000127      3.11      3.95      2.89
   SRCPARAM L0000695     0.00000000127      3.11      3.95      2.89
   SRCPARAM L0000696     0.00000000127      3.11      3.95      2.89
   SRCPARAM L0000697     0.00000000127      3.11      3.95      2.89
   SRCPARAM L0000698     0.00000000127      3.11      3.95      2.89
   SRCPARAM L0000699     0.00000000127      3.11      3.95      2.89
   SRCPARAM L0000700     0.00000000127      3.11      3.95      2.89
   SRCPARAM L0000701     0.00000000127      3.11      3.95      2.89
   SRCPARAM L0000702     0.00000000127      3.11      3.95      2.89
   SRCPARAM L0000703     0.00000000127      3.11      3.95      2.89
   SRCPARAM L0000704     0.00000000127      3.11      3.95      2.89
   SRCPARAM L0000705     0.00000000127      3.11      3.95      2.89
   SRCPARAM L0000706     0.00000000127      3.11      3.95      2.89
   SRCPARAM L0000707     0.00000000127      3.11      3.95      2.89
   SRCPARAM L0000708     0.00000000127      3.11      3.95      2.89
   SRCPARAM L0000709     0.00000000127      3.11      3.95      2.89
   SRCPARAM L0000710     0.00000000127      3.11      3.95      2.89
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   SRCPARAM L0000711     0.00000000127      3.11      3.95      2.89
   SRCPARAM L0000712     0.00000000127      3.11      3.95      2.89
   SRCPARAM L0000713     0.00000000127      3.11      3.95      2.89
   SRCPARAM L0000714     0.00000000127      3.11      3.95      2.89
   SRCPARAM L0000715     0.00000000127      3.11      3.95      2.89
   SRCPARAM L0000716     0.00000000127      3.11      3.95      2.89
   SRCPARAM L0000717     0.00000000127      3.11      3.95      2.89
   SRCPARAM L0000718     0.00000000127      3.11      3.95      2.89
   SRCPARAM L0000719     0.00000000127      3.11      3.95      2.89
   SRCPARAM L0000720     0.00000000127      3.11      3.95      2.89
** ---------------------------------------------------------------------
** LINE VOLUME Source ID = SLINE4
   SRCPARAM L0000721     0.000000001315      3.11      3.95      2.89
   SRCPARAM L0000722     0.000000001315      3.11      3.95      2.89
   SRCPARAM L0000723     0.000000001315      3.11      3.95      2.89
   SRCPARAM L0000724     0.000000001315      3.11      3.95      2.89
   SRCPARAM L0000725     0.000000001315      3.11      3.95      2.89
   SRCPARAM L0000726     0.000000001315      3.11      3.95      2.89
   SRCPARAM L0000727     0.000000001315      3.11      3.95      2.89
   SRCPARAM L0000728     0.000000001315      3.11      3.95      2.89
   SRCPARAM L0000729     0.000000001315      3.11      3.95      2.89
   SRCPARAM L0000730     0.000000001315      3.11      3.95      2.89
   SRCPARAM L0000731     0.000000001315      3.11      3.95      2.89
   SRCPARAM L0000732     0.000000001315      3.11      3.95      2.89
   SRCPARAM L0000733     0.000000001315      3.11      3.95      2.89
** ---------------------------------------------------------------------
** LINE VOLUME Source ID = SLINE5
   SRCPARAM L0000734     0.000000001273      3.11      3.95      2.89
   SRCPARAM L0000735     0.000000001273      3.11      3.95      2.89
   SRCPARAM L0000736     0.000000001273      3.11      3.95      2.89
   SRCPARAM L0000737     0.000000001273      3.11      3.95      2.89
   SRCPARAM L0000738     0.000000001273      3.11      3.95      2.89
   SRCPARAM L0000739     0.000000001273      3.11      3.95      2.89
   SRCPARAM L0000740     0.000000001273      3.11      3.95      2.89
   SRCPARAM L0000741     0.000000001273      3.11      3.95      2.89
   SRCPARAM L0000742     0.000000001273      3.11      3.95      2.89
   SRCPARAM L0000743     0.000000001273      3.11      3.95      2.89
   SRCPARAM L0000744     0.000000001273      3.11      3.95      2.89
   SRCPARAM L0000745     0.000000001273      3.11      3.95      2.89
   SRCPARAM L0000746     0.000000001273      3.11      3.95      2.89
   SRCPARAM L0000747     0.000000001273      3.11      3.95      2.89
   SRCPARAM L0000748     0.000000001273      3.11      3.95      2.89
   SRCPARAM L0000749     0.000000001273      3.11      3.95      2.89
   SRCPARAM L0000750     0.000000001273      3.11      3.95      2.89
   SRCPARAM L0000751     0.000000001273      3.11      3.95      2.89
   SRCPARAM L0000752     0.000000001273      3.11      3.95      2.89
   SRCPARAM L0000753     0.000000001273      3.11      3.95      2.89
   SRCPARAM L0000754     0.000000001273      3.11      3.95      2.89
   SRCPARAM L0000755     0.000000001273      3.11      3.95      2.89
   SRCPARAM L0000756     0.000000001273      3.11      3.95      2.89
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SRCPARAM	L0000757	0.000000001273	3.11	3.95	2.89
SRCPARAM	L0000758	0.000000001273	3.11	3.95	2.89
SRCPARAM	L0000759	0.000000001273	3.11	3.95	2.89
SRCPARAM	L0000760	0.000000001273	3.11	3.95	2.89
SRCPARAM	L0000761	0.000000001273	3.11	3.95	2.89
SRCPARAM	L0000762	0.000000001273	3.11	3.95	2.89
SRCPARAM	L0000763	0.000000001273	3.11	3.95	2.89
SRCPARAM	L0000764	0.000000001273	3.11	3.95	2.89
SRCPARAM	L0000765	0.000000001273	3.11	3.95	2.89
SRCPARAM	L0000766	0.000000001273	3.11	3.95	2.89
SRCPARAM	L0000767	0.000000001273	3.11	3.95	2.89
SRCPARAM	L0000768	0.000000001273	3.11	3.95	2.89
SRCPARAM	L0000769	0.000000001273	3.11	3.95	2.89
SRCPARAM	L0000770	0.000000001273	3.11	3.95	2.89
SRCPARAM	L0000771	0.000000001273	3.11	3.95	2.89
SRCPARAM	L0000772	0.000000001273	3.11	3.95	2.89
SRCPARAM	L0000773	0.000000001273	3.11	3.95	2.89
SRCPARAM	L0000774	0.000000001273	3.11	3.95	2.89
SRCPARAM	L0000775	0.000000001273	3.11	3.95	2.89
SRCPARAM	L0000776	0.000000001273	3.11	3.95	2.89
SRCPARAM	L0000777	0.000000001273	3.11	3.95	2.89
SRCPARAM	L0000778	0.000000001273	3.11	3.95	2.89
SRCPARAM	L0000779	0.000000001273	3.11	3.95	2.89
SRCPARAM	L0000780	0.000000001273	3.11	3.95	2.89
SRCPARAM	L0000781	0.000000001273	3.11	3.95	2.89
SRCPARAM	L0000782	0.000000001273	3.11	3.95	2.89
SRCPARAM	L0000783	0.000000001273	3.11	3.95	2.89
SRCPARAM	L0000784	0.000000001273	3.11	3.95	2.89
SRCPARAM	L0000785	0.000000001273	3.11	3.95	2.89
SRCPARAM	L0000786	0.000000001273	3.11	3.95	2.89
SRCPARAM	L0000787	0.000000001273	3.11	3.95	2.89
SRCPARAM	L0000788	0.000000001273	3.11	3.95	2.89
SRCPARAM	L0000789	0.000000001273	3.11	3.95	2.89
SRCPARAM	L0000790	0.000000001273	3.11	3.95	2.89
SRCPARAM	L0000791	0.000000001273	3.11	3.95	2.89
SRCPARAM	L0000792	0.000000001273	3.11	3.95	2.89
SRCPARAM	L0000793	0.000000001273	3.11	3.95	2.89
SRCPARAM	L0000794	0.000000001273	3.11	3.95	2.89
SRCPARAM	L0000795	0.000000001273	3.11	3.95	2.89
SRCPARAM	L0000796	0.000000001273	3.11	3.95	2.89
SRCPARAM	L0000797	0.000000001273	3.11	3.95	2.89
SRCPARAM	L0000798	0.000000001273	3.11	3.95	2.89
SRCPARAM	L0000799	0.000000001273	3.11	3.95	2.89
SRCPARAM	L0000800	0.000000001273	3.11	3.95	2.89
SRCPARAM	L0000801	0.000000001273	3.11	3.95	2.89
SRCPARAM	L0000802	0.000000001273	3.11	3.95	2.89
SRCPARAM	L0000803	0.000000001273	3.11	3.95	2.89
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SRCPARAM	L0000805	0.000000001273	3.11	3.95	2.89
SRCPARAM	L0000806	0.000000001273	3.11	3.95	2.89

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   SRCPARAM L0000807     0.000000001273      3.11      3.95      2.89
   SRCPARAM L0000808     0.000000001273      3.11      3.95      2.89
   SRCPARAM L0000809     0.000000001273      3.11      3.95      2.89
   SRCPARAM L0000810     0.000000001273      3.11      3.95      2.89
   SRCPARAM L0000811     0.000000001273      3.11      3.95      2.89
   SRCPARAM L0000812     0.000000001273      3.11      3.95      2.89
   SRCPARAM L0000813     0.000000001273      3.11      3.95      2.89
   SRCPARAM L0000814     0.000000001273      3.11      3.95      2.89
   SRCPARAM L0000815     0.000000001273      3.11      3.95      2.89
   SRCPARAM L0000816     0.000000001273      3.11      3.95      2.89
   SRCPARAM L0000817     0.000000001273      3.11      3.95      2.89
   SRCPARAM L0000818     0.000000001273      3.11      3.95      2.89
   SRCPARAM L0000819     0.000000001273      3.11      3.95      2.89
   SRCPARAM L0000820     0.000000001273      3.11      3.95      2.89
   SRCPARAM L0000821     0.000000001273      3.11      3.95      2.89
   SRCPARAM L0000822     0.000000001273      3.11      3.95      2.89
   SRCPARAM L0000823     0.000000001273      3.11      3.95      2.89
   SRCPARAM L0000824     0.000000001273      3.11      3.95      2.89
   SRCPARAM L0000825     0.000000001273      3.11      3.95      2.89
   SRCPARAM L0000826     0.000000001273      3.11      3.95      2.89
   SRCPARAM L0000827     0.000000001273      3.11      3.95      2.89
   SRCPARAM L0000828     0.000000001273      3.11      3.95      2.89
   SRCPARAM L0000829     0.000000001273      3.11      3.95      2.89
   SRCPARAM L0000830     0.000000001273      3.11      3.95      2.89
   SRCPARAM L0000831     0.000000001273      3.11      3.95      2.89
   SRCPARAM L0000832     0.000000001273      3.11      3.95      2.89
   SRCPARAM L0000833     0.000000001273      3.11      3.95      2.89
   SRCPARAM L0000834     0.000000001273      3.11      3.95      2.89
   SRCPARAM L0000835     0.000000001273      3.11      3.95      2.89
   SRCPARAM L0000836     0.000000001273      3.11      3.95      2.89
   SRCPARAM L0000837     0.000000001273      3.11      3.95      2.89
   SRCPARAM L0000838     0.000000001273      3.11      3.95      2.89
   SRCPARAM L0000839     0.000000001273      3.11      3.95      2.89
   SRCPARAM L0000840     0.000000001273      3.11      3.95      2.89
   SRCPARAM L0000841     0.000000001273      3.11      3.95      2.89
   SRCPARAM L0000842     0.000000001273      3.11      3.95      2.89
   SRCPARAM L0000843     0.000000001273      3.11      3.95      2.89
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** LINE VOLUME Source ID = SLINE6
   SRCPARAM L0000844     0.000000001278      3.11      3.95      2.89
   SRCPARAM L0000845     0.000000001278      3.11      3.95      2.89
   SRCPARAM L0000846     0.000000001278      3.11      3.95      2.89
   SRCPARAM L0000847     0.000000001278      3.11      3.95      2.89
   SRCPARAM L0000848     0.000000001278      3.11      3.95      2.89
   SRCPARAM L0000849     0.000000001278      3.11      3.95      2.89
   SRCPARAM L0000850     0.000000001278      3.11      3.95      2.89
   SRCPARAM L0000851     0.000000001278      3.11      3.95      2.89
   SRCPARAM L0000852     0.000000001278      3.11      3.95      2.89
   SRCPARAM L0000853     0.000000001278      3.11      3.95      2.89
   SRCPARAM L0000854     0.000000001278      3.11      3.95      2.89
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SRCPARAM	L0000855	0.000000001278	3.11	3.95	2.89
SRCPARAM	L0000856	0.000000001278	3.11	3.95	2.89
SRCPARAM	L0000857	0.000000001278	3.11	3.95	2.89
SRCPARAM	L0000858	0.000000001278	3.11	3.95	2.89
SRCPARAM	L0000859	0.000000001278	3.11	3.95	2.89
SRCPARAM	L0000860	0.000000001278	3.11	3.95	2.89
SRCPARAM	L0000861	0.000000001278	3.11	3.95	2.89
SRCPARAM	L0000862	0.000000001278	3.11	3.95	2.89
SRCPARAM	L0000863	0.000000001278	3.11	3.95	2.89
SRCPARAM	L0000864	0.000000001278	3.11	3.95	2.89
SRCPARAM	L0000865	0.000000001278	3.11	3.95	2.89
SRCPARAM	L0000866	0.000000001278	3.11	3.95	2.89
SRCPARAM	L0000867	0.000000001278	3.11	3.95	2.89
SRCPARAM	L0000868	0.000000001278	3.11	3.95	2.89
SRCPARAM	L0000869	0.000000001278	3.11	3.95	2.89
SRCPARAM	L0000870	0.000000001278	3.11	3.95	2.89
SRCPARAM	L0000871	0.000000001278	3.11	3.95	2.89
SRCPARAM	L0000872	0.000000001278	3.11	3.95	2.89
SRCPARAM	L0000873	0.000000001278	3.11	3.95	2.89
SRCPARAM	L0000874	0.000000001278	3.11	3.95	2.89
SRCPARAM	L0000875	0.000000001278	3.11	3.95	2.89
SRCPARAM	L0000876	0.000000001278	3.11	3.95	2.89
SRCPARAM	L0000877	0.000000001278	3.11	3.95	2.89
SRCPARAM	L0000878	0.000000001278	3.11	3.95	2.89
SRCPARAM	L0000879	0.000000001278	3.11	3.95	2.89
SRCPARAM	L0000880	0.000000001278	3.11	3.95	2.89
SRCPARAM	L0000881	0.000000001278	3.11	3.95	2.89
SRCPARAM	L0000882	0.000000001278	3.11	3.95	2.89
SRCPARAM	L0000883	0.000000001278	3.11	3.95	2.89
SRCPARAM	L0000884	0.000000001278	3.11	3.95	2.89
SRCPARAM	L0000885	0.000000001278	3.11	3.95	2.89
SRCPARAM	L0000886	0.000000001278	3.11	3.95	2.89
SRCPARAM	L0000887	0.000000001278	3.11	3.95	2.89
SRCPARAM	L0000888	0.000000001278	3.11	3.95	2.89
SRCPARAM	L0000889	0.000000001278	3.11	3.95	2.89
SRCPARAM	L0000890	0.000000001278	3.11	3.95	2.89
SRCPARAM	L0000891	0.000000001278	3.11	3.95	2.89
SRCPARAM	L0000892	0.000000001278	3.11	3.95	2.89
SRCPARAM	L0000893	0.000000001278	3.11	3.95	2.89
SRCPARAM	L0000894	0.000000001278	3.11	3.95	2.89
SRCPARAM	L0000895	0.000000001278	3.11	3.95	2.89
SRCPARAM	L0000896	0.000000001278	3.11	3.95	2.89
SRCPARAM	L0000897	0.000000001278	3.11	3.95	2.89
SRCPARAM	L0000898	0.000000001278	3.11	3.95	2.89
SRCPARAM	L0000899	0.000000001278	3.11	3.95	2.89
SRCPARAM	L0000900	0.000000001278	3.11	3.95	2.89
SRCPARAM	L0000901	0.000000001278	3.11	3.95	2.89
SRCPARAM	L0000902	0.000000001278	3.11	3.95	2.89
SRCPARAM	L0000903	0.000000001278	3.11	3.95	2.89
SRCPARAM	L0000904	0.000000001278	3.11	3.95	2.89

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   SRCPARAM L0000905     0.000000001278      3.11      3.95      2.89
   SRCPARAM L0000906     0.000000001278      3.11      3.95      2.89
   SRCPARAM L0000907     0.000000001278      3.11      3.95      2.89
   SRCPARAM L0000908     0.000000001278      3.11      3.95      2.89
   SRCPARAM L0000909     0.000000001278      3.11      3.95      2.89
   SRCPARAM L0000910     0.000000001278      3.11      3.95      2.89
   SRCPARAM L0000911     0.000000001278      3.11      3.95      2.89
   SRCPARAM L0000912     0.000000001278      3.11      3.95      2.89
   SRCPARAM L0000913     0.000000001278      3.11      3.95      2.89
   SRCPARAM L0000914     0.000000001278      3.11      3.95      2.89
   SRCPARAM L0000915     0.000000001278      3.11      3.95      2.89
   SRCPARAM L0000916     0.000000001278      3.11      3.95      2.89
   SRCPARAM L0000917     0.000000001278      3.11      3.95      2.89
   SRCPARAM L0000918     0.000000001278      3.11      3.95      2.89
   SRCPARAM L0000919     0.000000001278      3.11      3.95      2.89
   SRCPARAM L0000920     0.000000001278      3.11      3.95      2.89
   SRCPARAM L0000921     0.000000001278      3.11      3.95      2.89
   SRCPARAM L0000922     0.000000001278      3.11      3.95      2.89
** ----------------------------------------------------------------------
** LINE VOLUME Source ID = SLINE7
   SRCPARAM L0000631     0.000000000041      3.11      3.95      2.89
   SRCPARAM L0000632     0.000000000041      3.11      3.95      2.89
   SRCPARAM L0000633     0.000000000041      3.11      3.95      2.89
   SRCPARAM L0000634     0.000000000041      3.11      3.95      2.89
   SRCPARAM L0000635     0.000000000041      3.11      3.95      2.89
   SRCPARAM L0000636     0.000000000041      3.11      3.95      2.89
   SRCPARAM L0000637     0.000000000041      3.11      3.95      2.89
   SRCPARAM L0000638     0.000000000041      3.11      3.95      2.89
   SRCPARAM L0000639     0.000000000041      3.11      3.95      2.89
   SRCPARAM L0000640     0.000000000041      3.11      3.95      2.89
   SRCPARAM L0000641     0.000000000041      3.11      3.95      2.89
   SRCPARAM L0000642     0.000000000041      3.11      3.95      2.89
   SRCPARAM L0000643     0.000000000041      3.11      3.95      2.89
   SRCPARAM L0000644     0.000000000041      3.11      3.95      2.89
   SRCPARAM L0000645     0.000000000041      3.11      3.95      2.89
   SRCPARAM L0000646     0.000000000041      3.11      3.95      2.89
   SRCPARAM L0000647     0.000000000041      3.11      3.95      2.89
   SRCPARAM L0000648     0.000000000041      3.11      3.95      2.89
   SRCPARAM L0000649     0.000000000041      3.11      3.95      2.89
   SRCPARAM L0000650     0.000000000041      3.11      3.95      2.89
** ----------------------------------------------------------------------
** LINE VOLUME Source ID = SLINE8
   SRCPARAM L0000651     0.000000000036      3.11      3.95      2.89
   SRCPARAM L0000652     0.000000000036      3.11      3.95      2.89
   SRCPARAM L0000653     0.000000000036      3.11      3.95      2.89
   SRCPARAM L0000654     0.000000000036      3.11      3.95      2.89
   SRCPARAM L0000655     0.000000000036      3.11      3.95      2.89
   SRCPARAM L0000656     0.000000000036      3.11      3.95      2.89
   SRCPARAM L0000657     0.000000000036      3.11      3.95      2.89
   SRCPARAM L0000658     0.000000000036      3.11      3.95      2.89
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   SRCPARAM L0000659     0.000000000036      3.11      3.95      2.89
   SRCPARAM L0000660     0.000000000036      3.11      3.95      2.89
   SRCPARAM L0000661     0.000000000036      3.11      3.95      2.89
   SRCPARAM L0000662     0.000000000036      3.11      3.95      2.89
   SRCPARAM L0000663     0.000000000036      3.11      3.95      2.89
   SRCPARAM L0000664     0.000000000036      3.11      3.95      2.89
   SRCPARAM L0000665     0.000000000036      3.11      3.95      2.89
   SRCPARAM L0000666     0.000000000036      3.11      3.95      2.89
** ---------------------------------------------------------------------
** LINE VOLUME Source ID = SLINE9
   SRCPARAM L0000560     0.000000001451      3.11      3.95      2.89
   SRCPARAM L0000561     0.000000001451      3.11      3.95      2.89
   SRCPARAM L0000562     0.000000001451      3.11      3.95      2.89
   SRCPARAM L0000563     0.000000001451      3.11      3.95      2.89
   SRCPARAM L0000564     0.000000001451      3.11      3.95      2.89
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   SRCPARAM L0000582     0.000000001451      3.11      3.95      2.89
   SRCPARAM L0000583     0.000000001451      3.11      3.95      2.89
   SRCPARAM L0000584     0.000000001451      3.11      3.95      2.89
   SRCPARAM L0000585     0.000000001451      3.11      3.95      2.89
   SRCPARAM L0000586     0.000000001451      3.11      3.95      2.89
   SRCPARAM L0000587     0.000000001451      3.11      3.95      2.89
   SRCPARAM L0000588     0.000000001451      3.11      3.95      2.89
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   SRCPARAM L0000599     0.000000001451      3.11      3.95      2.89
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   SRCPARAM L0000617     0.000000001451      3.11      3.95      2.89
   SRCPARAM L0000618     0.000000001451      3.11      3.95      2.89
   SRCPARAM L0000619     0.000000001451      3.11      3.95      2.89
   SRCPARAM L0000620     0.000000001451      3.11      3.95      2.89
   SRCPARAM L0000621     0.000000001451      3.11      3.95      2.89
   SRCPARAM L0000622     0.000000001451      3.11      3.95      2.89
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   SRCPARAM L0000624     0.000000001451      3.11      3.95      2.89
   SRCPARAM L0000625     0.000000001451      3.11      3.95      2.89
   SRCPARAM L0000626     0.000000001451      3.11      3.95      2.89
   SRCPARAM L0000627     0.000000001451      3.11      3.95      2.89
   SRCPARAM L0000628     0.000000001451      3.11      3.95      2.89
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   SRCPARAM STCK1        0.000521271     6.100   673.600     24.73      0.61


** Building Downwash **
   BUILDHGT STCK1           15.24    15.24    15.24    15.24    15.24    15.24
   BUILDHGT STCK1           15.24    15.24    15.24    15.24    15.24    15.24
   BUILDHGT STCK1           15.24    15.24    15.24    15.24    15.24    15.24
   BUILDHGT STCK1           15.24    15.24    15.24    15.24    15.24    15.24
   BUILDHGT STCK1           15.24    15.24    15.24    15.24    15.24    15.24
   BUILDHGT STCK1           15.24    15.24    15.24    15.24    15.24    15.24

   BUILDWID STCK1          216.14   218.74   214.68   204.11   187.33   164.87
   BUILDWID STCK1          137.39   105.73    70.87   105.74   137.39   164.87
   BUILDWID STCK1          187.33   204.11   214.68   218.74   216.14   206.98
   BUILDWID STCK1          216.14   218.74   214.68   204.11   187.33   164.87
   BUILDWID STCK1          137.39   105.73    70.87   105.74   137.39   164.87
   BUILDWID STCK1          187.33   204.11   214.68   218.74   216.14   206.98
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   BUILDLEN STCK1          105.74   137.39   164.87   187.33   204.11   214.68
   BUILDLEN STCK1          218.74   216.14   206.98   216.14   218.74   214.68
   BUILDLEN STCK1          204.11   187.33   164.87   137.39   105.73    70.87
   BUILDLEN STCK1          105.74   137.39   164.87   187.33   204.11   214.68
   BUILDLEN STCK1          218.74   216.14   206.98   216.14   218.74   214.68
   BUILDLEN STCK1          204.11   187.33   164.87   137.39   105.73    70.87

   XBADJ    STCK1          -52.67   -87.62  -119.90  -148.54  -172.66  -191.54
   XBADJ    STCK1         -204.60  -211.44  -211.86  -218.15  -217.81  -210.85
   XBADJ    STCK1         -197.48  -178.11  -153.34  -123.90   -90.70   -54.74
   XBADJ    STCK1          -53.06   -49.77   -44.97   -38.80   -31.45   -23.14
   XBADJ    STCK1          -14.14    -4.70     4.88     2.00    -0.93    -3.84
   XBADJ    STCK1           -6.63    -9.22   -11.53   -13.49   -15.04   -16.13

   YBADJ    STCK1          110.08   108.44   103.50    95.43    84.45    70.90
   YBADJ    STCK1           55.21    37.83    19.30     0.19   -18.92   -37.47
   YBADJ    STCK1          -54.87   -70.61   -84.20   -95.23  -103.37  -108.37
   YBADJ    STCK1         -110.08  -108.44  -103.50   -95.43   -84.45   -70.90
   YBADJ    STCK1          -55.21   -37.83   -19.30    -0.19    18.92    37.47
   YBADJ    STCK1           54.87    70.61    84.20    95.23   103.37   108.37

   URBANSRC ALL
   SRCGROUP ALL
SO FINISHED
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** AERMOD Receptor Pathway
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RE STARTING
   INCLUDED "880 Doolittle_Ops.rou"
RE FINISHED
**
****************************************
** AERMOD Meteorology Pathway
****************************************
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ME STARTING
   SURFFILE "..\880 Doolittle\880 Doolittle.SFC"
   PROFFILE "..\880 Doolittle\880 Doolittle.PFL"
   SURFDATA 23230 2013 OAKLAND/WSO_AP
   UAIRDATA 23230 2013 OAKLAND/WSO_AP
   PROFBASE 5.0 METERS
ME FINISHED
**
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** AERMOD Output Pathway
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**
OU STARTING
   RECTABLE ALLAVE 1ST
   RECTABLE 1 1ST
   RECTABLE 8 1ST
   RECTABLE 24 1ST
** Auto-Generated Plotfiles
   PLOTFILE 1 ALL 1ST "880 DOOLITTLE_OPS.AD\01H1GALL.PLT" 31
   PLOTFILE 8 ALL 1ST "880 DOOLITTLE_OPS.AD\08H1GALL.PLT" 32
   PLOTFILE 24 ALL 1ST "880 DOOLITTLE_OPS.AD\24H1GALL.PLT" 33
   PLOTFILE PERIOD ALL "880 DOOLITTLE_OPS.AD\PE00GALL.PLT" 34
   SUMMFILE "880 Doolittle_Ops.sum"
OU FINISHED
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** Project Parameters
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** PROJCTN  CoordinateSystemUTM
** DESCPTN  UTM: Universal Transverse Mercator
** DATUM    World Geodetic System 1984
** DTMRGN   Global Definition
** UNITS    m
** ZONE     10
** ZONEINX  0
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** AERMOD Input Produced by:
** AERMOD View Ver. 11.0.1
** Lakes Environmental Software Inc.
** Date: 1/12/2023
** File: C:\Lakes\AERMOD View\880 Doolittle_Ops\880 Doolittle_Ops.ADI
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** AERMOD Control Pathway
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CO STARTING
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   MODELOPT DFAULT CONC
   AVERTIME 1 8 24 PERIOD
   URBANOPT 1649000 Alameda_County
   POLLUTID PM_2.5
   RUNORNOT RUN
   ERRORFIL "880 Doolittle_Ops.err"
CO FINISHED
**
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** AERMOD Source Pathway
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**
**
SO STARTING
** Source Location **
** Source ID - Type - X Coord. - Y Coord. **
** ---------------------------------------------------------------------
** Line Source Represented by Adjacent Volume Sources
** LINE VOLUME Source ID = SLINE2
** DESCRSRC Doolittle Driveway Hauling
** PREFIX
** Length of Side = 8.50
** Configuration = Adjacent
** Emission Rate = 5.33E-07
** Vertical Dimension = 6.22
** SZINIT = 2.89
** Nodes = 2
** 571457.211, 4175012.475, 3.53, 3.11, 3.95
** 571370.494, 4174928.103, 3.55, 3.11, 3.95
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   LOCATION L0000250     VOLUME   571441.981 4174997.656 3.54
   LOCATION L0000251     VOLUME   571435.888 4174991.728 3.53
   LOCATION L0000252     VOLUME   571429.796 4174985.801 3.53
   LOCATION L0000253     VOLUME   571423.704 4174979.874 3.53
   LOCATION L0000254     VOLUME   571417.612 4174973.946 3.55
   LOCATION L0000255     VOLUME   571411.519 4174968.019 3.56
   LOCATION L0000256     VOLUME   571405.427 4174962.091 3.56
   LOCATION L0000257     VOLUME   571399.335 4174956.164 3.54
   LOCATION L0000258     VOLUME   571393.243 4174950.236 3.57
   LOCATION L0000259     VOLUME   571387.150 4174944.309 3.57
   LOCATION L0000260     VOLUME   571381.058 4174938.381 3.56
   LOCATION L0000261     VOLUME   571374.966 4174932.454 3.53
** End of LINE VOLUME Source ID = SLINE2
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** Line Source Represented by Adjacent Volume Sources
** LINE VOLUME Source ID = SLINE3
** DESCRSRC Hester Street Trucks
** PREFIX
** Length of Side = 8.50
** Configuration = Adjacent
** Emission Rate = 6.86E-08
** Vertical Dimension = 6.22
** SZINIT = 2.89
** Nodes = 2
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** 571067.156, 4175396.512, 3.59, 3.11, 3.95
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   LOCATION L0000668     VOLUME   571452.308 4175176.199 4.00
   LOCATION L0000669     VOLUME   571444.930 4175180.419 3.95
   LOCATION L0000670     VOLUME   571437.552 4175184.639 3.91
   LOCATION L0000671     VOLUME   571430.174 4175188.860 3.88
   LOCATION L0000672     VOLUME   571422.795 4175193.080 3.85
   LOCATION L0000673     VOLUME   571415.417 4175197.301 3.83
   LOCATION L0000674     VOLUME   571408.039 4175201.521 3.82
   LOCATION L0000675     VOLUME   571400.661 4175205.742 3.80
   LOCATION L0000676     VOLUME   571393.283 4175209.962 3.75
   LOCATION L0000677     VOLUME   571385.905 4175214.183 3.68
   LOCATION L0000678     VOLUME   571378.526 4175218.403 3.61
   LOCATION L0000679     VOLUME   571371.148 4175222.623 3.56
   LOCATION L0000680     VOLUME   571363.770 4175226.844 3.55
   LOCATION L0000681     VOLUME   571356.392 4175231.064 3.54
   LOCATION L0000682     VOLUME   571349.014 4175235.285 3.52
   LOCATION L0000683     VOLUME   571341.635 4175239.505 3.53
   LOCATION L0000684     VOLUME   571334.257 4175243.726 3.56
   LOCATION L0000685     VOLUME   571326.879 4175247.946 3.57
   LOCATION L0000686     VOLUME   571319.501 4175252.167 3.60
   LOCATION L0000687     VOLUME   571312.123 4175256.387 3.65
   LOCATION L0000688     VOLUME   571304.744 4175260.608 3.69
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   LOCATION L0000690     VOLUME   571289.988 4175269.048 3.75
   LOCATION L0000691     VOLUME   571282.610 4175273.269 3.77
   LOCATION L0000692     VOLUME   571275.232 4175277.489 3.77
   LOCATION L0000693     VOLUME   571267.853 4175281.710 3.77
   LOCATION L0000694     VOLUME   571260.475 4175285.930 3.79
   LOCATION L0000695     VOLUME   571253.097 4175290.151 3.81
   LOCATION L0000696     VOLUME   571245.719 4175294.371 3.83
   LOCATION L0000697     VOLUME   571238.341 4175298.592 3.83
   LOCATION L0000698     VOLUME   571230.962 4175302.812 3.81
   LOCATION L0000699     VOLUME   571223.584 4175307.032 3.77
   LOCATION L0000700     VOLUME   571216.206 4175311.253 3.73
   LOCATION L0000701     VOLUME   571208.828 4175315.473 3.72
   LOCATION L0000702     VOLUME   571201.450 4175319.694 3.72
   LOCATION L0000703     VOLUME   571194.071 4175323.914 3.73
   LOCATION L0000704     VOLUME   571186.693 4175328.135 3.73
   LOCATION L0000705     VOLUME   571179.315 4175332.355 3.73
   LOCATION L0000706     VOLUME   571171.937 4175336.576 3.73
   LOCATION L0000707     VOLUME   571164.559 4175340.796 3.73
   LOCATION L0000708     VOLUME   571157.180 4175345.017 3.74
   LOCATION L0000709     VOLUME   571149.802 4175349.237 3.75
   LOCATION L0000710     VOLUME   571142.424 4175353.457 3.80
   LOCATION L0000711     VOLUME   571135.046 4175357.678 3.83
   LOCATION L0000712     VOLUME   571127.668 4175361.898 3.85
   LOCATION L0000713     VOLUME   571120.289 4175366.119 3.82
   LOCATION L0000714     VOLUME   571112.911 4175370.339 3.79
   LOCATION L0000715     VOLUME   571105.533 4175374.560 3.76
   LOCATION L0000716     VOLUME   571098.155 4175378.780 3.71
   LOCATION L0000717     VOLUME   571090.777 4175383.001 3.68
   LOCATION L0000718     VOLUME   571083.398 4175387.221 3.65
   LOCATION L0000719     VOLUME   571076.020 4175391.441 3.60
   LOCATION L0000720     VOLUME   571068.642 4175395.662 3.57
** End of LINE VOLUME Source ID = SLINE3
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** Line Source Represented by Adjacent Volume Sources
** LINE VOLUME Source ID = SLINE4
** DESCRSRC Adams Ave
** PREFIX
** Length of Side = 8.50
** Configuration = Adjacent
** Emission Rate = 1.71E-08
** Vertical Dimension = 6.22
** SZINIT = 2.89
** Nodes = 2
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   LOCATION L0000722     VOLUME   571056.780 4175377.779 3.54
   LOCATION L0000723     VOLUME   571052.037 4175370.725 3.54
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   LOCATION L0000724     VOLUME   571047.294 4175363.672 3.55
   LOCATION L0000725     VOLUME   571042.551 4175356.618 3.54
   LOCATION L0000726     VOLUME   571037.808 4175349.564 3.53
   LOCATION L0000727     VOLUME   571033.065 4175342.511 3.54
   LOCATION L0000728     VOLUME   571028.322 4175335.457 3.54
   LOCATION L0000729     VOLUME   571023.579 4175328.403 3.58
   LOCATION L0000730     VOLUME   571018.836 4175321.350 3.61
   LOCATION L0000731     VOLUME   571014.093 4175314.296 3.60
   LOCATION L0000732     VOLUME   571009.350 4175307.242 3.45
   LOCATION L0000733     VOLUME   571004.607 4175300.189 3.24
** End of LINE VOLUME Source ID = SLINE4
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** Line Source Represented by Adjacent Volume Sources
** LINE VOLUME Source ID = SLINE5
** DESCRSRC Doolittle Drive Trucks
** PREFIX
** Length of Side = 8.50
** Configuration = Adjacent
** Emission Rate = 1.4E-07
** Vertical Dimension = 6.22
** SZINIT = 2.89
** Nodes = 2
** 570998.673, 4175292.158, 2.86, 3.11, 3.95
** 571672.084, 4174648.097, 4.09, 3.11, 3.95
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   LOCATION L0000735     VOLUME   571007.887 4175283.345 2.95
   LOCATION L0000736     VOLUME   571014.030 4175277.470 3.03
   LOCATION L0000737     VOLUME   571020.173 4175271.595 3.14
   LOCATION L0000738     VOLUME   571026.316 4175265.720 3.27
   LOCATION L0000739     VOLUME   571032.459 4175259.845 3.34
   LOCATION L0000740     VOLUME   571038.601 4175253.970 3.37
   LOCATION L0000741     VOLUME   571044.744 4175248.095 3.38
   LOCATION L0000742     VOLUME   571050.887 4175242.220 3.40
   LOCATION L0000743     VOLUME   571057.030 4175236.345 3.38
   LOCATION L0000744     VOLUME   571063.172 4175230.470 3.36
   LOCATION L0000745     VOLUME   571069.315 4175224.595 3.37
   LOCATION L0000746     VOLUME   571075.458 4175218.720 3.42
   LOCATION L0000747     VOLUME   571081.601 4175212.845 3.42
   LOCATION L0000748     VOLUME   571087.744 4175206.970 3.40
   LOCATION L0000749     VOLUME   571093.886 4175201.095 3.36
   LOCATION L0000750     VOLUME   571100.029 4175195.220 3.32
   LOCATION L0000751     VOLUME   571106.172 4175189.344 3.33
   LOCATION L0000752     VOLUME   571112.315 4175183.469 3.38
   LOCATION L0000753     VOLUME   571118.458 4175177.594 3.42
   LOCATION L0000754     VOLUME   571124.600 4175171.719 3.45
   LOCATION L0000755     VOLUME   571130.743 4175165.844 3.47
   LOCATION L0000756     VOLUME   571136.886 4175159.969 3.56
   LOCATION L0000757     VOLUME   571143.029 4175154.094 3.64
   LOCATION L0000758     VOLUME   571149.171 4175148.219 3.66
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LOCATION	L0000760	VOLUME	571161.457	4175136.469	3.62
LOCATION	L0000761	VOLUME	571167.600	4175130.594	3.61
LOCATION	L0000762	VOLUME	571173.743	4175124.719	3.60
LOCATION	L0000763	VOLUME	571179.885	4175118.844	3.57
LOCATION	L0000764	VOLUME	571186.028	4175112.969	3.55
LOCATION	L0000765	VOLUME	571192.171	4175107.094	3.51
LOCATION	L0000766	VOLUME	571198.314	4175101.219	3.48
LOCATION	L0000767	VOLUME	571204.456	4175095.344	3.51
LOCATION	L0000768	VOLUME	571210.599	4175089.469	3.55
LOCATION	L0000769	VOLUME	571216.742	4175083.593	3.58
LOCATION	L0000770	VOLUME	571222.885	4175077.718	3.57
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LOCATION	L0000772	VOLUME	571235.170	4175065.968	3.67
LOCATION	L0000773	VOLUME	571241.313	4175060.093	3.72
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LOCATION	L0000775	VOLUME	571253.599	4175048.343	3.69
LOCATION	L0000776	VOLUME	571259.741	4175042.468	3.67
LOCATION	L0000777	VOLUME	571265.884	4175036.593	3.73
LOCATION	L0000778	VOLUME	571272.027	4175030.718	3.84
LOCATION	L0000779	VOLUME	571278.170	4175024.843	3.94
LOCATION	L0000780	VOLUME	571284.313	4175018.968	3.94
LOCATION	L0000781	VOLUME	571290.455	4175013.093	3.87
LOCATION	L0000782	VOLUME	571296.598	4175007.218	3.76
LOCATION	L0000783	VOLUME	571302.741	4175001.343	3.66
LOCATION	L0000784	VOLUME	571308.884	4174995.468	3.68
LOCATION	L0000785	VOLUME	571315.026	4174989.593	3.68
LOCATION	L0000786	VOLUME	571321.169	4174983.718	3.66
LOCATION	L0000787	VOLUME	571327.312	4174977.842	3.66
LOCATION	L0000788	VOLUME	571333.455	4174971.967	3.70
LOCATION	L0000789	VOLUME	571339.598	4174966.092	3.70
LOCATION	L0000790	VOLUME	571345.740	4174960.217	3.66
LOCATION	L0000791	VOLUME	571351.883	4174954.342	3.60
LOCATION	L0000792	VOLUME	571358.026	4174948.467	3.60
LOCATION	L0000793	VOLUME	571364.169	4174942.592	3.61
LOCATION	L0000794	VOLUME	571370.311	4174936.717	3.58
LOCATION	L0000795	VOLUME	571376.454	4174930.842	3.52
LOCATION	L0000796	VOLUME	571382.597	4174924.967	3.52
LOCATION	L0000797	VOLUME	571388.740	4174919.092	3.54
LOCATION	L0000798	VOLUME	571394.883	4174913.217	3.65
LOCATION	L0000799	VOLUME	571401.025	4174907.342	3.68
LOCATION	L0000800	VOLUME	571407.168	4174901.467	3.71
LOCATION	L0000801	VOLUME	571413.311	4174895.592	3.72
LOCATION	L0000802	VOLUME	571419.454	4174889.717	3.72
LOCATION	L0000803	VOLUME	571425.596	4174883.842	3.70
LOCATION	L0000804	VOLUME	571431.739	4174877.967	3.73
LOCATION	L0000805	VOLUME	571437.882	4174872.091	3.75
LOCATION	L0000806	VOLUME	571444.025	4174866.216	3.76
LOCATION	L0000807	VOLUME	571450.168	4174860.341	3.76
LOCATION	L0000808	VOLUME	571456.310	4174854.466	3.76

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   LOCATION L0000809     VOLUME   571462.453 4174848.591 3.76
   LOCATION L0000810     VOLUME   571468.596 4174842.716 3.75
   LOCATION L0000811     VOLUME   571474.739 4174836.841 3.74
   LOCATION L0000812     VOLUME   571480.881 4174830.966 3.72
   LOCATION L0000813     VOLUME   571487.024 4174825.091 3.71
   LOCATION L0000814     VOLUME   571493.167 4174819.216 3.72
   LOCATION L0000815     VOLUME   571499.310 4174813.341 3.72
   LOCATION L0000816     VOLUME   571505.453 4174807.466 3.74
   LOCATION L0000817     VOLUME   571511.595 4174801.591 3.77
   LOCATION L0000818     VOLUME   571517.738 4174795.716 3.81
   LOCATION L0000819     VOLUME   571523.881 4174789.841 3.82
   LOCATION L0000820     VOLUME   571530.024 4174783.966 3.81
   LOCATION L0000821     VOLUME   571536.166 4174778.091 3.82
   LOCATION L0000822     VOLUME   571542.309 4174772.216 3.84
   LOCATION L0000823     VOLUME   571548.452 4174766.341 3.87
   LOCATION L0000824     VOLUME   571554.595 4174760.465 3.82
   LOCATION L0000825     VOLUME   571560.738 4174754.590 3.79
   LOCATION L0000826     VOLUME   571566.880 4174748.715 3.79
   LOCATION L0000827     VOLUME   571573.023 4174742.840 3.80
   LOCATION L0000828     VOLUME   571579.166 4174736.965 3.80
   LOCATION L0000829     VOLUME   571585.309 4174731.090 3.81
   LOCATION L0000830     VOLUME   571591.451 4174725.215 3.83
   LOCATION L0000831     VOLUME   571597.594 4174719.340 3.86
   LOCATION L0000832     VOLUME   571603.737 4174713.465 3.89
   LOCATION L0000833     VOLUME   571609.880 4174707.590 3.92
   LOCATION L0000834     VOLUME   571616.023 4174701.715 3.95
   LOCATION L0000835     VOLUME   571622.165 4174695.840 3.98
   LOCATION L0000836     VOLUME   571628.308 4174689.965 3.98
   LOCATION L0000837     VOLUME   571634.451 4174684.090 3.99
   LOCATION L0000838     VOLUME   571640.594 4174678.215 4.00
   LOCATION L0000839     VOLUME   571646.736 4174672.340 4.03
   LOCATION L0000840     VOLUME   571652.879 4174666.465 4.04
   LOCATION L0000841     VOLUME   571659.022 4174660.590 4.05
   LOCATION L0000842     VOLUME   571665.165 4174654.714 4.06
   LOCATION L0000843     VOLUME   571671.308 4174648.839 4.08
** End of LINE VOLUME Source ID = SLINE5
** ----------------------------------------------------------------------
** Line Source Represented by Adjacent Volume Sources
** LINE VOLUME Source ID = SLINE6
** DESCRSRC Davis Street Trucks
** PREFIX
** Length of Side = 8.50
** Configuration = Adjacent
** Emission Rate = 1.01E-07
** Vertical Dimension = 6.22
** SZINIT = 2.89
** Nodes = 2
** 571670.453, 4174661.141, 4.07, 3.11, 3.95
** 572301.470, 4174889.416, 7.12, 3.11, 3.95
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LOCATION	L0000844	VOLUME	571674.450	4174662.587	4.08
LOCATION	L0000845	VOLUME	571682.443	4174665.478	4.12
LOCATION	L0000846	VOLUME	571690.436	4174668.370	4.17
LOCATION	L0000847	VOLUME	571698.429	4174671.262	4.26
LOCATION	L0000848	VOLUME	571706.422	4174674.153	4.40
LOCATION	L0000849	VOLUME	571714.415	4174677.045	4.53
LOCATION	L0000850	VOLUME	571722.408	4174679.936	4.61
LOCATION	L0000851	VOLUME	571730.401	4174682.828	4.66
LOCATION	L0000852	VOLUME	571738.394	4174685.719	4.73
LOCATION	L0000853	VOLUME	571746.387	4174688.611	4.75
LOCATION	L0000854	VOLUME	571754.381	4174691.502	4.64
LOCATION	L0000855	VOLUME	571762.374	4174694.394	4.54
LOCATION	L0000856	VOLUME	571770.367	4174697.285	4.47
LOCATION	L0000857	VOLUME	571778.360	4174700.177	4.52
LOCATION	L0000858	VOLUME	571786.353	4174703.069	4.56
LOCATION	L0000859	VOLUME	571794.346	4174705.960	4.61
LOCATION	L0000860	VOLUME	571802.339	4174708.852	4.69
LOCATION	L0000861	VOLUME	571810.332	4174711.743	4.78
LOCATION	L0000862	VOLUME	571818.325	4174714.635	4.88
LOCATION	L0000863	VOLUME	571826.318	4174717.526	4.95
LOCATION	L0000864	VOLUME	571834.311	4174720.418	5.03
LOCATION	L0000865	VOLUME	571842.304	4174723.309	5.10
LOCATION	L0000866	VOLUME	571850.297	4174726.201	5.17
LOCATION	L0000867	VOLUME	571858.290	4174729.092	5.23
LOCATION	L0000868	VOLUME	571866.283	4174731.984	5.29
LOCATION	L0000869	VOLUME	571874.276	4174734.876	5.34
LOCATION	L0000870	VOLUME	571882.269	4174737.767	5.38
LOCATION	L0000871	VOLUME	571890.263	4174740.659	5.41
LOCATION	L0000872	VOLUME	571898.256	4174743.550	5.49
LOCATION	L0000873	VOLUME	571906.249	4174746.442	5.57
LOCATION	L0000874	VOLUME	571914.242	4174749.333	5.66
LOCATION	L0000875	VOLUME	571922.235	4174752.225	5.69
LOCATION	L0000876	VOLUME	571930.228	4174755.116	5.72
LOCATION	L0000877	VOLUME	571938.221	4174758.008	5.74
LOCATION	L0000878	VOLUME	571946.214	4174760.899	5.79
LOCATION	L0000879	VOLUME	571954.207	4174763.791	5.83
LOCATION	L0000880	VOLUME	571962.200	4174766.683	5.85
LOCATION	L0000881	VOLUME	571970.193	4174769.574	5.86
LOCATION	L0000882	VOLUME	571978.186	4174772.466	5.87
LOCATION	L0000883	VOLUME	571986.179	4174775.357	5.90
LOCATION	L0000884	VOLUME	571994.172	4174778.249	5.92
LOCATION	L0000885	VOLUME	572002.165	4174781.140	5.93
LOCATION	L0000886	VOLUME	572010.158	4174784.032	5.94
LOCATION	L0000887	VOLUME	572018.151	4174786.923	5.95
LOCATION	L0000888	VOLUME	572026.144	4174789.815	5.95
LOCATION	L0000889	VOLUME	572034.138	4174792.706	5.95
LOCATION	L0000890	VOLUME	572042.131	4174795.598	5.94
LOCATION	L0000891	VOLUME	572050.124	4174798.490	5.95
LOCATION	L0000892	VOLUME	572058.117	4174801.381	6.00
LOCATION	L0000893	VOLUME	572066.110	4174804.273	6.05

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   LOCATION L0000894     VOLUME   572074.103 4174807.164 6.11
   LOCATION L0000895     VOLUME   572082.096 4174810.056 6.16
   LOCATION L0000896     VOLUME   572090.089 4174812.947 6.21
   LOCATION L0000897     VOLUME   572098.082 4174815.839 6.26
   LOCATION L0000898     VOLUME   572106.075 4174818.730 6.31
   LOCATION L0000899     VOLUME   572114.068 4174821.622 6.37
   LOCATION L0000900     VOLUME   572122.061 4174824.513 6.47
   LOCATION L0000901     VOLUME   572130.054 4174827.405 6.59
   LOCATION L0000902     VOLUME   572138.047 4174830.297 6.69
   LOCATION L0000903     VOLUME   572146.040 4174833.188 6.72
   LOCATION L0000904     VOLUME   572154.033 4174836.080 6.71
   LOCATION L0000905     VOLUME   572162.026 4174838.971 6.69
   LOCATION L0000906     VOLUME   572170.020 4174841.863 6.64
   LOCATION L0000907     VOLUME   572178.013 4174844.754 6.61
   LOCATION L0000908     VOLUME   572186.006 4174847.646 6.62
   LOCATION L0000909     VOLUME   572193.999 4174850.537 6.67
   LOCATION L0000910     VOLUME   572201.992 4174853.429 6.73
   LOCATION L0000911     VOLUME   572209.985 4174856.320 6.78
   LOCATION L0000912     VOLUME   572217.978 4174859.212 6.85
   LOCATION L0000913     VOLUME   572225.971 4174862.104 6.92
   LOCATION L0000914     VOLUME   572233.964 4174864.995 6.98
   LOCATION L0000915     VOLUME   572241.957 4174867.887 7.02
   LOCATION L0000916     VOLUME   572249.950 4174870.778 7.05
   LOCATION L0000917     VOLUME   572257.943 4174873.670 7.09
   LOCATION L0000918     VOLUME   572265.936 4174876.561 7.09
   LOCATION L0000919     VOLUME   572273.929 4174879.453 7.11
   LOCATION L0000920     VOLUME   572281.922 4174882.344 7.14
   LOCATION L0000921     VOLUME   572289.915 4174885.236 7.16
   LOCATION L0000922     VOLUME   572297.908 4174888.127 7.18
** End of LINE VOLUME Source ID = SLINE6
** ---------------------------------------------------------------------
** Line Source Represented by Adjacent Volume Sources
** LINE VOLUME Source ID = SLINE7
** DESCRSRC Loading Area (South)
** PREFIX
** Length of Side = 8.50
** Configuration = Adjacent
** Emission Rate = 8.2E-10
** Vertical Dimension = 6.22
** SZINIT = 2.89
** Nodes = 2
** 571494.708, 4175028.040, 3.69, 3.11, 3.95
** 571665.764, 4175038.513, 4.14, 3.11, 3.95
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   LOCATION L0000631     VOLUME   571498.950 4175028.300 3.70
   LOCATION L0000632     VOLUME   571507.434 4175028.819 3.71
   LOCATION L0000633     VOLUME   571515.918 4175029.339 3.73
   LOCATION L0000634     VOLUME   571524.402 4175029.858 3.77
   LOCATION L0000635     VOLUME   571532.886 4175030.378 3.82
   LOCATION L0000636     VOLUME   571541.370 4175030.897 3.87
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   LOCATION L0000637     VOLUME   571549.854 4175031.416 3.89
   LOCATION L0000638     VOLUME   571558.338 4175031.936 3.90
   LOCATION L0000639     VOLUME   571566.823 4175032.455 3.91
   LOCATION L0000640     VOLUME   571575.307 4175032.975 3.92
   LOCATION L0000641     VOLUME   571583.791 4175033.494 3.94
   LOCATION L0000642     VOLUME   571592.275 4175034.014 3.96
   LOCATION L0000643     VOLUME   571600.759 4175034.533 3.98
   LOCATION L0000644     VOLUME   571609.243 4175035.053 4.00
   LOCATION L0000645     VOLUME   571617.727 4175035.572 4.02
   LOCATION L0000646     VOLUME   571626.211 4175036.091 4.04
   LOCATION L0000647     VOLUME   571634.695 4175036.611 4.05
   LOCATION L0000648     VOLUME   571643.180 4175037.130 4.06
   LOCATION L0000649     VOLUME   571651.664 4175037.650 4.08
   LOCATION L0000650     VOLUME   571660.148 4175038.169 4.10
** End of LINE VOLUME Source ID = SLINE7
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** Line Source Represented by Adjacent Volume Sources
** LINE VOLUME Source ID = SLINE8
** DESCRSRC Loading Area (North)
** PREFIX
** Length of Side = 8.50
** Configuration = Adjacent
** Emission Rate = 5.7E-10
** Vertical Dimension = 6.22
** SZINIT = 2.89
** Nodes = 2
** 571516.817, 4175121.132, 3.96, 3.11, 3.95
** 571650.054, 4175124.623, 4.19, 3.11, 3.95
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   LOCATION L0000651     VOLUME   571521.065 4175121.243 3.96
   LOCATION L0000652     VOLUME   571529.562 4175121.466 3.97
   LOCATION L0000653     VOLUME   571538.060 4175121.688 3.99
   LOCATION L0000654     VOLUME   571546.557 4175121.911 4.00
   LOCATION L0000655     VOLUME   571555.054 4175122.134 4.01
   LOCATION L0000656     VOLUME   571563.551 4175122.356 4.02
   LOCATION L0000657     VOLUME   571572.048 4175122.579 4.03
   LOCATION L0000658     VOLUME   571580.545 4175122.802 4.04
   LOCATION L0000659     VOLUME   571589.042 4175123.024 4.05
   LOCATION L0000660     VOLUME   571597.539 4175123.247 4.06
   LOCATION L0000661     VOLUME   571606.036 4175123.470 4.08
   LOCATION L0000662     VOLUME   571614.533 4175123.692 4.10
   LOCATION L0000663     VOLUME   571623.030 4175123.915 4.12
   LOCATION L0000664     VOLUME   571631.527 4175124.137 4.14
   LOCATION L0000665     VOLUME   571640.025 4175124.360 4.15
   LOCATION L0000666     VOLUME   571648.522 4175124.583 4.19
** End of LINE VOLUME Source ID = SLINE8
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** Line Source Represented by Adjacent Volume Sources
** LINE VOLUME Source ID = SLINE9
** DESCRSRC Onsite Circulation Trucks
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** PREFIX
** Length of Side = 8.50
** Configuration = Adjacent
** Emission Rate = 1.03E-07
** Vertical Dimension = 6.22
** SZINIT = 2.89
** Nodes = 6
** 571469.689, 4175168.841, 4.15, 3.11, 3.95
** 571482.489, 4175140.332, 3.98, 3.11, 3.95
** 571684.382, 4175143.241, 4.52, 3.11, 3.95
** 571700.673, 4175025.131, 3.99, 3.11, 3.95
** 571505.762, 4174992.549, 3.58, 3.11, 3.95
** 571462.125, 4175017.567, 3.56, 3.11, 3.95
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   LOCATION L0000560     VOLUME   571471.430 4175164.964 4.15
   LOCATION L0000561     VOLUME   571474.911 4175157.210 4.12
   LOCATION L0000562     VOLUME   571478.393 4175149.456 4.08
   LOCATION L0000563     VOLUME   571481.874 4175141.701 4.02
   LOCATION L0000564     VOLUME   571489.488 4175140.433 4.03
   LOCATION L0000565     VOLUME   571497.987 4175140.555 4.06
   LOCATION L0000566     VOLUME   571506.486 4175140.678 4.11
   LOCATION L0000567     VOLUME   571514.985 4175140.800 4.15
   LOCATION L0000568     VOLUME   571523.484 4175140.923 4.18
   LOCATION L0000569     VOLUME   571531.983 4175141.045 4.21
   LOCATION L0000570     VOLUME   571540.482 4175141.168 4.23
   LOCATION L0000571     VOLUME   571548.981 4175141.290 4.25
   LOCATION L0000572     VOLUME   571557.480 4175141.413 4.26
   LOCATION L0000573     VOLUME   571565.980 4175141.535 4.26
   LOCATION L0000574     VOLUME   571574.479 4175141.658 4.26
   LOCATION L0000575     VOLUME   571582.978 4175141.780 4.25
   LOCATION L0000576     VOLUME   571591.477 4175141.902 4.25
   LOCATION L0000577     VOLUME   571599.976 4175142.025 4.24
   LOCATION L0000578     VOLUME   571608.475 4175142.147 4.24
   LOCATION L0000579     VOLUME   571616.974 4175142.270 4.24
   LOCATION L0000580     VOLUME   571625.473 4175142.392 4.24
   LOCATION L0000581     VOLUME   571633.973 4175142.515 4.25
   LOCATION L0000582     VOLUME   571642.472 4175142.637 4.26
   LOCATION L0000583     VOLUME   571650.971 4175142.760 4.31
   LOCATION L0000584     VOLUME   571659.470 4175142.882 4.37
   LOCATION L0000585     VOLUME   571667.969 4175143.005 4.42
   LOCATION L0000586     VOLUME   571676.468 4175143.127 4.47
   LOCATION L0000587     VOLUME   571684.462 4175142.661 4.52
   LOCATION L0000588     VOLUME   571685.623 4175134.241 4.46
   LOCATION L0000589     VOLUME   571686.785 4175125.821 4.44
   LOCATION L0000590     VOLUME   571687.946 4175117.400 4.41
   LOCATION L0000591     VOLUME   571689.108 4175108.980 4.39
   LOCATION L0000592     VOLUME   571690.269 4175100.560 4.37
   LOCATION L0000593     VOLUME   571691.430 4175092.140 4.34
   LOCATION L0000594     VOLUME   571692.592 4175083.719 4.32
   LOCATION L0000595     VOLUME   571693.753 4175075.299 4.29
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   LOCATION L0000596     VOLUME   571694.915 4175066.879 4.25
   LOCATION L0000597     VOLUME   571696.076 4175058.459 4.22
   LOCATION L0000598     VOLUME   571697.238 4175050.038 4.18
   LOCATION L0000599     VOLUME   571698.399 4175041.618 4.13
   LOCATION L0000600     VOLUME   571699.560 4175033.198 4.08
   LOCATION L0000601     VOLUME   571700.321 4175025.072 4.02
   LOCATION L0000602     VOLUME   571691.937 4175023.671 3.99
   LOCATION L0000603     VOLUME   571683.554 4175022.269 3.98
   LOCATION L0000604     VOLUME   571675.170 4175020.868 3.97
   LOCATION L0000605     VOLUME   571666.786 4175019.466 3.96
   LOCATION L0000606     VOLUME   571658.403 4175018.065 3.96
   LOCATION L0000607     VOLUME   571650.019 4175016.663 3.96
   LOCATION L0000608     VOLUME   571641.635 4175015.262 3.96
   LOCATION L0000609     VOLUME   571633.252 4175013.861 3.96
   LOCATION L0000610     VOLUME   571624.868 4175012.459 3.97
   LOCATION L0000611     VOLUME   571616.484 4175011.058 3.96
   LOCATION L0000612     VOLUME   571608.101 4175009.656 3.95
   LOCATION L0000613     VOLUME   571599.717 4175008.255 3.94
   LOCATION L0000614     VOLUME   571591.333 4175006.853 3.93
   LOCATION L0000615     VOLUME   571582.950 4175005.452 3.92
   LOCATION L0000616     VOLUME   571574.566 4175004.050 3.92
   LOCATION L0000617     VOLUME   571566.182 4175002.649 3.91
   LOCATION L0000618     VOLUME   571557.799 4175001.248 3.89
   LOCATION L0000619     VOLUME   571549.415 4174999.846 3.87
   LOCATION L0000620     VOLUME   571541.031 4174998.445 3.82
   LOCATION L0000621     VOLUME   571532.648 4174997.043 3.75
   LOCATION L0000622     VOLUME   571524.264 4174995.642 3.68
   LOCATION L0000623     VOLUME   571515.880 4174994.240 3.64
   LOCATION L0000624     VOLUME   571507.497 4174992.839 3.61
   LOCATION L0000625     VOLUME   571499.914 4174995.902 3.59
   LOCATION L0000626     VOLUME   571492.540 4175000.130 3.59
   LOCATION L0000627     VOLUME   571485.166 4175004.358 3.59
   LOCATION L0000628     VOLUME   571477.792 4175008.585 3.58
   LOCATION L0000629     VOLUME   571470.418 4175012.813 3.57
   LOCATION L0000630     VOLUME   571463.044 4175017.041 3.58
** End of LINE VOLUME Source ID = SLINE9
   LOCATION STCK1        POINT      571669.670  4175058.280        4.190
** DESCRSRC Emergency generator
** Source Parameters **
** LINE VOLUME Source ID = SLINE2
   SRCPARAM L0000248     0.00000003807      3.11      3.95      2.89
   SRCPARAM L0000249     0.00000003807      3.11      3.95      2.89
   SRCPARAM L0000250     0.00000003807      3.11      3.95      2.89
   SRCPARAM L0000251     0.00000003807      3.11      3.95      2.89
   SRCPARAM L0000252     0.00000003807      3.11      3.95      2.89
   SRCPARAM L0000253     0.00000003807      3.11      3.95      2.89
   SRCPARAM L0000254     0.00000003807      3.11      3.95      2.89
   SRCPARAM L0000255     0.00000003807      3.11      3.95      2.89
   SRCPARAM L0000256     0.00000003807      3.11      3.95      2.89
   SRCPARAM L0000257     0.00000003807      3.11      3.95      2.89
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   SRCPARAM L0000258     0.00000003807      3.11      3.95      2.89
   SRCPARAM L0000259     0.00000003807      3.11      3.95      2.89
   SRCPARAM L0000260     0.00000003807      3.11      3.95      2.89
   SRCPARAM L0000261     0.00000003807      3.11      3.95      2.89
** ----------------------------------------------------------------------
** LINE VOLUME Source ID = SLINE3
   SRCPARAM L0000667     0.00000000127      3.11      3.95      2.89
   SRCPARAM L0000668     0.00000000127      3.11      3.95      2.89
   SRCPARAM L0000669     0.00000000127      3.11      3.95      2.89
   SRCPARAM L0000670     0.00000000127      3.11      3.95      2.89
   SRCPARAM L0000671     0.00000000127      3.11      3.95      2.89
   SRCPARAM L0000672     0.00000000127      3.11      3.95      2.89
   SRCPARAM L0000673     0.00000000127      3.11      3.95      2.89
   SRCPARAM L0000674     0.00000000127      3.11      3.95      2.89
   SRCPARAM L0000675     0.00000000127      3.11      3.95      2.89
   SRCPARAM L0000676     0.00000000127      3.11      3.95      2.89
   SRCPARAM L0000677     0.00000000127      3.11      3.95      2.89
   SRCPARAM L0000678     0.00000000127      3.11      3.95      2.89
   SRCPARAM L0000679     0.00000000127      3.11      3.95      2.89
   SRCPARAM L0000680     0.00000000127      3.11      3.95      2.89
   SRCPARAM L0000681     0.00000000127      3.11      3.95      2.89
   SRCPARAM L0000682     0.00000000127      3.11      3.95      2.89
   SRCPARAM L0000683     0.00000000127      3.11      3.95      2.89
   SRCPARAM L0000684     0.00000000127      3.11      3.95      2.89
   SRCPARAM L0000685     0.00000000127      3.11      3.95      2.89
   SRCPARAM L0000686     0.00000000127      3.11      3.95      2.89
   SRCPARAM L0000687     0.00000000127      3.11      3.95      2.89
   SRCPARAM L0000688     0.00000000127      3.11      3.95      2.89
   SRCPARAM L0000689     0.00000000127      3.11      3.95      2.89
   SRCPARAM L0000690     0.00000000127      3.11      3.95      2.89
   SRCPARAM L0000691     0.00000000127      3.11      3.95      2.89
   SRCPARAM L0000692     0.00000000127      3.11      3.95      2.89
   SRCPARAM L0000693     0.00000000127      3.11      3.95      2.89
   SRCPARAM L0000694     0.00000000127      3.11      3.95      2.89
   SRCPARAM L0000695     0.00000000127      3.11      3.95      2.89
   SRCPARAM L0000696     0.00000000127      3.11      3.95      2.89
   SRCPARAM L0000697     0.00000000127      3.11      3.95      2.89
   SRCPARAM L0000698     0.00000000127      3.11      3.95      2.89
   SRCPARAM L0000699     0.00000000127      3.11      3.95      2.89
   SRCPARAM L0000700     0.00000000127      3.11      3.95      2.89
   SRCPARAM L0000701     0.00000000127      3.11      3.95      2.89
   SRCPARAM L0000702     0.00000000127      3.11      3.95      2.89
   SRCPARAM L0000703     0.00000000127      3.11      3.95      2.89
   SRCPARAM L0000704     0.00000000127      3.11      3.95      2.89
   SRCPARAM L0000705     0.00000000127      3.11      3.95      2.89
   SRCPARAM L0000706     0.00000000127      3.11      3.95      2.89
   SRCPARAM L0000707     0.00000000127      3.11      3.95      2.89
   SRCPARAM L0000708     0.00000000127      3.11      3.95      2.89
   SRCPARAM L0000709     0.00000000127      3.11      3.95      2.89
   SRCPARAM L0000710     0.00000000127      3.11      3.95      2.89
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   SRCPARAM L0000711     0.00000000127      3.11      3.95      2.89
   SRCPARAM L0000712     0.00000000127      3.11      3.95      2.89
   SRCPARAM L0000713     0.00000000127      3.11      3.95      2.89
   SRCPARAM L0000714     0.00000000127      3.11      3.95      2.89
   SRCPARAM L0000715     0.00000000127      3.11      3.95      2.89
   SRCPARAM L0000716     0.00000000127      3.11      3.95      2.89
   SRCPARAM L0000717     0.00000000127      3.11      3.95      2.89
   SRCPARAM L0000718     0.00000000127      3.11      3.95      2.89
   SRCPARAM L0000719     0.00000000127      3.11      3.95      2.89
   SRCPARAM L0000720     0.00000000127      3.11      3.95      2.89
** ---------------------------------------------------------------------
** LINE VOLUME Source ID = SLINE4
   SRCPARAM L0000721     0.000000001315      3.11      3.95      2.89
   SRCPARAM L0000722     0.000000001315      3.11      3.95      2.89
   SRCPARAM L0000723     0.000000001315      3.11      3.95      2.89
   SRCPARAM L0000724     0.000000001315      3.11      3.95      2.89
   SRCPARAM L0000725     0.000000001315      3.11      3.95      2.89
   SRCPARAM L0000726     0.000000001315      3.11      3.95      2.89
   SRCPARAM L0000727     0.000000001315      3.11      3.95      2.89
   SRCPARAM L0000728     0.000000001315      3.11      3.95      2.89
   SRCPARAM L0000729     0.000000001315      3.11      3.95      2.89
   SRCPARAM L0000730     0.000000001315      3.11      3.95      2.89
   SRCPARAM L0000731     0.000000001315      3.11      3.95      2.89
   SRCPARAM L0000732     0.000000001315      3.11      3.95      2.89
   SRCPARAM L0000733     0.000000001315      3.11      3.95      2.89
** ---------------------------------------------------------------------
** LINE VOLUME Source ID = SLINE5
   SRCPARAM L0000734     0.000000001273      3.11      3.95      2.89
   SRCPARAM L0000735     0.000000001273      3.11      3.95      2.89
   SRCPARAM L0000736     0.000000001273      3.11      3.95      2.89
   SRCPARAM L0000737     0.000000001273      3.11      3.95      2.89
   SRCPARAM L0000738     0.000000001273      3.11      3.95      2.89
   SRCPARAM L0000739     0.000000001273      3.11      3.95      2.89
   SRCPARAM L0000740     0.000000001273      3.11      3.95      2.89
   SRCPARAM L0000741     0.000000001273      3.11      3.95      2.89
   SRCPARAM L0000742     0.000000001273      3.11      3.95      2.89
   SRCPARAM L0000743     0.000000001273      3.11      3.95      2.89
   SRCPARAM L0000744     0.000000001273      3.11      3.95      2.89
   SRCPARAM L0000745     0.000000001273      3.11      3.95      2.89
   SRCPARAM L0000746     0.000000001273      3.11      3.95      2.89
   SRCPARAM L0000747     0.000000001273      3.11      3.95      2.89
   SRCPARAM L0000748     0.000000001273      3.11      3.95      2.89
   SRCPARAM L0000749     0.000000001273      3.11      3.95      2.89
   SRCPARAM L0000750     0.000000001273      3.11      3.95      2.89
   SRCPARAM L0000751     0.000000001273      3.11      3.95      2.89
   SRCPARAM L0000752     0.000000001273      3.11      3.95      2.89
   SRCPARAM L0000753     0.000000001273      3.11      3.95      2.89
   SRCPARAM L0000754     0.000000001273      3.11      3.95      2.89
   SRCPARAM L0000755     0.000000001273      3.11      3.95      2.89
   SRCPARAM L0000756     0.000000001273      3.11      3.95      2.89
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SRCPARAM	L0000757	0.000000001273	3.11	3.95	2.89
SRCPARAM	L0000758	0.000000001273	3.11	3.95	2.89
SRCPARAM	L0000759	0.000000001273	3.11	3.95	2.89
SRCPARAM	L0000760	0.000000001273	3.11	3.95	2.89
SRCPARAM	L0000761	0.000000001273	3.11	3.95	2.89
SRCPARAM	L0000762	0.000000001273	3.11	3.95	2.89
SRCPARAM	L0000763	0.000000001273	3.11	3.95	2.89
SRCPARAM	L0000764	0.000000001273	3.11	3.95	2.89
SRCPARAM	L0000765	0.000000001273	3.11	3.95	2.89
SRCPARAM	L0000766	0.000000001273	3.11	3.95	2.89
SRCPARAM	L0000767	0.000000001273	3.11	3.95	2.89
SRCPARAM	L0000768	0.000000001273	3.11	3.95	2.89
SRCPARAM	L0000769	0.000000001273	3.11	3.95	2.89
SRCPARAM	L0000770	0.000000001273	3.11	3.95	2.89
SRCPARAM	L0000771	0.000000001273	3.11	3.95	2.89
SRCPARAM	L0000772	0.000000001273	3.11	3.95	2.89
SRCPARAM	L0000773	0.000000001273	3.11	3.95	2.89
SRCPARAM	L0000774	0.000000001273	3.11	3.95	2.89
SRCPARAM	L0000775	0.000000001273	3.11	3.95	2.89
SRCPARAM	L0000776	0.000000001273	3.11	3.95	2.89
SRCPARAM	L0000777	0.000000001273	3.11	3.95	2.89
SRCPARAM	L0000778	0.000000001273	3.11	3.95	2.89
SRCPARAM	L0000779	0.000000001273	3.11	3.95	2.89
SRCPARAM	L0000780	0.000000001273	3.11	3.95	2.89
SRCPARAM	L0000781	0.000000001273	3.11	3.95	2.89
SRCPARAM	L0000782	0.000000001273	3.11	3.95	2.89
SRCPARAM	L0000783	0.000000001273	3.11	3.95	2.89
SRCPARAM	L0000784	0.000000001273	3.11	3.95	2.89
SRCPARAM	L0000785	0.000000001273	3.11	3.95	2.89
SRCPARAM	L0000786	0.000000001273	3.11	3.95	2.89
SRCPARAM	L0000787	0.000000001273	3.11	3.95	2.89
SRCPARAM	L0000788	0.000000001273	3.11	3.95	2.89
SRCPARAM	L0000789	0.000000001273	3.11	3.95	2.89
SRCPARAM	L0000790	0.000000001273	3.11	3.95	2.89
SRCPARAM	L0000791	0.000000001273	3.11	3.95	2.89
SRCPARAM	L0000792	0.000000001273	3.11	3.95	2.89
SRCPARAM	L0000793	0.000000001273	3.11	3.95	2.89
SRCPARAM	L0000794	0.000000001273	3.11	3.95	2.89
SRCPARAM	L0000795	0.000000001273	3.11	3.95	2.89
SRCPARAM	L0000796	0.000000001273	3.11	3.95	2.89
SRCPARAM	L0000797	0.000000001273	3.11	3.95	2.89
SRCPARAM	L0000798	0.000000001273	3.11	3.95	2.89
SRCPARAM	L0000799	0.000000001273	3.11	3.95	2.89
SRCPARAM	L0000800	0.000000001273	3.11	3.95	2.89
SRCPARAM	L0000801	0.000000001273	3.11	3.95	2.89
SRCPARAM	L0000802	0.000000001273	3.11	3.95	2.89
SRCPARAM	L0000803	0.000000001273	3.11	3.95	2.89
SRCPARAM	L0000804	0.000000001273	3.11	3.95	2.89
SRCPARAM	L0000805	0.000000001273	3.11	3.95	2.89
SRCPARAM	L0000806	0.000000001273	3.11	3.95	2.89

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   SRCPARAM L0000807     0.000000001273      3.11      3.95      2.89
   SRCPARAM L0000808     0.000000001273      3.11      3.95      2.89
   SRCPARAM L0000809     0.000000001273      3.11      3.95      2.89
   SRCPARAM L0000810     0.000000001273      3.11      3.95      2.89
   SRCPARAM L0000811     0.000000001273      3.11      3.95      2.89
   SRCPARAM L0000812     0.000000001273      3.11      3.95      2.89
   SRCPARAM L0000813     0.000000001273      3.11      3.95      2.89
   SRCPARAM L0000814     0.000000001273      3.11      3.95      2.89
   SRCPARAM L0000815     0.000000001273      3.11      3.95      2.89
   SRCPARAM L0000816     0.000000001273      3.11      3.95      2.89
   SRCPARAM L0000817     0.000000001273      3.11      3.95      2.89
   SRCPARAM L0000818     0.000000001273      3.11      3.95      2.89
   SRCPARAM L0000819     0.000000001273      3.11      3.95      2.89
   SRCPARAM L0000820     0.000000001273      3.11      3.95      2.89
   SRCPARAM L0000821     0.000000001273      3.11      3.95      2.89
   SRCPARAM L0000822     0.000000001273      3.11      3.95      2.89
   SRCPARAM L0000823     0.000000001273      3.11      3.95      2.89
   SRCPARAM L0000824     0.000000001273      3.11      3.95      2.89
   SRCPARAM L0000825     0.000000001273      3.11      3.95      2.89
   SRCPARAM L0000826     0.000000001273      3.11      3.95      2.89
   SRCPARAM L0000827     0.000000001273      3.11      3.95      2.89
   SRCPARAM L0000828     0.000000001273      3.11      3.95      2.89
   SRCPARAM L0000829     0.000000001273      3.11      3.95      2.89
   SRCPARAM L0000830     0.000000001273      3.11      3.95      2.89
   SRCPARAM L0000831     0.000000001273      3.11      3.95      2.89
   SRCPARAM L0000832     0.000000001273      3.11      3.95      2.89
   SRCPARAM L0000833     0.000000001273      3.11      3.95      2.89
   SRCPARAM L0000834     0.000000001273      3.11      3.95      2.89
   SRCPARAM L0000835     0.000000001273      3.11      3.95      2.89
   SRCPARAM L0000836     0.000000001273      3.11      3.95      2.89
   SRCPARAM L0000837     0.000000001273      3.11      3.95      2.89
   SRCPARAM L0000838     0.000000001273      3.11      3.95      2.89
   SRCPARAM L0000839     0.000000001273      3.11      3.95      2.89
   SRCPARAM L0000840     0.000000001273      3.11      3.95      2.89
   SRCPARAM L0000841     0.000000001273      3.11      3.95      2.89
   SRCPARAM L0000842     0.000000001273      3.11      3.95      2.89
   SRCPARAM L0000843     0.000000001273      3.11      3.95      2.89
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** LINE VOLUME Source ID = SLINE6
   SRCPARAM L0000844     0.000000001278      3.11      3.95      2.89
   SRCPARAM L0000845     0.000000001278      3.11      3.95      2.89
   SRCPARAM L0000846     0.000000001278      3.11      3.95      2.89
   SRCPARAM L0000847     0.000000001278      3.11      3.95      2.89
   SRCPARAM L0000848     0.000000001278      3.11      3.95      2.89
   SRCPARAM L0000849     0.000000001278      3.11      3.95      2.89
   SRCPARAM L0000850     0.000000001278      3.11      3.95      2.89
   SRCPARAM L0000851     0.000000001278      3.11      3.95      2.89
   SRCPARAM L0000852     0.000000001278      3.11      3.95      2.89
   SRCPARAM L0000853     0.000000001278      3.11      3.95      2.89
   SRCPARAM L0000854     0.000000001278      3.11      3.95      2.89
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SRCPARAM	L0000855	0.000000001278	3.11	3.95	2.89
SRCPARAM	L0000856	0.000000001278	3.11	3.95	2.89
SRCPARAM	L0000857	0.000000001278	3.11	3.95	2.89
SRCPARAM	L0000858	0.000000001278	3.11	3.95	2.89
SRCPARAM	L0000859	0.000000001278	3.11	3.95	2.89
SRCPARAM	L0000860	0.000000001278	3.11	3.95	2.89
SRCPARAM	L0000861	0.000000001278	3.11	3.95	2.89
SRCPARAM	L0000862	0.000000001278	3.11	3.95	2.89
SRCPARAM	L0000863	0.000000001278	3.11	3.95	2.89
SRCPARAM	L0000864	0.000000001278	3.11	3.95	2.89
SRCPARAM	L0000865	0.000000001278	3.11	3.95	2.89
SRCPARAM	L0000866	0.000000001278	3.11	3.95	2.89
SRCPARAM	L0000867	0.000000001278	3.11	3.95	2.89
SRCPARAM	L0000868	0.000000001278	3.11	3.95	2.89
SRCPARAM	L0000869	0.000000001278	3.11	3.95	2.89
SRCPARAM	L0000870	0.000000001278	3.11	3.95	2.89
SRCPARAM	L0000871	0.000000001278	3.11	3.95	2.89
SRCPARAM	L0000872	0.000000001278	3.11	3.95	2.89
SRCPARAM	L0000873	0.000000001278	3.11	3.95	2.89
SRCPARAM	L0000874	0.000000001278	3.11	3.95	2.89
SRCPARAM	L0000875	0.000000001278	3.11	3.95	2.89
SRCPARAM	L0000876	0.000000001278	3.11	3.95	2.89
SRCPARAM	L0000877	0.000000001278	3.11	3.95	2.89
SRCPARAM	L0000878	0.000000001278	3.11	3.95	2.89
SRCPARAM	L0000879	0.000000001278	3.11	3.95	2.89
SRCPARAM	L0000880	0.000000001278	3.11	3.95	2.89
SRCPARAM	L0000881	0.000000001278	3.11	3.95	2.89
SRCPARAM	L0000882	0.000000001278	3.11	3.95	2.89
SRCPARAM	L0000883	0.000000001278	3.11	3.95	2.89
SRCPARAM	L0000884	0.000000001278	3.11	3.95	2.89
SRCPARAM	L0000885	0.000000001278	3.11	3.95	2.89
SRCPARAM	L0000886	0.000000001278	3.11	3.95	2.89
SRCPARAM	L0000887	0.000000001278	3.11	3.95	2.89
SRCPARAM	L0000888	0.000000001278	3.11	3.95	2.89
SRCPARAM	L0000889	0.000000001278	3.11	3.95	2.89
SRCPARAM	L0000890	0.000000001278	3.11	3.95	2.89
SRCPARAM	L0000891	0.000000001278	3.11	3.95	2.89
SRCPARAM	L0000892	0.000000001278	3.11	3.95	2.89
SRCPARAM	L0000893	0.000000001278	3.11	3.95	2.89
SRCPARAM	L0000894	0.000000001278	3.11	3.95	2.89
SRCPARAM	L0000895	0.000000001278	3.11	3.95	2.89
SRCPARAM	L0000896	0.000000001278	3.11	3.95	2.89
SRCPARAM	L0000897	0.000000001278	3.11	3.95	2.89
SRCPARAM	L0000898	0.000000001278	3.11	3.95	2.89
SRCPARAM	L0000899	0.000000001278	3.11	3.95	2.89
SRCPARAM	L0000900	0.000000001278	3.11	3.95	2.89
SRCPARAM	L0000901	0.000000001278	3.11	3.95	2.89
SRCPARAM	L0000902	0.000000001278	3.11	3.95	2.89
SRCPARAM	L0000903	0.000000001278	3.11	3.95	2.89
SRCPARAM	L0000904	0.000000001278	3.11	3.95	2.89

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   SRCPARAM L0000905     0.000000001278      3.11      3.95      2.89
   SRCPARAM L0000906     0.000000001278      3.11      3.95      2.89
   SRCPARAM L0000907     0.000000001278      3.11      3.95      2.89
   SRCPARAM L0000908     0.000000001278      3.11      3.95      2.89
   SRCPARAM L0000909     0.000000001278      3.11      3.95      2.89
   SRCPARAM L0000910     0.000000001278      3.11      3.95      2.89
   SRCPARAM L0000911     0.000000001278      3.11      3.95      2.89
   SRCPARAM L0000912     0.000000001278      3.11      3.95      2.89
   SRCPARAM L0000913     0.000000001278      3.11      3.95      2.89
   SRCPARAM L0000914     0.000000001278      3.11      3.95      2.89
   SRCPARAM L0000915     0.000000001278      3.11      3.95      2.89
   SRCPARAM L0000916     0.000000001278      3.11      3.95      2.89
   SRCPARAM L0000917     0.000000001278      3.11      3.95      2.89
   SRCPARAM L0000918     0.000000001278      3.11      3.95      2.89
   SRCPARAM L0000919     0.000000001278      3.11      3.95      2.89
   SRCPARAM L0000920     0.000000001278      3.11      3.95      2.89
   SRCPARAM L0000921     0.000000001278      3.11      3.95      2.89
   SRCPARAM L0000922     0.000000001278      3.11      3.95      2.89
** ----------------------------------------------------------------------
** LINE VOLUME Source ID = SLINE7
   SRCPARAM L0000631     0.000000000041      3.11      3.95      2.89
   SRCPARAM L0000632     0.000000000041      3.11      3.95      2.89
   SRCPARAM L0000633     0.000000000041      3.11      3.95      2.89
   SRCPARAM L0000634     0.000000000041      3.11      3.95      2.89
   SRCPARAM L0000635     0.000000000041      3.11      3.95      2.89
   SRCPARAM L0000636     0.000000000041      3.11      3.95      2.89
   SRCPARAM L0000637     0.000000000041      3.11      3.95      2.89
   SRCPARAM L0000638     0.000000000041      3.11      3.95      2.89
   SRCPARAM L0000639     0.000000000041      3.11      3.95      2.89
   SRCPARAM L0000640     0.000000000041      3.11      3.95      2.89
   SRCPARAM L0000641     0.000000000041      3.11      3.95      2.89
   SRCPARAM L0000642     0.000000000041      3.11      3.95      2.89
   SRCPARAM L0000643     0.000000000041      3.11      3.95      2.89
   SRCPARAM L0000644     0.000000000041      3.11      3.95      2.89
   SRCPARAM L0000645     0.000000000041      3.11      3.95      2.89
   SRCPARAM L0000646     0.000000000041      3.11      3.95      2.89
   SRCPARAM L0000647     0.000000000041      3.11      3.95      2.89
   SRCPARAM L0000648     0.000000000041      3.11      3.95      2.89
   SRCPARAM L0000649     0.000000000041      3.11      3.95      2.89
   SRCPARAM L0000650     0.000000000041      3.11      3.95      2.89
** ----------------------------------------------------------------------
** LINE VOLUME Source ID = SLINE8
   SRCPARAM L0000651     0.000000000036      3.11      3.95      2.89
   SRCPARAM L0000652     0.000000000036      3.11      3.95      2.89
   SRCPARAM L0000653     0.000000000036      3.11      3.95      2.89
   SRCPARAM L0000654     0.000000000036      3.11      3.95      2.89
   SRCPARAM L0000655     0.000000000036      3.11      3.95      2.89
   SRCPARAM L0000656     0.000000000036      3.11      3.95      2.89
   SRCPARAM L0000657     0.000000000036      3.11      3.95      2.89
   SRCPARAM L0000658     0.000000000036      3.11      3.95      2.89
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   SRCPARAM L0000659     0.000000000036      3.11      3.95      2.89
   SRCPARAM L0000660     0.000000000036      3.11      3.95      2.89
   SRCPARAM L0000661     0.000000000036      3.11      3.95      2.89
   SRCPARAM L0000662     0.000000000036      3.11      3.95      2.89
   SRCPARAM L0000663     0.000000000036      3.11      3.95      2.89
   SRCPARAM L0000664     0.000000000036      3.11      3.95      2.89
   SRCPARAM L0000665     0.000000000036      3.11      3.95      2.89
   SRCPARAM L0000666     0.000000000036      3.11      3.95      2.89
** ---------------------------------------------------------------------
** LINE VOLUME Source ID = SLINE9
   SRCPARAM L0000560     0.000000001451      3.11      3.95      2.89
   SRCPARAM L0000561     0.000000001451      3.11      3.95      2.89
   SRCPARAM L0000562     0.000000001451      3.11      3.95      2.89
   SRCPARAM L0000563     0.000000001451      3.11      3.95      2.89
   SRCPARAM L0000564     0.000000001451      3.11      3.95      2.89
   SRCPARAM L0000565     0.000000001451      3.11      3.95      2.89
   SRCPARAM L0000566     0.000000001451      3.11      3.95      2.89
   SRCPARAM L0000567     0.000000001451      3.11      3.95      2.89
   SRCPARAM L0000568     0.000000001451      3.11      3.95      2.89
   SRCPARAM L0000569     0.000000001451      3.11      3.95      2.89
   SRCPARAM L0000570     0.000000001451      3.11      3.95      2.89
   SRCPARAM L0000571     0.000000001451      3.11      3.95      2.89
   SRCPARAM L0000572     0.000000001451      3.11      3.95      2.89
   SRCPARAM L0000573     0.000000001451      3.11      3.95      2.89
   SRCPARAM L0000574     0.000000001451      3.11      3.95      2.89
   SRCPARAM L0000575     0.000000001451      3.11      3.95      2.89
   SRCPARAM L0000576     0.000000001451      3.11      3.95      2.89
   SRCPARAM L0000577     0.000000001451      3.11      3.95      2.89
   SRCPARAM L0000578     0.000000001451      3.11      3.95      2.89
   SRCPARAM L0000579     0.000000001451      3.11      3.95      2.89
   SRCPARAM L0000580     0.000000001451      3.11      3.95      2.89
   SRCPARAM L0000581     0.000000001451      3.11      3.95      2.89
   SRCPARAM L0000582     0.000000001451      3.11      3.95      2.89
   SRCPARAM L0000583     0.000000001451      3.11      3.95      2.89
   SRCPARAM L0000584     0.000000001451      3.11      3.95      2.89
   SRCPARAM L0000585     0.000000001451      3.11      3.95      2.89
   SRCPARAM L0000586     0.000000001451      3.11      3.95      2.89
   SRCPARAM L0000587     0.000000001451      3.11      3.95      2.89
   SRCPARAM L0000588     0.000000001451      3.11      3.95      2.89
   SRCPARAM L0000589     0.000000001451      3.11      3.95      2.89
   SRCPARAM L0000590     0.000000001451      3.11      3.95      2.89
   SRCPARAM L0000591     0.000000001451      3.11      3.95      2.89
   SRCPARAM L0000592     0.000000001451      3.11      3.95      2.89
   SRCPARAM L0000593     0.000000001451      3.11      3.95      2.89
   SRCPARAM L0000594     0.000000001451      3.11      3.95      2.89
   SRCPARAM L0000595     0.000000001451      3.11      3.95      2.89
   SRCPARAM L0000596     0.000000001451      3.11      3.95      2.89
   SRCPARAM L0000597     0.000000001451      3.11      3.95      2.89
   SRCPARAM L0000598     0.000000001451      3.11      3.95      2.89
   SRCPARAM L0000599     0.000000001451      3.11      3.95      2.89
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   SRCPARAM L0000600     0.000000001451      3.11      3.95      2.89
   SRCPARAM L0000601     0.000000001451      3.11      3.95      2.89
   SRCPARAM L0000602     0.000000001451      3.11      3.95      2.89
   SRCPARAM L0000603     0.000000001451      3.11      3.95      2.89
   SRCPARAM L0000604     0.000000001451      3.11      3.95      2.89
   SRCPARAM L0000605     0.000000001451      3.11      3.95      2.89
   SRCPARAM L0000606     0.000000001451      3.11      3.95      2.89
   SRCPARAM L0000607     0.000000001451      3.11      3.95      2.89
   SRCPARAM L0000608     0.000000001451      3.11      3.95      2.89
   SRCPARAM L0000609     0.000000001451      3.11      3.95      2.89
   SRCPARAM L0000610     0.000000001451      3.11      3.95      2.89
   SRCPARAM L0000611     0.000000001451      3.11      3.95      2.89
   SRCPARAM L0000612     0.000000001451      3.11      3.95      2.89
   SRCPARAM L0000613     0.000000001451      3.11      3.95      2.89
   SRCPARAM L0000614     0.000000001451      3.11      3.95      2.89
   SRCPARAM L0000615     0.000000001451      3.11      3.95      2.89
   SRCPARAM L0000616     0.000000001451      3.11      3.95      2.89
   SRCPARAM L0000617     0.000000001451      3.11      3.95      2.89
   SRCPARAM L0000618     0.000000001451      3.11      3.95      2.89
   SRCPARAM L0000619     0.000000001451      3.11      3.95      2.89
   SRCPARAM L0000620     0.000000001451      3.11      3.95      2.89
   SRCPARAM L0000621     0.000000001451      3.11      3.95      2.89
   SRCPARAM L0000622     0.000000001451      3.11      3.95      2.89
   SRCPARAM L0000623     0.000000001451      3.11      3.95      2.89
   SRCPARAM L0000624     0.000000001451      3.11      3.95      2.89
   SRCPARAM L0000625     0.000000001451      3.11      3.95      2.89
   SRCPARAM L0000626     0.000000001451      3.11      3.95      2.89
   SRCPARAM L0000627     0.000000001451      3.11      3.95      2.89
   SRCPARAM L0000628     0.000000001451      3.11      3.95      2.89
   SRCPARAM L0000629     0.000000001451      3.11      3.95      2.89
   SRCPARAM L0000630     0.000000001451      3.11      3.95      2.89
** ---------------------------------------------------------------------
   SRCPARAM STCK1        0.000521271     6.100   673.600     24.73      0.61

** Building Downwash **
   BUILDHGT STCK1           15.24    15.24    15.24    15.24    15.24    15.24
   BUILDHGT STCK1           15.24    15.24    15.24    15.24    15.24    15.24
   BUILDHGT STCK1           15.24    15.24    15.24    15.24    15.24    15.24
   BUILDHGT STCK1           15.24    15.24    15.24    15.24    15.24    15.24
   BUILDHGT STCK1           15.24    15.24    15.24    15.24    15.24    15.24
   BUILDHGT STCK1           15.24    15.24    15.24    15.24    15.24    15.24

   BUILDWID STCK1          216.14   218.74   214.68   204.11   187.33   164.87
   BUILDWID STCK1          137.39   105.73    70.87   105.74   137.39   164.87
   BUILDWID STCK1          187.33   204.11   214.68   218.74   216.14   206.98
   BUILDWID STCK1          216.14   218.74   214.68   204.11   187.33   164.87
   BUILDWID STCK1          137.39   105.73    70.87   105.74   137.39   164.87
   BUILDWID STCK1          187.33   204.11   214.68   218.74   216.14   206.98

   BUILDLEN STCK1          105.74   137.39   164.87   187.33   204.11   214.68
```

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   BUILDLEN STCK1          218.74   216.14   206.98   216.14   218.74   214.68
   BUILDLEN STCK1          204.11   187.33   164.87   137.39   105.73    70.87
   BUILDLEN STCK1          105.74   137.39   164.87   187.33   204.11   214.68
   BUILDLEN STCK1          218.74   216.14   206.98   216.14   218.74   214.68
   BUILDLEN STCK1          204.11   187.33   164.87   137.39   105.73    70.87

   XBADJ    STCK1          -52.67   -87.62  -119.90  -148.54  -172.66  -191.54
   XBADJ    STCK1         -204.60  -211.44  -211.86  -218.15  -217.81  -210.85
   XBADJ    STCK1         -197.48  -178.11  -153.34  -123.90   -90.70   -54.74
   XBADJ    STCK1          -53.06   -49.77   -44.97   -38.80   -31.45   -23.14
   XBADJ    STCK1          -14.14    -4.70     4.88     2.00    -0.93    -3.84
   XBADJ    STCK1           -6.63    -9.22   -11.53   -13.49   -15.04   -16.13

   YBADJ    STCK1          110.08   108.44   103.50    95.43    84.45    70.90
   YBADJ    STCK1           55.21    37.83    19.30     0.19   -18.92   -37.47
   YBADJ    STCK1          -54.87   -70.61   -84.20   -95.23  -103.37  -108.37
   YBADJ    STCK1         -110.08  -108.44  -103.50   -95.43   -84.45   -70.90
   YBADJ    STCK1          -55.21   -37.83   -19.30    -0.19    18.92    37.47
   YBADJ    STCK1           54.87    70.61    84.20    95.23   103.37   108.37

   URBANSRC ALL
   SRCGROUP ALL
SO FINISHED
**
****************************************
** AERMOD Receptor Pathway
****************************************
**
**
RE STARTING
   INCLUDED "880 Doolittle_Ops.rou"
RE FINISHED
**
****************************************
** AERMOD Meteorology Pathway
****************************************
**
**
ME STARTING
   SURFFILE "..\880 Doolittle\880 Doolittle.SFC"
   PROFFILE "..\880 Doolittle\880 Doolittle.PFL"
   SURFDATA 23230 2013 OAKLAND/WSO_AP
   UAIRDATA 23230 2013 OAKLAND/WSO_AP
   PROFBASE 5.0 METERS
ME FINISHED
**
****************************************
** AERMOD Output Pathway
****************************************
**
```

```
**
OU STARTING
   RECTABLE ALLAVE 1ST
   RECTABLE 1 1ST
   RECTABLE 8 1ST
   RECTABLE 24 1ST
** Auto-Generated Plotfiles
   PLOTFILE 1 ALL 1ST "880 DOOLITTLE_OPS.AD\01H1GALL.PLT" 31
   PLOTFILE 8 ALL 1ST "880 DOOLITTLE_OPS.AD\08H1GALL.PLT" 32
   PLOTFILE 24 ALL 1ST "880 DOOLITTLE_OPS.AD\24H1GALL.PLT" 33
   PLOTFILE PERIOD ALL "880 DOOLITTLE_OPS.AD\PE00GALL.PLT" 34
   SUMMFILE "880 Doolittle_Ops.sum"
OU FINISHED


  *** Message Summary For AERMOD Model Setup ***

  --------- Summary of Total Messages --------

 A Total of            0 Fatal Error Message(s)
 A Total of            2 Warning Message(s)
 A Total of            0 Informational Message(s)


    ******** FATAL ERROR MESSAGES ********
               ***  NONE  ***


    ********   WARNING MESSAGES   ********
 ME W186     995       MEOPEN: THRESH_1MIN 1-min ASOS wind speed threshold used
      0.50
 ME W187     995       MEOPEN: ADJ_U* Option for Stable Low Winds used in AERMET


 ***********************************
 *** SETUP Finishes Successfully ***
 ***********************************

↑ *** AERMOD - VERSION 22112  ***   *** C:\Lakes\AERMOD View\880 Doolittle_Ops\880
Doolittle_Ops.isc         ***        01/12/23
 *** AERMET - VERSION  18081 ***   ***
                        ***        17:31:16

                                   PAGE   1
 *** MODELOPTs:    RegDFAULT  CONC  ELEV  URBAN  ADJ_U*

                                            ***     MODEL SETUP OPTIONS SUMMARY
  ***
 - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - -
- - - - - - - - - - - - - - - - - - - - - -
```

```
 ** Model Options Selected:
      * Model Uses Regulatory DEFAULT Options
      * Model Is Setup For Calculation of Average CONCentration Values.
      * NO GAS DEPOSITION Data Provided.
      * NO PARTICLE DEPOSITION Data Provided.
      * Model Uses NO DRY DEPLETION. DDPLETE  =  F
      * Model Uses NO WET DEPLETION. WETDPLT  =  F
      * Stack-tip Downwash.
      * Model Accounts for ELEVated Terrain Effects.
      * Use Calms Processing Routine.
      * Use Missing Data Processing Routine.
      * No Exponential Decay.
      * Model Uses URBAN Dispersion Algorithm for the SBL for   378 Source(s),
        for Total of    1 Urban Area(s):
   Urban Population =   1649000.0 ;  Urban Roughness Length =  1.000 m
      * Urban Roughness Length of 1.0 Meter Used.
      * ADJ_U*   - Use ADJ_U* option for SBL in AERMET
      * CCVR_Sub - Meteorological data includes CCVR substitutions
      * TEMP_Sub - Meteorological data includes TEMP substitutions
      * Model Assumes No FLAGPOLE Receptor Heights.
      * The User Specified a Pollutant Type of: PM_2.5

 **Model Calculates  3 Short Term Average(s) of:   1-HR   8-HR  24-HR
     and Calculates PERIOD Averages

 **This Run Includes:    378 Source(s);       1 Source Group(s); and     326
Receptor(s)

                with:      1 POINT(s), including
                           0 POINTCAP(s) and      0 POINTHOR(s)
                 and:    377 VOLUME source(s)
                 and:      0 AREA type source(s)
                 and:      0 LINE source(s)
                 and:      0 RLINE/RLINEXT source(s)
                 and:      0 OPENPIT source(s)
                 and:      0 BUOYANT LINE source(s) with a total of     0 line(s)
                 and:      0 SWPOINT source(s)


 **Model Set To Continue RUNning After the Setup Testing.

 **The AERMET Input Meteorological Data Version Date:  18081

 **Output Options Selected:
          Model Outputs Tables of PERIOD Averages by Receptor
          Model Outputs Tables of Highest Short Term Values by Receptor (RECTABLE
Keyword)
          Model Outputs External File(s) of High Values for Plotting (PLOTFILE
Keyword)
```

```
          Model Outputs Separate Summary File of High Ranked Values (SUMMFILE
Keyword)

 **NOTE:  The Following Flags May Appear Following CONC Values:  c for Calm Hours
                                                                 m for Missing
Hours
                                                                 b for Both Calm
and Missing Hours

 **Misc. Inputs:  Base Elev. for Pot. Temp. Profile (m MSL) =     5.00 ;  Decay
Coef. =    0.000     ;  Rot. Angle =     0.0
                  Emission Units = GRAMS/SEC                               ;
Emission Rate Unit Factor =   0.10000E+07
                  Output Units   = MICROGRAMS/M**3

 **Approximate Storage Requirements of Model =      4.2 MB of RAM.

 **Input Runstream File:          aermod.inp

 **Output Print File:             aermod.out


 **Detailed Error/Message File:   880 Doolittle_Ops.err

 **File for Summary of Results:   880 Doolittle_Ops.sum

 *** AERMOD - VERSION 22112  ***   *** C:\Lakes\AERMOD View\880 Doolittle_Ops\880
Doolittle_Ops.isc         ***        01/12/23
 *** AERMET - VERSION  18081 ***   ***
                       ***        17:31:16

                                  PAGE   2
 *** MODELOPTs:    RegDFAULT  CONC  ELEV  URBAN  ADJ_U*


                                                   *** POINT SOURCE DATA ***

               NUMBER EMISSION RATE                    BASE     STACK   STACK
STACK     STACK    BLDG   URBAN  CAP/  EMIS RATE
   SOURCE       PART.  (GRAMS/SEC)     X        Y      ELEV.    HEIGHT  TEMP.
EXIT VEL. DIAMETER  EXISTS SOURCE HOR   SCALAR
     ID         CATS.               (METERS) (METERS) (METERS) (METERS) (DEG.K)
(M/SEC)  (METERS)                     VARY BY
 - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - -
- - - - - - - - - - - - - - - - - - - - - - - - -

 STCK1            0   0.52127E-03  571669.7 4175058.3     4.2     6.10   673.60
24.73     0.61    YES     YES   NO
 *** AERMOD - VERSION 22112  ***   *** C:\Lakes\AERMOD View\880 Doolittle_Ops\880
Doolittle_Ops.isc         ***        01/12/23
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*** MODELOPTs: RegDFAULT CONC ELEV URBAN ADJ_U*

*** VOLUME SOURCE DATA ***

SOURCE ID	NUMBER PART. CATS.	EMISSION RATE (GRAMS/SEC)	X (METERS)	Y (METERS)	BASE ELEV. (METERS)	RELEASE HEIGHT (METERS)	INIT. SY (METERS)	INIT. SZ (METERS)	URBAN SOURCE	EMISSION RATE SCALAR VARY BY
L0000248	0	0.38070E-07	571454.2	4175009.5	3.5	3.11	3.95	2.89	YES	
L0000249	0	0.38070E-07	571448.1	4175003.6	3.5	3.11	3.95	2.89	YES	
L0000250	0	0.38070E-07	571442.0	4174997.7	3.5	3.11	3.95	2.89	YES	
L0000251	0	0.38070E-07	571435.9	4174991.7	3.5	3.11	3.95	2.89	YES	
L0000252	0	0.38070E-07	571429.8	4174985.8	3.5	3.11	3.95	2.89	YES	
L0000253	0	0.38070E-07	571423.7	4174979.9	3.5	3.11	3.95	2.89	YES	
L0000254	0	0.38070E-07	571417.6	4174973.9	3.5	3.11	3.95	2.89	YES	
L0000255	0	0.38070E-07	571411.5	4174968.0	3.6	3.11	3.95	2.89	YES	
L0000256	0	0.38070E-07	571405.4	4174962.1	3.6	3.11	3.95	2.89	YES	
L0000257	0	0.38070E-07	571399.3	4174956.2	3.5	3.11	3.95	2.89	YES	
L0000258	0	0.38070E-07	571393.2	4174950.2	3.6	3.11	3.95	2.89	YES	
L0000259	0	0.38070E-07	571387.2	4174944.3	3.6	3.11	3.95	2.89	YES	
L0000260	0	0.38070E-07	571381.1	4174938.4	3.6	3.11	3.95	2.89	YES	
L0000261	0	0.38070E-07	571375.0	4174932.5	3.5	3.11	3.95	2.89	YES	
L0000667	0	0.12700E-08	571459.7	4175172.0	4.1	3.11	3.95	2.89	YES	
L0000668	0	0.12700E-08	571452.3	4175176.2	4.0	3.11	3.95	2.89	YES	

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 L0000669         0   0.12700E-08  571444.9 4175180.4     3.9     3.11     3.95
2.89     YES
 L0000670         0   0.12700E-08  571437.6 4175184.6     3.9     3.11     3.95
2.89     YES
 L0000671         0   0.12700E-08  571430.2 4175188.9     3.9     3.11     3.95
2.89     YES
 L0000672         0   0.12700E-08  571422.8 4175193.1     3.8     3.11     3.95
2.89     YES
 L0000673         0   0.12700E-08  571415.4 4175197.3     3.8     3.11     3.95
2.89     YES
 L0000674         0   0.12700E-08  571408.0 4175201.5     3.8     3.11     3.95
2.89     YES
 L0000675         0   0.12700E-08  571400.7 4175205.7     3.8     3.11     3.95
2.89     YES
 L0000676         0   0.12700E-08  571393.3 4175210.0     3.8     3.11     3.95
2.89     YES
 L0000677         0   0.12700E-08  571385.9 4175214.2     3.7     3.11     3.95
2.89     YES
 L0000678         0   0.12700E-08  571378.5 4175218.4     3.6     3.11     3.95
2.89     YES
 L0000679         0   0.12700E-08  571371.1 4175222.6     3.6     3.11     3.95
2.89     YES
 L0000680         0   0.12700E-08  571363.8 4175226.8     3.5     3.11     3.95
2.89     YES
 L0000681         0   0.12700E-08  571356.4 4175231.1     3.5     3.11     3.95
2.89     YES
 L0000682         0   0.12700E-08  571349.0 4175235.3     3.5     3.11     3.95
2.89     YES
 L0000683         0   0.12700E-08  571341.6 4175239.5     3.5     3.11     3.95
2.89     YES
 L0000684         0   0.12700E-08  571334.3 4175243.7     3.6     3.11     3.95
2.89     YES
 L0000685         0   0.12700E-08  571326.9 4175247.9     3.6     3.11     3.95
2.89     YES
 L0000686         0   0.12700E-08  571319.5 4175252.2     3.6     3.11     3.95
2.89     YES
 L0000687         0   0.12700E-08  571312.1 4175256.4     3.6     3.11     3.95
2.89     YES
 L0000688         0   0.12700E-08  571304.7 4175260.6     3.7     3.11     3.95
2.89     YES
 L0000689         0   0.12700E-08  571297.4 4175264.8     3.7     3.11     3.95
2.89     YES
 L0000690         0   0.12700E-08  571290.0 4175269.0     3.8     3.11     3.95
2.89     YES
 L0000691         0   0.12700E-08  571282.6 4175273.3     3.8     3.11     3.95
2.89     YES
 L0000692         0   0.12700E-08  571275.2 4175277.5     3.8     3.11     3.95
2.89     YES
↑ *** AERMOD - VERSION 22112  ***   *** C:\Lakes\AERMOD View\880 Doolittle_Ops\880
Doolittle_Ops.isc         ***        01/12/23
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*** MODELOPTs: RegDFAULT CONC ELEV URBAN ADJ_U*

*** VOLUME SOURCE DATA ***

SOURCE ID	NUMBER PART. CATS.	EMISSION RATE (GRAMS/SEC)	X (METERS)	Y (METERS)	BASE ELEV. (METERS)	RELEASE HEIGHT (METERS)	INIT. SY (METERS)	INIT. SZ (METERS)	URBAN SOURCE	EMISSION RATE SCALAR VARY BY
L0000693	0	0.12700E-08	571267.9	4175281.7	3.8	3.11	3.95	2.89	YES	
L0000694	0	0.12700E-08	571260.5	4175285.9	3.8	3.11	3.95	2.89	YES	
L0000695	0	0.12700E-08	571253.1	4175290.2	3.8	3.11	3.95	2.89	YES	
L0000696	0	0.12700E-08	571245.7	4175294.4	3.8	3.11	3.95	2.89	YES	
L0000697	0	0.12700E-08	571238.3	4175298.6	3.8	3.11	3.95	2.89	YES	
L0000698	0	0.12700E-08	571231.0	4175302.8	3.8	3.11	3.95	2.89	YES	
L0000699	0	0.12700E-08	571223.6	4175307.0	3.8	3.11	3.95	2.89	YES	
L0000700	0	0.12700E-08	571216.2	4175311.3	3.7	3.11	3.95	2.89	YES	
L0000701	0	0.12700E-08	571208.8	4175315.5	3.7	3.11	3.95	2.89	YES	
L0000702	0	0.12700E-08	571201.5	4175319.7	3.7	3.11	3.95	2.89	YES	
L0000703	0	0.12700E-08	571194.1	4175323.9	3.7	3.11	3.95	2.89	YES	
L0000704	0	0.12700E-08	571186.7	4175328.1	3.7	3.11	3.95	2.89	YES	
L0000705	0	0.12700E-08	571179.3	4175332.4	3.7	3.11	3.95	2.89	YES	
L0000706	0	0.12700E-08	571171.9	4175336.6	3.7	3.11	3.95	2.89	YES	
L0000707	0	0.12700E-08	571164.6	4175340.8	3.7	3.11	3.95	2.89	YES	
L0000708	0	0.12700E-08	571157.2	4175345.0	3.7	3.11	3.95	2.89	YES	

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 L0000709         0   0.12700E-08  571149.8 4175349.2     3.8     3.11     3.95
2.89     YES
 L0000710         0   0.12700E-08  571142.4 4175353.5     3.8     3.11     3.95
2.89     YES
 L0000711         0   0.12700E-08  571135.0 4175357.7     3.8     3.11     3.95
2.89     YES
 L0000712         0   0.12700E-08  571127.7 4175361.9     3.8     3.11     3.95
2.89     YES
 L0000713         0   0.12700E-08  571120.3 4175366.1     3.8     3.11     3.95
2.89     YES
 L0000714         0   0.12700E-08  571112.9 4175370.3     3.8     3.11     3.95
2.89     YES
 L0000715         0   0.12700E-08  571105.5 4175374.6     3.8     3.11     3.95
2.89     YES
 L0000716         0   0.12700E-08  571098.2 4175378.8     3.7     3.11     3.95
2.89     YES
 L0000717         0   0.12700E-08  571090.8 4175383.0     3.7     3.11     3.95
2.89     YES
 L0000718         0   0.12700E-08  571083.4 4175387.2     3.6     3.11     3.95
2.89     YES
 L0000719         0   0.12700E-08  571076.0 4175391.4     3.6     3.11     3.95
2.89     YES
 L0000720         0   0.12700E-08  571068.6 4175395.7     3.6     3.11     3.95
2.89     YES
 L0000721         0   0.13150E-08  571061.5 4175384.8     3.5     3.11     3.95
2.89     YES
 L0000722         0   0.13150E-08  571056.8 4175377.8     3.5     3.11     3.95
2.89     YES
 L0000723         0   0.13150E-08  571052.0 4175370.7     3.5     3.11     3.95
2.89     YES
 L0000724         0   0.13150E-08  571047.3 4175363.7     3.5     3.11     3.95
2.89     YES
 L0000725         0   0.13150E-08  571042.6 4175356.6     3.5     3.11     3.95
2.89     YES
 L0000726         0   0.13150E-08  571037.8 4175349.6     3.5     3.11     3.95
2.89     YES
 L0000727         0   0.13150E-08  571033.1 4175342.5     3.5     3.11     3.95
2.89     YES
 L0000728         0   0.13150E-08  571028.3 4175335.5     3.5     3.11     3.95
2.89     YES
 L0000729         0   0.13150E-08  571023.6 4175328.4     3.6     3.11     3.95
2.89     YES
 L0000730         0   0.13150E-08  571018.8 4175321.3     3.6     3.11     3.95
2.89     YES
 L0000731         0   0.13150E-08  571014.1 4175314.3     3.6     3.11     3.95
2.89     YES
 L0000732         0   0.13150E-08  571009.4 4175307.2     3.4     3.11     3.95
2.89     YES
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*** MODELOPTs: RegDFAULT CONC ELEV URBAN ADJ_U*

*** VOLUME SOURCE DATA ***

SOURCE ID	NUMBER PART. CATS.	EMISSION RATE (GRAMS/SEC)	X (METERS)	Y (METERS)	BASE ELEV. (METERS)	RELEASE HEIGHT (METERS)	INIT. SY (METERS)	INIT. SZ (METERS)	URBAN SOURCE	EMISSION RATE SCALAR VARY BY
L0000733	0	0.13150E-08	571004.6	4175300.2	3.2	3.11	3.95	2.89	YES	
L0000734	0	0.12730E-08	571001.7	4175289.2	2.9	3.11	3.95	2.89	YES	
L0000735	0	0.12730E-08	571007.9	4175283.3	2.9	3.11	3.95	2.89	YES	
L0000736	0	0.12730E-08	571014.0	4175277.5	3.0	3.11	3.95	2.89	YES	
L0000737	0	0.12730E-08	571020.2	4175271.6	3.1	3.11	3.95	2.89	YES	
L0000738	0	0.12730E-08	571026.3	4175265.7	3.3	3.11	3.95	2.89	YES	
L0000739	0	0.12730E-08	571032.5	4175259.8	3.3	3.11	3.95	2.89	YES	
L0000740	0	0.12730E-08	571038.6	4175254.0	3.4	3.11	3.95	2.89	YES	
L0000741	0	0.12730E-08	571044.7	4175248.1	3.4	3.11	3.95	2.89	YES	
L0000742	0	0.12730E-08	571050.9	4175242.2	3.4	3.11	3.95	2.89	YES	
L0000743	0	0.12730E-08	571057.0	4175236.3	3.4	3.11	3.95	2.89	YES	
L0000744	0	0.12730E-08	571063.2	4175230.5	3.4	3.11	3.95	2.89	YES	
L0000745	0	0.12730E-08	571069.3	4175224.6	3.4	3.11	3.95	2.89	YES	
L0000746	0	0.12730E-08	571075.5	4175218.7	3.4	3.11	3.95	2.89	YES	
L0000747	0	0.12730E-08	571081.6	4175212.8	3.4	3.11	3.95	2.89	YES	
L0000748	0	0.12730E-08	571087.7	4175207.0	3.4	3.11	3.95	2.89	YES	

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 L0000749         0   0.12730E-08  571093.9 4175201.1     3.4     3.11     3.95
2.89     YES
 L0000750         0   0.12730E-08  571100.0 4175195.2     3.3     3.11     3.95
2.89     YES
 L0000751         0   0.12730E-08  571106.2 4175189.3     3.3     3.11     3.95
2.89     YES
 L0000752         0   0.12730E-08  571112.3 4175183.5     3.4     3.11     3.95
2.89     YES
 L0000753         0   0.12730E-08  571118.5 4175177.6     3.4     3.11     3.95
2.89     YES
 L0000754         0   0.12730E-08  571124.6 4175171.7     3.4     3.11     3.95
2.89     YES
 L0000755         0   0.12730E-08  571130.7 4175165.8     3.5     3.11     3.95
2.89     YES
 L0000756         0   0.12730E-08  571136.9 4175160.0     3.6     3.11     3.95
2.89     YES
 L0000757         0   0.12730E-08  571143.0 4175154.1     3.6     3.11     3.95
2.89     YES
 L0000758         0   0.12730E-08  571149.2 4175148.2     3.7     3.11     3.95
2.89     YES
 L0000759         0   0.12730E-08  571155.3 4175142.3     3.6     3.11     3.95
2.89     YES
 L0000760         0   0.12730E-08  571161.5 4175136.5     3.6     3.11     3.95
2.89     YES
 L0000761         0   0.12730E-08  571167.6 4175130.6     3.6     3.11     3.95
2.89     YES
 L0000762         0   0.12730E-08  571173.7 4175124.7     3.6     3.11     3.95
2.89     YES
 L0000763         0   0.12730E-08  571179.9 4175118.8     3.6     3.11     3.95
2.89     YES
 L0000764         0   0.12730E-08  571186.0 4175113.0     3.5     3.11     3.95
2.89     YES
 L0000765         0   0.12730E-08  571192.2 4175107.1     3.5     3.11     3.95
2.89     YES
 L0000766         0   0.12730E-08  571198.3 4175101.2     3.5     3.11     3.95
2.89     YES
 L0000767         0   0.12730E-08  571204.5 4175095.3     3.5     3.11     3.95
2.89     YES
 L0000768         0   0.12730E-08  571210.6 4175089.5     3.5     3.11     3.95
2.89     YES
 L0000769         0   0.12730E-08  571216.7 4175083.6     3.6     3.11     3.95
2.89     YES
 L0000770         0   0.12730E-08  571222.9 4175077.7     3.6     3.11     3.95
2.89     YES
 L0000771         0   0.12730E-08  571229.0 4175071.8     3.6     3.11     3.95
2.89     YES
 L0000772         0   0.12730E-08  571235.2 4175066.0     3.7     3.11     3.95
2.89     YES
↑ *** AERMOD - VERSION 22112  ***   *** C:\Lakes\AERMOD View\880 Doolittle_Ops\880
Doolittle_Ops.isc         ***        01/12/23
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*** MODELOPTs: RegDFAULT CONC ELEV URBAN ADJ_U*

*** VOLUME SOURCE DATA ***

SOURCE ID	NUMBER PART. CATS.	EMISSION RATE (GRAMS/SEC)	X (METERS)	Y (METERS)	BASE ELEV. (METERS)	RELEASE HEIGHT (METERS)	INIT. SY (METERS)	INIT. SZ (METERS)	URBAN SOURCE	EMISSION RATE SCALAR VARY BY
L0000773	0	0.12730E-08	571241.3	4175060.1	3.7	3.11	3.95	2.89	YES	
L0000774	0	0.12730E-08	571247.5	4175054.2	3.7	3.11	3.95	2.89	YES	
L0000775	0	0.12730E-08	571253.6	4175048.3	3.7	3.11	3.95	2.89	YES	
L0000776	0	0.12730E-08	571259.7	4175042.5	3.7	3.11	3.95	2.89	YES	
L0000777	0	0.12730E-08	571265.9	4175036.6	3.7	3.11	3.95	2.89	YES	
L0000778	0	0.12730E-08	571272.0	4175030.7	3.8	3.11	3.95	2.89	YES	
L0000779	0	0.12730E-08	571278.2	4175024.8	3.9	3.11	3.95	2.89	YES	
L0000780	0	0.12730E-08	571284.3	4175019.0	3.9	3.11	3.95	2.89	YES	
L0000781	0	0.12730E-08	571290.5	4175013.1	3.9	3.11	3.95	2.89	YES	
L0000782	0	0.12730E-08	571296.6	4175007.2	3.8	3.11	3.95	2.89	YES	
L0000783	0	0.12730E-08	571302.7	4175001.3	3.7	3.11	3.95	2.89	YES	
L0000784	0	0.12730E-08	571308.9	4174995.5	3.7	3.11	3.95	2.89	YES	
L0000785	0	0.12730E-08	571315.0	4174989.6	3.7	3.11	3.95	2.89	YES	
L0000786	0	0.12730E-08	571321.2	4174983.7	3.7	3.11	3.95	2.89	YES	
L0000787	0	0.12730E-08	571327.3	4174977.8	3.7	3.11	3.95	2.89	YES	
L0000788	0	0.12730E-08	571333.5	4174972.0	3.7	3.11	3.95	2.89	YES	

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 L0000789         0   0.12730E-08  571339.6 4174966.1     3.7     3.11     3.95
2.89     YES
 L0000790         0   0.12730E-08  571345.7 4174960.2     3.7     3.11     3.95
2.89     YES
 L0000791         0   0.12730E-08  571351.9 4174954.3     3.6     3.11     3.95
2.89     YES
 L0000792         0   0.12730E-08  571358.0 4174948.5     3.6     3.11     3.95
2.89     YES
 L0000793         0   0.12730E-08  571364.2 4174942.6     3.6     3.11     3.95
2.89     YES
 L0000794         0   0.12730E-08  571370.3 4174936.7     3.6     3.11     3.95
2.89     YES
 L0000795         0   0.12730E-08  571376.5 4174930.8     3.5     3.11     3.95
2.89     YES
 L0000796         0   0.12730E-08  571382.6 4174925.0     3.5     3.11     3.95
2.89     YES
 L0000797         0   0.12730E-08  571388.7 4174919.1     3.5     3.11     3.95
2.89     YES
 L0000798         0   0.12730E-08  571394.9 4174913.2     3.6     3.11     3.95
2.89     YES
 L0000799         0   0.12730E-08  571401.0 4174907.3     3.7     3.11     3.95
2.89     YES
 L0000800         0   0.12730E-08  571407.2 4174901.5     3.7     3.11     3.95
2.89     YES
 L0000801         0   0.12730E-08  571413.3 4174895.6     3.7     3.11     3.95
2.89     YES
 L0000802         0   0.12730E-08  571419.5 4174889.7     3.7     3.11     3.95
2.89     YES
 L0000803         0   0.12730E-08  571425.6 4174883.8     3.7     3.11     3.95
2.89     YES
 L0000804         0   0.12730E-08  571431.7 4174878.0     3.7     3.11     3.95
2.89     YES
 L0000805         0   0.12730E-08  571437.9 4174872.1     3.8     3.11     3.95
2.89     YES
 L0000806         0   0.12730E-08  571444.0 4174866.2     3.8     3.11     3.95
2.89     YES
 L0000807         0   0.12730E-08  571450.2 4174860.3     3.8     3.11     3.95
2.89     YES
 L0000808         0   0.12730E-08  571456.3 4174854.5     3.8     3.11     3.95
2.89     YES
 L0000809         0   0.12730E-08  571462.5 4174848.6     3.8     3.11     3.95
2.89     YES
 L0000810         0   0.12730E-08  571468.6 4174842.7     3.8     3.11     3.95
2.89     YES
 L0000811         0   0.12730E-08  571474.7 4174836.8     3.7     3.11     3.95
2.89     YES
 L0000812         0   0.12730E-08  571480.9 4174831.0     3.7     3.11     3.95
2.89     YES
↑ *** AERMOD - VERSION 22112  ***   *** C:\Lakes\AERMOD View\880 Doolittle_Ops\880
Doolittle_Ops.isc         ***        01/12/23
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*** MODELOPTs: RegDFAULT CONC ELEV URBAN ADJ_U*

*** VOLUME SOURCE DATA ***

SOURCE ID	NUMBER PART. CATS.	EMISSION RATE (GRAMS/SEC)	X (METERS)	Y (METERS)	BASE ELEV. (METERS)	RELEASE HEIGHT (METERS)	INIT. SY (METERS)	INIT. SZ (METERS)	URBAN SOURCE	EMISSION RATE SCALAR VARY BY
L0000813	0	0.12730E-08	571487.0	4174825.1	3.7	3.11	3.95	2.89	YES	
L0000814	0	0.12730E-08	571493.2	4174819.2	3.7	3.11	3.95	2.89	YES	
L0000815	0	0.12730E-08	571499.3	4174813.3	3.7	3.11	3.95	2.89	YES	
L0000816	0	0.12730E-08	571505.5	4174807.5	3.7	3.11	3.95	2.89	YES	
L0000817	0	0.12730E-08	571511.6	4174801.6	3.8	3.11	3.95	2.89	YES	
L0000818	0	0.12730E-08	571517.7	4174795.7	3.8	3.11	3.95	2.89	YES	
L0000819	0	0.12730E-08	571523.9	4174789.8	3.8	3.11	3.95	2.89	YES	
L0000820	0	0.12730E-08	571530.0	4174784.0	3.8	3.11	3.95	2.89	YES	
L0000821	0	0.12730E-08	571536.2	4174778.1	3.8	3.11	3.95	2.89	YES	
L0000822	0	0.12730E-08	571542.3	4174772.2	3.8	3.11	3.95	2.89	YES	
L0000823	0	0.12730E-08	571548.5	4174766.3	3.9	3.11	3.95	2.89	YES	
L0000824	0	0.12730E-08	571554.6	4174760.5	3.8	3.11	3.95	2.89	YES	
L0000825	0	0.12730E-08	571560.7	4174754.6	3.8	3.11	3.95	2.89	YES	
L0000826	0	0.12730E-08	571566.9	4174748.7	3.8	3.11	3.95	2.89	YES	
L0000827	0	0.12730E-08	571573.0	4174742.8	3.8	3.11	3.95	2.89	YES	
L0000828	0	0.12730E-08	571579.2	4174737.0	3.8	3.11	3.95	2.89	YES	

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 L0000829         0   0.12730E-08  571585.3 4174731.1     3.8     3.11     3.95
2.89     YES
 L0000830         0   0.12730E-08  571591.5 4174725.2     3.8     3.11     3.95
2.89     YES
 L0000831         0   0.12730E-08  571597.6 4174719.3     3.9     3.11     3.95
2.89     YES
 L0000832         0   0.12730E-08  571603.7 4174713.5     3.9     3.11     3.95
2.89     YES
 L0000833         0   0.12730E-08  571609.9 4174707.6     3.9     3.11     3.95
2.89     YES
 L0000834         0   0.12730E-08  571616.0 4174701.7     3.9     3.11     3.95
2.89     YES
 L0000835         0   0.12730E-08  571622.2 4174695.8     4.0     3.11     3.95
2.89     YES
 L0000836         0   0.12730E-08  571628.3 4174690.0     4.0     3.11     3.95
2.89     YES
 L0000837         0   0.12730E-08  571634.5 4174684.1     4.0     3.11     3.95
2.89     YES
 L0000838         0   0.12730E-08  571640.6 4174678.2     4.0     3.11     3.95
2.89     YES
 L0000839         0   0.12730E-08  571646.7 4174672.3     4.0     3.11     3.95
2.89     YES
 L0000840         0   0.12730E-08  571652.9 4174666.5     4.0     3.11     3.95
2.89     YES
 L0000841         0   0.12730E-08  571659.0 4174660.6     4.0     3.11     3.95
2.89     YES
 L0000842         0   0.12730E-08  571665.2 4174654.7     4.1     3.11     3.95
2.89     YES
 L0000843         0   0.12730E-08  571671.3 4174648.8     4.1     3.11     3.95
2.89     YES
 L0000844         0   0.12780E-08  571674.5 4174662.6     4.1     3.11     3.95
2.89     YES
 L0000845         0   0.12780E-08  571682.4 4174665.5     4.1     3.11     3.95
2.89     YES
 L0000846         0   0.12780E-08  571690.4 4174668.4     4.2     3.11     3.95
2.89     YES
 L0000847         0   0.12780E-08  571698.4 4174671.3     4.3     3.11     3.95
2.89     YES
 L0000848         0   0.12780E-08  571706.4 4174674.2     4.4     3.11     3.95
2.89     YES
 L0000849         0   0.12780E-08  571714.4 4174677.0     4.5     3.11     3.95
2.89     YES
 L0000850         0   0.12780E-08  571722.4 4174679.9     4.6     3.11     3.95
2.89     YES
 L0000851         0   0.12780E-08  571730.4 4174682.8     4.7     3.11     3.95
2.89     YES
 L0000852         0   0.12780E-08  571738.4 4174685.7     4.7     3.11     3.95
2.89     YES
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*** MODELOPTs: RegDFAULT CONC ELEV URBAN ADJ_U*

*** VOLUME SOURCE DATA ***

SOURCE ID	NUMBER PART. CATS.	EMISSION RATE (GRAMS/SEC)	X (METERS)	Y (METERS)	BASE ELEV. (METERS)	RELEASE HEIGHT (METERS)	INIT. SY (METERS)	INIT. SZ (METERS)	URBAN SOURCE	EMISSION RATE SCALAR VARY BY
L0000853	0	0.12780E-08	571746.4	4174688.6	4.8	3.11	3.95	2.89	YES	
L0000854	0	0.12780E-08	571754.4	4174691.5	4.6	3.11	3.95	2.89	YES	
L0000855	0	0.12780E-08	571762.4	4174694.4	4.5	3.11	3.95	2.89	YES	
L0000856	0	0.12780E-08	571770.4	4174697.3	4.5	3.11	3.95	2.89	YES	
L0000857	0	0.12780E-08	571778.4	4174700.2	4.5	3.11	3.95	2.89	YES	
L0000858	0	0.12780E-08	571786.4	4174703.1	4.6	3.11	3.95	2.89	YES	
L0000859	0	0.12780E-08	571794.3	4174706.0	4.6	3.11	3.95	2.89	YES	
L0000860	0	0.12780E-08	571802.3	4174708.9	4.7	3.11	3.95	2.89	YES	
L0000861	0	0.12780E-08	571810.3	4174711.7	4.8	3.11	3.95	2.89	YES	
L0000862	0	0.12780E-08	571818.3	4174714.6	4.9	3.11	3.95	2.89	YES	
L0000863	0	0.12780E-08	571826.3	4174717.5	5.0	3.11	3.95	2.89	YES	
L0000864	0	0.12780E-08	571834.3	4174720.4	5.0	3.11	3.95	2.89	YES	
L0000865	0	0.12780E-08	571842.3	4174723.3	5.1	3.11	3.95	2.89	YES	
L0000866	0	0.12780E-08	571850.3	4174726.2	5.2	3.11	3.95	2.89	YES	
L0000867	0	0.12780E-08	571858.3	4174729.1	5.2	3.11	3.95	2.89	YES	
L0000868	0	0.12780E-08	571866.3	4174732.0	5.3	3.11	3.95	2.89	YES	

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 L0000869         0   0.12780E-08  571874.3 4174734.9     5.3     3.11     3.95
2.89     YES
 L0000870         0   0.12780E-08  571882.3 4174737.8     5.4     3.11     3.95
2.89     YES
 L0000871         0   0.12780E-08  571890.3 4174740.7     5.4     3.11     3.95
2.89     YES
 L0000872         0   0.12780E-08  571898.3 4174743.5     5.5     3.11     3.95
2.89     YES
 L0000873         0   0.12780E-08  571906.2 4174746.4     5.6     3.11     3.95
2.89     YES
 L0000874         0   0.12780E-08  571914.2 4174749.3     5.7     3.11     3.95
2.89     YES
 L0000875         0   0.12780E-08  571922.2 4174752.2     5.7     3.11     3.95
2.89     YES
 L0000876         0   0.12780E-08  571930.2 4174755.1     5.7     3.11     3.95
2.89     YES
 L0000877         0   0.12780E-08  571938.2 4174758.0     5.7     3.11     3.95
2.89     YES
 L0000878         0   0.12780E-08  571946.2 4174760.9     5.8     3.11     3.95
2.89     YES
 L0000879         0   0.12780E-08  571954.2 4174763.8     5.8     3.11     3.95
2.89     YES
 L0000880         0   0.12780E-08  571962.2 4174766.7     5.8     3.11     3.95
2.89     YES
 L0000881         0   0.12780E-08  571970.2 4174769.6     5.9     3.11     3.95
2.89     YES
 L0000882         0   0.12780E-08  571978.2 4174772.5     5.9     3.11     3.95
2.89     YES
 L0000883         0   0.12780E-08  571986.2 4174775.4     5.9     3.11     3.95
2.89     YES
 L0000884         0   0.12780E-08  571994.2 4174778.2     5.9     3.11     3.95
2.89     YES
 L0000885         0   0.12780E-08  572002.2 4174781.1     5.9     3.11     3.95
2.89     YES
 L0000886         0   0.12780E-08  572010.2 4174784.0     5.9     3.11     3.95
2.89     YES
 L0000887         0   0.12780E-08  572018.2 4174786.9     6.0     3.11     3.95
2.89     YES
 L0000888         0   0.12780E-08  572026.1 4174789.8     6.0     3.11     3.95
2.89     YES
 L0000889         0   0.12780E-08  572034.1 4174792.7     6.0     3.11     3.95
2.89     YES
 L0000890         0   0.12780E-08  572042.1 4174795.6     5.9     3.11     3.95
2.89     YES
 L0000891         0   0.12780E-08  572050.1 4174798.5     6.0     3.11     3.95
2.89     YES
 L0000892         0   0.12780E-08  572058.1 4174801.4     6.0     3.11     3.95
2.89     YES
↑ *** AERMOD - VERSION 22112  ***   *** C:\Lakes\AERMOD View\880 Doolittle_Ops\880
Doolittle_Ops.isc         ***        01/12/23
```

*** MODELOPTs: RegDFAULT CONC ELEV URBAN ADJ_U*

*** VOLUME SOURCE DATA ***

SOURCE ID	NUMBER PART. CATS.	EMISSION RATE (GRAMS/SEC)	X (METERS)	Y (METERS)	BASE ELEV. (METERS)	RELEASE HEIGHT (METERS)	INIT. SY (METERS)	INIT. SZ (METERS)	URBAN SOURCE	EMISSION RATE SCALAR VARY BY
L0000893	0	0.12780E-08	572066.1	4174804.3	6.0	3.11	3.95	2.89	YES	
L0000894	0	0.12780E-08	572074.1	4174807.2	6.1	3.11	3.95	2.89	YES	
L0000895	0	0.12780E-08	572082.1	4174810.1	6.2	3.11	3.95	2.89	YES	
L0000896	0	0.12780E-08	572090.1	4174812.9	6.2	3.11	3.95	2.89	YES	
L0000897	0	0.12780E-08	572098.1	4174815.8	6.3	3.11	3.95	2.89	YES	
L0000898	0	0.12780E-08	572106.1	4174818.7	6.3	3.11	3.95	2.89	YES	
L0000899	0	0.12780E-08	572114.1	4174821.6	6.4	3.11	3.95	2.89	YES	
L0000900	0	0.12780E-08	572122.1	4174824.5	6.5	3.11	3.95	2.89	YES	
L0000901	0	0.12780E-08	572130.1	4174827.4	6.6	3.11	3.95	2.89	YES	
L0000902	0	0.12780E-08	572138.0	4174830.3	6.7	3.11	3.95	2.89	YES	
L0000903	0	0.12780E-08	572146.0	4174833.2	6.7	3.11	3.95	2.89	YES	
L0000904	0	0.12780E-08	572154.0	4174836.1	6.7	3.11	3.95	2.89	YES	
L0000905	0	0.12780E-08	572162.0	4174839.0	6.7	3.11	3.95	2.89	YES	
L0000906	0	0.12780E-08	572170.0	4174841.9	6.6	3.11	3.95	2.89	YES	
L0000907	0	0.12780E-08	572178.0	4174844.8	6.6	3.11	3.95	2.89	YES	
L0000908	0	0.12780E-08	572186.0	4174847.6	6.6	3.11	3.95	2.89	YES	

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 L0000909         0   0.12780E-08  572194.0 4174850.5     6.7     3.11     3.95
2.89     YES
 L0000910         0   0.12780E-08  572202.0 4174853.4     6.7     3.11     3.95
2.89     YES
 L0000911         0   0.12780E-08  572210.0 4174856.3     6.8     3.11     3.95
2.89     YES
 L0000912         0   0.12780E-08  572218.0 4174859.2     6.8     3.11     3.95
2.89     YES
 L0000913         0   0.12780E-08  572226.0 4174862.1     6.9     3.11     3.95
2.89     YES
 L0000914         0   0.12780E-08  572234.0 4174865.0     7.0     3.11     3.95
2.89     YES
 L0000915         0   0.12780E-08  572242.0 4174867.9     7.0     3.11     3.95
2.89     YES
 L0000916         0   0.12780E-08  572250.0 4174870.8     7.0     3.11     3.95
2.89     YES
 L0000917         0   0.12780E-08  572257.9 4174873.7     7.1     3.11     3.95
2.89     YES
 L0000918         0   0.12780E-08  572265.9 4174876.6     7.1     3.11     3.95
2.89     YES
 L0000919         0   0.12780E-08  572273.9 4174879.5     7.1     3.11     3.95
2.89     YES
 L0000920         0   0.12780E-08  572281.9 4174882.3     7.1     3.11     3.95
2.89     YES
 L0000921         0   0.12780E-08  572289.9 4174885.2     7.2     3.11     3.95
2.89     YES
 L0000922         0   0.12780E-08  572297.9 4174888.1     7.2     3.11     3.95
2.89     YES
 L0000631         0   0.41000E-10  571499.0 4175028.3     3.7     3.11     3.95
2.89     YES
 L0000632         0   0.41000E-10  571507.4 4175028.8     3.7     3.11     3.95
2.89     YES
 L0000633         0   0.41000E-10  571515.9 4175029.3     3.7     3.11     3.95
2.89     YES
 L0000634         0   0.41000E-10  571524.4 4175029.9     3.8     3.11     3.95
2.89     YES
 L0000635         0   0.41000E-10  571532.9 4175030.4     3.8     3.11     3.95
2.89     YES
 L0000636         0   0.41000E-10  571541.4 4175030.9     3.9     3.11     3.95
2.89     YES
 L0000637         0   0.41000E-10  571549.9 4175031.4     3.9     3.11     3.95
2.89     YES
 L0000638         0   0.41000E-10  571558.3 4175031.9     3.9     3.11     3.95
2.89     YES
 L0000639         0   0.41000E-10  571566.8 4175032.5     3.9     3.11     3.95
2.89     YES
 L0000640         0   0.41000E-10  571575.3 4175033.0     3.9     3.11     3.95
2.89     YES
↑ *** AERMOD - VERSION 22112  ***   *** C:\Lakes\AERMOD View\880 Doolittle_Ops\880
Doolittle_Ops.isc         ***        01/12/23
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*** MODELOPTs: RegDFAULT CONC ELEV URBAN ADJ_U*

*** VOLUME SOURCE DATA ***

SOURCE ID	NUMBER PART. CATS.	EMISSION RATE (GRAMS/SEC)	X (METERS)	Y (METERS)	BASE ELEV. (METERS)	RELEASE HEIGHT (METERS)	INIT. SY (METERS)	INIT. SZ (METERS)	URBAN SOURCE	EMISSION RATE SCALAR VARY BY
L0000641	0	0.41000E-10	571583.8	4175033.5	3.9	3.11	3.95	2.89	YES	
L0000642	0	0.41000E-10	571592.3	4175034.0	4.0	3.11	3.95	2.89	YES	
L0000643	0	0.41000E-10	571600.8	4175034.5	4.0	3.11	3.95	2.89	YES	
L0000644	0	0.41000E-10	571609.2	4175035.1	4.0	3.11	3.95	2.89	YES	
L0000645	0	0.41000E-10	571617.7	4175035.6	4.0	3.11	3.95	2.89	YES	
L0000646	0	0.41000E-10	571626.2	4175036.1	4.0	3.11	3.95	2.89	YES	
L0000647	0	0.41000E-10	571634.7	4175036.6	4.0	3.11	3.95	2.89	YES	
L0000648	0	0.41000E-10	571643.2	4175037.1	4.1	3.11	3.95	2.89	YES	
L0000649	0	0.41000E-10	571651.7	4175037.6	4.1	3.11	3.95	2.89	YES	
L0000650	0	0.41000E-10	571660.1	4175038.2	4.1	3.11	3.95	2.89	YES	
L0000651	0	0.36000E-10	571521.1	4175121.2	4.0	3.11	3.95	2.89	YES	
L0000652	0	0.36000E-10	571529.6	4175121.5	4.0	3.11	3.95	2.89	YES	
L0000653	0	0.36000E-10	571538.1	4175121.7	4.0	3.11	3.95	2.89	YES	
L0000654	0	0.36000E-10	571546.6	4175121.9	4.0	3.11	3.95	2.89	YES	
L0000655	0	0.36000E-10	571555.1	4175122.1	4.0	3.11	3.95	2.89	YES	
L0000656	0	0.36000E-10	571563.6	4175122.4	4.0	3.11	3.95	2.89	YES	

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 L0000657         0   0.36000E-10  571572.0 4175122.6     4.0     3.11     3.95
2.89     YES
 L0000658         0   0.36000E-10  571580.5 4175122.8     4.0     3.11     3.95
2.89     YES
 L0000659         0   0.36000E-10  571589.0 4175123.0     4.0     3.11     3.95
2.89     YES
 L0000660         0   0.36000E-10  571597.5 4175123.2     4.1     3.11     3.95
2.89     YES
 L0000661         0   0.36000E-10  571606.0 4175123.5     4.1     3.11     3.95
2.89     YES
 L0000662         0   0.36000E-10  571614.5 4175123.7     4.1     3.11     3.95
2.89     YES
 L0000663         0   0.36000E-10  571623.0 4175123.9     4.1     3.11     3.95
2.89     YES
 L0000664         0   0.36000E-10  571631.5 4175124.1     4.1     3.11     3.95
2.89     YES
 L0000665         0   0.36000E-10  571640.0 4175124.4     4.1     3.11     3.95
2.89     YES
 L0000666         0   0.36000E-10  571648.5 4175124.6     4.2     3.11     3.95
2.89     YES
 L0000560         0   0.14510E-08  571471.4 4175165.0     4.1     3.11     3.95
2.89     YES
 L0000561         0   0.14510E-08  571474.9 4175157.2     4.1     3.11     3.95
2.89     YES
 L0000562         0   0.14510E-08  571478.4 4175149.5     4.1     3.11     3.95
2.89     YES
 L0000563         0   0.14510E-08  571481.9 4175141.7     4.0     3.11     3.95
2.89     YES
 L0000564         0   0.14510E-08  571489.5 4175140.4     4.0     3.11     3.95
2.89     YES
 L0000565         0   0.14510E-08  571498.0 4175140.6     4.1     3.11     3.95
2.89     YES
 L0000566         0   0.14510E-08  571506.5 4175140.7     4.1     3.11     3.95
2.89     YES
 L0000567         0   0.14510E-08  571515.0 4175140.8     4.1     3.11     3.95
2.89     YES
 L0000568         0   0.14510E-08  571523.5 4175140.9     4.2     3.11     3.95
2.89     YES
 L0000569         0   0.14510E-08  571532.0 4175141.0     4.2     3.11     3.95
2.89     YES
 L0000570         0   0.14510E-08  571540.5 4175141.2     4.2     3.11     3.95
2.89     YES
 L0000571         0   0.14510E-08  571549.0 4175141.3     4.2     3.11     3.95
2.89     YES
 L0000572         0   0.14510E-08  571557.5 4175141.4     4.3     3.11     3.95
2.89     YES
 L0000573         0   0.14510E-08  571566.0 4175141.5     4.3     3.11     3.95
2.89     YES
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*** VOLUME SOURCE DATA ***

SOURCE ID	NUMBER PART. CATS.	EMISSION RATE (GRAMS/SEC)	X (METERS)	Y (METERS)	BASE ELEV. (METERS)	RELEASE HEIGHT (METERS)	INIT. SY (METERS)	INIT. SZ (METERS)	URBAN SOURCE	EMISSION RATE SCALAR VARY BY
L0000574	0	0.14510E-08	571574.5	4175141.7	4.3	3.11	3.95	2.89	YES	
L0000575	0	0.14510E-08	571583.0	4175141.8	4.2	3.11	3.95	2.89	YES	
L0000576	0	0.14510E-08	571591.5	4175141.9	4.2	3.11	3.95	2.89	YES	
L0000577	0	0.14510E-08	571600.0	4175142.0	4.2	3.11	3.95	2.89	YES	
L0000578	0	0.14510E-08	571608.5	4175142.1	4.2	3.11	3.95	2.89	YES	
L0000579	0	0.14510E-08	571617.0	4175142.3	4.2	3.11	3.95	2.89	YES	
L0000580	0	0.14510E-08	571625.5	4175142.4	4.2	3.11	3.95	2.89	YES	
L0000581	0	0.14510E-08	571634.0	4175142.5	4.2	3.11	3.95	2.89	YES	
L0000582	0	0.14510E-08	571642.5	4175142.6	4.3	3.11	3.95	2.89	YES	
L0000583	0	0.14510E-08	571651.0	4175142.8	4.3	3.11	3.95	2.89	YES	
L0000584	0	0.14510E-08	571659.5	4175142.9	4.4	3.11	3.95	2.89	YES	
L0000585	0	0.14510E-08	571668.0	4175143.0	4.4	3.11	3.95	2.89	YES	
L0000586	0	0.14510E-08	571676.5	4175143.1	4.5	3.11	3.95	2.89	YES	
L0000587	0	0.14510E-08	571684.5	4175142.7	4.5	3.11	3.95	2.89	YES	
L0000588	0	0.14510E-08	571685.6	4175134.2	4.5	3.11	3.95	2.89	YES	
L0000589	0	0.14510E-08	571686.8	4175125.8	4.4	3.11	3.95	2.89	YES	

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 L0000590         0   0.14510E-08  571687.9 4175117.4     4.4     3.11     3.95
2.89     YES
 L0000591         0   0.14510E-08  571689.1 4175109.0     4.4     3.11     3.95
2.89     YES
 L0000592         0   0.14510E-08  571690.3 4175100.6     4.4     3.11     3.95
2.89     YES
 L0000593         0   0.14510E-08  571691.4 4175092.1     4.3     3.11     3.95
2.89     YES
 L0000594         0   0.14510E-08  571692.6 4175083.7     4.3     3.11     3.95
2.89     YES
 L0000595         0   0.14510E-08  571693.8 4175075.3     4.3     3.11     3.95
2.89     YES
 L0000596         0   0.14510E-08  571694.9 4175066.9     4.2     3.11     3.95
2.89     YES
 L0000597         0   0.14510E-08  571696.1 4175058.5     4.2     3.11     3.95
2.89     YES
 L0000598         0   0.14510E-08  571697.2 4175050.0     4.2     3.11     3.95
2.89     YES
 L0000599         0   0.14510E-08  571698.4 4175041.6     4.1     3.11     3.95
2.89     YES
 L0000600         0   0.14510E-08  571699.6 4175033.2     4.1     3.11     3.95
2.89     YES
 L0000601         0   0.14510E-08  571700.3 4175025.1     4.0     3.11     3.95
2.89     YES
 L0000602         0   0.14510E-08  571691.9 4175023.7     4.0     3.11     3.95
2.89     YES
 L0000603         0   0.14510E-08  571683.6 4175022.3     4.0     3.11     3.95
2.89     YES
 L0000604         0   0.14510E-08  571675.2 4175020.9     4.0     3.11     3.95
2.89     YES
 L0000605         0   0.14510E-08  571666.8 4175019.5     4.0     3.11     3.95
2.89     YES
 L0000606         0   0.14510E-08  571658.4 4175018.1     4.0     3.11     3.95
2.89     YES
 L0000607         0   0.14510E-08  571650.0 4175016.7     4.0     3.11     3.95
2.89     YES
 L0000608         0   0.14510E-08  571641.6 4175015.3     4.0     3.11     3.95
2.89     YES
 L0000609         0   0.14510E-08  571633.3 4175013.9     4.0     3.11     3.95
2.89     YES
 L0000610         0   0.14510E-08  571624.9 4175012.5     4.0     3.11     3.95
2.89     YES
 L0000611         0   0.14510E-08  571616.5 4175011.1     4.0     3.11     3.95
2.89     YES
 L0000612         0   0.14510E-08  571608.1 4175009.7     3.9     3.11     3.95
2.89     YES
 L0000613         0   0.14510E-08  571599.7 4175008.3     3.9     3.11     3.95
2.89     YES
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*** MODELOPTs: RegDFAULT CONC ELEV URBAN ADJ_U*

*** VOLUME SOURCE DATA ***

SOURCE ID	NUMBER PART. CATS.	EMISSION RATE (GRAMS/SEC)	X (METERS)	Y (METERS)	BASE ELEV. (METERS)	RELEASE HEIGHT (METERS)	INIT. SY (METERS)	INIT. SZ (METERS)	URBAN SOURCE	EMISSION RATE SCALAR VARY BY
L0000614	0	0.14510E-08	571591.3	4175006.9	3.9	3.11	3.95	2.89	YES	
L0000615	0	0.14510E-08	571583.0	4175005.5	3.9	3.11	3.95	2.89	YES	
L0000616	0	0.14510E-08	571574.6	4175004.0	3.9	3.11	3.95	2.89	YES	
L0000617	0	0.14510E-08	571566.2	4175002.6	3.9	3.11	3.95	2.89	YES	
L0000618	0	0.14510E-08	571557.8	4175001.2	3.9	3.11	3.95	2.89	YES	
L0000619	0	0.14510E-08	571549.4	4174999.8	3.9	3.11	3.95	2.89	YES	
L0000620	0	0.14510E-08	571541.0	4174998.4	3.8	3.11	3.95	2.89	YES	
L0000621	0	0.14510E-08	571532.6	4174997.0	3.8	3.11	3.95	2.89	YES	
L0000622	0	0.14510E-08	571524.3	4174995.6	3.7	3.11	3.95	2.89	YES	
L0000623	0	0.14510E-08	571515.9	4174994.2	3.6	3.11	3.95	2.89	YES	
L0000624	0	0.14510E-08	571507.5	4174992.8	3.6	3.11	3.95	2.89	YES	
L0000625	0	0.14510E-08	571499.9	4174995.9	3.6	3.11	3.95	2.89	YES	
L0000626	0	0.14510E-08	571492.5	4175000.1	3.6	3.11	3.95	2.89	YES	
L0000627	0	0.14510E-08	571485.2	4175004.4	3.6	3.11	3.95	2.89	YES	
L0000628	0	0.14510E-08	571477.8	4175008.6	3.6	3.11	3.95	2.89	YES	
L0000629	0	0.14510E-08	571470.4	4175012.8	3.6	3.11	3.95	2.89	YES	

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 L0000630         0   0.14510E-08  571463.0 4175017.0     3.6     3.11     3.95
2.89     YES
↑ *** AERMOD - VERSION 22112  ***   *** C:\Lakes\AERMOD View\880 Doolittle_Ops\880
Doolittle_Ops.isc         ***        01/12/23
 *** AERMET - VERSION  18081 ***   ***
                       ***        17:31:16

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 *** MODELOPTs:    RegDFAULT  CONC  ELEV  URBAN  ADJ_U*


                                          *** SOURCE IDs DEFINING SOURCE GROUPS
***

 SRCGROUP ID                                                SOURCE IDs
 -----------                                                ----------


  ALL        L0000248    , L0000249    , L0000250    , L0000251    , L0000252    ,
L0000253    , L0000254    , L0000255    ,

             L0000256    , L0000257    , L0000258    , L0000259    , L0000260    ,
L0000261    , L0000667    , L0000668    ,

             L0000669    , L0000670    , L0000671    , L0000672    , L0000673    ,
L0000674    , L0000675    , L0000676    ,

             L0000677    , L0000678    , L0000679    , L0000680    , L0000681    ,
L0000682    , L0000683    , L0000684    ,

             L0000685    , L0000686    , L0000687    , L0000688    , L0000689    ,
L0000690    , L0000691    , L0000692    ,

             L0000693    , L0000694    , L0000695    , L0000696    , L0000697    ,
L0000698    , L0000699    , L0000700    ,

             L0000701    , L0000702    , L0000703    , L0000704    , L0000705    ,
L0000706    , L0000707    , L0000708    ,

             L0000709    , L0000710    , L0000711    , L0000712    , L0000713    ,
L0000714    , L0000715    , L0000716    ,

             L0000717    , L0000718    , L0000719    , L0000720    , L0000721    ,
L0000722    , L0000723    , L0000724    ,

             L0000725    , L0000726    , L0000727    , L0000728    , L0000729    ,
L0000730    , L0000731    , L0000732    ,

             L0000733    , L0000734    , L0000735    , L0000736    , L0000737    ,
L0000738    , L0000739    , L0000740    ,
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L0000746    , L0000747    , L0000748    ,

             L0000749    , L0000750    , L0000751    , L0000752    , L0000753    ,
L0000754    , L0000755    , L0000756    ,

             L0000757    , L0000758    , L0000759    , L0000760    , L0000761    ,
L0000762    , L0000763    , L0000764    ,

             L0000765    , L0000766    , L0000767    , L0000768    , L0000769    ,
L0000770    , L0000771    , L0000772    ,

             L0000773    , L0000774    , L0000775    , L0000776    , L0000777    ,
L0000778    , L0000779    , L0000780    ,

             L0000781    , L0000782    , L0000783    , L0000784    , L0000785    ,
L0000786    , L0000787    , L0000788    ,

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L0000794    , L0000795    , L0000796    ,

             L0000797    , L0000798    , L0000799    , L0000800    , L0000801    ,
L0000802    , L0000803    , L0000804    ,

             L0000805    , L0000806    , L0000807    , L0000808    , L0000809    ,
L0000810    , L0000811    , L0000812    ,
```



```
 *** MODELOPTs:    RegDFAULT  CONC  ELEV  URBAN  ADJ_U*


                                                *** SOURCE IDs DEFINING SOURCE GROUPS
***

 SRCGROUP ID                                                  SOURCE IDs
 -----------                                                  ----------


             L0000813    , L0000814    , L0000815    , L0000816    , L0000817    ,
L0000818    , L0000819    , L0000820    ,

             L0000821    , L0000822    , L0000823    , L0000824    , L0000825    ,
L0000826    , L0000827    , L0000828    ,

             L0000829    , L0000830    , L0000831    , L0000832    , L0000833    ,
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L0000890 , L0000891 , L0000892 ,

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L0000571 , L0000572 , L0000573 ,

*** SOURCE IDs DEFINING SOURCE GROUPS ***

SRCGROUP ID	SOURCE IDs
	L0000574 , L0000575 , L0000576 , L0000577 , L0000578 , L0000579 , L0000580 , L0000581 ,
	L0000582 , L0000583 , L0000584 , L0000585 , L0000586 , L0000587 , L0000588 , L0000589 ,
	L0000590 , L0000591 , L0000592 , L0000593 , L0000594 , L0000595 , L0000596 , L0000597 ,
	L0000598 , L0000599 , L0000600 , L0000601 , L0000602 , L0000603 , L0000604 , L0000605 ,
	L0000606 , L0000607 , L0000608 , L0000609 , L0000610 , L0000611 , L0000612 , L0000613 ,
	L0000614 , L0000615 , L0000616 , L0000617 , L0000618 , L0000619 , L0000620 , L0000621 ,
	L0000622 , L0000623 , L0000624 , L0000625 , L0000626 , L0000627 , L0000628 , L0000629 ,
	L0000630 , STCK1 ,

*** SOURCE IDs DEFINED AS URBAN SOURCES

***

URBAN ID	URBAN POP	SOURCE IDs
	1649000.	L0000248 , L0000249 , L0000250 , L0000251 , L0000252 , L0000253 , L0000254 , L0000255 ,
		L0000256 , L0000257 , L0000258 , L0000259 , L0000260 , L0000261 , L0000667 , L0000668 ,
		L0000669 , L0000670 , L0000671 , L0000672 , L0000673 , L0000674 , L0000675 , L0000676 ,
		L0000677 , L0000678 , L0000679 , L0000680 , L0000681 , L0000682 , L0000683 , L0000684 ,
		L0000685 , L0000686 , L0000687 , L0000688 , L0000689 , L0000690 , L0000691 , L0000692 ,
		L0000693 , L0000694 , L0000695 , L0000696 , L0000697 , L0000698 , L0000699 , L0000700 ,
		L0000701 , L0000702 , L0000703 , L0000704 , L0000705 , L0000706 , L0000707 , L0000708 ,
		L0000709 , L0000710 , L0000711 , L0000712 , L0000713 , L0000714 , L0000715 , L0000716 ,
		L0000717 , L0000718 , L0000719 , L0000720 , L0000721 , L0000722 , L0000723 , L0000724 ,
		L0000725 , L0000726 , L0000727 , L0000728 , L0000729 , L0000730 , L0000731 , L0000732 ,
		L0000733 , L0000734 , L0000735 , L0000736 , L0000737 , L0000738 , L0000739 , L0000740 ,
		L0000741 , L0000742 , L0000743 , L0000744 , L0000745 , L0000746 , L0000747 , L0000748 ,
		L0000749 , L0000750 , L0000751 , L0000752 , L0000753 , L0000754 , L0000755 , L0000756 ,
		L0000757 , L0000758 , L0000759 , L0000760 , L0000761 , L0000762 , L0000763 , L0000764 ,
		L0000765 , L0000766 , L0000767 , L0000768 , L0000769 ,

L0000770 , L0000771 , L0000772 ,

L0000773 , L0000774 , L0000775 , L0000776 , L0000777 ,
L0000778 , L0000779 , L0000780 ,

L0000781 , L0000782 , L0000783 , L0000784 , L0000785 ,
L0000786 , L0000787 , L0000788 ,

L0000789 , L0000790 , L0000791 , L0000792 , L0000793 ,
L0000794 , L0000795 , L0000796 ,

L0000797 , L0000798 , L0000799 , L0000800 , L0000801 ,
L0000802 , L0000803 , L0000804 ,

L0000805 , L0000806 , L0000807 , L0000808 , L0000809 ,
L0000810 , L0000811 , L0000812 ,

*** MODELOPTs: RegDFAULT CONC ELEV URBAN ADJ_U*

*** SOURCE IDs DEFINED AS URBAN SOURCES ***

URBAN ID	URBAN POP	SOURCE IDs

L0000813 , L0000814 , L0000815 , L0000816 , L0000817 ,
L0000818 , L0000819 , L0000820 ,

L0000821 , L0000822 , L0000823 , L0000824 , L0000825 ,
L0000826 , L0000827 , L0000828 ,

L0000829 , L0000830 , L0000831 , L0000832 , L0000833 ,
L0000834 , L0000835 , L0000836 ,

L0000837 , L0000838 , L0000839 , L0000840 , L0000841 ,
L0000842 , L0000843 , L0000844 ,

L0000845 , L0000846 , L0000847 , L0000848 , L0000849 ,
L0000850 , L0000851 , L0000852 ,

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L0000858 , L0000859 , L0000860 ,

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L0000866    , L0000867    , L0000868    ,

             L0000869    , L0000870    , L0000871    , L0000872    , L0000873    ,
L0000874    , L0000875    , L0000876    ,

             L0000877    , L0000878    , L0000879    , L0000880    , L0000881    ,
L0000882    , L0000883    , L0000884    ,

             L0000885    , L0000886    , L0000887    , L0000888    , L0000889    ,
L0000890    , L0000891    , L0000892    ,

             L0000893    , L0000894    , L0000895    , L0000896    , L0000897    ,
L0000898    , L0000899    , L0000900    ,

             L0000901    , L0000902    , L0000903    , L0000904    , L0000905    ,
L0000906    , L0000907    , L0000908    ,

             L0000909    , L0000910    , L0000911    , L0000912    , L0000913    ,
L0000914    , L0000915    , L0000916    ,

             L0000917    , L0000918    , L0000919    , L0000920    , L0000921    ,
L0000922    , L0000631    , L0000632    ,

             L0000633    , L0000634    , L0000635    , L0000636    , L0000637    ,
L0000638    , L0000639    , L0000640    ,

             L0000641    , L0000642    , L0000643    , L0000644    , L0000645    ,
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             L0000657    , L0000658    , L0000659    , L0000660    , L0000661    ,
L0000662    , L0000663    , L0000664    ,

             L0000665    , L0000666    , L0000560    , L0000561    , L0000562    ,
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             L0000566    , L0000567    , L0000568    , L0000569    , L0000570    ,
L0000571    , L0000572    , L0000573    ,
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*** SOURCE IDs DEFINED AS URBAN SOURCES
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URBAN ID	URBAN POP	SOURCE IDs

L0000574 , L0000575 , L0000576 , L0000577 , L0000578 ,
L0000579 , L0000580 , L0000581 ,

L0000582 , L0000583 , L0000584 , L0000585 , L0000586 ,
L0000587 , L0000588 , L0000589 ,

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L0000619 , L0000620 , L0000621 ,

L0000622 , L0000623 , L0000624 , L0000625 , L0000626 ,
L0000627 , L0000628 , L0000629 ,

L0000630 , STCK1 ,

*** MODELOPTs: RegDFAULT CONC ELEV URBAN ADJ_U*

*** DIRECTION SPECIFIC BUILDING DIMENSIONS ***

SOURCE ID: STCK1

IFV	BH	BW	BL	XADJ	YADJ	IFV	BH	BW	BL	XADJ	YADJ
1	15.2,	216.1,	105.7,	-52.7,	110.1,	2	15.2,	218.7,	137.4,	-87.6,	108.4,
3	15.2,	214.7,	164.9,	-119.9,	103.5,	4	15.2,	204.1,	187.3,	-148.5,	95.4,
5	15.2,	187.3,	204.1,	-172.7,	84.5,	6	15.2,	164.9,	214.7,	-191.5,	70.9,

```
    7   15.2,  137.4,  218.7, -204.6,   55.2,      8   15.2,  105.7,  216.1,
-211.4,   37.8,
    9   15.2,   70.9,  207.0, -211.9,   19.3,     10   15.2,  105.7,  216.1,
-218.2,    0.2,
   11   15.2,  137.4,  218.7, -217.8,  -18.9,     12   15.2,  164.9,  214.7,
-210.9,  -37.5,
   13   15.2,  187.3,  204.1, -197.5,  -54.9,     14   15.2,  204.1,  187.3,
-178.1,  -70.6,
   15   15.2,  214.7,  164.9, -153.3,  -84.2,     16   15.2,  218.7,  137.4,
-123.9,  -95.2,
   17   15.2,  216.1,  105.7,  -90.7, -103.4,     18   15.2,  207.0,   70.9,
-54.7, -108.4,
   19   15.2,  216.1,  105.7,  -53.1, -110.1,     20   15.2,  218.7,  137.4,
-49.8, -108.4,
   21   15.2,  214.7,  164.9,  -45.0, -103.5,     22   15.2,  204.1,  187.3,
-38.8,  -95.4,
   23   15.2,  187.3,  204.1,  -31.4,  -84.5,     24   15.2,  164.9,  214.7,
-23.1,  -70.9,
   25   15.2,  137.4,  218.7,  -14.1,  -55.2,     26   15.2,  105.7,  216.1,
-4.7,  -37.8,
   27   15.2,   70.9,  207.0,    4.9,  -19.3,     28   15.2,  105.7,  216.1,
2.0,   -0.2,
   29   15.2,  137.4,  218.7,   -0.9,   18.9,     30   15.2,  164.9,  214.7,
-3.8,   37.5,
   31   15.2,  187.3,  204.1,   -6.6,   54.9,     32   15.2,  204.1,  187.3,
-9.2,   70.6,
   33   15.2,  214.7,  164.9,  -11.5,   84.2,     34   15.2,  218.7,  137.4,
-13.5,   95.2,
   35   15.2,  216.1,  105.7,  -15.0,  103.4,     36   15.2,  207.0,   70.9,
-16.1,  108.4,

 *** AERMOD - VERSION 22112  ***   *** C:\Lakes\AERMOD View\880 Doolittle_Ops\880
Doolittle_Ops.isc         ***        01/12/23
 *** AERMET - VERSION  18081 ***   ***
                       ***        17:31:16

                                  PAGE  20
 *** MODELOPTs:    RegDFAULT  CONC  ELEV  URBAN  ADJ_U*

                                          *** DISCRETE CARTESIAN RECEPTORS ***
                                       (X-COORD, Y-COORD, ZELEV, ZHILL, ZFLAG)
                                                   (METERS)

     ( 571066.3, 4174560.9,       2.5,       2.5,       0.0);         ( 571128.2,
4174560.9,       3.1,       3.1,       0.0);
     ( 571190.1, 4174560.9,       2.8,       2.8,       0.0);         ( 571252.0,
4174560.9,       2.9,       2.9,       0.0);
     ( 571313.9, 4174560.9,       2.8,       2.8,       0.0);         ( 571066.3,
4174608.2,       2.7,       2.7,       0.0);
     ( 571128.2, 4174608.2,       3.5,       3.5,       0.0);         ( 571190.1,
```

4174608.2, 3.0, 3.0, 0.0);
(571252.0, 4174608.2, 3.0, 3.0, 0.0); (571313.9, 4174608.2, 3.1, 3.1, 0.0);
(571375.8, 4174608.2, 3.3, 3.3, 0.0); (571437.7, 4174608.2, 3.3, 3.3, 0.0);
(571499.6, 4174608.2, 3.3, 3.3, 0.0); (571561.6, 4174608.2, 3.6, 3.6, 0.0);
(571066.3, 4174655.4, 3.0, 3.0, 0.0); (571128.2, 4174655.4, 2.8, 2.8, 0.0);
(571190.1, 4174655.4, 2.9, 2.9, 0.0); (571252.0, 4174655.4, 3.3, 3.3, 0.0);
(571313.9, 4174655.4, 3.3, 3.3, 0.0); (571375.8, 4174655.4, 3.5, 3.5, 0.0);
(571437.7, 4174655.4, 3.4, 3.4, 0.0); (571499.6, 4174655.4, 3.5, 3.5, 0.0);
(571561.6, 4174655.4, 3.6, 3.6, 0.0); (571623.5, 4174655.4, 3.9, 3.9, 0.0);
(571685.4, 4174655.4, 4.1, 4.1, 0.0); (571747.3, 4174655.4, 4.6, 4.6, 0.0);
(571809.2, 4174655.4, 4.8, 4.8, 0.0); (571871.1, 4174655.4, 5.2, 5.2, 0.0);
(571066.3, 4174702.7, 3.6, 3.6, 0.0); (571128.2, 4174702.7, 3.2, 3.2, 0.0);
(571190.1, 4174702.7, 3.1, 3.1, 0.0); (571252.0, 4174702.7, 3.4, 3.4, 0.0);
(571313.9, 4174702.7, 3.1, 3.1, 0.0); (571375.8, 4174702.7, 3.5, 3.5, 0.0);
(571437.7, 4174702.7, 3.6, 3.6, 0.0); (571499.6, 4174702.7, 3.6, 3.6, 0.0);
(571561.6, 4174702.7, 3.5, 3.5, 0.0); (571623.5, 4174702.7, 4.0, 4.0, 0.0);
(571685.4, 4174702.7, 4.0, 4.0, 0.0); (571871.1, 4174702.7, 5.2, 5.2, 0.0);
(571066.3, 4174750.0, 3.2, 3.2, 0.0); (571128.2, 4174750.0, 4.5, 4.5, 0.0);
(571190.1, 4174750.0, 4.9, 4.9, 0.0); (571252.0, 4174750.0, 3.9, 3.9, 0.0);
(571313.9, 4174750.0, 3.2, 3.2, 0.0); (571375.8, 4174750.0, 3.5, 3.5, 0.0);
(571437.7, 4174750.0, 3.8, 3.8, 0.0); (571499.6, 4174750.0, 3.8, 3.8, 0.0);
(571561.6, 4174750.0, 3.8, 3.8, 0.0); (571623.5, 4174750.0, 4.1, 4.1, 0.0);
(571685.4, 4174750.0, 4.3, 4.3, 0.0); (571747.3, 4174750.0, 4.1, 4.1, 0.0);
(571809.2, 4174750.0, 4.7, 4.7, 0.0); (571871.1, 4174750.0, 5.3, 5.3, 0.0);
(571933.0, 4174750.0, 5.7, 5.7, 0.0); (571994.9, 4174750.0, 6.2, 6.2, 0.0);
(572056.8, 4174750.0, 5.8, 5.8, 0.0); (572118.7,

4174750.0, 6.0, 6.0, 0.0);
(572180.7, 4174750.0, 6.2, 6.2, 0.0); (571066.3, 4174797.3, 4.0, 4.0, 0.0);
(571128.2, 4174797.3, 5.4, 5.4, 0.0); (571190.1, 4174797.3, 7.1, 7.1, 0.0);
(571252.0, 4174797.3, 7.0, 7.0, 0.0); (571313.9, 4174797.3, 4.3, 4.3, 0.0);
(571375.8, 4174797.3, 3.5, 3.5, 0.0); (571437.7, 4174797.3, 3.7, 3.7, 0.0);
(571499.6, 4174797.3, 3.7, 3.7, 0.0); (571561.6, 4174797.3, 3.8, 3.8, 0.0);
(571623.5, 4174797.3, 4.0, 4.0, 0.0); (571685.4, 4174797.3, 4.1, 4.1, 0.0);
(571747.3, 4174797.3, 4.0, 4.0, 0.0); (571809.2, 4174797.3, 4.3, 4.3, 0.0);
(571871.1, 4174797.3, 5.0, 5.0, 0.0); (571933.0, 4174797.3, 5.5, 5.5, 0.0);
(571994.9, 4174797.3, 5.8, 5.8, 0.0); (572056.8, 4174797.3, 6.0, 6.0, 0.0);
(572118.7, 4174797.3, 6.3, 6.3, 0.0); (572180.7, 4174797.3, 6.4, 6.4, 0.0);
(571066.3, 4174844.6, 6.2, 6.2, 0.0); (571128.2, 4174844.6, 7.2, 7.2, 0.0);
(571190.1, 4174844.6, 6.1, 6.1, 0.0); (571252.0, 4174844.6, 6.1, 6.1, 0.0);
(571313.9, 4174844.6, 5.1, 5.1, 0.0); (571375.8, 4174844.6, 4.3, 4.3, 0.0);
(571437.7, 4174844.6, 3.7, 3.7, 0.0); (571499.6, 4174844.6, 3.8, 3.8, 0.0);
(571561.6, 4174844.6, 3.7, 3.7, 0.0); (571623.5, 4174844.6, 4.0, 4.0, 0.0);
(571685.4, 4174844.6, 3.8, 3.8, 0.0); (571747.3, 4174844.6, 3.9, 3.9, 0.0);

*** MODELOPTs: RegDFAULT CONC ELEV URBAN ADJ_U*

*** DISCRETE CARTESIAN RECEPTORS ***
(X-COORD, Y-COORD, ZELEV, ZHILL, ZFLAG)
(METERS)

(571809.2, 4174844.6, 4.3, 4.3, 0.0); (571871.1, 4174844.6, 4.9, 4.9, 0.0);
(571933.0, 4174844.6, 5.1, 5.1, 0.0); (571994.9, 4174844.6, 5.7, 5.7, 0.0);
(572056.8, 4174844.6, 6.0, 6.0, 0.0); (572118.7,

4174844.6, 6.4, 6.4, 0.0);
(572180.7, 4174844.6, 6.6, 6.6, 0.0); (571066.3, 4174891.8, 6.8, 6.8, 0.0);
(571128.2, 4174891.8, 7.8, 7.8, 0.0); (571190.1, 4174891.8, 4.6, 4.6, 0.0);
(571252.0, 4174891.8, 4.8, 4.8, 0.0); (571313.9, 4174891.8, 4.9, 4.9, 0.0);
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(571561.6, 4174891.8, 3.8, 3.8, 0.0); (571623.5, 4174891.8, 3.9, 3.9, 0.0);
(571685.4, 4174891.8, 3.8, 3.8, 0.0); (571747.3, 4174891.8, 3.9, 3.9, 0.0);
(571809.2, 4174891.8, 4.6, 4.6, 0.0); (571871.1, 4174891.8, 4.9, 4.9, 0.0);
(571933.0, 4174891.8, 4.8, 4.8, 0.0); (571994.9, 4174891.8, 5.3, 5.3, 0.0);
(572056.8, 4174891.8, 6.2, 6.2, 0.0); (572118.7, 4174891.8, 6.4, 6.4, 0.0);
(572180.7, 4174891.8, 6.5, 6.5, 0.0); (571066.3, 4174939.1, 7.6, 7.6, 0.0);
(571128.2, 4174939.1, 6.6, 6.6, 0.0); (571190.1, 4174939.1, 3.4, 3.4, 0.0);
(571252.0, 4174939.1, 4.3, 4.3, 0.0); (571313.9, 4174939.1, 4.4, 4.4, 0.0);
(571375.8, 4174939.1, 3.5, 3.5, 0.0); (571437.7, 4174939.1, 3.8, 3.8, 0.0);
(571499.6, 4174939.1, 3.7, 3.7, 0.0); (571623.5, 4174939.1, 4.0, 4.0, 0.0);
(571685.4, 4174939.1, 4.0, 4.0, 0.0); (571747.3, 4174939.1, 4.0, 4.0, 0.0);
(571809.2, 4174939.1, 4.8, 4.8, 0.0); (571871.1, 4174939.1, 4.9, 4.9, 0.0);
(571933.0, 4174939.1, 5.0, 5.0, 0.0); (571994.9, 4174939.1, 5.5, 5.5, 0.0);
(572056.8, 4174939.1, 6.1, 6.1, 0.0); (572118.7, 4174939.1, 6.6, 6.6, 0.0);
(572180.7, 4174939.1, 6.5, 6.5, 0.0); (571066.3, 4174986.4, 7.4, 7.4, 0.0);
(571128.2, 4174986.4, 4.9, 7.4, 0.0); (571190.1, 4174986.4, 3.7, 3.7, 0.0);
(571252.0, 4174986.4, 4.0, 4.0, 0.0); (571313.9, 4174986.4, 3.7, 3.7, 0.0);
(571375.8, 4174986.4, 3.5, 3.5, 0.0); (571437.7, 4174986.4, 3.6, 3.6, 0.0);
(571809.2, 4174986.4, 4.9, 4.9, 0.0); (571871.1, 4174986.4, 5.1, 5.1, 0.0);
(571933.0, 4174986.4, 5.5, 5.5, 0.0); (571994.9, 4174986.4, 5.7, 5.7, 0.0);
(572056.8, 4174986.4, 6.2, 6.2, 0.0); (572118.7,

4174986.4, 6.7, 6.7, 0.0);
(572180.7, 4174986.4, 6.5, 6.5, 0.0); (571066.3, 4175033.7, 6.6, 6.6, 0.0);
(571128.2, 4175033.7, 5.5, 5.5, 0.0); (571190.1, 4175033.7, 4.5, 4.5, 0.0);
(571252.0, 4175033.7, 3.8, 3.8, 0.0); (571313.9, 4175033.7, 3.5, 3.5, 0.0);
(571375.8, 4175033.7, 3.4, 3.4, 0.0); (571747.3, 4175033.7, 4.5, 4.5, 0.0);
(571809.2, 4175033.7, 4.7, 4.7, 0.0); (571871.1, 4175033.7, 5.2, 5.2, 0.0);
(571933.0, 4175033.7, 5.5, 5.5, 0.0); (571994.9, 4175033.7, 6.0, 6.0, 0.0);
(572056.8, 4175033.7, 6.4, 6.4, 0.0); (572118.7, 4175033.7, 6.6, 6.6, 0.0);
(572180.7, 4175033.7, 6.5, 6.5, 0.0); (571066.3, 4175081.0, 6.2, 6.2, 0.0);
(571128.2, 4175081.0, 5.5, 5.5, 0.0); (571190.1, 4175081.0, 3.9, 3.9, 0.0);
(571252.0, 4175081.0, 3.6, 3.6, 0.0); (571313.9, 4175081.0, 3.3, 3.3, 0.0);
(571747.3, 4175081.0, 4.5, 4.5, 0.0); (571809.2, 4175081.0, 4.5, 4.5, 0.0);
(571871.1, 4175081.0, 5.2, 5.2, 0.0); (571933.0, 4175081.0, 5.5, 5.5, 0.0);
(571994.9, 4175081.0, 6.1, 6.1, 0.0); (572056.8, 4175081.0, 6.8, 6.8, 0.0);
(572118.7, 4175081.0, 7.0, 7.0, 0.0); (572180.7, 4175081.0, 6.7, 6.7, 0.0);
(571066.3, 4175128.2, 5.1, 5.1, 0.0); (571128.2, 4175128.2, 4.2, 4.2, 0.0);
(571252.0, 4175128.2, 3.5, 3.5, 0.0); (571313.9, 4175128.2, 3.2, 3.2, 0.0);
(571375.8, 4175128.2, 3.8, 3.8, 0.0); (571437.7, 4175128.2, 3.8, 3.8, 0.0);

*** MODELOPTs: RegDFAULT CONC ELEV URBAN ADJ_U*

*** DISCRETE CARTESIAN RECEPTORS ***
(X-COORD, Y-COORD, ZELEV, ZHILL, ZFLAG)
(METERS)

(571747.3, 4175128.2, 4.6, 4.6, 0.0); (571809.2, 4175128.2, 4.6, 4.6, 0.0);
(571871.1, 4175128.2, 5.2, 5.2, 0.0); (571933.0,

4175128.2, 5.6, 5.6, 0.0);
(571994.9, 4175128.2, 6.1, 6.1, 0.0); (572056.8, 4175128.2, 7.2, 7.2, 0.0);
(572118.7, 4175128.2, 7.3, 7.3, 0.0); (572180.7, 4175128.2, 7.0, 7.0, 0.0);
(571066.3, 4175175.5, 3.5, 3.5, 0.0); (571128.2, 4175175.5, 3.5, 3.5, 0.0);
(571190.1, 4175175.5, 3.6, 3.6, 0.0); (571252.0, 4175175.5, 3.5, 3.5, 0.0);
(571313.9, 4175175.5, 3.3, 3.3, 0.0); (571375.8, 4175175.5, 3.7, 3.7, 0.0);
(571747.3, 4175175.5, 4.8, 4.8, 0.0); (571809.2, 4175175.5, 5.0, 5.0, 0.0);
(571871.1, 4175175.5, 5.4, 5.4, 0.0); (571933.0, 4175175.5, 5.8, 5.8, 0.0);
(571994.9, 4175175.5, 6.6, 6.6, 0.0); (572056.8, 4175175.5, 7.0, 7.0, 0.0);
(572118.7, 4175175.5, 7.0, 7.0, 0.0); (572180.7, 4175175.5, 6.9, 6.9, 0.0);
(571066.3, 4175222.8, 3.3, 3.3, 0.0); (571128.2, 4175222.8, 3.4, 3.4, 0.0);
(571190.1, 4175222.8, 3.5, 3.5, 0.0); (571252.0, 4175222.8, 3.7, 3.7, 0.0);
(571313.9, 4175222.8, 3.6, 3.6, 0.0); (571375.8, 4175222.8, 3.6, 3.6, 0.0);
(571437.7, 4175222.8, 4.0, 4.0, 0.0); (571623.5, 4175222.8, 4.8, 4.8, 0.0);
(571685.4, 4175222.8, 4.4, 4.4, 0.0); (571747.3, 4175222.8, 4.9, 4.9, 0.0);
(571809.2, 4175222.8, 5.4, 5.4, 0.0); (571871.1, 4175222.8, 5.4, 5.4, 0.0);
(571933.0, 4175222.8, 5.7, 5.7, 0.0); (571994.9, 4175222.8, 6.3, 6.3, 0.0);
(572056.8, 4175222.8, 6.7, 6.7, 0.0); (572118.7, 4175222.8, 6.9, 6.9, 0.0);
(572180.7, 4175222.8, 6.8, 6.8, 0.0); (571066.3, 4175270.1, 3.6, 3.6, 0.0);
(571128.2, 4175270.1, 3.3, 3.3, 0.0); (571190.1, 4175270.1, 3.6, 3.6, 0.0);
(571252.0, 4175270.1, 3.9, 3.9, 0.0); (571313.9, 4175270.1, 3.7, 3.7, 0.0);
(571375.8, 4175270.1, 3.8, 3.8, 0.0); (571437.7, 4175270.1, 4.1, 4.1, 0.0);
(571499.6, 4175270.1, 4.3, 4.3, 0.0); (571561.6, 4175270.1, 4.5, 4.5, 0.0);
(571623.5, 4175270.1, 4.6, 4.6, 0.0); (571685.4, 4175270.1, 4.5, 4.5, 0.0);
(571747.3, 4175270.1, 4.9, 4.9, 0.0); (571809.2, 4175270.1, 5.7, 5.7, 0.0);
(571871.1, 4175270.1, 5.4, 5.4, 0.0); (571933.0,

4175270.1, 5.6, 5.6, 0.0);
(571994.9, 4175270.1, 6.0, 6.0, 0.0); (572056.8, 4175270.1, 6.3, 6.3, 0.0);
(572118.7, 4175270.1, 6.6, 6.6, 0.0); (572180.7, 4175270.1, 6.9, 6.9, 0.0);
(571066.3, 4175317.4, 3.8, 3.8, 0.0); (571128.2, 4175317.4, 4.0, 4.0, 0.0);
(571190.1, 4175317.4, 3.8, 3.8, 0.0); (571252.0, 4175317.4, 3.8, 3.8, 0.0);
(571313.9, 4175317.4, 4.0, 4.0, 0.0); (571375.8, 4175317.4, 4.2, 4.2, 0.0);
(571437.7, 4175317.4, 4.1, 4.1, 0.0); (571499.6, 4175317.4, 4.1, 4.1, 0.0);
(571561.6, 4175317.4, 4.2, 4.2, 0.0); (571623.5, 4175317.4, 4.3, 4.3, 0.0);
(571685.4, 4175317.4, 4.8, 4.8, 0.0); (571747.3, 4175317.4, 5.4, 5.4, 0.0);
(571809.2, 4175317.4, 5.8, 5.8, 0.0); (571871.1, 4175317.4, 5.4, 5.4, 0.0);
(571933.0, 4175317.4, 5.8, 5.8, 0.0); (571994.9, 4175317.4, 6.0, 6.0, 0.0);
(572056.8, 4175317.4, 6.4, 6.4, 0.0); (572118.7, 4175317.4, 6.6, 6.6, 0.0);
(572180.7, 4175317.4, 6.8, 6.8, 0.0); (571066.3, 4175364.6, 3.6, 3.6, 0.0);
(571128.2, 4175364.6, 3.8, 3.8, 0.0); (571190.1, 4175364.6, 3.7, 3.7, 0.0);
(571252.0, 4175364.6, 4.1, 4.1, 0.0); (571313.9, 4175364.6, 4.2, 4.2, 0.0);
(571375.8, 4175364.6, 4.1, 4.1, 0.0); (571437.7, 4175364.6, 4.0, 4.0, 0.0);
(571499.6, 4175364.6, 4.1, 4.1, 0.0); (571561.6, 4175364.6, 4.2, 4.2, 0.0);
(571623.5, 4175364.6, 4.5, 4.5, 0.0); (571685.4, 4175364.6, 5.2, 5.2, 0.0);
(571747.3, 4175364.6, 5.6, 5.6, 0.0); (571809.2, 4175364.6, 5.8, 5.8, 0.0);

*** MODELOPTs: RegDFAULT CONC ELEV URBAN ADJ_U*

*** DISCRETE CARTESIAN RECEPTORS ***
(X-COORD, Y-COORD, ZELEV, ZHILL, ZFLAG)
(METERS)

(571871.1, 4175364.6, 5.5, 5.5, 0.0); (571933.0,

4175364.6, 6.0, 6.0, 0.0);
(571994.9, 4175364.6, 6.1, 6.1, 0.0); (572056.8, 4175364.6, 6.4, 6.4, 0.0);
(572118.7, 4175364.6, 6.7, 6.7, 0.0); (572180.7, 4175364.6, 6.9, 6.9, 0.0);
(571066.3, 4175411.9, 3.5, 3.5, 0.0); (571128.2, 4175411.9, 3.9, 3.9, 0.0);
(571190.1, 4175411.9, 3.9, 3.9, 0.0); (571252.0, 4175411.9, 4.0, 4.0, 0.0);
(571313.9, 4175411.9, 3.9, 3.9, 0.0); (571375.8, 4175411.9, 3.8, 3.8, 0.0);
(571437.7, 4175411.9, 4.3, 4.3, 0.0); (571499.6, 4175411.9, 4.4, 4.4, 0.0);
(571561.6, 4175411.9, 4.3, 4.3, 0.0); (571623.5, 4175411.9, 4.6, 4.6, 0.0);
(571685.4, 4175411.9, 5.0, 5.0, 0.0); (571747.3, 4175411.9, 5.5, 5.5, 0.0);
(571809.2, 4175411.9, 5.8, 5.8, 0.0); (571871.1, 4175411.9, 5.7, 5.7, 0.0);
(571933.0, 4175411.9, 5.9, 5.9, 0.0); (571994.9, 4175411.9, 6.3, 6.3, 0.0);
(572056.8, 4175411.9, 6.5, 6.5, 0.0); (572118.7, 4175411.9, 6.7, 6.7, 0.0);
(572180.7, 4175411.9, 7.5, 7.5, 0.0); (571066.3, 4175459.2, 3.6, 3.6, 0.0);
(571128.2, 4175459.2, 3.7, 3.7, 0.0); (571190.1, 4175459.2, 3.7, 3.7, 0.0);
(571252.0, 4175459.2, 3.6, 3.6, 0.0); (571313.9, 4175459.2, 3.6, 3.6, 0.0);
(571375.8, 4175459.2, 4.0, 4.0, 0.0); (571437.7, 4175459.2, 4.5, 4.5, 0.0);
(571499.6, 4175459.2, 4.6, 4.6, 0.0); (571561.6, 4175459.2, 4.3, 4.3, 0.0);
(571623.5, 4175459.2, 4.7, 4.7, 0.0); (571685.4, 4175459.2, 4.7, 4.7, 0.0);
(571747.3, 4175459.2, 5.3, 5.3, 0.0); (571809.2, 4175459.2, 5.6, 5.6, 0.0);
(571871.1, 4175459.2, 5.7, 5.7, 0.0); (571933.0, 4175459.2, 5.9, 5.9, 0.0);
(571994.9, 4175459.2, 6.2, 6.2, 0.0); (572056.8, 4175459.2, 6.5, 6.5, 0.0);
(572118.7, 4175459.2, 6.9, 6.9, 0.0); (572180.7, 4175459.2, 7.7, 7.7, 0.0);
(571496.3, 4174981.5, 3.5, 3.5, 0.0); (571724.8, 4175020.5, 4.1, 4.1, 0.0);
(571686.9, 4175179.9, 4.7, 4.7, 0.0); (571637.9, 4175169.9, 4.7, 4.7, 0.0);
(571494.1, 4175258.0, 4.4, 4.4, 0.0); (571450.6, 4175194.4, 4.0, 4.0, 0.0);
(571471.8, 4175186.6, 4.1, 4.1, 0.0); (571475.1,

4175165.4, 4.2, 4.2, 0.0);
(571462.9, 4175154.3, 4.0, 4.0, 0.0); (571447.3, 4175156.5, 3.9, 3.9, 0.0);
(571458.4, 4175101.9, 3.6, 3.6, 0.0); (571334.7, 4175077.4, 3.3, 3.3, 0.0);

*** MODELOPTs: RegDFAULT CONC ELEV URBAN ADJ_U*

* SOURCE-RECEPTOR COMBINATIONS FOR WHICH CALCULATIONS MAY NOT BE PERFORMED *
LESS THAN 1.0 METER; WITHIN OPENPIT; OR BEYOND 80KM FOR FASTAREA/FASTALL

SOURCE ID	- - RECEPTOR LOCATION - - XR (METERS)	YR (METERS)	DISTANCE (METERS)
L0000251	571437.7	4174986.4	-2.86
L0000252	571437.7	4174986.4	-0.54
L0000260	571375.8	4174939.1	-3.20
L0000261	571375.8	4174939.1	-1.77
L0000678	571375.8	4175222.8	-3.33
L0000679	571375.8	4175222.8	-3.82
L0000703	571190.1	4175317.4	-0.82
L0000712	571128.2	4175364.6	-5.70
L0000713	571128.2	4175364.6	-0.46
L0000744	571066.3	4175222.8	-0.22
L0000745	571066.3	4175222.8	-4.96
L0000754	571128.2	4175175.5	-3.27

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                            L0000785            571313.9     4174986.4
-5.11
                            L0000786            571313.9     4174986.4
-0.75
                            L0000794            571375.8     4174939.1
-2.48
                            L0000795            571375.8     4174939.1
-0.19
                            L0000825            571561.6     4174750.0
-3.83
                            L0000826            571561.6     4174750.0
-3.01
                            L0000834            571623.5     4174702.7
-0.99
                            L0000835            571623.5     4174702.7
-1.49
                            L0000876            571933.0     4174750.0
-2.67
                            L0000891            572056.8     4174797.3
-1.68
                            L0000892            572056.8     4174797.3
-4.19
                            L0000907            572180.7     4174844.6
-5.85
                            L0000908            572180.7     4174844.6
-2.31
                            L0000560            571475.1     4175165.4
-4.75
                            L0000561            571475.1     4175165.4
-0.25
```



```
 *** MODELOPTs:    RegDFAULT  CONC  ELEV  URBAN  ADJ_U*

                                          *** METEOROLOGICAL DAYS SELECTED FOR
PROCESSING ***
                                                                (1=YES; 0=NO)

           1 1 1 1 1 1 1 1 1 1   1 1 1 1 1 1 1 1 1 1   1 1 1 1 1 1 1 1 1 1   1 1 1
1 1 1 1 1 1 1   1 1 1 1 1 1 1 1 1 1
           1 1 1 1 1 1 1 1 1 1   1 1 1 1 1 1 1 1 1 1   1 1 1 1 1 1 1 1 1 1   1 1 1
1 1 1 1 1 1 1   1 1 1 1 1 1 1 1 1 1
           1 1 1 1 1 1 1 1 1 1   1 1 1 1 1 1 1 1 1 1   1 1 1 1 1 1 1 1 1 1   1 1 1
1 1 1 1 1 1 1   1 1 1 1 1 1 1 1 1 1
           1 1 1 1 1 1 1 1 1 1   1 1 1 1 1 1 1 1 1 1   1 1 1 1 1 1 1 1 1 1   1 1 1
1 1 1 1 1 1 1   1 1 1 1 1 1 1 1 1 1
```

```
           1 1 1 1 1 1 1 1 1 1   1 1 1 1 1 1 1 1 1 1   1 1 1 1 1 1 1 1 1 1   1 1 1
1 1 1 1 1 1 1   1 1 1 1 1 1 1 1 1 1
           1 1 1 1 1 1 1 1 1 1   1 1 1 1 1 1 1 1 1 1   1 1 1 1 1 1 1 1 1 1   1 1 1
1 1 1 1 1 1 1   1 1 1 1 1 1 1 1 1 1
           1 1 1 1 1 1 1 1 1 1   1 1 1 1 1 1 1 1 1 1   1 1 1 1 1 1 1 1 1 1   1 1 1
1 1 1 1 1 1 1   1 1 1 1 1 1 1 1 1 1
           1 1 1 1 1 1 1 1 1 1   1 1 1 1 1

                NOTE:  METEOROLOGICAL DATA ACTUALLY PROCESSED WILL ALSO DEPEND ON
WHAT IS INCLUDED IN THE DATA FILE.



                                  *** UPPER BOUND OF FIRST THROUGH FIFTH WIND SPEED
CATEGORIES ***
                                                                  (METERS/SEC)

                                                     1.54,   3.09,   5.14,   8.23,
10.80,
 *** AERMOD - VERSION 22112  ***   *** C:\Lakes\AERMOD View\880 Doolittle_Ops\880
Doolittle_Ops.isc         ***        01/12/23
 *** AERMET - VERSION  18081 ***   ***
                       ***        17:31:16

                                  PAGE  26
 *** MODELOPTs:    RegDFAULT  CONC  ELEV  URBAN  ADJ_U*

                                   *** UP TO THE FIRST 24 HOURS OF METEOROLOGICAL
DATA ***

   Surface file:   ..\880 Doolittle\880 Doolittle.SFC
                  Met Version:  18081
   Profile file:   ..\880 Doolittle\880 Doolittle.PFL

   Surface format: FREE

   Profile format: FREE

   Surface station no.:    23230                  Upper air station no.:    23230
                  Name: OAKLAND/WSO_AP                              Name:
OAKLAND/WSO_AP
                  Year:   2013                                      Year:   2013

 First 24 hours of scalar data
 YR MO DY JDY HR     H0     U*     W*  DT/DZ ZICNV ZIMCH  M-O LEN    Z0  BOWEN
ALBEDO  REF WS   WD     HT  REF TA     HT
- - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - -
- - - - - - - - - - - - - - - - - - -
 13 01 01   1 01   -7.9  0.116 -9.000 -9.000 -999.   95.     18.0  0.04   0.38
1.00    1.76  999.   10.0  278.8    2.0
```

```
 13 01 01   1 02  -10.3  0.133 -9.000 -9.000 -999.  116.     20.6  0.04   0.38
1.00    2.03   32.   10.0  278.1    2.0
 13 01 01   1 03  -22.6  0.220 -9.000 -9.000 -999.  248.     53.3  0.08   0.38
1.00    2.81  111.   10.0  278.8    2.0
 13 01 01   1 04  -12.8  0.148 -9.000 -9.000 -999.  139.     24.2  0.04   0.38
1.00    2.25   59.   10.0  278.8    2.0
 13 01 01   1 05  -18.7  0.183 -9.000 -9.000 -999.  189.     37.0  0.04   0.38
1.00    2.74   46.   10.0  280.4    2.0
 13 01 01   1 06  -24.9  0.244 -9.000 -9.000 -999.  289.     65.3  0.04   0.38
1.00    3.59   29.   10.0  279.2    2.0
 13 01 01   1 07  -20.6  0.200 -9.000 -9.000 -999.  216.     44.2  0.04   0.38
1.00    2.98   58.   10.0  278.8    2.0
 13 01 01   1 08  -13.6  0.158 -9.000 -9.000 -999.  151.     27.5  0.08   0.38
0.73    2.06  100.   10.0  278.8    2.0
 13 01 01   1 09    2.9  0.198  0.145  0.005   38.  212.   -243.5  0.04   0.38
0.36    2.70   38.   10.0  281.4    2.0
 13 01 01   1 10   30.3  0.318  0.419  0.005   88.  430.    -96.6  0.04   0.38
0.23    4.20   49.   10.0  282.5    2.0
 13 01 01   1 11   51.4  0.425  0.653  0.008  197.  665.   -136.2  0.04   0.38
0.18    5.69   55.   10.0  284.2    2.0
 13 01 01   1 12   63.4  0.409  0.872  0.007  381.  628.    -98.4  0.04   0.38
0.17    5.41   39.   10.0  284.9    2.0
 13 01 01   1 13   65.4  0.584  1.066  0.005  674. 1071.   -277.3  0.04   0.38
0.16    7.96   43.   10.0  284.9    2.0
 13 01 01   1 14   57.7  0.597  1.105  0.005  850. 1105.   -334.8  0.04   0.38
0.17    8.16   49.   10.0  285.9    2.0
 13 01 01   1 15   40.5  0.511  0.996  0.008  889.  886.   -300.4  0.04   0.38
0.20    6.98   51.   10.0  286.4    2.0
 13 01 01   1 16   15.0  0.468  0.718  0.008  894.  772.   -622.3  0.04   0.38
0.29    6.46   41.   10.0  285.4    2.0
 13 01 01   1 17  -31.4  0.404 -9.000 -9.000 -999.  620.    191.3  0.04   0.38
0.52    5.80   47.   10.0  283.8    2.0
 13 01 01   1 18  -29.2  0.289 -9.000 -9.000 -999.  381.     91.7  0.08   0.38
1.00    3.64   95.   10.0  282.5    2.0
 13 01 01   1 19  -33.0  0.324 -9.000 -9.000 -999.  443.    115.6  0.08   0.38
1.00    4.07   90.   10.0  280.4    2.0
 13 01 01   1 20  -29.0  0.283 -9.000 -9.000 -999.  363.     88.3  0.04   0.38
1.00    4.15   57.   10.0  279.2    2.0
 13 01 01   1 21  -17.9  0.182 -9.000 -9.000 -999.  191.     36.5  0.08   0.38
1.00    2.35   89.   10.0  279.2    2.0
 13 01 01   1 22  -14.1  0.161 -9.000 -9.000 -999.  156.     28.6  0.08   0.38
1.00    2.10  114.   10.0  279.9    2.0
 13 01 01   1 23  -10.1  0.136 -9.000 -9.000 -999.  120.     22.5  0.08   0.38
1.00    1.79   99.   10.0  279.9    2.0
 13 01 01   1 24   -8.8  0.123 -9.000 -9.000 -999.  104.     19.4  0.05   0.38
1.00    1.81  125.   10.0  278.8    2.0


 First hour of profile data
 YR MO DY HR HEIGHT F  WDIR    WSPD AMB_TMP sigmaA  sigmaW  sigmaV
```

```
 13 01 01 01   10.0 1 -999.    1.76   278.8   99.0  -99.00  -99.00

 F indicates top of profile (=1) or below (=0)
↑ *** AERMOD - VERSION 22112  ***   *** C:\Lakes\AERMOD View\880 Doolittle_Ops\880
Doolittle_Ops.isc         ***        01/12/23
 *** AERMET - VERSION  18081 ***   ***
                       ***        17:31:16

                                  PAGE  27
 *** MODELOPTs:    RegDFAULT  CONC  ELEV  URBAN  ADJ_U*

                              *** THE PERIOD ( 43824 HRS) AVERAGE CONCENTRATION
VALUES FOR SOURCE GROUP: ALL      ***
                                  INCLUDING SOURCE(S):     L0000248    , L0000249
 , L0000250    , L0000251    , L0000252    ,
                 L0000253    , L0000254    , L0000255    , L0000256    , L0000257
 , L0000258    , L0000259    , L0000260    ,
                 L0000261    , L0000667    , L0000668    , L0000669    , L0000670
 , L0000671    , L0000672    , L0000673    ,
                 L0000674    , L0000675    , L0000676    , L0000677    , L0000678
 , L0000679    , L0000680    ,  . . .      ,

                                                *** DISCRETE CARTESIAN RECEPTOR POINTS
***

                                        ** CONC OF PM_2.5   IN MICROGRAMS/M**3
                    **

       X-COORD (M)   Y-COORD (M)        CONC                       X-COORD (M)
Y-COORD (M)        CONC
 - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - -
- - - - - - - - - - - - - - - - - - - - - - - - - - -
         571066.27    4174560.88        0.00038                       571128.18
4174560.88        0.00040
         571190.09    4174560.88        0.00041                       571252.00
4174560.88        0.00041
         571313.91    4174560.88        0.00039                       571066.27
4174608.16        0.00043
         571128.18    4174608.16        0.00047                       571190.09
4174608.16        0.00049
         571252.00    4174608.16        0.00049                       571313.91
4174608.16        0.00047
         571375.82    4174608.16        0.00043                       571437.73
4174608.16        0.00038
         571499.64    4174608.16        0.00029                       571561.55
4174608.16        0.00020
         571066.27    4174655.44        0.00047                       571128.18
4174655.44        0.00052
         571190.09    4174655.44        0.00056                       571252.00
4174655.44        0.00058
```

571313.91 4174655.44 0.00056 571375.82 4174655.44 0.00052
571437.73 4174655.44 0.00046 571499.64 4174655.44 0.00036
571561.55 4174655.44 0.00025 571623.46 4174655.44 0.00015
571685.37 4174655.44 0.00012 571747.28 4174655.44 0.00011
571809.19 4174655.44 0.00012 571871.10 4174655.44 0.00014
571066.27 4174702.72 0.00050 571128.18 4174702.72 0.00058
571190.09 4174702.72 0.00064 571252.00 4174702.72 0.00067
571313.91 4174702.72 0.00067 571375.82 4174702.72 0.00064
571437.73 4174702.72 0.00057 571499.64 4174702.72 0.00045
571561.55 4174702.72 0.00031 571623.46 4174702.72 0.00019
571685.37 4174702.72 0.00012 571871.10 4174702.72 0.00017
571066.27 4174750.00 0.00052 571128.18 4174750.00 0.00062
571190.09 4174750.00 0.00071 571252.00 4174750.00 0.00077
571313.91 4174750.00 0.00080 571375.82 4174750.00 0.00078
571437.73 4174750.00 0.00071 571499.64 4174750.00 0.00058
571561.55 4174750.00 0.00041 571623.46 4174750.00 0.00023
571685.37 4174750.00 0.00013 571747.28 4174750.00 0.00013
571809.19 4174750.00 0.00016 571871.10 4174750.00 0.00020
571933.01 4174750.00 0.00028 571994.92 4174750.00 0.00037
572056.83 4174750.00 0.00046 572118.74 4174750.00 0.00051
572180.65 4174750.00 0.00053 571066.27 4174797.28 0.00054
571128.18 4174797.28 0.00064 571190.09 4174797.28 0.00074
571252.00 4174797.28 0.00084 571313.91 4174797.28 0.00092
571375.82 4174797.28 0.00094 571437.73 4174797.28 0.00090
571499.64 4174797.28 0.00077 571561.55 4174797.28 0.00055

```
         571623.46    4174797.28        0.00029                      571685.37
4174797.28        0.00015
         571747.28    4174797.28        0.00015                      571809.19
4174797.28        0.00018
         571871.10    4174797.28        0.00026                      571933.01
4174797.28        0.00039
         571994.92    4174797.28        0.00052                      572056.83
4174797.28        0.00060
         572118.74    4174797.28        0.00062                      572180.65
4174797.28        0.00061
         571066.27    4174844.56        0.00054                      571128.18
4174844.56        0.00064
```



```
                             *** THE PERIOD ( 43824 HRS) AVERAGE CONCENTRATION
VALUES FOR SOURCE GROUP: ALL      ***
                                  INCLUDING SOURCE(S):     L0000248    , L0000249
 , L0000250    , L0000251    , L0000252    ,
                L0000253    , L0000254    , L0000255    , L0000256    , L0000257
 , L0000258    , L0000259    , L0000260    ,
                L0000261    , L0000667    , L0000668    , L0000669    , L0000670
 , L0000671    , L0000672    , L0000673    ,
                L0000674    , L0000675    , L0000676    , L0000677    , L0000678
 , L0000679    , L0000680    ,  . . .      ,

                                               *** DISCRETE CARTESIAN RECEPTOR POINTS
***

                                        ** CONC OF PM_2.5   IN MICROGRAMS/M**3
                    **

       X-COORD (M)   Y-COORD (M)        CONC                       X-COORD (M)
Y-COORD (M)        CONC
 - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - -
- - - - - - - - - - - - - - - - - - - - - - - - - - - - -
         571190.09    4174844.56        0.00076                      571252.00
4174844.56        0.00089
         571313.91    4174844.56        0.00102                      571375.82
4174844.56        0.00111
         571437.73    4174844.56        0.00114                      571499.64
4174844.56        0.00104
         571561.55    4174844.56        0.00078                      571623.46
4174844.56        0.00044
         571685.37    4174844.56        0.00020                      571747.28
```

4174844.56 0.00018
571809.19 4174844.56 0.00024 571871.10
4174844.56 0.00039
571933.01 4174844.56 0.00057 571994.92
4174844.56 0.00070
572056.83 4174844.56 0.00073 572118.74
4174844.56 0.00071
572180.65 4174844.56 0.00067 571066.27
4174891.84 0.00052
571128.18 4174891.84 0.00062 571190.09
4174891.84 0.00075
571252.00 4174891.84 0.00090 571313.91
4174891.84 0.00107
571375.82 4174891.84 0.00126 571499.64
4174891.84 0.00144
571561.55 4174891.84 0.00125 571623.46
4174891.84 0.00072
571685.37 4174891.84 0.00029 571747.28
4174891.84 0.00025
571809.19 4174891.84 0.00038 571871.10
4174891.84 0.00062
571933.01 4174891.84 0.00081 571994.92
4174891.84 0.00086
572056.83 4174891.84 0.00083 572118.74
4174891.84 0.00077
572180.65 4174891.84 0.00070 571066.27
4174939.12 0.00048
571128.18 4174939.12 0.00059 571190.09
4174939.12 0.00071
571252.00 4174939.12 0.00087 571313.91
4174939.12 0.00107
571375.82 4174939.12 0.00137 571437.73
4174939.12 0.00168
571499.64 4174939.12 0.00228 571623.46
4174939.12 0.00121
571685.37 4174939.12 0.00041 571747.28
4174939.12 0.00043
571809.19 4174939.12 0.00074 571871.10
4174939.12 0.00095
571933.01 4174939.12 0.00101 571994.92
4174939.12 0.00097
572056.83 4174939.12 0.00089 572118.74
4174939.12 0.00081
572180.65 4174939.12 0.00072 571066.27
4174986.40 0.00044
571128.18 4174986.40 0.00054 571190.09
4174986.40 0.00066
571252.00 4174986.40 0.00081 571313.91
4174986.40 0.00101
571375.82 4174986.40 0.00130 571437.73

4174986.40   0.00208
         571809.19   4174986.40   0.00130   571871.10
4174986.40   0.00122
         571933.01   4174986.40   0.00112   571994.92
4174986.40   0.00103
         572056.83   4174986.40   0.00094   572118.74
4174986.40   0.00084
         572180.65   4174986.40   0.00075   571066.27
4175033.68   0.00039
         571128.18   4175033.68   0.00049   571190.09
4175033.68   0.00060
         571252.00   4175033.68   0.00075   571313.91
4175033.68   0.00093
         571375.82   4175033.68   0.00120   571747.28
4175033.68   0.00204
         571809.19   4175033.68   0.00176   571871.10
4175033.68   0.00141
         571933.01   4175033.68   0.00120   571994.92
4175033.68   0.00109
         572056.83   4175033.68   0.00097   572118.74
4175033.68   0.00086

*** MODELOPTs: RegDFAULT CONC ELEV URBAN ADJ_U*

*** THE PERIOD (43824 HRS) AVERAGE CONCENTRATION VALUES FOR SOURCE GROUP: ALL ***
INCLUDING SOURCE(S): L0000248 , L0000249 , L0000250 , L0000251 , L0000252 ,
L0000253 , L0000254 , L0000255 , L0000256 , L0000257 , L0000258 , L0000259 , L0000260 ,
L0000261 , L0000667 , L0000668 , L0000669 , L0000670 , L0000671 , L0000672 , L0000673 ,
L0000674 , L0000675 , L0000676 , L0000677 , L0000678 , L0000679 , L0000680 , . . . ,

*** DISCRETE CARTESIAN RECEPTOR POINTS ***

** CONC OF PM_2.5 IN MICROGRAMS/M**3 **

X-COORD (M)   Y-COORD (M)   CONC   X-COORD (M)   Y-COORD (M)   CONC
- -

572180.65 4175033.68 0.00076 571066.27
4175080.96 0.00037
571128.18 4175080.96 0.00045 571190.09
4175080.96 0.00055
571252.00 4175080.96 0.00068 571313.91
4175080.96 0.00085
571747.28 4175080.96 0.00161 571809.19
4175080.96 0.00162
571871.10 4175080.96 0.00134 571933.01
4175080.96 0.00115
571994.92 4175080.96 0.00105 572056.83
4175080.96 0.00094
572118.74 4175080.96 0.00083 572180.65
4175080.96 0.00074
571066.27 4175128.24 0.00035 571128.18
4175128.24 0.00043
571252.00 4175128.24 0.00061 571313.91
4175128.24 0.00073
571375.82 4175128.24 0.00091 571437.73
4175128.24 0.00142
571747.28 4175128.24 0.00088 571809.19
4175128.24 0.00098
571871.10 4175128.24 0.00094 571933.01
4175128.24 0.00090
571994.92 4175128.24 0.00087 572056.83
4175128.24 0.00081
572118.74 4175128.24 0.00074 572180.65
4175128.24 0.00067
571066.27 4175175.52 0.00035 571128.18
4175175.52 0.00042
571190.09 4175175.52 0.00049 571252.00
4175175.52 0.00057
571313.91 4175175.52 0.00066 571375.82
4175175.52 0.00079
571747.28 4175175.52 0.00065 571809.19
4175175.52 0.00066
571871.10 4175175.52 0.00064 571933.01
4175175.52 0.00066
571994.92 4175175.52 0.00066 572056.83
4175175.52 0.00064
572118.74 4175175.52 0.00061 572180.65
4175175.52 0.00057
571066.27 4175222.80 0.00035 571128.18
4175222.80 0.00040
571190.09 4175222.80 0.00046 571252.00
4175222.80 0.00053
571313.91 4175222.80 0.00061 571375.82
4175222.80 0.00073
571437.73 4175222.80 0.00086 571623.46
4175222.80 0.00090

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         571685.37    4175222.80        0.00057                      571747.28
4175222.80        0.00051
         571809.19    4175222.80        0.00050                      571871.10
4175222.80        0.00050
         571933.01    4175222.80        0.00050                      571994.92
4175222.80        0.00050
         572056.83    4175222.80        0.00050                      572118.74
4175222.80        0.00048
         572180.65    4175222.80        0.00046                      571066.27
4175270.08        0.00033
         571128.18    4175270.08        0.00038                      571190.09
4175270.08        0.00043
         571252.00    4175270.08        0.00050                      571313.91
4175270.08        0.00058
         571375.82    4175270.08        0.00066                      571437.73
4175270.08        0.00073
         571499.64    4175270.08        0.00076                      571561.55
4175270.08        0.00072
         571623.46    4175270.08        0.00056                      571685.37
4175270.08        0.00044
         571747.28    4175270.08        0.00040                      571809.19
4175270.08        0.00040
         571871.10    4175270.08        0.00041                      571933.01
4175270.08        0.00041
         571994.92    4175270.08        0.00041                      572056.83
4175270.08        0.00040
         572118.74    4175270.08        0.00038                      572180.65
4175270.08        0.00037
         571066.27    4175317.36        0.00031                      571128.18
4175317.36        0.00036
```



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                             *** THE PERIOD ( 43824 HRS) AVERAGE CONCENTRATION
VALUES FOR SOURCE GROUP: ALL      ***
                                  INCLUDING SOURCE(S):     L0000248    , L0000249
 , L0000250    , L0000251    , L0000252    ,
                L0000253    , L0000254    , L0000255    , L0000256    , L0000257
 , L0000258    , L0000259    , L0000260    ,
                L0000261    , L0000667    , L0000668    , L0000669    , L0000670
 , L0000671    , L0000672    , L0000673    ,
                L0000674    , L0000675    , L0000676    , L0000677    , L0000678
 , L0000679    , L0000680    ,  . . .      ,

                                                *** DISCRETE CARTESIAN RECEPTOR POINTS
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***

** CONC OF PM_2.5 IN MICROGRAMS/M**3 **

X-COORD (M)	Y-COORD (M)	CONC	X-COORD (M)	Y-COORD (M)	CONC
571190.09	4175317.36	0.00041	571252.00	4175317.36	0.00047
571313.91	4175317.36	0.00053	571375.82	4175317.36	0.00058
571437.73	4175317.36	0.00061	571499.64	4175317.36	0.00060
571561.55	4175317.36	0.00051	571623.46	4175317.36	0.00042
571685.37	4175317.36	0.00034	571747.28	4175317.36	0.00032
571809.19	4175317.36	0.00034	571871.10	4175317.36	0.00035
571933.01	4175317.36	0.00035	571994.92	4175317.36	0.00034
572056.83	4175317.36	0.00033	572118.74	4175317.36	0.00032
572180.65	4175317.36	0.00030	571066.27	4175364.64	0.00030
571128.18	4175364.64	0.00034	571190.09	4175364.64	0.00039
571252.00	4175364.64	0.00044	571313.91	4175364.64	0.00048
571375.82	4175364.64	0.00050	571437.73	4175364.64	0.00051
571499.64	4175364.64	0.00047	571561.55	4175364.64	0.00041
571623.46	4175364.64	0.00035	571685.37	4175364.64	0.00029
571747.28	4175364.64	0.00028	571809.19	4175364.64	0.00029
571871.10	4175364.64	0.00029	571933.01	4175364.64	0.00029
571994.92	4175364.64	0.00029	572056.83	4175364.64	0.00028
572118.74	4175364.64	0.00027	572180.65	4175364.64	0.00026
571066.27	4175411.92	0.00028	571128.18	4175411.92	0.00032
571190.09	4175411.92	0.00036	571252.00	4175411.92	0.00040
571313.91	4175411.92	0.00042	571375.82		

4175411.92 0.00043
571437.73 4175411.92 0.00042 571499.64
4175411.92 0.00038
571561.55 4175411.92 0.00033 571623.46
4175411.92 0.00030
571685.37 4175411.92 0.00025 571747.28
4175411.92 0.00024
571809.19 4175411.92 0.00024 571871.10
4175411.92 0.00025
571933.01 4175411.92 0.00025 571994.92
4175411.92 0.00025
572056.83 4175411.92 0.00024 572118.74
4175411.92 0.00023
572180.65 4175411.92 0.00022 571066.27
4175459.20 0.00026
571128.18 4175459.20 0.00030 571190.09
4175459.20 0.00033
571252.00 4175459.20 0.00035 571313.91
4175459.20 0.00037
571375.82 4175459.20 0.00037 571437.73
4175459.20 0.00035
571499.64 4175459.20 0.00032 571561.55
4175459.20 0.00028
571623.46 4175459.20 0.00026 571685.37
4175459.20 0.00022
571747.28 4175459.20 0.00021 571809.19
4175459.20 0.00021
571871.10 4175459.20 0.00022 571933.01
4175459.20 0.00022
571994.92 4175459.20 0.00021 572056.83
4175459.20 0.00021
572118.74 4175459.20 0.00020 572180.65
4175459.20 0.00019
571496.32 4174981.53 0.00180 571724.84
4175020.54 0.00158
571686.94 4175179.95 0.00072 571637.89
4175169.91 0.00143
571494.09 4175257.97 0.00085 571450.62
4175194.44 0.00135

*** MODELOPTs: RegDFAULT CONC ELEV URBAN ADJ_U*

*** THE PERIOD (43824 HRS) AVERAGE CONCENTRATION VALUES FOR SOURCE GROUP: ALL ***
INCLUDING SOURCE(S): L0000248 , L0000249

```
 , L0000250    , L0000251    , L0000252    ,
                L0000253    , L0000254    , L0000255    , L0000256    , L0000257
 , L0000258    , L0000259    , L0000260    ,
                L0000261    , L0000667    , L0000668    , L0000669    , L0000670
 , L0000671    , L0000672    , L0000673    ,
                L0000674    , L0000675    , L0000676    , L0000677    , L0000678
 , L0000679    , L0000680    ,  . . .      ,

                                                *** DISCRETE CARTESIAN RECEPTOR POINTS
***

                                          ** CONC OF PM_2.5   IN MICROGRAMS/M**3
                    **

       X-COORD (M)   Y-COORD (M)        CONC                       X-COORD (M)
Y-COORD (M)        CONC
 - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - -
- - - - - - - - - - - - - - - - - - - - - - -
         571471.80    4175186.63        0.00137                      571475.14
4175165.45        0.00134
         571462.88    4175154.31        0.00136                      571447.27
4175156.54        0.00133
         571458.42    4175101.92        0.00172                      571334.69
4175077.39        0.00094
↑ *** AERMOD - VERSION 22112  ***   *** C:\Lakes\AERMOD View\880 Doolittle_Ops\880
Doolittle_Ops.isc         ***       01/12/23
 *** AERMET - VERSION  18081 ***   ***
                       ***        17:31:16

                                   PAGE  32
 *** MODELOPTs:    RegDFAULT  CONC  ELEV  URBAN  ADJ_U*

                              *** THE   1ST HIGHEST  1-HR AVERAGE CONCENTRATION
VALUES FOR SOURCE GROUP:  ALL      ***
                                 INCLUDING SOURCE(S):     L0000248    , L0000249
 , L0000250    , L0000251    , L0000252    ,
                L0000253    , L0000254    , L0000255    , L0000256    , L0000257
 , L0000258    , L0000259    , L0000260    ,
                L0000261    , L0000667    , L0000668    , L0000669    , L0000670
 , L0000671    , L0000672    , L0000673    ,
                L0000674    , L0000675    , L0000676    , L0000677    , L0000678
 , L0000679    , L0000680    ,  . . .      ,

                                                *** DISCRETE CARTESIAN RECEPTOR POINTS
***

                                          ** CONC OF PM_2.5   IN MICROGRAMS/M**3
                    **

      X-COORD (M)  Y-COORD (M)        CONC     (YYMMDDHH)              X-COORD (M)
```

Y-COORD (M) CONC (YYMMDDHH)

\- -

571066.27 4174560.88 0.01275 (14051505) 571128.18
4174560.88 0.01408 (16071103)
571190.09 4174560.88 0.01468 (17090103) 571252.00
4174560.88 0.01589 (17102223)
571313.91 4174560.88 0.01596 (17100822) 571066.27
4174608.16 0.01360 (15083024)
571128.18 4174608.16 0.01527 (14051505) 571190.09
4174608.16 0.01627 (16071103)
571252.00 4174608.16 0.01703 (14091102) 571313.91
4174608.16 0.01815 (14100223)
571375.82 4174608.16 0.01781 (14043002) 571437.73
4174608.16 0.01838 (16061903)
571499.64 4174608.16 0.01546 (17072004) 571561.55
4174608.16 0.01437 (15110304)
571066.27 4174655.44 0.01461 (15081503) 571128.18
4174655.44 0.01606 (15083024)
571190.09 4174655.44 0.01762 (14051505) 571252.00
4174655.44 0.01833 (16071103)
571313.91 4174655.44 0.01926 (17072902) 571375.82
4174655.44 0.01957 (14042903)
571437.73 4174655.44 0.01943 (17040424) 571499.64
4174655.44 0.01737 (16061903)
571561.55 4174655.44 0.01614 (15110304) 571623.46
4174655.44 0.00954 (17120419)
571685.37 4174655.44 0.01088 (13060819) 571747.28
4174655.44 0.00894 (17121621)
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4174655.44 0.00765 (17061819)
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4174702.72 0.02034 (16061903)
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571685.37 4174702.72 0.01166 (13060819) 571871.10
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571066.27 4174750.00 0.01690 (13100702) 571128.18
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4174750.00 0.02116 (15083024)
571313.91 4174750.00 0.02249 (16071103) 571375.82
4174750.00 0.02231 (17090103)
571437.73 4174750.00 0.02287 (14042903) 571499.64

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 4174750.00        0.02221  (16061903)
        571561.55   4174750.00        0.01861  (17071404)                571623.46
 4174750.00        0.01228  (13070305)
        571685.37   4174750.00        0.01241  (13060819)                571747.28
 4174750.00        0.00993  (13040808)
        571809.19   4174750.00        0.00920  (13060818)                571871.10
 4174750.00        0.00907  (15062519)
        571933.01   4174750.00        0.00846  (16060419)                571994.92
 4174750.00        0.00798  (16012517)
        572056.83   4174750.00        0.00770  (15092018)                572118.74
 4174750.00        0.00696  (13012517)
        572180.65   4174750.00        0.00601  (15061119)                571066.27
 4174797.28        0.01842  (14102203)
        571128.18   4174797.28        0.01957  (15031423)                571190.09
 4174797.28        0.02128  (16102602)
        571252.00   4174797.28        0.02286  (15081503)                571313.91
 4174797.28        0.02344  (15083024)
        571375.82   4174797.28        0.02459  (16071103)                571437.73
 4174797.28        0.02422  (17072902)
        571499.64   4174797.28        0.02318  (14043002)                571561.55
 4174797.28        0.02139  (16061903)
        571623.46   4174797.28        0.01467  (13070305)                571685.37
 4174797.28        0.01344  (13100408)
        571747.28   4174797.28        0.01019  (13040808)                571809.19
 4174797.28        0.01018  (13073019)
        571871.10   4174797.28        0.00931  (17062219)                571933.01
 4174797.28        0.00884  (14080619)
        571994.92   4174797.28        0.00861  (15092018)                572056.83
 4174797.28        0.00790  (13012517)
        572118.74   4174797.28        0.00697  (15061119)                572180.65
 4174797.28        0.00651  (17040418)
        571066.27   4174844.56        0.01983  (13122319)                571128.18
 4174844.56        0.02189  (15093024)
 *** AERMOD - VERSION 22112  ***   *** C:\Lakes\AERMOD View\880 Doolittle_Ops\880
Doolittle_Ops.isc         ***        01/12/23
 *** AERMET - VERSION  18081 ***   ***
                        ***        17:31:16

                                   PAGE  33
 *** MODELOPTs:    RegDFAULT  CONC  ELEV  URBAN  ADJ_U*

                              *** THE   1ST HIGHEST  1-HR AVERAGE CONCENTRATION
VALUES FOR SOURCE GROUP:  ALL      ***
                                  INCLUDING SOURCE(S):     L0000248    , L0000249
 , L0000250    , L0000251    , L0000252    ,
                L0000253    , L0000254    , L0000255    , L0000256    , L0000257
 , L0000258    , L0000259    , L0000260    ,
                L0000261    , L0000667    , L0000668    , L0000669    , L0000670
 , L0000671    , L0000672    , L0000673    ,
                L0000674    , L0000675    , L0000676    , L0000677    , L0000678
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, L0000679 , L0000680 , . . . ,

*** DISCRETE CARTESIAN RECEPTOR POINTS ***

** CONC OF PM_2.5 IN MICROGRAMS/M**3 **

X-COORD (M)	Y-COORD (M)	CONC	(YYMMDDHH)	X-COORD (M)	Y-COORD (M)	CONC	(YYMMDDHH)
571190.09	4174844.56	0.02267	(15093024)	571252.00	4174844.56	0.02378	(16102602)
571313.91	4174844.56	0.02521	(15081503)	571375.82	4174844.56	0.02557	(15083024)
571437.73	4174844.56	0.02675	(16071103)	571499.64	4174844.56	0.02640	(16072301)
571561.55	4174844.56	0.02501	(16061903)	571623.46	4174844.56	0.02036	(13070305)
571685.37	4174844.56	0.01498	(13100408)	571747.28	4174844.56	0.01080	(14070719)
571809.19	4174844.56	0.00987	(14063019)	571871.10	4174844.56	0.00976	(15071519)
571933.01	4174844.56	0.00928	(15092018)	571994.92	4174844.56	0.00867	(13012517)
572056.83	4174844.56	0.00794	(16053119)	572118.74	4174844.56	0.00752	(17040418)
572180.65	4174844.56	0.00640	(16091518)	571066.27	4174891.84	0.02041	(15100106)
571128.18	4174891.84	0.02246	(14111405)	571190.09	4174891.84	0.02469	(13051103)
571252.00	4174891.84	0.02654	(15093024)	571313.91	4174891.84	0.02651	(15093024)
571375.82	4174891.84	0.02767	(16102602)	571499.64	4174891.84	0.03065	(16071103)
571561.55	4174891.84	0.03312	(14042903)	571623.46	4174891.84	0.02545	(14070403)
571685.37	4174891.84	0.01712	(17121618)	571747.28	4174891.84	0.01149	(13060818)
571809.19	4174891.84	0.01065	(17062219)	571871.10	4174891.84	0.00993	(16031618)
571933.01	4174891.84	0.00957	(17080119)	571994.92	4174891.84	0.00877	(13101917)
572056.83	4174891.84	0.00809	(13020417)	572118.74	4174891.84	0.00754	(16091518)
572180.65	4174891.84	0.00697	(16091918)	571066.27	4174939.12	0.02272	(16032524)
571128.18	4174939.12	0.02525	(16032524)	571190.09	4174939.12	0.02655	(16032524)

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       571252.00   4174939.12        0.02725  (14100122)                571313.91
 4174939.12        0.02948  (15093024)
       571375.82   4174939.12        0.03168  (15093024)                571437.73
 4174939.12        0.03343  (15093024)
       571499.64   4174939.12        0.04112  (16071103)                571623.46
 4174939.12        0.03745  (15042924)
       571685.37   4174939.12        0.01790  (17121618)                571747.28
 4174939.12        0.01559  (13123115)
       571809.19   4174939.12        0.01251  (14010314)                571871.10
 4174939.12        0.01029  (15061319)
       571933.01   4174939.12        0.00982  (14073019)                571994.92
 4174939.12        0.00905  (16091518)
       572056.83   4174939.12        0.00840  (16052719)                572118.74
 4174939.12        0.00771  (14102717)
       572180.65   4174939.12        0.00712  (17031518)                571066.27
 4174986.40        0.02315  (13042803)
       571128.18   4174986.40        0.02622  (16021520)                571190.09
 4174986.40        0.02892  (16021520)
       571252.00   4174986.40        0.03163  (16011622)                571313.91
 4174986.40        0.03396  (15012804)
       571375.82   4174986.40        0.03572  (15012804)                571437.73
 4174986.40        0.04648  (14092924)
       571809.19   4174986.40        0.01525  (13010813)                571871.10
 4174986.40        0.01063  (15073019)
       571933.01   4174986.40        0.01025  (14102617)                571994.92
 4174986.40        0.00941  (15080519)
       572056.83   4174986.40        0.00870  (15031818)                572118.74
 4174986.40        0.00789  (15031818)
       572180.65   4174986.40        0.00704  (16040818)                571066.27
 4175033.68        0.02349  (13062423)
       571128.18   4175033.68        0.02639  (16111302)                571190.09
 4175033.68        0.03016  (16111302)
       571252.00   4175033.68        0.03353  (16111302)                571313.91
 4175033.68        0.03644  (16111302)
       571375.82   4175033.68        0.03956  (16111302)                571747.28
 4175033.68        0.02380  (15091111)
       571809.19   4175033.68        0.01792  (13110212)                571871.10
 4175033.68        0.01319  (13110212)
       571933.01   4175033.68        0.01173  (15073118)                571994.92
 4175033.68        0.01088  (17080719)
       572056.83   4175033.68        0.00982  (17060419)                572118.74
 4175033.68        0.00889  (16032618)
↑ *** AERMOD - VERSION 22112  ***   *** C:\Lakes\AERMOD View\880 Doolittle_Ops\880
Doolittle_Ops.isc         ***        01/12/23
 *** AERMET - VERSION  18081 ***   ***
                        ***        17:31:16

                                   PAGE  34
 *** MODELOPTs:    RegDFAULT  CONC  ELEV  URBAN  ADJ_U*
```

*** THE 1ST HIGHEST 1-HR AVERAGE CONCENTRATION VALUES FOR SOURCE GROUP: ALL ***

INCLUDING SOURCE(S): L0000248 , L0000249 , L0000250 , L0000251 , L0000252 , L0000253 , L0000254 , L0000255 , L0000256 , L0000257 , L0000258 , L0000259 , L0000260 , L0000261 , L0000667 , L0000668 , L0000669 , L0000670 , L0000671 , L0000672 , L0000673 , L0000674 , L0000675 , L0000676 , L0000677 , L0000678 , L0000679 , L0000680 , . . . ,

*** DISCRETE CARTESIAN RECEPTOR POINTS ***

** CONC OF PM_2.5 IN MICROGRAMS/M**3 **

X-COORD (M)	Y-COORD (M)	CONC	(YYMMDDHH)	X-COORD (M)	Y-COORD (M)	CONC	(YYMMDDHH)
572180.65	4175033.68	0.00797	(15051807)	571066.27	4175080.96	0.02259	(16111305)
571128.18	4175080.96	0.02634	(16111305)	571190.09	4175080.96	0.03018	(16111305)
571252.00	4175080.96	0.03402	(16111305)	571313.91	4175080.96	0.03828	(16111305)
571747.28	4175080.96	0.02302	(17102512)	571809.19	4175080.96	0.01849	(16081311)
571871.10	4175080.96	0.01330	(16102012)	571933.01	4175080.96	0.01158	(14041918)
571994.92	4175080.96	0.01082	(16052319)	572056.83	4175080.96	0.00982	(15080119)
572118.74	4175080.96	0.00893	(15080207)	572180.65	4175080.96	0.00820	(15080207)
571066.27	4175128.24	0.02609	(13092304)	571128.18	4175128.24	0.02941	(13092304)
571252.00	4175128.24	0.03519	(15011222)	571313.91	4175128.24	0.03863	(15082804)
571375.82	4175128.24	0.04272	(16010820)	571437.73	4175128.24	0.05348	(15011222)
571747.28	4175128.24	0.01871	(13052010)	571809.19	4175128.24	0.01482	(17051909)
571871.10	4175128.24	0.01081	(13043010)	571933.01	4175128.24	0.00966	(16072119)
571994.92	4175128.24	0.00941	(17081418)	572056.83	4175128.24	0.00883	(16080607)
572118.74	4175128.24	0.00809	(16080607)	572180.65	4175128.24	0.00739	(13091318)
571066.27	4175175.52	0.02549	(15082804)	571128.18			

4175175.52 0.02894 (15082804)
571190.09 4175175.52 0.03159 (13013105) 571252.00
4175175.52 0.03409 (14021723)
571313.91 4175175.52 0.03577 (15102307) 571375.82
4175175.52 0.03896 (14021203)
571747.28 4175175.52 0.01672 (15020719) 571809.19
4175175.52 0.01209 (14081205)
571871.10 4175175.52 0.01003 (17112620) 571933.01
4175175.52 0.00916 (13062519)
571994.92 4175175.52 0.00884 (17060319) 572056.83
4175175.52 0.00827 (13021817)
572118.74 4175175.52 0.00793 (16062319) 572180.65
4175175.52 0.00740 (17061319)
571066.27 4175222.80 0.02469 (14021723) 571128.18
4175222.80 0.02707 (15021207)
571190.09 4175222.80 0.02978 (16092501) 571252.00
4175222.80 0.03182 (14021203)
571313.91 4175222.80 0.03380 (17102502) 571375.82
4175222.80 0.03625 (17100103)
571437.73 4175222.80 0.03740 (14051224) 571623.46
4175222.80 0.05159 (13031901)
571685.37 4175222.80 0.02773 (17032322) 571747.28
4175222.80 0.01605 (17110904)
571809.19 4175222.80 0.01189 (14030524) 571871.10
4175222.80 0.01021 (13092923)
571933.01 4175222.80 0.00915 (14091718) 571994.92
4175222.80 0.00839 (16071019)
572056.83 4175222.80 0.00805 (14102417) 572118.74
4175222.80 0.00779 (16040718)
572180.65 4175222.80 0.00695 (13041218) 571066.27
4175270.08 0.02399 (16092501)
571128.18 4175270.08 0.02615 (14030807) 571190.09
4175270.08 0.02855 (15090823)
571252.00 4175270.08 0.03065 (17100103) 571313.91
4175270.08 0.03224 (17091123)
571375.82 4175270.08 0.03361 (14051224) 571437.73
4175270.08 0.03512 (13040305)
571499.64 4175270.08 0.03477 (15090723) 571561.55
4175270.08 0.03472 (16021918)
571623.46 4175270.08 0.03148 (13070402) 571685.37
4175270.08 0.02280 (17032322)
571747.28 4175270.08 0.01394 (17091103) 571809.19
4175270.08 0.01186 (16011424)
571871.10 4175270.08 0.01043 (17110405) 571933.01
4175270.08 0.00915 (13092020)
571994.92 4175270.08 0.00860 (14091718) 572056.83
4175270.08 0.00802 (16102917)
572118.74 4175270.08 0.00755 (13111416) 572180.65
4175270.08 0.00689 (16040718)
571066.27 4175317.36 0.02294 (17091024) 571128.18

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 4175317.36        0.02537  (17102502)
↑ *** AERMOD - VERSION 22112  ***   *** C:\Lakes\AERMOD View\880 Doolittle_Ops\880
Doolittle_Ops.isc         ***        01/12/23
 *** AERMET - VERSION  18081 ***   ***
                       ***        17:31:16

                                  PAGE  35
 *** MODELOPTs:    RegDFAULT  CONC  ELEV  URBAN  ADJ_U*

                              *** THE   1ST HIGHEST  1-HR AVERAGE CONCENTRATION
VALUES FOR SOURCE GROUP:  ALL      ***
                                 INCLUDING SOURCE(S):     L0000248    , L0000249
 , L0000250    , L0000251    , L0000252    ,
                L0000253    , L0000254    , L0000255    , L0000256    , L0000257
 , L0000258    , L0000259    , L0000260    ,
                L0000261    , L0000667    , L0000668    , L0000669    , L0000670
 , L0000671    , L0000672    , L0000673    ,
                L0000674    , L0000675    , L0000676    , L0000677    , L0000678
 , L0000679    , L0000680    ,  . . .      ,

                                              *** DISCRETE CARTESIAN RECEPTOR POINTS
***

                                        ** CONC OF PM_2.5   IN MICROGRAMS/M**3
                    **

      X-COORD (M)  Y-COORD (M)        CONC     (YYMMDDHH)              X-COORD (M)
Y-COORD (M)        CONC     (YYMMDDHH)
 - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - -
- - - - - - - - - - - - - - - - - - - - - - - - - - - - -
        571190.09   4175317.36        0.02761  (17100103)                571252.00
 4175317.36        0.02911  (15072006)
        571313.91   4175317.36        0.03049  (14051224)                571375.82
 4175317.36        0.03186  (17041602)
        571437.73   4175317.36        0.03186  (15090723)                571499.64
 4175317.36        0.03197  (16030402)
        571561.55   4175317.36        0.02994  (16051604)                571623.46
 4175317.36        0.02528  (13070402)
        571685.37   4175317.36        0.02001  (17032322)                571747.28
 4175317.36        0.01304  (17010924)
        571809.19   4175317.36        0.01161  (17110904)                571871.10
 4175317.36        0.01022  (16110520)
        571933.01   4175317.36        0.00940  (13092021)                571994.92
 4175317.36        0.00814  (17060307)
        572056.83   4175317.36        0.00777  (13032718)                572118.74
 4175317.36        0.00755  (16102917)
        572180.65   4175317.36        0.00660  (13111416)                571066.27
 4175364.64        0.02172  (16010401)
        571128.18   4175364.64        0.02403  (15100724)                571190.09
 4175364.64        0.02596  (15072006)
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571252.00 4175364.64 0.02758 (14051224) 571313.91
4175364.64 0.02907 (17112401)
571375.82 4175364.64 0.02882 (16012724) 571437.73
4175364.64 0.03034 (14110219)
571499.64 4175364.64 0.02977 (16021918) 571561.55
4175364.64 0.02898 (13070402)
571623.46 4175364.64 0.02312 (13062203) 571685.37
4175364.64 0.01903 (16120819)
571747.28 4175364.64 0.01254 (17010924) 571809.19
4175364.64 0.01181 (17110904)
571871.10 4175364.64 0.01028 (13091106) 571933.01
4175364.64 0.00887 (13081724)
571994.92 4175364.64 0.00834 (15072307) 572056.83
4175364.64 0.00746 (17060307)
572118.74 4175364.64 0.00687 (13032718) 572180.65
4175364.64 0.00678 (16102917)
571066.27 4175411.92 0.02062 (15100724) 571128.18
4175411.92 0.02269 (16110904)
571190.09 4175411.92 0.02439 (14051224) 571252.00
4175411.92 0.02606 (17112401)
571313.91 4175411.92 0.02687 (16112422) 571375.82
4175411.92 0.02773 (17010502)
571437.73 4175411.92 0.02812 (16030402) 571499.64
4175411.92 0.02759 (16021918)
571561.55 4175411.92 0.02751 (13070402) 571623.46
4175411.92 0.02194 (13062203)
571685.37 4175411.92 0.01820 (16120819) 571747.28
4175411.92 0.01173 (13100823)
571809.19 4175411.92 0.01119 (16103101) 571871.10
4175411.92 0.00970 (16112620)
571933.01 4175411.92 0.00908 (16110520) 571994.92
4175411.92 0.00781 (16110103)
572056.83 4175411.92 0.00748 (15072307) 572118.74
4175411.92 0.00665 (17060307)
572180.65 4175411.92 0.00600 (17060803) 571066.27
4175459.20 0.01932 (16110904)
571128.18 4175459.20 0.02115 (15103101) 571190.09
4175459.20 0.02297 (17031904)
571252.00 4175459.20 0.02442 (17041602) 571313.91
4175459.20 0.02513 (16011623)
571375.82 4175459.20 0.02655 (14110219) 571437.73
4175459.20 0.02655 (17112005)
571499.64 4175459.20 0.02525 (16051604) 571561.55
4175459.20 0.02520 (13070402)
571623.46 4175459.20 0.02103 (16061605) 571685.37
4175459.20 0.01741 (16120819)
571747.28 4175459.20 0.01120 (13092022) 571809.19
4175459.20 0.01078 (17091103)
571871.10 4175459.20 0.00994 (17110904) 571933.01
4175459.20 0.00866 (13091106)

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        571994.92   4175459.20        0.00728  (16090122)                572056.83
 4175459.20        0.00676  (17110405)
        572118.74   4175459.20        0.00653  (15072307)                572180.65
 4175459.20        0.00585  (17052423)
        571496.32   4174981.53        0.03859  (14100122)                571724.84
 4175020.54        0.02283  (15050109)
        571686.94   4175179.95        0.03259  (17032322)                571637.89
 4175169.91        0.05958  (13040404)
        571494.09   4175257.97        0.03570  (15090723)                571450.62
 4175194.44        0.05806  (16041604)
🡅 *** AERMOD - VERSION 22112  ***   *** C:\Lakes\AERMOD View\880 Doolittle_Ops\880
Doolittle_Ops.isc         ***        01/12/23
 *** AERMET - VERSION  18081 ***   ***
                       ***        17:31:16

                                  PAGE  36
 *** MODELOPTs:    RegDFAULT  CONC  ELEV  URBAN  ADJ_U*

                             *** THE   1ST HIGHEST  1-HR AVERAGE CONCENTRATION
VALUES FOR SOURCE GROUP:  ALL      ***
                                 INCLUDING SOURCE(S):     L0000248    , L0000249
 , L0000250    , L0000251    , L0000252    ,
                L0000253    , L0000254    , L0000255    , L0000256    , L0000257
 , L0000258    , L0000259    , L0000260    ,
                L0000261    , L0000667    , L0000668    , L0000669    , L0000670
 , L0000671    , L0000672    , L0000673    ,
                L0000674    , L0000675    , L0000676    , L0000677    , L0000678
 , L0000679    , L0000680    ,  . . .      ,

                                            *** DISCRETE CARTESIAN RECEPTOR POINTS
***

                                       ** CONC OF PM_2.5   IN MICROGRAMS/M**3
                    **

      X-COORD (M)  Y-COORD (M)        CONC     (YYMMDDHH)              X-COORD (M)
Y-COORD (M)        CONC     (YYMMDDHH)
 - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - -
- - - - - - - - - - - - - - - - - - - - - - - - - - -
        571471.80   4175186.63        0.05399  (13011819)                571475.14
 4175165.45        0.04642  (15102307)
        571462.88   4175154.31        0.04841  (14021723)                571447.27
 4175156.54        0.05279  (13100424)
        571458.42   4175101.92        0.04133  (13111917)                571334.69
 4175077.39        0.03933  (16111305)
🡅 *** AERMOD - VERSION 22112  ***   *** C:\Lakes\AERMOD View\880 Doolittle_Ops\880
Doolittle_Ops.isc         ***        01/12/23
 *** AERMET - VERSION  18081 ***   ***
                       ***        17:31:16
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 *** MODELOPTs:    RegDFAULT  CONC  ELEV  URBAN  ADJ_U*

                              *** THE   1ST HIGHEST  8-HR AVERAGE CONCENTRATION
VALUES FOR SOURCE GROUP:  ALL      ***
                                 INCLUDING SOURCE(S):     L0000248    , L0000249
 , L0000250    , L0000251    , L0000252    ,
                 L0000253    , L0000254    , L0000255    , L0000256    , L0000257
 , L0000258    , L0000259    , L0000260    ,
                 L0000261    , L0000667    , L0000668    , L0000669    , L0000670
 , L0000671    , L0000672    , L0000673    ,
                 L0000674    , L0000675    , L0000676    , L0000677    , L0000678
 , L0000679    , L0000680    ,  . . .      ,

                                            *** DISCRETE CARTESIAN RECEPTOR POINTS
***

                                       ** CONC OF PM_2.5   IN MICROGRAMS/M**3
                    **

      X-COORD (M)  Y-COORD (M)        CONC     (YYMMDDHH)              X-COORD (M)
Y-COORD (M)        CONC     (YYMMDDHH)
 - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - -
- - - - - - - - - - - - - - - - - - - - - - - - - - - -
        571066.27   4174560.88        0.00836  (17030108)                571128.18
 4174560.88        0.00811  (17030108)
        571190.09   4174560.88        0.00842  (14101608)                571252.00
 4174560.88        0.00958  (14101608)
        571313.91   4174560.88        0.00868  (14101608)                571066.27
 4174608.16        0.00940  (17030108)
        571128.18   4174608.16        0.01011  (17030108)                571190.09
 4174608.16        0.00969  (14100308)
        571252.00   4174608.16        0.01037  (14101608)                571313.91
 4174608.16        0.01045  (14101608)
        571375.82   4174608.16        0.00835  (14101608)                571437.73
 4174608.16        0.00719  (16092708)
        571499.64   4174608.16        0.00693  (14070408)                571561.55
 4174608.16        0.00514  (14123024)
        571066.27   4174655.44        0.01059  (14010108)                571128.18
 4174655.44        0.01127  (17030108)
        571190.09   4174655.44        0.01182  (17030108)                571252.00
 4174655.44        0.01136  (14100308)
        571313.91   4174655.44        0.01203  (14101608)                571375.82
 4174655.44        0.01112  (14101608)
        571437.73   4174655.44        0.00809  (16092708)                571499.64
 4174655.44        0.00775  (14070408)
        571561.55   4174655.44        0.00583  (14070408)                571623.46
 4174655.44        0.00499  (14123024)
        571685.37   4174655.44        0.00544  (13100408)                571747.28
 4174655.44        0.00505  (17121624)
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571809.19 4174655.44 0.00549 (14122508) 571871.10
4174655.44 0.00473 (14122508)
571066.27 4174702.72 0.01154 (14010108) 571128.18
4174702.72 0.01281 (14010108)
571190.09 4174702.72 0.01329 (17030108) 571252.00
4174702.72 0.01365 (17030108)
571313.91 4174702.72 0.01285 (14100308) 571375.82
4174702.72 0.01354 (14101608)
571437.73 4174702.72 0.01071 (14101608) 571499.64
4174702.72 0.00828 (17071008)
571561.55 4174702.72 0.00688 (14070408) 571623.46
4174702.72 0.00576 (14123024)
571685.37 4174702.72 0.00598 (13100408) 571871.10
4174702.72 0.00537 (15111608)
571066.27 4174750.00 0.01161 (14010108) 571128.18
4174750.00 0.01386 (14010108)
571190.09 4174750.00 0.01524 (14010108) 571252.00
4174750.00 0.01543 (17030108)
571313.91 4174750.00 0.01531 (17030108) 571375.82
4174750.00 0.01459 (14101608)
571437.73 4174750.00 0.01369 (14101608) 571499.64
4174750.00 0.00994c (14013108)
571561.55 4174750.00 0.00840 (14070408) 571623.46
4174750.00 0.00654 (14123024)
571685.37 4174750.00 0.00666 (13100408) 571747.28
4174750.00 0.00518 (17121624)
571809.19 4174750.00 0.00618 (14122508) 571871.10
4174750.00 0.00560 (15111608)
571933.01 4174750.00 0.00555 (15111616) 571994.92
4174750.00 0.00486 (15060524)
572056.83 4174750.00 0.00441 (13070224) 572118.74
4174750.00 0.00410 (13071024)
572180.65 4174750.00 0.00414 (16080124) 571066.27
4174797.28 0.01196 (15010308)
571128.18 4174797.28 0.01314 (14010108) 571190.09
4174797.28 0.01613 (14010108)
571252.00 4174797.28 0.01750 (14010108) 571313.91
4174797.28 0.01747 (17030108)
571375.82 4174797.28 0.01693 (17030108) 571437.73
4174797.28 0.01658 (14101608)
571499.64 4174797.28 0.01328 (14101608) 571561.55
4174797.28 0.00954 (14070408)
571623.46 4174797.28 0.00749 (14123024) 571685.37
4174797.28 0.00741 (13100408)
571747.28 4174797.28 0.00600 (14122508) 571809.19
4174797.28 0.00598 (15111608)
571871.10 4174797.28 0.00630 (15111616) 571933.01
4174797.28 0.00529 (15060524)
571994.92 4174797.28 0.00529 (14072016) 572056.83
4174797.28 0.00495 (13072216)

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        572118.74   4174797.28        0.00454  (16080124)                572180.65
 4174797.28        0.00430  (15062024)
        571066.27   4174844.56        0.01197  (15010308)                571128.18
 4174844.56        0.01387  (15010308)
↑ *** AERMOD - VERSION 22112  ***   *** C:\Lakes\AERMOD View\880 Doolittle_Ops\880
Doolittle_Ops.isc         ***        01/12/23
 *** AERMET - VERSION  18081 ***   ***
                       ***        17:31:16

                                  PAGE  38
 *** MODELOPTs:    RegDFAULT  CONC  ELEV  URBAN  ADJ_U*

                              *** THE   1ST HIGHEST  8-HR AVERAGE CONCENTRATION
VALUES FOR SOURCE GROUP:  ALL      ***
                                 INCLUDING SOURCE(S):     L0000248    , L0000249
 , L0000250    , L0000251    , L0000252    ,
                L0000253    , L0000254    , L0000255    , L0000256    , L0000257
 , L0000258    , L0000259    , L0000260    ,
                L0000261    , L0000667    , L0000668    , L0000669    , L0000670
 , L0000671    , L0000672    , L0000673    ,
                L0000674    , L0000675    , L0000676    , L0000677    , L0000678
 , L0000679    , L0000680    ,  . . .      ,

                                                *** DISCRETE CARTESIAN RECEPTOR POINTS
***

                                          ** CONC OF PM_2.5   IN MICROGRAMS/M**3
                    **

      X-COORD (M)  Y-COORD (M)        CONC     (YYMMDDHH)              X-COORD (M)
Y-COORD (M)        CONC     (YYMMDDHH)
 - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - -
- - - - - - - - - - - - - - - - - - - - - - - - - - - - - -
        571190.09   4174844.56        0.01493  (15010308)                571252.00
 4174844.56        0.01787  (14010108)
        571313.91   4174844.56        0.02042  (14010108)                571375.82
 4174844.56        0.01994  (14010108)
        571437.73   4174844.56        0.01867  (17030108)                571499.64
 4174844.56        0.01759  (14101608)
        571561.55   4174844.56        0.01229c (14013108)                571623.46
 4174844.56        0.00847  (14123024)
        571685.37   4174844.56        0.00851  (13100408)                571747.28
 4174844.56        0.00764  (14122508)
        571809.19   4174844.56        0.00661  (15111608)                571871.10
 4174844.56        0.00627  (15111616)
        571933.01   4174844.56        0.00613  (14072016)                571994.92
 4174844.56        0.00600  (13072216)
        572056.83   4174844.56        0.00536  (15070316)                572118.74
 4174844.56        0.00456  (17081724)
        572180.65   4174844.56        0.00442  (17081724)                571066.27
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571128.18 4174891.84 0.01234 (15010308) 571190.09
4174891.84 0.01504 (15010308)
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571499.64 4174939.12 0.03497 (17030108) 571623.46
4174939.12 0.01944m (17050808)
571685.37 4174939.12 0.01234 (17121624) 571747.28
4174939.12 0.00968 (15111608)
571809.19 4174939.12 0.00766 (15111524) 571871.10
4174939.12 0.00709 (15070316)
571933.01 4174939.12 0.00688 (15081716) 571994.92
4174939.12 0.00608 (15081716)
572056.83 4174939.12 0.00612 (17061108) 572118.74
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572180.65 4174939.12 0.00527 (17061108) 571066.27
4174986.40 0.01118 (15030408)
571128.18 4174986.40 0.01298 (15030408) 571190.09
4174986.40 0.01479 (15030408)
571252.00 4174986.40 0.01677 (15030408) 571313.91
4174986.40 0.01820 (15030408)
571375.82 4174986.40 0.02045 (17110108) 571437.73
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4174986.40 0.00565 (15122224)
572180.65 4174986.40 0.00548 (15122224) 571066.27

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        571128.18   4175033.68        0.01187  (16122508)                571190.09
 4175033.68        0.01385  (16122508)
        571252.00   4175033.68        0.01565  (14112608)                571313.91
 4175033.68        0.01761  (14112608)
        571375.82   4175033.68        0.02035  (15030408)                571747.28
 4175033.68        0.01289  (15092116)
        571809.19   4175033.68        0.01049  (15111516)                571871.10
 4175033.68        0.00944  (16061508)
        571933.01   4175033.68        0.00870  (16051924)                571994.92
 4175033.68        0.00804  (16051924)
        572056.83   4175033.68        0.00732  (16051924)                572118.74
 4175033.68        0.00658  (16051924)
↑ *** AERMOD - VERSION 22112  ***   *** C:\Lakes\AERMOD View\880 Doolittle_Ops\880
Doolittle_Ops.isc         ***        01/12/23
 *** AERMET - VERSION  18081 ***   ***
                       ***        17:31:16

                                  PAGE  39
 *** MODELOPTs:    RegDFAULT  CONC  ELEV  URBAN  ADJ_U*

                              *** THE   1ST HIGHEST  8-HR AVERAGE CONCENTRATION
VALUES FOR SOURCE GROUP:  ALL      ***
                                 INCLUDING SOURCE(S):     L0000248    , L0000249
 , L0000250    , L0000251    , L0000252    ,
                L0000253    , L0000254    , L0000255    , L0000256    , L0000257
 , L0000258    , L0000259    , L0000260    ,
                L0000261    , L0000667    , L0000668    , L0000669    , L0000670
 , L0000671    , L0000672    , L0000673    ,
                L0000674    , L0000675    , L0000676    , L0000677    , L0000678
 , L0000679    , L0000680    ,  . . .      ,

                                                *** DISCRETE CARTESIAN RECEPTOR POINTS
***

                                          ** CONC OF PM_2.5   IN MICROGRAMS/M**3
                    **

      X-COORD (M)  Y-COORD (M)        CONC     (YYMMDDHH)              X-COORD (M)
Y-COORD (M)        CONC     (YYMMDDHH)
 - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - -
- - - - - - - - - - - - - - - - - - - - - - - - - - - - -
        572180.65   4175033.68        0.00601  (16092124)                571066.27
 4175080.96        0.01206  (16122508)
        571128.18   4175080.96        0.01419  (16122508)                571190.09
 4175080.96        0.01694  (16122508)
        571252.00   4175080.96        0.01933  (16122508)                571313.91
 4175080.96        0.02191  (16122508)
        571747.28   4175080.96        0.01196  (13012116)                571809.19
 4175080.96        0.01050  (16091816)
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571871.10 4175080.96 0.00992 (13061816) 571933.01 4175080.96 0.00911 (13061816)
571994.92 4175080.96 0.00811 (13061816) 572056.83 4175080.96 0.00709 (13061816)
572118.74 4175080.96 0.00637 (17062624) 572180.65 4175080.96 0.00588 (17062624)
571066.27 4175128.24 0.01003 (17120208) 571128.18 4175128.24 0.01136 (17120208)
571252.00 4175128.24 0.01472 (16111808) 571313.91 4175128.24 0.01703 (16111808)
571375.82 4175128.24 0.01962 (16111808) 571437.73 4175128.24 0.02879 (14121808)
571747.28 4175128.24 0.01194 (17052524) 571809.19 4175128.24 0.00986 (14070308)
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572118.74 4175128.24 0.00583 (16060824) 572180.65 4175128.24 0.00548 (16052024)
571066.27 4175175.52 0.01004 (16111808) 571128.18 4175175.52 0.01152 (16111808)
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571871.10 4175175.52 0.00854 (14070308) 571933.01 4175175.52 0.00700 (17081308)
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572056.83 4175222.80 0.00525 (17081308) 572118.74 4175222.80 0.00536 (17042616)

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       572180.65   4175222.80        0.00522  (14061524)                571066.27
 4175270.08        0.01066  (14121708)
       571128.18   4175270.08        0.01261  (14121708)                571190.09
 4175270.08        0.01414  (14121708)
       571252.00   4175270.08        0.01421  (14121708)                571313.91
 4175270.08        0.01540  (16012508)
       571375.82   4175270.08        0.01675  (14112908)                571437.73
 4175270.08        0.01690  (16112008)
       571499.64   4175270.08        0.01824  (13112008)                571561.55
 4175270.08        0.01622  (16120824)
       571623.46   4175270.08        0.01457  (17110324)                571685.37
 4175270.08        0.00983  (14020908)
       571747.28   4175270.08        0.01112  (14091808)                571809.19
 4175270.08        0.00978  (14021524)
       571871.10   4175270.08        0.00845  (17052524)                571933.01
 4175270.08        0.00793  (14071108)
       571994.92   4175270.08        0.00647  (17081408)                572056.83
 4175270.08        0.00582  (14070308)
       572118.74   4175270.08        0.00474  (17081308)                572180.65
 4175270.08        0.00422  (17051524)
       571066.27   4175317.36        0.01036  (14121708)                571128.18
 4175317.36        0.01137  (14121708)
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 *** MODELOPTs:    RegDFAULT  CONC  ELEV  URBAN  ADJ_U*

                              *** THE   1ST HIGHEST  8-HR AVERAGE CONCENTRATION
VALUES FOR SOURCE GROUP:  ALL      ***
                                 INCLUDING SOURCE(S):     L0000248    , L0000249
 , L0000250    , L0000251    , L0000252    ,
                 L0000253    , L0000254    , L0000255    , L0000256    , L0000257
 , L0000258    , L0000259    , L0000260    ,
                 L0000261    , L0000667    , L0000668    , L0000669    , L0000670
 , L0000671    , L0000672    , L0000673    ,
                 L0000674    , L0000675    , L0000676    , L0000677    , L0000678
 , L0000679    , L0000680    ,  . . .      ,

                                                *** DISCRETE CARTESIAN RECEPTOR POINTS
***

                                          ** CONC OF PM_2.5   IN MICROGRAMS/M**3
                    **

      X-COORD (M)  Y-COORD (M)        CONC     (YYMMDDHH)              X-COORD (M)
Y-COORD (M)        CONC     (YYMMDDHH)
 - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - -
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- -

571190.09 4175317.36 0.01206 (15120108) 571252.00 4175317.36 0.01335 (13111908)
571313.91 4175317.36 0.01466 (14112908) 571375.82 4175317.36 0.01483 (16112008)
571437.73 4175317.36 0.01438 (13112008) 571499.64 4175317.36 0.01625 (13112008)
571561.55 4175317.36 0.01431 (16120824) 571623.46 4175317.36 0.01257 (17110324)
571685.37 4175317.36 0.00855 (14020908) 571747.28 4175317.36 0.01101 (14091808)
571809.19 4175317.36 0.00993 (14021524) 571871.10 4175317.36 0.00771 (15050508)
571933.01 4175317.36 0.00765 (17052524) 571994.92 4175317.36 0.00688 (14071108)
572056.83 4175317.36 0.00575 (17081408) 572118.74 4175317.36 0.00505 (14070308)
572180.65 4175317.36 0.00434 (14070308) 571066.27 4175364.64 0.00904 (15120108)
571128.18 4175364.64 0.01040 (15120108) 571190.09 4175364.64 0.01106 (13111908)
571252.00 4175364.64 0.01285 (14112908) 571313.91 4175364.64 0.01307 (16112008)
571375.82 4175364.64 0.01160 (16120908) 571437.73 4175364.64 0.01445 (13112008)
571499.64 4175364.64 0.01253 (13112008) 571561.55 4175364.64 0.01272 (16120824)
571623.46 4175364.64 0.01072 (17110324) 571685.37 4175364.64 0.00775 (14020908)
571747.28 4175364.64 0.01010 (14091808) 571809.19 4175364.64 0.00827 (14021524)
571871.10 4175364.64 0.00789 (14021524) 571933.01 4175364.64 0.00705 (17052608)
571994.92 4175364.64 0.00671 (17052524) 572056.83 4175364.64 0.00600 (14071108)
572118.74 4175364.64 0.00508 (17081408) 572180.65 4175364.64 0.00437 (14070308)
571066.27 4175411.92 0.00871 (15120108) 571128.18 4175411.92 0.00939 (13111908)
571190.09 4175411.92 0.01108 (14112908) 571252.00 4175411.92 0.01142 (16112008)
571313.91 4175411.92 0.01031 (16120908) 571375.82 4175411.92 0.01232 (13112008)
571437.73 4175411.92 0.01299 (13112008) 571499.64 4175411.92 0.01129 (16120824)
571561.55 4175411.92 0.01027 (16120824) 571623.46 4175411.92 0.00963 (14122024)
571685.37 4175411.92 0.00709 (14020908) 571747.28 4175411.92 0.00898 (14020824)
571809.19 4175411.92 0.00728 (14091808) 571871.10

```
 4175411.92        0.00829  (14021524)
        571933.01   4175411.92        0.00647  (17052508)                571994.92
 4175411.92        0.00620  (17052608)
        572056.83   4175411.92        0.00580  (17052524)                572118.74
 4175411.92        0.00527  (14071108)
        572180.65   4175411.92        0.00452  (17081408)                571066.27
 4175459.20        0.00780  (14112908)
        571128.18   4175459.20        0.00913  (14112908)                571190.09
 4175459.20        0.00984  (16112008)
        571252.00   4175459.20        0.00900  (16120908)                571313.91
 4175459.20        0.00983  (13112008)
        571375.82   4175459.20        0.01197  (13112008)                571437.73
 4175459.20        0.01072  (13112008)
        571499.64   4175459.20        0.01057  (16120824)                571561.55
 4175459.20        0.00901  (17110324)
        571623.46   4175459.20        0.00900  (14122024)                571685.37
 4175459.20        0.00653  (14020908)
        571747.28   4175459.20        0.00826  (14020824)                571809.19
 4175459.20        0.00777  (14091808)
        571871.10   4175459.20        0.00746  (14021524)                571933.01
 4175459.20        0.00627  (14021524)
        571994.92   4175459.20        0.00565  (17052608)                572056.83
 4175459.20        0.00547  (17052524)
        572118.74   4175459.20        0.00501  (17052524)                572180.65
 4175459.20        0.00467  (14071108)
        571496.32   4174981.53        0.02392  (17120108)                571724.84
 4175020.54        0.01064  (15010816)
        571686.94   4175179.95        0.01416  (15071508)                571637.89
 4175169.91        0.03598  (17020408)
        571494.09   4175257.97        0.01786  (13112008)                571450.62
 4175194.44        0.03606  (15120108)
↑ *** AERMOD - VERSION 22112  ***   *** C:\Lakes\AERMOD View\880 Doolittle_Ops\880
Doolittle_Ops.isc         ***        01/12/23
 *** AERMET - VERSION  18081 ***   ***
                       ***        17:31:16

                                  PAGE  41
 *** MODELOPTs:    RegDFAULT  CONC  ELEV  URBAN  ADJ_U*

                              *** THE   1ST HIGHEST  8-HR AVERAGE CONCENTRATION
VALUES FOR SOURCE GROUP:  ALL      ***
                                 INCLUDING SOURCE(S):     L0000248    , L0000249
 , L0000250    , L0000251    , L0000252    ,
                 L0000253    , L0000254    , L0000255    , L0000256    , L0000257
 , L0000258    , L0000259    , L0000260    ,
                 L0000261    , L0000667    , L0000668    , L0000669    , L0000670
 , L0000671    , L0000672    , L0000673    ,
                 L0000674    , L0000675    , L0000676    , L0000677    , L0000678
 , L0000679    , L0000680    ,  . . .      ,
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*** DISCRETE CARTESIAN RECEPTOR POINTS ***

** CONC OF PM_2.5 IN MICROGRAMS/M**3 **

X-COORD (M)	Y-COORD (M)	CONC	(YYMMDDHH)	X-COORD (M)	Y-COORD (M)	CONC	(YYMMDDHH)
571471.80	4175186.63	0.03231	(13111908)	571475.14	4175165.45	0.02870	(15120108)
571462.88	4175154.31	0.03258	(14121708)	571447.27	4175156.54	0.03257	(14121708)
571458.42	4175101.92	0.02722	(14102408)	571334.69	4175077.39	0.02300	(16122508)

*** THE 1ST HIGHEST 24-HR AVERAGE CONCENTRATION VALUES FOR SOURCE GROUP: ALL ***
INCLUDING SOURCE(S): L0000248 , L0000249 , L0000250 , L0000251 , L0000252 ,
L0000253 , L0000254 , L0000255 , L0000256 , L0000257 , L0000258 , L0000259 , L0000260 ,
L0000261 , L0000667 , L0000668 , L0000669 , L0000670 , L0000671 , L0000672 , L0000673 ,
L0000674 , L0000675 , L0000676 , L0000677 , L0000678 , L0000679 , L0000680 , . . . ,

*** DISCRETE CARTESIAN RECEPTOR POINTS ***

** CONC OF PM_2.5 IN MICROGRAMS/M**3 **

X-COORD (M)	Y-COORD (M)	CONC	(YYMMDDHH)	X-COORD (M)	Y-COORD (M)	CONC	(YYMMDDHH)
571066.27	4174560.88	0.00312c	(17030124)	571128.18	4174560.88	0.00361m	(14101224)
571190.09	4174560.88	0.00394m	(14101224)	571252.00	4174560.88	0.00360	(13120824)
571313.91	4174560.88	0.00349c	(14011824)	571066.27			

4174608.16 0.00362c (17030124)
571128.18 4174608.16 0.00388m (14101224) 571190.09
4174608.16 0.00439m (14101224)
571252.00 4174608.16 0.00452m (14101224) 571313.91
4174608.16 0.00391c (14011824)
571375.82 4174608.16 0.00376c (14011824) 571437.73
4174608.16 0.00369 (17111724)
571499.64 4174608.16 0.00318 (13112224) 571561.55
4174608.16 0.00295m (14123024)
571066.27 4174655.44 0.00411 (14010124) 571128.18
4174655.44 0.00435c (17030124)
571190.09 4174655.44 0.00472m (14101224) 571252.00
4174655.44 0.00520m (14101224)
571313.91 4174655.44 0.00497m (14101224) 571375.82
4174655.44 0.00435c (14011824)
571437.73 4174655.44 0.00413 (13112224) 571499.64
4174655.44 0.00385 (17111724)
571561.55 4174655.44 0.00324m (14123024) 571623.46
4174655.44 0.00277m (14123024)
571685.37 4174655.44 0.00231m (17121624) 571747.28
4174655.44 0.00279 (14122524)
571809.19 4174655.44 0.00411 (14122524) 571871.10
4174655.44 0.00338 (14122524)
571066.27 4174702.72 0.00450 (14010124) 571128.18
4174702.72 0.00496 (14010124)
571190.09 4174702.72 0.00513c (17030124) 571252.00
4174702.72 0.00567m (14101224)
571313.91 4174702.72 0.00592m (14101224) 571375.82
4174702.72 0.00532 (13120824)
571437.73 4174702.72 0.00460c (14011824) 571499.64
4174702.72 0.00450 (13112224)
571561.55 4174702.72 0.00336 (13112224) 571623.46
4174702.72 0.00319m (14123024)
571685.37 4174702.72 0.00254m (17121624) 571871.10
4174702.72 0.00382 (15111624)
571066.27 4174750.00 0.00449 (14010124) 571128.18
4174750.00 0.00538 (14010124)
571190.09 4174750.00 0.00589 (14010124) 571252.00
4174750.00 0.00597c (17030124)
571313.91 4174750.00 0.00657m (14101224) 571375.82
4174750.00 0.00658 (13120824)
571437.73 4174750.00 0.00544 (13120824) 571499.64
4174750.00 0.00529 (13112224)
571561.55 4174750.00 0.00424 (13112224) 571623.46
4174750.00 0.00365m (14123024)
571685.37 4174750.00 0.00285m (17121624) 571747.28
4174750.00 0.00407 (14122524)
571809.19 4174750.00 0.00452 (14122524) 571871.10
4174750.00 0.00435 (15111624)
571933.01 4174750.00 0.00330 (15111624) 571994.92

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 4174750.00        0.00319  (15070224)
        572056.83   4174750.00        0.00326  (13070224)                572118.74
 4174750.00        0.00278  (14072024)
        572180.65   4174750.00        0.00275  (14072024)                571066.27
 4174797.28        0.00468  (14100124)
        571128.18   4174797.28        0.00505  (14010124)                571190.09
 4174797.28        0.00622  (14010124)
        571252.00   4174797.28        0.00676  (14010124)                571313.91
 4174797.28        0.00685  (13120924)
        571375.82   4174797.28        0.00748m (14101224)                571437.73
 4174797.28        0.00735  (13120824)
        571499.64   4174797.28        0.00589  (13112224)                571561.55
 4174797.28        0.00546  (13112224)
        571623.46   4174797.28        0.00421m (14123024)                571685.37
 4174797.28        0.00322m (17121624)
        571747.28   4174797.28        0.00484  (14122524)                571809.19
 4174797.28        0.00421  (15111624)
        571871.10   4174797.28        0.00427  (15111624)                571933.01
 4174797.28        0.00353  (15070224)
        571994.92   4174797.28        0.00372  (13070224)                572056.83
 4174797.28        0.00326  (14072024)
        572118.74   4174797.28        0.00314  (14072024)                572180.65
 4174797.28        0.00302  (17062424)
        571066.27   4174844.56        0.00506  (14100124)                571128.18
 4174844.56        0.00575  (14100124)
 *** AERMOD - VERSION 22112  ***   *** C:\Lakes\AERMOD View\880 Doolittle_Ops\880
Doolittle_Ops.isc         ***        01/12/23
 *** AERMET - VERSION  18081 ***   ***
                       ***        17:31:16

                                  PAGE  43
 *** MODELOPTs:    RegDFAULT  CONC  ELEV  URBAN  ADJ_U*

                             *** THE   1ST HIGHEST 24-HR AVERAGE CONCENTRATION
VALUES FOR SOURCE GROUP:  ALL      ***
                                INCLUDING SOURCE(S):     L0000248    , L0000249
 , L0000250    , L0000251    , L0000252    ,
                L0000253    , L0000254    , L0000255    , L0000256    , L0000257
 , L0000258    , L0000259    , L0000260    ,
                L0000261    , L0000667    , L0000668    , L0000669    , L0000670
 , L0000671    , L0000672    , L0000673    ,
                L0000674    , L0000675    , L0000676    , L0000677    , L0000678
 , L0000679    , L0000680    ,  . . .      ,

                                                *** DISCRETE CARTESIAN RECEPTOR POINTS
***

                                          ** CONC OF PM_2.5   IN MICROGRAMS/M**3
                    **
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```
      X-COORD (M)  Y-COORD (M)        CONC     (YYMMDDHH)              X-COORD (M)
Y-COORD (M)        CONC     (YYMMDDHH)
 - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - -
- - - - - - - - - - - - - - - - - - - - - - - - - - - -
        571190.09   4174844.56        0.00611  (14100124)                571252.00
 4174844.56        0.00686  (14010124)
        571313.91   4174844.56        0.00786  (13120924)                571375.82
 4174844.56        0.00809  (13120924)
        571437.73   4174844.56        0.00871  (13120824)                571499.64
 4174844.56        0.00784  (13120824)
        571561.55   4174844.56        0.00687  (13112224)                571623.46
 4174844.56        0.00487m (14123024)
        571685.37   4174844.56        0.00385m (17121624)                571747.28
 4174844.56        0.00576  (14122524)
        571809.19   4174844.56        0.00506  (15111624)                571871.10
 4174844.56        0.00364  (15070224)
        571933.01   4174844.56        0.00425  (13070224)                571994.92
 4174844.56        0.00379  (14072024)
        572056.83   4174844.56        0.00350  (14072024)                572118.74
 4174844.56        0.00356  (17062424)
        572180.65   4174844.56        0.00338  (17062424)                571066.27
 4174891.84        0.00511  (14111824)
        571128.18   4174891.84        0.00580  (14100124)                571190.09
 4174891.84        0.00677  (14100124)
        571252.00   4174891.84        0.00739  (14100124)                571313.91
 4174891.84        0.00765  (13120924)
        571375.82   4174891.84        0.00919  (13120924)                571499.64
 4174891.84        0.01077  (13120824)
        571561.55   4174891.84        0.00861c (15010124)                571623.46
 4174891.84        0.00639  (13112224)
        571685.37   4174891.84        0.00483m (17121624)                571747.28
 4174891.84        0.00648  (14122524)
        571809.19   4174891.84        0.00490  (15111624)                571871.10
 4174891.84        0.00479  (13070224)
        571933.01   4174891.84        0.00424  (14072024)                571994.92
 4174891.84        0.00406  (17062424)
        572056.83   4174891.84        0.00411  (17062424)                572118.74
 4174891.84        0.00366  (17062424)
        572180.65   4174891.84        0.00325  (13060424)                571066.27
 4174939.12        0.00531  (14111824)
        571128.18   4174939.12        0.00620  (14111824)                571190.09
 4174939.12        0.00686  (14111824)
        571252.00   4174939.12        0.00750  (14111824)                571313.91
 4174939.12        0.00853  (14100124)
        571375.82   4174939.12        0.00950  (14121324)                571437.73
 4174939.12        0.01078  (13120924)
        571499.64   4174939.12        0.01665  (13120924)                571623.46
 4174939.12        0.01171  (13112224)
        571685.37   4174939.12        0.00645  (14122524)                571747.28
 4174939.12        0.00744  (15111624)
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       571809.19   4174939.12        0.00570  (13070224)                571871.10
 4174939.12        0.00447  (13071024)
       571933.01   4174939.12        0.00469  (17062424)                571994.92
 4174939.12        0.00436  (17062424)
       572056.83   4174939.12        0.00392  (14042224)                572118.74
 4174939.12        0.00362  (14042224)
       572180.65   4174939.12        0.00332  (17061124)                571066.27
 4174986.40        0.00536c (16010224)
       571128.18   4174986.40        0.00636c (16010224)                571190.09
 4174986.40        0.00737c (16010224)
       571252.00   4174986.40        0.00813  (14121424)                571313.91
 4174986.40        0.00937  (14121424)
       571375.82   4174986.40        0.01066  (14121424)                571437.73
 4174986.40        0.01460c (16010224)
       571809.19   4174986.40        0.00576  (16121624)                571871.10
 4174986.40        0.00542  (16121624)
       571933.01   4174986.40        0.00521  (14042224)                571994.92
 4174986.40        0.00493  (17061124)
       572056.83   4174986.40        0.00454  (17061124)                572118.74
 4174986.40        0.00418  (15051224)
       572180.65   4174986.40        0.00391  (15122224)                571066.27
 4175033.68        0.00557c (16010224)
       571128.18   4175033.68        0.00667c (16010224)                571190.09
 4175033.68        0.00789c (16010224)
       571252.00   4175033.68        0.00936c (16010224)                571313.91
 4175033.68        0.01101c (16010224)
       571375.82   4175033.68        0.01324c (16010224)                571747.28
 4175033.68        0.00796  (14042224)
       571809.19   4175033.68        0.00811  (17061124)                571871.10
 4175033.68        0.00751  (15122224)
       571933.01   4175033.68        0.00704  (15122224)                571994.92
 4175033.68        0.00659  (15122224)
       572056.83   4175033.68        0.00603  (15122224)                572118.74
 4175033.68        0.00545  (15122224)
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                              *** THE   1ST HIGHEST 24-HR AVERAGE CONCENTRATION
VALUES FOR SOURCE GROUP:  ALL      ***
                                 INCLUDING SOURCE(S):     L0000248    , L0000249
 , L0000250    , L0000251    , L0000252    ,
                 L0000253    , L0000254    , L0000255    , L0000256    , L0000257
 , L0000258    , L0000259    , L0000260    ,
                 L0000261    , L0000667    , L0000668    , L0000669    , L0000670
 , L0000671    , L0000672    , L0000673    ,
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L0000674 , L0000675 , L0000676 , L0000677 , L0000678
, L0000679 , L0000680 , . . . ,

*** DISCRETE CARTESIAN RECEPTOR POINTS
***

** CONC OF PM_2.5 IN MICROGRAMS/M**3
**

X-COORD (M)	Y-COORD (M)	CONC	(YYMMDDHH)	X-COORD (M)	Y-COORD (M)	CONC	(YYMMDDHH)
572180.65	4175033.68	0.00489	(15122224)	571066.27	4175080.96	0.00437c	(16010224)
571128.18	4175080.96	0.00512c	(16010224)	571190.09	4175080.96	0.00598c	(16010224)
571252.00	4175080.96	0.00694c	(16010224)	571313.91	4175080.96	0.00829c	(16010224)
571747.28	4175080.96	0.00705	(15072224)	571809.19	4175080.96	0.00810	(17062724)
571871.10	4175080.96	0.00743	(17062724)	571933.01	4175080.96	0.00653	(17062724)
571994.92	4175080.96	0.00595	(17062724)	572056.83	4175080.96	0.00533	(17062724)
572118.74	4175080.96	0.00477	(17062724)	572180.65	4175080.96	0.00431	(15080324)
571066.27	4175128.24	0.00446m	(17120224)	571128.18	4175128.24	0.00505m	(17120224)
571252.00	4175128.24	0.00628b	(15113024)	571313.91	4175128.24	0.00742b	(15113024)
571375.82	4175128.24	0.00868b	(15113024)	571437.73	4175128.24	0.01417	(14121824)
571747.28	4175128.24	0.01032	(17052524)	571809.19	4175128.24	0.00724	(17081424)
571871.10	4175128.24	0.00659	(14061624)	571933.01	4175128.24	0.00610	(17091424)
571994.92	4175128.24	0.00571	(17091424)	572056.83	4175128.24	0.00538	(17053024)
572118.74	4175128.24	0.00496	(17053024)	572180.65	4175128.24	0.00457	(17062724)
571066.27	4175175.52	0.00406	(15122724)	571128.18	4175175.52	0.00458	(15122724)
571190.09	4175175.52	0.00525b	(15113024)	571252.00	4175175.52	0.00611	(14121724)
571313.91	4175175.52	0.00761	(14121724)	571375.82	4175175.52	0.00942	(14121724)
571747.28	4175175.52	0.00918	(17052524)	571809.19	4175175.52	0.00771	(17052524)
571871.10	4175175.52	0.00558	(17081424)	571933.01			

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 4175175.52        0.00487  (14061624)
       571994.92   4175175.52        0.00512  (14061624)                572056.83
 4175175.52        0.00460  (14061624)
       572118.74   4175175.52        0.00447  (17091424)                572180.65
 4175175.52        0.00417  (17091424)
       571066.27   4175222.80        0.00392  (14121724)                571128.18
 4175222.80        0.00478  (14121724)
       571190.09   4175222.80        0.00585  (14121724)                571252.00
 4175222.80        0.00696  (14121724)
       571313.91   4175222.80        0.00783  (14121724)                571375.82
 4175222.80        0.00956  (13111924)
       571437.73   4175222.80        0.01175  (13111924)                571623.46
 4175222.80        0.01391  (14122024)
       571685.37   4175222.80        0.00822  (14020924)                571747.28
 4175222.80        0.00613  (17020324)
       571809.19   4175222.80        0.00859  (17052524)                571871.10
 4175222.80        0.00562  (17052524)
       571933.01   4175222.80        0.00458  (17081424)                571994.92
 4175222.80        0.00375  (15071424)
       572056.83   4175222.80        0.00399  (14061624)                572118.74
 4175222.80        0.00399  (14061624)
       572180.65   4175222.80        0.00363  (14061624)                571066.27
 4175270.08        0.00439  (15121724)
       571128.18   4175270.08        0.00520  (15121724)                571190.09
 4175270.08        0.00596  (14121724)
       571252.00   4175270.08        0.00671  (13111924)                571313.91
 4175270.08        0.00835  (13111924)
       571375.82   4175270.08        0.00938  (13111924)                571437.73
 4175270.08        0.01078  (14112924)
       571499.64   4175270.08        0.00980  (14121924)                571561.55
 4175270.08        0.00945  (14121924)
       571623.46   4175270.08        0.00967  (14122024)                571685.37
 4175270.08        0.00660  (14020924)
       571747.28   4175270.08        0.00446  (14020924)                571809.19
 4175270.08        0.00610  (17052524)
       571871.10   4175270.08        0.00713  (17052524)                571933.01
 4175270.08        0.00430  (17052524)
       571994.92   4175270.08        0.00383  (17081424)                572056.83
 4175270.08        0.00313  (17081424)
       572118.74   4175270.08        0.00308  (15071424)                572180.65
 4175270.08        0.00319  (14061624)
       571066.27   4175317.36        0.00450  (15121724)                571128.18
 4175317.36        0.00500  (14121724)
 *** AERMOD - VERSION 22112  ***   *** C:\Lakes\AERMOD View\880 Doolittle_Ops\880
Doolittle_Ops.isc         ***        01/12/23
 *** AERMET - VERSION  18081 ***   ***
                        ***        17:31:16

                                   PAGE  45
 *** MODELOPTs:    RegDFAULT  CONC  ELEV  URBAN  ADJ_U*
```

*** THE 1ST HIGHEST 24-HR AVERAGE CONCENTRATION VALUES FOR SOURCE GROUP: ALL ***
INCLUDING SOURCE(S): L0000248 , L0000249 , L0000250 , L0000251 , L0000252 ,
L0000253 , L0000254 , L0000255 , L0000256 , L0000257 , L0000258 , L0000259 , L0000260 ,
L0000261 , L0000667 , L0000668 , L0000669 , L0000670 , L0000671 , L0000672 , L0000673 ,
L0000674 , L0000675 , L0000676 , L0000677 , L0000678 , L0000679 , L0000680 , . . . ,

*** DISCRETE CARTESIAN RECEPTOR POINTS ***

** CONC OF PM_2.5 IN MICROGRAMS/M**3 **

X-COORD (M)	Y-COORD (M)	CONC	(YYMMDDHH)	X-COORD (M)	Y-COORD (M)	CONC	(YYMMDDHH)
571190.09	4175317.36	0.00607	(13111924)	571252.00	4175317.36	0.00727	(13111924)
571313.91	4175317.36	0.00797	(14112924)	571375.82	4175317.36	0.00899	(14112924)
571437.73	4175317.36	0.00828	(14112924)	571499.64	4175317.36	0.00870	(14121924)
571561.55	4175317.36	0.00708	(14122024)	571623.46	4175317.36	0.00796	(14122024)
571685.37	4175317.36	0.00548	(14020924)	571747.28	4175317.36	0.00420	(14020924)
571809.19	4175317.36	0.00446	(17020324)	571871.10	4175317.36	0.00622	(17052524)
571933.01	4175317.36	0.00578	(17052524)	571994.92	4175317.36	0.00351	(16090324)
572056.83	4175317.36	0.00322	(17081424)	572118.74	4175317.36	0.00267	(17081424)
572180.65	4175317.36	0.00240	(15071424)	571066.27	4175364.64	0.00425	(13111924)
571128.18	4175364.64	0.00531	(13111924)	571190.09	4175364.64	0.00611	(13111924)
571252.00	4175364.64	0.00690	(14112924)	571313.91	4175364.64	0.00765	(14112924)
571375.82	4175364.64	0.00714	(14112924)	571437.73	4175364.64	0.00731	(14121924)
571499.64	4175364.64	0.00693	(14121924)	571561.55	4175364.64	0.00669	(14122024)
571623.46	4175364.64	0.00702	(14122024)	571685.37	4175364.64	0.00479	(14020924)

571747.28 4175364.64 0.00388 (14020924) 571809.19
4175364.64 0.00357 (17020324)
571871.10 4175364.64 0.00440 (17052524) 571933.01
4175364.64 0.00566 (17052524)
571994.92 4175364.64 0.00469 (17052524) 572056.83
4175364.64 0.00302 (16090324)
572118.74 4175364.64 0.00273 (17081424) 572180.65
4175364.64 0.00230 (17081424)
571066.27 4175411.92 0.00451 (13111924) 571128.18
4175411.92 0.00513 (13111924)
571190.09 4175411.92 0.00590 (14112924) 571252.00
4175411.92 0.00653 (14112924)
571313.91 4175411.92 0.00617 (14112924) 571375.82
4175411.92 0.00573 (14121924)
571437.73 4175411.92 0.00651 (14121924) 571499.64
4175411.92 0.00541 (16102524)
571561.55 4175411.92 0.00636 (14122024) 571623.46
4175411.92 0.00613 (14122024)
571685.37 4175411.92 0.00421 (14020924) 571747.28
4175411.92 0.00351 (14020924)
571809.19 4175411.92 0.00305c (16101524) 571871.10
4175411.92 0.00348 (17020324)
571933.01 4175411.92 0.00461 (17052524) 571994.92
4175411.92 0.00492 (17052524)
572056.83 4175411.92 0.00384 (17052524) 572118.74
4175411.92 0.00260 (16090324)
572180.65 4175411.92 0.00235 (17081424) 571066.27
4175459.20 0.00418 (13111924)
571128.18 4175459.20 0.00490 (14112924) 571190.09
4175459.20 0.00544 (14112924)
571252.00 4175459.20 0.00528 (14112924) 571313.91
4175459.20 0.00486 (15122024)
571375.82 4175459.20 0.00556 (14121924) 571437.73
4175459.20 0.00554 (14121924)
571499.64 4175459.20 0.00440 (16120824) 571561.55
4175459.20 0.00594 (14122024)
571623.46 4175459.20 0.00549 (14122024) 571685.37
4175459.20 0.00372 (14020924)
571747.28 4175459.20 0.00315 (14020924) 571809.19
4175459.20 0.00300 (14091824)
571871.10 4175459.20 0.00292 (17020324) 571933.01
4175459.20 0.00339 (17052524)
571994.92 4175459.20 0.00439 (17052524) 572056.83
4175459.20 0.00421 (17052524)
572118.74 4175459.20 0.00317 (17052524) 572180.65
4175459.20 0.00224 (16090324)
571496.32 4174981.53 0.01272 (13120924) 571724.84
4175020.54 0.00682 (13072724)
571686.94 4175179.95 0.00988 (14020924) 571637.89
4175169.91 0.01962 (14122024)

571494.09   4175257.97   0.01168 (14112924)   571450.62
4175194.44   0.01820 (13111924)

*** MODELOPTs: RegDFAULT CONC ELEV URBAN ADJ_U*

*** THE   1ST HIGHEST 24-HR AVERAGE CONCENTRATION VALUES FOR SOURCE GROUP: ALL   ***
INCLUDING SOURCE(S):   L0000248   , L0000249
, L0000250   , L0000251   , L0000252   ,
L0000253   , L0000254   , L0000255   , L0000256   , L0000257
, L0000258   , L0000259   , L0000260   ,
L0000261   , L0000667   , L0000668   , L0000669   , L0000670
, L0000671   , L0000672   , L0000673   ,
L0000674   , L0000675   , L0000676   , L0000677   , L0000678
, L0000679   , L0000680   , . . .   ,

*** DISCRETE CARTESIAN RECEPTOR POINTS ***

** CONC OF PM_2.5   IN MICROGRAMS/M**3 **

X-COORD (M)	Y-COORD (M)	CONC	(YYMMDDHH)	X-COORD (M)	Y-COORD (M)	CONC	(YYMMDDHH)
571471.80	4175186.63	0.01852	(13111924)	571475.14	4175165.45	0.01600	(14121724)
571462.88	4175154.31	0.01642	(14121724)	571447.27	4175156.54	0.01569	(14121724)
571458.42	4175101.92	0.01487b	(15113024)	571334.69	4175077.39	0.00917c	(16010224)

*** MODELOPTs: RegDFAULT CONC ELEV URBAN ADJ_U*

*** THE SUMMARY OF MAXIMUM PERIOD (43824 HRS) RESULTS ***

** CONC OF PM_2.5   IN MICROGRAMS/M**3

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                **


                        NETWORK
GROUP ID                      AVERAGE CONC                RECEPTOR  (XR, YR,
ZELEV, ZHILL, ZFLAG)  OF TYPE  GRID-ID
- - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - -
- - - - - - - - - - - - - - - - - - -

ALL       1ST HIGHEST VALUE IS       0.00228 AT (  571499.64,  4174939.12,
3.68,     3.68,    0.00)  DC
          2ND HIGHEST VALUE IS       0.00208 AT (  571437.73,  4174986.40,
3.56,     3.56,    0.00)  DC
          3RD HIGHEST VALUE IS       0.00204 AT (  571747.28,  4175033.68,
4.52,     4.52,    0.00)  DC
          4TH HIGHEST VALUE IS       0.00180 AT (  571496.32,  4174981.53,
3.53,     3.53,    0.00)  DC
          5TH HIGHEST VALUE IS       0.00176 AT (  571809.19,  4175033.68,
4.72,     4.72,    0.00)  DC
          6TH HIGHEST VALUE IS       0.00172 AT (  571458.42,  4175101.92,
3.65,     3.65,    0.00)  DC
          7TH HIGHEST VALUE IS       0.00168 AT (  571437.73,  4174939.12,
3.76,     3.76,    0.00)  DC
          8TH HIGHEST VALUE IS       0.00162 AT (  571809.19,  4175080.96,
4.47,     4.47,    0.00)  DC
          9TH HIGHEST VALUE IS       0.00161 AT (  571747.28,  4175080.96,
4.45,     4.45,    0.00)  DC
         10TH HIGHEST VALUE IS       0.00158 AT (  571724.84,  4175020.54,
4.10,     4.10,    0.00)  DC


 *** RECEPTOR TYPES:  GC = GRIDCART
                      GP = GRIDPOLR
                      DC = DISCCART
                      DP = DISCPOLR
 *** AERMOD - VERSION 22112  ***   *** C:\Lakes\AERMOD View\880 Doolittle_Ops\880
Doolittle_Ops.isc         ***        01/12/23
 *** AERMET - VERSION  18081 ***   ***
                       ***        17:31:16

                                  PAGE  48
 *** MODELOPTs:    RegDFAULT  CONC  ELEV  URBAN  ADJ_U*

                                                *** THE SUMMARY OF HIGHEST  1-HR
RESULTS ***


                                   ** CONC OF PM_2.5   IN MICROGRAMS/M**3
                **
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```
                                                        DATE
                                            NETWORK
GROUP ID                          AVERAGE CONC     (YYMMDDHH)             RECEPTOR
(XR, YR, ZELEV, ZHILL, ZFLAG)    OF TYPE  GRID-ID
- - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - -
- - - - - - - - - - - - - - - - - - - - - - - - -

ALL      HIGH   1ST HIGH VALUE IS       0.05958  ON 13040404: AT (  571637.89,
4175169.91,     4.68,     4.68,    0.00)  DC


 *** RECEPTOR TYPES:  GC = GRIDCART
                      GP = GRIDPOLR
                      DC = DISCCART
                      DP = DISCPOLR
↑ *** AERMOD - VERSION 22112  ***   *** C:\Lakes\AERMOD View\880 Doolittle_Ops\880
Doolittle_Ops.isc         ***        01/12/23
 *** AERMET - VERSION  18081 ***   ***
                        ***       17:31:16

                                  PAGE  49
 *** MODELOPTs:    RegDFAULT  CONC  ELEV  URBAN  ADJ_U*

                                                *** THE SUMMARY OF HIGHEST  8-HR
RESULTS ***


                                   ** CONC OF PM_2.5   IN MICROGRAMS/M**3
                **

                                                        DATE
                                            NETWORK
GROUP ID                          AVERAGE CONC     (YYMMDDHH)             RECEPTOR
(XR, YR, ZELEV, ZHILL, ZFLAG)    OF TYPE  GRID-ID
- - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - -
- - - - - - - - - - - - - - - - - - - - - - - - -

ALL      HIGH   1ST HIGH VALUE IS       0.03606  ON 15120108: AT (  571450.62,
4175194.44,     3.96,     3.96,    0.00)  DC


 *** RECEPTOR TYPES:  GC = GRIDCART
                      GP = GRIDPOLR
                      DC = DISCCART
                      DP = DISCPOLR
↑ *** AERMOD - VERSION 22112  ***   *** C:\Lakes\AERMOD View\880 Doolittle_Ops\880
Doolittle_Ops.isc         ***        01/12/23
 *** AERMET - VERSION  18081 ***   ***
                        ***       17:31:16
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*** THE SUMMARY OF HIGHEST 24-HR RESULTS ***

** CONC OF PM_2.5 IN MICROGRAMS/M**3 **

GROUP ID	AVERAGE CONC	DATE (YYMMDDHH)	NETWORK OF TYPE GRID-ID	RECEPTOR (XR, YR, ZELEV, ZHILL, ZFLAG)
ALL HIGH 1ST HIGH VALUE IS	0.01962	ON 14122024:	AT (	571637.89, 4175169.91, 4.68, 4.68, 0.00) DC

*** RECEPTOR TYPES: GC = GRIDCART
GP = GRIDPOLR
DC = DISCCART
DP = DISCPOLR

*** Message Summary : AERMOD Model Execution ***

--------- Summary of Total Messages --------

A Total of 0 Fatal Error Message(s)
A Total of 2 Warning Message(s)
A Total of 1143 Informational Message(s)

A Total of 43824 Hours Were Processed

A Total of 760 Calm Hours Identified

A Total of 383 Missing Hours Identified (0.87 Percent)

******** FATAL ERROR MESSAGES ********
*** NONE ***

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   ********   WARNING MESSAGES   ********
ME W186     995       MEOPEN: THRESH_1MIN 1-min ASOS wind speed threshold used
     0.50
ME W187     995       MEOPEN: ADJ_U* Option for Stable Low Winds used in AERMET


   ************************************
   *** AERMOD Finishes Successfully ***
   ************************************
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*HARP - HRACalc v22094 1/13/2023 10:49:12 AM - Chronic Risk - Input File: C:\Users\noemi.wyss\Desktop\HARP\880 Doolittle\Operations\880Doolittle_Ops_W_HRAInput.hra

INDEX	GRP1	GRP2	POLID	POLABBRE\	CONC	SCENARIO	CV	CNS	IMMUN	KIDNEY	GILV	REPRO/DE\	RESP	SKIN	EYE	BONE/TEETH
2			107028	Acrolein	0	NonCancer	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
1			9901	DieselExhP	0.0012	NonCancer	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	2.40E-04	0.00E+00	0.00E+00	0.00E+00

ENDO	BLOOD	ODOR	GENERAL	DETAILS	INH_CONC	SOIL_DOSE	DERMAL_D	MMILK_DC	WATER_DC	FISH_DOSE	CROP_DOS	BEEF_DOSE	DAIRY_DOSE
0.00E+00	0.00E+00	0.00E+00	0.00E+00	*	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
0.00E+00	0.00E+00	0.00E+00	0.00E+00	*	1.20E-03	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00

PIG_DOSE	CHICKEN_D	EGG_DOSE	1ST_DRIVE	2ND_DRIVE	3RD_DRIVE	PASTURE_(	FISH_CONC	WATER_CONC
0.00E+00	0.00E+00	0.00E+00	INHALATIO	NA	NA	0.00E+00	0.00E+00	0.00E+00
0.00E+00	0.00E+00	0.00E+00	INHALATIO	NA	NA	0.00E+00	0.00E+00	0.00E+00

*HARP - HRACalc v22094 1/13/2023 10:49:12 AM - Acute Risk - Input File: C:\Users\noemi.wyss\Desktop\HARP\880 Doolittle\Operations\880Doolittle_Ops_W_HRAInput.hra

INDEX	GRP1	GRP2	POLID	POLABBRE'	CONC	SCENARIO	CV	CNS	IMMUN	KIDNEY	GILV	REPRO/DE'	RESP	SKIN	EYE
2			107028	Acrolein	0.0516	NonCancer	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	2.06E-02	0.00E+00	2.06E-02
1			9901	DieselExhP	0.0516	NonCancer	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00

BONE/TEET	ENDO	BLOOD	ODOR	GENERAL
0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00

*HARP - HRACalc v22094 1/13/2023 10:49:12 AM - Cancer Risk - Input File: C:\Users\noemi.wyss\Desktop\HARP\880 Doolittle\Operations\880Doolittle_Ops_W_HRAInput.hra

INDEX	GRP1	GRP2	POLID	POLABBRE\	CONC	RISK_SUM	SCENARIO	DETAILS	INH_RISK	SOIL_RISK	DERMAL_R	MMILK_RIS	WATER_RI!	FISH_RISK	CROP_RISK	BEEF_RISK
2			107028	Acrolein	0	0.00E+00	25YrCancer	*	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
1			9901	DieselExhP	0.0012	3.12E-07	25YrCancer	*	3.12E-07	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00

DAIRY_RISI	PIG_RISK	CHICKEN_F	EGG_RISK	1ST_DRIVE	2ND_DRIVI	PASTURE_(	FISH_CONC	WATER_CONC
0.00E+00	0.00E+00	0.00E+00	0.00E+00	NA	NA	0.00E+00	0.00E+00	0.00E+00
0.00E+00	0.00E+00	0.00E+00	0.00E+00	NA	NA	0.00E+00	0.00E+00	0.00E+00

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INDEX	GRP1	GRP2	POLID	POLABBRE\	CONC	SCENARIO	CV	CNS	IMMUN	KIDNEY	GILV	REPRO/DE\	RESP	SKIN	EYE	BONE/TEETH
2			9901	DieselExhP	0.0005	NonCancer	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	1.00E-04	0.00E+00	0.00E+00	0.00E+00
1			107028	Acrolein	0	NonCancer	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00

ENDO	BLOOD	ODOR	GENERAL	DETAILS	INH_CONC	SOIL_DOSE	DERMAL_D	MMILK_DC	WATER_DC	FISH_DOSE	CROP_DOS	BEEF_DOSE	DAIRY_DOSE
0.00E+00	0.00E+00	0.00E+00	0.00E+00	*	5.00E-04	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
0.00E+00	0.00E+00	0.00E+00	0.00E+00	*	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00

PIG_DOSE	CHICKEN_D	EGG_DOSE	1ST_DRIVE	2ND_DRIVE	3RD_DRIVE	PASTURE_(	FISH_CONC	WATER_CONC
0.00E+00	0.00E+00	0.00E+00	INHALATIO	NA	NA	0.00E+00	0.00E+00	0.00E+00
0.00E+00	0.00E+00	0.00E+00	INHALATIO	NA	NA	0.00E+00	0.00E+00	0.00E+00

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INDEX	GRP1	GRP2	POLID	POLABBRE'	CONC	SCENARIO	CV	CNS	IMMUN	KIDNEY	GILV	REPRO/DE'	RESP	SKIN	EYE
2			9901	DieselExhP	0.0116	NonCancer	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
1			107028	Acrolein	0.0116	NonCancer	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	4.64E-03	0.00E+00	4.64E-03

BONE/TEET	ENDO	BLOOD	ODOR	GENERAL
0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00

*HARP - HRACalc v22094 1/13/2023 10:52:41 AM - Cancer Risk - Input File: C:\Users\noemi.wyss\Desktop\HARP\880 Doolittle\Operations\880Doolittle_Ops_Res_HRAInput.hra

INDEX	GRP1	GRP2	POLID	POLABBRE\	CONC	RISK_SUM	SCENARIO	DETAILS	INH_RISK	SOIL_RISK	DERMAL_R	MMILK_RIS	WATER_RI	FISH_RISK	CROP_RISK	BEEF_RISK
2			9901	DieselExhP	0.0005	1.05E-07	30YrCancer	*	1.05E-07	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
1			107028	Acrolein	0	0.00E+00	30YrCancer	*	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00

DAIRY_RISI	PIG_RISK	CHICKEN_F	EGG_RISK	1ST_DRIVE	2ND_DRIVI	PASTURE_(	FISH_CONC	WATER_CONC
0.00E+00	0.00E+00	0.00E+00	0.00E+00	NA	NA	0.00E+00	0.00E+00	0.00E+00
0.00E+00	0.00E+00	0.00E+00	0.00E+00	NA	NA	0.00E+00	0.00E+00	0.00E+00

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INDEX	GRP1	GRP2	POLID	POLABBRE\	CONC	SCENARIO	CV	CNS	IMMUN	KIDNEY	GILV	REPRO/DE\	RESP	SKIN	EYE	BONE/TEETH
2			9901	DieselExhP	0.0009	NonCancer	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	1.80E-04	0.00E+00	0.00E+00	0.00E+00
1			107028	Acrolein	0	NonCancer	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00

ENDO	BLOOD	ODOR	GENERAL	DETAILS	INH_CONC	SOIL_DOSE	DERMAL_D	MMILK_DC	WATER_DC	FISH_DOSE	CROP_DOS	BEEF_DOSE	DAIRY_DOSE
0.00E+00	0.00E+00	0.00E+00	0.00E+00	*	9.00E-04	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
0.00E+00	0.00E+00	0.00E+00	0.00E+00	*	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00

PIG_DOSE	CHICKEN_D	EGG_DOSE	1ST_DRIVE	2ND_DRIVE	3RD_DRIVE	PASTURE_(	FISH_CONC	WATER_CONC
0.00E+00	0.00E+00	0.00E+00	INHALATIO	NA	NA	0.00E+00	0.00E+00	0.00E+00
0.00E+00	0.00E+00	0.00E+00	INHALATIO	NA	NA	0.00E+00	0.00E+00	0.00E+00

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INDEX	GRP1	GRP2	POLID	POLABBRE	CONC	SCENARIO	CV	CNS	IMMUN	KIDNEY	GILV	REPRO/DE	RESP	SKIN	EYE
2			9901	DieselExhP	0.0272	NonCancer	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
1			107028	Acrolein	0.0272	NonCancer	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	1.09E-02	0.00E+00	1.09E-02

BONE/TEE	ENDO	BLOOD	ODOR	GENERAL
0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00

*HARP - HRACalc v22094 1/13/2023 10:51:05 AM - Cancer Risk - Input File: C:\Users\noemi.wyss\Desktop\HARP\880 Doolittle\Operations\880Doolittle_Ops_Rec_HRAInput.hra

INDEX	GRP1	GRP2	POLID	POLABBRE\	CONC	RISK_SUM	SCENARIO	DETAILS	INH_RISK	SOIL_RISK	DERMAL_R	MMILK_RIS	WATER_RI!	FISH_RISK	CROP_RISK	BEEF_RISK
2			9901	DieselExhP	0.0009	1.51E-07	9YrCancerl	*	1.51E-07	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
1			107028	Acrolein	0	0.00E+00	9YrCancerl	*	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00

DAIRY_RISI	PIG_RISK	CHICKEN_F	EGG_RISK	1ST_DRIVE	2ND_DRIVI	PASTURE_(	FISH_CONC	WATER_CONC
0.00E+00	0.00E+00	0.00E+00	0.00E+00	NA	NA	0.00E+00	0.00E+00	0.00E+00
0.00E+00	0.00E+00	0.00E+00	0.00E+00	NA	NA	0.00E+00	0.00E+00	0.00E+00

Appendix C

Biological Resources Assessment

MOORE BIOLOGICAL CONSULTANTS

October 27, 2023

Ms. Claudia Tarpin
Prologis
3353 Gateway Blvd.
Fremont, CA 94538

Subject: 14.4+/- ACRE "880 DOOLITTLE DRIVE" SITE, SAN LEANDRO, ALAMEDA COUNTY, CALIFORNIA: BIOLOGICAL ASSESSMENT

Dear Claudia:

Thank you for asking Moore Biological Consultants to prepare a Biological Assessment (BA) for this project in San Leandro, Alameda County, California (Figure 1). The purposes of this assessment are to describe existing biological resources in the project site, identify potentially significant impacts to biological resources from the project, and provide recommendations for how to reduce those impacts to a less-than-significant level. The work involved reviewing databases, aerial photographs, and documents, and conducting field a survey to document vegetation communities, wildlife habitats, potentially jurisdictional Waters of the U.S. and/or wetlands, and potentially suitable habitat for or presence of special-status species. This report details the methodology and results of our investigation.

Project Overview

Prologis LP, the project applicant, is proposing redevelopment of a 14.4+/-acre site in the City of San Leandro. The site comprised of two parcels located at the terminus of Hester Street and adjacent to Doolittle Drive, at 880 Doolittle Drive and 498 Hester Street (APNs # 77A-0741-004-02 and 77A-0741-005-00).

10330 Twin Cities Road, Suite 30 • Galt, CA 95632
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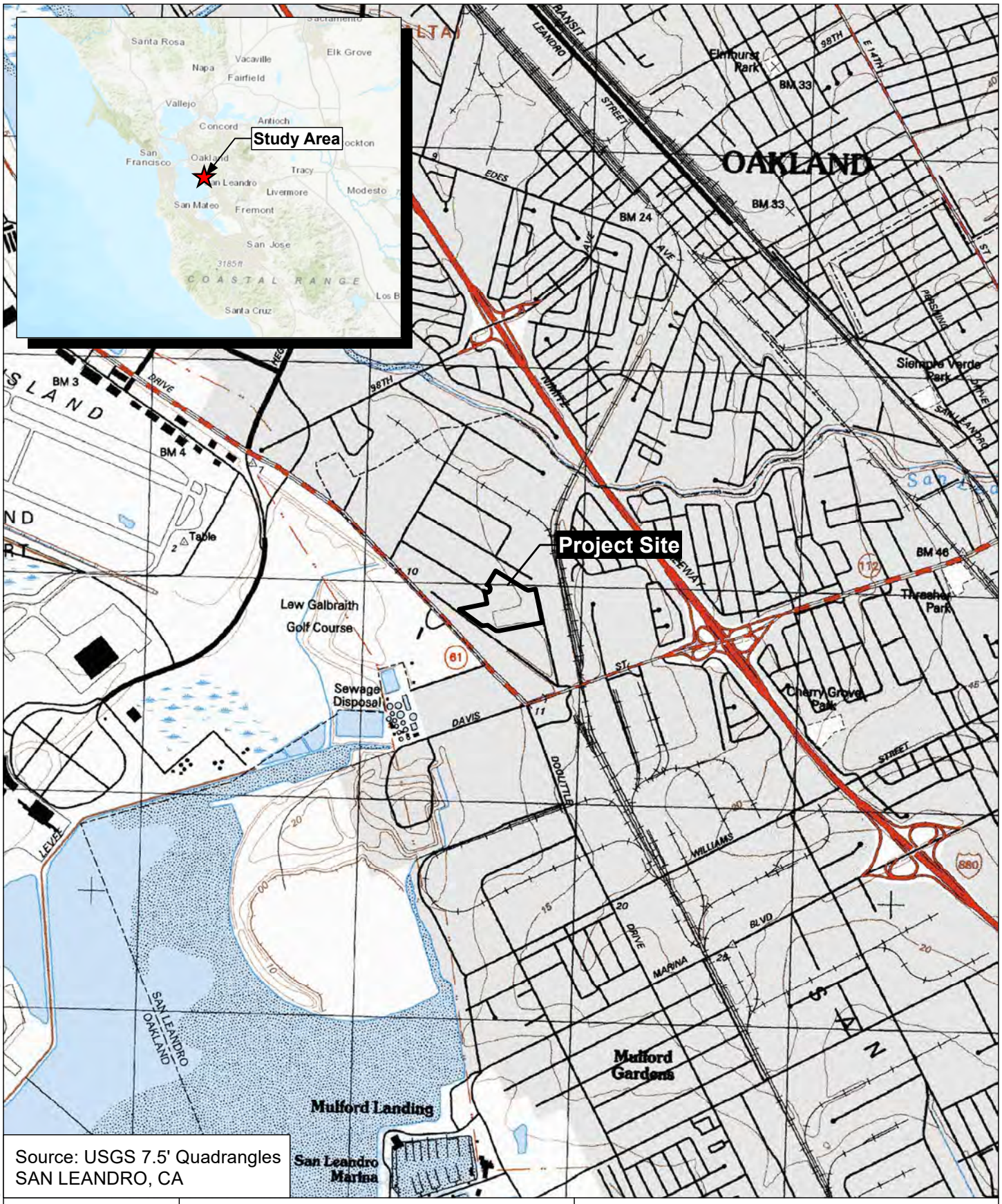
e-mail: moorebio@softcom.net



Source: USGS 7.5' Quadrangles
SAN LEANDRO, CA

Figure 1

Moore Biological Consultants

0 1,000 2,000
Feet

N W E S

Map Date: 10/18/2023

USGS

880 Doolittle Drive

Town of San Leandro, Alameda County, CA

C:\EFC_LNC\Project\Moore Biological\880 Doolittle Drive\MXD\880 doolittle drive usgs figure 1.mxd

The project site has a general plan land use designation of General Industrial and is zoned Industrial General (IG). The IG designation may contain a wide range of manufacturing, transportation, food and beverage processing, technology, warehousing, vehicle storage, office-flex, and distribution uses.

The proposed project would demolish four existing buildings and construct a single 239,573 square-foot warehouse building with a total building area of 244,573 square feet (see detailed Project Description and Plans in Attachment A). The proposed project would contain office and industrial uses and operate as a distribution and delivery station for a single tenant. The project also includes surface parking spaces, landscaping, and stormwater improvements.

Regulatory Framework

FEDERAL ENDANGERED SPECIES ACT: The Federal Endangered Species Act (FESA) of 1973 (16 U.S.C. 1531-1543) and subsequent amendments provide guidance for the conservation of endangered and threatened species and the ecosystems upon which they depend.

Section 7 of FESA requires Federal agencies, in consultation with and with the assistance of the Secretary of the Interior or the Secretary of Commerce, as appropriate, to ensure that actions they authorize, fund, or carry out are not likely to jeopardize the continued existence of threatened or endangered species or result in the destruction or adverse modification of critical habitat for these species. The United States Fish and Wildlife Service (USFWS) and National Marine Fisheries Service (NMFS) share responsibilities for administering the Act. Regulations governing interagency cooperation under Section 7 are found at 50 CFR Part 402. The opinions issued at the conclusion of consultation include statements authorizing take that may occur incidental to an otherwise legal activity.

CLEAN WATER ACT: The Clean Water Act (CWA) (33 U.S.C. 1251-1376) provides guidance for the restoration and maintenance of the chemical, physical, and biological integrity of the nation's waters. Section 404 of the CWA established a permit program administered by the U.S. Army Corps of Engineers (ACOE) regulating the discharge of dredged or fill material into waters of the United States (including wetlands). Implementing regulations by ACOE are found at 33 CFR Parts 320-330. Guidelines for implementation are referred to as the Section 404 (b)(1) Guidelines and were developed by the Environmental Protection Agency (EPA) in conjunction with ACOE (40 CFR Parts 230). The Guidelines allow the discharge of dredged or fill material into the aquatic system only if there is no practicable alternative that would have less adverse impacts.

State and federal agencies regulate Waters of the U.S. and wetlands, and Section 404 of the Clean Water Act requires that a permit be secured prior to the discharge of dredged or fill materials into any waters of the U.S., including wetlands. California Department of Fish and Wildlife (CDFW) also has jurisdiction over modifications to rivers, lakes, and streams under Section 1600 of Fish and Game Code of California (FGCC).

“Waters of the U.S.”, as defined in 33 CFR 328.4, encompasses Territorial Seas, Tidal Waters, and Non-Tidal Waters; Non-Tidal Waters includes interstate and intrastate rivers and streams, as well as their tributaries. The limit of federal jurisdiction of Non-Tidal Waters of the U.S. extends to the “ordinary high water mark”. The ordinary high water mark is established by physical characteristics such as a natural water line impressed on the bank, presence of shelves, destruction of terrestrial vegetation, or the presence of litter and debris.

Wetlands are vegetated areas that meet specific vegetation, soil, and hydrologic criteria defined by the ACOE *Wetlands Delineation Manual* and Regional Supplement (ACOE, 1987; 2008). Wetlands that are adjacent to and hydrologically very closely associated with jurisdictional lakes, rivers, streams, and tributaries can also fall under ACOE jurisdiction as “adjacent wetlands”.

Pursuant to a May 2023 Supreme Court decision, adjacent wetlands must have a continuous surface connection with a jurisdictional Water of the U.S. such that the wetland is indistinguishable from the adjacent water. Geographically and hydrologically isolated wetlands are outside federal jurisdiction, but some are regulated by RWQCB as a "Water of the State", as discussed below.

Jurisdictional wetlands and Waters of the U.S. include, but are not limited to, perennial and intermittent creeks and drainages, lakes, seeps, and springs; emergent marshes; riparian wetlands; and seasonal wetlands. Wetlands and Waters of the U.S. provide critical habitat components, such as nest sites and a reliable source of water, for a wide variety of wildlife species.

Section 401 of the CWA requires an applicant for a Federal license or permit that allows activities resulting in a discharge to waters of the U.S., to obtain a state certification that the discharge complies with other provisions of the CWA. The Regional Water Quality Control Board (RWQCB) administers the certification program in California.

MIGRATORY BIRD TREATY ACT: The Migratory Bird Treaty Act (MBTA) (16 USC, Section 703-711; 40 Stat. 755), as amended, prohibits killing, possessing, or trading in migratory birds except in accordance with regulations prescribed by the Secretary of the Interior. This act applies to whole birds, parts of birds, and bird nests and eggs. The MBTA does not provide protection for habitat of migratory birds, but does prohibit the destruction or possession of individual birds, eggs, or nest in active use without a permit from USFWS.

CALIFORNIA ENDANGERED SPECIES ACT: The California Endangered Species Act (CESA) (FGCC 2050 et seq.) establishes the policy of the State to conserve, protect, restore, and enhance threatened or endangered species and their habitats. CESA mandates that State agencies should not approve projects that would jeopardize the continued existence of threatened or endangered species, if reasonable and prudent alternatives are available that would avoid jeopardy.

CESA requires State lead agencies to consult with the during the California Environmental Quality Act (CEQA) process to avoid jeopardy to threatened or endangered species. As an outcome of consultation, CDFW is required to issue a written finding indicating if a project would jeopardize threatened or endangered species and specifying reasonable and prudent alternatives that would avoid jeopardy. The Act provides for joint consultations when species are listed by both the State and Federal governments.

PORTER-COLOGNE WATER QUALITY CONTROL ACT & WATERS OF THE STATE: Under the Porter-Cologne Water Quality Control Act, "Waters of the State" fall under the jurisdiction of the State Water Resource Control Board (SWRCB) and California Regional Water Quality Control Boards (RWQCBs). The RWQCBs are required to prepare and periodically update water quality control basin plans, which set forth water quality standards for surface water and groundwater, as well as actions to control non-point and point sources of pollution to achieve and maintain these standards.

Projects that affect Waters of the State may also be required to meet waste discharge requirements (WDRs) of the RWQCBs. SWRCB's Resolution 2008-0026 identified a need to protect Waters of the State that are not subject to CWA Section 404 permitting and associated CWA Section 401 Water Quality Certification. On May 28, 2020, the *State Wetland Definition and Procedures for the Discharges of Dredged or Fill Material to Waters of the State* went in to effect. The RWQCBs now issue WDRs for the fill of isolated wetlands that not subject to CWA Section 404 by issuing WDRs or in some cases, issues a WDR waiver.

CALIFORNIA ENVIRONMENTAL QUALITY ACT: With respect to biological resources, the CEQA Guidelines Section 15206 specifies that a project shall be deemed to be of statewide, regional, or area wide significance if it would substantially affect sensitive wildlife habitats, including but not limited to riparian lands, wetlands, bays, estuaries, marshes, and habitats for rare and endangered species.

CEQA Guidelines Section 15380 provides that a species not listed under FESA or CESA may be considered rare or endangered under specific criteria. These criteria have been modeled after the definitions in FESA and CESA. Section 15380 was included in the CEQA Guidelines primarily to deal with situations in which a public agency is reviewing a project that may have a significant effect on a candidate species that has not yet been listed by either USFWS or CDFW. Thus, Section 15380 provides an agency with the ability to protect a species from a project's potential impacts until the respective resource agencies have had an opportunity to designate the species as protected, if warranted.

An example would be the vascular plants listed as rare or endangered by the California Native Plant Society (CNPS), but which may have no designated status or protection under FESA or CESA. The CNPS created five lists:

- List 1A: Plants presumed extinct in California,
- List 1B: Plants rare, threatened, or endangered in California and elsewhere,
- List 2: Plants rare, threatened, or endangered in California, but more numerous elsewhere,
- List 3: Plants about which more information is needed; a "review list", and
- List 4: Plants of limited distribution; a "watch list".

Plants appearing on CNPS List 1A, 1B, or 2 are considered to meet the criteria of Section 15380; in rare cases, List 3 species may also meet the criteria.
FISH AND GAME CODE (SECTIONS 1600 AND 3503): Under Section 1600 of the FGCC, project proponents are required to notify CDFW prior to initiating activities for any project that would divert water from, or obstruct or change the natural flow, bed, channel, or bank of any river, stream, or lake. When an existing fish or wildlife resource may be substantially adversely affected, CDFW is required to propose reasonable project changes to protect the resource. These modifications are formalized in a Streambed Alteration Agreement.

Section 3503 of FGCC prohibits unlawful take, possession or needless destruction of the nest or eggs of any bird. Section 3503.5 of the FGCC states that it is “unlawful to take, possess, or destroy any birds-of-prey in the orders Falconiformes or Strigiformes . . .” (i.e., hawks, owls, eagles, and falcons). The loss of an active nest is considered a violation of this code by CDFW. This statute does not provide for the issuance of any type of incidental take permit.

Methods

Prior to the field survey, we conducted a search of California Department of Fish and Wildlife’s (CDFW) California Natural Diversity Database (CNDDB, 2020); an updated and expanded database search was conducted in October 2023 (CNDDB, 2023). The CNDDB search included the USGS 7.5-minute Oakland West, Oakland East, Las Trampas Ridge, Hunters Point, San Leandro, Hayward, San Mateo, Redwood Point and Newark topographic quadrangles, encompassing approximately 540 square miles surrounding the site. The USFWS IPaC Trust Report of Federally Threatened and Endangered species that may occur in or be affected by projects in the project vicinity was also reviewed (Attachment B). This information was used to identify wildlife and plant species that have been documented in the project vicinity or that may have the potential to occur if suitable habitat is present. We also reviewed the IPaC and USFWS on-line-maps of designated critical habitat.

A table of “Special-Status Species” pursuant to CEQA was compiled from the results of the database searches. Special-status species include species that are currently listed as threatened or endangered, or species that are candidates for listing at the state or federal level, rare plants, and animals considered sensitive by CDFW, as described above. Common species identified in the CNDDB were not included the Special-Status Species table.

A field survey was conducted on November 23, 2020. The survey consisted of walking throughout the site making observations of habitat conditions and noting

surrounding land uses, vegetation types, and plant and wildlife species. The survey included an assessment of the site for potentially jurisdictional Waters of the U.S. (a term that includes wetlands) as defined by the ACOE, 1987; 2008) and/or Waters of the State, including wetlands. The site was also searched for special-status species, and suitable habitat for special-status species (e.g., salt marshes, vernal pools). Trees along the edges of the site were assessed for the potential use by nesting raptors and the site was also searched for burrowing owls (*Athene cunicularia*) or ground squirrel burrows that could be utilized by burrowing owls.

An extensive visual search for bats was also conducted. Specifically, the inside and outside of the buildings and structures in the site were comprehensively searched with binoculars for suitable roosting crevices/areas for bats, or staining indicating recent or current bat utilization. The ground at the bases of the walls were also searched for guano deposits.

Results

GENERAL SETTING: The site is in San Leandro, in Alameda County, California. The site is in an Unnumbered Section, within Township 3 South, Range 3 West of the USGS 7.5-minute San Leandro topographic quadrangle (Figure 1). The site is essentially level and is situated at an elevation of approximately 10 feet above mean sea level. The site is completely developed and was used for airport parking until a few years ago when Amazon began using the site for van parking (Figure 2 and photographs in Attachment C).

This portion of San Leandro is primarily heavily industrial and commercial (see Figure 2). The site is bordered on all sides by industrial businesses and fully-developed properties. The cul-de-sac at the end of Hester Street provides access in to the northwest corner of the site, while a side street off of Doolittle Drive, situated just southwest of the site, is the main access road into the site.

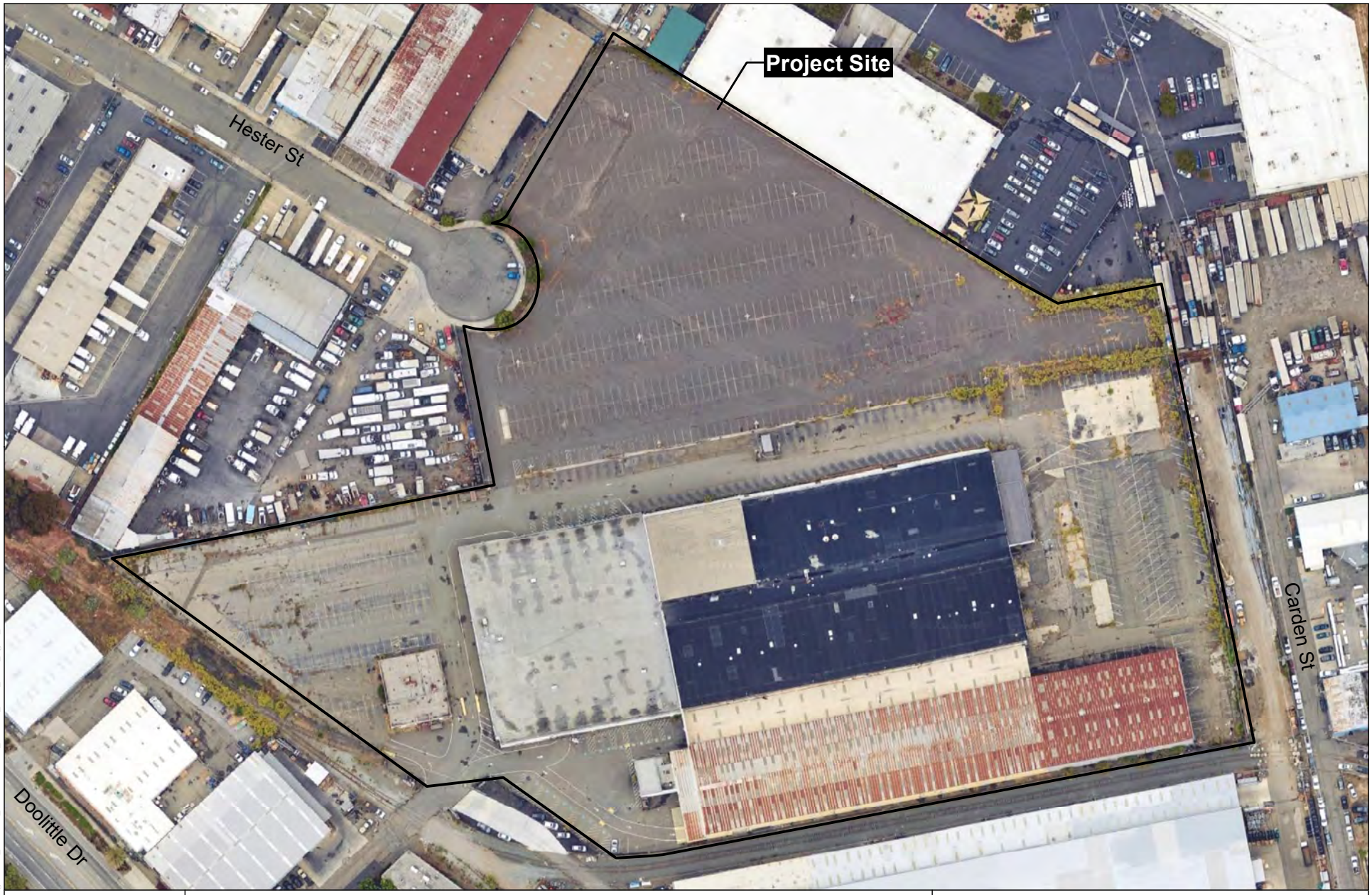


Figure 2

Moore Biological Consultants

0 150 300
Feet

N W E S

Map Date: 10/18/2023
Aerial Source: Google Earth (04/01/2022)

AERIAL

880 Doolittle Drive

Town of San Leandro, Alameda County, CA

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There are no aquatic habitats, riparian habitats, sensitive natural communities, wildlife movement corridors, or native wildlife nursery sites in the site. The site is not located in an area with an adopted Habitat Conservation Plan, Natural Community Conservation Plan, or other approved local, regional, or state habitat conservation plan.

VEGETATION: Natural habitats in the project vicinity, including those in the site, have been almost completely converted to development and most of the site is paved. The only vegetation in the site is narrow fringes of highly disturbed ruderal grassland along fence lines and along the extreme edges of buildings within the site. Dominant grassland species in the site include oats (*Avena* sp.), common mallow (*Malva neglecta*), fireweed (*Epilobium brachycarpum*), prickly lettuce (*Lactuca serriola*), field bindweed (*Convolvulus arvensis*) and common sow thistle (*Sonchus oleraceus*).

The only trees in or immediately adjacent to the site are five ornamental trees in a landscaped strip around the cul-de-sac at the end of Hester Street. There are a couple of large trees a few hundred feet northwest of the site. The only other trees near the site are similar ornamental landscape trees scattered around businesses near the site.

WILDLIFE: Turkey vulture (*Cathartes aura*), rock dove (*Columba livia*), western gull (*Larus occidentalis*), yellow-rumped warbler (*Setophaga coronata*), and house finch (*Haemorhous mexicanus*) were the only birds observed in the site. The only trees near the site suitable for nesting raptors, despite being in such an urbanized area, is the eucalyptus trees located northwest of the west tip of the site. Given the presence a golf course nearby providing foraging and nesting opportunities, it is possible raptors and other protected migratory birds nest in trees near the site during some years. Songbirds could potentially nest in the ornamental trees along the edges of the site. Because the ruderal grassland areas in the site are very small and fragmented, they are unlikely to be used by nesting songbirds or ground-nesting birds.

No mammals or signs of mammals were observed in the site during the recent survey. As describe above, the buildings in the site were searched for bats, suitable roost habitat for bats, or sign of bats (i.e., guano). The buildings in the site are metal warehouses without attics that do not provide suitable roosting habitat for bats. No sign of bats was observed in the buildings.

Based on habitat types present, very few amphibians and reptiles have potential to occur in the site and none were observed. The site is within the range of Pacific chorus frog (*Pseudacris regilla*), western fence lizard (*Sceloporus occidentalis*), and gopher snake (*Pituophis melanoleucus*). Although considered highly unlikely, these and other common amphibian and reptile species may occur on-site on occasion.

WATERS OF THE U.S. AND WETLANDS: No vernal pools, seasonal wetlands, marshes, creeks, lakes, or any other areas meeting the technical and regulatory criteria of jurisdictional Waters of the U.S. or wetlands were observed in the site. There are also no areas in the site meeting the criteria of Waters of the State, including wetlands. Further, there are no areas within the site mapped as aquatic features in the National Wetland Inventory (NWI) (Attachment D).

SPECIAL-STATUS SPECIES: The likelihood of occurrence of listed, candidate, and other special-status species in the site is extremely low. Table 1 provides a summary of the listing status and habitat requirements of special-status species that have been documented in the greater project vicinity or for which there is potentially suitable habitat in the greater project vicinity. This table also includes an assessment of the likelihood of occurrence of each of these species in the site. The evaluation of the potential for occurrence of each species is based on the distribution of regional occurrences (if any), habitat suitability, and field observations.

SPECIAL-STATUS PLANTS: A total of 58 special-status plants were identified in the CNDDB (2023) search area, most of which are several miles from the site. A total

TABLE 1

SPECIAL-STATUS PLANT AND WILDLIFE SPECIES DOCUMENTED OR POTENTIALLY-OCCURRING IN THE PROJECT VICINITY

Common Name	Scientific Name	Federal Status[1]	State Status[2]	CNPS List[3]	Habitat	Potential for Occurrence in the Project Site
PLANTS						
San Mateo thorn-mint	*Acanthomintha duttonii*	E	E	1B	Chaparral, valley and foothill grassland (serpentine); elevations 165 – 985 feet; blooms April – June.	Unlikely: there is no suitable habitat in the site for San Mateo thorn-mint. The nearest record of this species in the CNDDB (2023) is over 5 miles from the site.
Franciscan onion	*Allium peninsulare var. franciscanum*	None	None	1B	Cismontane woodland, valley and foothill grassland; elevations 170-1,000 feet; blooms April – June.	Unlikely: there is no suitable habitat in the site for this species. The nearest record of Franciscan onion in the CNDDB (2023) is over 5 miles from the site.
Bent-flowered fiddleneck	*Amsinckia lunaris*	None	None	1B	Cismontane woodland, valley and foothill grassland, and coastal bluff scrub; elevations 10-1,640 feet; blooms March – June.	Unlikely: there is no suitable habitat in the site for bent-flowered fiddleneck. The nearest record of this species in the CNDDB (2023) is over 5 miles from the site.
Pallid manzanita	*Arctostaphylos pallida*	T	E	1B	Broadleafed upland forest, closed-cone coniferous forest, chaparral, cismontane woodland, and coastal scrub; elevations 605 – 1,525 feet; blooms December – March.	Unlikely: there is no suitable habitat in the site for pallid manzanita. The nearest record of this species in the CNDDB (2023) is over 5 miles from the site.
Coastal marsh milk-vetch	*Astragalus pycnostachyus var. pycnostachyus*	None	None	1B	Coastal dunes, marshes and swamps, and coastal scrub; elevations 0 – 180 feet; blooms June – October.	Unlikely: there is no suitable habitat in the site for coastal marsh milk vetch. The nearest record of this species in the CNDDB (2023) is over 5 miles from the site.
Alkali milk-vetch	*Astragalus tener var. tener*	None	None	1B	Alkali playas and vernal pools; elevations 5 – 195 feet; blooms March – June.	Unlikely: the site does not provide suitable habitat for this species. The nearest occurrence of alkali milk-vetch in the CNDDB (2023) search area is approximately 2 miles northwest of the site.

TABLE 1

SPECIAL-STATUS PLANT AND WILDLIFE SPECIES DOCUMENTED OR POTENTIALLY-OCCURRING IN THE PROJECT VICINITY

Common Name	Scientific Name	Federal Status[1]	State Status[2]	CNPS List[3]	Habitat	Potential for Occurrence in the Project Site
Big-scale balsamroot	*Balsamorhiza macrolepis*	None	None	1B	Chaparral, valley and foothill grassland and cismontane woodland; sometimes serpentine soils; elevations 150 – 5,100 feet; blooms March – June.	Unlikely: there is no suitable habitat in the site for big-scale balsamroot. The nearest occurrence of this species in the CNDDB (2023) search area is approximately 3.5 miles east of the site.
Mt. Diablo fairy-lantern	*Calochortus pulchellus*	None	None	1B	Chaparral, cismontane woodland, riparian woodland, valley and foothill grassland; elevations 98-2,756 feet; blooms April – June.	Unlikely: the site does not provide suitable habitat for Mt. Diablo fairy-lantern. The nearest record of this species in the CNDDB (2023) is over 5 miles from the site.
Bristly sedge	*Carex comosa*	None	None	2B	Marshes and swamps, coastal prairie, valley and foothill grassland; elevations 0 – 2,050 feet; blooms May – September.	Unlikely: there is no suitable habitat in the site for this species. The nearest record of bristly sedge in the CNDDB (2023) is over 5 miles from the site.
Congdon's tarplant	*Centromadia parryi ssp. congdonii*	None	None	1B	Valley and foothill grassland within alkaline soils; elevations 0 – 755 feet; blooms May – October.	Unlikely: the site does not provide suitable habitat for Congdon's tarplant. The nearest occurrence of this species in the CNDDB (2023) search area is approximately 1.5 miles southeast of the site.
Point Reyes salty bird's beak	*Chloropyron maritimum ssp. palustre*	None	None	1B	Coastal salt marsh; elevations 0 – 35 feet; blooms June - October.	Unlikely: there is no suitable habitat in the site for Point Reyes salty bird's beak. The nearest occurrence of this species in the CNDDB (2023) search area is approximately 3 miles northwest of the site.
San Francisco Bay spineflower	*Chorizanthe cuspidata var. cuspidata*	None	None	1B	Coastal bluff scrub, coastal dunes, coastal prairie and coastal scrub; elevations 10 – 705; blooms April – July.	Unlikely: there is no suitable habitat in the site for San Francisco Bay spineflower. The nearest record of this species in the CNDDB (2023) is over 5 miles from the site.

TABLE 1

SPECIAL-STATUS PLANT AND WILDLIFE SPECIES DOCUMENTED OR POTENTIALLY-OCCURRING IN THE PROJECT VICINITY

Common Name	Scientific Name	Federal Status[1]	State Status[2]	CNPS List[3]	Habitat	Potential for Occurrence in the Project Site
Robust spineflower	*Chorizanthe robusta var. robusta*	E	None	1B	Coastal scrub, coastal dunes, openings in cismontane woodland, maritime chaparral; usually on sandy or gravelly soils; elevations 10 – 985 feet; blooms April – September.	Unlikely: the site does not provide suitable habitat for robust spineflower. The nearest occurrence of this species in the CNDDB (2023) search area is approximately 4.5 miles northwest of the site. The site is not within designated critical habitat for this species (USFWS, 2002a).
Fountain thistle	*Cirsium fontinale var. fontinale*	E	E	1B	Valley and foothill grassland, chaparral, cismontane woodland and meadows and seeps; elevations 150 – 575 feet; blooms April – October.	Unlikely: there is no suitable habitat in the site for fountain thistle. The nearest record of this species in the CNDDB (2023) is over 5 miles from the site.
Presidio clarkia	*Clarkia franciscana*	E	E	1B	Coastal scrub, valley and foothill grassland; elevations 80 – 1,100 feet; blooms May – July.	Unlikely: there is no suitable habitat in the site for Presidio clarkia. The nearest record of this species in the CNDDB (2023) is over 5 miles from the site.
San Francisco collinsia	*Collinsia multicolor*	None	None	1B	Closed-cone coniferous forest and coastal scrub; elevations 100 – 900 feet; blooms February – May.	Unlikely: there is no suitable habitat in the site for San Francisco collinsia. The nearest record of this species in the CNDDB (2023) is over 5 miles from the site.
Western leatherwood	*Dirca occidentalis*	None	None	1B	Broadleafed upland forest, closed-cone coniferous forest, coastal scrub, chaparral, and cismontane woodland; elevations 80 – 1,395; blooms January – April.	Unlikely: the site does not provide suitable habitat for western leatherwood. The nearest occurrence of this species in the CNDDB (2023) search area is approximately 5 miles northeast of the site.
Tiburon buckwheat	*Eriogonum luteolum var. caninum*	None	None	1B	Valley and foothill grassland, chaparral, cismontane woodland, coastal prairie; in serpentine soils; elevations 0 – 2,295 feet; blooms May – September.	Unlikely: there is no suitable habitat in the site for Tiburon buckwheat. The nearest record of this species in the CNDDB (2023) is over 5 miles from the site.

TABLE 1

SPECIAL-STATUS PLANT AND WILDLIFE SPECIES DOCUMENTED OR POTENTIALLY-OCCURRING IN THE PROJECT VICINITY

Common Name	Scientific Name	Federal Status[1]	State Status[2]	CNPS List[3]	Habitat	Potential for Occurrence in the Project Site
San Mateo woolly sunflower	*Eriophyllum latilobum*	E	E	1B	Cismontane woodland, coastal scrub and lower montane coniferous forest; elevations 150 – 1,085 feet; blooms May – June.	Unlikely: the site does not provide suitable habitat for San Mateo woolly sunflower. The nearest record of this species in the CNDDB (2023) is over 5 miles from the site.
Hoover's button-celery	*Eryngium aristulatum var. hooveri*	None	None	1B	Vernal pools; elevations 10-150 feet; blooms July – August.	Unlikely: there is no suitable habitat in the site for Hoover's button celery. The nearest record of this species in the CNDDB (2023) is over 5 miles from the site.
Jepson's coyote thistle	*Eryngium jepsonii*	None	None	1B	Valley and foothill grasslands, within vernal pools; elevations 10 – 985 feet; blooms April – August.	Unlikely: the site does not provide suitable habitat for Jepson's coyote thistle. The nearest occurrence of this species in the CNDDB (2023) search area is approximately 4.5 miles southeast of the site.
San Joaquin spearscale	*Etriplex joaquiniana*	None	None	1B	Chenopod scrub, alkali meadow, valley and foothill grassland; within alkaline soils; elevations 3 – 2,672 feet; blooms April – October.	Unlikely: there is no suitable habitat in the site for San Joaquin spearscale. The nearest record of this species in the CNDDB (2023) is over 5 miles from the site.
Minute pocket moss	*Fissidens pauperculus*	None	None	1B	North coast coniferous forest in damp coastal soils; elevations 35 – 3,360 feet.	Unlikely: there is no suitable habitat in the site for minute pocket moss. The nearest record of this species in the CNDDB (2023) is over 5 miles from the site.
Hillsborough chocolate lily	*Fritillaria biflora var. ineziana*	None	None	1B	Cismontane woodland and valley and foothill grassland; elevation of 490 feet; blooms March – April.	Unlikely: the site does not provide suitable habitat for Hillsborough chocolate lily. The nearest record of this species in the CNDDB (2023) is over 5 miles from the site.
Fragrant fritillary	*Fritillaria liliacea*	None	None	1B	Coastal scrub, valley and foothill grassland and coastal prairie; often on serpentine soils; elevations 10 - 1,345 feet; blooms February – April.	Unlikely: there is no suitable habitat in the site for fragrant fritillary. The nearest occurrence of this species in the CNDDB (2023) search area is approximately 3.5 miles east of the site.

TABLE 1

SPECIAL-STATUS PLANT AND WILDLIFE SPECIES DOCUMENTED OR POTENTIALLY-OCCURRING IN THE PROJECT VICINITY

Common Name	Scientific Name	Federal Status[1]	State Status[2]	CNPS List[3]	Habitat	Potential for Occurrence in the Project Site
Blue coast gilia	*Gilia capitata ssp. chamissonis*	None	None	1B	Coastal dunes and coastal scrub; elevations 5 – 655 feet; blooms April – June.	Unlikely: the site does not provide suitable habitat blue coast gilia. The nearest record of this species in the CNDDB (2023) is over 5 miles from the site.
Dark-eyed gilia	*Gilia millefoliata*	None	None	1B	Coastal dunes; elevations 5 – 100 feet; blooms April – June.	Unlikely: the site does not provide suitable habitat for dark-eyed gilia. The nearest record of this species in the CNDDB (2023) is over 5 miles from the site.
Diablo helianthella	*Helianthella castanea*	None	None	1B	Broad-leaved upland forest, chaparral, cismontane woodland, coastal scrub, riparian woodland, valley and foothill grassland; elevations 197- 4,265 feet; blooms March – June.	Unlikely: there is no suitable habitat in the site for Diablo helianthella. The nearest occurrence of this species in the CNDDB (2023) search area is approximately 4 miles east of the site.
Congested-headed hayfield tarplant	*Hemizonia congesta ssp. congesta*	None	None	1B	Valley and foothill grassland; elevations 65 – 1,835 feet; blooms April – November.	Unlikely: the site does not provide suitable habitat for congested-headed hayfield tarplant. The nearest record of this species in the CNDDB (2023) is over 5 miles from the site.
Short-leaved evax	*Hesperevax sparsiflora var. brevifolia*	None	None	1B	Coastal bluff scrub, coastal dunes and coastal prairie; elevations 0 – 705 feet; blooms March – June.	Unlikely: there is no suitable habitat in the site for short-leaved evax. The nearest record of this species in the CNDDB (2023) is over 5 miles from the site.
Marin western flax	*Hesperolinon congestum*	T	T	1B	Chaparral, valley and foothill grassland (serpentinite); elevations 15 – 1,215 feet; blooms April – June.	Unlikely: the site does not provide suitable habitat for Marin western flax. The nearest record of this species in the CNDDB (2023) is over 5 miles from the site.
Water star-grass	*Heteranthera dubia*	None	None	2	Marshes and swamps (alkaline); elevations 100 – 4,905 feet; blooms July – October.	Unlikely: the site does not provide suitable habitat for water star-grass. The nearest record of this species in the CNDDB (2023) is over 5 miles from the site.

TABLE 1

SPECIAL-STATUS PLANT AND WILDLIFE SPECIES DOCUMENTED OR POTENTIALLY-OCCURRING IN THE PROJECT VICINITY

Common Name	Scientific Name	Federal Status[1]	State Status[2]	CNPS List[3]	Habitat	Potential for Occurrence in the Project Site
Loma Prieta hoita	*Hoita strobilina*	None	None	1B	Chaparral, cismontane woodlands and riparian woodlands; usually in serpentine soils; elevations 100 – 2,820 feet; blooms May – October.	Unlikely: there is no suitable habitat in the site for Loma Prieta hoita. The nearest record of this species in the CNDDB (2023) is over 5 miles from the site.
Santa Cruz tarplant	*Holocarpha macradenia*	T	E	1B	Coastal prairie, valley and foothill grassland; light sandy soil or sandy clay.	Unlikely: there is no suitable habitat in the site for Santa Cruz tarplant. The nearest record of this species in the CNDDB (2023) is over 5 miles from the site. The site is not within designated critical habitat for this species (USFWS, 2002b).
Kellogg's horkelia	*Horkelia cuneata var. sericea*	None	None	1B	Closed-cone coniferous forest, costal scrub and dunes, and chaparral; elevations 35 – 655 feet; blooms April – September.	Unlikely: the site does not provide suitable habitat for Kellogg's horkelia. The nearest occurrence of this species in the CNDDB (2023) search area is approximately 4.5 miles northwest of the site.
Contra Costa goldfields	*Lasthenia conjugens*	E	None	1B	Valley and foothill grassland within vernal pools and swales; elevations 0 – 1,540 feet; blooms March – June.	Unlikely: the site does not provide suitable habitat for Contra Costa goldfields. The nearest record of this species in the CNDDB (2023) is over 5 miles from the site. The site is not in designated critical habitat for this species (USFWS 2005a).
Beach layia	*Layia carnosa*	T	E	1B	Coastal dunes and coastal scrub; elevations 0 – 195 feet; blooms March – July.	Unlikely: there is no suitable habitat in the site for beach layia. The nearest record of this species in the CNDDB (2023) is over 5 miles from the site.
Rose leptosiphon	*Leptosiphon rosaceus*	None	None	1B	Coastal bluff scrub; elevations 0 – 330 feet; blooms April – July.	Unlikely: the site does not provide suitable habitat for rose leptosiphon. The nearest record of this species in the CNDDB (2023) is over 5 miles from the site.

TABLE 1

SPECIAL-STATUS PLANT AND WILDLIFE SPECIES DOCUMENTED OR POTENTIALLY-OCCURRING IN THE PROJECT VICINITY

Common Name	Scientific Name	Federal Status[1]	State Status[2]	CNPS List[3]	Habitat	Potential for Occurrence in the Project Site
Crystal Springs lessingia	*Lessingia arachnoidea*	None	None	1B	Coastal sage scrub, valley and foothill grassland and cismontane woodland; elevations 195 – 655 feet; blooms July – October.	Unlikely: there is no suitable habitat in the site for Crystal Springs lessingia. The nearest record of this species in the CNDDB (2023) is over 5 miles from the site.
Arcuate bush-mallow	*Malacothamnus arcuatus*	None	None	1B	Chaparral and cismontane woodland; elevations 50 – 1,165 feet; blooms April – September.	Unlikely: there is no suitable habitat in the site for arcuate bush-mallow. The nearest record of this species in the CNDDB (2023) is over 5 miles from the site.
Oregon meconella	*Meconella oregana*	None	None	1B	Coastal prairie, coastal scrub; elevations 820 – 2,035 feet; blooms March – April.	Unlikely: the site does not provide suitable habitat for Oregon meconella. The nearest record of this species in the CNDDB (2023) is over 5 miles from the site.
Woodland woollythreads	*Monolopia gracilens*	None	None	1B	Chaparral, valley and foothill grassland and cismontane woodland; elevations 330 – 3,935 feet; blooms February – July.	Unlikely: the site does not provide suitable habitat for Woodland woollythreads. The nearest record of this species in the CNDDB (2023) search area is a large, nonspecific record centered over 5 miles from the site.
White-rayed pentachaeta	*Pentachaeta bellidiflora*	E	E	1B	Valley and foothill grassland; usually serpentine soils; elevations 115 – 2,035 feet; blooms March – May.	Unlikely: there is no suitable habitat in the site for white-rayed pentachaeta. The nearest record of this species in the CNDDB (2023) is over 5 miles from the site.
Choris' popcornflower	*Plagiobothrys chorisianus var. chorisianus*	None	None	1B	Chaparral, coastal scrub and coastal prairie; elevations 10 – 525 feet; blooms March – June.	Unlikely: the site does not provide suitable habitat for Choris' popcornflower. The nearest record of this species in the CNDDB (2023) is over 5 miles from the site.
San Francisco popcornflower	*Plagiobothrys diffusus*	None	E	1B	Valley and foothill grassland and coastal prairie; elevations 195 – 1,180 feet; blooms March – June.	Unlikely: there is no suitable habitat in the site for San Francisco popcornflower. The nearest record of this species in the CNDDB (2023) is over 5 miles from the site.

TABLE 1

SPECIAL-STATUS PLANT AND WILDLIFE SPECIES DOCUMENTED OR POTENTIALLY-OCCURRING IN THE PROJECT VICINITY

Common Name	Scientific Name	Federal Status[1]	State Status[2]	CNPS List[3]	Habitat	Potential for Occurrence in the Project Site
Hairless popcorn-flower	*Plagiobothrys glaber*	None	None	1A	Meadows and seeps, marshes and swamps; elevations 50 – 590 feet; blooms March – May.	Unlikely: the site does not provide suitable habitat for hairless popcornflower. The nearest record of this species in the CNDDB (2023) is over 5 miles from the site.
Marin knotweed	*Polygonum marinense*	None	None	3	Marshes and swamps; elevations 0 – 35 feet; blooms April – October.	Unlikely: there is no suitable habitat in the site for Marin knotweed. The nearest record of this species in the CNDDB (2023) is a nonspecific record centered over 5 miles from the site.
Adobe sanicle	*Sanicula maritima*	None	R	1B	Meadows and seeps, valley and foothill grassland, chaparral and coastal prairie; elevations 100 – 785 feet; blooms February – May.	Unlikely: the site does not provide suitable habitat for adobe sanicle. The nearest occurrence of this species in the CNDDB (2023) search area is approximately 4 miles northwest of the site.
Chaparral ragwort	*Senecio aphanactis*	None	None	2	Cismontane woodland, coastal scrub, within drying alkaline flats; elevations 49-2,625 feet; blooms January - April.	Unlikely: the site does not provide suitable habitat for chaparral ragwort. The nearest record of this species in the CNDDB (2023) is over 5 miles from the site.
Long-styled sand-spurrey	*Spergularia macrotheca var. longistyla*	None	None	1B	Marshes and swamps, meadows and seeps; elevations 0 – 835 feet; blooms February – May.	Unlikely: the site does not provide suitable habitat for long-styled sand-spurrey. The nearest occurrence of this species in the CNDDB (2023) search area is approximately 2 miles northwest of the site.
Most beautiful jewelflower	*Streptanthus albidus ssp. peramoenus*	None	None	1B	Chaparral, valley and foothill grassland and cismontane woodland; elevations 310 – 3,280 feet; blooms March – October.	Unlikely: the site does not provide suitable habitat for most beautiful jewel flower. The nearest occurrence of this species in the CNDDB (2023) search area is approximately 3 miles northeast of the site.
Northern slender pondweed	*Stuckenia filiformis ssp. alpina*	None	None	2	Marshes and swamps; elevations 985 – 7,055; blooms May – July.	Unlikely: the site does not provide suitable habitat for northern slender pondweed. The nearest record of this species in the CNDDB (2023) is over 5 miles from the site.

TABLE 1

SPECIAL-STATUS PLANT AND WILDLIFE SPECIES DOCUMENTED OR POTENTIALLY-OCCURRING IN THE PROJECT VICINITY

Common Name	Scientific Name	Federal Status[1]	State Status[2]	CNPS List[3]	Habitat	Potential for Occurrence in the Project Site
California seablite	*Suaeda californica*	E	None	1B	Marshes and swamps; elevations 0 – 50 feet; blooms July – October.	Unlikely: there is no suitable habitat in the site for California seablite. The nearest occurrence of this species in the CNDDB (2023) search area is approximately 1 mile southwest of the site.
Saline clover	*Trifolium hydrophilum*	None	None	1B	Marshes and swamps, mesic areas in valley and foothill grassland, vernal pools; elevations 0 – 985 feet; blooms April – June.	Unlikely: the site does not provide suitable habitat for saline clover. The nearest occurrence of this species in the CNDDB (2023) search area is approximately 4 miles northwest of the site.
San Francisco owl's-clover	*Triphysaria floribunda*	None	None	1B	Coastal prairie, coastal scrub and valley and foothill grassland; elevations 35 – 525 feet; blooms April – June.	Unlikely: there is no suitable habitat in the site for San Francisco owl's-clover. The nearest record of this species in the CNDDB (2023) is over 5 miles from the site.
Oval-leaved viburnum	*Viburnum ellipticum*	None	None	2	Chaparral, cismontane woodland, and lower montane coniferous forest; elevations 705 – 4,593 feet; blooms May - June.	Unlikely: the site does not provide suitable habitat for oval-leaved viburnum. The nearest record of this species in the CNDDB (2023) is over 5 miles from the site.
WILDLIFE						
Birds						
California Ridgway's rail	*Rallus obsoletus obsoletus*	E	E	N/A	Salt water and brackish marshes traversed by tidal sloughs in the San Francisco Bay; associated with pickleweed.	Unlikely: the site does not provide suitable habitat for this species. The nearest occurrence of California Ridgway's rail in the CNDDB (2023) search area is approximately 1 mile northwest of the site.
California least tern	*Sturnula antillarum browni*	E	E	N/A	Estuaries and bays; nests on exposed tidal flats or beaches	Unlikely: the site does not provide suitable habitat for California least tern. The nearest occurrence of this species in the CNDDB (2023) search area is approximately 3 miles northwest of the site.

TABLE 1

SPECIAL-STATUS PLANT AND WILDLIFE SPECIES DOCUMENTED OR POTENTIALLY-OCCURRING IN THE PROJECT VICINITY

Common Name	Scientific Name	Federal Status[1]	State Status[2]	CNPS List[3]	Habitat	Potential for Occurrence in the Project Site
Western yellow-billed cuckoo	*Coccyzus americanus occidentalis*	T	E	N/A	Nests in riparian forests, along the broad, lower flood-bottoms of larger river systems.	Unlikely: the site does not provide suitable habitat for western yellow-billed cuckoo. There are no occurrences of this species in the CNDDB (2023) search area. The site is not in designated critical habitat for western yellow-billed cuckoo (USFWS, 2021).
Western snowy plover	*Charadrius alexandrinus nivosus*	T	None	N/A	Sandy beaches, salt pond levees and shores of large alkali lakes.	Unlikely: the site does not provide suitable habitat for western snowy plover. The nearest occurrence of this species in the CNDDB (2023) search area is approximately 0.5 miles west of the site in the San Francisco Bay. The site is not in designated critical habitat for western snowy plover (USFWS 2012).
Tricolored blackbird	*Agelaius tricolor*	None	T	N/A	Open water and protected nesting substrate, usually cattails and riparian scrub.	Unlikely: the site does not provide suitable nesting habitat for tricolored blackbird. The nearest record of this species in the CNDDB (2023) is over 5 miles from the site.
Bank swallow	*Riparia riparia*	None	T	N/A	Nests colonially in riparian habitats; requires vertical banks and cliffs with fine-textured soils.	Unlikely: there is no suitable nesting habitat for this species in the site. The nearest record of bank swallow in the CNDDB (2023) is over 5 miles from the site.
California black rail	*Laterallus jamaicensis coturniculus*	None	T	N/A	Mainly inhabits salt marshes bordering larger bays.	Unlikely: the site does not provide suitable habitat for California black rail. The nearest occurrence of this species in the CNDDB (2023) search area is approximately 2 miles northwest of the site.
Burrowing owl	*Athene cunicularia*	None	SC	N/A	Open, dry annual or perennial grasslands, deserts and scrublands characterized by low-growing vegetation.	Unlikely: no burrowing owls, ground squirrels, or ground squirrel burrows were observed in the site. The nearest occurrence of burrowing owls in the CNDDB (2023) search area is approximately 2 miles northwest of the site.

TABLE 1

SPECIAL-STATUS PLANT AND WILDLIFE SPECIES DOCUMENTED OR POTENTIALLY-OCCURRING IN THE PROJECT VICINITY

Common Name	Scientific Name	Federal Status[1]	State Status[2]	CNPS List[3]	Habitat	Potential for Occurrence in the Project Site
Yellow warbler	*Setophaga petechia*	None	SC	N/A	Nests in riparian areas, usually in willows, alders, and cottonwoods.	Unlikely: there is no suitable habitat in the site for yellow warbler. The nearest record of this species in the CNDDB (2023) is over 5 miles from the site.
Northern harrier	*Circus hudsonius*	None	SC	N/A	Costal salt and freshwater marsh; nests and forages in grasslands.	Unlikely: the site does not provide suitable habitat for northern harrier. The nearest record of this species in the CNDDB (2023) is over 5 miles from the site.
Black skimmer	*Rynchops niger*	None	None	SC	Nests on gravel bars, low islets and sandy beaches.	Unlikely: there is no suitable habitat in the site to support black skimmer. The nearest record of this species in the CNDDB (2023) is over 5 miles from the site.
Yellow rail	*Coturnicops noveboracensis*	None	SC	N/A	Fresh water marshlands, summer residence in eastern Sierra Nevada in Mono County.	Unlikely: the site does not provide suitable habitat for this species. The nearest occurrence of yellow rail in the CNDDB (2023) search area is approximately 2 miles northwest of the site.
Short-eared owl	*Asio flammeus*	None	SC	N/A	Winters in the Central Valley and utilizes annual grassland habitat and agricultural lands for foraging.	Unlikely: there is no suitable habitat for short-eared owl in the site. The nearest record of this species in the CNDDB (2023) is over 5 miles from the site.
Saltmarsh common yellowthroat	*Geothlypis trichas sinuosa*	None	SC	N/A	Fresh and saltwater marshes. Requires thick, continuous cover down to water surface for foraging.	Unlikely: the site does not provide suitable habitat for this species. The nearest occurrence of saltmarsh common yellowthroat in the CNDDB (2023) search area is approximately 2 miles northwest of the site.
Alameda song sparrow	*Melospiza melodia pusillula*	None	SC	N/A	Salt marshes bordering the south are of the San Francisco Bay.	Unlikely: the site does not provide suitable habitat for Alameda song sparrow. The nearest occurrence of this species in the CNDDB (2023) search area is just to the west of the site in the San Francisco Bay.

TABLE 1

SPECIAL-STATUS PLANT AND WILDLIFE SPECIES DOCUMENTED OR POTENTIALLY-OCCURRING IN THE PROJECT VICINITY

Common Name	Scientific Name	Federal Status[1]	State Status[2]	CNPS List[3]	Habitat	Potential for Occurrence in the Project Site
White-tailed kite	*Elanus leucurus*	None	FP	N/A	Herbaceous lowlands with variable tree growth and dense population of voles.	Unlikely: the site does not provide suitable habitat for white-tailed kite. The nearest record of this species in the CNDDB (2023) is over 5 miles from the site.
Golden eagle	*Aquila chrysaetos*	None	FP	N/A	Nesting areas are associated with cliff-walled canyons and large trees. Forages in rolling hills and mountain areas.	Unlikely: the site does not provide suitable habitat for golden eagle. The nearest record of this species in the CNDDB (2023) is over 5 miles from the site.
Mammals						
Salt-marsh harvest mouse	*Reithrodontomys raviventris*	E	E	N/A	Saline emergent wetlands dominated by pickleweed.	Unlikely: the site does not contain suitable habitat for this species. The nearest occurrence of salt-marsh harvest mouse in the CNDDB (2023) search area is approximately 2 miles northwest of the site.
San Francisco dusky-footed woodrat	*Neotoma fuscipes annectens*	E	SC	N/A	Forest and woodland habitats; sometimes in chaparral and redwood habitats.	Unlikely: the site does not provide suitable habitat for San Francisco dusky-footed woodrat. The nearest record of this species in the CNDDB (2023) is over 5 miles from the site.
American badger	*Taxidea taxus*	None	SC	N/A	Drier open stages of most shrub, forest, and herbaceous habitats, with friable soils	Unlikely: the site does not provide suitable habitat for American badger. The nearest record of this species in the CNDDB (2023) is over 5 miles from the site.
Western mastiff bat	*Eumops perotis californicus*	None	SC	N/A	Open, dry habitats with crevices in cliff faces, high buildings, trees and tunnels for roosting.	Unlikely: the site does not provide suitable habitat for western mastiff bat. The nearest record of this species in the CNDDB (2023) is over 5 miles from the site.
Townsend's big-eared bat	*Corynorhinus townsendii*	None	SC	N/A	Wide variety of habitats, most common in mesic sites; extremely sensitive to human disturbance.	Unlikely: the site does not provide suitable habitat for Townsend's big-eared bat. The nearest record of this species in the CNDDB (2023) is over 5 miles from the site.

TABLE 1

SPECIAL-STATUS PLANT AND WILDLIFE SPECIES DOCUMENTED OR POTENTIALLY-OCCURRING IN THE PROJECT VICINITY

Common Name	Scientific Name	Federal Status[1]	State Status[2]	CNPS List[3]	Habitat	Potential for Occurrence in the Project Site
Pallid bat	*Antrozous pallidus*	None	SC	N/A	Open and dry habitats with rocky areas for roosting.	Unlikely: the site does not provide suitable habitat for pallid bat. The nearest record of this species in the CNDDB (2023) is over 5 miles from the site.
Big free-tailed bat	*Nyctinomops macrotis*	None	None	N/A	Low-lying arid areas in southern California. Needs cliffs or rocky outcrops for roosting.	Unlikely: the site does not provide suitable habitat for big free-tailed bat. The nearest record of this species in the CNDDB (2023) is over 5 miles from the site.
Salt-marsh wandering shrew	*Sorex vagrans halicoetes*	None	None	SC	Salt marshes of the south are of San Francisco Bay.	Unlikely: the project site does not contain suitable habitat for this species. The nearest occurrences of salt-marsh wandering shrew in the CNDDB (2023) search area are approximately 2 miles west of the site.
Alameda island mole	*Scapanus latimanus parvus*	None	None	SC	Only known from Alameda Island; found in a variety of habitats, especially annual and perennial grasslands.	Unlikely: the site does not provide suitable habitat for Alameda Island mole. The nearest occurrence of this species in the CNDDB (2023) search area is approximately 4 miles northwest of the site on Alameda Island.
Reptiles & Amphibians						
San Francisco gartersnake	*Thamnophis sirtalis tetrataenia*	E	E	FP	Vicinity of freshwater marshes, pond and slow-moving streams in San Mateo County and extreme northern Santa Cruz County.	Unlikely: the site does not provide suitable habitat for San Francisco gartersnake. The nearest record of this species in the CNDDB (2023) is over 5 miles from the site.
California tiger salamander	*Ambystoma californiense*	T	T	N/A	Seasonal water bodies without fish (i.e., vernal pools and stock ponds) and grassland/ woodland habitats with summer refugia (i.e., burrows).	Unlikely: the site does not provide suitable habitat for California tiger salamander. The nearest occurrence of this species in the CNDDB (2023) search area is approximately 4.5 northwest of the site. The site is not within designated critical habitat for California tiger salamander (USFWS, 2005b).

TABLE 1

SPECIAL-STATUS PLANT AND WILDLIFE SPECIES DOCUMENTED OR POTENTIALLY-OCCURRING IN THE PROJECT VICINITY

Common Name	Scientific Name	Federal Status[1]	State Status[2]	CNPS List[3]	Habitat	Potential for Occurrence in the Project Site
California red-legged frog	*Rana aurora draytonii*	T	SC	N/A	Lowlands and foothills in or near permanent sources of deep water with dense, shrubby or emergent riparian vegetation.	Unlikely: the site does not provide suitable habitat for California red-legged frog. The nearest record of this species in the CNDDB (2023) is over 5 miles from the site. The site is not within designated critical habitat for this species (USFWS, 2006a).
Alameda whipsnake	*Masticophis lateralis euryxanthus*	T	T	N/A	Scrub, chaparral, grassland, and woodland habitat mosaics. South-facing slopes and ravines.	Unlikely: the site does not contain suitable habitat for Alameda whipsnake. The nearest record of this species in the CNDDB (2023) search area is approximately 4 miles north of the site. The site is not in designated critical habitat for Alameda whipsnake (USFWS, 2006b).
Foothill yellow-legged frog – central coast DPS	*Rana boylii pop. 4*	T	E	N/A	Perennial water bodies (i.e., streams and ponds) with abundant riparian vegetation.	Unlikely: there is no aquatic habitat in the site. The nearest record of foothill yellow-legged frog in the CNDDB (2023) is over 5 miles from the site.
Western pond turtle	*Emys marmorata*	None	SC	N/A	Ponds, marshes, streams, and ditches with emergent aquatic vegetation and basking areas.	Unlikely: the site does not contain suitable habitat for western pond turtle. The nearest record of this species in the CNDDB (2023) is over 5 miles from the site.
Fish						
Green sturgeon	*Acipenser medirostris pop.1*	T	None	N/A	Spawns in the Sacramento, Feather, and Yuba rivers. Non-spawning adults occupy marine/estuarine waters.	Unlikely there is no aquatic habitat in the site. The nearest occurrence of this species in the CNDDB (2023) search area is approximately 1.5 miles southwest of the project site. The site is not in designated critical habitat for green sturgeon (NOAA, 2009).
Steelhead - Central California coast DPS	*Oncorhynchus mykiss irideus pop. 8*	T	None	N/A	Riffle and pool complexes with adequate spawning substrates within Central Valley drainages.	Unlikely there is no aquatic habitat in the site. The nearest record of steelhead in the CNDDB (2023) is over 5 miles from the site. The site is not within designated critical habitat for Central Valley steelhead (NOAA, 2005).

TABLE 1

SPECIAL-STATUS PLANT AND WILDLIFE SPECIES DOCUMENTED OR POTENTIALLY-OCCURRING IN THE PROJECT VICINITY

Common Name	Scientific Name	Federal Status[1]	State Status[2]	CNPS List[3]	Habitat	Potential for Occurrence in the Project Site
Tidewater goby	*Eucyclogobius newberryi*	E	None	N/A	Coastal lagoons and the uppermost brackish water zones of larger estuaries.	Unlikely there is no aquatic habitat in the site. The nearest record of tidewater goby in the CNDDB (2023) is over 5 miles from the site. The site is not within designated critical habitat of this species (USFWS, 2008).
Longfin smelt	*Spirinchus thaleichthys*	None	SC	N/A	Brackish estuarine habitats.	Unlikely there is no aquatic habitat in the site. The nearest occurrence of longfin smelt in the CNDDB (2023) search area is within a mile southwest of the site.
Invertebrates						
Myrtle's silverspot butterfly	*Speyeria zerene myrtleae*	E	None	N/A	Restricted to foggy, coastal dunes and hills of the Point Reyes Peninsula; larval foodplant thought to be *Viola adunca*.	Unlikely: the site does not provide suitable habitat for this species. The nearest record of Myrtle's silverspot butterfly in the CNDDB (2023) is over 5 miles from the site.
Vernal pool fairy shrimp	*Branchinecta lynchi*	T	None	N/A	Vernal pools.	Unlikely there are no vernal pools in the site. There are no occurrences of this species in the CNDDB (2023) search area. The site is not within designated critical habitat of vernal pool fairy shrimp (USFWS 2005a).
Bay checkerspot butterfly	*Euphydryas editha bayensis*	T	None	N/A	Restricted to native grasslands on outcrops of serpentine soil in the vicinity of San Francisco Bay.	Unlikely: the site does not provide suitable habitat for Bay checkerspot butterfly. The nearest occurrence of this species in the CNDDB (2023) search area is approximately 4 miles northeast of the project site.
Monarch – California overwintering population	*Danaus plexippus pop. 1*	C	None	N/A	Variety of habitats in California; monarch larvae dependent on milkweed.	Unlikely: the site does not provide suitable habitat for monarch butterfly; no milkweed was observed in the site. The nearest record of this species in the CNDDB (2023) search area is approximately 1 mile southwest of the site.

TABLE 1

SPECIAL-STATUS PLANT AND WILDLIFE SPECIES DOCUMENTED OR POTENTIALLY-OCCURRING IN THE PROJECT VICINITY

Common Name	Scientific Name	Federal Status[1]	State Status[2]	CNPS List[3]	Habitat	Potential for Occurrence in the Project Site
Crotch bumble bee	*Bombus crotchii*	None	CE	N/A	Open grassland and scrub habitats throughout California; rarely found in the Central Valley.	Unlikely: the site does not provide suitable habitat for Crotch bumble bee. The nearest record of this species in the CNDDB (2023) is over 5 miles from the site.
Western bumble bee	*Bombus occidentalis*	None	CE	N/A	Meadows and grasslands with abundant floral resources, usually found in high elevation.	Unlikely: the site is completely developed and does not provide suitable habitat for western bumble bee. The nearest record of this species in the CNDDB (2023) search area is approximately 2.5 miles east of the site.

1 T= Threatened; E = Endangered; C = Candidate for listing.

2 T = Threatened; E = Endangered; CE = Candidate for Endangered Status; FP = Fully Protected Species; R = Rare; SC=State of California Species of Special Concern.

3 CNPS List 1A includes species that are considered extinct in California; List 1B includes species that are rare, threatened, or endangered in California and elsewhere; List 2 includes plants that are rare, threatened or endangered in California but are more common elsewhere; List 3 is a review list of species for which more information is needed; List 4 is a watch list.

of 16 special-status plants are located within five miles from the site: alkali milk-vetch (*Astragalus tener var. tener*), big-scale balsamroot (*Balsamorhiza macrolepis*), Congdon's tarplant (*Centromadia parryi spp. congdonii*), Point Reyes salty bird's beak (*Chloropyron maritimum ssp. palustre*), robust spineflower (*Chorizanthe robusta var. robusta*), western leatherwood (*Dirca occidentalis*), Jepson's coyote-thistle (*Eryngium jepsonii*), fragrant fritillary (*Fritillaria biflora var. ineziana*), Diablo helianthella (*Helianthella castanea*), Kellogg's horkelia (*Horkelia cuneata var. sericea*), adobe sanicle (*Sanicula maritima*), long-styled sand-spurrey (*Spergularia macrotheca var. longistyla*), most beautiful jewelflower (*Streptanthus albidus ssp. peramoenus*), California seablite (*Suaeda californica*), and saline clover (*Trifolium hydrophilum*). The USFWS IPaC Trust Report includes a few of these same species and also contains California seablite and Contra Costa goldfields (*Lasthenia conjugens*).

Special-status plants generally occur in relatively undisturbed areas in vegetation communities such as vernal pools, marshes and swamps, chenopod scrub, seasonal wetlands, riparian scrub, and areas with unusual soils. The project site is completely developed and essentially void of vegetation. Due to a lack of suitable habitat, it is highly unlikely that any special-status plants occur in the project site.

SPECIAL-STATUS WILDLIFE: The potential for intensive use of the site by special-status wildlife species is extremely low. A total of 40 special-status wildlife species are recorded in the CNDDB (2023) query, with 17 of which have been found within 5 miles of the site. These species include: California Ridgway's rail (*Rallus obsoletus obsoletus*), California least tern (*Sturnula antillarum browni*), California black rail (*Laterallus jamaicensis coturniculus*), western snowy plover (*Charadrius alexandrinus nivosus*), burrowing owl, yellow rail (*Coturnicops noveboracensis*), saltmarsh common yellowthroat (*Geothlypis trichas sinuosa*), Alameda song sparrow (*Melospiza melodia pusillula*), salt-marsh harvest mouse (*Reithrodontomys raviventris*), salt-marsh wandering shrew (*Sorex vagrans halicoetes*), Alameda island mole (*Scapanus latimanus parvus*), California tiger

salamander (*Ambystoma californiense*), Alameda whipsnake (*Masticophis lateralis euryxanthus*), green sturgeon (*Acipenser medirostris*), longfin smelt (*Spirinchus thaleichthys*), Bay checkerspot butterfly (*Euphydryas editha bayensis*), monarch butterfly (*Danaus plexippus*), and western bumble bee (*Bombus occidentalis*).

Western yellow-billed cuckoo (*Coccyzus americanus occidentalis*) and vernal pool fairy shrimp (*Branchinecta lynchi*) are the two additional species that are not recorded in the CNDDB within the search area, but are on the USFWS IPaC Trust Report (Attachment B).

While the project site may have provided habitat for special-status wildlife species at some time in the past, development has substantially modified natural habitats in the greater project vicinity, including those within the site. The site does not provide suitable habitat for any of the special-status species identified in Table 1. It is unlikely that special-status wildlife species occur in the site, primarily due to a lack of suitable habitat.

A few special-status bird species may fly over the site on occasion, but are not be expected to nest in the site or utilize the site more than for occasional perching. Most notably, the site is completely developed and surrounded by industrial and commercial parcels on all sides and does not contain natural habitats necessary for bird nesting such as marsh and beach habitat. Additionally, there are no trees large enough in the site for nesting raptors and there is no suitable burrow habitat in the site for nesting burrowing owl.

The paved site does not provide suitable habitat for any of the special-status rodents in Table 1 including salt-marsh harvest mouse, salt-marsh wandering shrew, and Alameda island mole. The site also does not provide suitable habitat for special-status bats or other special-status mammalian species such as San Francisco dusky-footed woodrat and American badger.

The site does not provide aquatic habitat for California red-legged frog, California tiger salamander, San Francisco gartersnake, western pond turtle, and foothill yellow-legged frog or the mosaic of scrub, chaparral, grassland, and woodland habitats required by Alameda whipsnake. The site does not provide suitable habitat for other special-status reptile or amphibian species.

The site does not provide aquatic habitat for Central Valley steelhead, green sturgeon, tidewater goby, longfin smelt, or other special-status fish.

There are no vernal pools or seasonal wetlands in the site for vernal pool fairy shrimp. The site also does not provide suitable habitat for Myrtle's silverspot butterfly or Bay checkerspot butterfly. Finally, the site lacks the floristic resources needed to support bee species.

CRITICAL HABITAT: The site is not in designated critical habitat of western yellow-billed cuckoo (USFWS, 2021), western snowy plover (USFWS 2012), California red-legged frog (USFWS, 2006a), Alameda whipsnake (USFWS, 2006b), federally listed vernal pool shrimp or plants (USFWS, 2005a), California tiger salamander (USFWS, 2005b), Alameda whipsnake (USFWS, 2006b), robust spineflower (USFWS, 2002a), Santa Cruz tarplant (USFWS, 2002b), green sturgeon (NOAA, 2009), tidewater goby (USFWS, 2008), or any other federally listed species (Attachment E).

WILDLIFE MOVEMENT CORRIDORS: Well-developed riparian corridors are often utilized for movement by wildlife species such as deer, coyote, red fox (*Vulpes vulpes*), and bobcat (*Felis rufus*), as well as a variety of amphibians, reptiles, and fish. There are no wildlife movement corridors in the site.

HABITAT CONSERVATION PLANS: The site is not located in an area with an adopted Habitat Conservation Plan, Natural Community Conservation Plan, or other approved local, regional, or state habitat conservation plan.

Impact Analysis and CEQA Checklist

A review of the six questions regarding the level of the project impacts to biological resources follows:

A. *Would the project have a substantial adverse effect, either directly or through habitat modifications, on any species identified as a candidate, sensitive, or special status species in local or regional plans, policies, or regulations, or by the California Department of Fish and Game or U.S. Fish and Wildlife Service?* No. No special-status plants or potentially suitable habitat for special-status plants was observed in the site. No special-status wildlife species have potential to occur in the site on more than a transitory or very occasional basis.

B. *Would the project Have a substantial adverse effect on any riparian habitat or other sensitive natural community identified in local or regional plans, policies, regulations or by the California Department of Fish and Game or US Fish and Wildlife Service?* No. The site is biologically unremarkable. There is no riparian habitat in the site. There are no sensitive natural communities in the site.

C. *Would the project have a substantial adverse effect on federally protected wetlands as defined by Section 404 of the Clean Water Act (including, but not limited to, marsh, vernal pool, coastal, etc.) through direct removal, filling, hydrological interruption, or other means?* No. No potentially jurisdictional Waters of the U.S. or wetlands of any type were observed in the site. There are also no areas in the site meeting the criteria of Waters of the State, including wetlands.

D. *Would the project interfere substantially with the movement of any native resident or migratory fish or wildlife species or with established native resident or migratory wildlife corridors, or impede the use of native wildlife*

nursery sites? No. There are no riparian habitats or other wildlife movement corridors, or native wildlife nursery sites in the site.

E. *Would the project conflict with any local policies or ordinances protecting biological resources, such as a tree preservation policy or ordinance?* No. The only trees in or immediately adjacent to the site are five ornamental landscape trees.

F. *Would the project conflict with the provisions of an adopted Habitat Conservation Plan, Natural Community Conservation Plan, or other approved local, regional, or state habitat conservation plan?* No. The site is not located in an area with an adopted Habitat Conservation Plan, Natural Community Conservation Plan, or other approved local, regional, or state habitat conservation plan.

Conclusions and Recommendations

- The site is paved and is essentially void of vegetation. There are no aquatic habitats, riparian habitats, sensitive natural communities, wildlife movement corridors, or native wildlife nursery sites in the site; the site is biologically unremarkable.

- There are no potentially jurisdictional Waters of the U.S. or wetlands in the site. There are also no areas in the site meeting the criteria of Waters of the State, including wetlands

- Due to a lack of suitable habitat, it is extremely unlikely that special-status plants occur in the site. No special-status plants were observed and none are expected to occur in the site.

- Due to a lack of suitable habitat and location of the site in an infill area, it is unlikely that special-status wildlife species occur in the site.

- The site is not within designated critical habitat for any federally listed species.

- The site is not located in an area with an adopted Habitat Conservation Plan, Natural Community Conservation Plan, or other approved local, regional, or state habitat conservation plan.

- If project activities, including, but not limited to, staging of materials, tree or vegetation removal, and demolition work, are conducted during nesting bird season (February 15 - September 15), preconstruction nest surveys shall be conducted in and near the project (within 250 feet for large raptors and 100 feet for all other birds) by a qualified biologist within 7 days of the start of construction. Survey shall include, but not be limited to, ground, trees, shrubs, and building areas. If nesting birds are identified during the preconstruction survey, then the project shall be modified (i.e., a no-work exclusion buffer of appropriate size [to be determined by the biologist] shall be erected around active nests) and/or delayed in specific areas, as necessary, to avoid impacts to the identified nests, eggs, and/or young.

We hope this information is useful. Please call me at (209) 745-1159 with any questions.

Sincerely,

Diane S. Moore, M.S.
Principal Biologist

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Attachment A

Project Description & Plans

Project Description – 880 Doolittle Drive

Project Introduction and Location

Prologis LP, the project applicant, is proposing to demolish the existing warehouses and construct a new warehouse on the approximately 14.14-acre property located at 880 Doolittle Drive (APNs # 77A-0741-004-02 and 77A-0741-005-00) in the City of San Leandro (City).

Surrounding Area and Existing Conditions

The project site is bounded by commercial development on the west, north, and east. The southern boundary comprises an existing railroad with commercial development beyond. There are existing commercial use buildings on-site with associated surface parking. The only on-site landscaping are five trees along the northwestern site boundary at Hester Street. Access is currently provided via two existing driveways. A driveway along the site's southwestern boundary provides access from Doolittle Drive and a driveway on the site's northwestern boundary provides exit-only movements from Hester Street. There are existing sidewalks along the Hester Street driveway. There is no pedestrian access from Doolittle Drive. There are Class II bikeways along Doolittle Drive and Adams Avenue.

The project site has a general plan land use designation of General Industrial (IG) and is zoned Industrial General (IG). The IG designation may contain a wide range of manufacturing, transportation, food and beverage processing, technology, warehousing, vehicle storage, office-flex, and distribution uses. The IG zone permits new storage or wholesale/retail distribution facility warehouse uses with the approval of a conditional use permit (CUP).

Proposed Project Characteristics

The proposed project would demolish the existing 211,213[1] square feet of industrial warehouse on-site and construct an approximately 239, 573 square foot (sf) new warehouse[2]. The new warehouse will be a modern facility that would comprise approximately 229,573 sf of warehouse use and 15,000 sf of office use, of which 5,000 sf of office use would be mezzanine level. Sixty-four loading docks would be constructed as part of the proposed warehouse, 27 on the north side and 37 on the southside of the building. The project will be designed to attract a wide variety of tenants. Prologis is exploring the use of environmental friendly construction materials such as Cross Laminated Timber (CLT) in the office space..

The proposed floor area ratio (FAR) is 0.40 and the maximum building height would be 50 feet with an interior clear height of 40 feet. The warehouse would be positioned within the project site to comply with the City minimum frontage setback requirement of 10 feet.

The project proposes several surface improvements, including new landscaping and reconfigured parking areas. The reconfigured parking amounts to 203 automobile parking spaces and 59 trailer parking spaces. Per City requirements (Municipal Code Section 2.12.320), proposed landscaping would comprise five percent of the project site.

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[1] The existing industrial warehouse building is 206,243 sq. ft and there is an adjacent ancillary office building of 4,970 sq ft, totally 211,213 of industrial use on-site.

[2] The proposed building footprint would be approximately 239,573 sf; there would be an additional 5,000 sf of mezzanine office space within the building footprint for a total of 244,573 sf of usable space.

Project access would be provided via three driveways. The two existing driveways (at Doolittle Drive and Hester Street) would be maintained and a third driveway would be added from Hester Street. Both driveways providing access from Hester Street would be 40 feet wide and all driveways would meet minimum width requirements based on intended use.

The General Plan land use designation of General Industrial is intended to contain a wide range of manufacturing, transportation, food and beverage processing, technology, warehousing, vehicle storage, office-flex, and distribution uses. The project has been designed for consistency with the General Plan, compliance with the requisite zoning standards and guidelines, and substantial compliance with the Site Plan Review Standards and findings. Consistent with the intended use called for in the General Plan, the project would develop a warehouse for future tenant use. The proposed warehouse would also be in compliance with the IG zoning of the project site, with approval of a CUP.

Sustainability Features

Prologis LP, the project applicant, has recently set a companywide goal of achieving net zero carbon emissions by 2040. On site power generation, vehicle electrification and carbon reduction are important goals for Prologis. As part of this effort, the proposed building will be solar ready, utilize LED lights, pursue LEED certification, and include equipment for 21 on-site electric vehicle charging stalls to be installed at a future date. Prologis will also target LEED Silver Certification.

Existing Zoning and Proposed Land Use

At the time of publishing, no tenant has been identified for this site, however the project is intended for occupancy by uses consistent with the site's IG General Plan designation, as well as those uses permitted under the site's IG zoning classification. See Table 1: Permitted Zoning Uses below summarizing the potential uses for the proposed project.

Table 1: Permitted Zoning Uses

	Industrial General	
Use Classification	IG	Classification Description, per San Leandro Zoning Code 1.12.108
Building Materials and Services	P	Retailing, wholesaling, or rental of building supplies or equipment. This classification includes lumber yards, tool and equipment sales or rental establishments, plumbing supply businesses, and building contractors' yards, but excludes establishments devoted exclusively to retail sales of paint, hardware, wall coverings, furniture, decorations, electronics, appliances, and home improvement sales, and activities classified under Vehicle/Equipment Repair and Sales classifications, including vehicle towing services
Equipment Sales	P	The sale of large products for commercial and industrial use, e.g. x-ray machines, photocopy machines, etc.
Food Processing, General	P	Establishments engaged in the manufacturing or processing of food or beverages for consumption and wholesale distribution where the processing of food is primarily from raw materials or involves complex food packaging. This classification includes breweries and establishments where the food processing may involve noxious or unpleasant odors.

Food Processing, Limited	P	Food Processing, Limited. Establishments engaged in the manufacturing or processing of food or beverages for consumption and wholesale distribution where the processing of food is primarily from previously prepared foodstuffs or is limited in nature. This classification excludes establishments where the food processing involves noxious or unpleasant odors.
Industry, Custom	P	Establishments primarily engaged in on-site production of goods by hand manufacturing involving the use of hand tools and small-scale equipment.
Industry, General	P	Manufacturing of products, primarily from extracted or raw materials, or bulk storage and handling of such products and materials. Uses in this classification typically involve a high incidence of truck or rail traffic, and/or outdoor storage of products, materials, equipment, or bulk fuel. This classification includes chemical manufacture or processing, laundry and dry cleaning plants, and auto dismantling within an enclosed building. This classification excludes the processing of recycled materials as a facility regulated by Section 4.04.232 Recycling Facilities.
Industry, Research and Development	P	Establishments primarily engaged in the research, development, and controlled production of high-technology electronic, industrial or scientific products or commodities for sale, but excludes uses that may be objectionable as determined by the Zoning Enforcement Official, by reason of production of offensive odor, dust, noise, vibration, or storage of or risk associated with hazardous materials. Uses include biotechnology firms, metallurgy, optical, pharmaceutical and x-ray research, data processing, and non-toxic computer component manufacturers
Parcel Processing and Shipping Centers*	P/AR	Establishments for the processing and/or re-distribution of parcels or products, including but not limited to air and ground cargo receiving and distribution centers. This classification includes “Parcel Processing and Shipping Facilities” that provide incidental warehousing, but excludes “Truck Terminals” and parcel processing that is accessory to industrial, manufacturing or warehousing uses.
Warehouse - Storage Facilities**	P/UP	Distribution and warehousing facilities, such as order-processing fulfillment centers, logistics business, and other facilities that provide for the shipment of an on-site inventory of goods and products directly to retail/wholesale customers or retail stores. This classification includes facilities for the repackaging of consumer goods for shipment to retail stores. (This classification excludes warehousing activity accessory to an industrial and/or manufacturing use, and also excludes “Truck Terminals” and “Parcel Processing and Shipping Centers” with incidental warehousing.)
Warehouse - Wholesale/Retail Distribution***	P/UP	Warehousing facilities primarily used for the storage and/or consolidating of items such as raw materials, private goods, and the intermediary storage of bulk goods intended for further distribution. This classification includes moving and furniture storage companies. (This classification excludes warehousing activity accessory to an industrial and/or manufacturing use and, also, excludes “Truck Terminals” and “Parcel Processing and Shipping Centers” with incidental warehousing.)

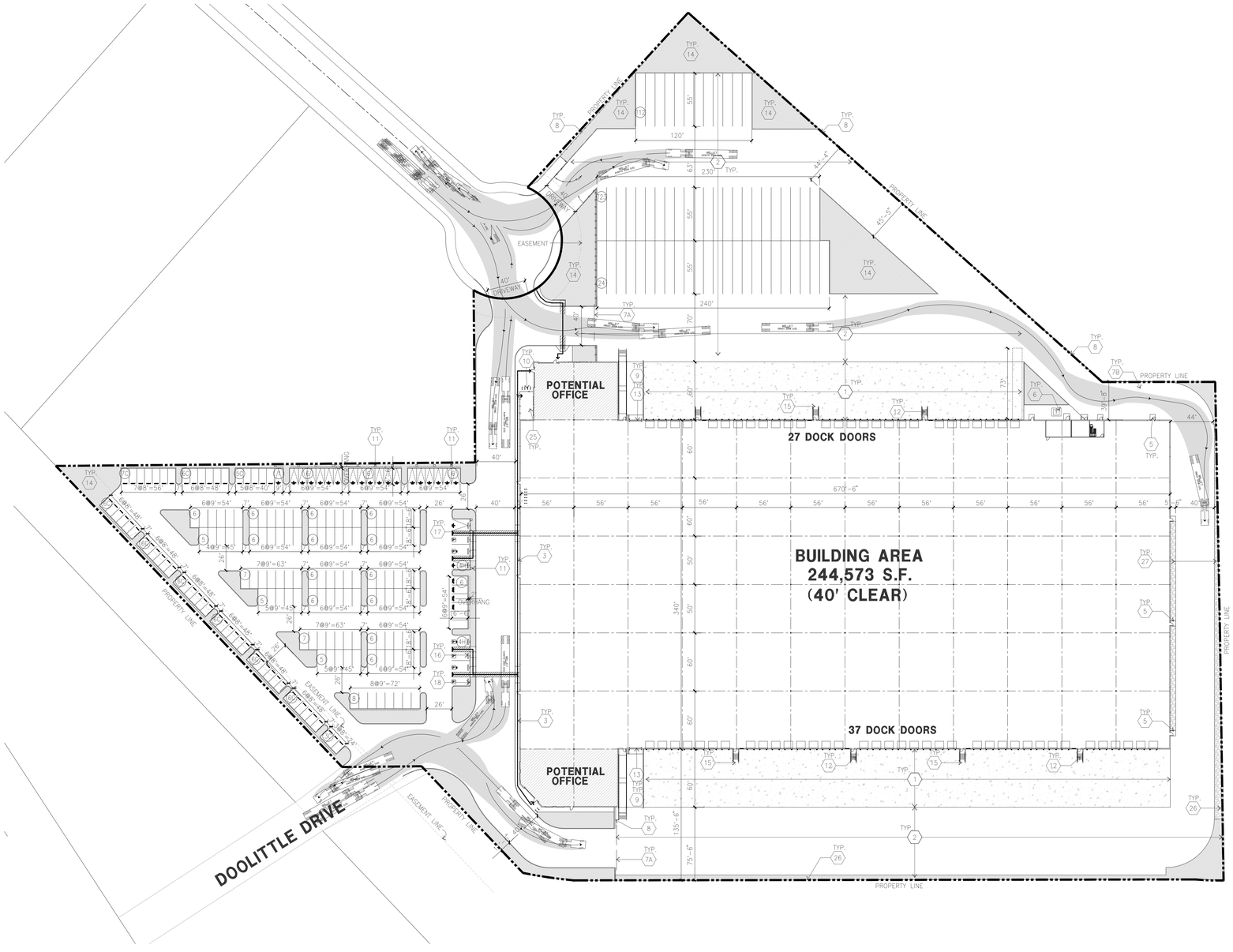
*Pursuant to Zoning Code sections 2.12.200(A)(30) and 2.12.228, a Parcel Processing and Shipping Center is subject to Administrative Review in order to occupy 30,000 SF or more, in a building constructed after August 15, 2001.

**Pursuant to Zoning Code section 2.12.200(A)(36), Warehouse-Storage Facilities require a Conditional Use Permit if an existing building is expanded more than 10,000 SF, or if a new building is proposed.

***Pursuant to Zoning Code section 2.12.200(A)(37), Warehouse - Wholesale/Retail Distribution require a Conditional Use Permit if an existing building is expanded more than 10,000 SF, or if a new building is proposed.

California Environmental Quality Act (CEQA) Compliance

There is an open State Water Resources Control Board cleanup case on the project site. This cleanup case is considered a Cortese List site. Thus, the project cannot utilize a Categorical Exemption (per CEQA Guidelines Section 15300.2 [e]) and will require CEQA evaluation beginning with an Initial Study.



OVERALL SITE PLAN (A)
scale: 1" = 50'-0"

SCALE: 1" = 50'-0"
0 50' 100' 150'
PLAN NORTH TRUE NORTH

SITE PLAN KEYNOTES

1. HEAVY BROOM FINISH CONCRETE PAVEMENT.
2. ASPHALT CONCRETE (AC) PAVING
3. ACCESSIBLE PATH OF TRAVEL
4. DRIVEWAY APRONS
5. 5'-6"X5'-6"X4" THICK CONCRETE EXTERIOR LANDING PAD TYP. AT ALL EXTERIOR MAN DOORS TO LANDSCAPED AREAS. FINISH TO BE MEDIUM BROOM FINISH SLOPE TO BE 1/4" : 12" MAX.
6. APPROXIMATE LOCATION OF TRANSFORMER. CONTRACTOR TO VERIFY
7A. SLIDING GATE
7B. SWING GATE
8. 8' HIGH METAL FENCE
9. CONCRETE RAMP WITH CONCRETE GUARD WALL.
10. BIKE RACK.
11. FUTURE ELECTRIC VEHICLE CHARGER.
12. EXTERIOR METAL STEEL STAIR.
13. 12' x 14' DRIVE-IN DOOR
14. LANDSCAPE.
15. CONC. FILLED GUARD POST 6" DIA. U.N.O. 48" H.
16. PRE-CAST CONC. WHEEL STOP.
17. TRUNCATED DOMES.
18. ACCESSIBLE PARKING STALL SIGN.
19. HARDSCAPE AT ENTRANCE.
20. ACCESSIBLE ENTRY SIGN.
21. PUMP ROOM.
22. 8' HIGH METAL GATE
23. ELECTRICAL ROOM.
24. EXTERIOR TRASH ENCLOSURE
25. OUTDOOR BREAK AREA
26. EXISTING FENCE
27. GRAVEL, SEE CIVIL DRAWINGS

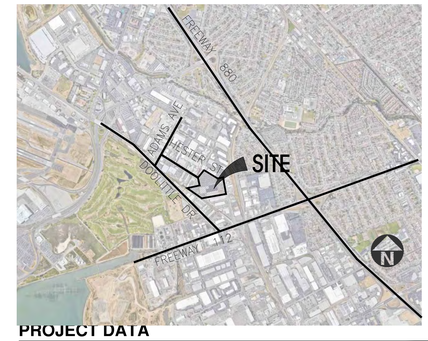
SITE PLAN GENERAL NOTES

1. THE SITE PLAN BASED ON THE SOILS REPORT PREPARED BY GEOTECHNICAL ENGINEER, DATE, PROJECT NUMBER #
2. IF SOILS ARE EXPANSIVE IN NATURE, USE STEEL REINFORCING FOR ALL SITE CONCRETE
3. ALL DIMENSIONS ARE TO THE FACE OF CONCRETE WALL, FACE OF CONCRETE CURB OR GRID LINE U.N.O.
4. SEE "C" PLANS FOR ALL CONCRETE CURBS, GUTTERS AND SWALES
5. PROVIDE STRUCTURAL CALCULATION AND CONSTRUCTION ANCHORAGE DETAIL FOR TRANSFORMER PRIOR TO INSTALLATION.
6. SEE "C" DRAWINGS FOR POINT OF CONNECTIONS TO OFF-SITE UTILITIES. CONTRACTOR SHALL VERIFY ACTUAL UTILITY LOCATIONS.
7. PROVIDE POSITIVE DRAINAGE AWAY FROM BLDG. SEE "C" DRAWINGS.
8. CONTRACTOR TO REFER TO "C" DRAWINGS FOR ALL HORIZONTAL CONTROL DIMENSIONS. SITE PLANS ARE FOR GUIDANCE AND STARTING LAYOUT POINTS.
9. SEE "C"DRAWINGS FOR FINISH GRADE ELEVATIONS.
10. CONCRETE SIDEWALKS TO BE A MINIMUM OF 4" THICK W/ TOOLED JOINTS AT 6' O.C. EXPANSION/CONSTRUCTION JOINTS SHALL BE A MAXIMUM 12' EA. WAY W/ 1:20 MAX. SLOPE. EXPANSION JOINTS TO HAVE COMPRESSIVE EXPANSION FILLER MATERIAL OF 1/4". FINISH TO BE A MEDIUM BROOM FINISH
11. U.N.O. PROVIDE KNOX BOXES AT ALL OFFICE ENTRANCES.
12. PAINT CURBS AND PROVIDE SIGNS TO INFORM OF FIRE LANES AS REQUIRED BY FIRE DEPARTMENT.
13. ON-SITE FIRE MAIN, FIRE SPRINKLER, AND SPRINKLER MONITORING SYSTEM SHALL BE SUBMITTED SEPARATELY TO THE FIRE DEPARTMENT FOR REVIEW AND PERMITTING.
14. ALL VERTICAL MOUNTING POLES OF FENCING SHALL BE CAPPED.
15. LANDSCAPED AREAS SHALL BE DELINEATED WITH A MINIMUM SIX INCHES (6") HIGH CURB
16. ALL INTERIOR AND EXTERIOR WALK SURFACES TO BE NON-SLIP TYPE

SITE LEGEND

- CONCRETE PAVING. SEE "C" DRWGS. FOR THICKNESS
- COMPACT PARKING STALL 8' X 15'
- LANDSCAPED AREA
- STANDARD PARKING STALL (9' X 16.5') W/ 2 FT OVERHANG
- ACCESSIBLE PARKING STALL (9' X 18.5') + 5' W/ ACCESSIBLE AISLE
- CLEAN AIR/VANPOOL/EV CONDUIT STUB FOR FUTURE EV
- ACCESSIBLE PARKING (VAN) STALL (12' X 18.5') + 5' W/ ACCESSIBLE AISLE
- CLEAN AIR/ VANPOOL/EV WITHOUT CONDUIT STUB FOR FUTURE EV
- ACCESSIBLE PATH OF TRAVEL MIN. WIDTH TO BE 48" SLOPE NOT TO EXCEED 5% IN THE DIRECTION OF TRAVEL AND CROSS SLOPE NOT TO EXCEED 2 % . SEE CIVIL DRAWINGS FOR GRADING PLAN

AERIAL MAP



PROJECT DATA

SITE AREA	BLDG	
In s.f.	615,775	s.f.
In acres	14.14	ac
BUILDING AREA		
Office	10,000	s.f.
Office - Mezzanine	5,000	s.f.
Warehouse	224,573	s.f.
TOTAL	244,573	s.f.
footprint	239,573	s.f.
COVERAGE		
Maximum	75%	
Actual	38.1%	
FLOOR AREA RATIO		
Maximum	1.0	
Actual	0.4	
AUTO PARKING REQUIRED		
Office: 1/300 s.f.	50	stalls
Whse: 1/1500 s.f.	150	stalls
TOTAL	200	stalls
AUTO PARKING PROVIDED		
Standard (9' x 18'-6")	117	stalls
Compact (8' x 15' & 8'x 16'-6")	57	stalls
Accessible standard (9' x18'-6")	3	stalls
Accessible Van (12' x 18'-6")	3	stalls
Clean air	4	stalls
-EV standard	19	stalls
-EV van accessible	1	stalls
-EV standard accessible	1	stalls
Total	205	stalls
TRAILER PARKING PROVIDED		
Trailer (10' x 53')	59	stalls
BICYCLE PARKING REQUIRED		
Short term (5% of total stalls)	11	stalls
Long term (5% of total stalls)	11	stalls
BICYCLE PARKING PROVIDED		
Short term (5% of total stalls)	12	stalls
Long term (5% of total stalls)	12	stalls

ZONING ORDINANCE FOR CITY

Zoning Designation - Industrial General (IG)

MAXIMUM BUILDING HEIGHT ALLOWED

35' *(Maximum building height of fifty feet (50') may be approved by the Zoning Enforcement Official)

PROPOSED BUILDING HEIGHT

50'

LANDSCAPE REQUIREMENT

Percentage - 5%

SETBACKS

Building	Landscape
Front-10' Plus 10' for additional 20' heigh	10'
Side - 0' corner side - 10'	0'
Rear - 0'	0'

The site falls within the Oakland Airport Influence Area. Driven by the distance from the runway, and construction including the use of cranes will have to be permitted through the FAA.

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LICENSED ARCHITECT YONG NAM C-29451 3-31-21 RENEWAL DATE STATE OF CALIFORNIA

Owner:

PROLOGIS® Ahead of what's next

3353 Gateway Blvd.
Fremont, CA 94538
tel: (510) 656-1900

Project:

880 DOOLITTLE DR.

San Leandro, CA

Consultants:

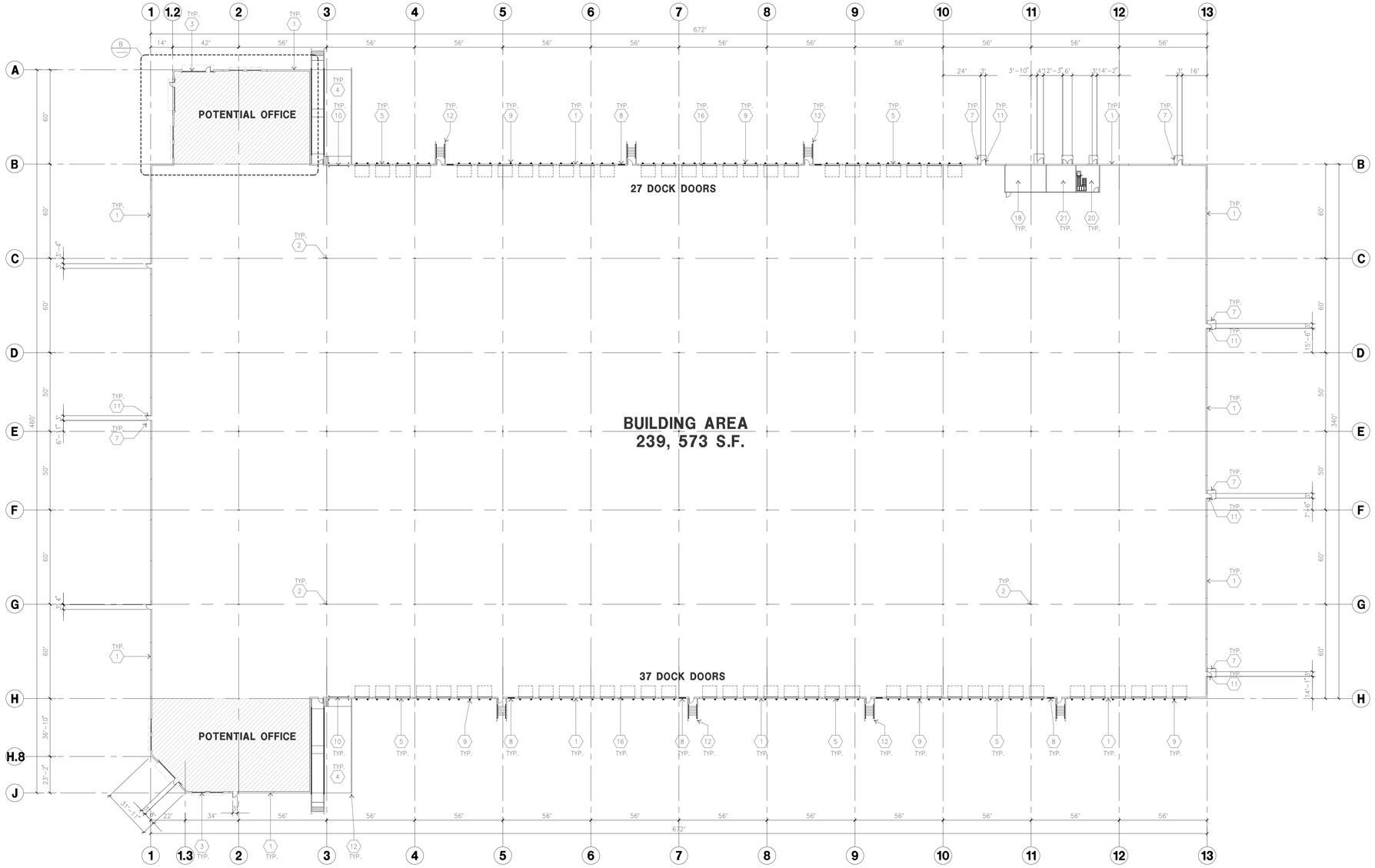
CIVIL	K&W
STRUCTURAL	HSA
MECHANICAL	KRAEMER
PLUMBING	KRAEMER
ELECTRICAL	KRAEMER
LANDSCAPE	GREEN DESIGN
FIRE PROTECTION	HARRINGTON
SOILS ENGINEER	ENGEO

Title: OVERALL SITE PLAN

Project Number: 22493
Drawn by: AH
Date: 07/21/2021
Revision:

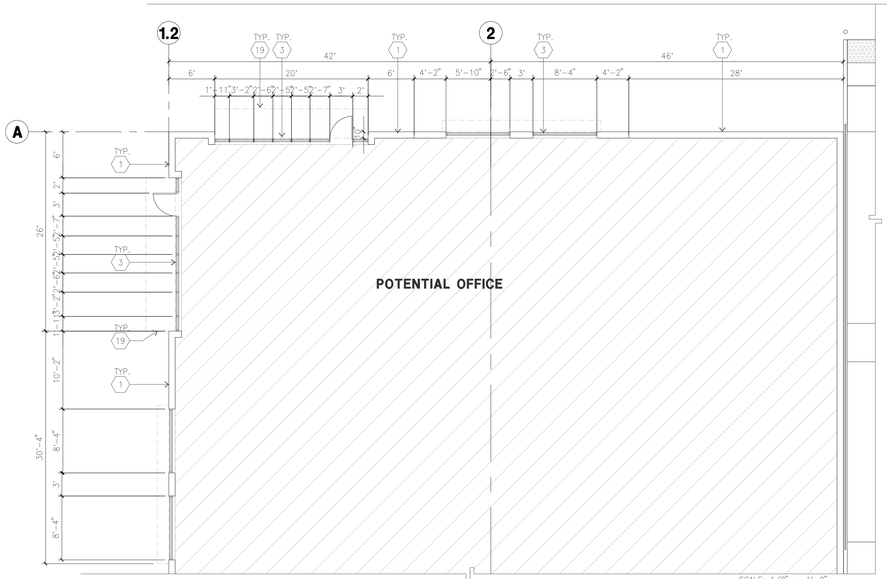
Sheet:

DAB-A1.1



OVERALL FLOOR PLAN (A)
scale: 1" = 30'-0"

SCALE: 1" = 30'-0"
0 30' 60' 90'
TRUE NORTH



ENLARGED FLOOR PLAN (B)
scale: 1/8" = 1'-0"

SCALE: 1/8" = 1'-0"
0 8' 16' 24'
TRUE NORTH

KEYNOTES - FLOOR PLAN

1. CONCRETE TILT-UP PANEL.
2. STRUCTURAL STEEL COLUMN.
3. TYPICAL STOREFRONT SYSTEM WITH GLAZING. SEE ENLARGED PLANS AND ELEVATIONS FOR SIZE, COLOR AND LOCATIONS.
4. CONCRETE RAMP W/ 42" HIGH CONC TILT-UP GUARD WALL OR BUILDING WALL ON BOTH SIDES OF RAMP.
5. 9' X 10' DOCK DOOR, SECTIONAL O.H., STANDARD GRADE. DESIGNED TO RESIST CITY REQUIRED WIND SPEED.
6. EXTERIOR CONCRETE STAIR AND GUARDRAIL .PAINTED METAL HANDRAIL
7. 5'-6"X5'-6"X4". THICK CONCRETE EXTERIOR LANDING PAD TYPICAL AT ALL EXTERIOR MAN DOORS TO LANDSCAPED AREA. FINISH TO BE MEDIUM BLOOM FINISH. SLOPE TO BE 1/4" : 12" MAX.
8. 4'X8' METAL LOUVER.
9. DOCK DOOR BUMPER.
10. 12' X 14' DRIVE THRU. SECTIONAL O.H., STANDARD GRADE. DESIGNED TO RESIST CITY REQUIRED WIND SPEED.
11. 3' X 7' HOLLOW METAL EXTERIOR MAN DOOR. DESIGNED TO RESIST CITY REQUIRED WIND SPEED.
12. CONC. FILLED GUARD POST. 6" DIA. U.N.O., 48"H.
13. EXTERIOR DOWNSPOUT WITH OVERFLOW SCUPPER.
14. INTERIOR ROOF DRAIN & OVERFLOW SCUPPERS.
15. INTERIOR ROOF DRAIN WITH PIPED OVERFLOW.
16. Z GUARD.
17. LONG TERM BIKE RACK. SEE TABULATION FOR CALCULATION. SEE DAB-AD.1 FOR ENLARGED PLAN AND DETAILS
18. ELECTRICAL ROOM.
19. METAL CANOPY ABOVE.
20. ROOF ACCESS LADDER.
21. FIRE PUMP ROOM.
22. CONCRETE STAIR / RAMP WITH BLACK POWDER COATED METAL GUARD RAIL AND HANDRAIL TO COMPLY WITH CBC 11B

GENERAL NOTES - FLOOR PLAN

1. THIS BUILDING IS DESIGNED FOR HIGH PILE STORAGE WITH FIRE ACCESS MAN DOORS AT 125' O.C. MAX. A SEPARATE PERMIT WILL BE REQUIRED FOR ANY RACKING/CONVEYER SYSTEMS. INSURE HEAT AND SMOKE VENTS AS REQ'D COMPLY WITH TABLE 910.3 CBC
2. FIRE HOSE LOCATIONS SHALL BE APPROVED PER FIRE DEPARTMENT.
3. SEE "C" DRAWINGS FOR FINISH SURFACE ELEVATIONS.
4. WAREHOUSE INTERIOR CONCRETE WALLS ARE PAINTED WHITE. COLUMNS ARE TO RECEIVE PRIMER ONLY. ALL GYP. BD. WALLS IN WAREHOUSE TO RECEIVE 1 COAT OF WHITE TO COVER.
5. THE BUILDING FLOOR SLAB IS FLAT/SLOPED. SEE CIVIL.
6. SLOPE POUR STRIP 1/2" TO EXTERIOR AT ALL MANDOOR EXITS. SEE "S" DRAWINGS FOR POUR STRIP LOCATION.
7. PROVIDE 6" DIA. CONCRETE BOLLARD AT ALL FIRE RISER AND UNPROTECTED INTERIOR ROOF DRAIN.
8. ALL DIMENSIONS ARE TO THE FACE OF CONCRETE PANEL WALL, GRIDLINE, OR FACE OF STUD U.N.O.
9. SEE CIVIL DRAWINGS FOR POINT OF CONNECTIONS TO OFF-SITE UTILITIES. CONTRACTOR TO VERIFY ACTUAL UTILITY LOCATIONS. PLUMBING/ELECTRICAL COORDINATION.
10. FOR DOOR TYPES AND SIZES, SEE DETAIL SHEET A5.1. NOTE: ALL DOORS PER DOOR SCHEDULE ARE FINISH OPENINGS.
11. CONTRACTOR TO PROTECT AND KEEP THE FLOOR SLAB CLEAN. ALL EQUIPMENT TO BE DIAPERED INCLUDING CARS AND TRUCKS.
12. ALL EXIT MAN DOORS IN WAREHOUSE TO HAVE ILLUMINATED EXIT SIGN HARDWARE.
13. HIGHLY FLAMMABLE AND COMBUSTIBLE MATERIAL SHALL NOT BE USED OR STORED IN THIS BUILDING.
14. PROVIDE FIRE EXTINGUISHERS AT LOCATIONS DETERMINED BY FIRE DEPARTMENT.
15. EACH EXTERIOR EXIT DOOR SHALL BE IDENTIFIED BY A TACTILE EXIT SIGN WITH THE WORDS "EXIT". THE MOUNTING HEIGHT FOR SUCH SIGNAGE SHALL BE 60" FROM FINISH FLOOR LEVEL TO THE CENTER OF THE SIGN.
16. AFFIX AN INTERNATIONAL ACCESSIBILITY SYMBOL ON ALL ACCESSIBLE ENTRANCES PER CBC 11B-216.6
17. ALL INTERIOR AND EXTERIOR WALKING SURFACES TO BE NON-SLIP TYPE

FLOOR SLAB AND POUR STRIPS REQ.

THESE NOTES ARE VERY MIN. REQUIREMENT. SEE "S" DWGS FOR ADDITIONAL REQUIREMENTS

1. FLOOR COMPACTION – 95%
2. TRENCH COMPACTION – 90%
3. BUILDING FLOOR SLAB: SEE STRUCTURAL DRAWINGS FOR DETAILS.
4. CONTRACTOR TO BUILD FOR CLASS V FLOOR PER A.C.I. 302-R-96
5. CONCRETE SLAB TO HAVE STEEL FLOAT HARD TROWEL BURNISHED FINISH.
6. CONTRACTOR TO CURE SLAB TO BE WET CURING USING BURLINE FOR 7 DAYS MIN.
7. ALL EQUIPMENT & MOVING VEHICLES SHALL BE DIAPERED.
8. NO CRANES, CONCRETE TRUCKS, OR ANYTHING HEAVIER WILL BE PLACED ON THE SLAB.
9. SLAB TO BE FF50 FL35 MEASURED WITHIN 24 HOURS.
10. NO FLY ASH IN THE CONCRETE
11. WHERE [hatched] INDICATED, PROVIDE VAPOR BARRIER (15 MIL STEGO OR EQUAL) CONFORMING TO ASTM E 1745 UNDER THE CONCRETE SLAB. PROVIDE SAND PER SOILS ENGINEER OR MANUFACTURER'S RECOMMENDATION. CONCRETE SLAB IN OFFICE AREAS, WHERE SAND OVER VISQUEEN ARE REQUIRED, SHALL BE NATURALLY HYDRATED WITHOUT USE OF BURLENE, CURING COMPOUND, OR RELEASE AGENTS.
12. SEAL CONCRETE SLAB W/ "LAPIDOLITH" SEALER
13. SHURESEAL,LAPIDOLITH OR APPROVED EQUAL FLOOR SEALER APPLIED ONE COAT AT END OF JOB IN ACCORDANCE WITH MANUFACTURER'S RECOMMENDATION.
14. NO PERMANENT GREASE PEN PANEL MARKS ON FLOOR SLAB. NO RED CAULK MARKS. ALL CONSTRUCTION MARKS TO BE REMOVED BEFORE SEALING.
15. 10' POUR STRIP AT TRUCK DOOR. 4FT. MAX. ELSEWHERE.
16. ALL FLOOR SLAB NAIL OR BRACE FRAME HOLES FILLED WITH APPROVED 2 PART EPOXY COMPOUND TO MATCH CONCRETE COLOR. PEGA BOND LV 2000,BURKE EPOXY INJECTION RESIN OR EQUAL.
17. PROVIDE FIRE EXTINGUISHERS PER FIRE DEPARTMENT REQUIREMENT.
18. MM-80 AT SPEED BAY ONLY, PRICE AS ADDITIONAL ALTERNATE

PAINT NOTES

INTERIOR GYP. BD. WALLS : SINGLE COAT OF ACRYLIC PAINT FRAZEE "WHITE" ON INTERIOR WALLS.

ALL STRUCTURAL STEEL MEMBER INC. COLUMNS, LEDGERS, JOISTS, & GIRDERS SHALL HAVE LIGHT GRAY SHOP PRIMER.

INTERIOR STEEL COLUMNS : PAINT OSHA YELLOW 10" A.F.F. ABOVE 12' APPLY ONE COAT OF WHITE PAINT

PIPE BOLLARDS SHALL HAVE TWO COATS OF ENAMEL "OSHA YELLOW".

EXTERIOR CONCRETE WALLS WILL HAVE ONE COAT OF PRIMER AND ONE FINISH COAT OF PAINT.

ALL EXTERIOR HOLLOW METAL DOORS AND DOCK DOORS TO HAVE ONE COAT OF EXTERIOR PRIMER AND TWO COATS OF ACRYLIC PAINT TO MATCH ADJACENT SURFACE COLORS. PIPE STEEL HANDRAILS SHALL HAVE TWO COATS OF LATEX PAINT.

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LICENSED ARCHITECT
YONG NAM
C-29451
3-31-21
RENEWAL DATE
STATE OF CALIFORNIA

Owner:

PROLOGIS®
Ahead of what's next

3353 Gateway Blvd.
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Project:

880 DOOLITTLE DR.

San Leandro, CA

Consultants:

CIVIL	K&W
STRUCTURAL	HSA
MECHANICAL	KRAEMER
PLUMBING	KRAEMER
ELECTRICAL	KRAEMER
LANDSCAPE	GREEN DESIGN
FIRE PROTECTION	HARRINGTON
SOILS ENGINEER	ENGEO

Title: OVERALL FLOOR PLAN

Project Number: 22493
Drawn by: AH
Date: 07/21/2021
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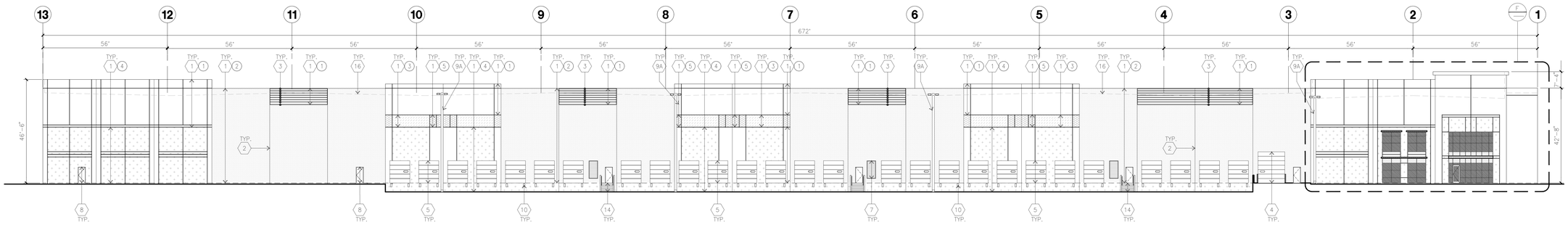
DAB-A2.1



NORTH ELEVATION (A)
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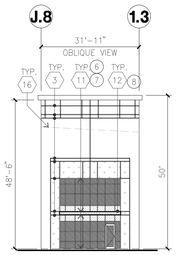

SOUTHWEST ELEVATION (C)
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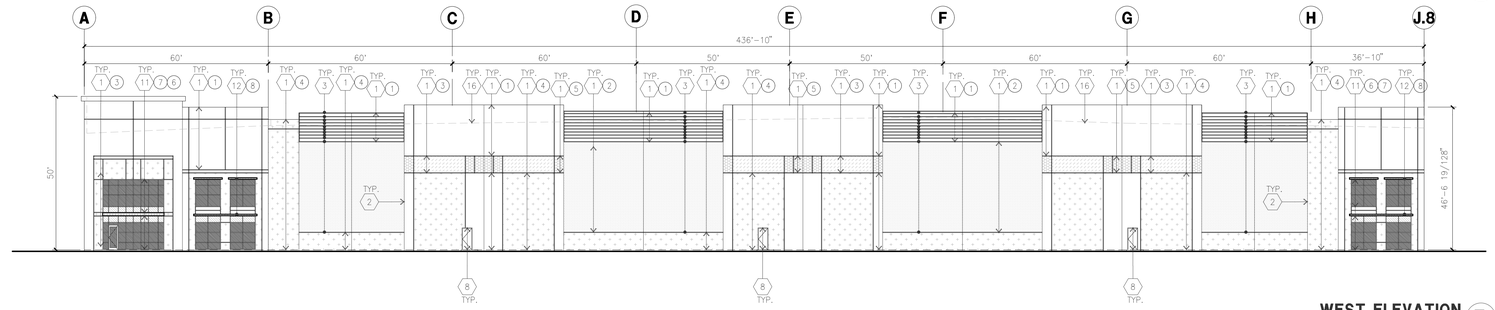
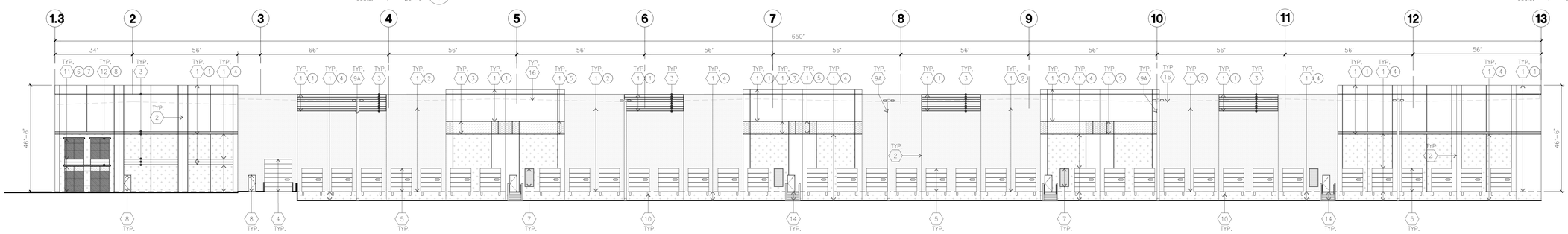
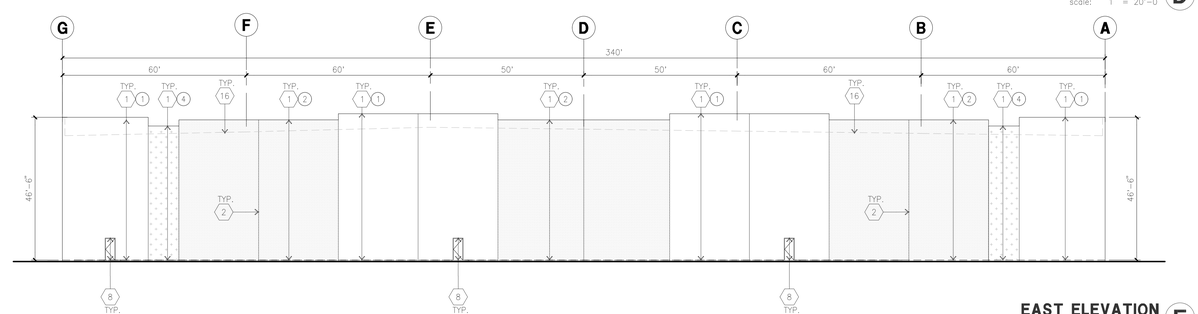


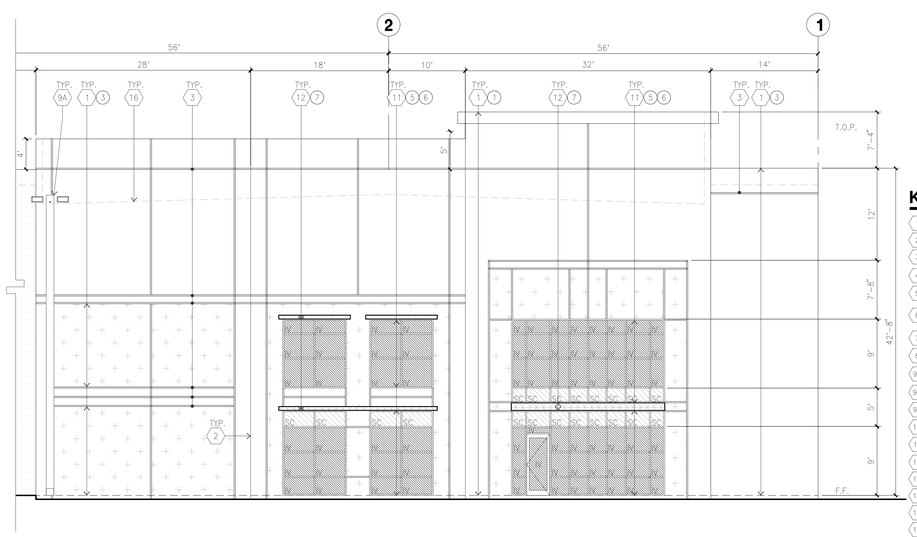
WEST ELEVATION (B)
scale: 1" = 20'-0"



SOUTH ELEVATION (D)
scale: 1" = 20'-0"



EAST ELEVATION (E)
scale: 1" = 20'-0"



ENLARGED NORTH ELEVATION (F)
scale: 1/8" = 1'-0"

KEYNOTES - ELEVATIONS

1. CONCRETE TILT-UP PANEL(PAINTED).
2. PANEL JOINT.
3. PANEL REVEAL.
4. OVERHEAD DOOR @ DRIVE THRU. PROVIDE COMPLETE WEATHER-STRIPPING PROTECTION ALL AROUND.
5. OVERHEAD DOOR @ DOCK HIGH. PROVIDE COMPLETE WEATHER-STRIPPING PROTECTION ALL AROUND.
6. EXTERIOR CONCRETE STAIR / RAMP WITH METAL GUARDRAIL AND HANDRAIL
7. METAL LOUVER. PAINT TO MATCH BUILDING COLOR.
8. HOLLOW METAL DOORS.
9A. EXTERIOR DOWNSPOUT WITH OVERFLOW SCUPPERS.
9B. INTERIOR ROOF DRAIN AND OVERFLOW SCUPPER.
9C. INTERIOR ROOF DRAIN WITH PIPED OVERFLOW
10. DOCK BUMPER.
11. ALUMINUM STOREFRONT FRAMING WITH TEMPERED GLAZING.
12. METAL TUBE STEEL CANOPY
13. TOP OF ROOF LINE BEYOND
14. EXTERIOR CONCRETE STAIR AND GUARDRAIL, METAL HANDRAIL.
15. TRASH ENCLOSURE
16. ROOF LINE

GENERAL NOTES - ELEVATIONS

A. ALL PAINT COLOR CHANGES TO OCCUR AT INSIDE CORNERS UNLESS NOTED OTHERWISE.
B. ALL PAINT FINISHES ARE TO BE FLAT UNLESS NOTED OTHERWISE.
C. T.O.P. EL.= TOP OF PARAPET ELEVATION.
D. F.F. = FINISH FLOOR ELEVATION.
E. STOREFRONT CONSTRUCTION: GLASS, METAL ATTACHMENTS AND LINTELS SHALL BE DESIGNED TO RESIST CITY REQUIRED WIND SPEED. EXPOSURE "C". WINDS. CONTRACTOR SHALL SUBMIT SHOP DRAWINGS PRIOR TO INSTALLATION.
F. CONCRETE SHALL FULLY PAINT SEVERAL CONCRETE PANEL W/ SELECTED COLORS. LOCATION TO BE SELECTED BY ARCHITECT, ARCHITECT AND OWNER SHALL APPROVE PRIOR TO PAINTING REMAINDER OF BUILDING.
G. BACK SIDE OF PARAPETS TO HAVE SMOOTH FINISH AND BE PAINTED WITH ELASTOMERIC PAINT.
H. FOR SPANDREL GLAZING, ALLOW SPACE BEHIND SPANDREL TO BREATH.
J. USE ADHESIVE BACK WOOD STRIPS FOR ALL REVEAL FORMS.
K. THE FIRST COAT OF PAINT TO BE ROLLED-ON AND THE SECOND COAT TO BE SPRAYED-ON
L. EXTERIOR STAIRS AND RAMPS TO MATCH BUILDING COLOR. RAILINGS TO MATCH BUILDING COLOR.
M. ALL DOORS TO BE PAINTED THE SAME COLOR AS THE ADJACENT WALL.

COLOR SCHEDULE - ELEVATIONS

PLEASE SEE THE COLORED ELEVATIONS

1	CONC. TILT-UP PANEL	PAINT BRAND	SHERWIN WILLIAMS PLD-9 PURE WHITE SHERWIN WILLIAMS SW 7005 PURE WHITE
2	CONC. TILT-UP PANEL	PAINT BRAND	SHERWIN WILLIAMS PLD-10 FIRST STAR SHERWIN WILLIAMS SW 7646 FIRST STAR
3	CONC. TILT-UP PANEL	PAINT BRAND	SHERWIN WILLIAMS PLD-8 SABLE SHERWIN WILLIAMS SW7015 REPOSE GRAY
4	CONC. TILT-UP PANEL	PAINT BRAND	SHERWIN WILLIAMS PLD-7 LIQUORICE TINT SHERWIN WILLIAMS SW7016 MINDFUL GRAY
5	CONC. TILT-UP PANEL	PAINT BRAND	SHERWIN WILLIAMS PLD-5 NEW DARK GREEN W1 8Y 4/42 G2 34Y 33/32, 1/128 L1 8Y 7/32, 1/64, 1/128 R2 58/32, 1/64, 1/128 Y3 4Y 48/32, 1/128
6	MULLIONS	PAINT BRAND	CLEAR ANODIZED
7	GLAZING	COLOR	EVERGREEN GLAZING
8	METAL CANOPY	MATCH COLOR WITH	SHERWIN WILLIAMS SW 7673 PEWTER CAST
9	DOORS	PAINT BRAND	MATCH BUILDING COLOR OR FACTORY FINISH WHITE FOR DOCK DOOR, TYP

ALL PAINT COLORS ABOVE ARE BASED ON A-100 EXTERIOR FLAT 5 GALLON FORMULA

GLAZING LEGEND

NOTE: ALL EXTERIOR AND INTERIOR GLAZING SHALL BE TEMPERED.

IV INSULATED VISION GLASS
SPANDREL GLASS WITH CONCRETE BEHIND
SINGLE LITE VISION GLASS
SPANDREL GLASS WITH KNOCK OUT PANEL BEHIND, SEE STRUCTURAL DRAWINGS

IV : INSULATED VISION GLASS
1/4" ATLANTICA + 1/4" SUNGATE 400 CLEAR
1" INSULATED GLASS UNIT WITH 1/2" AIRSPACE AND 1/4" LITES
U: 0.27 SHGC: 0.35 VLT: 58%
MINIMUM VT TO BE 0.42 PER 2016 CEC TABLE 140.3-B

SC : SPANDREL WITH CONCRETE BEHIND
1/4" CLEAR WITH ATLANTIC WATERS OPACICOAT PAINTED ON REFLECTIVE. INSTALLED ON CONCRETE.

V : VISION GLASS
1/4" ATLANTICA

S : SPANDREL
1/4" CLEAR WITH ATLANTIC WATERS OPACICOAT PAINTED ON REFLECTIVE. INSTALLED ON OPENINGS.

MULLIONS : ANODIZED CLEAR.

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LICENSED ARCHITECT YONG NAM C-29451 3-31-21 RENEWAL DATE STATE OF CALIFORNIA

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Project:

880 DOOLITTLE DR.

San Leandro, CA

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MECHANICAL	KRAEMER
PLUMBING	KRAEMER
ELECTRICAL	KRAEMER
LANDSCAPE	GREEN DESIGN
FIRE PROTECTION	HARRINGTON
SOILS ENGINEER	ENGEO

Title: ELEVATIONS

Project Number: 22493
Drawn by: AH
Date: 07/21/2021
Revision:

Sheet:

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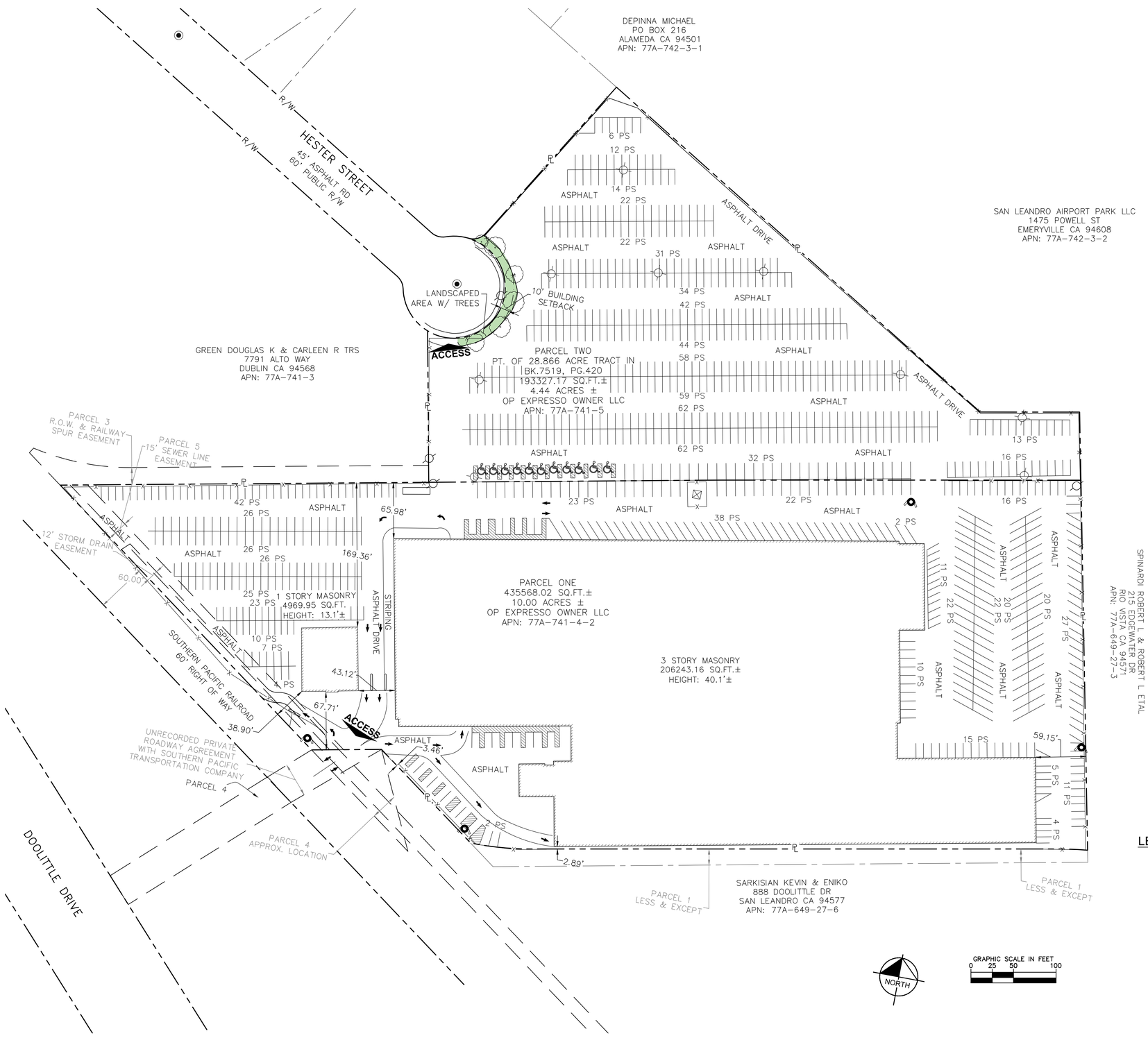

LEGEND

- RIGHT OF WAY
- PROPERTY LINE
- EASEMENT
- BUILDING SETBACK
- FENCE
- FOUND 3" BRASS DISK
- POWER POLE
- LIGHT POLE
- TREE
- FIRE HYDRANT
- EXISTING LANDSCAPING

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ELECTRICAL	KRAEMER
LANDSCAPE	GREEN DESIGN
FIRE PROTECTION	HARRINGTON
SOILS ENGINEER	ENGEO

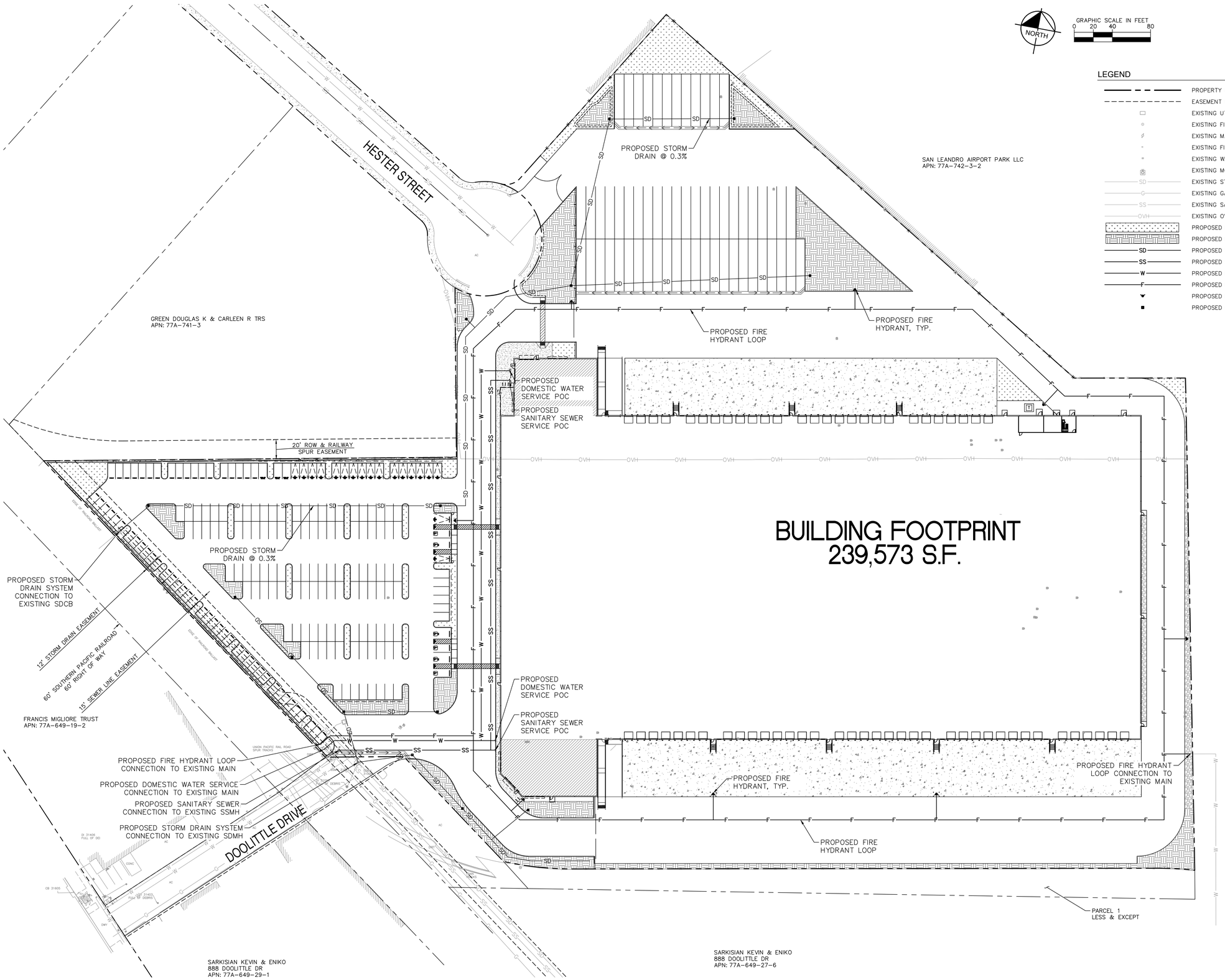
Title:

EXISTING CONDITIONS

Project Number:	097115002
Drawn by:	ASK
Date:	08/01/2022
Revision:	08/01/2022

Sheet:

C1.0



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PLUMBING	KRAEMER
ELECTRICAL	KRAEMER
LANDSCAPE	GREEN DESIGN
FIRE PROTECTION	HARRINGTON
SOILS ENGINEER	ENGEO

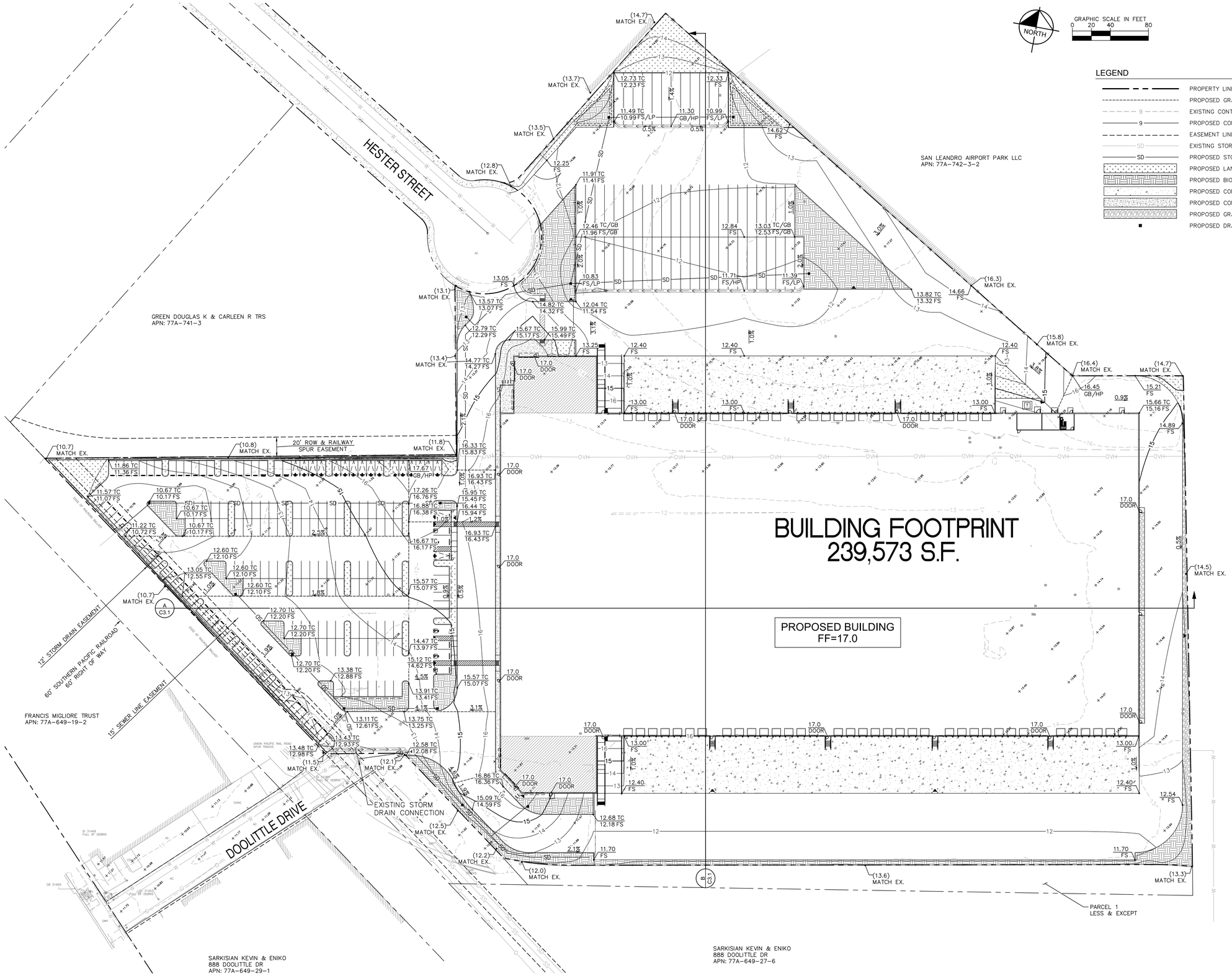
Title:

PRELIMINARY UTILITY PLAN

Project Number: 097115002
Drawn by: ASK
Date: 08/01/2022
Revision:

Sheet:

C2.0



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PLUMBING	KRAEMER
ELECTRICAL	KRAEMER
LANDSCAPE	GREEN DESIGN
FIRE PROTECTION	HARRINGTON
SOILS ENGINEER	ENGEO

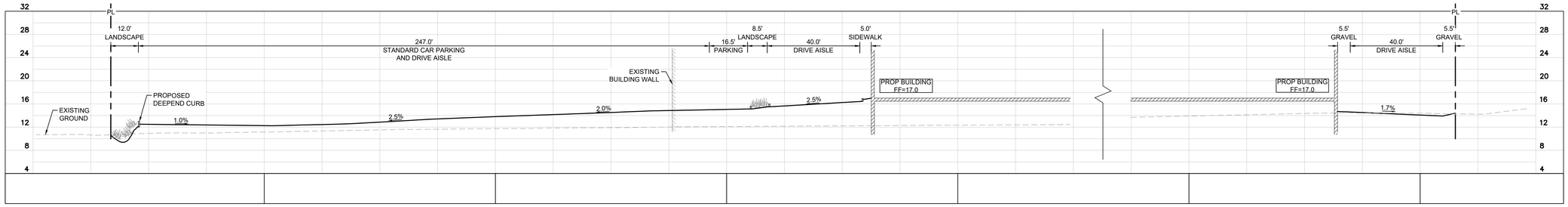
Title:

PRELIMINARY GRADING PLAN

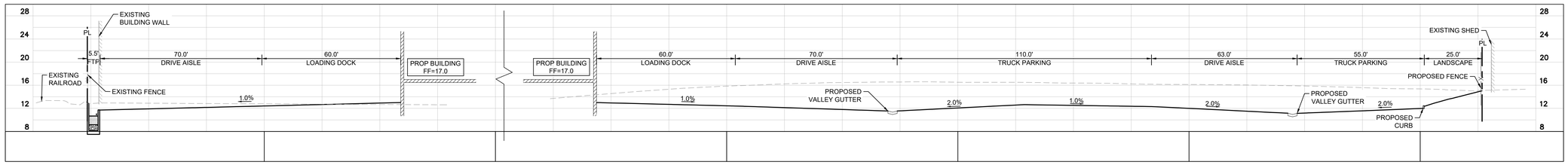
Project Number: 097115002
Drawn by: ASK
Date: 08/01/2022
Revision:

Sheet:

C3.0



SECTION A-A EAST-WEST
HORIZONTAL SCALE 1" = 20'
VERTICAL SCALE 1" = 8'
A



SECTION B-B NORTH-SOUTH
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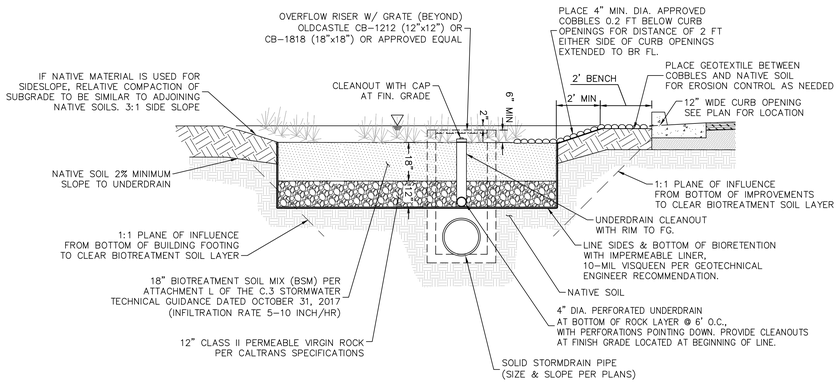
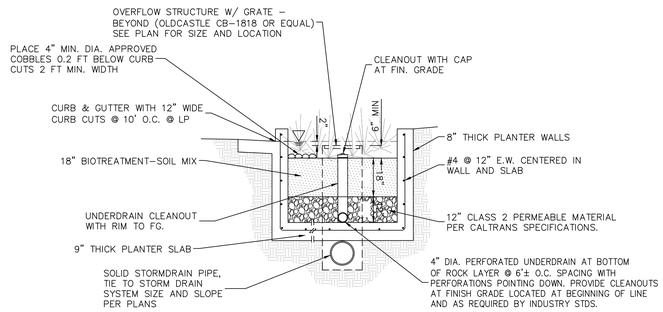
VERTICAL SCALE 1" = 8'
B



A BIORETENTION DETAIL
NTS



B FLOW THROUGH PLANTER DETAIL
NTS

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ELECTRICAL	KRAEMER
LANDSCAPE	GREEN DESIGN
FIRE PROTECTION	HARRINGTON
SOILS ENGINEER	ENGEO

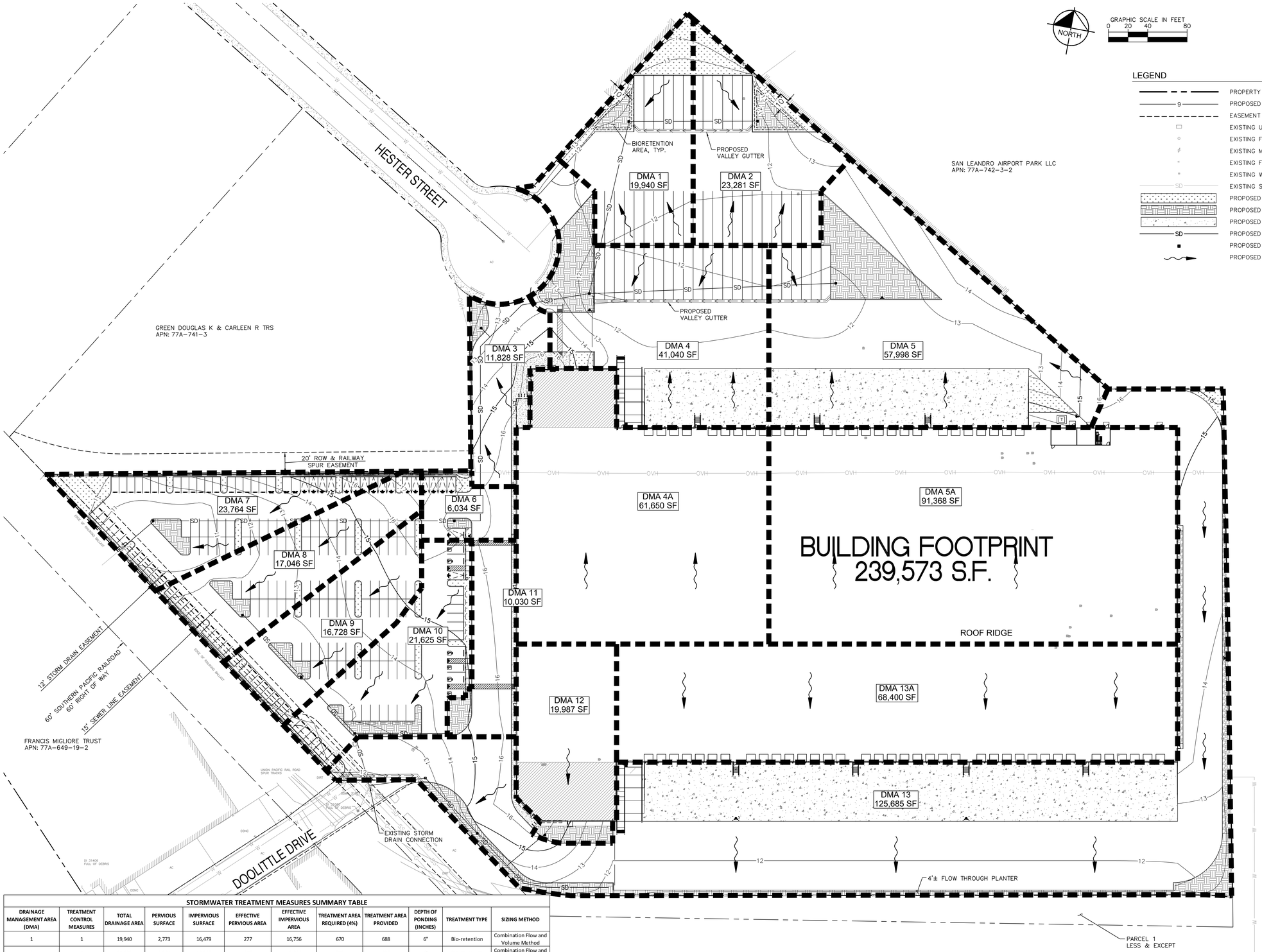
Title:

GRADING CROSS SECTIONS

Project Number:	097115002
Drawn by:	ASK
Date:	08/01/2022
Revision:	

Sheet:

C3.1



STORMWATER TREATMENT MEASURES SUMMARY TABLE

DRAINAGE MANAGEMENT AREA (DMA)	TREATMENT CONTROL MEASURES	TOTAL DRAINAGE AREA	PERVIOUS SURFACE	IMPERVIOUS SURFACE	EFFECTIVE PERVIOUS AREA	EFFECTIVE IMPERVIOUS AREA	TREATMENT AREA REQUIRED (4%)	TREATMENT AREA PROVIDED	DEPTH OF PONDING (INCHES)	TREATMENT TYPE	SIZING METHOD
1	1	19,940	2,773	16,479	277	16,756	670	688	6"	Bio-retention	Combination Flow and Volume Method
2	2	23,281	2,864	19,590	286	19,876	795	827	6"	Bio-retention	Combination Flow and Volume Method
3	3	11,828	325	10,989	33	11,022	441	514	6"	Bio-retention	Combination Flow and Volume Method
4, 4A	4	102,690	629	98,073	63	98,136	3,925	3,988	6"	Bio-retention	Combination Flow and Volume Method
5, 5A	5	149,366	1,121	142,287	112	142,399	5,696	5,958	6"	Bio-retention	Combination Flow and Volume Method
6	6	6,034	582	5,233	58	5,291	212	219	6"	Bio-retention	Combination Flow and Volume Method
7	7	23,764	4,022	18,999	402	19,401	582*	743	6"	Bio-retention	Combination Flow and Volume Method
8	8	17,046	1,359	15,070	136	15,206	608	617	6"	Bio-retention	Combination Flow and Volume Method
9	9	16,728	1,351	14,719	135	14,854	594	657	6"	Bio-retention	Combination Flow and Volume Method
10	10	21,625	1,500	18,732	150	18,882	755	1,393	6"	Bio-retention	Combination Flow and Volume Method
11	11	10,030	0	9,191	0	9,191	368	838	6"	Bio-retention	Combination Flow and Volume Method
12	12	19,987	0	18,772	0	18,772	751	1,215	6"	Bio-retention	Combination Flow and Volume Method
13, 13A	13	194,085	4,029	182,268	403	182,671	7,307	7,790	6"	Bio-retention	Combination Flow and Volume Method

*TREATMENT AREA REQUIRED IS CALCULATED AT 3%

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ELECTRICAL	KRAEMER
LANDSCAPE	GREEN DESIGN
FIRE PROTECTION	HARRINGTON
SOILS ENGINEER	ENGEO

Title:
PRELIMINARY STORMWATER CONTROL PLAN

Project Number: 097115002
Drawn by: ASK
Date: 08/01/2022
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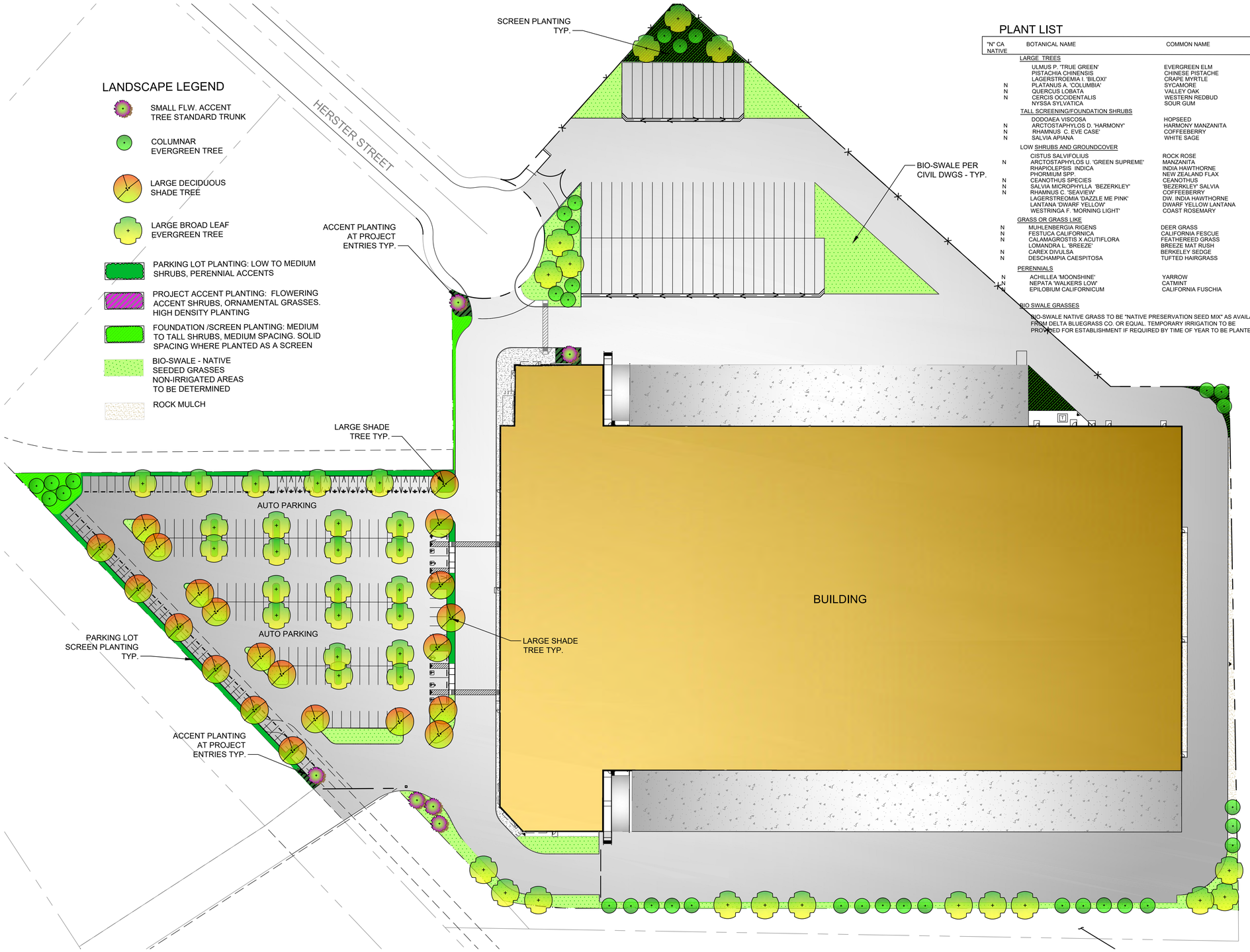

LANDSCAPE LEGEND

- SMALL FLW. ACCENT TREE STANDARD TRUNK
- COLUMNAR EVERGREEN TREE
- LARGE DECIDUOUS SHADE TREE
- LARGE BROAD LEAF EVERGREEN TREE
- PARKING LOT PLANTING: LOW TO MEDIUM SHRUBS, PERENNIAL ACCENTS
- PROJECT ACCENT PLANTING: FLOWERING ACCENT SHRUBS, ORNAMENTAL GRASSES. HIGH DENSITY PLANTING
- FOUNDATION /SCREEN PLANTING: MEDIUM TO TALL SHRUBS, MEDIUM SPACING. SOLID SPACING WHERE PLANTED AS A SCREEN
- BIO-SWALE - NATIVE SEEDED GRASSES NON-IRRIGATED AREAS TO BE DETERMINED
- ROCK MULCH

PLANT LIST

"N" CA NATIVE	BOTANICAL NAME	COMMON NAME	SIZE	WATER REGIME /ZONE	MATURE HABIT H X W
	LARGE TREES				
	ULMUS P. 'TRUE GREEN'	EVERGREEN ELM	15 GAL. or B&B	L	40' X 40"
	PISTACHIA CHINENSIS	CHINESE PISTACHE	15 GAL. or B&B	L	50' X 40'
	LAGERSTROEMIA I. 'BILOXI'	CRAPE MYRTLE	15 GAL. or B&B	L	20' X 12' STANDARD
N	PLATANUS A. 'COLUMBIA'	SYCAMORE	15 GAL. or B&B	L	50' X 40'
N	QUERCUS LOBATA	VALLEY OAK	15 GAL. or B&B	L	80' X 50'
N	CERCIS OCCIDENTALIS	WESTERN REDBUD	15 GAL. or B&B	L	20' X 20'
	NYSSA SYLVATICA	SOUR GUM	15 GAL. or B&B	L	35' X 20'
	TALL SCREENING/FOUNDATION SHRUBS				
	DODOAEA VISCOSA	HOPSEED	5 GAL.	L	10' X 10'
N	ARCTOSTAPHYLOS D. 'HARMONY'	HARMONY MANZANITA	5 GAL.	L	7' X 5'
N	RHAMNUS C. EVE CASE'	COFFEEBERRY	5 GAL.	L	5' X 6'
N	SALVIA APIANA	WHITE SAGE	5GAL	L	3' X 5'
	LOW SHRUBS AND GROUNDCOVER				
	CISTUS SALVIFOLIUS	ROCK ROSE	5 GAL.	L	2' X 4'
N	ARCTOSTAPHYLOS U. 'GREEN SUPREME'	MANZANITA	5 GAL.	L	1' X 3'
	RHAPIOLEPSIS INDICA	INDIA HAWTHORNE	5 GAL.	L	3' X 4'
	PHORMIUM SPP.	NEW ZEALAND FLAX	5 GAL.	L	VARIES
N	CEANOTHUS SPECIES	CEANOTHUS	5 GAL.	L	VARIES'
N	SALVIA MICROPHYLLA 'BEZERKLEY'	'BEZERKLEY' SALVIA	5 GAL.	L	2' X 3'
N	RHAMNUS C. 'SEAVIEW'	COFFEEBERRY	5 GAL.	L	2' X 4'
	LAGERSTREOMIA 'DAZZLE ME PINK'	DW. INDIA HAWTHORNE	5GAL.	L	3' X 3'
	LANTANA 'DWARF YELLOW'	DWARF YELLOW LANTANA	5 GAL	L	2' X 5'
	WESTRINGA F. 'MORNING LIGHT'	COAST ROSEMARY	5 GAL	L	3' X 3'
	GRASS OR GRASS LIKE				
N	MUHLENBERGIA RIGENS	DEER GRASS	1 GAL.	L	4' X 4'
N	FESTUCA CALIFORNICA	CALIFORNIA FESCUE	1 GAL.	L	1' X 2
N	CALAMAGROSTIS X ACUTIFLORA	FEATHEREED GRASS	1 GAL	L	2' X 3'
	LOMANDRA L. 'BREEZE'	BREEZE MAT RUSH	1 GAL	L	3' X 3'
N	CAREX DIVULSA	BERKELEY SEDGE	1 GAL.	L	2' X 2'
N	DESCHAMPIA CAESPITOSA	TUFTED HAIRGRASS	1 GAL.	L	2' X 2'
	PERENNIALS				
N	ACHILLEA 'MOONSHINE'	YARROW	1 GAL.	L	1' X 3'
N	NEPATA 'WALKERS LOW'	CATMINT	1 GAL.	L	1' X 2'
N	EPILOBIUM CALIFORNICUM	CALIFORNIA FUSCHIA	1 GAL	L	1' X 3'

BIO SWALE GRASSES

BIO-SWALE NATIVE GRASS TO BE "NATIVE PRESERVATION SEED MIX" AS AVAILABLE FROM DELTA BLUEGRASS CO. OR EQUAL. TEMPORARY IRRIGATION TO BE PROVIDED FOR ESTABLISHMENT IF REQUIRED BY TIME OF YEAR TO BE PLANTED.

IRRIGATION

ALL IRRIGATION IS TO BE POINT SOURCE DRIP OR DEEP ROOT BUBBLER IRRIGATION PROVIDED PER PANT. IRRIGATION WILL MEET THE MWELO AND ARTICLE 19 OF THE ZONING CODE. IRRIGATION PLANS AND DETAILS TO BE SUBMITTED WITH PERMIT DRAWINGS.

LANDSCAPE CALCULATIONS

TOTAL SITE AREA : 616,401 S.F. (14.15 ACRES)
LANDSCAPE AREA REQUIRED (5% OF SITE): 30,820 S.F.
LANDSCAPE AREA PROVIDED (7%): 41,592 S.F.
TOTAL AUTO PARKING SPACES PROVIDED: 205
PARKING AREA TREES REQUIRED 1/6 SPACES: 34
PARKING AREA TREES PROVIDED: 45

WATER EFFICIENT LANDSCAPE REQUIREMENTS

ALL IRRIGATION EITHER PERMANENT OR TEMPORARY
SHALL BE AUTOMATIC TIMER CONTROLLED. PERMANENTLY
IRRIGATED SHRUBS AND TREES SHALL BE DRIP IRRIGATED.
AUTOMATIC CONTROLLER w/ ET DATA, REPEAT CYCLING
IRRIGATION ZONES PER PLANT WATER REQUIREMENTS
RAIN SENSOR SENSOR TO BE SPECIFIED
SOIL AMENDMENTS TO BE INCORPORATED
PLANTER SURFACE AREAS TO BE MULCHED
WATER USAGE TO MEET STATE WATER EFFICIENT LANDSCAPE STANDARD

I HAVE COMPLIED WITH THE CRITERIA OF THE MODEL WATER EFFICIENT LANDSCAPE ORDINANCE AND APPLIED THEM FOR THE EFFICIENT USE OF WATER IN THE LANDSCAPE AND IRRIGATION DESIGN PLANS.

BARBARA M. HATCH RLA ASLA

north

1" = 40'

0 40 80 120

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PLUMBING	
ELECTRICAL	
LANDSCAPE	GREEN DESIGN
FIRE PROTECTION	
SOILS ENGINEER	

Title:
PRELIMINARY LANDSCAPE PLAN

Project Number: 18339
Drawn by: BH
Date: 3-15-21
Revision:
REVISED 7-27-22

Sheet:
LC1

880 DOOLITTLE PRELIMINARY HYDROZONE INFORMATION TABLE

Please complete the hydrozone table(s) for each hydrozone. Use as many tables as necessary to provide the square footage of landscape area per hydrozone.

Table reflects irrigated areas only. Rock areas with no plant material and non-irrigated seeded bio-swales. are excluded in the landscape square footage.

Hydrozone*	Zone or Valve	Irrigation Method**	Area (Sq. Ft.)	% of Landscape Area
LW Trees and Shrubs High Density	Project Accent Planting	Drip/Bubbler	1,011	8%
LW Trees and Shrubs Med Density	Parking Lot Planting	Drip/Bubbler	7,220	20%
LW Shrubs Low Density	Screen/Foundation Planting	Drip	7,598	27%
LW Bio-Retention	Seeded native grasses	Spray	25,763	45%
	Total		41,592 sq.ft.	100%

Hydrozone
HW = High Water Use Plants
MW = Moderate Water Use Plants
LW = Low Water Use Plants
VLW= Very Low Water Us –Non Irrigated
Trees are assumed a 40 s.f. area for watering each.

Maximum Applied Water Allowance Calculations for New and Rehabilitated Non-Residential Landscapes

Enter value in Pale Blue Cells

Tan Cells Show Results

Messages and Warnings

Click on the blue cell on right to Pick City Name	**Union City**	**Name of City**
ET_o of City from Appendix A	44.20	ET_o (inches/year)
	25,763	Overhead Landscape Area (ft^2)
	15,829	Drip Landscape Area (ft^2)
	0	SLA (ft^2)
Total Landscape Area	41,592	
Results:		
(ET_o) x (0.62) x [(0.45 x LA) + (1.0 - 0.45) X SLA)]	-	Gallons
	-	Cubic Feet
	-	HCF
	-	Acre-feet
	-	Millions of Gallons
MAWA calculation incorporating Effective Precipitation (Optional)		
Precipitation (Optional)		
ET_o of City from Appendix A	44	ET_o (inches/year)
Total Landscape Area	41,592	LA (ft^2)
Special Landscape Area	0	SLA (ft^2)
	18	Total annual precipitiation (inches/year)
Enter Effective Precipitation	4.50	Eppt (in/yr)(25% of total annual precipitation)
Results:		
MAWA = $[(ET_o - Eppt) \times (0.62)] \times [(0.45 \times LA) + ((1.0 - 0.45) \times SLA)]$	460,685	Gallons
	61,584.89	Cubic Feet
	615.85	HCF
	1.41	Acre-feet
	0.46	Millions of Gallons

Estimated Total Water Use

Equation: ETWU = ET_o x 0.62 x [((PF x HA)/IE) + SLA]; Considering precipitation ETWA = (ETo-Eppt) x 0.62 x [((PF x HA)/IE) +SLA]

Enter values in Pale Blue Cells

Tan Cells Show Results

Messages and Warnings

Irrigation Efficiency Default Value for overhead 0.75 and drip 0.81.

Plant Water Use Type	Plant Factor
Very Low	0 - 0.1
Low	0.2 - 0.3
Medium	0.4 - 0.6
High	0.7 - 1.0
SLA	1.0

Hydrozone	Select System From the Dropdown List click on cell below	Plant Water Use Type (s) (low, medium, high)	Plant Factor (PF)	Hydrozone Area (HA) (ft^2) Without SLA	Enter Irrigation Efficiency (IE)	(PF x HA (ft^2))/IE
Zone 1	Drip	Low	0.30	1,011	0.81	374
Zone 2	Drip	Low	0.30	7,220	0.81	2,670
Zone 3	Overhead Spray	Medium	0.50	25,763	0.75	6,873
Zone 4	Drip	Very Low	0.10	7,598	0.81	938
Zone 5						
Zone 6						
Zone 7						
Zone 8						
Zone 9						
Zone 10						
Zone 11						
Zone 12						
Zone 13						
Zone 14						
Zone 15						
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Zone 89						
Zone 90						
Zone 91						
Zone 92						
Zone 93						
Zone 94						
Zone 95						
Zone 96						
Zone 97						
Zone 98						
Zone 99						
Zone 100						
						9,865
		SLA		0		0
		Sum		41,592		

Results			
MAWA =	460,685	ETWU =	245,396 Gallons
			32,798 Cubic Feet
			327.96 HCF
			0.75 Acre-feet
			0.25 Millions of Gallons

ETWU complies with MAWA

HPA architecture

hpa, inc.
18831 bardeen avenue - ste.
#100 irvine, ca
92612
tel: 949•863•1770
fax: 949•863•0851
email: hpa@hparchs.com

GreenDesign
Landscape Architects, Inc.
1464 Popinjay Drive
Reno, NV.
p: 775 829 1364
email: bhatch00@charter.net

Owner:

PROLOGIS®
Ahead of what's next

3353 Gateway Blvd.
Fremont, CA 94538
tel: (510) 656-1900
fax: (510) 656-4320

Project:

PROLOGIS
SAN LEANDRO

880 Doolittle Drive
San Leandro, CA

Consultants:

CIVIL	KIMLEY-HORN
STRUCTURAL	
MECHANICAL	
PLUMBING	
ELECTRICAL	
LANDSCAPE	GREEN DESIGN
FIRE PROTECTION	
SOILS ENGINEER	

Title:
PRELIMINARY
MWELO

Project Number:	18339
Drawn by:	BH
Date:	3-15-21

Revision:
REVISED 7-27-22

Sheet:

LC1.2

Attachment B

CNDDB Summary Report and Exhibits

& USFWS IPaC Trust Report

Selected Elements by Scientific Name

California Department of Fish and Wildlife

California Natural Diversity Database

Query Criteria: Quad IS (Oakland East (3712272) OR Oakland West (3712273) OR Las Trampas Ridge (3712271) OR Hunters Point (3712263) OR San Leandro (3712262) OR Hayward (3712261) OR San Mateo (3712253) OR Redwood Point (3712252) OR Newark (3712251))

Species	Element Code	Federal Status	State Status	Global Rank	State Rank	Rare Plant Rank/CDFW SSC or FP
Acanthomintha duttonii San Mateo thorn-mint	PDLAM01040	Endangered	Endangered	G1	S1	1B.1
Accipiter cooperii Cooper's hawk	ABNKC12040	None	None	G5	S4	WL
Accipiter striatus sharp-shinned hawk	ABNKC12020	None	None	G5	S4	WL
Acipenser medirostris pop. 1 green sturgeon - southern DPS	AFCAA01031	Threatened	None	G2T1	S1	
Agelaius tricolor tricolored blackbird	ABPBXB0020	None	Threatened	G1G2	S2	SSC
Allium peninsulare var. franciscanum Franciscan onion	PMLIL021R1	None	None	G4G5T2	S2	1B.2
Ambystoma californiense pop. 1 California tiger salamander - central California DPS	AAAAA01181	Threatened	Threatened	G2G3T3	S3	WL
Amsinckia lunaris bent-flowered fiddleneck	PDBOR01070	None	None	G3	S3	1B.2
Anomobryum julaceum slender silver moss	NBMUS80010	None	None	G5?	S2	4.2
Antrozous pallidus pallid bat	AMACC10010	None	None	G4	S3	SSC
Aquila chrysaetos golden eagle	ABNKC22010	None	None	G5	S3	FP
Arctostaphylos pallida pallid manzanita	PDERI04110	Threatened	Endangered	G1	S1	1B.1
Ardea herodias great blue heron	ABNGA04010	None	None	G5	S4	
Asio flammeus short-eared owl	ABNSB13040	None	None	G5	S2	SSC
Astragalus pycnostachyus var. pycnostachyus coastal marsh milk-vetch	PDFAB0F7B2	None	None	G2T2	S2	1B.2
Astragalus tener var. tener alkali milk-vetch	PDFAB0F8R1	None	None	G2T1	S1	1B.2
Athene cunicularia burrowing owl	ABNSB10010	None	None	G4	S2	SSC
Balsamorhiza macrolepis big-scale balsamroot	PDAST11061	None	None	G2	S2	1B.2

Species	Element Code	Federal Status	State Status	Global Rank	State Rank	Rare Plant Rank/CDFW SSC or FP
Bombus caliginosus obscure bumble bee	IIHYM24380	None	None	G2G3	S1S2	
Bombus crotchii Crotch bumble bee	IIHYM24480	None	Candidate Endangered	G2	S2	
Bombus occidentalis western bumble bee	IIHYM24252	None	Candidate Endangered	G3	S1	
Calicina minor Edgewood blind harvestman	ILARA13020	None	None	G1	S1	
Calochortus pulchellus Mt. Diablo fairy-lantern	PMLIL0D160	None	None	G2	S2	1B.2
Carex comosa bristly sedge	PMCYP032Y0	None	None	G5	S2	2B.1
Centromadia parryi ssp. congdonii Congdon's tarplant	PDAST4R0P1	None	None	G3T2	S2	1B.1
Charadrius nivosus nivosus western snowy plover	ABNNB03031	Threatened	None	G3T3	S3	SSC
Chloropyron maritimum ssp. palustre Point Reyes salty bird's-beak	PDSCR0J0C3	None	None	G4?T2	S2	1B.2
Chorizanthe cuspidata var. cuspidata San Francisco Bay spineflower	PDPGN04081	None	None	G2T1	S1	1B.2
Chorizanthe robusta var. robusta robust spineflower	PDPGN040Q2	Endangered	None	G2T1	S1	1B.1
Cicindela hirticollis gravida sandy beach tiger beetle	IICOL02101	None	None	G5T2	S2	
Circus hudsonius northern harrier	ABNKC11011	None	None	G5	S3	SSC
Cirsium fontinale var. fontinale fountain thistle	PDAST2E161	Endangered	Endangered	G2T1	S1	1B.1
Clarkia concinna ssp. automixa Santa Clara red ribbons	PDONA050A1	None	None	G5?T3	S3	4.3
Clarkia franciscana Presidio clarkia	PDONA050H0	Endangered	Endangered	G1	S1	1B.1
Collinsia multicolor San Francisco collinsia	PDSCR0H0B0	None	None	G2	S2	1B.2
Corynorhinus townsendii Townsend's big-eared bat	AMACC08010	None	None	G4	S2	SSC
Coturnicops noveboracensis yellow rail	ABNME01010	None	None	G4	S2	SSC
Danaus plexippus plexippus pop. 1 monarch - California overwintering population	IILEPP2012	Candidate	None	G4T1T2Q	S2	
Dipodomys heermanni berkeleyensis Berkeley kangaroo rat	AMAFD03061	None	None	G4T1	S2	

Species	Element Code	Federal Status	State Status	Global Rank	State Rank	Rare Plant Rank/CDFW SSC or FP
Dipodomys venustus venustus Santa Cruz kangaroo rat	AMAFD03042	None	None	G4T1	S1	
Dirca occidentalis western leatherwood	PDTHY03010	None	None	G2	S2	1B.2
Efferia antiochi Antioch efferian robberfly	IIDIP07010	None	None	G1G2	S1S2	
Elanus leucurus white-tailed kite	ABNKC06010	None	None	G5	S3S4	FP
Emys marmorata western pond turtle	ARAAD02030	None	None	G3G4	S3	SSC
Eriogonum luteolum var. caninum Tiburon buckwheat	PDPGN083S1	None	None	G5T2	S2	1B.2
Eriophyllum latilobum San Mateo woolly sunflower	PDAST3N060	Endangered	Endangered	G1	S1	1B.1
Eryngium aristulatum var. hooveri Hoover's button-celery	PDAPI0Z043	None	None	G5T1	S1	1B.1
Eryngium jepsonii Jepson's coyote-thistle	PDAPI0Z130	None	None	G2	S2	1B.2
Eucyclogobius newberryi tidewater goby	AFCQN04010	Endangered	None	G3	S3	
Eumops perotis californicus western mastiff bat	AMACD02011	None	None	G4G5T4	S3S4	SSC
Euphydryas editha bayensis Bay checkerspot butterfly	IILEPK4055	Threatened	None	G5T1	S3	
Extriplex joaquinana San Joaquin spearscale	PDCHE041F3	None	None	G2	S2	1B.2
Falco peregrinus anatum American peregrine falcon	ABNKD06071	Delisted	Delisted	G4T4	S3S4	
Fissidens pauperculus minute pocket moss	NBMUS2W0U0	None	None	G3?	S2	1B.2
Fritillaria biflora var. ineziana Hillsborough chocolate lily	PMLIL0V0M1	None	None	G3G4T1	S1	1B.1
Fritillaria liliacea fragrant fritillary	PMLIL0V0C0	None	None	G2	S2	1B.2
Geothlypis trichas sinuosa saltmarsh common yellowthroat	ABPBX1201A	None	None	G5T3	S3	SSC
Gilia capitata ssp. chamissonis blue coast gilia	PDPLM040B3	None	None	G5T2	S2	1B.1
Gilia millefoliata dark-eyed gilia	PDPLM04130	None	None	G2	S2	1B.2
Gonidea angulata western ridged mussel	IMBIV19010	None	None	G3	S2	

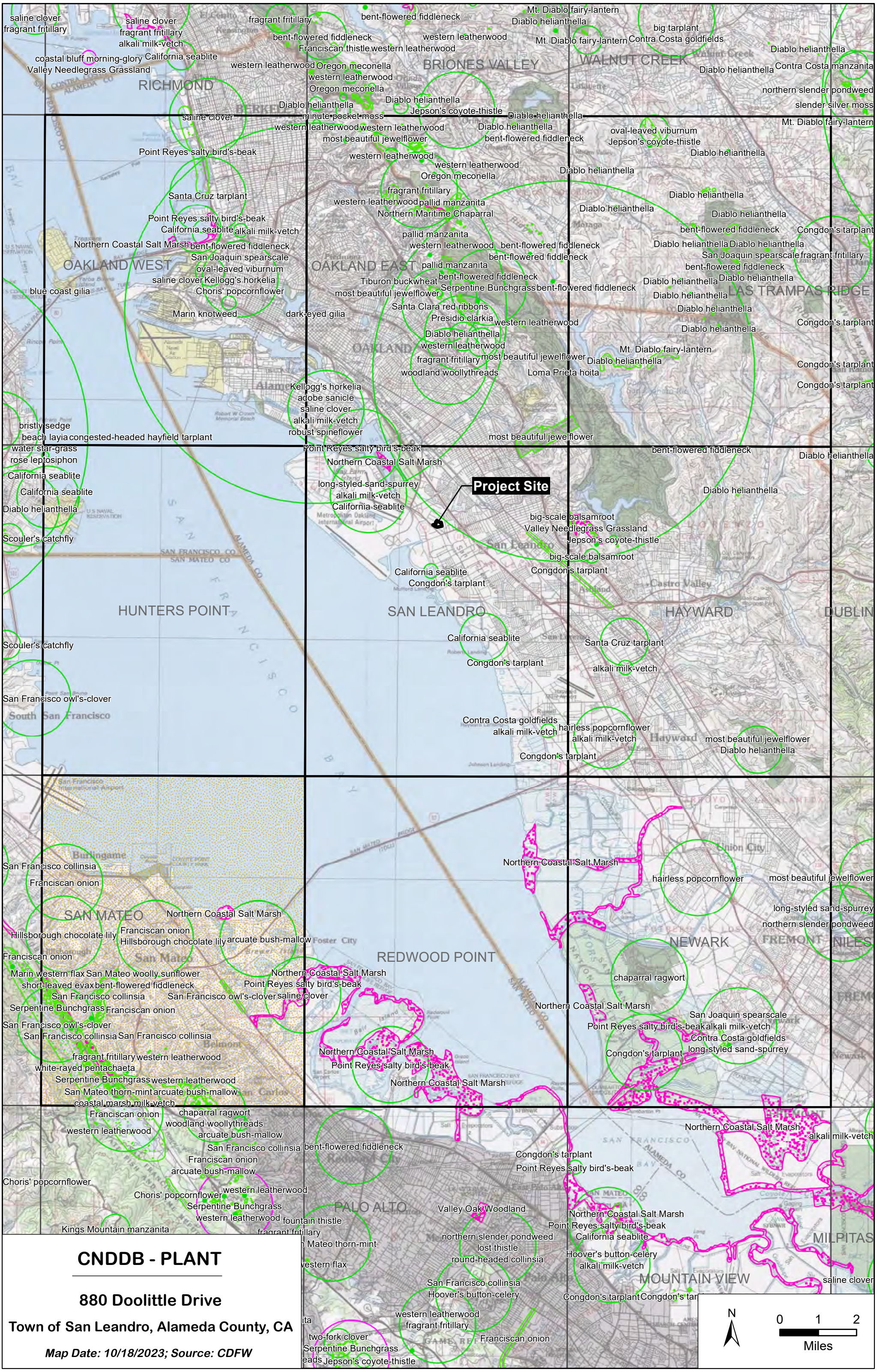
Species	Element Code	Federal Status	State Status	Global Rank	State Rank	Rare Plant Rank/CDFW SSC or FP
Helianthella castanea Diablo helianthella	PDAST4M020	None	None	G2	S2	1B.2
Helminthoglypta nickliniana bridgesi Bridges' coast range shoulderband	IMGASC2362	None	None	G3T1	S1S2	
Hemizonia congesta ssp. congesta congested-headed hayfield tarplant	PDAST4R0W1	None	None	G5T2	S2	1B.2
Hesperevax sparsiflora var. brevifolia short-leaved evax	PDASTE5011	None	None	G4T3	S3	1B.2
Hesperolinon congestum Marin western flax	PDLIN01060	Threatened	Threatened	G1	S1	1B.1
Heteranthera dubia water star-grass	PMPON03010	None	None	G5	S2	2B.2
Hoita strobilina Loma Prieta hoita	PDFAB5Z030	None	None	G2?	S2?	1B.1
Holocarpha macradenia Santa Cruz tarplant	PDAST4X020	Threatened	Endangered	G1	S1	1B.1
Horkelia cuneata var. sericea Kellogg's horkelia	PDROS0W043	None	None	G4T1?	S1?	1B.1
Hydrochara ricksecker Ricksecker's water scavenger beetle	IICOL5V010	None	None	G2?	S2?	
Ischnura gemina San Francisco forktail damselfly	IIODO72010	None	None	G2	S2	
Lasionycteris noctivagans silver-haired bat	AMACC02010	None	None	G3G4	S3S4	
Lasiurus cinereus hoary bat	AMACC05032	None	None	G3G4	S4	
Lasthenia conjugens Contra Costa goldfields	PDAST5L040	Endangered	None	G1	S1	1B.1
Laterallus jamaicensis coturniculus California black rail	ABNME03041	None	Threatened	G3T1	S2	FP
Layia carnosa beach layia	PDAST5N010	Threatened	Endangered	G2	S2	1B.1
Leptosiphon rosaceus rose leptosiphon	PDPLM09180	None	None	G1	S1	1B.1
Lessingia arachnoidea Crystal Springs lessingia	PDAST5S0C0	None	None	G2	S2	1B.2
Malacothamnus arcuatus arcuate bush-mallow	PDMAL0Q0E0	None	None	G2Q	S2	1B.2
Masticophis lateralis euryxanthus Alameda whipsnake	ARADB21031	Threatened	Threatened	G4T2	S2	
Meconella oregana Oregon meconella	PDPAP0G030	None	None	G2G3	S2	1B.1

Species	Element Code	Federal Status	State Status	Global Rank	State Rank	Rare Plant Rank/CDFW SSC or FP
Melospiza melodia pusillula Alameda song sparrow	ABPBXA301S	None	None	G5T2T3	S2	SSC
Microcina leei Lee's micro-blind harvestman	ILARA47040	None	None	G1	S1	
Microcina lumi Lum's micro-blind harvestman	ILARA47050	None	None	G1	S1	
Monolopia gracilens woodland woollythreads	PDAST6G010	None	None	G3	S3	1B.2
Nannopterum auritum double-crested cormorant	ABNFD01020	None	None	G5	S4	WL
Neotoma fuscipes annectens San Francisco dusky-footed woodrat	AMAFF08082	None	None	G5T2T3	S2S3	SSC
Northern Coastal Salt Marsh Northern Coastal Salt Marsh	CTT52110CA	None	None	G3	S3.2	
Northern Maritime Chaparral Northern Maritime Chaparral	CTT37C10CA	None	None	G1	S1.2	
Nycticorax nycticorax black-crowned night heron	ABNGA11010	None	None	G5	S4	
Nyctinomops macrotis big free-tailed bat	AMACD04020	None	None	G5	S3	SSC
Oncorhynchus mykiss irideus pop. 8 steelhead - central California coast DPS	AFCHA0209G	Threatened	None	G5T3Q	S3	
Pentachaeta bellidiflora white-rayed pentachaeta	PDAST6X030	Endangered	Endangered	G1	S1	1B.1
Plagiobothrys chorisianus var. chorisianus Choris' popcornflower	PDBOR0V061	None	None	G3T1Q	S1	1B.2
Plagiobothrys diffusus San Francisco popcornflower	PDBOR0V080	None	Endangered	G1Q	S1	1B.1
Plagiobothrys glaber hairless popcornflower	PDBOR0V0B0	None	None	GX	SX	1A
Polygonum marinense Marin knotweed	PDPGN0L1C0	None	None	G2Q	S2	3.1
Pomatiopsis californica Pacific walker	IMGASJ9020	None	None	G1	S1	
Rallus obsoletus obsoletus California Ridgway's rail	ABNME05011	Endangered	Endangered	G3T1	S2	FP
Rana boylii pop. 4 foothill yellow-legged frog - central coast DPS	AAABH01054	Threatened	Endangered	G3T2	S2	
Rana draytonii California red-legged frog	AAABH01022	Threatened	None	G2G3	S2S3	SSC
Reithrodontomys raviventris salt-marsh harvest mouse	AMAFF02040	Endangered	Endangered	G1G2	S3	FP

Species	Element Code	Federal Status	State Status	Global Rank	State Rank	Rare Plant Rank/CDFW SSC or FP
Riparia riparia bank swallow	ABPAU08010	None	Threatened	G5	S3	
Rynchops niger black skimmer	ABNNM14010	None	None	G5	S2	SSC
Sanicula maritima adobe sanicle	PDAPI1Z0D0	None	Rare	G2	S2	1B.1
Scapanus latimanus parvus Alameda Island mole	AMABB02031	None	None	G5T1Q	SH	SSC
Senecio aphanactis chaparral ragwort	PDAST8H060	None	None	G3	S2	2B.2
Serpentine Bunchgrass Serpentine Bunchgrass	CTT42130CA	None	None	G2	S2.2	
Setophaga petechia yellow warbler	ABPBX03010	None	None	G5	S3	SSC
Sorex vagrans halicoetes salt-marsh wandering shrew	AMABA01071	None	None	G5T1	S1	SSC
Spergularia macrotheca var. longistyla long-styled sand-spurrey	PDCAR0W062	None	None	G5T2	S2	1B.2
Speyeria zerene myrtleae Myrtle's silverspot butterfly	IILEPJ608C	Endangered	None	G5T1	S1	
Spirinchus thaleichthys longfin smelt	AFCHB03010	Candidate	Threatened	G5	S1	
Sternula antillarum browni California least tern	ABNNM08103	Endangered	Endangered	G4T2T3Q	S2	FP
Streptanthus albidus ssp. peramoenus most beautiful jewelflower	PDBRA2G012	None	None	G2T2	S2	1B.2
Stuckenia filiformis ssp. alpina northern slender pondweed	PMPOT03091	None	None	G5T5	S2S3	2B.2
Suaeda californica California seablite	PDCHE0P020	Endangered	None	G1	S1	1B.1
Taxidea taxus American badger	AMAJF04010	None	None	G5	S3	SSC
Thamnophis sirtalis tetrataenia San Francisco gartersnake	ARADB3613B	Endangered	Endangered	G5T2Q	S2	FP
Trifolium hydrophilum saline clover	PDFAB400R5	None	None	G2	S2	1B.2
Triphysaria floribunda San Francisco owl's-clover	PDSCR2T010	None	None	G2?	S2?	1B.2
Tryonia imitator mimic tryonia (=California brackishwater snail)	IMGASJ7040	None	None	G2	S2	
Valley Needlegrass Grassland Valley Needlegrass Grassland	CTT42110CA	None	None	G3	S3.1	

Species	Element Code	Federal Status	State Status	Global Rank	State Rank	Rare Plant Rank/CDFW SSC or FP
Viburnum ellipticum	PDCPR07080	None	None	G4G5	S3?	2B.3
oval-leaved viburnum						

Record Count: 124

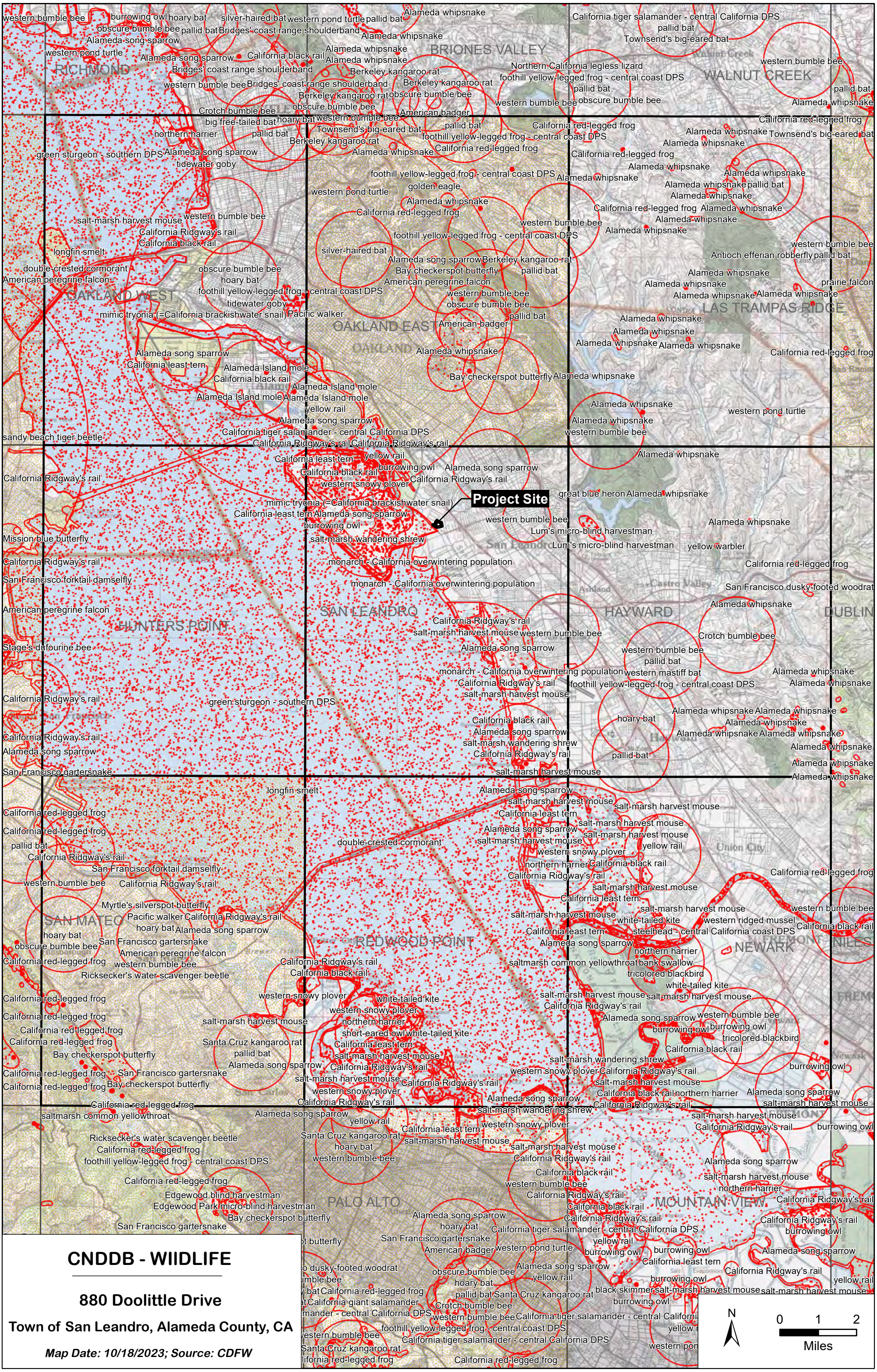


CNDDB - PLANT

880 Doolittle Drive

Town of San Leandro, Alameda County, CA

Map Date: 10/18/2023; Source: CDFW



CNDDB - WIIDLIFE

880 Doolittle Drive

Town of San Leandro, Alameda County, CA

Map Date: 10/18/2023; Source: CDFW

IPaC **U.S. Fish & Wildlife Service**

IPaC resource list

This report is an automatically generated list of species and other resources such as critical habitat (collectively referred to as *trust resources*) under the U.S. Fish and Wildlife Service's (USFWS) jurisdiction that are known or expected to be on or near the project area referenced below. The list may also include trust resources that occur outside of the project area, but that could potentially be directly or indirectly affected by activities in the project area. However, determining the likelihood and extent of effects a project may have on trust resources typically requires gathering additional site-specific (e.g., vegetation/species surveys) and project-specific (e.g., magnitude and timing of proposed activities) information.

Below is a summary of the project information you provided and contact information for the USFWS office(s) with jurisdiction in the defined project area. Please read the introduction to each section that follows (Endangered Species, Migratory Birds, USFWS Facilities, and NWI Wetlands) for additional information applicable to the trust resources addressed in that section.

NOT FOR CONSULTATION

Location

Alameda County, California

Local offices

San Francisco Bay-Delta Fish And Wildlife

(916) 930-5603
(916) 930-5654

650 Capitol Mall
Suite 8-300
Sacramento, CA 95814

Sacramento Fish And Wildlife Office

(916) 414-6600
(916) 414-6713

Federal Building
2800 Cottage Way, Room W-2605
Sacramento, CA 95825-1846

Endangered species

This resource list is for informational purposes only and does not constitute an analysis of project level impacts.

The primary information used to generate this list is the known or expected range of each species. Additional areas of influence (AOI) for species are also considered. An AOI includes areas outside of the species range if the species could be indirectly affected by activities in that area (e.g., placing a dam upstream of a fish population even if that fish does not occur at the dam site, may indirectly impact the species by reducing or eliminating water flow downstream). Because species can move, and site conditions can change, the species on this list are not guaranteed to be found on or near the project area. To fully determine any potential effects to species, additional site-specific and project-specific information is often required.

Section 7 of the Endangered Species Act **requires** Federal agencies to "request of the Secretary information whether any species which is listed or proposed to be listed may be present in the area of such proposed action" for any project that is conducted, permitted, funded, or licensed by any Federal agency. A letter from the local office and a species list which fulfills this requirement can **only** be obtained by requesting an official species list from either the Regulatory Review section in IPaC (see directions below) or from the local field office directly.

For project evaluations that require USFWS concurrence/review, please return to the IPaC website and request an official species list by doing the following:

1. Draw the project location and click CONTINUE.
2. Click DEFINE PROJECT.
3. Log in (if directed to do so).
4. Provide a name and description for your project.
5. Click REQUEST SPECIES LIST.

Listed species[1] and their critical habitats are managed by the Ecological Services Program of the U.S. Fish and Wildlife Service (USFWS) and the fisheries division of the National Oceanic and Atmospheric Administration (NOAA Fisheries[2]).

Species and critical habitats under the sole responsibility of NOAA Fisheries are **not** shown on this list. Please contact NOAA Fisheries for species under their jurisdiction.

NOT FOR CONSULTATION

1. Species listed under the Endangered Species Act are threatened or endangered; IPaC also shows species that are candidates, or proposed, for listing. See the listing status page for more information. IPaC only shows species that are regulated by USFWS (see FAQ).
2. NOAA Fisheries, also known as the National Marine Fisheries Service (NMFS), is an office of the National Oceanic and Atmospheric Administration within the Department of Commerce.

The following species are potentially affected by activities in this location:

Mammals

NAME	STATUS
Salt Marsh Harvest Mouse *Reithrodontomys raviventris* Wherever found No critical habitat has been designated for this species. https://ecos.fws.gov/ecp/species/613	Endangered

Birds

NAME	STATUS
California Clapper Rail *Rallus longirostris obsoletus* Wherever found No critical habitat has been designated for this species. https://ecos.fws.gov/ecp/species/4240	Endangered
California Least Tern *Sterna antillarum browni* Wherever found No critical habitat has been designated for this species. https://ecos.fws.gov/ecp/species/8104	Endangered
Western Snowy Plover *Charadrius nivosus nivosus* There is **final** critical habitat for this species. Your location does not overlap the critical habitat. https://ecos.fws.gov/ecp/species/8035	Threatened

Yellow-billed Cuckoo Coccyzus americanus — Threatened
There is **final** critical habitat for this species. Your location does not overlap the critical habitat.
https://ecos.fws.gov/ecp/species/3911

Reptiles

NAME	STATUS
Alameda Whipsnake (=striped Racer) Masticophis lateralis euryxanthus Wherever found There is **final** critical habitat for this species. Your location does not overlap the critical habitat. https://ecos.fws.gov/ecp/species/5524	Threatened

Amphibians

NAME	STATUS
California Red-legged Frog Rana draytonii Wherever found There is **final** critical habitat for this species. Your location does not overlap the critical habitat. https://ecos.fws.gov/ecp/species/2891	Threatened
California Tiger Salamander Ambystoma californiense There is **final** critical habitat for this species. Your location does not overlap the critical habitat. https://ecos.fws.gov/ecp/species/2076	Threatened
Foothill Yellow-legged Frog Rana boylii No critical habitat has been designated for this species. https://ecos.fws.gov/ecp/species/5133	Threatened

NOT FOR CONSULTATION

Fishes

NAME	STATUS
Longfin Smelt Spirinchus thaleichthys No critical habitat has been designated for this species.	Proposed Endangered
Tidewater Goby Eucyclogobius newberryi Wherever found There is **final** critical habitat for this species. Your location does not overlap the critical habitat. https://ecos.fws.gov/ecp/species/57	Endangered

Insects

NAME	STATUS
Monarch Butterfly Danaus plexippus Wherever found No critical habitat has been designated for this species. https://ecos.fws.gov/ecp/species/9743	Candidate

Crustaceans

NAME	STATUS
Vernal Pool Fairy Shrimp Branchinecta lynchi Wherever found There is **final** critical habitat for this species. Your location does not overlap the critical habitat. https://ecos.fws.gov/ecp/species/498	Threatened

Flowering Plants

NAME	STATUS
California Seablite Suaeda californica No critical habitat has been designated for this species. https://ecos.fws.gov/ecp/species/6310	Endangered

Contra Costa Goldfields Lasthenia conjugens Wherever found There is **final** critical habitat for this species. Your location does not overlap the critical habitat. https://ecos.fws.gov/ecp/species/7058	Endangered

Critical habitats

Potential effects to critical habitat(s) in this location must be analyzed along with the endangered species themselves.

There are no critical habitats at this location.

You are still required to determine if your project(s) may have effects on all above listed species.

NOT FOR CONSULTATION

Bald & Golden Eagles

Bald and golden eagles are protected under the Bald and Golden Eagle Protection Act[1] and the Migratory Bird Treaty Act[2].

Any person or organization who plans or conducts activities that may result in impacts to bald or golden eagles, or their habitats[3], should follow appropriate regulations and consider implementing appropriate conservation measures, as described below.

Additional information can be found using the following links:

- Eagle Managment https://www.fws.gov/program/eagle-management
- Measures for avoiding and minimizing impacts to birds https://www.fws.gov/library/collections/avoiding-and-minimizing-incidental-take-migratory-birds
- Nationwide conservation measures for birds https://www.fws.gov/sites/default/files/documents/nationwide-standard-conservation-measures.pdf
- Supplemental Information for Migratory Birds and Eagles in IPaC https://www.fws.gov/media/supplemental-information-migratory-birds-and-bald-and-golden-eagles-may-occur-project-action

There are bald and/or golden eagles in your project area.

For guidance on when to schedule activities or implement avoidance and minimization measures to reduce impacts to migratory birds on your list, click on the PROBABILITY OF PRESENCE SUMMARY at the top of your list to see when these birds are most likely to be present and breeding in your project area.

NAME	BREEDING SEASON
Bald Eagle Haliaeetus leucocephalus This is not a Bird of Conservation Concern (BCC) in this area, but warrants attention because of the Eagle Act or for potential susceptibilities in offshore areas from certain types of development or activities.	Breeds Jan 1 to Aug 31
Golden Eagle Aquila chrysaetos This is not a Bird of Conservation Concern (BCC) in this area, but warrants attention because of the Eagle Act or for potential susceptibilities in offshore areas from certain types of development or activities. https://ecos.fws.gov/ecp/species/1680	Breeds Jan 1 to Aug 31

Probability of Presence Summary

The graphs below provide our best understanding of when birds of concern are most likely to be present in your project area. This information can be used to tailor and schedule your project activities to avoid or minimize impacts to birds. Please make sure you read and understand the FAQ "Proper Interpretation and Use of Your Migratory Bird Report" before using or attempting to interpret this report.

Probability of Presence (■)

Each green bar represents the bird's relative probability of presence in the 10km grid cell(s) your project overlaps during a particular week of the year. (A year is represented as 12 4-week months.) A taller bar indicates a higher probability of species presence. The survey effort (see below) can be used to establish a level of confidence in the presence score. One can have higher confidence in the presence score if the corresponding survey effort is also high.

How is the probability of presence score calculated? The calculation is done in three steps:

1. The probability of presence for each week is calculated as the number of survey events in the week where the species was detected divided by the total number of survey events for that week. For example, if in week 12 there were 20 survey events and the Spotted Towhee was found in 5 of them, the probability of presence of the Spotted Towhee in week 12 is 0.25.
2. To properly present the pattern of presence across the year, the relative probability of presence is calculated. This is the probability of presence divided by the maximum probability of presence across all weeks. For example, imagine the probability of presence in week 20 for the Spotted Towhee is 0.05, and that the probability of presence at week 12 (0.25) is the maximum of any week of the year. The relative probability of presence on week 12 is 0.25/0.25 = 1; at week 20 it is 0.05/0.25 = 0.2.
3. The relative probability of presence calculated in the previous step undergoes a statistical conversion so that all possible values fall between 0 and 10, inclusive. This is the probability of presence score.

To see a bar's probability of presence score, simply hover your mouse cursor over the bar.

Breeding Season (■)
Yellow bars denote a very liberal estimate of the time-frame inside which the bird breeds across its entire range. If there are no yellow bars shown for a bird, it does not breed in your project area.

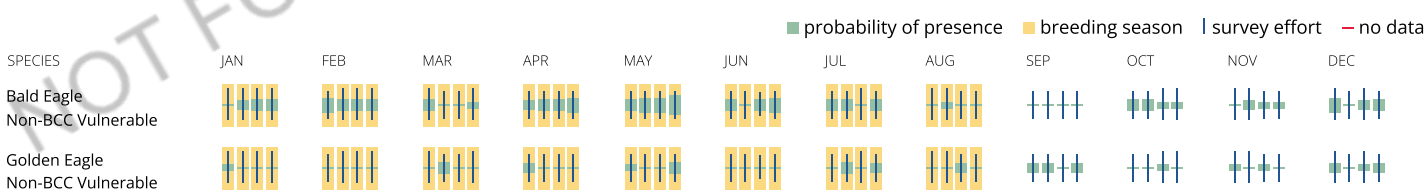
Survey Effort (|)
Vertical black lines superimposed on probability of presence bars indicate the number of surveys performed for that species in the 10km grid cell(s) your project area overlaps. The number of surveys is expressed as a range, for example, 33 to 64 surveys.

To see a bar's survey effort range, simply hover your mouse cursor over the bar.

No Data (–)
A week is marked as having no data if there were no survey events for that week.

Survey Timeframe
Surveys from only the last 10 years are used in order to ensure delivery of currently relevant information. The exception to this is areas off the Atlantic coast, where bird returns are based on all years of available data, since data in these areas is currently much more sparse.

NOT FOR CONSULTATION



What does IPaC use to generate the potential presence of bald and golden eagles in my specified location?

The potential for eagle presence is derived from data provided by the Avian Knowledge Network (AKN). The AKN data is based on a growing collection of survey, banding, and citizen science datasets and is queried and filtered to return a list of those birds reported as occurring in the 10km grid cell(s) which your project intersects, and that have been identified as warranting special attention because they are a BCC species in that area, an eagle (Eagle Act requirements may apply). To see a list of all birds potentially present in your project area, please visit the Rapid Avian Information Locator (RAIL) Tool.

What does IPaC use to generate the probability of presence graphs of bald and golden eagles in my specified location?

The Migratory Bird Resource List is comprised of USFWS Birds of Conservation Concern (BCC) and other species that may warrant special attention in your project location.

The migratory bird list generated for your project is derived from data provided by the Avian Knowledge Network (AKN). The AKN data is based on a growing collection of survey, banding, and citizen science datasets and is queried and filtered to return a list of those birds reported as occurring in the 10km grid cell(s) which your project intersects, and that have been identified as warranting special attention because they are a BCC species in that area, an eagle (Eagle Act requirements may apply), or a species that has a particular vulnerability to offshore activities or development.

Again, the Migratory Bird Resource list includes only a subset of birds that may occur in your project area. It is not representative of all birds that may occur in your project area. To get a list of all birds potentially present in your project area, please visit the Rapid Avian Information Locator (RAIL) Tool.

What if I have eagles on my list?

If your project has the potential to disturb or kill eagles, you may need to obtain a permit to avoid violating the Eagle Act should such impacts occur. Please contact your local Fish and Wildlife Service Field Office if you have questions.

Migratory birds

Certain birds are protected under the Migratory Bird Treaty Act[1] and the Bald and Golden Eagle Protection Act[2].

Any person or organization who plans or conducts activities that may result in impacts to migratory birds, eagles, and their habitats[3] should follow appropriate regulations and consider implementing appropriate conservation measures, as described below.

1. The Migratory Birds Treaty Act of 1918.
2. The Bald and Golden Eagle Protection Act of 1940.

Additional information can be found using the following links:

- Eagle Management https://www.fws.gov/program/eagle-management
- Measures for avoiding and minimizing impacts to birds https://www.fws.gov/library/collections/avoiding-and-minimizing-incidental-take-migratory-birds
- Nationwide conservation measures for birds https://www.fws.gov/sites/default/files/ documents/nationwide-standard-conservation-measures.pdf
- Supplemental Information for Migratory Birds and Eagles in IPaC https://www.fws.gov/media/supplemental-information-migratory-birds-and-bald-and-golden-eagles-may-occur-project-action

The birds listed below are birds of particular concern either because they occur on the USFWS Birds of Conservation Concern (BCC) list or warrant special attention in your project location. To learn more about the levels of concern for birds on your list and how this list is generated, see the FAQ below. This is not a list of every bird you may find in this location, nor a guarantee that every bird on this list will be found in your project area. To see exact locations of where birders and the general public have sighted birds in and around your project area, visit the E-bird data mapping tool (Tip: enter your location, desired date range and a species on your list). For projects that occur off the Atlantic Coast, additional maps and models detailing the relative occurrence and abundance of bird species on your list are available. Links to additional information about Atlantic Coast birds, and other important information about your migratory bird list, including how to properly interpret and use your migratory bird report, can be found below.

For guidance on when to schedule activities or implement avoidance and minimization measures to reduce impacts to migratory birds on your list, click on the PROBABILITY OF PRESENCE SUMMARY at the top of your list to see when these birds are most likely to be present and breeding in your project area.

NOT FOR CONSULTATION

NAME	BREEDING SEASON
Allen's Hummingbird Selasphorus sasin This is a Bird of Conservation Concern (BCC) throughout its range in the continental USA and Alaska. https://ecos.fws.gov/ecp/species/9637	Breeds Feb 1 to Jul 15
Bald Eagle Haliaeetus leucocephalus This is not a Bird of Conservation Concern (BCC) in this area, but warrants attention because of the Eagle Act or for potential susceptibilities in offshore areas from certain types of development or activities.	Breeds Jan 1 to Aug 31
Belding's Savannah Sparrow Passerculus sandwichensis beldingi This is a Bird of Conservation Concern (BCC) only in particular Bird Conservation Regions (BCRs) in the continental USA https://ecos.fws.gov/ecp/species/8	Breeds Apr 1 to Aug 15
Black Oystercatcher Haematopus bachmani This is a Bird of Conservation Concern (BCC) throughout its range in the continental USA and Alaska. https://ecos.fws.gov/ecp/species/9591	Breeds Apr 15 to Oct 31
Black Scoter Melanitta nigra This is not a Bird of Conservation Concern (BCC) in this area, but warrants attention because of the Eagle Act or for potential susceptibilities in offshore areas from certain types of development or activities.	Breeds elsewhere
Black Skimmer Rynchops niger This is a Bird of Conservation Concern (BCC) throughout its range in the continental USA and Alaska. https://ecos.fws.gov/ecp/species/5234	Breeds May 20 to Sep 15
Black Swift Cypseloides niger This is a Bird of Conservation Concern (BCC) throughout its range in the continental USA and Alaska. https://ecos.fws.gov/ecp/species/8878	Breeds Jun 15 to Sep 10
Black Tern Chlidonias niger This is a Bird of Conservation Concern (BCC) throughout its range in the continental USA and Alaska. https://ecos.fws.gov/ecp/species/3093	Breeds May 15 to Aug 20
Black Turnstone Arenaria melanocephala This is a Bird of Conservation Concern (BCC) throughout its range in the continental USA and Alaska.	Breeds elsewhere
Brown Pelican Pelecanus occidentalis This is not a Bird of Conservation Concern (BCC) in this area, but warrants attention because of the Eagle Act or for potential susceptibilities in offshore areas from certain types of development or activities.	Breeds Jan 15 to Sep 30

Bullock's Oriole Icterus bullockii — Breeds Mar 21 to Jul 25
This is a Bird of Conservation Concern (BCC) only in particular Bird Conservation Regions (BCRs) in the continental USA

California Gull Larus californicus — Breeds Mar 1 to Jul 31
This is a Bird of Conservation Concern (BCC) throughout its range in the continental USA and Alaska.

California Thrasher Toxostoma redivivum — Breeds Jan 1 to Jul 31
This is a Bird of Conservation Concern (BCC) throughout its range in the continental USA and Alaska.

Cassin's Finch Carpodacus cassinii — Breeds May 15 to Jul 15
This is a Bird of Conservation Concern (BCC) throughout its range in the continental USA and Alaska.
https://ecos.fws.gov/ecp/species/9462

Clark's Grebe Aechmophorus clarkii — Breeds Jun 1 to Aug 31
This is a Bird of Conservation Concern (BCC) throughout its range in the continental USA and Alaska.

Common Loon gavia immer — Breeds Apr 15 to Oct 31
This is not a Bird of Conservation Concern (BCC) in this area, but warrants attention because of the Eagle Act or for potential susceptibilities in offshore areas from certain types of development or activities.
https://ecos.fws.gov/ecp/species/4464

Common Murre Uria aalge — Breeds Apr 15 to Aug 15
This is not a Bird of Conservation Concern (BCC) in this area, but warrants attention because of the Eagle Act or for potential susceptibilities in offshore areas from certain types of development or activities.

Common Yellowthroat Geothlypis trichas sinuosa — Breeds May 20 to Jul 31
This is a Bird of Conservation Concern (BCC) only in particular Bird Conservation Regions (BCRs) in the continental USA
https://ecos.fws.gov/ecp/species/2084

Golden Eagle Aquila chrysaetos — Breeds Jan 1 to Aug 31
This is not a Bird of Conservation Concern (BCC) in this area, but warrants attention because of the Eagle Act or for potential susceptibilities in offshore areas from certain types of development or activities.
https://ecos.fws.gov/ecp/species/1680

Lawrence's Goldfinch Carduelis lawrencei — Breeds Mar 20 to Sep 20
This is a Bird of Conservation Concern (BCC) throughout its range in the continental USA and Alaska.
https://ecos.fws.gov/ecp/species/9464

Long-tailed Duck Clangula hyemalis — Breeds elsewhere
This is not a Bird of Conservation Concern (BCC) in this area, but warrants attention because of the Eagle Act or for potential susceptibilities in offshore areas from certain types of development or activities.
https://ecos.fws.gov/ecp/species/7238

Marbled Godwit Limosa fedoa — Breeds elsewhere
This is a Bird of Conservation Concern (BCC) throughout its range in the continental USA and Alaska.
https://ecos.fws.gov/ecp/species/9481

Mountain Plover Charadrius montanus — Breeds elsewhere
This is a Bird of Conservation Concern (BCC) throughout its range in the continental USA and Alaska.
https://ecos.fws.gov/ecp/species/3638

Nuttall's Woodpecker Picoides nuttallii — Breeds Apr 1 to Jul 20
This is a Bird of Conservation Concern (BCC) only in particular Bird Conservation Regions (BCRs) in the continental USA
https://ecos.fws.gov/ecp/species/9410

NOT FOR CONSULTATION

Oak Titmouse Baeolophus inornatus — Breeds Mar 15 to Jul 15
This is a Bird of Conservation Concern (BCC) throughout its range in the continental USA and Alaska.
https://ecos.fws.gov/ecp/species/9656

Olive-sided Flycatcher Contopus cooperi — Breeds May 20 to Aug 31
This is a Bird of Conservation Concern (BCC) throughout its range in the continental USA and Alaska.
https://ecos.fws.gov/ecp/species/3914

Pink-footed Shearwater Puffinus creatopus — Breeds elsewhere
This is a Bird of Conservation Concern (BCC) throughout its range in the continental USA and Alaska.

Pomarine Jaeger Stercorarius pomarinus — Breeds elsewhere
This is not a Bird of Conservation Concern (BCC) in this area, but warrants attention because of the Eagle Act or for potential susceptibilities in offshore areas from certain types of development or activities.

Red Phalarope Phalaropus fulicarius — Breeds elsewhere
This is not a Bird of Conservation Concern (BCC) in this area, but warrants attention because of the Eagle Act or for potential susceptibilities in offshore areas from certain types of development or activities.

Red-breasted Merganser Mergus serrator — Breeds elsewhere
This is not a Bird of Conservation Concern (BCC) in this area, but warrants attention because of the Eagle Act or for potential susceptibilities in offshore areas from certain types of development or activities.

Red-necked Phalarope Phalaropus lobatus — Breeds elsewhere
This is not a Bird of Conservation Concern (BCC) in this area, but warrants attention because of the Eagle Act or for potential susceptibilities in offshore areas from certain types of development or activities.

Red-throated Loon Gavia stellata — Breeds elsewhere
This is not a Bird of Conservation Concern (BCC) in this area, but warrants attention because of the Eagle Act or for potential susceptibilities in offshore areas from certain types of development or activities.

Ring-billed Gull Larus delawarensis — Breeds elsewhere
This is not a Bird of Conservation Concern (BCC) in this area, but warrants attention because of the Eagle Act or for potential susceptibilities in offshore areas from certain types of development or activities.

Short-billed Dowitcher Limnodromus griseus — Breeds elsewhere
This is a Bird of Conservation Concern (BCC) throughout its range in the continental USA and Alaska.
https://ecos.fws.gov/ecp/species/9480

Surf Scoter Melanitta perspicillata — Breeds elsewhere
This is not a Bird of Conservation Concern (BCC) in this area, but warrants attention because of the Eagle Act or for potential susceptibilities in offshore areas from certain types of development or activities.

Tricolored Blackbird Agelaius tricolor — Breeds Mar 15 to Aug 10
This is a Bird of Conservation Concern (BCC) throughout its range in the continental USA and Alaska.
https://ecos.fws.gov/ecp/species/3910

Western Grebe aechmophorus occidentalis — Breeds Jun 1 to Aug 31
This is a Bird of Conservation Concern (BCC) throughout its range in the continental USA and Alaska.
https://ecos.fws.gov/ecp/species/6743

White-winged Scoter Melanitta fusca — Breeds elsewhere
This is not a Bird of Conservation Concern (BCC) in this area, but warrants attention because of the Eagle Act or for potential susceptibilities in offshore areas from certain types of development or activities.

NOT FOR CONSULTATION

Willet Tringa semipalmata — Breeds elsewhere
This is a Bird of Conservation Concern (BCC) throughout its range in the continental USA and Alaska.

Wrentit Chamaea fasciata — Breeds Mar 15 to Aug 10
This is a Bird of Conservation Concern (BCC) throughout its range in the continental USA and Alaska.

Probability of Presence Summary

The graphs below provide our best understanding of when birds of concern are most likely to be present in your project area. This information can be used to tailor and schedule your project activities to avoid or minimize impacts to birds. Please make sure you read and understand the FAQ "Proper Interpretation and Use of Your Migratory Bird Report" before using or attempting to interpret this report.

Probability of Presence (■)

Each green bar represents the bird's relative probability of presence in the 10km grid cell(s) your project overlaps during a particular week of the year. (A year is represented as 12 4-week months.) A taller bar indicates a higher probability of species presence. The survey effort (see below) can be used to establish a level of confidence in the presence score. One can have higher confidence in the presence score if the corresponding survey effort is also high.

How is the probability of presence score calculated? The calculation is done in three steps:

1. The probability of presence for each week is calculated as the number of survey events in the week where the species was detected divided by the total number of survey events for that week. For example, if in week 12 there were 20 survey events and the Spotted Towhee was found in 5 of them, the probability of presence of the Spotted Towhee in week 12 is 0.25.
2. To properly present the pattern of presence across the year, the relative probability of presence is calculated. This is the probability of presence divided by the maximum probability of presence across all weeks. For example, imagine the probability of presence in week 20 for the Spotted Towhee is 0.05, and that the probability of presence at week 12 (0.25) is the maximum of any week of the year. The relative probability of presence on week 12 is 0.25/0.25 = 1; at week 20 it is 0.05/0.25 = 0.2.
3. The relative probability of presence calculated in the previous step undergoes a statistical conversion so that all possible values fall between 0 and 10, inclusive. This is the probability of presence score.

To see a bar's probability of presence score, simply hover your mouse cursor over the bar.

Breeding Season (■)
Yellow bars denote a very liberal estimate of the time-frame inside which the bird breeds across its entire range. If there are no yellow bars shown for a bird, it does not breed in your project area.

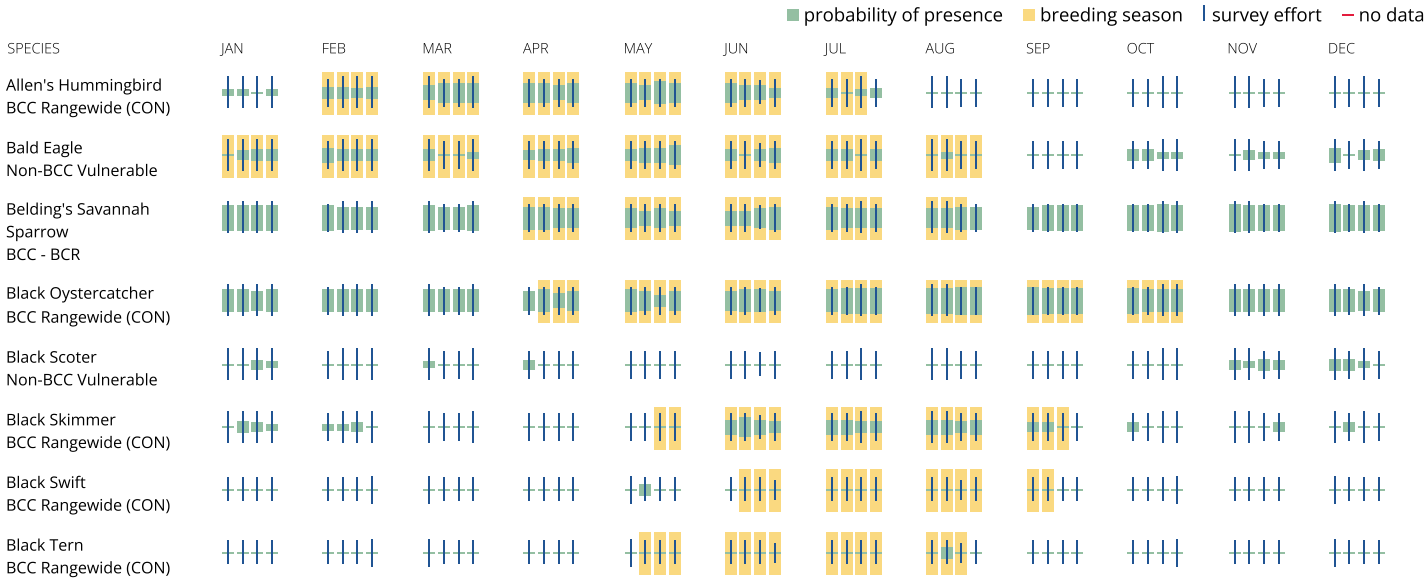
Survey Effort (|)
Vertical black lines superimposed on probability of presence bars indicate the number of surveys performed for that species in the 10km grid cell(s) your project area overlaps. The number of surveys is expressed as a range, for example, 33 to 64 surveys.

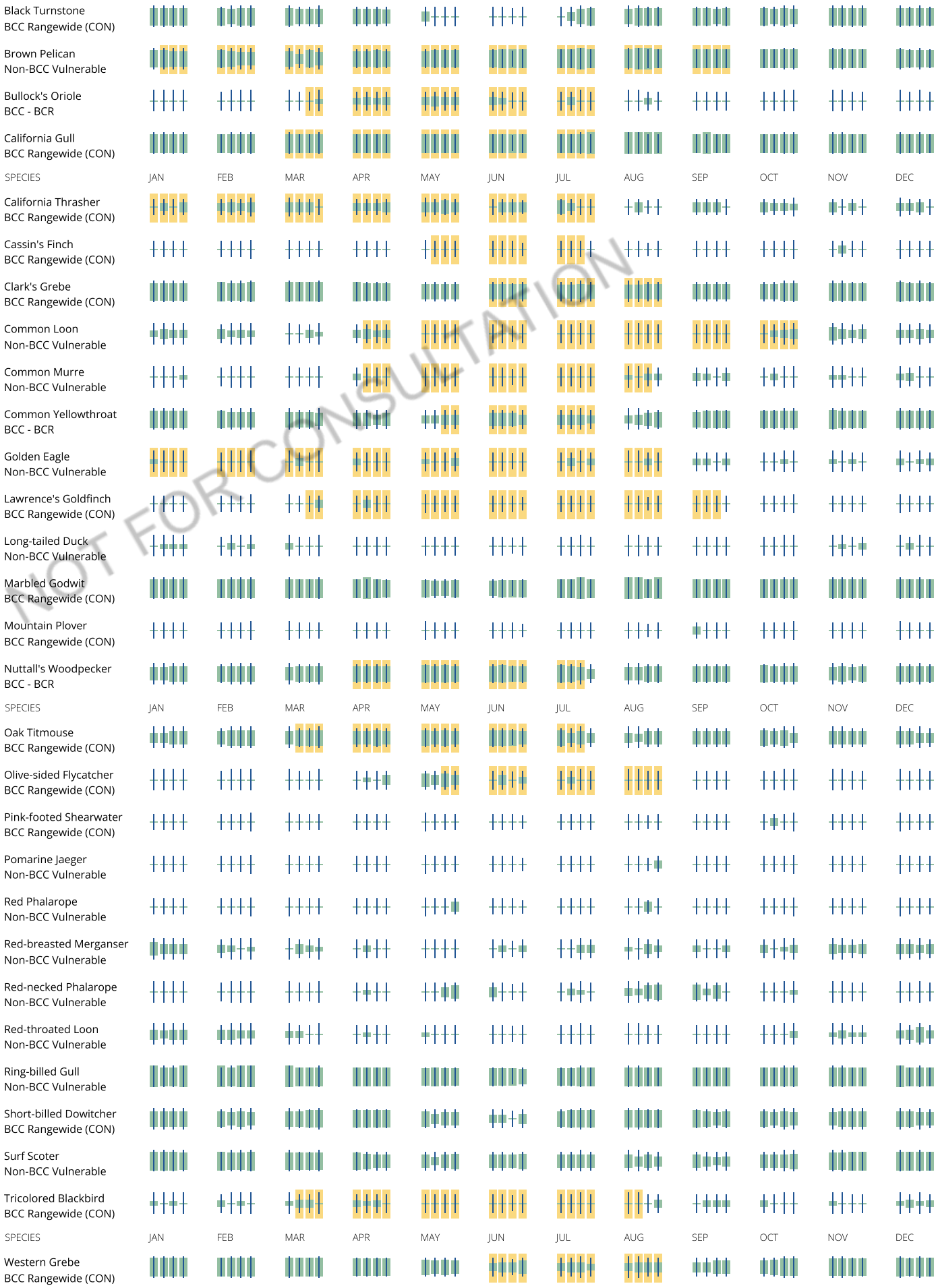
To see a bar's survey effort range, simply hover your mouse cursor over the bar.

No Data (–)
A week is marked as having no data if there were no survey events for that week.

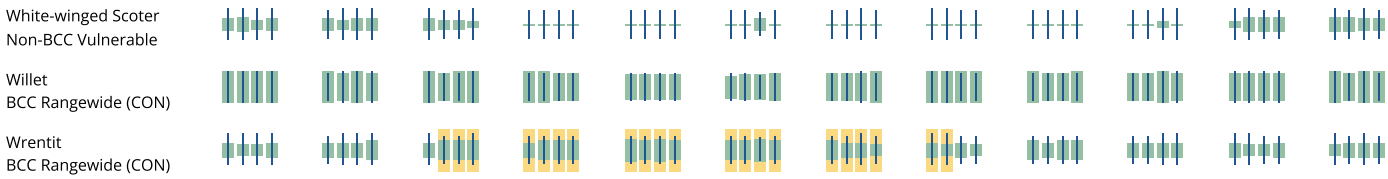
Survey Timeframe
Surveys from only the last 10 years are used in order to ensure delivery of currently relevant information. The exception to this is areas off the Atlantic coast, where bird returns are based on all years of available data, since data in these areas is currently much more sparse.

NOT FOR CONSULTATION





NOT FOR CONSULTATION



Tell me more about conservation measures I can implement to avoid or minimize impacts to migratory birds.

Nationwide Conservation Measures describes measures that can help avoid and minimize impacts to all birds at any location year round. Implementation of these measures is particularly important when birds are most likely to occur in the project area. When birds may be breeding in the area, identifying the locations of any active nests and avoiding their destruction is a very helpful impact minimization measure. To see when birds are most likely to occur and be breeding in your project area, view the Probability of Presence Summary. Additional measures or permits may be advisable depending on the type of activity you are conducting and the type of infrastructure or bird species present on your project site.

What does IPaC use to generate the list of migratory birds that potentially occur in my specified location?

The Migratory Bird Resource List is comprised of USFWS Birds of Conservation Concern (BCC) and other species that may warrant special attention in your project location.

The migratory bird list generated for your project is derived from data provided by the Avian Knowledge Network (AKN). The AKN data is based on a growing collection of survey, banding, and citizen science datasets and is queried and filtered to return a list of those birds reported as occurring in the 10km grid cell(s) which your project intersects, and that have been identified as warranting special attention because they are a BCC species in that area, an eagle (Eagle Act requirements may apply), or a species that has a particular vulnerability to offshore activities or development.

Again, the Migratory Bird Resource list includes only a subset of birds that may occur in your project area. It is not representative of all birds that may occur in your project area. To get a list of all birds potentially present in your project area, please visit the Rapid Avian Information Locator (RAIL) Tool.

NOT FOR CONSULTATION

What does IPaC use to generate the probability of presence graphs for the migratory birds potentially occurring in my specified location?

The probability of presence graphs associated with your migratory bird list are based on data provided by the Avian Knowledge Network (AKN). This data is derived from a growing collection of survey, banding, and citizen science datasets.

Probability of presence data is continuously being updated as new and better information becomes available. To learn more about how the probability of presence graphs are produced and how to interpret them, go the Probability of Presence Summary and then click on the "Tell me about these graphs" link.

How do I know if a bird is breeding, wintering or migrating in my area?

To see what part of a particular bird's range your project area falls within (i.e. breeding, wintering, migrating or year-round), you may query your location using the RAIL Tool and look at the range maps provided for birds in your area at the bottom of the profiles provided for each bird in your results. If a bird on your migratory bird species list has a breeding season associated with it, if that bird does occur in your project area, there may be nests present at some point within the timeframe specified. If "Breeds elsewhere" is indicated, then the bird likely does not breed in your project area.

What are the levels of concern for migratory birds?

Migratory birds delivered through IPaC fall into the following distinct categories of concern:

1. "BCC Rangewide" birds are Birds of Conservation Concern (BCC) that are of concern throughout their range anywhere within the USA (including Hawaii, the Pacific Islands, Puerto Rico, and the Virgin Islands);
2. "BCC - BCR" birds are BCCs that are of concern only in particular Bird Conservation Regions (BCRs) in the continental USA; and
3. "Non-BCC - Vulnerable" birds are not BCC species in your project area, but appear on your list either because of the Eagle Act requirements (for eagles) or (for non-eagles) potential susceptibilities in offshore areas from certain types of development or activities (e.g. offshore energy development or longline fishing).

Although it is important to try to avoid and minimize impacts to all birds, efforts should be made, in particular, to avoid and minimize impacts to the birds on this list, especially eagles and BCC species of rangewide concern. For more information on conservation measures you can implement to help avoid and minimize migratory bird impacts and requirements for eagles, please see the FAQs for these topics.

Details about birds that are potentially affected by offshore projects

For additional details about the relative occurrence and abundance of both individual bird species and groups of bird species within your project area off the Atlantic Coast, please visit the Northeast Ocean Data Portal. The Portal also offers data and information about other taxa besides birds that may be helpful to you in your project review. Alternately, you may download the bird model results files underlying the portal maps through the NOAA NCCOS Integrative Statistical Modeling and Predictive Mapping of Marine Bird Distributions and Abundance on the Atlantic Outer Continental Shelf project webpage.

Bird tracking data can also provide additional details about occurrence and habitat use throughout the year, including migration. Models relying on survey data may not include this information. For additional information on marine bird tracking data, see the Diving Bird Study and the nanotag studies or contact Caleb Spiegel or Pam Loring.

What if I have eagles on my list?

If your project has the potential to disturb or kill eagles, you may need to obtain a permit to avoid violating the Eagle Act should such impacts occur.

Proper Interpretation and Use of Your Migratory Bird Report

The migratory bird list generated is not a list of all birds in your project area, only a subset of birds of priority concern. To learn more about how your list is generated, and see options for identifying what other birds may be in your project area, please see the FAQ "What does IPaC use to generate the migratory birds potentially occurring in my specified location". Please be aware this report provides the "probability of presence" of birds within the 10 km grid cell(s) that overlap your project; not your exact project footprint. On the graphs provided, please also look carefully at the survey effort (indicated by the black vertical bar) and for the existence of the "no data" indicator (a red horizontal bar). A high survey effort is the key component. If the survey effort is high, then the probability of presence score can be viewed as more dependable. In contrast, a low survey effort bar or no data bar means a lack of data and, therefore, a lack of certainty about presence of the species. This list is not perfect; it is simply a starting point for identifying what birds of concern have the potential to be in your project area, when they might be there, and if they might be breeding (which means nests might be present). The list helps you know what to look for to confirm presence, and helps guide you in knowing when to implement conservation measures to avoid or minimize potential impacts from your project activities, should presence be confirmed. To learn more about conservation measures, visit the FAQ "Tell me about conservation measures I can implement to avoid or minimize impacts to migratory birds" at the bottom of your migratory bird trust resources page.

Facilities

National Wildlife Refuge lands

Any activity proposed on lands managed by the National Wildlife Refuge system must undergo a 'Compatibility Determination' conducted by the Refuge. Please contact the individual Refuges to discuss any questions or concerns.

There are no refuge lands at this location.

Fish hatcheries

There are no fish hatcheries at this location.

NOT FOR CONSULTATION

Wetlands in the National Wetlands Inventory (NWI)

Impacts to NWI wetlands and other aquatic habitats may be subject to regulation under Section 404 of the Clean Water Act, or other State/Federal statutes.

For more information please contact the Regulatory Program of the local U.S. Army Corps of Engineers District.

Wetland information is not available at this time

This can happen when the National Wetlands Inventory (NWI) map service is unavailable, or for very large projects that intersect many wetland areas. Try again, or visit the NWI map to view wetlands at this location.

Data limitations

The Service's objective of mapping wetlands and deepwater habitats is to produce reconnaissance level information on the location, type and size of these resources. The maps are prepared from the analysis of high altitude imagery. Wetlands are identified based on vegetation, visible hydrology and geography. A margin of error is inherent in the use of imagery; thus, detailed on-the-ground inspection of any particular site may result in revision of the wetland boundaries or classification established through image analysis.

The accuracy of image interpretation depends on the quality of the imagery, the experience of the image analysts, the amount and quality of the collateral data and the amount of ground truth verification work conducted. Metadata should be consulted to determine the date of the source imagery used and any mapping problems.

Wetlands or other mapped features may have changed since the date of the imagery or field work. There may be occasional differences in polygon boundaries or classifications between the information depicted on the map and the actual conditions on site.

Data exclusions

Certain wetland habitats are excluded from the National mapping program because of the limitations of aerial imagery as the primary data source used to detect wetlands. These habitats include seagrasses or submerged aquatic vegetation that are found in the intertidal and subtidal zones of estuaries and nearshore coastal waters. Some deepwater reef communities (coral or tuberficid worm reefs) have also been excluded from the inventory. These habitats, because of their depth, go undetected by aerial imagery.

Data precautions

Federal, state, and local regulatory agencies with jurisdiction over wetlands may define and describe wetlands in a different manner than that used in this inventory. There is no attempt, in either the design or products of this inventory, to define the limits of proprietary jurisdiction of any Federal, state, or local government or to

establish the geographical scope of the regulatory programs of government agencies. Persons intending to engage in activities involving modifications within or adjacent to wetland areas should seek the advice of appropriate Federal, state, or local agencies concerning specified agency regulatory programs and proprietary jurisdictions that may affect such activities.

NOT FOR CONSULTATION

Attachment C

Photographs

Parking stalls in the north part of the site, looking northeast; 11/23/20. The site is currently being used for Amazon van parking.

Highly disturbed grassland along a fence line in the east part of the site, looking southwest from the east edge of the site; 11/23/20.

East edge of the site, looking north from the southeast part of the site; 11/23/20.

Railroad tracks adjacent to the south edge of the site, looking northeast from the southwest part of the site; 11/23/20.

West edge of the site, looking southeast along a fence line; 11/23/20.

Northeast edge of the site, looking southeast; 11/23/20. A majority of the site is paved and is being used for parking.

Doolittle Drive, looking southwest from the west part of the site; 11/23/20. This road provides access to the south part of the site.

Cul-de-sac at the end of Hester Street, looking north from the northwest part of the site; 11/23/20. The landscape trees in this part of the site were scanned for nesting birds and none were observed.

Large airplane warehouse in the south part of the site, looking northeast from the west side of the warehouse; 11/23/20. No evidence of bats or any other wildlife was observed within this warehouse.

Warehouse in the south part of the site, looking northeast from just west of the warehouse; 11/23/20.

Attachment D

National Wetland Inventory Map

U.S. Fish and Wildlife Service
National Wetlands Inventory

880 Doolittle Drive

November 23, 2020

Wetlands

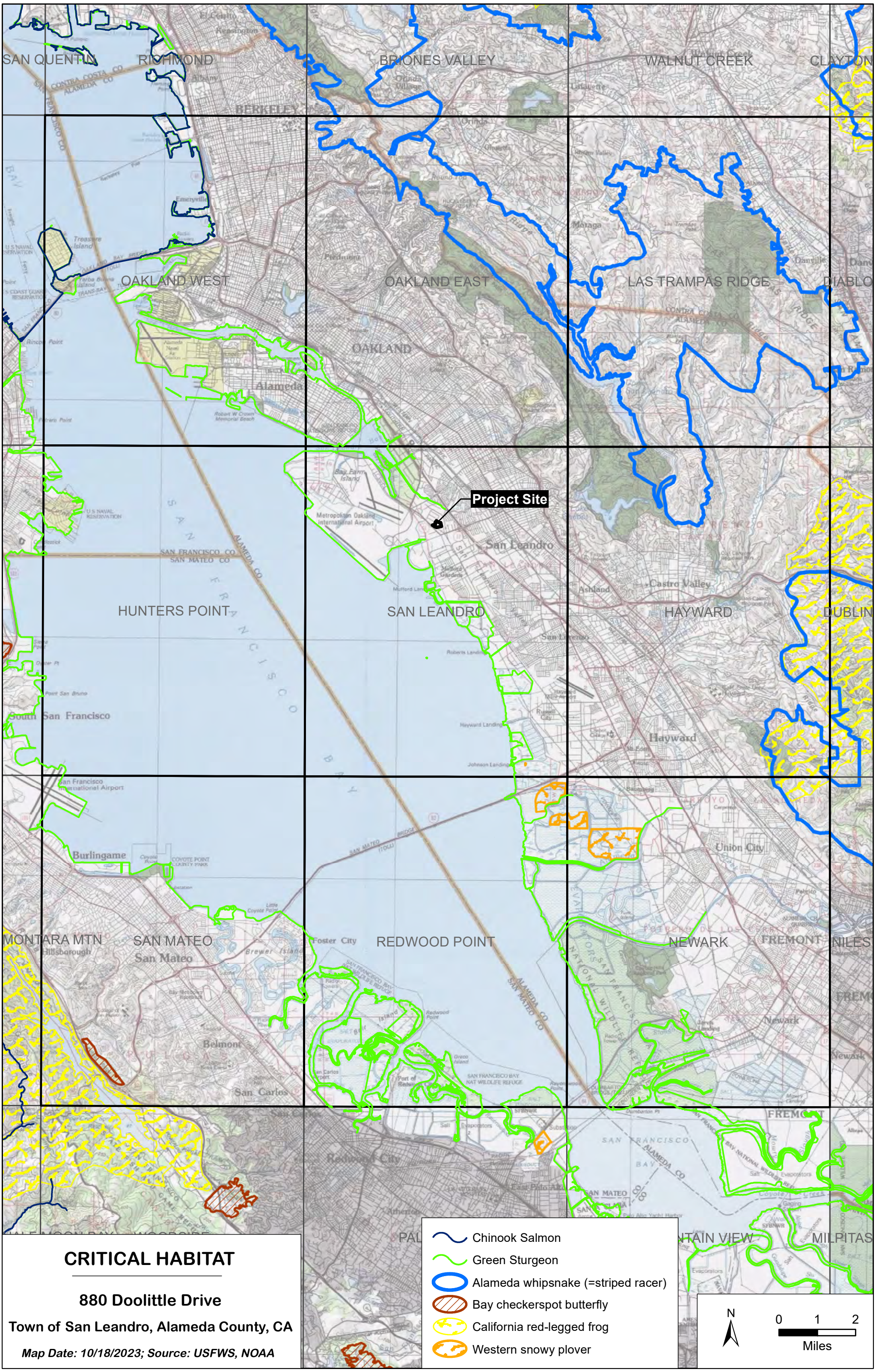
- Estuarine and Marine Deepwater
- Estuarine and Marine Wetland
- Freshwater Emergent Wetland
- Freshwater Forested/Shrub Wetland
- Freshwater Pond
- Lake
- Other
- Riverine

This map is for general reference only. The US Fish and Wildlife Service is not responsible for the accuracy or currentness of the base data shown on this map. All wetlands related data should be used in accordance with the layer metadata found on the Wetlands Mapper web site.

National Wetlands Inventory (NWI)
This page was produced by the NWI mapper

Attachment E

Designated Critical Habitat



CRITICAL HABITAT

880 Doolittle Drive

Town of San Leandro, Alameda County, CA

Map Date: 10/18/2023; Source: USFWS, NOAA

Appendix D

Cultural Resources Memorandum

Cultural Resources Due Diligence Level Review – New Industrial Building and Parking Structure, 880 Doolittle Drive, San Leandro, Alameda County (PLN20-0036)

TO:	Claudia Tarpin (562-376-9271) Director, Development ***Prologis***, El Segundo
RE:	Archaeological Resources Due Diligence Level Review - New Industrial Building and Parking Structure, 880 Doolittle Drive, San Leandro (PLN20-0036)
FROM:	Colin I. Busby, Project Principal (510 430-8441 ext 101)
DATE:	12 April, 2024 (Revised)

INTRODUCTION

Prologis is proposing to redevelop a 14.4 acres site comprised of two parcels at 880 Doolittle Drive/498 Hester Street, City of San Leandro (APN 077A-0741-004-02; 077A-0741-005-00; USGS San Leandro, CA, 1993 T2S, R3W) [Figs. 1-3, 17]. The project plans to demolish four existing buildings and construct a single 98,015 square-foot warehouse building with a total building area of 106,747 square feet. The proposed project would contain office and industrial uses and operate as a distribution and delivery station for a single tenant. The distribution and delivery station would receive deliveries of consumer products, sort and store these products, and coordinate the delivery of products to the customer. The project also includes surface parking spaces, landscaping, and stormwater improvements. The site is located in a mixed-use commercial and industrial area of the Davis Tract in northwestern San Leandro.

The most recent use was an Expresso Airport Parking facility and includes asphalt parking areas and an auxiliary building and three former industrial buildings repurposed for indoor parking totaling 213,500 square feet. The initial facility was developed in the mid to late 1940s by Robert Osborne Engineering that manufactured motor or aircraft parts. Kaiser Industries Corporation/Kaiser Aerospace & Electronics Corporation (KAEC) apparently took over operations in 1951 although it did not purchase the property until 1957. The project site also appears to have been occupied by the Oakland Aircraft Division of Willys Motors, Inc., San Leandro in 1955-1956/1962. Kaiser manufactured aircraft bodies and parts from 1955 to 1957 but then shifted in 1957 to manufacturing nozzles for rocket engines with limited production of aircraft parts. Portions of the property were also used for employee parking and storage. Manufacturing continued until the plant was closed in 1996. The site was used as an off-airport parking enterprise from 2002/2003 to 2018/2020.

The topography is relatively flat and is approximately 13 feet above mean sea level. San Leandro Creek is located approximately 0.5 miles north of the project site and San Francisco Bay is approximately one mile to the southwest. The project site is within Holocene alluvial fan deposits (fine facies Qhff) and latest Holocene alluvial fan deposits (see Witter et al. 2006). Subsurface sediments are primarily unconsolidated and interbedded fine sand, silt and clay

deposits in fluvial, inter-fluvial basin and alluvial environments. Ground water is found approximately 5-7 feet below the surface depending on the season.

Basin Research Associates (BASIN) was requested to review the proposed project site to determine if historic properties or unique archaeological resources would be affected by the proposed actions for use in a California Environmental Quality Act (CEQA) study.

PROJECT SITE HISTORY (excerpted from Langan 2019 and other sources)

The project site covers 14.4 acres within two parcels – 880 Doolittle Drive (southern portion) and 498 Hester Street (northern portion) – in a mixed-use commercial and industrial area of northwest San Leandro. Currently, the northern portion consists of asphalt-paved parking areas, and the southern portion is occupied by three large, industrial, warehouse-like buildings, and a smaller office or administrative building [see Fig. 3]. Project redevelopment will result in the demolition of the existing buildings. The project site was recently used as an off-site airport parking facility.

LAND USE AND DEVELOPMENT

The project site in the later 19th century was in a large open area in agriculture west of the city boundary of San Leandro [see Figs. 4-6]. Davis Street, a major east-west trending road, was in place and the alignment of Bayshore or Shoreline Boulevard (the future Doolittle Drive) extended north from Davis Street towards the Oakland city boundary. The South[ern] Pacific Railroad (SPRR) to Alameda and Oakland was present both north and south of Davis Street following the approximate and future alignment of Doolittle Drive (Thompson and West 1878:36; USGS Haywards, Calif. 1899; Shaffer 1972:128). The area to the immediate west of the present-day alignment of Doolittle Drive and the railroad was largely tidal marshland with San Leandro Creek to the north. The project site was primarily located within a 100 acre parcel owned by D. Sullivan in 1874 (see Allardt 1874) and a 33 ½ acre parcel owned by D. Tosto in 1878 (Thomson and West 1878) [Figs. 5-6].

By the early 20th century, there were orchards to the northeast and southeast of the project site but the project vicinity is shown as open agricultural fields [Fig. 7]. Several additional roads were present in the area to the south of the project site. One notable change was the addition of a rail connection to the main SPRR line heading to Oakland [Fig. 8] and the possible abandonment of the alignment to Alameda. The 1915 USGS shows the rail line as the only railroad near the project site but the original rail alignment to Alameda adjacent to and through the tidal marsh is still shown on other maps, and appears to be visible in a 1939 aerial (USGS Haywards, Calif. 1915; USCGS San Francisco Bay, Southern Part, 1905, 1923). Detailed information on the railroad and its changes is provided in Shafter (1972:37). The extent of marshland to the west and north of the project vicinity appears unchanged.

By 1939 filling had occurred on some of the tidal marsh west of Doolittle. A sewer plant is visible at the end of Davis Street, and an industrial building had been built on Davis Street, east of the SPRR tracks [see Figs. 9-10]. The Oakland Airport North Field is present having been developed in 1927. Much of the area, however, remained in agriculture and the project site was mostly vacant. The Nimitz Freeway (Interstate I-880), not visible on a 1946 aerial, is mapped on the 1947 USGS San Leandro topographic map; however, the section between 98th Avenue in

Oakland and Lewelling Boulevard in San Leandro was not completed until mid-June 1952 and the section from Lewelling to Jackson Street in Hayward was completed in 1953.

Housing developments are present west of the SPRR tracks and Doolittle Drive, approximately one mile to the south of the project site. The USGS topographic map shows three more industrial buildings in the vicinity, including the first building on the project parcel (USGS San Leandro, Calif. 1947) [Figs. 11-12]. A 1946 aerial photograph shows initial site development with grading and foundations present – a start to the post-World War II development of northwest San Leandro.

Early industry in San Leandro was clustered on the east end of Davis Street generally near the SPRR tracks before East 14th Street and/or Bancroft Avenue in the vicinity of Alvarado and Martinez streets. Industrial development in San Leandro increased during and just after WWII with a focus on calculating machines, food products, tractor parts, boxes and paper products, auto assembly and parts, aircraft assembly and parts, paint, electronic and scientific instruments, furniture and wood specialties, chemicals, process instruments and general machine and tool and die parts. The presence of the railroad, the completion of the Nimitz Freeway in the early 1950s and the Port of Oakland all facilitated transportation for raw materials and finished product shipping. The Oakland Airport, constructed in 1927 and subsequently expanded and developed by the Port of Oakland, provided passenger and cargo transport.

The late 1940s and early 1950s resulted in the development of new sewer lines and outfalls and the expansion of the sewage treatment plant site at the end of Davis Street with partial funding provided by the new Chrysler Dodge auto assembly plant on Davis Street just east of Doolittle Drive. Industrial development started in earnest from 1948 on with the annexation of more than 80 industrial properties over 20 years (see Shaffer 1972:128-129) with a focus south of Davis Street along Doolittle Drive and west of the Nimitz Freeway which was opened in the early 1950s. In 1954, there were 198 industrial firms employing 14,000 workers in San Leandro. Virtually all of the industries had entered the city within a few years due to post-WWII and Korean War industrial expansion as well as the continuing focus on agriculture and food processing industries (San Leandro Historical Society, personal communications with C. Busby, September 2021). The availability of open land, expanding and new transportation networks, the presence of a skilled post-war labor pool and the opening of large areas of the Eastbay including San Leandro and unincorporated San Lorenzo for suburban housing development were factors that fed the industrial expansion.

The 1950s industrial expansion included the project area. By 1958, scattered industrial buildings are present in the project vicinity, although there are still many undeveloped parcels in the area. There is little marshland remaining. By 1963, development is starting to fill in the area to the northwest and by 1982 the area is predominantly industrial with only a few unbuilt parcels. Small manufacturing and fabrication, transportation, storage, food processing and service based industries are dominant.

Development of industrial San Leandro continued steadily through the 1990s with minor development in early 21st century. At present, there is increasing focus on biotechnology research and development (R&D) as well as continuing emphasis on food processing, beverage production and light manufacturing and service related industries. Relocation of these industries to San Leandro appears driven by the proximity of a trained and available workforce, the

presence and availability of varied transportation networks for both raw materials and the shipping of finished goods, ample storage and warehousing, City tax and development incentives and adaptive reuse of existing industrial infrastructure.

Project Site

The project site follows the industrial development trends of northwest and other areas of San Leandro transitioning from initial manufacturing to both light manufacturing and serviced based uses in later years. In 1939 the project site was undeveloped agricultural land and vacant as was the surrounding area. By 1946 initial site development had started. A 1946 aerial photograph shows the initial site development with a building present along the 880 Doolittle parcel north edge and grading and/or new building foundations within the main portion of the parcel. A distinct "L" shaped building or building foundation is present that probably represents the initial configuration of the administrative building near the entrance from Doolittle Drive. The 498 Hester parcel was vacant and undeveloped.

Initial use in the late 1940s included the manufacture of motor or aircraft parts possibly for use by the other industries clustered around the Oakland Airport or for use in the auto assembly plants in San Leandro (Chrysler Dodge), Oakland (GMC) or Milpitas (Ford). Kaiser Industries Corporation/Kaiser Aerospace & Electronics Corporation (KAEC) apparently took over operations in 1951 although it did not purchase the property until 1957. The project site also appears to have been occupied by the Oakland Aircraft Division of Willys Motors, Inc., San Leandro in 1955-1956/1962. KAEC manufactured aircraft bodies and parts from 1955 to 1957 but then shifted in 1957 to manufacturing nozzles for rocket engines with limited production of aircraft parts. Portions of the property were also used for employee parking and storage. Manufacturing continued until the plant was closed in 1996. The site was used as an off-airport parking enterprise from 2002/2003 to 2018/2020.

By 1958, the 498 Hester Street property had one building and had been recently paved. The property was used for employee parking and storage associated with the adjacent 880 Doolittle property from 1963 until 1976. After 1976, KAEC leased 75% of the 498 Hester Street property to other businesses including a truck trailer repair and storage company and light manufacturing company. From 1995 to October 2002, the property was used by a cargo container repair and storage company. The parcel is currently vacant and is completely paved.

In terms of the built environment, there are multiple buildings on the 880 Doolittle Drive parcel [see Figs. 17-25]. The Administration Building was constructed first around 1946 and is freestanding, just off Doolittle Drive at the western portion of the parcel. The Northern Building, based on historic aerial photographs and maps, appears to have been built in 1946-47 with an addition constructed at its west side in 1961. The Southern Building and adjacent Breezeway Building were both built in 1964, with an addition to the east side of the Southern Building constructed in 1966. These industrial buildings were merged and connected through several building campaigns forming continuous, irregular roof coverage over a large portion of the parcel (see *Historical Resource Evaluation 880 Doolittle drive & 498 Hester Street [Parcels 077A-0741-004002 & 077A-0741-004-00, San Leandro, CA* [architecture + history, llc 2024]).

RESEARCH PROTOCOLS

A prehistoric and historic site records and literature search for a 0.25 mile radius from the project site was completed by the California Historical Resources Information System, Northwest Information Center, Sonoma State University (CHRIS/NWIC File No. 20-1048 by Hagel, dated 12/8/20). Reference material from the Bancroft Library at the University of California, Berkeley, Basin Research Associates, San Leandro and available on the web was also consulted. Sources included:

> *National Register of Historic Places* listings for Alameda County, California (USNPS 2017-2020);
>
> *OHP Built Environment Resources Directory* [BERD] (CAL/OHP 2020a).
>
> *Listed California Historical Resources* (CAL/OHP 2020b) with the most recent updates of the National Register of Historic Places; California Historical Landmarks; and, California Points of Historical Interest as well as other evaluations of properties reviewed by the State of California Office of Historic Preservation;
>
> *California History Plan* (CAL/OHP 1973);
>
> *California Inventory of Historic Resources* (CAL/OHP 1976);
>
> *Five Views: An Ethnic Sites Survey for California* (CAL/OHP 1988);
>
> *Archaeological Determinations of Eligibility* (CAL/OHP 2020c);
>
> Other regional/local lists and maps (see preceding Land Use History Section and References Cited and Consulted).

The Native American Heritage Commission (NAHC) was contacted for a review of the Sacred Lands Inventory (SLF) (Busby 2020a) (see Attachments). No other agencies, departments or local historical societies were contacted regarding landmarks, potential historic sites or structures.

An archaeological and built environment review of the project site was conducted by Dr. Colin I. Busby (RPA), an archaeologist meeting the Standards of the Secretary of the Interior, on December 14, 2020.

FINDINGS

No prehistoric, combined prehistoric/historic era, and/or historic era archaeological sites have been recorded within the project site. The *OHP Built Environment Resources Directory* [BERD] (CAL/OHP 2020a) has no resources listed for the project addresses.

RECORDS SEARCH RESULTS

The San Leandro Fiber Optic for Broadband project (excluding California Office of Historic Preservation correspondence) has four reports with negative results within or adjacent to the project site. Twelve additional cultural resources studies are within 0.25 mile of the project site with generally negative results (see Table 1).

No prehistoric, combined prehistoric/historic era, and/or historic era archaeological sites have been recorded within the project site. Two historic buildings and one historic district are within 1000 feet (see Table 2). Two resources have been found ineligible for the National Register of Historic Places (NR), the California Register of Historical Resources (CR) or Local Listing (LL) through survey evaluation. One resource, the Davis West Historic District, has been determined ineligible for the NR by consensus through Section 106 process – not evaluated for CR or LL.

TABLE 1
STUDIES IN/ADJACENT AND WITHIN 0.25 MILE OF PROJECT SITE

Report #	Author	Date	Title	Study Type	Comments	Resources In/Adjacent
In or Adjacent						
S-046322	Heidi Koenig	2014	San Leandro Fiber Optic for Broadband Project, City of San Leandro, Alameda County, California; Cultural Resources Survey Report	Archaeological, Field study	Negative	None
S-046322a	Heidi Koenig	2014	Addendum to the San Leandro Fiber Optic For Broadband Project, City of San Leandro, Alameda County, California	Archaeological, Field study	Negative	None
S-046322b	Heidi Koenig	2015	Cultural Resources Monitoring Report, San Leandro Fiber Optic for Broadband Project, City of San Leandro, Alameda County, California	Archaeological, Monitoring	Negative	None
S-046322c	Heidi Koenig	2015	Addendum #2 to the San Leandro Fiber Optic for Broadband Project, City of San Leandro, Alameda County	Archaeological, Evaluation, Field study	Negative	None
S-046322d	Carol Roland-Nawi	2015	EDA_2014_0206_001; 2nd Area of Potential Effects Revision, San Leandro Fiber Optic Broadband Project, San Leandro, CA	OHP Correspondence	Negative	None
Within 0.25 mile						
S-000621	Richard B. Hastings	1975	Archaeological and Architectural Survey of the Davis Street Railroad Crossing, 04-Ala-112 0.0/0.5, 04209 - 393291	Archaeological, Field study	Negative	None
S-000667	David Chavez	1977	An archaeological field reconnaissance of two proposed water storage pond sites in Oakland (letter report).	Archaeological, Field study	Negative	None
S-001308	Carol Sutton and Cindy Desgrandchamp	1978	An Archaeological Survey Report of a Proposed Road Widening, 04-ALA-61 P.M. 14.8/15.9, 04204 - 350601	Archaeological, Field study	Negative	None
S-001743	Michael J. Sawyer, Diane C. Watts, E. Breck Parkman, Patricia M. Ogrey, and Robert M. Harmon	1978	An Archaeological Reconnaissance of the Hayward-San Leandro Transportation Corridor, Alameda County, California	Archaeological, Field study	2 resources outside the project area	None
S-001786	David Chavez	1979	Cultural Resources Evaluation for the Oakland Airport Transit Connector EIS/EIR, Alameda County, California	Archaeological, Field study	Negative	None
S-012439	David Chavez	1990	Cultural Resources Investigations for the Port of Oakland Phase I Dredging, Cultural Resources Evaluation	Archaeological, Field study	Negative	None
S-023381	Colin I. Busby and Stuart A. Guedon	2000	EBMUD Exploratory Boring Program, Davis and Beecher Streets, San Leandro (Revised), APN-077A-0675-009-00, 077A-0675-005-02 and 007A-0675-013-00 (letter report)	Archaeological, Field study	Negative	None
S-029589	Adam Marlow, Allen Estes, and James Allan	2004	Archaeological Assessment of the Proposed San Leandro Recycled Water Master Plan, San Leandro, Alameda County, California.	Archaeological, Field study	Negative	None

TABLE 1, con't
STUDIES IN/ADJACENT AND WITHIN 0.25 MILE OF PROJECT SITE

Report #	Author	Date	Title	Study Type	Comments	Resources In/Adjacent
Within 0.25 mile, con't						
S-033061	Nancy Sikes, Cindy Arrington, Bryon Bass, Chris Corey, Kevin Hunt, Steve O'Neil, Catherine Pruett, Tony Sawyer, Michael Tuma, Leslie Wagner, and Alex Wesson	2006	Cultural Resources Final Report of Monitoring and Findings for the Qwest Network Construction Project, State of California	Archaeological, Architectural/ historical, Field study, Monitoring	Numerous resources outside the area	None
S-033061a	SWCA Environmental Consultants	2006	Cultural Resources Final Report of Monitoring and Findings for the Qwest Network Construction Project, State of California	Archaeological, Monitoring	Numerous resources outside the area	None
S-033061b	Nancy E. Sikes	2007	Final Report of Monitoring and Findings for the Qwest Network Construction Project (letter report)	Archaeological, Monitoring	Numerous resources outside the area	None
S-052020	Paul Zimmer	2018	Alco Iron And Metal Expansion Project Alameda County, California; Cultural Resources Study	Archaeological, Architectural/ historical, Field study	2 resources outside the project area	None

TABLE 2
CULTURAL RESOURCES IN THE VICINITY OF THE PROJECT

Resource	Type	Recorded by	Eligibility NRHP/CRHR	Comment
In or Adjacent				
None				
Within 1000 feet				
P-01-011497	Historic District; Davis West Historic District;	2013 (Michael Hibma, LSA Associates Inc.)	Evaluated as not eligible – 6Y	Resource is a minimum of 550 feet east of the project
P-01-012125	Historic; Building Alco Ferrous Scrap Purchasing Building	2018 (Paul Zimmer, Environmental Science Associates)	Evaluated as not eligible – 6Z	Resource is ca. 700 feet southwest of the project
P-01-012126	Historic; Building Alco Scrap Metal Storage Warehouse	2018 (Paul Zimmer, Environmental Science Associates)	Evaluated as not eligible – 6Z	Resource is ca. 1000 feet southwest of the project

FIELD REVIEW [see Figs. 4-12]

Dr. Colin I. Busby (RPA) completed an archaeological and built environment field review of the project site on December 14, 2020. The 14-acre project site is generally paved with three large size industrial buildings and an associated administrative office present. The buildings were secured and not inspected from the interior. Langan (2019) provides a number of interior building views and these were reviewed.

No surface evidence of prehistoric or historic cultural material was observed as entire area was covered with hardscape and native soil was not available for inspection.

INDIVIDUALS, GROUP AND AGENCY PARTICIPATION

The Native American Heritage Commission (NAHC) was contacted for a review of the Sacred Lands Inventory (SLF) (Busby 2020a). The NAHC responded indicating the review of the SLF was negative and providing a list of 10 Native American tribes and individuals for consultation pursuant to Assembly Bill (AB 52) (Fonseca 2020) (see Attachments). Consultation requires government to government contact and the City of San Leandro will undertake AB 52 consultation when the City has determined that the application for the project is complete. BASIN did not complete any outreach to the Native American tribes and individuals due to the City's mandate to complete AB 52 outreach.

No other agencies were contacted. However, contract was made with Ms. Cynthia Simons, President, San Leandro Historical Society, who reviewed her files on "industry" in northwest San Leandro. She provided several undated newspaper articles and advertisements concerning Kaiser Aerospace and Electronics Corporation. One articles had information regarding an award made to the firm for "Zero Defects" for machined parts provided to the United States Air Force and the other was a help wanted advertisement for machinists, heliarc welders and maintenance mechanics.

SUMMARY

- The CHRIS/NWIC records review found no record of previous cultural resources studies for the project site and did not note the presence of any prehistoric and/or historic era archaeological sites within or adjacent to the project site.
- No Native American villages, traditional use areas or contemporary use areas or other features of significance have been identified in or adjacent to the project site.
- No Hispanic era features have been identified in or adjacent to the project site.
- No American Period archaeological sites have been recorded, reported or identified in or adjacent to the project site.
- No surface evidence of prehistoric or historic cultural material was observed as entire area was covered with hardscape.
- The built environment was reviewed by architecture + history, llc (2024) who determined that the buildings do not appear to qualify as Historical Resources under CEQA. They do not appear to be associated with events that have made a significant contribution to the broad patterns of California's history and cultural heritage (Criterion 1) nor are they associated with the lives of persons important in our past (Criterion 2). None of the buildings embody the distinctive characteristics of a type, period, region, or method of construction, or represent the work of an important creative individual, or possesses high artistic values (Criterion 3). None of the buildings meet the City of San Leandro's criteria for a City Landmark or designation as a Merit Resource.
- Research completed for the project suggests a low potential for the presence of subsurface prehistoric and/or historic deposits either within or adjacent to the project site. The nearest known prehistoric resources are located along San Leandro Creek 0.5 mile to north. No prehistoric uses have been exposed in the general area.

- No listed or known potential National Register of Historic Places and/or California Register of Historical Resources are located in or adjacent to the project site. No other significant or potentially significant local, state or federal cultural resources/historic properties, landmarks, points of interest, etc. have been identified in or immediately adjacent to the project site.

MANAGEMENT RECOMMENDATIONS

It is the considered opinion of BASIN, based on a review of pertinent records, maps and other documents and a field inventory, that the proposed project can proceed as planned in regard to prehistoric and historic archaeological resources. No subsurface testing for buried archaeological resources appears warranted. The built environment does not appear to be eligible for listing on the California Register of Historic Resources or as a City of San Leandro Historic Resource (see architecture + history, llc 2024).

BASIN recommends that if any unanticipated prehistoric or historic period cultural materials[1] are exposed during construction grading and/or excavation, operations should stop within 50 feet of the find and a qualified professional archaeologist contacted for evaluation and further recommendations consistent with CEQA and City of San Leandro requirements. Potential recommendations could include evaluation, collection, recordation, analysis, etc. of any significant cultural materials followed by a professional report.

---

1. Significant prehistoric cultural resources are defined as human burials, features or other clusterings of finds made, modified or used by Native American peoples in the past. The prehistoric and protohistoric indicators of prior cultural occupation by Native Americans include artifacts and human bone, as well as soil discoloration, shell, animal bone, sandstone cobbles, ashy areas, and baked or vitrified clays. Prehistoric materials may include:

   a. Human bone - either isolated or intact burials.
   b. Habitation (occupation or ceremonial structures as interpreted from rock rings/features, distinct ground depressions, differences in compaction (e.g., house floors).
   c . Artifacts including chipped stone objects such as projectile points and bifaces; groundstone artifacts such as manos, metates, mortars, pestles, grinding stones, pitted hammerstones; and, shell and bone artifacts including ornaments and beads.
   d. Various features and samples including hearths (fire-cracked rock; baked and vitrified clay), artifact caches, faunal and shellfish remains (which permit dietary reconstruction), distinctive changes in soil stratigraphy indicative of prehistoric activities.
   e. Isolated artifacts

   Historic cultural materials may include finds from the late 19th through early 20th centuries. Objects and features associated with the Historic Period can include.

   a. Structural remains or portions of foundations (bricks, cobbles/boulders, stacked field stone, postholes, etc.).
   b. Trash pits, privies, wells and associated artifacts.
   c. Isolated artifacts or isolated clusters of manufactured artifacts (e.g., glass bottles, metal cans, manufactured wood items, etc.).
   d. Human remains.

   In addition, cultural materials including both artifacts and structures that can be attributed to Hispanic, Asian and other ethnic or racial groups are potentially significant. Such features or clusters of artifacts and samples include remains of structures, trash pits, and privies.

State law shall be followed in regard to Native American burials (Chapter 1492, Section 7050.5 to the Health and Safety Code, Sections 5097.94, 5097.98 and 5097.99 of the Public Resources Code).

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Abbreviations

n.d. no date v.d. various dates N.P. no publisher noted
n.p.p. no place of publisher noted

CHRIS/NWIC, Sonoma State University, Rohnert Park is used for material on file at the California Historical Resources Information System, Northwest Information Center, Sonoma State University, Rohnert Park.

ATTACHMENTS

FIGURES

FIGURE 1	General Project Location (ESRI World Street Map)
FIGURE 2	Project Location - T2S R3W unsectioned (USGS San Leandro, CA 1993)
FIGURE 3	Project with Historic Site Features (Langan 2019)
FIGURE 4	Approximate Location of Project in 1873 (Whitney et al. 1873)
FIGURE 5	Project Area in 1874 (Allardt 1874)
FIGURE 6	Project Area in 1878 (Thompson and West 1878:36)
FIGURE 7	Project Area in 1905 - note orchards in the vicinity of San Leandro (USCGS San Francisco Bay Southern Part 1905)
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FIGURE 12	Project Location T2S R3W (USGS San Leandro, Calif. 1948)
FIGURE 13	Project Location T2S R3W (USGS San Leandro, Calif. 1959)
FIGURE 14	Project Location T2S R3W (USGS San Leandro, Calif. 1968)
FIGURE 15	Project Location T2S R3W (USGS San Leandro, Calif. 1973)
FIGURE 16	Project Location T2S R3W (USGS San Leandro, Calif. 1980)
FIGURE 17	Aerial View of Project Parcels with Photo View Locations
FIGURE 18	Former Administration Building – view north from Doolittle Drive entrance
FIGURE 19	Northern Building – west façade of 1961 addition, view to south
FIGURE 20	Northern Building – view east along north façade
FIGURE 21	Northern Building – view west along north side of building showing 1961 addition
FIGURE 22	Northern Building – view west along north side of building
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FIGURE 24	Southern Building – west façade, view to east
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NATIVE AMERICAN OUTREACH

REQUEST	Request to Native American Heritage Commission (NAHC)
RESPONSE	NAHC Response

CHRIS/NWIC SEARCH

SEARCH	CHRIS/NWIC File No. 20-1048. Dated 12/8/20. [No Confidential Information]

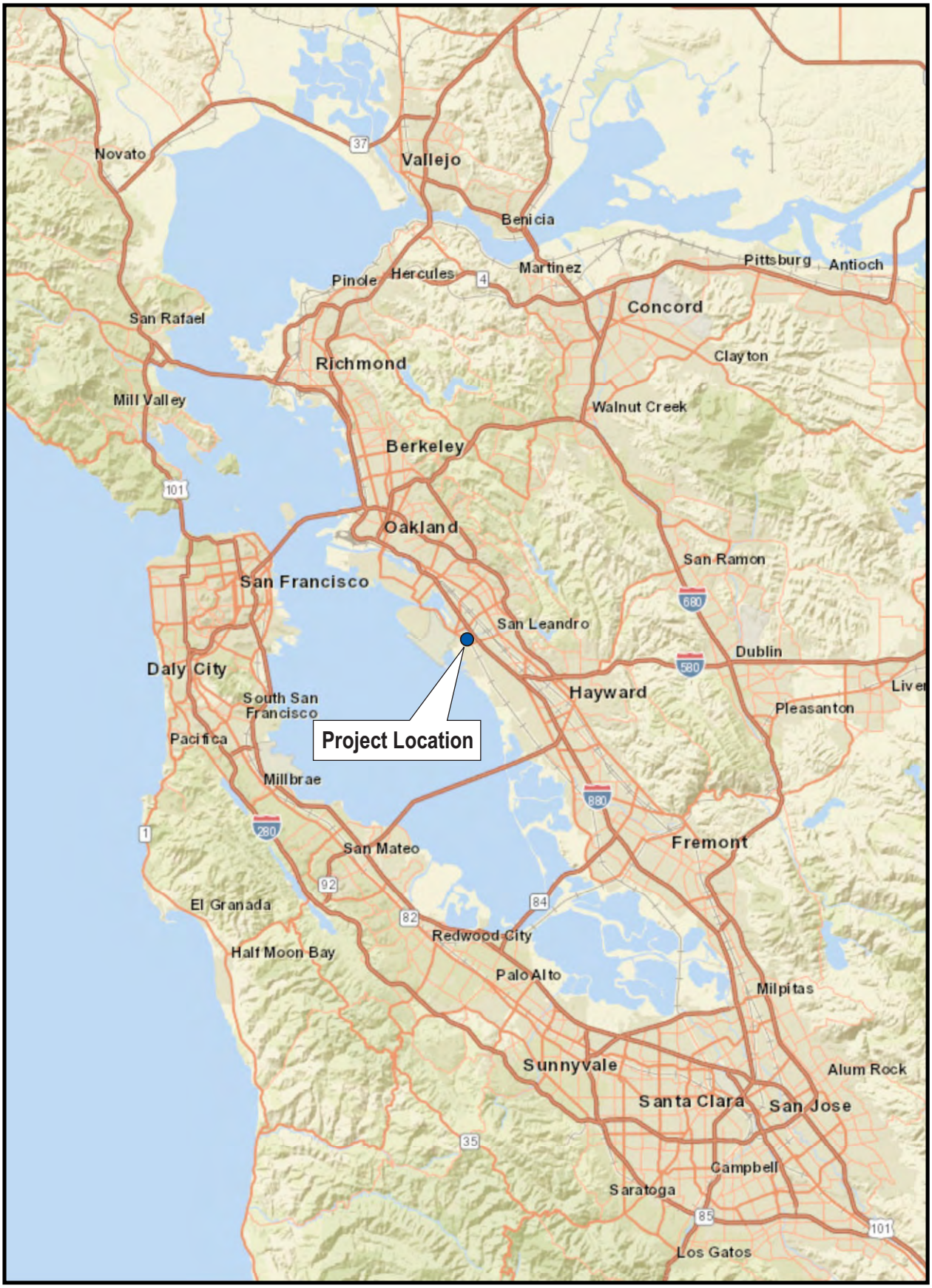


Figure 1: General Project Location (ESRI World Street Map)

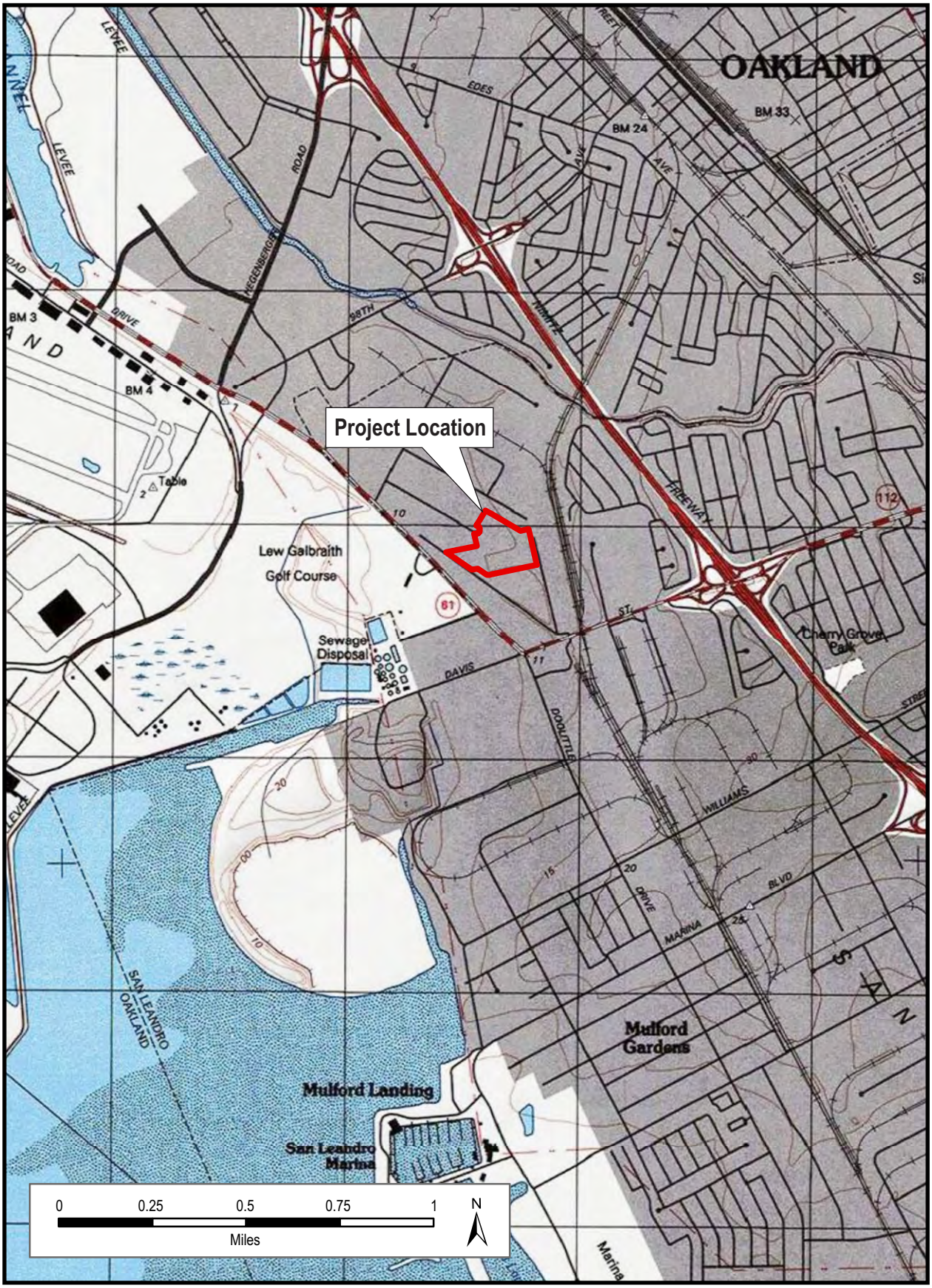
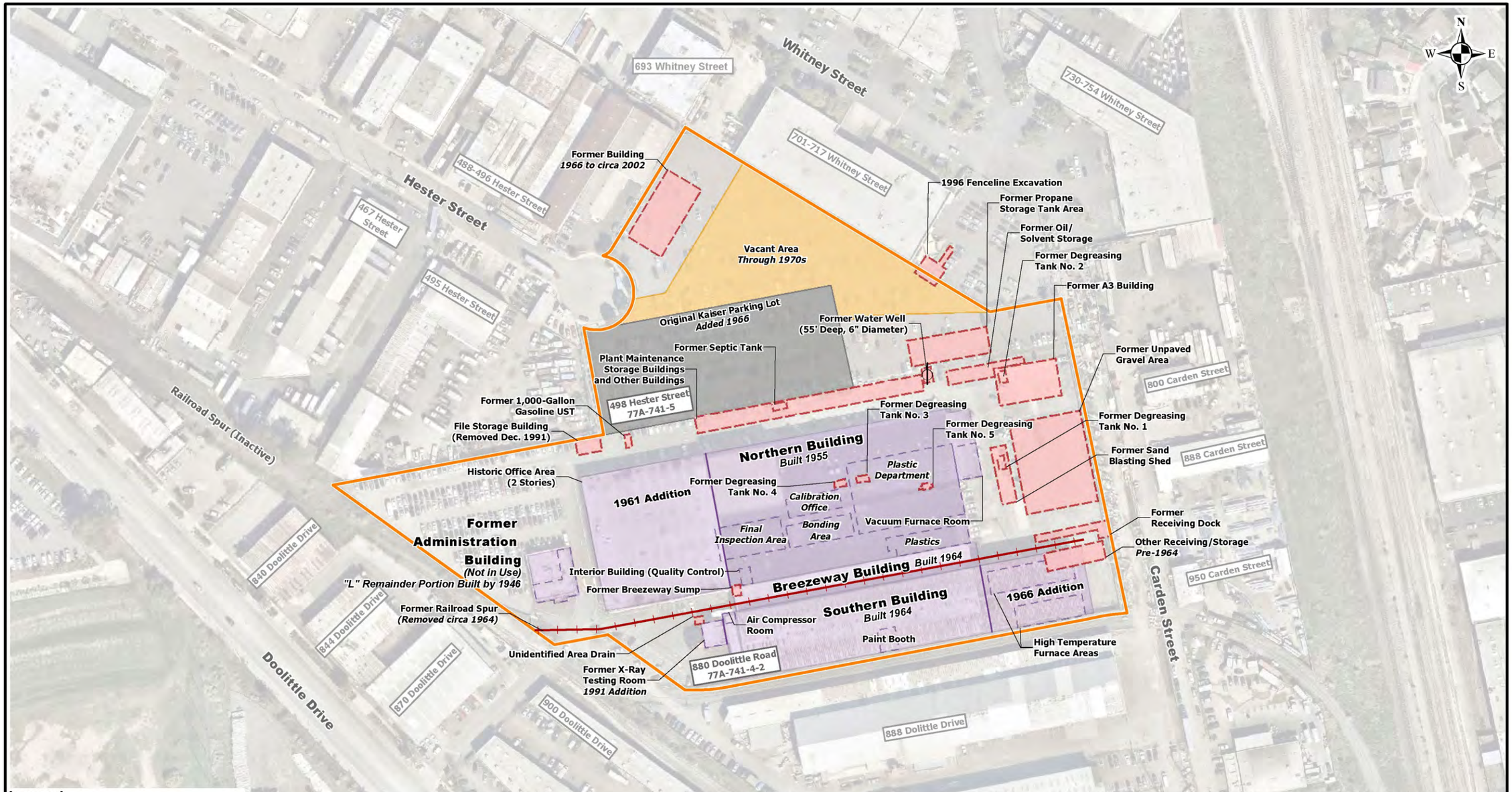


Figure 2: Project Location - T2S R3W unsectioned (USGS San Leandro, CA 1993)



Legend

- Railroad Spur
- Existing Structure Footprint (with sub-lines for different building phases)
- Building Interior Feature
- Former Parking Area
- Former Vacant Area
- Historic Site Features
- Approximate Site Boundary

Notes:
1. Aerial imagery provided by Langan's subscription to Nearmap.com. Imagery flown on 3/6/2018.
2. Parcel boundary provided by County of Alameda, 2016.
3. Overall site features digitized from "Site Plan" created by SGI, dated 4/19/2017 with other features from 14-Oct-74 and 24-Jun-63 aerial photographs and diagrams in 1996 Source Area Evaluation Report.
4. Building subareas and historic features shown are approximate.

150 0 150
SCALE IN FEET

LANGAN
501 14TH Street, 3rd Floor
Oakland, CA 94612-1420
T: 510.874.7000 F: 510.874.7001 www.langan.com
Langan Engineering & Environmental Services, Inc.
Langan Engineering, Environmental, Surveying and Landscape Architecture, D.P.C.
Langan International LLC
Collectively known as Langan

Project	Drawing Title	Project No.	Figure
880 DOOLITTLE DRIVE SAN LEANDRO ALAMEDA COUNTY CALIFORNIA	HISTORIC SITE FEATURES	750651301	3
		Date 8/13/2018	
		Scale 1 " = 150 '	
		Drawn By OG	

© 2012 Langan

Path: \\langan.com\data\OAK\data3\750651301\Project Data\ArcGIS\MXD\Environmental_Figures\Fig3_Historic_Site_Features.mxd Date: 8/13/2018 User: ogodfrey Time: 4:26:19 PM

Figure 3: Project with Historic Site Features (Langan 2019)

Figure 4: Approximate Location of Project in 1873 (Whitney et al. 1873)

Figure 5: Project Area in 1874 (Allardt 1874)

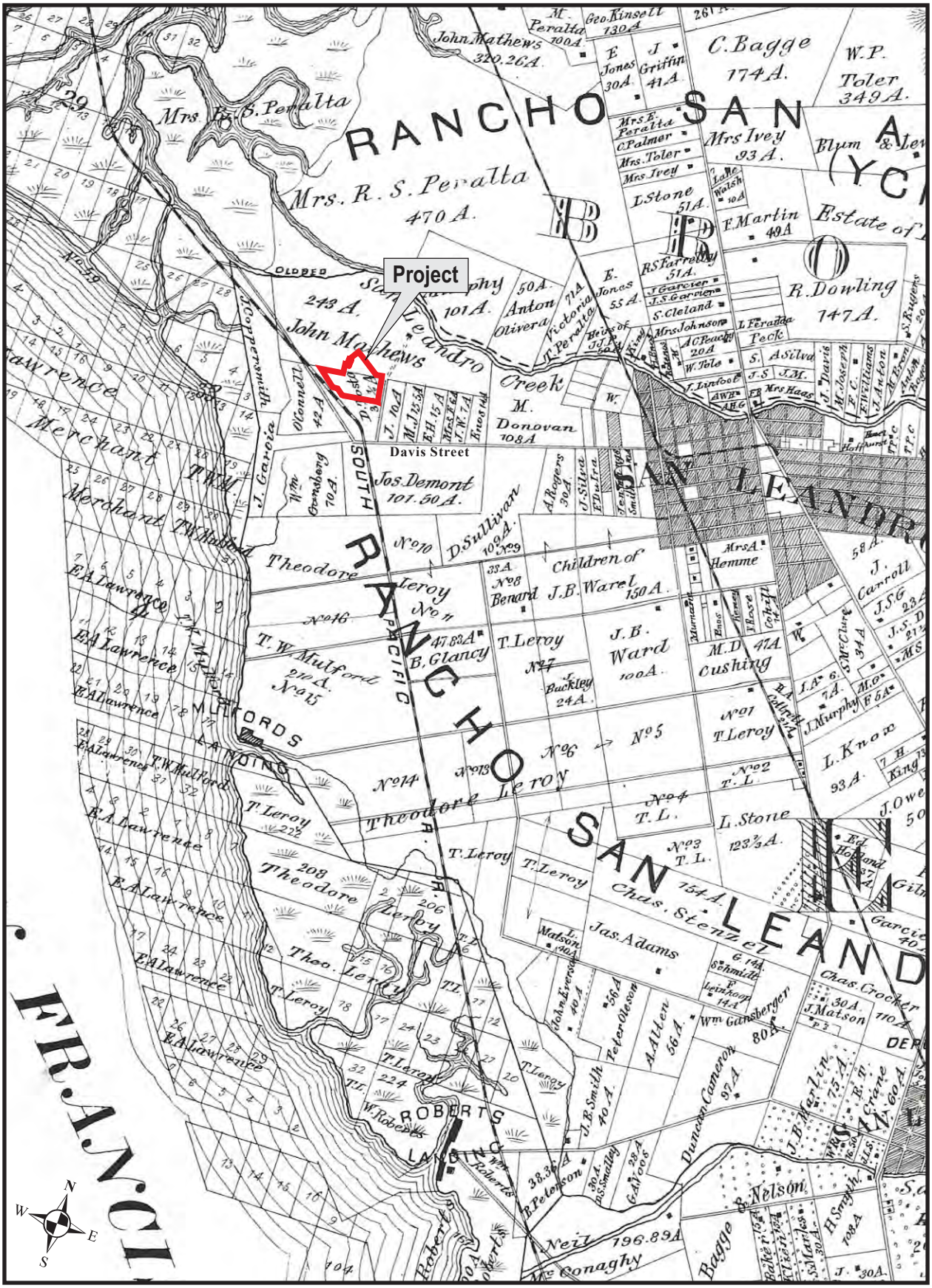


Figure 6: Project Area in 1878 (Thompson and West 1878:36)

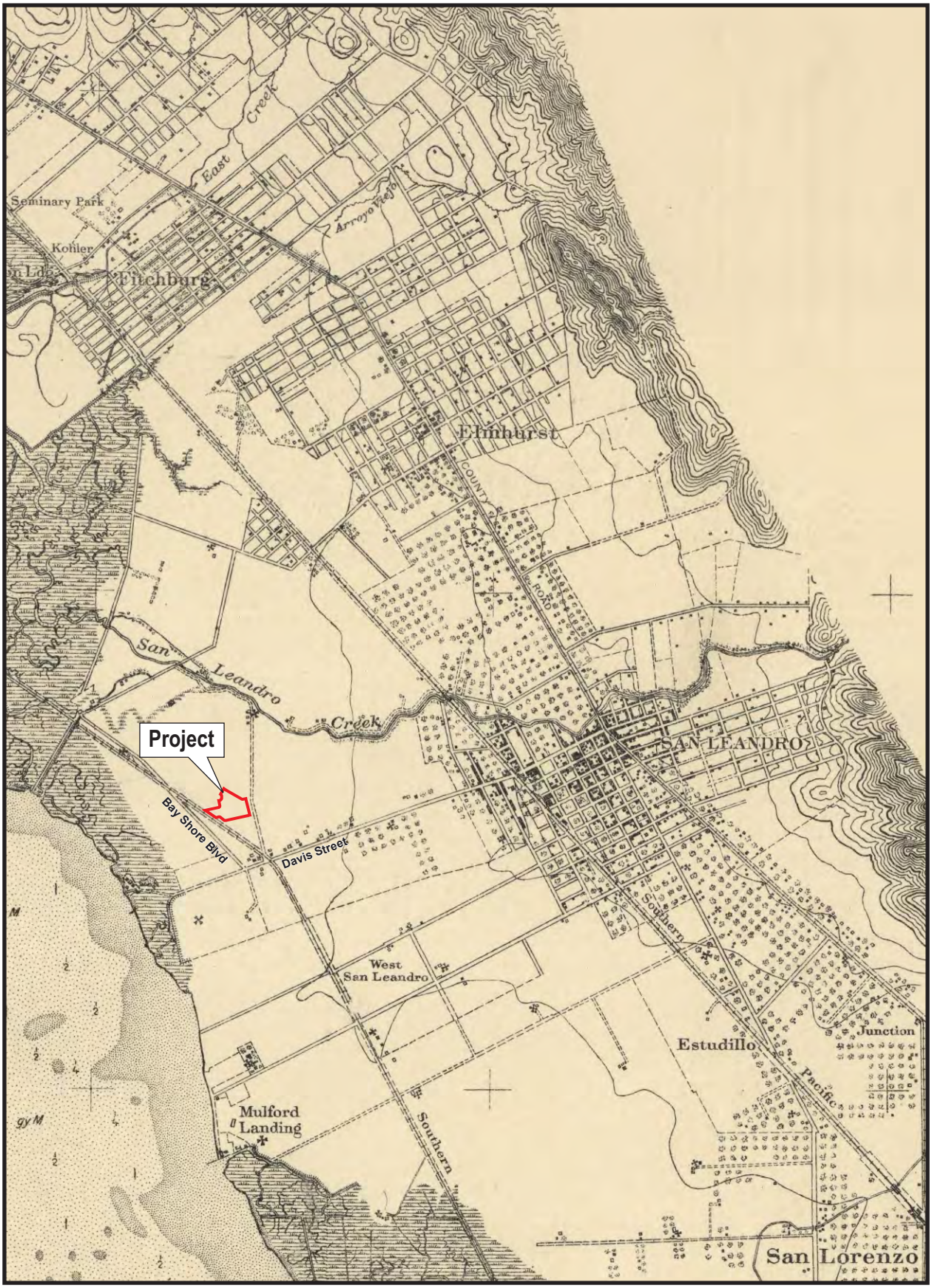


Figure 7: Project Area in 1905 - note orchards in the vicinity of San Leandro (USCGS San Francisco Bay Southern Part 1905)

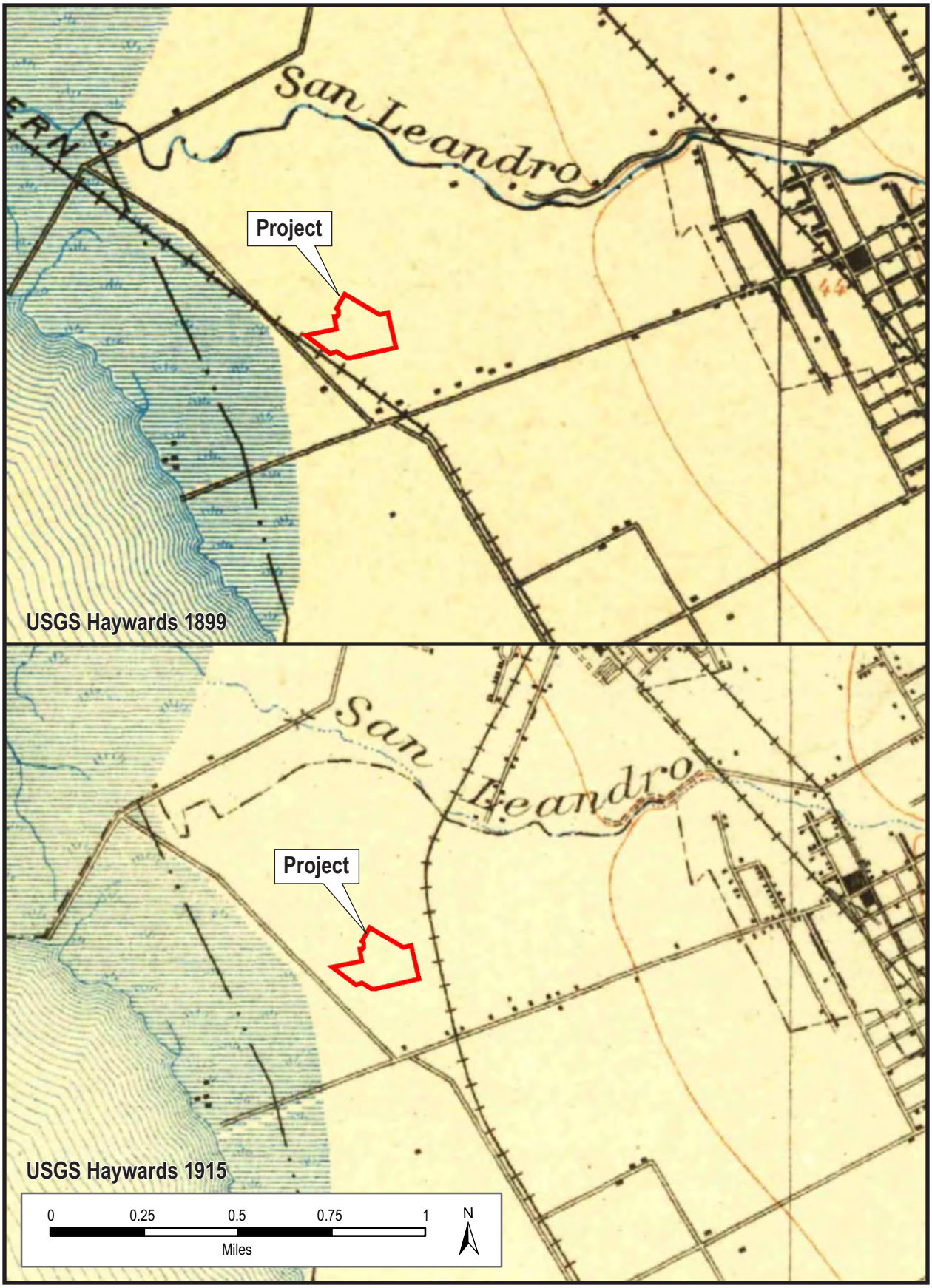


Figure 8: Project Location T2S R3W (USGS Haywards, Calif. 1899 and 1915)

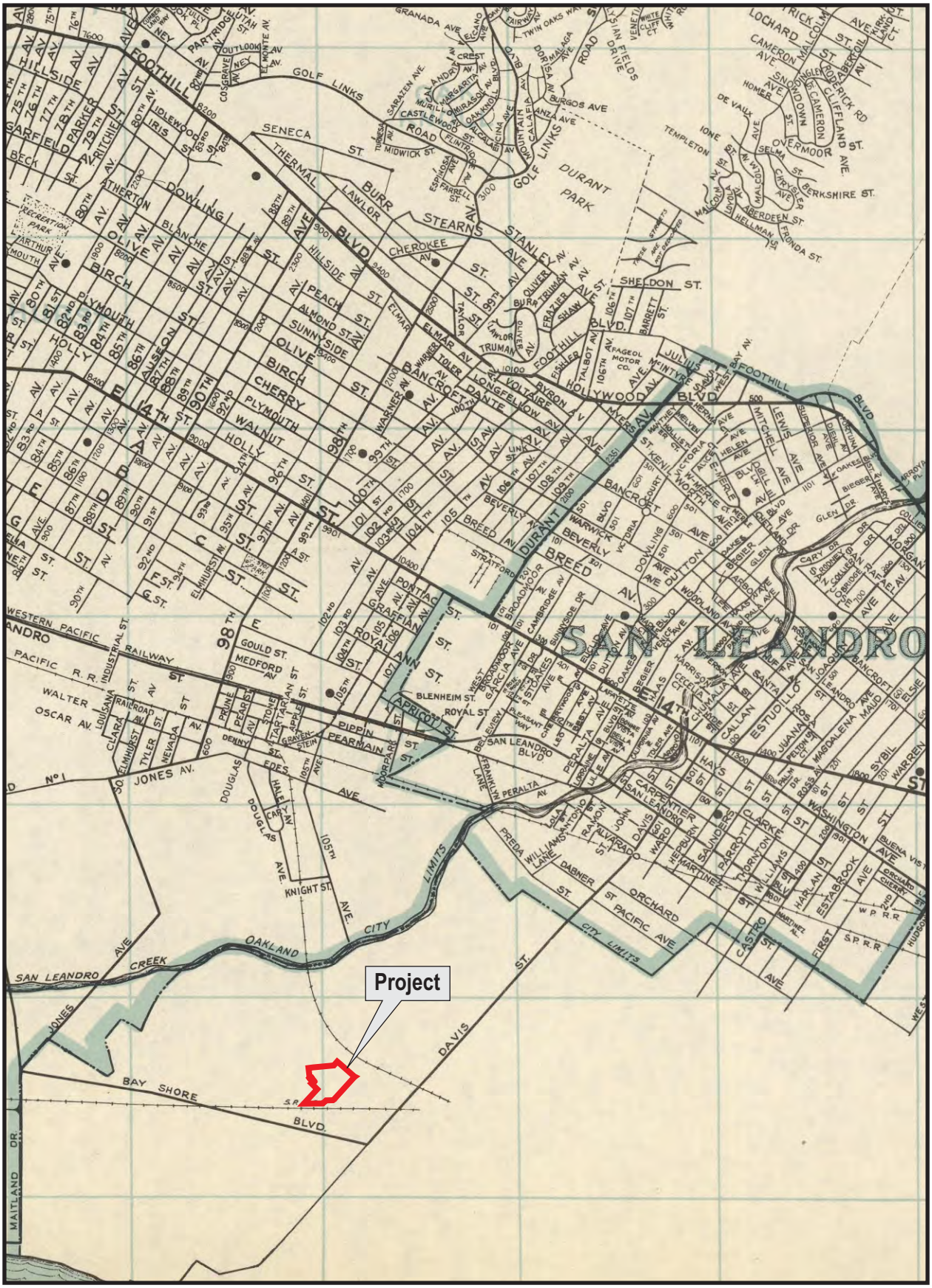


Figure 9: Thomas Bros 1938 map showing Bay Shore Blvd. and Davis St., and the San Leandro and Oakland city limits (Thomas Brothers 1938)

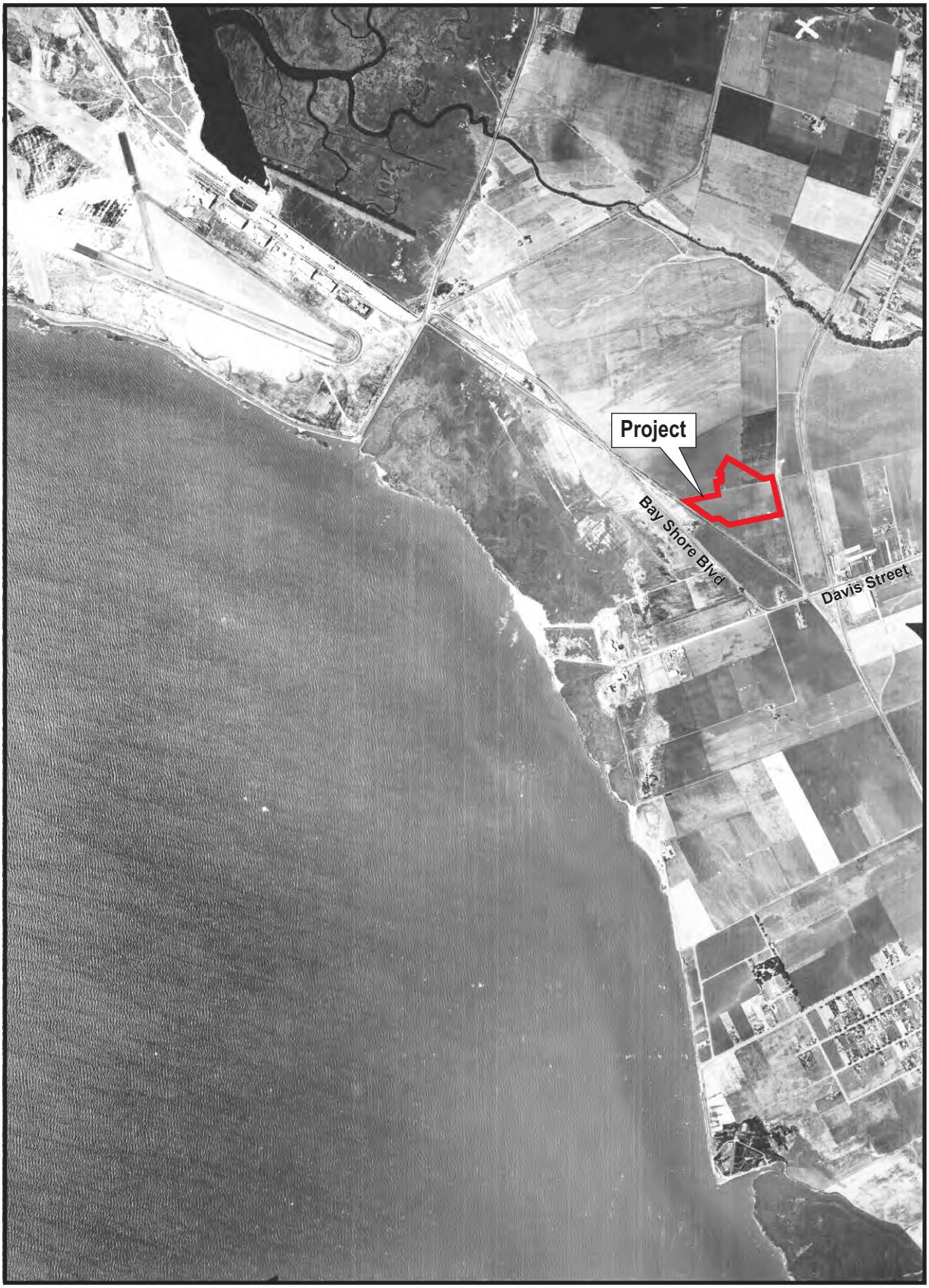


Figure 10: Aerial View of Project Location in 1939 (UCSB M&IL 1939:C-5750 Fr 289-52)

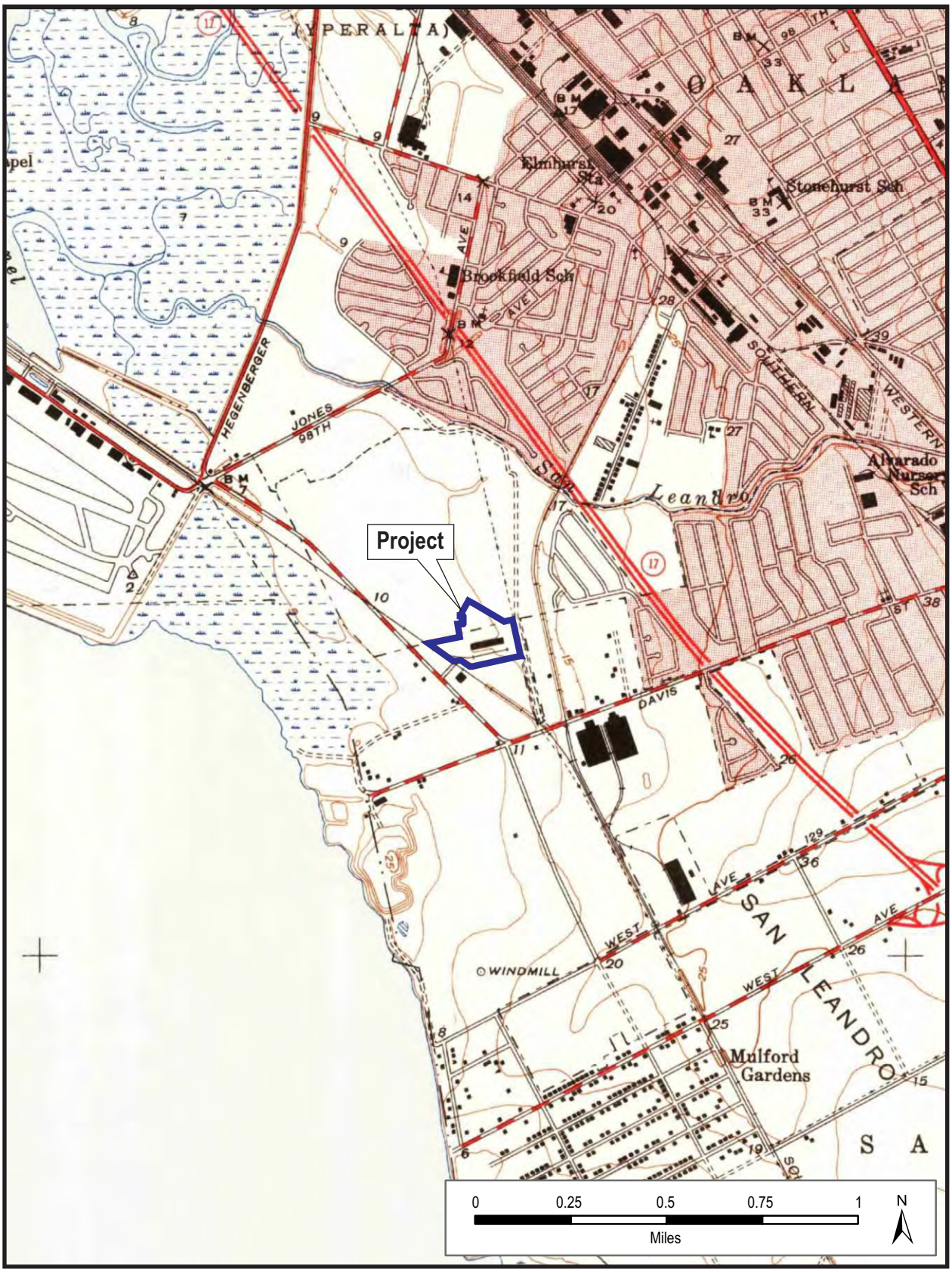


Figure 11: Project Location T2S R3W (USGS San Leandro, Calif. 1947)

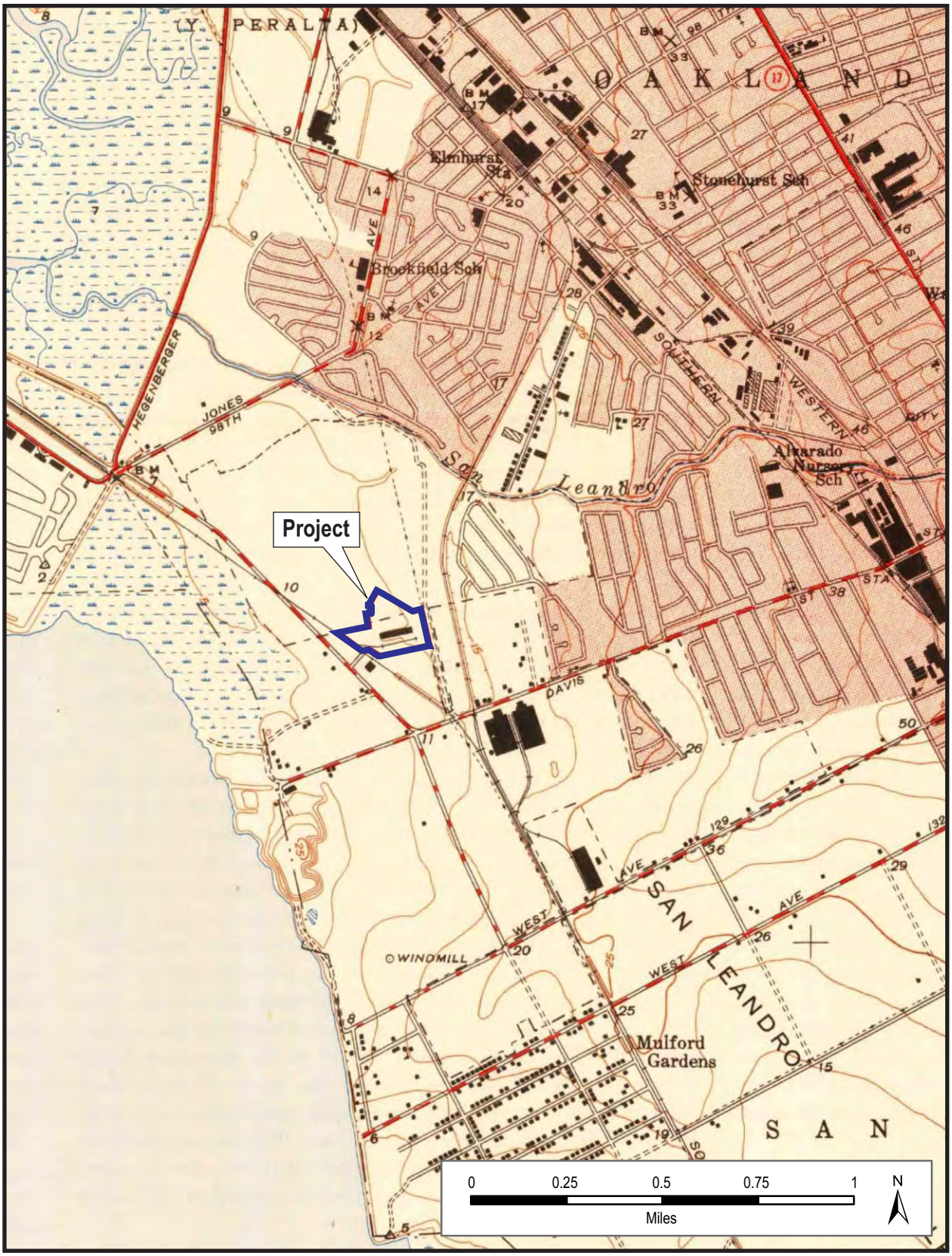


Figure 12: Project Location T2S R3W (USGS San Leandro, Calif. 1948)

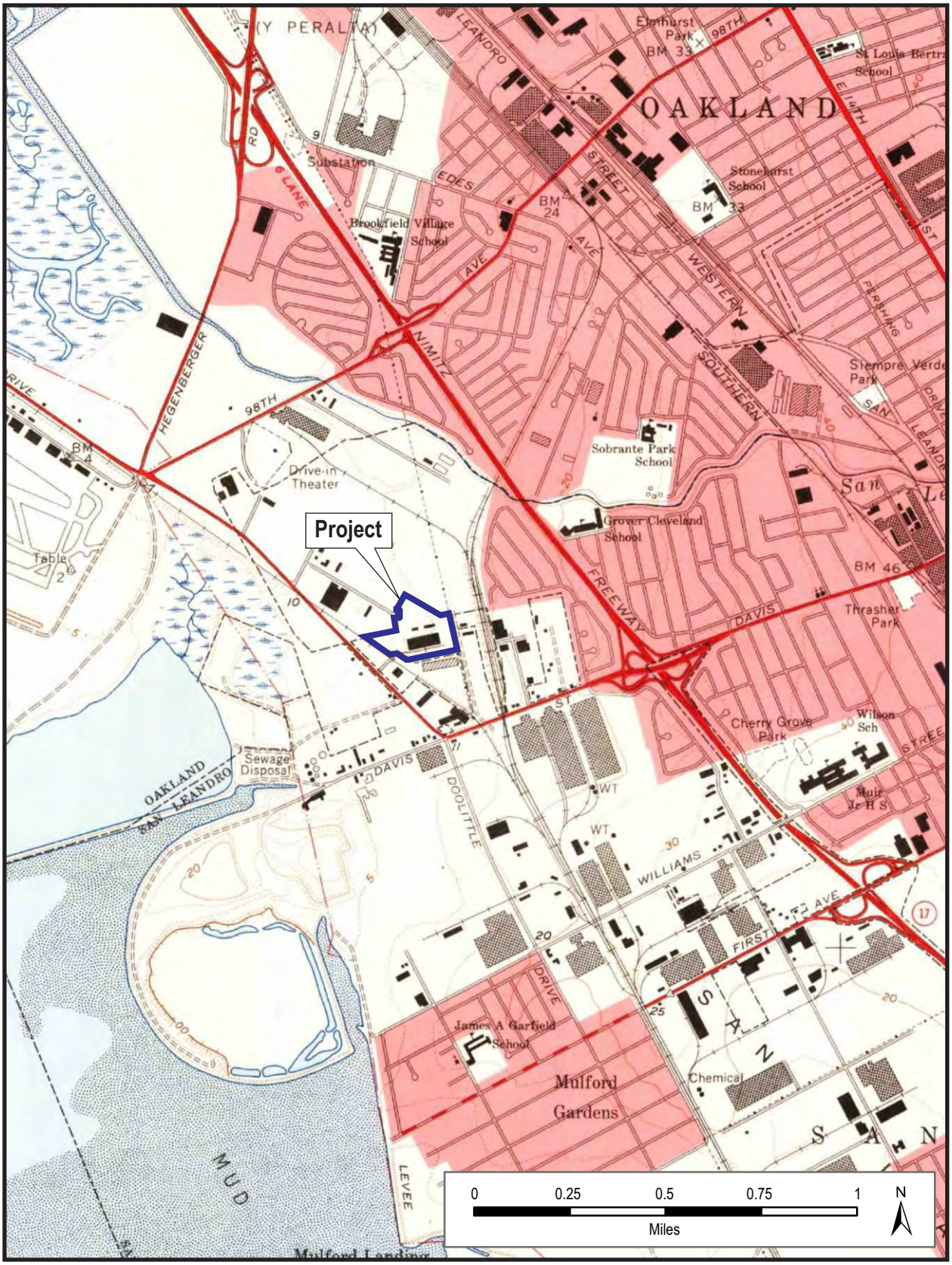


Figure 13: Project Location T2S R3W (USGS San Leandro, Calif. 1959)

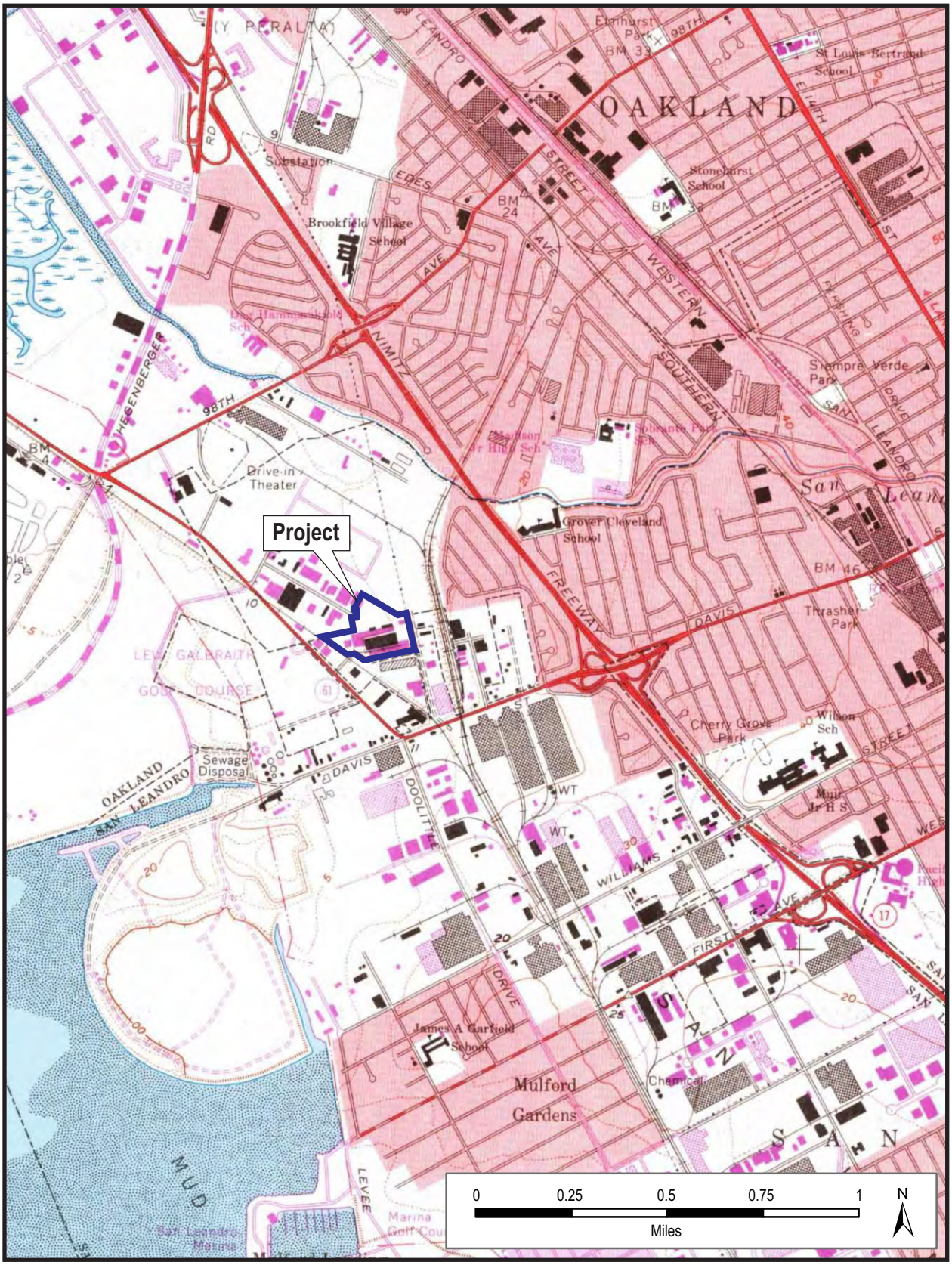


Figure 14: Project Location T2S R3W (USGS San Leandro, Calif. 1968)

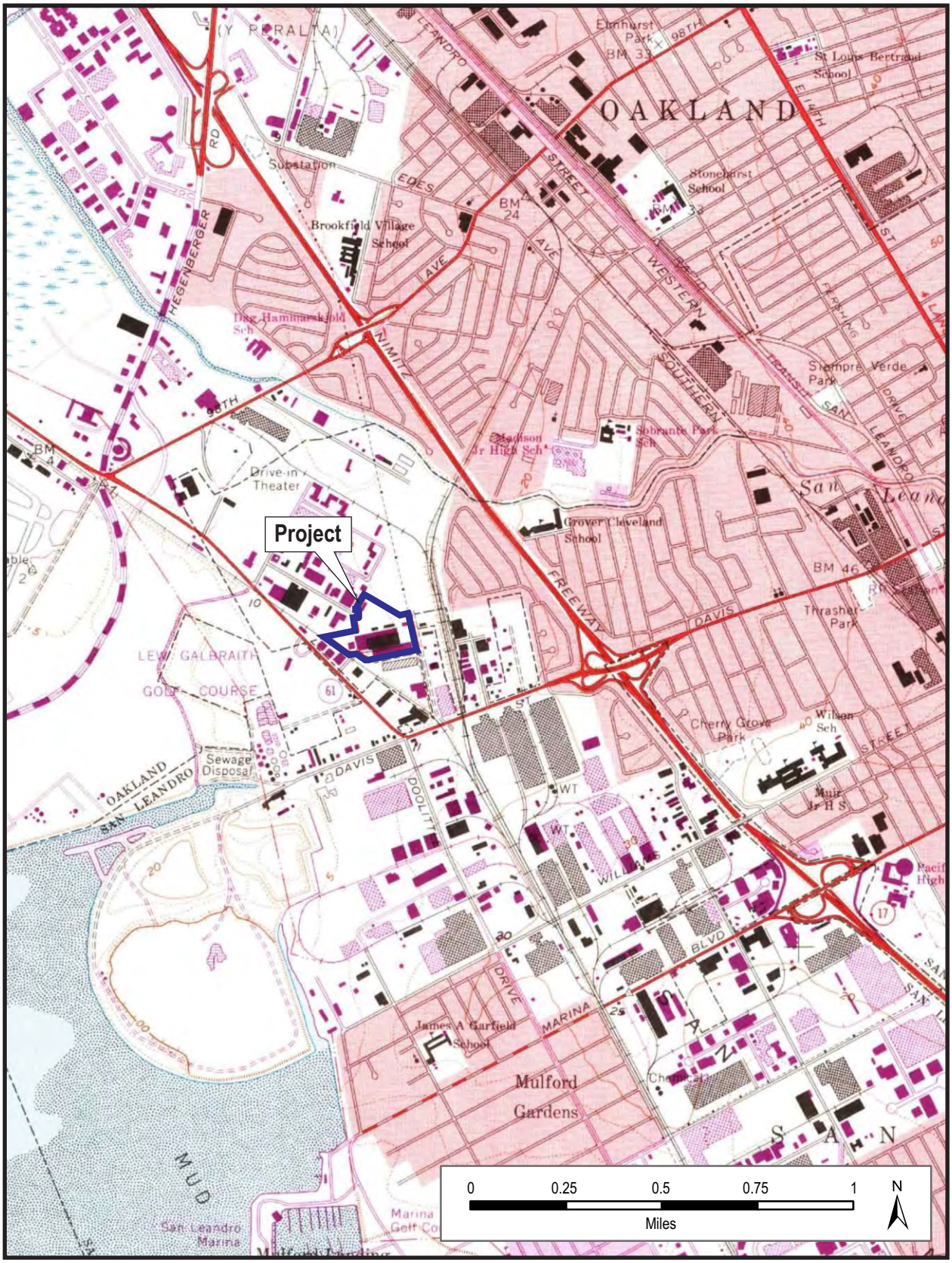


Figure 15: Project Location T2S R3W (USGS San Leandro, Calif. 1973)

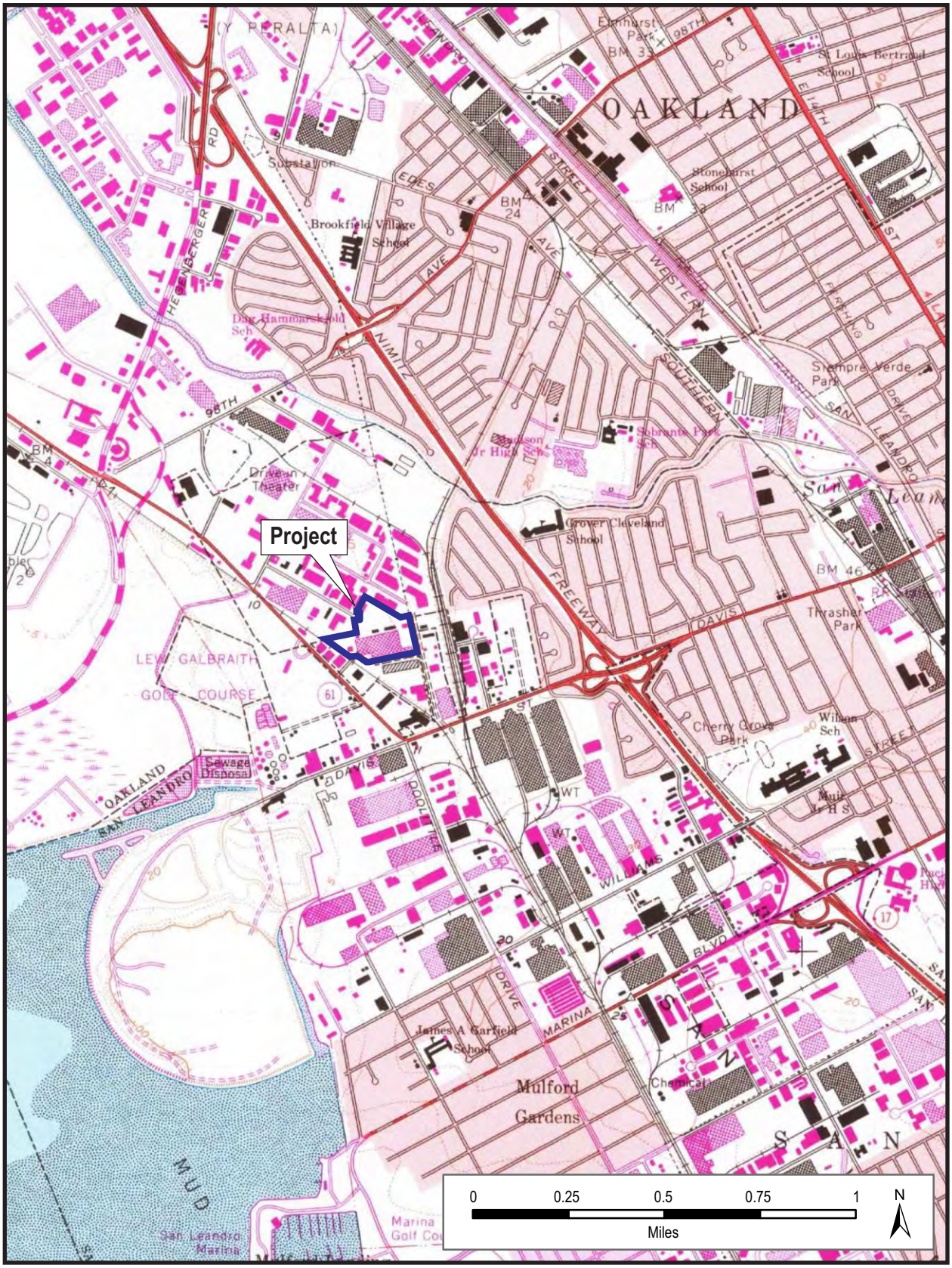


Figure 16: Project Location T2S R3W (USGS San Leandro, Calif. 1980)

Figure 17: Aerial View of Project Parcels with Photo View Locations

Figure 18: Former Administration Building – view north from Doolittle Drive entrance

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Figure 22: Northern Building – view west along north side of building

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Figure 24: Southern Building – west façade, view to east

Figure 25: Northern, Breezeway and Southern Buildings – view to east

Sacred Lands File & Native American Contacts List Request

NATIVE AMERICAN HERITAGE COMMISSION

1556 Harbor Boulevard, STE 100
West Sacramento, CA 95691
(916) 373-3710
(916) 373-5471 – Fax
nahc@nahc.ca.gov

Information Below is Required for a Sacred Lands File Search

Project: 880 Doolittle Drive Industrial Building, San Leandro, Alameda County

County: Alameda

USGS Quadrangle Name: USGS San Leandro, CA 1993

Address: 880 Doolittle Drive, San Leandro

Township: 2 South, **Range**: 3 West, unsectioned

Company/Firm/Agency: Basin Research Associates

Contact Person: Colin I. Busby, PhD, RPA

Street Address: 1933 Davis Street, STE 215

City/Zip: San Leandro, CA 94577

Phone: (510) 430-8441 x101

Email: Please send response to basinres1@gmail.com

Project Description:

Prologis is proposing to develop a new 250,000 square foot industrial building and parking structure for the operation of a last mile delivery distribution center at 880 Doolittle Drive, City of San Leandro (APN 077A-0741-004-02; 077A-0741-005-00; USGS San Leandro, CA, 1993 T2S, R3W).

The project site, covering 13.72 acres on two parcels (880 Doolittle/498 Hester Street), is located within a portion of the former Expresso Airport Parking facility and includes an auxiliary building, an asphalt parking lot and former industrial buildings repurposed for indoor parking. The facility was the former location of Kaiser Industries Corporation/Kaiser Aerospace & Electronics Corporation from 1957-2001. During that time, Kaiser manufactured aircraft bodies and parts and rocket nozzles on the property and used portions of the property for employee parking and storage. The project site was occupied by the Oakland Aircraft Division of Willys Motors, Inc., San Leandro in 1955-1956.

The City of San Leandro will use the information to develop an IS/MND under the California Environmental Quality Act.

Date: 12/3/2020

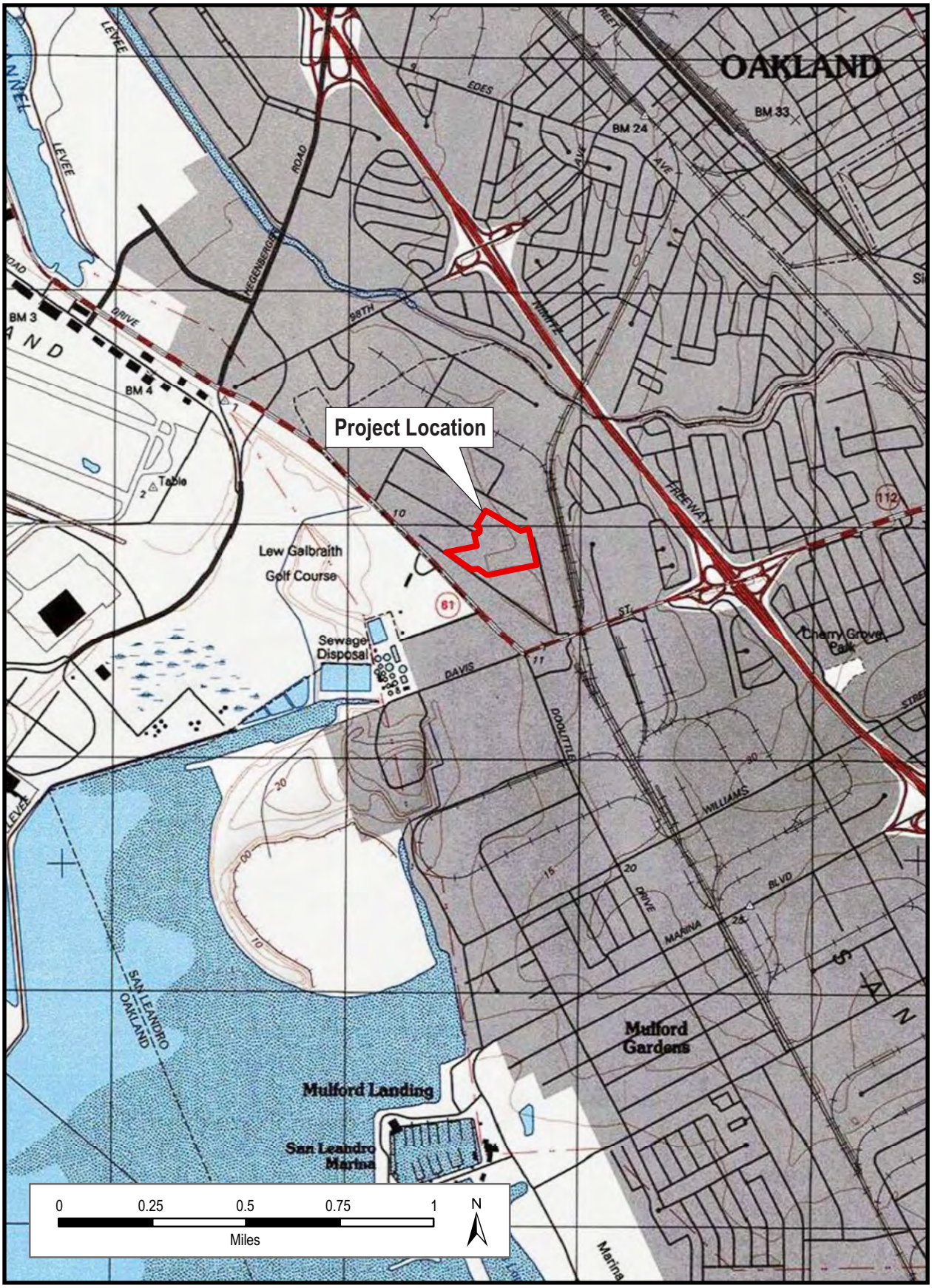

Figure 1: Project Location - T2S R3W unsectioned (USGS San Leandro, CA 1993)

NATIVE AMERICAN HERITAGE COMMISSION

CHAIRPERSON
Laura Miranda
Luiseño

VICE CHAIRPERSON
Reginald Pagaling
Chumash

SECRETARY
Merri Lopez-Keifer
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Karuk

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Wintun

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William Mungary
Paiute/White Mountain Apache

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Julie Tumamait-Stenslie
Chumash

COMMISSIONER
[Vacant]

COMMISSIONER
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Christina Snider
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West Sacramento,
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(916) 373-3710
nahc@nahc.ca.gov
NAHC.ca.gov

December 10, 2020

Colin I. Busby, PhD, RPA
Basin Research Associates

Via Email to: basinres1@gmail.com

Re: Native American Tribal Consultation, Pursuant to the Assembly Bill 52 (AB 52), Amendments to the California Environmental Quality Act (CEQA) (Chapter 532, Statutes of 2014), Public Resources Code Sections 5097.94 (m), 21073, 21074, 21080.3.1, 21080.3.2, 21082.3, 21083.09, 21084.2 and 21084.3, 880 Doolittle Drive Industrial Building, San Leandro Project, Alameda County

To Dr. Busby:

Pursuant to Public Resources Code section 21080.3.1 (c), attached is a consultation list of tribes that are traditionally and culturally affiliated with the geographic area of the above-listed project. Please note that the intent of the AB 52 amendments to CEQA is to avoid and/or mitigate impacts to tribal cultural resources, (Pub. Resources Code §21084.3 (a)) ("Public agencies shall, when feasible, avoid damaging effects to any tribal cultural resource.")

Public Resources Code sections 21080.3.1 and 21084.3(c) require CEQA lead agencies to consult with California Native American tribes that have requested notice from such agencies of proposed projects in the geographic area that are traditionally and culturally affiliated with the tribes on projects for which a Notice of Preparation or Notice of Negative Declaration or Mitigated Negative Declaration has been filed on or after July 1, 2015. Specifically, Public Resources Code section 21080.3.1 (d) provides:

Within 14 days of determining that an application for a project is complete or a decision by a public agency to undertake a project, the lead agency shall provide formal notification to the designated contact of, or a tribal representative of, traditionally and culturally affiliated California Native American tribes that have requested notice, which shall be accomplished by means of at least one written notification that includes a brief description of the proposed project and its location, the lead agency contact information, and a notification that the California Native American tribe has 30 days to request consultation pursuant to this section.

The AB 52 amendments to CEQA law does not preclude initiating consultation with the tribes that are culturally and traditionally affiliated within your jurisdiction prior to receiving requests for notification of projects in the tribe's areas of traditional and cultural affiliation. The Native American Heritage Commission (NAHC) recommends, but does not require, early consultation as a best practice to ensure that lead agencies receive sufficient information about cultural resources in a project area to avoid damaging effects to tribal cultural resources.

The NAHC also recommends, but does not require that agencies should also include with their notification letters, information regarding any cultural resources assessment that has been completed on the area of potential effect (APE), such as:

1. The results of any record search that may have been conducted at an Information Center of the California Historical Resources Information System (CHRIS), including, but not limited to:

- A listing of any and all known cultural resources that have already been recorded on or adjacent to the APE, such as known archaeological sites;
- Copies of any and all cultural resource records and study reports that may have been provided by the Information Center as part of the records search response;
- Whether the records search indicates a low, moderate, or high probability that unrecorded cultural resources are located in the APE; and
- If a survey is recommended by the Information Center to determine whether previously unrecorded cultural resources are present.

2. The results of any archaeological inventory survey that was conducted, including:

   - Any report that may contain site forms, site significance, and suggested mitigation measures.

     All information regarding site locations, Native American human remains, and associated funerary objects should be in a separate confidential addendum, and not be made available for public disclosure in accordance with Government Code section 6254.10.

3. The result of any Sacred Lands File (SLF) check conducted through the Native American Heritage Commission was negative.

4. Any ethnographic studies conducted for any area including all or part of the APE; and

5. Any geotechnical reports regarding all or part of the APE.

Lead agencies should be aware that records maintained by the NAHC and CHRIS are not exhaustive and a negative response to these searches does not preclude the existence of a tribal cultural resource. A tribe may be the only source of information regarding the existence of a tribal cultural resource.

This information will aid tribes in determining whether to request formal consultation. In the event that they do, having the information beforehand will help to facilitate the consultation process.

If you receive notification of change of addresses and phone numbers from tribes, please notify the NAHC. With your assistance, we can assure that our consultation list remains current.

If you have any questions, please contact me at my email address: Sarah.Fonseca@nahc.ac.gov.

Sincerely,

Sarah Fonseca
Cultural Resources Analyst

Attachment

Native American Heritage Commission
Tribal Consultation List
Alameda County
12/10/2020

Amah MutsunTribal Band of Mission San Juan Bautista
Irenne Zwierlein, Chairperson
789 Canada Road — Costanoan
Woodside, CA, 94062
Phone: (650) 851 - 7489
Fax: (650) 332-1526
amahmutsuntribal@gmail.com

Costanoan Rumsen Carmel Tribe
Tony Cerda, Chairperson
244 E. 1st Street — Costanoan
Pomona, CA, 91766
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Fax: (909) 524-8041
rumsen@aol.com

Indian Canyon Mutsun Band of Costanoan
Kanyon Sayers-Roods, MLD Contact
1615 Pearson Court — Costanoan
San Jose, CA, 95122
Phone: (408) 673 - 0626
kanyon@kanyonkonsulting.com

Indian Canyon Mutsun Band of Costanoan
Ann Marie Sayers, Chairperson
P.O. Box 28 — Costanoan
Hollister, CA, 95024
Phone: (831) 637 - 4238
ams@indiancanyon.org

Muwekma Ohlone Indian Tribe of the SF Bay Area
Charlene Nijmeh, Chairperson
20885 Redwood Road, Suite 232 — Costanoan
Castro Valley, CA, 94546
Phone: (408) 464 - 2892
cnijmeh@muwekma.org

Muwekma Ohlone Indian Tribe of the SF Bay Area
Monica Arellano,
20885 Redwood Road, Suite 232 — Costanoan
Castro Valley, CA, 94546
Phone: (408) 205 - 9714
marellano@muwekma.org

North Valley Yokuts Tribe
Timothy Perez, MLD Contact
P.O. Box 717 — Costanoan
Linden, CA, 95236 — Northern Valley
Phone: (209) 662 - 2788 — Yokut
huskanam@gmail.com

North Valley Yokuts Tribe
Katherine Perez, Chairperson
P.O. Box 717 — Costanoan
Linden, CA, 95236 — Northern Valley
Phone: (209) 887 - 3415 — Yokut
canutes@verizon.net

The Ohlone Indian Tribe
Andrew Galvan,
P.O. Box 3388 — Bay Miwok
Fremont, CA, 94539 — Ohlone
Phone: (510) 882 - 0527 — Patwin
Fax: (510) 687-9393 — Plains Miwok
chochenyo@AOL.com

The Confederated Villages of Lisjan
Corrina Gould, Chairperson
10926 Edes Avenue — Bay Miwok
Oakland, CA, 94603 — Ohlone
Phone: (510) 575 - 8408 — Delta Yokut
cvltribe@gmail.com

This list is current only as of the date of this document. Distribution of this list does not relieve any person of statutory responsibility as defined in Section 7050.5 of the Health and Safety Code, Section 5097.94 of the Public Resources Code and section 5097.98 of the Public Resources Code.

This list is only applicable for consultation with Native American tribes under Public Resources Code Sections 21080.3.1 for the proposed 880 Doolittle Drive Industrial Building, San Leandro Project, Alameda County.

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12/8/2020 NWIC File No.: 20-1048

Donna M. Garaventa
Basin Research Associates
1933 Davis Street, Suite 215
San Leandro, CA 94577

re: Doolittle

The Northwest Information Center received your record search request for the project area referenced above, located on the San Leandro USGS 7.5' quad. The following reflects the results of the records search for the project area and a 0.25 mile radius:

Resources within project area:	None
Resources within 0.25 mile radius:	P-01-011497, 012125, & 012126.
Reports within project area:	None
Reports within 0.25 mile radius:	S-46322, 33061, 23381, 621, 1786, 1743, 1308, 52020, 29589, 12439, & 667.

Resource Database Printout (list):	☒ enclosed	☐ not requested	☐ nothing listed
Resource Database Printout (details):	☒ enclosed	☐ not requested	☐ nothing listed
Resource Digital Database Records:	☐ enclosed	☒ not requested	☐ nothing listed
Report Database Printout (list):	☒ enclosed	☐ not requested	☐ nothing listed
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Report Digital Database Records:	☐ enclosed	☒ not requested	☐ nothing listed
Resource Record Copies:	☐ enclosed	☐ not requested	☐ nothing listed
Report Copies:	☐ enclosed	☐ not requested	☐ nothing listed
OHP Built Environment Resources Directory:	☒ enclosed	☐ not requested	☐ nothing listed
Archaeological Determinations of Eligibility:	☐ enclosed	☐ not requested	☒ nothing listed
CA Inventory of Historic Resources (1976):	☐ enclosed	☒ not requested	☐ nothing listed
Caltrans Bridge Survey:	☐ enclosed	☒ not requested	☐ nothing listed
Ethnographic Information:	☐ enclosed	☒ not requested	☐ nothing listed
Historical Literature:	☐ enclosed	☒ not requested	☐ nothing listed
Historical Maps:	☐ enclosed	☒ not requested	☐ nothing listed
Local Inventories:	☐ enclosed	☒ not requested	☐ nothing listed
GLO and/or Rancho Plat Maps:	☐ enclosed	☒ not requested	☐ nothing listed

Shipwreck Inventory: ☐ enclosed ☒ not requested ☐ nothing listed

*Notes:

** Current versions of these resources are available on-line:

Caltrans Bridge Survey: http://www.dot.ca.gov/hq/structur/strmaint/historic.htm

Soil Survey: http://www.nrcs.usda.gov/wps/portal/nrcs/surveylist/soils/survey/state/?stateld=CA

Shipwreck Inventory: http://www.slc.ca.gov/Info/Shipwrecks.html

Please forward a copy of any resulting reports from this project to the office as soon as possible. Due to the sensitive nature of archaeological site location data, we ask that you do not include resource location maps and resource location descriptions in your report if the report is for public distribution. If you have any questions regarding the results presented herein, please contact the office at the phone number listed above.

The provision of CHRIS Data via this records search response does not in any way constitute public disclosure of records otherwise exempt from disclosure under the California Public Records Act or any other law, including, but not limited to, records related to archeological site information maintained by or on behalf of, or in the possession of, the State of California, Department of Parks and Recreation, State Historic Preservation Officer, Office of Historic Preservation, or the State Historical Resources Commission.

Due to processing delays and other factors, not all of the historical resource reports and resource records that have been submitted to the Office of Historic Preservation are available via this records search. Additional information may be available through the federal, state, and local agencies that produced or paid for historical resource management work in the search area. Additionally, Native American tribes have historical resource information not in the CHRIS Inventory, and you should contact the California Native American Heritage Commission for information on local/regional tribal contacts.

Should you require any additional information for the above referenced project, reference the record search number listed above when making inquiries. Requests made after initial invoicing will result in the preparation of a separate invoice.

Thank you for using the California Historical Resources Information System (CHRIS).

Sincerely,

Lisa C. Hagel
Researcher

Appendix E

Geotechnical Investigation

CORNERSTONE EARTH GROUP

Type of Services	**Geotechnical Investigation**
Project Name	**Doolittle Drive Warehouse**
Location	**880 Doolittle Drive** **San Leandro, California**
Client	**PROLOGIS**
Client Address	**3353 Gateway Boulevard** **Fremont, California**
Project Number	**555-16-1**
Date	**September 9, 2020**

Prepared by **Matthew J. Schaffer, P.E., G.E.**
Principal Engineer
Geotechnical Project Manager

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Senior Principal Engineer
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Type of Services	**Geotechnical Investigation**
Project Name	**Doolittle Drive Warehouse**
Location	**880 Doolittle Drive** **San Leandro, California**

SECTION 1: INTRODUCTION

This geotechnical report was prepared for the sole use of PROLOGIS for the Doolittle Drive Warehouse project in San Leandro, California. The location of the site is shown on the Vicinity Map, Figure 1. For our use, we were provided with the following documents:

- A site plan titled "DCK5, San Leandro, Concept 4 Site Plan," Sheet CS104, prepared by Langan Engineering, dated August 7, 2020.
- A topographic survey titled "Topographic Survey of 880 Doolittle Dr, San Leandro, CA," prepared by Kimley Horn, dated July 13, 2020.
- An environmental remediation report titled "Remedial Design and Implementation Plan, Former Kaiser Aerotech Facilities, 880 Doolittle Drive and 498 Hester Street, San Leandro, California, 01-KAEC-001," prepared by SGI Environmental, dated April 28, 2008.
- A groundwater monitoring report titled "2017 Annual Groundwater Monitoring Report, Former Kaiser Aerotech Facilities, 880 Doolittle Drive and 498 Hester Street, San Leandro, California, 01-OPEX-001," prepared by SGI Environmental, dated May 15, 2017.

1.1 PROJECT DESCRIPTION

The project will include redeveloping the approximately 16-acre site for a new commercial warehouse/distribution facility. The new building will be approximately 95,000 square feet with about 86,800 square feet of warehouse space and about 8,200 square feet of office space located on the north and south ends of the building. The new building will have interior clear height of about 32 feet and concrete tilt-up construction. Truck loading docks will be located along the north side of the building, van loading zones will be on the east side of the building, about 127,450 square feet of associate parking will be on the west side of the building, and about 210,890 square feet of van parking will be on the east and south sides of the building.

Appurtenant utilities, landscaping, stormwater management areas, and other improvements necessary for the overall site development are also planned.

Building loads have not been provided at this time, however are expected to be typical of this type of construction. Based on conversations with you, the finished floor elevation will likely be at Elevation 16 to 17 feet (NAVD88 datum) and the finished floor will be generally at the same elevation across the entire building width and length. The finished grade at the truck loading dock on the north side of the building will be about 4 feet below the building finished floor and therefore anticipated at about Elevation 12 to 13 feet. Finished grades around the west, south, and east sides of the building are to be at the approximate building finished floor elevation.

Based on the current site grades, to achieve the referenced finished floor elevation, the current site grades will be at approximate finished floor elevation or will need to be raised roughly 1 to 2 feet at the north end of the building. Current site grades will need to be raised roughly 3 to 4 feet in the middle portion and 4 to 5 feet at the south end of the building to achieve finished floor elevation. Cuts on the order of 3 to 5 feet are anticipated to achieve finished grade at the loading dock along the north side of the building.

1.2 SCOPE OF SERVICES

Our scope of services was presented in our proposal dated October 9, 2019 and consisted of field and laboratory programs to evaluate physical and engineering properties of the subsurface soils, engineering analysis to prepare recommendations for site work and grading, building foundations, flatwork, retaining walls, and pavements, and preparation of this report. Brief descriptions of our exploration and laboratory programs are presented below.

1.3 EXPLORATION PROGRAM

Field exploration consisted of 12 borings drilled on June 1 to 5, 2020 with truck-mounted, hollow-stem auger drilling equipment and 10 Cone Penetration Tests (CPTs) advanced on May 18 to 20, 2020. The borings were drilled to depths of 7 to 35 feet; the CPTs were advanced to depths of 50 to 140 feet. Seismic shear wave velocity measurements were collected from CPT-1 and CPT-10. Borings EB-1, EB-2, EB-3, EB-5, EB-6, EB-7, EB-8, EB-9 and EB-12 were advanced adjacent to CPT-1, CPT-2, CPT-3, CPT-5, CPT-6, CPT-7, CPT-9, CPT-10, and CPT-8, respectively, for direct evaluation of physical samples to correlated soil behavior. Boring EB-4 was also performed in proximity to CPT-4, however slightly offset.

The borings and CPTs were backfilled with cement grout in accordance with local requirements; exploration permits were obtained as required by local jurisdictions. Environmental impacts are present at the site. Drilling procedures outlined on the drilling permit and discussed with SGI Environmental including exploration locations and depths were followed. CPT rods were cleaned with Liquinox and boring augers were steam cleaned between each exploration to reduce the potential for cross contamination.

The approximate locations of our exploratory borings are shown on the Site Plan, Figure 2. Details regarding our field program are included in Appendix A.

1.4 LABORATORY TESTING PROGRAM

In addition to visual classification of samples, the laboratory program focused on obtaining data for foundation design and seismic ground deformation estimates. Testing included moisture contents, dry densities, Plasticity Index tests, washed sieve analyses, consolidation tests, and triaxial compression tests. Details regarding our laboratory program are included in Appendix B.

1.5 ENVIRONMENTAL SERVICES

Environmental services, including a Phase I or II were not requested for this project. Environmental concerns are present at the site. The project environmental consultant should review our geotechnical recommendations for compatibility with the environmental concerns.

SECTION 2: REGIONAL SETTING

2.1 REGIONAL SEISMICITY

The San Francisco Bay area region is one of the most seismically active areas in the Country. While seismologists cannot predict earthquake events, geologists from the U.S. Geological Survey have recently updated earlier estimates from their 2015 Uniform California Earthquake Rupture Forecast (Version 3) publication. The estimated probability of one or more magnitude 6.7 earthquakes (the size of the destructive 1994 Northridge earthquake) expected to occur somewhere in the San Francisco Bay Area has been revised (increased) to 72 percent for the period 2014 to 2043 (Aagaard et al., 2016). The faults in the region with the highest estimated probability of generating damaging earthquakes between 2014 and 2043 are the Hayward (33%), Rodgers Creek (33%), Calaveras (26%), and San Andreas Faults (22%). In this 30-year period, the probability of an earthquake of magnitude 6.7 or larger occurring is 22 percent along the San Andreas Fault and 33 percent for the Hayward or Rodgers Creek Faults.

The faults considered capable of generating significant earthquakes are generally associated with the well-defined areas of crustal movement, which trend northwesterly. The table below presents the State-considered active faults within 25 kilometers of the site.

Table 1: Approximate Fault Distances

Fault Name	Distance	
	(miles)	(kilometers)
Hayward (Total Length)	2.8	4.5
Calaveras	11.5	18.5
San Andreas (1906)	15.5	25.0

A regional fault map is presented as Figure 3, illustrating the relative distances of the site to significant fault zones.

SECTION 3: SITE CONDITIONS

3.1 SURFACE DESCRIPTION

The irregularly shaped site is located at the southern end of the Hester Street cul-de-sac and is generally surrounded by and located in an area of industrial/commercial buildings with associated parking lots and equipment yards. Railroad tracks are located directly to the west and south of the site with the adjacent buildings beyond. A storage yard with construction equipment and materials is located outside the southeast portion of the site with Carden Street and adjacent buildings beyond. Large electrical towers also run generally north-south within the storage yard. Industrial/commercial buildings and associated parking lots/equipment yards are located adjacent to the northwest, north, and northeast sides of the site. The main driveway entrance into the site is from Doolittle Drive near the southwest corner of the site. The site is generally enclosed by chain-link fencing, wrought-iron fencing, and construction fencing.

The majority of the southern half of the site is currently occupied by a large interconnected one- and two-story industrial/commercial/warehouse/office type building. Portions of the building are two-stories while other connected portions are a high-bay industrial/warehouse building. Another smaller one-story building is located in the western/southwestern portion of the site. The northern half of the site is generally an asphalt concrete parking lot. Asphalt concrete parking and driving areas are also located on the eastern and the western sides of the buildings where the irregular shaped site extends westward. Some areas of Portland cement concrete (PCC) pavements/slabs are also present generally on the eastern side of the large building. Light poles are positioned throughout the parking lots and high voltage power poles run in east-west direction across the site. The site is relatively level and slopes slightly upward to the north/northeast. Existing site grades are approximately Elevation 10 to 12 feet (NAVD88 datum) along the western/southwestern side of the site, 12 to 14 feet in the southeastern corner of the site, and 15 to 17 feet in the north/northeast portion of the site.

Surface pavements at our boring locations generally consisted of 3 to 4 inches of asphalt concrete over 3 to 12 inches of aggregate base. Stabilization fabric was also encountered beneath the aggregate base at Boring EB-1. Based on visual observations, the existing pavements are in generally poor to very poor condition.

3.2 SUBSURFACE CONDITIONS

Below the surface pavements, our Borings EB-3 to EB-8 and EB-11 encountered undocumented fills to depths ranging from about 1¾ to 7 feet beneath the surface. The fills consisted of medium dense to very dense clayey sand with gravel, loose silty sand with variable amounts of gravel, and stiff to very stiff sandy lean clay. Beneath the undocumented fills (except at Boring EB-8) and the surface pavements at our Borings EB-1, EB-2, EB-9, EB-10, and EB-12, an approximately 1½ to 3 foot layer of medium stiff to very stiff highly expansive clay was encountered to depths ranging from 3 to 7 feet beneath the surface. Beneath the highly expansive clay and the undocumented fills at Boring EB-8, generally stiff to very stiff lean clays with variable amounts of sand were encountered to the maximum depth explored in our borings of 35 feet beneath the surface. At some borings, the lean clays were also observed to have

lower strength and be medium stiff at depths ranging from about 7 to 12 feet and 15 to 25 feet. Beneath the highly expansive clays at Boring EB-1 and EB-9, an approximate 1-foot layer of medium dense clayey sand was encountered above the lean clays. Some 1- to 3-foot thick loose to medium dense clayey sand, silty, clayey sand, and poorly graded sand with silt layers were observed interbedded within the lean clays at various depths.

Beneath the depth of our borings, our CPTs generally interpreted stiff to very stiff clays and silts interbedded with generally thin (less than 2 feet thick) layers of sands to the maximum depths explored ranging from about 50 to 140 feet beneath the surface. A thicker sand layer was encountered within CPT-3 and CPT-5 to CPT-8 at depths ranging from about 38 to 46 feet and a depth of about 52 to 62 feet in CPT-3.

3.2.1 Plasticity/Expansion Potential

We performed five Plasticity Index (PI) tests on representative samples. Test results were used to evaluate the expansion potential of surficial soils and the plasticity of the fines in potentially liquefiable layers. The near surface PI test resulted in a PI of 33, indicating high expansion potential to wetting and drying cycles. Results of the PI tests in potentially liquefiable soils indicated PIs of 5, 10, 16, and 23.

3.2.2 In-Situ Moisture Contents

Laboratory testing indicated that the in-situ moisture contents within the upper 10 feet range from near optimum to about 20 to 25 percent over the estimated laboratory optimum moisture.

3.3 GROUNDWATER

Groundwater was encountered in our Borings EB-1, EB-2, EB-4, EB-5, EB-7, EB-8, EB-9, EB-10, and EB-11 at depths ranging from 5 to 14 feet below current grades corresponding to Elevations of -3¼ to 9½ feet (NAVD88 datum) based on the topographic survey provided by Kimley Horn. Groundwater was not encountered to the maximum depths explored of 7 to 10 feet at Borings EB-3, EB-6, and EB-12. Groundwater was inferred at depths of approximately 2 to 7 feet below current grades in our CPT explorations based on pore pressure dissipation tests. All measurements were taken at the time of drilling and may not represent the stabilized levels that can be higher than the initial levels encountered.

Historic high groundwater levels are mapped at a depth of approximately 5 feet (CGS, San Leandro Quadrangle, Seismic Hazard Zone Report 078, 2003). Based on our review of the remediation and groundwater monitoring reports by SGI Environmental in 2008 and 2017, groundwater was noted within the report language to be generally at depths of about 5 to 7 feet beneath the surface. Based on the monitoring data also provided within the reports, groundwater appears to have been observed as shallow as about 3 feet beneath site grades.

In general, fluctuations in groundwater levels occur due to many factors including seasonal fluctuation, underground drainage patterns, regional fluctuations, and other factors. Based on

the above data and engineering judgement, we recommend a design groundwater depth of 5 feet beneath existing grades.

SECTION 4: GEOLOGIC HAZARDS

4.1 FAULT RUPTURE

As discussed above, several significant faults are located within 25 kilometers of the site. The site is not located within a State-designated Alquist Priolo Earthquake Fault Zone. As shown in Figure 3, no known surface expression of fault traces is thought to cross the site; therefore, fault rupture hazard is not a significant geologic hazard at the site.

4.2 ESTIMATED GROUND SHAKING

Moderate to severe (design-level) earthquakes can cause strong ground shaking, which is the case for most sites within the Bay Area. A peak ground acceleration (PGA_M) was estimated following the ground motion hazard analysis procedure presented in Chapter 21, Section 21.2 of ASCE 7-16 and Supplement No. 1 and determined in accordance with Section 21.5 of ASCE 7-16. For our analyses we used a PGA_M of 0.89g.

4.3 LIQUEFACTION POTENTIAL

The site is within a State-designated Liquefaction Hazard Zone (CGS, San Leandro Quadrangle, 2003). Our field and laboratory programs addressed this issue by testing and sampling potentially liquefiable layers to depths of at least 50 feet, performing visual classification on sampled materials, evaluating CPT data, and performing various tests to further classify soil properties.

4.3.1 Background

During strong seismic shaking, cyclically induced stresses can cause increased pore pressures within the soil matrix that can result in liquefaction triggering, soil softening due to shear stress loss, potentially significant ground deformation due to settlement within sandy liquefiable layers as pore pressures dissipate, and/or flow failures in sloping ground or where open faces are present (lateral spreading) (NCEER 1998). Limited field and laboratory data is available regarding ground deformation due to settlement; however, in clean sand layers settlement on the order of 2 to 4 percent of the liquefied layer thickness can occur. Soils most susceptible to liquefaction are loose, non-cohesive soils that are saturated and are bedded with poor drainage, such as sand and silt layers bedded with a cohesive cap.

4.3.2 Analysis

As discussed in the “Subsurface” section above, several sand layers were encountered below the design groundwater depth of 5 feet. Following the liquefaction analysis framework in the 2008 monograph, *Soil Liquefaction During Earthquakes* (Idriss and Boulanger, 2008), incorporating updates in *CPT and SPT Based Liquefaction Triggering Procedures* (Boulanger

and Idriss, 2014), and in accordance with CDMG Special Publication 117A guidelines (CDMG, 2008) for quantitative analysis, these layers were analyzed for liquefaction triggering and potential post-liquefaction settlement. These methods compare the ratio of the estimated cyclic shaking (Cyclic Stress Ratio - CSR) to the soil's estimated resistance to cyclic shaking (Cyclic Resistance Ratio - CRR), providing a factor of safety against liquefaction triggering. Factors of safety less than or equal to 1.3 are considered to be potentially liquefiable and capable of post-liquefaction re-consolidation (i.e. settlement).

The CSR for each layer quantifies the stresses anticipated to be generated due to a design-level seismic event, is based on the peak horizontal acceleration generated at the ground surface discussed in the "Estimated Ground Shaking" section above, and is corrected for overburden and stress reduction factors as discussed in the procedure developed by Seed and Idriss (1971) and updated in the 2008 Idriss and Boulanger monograph.

For the CPT liquefaction analysis, the soil's CRR is estimated from the in-situ measurements from the CPTs and laboratory testing on samples retrieved from our boring. The tip pressures are corrected for effective overburden stresses, taking into consideration both the groundwater level at the time of exploration and the design groundwater level, and stress reduction versus depth factors. The CPT method utilizes the soil behavior type index (I_C) to estimate the plasticity of the layers. Soil samples were collected from the borings that were in proximity to the CPTs to visually observe for confirmation of CPT soil behavior types.

For the boring liquefaction analysis, the soil's CRR is estimated from the in-situ density and strength obtained from field SPT blow counts ("N" value). The "N" values are corrected for effective overburden stresses, taking into consideration both the groundwater level at the time of exploration and the design groundwater level, and stress reduction versus depth factors. The "N" values are also corrected for fines content, hammer efficiency, boring diameter, rod length, and sampler type (with or without liners).

The results of our CPT analyses (CPT-1 to CPT-10) are presented on Figures 4A to 4J of this report. Calculations for these CPTs are attached as Appendix C. As mentioned, Boring EB-4 was performed slightly offset from the adjacent CPT-4. A poorly graded sand with silt layer was encountered that was not observed in CPT-4 at a depth of about 25 to 28 feet. As such, we performed liquefaction analysis on this sand layer observed within Boring EB-4. Calculations for Boring EB-4 are attached in Appendix C.

4.3.3 Summary

Our analyses indicate that several layers could potentially experience liquefaction triggering that could result in post-liquefaction total settlement at the ground surface ranging from less than ¼ inch up to 1 inch based on the Yoshimine (2006) method. Our analyses show that locations within the currently proposed building footprint and in close proximity to the proposed building (CPT-3, CPT-4, CPT-5, CPT-6, CPT-7, CPT-8, and CPT-10) could experience total post-liquefaction settlement of up to about ½ inch. As discussed in SP 117A, differential movement for level ground sites over deep soil sites will be up to about two-thirds of the total settlement between independent foundation elements. In our opinion, differential settlements are

anticipated to be on the order of ⅓-inch between independent foundation elements, based on the current proposed building layout.

4.3.4 Ground Rupture Potential

The methods used to estimate liquefaction settlements assume that there is a sufficient cap of non-liquefiable material to prevent ground rupture or sand boils. For ground rupture to occur, the pore water pressure within the liquefiable soil layer will need to be great enough to break through the overlying non-liquefiable layer, which could cause significant ground deformation and settlement. The work of Youd and Garris (1995) indicates that the non-liquefiable cap at all locations except for CPT-9/EB-8 is sufficient to prevent ground rupture; therefore, the above total settlement estimates at locations other than CPT-9/EB-8 are reasonable.

The location of CPT-9/EB-8 is beyond the limits of the proposed building area. As such, ground rupture at this location would not affect the proposed building in its current planned location. However, if desired to protect site improvements within this location, we recommend the undocumented fills at CPT-9/EB-8 to a depth of about 7 feet be removed and replaced as engineered fill.

4.4 LATERAL SPREADING

Lateral spreading is horizontal/lateral ground movement of relatively flat-lying soil deposits towards a free face such as an excavation, channel, or open body of water; typically lateral spreading is associated with liquefaction of one or more subsurface layers near the bottom of the exposed slope. As failure tends to propagate as block failures, it is difficult to analyze and estimate where the first tension crack will form.

There are no open faces within a distance considered susceptible to lateral spreading; therefore, in our opinion, the potential for lateral spreading to affect the site is low.

4.5 SEISMIC SETTLEMENT/UNSATURATED SAND SHAKING

Loose to medium dense unsaturated sandy soils can settle during strong seismic shaking. We evaluated the potential for seismic compaction of the unsaturated soils above the design groundwater depths based on the work by Robertson and Shao (2010). Based on our analysis, the unsaturated granular soils above the design groundwater depth could experience up to about ¼ inch of total settlement following strong seismic shaking.

This settlement is generally associated with the surficial undocumented fills. As to be discussed, we recommend the undocumented fills be reworked and recompacted as engineered fill with the building area. As such, the potential for significant differential seismic settlement affecting the proposed building will be low.

4.6 TSUNAMI/SEICHE

The terms tsunami or seiche are described as ocean waves or similar waves usually created by undersea fault movement or by a coastal or submerged landslide. Tsunamis may be generated at great distance from shore (far field events) or nearby (near field events). Waves are formed, as the displaced water moves to regain equilibrium, and radiates across the open water, similar to ripples from a rock being thrown into a pond. When the waveform reaches the coastline, it quickly raises the water level, with water velocities as high as 15 to 20 knots. The water mass, as well as vessels, vehicles, or other objects in its path create tremendous forces as they impact coastal structures.

Tsunamis have affected the coastline along the Pacific Northwest during historic times. The Fort Point tide gauge in San Francisco recorded approximately 21 tsunamis between 1854 and 1964. The 1964 Alaska earthquake generated a recorded wave height of 7.4 feet and drowned eleven people in Crescent City, California. For the case of a far-field event, the Bay area would have hours of warning; for a near field event, there may be only a few minutes of warning, if any.

A tsunami or seiche originating in the Pacific Ocean would lose much of its energy passing through San Francisco Bay. Based on the study of tsunami inundation potential for the San Francisco Bay Area (Ritter and Dupre, 1972), areas most likely to be inundated are marshlands, tidal flats, and former bay margin lands that are now artificially filled, but are still at or below sea level, and are generally within 1½ miles of the shoreline. The site is approximately ¾ miles inland from the San Francisco Bay shoreline, and the existing elevations are approximately at Elevation 11 to 17 feet (NAVD88 datum) according to the topographic survey provided by Kimley Horn. Additionally, the site is mapped by the State of California Tsunami Inundation Map as not being within an inundation area. Therefore, the potential for inundation due to tsunami or seiche is considered low.

4.7 FLOODING

Based on our internet search of the Federal Emergency Management Agency (FEMA) flood map public database, the majority of the site is located within Zone X, described as "area of minimal flood hazard." The western portion of the site is located within Zone X, described as an area with "0.2% annual chance flood hazard, areas of 1% annual chance flood with average depth less than one foot or with drainage areas of less than one square mile." We recommend the project civil engineer be retained to confirm this information and verify the base flood elevation, if appropriate.

SECTION 5: CONCLUSIONS

5.1 SUMMARY

From a geotechnical viewpoint, the project is feasible provided the concerns listed below are addressed in the project design. Descriptions of each concern with brief outlines of our recommendations follow the listed concerns.

- Potential for liquefaction-induced settlements
- Potential for significant static settlements from fill placement and building loads
- Shallow groundwater
- Undocumented fill and loose to medium dense sandy soils
- Expansive soils
- Redevelopment considerations

5.1.1 Potential for Liquefaction-Induced Settlements

As discussed, our liquefaction analysis indicates that there is a potential for liquefaction of discontinuous sand layers across the site during a significant seismic event. Our analysis indicates total liquefaction-induced settlement up to about ½ inch could occur within proximity of the proposed building area, resulting in differential settlements on the order of about ⅓ inch between independent foundation elements. The potential for liquefied sands to vent to the ground surface through cracks in the surficial soils is low in our exploration locations in proximity of the proposed building; however, there is a moderate potential for ground rupture at CPT-9/EB-8 location. Please refer to Section 4.3.4 for additional recommendations if the potential for ground rupture at this location beyond the building footprint is to be reduced. Foundations for the building should be designed to tolerate the anticipated total and differential settlements mention above. Detailed foundation recommendations are presented in the "Foundations" section.

5.1.2 Potential for Significant Static Settlements from Fill Placement and Building Loads

As part of our evaluation, we performed settlement analyses to estimate the potential static settlements due to new fill placement and building loads. As mentioned, the finished floor elevation is anticipated to be at about Elevation 16 to 17 feet. Site grades within the building area are anticipated to be raised up to about 2 feet at the northern end and up to about 5 feet at the southern end. This additional new fill would cause settlement of the existing soils in addition to settlement due to foundation loads. We estimate total settlements from raising site grades to achieve the building finished floor elevation could be up to ½ inch on the north end and on the order of 1 to 1¾ inches on the south end.

Additionally, we evaluated static settlements due to estimated static dead plus live column loading of 50 to 150 kips and wall loading of 7 to 10 kips per foot. For conventional shallow spread footings at columns and continuous strip footings at walls, provided the bottom of footing is about 3 feet below a finished floor Elevation 16 to 17 feet, total static settlements are estimated to be on the order of about ½- to 1-inch. For continuous strip footings at walls along the loading dock on the north side of the building, with a bottom of footing at about 7 feet below finished floor Elevation 16 to 17 feet, total static settlements are estimated to be on the order of about 1½ inches. The building foundations will need to be designed to tolerate total and differential settlements due to static and liquefaction-induced settlement. Detailed foundation recommendations are presented in the "Foundations" section.

5.1.3 Shallow Groundwater

Shallow groundwater was measured at depths ranging from approximately 5 to 14 feet below the existing ground surface in our borings. Additionally, groundwater monitoring data indicates groundwater is generally at depths of 5 to 7 feet below site grades with water occasionally as shallow as about 3 feet beneath the surface at times. Shallow groundwater could significantly impact grading and underground construction. These impacts typically consist of potentially wet and unstable pavement subgrade and subgrade for over-excavations, difficulty achieving compaction, and difficult underground utility installation. Dewatering and shoring of utility trenches may be required in some isolated areas of the site. Additional recommendations addressing this concern are presented in the "Earthwork" section of this report.

As discussed, the proposed loading dock is to be located along the north end of the building and the finished surface is anticipated to be roughly 4 to 5 feet below the existing site grades based on a finished floor Elevation 16 to 17 feet. As such, subgrade for the loading dock will be close to groundwater and may be susceptible to softening in periods with higher groundwater. Depending on the final depth and elevation of the loading dock, additional mitigation and subgrade stabilization or sub-drainage system may need to be considered to reduce the potential for reduced subgrade support if water is present. We should be consulted to provided additional recommendation, if needed, based on the final elevation of the loading dock.

5.1.4 Undocumented Fill and Loose to Medium Dense Sandy Soils

As mentioned, undocumented fills were encountered within some of our borings ranging up to 7 feet beneath the surface. Additionally, due to the previous development and site history, we anticipated fills may extend deeper in some locations. Undocumented fills are expected to be variable in thickness, density, and consistency across the site. We recommend all undocumented fills blanketing the site be completely removed from within the building areas and replaced as engineered fill.

Further, some explorations in proximity to the building encountered an approximately 1-foot thick loose to medium dense native sandy layer at a depth of about 3½ to 6 feet beneath the existing surface. Due to potential for lower bearing strength and increase differential settlement, we recommend the building area be over-excavated a minimum 3 feet beneath existing site grades to recompact the lower strength sandy soils. Additional recommendations are provided in the "Earthwork" section regarding removal and recompaction of undocumented fills and the near surface loose to medium dense native sandy layer.

Additional exploration including exploratory borings and/or test pits can be performed prior to site grading to better evaluate the undocumented fills and low-strength/soil bearing layer and lateral extent. We can provide additional recommendations if this alternative is desired.

5.1.5 Expansive Soils

As discussed, highly expansive surficial soils were encountered in the near surface soils that blanket the site. Expansive soils can undergo significant volume change with changes in

moisture content. They shrink and harden when dried and expand and soften when wetted. To reduce the potential for damage to the planned structure, slabs-on-grade should have sufficient reinforcement and be supported on a layer of non-expansive fill; footings should extend below the zone of seasonal moisture fluctuation. In addition, it is important to limit moisture changes in the surficial soils by using positive drainage away from buildings as well as limiting landscaping watering. Detailed grading and foundation recommendations addressing this concern are presented in the following sections.

5.1.6 Redevelopment Considerations

The site is currently occupied by buildings and pavements. The existing improvements will be demolished for site redeveloped. Potential issues that are often associated with redeveloping sites include demolition of existing improvements, abandonment of existing utilities, and undocumented fills. Please refer to the “Earthwork” section below for further recommendations.

5.2 PLANS AND SPECIFICATIONS REVIEW

We recommend that we be retained to review the geotechnical aspects of the project structural, civil, and landscape plans and specifications, allowing sufficient time to provide the design team with any comments prior to issuing the plans for construction.

5.3 CONSTRUCTION OBSERVATION AND TESTING

As site conditions may vary significantly between the small-diameter borings performed during this investigation, we also recommend that a Cornerstone representative be present to provide geotechnical observation and testing during earthwork and foundation construction. This will allow us to form an opinion and prepare a letter at the end of construction regarding contractor compliance with project plans and specifications, and with the recommendations in our report. We will also be allowed to evaluate any conditions differing from those encountered during our investigation, and provide supplemental recommendations as necessary. For these reasons, the recommendations in this report are contingent of Cornerstone providing observation and testing during construction. Contractors should provide at least a 48-hour notice when scheduling our field personnel.

SECTION 6: EARTHWORK

6.1 SITE DEMOLITION

All existing improvements not to be reused for the current development, including all foundations, flatwork, pavements, utilities, and other improvements should be demolished and removed from the site. Recommendations in this section apply to the removal of these improvements, which may be and are currently present on the site, prior to the start of mass grading or the construction of new improvements for the project.

Cornerstone should be notified prior to the start of demolition and should be present on at least a part-time basis during all backfill and mass grading as a result of demolition. Occasionally,

other types of buried structures (wells, cisterns, debris pits, etc.) can be found on sites with prior development. If encountered, Cornerstone should be contacted to address these types of structures on a case-by-case basis.

6.1.1 Demolition of Existing Slabs, Foundations and Pavements

All slabs, foundations, and pavements should be completely removed from within planned building areas.

As an owner value-engineered option, existing slabs, foundations, and pavements that extend into planned flatwork, pavement, or landscape areas may be left in place provided there is at least 3 feet of engineered fill overlying the remaining materials, they are shown not to conflict with new utilities, and that asphalt and concrete more than 10 feet square is broken up to allow subsurface drainage. Future distress and/or higher maintenance may result from leaving these prior improvements in place. A discussion of recycling existing improvements is provided later in this report.

Special care should be taken during the demolition and removal of existing floor slabs, foundations, utilities and pavements to minimize disturbance of the subgrade. Excessive disturbance of the subgrade, which includes either native or previously placed engineered fill, resulting from demolition activities can have serious detrimental effects on planned foundation and paving elements.

Existing foundations are typically mat-slabs, shallow footings, or piers/piles. If slab or shallow footings are encountered, they should be completely removed. If drilled piers are encountered, they should be cut off at an elevation at least 60-inches below proposed footings or the final subgrade elevation, whichever is deeper. The remainder of the drilled pier could remain in place. Foundation elements to remain in place should be surveyed and superimposed on the proposed development plans to determine the potential for conflicts or detrimental impacts to the planned construction. Following review, additional mitigation or planned foundation elements may need to be modified.

6.1.2 Abandonment of Existing Utilities

All utilities should be completely removed from within planned building areas. For any utility line to be considered acceptable to remain within building areas, the utility line must be completely backfilled with grout or sand-cement slurry (sand slurry is not acceptable), the ends outside the building area capped with concrete, and the trench fills either removed and replaced as engineered fill with the trench side slopes flattened to at least 1:1, or the trench fills are determined not to be a risk to the structure. The assessment of the level of risk posed by the particular utility line will determine whether the utility may be abandoned in place or needs to be completely removed. The contractor should assume that all utilities will be removed from within building areas unless provided written confirmation from both the owner and the geotechnical engineer.

Utilities extending beyond the building area may be abandoned in place provided the ends are plugged with concrete, they do not conflict with planned improvements, and that the trench fills do not pose significant risk to the planned surface improvements.

The risk for owners associated with abandoning utilities in place include the potential for future differential settlement of existing trench fills, and/or partial collapse and potential ground loss into utility lines that are not completely filled with grout.

6.2 SITE CLEARING AND PREPARATION

6.2.1 Site Stripping

The site should be stripped of all surface vegetation, and surface and subsurface improvements to be removed within the proposed development area. Demolition of existing improvements is discussed in the prior paragraphs. A detailed discussion of removal of existing fills is provided later in this report. Surface vegetation and topsoil should be stripped to a sufficient depth to remove all material greater than 3 percent organic content by weight.

6.2.2 Tree and Shrub Removal

Trees and shrubs designated for removal should have the root balls and any roots greater than ½-inch diameter removed completely. Mature trees are estimated to have root balls extending to depths of 2 to 4 feet, depending on the tree size. Significant root zones are anticipated to extend to the diameter of the tree canopy. Grade depressions resulting from root ball removal should be cleaned of loose material and backfilled in accordance with the recommendations in the “Compaction” section of this report.

6.3 REMOVAL OF EXISTING FILLS AND OVER-EXCAVATION

We recommend the entire building area be over-excavated a minimum depth of 3 feet beneath existing site grades or full depth of the undocumented fill, whichever is deeper, and replaced as engineered fill. The over-excavation and removal of fills should extend a lateral distance of at least 5 feet beyond the building footprint or to a lateral distance equal to fill depth below the perimeter footing, whichever is greater.

Once the over-excavation is completed, the exposed subgrade should be scarified, moisture conditioned, and compacted. The minimum recommended performance specification for compaction of the base of the exposed over-excavation area should consist of a minimum of five overlapping passes with a heavy-duty, vibratory smooth drum roller (such as a Dynapac CA5000, Volvo SD160 or an approved equivalent) that will exert a minimum of 25,000 ft-lbs of energy. The above recommendations may need to be modified at the time of construction based on actual field conditions.

Subgrade preparation and compaction should be performed in accordance with the following sections. If the over-excavated materials and fills meet requirements in the “Materials for Fill” section, they can be reused as engineered fill when backfilling the building pad. If materials are

encountered that do not meet the requirements, such as debris, wood, trash, those materials should be screened out of the remaining material and be removed from the site. Backfill of the over-excavation should be placed in lifts and compacted in accordance with the "Compaction" section below.

Fills extending into planned pavement and flatwork areas may be left in place provided they are determined to be a low risk for future differential settlement and that the upper 12 to 18 inches of fill below pavement subgrade is re-worked and compacted as discussed in the "Compaction" section below.

As mentioned, additional exploration can be performed to further evaluate the presence of the lower strength sandy layer at a depth of about 3½ to 6 feet beneath existing site grades and to define the limits of over-excavation and recompaction and depth of over-excavation within the building areas.

6.3.1 High Moisture in Fills and Underlying Native Soils

As discussed, the in-situ moisture contents range up to about 20 to 25 percent over the estimated laboratory optimum in the upper 10 feet of the soil profile. Additionally, the soils may become significantly wetter during wet winter weather and at depths close to the groundwater. The contractor should anticipate drying and processing soils prior to reusing them as fill. The contractors should anticipate working with and mitigating unstable soil conditions.

6.4 TEMPORARY CUT AND FILL SLOPES

The contractor is responsible for maintaining all temporary slopes and providing temporary shoring where required. Temporary shoring, bracing, and cuts/fills should be performed in accordance with the strictest government safety standards. On a preliminary basis, the upper 10 feet at the site may be classified as OSHA Soil Type C materials.

Excavations performed during site demolition and fill removal should be sloped at 3:1 (horizontal:vertical) within the upper 5 feet below building subgrade. Excavations extending more than 5 feet below building subgrade and excavations in pavement and flatwork areas should be slope at a 1:1 inclination unless the OSHA soil classification indicates that slope should not exceed 1.5:1.

6.5 SHALLOW GROUNDWATER

As previously stated, groundwater was encountered at depths of about 5 to 14 feet in our borings corresponding to approximate Elevations -3¼ to 9½ feet (NAVD88 datum) based on the topographic survey provided. Additionally, based on previous groundwater monitoring data at the site, groundwater appears to generally be about 5 to 7 feet beneath site grades but has also been observed as shallow as 3 feet beneath the existing site grades. We recommend that contractors anticipate dewatering to control water seeping into deeper excavations close to or below the groundwater. Groundwater conditions can be difficult to maintain, and if the groundwater is in a relatively widespread, continuous layer, it may be hard to dewater, requiring

continuous dewatering during excavations. The contractors should anticipate working with and mitigating unstable soil conditions, especially when close to the groundwater depth.

6.6 SUBGRADE PREPARATION

After site clearing and demolition is complete, and prior to backfilling any excavations resulting from fill removal or demolition, the excavation subgrade and subgrade within areas to receive additional site fills, slabs-on-grade and/or pavements should be scarified to a depth of 6 inches, moisture conditioned, and compacted in accordance with the “Compaction” section below.

6.7 SUBGRADE STABILIZATION MEASURES

Soil subgrade and fill materials, especially soils with high fines contents such as clays and silty soils, can become unstable due to high moisture content, whether from high in-situ moisture contents or from winter rains. As the moisture content increases over the laboratory optimum, it becomes more likely the materials will be subject to softening and yielding (pumping) from construction loading or become unworkable during placement and compaction.

As discussed in the “Subsurface” section in this report, the in-situ moisture contents range up to about 20 to 25 percent over the estimated laboratory optimum in the upper 10 of the soil profile. The contractor should anticipate drying the soils prior to reusing them as fill. In addition, repetitive rubber-tire loading may de-stabilize the soils.

There are several methods to address potential unstable soil conditions and facilitate fill placement and trench backfill. Some of the methods are briefly discussed below. Implementation of the appropriate stabilization measures should be evaluated on a case-by-case basis according to the project construction goals and the particular site conditions.

6.7.1 Chemical Treatment

Where the unstable area exceeds about 5,000 to 10,000 square feet and/or site winterization is desired, chemical treatment with quicklime (CaO), kiln-dust, or cement may be more cost-effective than removal and replacement. Recommended chemical treatment depths will typically range from 12 to 18 inches depending on the magnitude of the instability.

6.7.2 Removal and Replacement

As an alternative to scarification, the contractor may choose to over-excavate the unstable soils and replace them with dry on-site or import materials. A Cornerstone representative should be present to provide recommendations regarding the appropriate depth of over-excavation, whether a geosynthethic (stabilization fabric or geogrid) is recommended, and what materials are recommended for backfill.

6.7.3 Scarification and Drying

The subgrade may be scarified to a depth of 8 to 12 inches and allowed to dry to near optimum conditions, if sufficient dry weather is anticipated to allow sufficient drying. More than one round of scarification may be needed to break up the soil clods.

6.8 MATERIAL FOR FILL

6.8.1 Re-Use of On-site Soils

On-site soils with an organic content less than 3 percent by weight may be reused as general fill. General fill should not have lumps, clods or cobble pieces larger than 6 inches in diameter; 85 percent of the fill should be smaller than 2½ inches in diameter. Minor amounts of oversize material (smaller than 12 inches in diameter) may be allowed provided the oversized pieces are not allowed to nest together and the compaction method will allow for loosely placed lifts not exceeding 12 inches.

6.8.2 Re-Use of On-Site Site Improvements

We anticipate that significant quantities of asphalt concrete (AC) grindings and aggregate base (AB) will be generated during site demolition. If the AC grindings are mixed with the underlying AB to meet Class 2 AB specifications, they may be reused within new pavement and flatwork structural sections. Fill containing AC grindings may not be reused within building areas. Laboratory testing will be required to confirm the grindings meet project specifications.

If the site area allows for on-site pulverization of PCC and provided the PCC is pulverized to meet the "Material for Fill" requirements of this report, it may be used as select fill within the planned building areas, excluding the capillary break layer; as typically pulverized PCC comes close to or meets Class 2 AB specifications, the recycled PCC may likely be used within the pavement structural sections. PCC grindings also make good winter construction access roads, similar to a cement-treated base (CTB) section.

6.8.3 High Moisture in Fills and Underlying Native Soils

As discussed, the in-situ moisture contents range up to about 20 to 25 percent over the estimated laboratory optimum in the upper 10 feet of the soil profile. Additionally, the soils may become significantly wetter during wet winter weather and at depths close to the groundwater. The contractor should anticipate drying and processing soils prior to reusing them as fill. The contractors should anticipate working with and mitigating unstable soil conditions.

6.8.4 Potential Import Sources

Imported and non-expansive material should be inorganic with a Plasticity Index (PI) of 15 or less, and not contain recycled asphalt concrete where it will be used within the building areas. To prevent significant caving during trenching or foundation construction, imported material should have sufficient fines. Samples of potential import sources should be delivered to our

office at least 10 days prior to the desired import start date. Information regarding the import source should be provided, such as any site geotechnical reports. If the material will be derived from an excavation rather than a stockpile, potholes will likely be required to collect samples from throughout the depth of the planned cut that will be imported. At a minimum, laboratory testing will include PI tests. Material data sheets for select fill materials (Class 2 aggregate base, ¾-inch crushed rock, quarry fines, etc.) listing current laboratory testing data (not older than 6 months from the import date) may be provided for our review without providing a sample. If current data is not available, specification testing will need to be completed prior to approval.

Environmental and soil corrosion characterization should also be considered by the project team prior to acceptance. Suitable environmental laboratory data to the planned import quantity should be provided to the project environmental consultant; additional laboratory testing may be required based on the project environmental consultant's review. The potential import source should also not be more corrosive than the on-site soils, based on pH, saturated resistivity, and soluble sulfate and chloride testing.

6.8.5 Non-Expansive Fill Using Lime Treatment

As discussed above, non-expansive fill should have a Plasticity Index (PI) of 15 or less. Due to the high clay content and PI of the on-site soil materials, it is not likely that sufficient quantities of non-expansive fill would be generated from cut materials. As an alternative to importing non-expansive fill, chemical treatment can be considered to create non-expansive fill. If this option is considered, additional laboratory tests should be performed during initial site grading to further evaluate the optimum percentage of quicklime required.

6.9 COMPACTION REQUIREMENTS

All fills, and subgrade areas where fill, slabs-on-grade, and pavements are planned, should be placed in loose lifts 8 inches thick or less and compacted in accordance with ASTM D1557 (latest version) requirements as shown in the table below. In general, clayey soils should be compacted with sheepsfoot equipment and sandy/gravelly soils with vibratory equipment; open-graded materials such as crushed rock should be placed in lifts no thicker than 18 inches and consolidated in place with vibratory equipment. Each lift of fill and all subgrade should be firm and unyielding under construction equipment loading in addition to meeting the compaction requirements to be approved. The contractor (with input from a Cornerstone representative) should evaluate the in-situ moisture conditions, as the use of vibratory equipment on soils with high moistures can cause unstable conditions. General recommendations for soil stabilization are provided in the "Subgrade Stabilization Measures" section of this report. Where the soil's PI is 20 or greater, the expansive soil criteria should be used.

Table 2: Compaction Requirements

Description	Material Description	Minimum Relative[1] Compaction (percent)	Moisture[2] Content (percent)
General Fill (within upper 5 feet)	On-Site Expansive Soils	87 – 92	>3
	Low Expansion Soils	90	>1
General Fill (below a depth of 5 feet)	On-Site Expansive Soils	95	>3
	Low Expansion Soils	95	>1
Trench Backfill	On-Site Expansive Soils	87 – 92	>3
Trench Backfill	Low Expansion Soils	90	>1
Trench Backfill (upper 6 inches of pavement subgrade)	On-Site Low Expansion Soils	95	>1
Crushed Rock Fill	¾-inch Clean Crushed Rock	Consolidate In-Place	NA
Non-Expansive Fill	Imported Non-Expansive Fill	90	Optimum
Flatwork Subgrade	On-Site Expansive Soils	87 - 92	>3
Flatwork Subgrade	Low Expansion Soils	90	>1
Flatwork Aggregate Base	Class 2 Aggregate Base[3]	90	Optimum
Pavement Subgrade	On-Site Expansive Soils	87 - 92	>3
Pavement Subgrade	Low Expansion Soils	95	>1
Pavement Aggregate Base	Class 2 Aggregate Base[3]	95	Optimum
Asphalt Concrete	Asphalt Concrete	95 (Marshall)	NA

1 – Relative compaction based on maximum density determined by ASTM D1557 (latest version)
2 – Moisture content based on optimum moisture content determined by ASTM D1557 (latest version)
3 – Class 2 aggregate base shall conform to Caltrans Standard Specifications, latest edition, except that the relative compaction should be determined by ASTM D1557 (latest version)

6.9.1 Construction Moisture Conditioning

Expansive soils can undergo significant volume change when dried then wetted. The contractor should keep all exposed expansive soil subgrade (and also trench excavation side walls) moist until protected by overlying improvements (or trenches are backfilled). If expansive soils are allowed to dry out significantly, re-moisture conditioning may require several days of re-wetting (flooding is not recommended), or deep scarification, moisture conditioning, and re-compaction.

6.10 TRENCH BACKFILL

Utility lines constructed within public right-of-way should be trenched, bedded and shaded, and backfilled in accordance with the local or governing jurisdictional requirements. Utility lines in private improvement areas should be constructed in accordance with the following requirements unless superseded by other governing requirements.

All utility lines should be bedded and shaded to at least 6 inches over the top of the lines with crushed rock (⅜-inch-diameter or greater) or well-graded sand and gravel materials conforming to the pipe manufacturer's requirements. Open-graded shading materials should be consolidated in place with vibratory equipment and well-graded materials should be compacted to at least 90 percent relative compaction with vibratory equipment prior to placing subsequent backfill materials.

General backfill over shading materials may consist of on-site native materials provided they meet the requirements in the "Material for Fill" section, and are moisture conditioned and compacted in accordance with the requirements in the "Compaction" section.

Where utility lines will cross perpendicular to strip footings, the footing should be deepened to encase the utility line, providing sleeves or flexible cushions to protect the pipes from anticipated foundation settlement, or the utility lines should be backfilled to the bottom of footing with sand-cement slurry or lean concrete. Where utility lines will parallel footings and will extend below the "foundation plane of influence," an imaginary 1:1 plane projected down from the bottom edge of the footing, either the footing will need to be deepened so that the pipe is above the foundation plane of influence or the utility trench will need to be backfilled with sand-cement slurry or lean concrete within the influence zone. Sand-cement slurry used within foundation influence zones should have a minimum compressive strength of 75 psi.

On expansive soils sites it is desirable to reduce the potential for water migration into building and pavement areas through the granular shading materials. We recommend that a plug of low-permeability clay soil, sand-cement slurry, or lean concrete be placed within trenches just outside where the trenches pass into building and pavement areas.

6.11 SITE DRAINAGE

Ponding should not be allowed adjacent to building foundations, slabs-on-grade, or pavements. Hardscape surfaces should slope at least 2 percent towards suitable discharge facilities; landscape areas should slope at least 3 percent towards suitable discharge facilities. Roof runoff should be directed away from building areas in closed conduits, to approved infiltration facilities, or on to hardscaped surfaces that drain to suitable facilities. Retention, detention or infiltration facilities should be spaced at least 10 feet from buildings, and preferably at least 5 feet from slabs-on-grade or pavements. However, if retention, detention or infiltration facilities are located within these zones, we recommend that these treatment facilities meet the requirements in the Storm Water Treatment Design Considerations section of this report.

6.12 LOW-IMPACT DEVELOPMENT (LID) IMPROVEMENTS

The Municipal Regional Permit (MRP) requires regulated projects to treat 100 percent of the amount of runoff identified in Provision C.3.d from a regulated project's drainage area with low impact development (LID) treatment measures onsite or at a joint stormwater treatment facility. LID treatment measures are defined as rainwater harvesting and use, infiltration, evapotranspiration, or biotreatment. A biotreatment system may only be used if it is infeasible to implement harvesting and use, infiltration, or evapotranspiration at a project site.

Technical infeasibility of infiltration may result from site conditions that restrict the operability of infiltration measures and devices. Various factors affecting the feasibility of infiltration treatment may create an environmental risk, structural stability risk, or physically restrict infiltration. The presence of any of these limiting factors may render infiltration technically infeasible for a proposed project. To aid in determining if infiltration may be feasible at the site, we provide the following site information regarding factors that may aid in determining the feasibility of infiltration facilities at the site.

- The near-surface soils at the site are generally clayey, and categorized as Hydrologic Soil Group D, and is expected to have infiltration rates of less than 0.2 inches per hour. In our opinion, these clayey soils will significantly limit the infiltration of stormwater.

- Locally, seasonal high groundwater is mapped at a depth of about 5 to 7 feet, and based on groundwater data at the site we anticipate may be as shallow as 3 feet beneath existing site grades. Therefore, groundwater is expected to be within 10 feet of the base of the infiltration measure.

- In our opinion, infiltration locations within 10 feet of the buildings would create a geotechnical hazard.

- Infiltration measures, devices, or facilities may conflict with the location of existing or proposed underground utilities or easements. Infiltration measures, devices, or facilities should not be placed on top of or very near to underground utilities such that they discharge to the utility trench, restrict access, or cause stability concerns.

6.12.1 Storm Water Treatment Design Considerations

If storm water treatment improvements, such as shallow bio-retention swales, basins or pervious pavements, are required as part of the site improvements to satisfy Storm Water Quality (C.3) requirements, we recommend the following items be considered for design and construction.

6.12.1.1 General Bioswale Design Guidelines

- If possible, avoid placing bioswales or basins within 10 feet of the building perimeter or within 5 feet of exterior flatwork or pavements. If bioswales must be constructed within these setbacks, the side(s) and bottom of the trench excavation should be lined with 10-mil visqueen to reduce water infiltration into the surrounding expansive clay.

- Bioswales constructed within 3 feet of proposed buildings may be within the foundation zone of influence for perimeter wall loads. Therefore, where bioswales will parallel foundations and will extend below the “foundation plane of influence,” an imaginary 1:1 plane projected down from the bottom edge of the foundation, the foundation will need to be deepened so that the bottom edge of the bioswale filter material is above the foundation plane of influence.

- The bottom of bioswale or detention areas should include a perforated drain placed at a low point, such as a shallow trench or sloped bottom, to reduce water infiltration into the surrounding soils near structural improvements, and to address the low infiltration capacity of the on-site clay soils.

6.12.1.2 Bioswale Infiltration Material

- Gradation specifications for bioswale filter material, if required, should be specified on the grading and improvement plans.

- Compaction requirements for bioswale filter material in non-landscaped areas or in pervious pavement areas, if any, should be indicated on the plans and specifications to satisfy the anticipated use of the infiltration area.

- If required, infiltration (percolation) testing should be performed on representative samples of potential bioswale materials prior to construction to check for general conformance with the specified infiltration rates.

- It should be noted that multiple laboratory tests may be required to evaluate the properties of the bioswale materials, including percolation, landscape suitability and possibly environmental analytical testing depending on the source of the material. We recommend that the landscape architect provide input on the required landscape suitability tests if bioswales are to be planted.

- If bioswales are to be vegetated, the landscape architect should select planting materials that do not reduce or inhibit the water infiltration rate, such as covering the bioswale with grass sod containing a clayey soil base.

- If required by governing agencies, field infiltration testing should be specified on the grading and improvement plans. The appropriate infiltration test method, duration and frequency of testing should be specified in accordance with local requirements.

- Due to the relatively loose consistency and/or high organic content of many bioswale filter materials, long-term settlement of the bioswale medium should be anticipated. To reduce initial volume loss, bioswale filter material should be wetted in 12 inch lifts during placement to pre-consolidate the material. Mechanical compaction should not be allowed, unless specified on the grading and improvement plans, since this could significantly decrease the infiltration rate of the bioswale materials.

- It should be noted that the volume of bioswale filter material may decrease over time depending on the organic content of the material. Additional filter material may need to be added to bioswales after the initial exposure to winter rains and periodically over the life of the bioswale areas, as needed.

6.12.1.3 Bioswale Construction Adjacent to Pavements

If bio-infiltration swales or basins are considered adjacent to proposed parking lots or exterior flatwork, we recommend that mitigative measures be considered in the design and construction of these facilities to reduce potential impacts to flatwork or pavements. Exterior flatwork, concrete curbs, and pavements located directly adjacent to bio-swales may be susceptible to settlement or lateral movement, depending on the configuration of the bioswale and the setback between the improvements and edge of the swale. To reduce the potential for distress to these improvements due to vertical or lateral movement, the following options should be considered by the project civil engineer:

- Improvements should be setback from the edge of a bioswale (assuming a sloping bioswale) such that there is at least 1 foot of horizontal distance between the edge of improvements and the top edge of the bioswale excavation for every 1 foot of vertical bioswale depth, or

- Concrete curbs for pavements, or lateral restraint for exterior flatwork, located directly adjacent to a bioswale, or not meeting the above setback, should be designed to resist lateral earth pressures in accordance with the recommendations in the “Retaining Walls” section of this report, or concrete curbs or edge restraint should be adequately keyed into the native soil or engineered to reduce the potential for rotation or lateral movement of the curbs.

6.13 LANDSCAPE CONSIDERATIONS

Since the near-surface soils are moderately to highly expansive, we recommend greatly reducing the amount of surface water infiltrating these soils near foundations and exterior slabs-on-grade. This can typically be achieved by:

- Using drip irrigation

- Avoiding open planting within 3 feet of the building perimeter or near the top of existing slopes

- Regulating the amount of water distributed to lawns or planter areas by using irrigation timers

- Selecting landscaping that requires little or no watering, especially near foundations.

We recommend that the landscape architect consider these items when developing landscaping plans.

SECTION 7: 2019 CBC SEISMIC DESIGN CRITERIA

We developed site-specific seismic design parameters in accordance with Chapter 16, Chapter 18 and Appendix J of the 2019 California Building Code (CBC) and Chapters 11, 12, 20, and 21 and Supplement No. 1 of ASCE 7-16.

7.1 SITE LOCATION AND PROVIDED DATA FOR 2019 CBC SEISMIC DESIGN

The project is located at latitude 37.719966° and longitude -122.187908°, which is based on Google Earth (WGS84) coordinates at the approximate center of the site at 880 Doolittle Drive in San Leandro, California. We have assumed that a Seismic Importance Factor (I_e) of 1.00 has been assigned to the structure in accordance with Table 1.5-2 of ASCE 7-16 for structures classified as Risk Category II. The building period has not been provided by the project structural engineer.

7.2 SITE CLASSIFICATION – CHAPTER 20 OF ASCE 7-16

Code-based site classification and ground motion attenuation relationships are based on the time-weighted average shear wave velocity of the top approximately 100 feet (30 meters) of the soil profile (V_{S30}).

Shear wave velocity (V_S) measurements were performed while advancing CPT-1 and CPT-10, resulting in a time-averaged shear wave velocity for the top 30 meters (V_{S30}) of 217 meters per second (m/s) and 225 m/s, respectively. In accordance with Table 20.3-1 of ASCE 7-16, we recommend the site be classified as Soil Classification D, which is described as a “stiff soil” profile. Because we used site specific data from our explorations and laboratory testing, the site class should be considered as “determined” for the purposes of estimating the seismic design parameters from the code outlined below. Our site-specific ground motion hazard analysis considered a V_{S30} of 217 m/s (712 ft/s).

7.3 CODE-BASED SEISMIC DESIGN PARAMETERS

Code-based spectral acceleration parameters were determined based on mapped acceleration response parameters adjusted for the specific site conditions. Mapped Risk-Adjusted Maximum Considered Earthquake (MCE_R) spectral acceleration parameters (S_S and S_1) were determined using the ATC Hazards by Location website (https://hazards.atcouncil.org).

The mapped acceleration parameters were adjusted for local site conditions based on the average soil conditions for the upper 100 feet (30 meters) of the soil profile. Code-based MCE_R spectral response acceleration parameters adjusted for site effects (S_{MS} and S_{M1}) and design spectral response acceleration parameters (S_{DS} and S_{D1}) are presented in Table 3.

In accordance with Section 11.4.8 of ASCE 7-16, structures on Site Class D sites with mapped 1-second period spectral acceleration (S_1) values greater than or equal to 0.2 require a site-specific ground motion hazard analysis be performed in accordance with Section 21.2 of ASCE 7-16. ***Design seismic parameters determined by performing a Ground Motion***

Hazard Analysis per Section 21.2 of ASCE 7-16 are presented in Table 6. Recommended values in Table 3 should not be used for design unless in the judgement of the structural engineer an exception can be taken in accordance with Section 11.4.8 of ASCE 7-16.
Values summarized in Table 3 are only used to determine Seismic Design Category and comparison with minimum code requirements for further use in our ground motion hazard analysis (GMHA).

Table 3: 2019 CBC Site Categorization and Site Coefficients

Classification/Coefficient	Design Value
Site Class	D
Site Latitude	37.719966°
Site Longitude	-122.187908°
Risk Category	II
Short Period Mapped Spectral Acceleration – S_S	1.818g
1-second Period Mapped Spectral Acceleration – S_1	0.692g
Short-Period Site Coefficient – F_a	1.0
Long-Period Site Coefficient – F_v	*null
Short Period MCE Spectral Response Acceleration Adjusted for Site Effects – S_{MS}	1.818g
1-second Period MCE Spectral Response Acceleration Adjusted for Site Effects – S_{M1}	*null
Short Period, Design Earthquake Spectral Response Acceleration – S_{DS}	1.212g
1-second Period, Design Earthquake Spectral Response Acceleration – S_{D1}	*null
Long-Period Transition – T_L	8 seconds
Site Coefficient – F_{PGA}	1.1
Site Modified Peak Ground Acceleration – PGA_M	0.840g

*null – per section 11.4.8 of ASCE 7-16

7.4 GROUND MOTION HAZARD ANALYSIS

Following Section 11.4.8 of ASCE 7-16, we performed a ground motion hazards analysis (GMHA) in accordance with Chapter 21, Section 21.2 of ASCE 7. We evaluated both Probabilistic MCE_R Ground Motions in accordance with Method 1 and Deterministic MCE_R Ground Motions to generate our recommended design response spectrum for the project.

Our analyses were performed using the USGS interface Unified Hazard Tool (UHT) based on the UCERF 3 Data Set, Building Seismic Safety Council (BSSC) Scenario Catalog 2014 event set (BSSC 2014), and the 2014 National Seismic Hazard Maps – Source Parameters (NSHMP deterministic event set). Additionally, we utilized the USGS program Response Spectra Plotter with combined models (Combined: WUS 2014 (4.1)).

Our analysis utilized the mean ground motions predicted by four of the Next Generation Attenuation West 2 (NGA-West 2) relationships: Boore-Atkinson (2013), Campbell-Bozorgnia (2013), Chiou-Youngs (2013), and Abrahamson-Silva (2013). Rotation factors (scale factors) were determined as specified in ASCE 7-16 Chapter 21, Section 21.2, to calculate the maximum rotated component of ground motions (ASCE, 2016).

7.4.1 Probabilistic MCE_R

We performed a probabilistic seismic hazard analysis (PSHA) per ASCE 7-16 Section 21.2.1. The probabilistic MCE acceleration response spectrum is defined as the 5 percent damped acceleration response spectrum having a 2 percent probability of exceedance in a 50-year period (2,475-year return period). The probabilistic MCE spectrum was multiplied by Risk Coefficients (CR) to determine the probabilistic MCE_R. We used Risk Coefficients (CR_S and CR_1) of 0.923 and 0.910, respectively, based on ASCE 7-16 Section 21.2.1.1 – Method 1 and the ATC website. Risk coefficients for the various periods are presented in Table 4, Column 3.

The resulting probabilistic MCE_R is presented on Figure 5 (red line). Spectral ordinates are tabulated in Table 4, Column 6.

7.4.2 Deterministic MCER

We performed deterministic seismic hazard analyses in accordance with ASCE 7-16 Section 21.2.2 and ASCE 7-16 Supplement No. 1. The deterministic MCE_R acceleration response spectrum is calculated as the largest 84th percentile ground motion in the direction of maximum horizontal response for each period for characteristic earthquakes on all known active faults within the region. The largest deterministic ground motion resulted from a M_w 7.58 earthquake on the Hayward Fault (RC+HN+HS+HE segments), located at a distance of approximately 5.91 km from the site.

In accordance with Supplement No.1 of ASCE 7-16, when the largest spectral response acceleration of the resulting deterministic ground motion response spectrum is less than $1.5F_a$ then the largest 84th percentile rotated response spectrum (Table 4, Column 4) shall be scaled by a single factor such that the maximum response spectral acceleration equals $1.5F_a$. For Site Classes A, B, C and D, F_a is determined using Table 11.4.1 with the value of S_s taken as 1.5; for Site Class E, F_a shall be taken as 1.0. When the largest spectral response acceleration of the probabilistic ground motion response of 21.2.1 is less than $1.2F_a$, the deterministic ground motion response spectrum does not need to be calculated.

As the largest probabilistic spectral response acceleration was determined to be 2.659 which is greater than $1.2F_a$, where F_a is taken as 1.000 from Table 11.4-1 in ASCE 7-16 Supplement No.1, the 84th percentile rotated response spectrum was calculated as part of the deterministic analyses. The maximum spectral acceleration from the 84th percentile rotated response spectrum was then compared to $1.5F_a$ to determine if a scale factor needed to be applied. The deterministic MCE spectrum are tabulated in Table 4, Column 5. The deterministic MCE_R is presented graphically on Figure 5 (blue line).

7.4.3 Site-Specific MCE_R

The site-specific MCE_R is defined by ASCE 7-16 Section 21.2.3 as the lesser of the deterministic and probabilistic MCE_R's at each period. Spectral ordinates for the site-specific MCE_R are tabulated in Table 4, Column 7 and shown graphically on Figure 5 (dashed black line).

Table 4: Development of Site-Specific MCE_R Spectrum

Period (seconds)	CBC General Spectrum (g)	Risk Coefficient	Det. 84th Percentile Rotated	Deterministic MCE_R (g)	Probabilistic MCE_R (g)	Site-Specific MCE_R (g)
0.000	0.485	0.923	0.976	0.976	0.996	0.976
0.050	0.676	0.923	0.978	0.978	1.316	0.978
0.100	0.867	0.923	1.421	1.421	1.636	1.421
0.150	1.058	0.923	1.752	1.752	1.907	1.752
0.190	1.211	0.923	1.892	1.892	2.124	1.892
0.200	1.212	0.923	1.927	1.927	2.179	1.927
0.250	1.212	0.922	2.058	2.058	2.361	2.058
0.300	1.212	0.921	2.133	2.133	2.543	2.133
0.400	1.212	0.920	2.245	2.245	2.601	2.245
0.500	1.212	0.918	2.281	2.281	2.659	2.281
0.750	1.212	0.914	2.001	2.001	2.339	2.001
0.952	1.211	0.911	1.844	1.844	2.114	1.844
1.000	1.153	0.910	1.807	1.807	2.061	1.807
2.000	0.577	0.910	1.083	1.083	1.197	1.083
3.000	0.384	0.910	0.743	0.743	0.806	0.743
4.000	0.288	0.910	0.526	0.526	0.581	0.526
5.000	0.231	0.910	0.402	0.402	0.446	0.402

7.4.4 Design Response Spectrum

The Design Response Spectrum (DRS) is defined in ASCE 7-16 Section 21.3 as:

- two-thirds of the site-specific MCE_R, but
- not less than 80% of the general design response spectrum

Spectral accelerations corresponding to two-thirds of the MCE_R are tabulated in Table 5, Column 2. Ordinates corresponding to 80% of the general Site Class D response spectrum are tabulated below in Table 5, Column 3. Ordinates of the site-specific DRS are tabulated in

Table 5, Column 4. Development of the site-specific DRS is presented graphically on Figure 6 (dashed black line).

Table 5: Development of Site-Specific Design Response Spectrum

Period (seconds)	2/3 Site-Specific MCE_R (g)	80% CBC General Spectrum (g)	Design Response Spectrum (g)
0.000	0.651	0.388	0.651
0.050	0.652	0.541	0.652
0.100	0.947	0.694	0.947
0.150	1.168	0.846	1.168
0.190	1.261	0.969	1.261
0.200	1.285	0.970	1.285
0.250	1.372	0.970	1.372
0.300	1.422	0.970	1.422
0.400	1.497	0.970	1.497
0.500	1.521	0.970	1.521
0.750	1.334	0.970	1.334
0.952	1.229	0.969	1.229
1.000	1.205	0.923	1.205
2.000	0.722	0.461	0.722
3.000	0.495	0.308	0.495
4.000	0.351	0.231	0.351
5.000	0.268	0.185	0.268

7.5 DESIGN ACCELERATION PARAMETERS

Design acceleration parameters (S_{DS} and S_{D1}) were determined in accordance with Section 21.4 of ASCE 7-16. S_{DS} is defined as the design spectral acceleration at 90% of the maximum spectral acceleration, S_a, obtained from the site-specific spectrum, at any period within the range from 0.2 to 5 seconds, inclusive. S_{D1} is defined as the maximum value of the product, TS_a, for periods from 1 to 2 seconds for sites with $v_{s,30}$ > 1,200 ft/s ($v_{s,30}$ > 365.76 m/s) and for periods from 1 to 5 seconds for sites with $v_{s,30}$ ≤ 1,200 ft/s ($v_{s,30}$ ≤365.76 m/s).

Site-specific MCE_R spectral response acceleration parameters (S_{MS} and S_{M1}) are calculated as:

- 1.5 times the S_{DS} and S_{D1} values, respectively, but
- not less than 80% of the code-based values presented in Table 3.

Recommended design acceleration parameters are summarized in Table 6.

When using the Equivalent Lateral Force Procedure, ASCE 7-16 Section 21.4 allows using the spectral acceleration at any period (T) in lieu of S_{D1}/T in Eq. 12.8-3 and $S_{D1}T_L/T_2$ in Eq. 12.8-4. The site-specific spectral acceleration at any period may be calculated by interpolation of the spectral ordinates in Table 5, Column 4.

Table 6: Site-Specific Design Acceleration Parameters

Parameter	Value
S_{DS}	1.369
S_{D1}	1.485
S_{MS}	2.053
S_{M1}	2.228

7.6 SITE-SPECIFIC MCE_G PEAK GROUND ACCELERATION

We calculated the Site-Specific MCE_G Peak Ground Acceleration (PGA_M) per ASCE 7-16 Section 21.5. The Site-Specific PGA_M is calculated as the lesser of probabilistic and deterministic geometric mean PGA. The 2% in 50-year probabilistic geometric mean PGA is 0.981g. The deterministic PGA is considered the greater of the largest 84th percentile deterministic geometric mean PGA (0.887g) or one-half of the tabulated F_{PGA} value from ASCE 7-16 Table 11.8.1 with the value of PGA taken as 0.5g. For Site Class D, F_{PGA} is 1.100 and one-half of the F_{PGA} is 0.55g; therefore, the deterministic PGA is 0.887g. Additionally, the Site-Specific PGA_M may not be less than 80% of the mapped PGA_M determined from ASCE 7-16 Equation 11.8-1. The mapped PGA_M for the site is 0.840g; 80% of PGA_M is 0.672g.

Based on the above, the recommended Site-Specific PGA_M for the site is 0.887g.

SECTION 8: FOUNDATIONS

8.1 SUMMARY OF RECOMMENDATIONS

In our opinion, the proposed structures may be supported on shallow foundations provided the recommendations in the “Earthwork” section and the sections below are followed.

8.2 SHALLOW FOUNDATIONS

8.2.1 Spread Footings

Provided the structures can tolerate the estimated static and seismic total and differential settlements, conventional spread footings can be considered for building support. Spread footings should bear entirely on natural, undisturbed soil or engineered fill, be at least 15 inches wide, and extend at least 21 inches below the lowest adjacent grade. Lowest adjacent grade is

defined as the deeper of the following: 1) bottom of the adjacent interior slab-on-grade, or 2) finished exterior grade, excluding landscaping topsoil.

Footings constructed to the above dimensions and in accordance with the "Earthwork" recommendations of this report are capable of supporting maximum allowable bearing pressures of 2,000 psf for dead loads, 3,000 psf for combined dead plus live loads, and 4,000 psf for all loads including wind and seismic. These pressures are based on factors of safety of 3.0, 2.0, and 1.5 applied to the ultimate bearing pressure for dead, dead plus live, and all loads, respectively. These pressures are net values; the weight of the footing may be neglected for the portion of the footing extending below grade (typically, the full footing depth). Top and bottom mats of reinforcing steel should be included in continuous footings to help span irregularities and differential settlement.

8.2.2 Footing Settlement

Structural loads were not provided to us at the time this report was prepared. Based on estimated building loads (up to 150 kips dead plus live column loads and up to 10 kips per foot dead plus live wall loads), the allowable bearing pressures presented above, and assumed bottom of interior column footings and non-loading dock continuous wall footings at about 3 feet below finished floor at about Elevation 13 to 14 feet and loading dock continuous wall footings at about 7 feet below finished floor at about Elevation 9 to 10 feet, we estimated the following total static footing settlements:

- ½ to 1 inch for column square spread footings and non-loading dock continuous strip wall footings.
- 1¼ to 1½ inches for loading dock continuous strip wall footings.

Due to foundation loads only, post-construction differential settlements between adjacent foundation elements or over about 30 feet along continuous strip footings are estimated to be:

- ½ inch or less for column square spread footings and non-loading dock continuous strip wall footings.
- ⅔ to ¾ inch for loading dock continuous strip wall footings.

In addition to the estimated static footing settlements presented above, we estimate differential seismic movement between independent foundation elements will be on the order of ⅓ inch (provided all undocumented fills are over-excavated and replaced as engineered fill as previously discussed).

Furthermore, based on a finished floor Elevation 16 to 17 feet across the building, existing grades will be raised about 0 to 2 feet along the north end of the building and about 4 to 5 feet along the south end of the building to achieve finished floor. In addition to the static foundation and seismic settlements discussed above, the building should be designed to accommodate the

following estimated settlements due to additional fill to raise existing grades up to the finished floor elevation:

- 0 to ½ inch in the northern end of the building (grades raised 0 to 2 feet).
- ¾ to 1¼ inches in the middle portion of the building (grades raised 3 to 4 feet).
- 1 to 1¾ inches in the southern end of the building (grades raised 4 to 5 feet).

Total differential footing movement is estimated to range from:

- ¾ to 1⅓ inches for column square spread footings and non-loading dock continuous strip wall footings.
- 1 to 1⅓ inches for loading dock continuous strip wall footings.

These static plus seismic differential movements are anticipated between independent foundation elements, or over about 30 feet along the continuous perimeter foundations. We recommend we be retained to review the final footing layout and loading, and verify the settlement estimates above.

8.2.3 Lateral Loading

Lateral loads may be resisted by friction between the bottom of footing and the supporting subgrade, and also by passive pressures generated against footing sidewalls. An ultimate frictional resistance of 0.4 applied to the footing dead load, and an ultimate passive pressure based on an equivalent fluid pressure of 450 pcf may be used in design. The structural engineer should apply an appropriate factor of safety (such as 1.5) to the ultimate values above. Where footings are adjacent to landscape areas without hardscape, the upper 18 inches of soil should be neglected when determining passive pressure capacity.

8.2.4 Spread Footing Construction Considerations

Where utility lines will cross perpendicular to strip footings, the footing should be deepened to encase the utility line, providing sleeves or flexible cushions to protect the pipes from anticipated foundation settlement, or the utility lines should be backfilled to the bottom of footing with sand-cement slurry or lean concrete. Where utility lines will parallel footings and will extend below the "foundation plane of influence," an imaginary 1:1 plane projected down from the bottom edge of the footing, either the footing will need to be deepened so that the pipe is above the foundation plane of influence or the utility trench will need to be backfilled with sand-cement slurry or lean concrete within the influence zone. Sand-cement slurry used within foundation influence zones should have a minimum compressive strength of 75 psi.

Footing excavations should be filled as soon as possible or be kept moist until concrete placement by regular sprinkling to prevent desiccation. A Cornerstone representative should observe all footing excavations prior to placing reinforcing steel and concrete. If there is a

significant schedule delay between our initial observation and concrete placement, we may need to re-observe the excavations.

Some pockets of sandy soils may be encountered within footing excavations. If encountered, excavation walls may not stand vertical and may need to be sloped to a minimum 1:1 inclination or Stay-Form or similar be placed within the footing excavations as they are excavated during construction of the foundation elements. If granular material is encountered in the footing bottoms, the material may also be disturbed to a depth of 6 to 8 inches following excavation and may need to be compacted prior to steel placement. Care should be taken to not disturb the compacted granular material during steel placement. We should re-observe the footing excavations in granular materials after reinforcing steel has been placed and just prior to concrete placement. Footing excavations should also be kept moist by regular sprinkling with water to prevent desiccation and potential raveling of the granular materials. As an alternative, a rat slab can be placed over the granular material after we have observed the footing excavation to protect the granular material prior to steel placement.

Further, groundwater is anticipated to be shallow and the existing soils are highly wet in locations. Footing excavations, especially deeper excavations (i.e. loading dock wall footings) may encounter groundwater or highly wet soils. Contractors should anticipate encountering these conditions and needing to remove groundwater and stabilize excavation bottoms prior to steel placement and concrete.

8.3 ALTERNATIVE FOUNDATIONS

If the above settlements exceed structural requirements and a shallow spread footing system is determined not feasible or if an alternative foundation system is desired by the design team, we should be consulted to provided additional foundation recommendations.

SECTION 9: CONCRETE SLABS AND PEDESTRIAN PAVEMENTS

9.1 OFFICE SLABS-ON-GRADE

As Plasticity Index (PI) tests of the surficial soils indicate high expansion potential, the proposed slabs-on-grade should be supported on 18 inches of non-expansive fill (NEF) over subgrade prepared in accordance with the recommendations in the “Earthwork” section of this report. If moisture-sensitive floor coverings are planned, the recommendations in the “Interior Slabs Moisture Protection Considerations” section below may be incorporated in the project design if desired. If significant time elapses between initial subgrade preparation and NEF and slab-on-grade construction, the subgrade should be proof-rolled to confirm subgrade stability, and if the soil has been allowed to dry out, the subgrade should be re-moisture conditioned in accordance with the “Compaction” section of this report.

The structural engineer should determine the appropriate slab reinforcement for the loading requirements and considering the expansion potential of the underlying soils. Consideration should be given to limiting the control joint spacing to a maximum of about 2 feet in each direction for each inch of concrete thickness.

9.2 WAREHOUSE SLABS-ON-GRADE

Warehouse slabs-on-grade should be at least 6 inches thick, should have a minimum compressive strength of 3,500 psi, and should be designed for the specific warehouse loading (ie. Forklifts, rack loads, etc.). At this time, rack loading information, etc. was not available. During design of the slab, we should be consulted to provide subgrade modulus for design of the slab based on anticipated loading conditions (e.g. rack, forklift, etc.), if needed. The slab should also be designed to accommodate potential slab settlement beneath heavily loaded slab areas. We recommend we be retained to review the final heavily loaded (i.e. rack loading) layout and loading, and provide estimated settlements.

Warehouse slabs-on-grade should also be supported on at least 6 inches of crushed granular base having an R-value of at least 50 and no more than 10 percent passing the No. 200 sieve, such as Class 2 aggregate base. Due to the high plasticity of the surficial soils, an additional 12 inches of non-expansive fill (NEF) should underlie the upper granular base. All base and sub-base materials should be placed and compacted in accordance with the "Compaction" section of this report. If there will be areas within the warehouse that are moisture sensitive, such as equipment and elevator rooms, a vapor barrier may be placed over the upper granular base prior to slab construction. Please refer to the recommendations in the "Interior Slabs Moisture Protection Considerations" section for vapor barrier construction. Consideration should be given to limiting the control joint spacing to a maximum of about 2 feet in each direction for each inch of concrete thickness.

9.3 INTERIOR SLABS MOISTURE PROTECTION CONSIDERATIONS

The following general guidelines for concrete slab-on-grade construction where floor coverings are planned are presented for the consideration by the developer, design team, and contractor. These guidelines are based on information obtained from a variety of sources, including the American Concrete Institute (ACI) and are intended to reduce the potential for moisture-related problems causing floor covering failures, and may be supplemented as necessary based on project-specific requirements. The application of these guidelines or not will not affect the geotechnical aspects of the slab-on-grade performance.

- Place a minimum 10-mil vapor retarder conforming to ASTM E 1745, Class C requirements or better directly below the concrete slab; the vapor retarder should extend to the slab edges and be sealed at all seams and penetrations in accordance with manufacturer's recommendations and ASTM E 1643 requirements. A 4-inch-thick capillary break, consisting of crushed rock should be placed below the vapor retarder and consolidated in place with vibratory equipment. The mineral aggregate shall be of such size that the percentage composition by dry weight as determined by laboratory sieves will conform to the following gradation:

Sieve Size	Percentage Passing Sieve
1"	100
¾"	90 – 100
No. 4	0 - 10

The capillary break rock may be considered as the upper 4 inches of the non-expansive fill previously recommended.

- The concrete water:cement ratio should be 0.45 or less. Mid-range plasticizers may be used to increase concrete workability and facilitate pumping and placement.
- Water should not be added after initial batching unless the slump is less than specified and/or the resulting water:cement ratio will not exceed 0.45.
- Polishing the concrete surface with metal trowels is not recommended.
- Where floor coverings are planned, all concrete surfaces should be properly cured.
- Water vapor emission levels and concrete pH should be determined in accordance with ASTM F1869-98 and F710-98 requirements and evaluated against the floor covering manufacturer's requirements prior to installation.

9.4 EXTERIOR FLATWORK

Exterior concrete flatwork subject to pedestrian and/or occasional light pick up loading should be at least 4 inches thick and supported on at least 12 inches of non-expansive fill (NEF) overlying subgrade prepared in accordance with the "Earthwork" recommendations of this report. In addition, the upper 4 inches of NEF should also meet Class 2 aggregate base requirements. Flatwork that will be subject to heavier or frequent vehicular loading should be designed in accordance with the recommendations in the "Vehicular Pavements" section below. To help reduce the potential for uncontrolled shrinkage cracking, adequate expansion and control joints should be included. Consideration should be given to limiting the control joint spacing to a maximum of about 2 feet in each direction for each inch of concrete thickness. Flatwork should be isolated from adjacent foundations or retaining walls except where limited sections of structural slabs are included to help span irregularities in retaining wall backfill at the transitions between at-grade and on-structure flatwork.

SECTION 10: VEHICULAR PAVEMENTS

10.1 ASPHALT CONCRETE

The following asphalt concrete pavement recommendations tabulated below are based on the Procedure 608 of the Caltrans Highway Design Manual, estimated traffic indices for various pavement-loading conditions, and on a design R-value of 5. The design R-value was chosen based on engineering judgement considering the existing surface conditions and potential variable surface conditions following site grading. We have also included pavement structural section alternatives for chemical-treated (lime/cement) subgrade soil with an estimated design R-value of 50 for your consideration. If it is desired to chemical-treat, we recommend that the upper 12 inches of subgrade soil be treated. Additional testing will need to be performed to determine the appropriate lime/cement percentage to be mixed with the subgrade soil.

Table 7: Asphalt Concrete Pavement Recommendations (Untreated Subgrade)

Design Traffic Index (TI)	Asphalt Concrete (inches)	Class 2 Aggregate Base* (inches)	Total Pavement Section Thickness (inches)
4.0	2.5	7.5	10.0
4.5	2.5	9.5	12.0
5.0	3.0	10.0	13.0
5.5	3.0	12.0	15.0
6.0	3.5	13.0	16.5
6.5	4.0	14.0	18.0
7.0	4.0	16.0	20.0
7.5	4.5	17.0	21.5
8.0	5.0	18.0	23.0
8.5	5.0	20.0	25.0
9.0	5.5	21.0	26.5
9.5	6.0	22.0	28.0
10.0	6.5	23.0	29.5
10.5	6.5	25.0	31.5
11.0	7.0	26.0	33.0

*Caltrans Class 2 aggregate base; minimum R-value of 78.

Table 8: Asphalt Concrete Pavement Recommendations (Chemical-Treated Subgrade)

Design Traffic Index (TI)	Asphalt Concrete (inches)	Class 2 Aggregate Base* (inches)	Total Pavement Section Thickness (inches)
4.0/4.5	2.5	4.0	6.5
5.0/5.5	3.0	4.0	7.0
6.0	3.5	4.0	7.5
6.5	4.0	4.0	8.0
7.0	4.0	4.5	8.5
7.5	4.5	5.0	9.5
8.0	5.0	5.0	10.0
8.5	5.0	6.5	11.5
9.0	5.5	6.5	12.0
9.5	6.0	7.0	13.0

Table 8 Continues

Table 8: Asphalt Concrete Pavement Recommendations (Chemical-Treated Subgrade) (Continued)

Design Traffic Index (TI)	Asphalt Concrete (inches)	Class 2 Aggregate Base* (inches)	Total Pavement Section Thickness (inches)
10.0	6.0	8.0	14.0
10.5	6.5	8.5	15.0
11.0	7.0	8.5	15.5

*Caltrans Class 2 aggregate base with minimum R-value of 78; minimum chemical-treated subgrade R-value assumed to be 50

Frequently, the full asphalt concrete section is not constructed prior to construction traffic loading. This can result in significant loss of asphalt concrete layer life, rutting, or other pavement failures. To improve the pavement life and reduce the potential for pavement distress through construction, we recommend the full design asphalt concrete section be constructed prior to construction traffic loading. Alternatively, a higher traffic index may be chosen for the areas where construction traffic will be using the pavements.

Asphalt concrete pavements constructed on expansive subgrade where the adjacent areas will not be irrigated for several months after the pavements are constructed may experience longitudinal cracking parallel to the pavement edge. These cracks typically form within a few feet of the pavement edge and are due to seasonal wetting and drying of the adjacent soil. The cracking may also occur during construction where the adjacent grade is allowed to significantly dry during the summer, pulling moisture out of the pavement subgrade. Any cracks that form should be sealed with bituminous sealant prior to the start of winter rains. One alternative to reduce the potential for this type of cracking is to install a moisture barrier at least 24 inches deep behind the pavement curb.

10.2 PORTLAND CEMENT CONCRETE

The exterior Portland Cement Concrete (PCC) pavement recommendations tabulated below are based on methods presented in the Portland Cement Association (PCA) design manual (PCA, 1984). We have provided a few pavement alternatives as an anticipated Average Daily Truck Traffic (ADTT) was not provided. An allowable ADTT should be chosen that is greater than what is expected for the development. PCC alternatives for chemical-treated (lime/cement) subgrade are also provided in the tables below.

Table 9: PCC Pavement Recommendations (Untreated Subgrade)

Allowable ADTT	Minimum PCC Thickness (inches)
13	5.5
130	6.0

Table 10: PCC Pavement Recommendations (Chemical-Treated Subgrade)

Allowable ADTT	Minimum PCC Thickness (inches)
13	5.0
150	5.5

The PCC thicknesses above are based on a concrete compressive strength of at least 3,500 psi, supporting the PCC on at least 6 inches of Class 2 aggregate base compacted as recommended in the "Earthwork" section, and laterally restraining the PCC with curbs or concrete shoulders. Adequate expansion and control joints should be included. Consideration should be given to limiting the control joint spacing to a maximum of about 2 feet in each direction for each inch of concrete thickness. Due to the expansive surficial soils present, we recommend that the construction and expansion joints be dowelled.

10.3 TRASH ENCLOSURES

Trash enclosures and the associated stress pads should consist of at least 8 inches of Portland cement concrete (PCC) over at least 6 inches of Class 2 aggregate base, where the aggregate base should be compacted to 95 percent relative compaction. The top 6 inches of the underlying subgrade should be moisture conditioned and compacted according to the "Compaction" section of this report. The compressive strength and construction details should be consistent with the above recommendations for PCC pavements.

10.4 PAVEMENT CUTOFF

Surface water penetration into the pavement section can significantly reduce the pavement life, due to the native expansive clays. While quantifying the life reduction is difficult, a normal 20-year pavement design could be reduced to less than 10 years; therefore, increased long-term maintenance may be required.

It would be beneficial to include a pavement cut-off, such as deepened curbs, redwood-headers, or "Deep-Root Moisture Barriers" that are keyed at least 4 inches into the pavement subgrade. This will help limit the additional long-term maintenance.

SECTION 11: RETAINING WALLS

11.1 STATIC LATERAL EARTH PRESSURES

The structural design of any site retaining wall should include resistance to lateral earth pressures that develop from the soil behind the wall, any undrained water pressure, and surcharge loads acting behind the wall. Provided a drainage system is constructed behind the wall to prevent the build-up of hydrostatic pressures as discussed in the section below, we recommend that the walls with level backfill be designed for the following pressures:

Table 11: Recommended Lateral Earth Pressures

Wall Condition	Lateral Earth Pressure*	Additional Surcharge Loads
Unrestrained – Cantilever Wall	45 pcf	⅓ of vertical loads at top of wall
Restrained – Braced Wall	45 pcf + 8H** psf	½ of vertical loads at top of wall

* Lateral earth pressures are based on an equivalent fluid pressure for level backfill conditions
** H is the distance in feet between the bottom of footing and top of retained soil

If adequate drainage cannot be provided behind the wall, an additional equivalent fluid pressure of 40 pcf should be added to the values above for both restrained and unrestrained walls for the portion of the wall that will not have drainage. Damp proofing or waterproofing of the walls may be considered where moisture penetration and/or efflorescence are not desired.

11.2 SEISMIC LATERAL EARTH PRESSURES

The 2019 CBC states that lateral pressures from earthquakes should be considered in the design of basements and retaining walls greater than 6 feet in height. At this time, we are not aware of any retaining walls 6 feet or greater in height and have not provided seismic earth pressures with this report. If retaining walls greater than 6 feet in height are proposed, we should be retained to provide seismic earth pressures, if warranted. In our opinion, seismic earth pressures are not warranted for design of minor landscape retaining walls (i.e. walls 6 feet or less in height).

11.3 WALL DRAINAGE

Adequate drainage should be provided by a subdrain system behind all walls. This system should consist of a 4-inch minimum diameter perforated pipe placed near the base of the wall (perforations placed downward). The pipe should be bedded and backfilled with Class 2 Permeable Material per Caltrans Standard Specifications, latest edition. The permeable backfill should extend at least 12 inches out from the wall and to within 2 feet of outside finished grade. Alternatively, ½-inch to ¾-inch crushed rock may be used in place of the Class 2 Permeable Material provided the crushed rock and pipe are enclosed in filter fabric, such as Mirafi 140N or approved equivalent. The upper 2 feet of wall backfill should consist of compacted on-site soil. The subdrain outlet should be connected to a free-draining outlet or sump.

Miradrain, Geotech Drainage Panels, or equivalent drainage matting can be used for wall drainage as an alternative to the Class 2 Permeable Material or drain rock backfill. Horizontal strip drains connecting to the vertical drainage matting may be used in lieu of the perforated pipe and crushed rock section. The vertical drainage panel should be connected to the perforated pipe or horizontal drainage strip at the base of the wall, or to some other closed or through-wall system such as the TotalDrain system from AmerDrain. Sections of horizontal drainage strips should be connected with either the manufacturer's connector pieces or by pulling back the filter fabric, overlapping the panel dimples, and replacing the filter fabric over the connection. At corners, a corner guard, corner connection insert, or a section of crushed rock covered with filter fabric must be used to maintain the drainage path.

Drainage panels should terminate 18 to 24 inches from final exterior grade. The Miradrain panel filter fabric should be extended over the top of and behind the panel to protect it from intrusion of the adjacent soil.

11.4 BACKFILL

Where surface improvements will be located over the retaining wall backfill, backfill placed behind the walls with a PI less than 20 should be compacted to at least 95 percent relative compaction using light compaction equipment. If the soil's PI is 20 or greater, expansive soil criteria should be used as discussed in the "Compaction" section of this report. Where no surface improvements are planned, backfill should be compacted to at least 90 percent for soils with a PI less than 20. Expansive soil criteria should be followed for soils with a PI of 20 or greater. If heavy compaction equipment is used, the walls should be temporarily braced.

11.5 FOUNDATIONS

Retaining walls may be supported on a continuous spread footing designed in accordance with the recommendations presented in the "Foundations" section of this report.

SECTION 12: LIMITATIONS

This report, an instrument of professional service, has been prepared for the sole use of PROLOGIS specifically to support the design of the 880 Doolittle Drive Warehouse project in San Leandro, California. The opinions, conclusions, and recommendations presented in this report have been formulated in accordance with accepted geotechnical engineering practices that exist in Northern California at the time this report was prepared. No warranty, expressed or implied, is made or should be inferred.

Recommendations in this report are based upon the soil and groundwater conditions encountered during our subsurface exploration. If variations or unsuitable conditions are encountered during construction, Cornerstone must be contacted to provide supplemental recommendations, as needed.

PROLOGIS may have provided Cornerstone with plans, reports and other documents prepared by others. PROLOGIS understands that Cornerstone reviewed and relied on the information presented in these documents and cannot be responsible for their accuracy.

Cornerstone prepared this report with the understanding that it is the responsibility of the owner or his representatives to see that the recommendations contained in this report are presented to other members of the design team and incorporated into the project plans and specifications, and that appropriate actions are taken to implement the geotechnical recommendations during construction.

Conclusions and recommendations presented in this report are valid as of the present time for the development as currently planned. Changes in the condition of the property or adjacent properties may occur with the passage of time, whether by natural processes or the acts of other persons. In addition, changes in applicable or appropriate standards may occur through legislation or the broadening of knowledge. Therefore, the conclusions and recommendations presented in this report may be invalidated, wholly or in part, by changes beyond Cornerstone's control. This report should be reviewed by Cornerstone after a period of three (3) years has elapsed from the date of this report. In addition, if the current project design is changed, then Cornerstone must review the proposed changes and provide supplemental recommendations, as needed.

An electronic transmission of this report may also have been issued. While Cornerstone has taken precautions to produce a complete and secure electronic transmission, please check the electronic transmission against the hard copy version for conformity.

Recommendations provided in this report are based on the assumption that Cornerstone will be retained to provide observation and testing services during construction to confirm that conditions are similar to that assumed for design, and to form an opinion as to whether the work has been performed in accordance with the project plans and specifications. If we are not retained for these services, Cornerstone cannot assume any responsibility for any potential claims that may arise during or after construction as a result of misuse or misinterpretation of Cornerstone's report by others. Furthermore, Cornerstone will cease to be the Geotechnical-Engineer-of-Record if we are not retained for these services.

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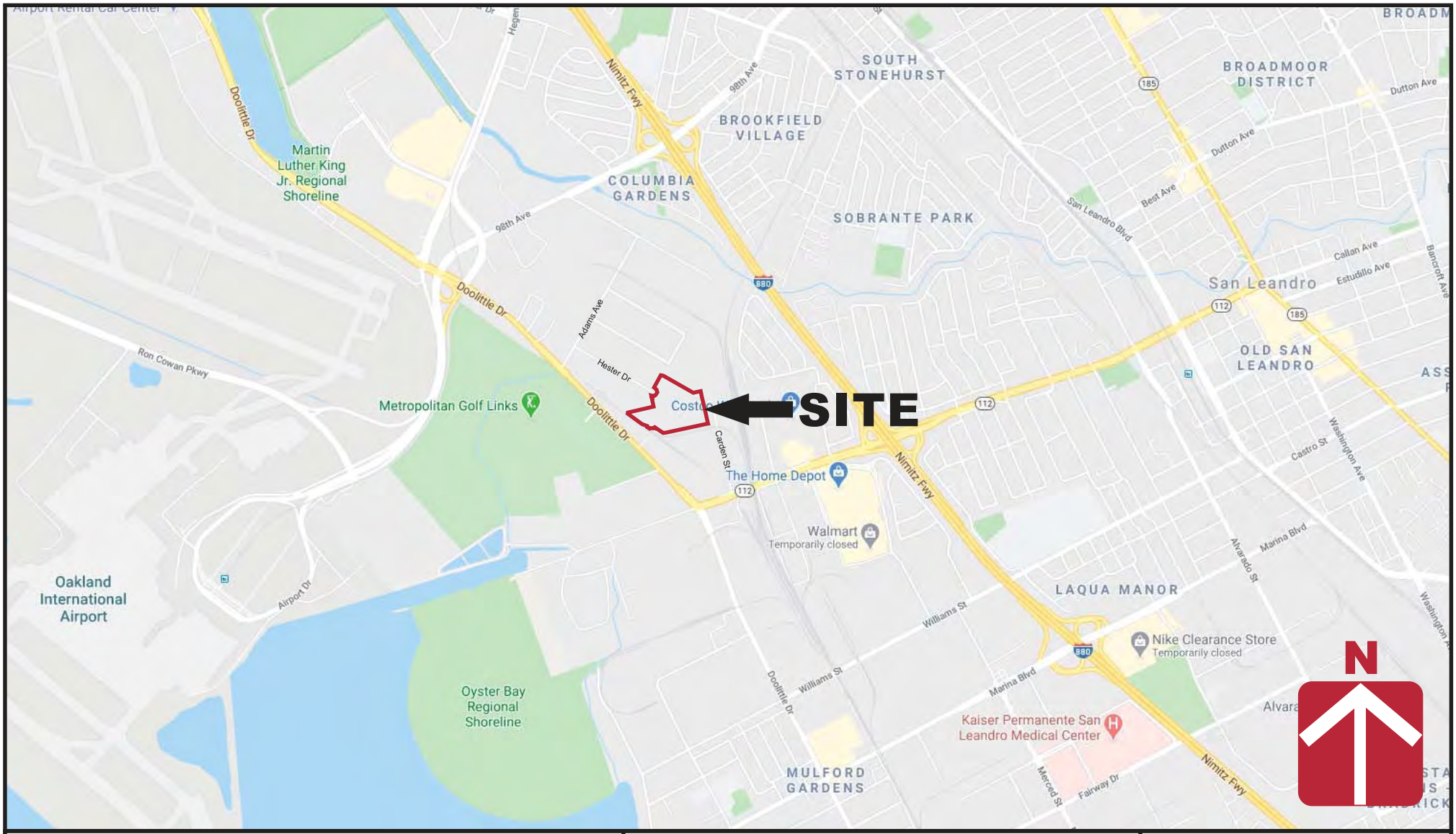

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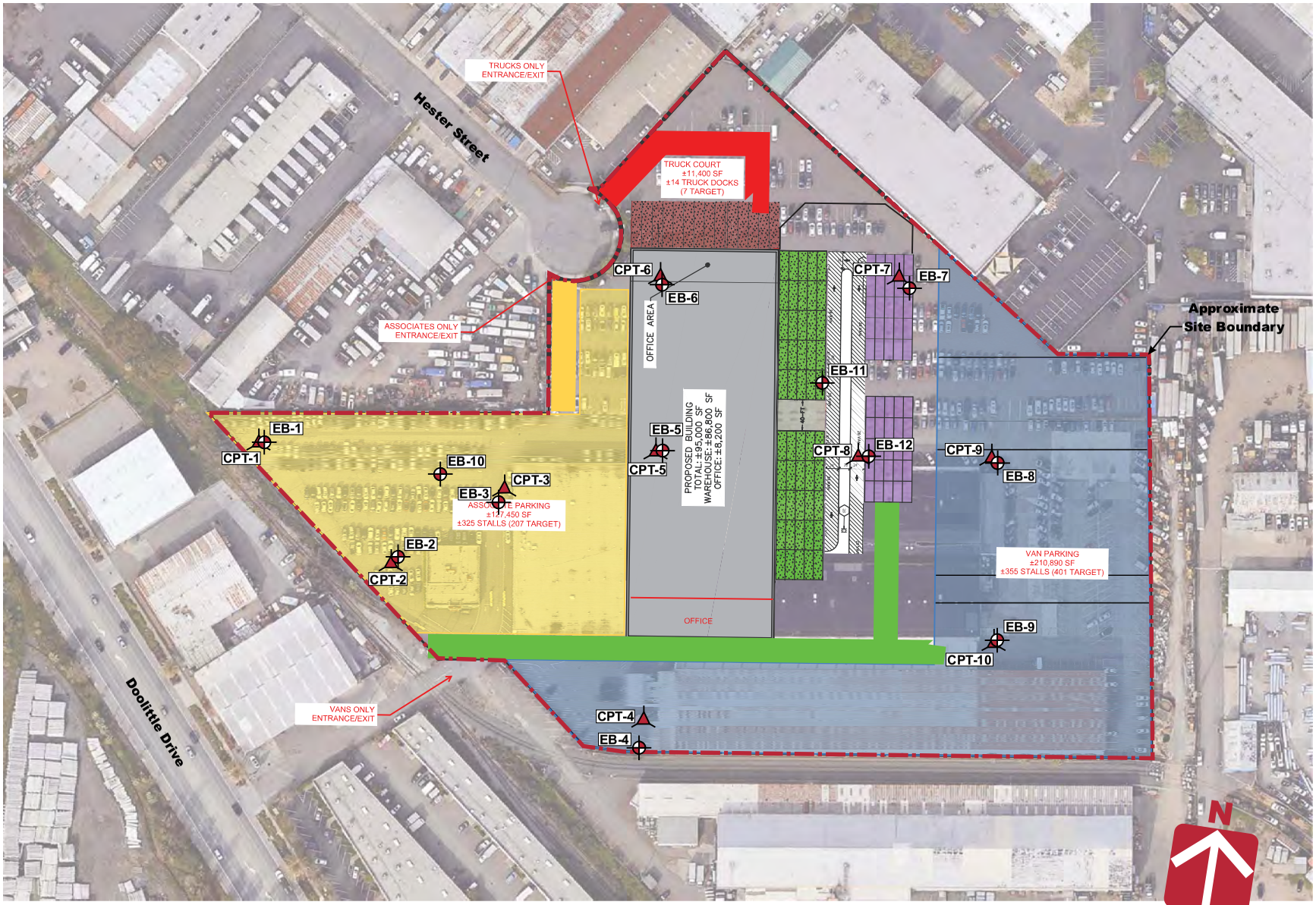
Vicinity Map

Doolittle Drive Warehouse
San Leandro, CA

Project Number	555-16-1
Figure Number	Figure 1
Date	June 2020
Drawn By	RRN



Legend

Approximate location of exploratory boring (EB)

Approximate location of cone penetration test (CPT)

0 120 240

APPROXIMATE SCALE (FEET)

Base by Google Earth, dated 10/26/2018
Overlay by Langan, Concept 4 Site Plan - CS104, dated 06/07/2020

Site Plan

Doolittle Drive Warehouse
San Leandro, CA

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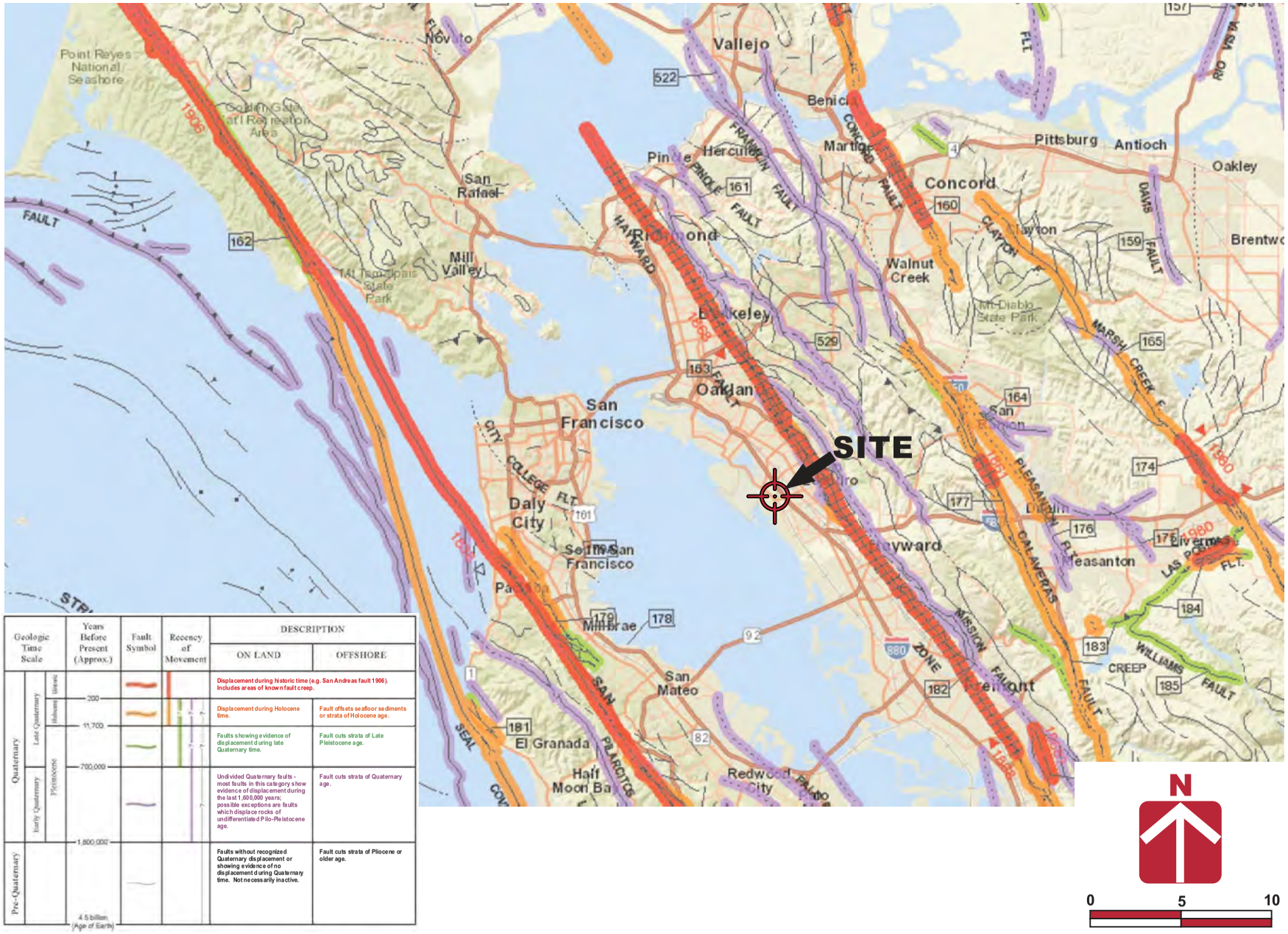
Project Number	555-16-1
Figure Number	Figure 2
Date	August 2020
Drawn By	RRN



Geologic Time Scale			Years Before Present (Approx.)	Fault Symbol	Recency of Movement	DESCRIPTION: ON LAND	DESCRIPTION: OFFSHORE
Quaternary	Late Quaternary	Holocene (Recent)	200			Displacement during historic time (e.g. San Andreas fault 1906). Includes areas of known fault creep.	
			11,700			Displacement during Holocene time.	Fault offsets seafloor sediments or strata of Holocene age.
		Pleistocene	700,000			Faults showing evidence of displacement during late Quaternary time.	Fault cuts strata of Late Pleistocene age.
	Early Quaternary		1,800,000			Undivided Quaternary faults - most faults in this category show evidence of displacement during the last 1,600,000 years; possible exceptions are faults which displace rocks of undifferentiated Plio-Pleistocene age.	Fault cuts strata of Quaternary age.
Pre-Quaternary			4.5 billion (Age of Earth)			Faults without recognized Quaternary displacement or showing evidence of no displacement during Quaternary time. Not necessarily inactive.	Fault cuts strata of Pliocene or older age.

Base by California Geological Survey - 2010 Fault Activity Map of California (Jennings and Bryant, 2010)

Project Number: 555-16-1

Figure Number: Figure 3

Date: June 2020

Drawn By: RRN

Regional Fault Map

Doolittle Drive Warehouse
San Leandro, CA

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FIGURE 4A

CPT NO. 1

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PROJECT/CPT DATA

Project Title	Doolittle Drive Warehouse
Project No.	555-16-1
Project Manager	MJS

SEISMIC PARAMETERS

Controlling Fault	Hayward	
Earthquake Magnitude (Mw)	7.58	
PGA (Amax)	0.89	(g)

SITE SPECIFIC PARAMETERS

Ground Water Depth at Time of Drilling (feet)	14
Design Water Depth (feet)	5
Ave. Unit Weight Above GW (pcf)	120
Ave. Unit Weight Below GW (pcf)	120

CPT ANALYSIS RESULTS

DRY SAND SETTLEMENT FROM	5	FEET
	0.16	(Inches)
LIQUEFACTION SETTLEMENT FROM	50	FEET
	0.36	(Inches)
TOTAL SEISMIC SETTLEMENT	0.5	INCHES

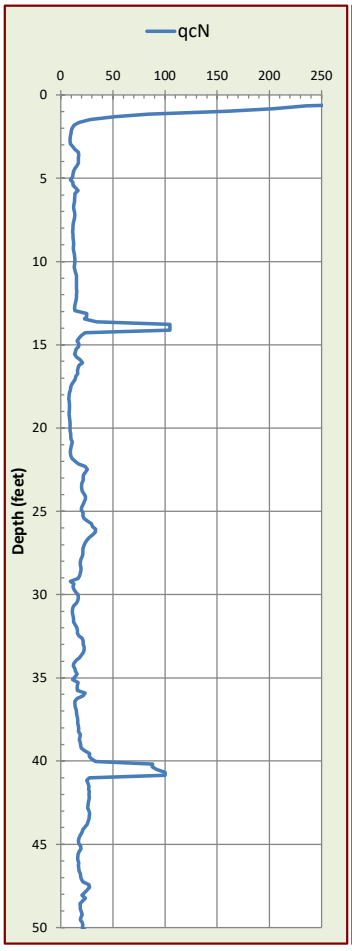
POTENTIAL LATERAL DISPLACEMENT

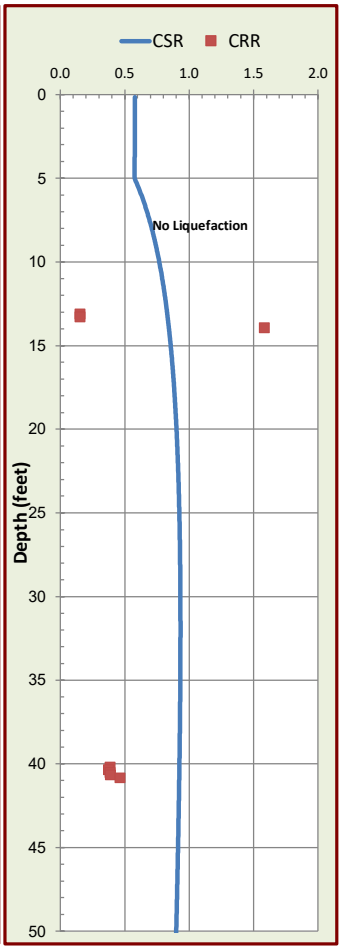
LDI[2]	0.14	L/H	164.6
LDI[1] Corrected for Distance	0.01	(4 < L/H < 40)	

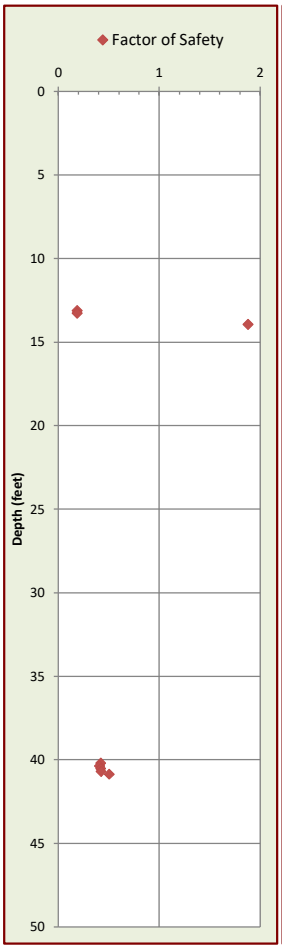
EXPECTED RANGE OF DISPLACEMENT

0.0 to 0.0 feet

[1]Not Valid for L/H Values < 4 and > 40.
[2]LDI Values Only Summed to 2H Below Grade.







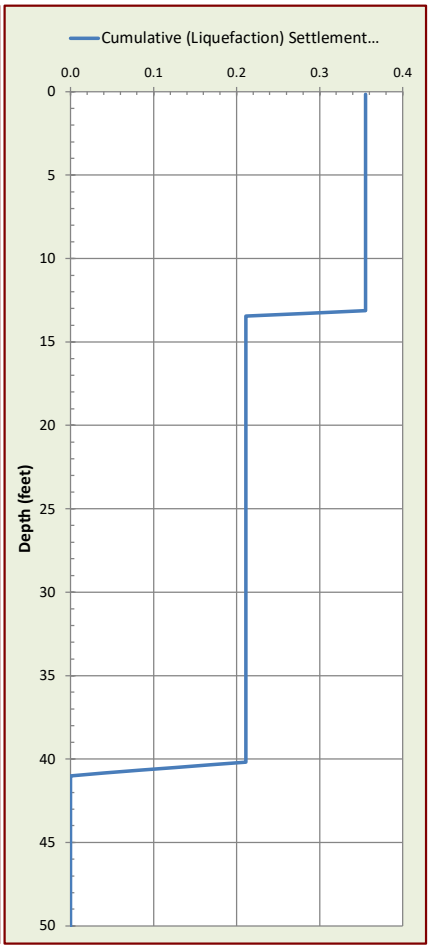


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FIGURE 4B

CPT NO. 2

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PROJECT/CPT DATA

Project Title	Doolittle Drive Warehouse
Project No.	555-16-1
Project Manager	MJS

SEISMIC PARAMETERS

Controlling Fault	Hayward	
Earthquake Magnitude (Mw)	7.58	
PGA (Amax)	0.89	(g)

SITE SPECIFIC PARAMETERS

Ground Water Depth at Time of Drilling (feet)	8
Design Water Depth (feet)	5
Ave. Unit Weight Above GW (pcf)	120
Ave. Unit Weight Below GW (pcf)	120

CPT ANALYSIS RESULTS

DRY SAND SETTLEMENT FROM	5	FEET
	0.15	(Inches)
LIQUEFACTION SETTLEMENT FROM	50	FEET
	0.37	(Inches)
TOTAL SEISMIC SETTLEMENT	0.5	INCHES

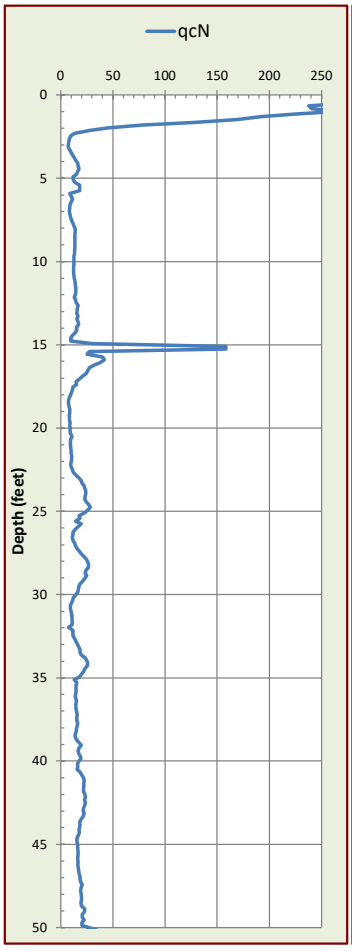
POTENTIAL LATERAL DISPLACEMENT

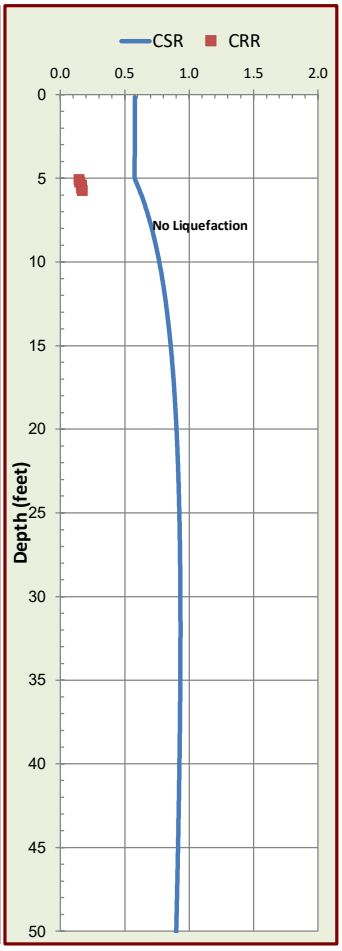
LDI[2]	0.36	L/H	91.3
LDI[1] Corrected for Distance	0.06	(4 < L/H < 40)	

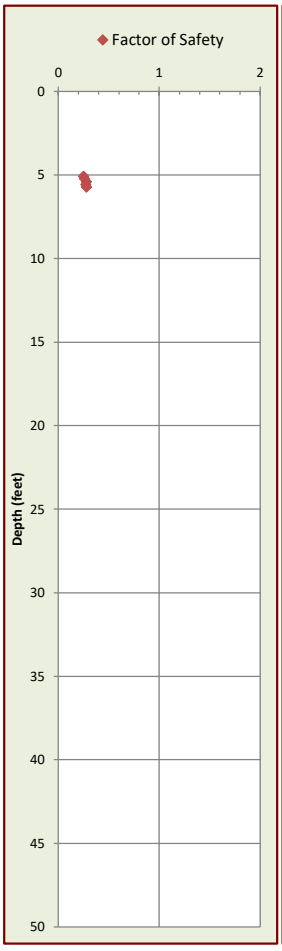
EXPECTED RANGE OF DISPLACEMENT

0.0 to 0.1 feet

[1]Not Valid for L/H Values < 4 and > 40.
[2]LDI Values Only Summed to 2H Below Grade.







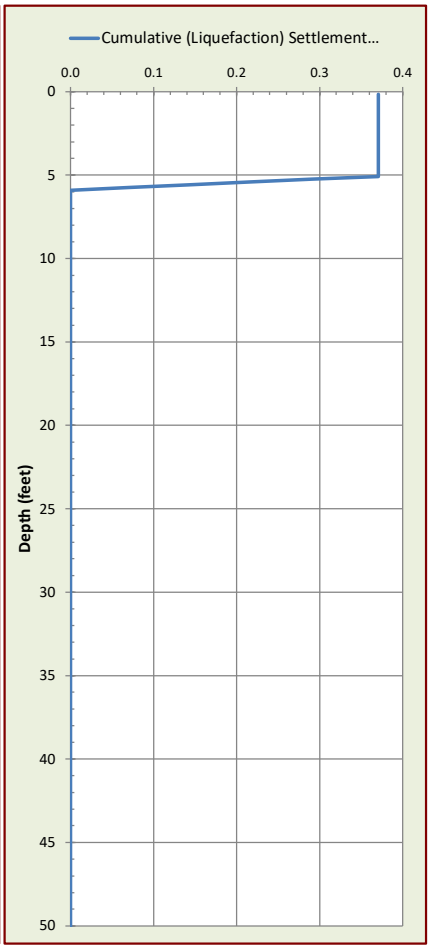


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FIGURE 4C

CPT NO. 3

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PROJECT/CPT DATA

Project Title	Doolittle Drive Warehouse
Project No.	555-16-1
Project Manager	MJS

SEISMIC PARAMETERS

Controlling Fault	Hayward	
Earthquake Magnitude (Mw)	7.58	
PGA (Amax)	0.89	(g)

SITE SPECIFIC PARAMETERS

Ground Water Depth at Time of Drilling (feet)	10
Design Water Depth (feet)	5
Ave. Unit Weight Above GW (pcf)	120
Ave. Unit Weight Below GW (pcf)	120

CPT ANALYSIS RESULTS

DRY SAND SETTLEMENT FROM	5	FEET
	0.27	(Inches)
LIQUEFACTION SETTLEMENT FROM	50	FEET
	0.36	(Inches)
TOTAL SEISMIC SETTLEMENT	0.6	INCHES

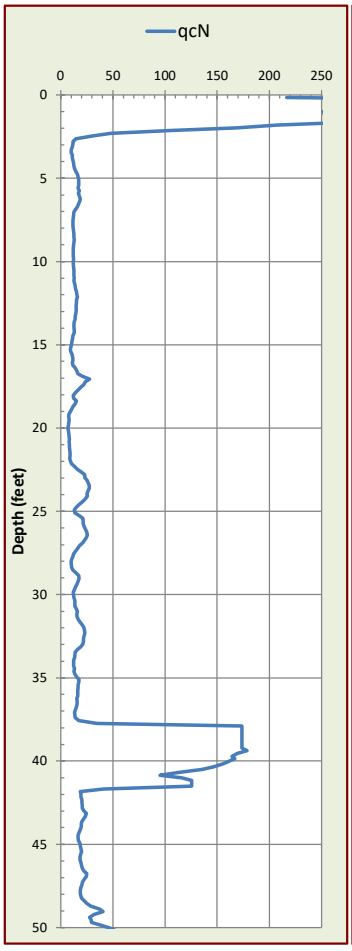
POTENTIAL LATERAL DISPLACEMENT

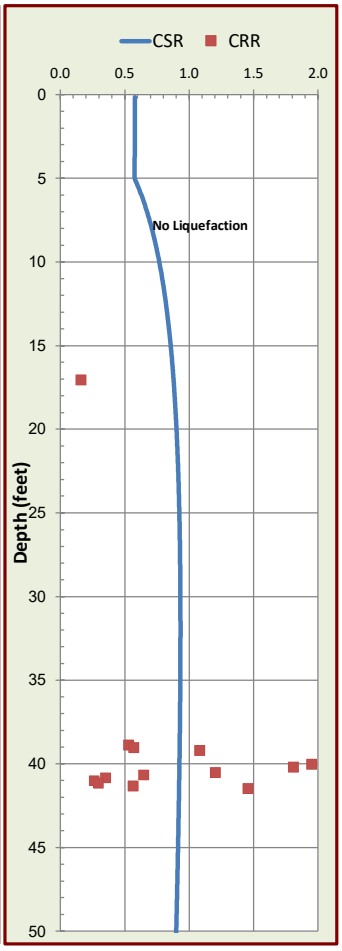
LDI[2]	0.06	L/H	164.6
LDI[1] Corrected for Distance	0.01	(4 < L/H < 40)	

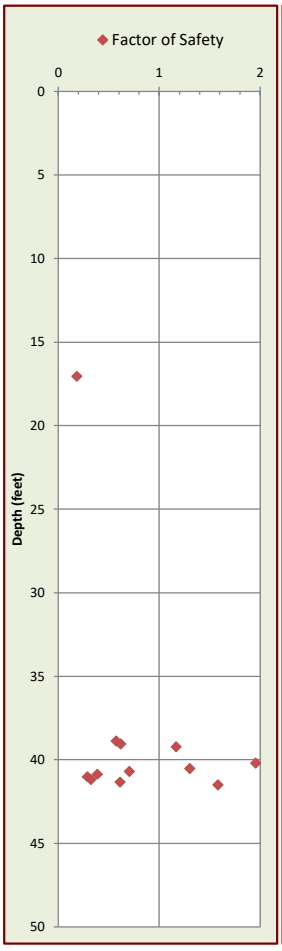
EXPECTED RANGE OF DISPLACEMENT

0.0 to 0.0 feet

[1]Not Valid for L/H Values < 4 and > 40.
[2]LDI Values Only Summed to 2H Below Grade.







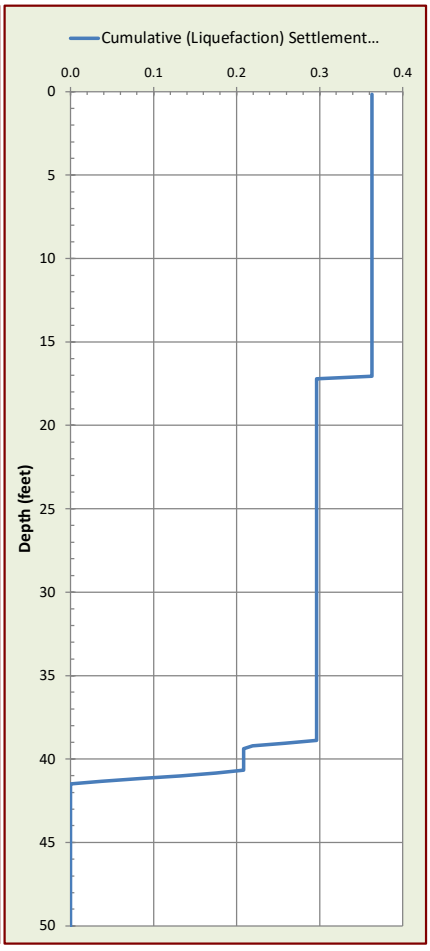


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FIGURE 4D

CPT NO. 4

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PROJECT/CPT DATA

Project Title	Doolittle Drive Warehouse
Project No.	555-16-1
Project Manager	MJS

SEISMIC PARAMETERS

Controlling Fault	Hayward	
Earthquake Magnitude (Mw)	7.58	
PGA (Amax)	0.89	(g)

SITE SPECIFIC PARAMETERS

Ground Water Depth at Time of Drilling (feet)	14
Design Water Depth (feet)	5
Ave. Unit Weight Above GW (pcf)	120
Ave. Unit Weight Below GW (pcf)	120

CPT ANALYSIS RESULTS

DRY SAND SETTLEMENT FROM	5	FEET
	0.10	(Inches)
LIQUEFACTION SETTLEMENT FROM	50	FEET
	0.07	(Inches)
TOTAL SEISMIC SETTLEMENT	0.2	INCHES

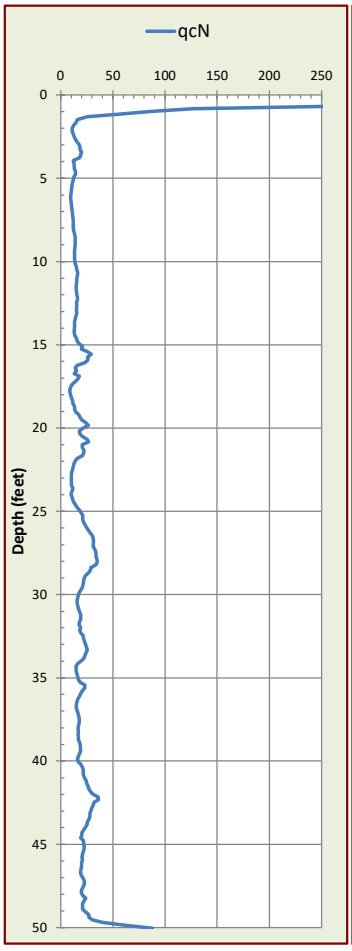
POTENTIAL LATERAL DISPLACEMENT

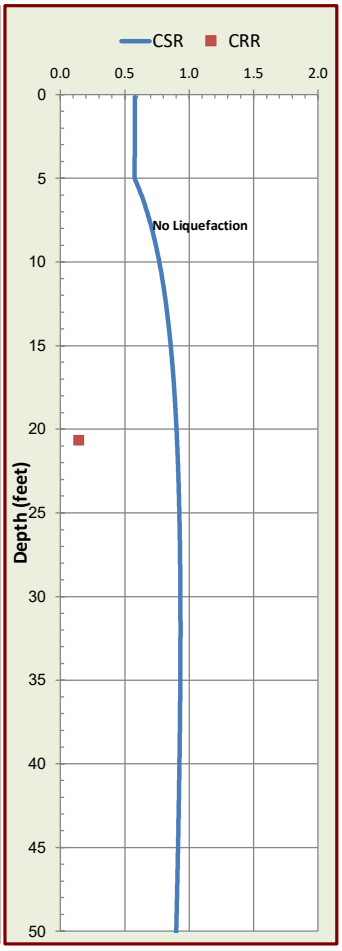
LDI[2]	0.07	L/H	164.6
LDI[1] Corrected for Distance	0.01	(4 < L/H < 40)	

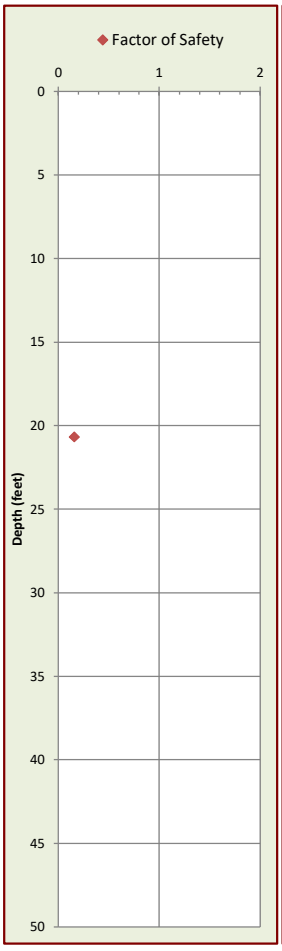
EXPECTED RANGE OF DISPLACEMENT

0.0 to 0.0 feet

[1]Not Valid for L/H Values < 4 and > 40.
[2]LDI Values Only Summed to 2H Below Grade.







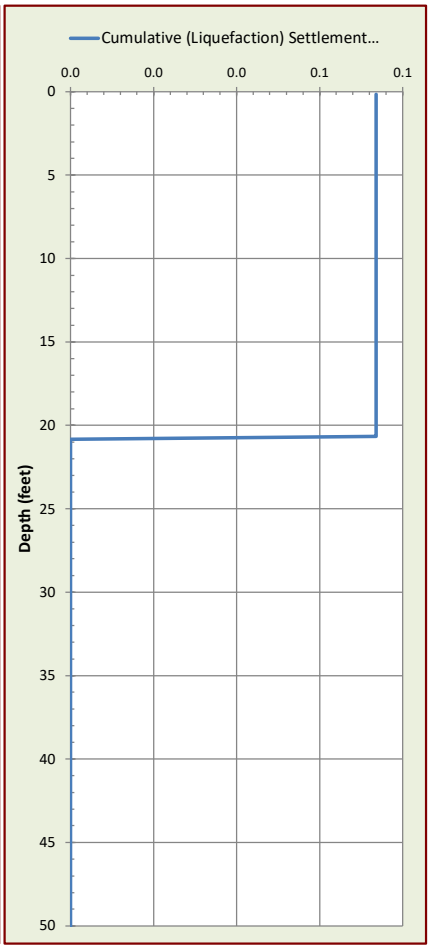


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FIGURE 4E

CPT NO. 5

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PROJECT/CPT DATA

Project Title	Doolittle Drive Warehouse
Project No.	555-16-1
Project Manager	MJS

SEISMIC PARAMETERS

Controlling Fault	Hayward	
Earthquake Magnitude (Mw)	7.58	
PGA (Amax)	0.89	(g)

SITE SPECIFIC PARAMETERS

Ground Water Depth at Time of Drilling (feet)	7
Design Water Depth (feet)	5
Ave. Unit Weight Above GW (pcf)	120
Ave. Unit Weight Below GW (pcf)	120

CPT ANALYSIS RESULTS

DRY SAND SETTLEMENT FROM	5	FEET
	0.16	(Inches)
LIQUEFACTION SETTLEMENT FROM	50	FEET
	0.19	(Inches)
TOTAL SEISMIC SETTLEMENT	0.4	INCHES

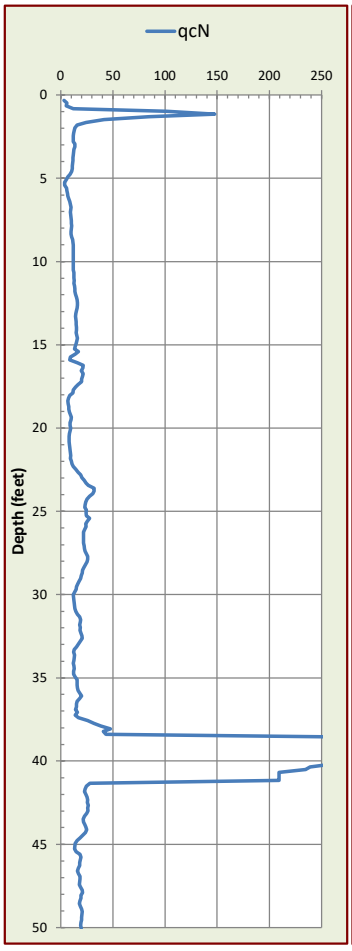
POTENTIAL LATERAL DISPLACEMENT

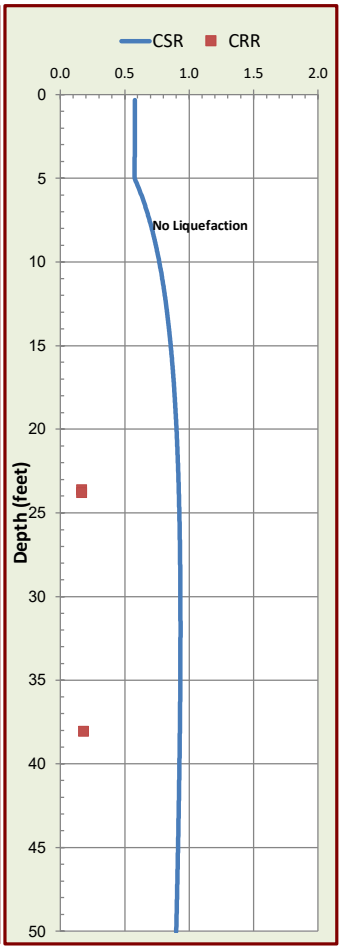
LDI[2]	0.11	L/H	164.6
LDI[1] Corrected for Distance	0.01	(4 < L/H < 40)	

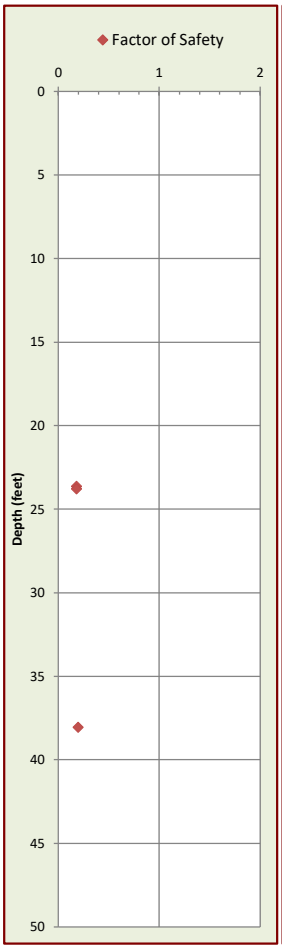
EXPECTED RANGE OF DISPLACEMENT

0.0 to 0.0 feet

[1]Not Valid for L/H Values < 4 and > 40.
[2]LDI Values Only Summed to 2H Below Grade.







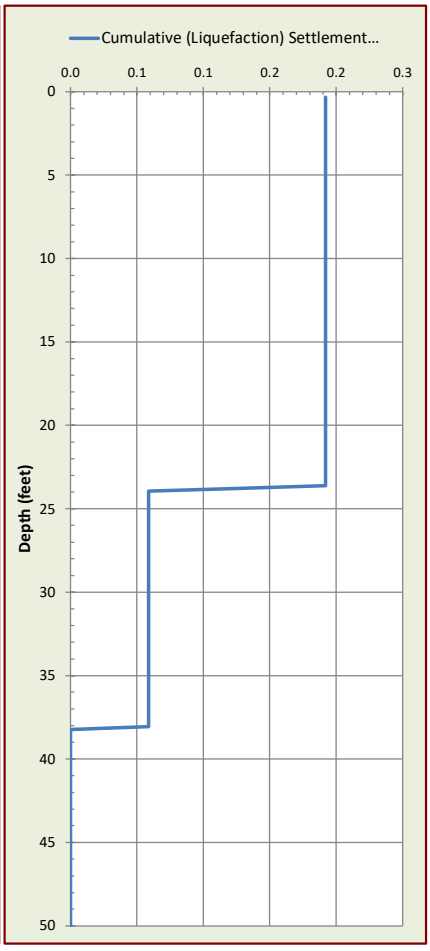


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FIGURE 4F

CPT NO. 6

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PROJECT/CPT DATA

Project Title	Doolittle Drive Warehouse
Project No.	555-16-1
Project Manager	MJS

SEISMIC PARAMETERS

Controlling Fault	Hayward	
Earthquake Magnitude (Mw)	7.58	
PGA (Amax)	0.89	(g)

SITE SPECIFIC PARAMETERS

Ground Water Depth at Time of Drilling (feet)	7
Design Water Depth (feet)	5
Ave. Unit Weight Above GW (pcf)	120
Ave. Unit Weight Below GW (pcf)	120

CPT ANALYSIS RESULTS

DRY SAND SETTLEMENT FROM	5	FEET
	0.04	(Inches)
LIQUEFACTION SETTLEMENT FROM	50	FEET
	0.34	(Inches)
TOTAL SEISMIC SETTLEMENT	0.4	INCHES

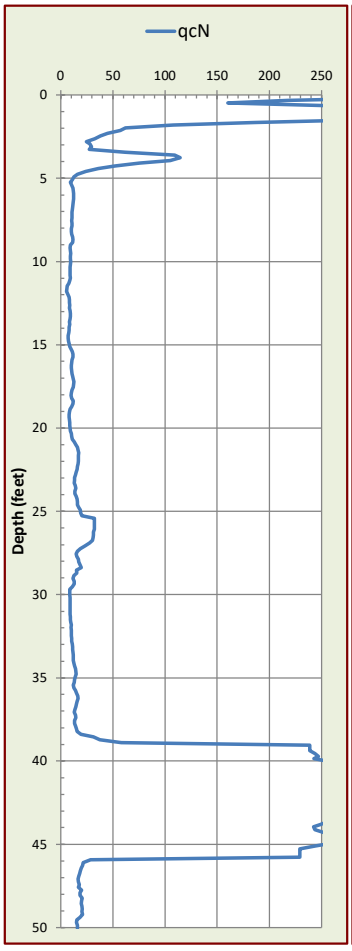
POTENTIAL LATERAL DISPLACEMENT

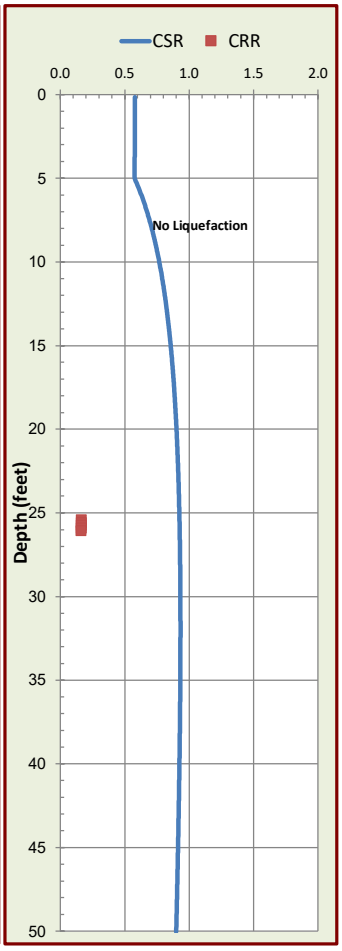
LDI[2]	0.00	L/H	164.6
LDI[1] Corrected for Distance	0.00	(4 < L/H < 40)	

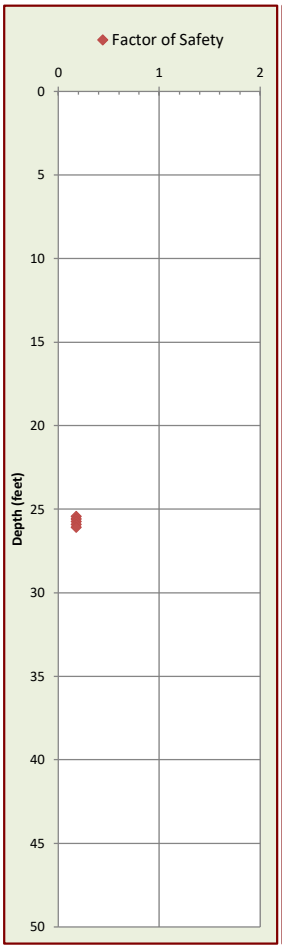
EXPECTED RANGE OF DISPLACEMENT

0.0 to 0.0 feet

[1]Not Valid for L/H Values < 4 and > 40.
[2]LDI Values Only Summed to 2H Below Grade.







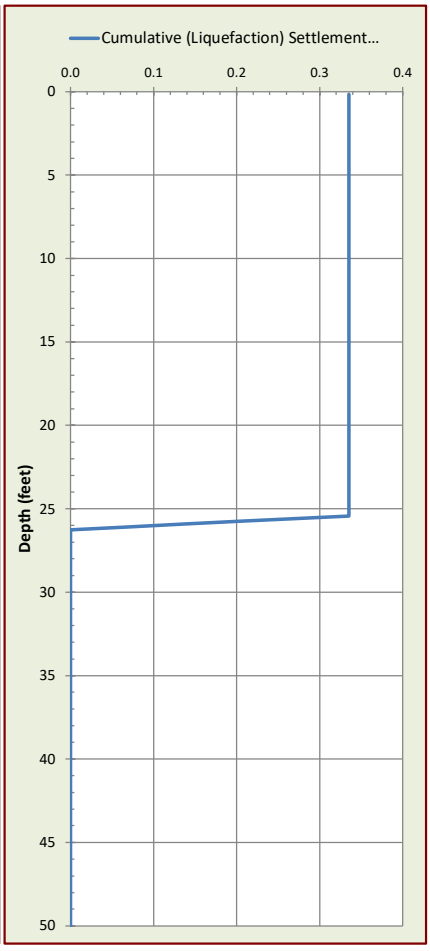


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FIGURE 4G

CPT NO. 7

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PROJECT/CPT DATA

Project Title	Doolittle Drive Warehouse
Project No.	555-16-1
Project Manager	MJS

SEISMIC PARAMETERS

Controlling Fault	Hayward	
Earthquake Magnitude (Mw)	7.58	
PGA (Amax)	0.89	(g)

SITE SPECIFIC PARAMETERS

Ground Water Depth at Time of Drilling (feet)	10
Design Water Depth (feet)	5
Ave. Unit Weight Above GW (pcf)	120
Ave. Unit Weight Below GW (pcf)	120

CPT ANALYSIS RESULTS

DRY SAND SETTLEMENT FROM	5	FEET
	0.03	(Inches)
LIQUEFACTION SETTLEMENT FROM	50	FEET
	0.17	(Inches)
TOTAL SEISMIC SETTLEMENT	0.2	INCHES

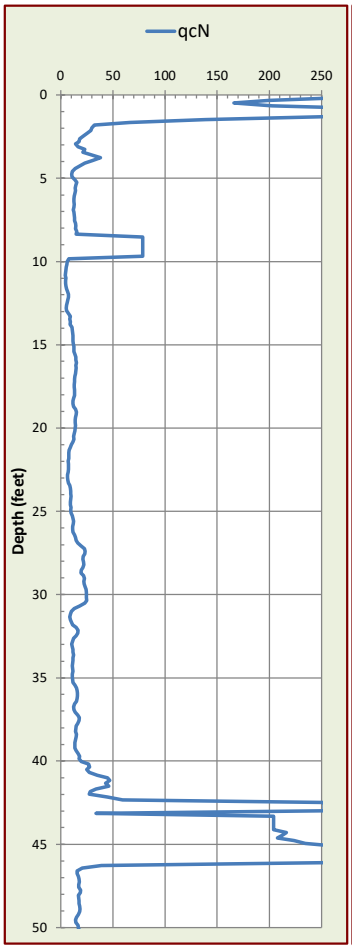
POTENTIAL LATERAL DISPLACEMENT

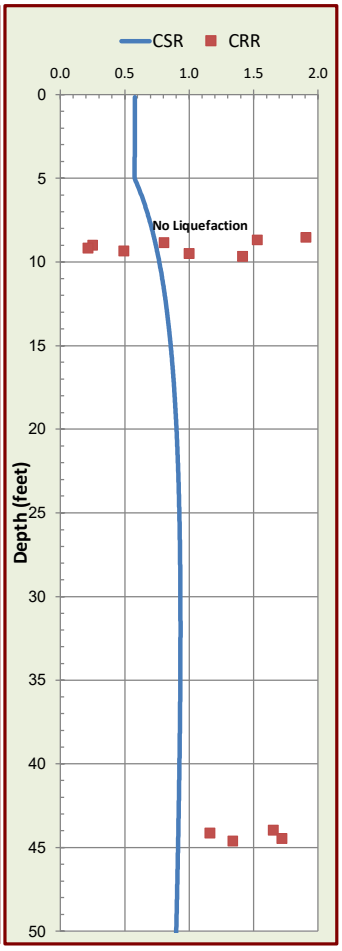
LDI[2]	0.10	L/H	164.6
LDI[1] Corrected for Distance	0.01	(4 < L/H < 40)	

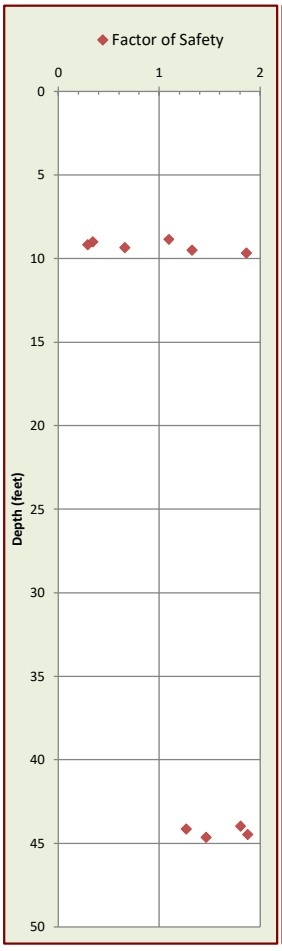
EXPECTED RANGE OF DISPLACEMENT

0.0 to 0.0 feet

[1]Not Valid for L/H Values < 4 and > 40.
[2]LDI Values Only Summed to 2H Below Grade.







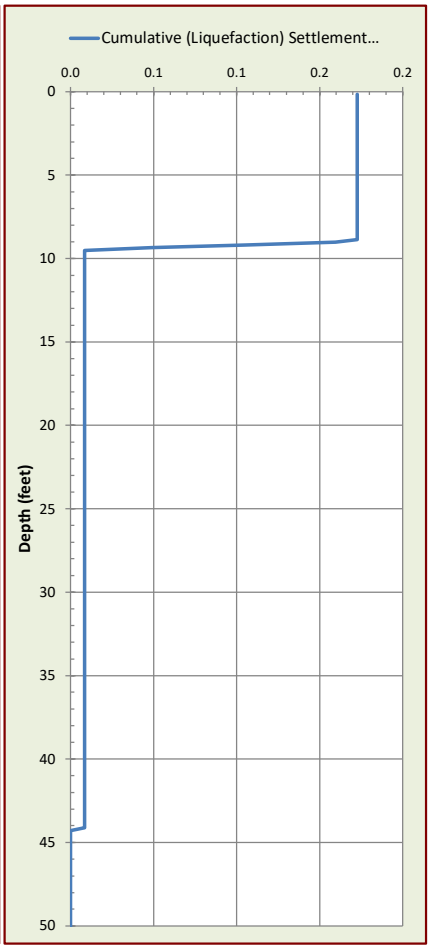


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FIGURE	4H
CPT NO.	8

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PROJECT/CPT DATA

Project Title	Doolittle Drive Warehouse
Project No.	555-16-1
Project Manager	MJS

SEISMIC PARAMETERS

Controlling Fault	Hayward	
Earthquake Magnitude (Mw)	7.58	
PGA (Amax)	0.89	(g)

SITE SPECIFIC PARAMETERS

Ground Water Depth at Time of Drilling (feet)	7.5
Design Water Depth (feet)	5
Ave. Unit Weight Above GW (pcf)	120
Ave. Unit Weight Below GW (pcf)	120

CPT ANALYSIS RESULTS

DRY SAND SETTLEMENT FROM	5	FEET
	0.00	(Inches)
LIQUEFACTION SETTLEMENT FROM	50	FEET
	0.14	(Inches)
TOTAL SEISMIC SETTLEMENT	0.1	INCHES

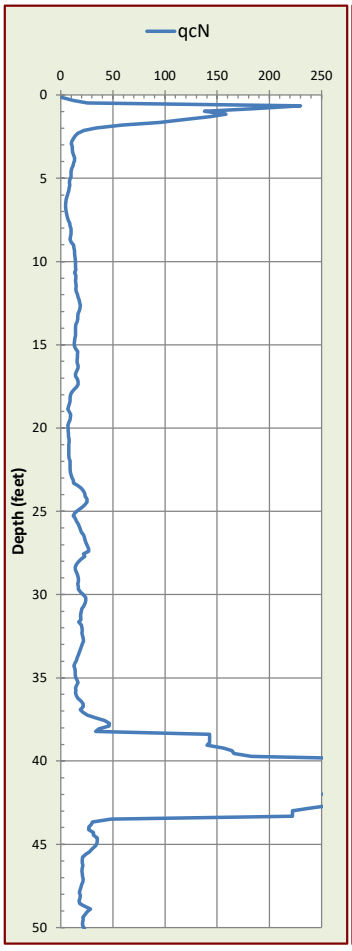
POTENTIAL LATERAL DISPLACEMENT

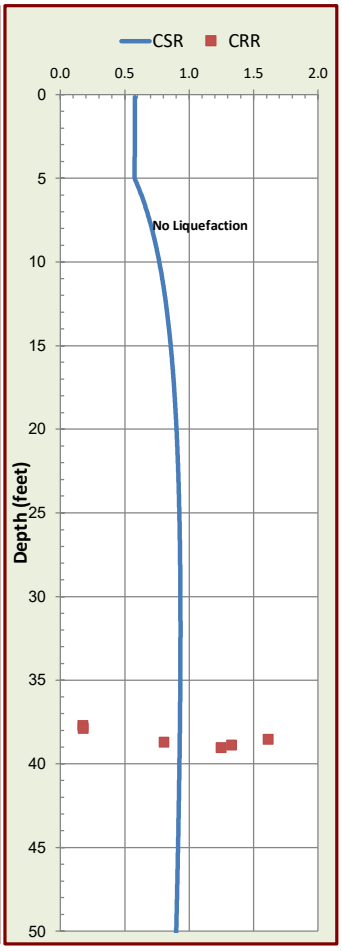
LDI[2]	0.00	L/H	164.6
LDI[1] Corrected for Distance	0.00	(4 < L/H < 40)	

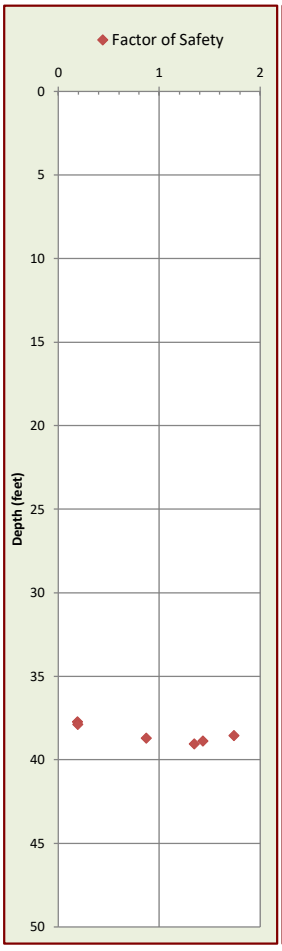
EXPECTED RANGE OF DISPLACEMENT

0.0 to 0.0 feet

[1]Not Valid for L/H Values < 4 and > 40.
[2]LDI Values Only Summed to 2H Below Grade.







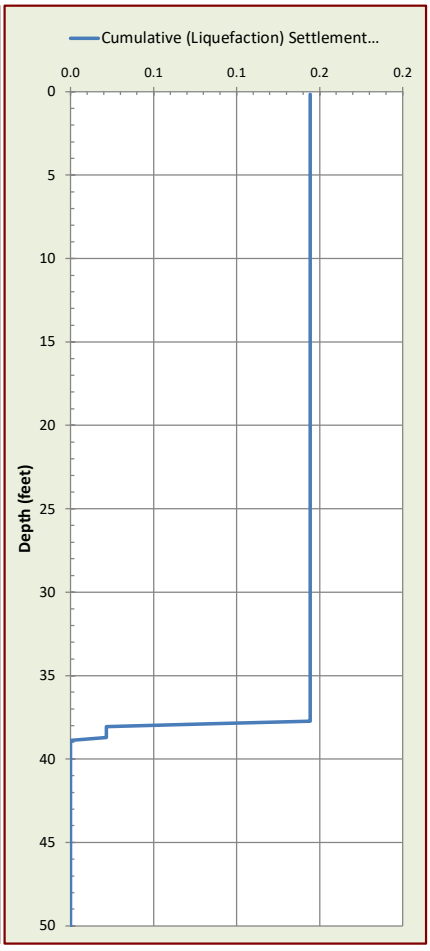


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FIGURE	4I
CPT NO.	9

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PROJECT/CPT DATA

Project Title	Doolittle Drive Warehouse
Project No.	555-16-1
Project Manager	MJS

SEISMIC PARAMETERS

Controlling Fault	Hayward	
Earthquake Magnitude (Mw)	7.58	
PGA (Amax)	0.89	(g)

SITE SPECIFIC PARAMETERS

Ground Water Depth at Time of Drilling (feet)	5.5
Design Water Depth (feet)	5
Ave. Unit Weight Above GW (pcf)	120
Ave. Unit Weight Below GW (pcf)	120

CPT ANALYSIS RESULTS

DRY SAND SETTLEMENT FROM	5	FEET
	0.01	(Inches)
LIQUEFACTION SETTLEMENT FROM	50	FEET
	0.46	(Inches)
TOTAL SEISMIC SETTLEMENT	0.5	INCHES

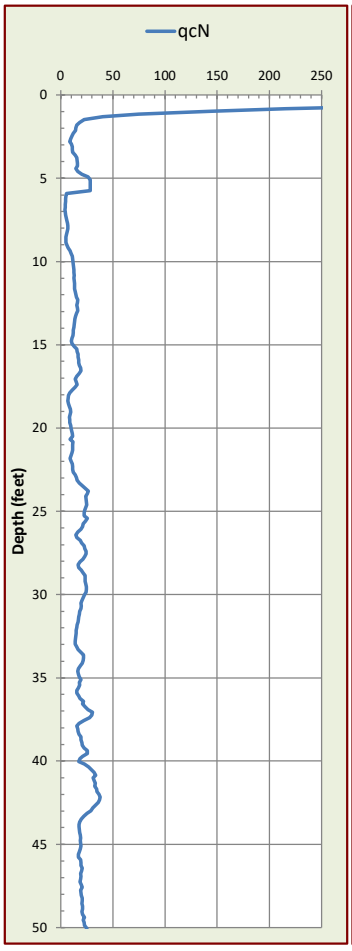
POTENTIAL LATERAL DISPLACEMENT

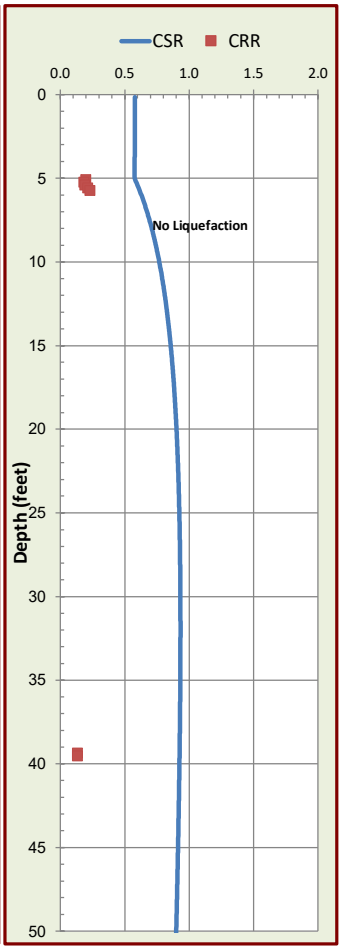
LDI[2]	0.23	L/H	164.6
LDI[1] Corrected for Distance	0.02	(4 < L/H < 40)	

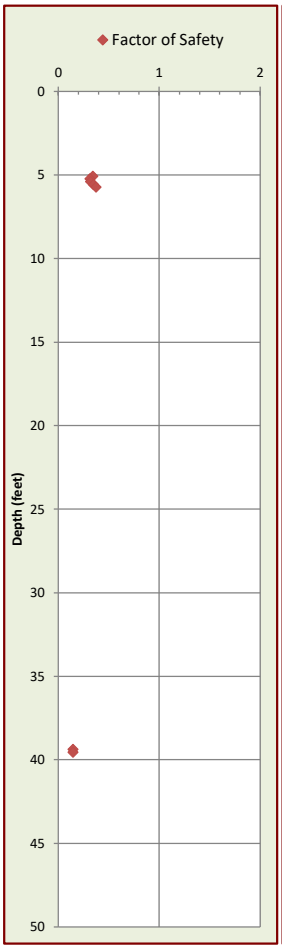
EXPECTED RANGE OF DISPLACEMENT

0.0 to 0.0 feet

[1]Not Valid for L/H Values < 4 and > 40.
[2]LDI Values Only Summed to 2H Below Grade.







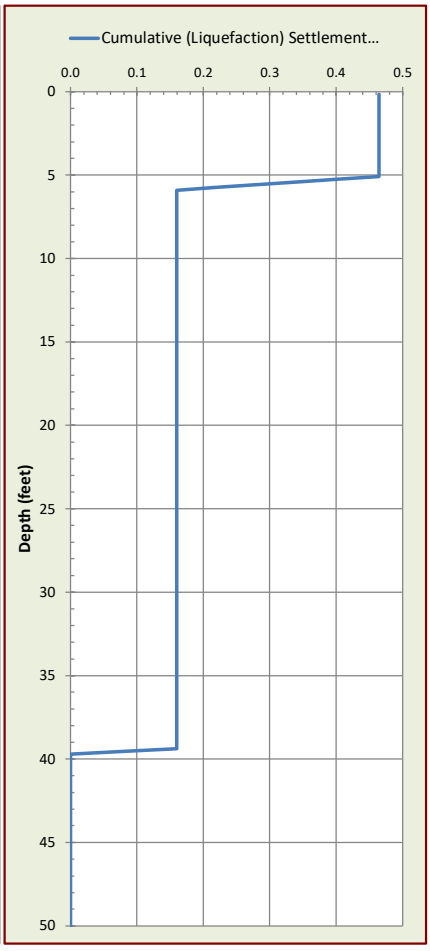


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FIGURE 4J

CPT NO. 10

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PROJECT/CPT DATA

Project Title	Doolittle Drive Warehouse
Project No.	555-16-1
Project Manager	MJS

SEISMIC PARAMETERS

Controlling Fault	Hayward	
Earthquake Magnitude (Mw)	7.58	
PGA (Amax)	0.89	(g)

SITE SPECIFIC PARAMETERS

Ground Water Depth at Time of Drilling (feet)	5
Design Water Depth (feet)	5
Ave. Unit Weight Above GW (pcf)	120
Ave. Unit Weight Below GW (pcf)	120

CPT ANALYSIS RESULTS

DRY SAND SETTLEMENT FROM	5	FEET
	0.07	(Inches)
LIQUEFACTION SETTLEMENT FROM	50	FEET
	0.06	(Inches)
TOTAL SEISMIC SETTLEMENT	0.1	INCHES

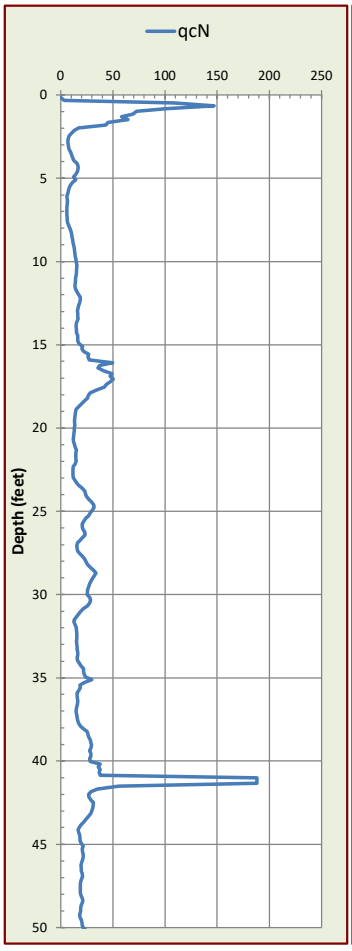
POTENTIAL LATERAL DISPLACEMENT

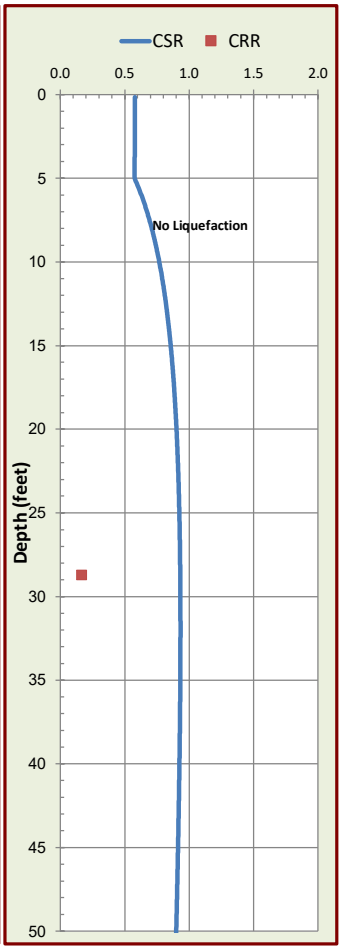
LDI[2]	0.00	L/H	164.6
LDI[1] Corrected for Distance	0.00	(4 < L/H < 40)	

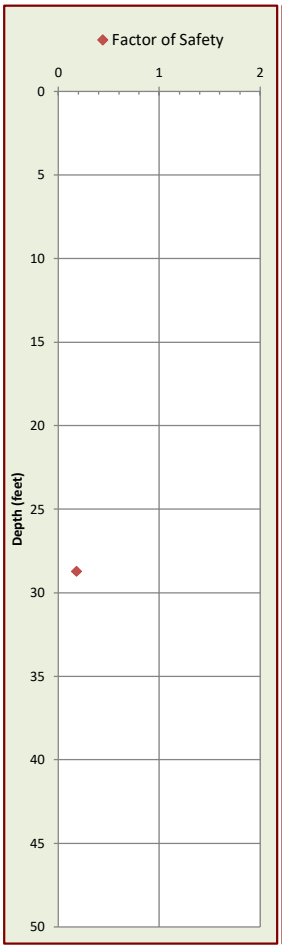
EXPECTED RANGE OF DISPLACEMENT

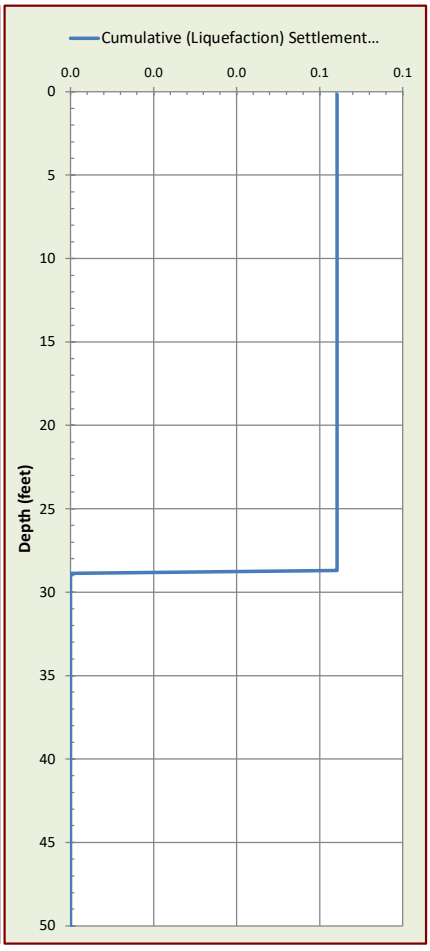
0.0 to 0.0 feet

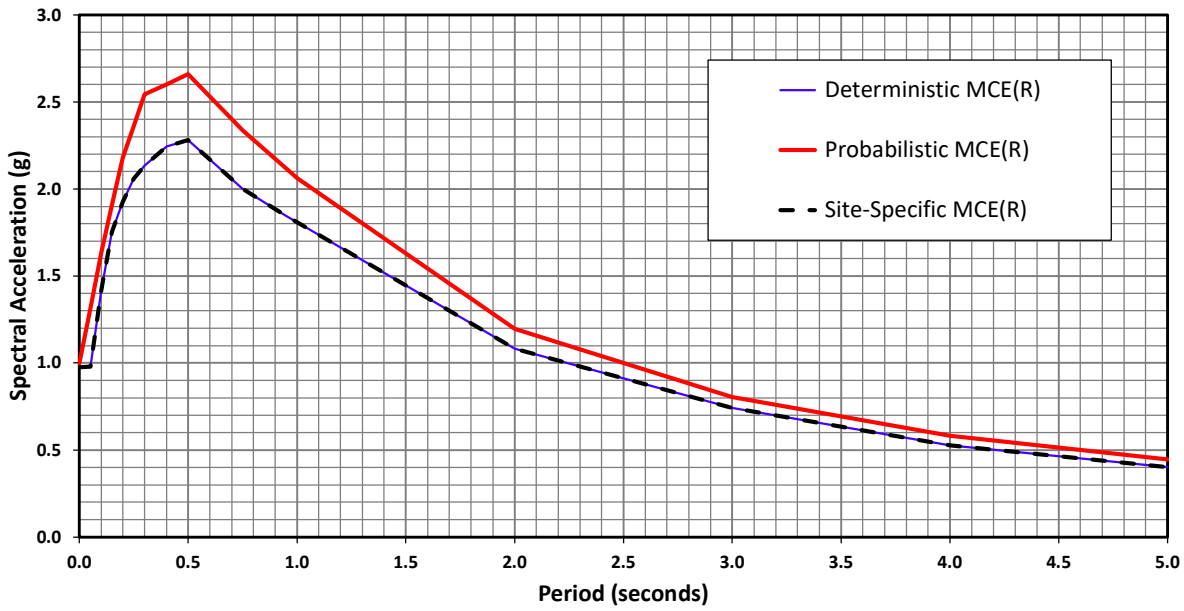
[1]Not Valid for L/H Values < 4 and > 40.
[2]LDI Values Only Summed to 2H Below Grade.











The Site-Specific Maximum Considered Earthquake (MCE_R) is defined as the lesser of the following at all periods:

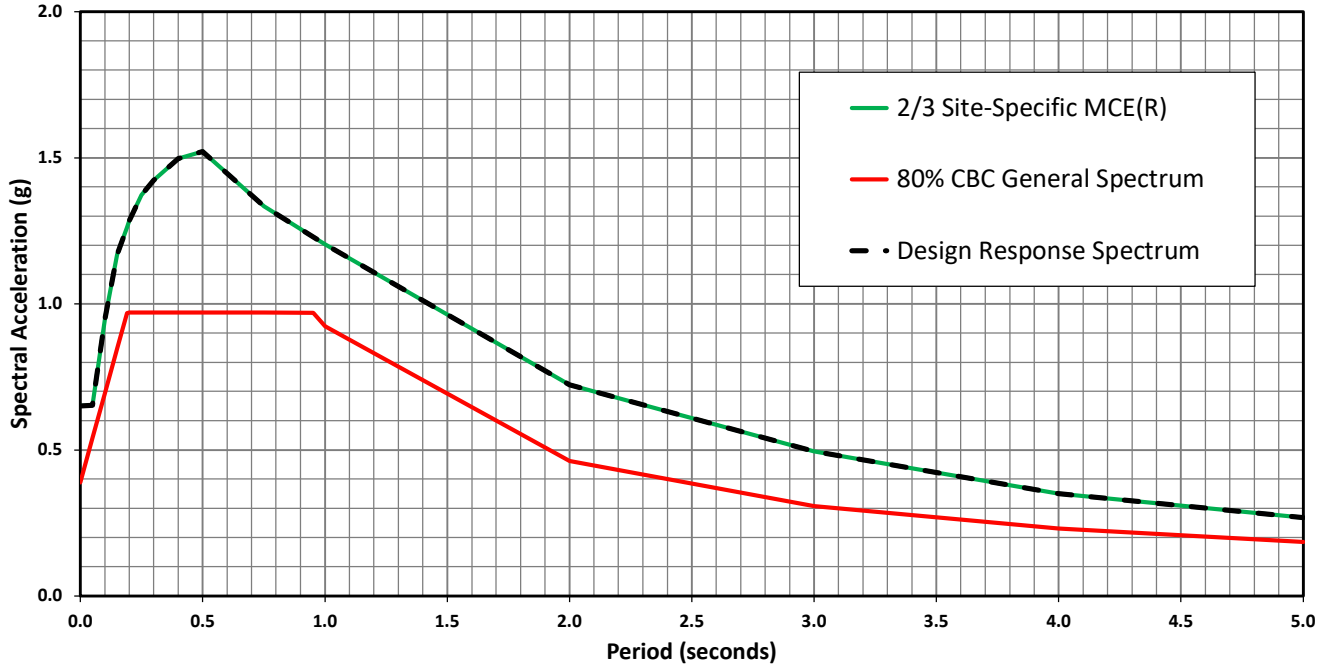
- Deterministic MCE_R – maximum 84th percentile deterministic, or
- Probabilistic MCE_R – defined as the 2,475–year ground motion.

Site-Specific MCE_R	
Period (Seconds)	Spectral Acceleration (g)
0.00	0.976
0.05	0.978
0.10	1.421
0.15	1.752
0.19	1.892
0.20	1.927
0.25	2.058
0.30	2.133
0.40	2.245
0.50	2.281
0.75	2.001
0.95	1.844
1.00	1.807
2.00	1.083
3.00	0.743
4.00	0.526
5.00	0.402

References:

ASCE/SEI 7-16: Minimum Design Loads and Associated Criteria for Buildings and Other Strutures with Supplement No. 1.
2019 California Building Code, Title 24, Part 2, Volume 2

CORNERSTONE EARTH GROUP	MCE_R RESPONSE SPECTRA	FIGURE 5
	Doolittle Drive Warehouse 880 Doolittle Drive San Leandro, CA	PROJECT NO. 555-16-1
		September 8, 2020 | MJS



The Site-Specific Design Response Spectrum per Section 21.2, 21.3 and 21.4 of ASCE 7-16 is defined as the greater of the following at all periods:

- 2/3 of the Site-Specific MCE_R, or
- 80% of the CBC General Spectrum.

Design Response Spectra	
Period (Seconds)	Spectral Acceleration (g)
0.00	0.651
0.05	0.652
0.10	0.947
0.15	1.168
0.19	1.261
0.20	1.285
0.25	1.372
0.30	1.422
0.40	1.497
0.50	1.521
0.75	1.334
0.95	1.229
1.00	1.205
2.00	0.722
3.00	0.495
4.00	0.351
5.00	0.268

Site Design	Design Values
Site Class (Per Chapter 20 ASCE 7-16)	D
Shear Wave Velocity, V_{S30} (m/sec)	217
Site Latitude (degrees)	37.719966
Site Longitude (degrees)	-122.187908
Risk Category	II
Building Period (sec)	Unknown
Importance Factor, I_e	1
[1]Site Specific PGA_M (g)	0.89

[1] Lower of Deterministic and Probabilistic, but not less than 80% of mapped value of FM x PGA, determined in accordance with Section 21.5 of ASCE 7-16.

Design Acceleration Parameters[1]	
S_{DS}	1.369
S_{D1}	1.485
S_{MS}	2.053
S_{M1}	2.228

References:

ASCE/SEI 7-16: Minimum Design Loads and Associated Criteria for Buildings and Other Strutures with Supplement No. 1.
2019 California Building Code, Title 24, Part 2, Volume 2

CORNERSTONE EARTH GROUP

DESIGN RESPONSE SPECTRA

Doolittle Drive Warehouse
880 Doolittle Drive
San Leandro, CA

FIGURE 6

PROJECT NO. 555-16-1

September 8, 2020 | MJS

APPENDIX A: FIELD INVESTIGATION

The field investigation consisted of a surface reconnaissance and a subsurface exploration program using truck-mounted, hollow-stem auger drilling equipment and 20-ton truck-mounted Cone Penetration Test equipment. Twelve 8-inch-diameter exploratory borings were drilled on June 1 to 5, 2020 to depths of 7 to 35 feet. Ten CPT soundings were also performed in accordance with ASTM D 5778-95 (revised, 2002) on May 18 to 20, 2020, to depths ranging from about 50 to 140 feet. The approximate locations of exploratory borings and CPTs are shown on the Site Plan, Figure 2. The soils encountered were continuously logged in the field by our representative and described in accordance with the Unified Soil Classification System (ASTM D2488). Boring logs, as well as a key to the classification of the soil, are included as part of this appendix.

Boring and CPT locations were approximated using existing site boundaries, a hand held GPS unit, and other site features as references. Boring elevations were based on interpolation of the topographic survey performed by Kimley Horn. The locations and elevations of the borings and CPTs should be considered accurate only to the degree implied by the method used.

Representative soil samples were obtained from the borings at selected depths. All samples were returned to our laboratory for evaluation and appropriate testing. The standard penetration resistance blow counts were obtained by dropping a 140-pound hammer through a 30-inch free fall. The 2-inch O.D. split-spoon sampler was driven 18 inches and the number of blows was recorded for each 6 inches of penetration (ASTM D1586). 2.5-inch I.D. samples were obtained using a Modified California Sampler driven into the soil with the 140-pound hammer previously described. Relatively undisturbed samples were also obtained with 2.875-inch I.D. Shelby Tube sampler which were hydraulically pushed. Unless otherwise indicated, the blows per foot recorded on the boring log represent the accumulated number of blows required to drive the last 12 inches. The various samplers are denoted at the appropriate depth on the boring logs.

The CPT involved advancing an instrumented cone-tipped probe into the ground while simultaneously recording the resistance at the cone tip (q_c) and along the friction sleeve (f_s) at approximately 5-centimeter intervals. Based on the tip resistance and tip to sleeve ratio (R_f), the CPT classified the soil behavior type and estimated engineering properties of the soil, such as equivalent Standard Penetration Test (SPT) blow count, internal friction angle within sand layers, and undrained shear strength in silts and clays. A pressure transducer behind the tip of the CPT cone measured pore water pressure (u_2). Graphical logs of the CPT data is included as part of this appendix.

Field tests included an evaluation of the unconfined compressive strength of the soil samples using a pocket penetrometer device. The results of these tests are presented on the individual boring logs at the appropriate sample depths.

Attached boring and CPT logs and related information depict subsurface conditions at the locations indicated and on the date designated on the logs. Subsurface conditions at other locations may differ from conditions occurring at these boring and CPT locations. The passage of time may result in altered subsurface conditions due to environmental changes. In addition,

any stratification lines on the logs represent the approximate boundary between soil types and the transition may be gradual.

UNIFIED SOIL CLASSIFICATION (ASTM D-2487-98)

MATERIAL TYPES	CRITERIA FOR ASSIGNING SOIL GROUP NAMES			GROUP SYMBOL	SOIL GROUP NAMES & LEGEND
COARSE-GRAINED SOILS >50% RETAINED ON NO. 200 SIEVE	GRAVELS >50% OF COARSE FRACTION RETAINED ON NO 4. SIEVE	CLEAN GRAVELS <5% FINES	Cu>4 AND 1<Cc<3	GW	WELL-GRADED GRAVEL
			Cu>4 AND 1>Cc>3	GP	POORLY-GRADED GRAVEL
		GRAVELS WITH FINES >12% FINES	FINES CLASSIFY AS ML OR CL	GM	SILTY GRAVEL
			FINES CLASSIFY AS CL OR CH	GC	CLAYEY GRAVEL
	SANDS >50% OF COARSE FRACTION PASSES ON NO 4. SIEVE	CLEAN SANDS <5% FINES	Cu>6 AND 1<Cc<3	SW	WELL-GRADED SAND
			Cu>6 AND 1>Cc>3	SP	POORLY-GRADED SAND
		SANDS AND FINES >12% FINES	FINES CLASSIFY AS ML OR CL	SM	SILTY SAND
			FINES CLASSIFY AS CL OR CH	SC	CLAYEY SAND
FINE-GRAINED SOILS >50% PASSES NO. 200 SIEVE	SILTS AND CLAYS LIQUID LIMIT<50	INORGANIC	PI>7 AND PLOTS>"A" LINE	CL	LEAN CLAY
			PI>4 AND PLOTS<"A" LINE	ML	SILT
		ORGANIC	LL (oven dried)/LL (not dried)<0.75	OL	ORGANIC CLAY OR SILT
	SILTS AND CLAYS LIQUID LIMIT>50	INORGANIC	PI PLOTS >"A" LINE	CH	FAT CLAY
			PI PLOTS <"A" LINE	MH	ELASTIC SILT
		ORGANIC	LL (oven dried)/LL (not dried)<0.75	OH	ORGANIC CLAY OR SILT
HIGHLY ORGANIC SOILS		PRIMARILY ORGANIC MATTER, DARK IN COLOR, AND ORGANIC ODOR		PT	PEAT

OTHER MATERIAL SYMBOLS

- Poorly-Graded Sand with Clay
- Clayey Sand
- Sandy Silt
- Artificial/Undocumented Fill
- Poorly-Graded Gravelly Sand
- Topsoil
- Well-Graded Gravel with Clay
- Well-Graded Gravel with Silt
- Sand
- Silt
- Well Graded Gravelly Sand
- Gravelly Silt
- Asphalt
- Boulders and Cobble

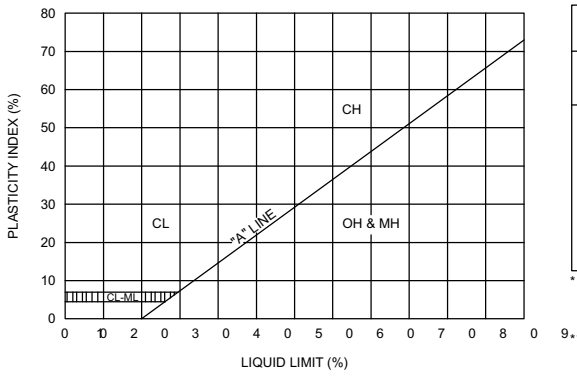
SAMPLER TYPES

- SPT
- Modified California (2.5" I.D.)
- Rock Core
- Shelby Tube
- No Recovery
- Grab Sample

ADDITIONAL TESTS

CA	-	CHEMICAL ANALYSIS (CORROSIVITY)	PI	-	PLASTICITY INDEX
CD	-	CONSOLIDATED DRAINED TRIAXIAL	SW		SWELL TEST
CN	-	CONSOLIDATION	TC	-	CYCLIC TRIAXIAL
CU	-	CONSOLIDATED UNDRAINED TRIAXIAL	TV	-	TORVANE SHEAR
DS	-	DIRECT SHEAR	UC	-	UNCONFINED COMPRESSION
PP	-	POCKET PENETROMETER (TSF)	(1.5)	-	(WITH SHEAR STRENGTH IN KSF)
(3.0)	-	(WITH SHEAR STRENGTH IN KSF)		-	
RV	-	R-VALUE	UU		UNCONSOLIDATED UNDRAINED TRIAXIAL
SA	-	SIEVE ANALYSIS: % PASSING #200 SIEVE		-	
	-	WATER LEVEL			

PLASTICITY CHART



PENETRATION RESISTANCE (RECORDED AS BLOWS / FOOT)				
SAND & GRAVEL		SILT & CLAY		
RELATIVE DENSITY	BLOWS/FOOT*	CONSISTENCY	BLOWS/FOOT*	STRENGTH** (KSF)
VERY LOOSE	0 - 4	VERY SOFT	0 - 2	0 - 0.25
LOOSE	4 - 10	SOFT	2 - 4	0.25 - 0.5
MEDIUM DENSE	10 - 30	MEDIUM STIFF	4 - 8	0.5 - 1.0
DENSE	30 - 50	STIFF	8 - 15	1.0 - 2.0
VERY DENSE	OVER 50	VERY STIFF	15 - 30	2.0 - 4.0
		HARD	OVER 30	OVER 4.0

* NUMBER OF BLOWS OF 140 LB HAMMER FALLING 30 INCHES TO DRIVE A 2 INCH O.D. (1-3/8 INCH I.D.) SPLIT-BARREL SAMPLER THE LAST 12 INCHES OF AN 18-INCH DRIVE (ASTM-1586 STANDARD PENETRATION TEST).

** UNDRAINED SHEAR STRENGTH IN KIPS/SQ. FT. AS DETERMINED BY LABORATORY TESTING OR APPROXIMATED BY THE STANDARD PENETRATION TEST, POCKET PENETROMETER, TORVANE, OR VISUAL OBSERVATION.

CORNERSTONE EARTH GROUP

LEGEND TO SOIL DESCRIPTIONS

Figure Number A-1

BORING NUMBER EB-1

CORNERSTONE EARTH GROUP

PROJECT NAME Doolittle Drive Warehouse
PROJECT NUMBER 555-16-1
PROJECT LOCATION San Leandro, CA

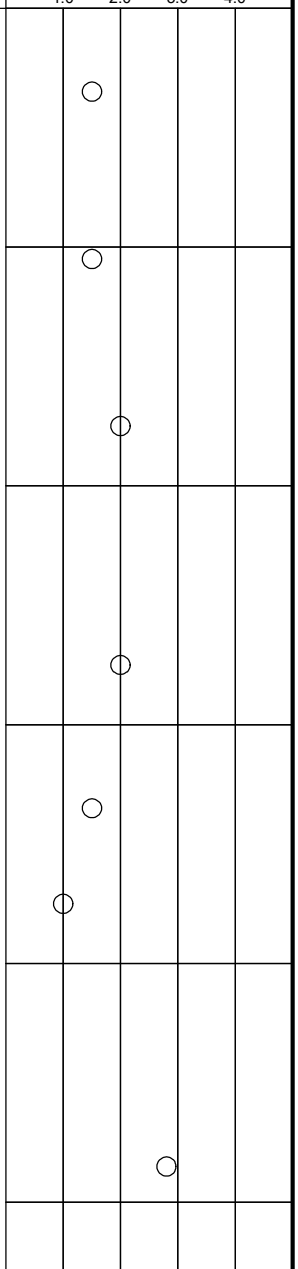
DATE STARTED 6/1/20 **DATE COMPLETED** 6/1/20
GROUND ELEVATION 10.75 FT +/- **BORING DEPTH** 35 ft.
DRILLING CONTRACTOR Exploration Geoservices
LATITUDE 37.720132° **LONGITUDE** -122.190352°
DRILLING METHOD Mobile B-61, 8 inch Hollow-Stem Auger
GROUND WATER LEVELS:
LOGGED BY BCG
AT TIME OF DRILLING 14 ft.
NOTES
AT END OF DRILLING 14 ft.

This log is a part of a report by Cornerstone Earth Group, and should not be used as a stand-alone document. This description applies only to the location of the exploration at the time of drilling. Subsurface conditions may differ at other locations and may change at this location with time. The description presented is a simplification of actual conditions encountered. Transitions between soil types may be gradual.

ELEVATION (ft)	DEPTH (ft)	DESCRIPTION	N-Value (uncorrected) blows per foot	SAMPLES TYPE AND NUMBER	DRY UNIT WEIGHT PCF	NATURAL MOISTURE CONTENT	PLASTICITY INDEX, %	PERCENT PASSING No. 200 SIEVE
10.8 / 10.5	0	3 inches asphalt concrete over 8 inches aggregate base and stabilization fabric						
9.9		**Fat Clay with Sand (CH)** stiff, moist, dark gray, fine to medium sand, high plasticity	25	MC-1B	91	32		
7.3		**Clayey Sand (SC)** medium dense, moist, dark gray, fine to medium sand	26	MC-2B		20		48
6.3	5	**Lean Clay with Sand (CL)** stiff, moist, dark gray to gray, fine to coarse sand, moderate plasticity	26	MC-3C	102	22		
				ST				
	10							
-3.3		**Clayey Sand (SC)** medium dense, moist, very light gray, fine to medium sand, some fine subangular to subrounded gravel	51	MC-5C	110	22		40
	15							
-6.3		**Lean Clay with Sand (CL)** stiff, moist, gray with brown mottles, fine sand, moderate plasticity	37	MC-6B	110	21		
				ST				
	20							
		becomes very stiff	78	MC-8B	108	22		
	25							
-15.3								

Continued Next Page

UNDRAINED SHEAR STRENGTH, ksf
○ HAND PENETROMETER
△ TORVANE
● UNCONFINED COMPRESSION
▲ UNCONSOLIDATED-UNDRAINED TRIAXIAL



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BORING NUMBER EB-1

CORNERSTONE EARTH GROUP

PROJECT NAME Doolittle Drive Warehouse

PROJECT NUMBER 555-16-1

PROJECT LOCATION San Leandro, CA

This log is a part of a report by Cornerstone Earth Group, and should not be used as a stand-alone document. This description applies only to the location of the exploration at the time of drilling. Subsurface conditions may differ at other locations and may change at this location with time. The description presented is a simplification of actual conditions encountered. Transitions between soil types may be gradual.

ELEVATION (ft)	DEPTH (ft)	SYMBOL	DESCRIPTION	N-Value (uncorrected) blows per foot	SAMPLES TYPE AND NUMBER	DRY UNIT WEIGHT PCF	NATURAL MOISTURE CONTENT	PLASTICITY INDEX, %	PERCENT PASSING No. 200 SIEVE	UNDRAINED SHEAR STRENGTH, ksf (HAND PENETROMETER ○, TORVANE △, UNCONFINED COMPRESSION ●, UNCONSOLIDATED-UNDRAINED TRIAXIAL ▲; 1.0 2.0 3.0 4.0)
-15.3			**Lean Clay with Sand (CL)** stiff, moist, gray with brown mottles, fine sand, moderate plasticity							
				46	MC-9		24			
	30									
				29	MC-10B		22			
-24.3	35		Bottom of Boring at 35.0 feet.							
	40									
	45									
	50									
	55									

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BORING NUMBER EB-10

CORNERSTONE EARTH GROUP

PROJECT NAME Doolittle Drive Warehouse
PROJECT NUMBER 555-16-1
PROJECT LOCATION San Leandro, CA

DATE STARTED 6/2/20 **DATE COMPLETED** 6/2/20
GROUND ELEVATION 11.5 FT +/- **BORING DEPTH** 35 ft.
DRILLING CONTRACTOR Exploration Geoservices
LATITUDE 37.720152° **LONGITUDE** -122.189560°
DRILLING METHOD Mobile B-61, 8 inch Hollow-Stem Auger
GROUND WATER LEVELS:
LOGGED BY BCG
AT TIME OF DRILLING 13 ft.
NOTES
AT END OF DRILLING 13 ft.

This log is a part of a report by Cornerstone Earth Group, and should not be used as a stand-alone document. This description applies only to the location of the exploration at the time of drilling. Subsurface conditions may differ at other locations and may change at this location with time. The description presented is a simplification of actual conditions encountered. Transitions between soil types may be gradual.

ELEVATION (ft)	DEPTH (ft)	DESCRIPTION	N-Value (uncorrected) blows per foot	SAMPLES TYPE AND NUMBER	DRY UNIT WEIGHT PCF	NATURAL MOISTURE CONTENT	PLASTICITY INDEX, %	PERCENT PASSING No. 200 SIEVE
11.5 / 11.3	0	3 inches asphalt concrete over 12 inches aggregate base						
10.3		**Fat Clay with Sand (CH)** medium stiff to stiff, moist, dark gray, fine to medium sand, high plasticity	16	MC-1B	96	33		
			21	MC-2C	91	32		
7.0	5	**Sandy Lean Clay (CL)** stiff, moist, gray, fine to medium sand, low plasticity	20	MC-3B	112	20		
5.0		**Lean Clay with Sand (CL)** very stiff, moist, gray, fine sand, moderate plasticity	34	MC				
			28	MC-5B	100	28		
	10							
			44	MC-6B	106	21		
	15							
-4.5		**Lean Clay with Sand (CL)** medium stiff, moist, light gray, fine to medium sand, moderate plasticity						
			24	MC-7B	88	33		
	20							
-9.5		**Lean Clay (CL)** very stiff, moist, gray with brown mottles, some fine sand, moderate plasticity		ST				
			46	MC-9		22		
	25							
-14.5								

UNDRAINED SHEAR STRENGTH, ksf
○ HAND PENETROMETER
△ TORVANE
● UNCONFINED COMPRESSION
▲ UNCONSOLIDATED-UNDRAINED TRIAXIAL
1.0 2.0 3.0 4.0

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BORING NUMBER EB-10

CORNERSTONE EARTH GROUP

PROJECT NAME Doolittle Drive Warehouse

PROJECT NUMBER 555-16-1

PROJECT LOCATION San Leandro, CA

This log is a part of a report by Cornerstone Earth Group, and should not be used as a stand-alone document. This description applies only to the location of the exploration at the time of drilling. Subsurface conditions may differ at other locations and may change at this location with time. The description presented is a simplification of actual conditions encountered. Transitions between soil types may be gradual.

ELEVATION (ft)	DEPTH (ft)	SYMBOL	DESCRIPTION	N-Value (uncorrected) blows per foot	SAMPLES TYPE AND NUMBER	DRY UNIT WEIGHT PCF	NATURAL MOISTURE CONTENT	PLASTICITY INDEX, %	PERCENT PASSING No. 200 SIEVE	UNDRAINED SHEAR STRENGTH, ksf (○ HAND PENETROMETER, △ TORVANE, ● UNCONFINED COMPRESSION, ▲ UNCONSOLIDATED-UNDRAINED TRIAXIAL) 1.0 2.0 3.0 4.0
-14.5										
-15.5			**Sandy Lean Clay (CL)** stiff, moist, gray with brown mottles, fine to medium sand, low to moderate plasticity							
	30			35	MC-10B	109	22			○
				54	MC-11		24			○
-23.5	35		Bottom of Boring at 35.0 feet.							
	40									
	45									
	50									
	55									

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BORING NUMBER EB-11

CORNERSTONE EARTH GROUP

PROJECT NAME Doolittle Drive Warehouse
PROJECT NUMBER 555-16-1
PROJECT LOCATION San Leandro, CA

DATE STARTED 6/4/20 **DATE COMPLETED** 6/4/20
GROUND ELEVATION 15.5 FT +/- **BORING DEPTH** 35 ft.
DRILLING CONTRACTOR Exploration Geoservices
LATITUDE 37.720747° **LONGITUDE** -122.188002°
DRILLING METHOD Mobile B-61, 8 inch Hollow-Stem Auger
GROUND WATER LEVELS:
LOGGED BY BCG
AT TIME OF DRILLING 12 ft.
NOTES
AT END OF DRILLING 6 ft.

This log is a part of a report by Cornerstone Earth Group, and should not be used as a stand-alone document. This description applies only to the location of the exploration at the time of drilling. Subsurface conditions may differ at other locations and may change at this location with time. The description presented is a simplification of actual conditions encountered. Transitions between soil types may be gradual.

ELEVATION (ft)	DEPTH (ft)	DESCRIPTION	N-Value (uncorrected) blows per foot	SAMPLES TYPE AND NUMBER	DRY UNIT WEIGHT PCF	NATURAL MOISTURE CONTENT	PLASTICITY INDEX, %	PERCENT PASSING No. 200 SIEVE
15.5 / 15.2	0	4 inches of asphalt concrete over 6 inches of aggregate base						
14.6		**Sandy Lean Clay (CL) [Fill]** stiff, moist, dark gray and brown mottled, fine to coarse sand, low plasticity	38	MC-1B	104	17		
12.0	5	**Fat Clay (CH)** stiff, moist, dark gray, trace fine sand, high plasticity	13	MC-2C	90	31		
10.0		**Lean Clay with Sand (CL)** very stiff, moist, gray with brown mottles, fine to coarse sand, moderate plasticity	22	MC-3B	104	21		
7.5	10	**Lean Clay (CL)** medium stiff, moist, gray, some fine sand, moderate plasticity	10	4A MC 4B	87 88	36 38		
	15	becomes stiff	30	MC-5B	95	33		
-3.0	20	**Fat Clay (CH)** stiff, moist, dark gray, trace fine sand, high plasticity	25	MC-6B	82	40		
-6.5	25	**Lean Clay (CL)** very stiff, moist, gray, some fine sand, moderate plasticity	33	MC-7A	103	26		
-10.5								

UNDRAINED SHEAR STRENGTH, ksf
○ HAND PENETROMETER
△ TORVANE
● UNCONFINED COMPRESSION
▲ UNCONSOLIDATED-UNDRAINED TRIAXIAL
1.0 2.0 3.0 4.0

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BORING NUMBER EB-11

CORNERSTONE EARTH GROUP

PROJECT NAME Doolittle Drive Warehouse

PROJECT NUMBER 555-16-1

PROJECT LOCATION San Leandro, CA

This log is a part of a report by Cornerstone Earth Group, and should not be used as a stand-alone document. This description applies only to the location of the exploration at the time of drilling. Subsurface conditions may differ at other locations and may change at this location with time. The description presented is a simplification of actual conditions encountered. Transitions between soil types may be gradual.

ELEVATION (ft)	DEPTH (ft)	SYMBOL	DESCRIPTION	N-Value (uncorrected) blows per foot	SAMPLES TYPE AND NUMBER	DRY UNIT WEIGHT PCF	NATURAL MOISTURE CONTENT	PLASTICITY INDEX, %	PERCENT PASSING No. 200 SIEVE	UNDRAINED SHEAR STRENGTH, ksf (1.0 2.0 3.0 4.0)
-10.5			**Lean Clay (CL)** very stiff, moist, gray, some fine sand, moderate plasticity							
	30			58	MC-8B	102	25			○
			becomes stiff	33	MC-9B	103	25			○
-19.5	35		Bottom of Boring at 35.0 feet.							
	40									
	45									
	50									
	55									

UNDRAINED SHEAR STRENGTH, ksf
○ HAND PENETROMETER
△ TORVANE
● UNCONFINED COMPRESSION
▲ UNCONSOLIDATED-UNDRAINED TRIAXIAL

CORNERSTONE EARTH GROUP2 - CORNERSTONE 0812.GDT - 9/8/20 10:34 - P:\DRAFTING\GINT FILES\555-16-1 DOOLITTLE WH.GPJ

BORING NUMBER EB-12

CORNERSTONE EARTH GROUP

PROJECT NAME Doolittle Drive Warehouse
PROJECT NUMBER 555-16-1
PROJECT LOCATION San Leandro, CA

DATE STARTED 6/5/20 **DATE COMPLETED** 6/5/20
GROUND ELEVATION 13.0 FT +/- **BORING DEPTH** 7.5 ft.
DRILLING CONTRACTOR Exploration Geoservices
LATITUDE 37.720532° **LONGITUDE** -122.187730°
DRILLING METHOD Mobile B-61, 8 inch Hollow-Stem Auger
GROUND WATER LEVELS:
LOGGED BY BCG
AT TIME OF DRILLING Not Encountered
NOTES
AT END OF DRILLING Not Encountered

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ELEVATION (ft)	DEPTH (ft)	DESCRIPTION	N-Value (uncorrected) blows per foot	SAMPLES TYPE AND NUMBER	DRY UNIT WEIGHT PCF	NATURAL MOISTURE CONTENT	PLASTICITY INDEX, %	PERCENT PASSING No. 200 SIEVE
13.0 / 12.7	0	4 inches of asphalt concrete over 10 inches of aggregate base						
11.8		**Fat Clay (CH)** very stiff, moist, dark gray, trace fine sand, high plasticity	23	MC-1B	85	29		
9.5		**Sandy Lean Clay (CL)** stiff, moist, dark gray, fine to medium sand, low plasticity	20	MC-2B	99	23		
8.5	5	**Lean Clay with Sand (CL)** medium stiff, moist, gray with brown mottles, fine sand, moderate plasticity	15	NR				
			16	MC-3C	87	32		
5.5		Bottom of Boring at 7.5 feet.						
	10							
	15							
	20							
	25							

UNDRAINED SHEAR STRENGTH, ksf
○ HAND PENETROMETER
△ TORVANE
● UNCONFINED COMPRESSION
▲ UNCONSOLIDATED-UNDRAINED TRIAXIAL
1.0 2.0 3.0 4.0

CORNERSTONE EARTH GROUP2 - CORNERSTONE 0812.GDT - 9/8/20 10:34 - P:\DRAFTING\GINT FILES\555-16-1 DOOLITTLE WH.GPJ

BORING NUMBER EB-2

CORNERSTONE EARTH GROUP

PROJECT NAME Doolittle Drive Warehouse
PROJECT NUMBER 555-16-1
PROJECT LOCATION San Leandro, CA

DATE STARTED 6/1/20 **DATE COMPLETED** 6/1/20
GROUND ELEVATION 11.5 FT +/- **BORING DEPTH** 35 ft.
DRILLING CONTRACTOR Exploration Geoservices
LATITUDE 37.719839° **LONGITUDE** -122.189665°
DRILLING METHOD Mobile B-61, 8 inch Hollow-Stem Auger
GROUND WATER LEVELS:
LOGGED BY BCG
AT TIME OF DRILLING 8 ft.
NOTES
AT END OF DRILLING 8 ft.

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ELEVATION (ft)	DEPTH (ft)	DESCRIPTION	N-Value (uncorrected) blows per foot	SAMPLES TYPE AND NUMBER	DRY UNIT WEIGHT PCF	NATURAL MOISTURE CONTENT	PLASTICITY INDEX, %	PERCENT PASSING No. 200 SIEVE
11.5 / 11.3	0	3 inches of asphalt concrete over 12 inches of aggregate base						
10.3		**Fat Clay (CH)** stiff, moist, dark gray, trace fine sand, high plasticty Liquid Limit = 52, Plastic Limit = 19	10	MC-1B	88	33	33	
8.0		**Sandy Lean Clay (CL)** stiff, moist, dark gray, fine to coarse sand, moderate plasticity	18	MC-2C	109	16		
6.5	5	**Silty, Clayey Sand (SC-SM)** loose, moist, gray, fine to coarse sand Liquid Limit = 21, Plastic Limit = 16	19	MC-3A	107	20	5	31
5.5		**Lean Clay (CL)** stiff, moist, gray, some fine sand, moderate plasticity	28	MC-4		32		
	10		38	MC-5B	104	22		
-3.0	15	**Clayey Sand with Gravel (CL)** medium dense, moist, very light gray, fine to coarse sand, fine subangular gravel Liquid Limit = 39, Plastic Limit = 16	40	MC-6A	98	28	23	38
-4.0		**Sandy Lean Clay (CL)** very stiff, moist, light gray, fine to coarse sand, moderate plasticity		MC				
-6.5		**Lean Clay (CL)** stiff, moist, gray, some fine sand, moderate plasticity		ST-8	91	30		
	20							
-11.0		**Lean Clay with Sand (CL)** very stiff, moist, gray with brown mottles, fine sand, moderate plasticity	44	MC-9B	103	23		
	25							
-14.5								

UNDRAINED SHEAR STRENGTH, ksf
○ HAND PENETROMETER
△ TORVANE
● UNCONFINED COMPRESSION
▲ UNCONSOLIDATED-UNDRAINED TRIAXIAL
1.0 2.0 3.0 4.0

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CORNERSTONE EARTH GROUP2 - CORNERSTONE 0812.GDT - 9/8/20 10:34 - P:\DRAFTING\GINT FILES\555-16-1 DOOLITTLE WH.GPJ

BORING NUMBER EB-2

CORNERSTONE EARTH GROUP

PROJECT NAME Doolittle Drive Warehouse

PROJECT NUMBER 555-16-1

PROJECT LOCATION San Leandro, CA

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ELEVATION (ft)	DEPTH (ft)	SYMBOL	DESCRIPTION	N-Value (uncorrected) blows per foot	SAMPLES TYPE AND NUMBER	DRY UNIT WEIGHT PCF	NATURAL MOISTURE CONTENT	PLASTICITY INDEX, %	PERCENT PASSING No. 200 SIEVE	UNDRAINED SHEAR STRENGTH, ksf (○ HAND PENETROMETER, △ TORVANE, ● UNCONFINED COMPRESSION, ▲ UNCONSOLIDATED-UNDRAINED TRIAXIAL; 1.0 2.0 3.0 4.0)
-14.5			**Lean Clay with Sand (CL)** very stiff, moist, gray with brown mottles, fine sand, moderate plasticity							
	30				ST					○
				51	MC-11B	110	20			○
-23.5	35		Bottom of Boring at 35.0 feet.							
	40									
	45									
	50									
	55									

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BORING NUMBER EB-3

CORNERSTONE EARTH GROUP

PROJECT NAME Doolittle Drive Warehouse
PROJECT NUMBER 555-16-1
PROJECT LOCATION San Leandro, CA

DATE STARTED 6/1/20 **DATE COMPLETED** 6/1/20
GROUND ELEVATION 12.0 FT +/- **BORING DEPTH** 10 ft.
DRILLING CONTRACTOR Exploration Geoservices
LATITUDE 37.720102° **LONGITUDE** -122.189279°
DRILLING METHOD Mobile B-61, 8 inch Hollow-Stem Auger
GROUND WATER LEVELS:
LOGGED BY BCG
AT TIME OF DRILLING Not Encountered
NOTES
AT END OF DRILLING Not Encountered

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ELEVATION (ft)	DEPTH (ft)	DESCRIPTION	N-Value (uncorrected) blows per foot	SAMPLES TYPE AND NUMBER	DRY UNIT WEIGHT PCF	NATURAL MOISTURE CONTENT	PLASTICITY INDEX, %	PERCENT PASSING No. 200 SIEVE	UNDRAINED SHEAR STRENGTH, ksf (1.0 / 2.0 / 3.0 / 4.0)
12.0	0	4 inches of asphalt concrete over 3 inches of aggregate base							
11.7									
11.4		**Clayey Sand with Gravel (SC) [Fill]** very dense, moist, reddish brown, fine to medium sand, fine to coarse subangular to subrounded gravel	50 6"	MC-1	124	9			
9.0		**Fat Clay (CH)** stiff, moist, dark gray, trace fine sand, high plasticity	40	MC-2B	90	31			○
7.5	5	**Lean Clay (CL)** stiff, moist, gray brown, some fine sand, moderate plasticity	48	MC-3C	95	25			○
			38	MC-4C	97	30			○
4.0		**Sandy Lean Clay (CL)** very stiff, moist, gray, fine to coarse sand, some fine subrounded gravel, low plasticity	43	MC-5B	108	21			○
2.0	10	Bottom of Boring at 10.0 feet.							
	15								
	20								
	25								

UNDRAINED SHEAR STRENGTH, ksf
○ HAND PENETROMETER
△ TORVANE
● UNCONFINED COMPRESSION
▲ UNCONSOLIDATED-UNDRAINED TRIAXIAL

CORNERSTONE EARTH GROUP2 - CORNERSTONE 0812.GDT - 9/8/20 10:34 - P:\DRAFTING\GINT FILES\555-16-1 DOOLITTLE WH.GPJ

BORING NUMBER EB-4

CORNERSTONE EARTH GROUP

PROJECT NAME Doolittle Drive Warehouse
PROJECT NUMBER 555-16-1
PROJECT LOCATION San Leandro, CA

DATE STARTED 6/2/20 **DATE COMPLETED** 6/2/20
GROUND ELEVATION 11.5 FT +/- **BORING DEPTH** 30 ft.
DRILLING CONTRACTOR Exploration Geoservices
LATITUDE 37.719370° **LONGITUDE** -122.188447°
DRILLING METHOD Mobile B-61, 8 inch Hollow-Stem Auger
GROUND WATER LEVELS:
LOGGED BY BCG
AT TIME OF DRILLING 14 ft.
NOTES
AT END OF DRILLING 14 ft.

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ELEVATION (ft)	DEPTH (ft)	DESCRIPTION	N-Value (uncorrected) blows per foot	SAMPLES TYPE AND NUMBER	DRY UNIT WEIGHT PCF	NATURAL MOISTURE CONTENT	PLASTICITY INDEX, %	PERCENT PASSING No. 200 SIEVE
11.5	0	4 inches asphalt concrete over 8 inches aggregate base						
11.3								
10.5		**Clayey Sand with Gravel (SC) [Fill]**						
9.8		**Fat Clay (CH)** very stiff, moist, dark gray, some fine sand, high plasticity	39	MC-1B	101	26		
8.5		**Sandy Lean Clay (CL)** very stiff, moist, dark gray, fine to medium sand, moderate plasticity	36	MC-2B	102	18		
7.0				3A	112	18	10	38
6.3	5	**Clayey Sand (SC)** medium dense, moist, dark gray, fine to medium sand, some fine subangular to subrounded gravel Liquid Limit = 25, Plastic Limit = 15	22	MC 3C	95	29		
		Lean Clay (CL) very stiff, moist, gray, some fine sand, moderate plasticity	34	MC-4B	92	29		
	10							
-0.5		**Lean Clay with Sand (CL)** very stiff, moist, gray, fine to coarse sand, moderate plasticity	44	MC-5C	114	21		
-3.3	15	**Clayey Sand (SC)** medium dense, moist, very light gray, fine to medium sand, some fine subangular to subrounded gravel Liquid Limit = 29, Plastic Limit = 13	24	MC-6B	109	22	16	49
-4.5			38	MC-7B	105	23		
		Lean Clay with Sand (CL) very stiff, moist, gray with brown mottles, fine sand, moderate plasticity						
	20		64	MC-8B	110	22		
-13.5	25							

UNDRAINED SHEAR STRENGTH, ksf
○ HAND PENETROMETER
△ TORVANE
● UNCONFINED COMPRESSION
▲ UNCONSOLIDATED-UNDRAINED TRIAXIAL
1.0 2.0 3.0 4.0

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BORING NUMBER EB-4

CORNERSTONE EARTH GROUP

PROJECT NAME Doolittle Drive Warehouse

PROJECT NUMBER 555-16-1

PROJECT LOCATION San Leandro, CA

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ELEVATION (ft)	DEPTH (ft)	SYMBOL	DESCRIPTION	N-Value (uncorrected) blows per foot	SAMPLES TYPE AND NUMBER	DRY UNIT WEIGHT PCF	NATURAL MOISTURE CONTENT	PLASTICITY INDEX, %	PERCENT PASSING No. 200 SIEVE	UNDRAINED SHEAR STRENGTH, ksf (○ HAND PENETROMETER, △ TORVANE, ● UNCONFINED COMPRESSION, ▲ UNCONSOLIDATED-UNDRAINED TRIAXIAL) 1.0 2.0 3.0 4.0
-13.5	25		**Poorly Graded Sand with Silt (SP-SM)** medium dense, moist, gray, fine to medium sand, some fine subrounded gravel	39	MC-9B	118	15			
				60	MC					
-16.5			**Lean Clay with Sand (CL)** stiff, moist, gray with brown mottles, fine sand, moderate plasticity	33	MC-11		23			○
-18.5	30		Bottom of Boring at 30.0 feet.							
	35									
	40									
	45									
	50									

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BORING NUMBER EB-5

CORNERSTONE EARTH GROUP

PROJECT NAME Doolittle Drive Warehouse
PROJECT NUMBER 555-16-1
PROJECT LOCATION San Leandro, CA

DATE STARTED 6/3/20 **DATE COMPLETED** 6/3/20
GROUND ELEVATION 12.5 FT +/- **BORING DEPTH** 30 ft.
DRILLING CONTRACTOR Exploration Geoservices
LATITUDE 37.720398° **LONGITUDE** -122.188623°
DRILLING METHOD Mobile B-61, 8 inch Hollow-Stem Auger
GROUND WATER LEVELS:
LOGGED BY BCG
AT TIME OF DRILLING 12 ft.
NOTES
AT END OF DRILLING 7 ft.

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ELEVATION (ft)	DEPTH (ft)	DESCRIPTION	N-Value (uncorrected) blows per foot	SAMPLES TYPE AND NUMBER	DRY UNIT WEIGHT PCF	NATURAL MOISTURE CONTENT	PLASTICITY INDEX, %	PERCENT PASSING No. 200 SIEVE
12.5 / 12.2	0	4 inches of asphalt concrete over 7 inches of aggregate base						
11.6		**Clayey Sand with Gravel (SC) [Fill]** medium dense, moist, reddish brown, fine to medium sand, fine to coarse subangular to subrounded gravel	36	MC-1B	131	9		
9.5		**Fat Clay (CH)** very stiff, moist, dark gray, trace fine sand, high plasticity	38	MC-2B	91	27		
7.5	5	**Lean Clay with Sand (CL)** very stiff, moist, gray brown, fine to coarse sand, moderate plasticity	36	MC-3C	105	21		
4.5		**Lean Clay (CL)** very stiff, moist, gray, some fine sand, moderate plasticity	26	MC-4B	87	28		
	10							
	15		38	MC-5B	94	33		
-6.0		**Sandy Lean Clay (CL)** stiff, moist, gray, fine to coarse sand, some fine subrounded gravel, low plasticity		ST				
	20							
-8.5		**Lean Clay with Sand (CL)** stiff, moist, gray, fine sand, moderate plasticity	29	MC-7C	92	32		
		becomes very stiff	36	MC-8B	106	22		
	25							
-13.5		*Continued Next Page*						

UNDRAINED SHEAR STRENGTH, ksf
○ HAND PENETROMETER
△ TORVANE
● UNCONFINED COMPRESSION
▲ UNCONSOLIDATED-UNDRAINED TRIAXIAL
1.0 2.0 3.0 4.0

CORNERSTONE EARTH GROUP2 - CORNERSTONE 0812.GDT - 9/8/20 10:34 - P:\DRAFTING\GINT FILES\555-16-1 DOOLITTLE WH.GPJ

BORING NUMBER EB-5

CORNERSTONE EARTH GROUP

PROJECT NAME Doolittle Drive Warehouse

PROJECT NUMBER 555-16-1

PROJECT LOCATION San Leandro, CA

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ELEVATION (ft)	DEPTH (ft)	SYMBOL	DESCRIPTION	N-Value (uncorrected) blows per foot	SAMPLES TYPE AND NUMBER	DRY UNIT WEIGHT PCF	NATURAL MOISTURE CONTENT	PLASTICITY INDEX, %	PERCENT PASSING No. 200 SIEVE	UNDRAINED SHEAR STRENGTH, ksf (○ HAND PENETROMETER, △ TORVANE, ● UNCONFINED COMPRESSION, ▲ UNCONSOLIDATED-UNDRAINED TRIAXIAL; 1.0 2.0 3.0 4.0)
-13.5			**Lean Clay with Sand (CL)** very stiff, moist, gray, fine sand, moderate plasticity	49	MC-9B	113	20			○
-17.5	30		Bottom of Boring at 30.0 feet.							
	35									
	40									
	45									
	50									
	55									

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BORING NUMBER EB-6

CORNERSTONE EARTH GROUP

PROJECT NAME Doolittle Drive Warehouse
PROJECT NUMBER 555-16-1
PROJECT LOCATION San Leandro, CA

DATE STARTED 6/4/20 **DATE COMPLETED** 6/4/20
GROUND ELEVATION 15 FT +/- **BORING DEPTH** 7 ft.
DRILLING CONTRACTOR Exploration Geoservices
LATITUDE 37.720962° **LONGITUDE** -122.188783°
DRILLING METHOD Mobile B-61, 8 inch Hollow-Stem Auger
GROUND WATER LEVELS:
LOGGED BY BCG
AT TIME OF DRILLING Not Encountered
NOTES
AT END OF DRILLING Not Encountered

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ELEVATION (ft)	DEPTH (ft)	SYMBOL	DESCRIPTION	N-Value (uncorrected) blows per foot	SAMPLES TYPE AND NUMBER	DRY UNIT WEIGHT PCF	NATURAL MOISTURE CONTENT	PLASTICITY INDEX, %	PERCENT PASSING No. 200 SIEVE	UNDRAINED SHEAR STRENGTH, ksf (○ HAND PENETROMETER, △ TORVANE, ● UNCONFINED COMPRESSION, ▲ UNCONSOLIDATED-UNDRAINED TRIAXIAL; 1.0 2.0 3.0 4.0)
15.0	0		4 inches of asphalt concrete over 9 inches of aggregate base							
14.7										
13.9			**Clayey Sand with Gravel (SC) [Fill]** medium dense, moist, dark gray and brown mottled, fine to medium sand, fine to coarse subangular to subrounded gravel	41	MC-1B	121	6			
				49	MC-2C	112	9			
11.5			**Silty Sand with Gravel (SM) [Fill]** loose, moist, dark brown, fine to medium sand	11	MC					
	5									
9.0			**Fat Clay (CH)** very stiff, moist, dark gray, trace fine sand, high plasticty	10	SPT-4B		31			○
8.0			Bottom of Boring at 7.0 feet.							
	10									
	15									
	20									
	25									

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BORING NUMBER EB-7

CORNERSTONE EARTH GROUP

PROJECT NAME Doolittle Drive Warehouse
PROJECT NUMBER 555-16-1
PROJECT LOCATION San Leandro, CA

DATE STARTED 6/4/20 **DATE COMPLETED** 6/4/20
GROUND ELEVATION 17 FT +/- **BORING DEPTH** 30 ft.
DRILLING CONTRACTOR Exploration Geoservices
LATITUDE 37.721133° **LONGITUDE** -122.187715°
DRILLING METHOD Mobile B-61, 8 inch Hollow-Stem Auger
GROUND WATER LEVELS:
LOGGED BY BCG
AT TIME OF DRILLING 13 ft.
NOTES
AT END OF DRILLING 10 ft.

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ELEVATION (ft)	DEPTH (ft)	DESCRIPTION	N-Value (uncorrected) blows per foot	SAMPLES TYPE AND NUMBER	DRY UNIT WEIGHT PCF	NATURAL MOISTURE CONTENT	PLASTICITY INDEX, %	PERCENT PASSING No. 200 SIEVE
17.0	0	4 inches of asphalt concrete over 6 inches of aggregate base						
16.7								
16.1		**Clayey Sand with Gravel (SC) [Fill]** medium dense, moist, dark gray and brown mottled, fine to medium sand, fine to coarse subangular to subrounded gravel	46	MC-1B	128	12		
14.0		**Sandy Lean Clay (CL) [Fill]** stiff, moist, dark gray and brown mottled, fine to coarse sand, low plasticity	24	MC-2B	100	19		
12.0	5	**Fat Clay (CH)** stiff, moist, dark gray, trace fine sand, high plasticty	32	MC-3C	100	26		
10.0		**Sandy Lean Clay (CL)** stiff, moist, gray, fine to coarse sand, low plasticity						
8.0		**Clayey Sand (SC)** medium dense, moist, gray, fine to coarse sand	38	MC-4C	108	18		29
	10							
6.0		**Lean Clay with Sand (CL)** stiff, moist, gray brown, fine to coarse sand, subangular gravel, moderate plasticity		ST				
4.5		**Lean Clay (CL)** stiff, moist, gray, trace fine sand, moderate plasticity	34	MC-6B	88	35		
	15							
			44	MC-7B	95	27		
-3.0	20	**Lean Clay with Sand (CL)** medium stiff, moist, brown, fine sand, moderate plasticity		ST				
			17	MC-9C	94	31		
	25							
-9.0								

UNDRAINED SHEAR STRENGTH, ksf
○ HAND PENETROMETER
△ TORVANE
● UNCONFINED COMPRESSION
▲ UNCONSOLIDATED-UNDRAINED TRIAXIAL
1.0 2.0 3.0 4.0

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BORING NUMBER EB-7

CORNERSTONE EARTH GROUP

PROJECT NAME Doolittle Drive Warehouse

PROJECT NUMBER 555-16-1

PROJECT LOCATION San Leandro, CA

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ELEVATION (ft)	DEPTH (ft)	SYMBOL	DESCRIPTION	N-Value (uncorrected) blows per foot	SAMPLES TYPE AND NUMBER	DRY UNIT WEIGHT PCF	NATURAL MOISTURE CONTENT	PLASTICITY INDEX, %	PERCENT PASSING No. 200 SIEVE	UNDRAINED SHEAR STRENGTH, ksf (○ HAND PENETROMETER, △ TORVANE, ● UNCONFINED COMPRESSION, ▲ UNCONSOLIDATED-UNDRAINED TRIAXIAL) 1.0 2.0 3.0 4.0
-9.0										
-10.0			**Lean Clay with Sand (CL)** very stiff, moist, gray with brown mottles, fine to coarse sand, moderate plasticity	37	MC-10B	105	23			○
-13.0	30		Bottom of Boring at 30.0 feet.							
	35									
	40									
	45									
	50									
	55									

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BORING NUMBER EB-8

CORNERSTONE EARTH GROUP

PROJECT NAME Doolittle Drive Warehouse
PROJECT NUMBER 555-16-1
PROJECT LOCATION San Leandro, CA

DATE STARTED 6/5/20 **DATE COMPLETED** 6/5/20
GROUND ELEVATION 13.5 FT +/- **BORING DEPTH** 20 ft.
DRILLING CONTRACTOR Exploration Geoservices
LATITUDE 37.720604° **LONGITUDE** -122.187173°
DRILLING METHOD Mobile B-61, 8 inch Hollow-Stem Auger
GROUND WATER LEVELS:
LOGGED BY BCG
AT TIME OF DRILLING 8.5 ft.
NOTES
AT END OF DRILLING 5.5 ft.

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ELEVATION (ft)	DEPTH (ft)	DESCRIPTION	N-Value (uncorrected) blows per foot	SAMPLES TYPE AND NUMBER	DRY UNIT WEIGHT PCF	NATURAL MOISTURE CONTENT	PLASTICITY INDEX, %	PERCENT PASSING No. 200 SIEVE
13.5 / 13.2	0	3 inches of asphalt concrete over 10 inches of aggregate base						
12.4		**Sandy Lean Clay (CL) [Fill]** very stiff, moist, dark gray and brown mottled, fine to coarse sand, low plasticity	30	MC-1B	112	21		
10.5		**Clayey Sand with Gravel (SC) [Fill]** medium dense, moist, dark gray and brown mottled, fine to medium sand, fine to coarse subangular to subrounded gravel	35	MC-2C	107	17		32
8.5	5	**Silty Sand (SM) [Fill]** loose, moist, gray, fine to coarse sand	9	MC				
			8	4A MC	116	17		14
6.5		**Lean Clay (CL)** medium stiff, moist, gray, trace fine sand, moderate plasticity		4C	89	33		
				ST-5	85	35		
	10							
1.5		**Lean Clay with Sand (CL)** stiff, moist, gray with brown mottles, fine sand, moderate plasticity	37	MC-6B	95	29		
	15							
-3.0		**Lean Clay (CL)** medium stiff, moist, gray with brown mottles, some fine sand, moderate plasticity	14	MC-7	93	27		
-6.5	20	Bottom of Boring at 20.0 feet.						
	25							

UNDRAINED SHEAR STRENGTH, ksf
○ HAND PENETROMETER
△ TORVANE
● UNCONFINED COMPRESSION
▲ UNCONSOLIDATED-UNDRAINED TRIAXIAL
1.0 2.0 3.0 4.0

CORNERSTONE EARTH GROUP2 - CORNERSTONE 0812.GDT - 9/8/20 10:34 - P:\DRAFTING\GINT FILES\555-16-1 DOOLITTLE WH.GPJ

BORING NUMBER EB-9

CORNERSTONE EARTH GROUP

PROJECT NAME Doolittle Drive Warehouse
PROJECT NUMBER 555-16-1
PROJECT LOCATION San Leandro, CA

DATE STARTED 6/5/20 **DATE COMPLETED** 6/5/20
GROUND ELEVATION 13.75 FT +/- **BORING DEPTH** 25 ft.
DRILLING CONTRACTOR Exploration Geoservices
LATITUDE 37.720000° **LONGITUDE** -122.187009°
DRILLING METHOD Mobile B-61, 8 inch Hollow-Stem Auger
GROUND WATER LEVELS:
LOGGED BY BCG
AT TIME OF DRILLING 6.5 ft.
NOTES
AT END OF DRILLING 5 ft.

This log is a part of a report by Cornerstone Earth Group, and should not be used as a stand-alone document. This description applies only to the location of the exploration at the time of drilling. Subsurface conditions may differ at other locations and may change at this location with time. The description presented is a simplification of actual conditions encountered. Transitions between soil types may be gradual.

ELEVATION (ft)	DEPTH (ft)	DESCRIPTION	N-Value (uncorrected) blows per foot	SAMPLES TYPE AND NUMBER	DRY UNIT WEIGHT PCF	NATURAL MOISTURE CONTENT	PLASTICITY INDEX, %	PERCENT PASSING No. 200 SIEVE
13.8	0	3 inches asphalt concrete over 8 inches aggregate base						
13.5								
12.9		**Fat Clay (CH)** stiff, moist, dark gray, some fine sand, high plasticity	15	MC-1B	96	28		
10.3		**Clayey Sand (SC)** medium dense, moist, dark gray, fine to medium sand	29	MC-2C	104	18		
9.3	5	**Lean Clay with Sand (CL)** stiff, moist, gray, fine sand, moderate plasticity	20	MC-3C	89	32		
			27	MC-4B	97	26		
	10							
		becomes very stiff	37	MC-5B	102	24		
-1.3	15	**Sandy Lean Clay (CL)** stiff, moist, light gray, fine to coarse sand, low plasticity	38	MC-6B	113	18		63
-2.8		**Lean Clay with Sand (CL)** very stiff, moist, gray with brown mottles, fine sand, moderate plasticity	26	SPT				
			31	MC-8		26		
	20							
-8.3		**Lean Clay (CL)** stiff, moist, gray with brown mottles, some fine sand, moderate plasticity						
			28	MC-9B	104	24		
-11.3	25	Bottom of Boring at 25.0 feet.						

UNDRAINED SHEAR STRENGTH, ksf (1.0, 2.0, 3.0, 4.0)
○ HAND PENETROMETER
△ TORVANE
● UNCONFINED COMPRESSION
▲ UNCONSOLIDATED-UNDRAINED TRIAXIAL

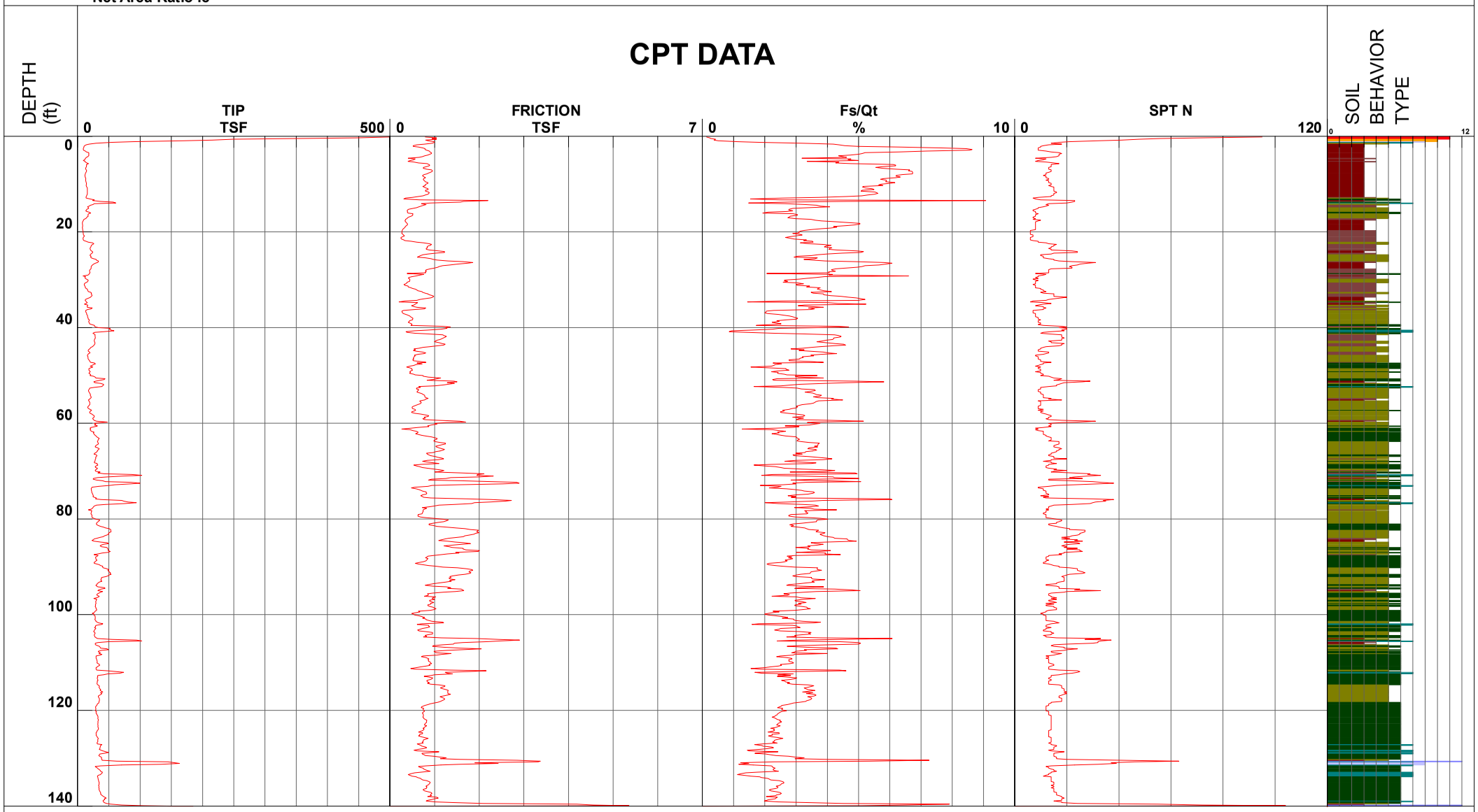
CORNERSTONE EARTH GROUP2 - CORNERSTONE 0812.GDT - 9/8/20 10:34 - P:\DRAFTING\GINT FILES\555-16-1 DOOLITTLE WH.GPJ

Cornerstone Earth Group

Project	880 Doolittle Drive	Operator	BH-GH	Filename	SDF(111).cpt
Job Number	555-16-1	Cone Number	DDG1496	GPS	
Hole Number	CPT-01	Date and Time	5/18/2020 7:26:30 AM	Maximum Depth	140.42 ft
EST GW Depth During Test		4.20 ft			

Net Area Ratio .8

CPT DATA



1 - sensitive fine grained	4 - silty clay to clay	7 - silty sand to sandy silt	10 - gravelly sand to sand
2 - organic material	5 - clayey silt to silty clay	8 - sand to silty sand	11 - very stiff fine grained (*)
3 - clay	6 - sandy silt to clayey silt	9 - sand	12 - sand to clayey sand (*)

Cone Size 15cm squared

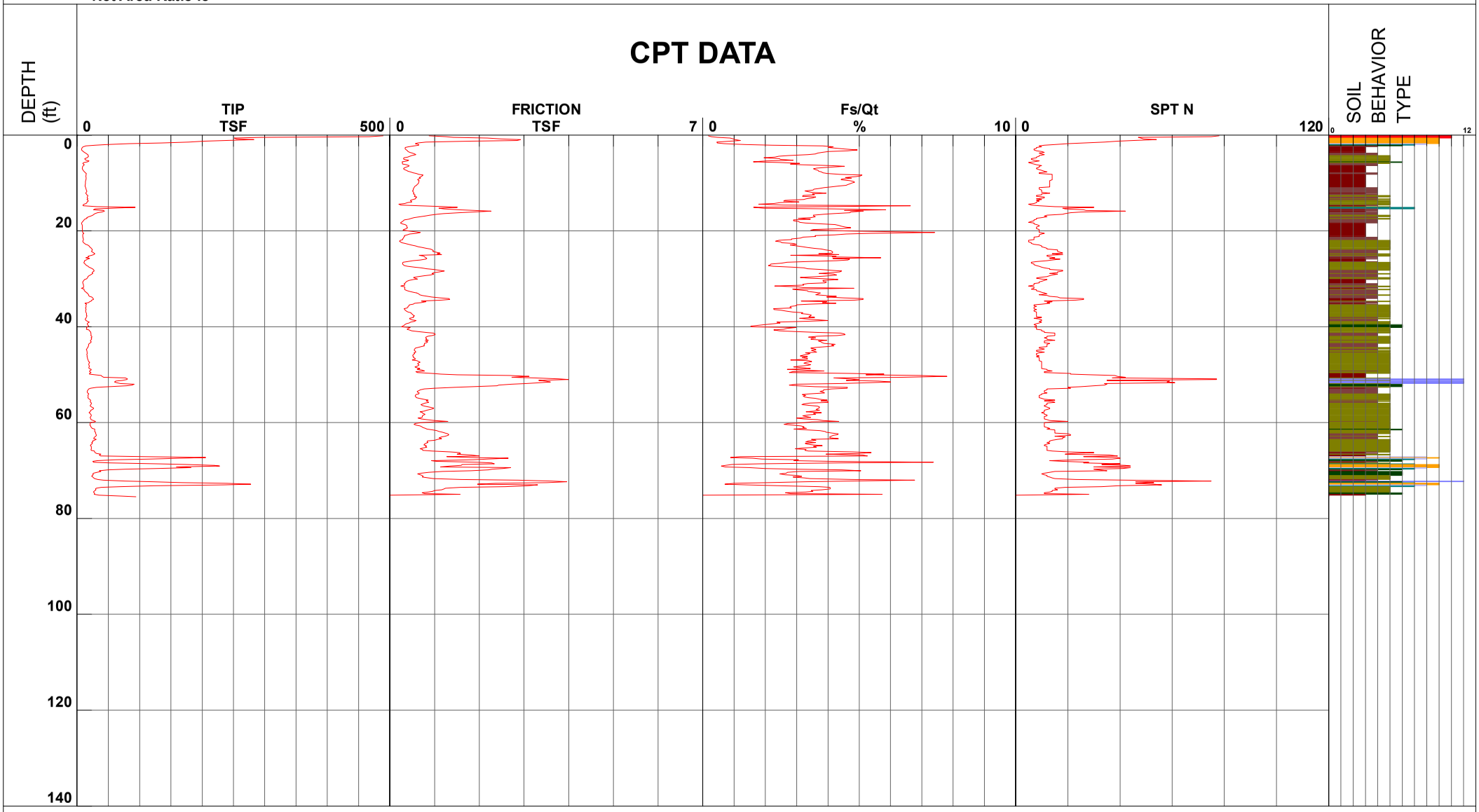
S*Soil behavior type and SPT based on data from UBC-1983

Cornerstone Earth Group

Project	880 Doolittle Drive	Operator	BH-GH	Filename	SDF(112).cpt
Job Number	555-16-1	Cone Number	DDG1496	GPS	
Hole Number	CPT-02	Date and Time	5/18/2020 11:32:52 AM	Maximum Depth	75.46 ft
EST GW Depth During Test		4.80 ft			

Net Area Ratio .8

CPT DATA



1 - sensitive fine grained	4 - silty clay to clay	7 - silty sand to sandy silt	10 - gravelly sand to sand
2 - organic material	5 - clayey silt to silty clay	8 - sand to silty sand	11 - very stiff fine grained (*)
3 - clay	6 - sandy silt to clayey silt	9 - sand	12 - sand to clayey sand (*)

Cone Size 15cm squared

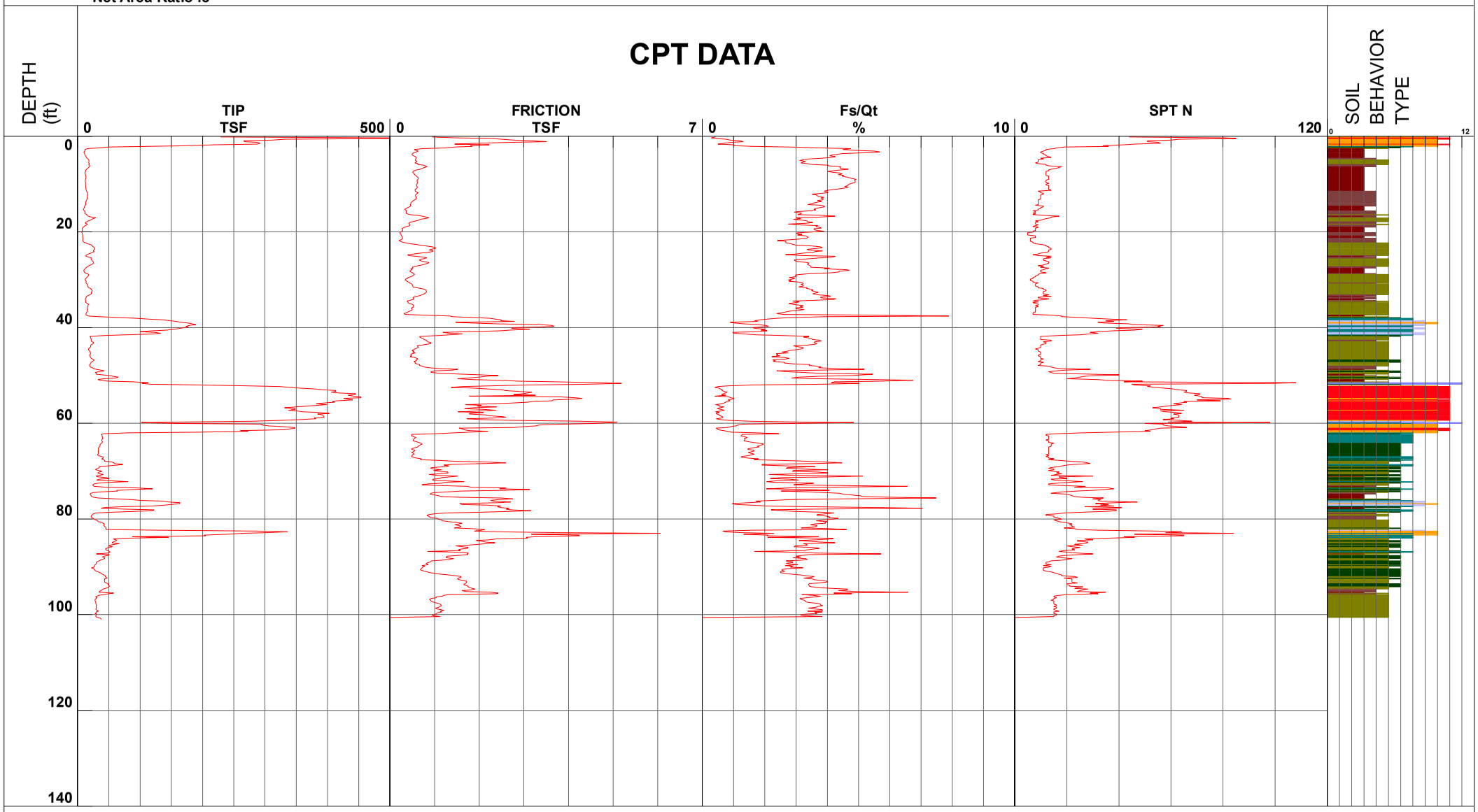
S*Soil behavior type and SPT based on data from UBC-1983

Cornerstone Earth Group

Project	880 Doolittle Drive	Operator	BH-GH	Filename	SDF(113).cpt
Job Number	555-16-1	Cone Number	DDG1496	GPS	
Hole Number	CPT-03	Date and Time	5/18/2020 2:09:01 PM	Maximum Depth	100.88 ft
EST GW Depth During Test		5.00 ft			

Net Area Ratio .8

CPT DATA



- 1 - sensitive fine grained
- 2 - organic material
- 3 - clay
- 4 - silty clay to clay
- 5 - clayey silt to silty clay
- 6 - sandy silt to clayey silt
- 7 - silty sand to sandy silt
- 8 - sand to silty sand
- 9 - sand
- 10 - gravelly sand to sand
- 11 - very stiff fine grained (*)
- 12 - sand to clayey sand (*)

Cone Size 15cm squared

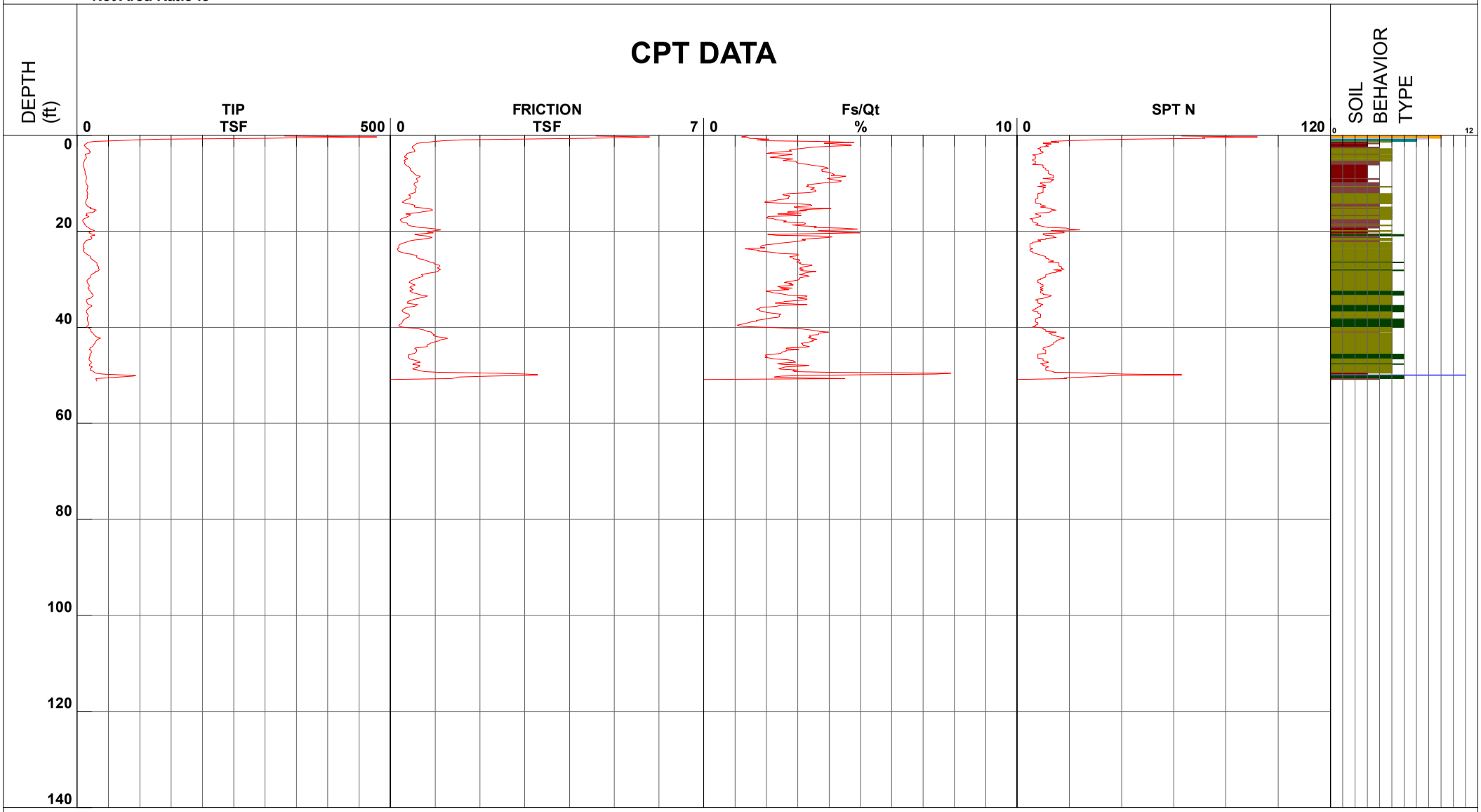
S*Soil behavior type and SPT based on data from UBC-1983

Cornerstone Earth Group

Project	880 Doolittle Drive	Operator	BH-GH	Filename	SDF(123).cpt
Job Number	555-16-1	Cone Number	DDG1496	GPS	
Hole Number	CPT-04	Date and Time	5/20/2020 12:45:27 PM	Maximum Depth	51.18 ft
EST GW Depth During Test		5.00 ft			

Net Area Ratio .8

CPT DATA



- 1 - sensitive fine grained
- 2 - organic material
- 3 - clay
- 4 - silty clay to clay
- 5 - clayey silt to silty clay
- 6 - sandy silt to clayey silt
- 7 - silty sand to sandy silt
- 8 - sand to silty sand
- 9 - sand
- 10 - gravelly sand to sand
- 11 - very stiff fine grained (*)
- 12 - sand to clayey sand (*)

Cone Size 15cm squared

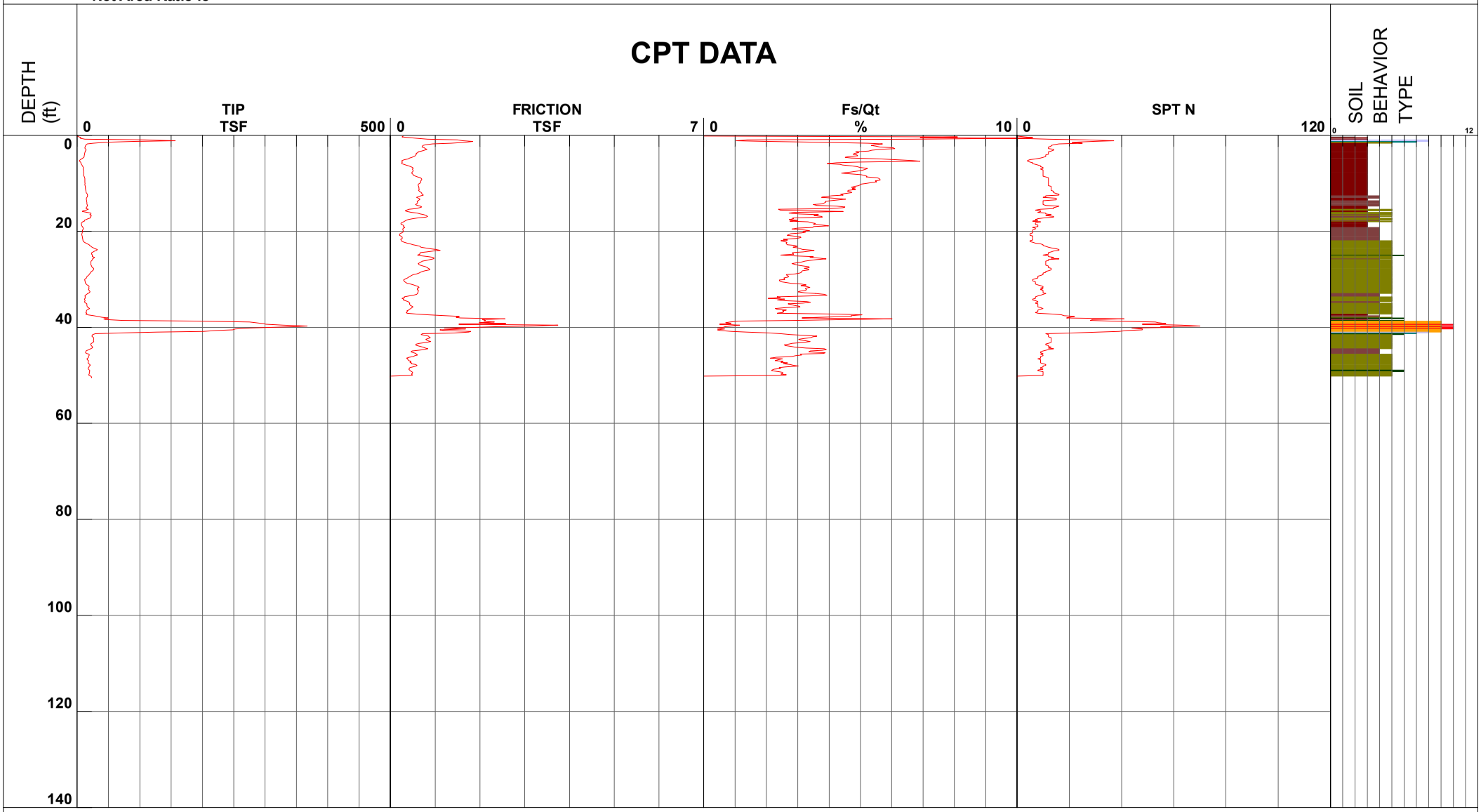
S*Soil behavior type and SPT based on data from UBC-1983

Cornerstone Earth Group

Project	880 Doolittle Drive	Operator	BH-GH	Filename	SDF(115).cpt
Job Number	555-16-1	Cone Number	DDG1496	GPS	
Hole Number	CPT-05	Date and Time	5/19/2020 8:01:58 AM	Maximum Depth	50.52 ft
EST GW Depth During Test		3.70 ft			

Net Area Ratio .8

CPT DATA



1 - sensitive fine grained	4 - silty clay to clay	7 - silty sand to sandy silt	10 - gravelly sand to sand
2 - organic material	5 - clayey silt to silty clay	8 - sand to silty sand	11 - very stiff fine grained (*)
3 - clay	6 - sandy silt to clayey silt	9 - sand	12 - sand to clayey sand (*)

Cone Size 15cm squared

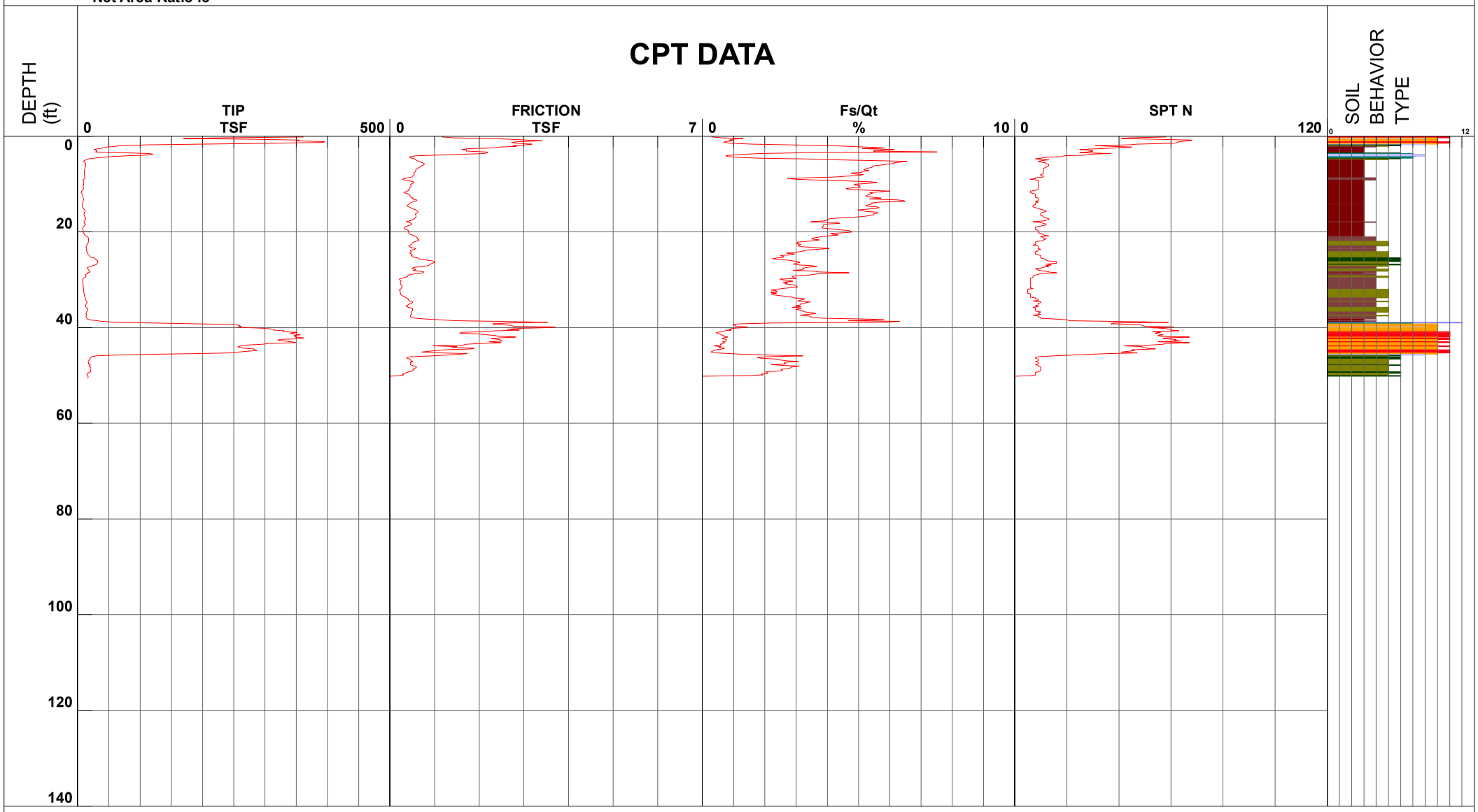
S*Soil behavior type and SPT based on data from UBC-1983

Cornerstone Earth Group

Project	880 Doolittle Drive	Operator	BH-GH	Filename	SDF(116).cpt
Job Number	555-16-1	Cone Number	DDG1496	GPS	
Hole Number	CPT-06	Date and Time	5/19/2020 9:00:50 AM	Maximum Depth	50.52 ft
EST GW Depth During Test		6.75 ft			

Net Area Ratio .8

CPT DATA



1 - sensitive fine grained	4 - silty clay to clay	7 - silty sand to sandy silt	10 - gravelly sand to sand
2 - organic material	5 - clayey silt to silty clay	8 - sand to silty sand	11 - very stiff fine grained (*)
3 - clay	6 - sandy silt to clayey silt	9 - sand	12 - sand to clayey sand (*)

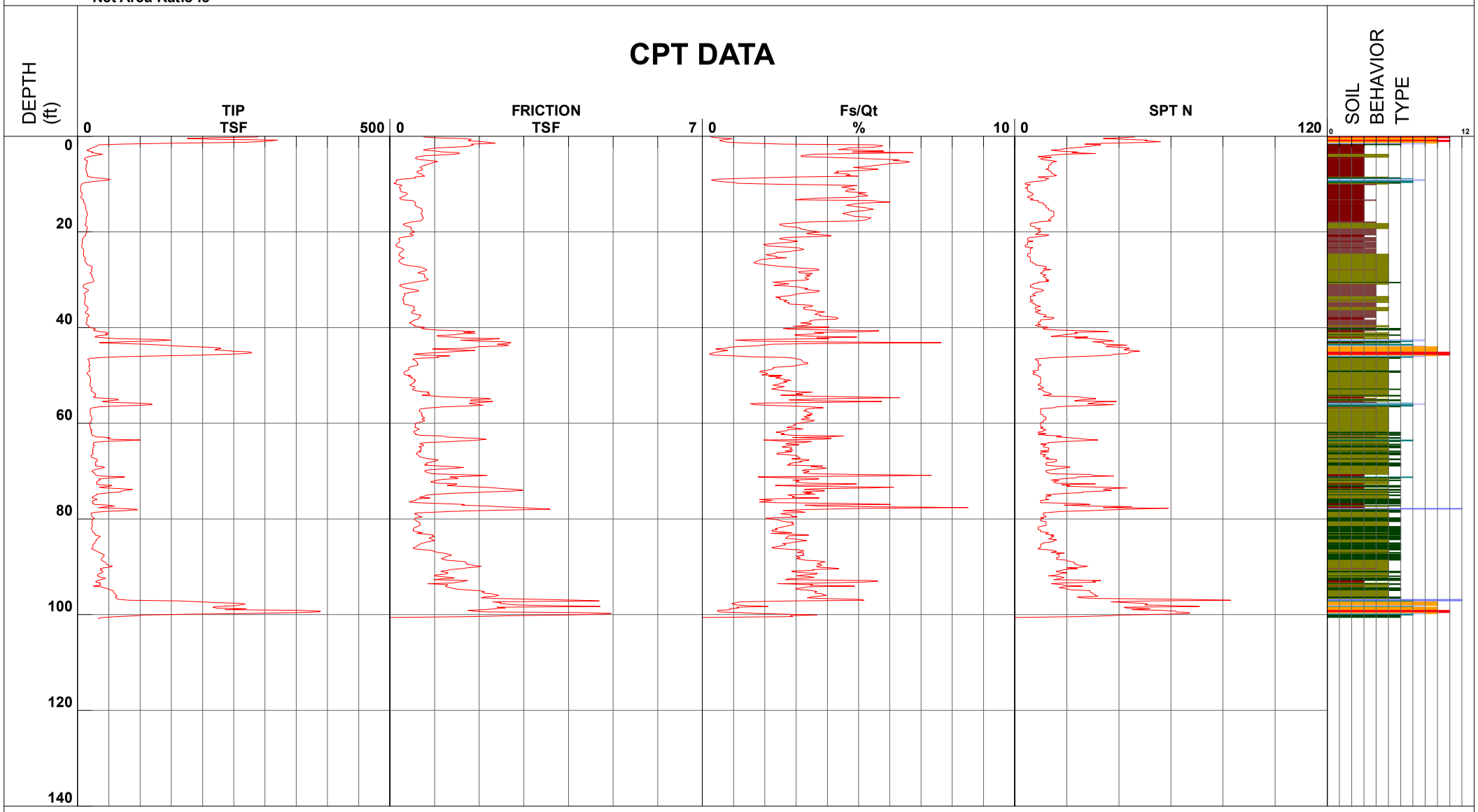
Cone Size 15cm squared

S*Soil behavior type and SPT based on data from UBC-1983

Cornerstone Earth Group

Project	880 Doolittle Drive	Operator	BH-GH	Filename	SDF(120).cpt
Job Number	555-16-1	Cone Number	DDG1496	GPS	
Hole Number	CPT-07	Date and Time	5/19/2020 2:04:54 PM	Maximum Depth	100.88 ft
EST GW Depth During Test		5.60 ft			

Net Area Ratio .8



1 - sensitive fine grained
2 - organic material
3 - clay
4 - silty clay to clay
5 - clayey silt to silty clay
6 - sandy silt to clayey silt
7 - silty sand to sandy silt
8 - sand to silty sand
9 - sand
10 - gravelly sand to sand
11 - very stiff fine grained (*)
12 - sand to clayey sand (*)

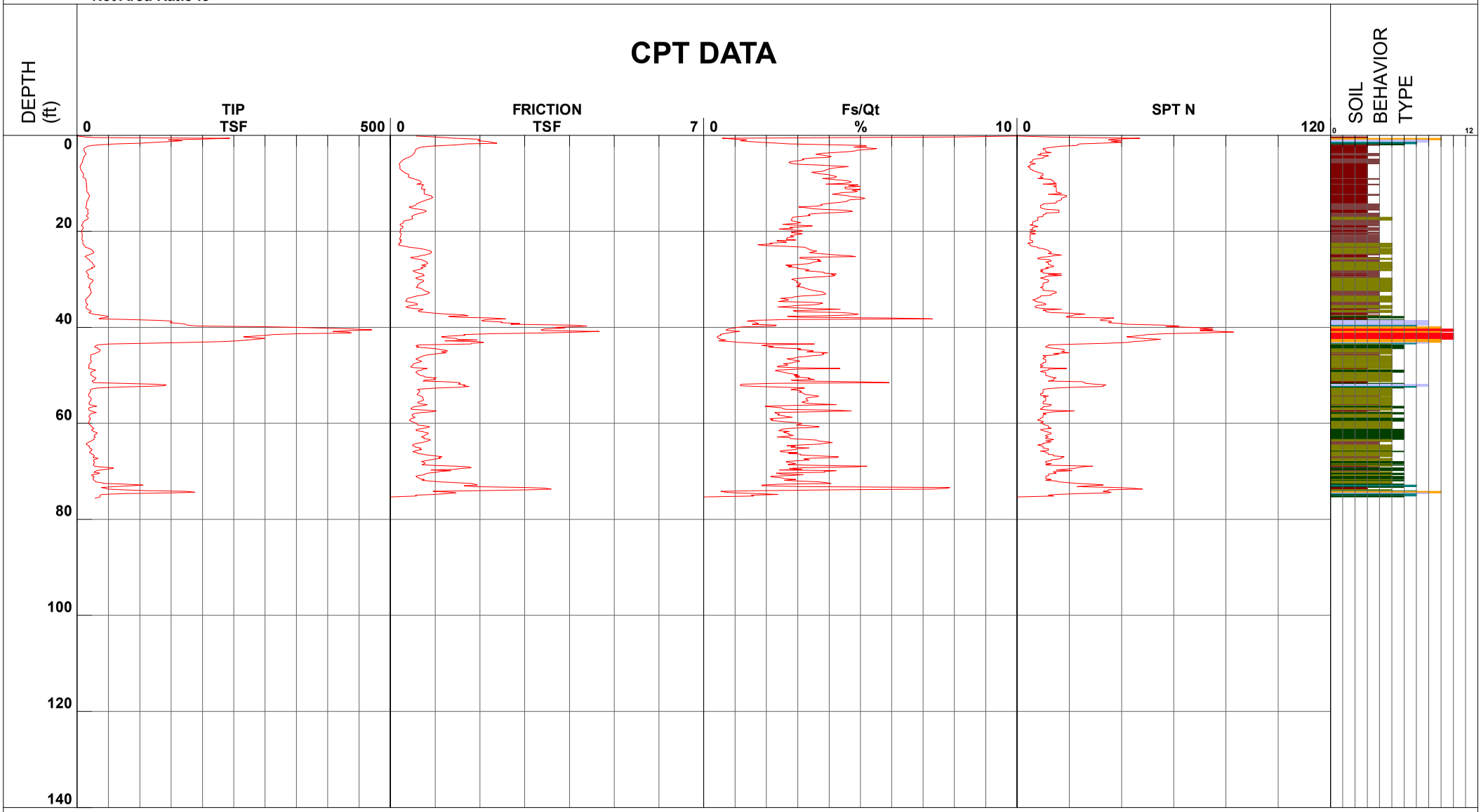
Cone Size 15cm squared

S*Soil behavior type and SPT based on data from UBC-1983

Cornerstone Earth Group

Project	880 Doolittle Drive	Operator	BH-GH	Filename	SDF(119).cpt
Job Number	555-16-1	Cone Number	DDG1496	GPS	
Hole Number	CPT-08	Date and Time	5/19/2020 11:51:11 AM	Maximum Depth	75.62 ft
EST GW Depth During Test		5.00 ft			

Net Area Ratio .8



1 - sensitive fine grained
2 - organic material
3 - clay
4 - silty clay to clay
5 - clayey silt to silty clay
6 - sandy silt to clayey silt
7 - silty sand to sandy silt
8 - sand to silty sand
9 - sand
10 - gravelly sand to sand
11 - very stiff fine grained (*)
12 - sand to clayey sand (*)

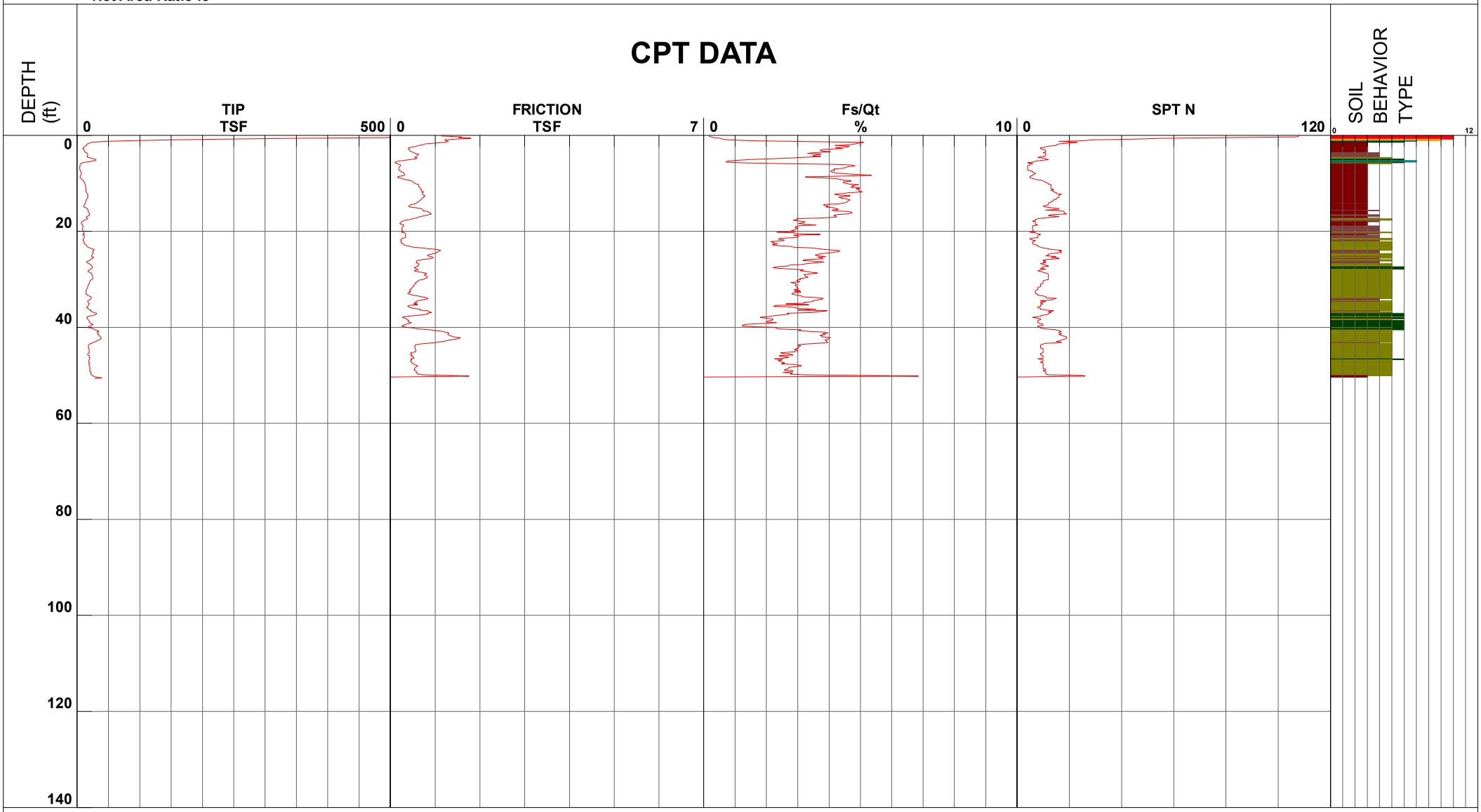
Cone Size 15cm squared

S*Soil behavior type and SPT based on data from UBC-1983

Cornerstone Earth Group

Project	880 Doolittle Drive	Operator	BH-GH	Filename	SDF(117).cpt
Job Number	555-16-1	Cone Number	DDG1496	GPS	
Hole Number	CPT-09	Date and Time	5/19/2020 10:05:35 AM	Maximum Depth	50.69 ft
EST GW Depth During Test		5.00 ft			

Net Area Ratio .8



1 - sensitive fine grained
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5 - clayey silt to silty clay
6 - sandy silt to clayey silt
7 - silty sand to sandy silt
8 - sand to silty sand
9 - sand
10 - gravelly sand to sand
11 - very stiff fine grained (*)
12 - sand to clayey sand (*)

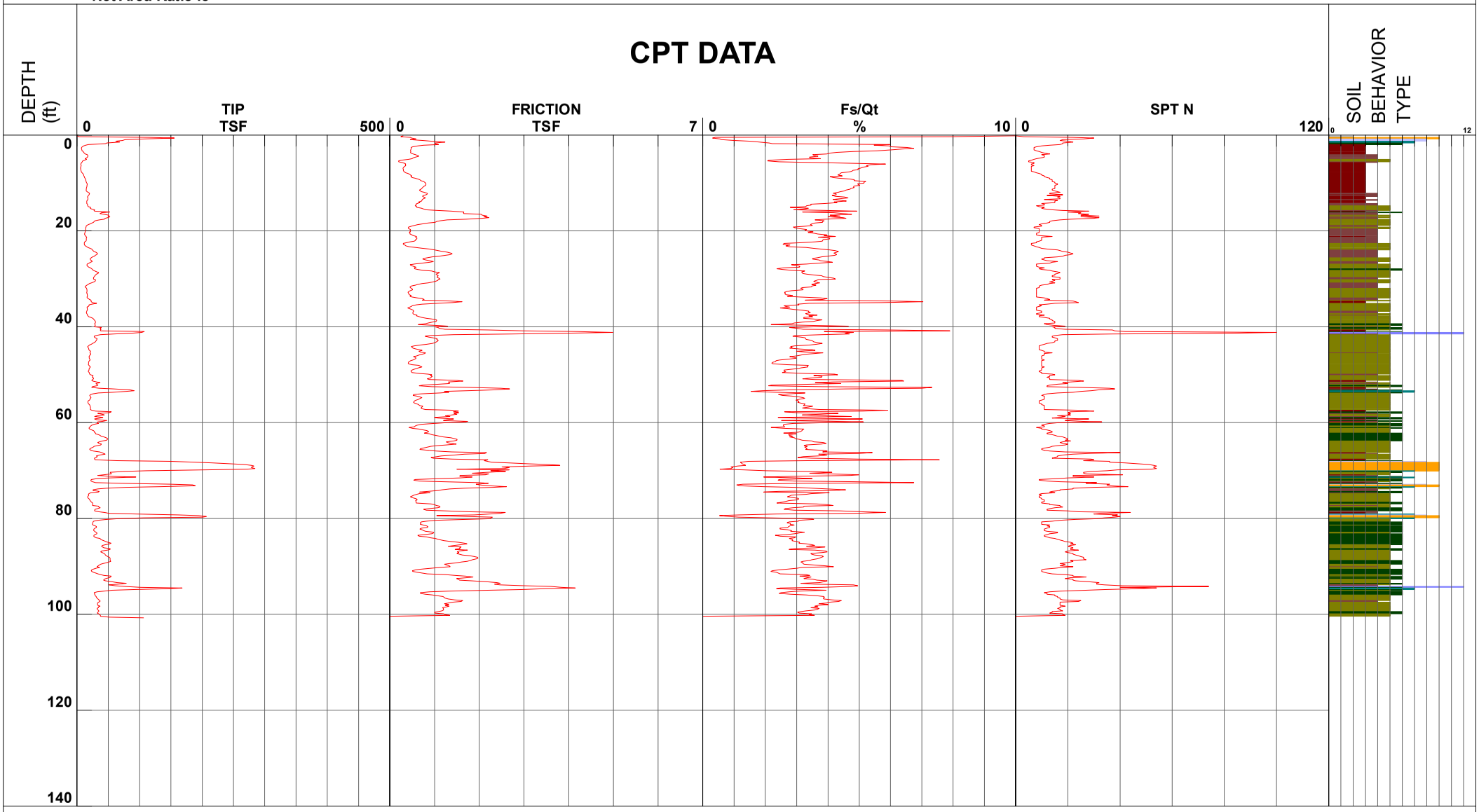
Cone Size 15cm squared

S*Soil behavior type and SPT based on data from UBC-1983

Cornerstone Earth Group

Project	880 Doolittle Drive	Operator	BH-GH	Filename	SDF(121).cpt
Job Number	555-16-1	Cone Number	DDG1496	GPS	
Hole Number	CPT-10	Date and Time	5/20/2020 8:30:40 AM	Maximum Depth	100.72 ft
EST GW Depth During Test		5.50 ft			

Net Area Ratio .8



1 - sensitive fine grained
2 - organic material
3 - clay
4 - silty clay to clay
5 - clayey silt to silty clay
6 - sandy silt to clayey silt
7 - silty sand to sandy silt
8 - sand to silty sand
9 - sand
10 - gravelly sand to sand
11 - very stiff fine grained (*)
12 - sand to clayey sand (*)

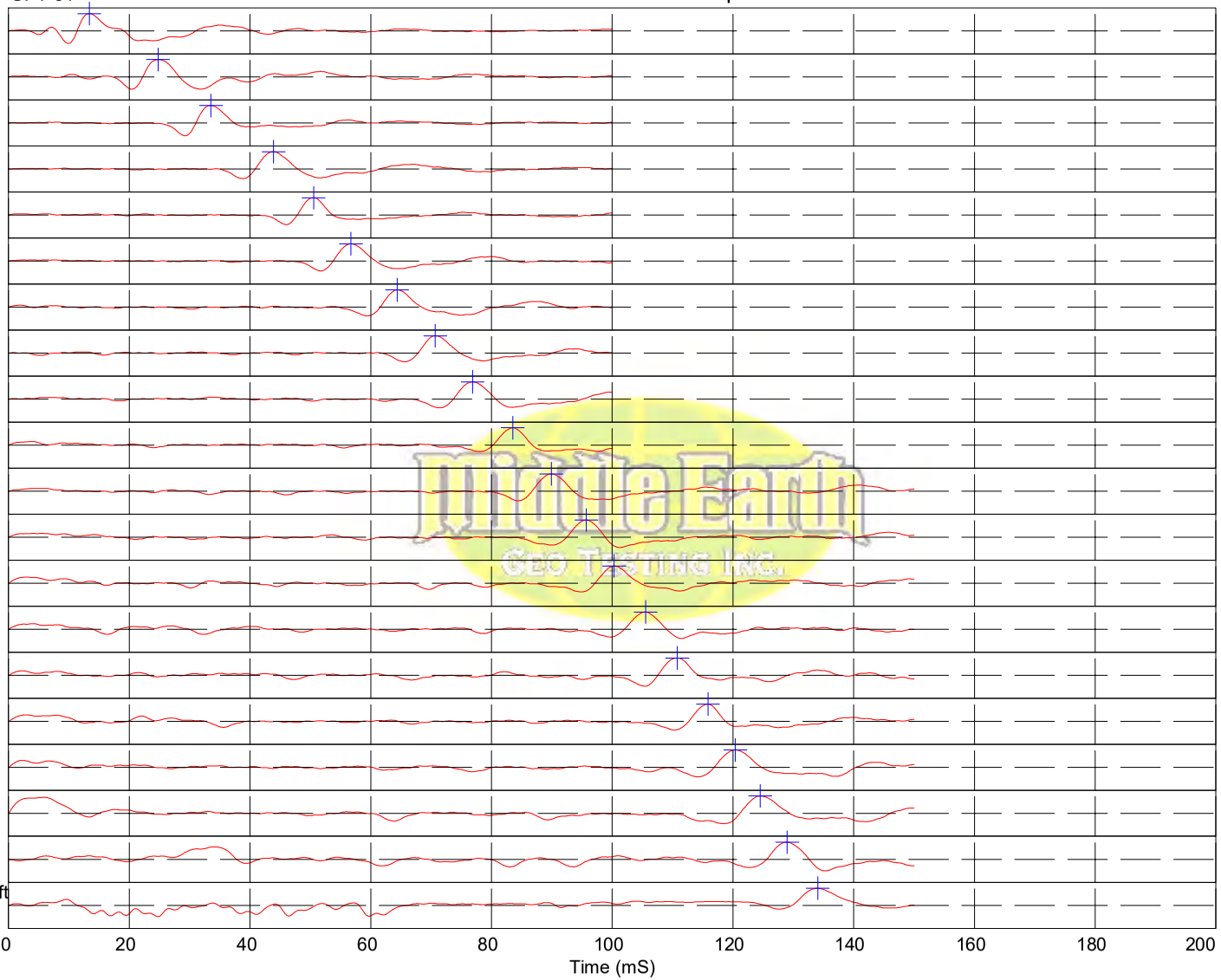
Cone Size 15cm squared

S*Soil behavior type and SPT based on data from UBC-1983

CPT-01

Cornerstone Earth Group

880 Doolittle Drive



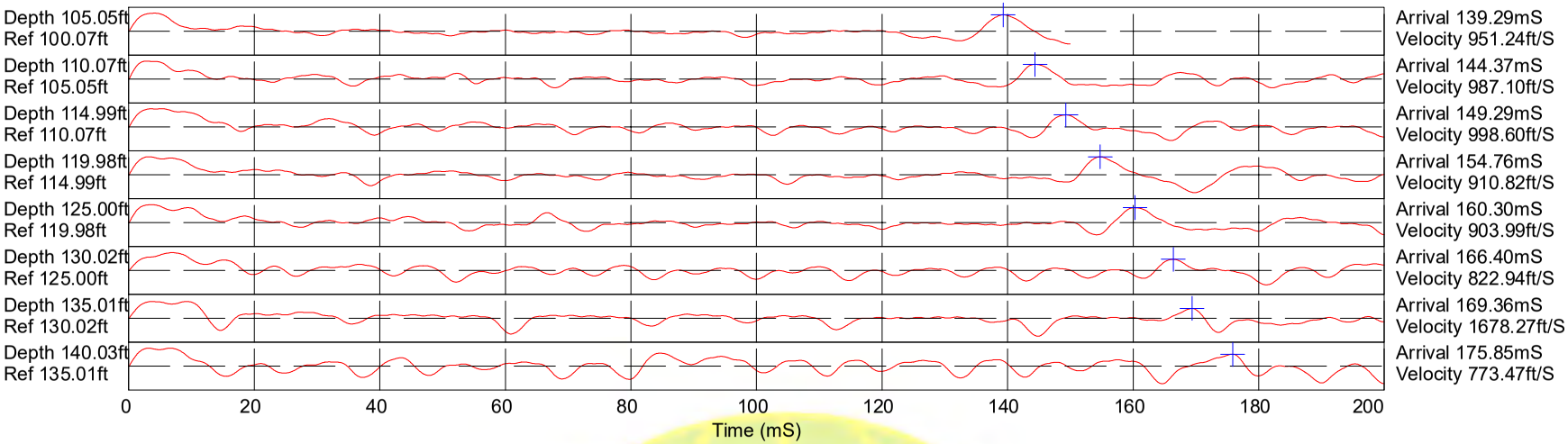
Hammer to Rod String Distance (ft): 5.83
* = Not Determined

COMMENT:

CPT-01

SEISMIC TEST

880 Doolittle Drive



Hammer to Rod String Distance (ft): 5.83
* = Not Determined

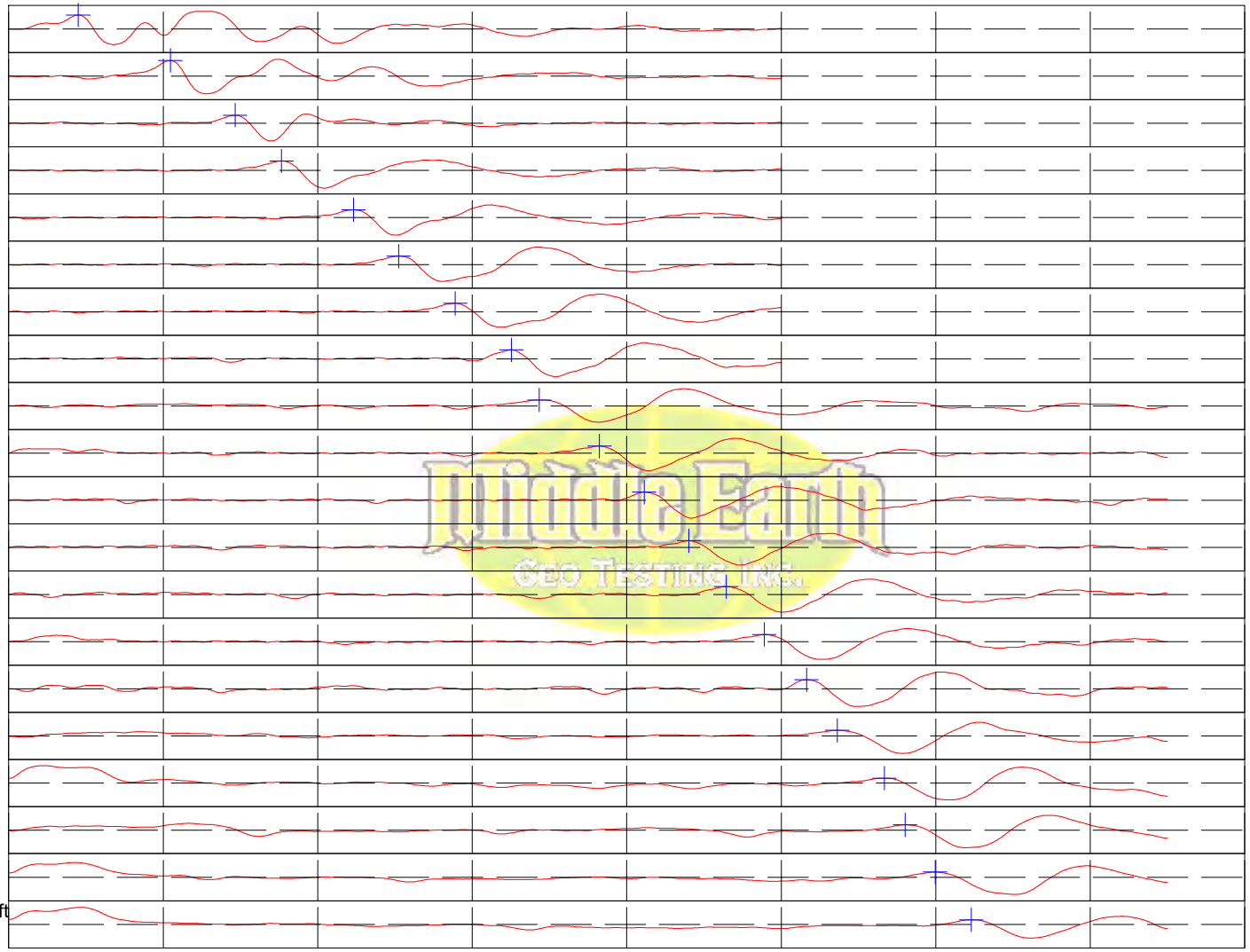
COMMENT:

Mother Earth
Geo Testing Inc.

CPT-10

Cornerstone Earth Group

880 Doolittle Drive



Depth	Ref	Arrival	Velocity
4.99ft	Ref*	8.98mS	Velocity*
10.01ft	4.99ft	20.94mS	326.99ft/S
15.03ft	10.01ft	29.30mS	542.67ft/S
20.01ft	15.03ft	35.31mS	785.86ft/S
25.03ft	20.01ft	44.61mS	522.53ft/S
30.02ft	25.03ft	50.47mS	832.51ft/S
35.01ft	30.02ft	57.81mS	668.37ft/S
40.03ft	35.01ft	65.07mS	682.69ft/S
45.01ft	40.03ft	68.67mS	1374.82ft/S
50.03ft	45.01ft	76.48mS	637.76ft/S
55.02ft	50.03ft	82.26mS	857.37ft/S
60.04ft	55.02ft	88.04mS	863.89ft/S
65.03ft	60.04ft	92.88mS	1025.16ft/S
70.05ft	65.03ft	97.81mS	1016.15ft/S
75.03ft	70.05ft	103.27mS	909.01ft/S
80.05ft	75.03ft	107.26mS	1256.37ft/S
85.04ft	80.05ft	113.35mS	816.37ft/S
90.06ft	85.04ft	116.01mS	1885.70ft/S
95.05ft	90.06ft	119.91mS	1274.19ft/S
100.07ft	95.05ft	124.60mS	1069.02ft/S

Hammer to Rod String Distance (ft): 5.83
* = Not Determined

COMMENT:

APPENDIX B: LABORATORY TEST PROGRAM

The laboratory testing program was performed to evaluate the physical and mechanical properties of the soils retrieved from the site to aid in verifying soil classification.

Moisture Content: The natural water content was determined (ASTM D2216) on 89 samples of the materials recovered from the borings. These water contents are recorded on the boring logs at the appropriate sample depths.

Dry Densities: In place dry density determinations (ASTM D2937) were performed on 80 samples to measure the unit weight of the subsurface soils. Results of these tests are shown on the boring logs at the appropriate sample depths.

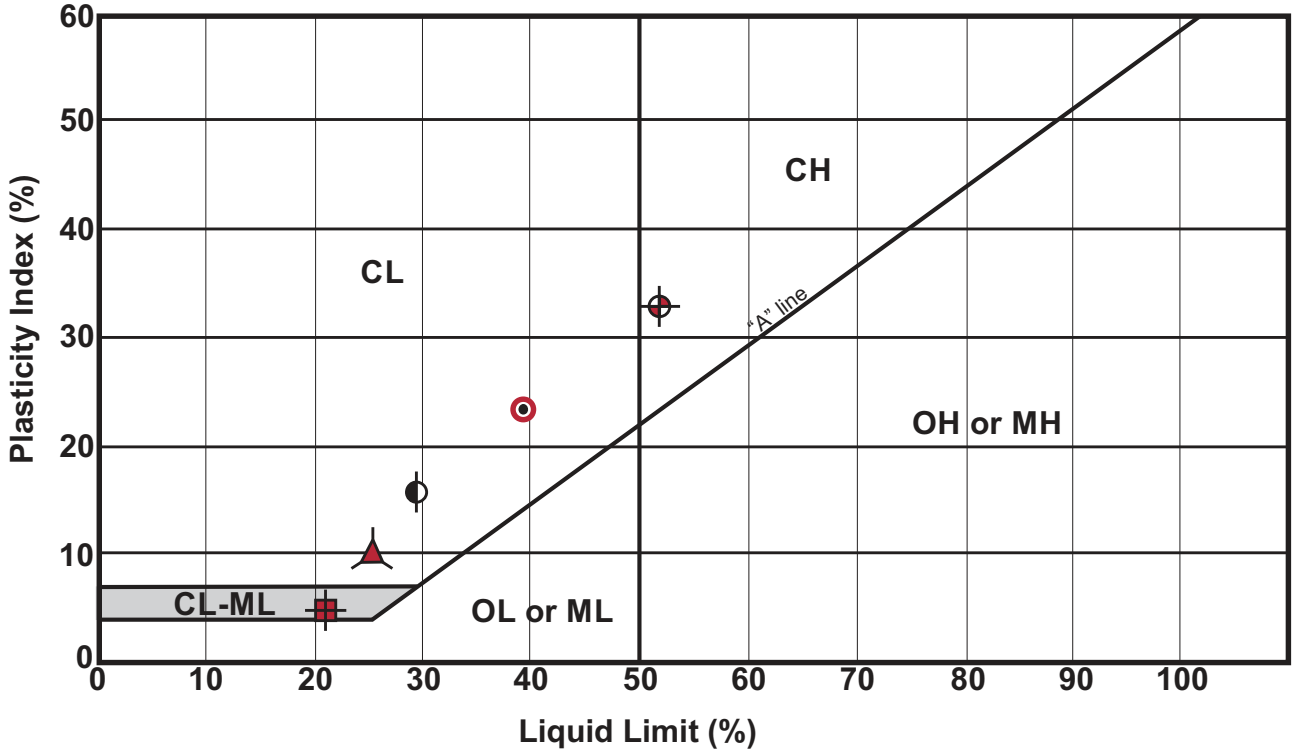
Washed Sieve Analyses: The percent soil fraction passing the No. 200 sieve (ASTM D1140) was determined on 10 samples of the subsurface soils to aid in the classification of these soils. Results of these tests are shown on the boring logs at the appropriate sample depths.

Plasticity Index: Five Plasticity Index determinations (ASTM D4318) were performed on samples of the subsurface soils to measure the range of water contents over which the material exhibits plasticity. The Plasticity Index was used to classify the soil in accordance with the Unified Soil Classification System and to evaluate the soil expansion potential. Results of these tests are shown on the boring logs at the appropriate sample depths.

Undrained-Unconsolidated Triaxial Shear Strength: The undrained shear strength was determined on three relatively undisturbed sample(s) by unconsolidated-undrained triaxial shear strength testing (ASTM D2850). The results of this test are included as part of this appendix.

Consolidation: Two consolidation tests (ASTM D2435) were performed on relatively undisturbed samples of the subsurface clayey soils to assist in evaluating the compressibility property of this soil. Results of the consolidation tests are presented graphically in this appendix.

Plasticity Index (ASTM D4318) Testing Summary



Symbol	Boring No.	Depth (ft)	Natural Water Content (%)	Liquid Limit (%)	Plastic Limit (%)	Plasticity Index	Passing No. 200 (%)	Group Name (USCS - ASTM D2487)
	EB-2	1.5	33	52	19	33	—	Fat Clay (CH)
	EB-2	5.0	20	21	16	5	31	Silty Clayey Sand (SC-SM)(CL-ML fines)
	EB-2	15.5	28	39	16	23	38	Clayey Sand (SC) (CL fines)
	EB-4	4.5	18	25	15	10	38	Clayey Sand (SC) (CL fines)
	EB-4	15.0	22	29	13	16	49	Clayey Sand (SC) (CL fines)

Samples prepared in accordance with ASTM D421

CORNERSTONE EARTH GROUP

Plasticity Index Testing Summary

Doolittle Drive Warehouse
San Leandro, CA

Project Number: 555-16-1

Figure Number: Figure B1

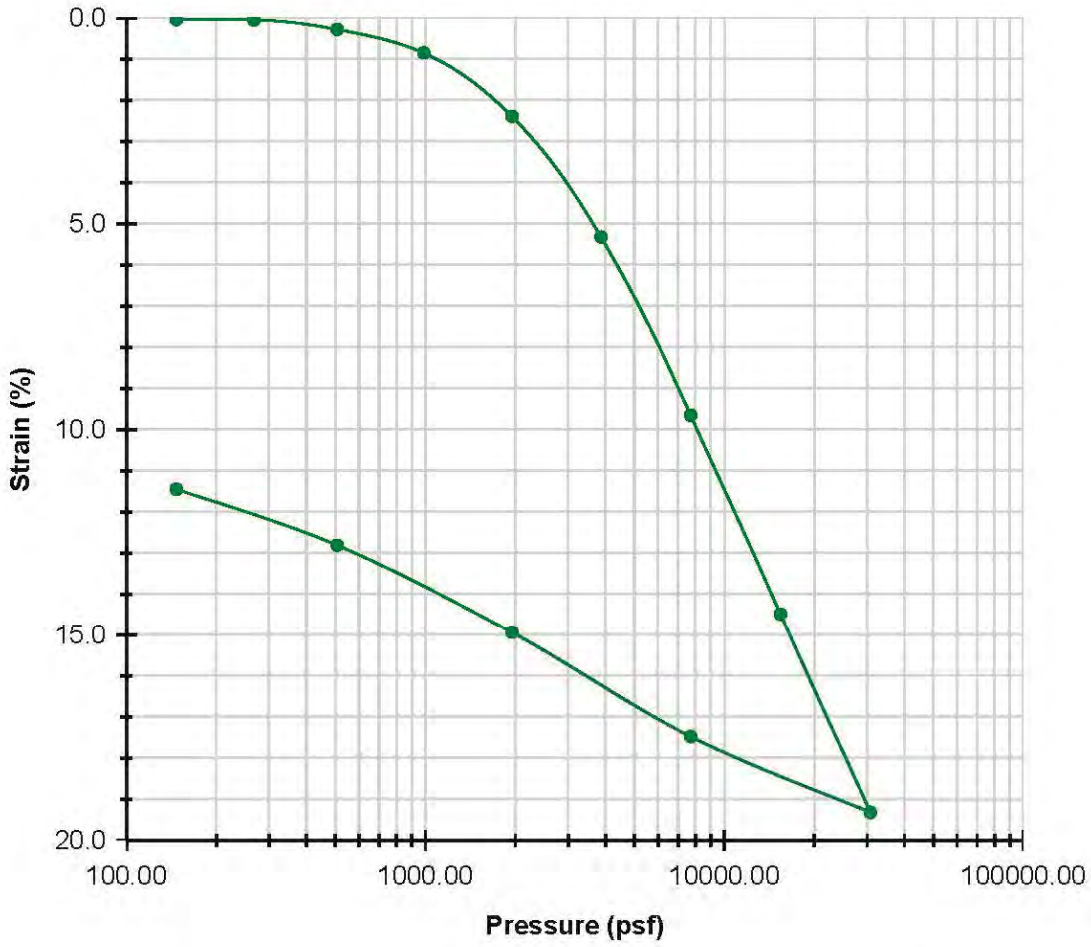
Date: June 2020

Drawn By: FLL

Consolidation Test ASTM D2435

Boring: EB-8 **Sample:** 5 **Depth:** 9.5'

Description: Lean Clay (CL)



	BEFORE	AFTER
Moisture (%)	35.4	29.7
Dry Density (pcf)	85.3	93.9
Saturation (%)	97.2	100.0
Void Ratio	0.99	0.81

(A) Stress Strain Curve

CORNERSTONE EARTH GROUP

Strain-Log Curve - EB-8 @ 9.5'

Doolittle Drive Warehouse
San Leandro, CA

Project Number: 555-16-1

Figure Number: Figure B3

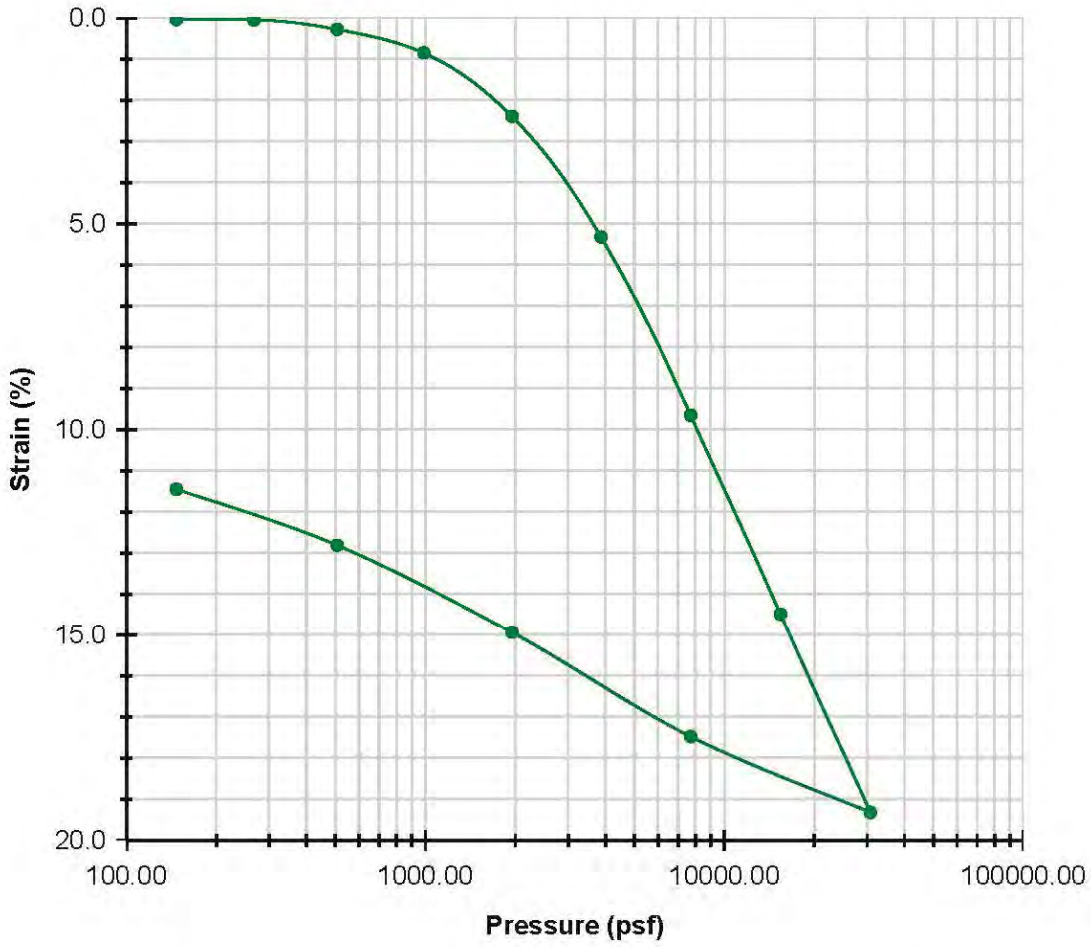
Date: June 2020

Drawn By: FLL

Consolidation Test ASTM D2435

Boring: EB-8 **Sample:** 5 **Depth:** 9.5'

Description: Lean Clay (CL)



	BEFORE	AFTER
Moisture (%)	35.4	29.7
Dry Density (pcf)	85.3	93.9
Saturation (%)	97.2	100.0
Void Ratio	0.99	0.81

(A) Stress Strain Curve

CORNERSTONE EARTH GROUP

Strain-Log Curve - EB-8 @ 9.5'

880 Doolittle Drive Warehouse
San Leandro, CA

Project Number: 555-16-1

Figure Number: Figure B3

Date: June 2020

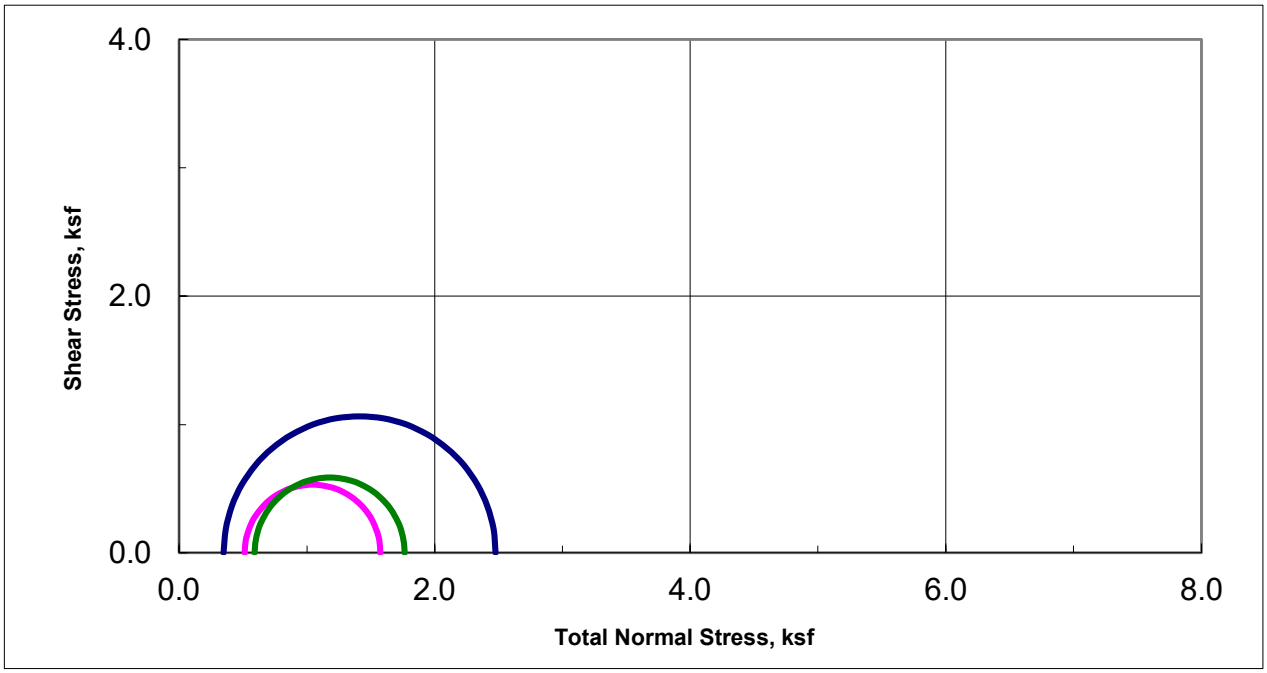
Drawn By: FLL

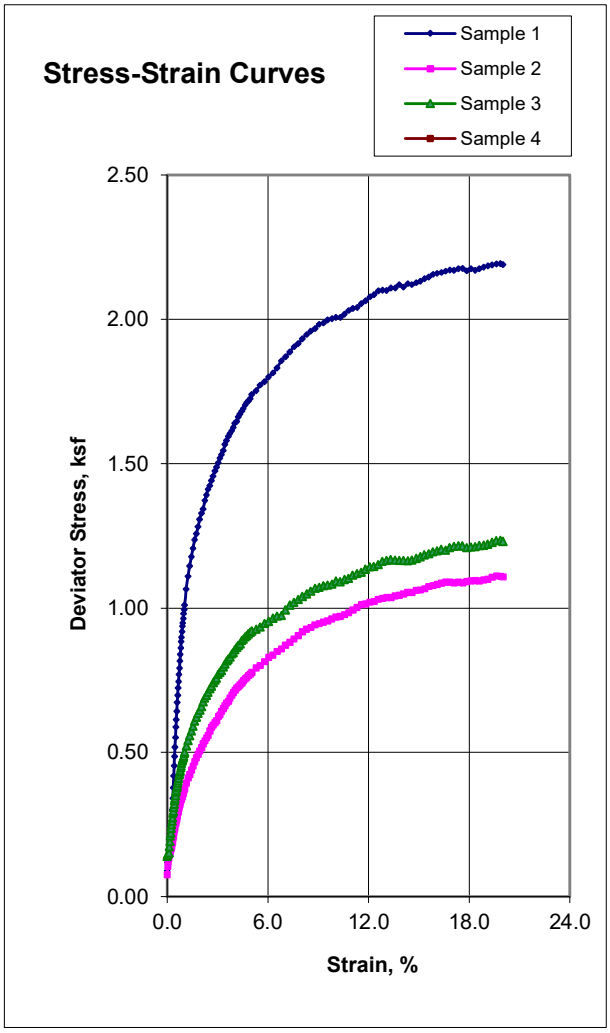
Cooper Testing Labs, Inc.
937 Commercial Street
Palo Alto, CA 94303

COOPER TESTING LABORATORY

Unconsolidated-Undrained Triaxial Test

ASTM D2850





Sample Data				
	1	2	3	4
Moisture %	16.4	33.4	35.7	
Dry Den,pcf	109.2	89.2	86.6	
Void Ratio	0.572	0.924	0.982	
Saturation %	79.1	99.6	99.8	
Height in	5.01	5.00	4.99	
Diameter in	2.38	2.40	2.42	
Cell psi	2.4	3.6	4.1	
Strain %	15.00	15.00	15.00	
Deviator, ksf	2.128	1.062	1.173	
Rate %/min	1.00	1.00	1.00	
in/min	0.050	0.050	0.050	
Job No.:	640-1407			
Client:	Cornerstone Earth Group			
Project:	555-16-1			
Boring:	EB-2	EB-8	EB-11	
Sample:	2C	4C	4A	
Depth ft:	4.5	7.0	9.0	

Visual Soil Description	
Sample #	
1	Dark Brown Sandy CLAY w/ Gravel
2	Olive Brown CLAY w/ Sand
3	Olive Gray Sandy CLAY
4	

Remarks:

Note: Strengths are picked at the peak deviator stress or 15% strain which ever occurs first per ASTM D2850.

APPENDIX C: LIQUEFACTION ANALYSES CALCULATIONS

CORNERSTONE EARTH GROUP

CPT No.	1

PGA (A_{max})	0.89

Total Settlement:	0.36	(Inches)

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Depth (ft)	q_c (tsf)	f_s (tsf)	σ_{vc} (psf)	Insitu σ'_{vc} (psf)	Q	F (%)	I_c	Layer "Plastic" PI > 7	Flag Soil Type	Fines (%)	q_{cN} near interfaces (soft layer)	Thin Layer Factor (K_H)	Interpreted q_{cN}	C_N	q_{c1N}	$q_{c1N\text{-}CS}$	Stress Reduction Coeff, r_d	CSR	K_σ for Sand	$CRR_{M=7.5,\ \sigma'vc = 1\ atm}$	CRR	Factor of Safety (CRR/CSR)	Vertical Strain ε_v	Settlement (Inches)
0.160	596.210	0.790	19.2	19.2	5915.804	0.132	0.46		Unsaturated	0.0			563.53	1.70	957.99	957.99	1.00	0.579	1.100	n.a.	n.a.	n.a.	0.00	0.00
0.330	446.020	1.042	39.6	39.6	3081.482	0.234	0.59		Unsaturated	0.0			421.57	1.70	716.67	716.67	1.00	0.579	1.100	n.a.	n.a.	n.a.	0.00	0.00
0.490	351.020	0.943	58.8	58.8	1990.119	0.269	0.67		Unsaturated	0.0			331.78	1.70	564.02	564.02	1.00	0.579	1.100	n.a.	n.a.	n.a.	0.00	0.00
0.660	249.060	1.042	79.2	79.2	1216.591	0.418	0.93		Unsaturated	0.0			235.41	1.70	400.19	400.19	1.00	0.579	1.100	n.a.	n.a.	n.a.	0.00	0.00
0.820	215.720	0.800	98.4	98.4	945.292	0.371	0.93		Unsaturated	0.0			203.89	1.70	346.62	346.62	1.00	0.579	1.100	n.a.	n.a.	n.a.	0.00	0.00
0.980	168.570	0.857	117.6	117.6	675.612	0.508	1.13		Unsaturated	0.0			159.33	1.70	270.86	270.86	1.00	0.579	1.100	n.a.	n.a.	n.a.	0.00	0.00
1.150	89.050	0.989	138.0	138.0	329.329	1.111	1.58		Unsaturated	0.0			84.17	1.70	143.09	143.09	1.00	0.579	1.100	n.a.	n.a.	n.a.	0.00	0.00
1.310	54.570	0.996	157.2	157.2	188.962	1.827	1.90		Unsaturated	15.2			51.58	1.70	87.68	110.34	1.00	0.579	1.100	n.a.	n.a.	n.a.	0.00	0.00
1.480	29.750	0.948	177.6	177.6	96.770	3.196	2.28		Unsaturated	45.0			28.12	1.70	47.80	104.17	1.00	0.579	1.100	n.a.	n.a.	n.a.	0.00	0.00
1.640	18.570	0.777	196.8	196.8	57.249	4.204	2.52		Unsaturated	64.3			17.55	1.70	29.84	87.96	1.00	0.579	1.100	n.a.	n.a.	n.a.	0.00	0.00
1.800	13.870	0.603	216.0	216.0	64.260	4.382	2.50		Unsaturated	62.7			13.11	1.70	22.29	77.89	1.00	0.579	1.100	n.a.	n.a.	n.a.	0.00	0.00
1.970	11.580	0.522	236.4	236.4	50.243	4.553	2.58		Unsaturated	69.4			10.95	1.70	18.61	74.54	1.00	0.579	1.100	n.a.	n.a.	n.a.	0.00	0.00
2.130	10.620	0.518	255.6	255.6	43.546	4.932	2.65		Unsaturated	74.8			10.04	1.70	17.06	73.45	1.00	0.579	1.100	n.a.	n.a.	n.a.	0.00	0.00
2.300	10.340	0.642	276.0	276.0	40.126	6.289	2.75		Unsaturated	82.9			9.77	1.70	16.61	73.98	1.00	0.579	1.100	n.a.	n.a.	n.a.	0.00	0.00
2.460	9.720	0.738	295.2	295.2	64.854	7.704	2.68		Unsaturated	77.5			9.19	1.70	15.62	71.97	1.00	0.579	1.100	n.a.	n.a.	n.a.	0.00	0.00
2.620	9.360	0.786	314.4	314.4	58.542	8.541	2.74		Unsaturated	82.5			8.85	1.70	15.04	71.88	1.00	0.579	1.100	n.a.	n.a.	n.a.	0.00	0.00
2.790	9.150	0.788	334.8	334.8	53.659	8.776	2.78		Unsaturated	85.1			8.65	1.70	14.70	71.75	1.00	0.579	1.100	n.a.	n.a.	n.a.	0.00	0.00
2.950	9.620	0.823	354.0	354.0	53.350	8.714	2.78		Unsaturated	85.1			9.09	1.70	15.46	72.73	1.00	0.579	1.100	n.a.	n.a.	n.a.	0.00	0.00
3.120	12.340	0.881	374.4	374.4	64.919	7.250	2.66		Unsaturated	75.8			11.66	1.70	19.83	77.18	1.00	0.578	1.100	n.a.	n.a.	n.a.	0.00	0.00
3.280	14.370	0.897	393.6	393.6	43.482	6.327	2.73		Unsaturated	81.2			13.58	1.70	23.09	82.19	1.00	0.578	1.100	n.a.	n.a.	n.a.	0.00	0.00
3.440	17.990	0.928	412.8	412.8	52.769	5.219	2.61		Unsaturated	71.7			17.00	1.70	28.91	88.26	1.00	0.578	1.100	n.a.	n.a.	n.a.	0.00	0.00
3.610	18.370	0.935	433.2	433.2	52.078	5.150	2.61		Unsaturated	71.7			17.36	1.70	29.52	89.05	1.00	0.578	1.100	n.a.	n.a.	n.a.	0.00	0.00
3.770	18.050	0.895	452.4	452.4	49.603	5.022	2.62		Unsaturated	72.2			17.06	1.70	29.00	88.47	1.00	0.578	1.100	n.a.	n.a.	n.a.	0.00	0.00
3.940	18.150	0.850	472.8	472.8	48.337	4.743	2.60		Unsaturated	71.4			17.16	1.70	29.16	88.53	1.00	0.577	1.100	n.a.	n.a.	n.a.	0.00	0.00
4.100	18.120	0.781	492.0	492.0	46.905	4.370	2.59		Unsaturated	70.0			17.13	1.70	29.12	88.22	1.00	0.577	1.100	n.a.	n.a.	n.a.	0.00	0.00
4.270	16.500	0.729	512.4	512.4	41.432	4.485	2.63		Unsaturated	73.7			15.60	1.70	26.51	85.50	1.00	0.577	1.100	n.a.	n.a.	n.a.	0.00	0.00
4.430	14.500	0.656	531.6	531.6	35.383	4.609	2.69		Unsaturated	78.2			13.71	1.70	23.30	82.04	1.00	0.577	1.100	n.a.	n.a.	n.a.	0.00	0.00
4.590	13.110	0.409	550.8	550.8	31.122	3.186	2.62		Unsaturated	72.8			12.39	1.70	21.07	78.31	1.00	0.576	1.100	n.a.	n.a.	n.a.	0.00	0.00
4.760	12.170	0.564	571.2	571.2	41.612	4.747	2.65		Unsaturated	75.0			11.50	1.70	19.55	76.70	1.00	0.576	1.100	n.a.	n.a.	n.a.	0.00	0.00
4.920	11.720	0.532	590.4	590.4	38.702	4.656	2.67		Unsaturated	76.3			11.08	1.70	18.83	75.96	1.00	0.576	1.100	n.a.	n.a.	n.a.	0.00	0.00
5.090	9.460	0.457	610.8	610.8	29.976	4.993	2.77		Clay	84.3			8.94	1.39	n.a.	n.a.	1.00	0.581	n.a.	n.a.	n.a.	n.a.	0.00	0.00
5.250	12.220	0.403	630.0	630.0	26.276	3.382	2.70	plastic	Clay	78.6			11.55	1.38	n.a.	n.a.	0.99	0.590	n.a.	n.a.	n.a.	n.a.	0.00	0.00
5.410	12.610	0.537	649.2	649.2	37.848	4.372	2.65		Clay	75.3			11.92	1.37	n.a.	n.a.	0.99	0.599	n.a.	n.a.	n.a.	n.a.	0.00	0.00
5.580	15.500	0.642	669.6	669.6	32.074	4.231	2.70	plastic	Clay	78.6			14.65	1.35	n.a.	n.a.	0.99	0.608	n.a.	n.a.	n.a.	n.a.	0.00	0.00
5.740	17.640	0.834	688.8	688.8	35.863	4.824	2.70	plastic	Clay	79.0			16.67	1.34	n.a.	n.a.	0.99	0.616	n.a.	n.a.	n.a.	n.a.	0.00	0.00
5.910	14.450	0.874	709.2	709.2	39.750	6.203	2.75		Clay	82.8			13.66	1.33	n.a.	n.a.	0.99	0.625	n.a.	n.a.	n.a.	n.a.	0.00	0.00
6.070	14.530	0.890	728.4	728.4	38.896	6.283	2.76		Clay	83.7			13.73	1.32	n.a.	n.a.	0.99	0.632	n.a.	n.a.	n.a.	n.a.	0.00	0.00
6.230	14.270	0.876	747.6	747.6	37.175	6.306	2.77		Clay	84.8			13.49	1.32	n.a.	n.a.	0.99	0.640	n.a.	n.a.	n.a.	n.a.	0.00	0.00
6.400	14.210	0.813	768.0	768.0	36.005	5.881	2.76		Clay	83.8			13.43	1.31	n.a.	n.a.	0.99	0.648	n.a.	n.a.	n.a.	n.a.	0.00	0.00
6.560	13.570	0.751	787.2	787.2	33.477	5.701	2.77		Clay	84.8			12.83	1.30	n.a.	n.a.	0.99	0.655	n.a.	n.a.	n.a.	n.a.	0.00	0.00
6.730	13.050	0.750	807.6	807.6	31.318	5.928	2.81		Clay	87.4			12.33	1.29	n.a.	n.a.	0.99	0.662	n.a.	n.a.	n.a.	n.a.	0.00	0.00
6.890	13.330	0.820	826.8	826.8	31.245	6.349	2.83		Clay	89.2			12.60	1.28	n.a.	n.a.	0.99	0.669	n.a.	n.a.	n.a.	n.a.	0.00	0.00
7.050	14.130	0.932	846.0	846.0	32.404	6.796	2.84		Clay	90.0			13.36	1.27	n.a.	n.a.	0.99	0.675	n.a.	n.a.	n.a.	n.a.	0.00	0.00
7.220	14.540	0.952	866.4	866.4	32.564	6.751	2.83		Clay	89.7			13.74	1.27	n.a.	n.a.	0.99	0.682	n.a.	n.a.	n.a.	n.a.	0.00	0.00
7.380	14.220	0.948	885.6	885.6	31.114	6.877	2.85		Clay	91.3			13.44	1.26	n.a.	n.a.	0.99	0.688	n.a.	n.a.	n.a.	n.a.	0.00	0.00
7.550	13.600	0.908	906.0	906.0	29.022	6.910	2.88		Clay	93.1			12.85	1.25	n.a.	n.a.	0.99	0.694	n.a.	n.a.	n.a.	n.a.	0.00	0.00
7.710	12.990	0.867	925.2	925.2	27.080	6.921	2.90		Clay	94.8			12.28	1.24	n.a.	n.a.	0.99	0.700	n.a.	n.a.	n.a.	n.a.	0.00	0.00
7.870	12.450	0.828	944.4	944.4	25.366	6.911	2.92		Clay	96.4			11.77	1.24	n.a.	n.a.	0.99	0.706	n.a.	n.a.	n.a.	n.a.	0.00	0.00
8.040	12.110	0.766	964.8	964.8	24.104	6.588	2.92		Clay	96.5			11.45	1.23	n.a.	n.a.	0.99	0.711	n.a.	n.a.	n.a.	n.a.	0.00	0.00
8.200	11.900	0.731	984.0	984.0	23.187	6.403	2.92		Clay	96.7			11.25	1.22	n.a.	n.a.	0.99	0.717	n.a.	n.a.	n.a.	n.a.	0.00	0.00
8.370	12.050	0.739	1004.4	1004.4	22.994	6.400	2.92		Clay	96.9			11.39	1.22	n.a.	n.a.	0.99	0.722	n.a.	n.a.	n.a.	n.a.	0.00	0.00
8.530	12.330	0.773	1023.6	1023.6	23.091	6.542	2.93		Clay	97.4			11.65	1.21	n.a.	n.a.	0.99	0.727	n.a.	n.a.	n.a.	n.a.	0.00	0.00
8.690	12.960	0.794	1042.8	1042.8	23.856	6.387	2.91		Clay	96.0			12.25	1.21	n.a.	n.a.	0.99	0.732	n.a.	n.a.	n.a.	n.a.	0.00	0.00
8.860	13.220	0.760	1063.2	1063.2	23.868	5.986	2.89		Clay	94.4			12.50	1.20	n.a.	n.a.	0.99	0.737	n.a.	n.a.	n.a.	n.a.	0.00	0.00
9.020	13.210	0.747	1082.4	1082.4	23.409	5.897	2.89		Clay	94.5			12.49	1.19	n.a.	n.a.	0.99	0.742	n.a.	n.a.	n.a.	n.a.	0.00	0.00
9.190	12.980	0.756	1102.8	1102.8	22.540	6.079	2.91		Clay	96.2			12.27	1.19	n.a.	n.a.	0.98	0.747	n.a.	n.a.	n.a.	n.a.	0.00	0.00
9.350	13.290	0.775	1122.0	1122.0	22.690	6.092	2.91		Clay	96.1			12.56	1.18	n.a.	n.a.	0.98	0.751	n.a.	n.a.	n.a.	n.a.	0.00	0.00
9.510	13.660	0.793	1141.2	1141.2	22.940	6.055	2.91		Clay	95.7			12.91	1.18	n.a.	n.a.	0.98	0.756	n.a.	n.a.	n.a.	n.a.	0.00	0.00
9.680	13.990	0.851	1161.6	1161.6	23.087	6.345	2.92		Clay	96.6			13.22	1.17	n.a.	n.a.	0.98	0.760	n.a.	n.a.	n.a.	n.a.	0.00	0.00
9.840	14.310	0.850	1180.8	1180.8	23.238	6.194	2.91		Clay	95.9			13.53	1.17	n.a.	n.a.	0.98	0.764	n.a.	n.a.	n.a.	n.a.	0.00	0.00
10.010	14.310	0.810	1201.2	1201.2	22.826	5.907	2.90		Clay	95.2			13.53	1.16	n.a.	n.a.	0.98	0.768	n.a.	n.a.	n.a.	n.a.	0.00	0.00
10.170	14.190	0.788	1220.4	1220.4	22.255	5.805	2.91		Clay	95.4			13.41	1.16	n.a.	n.a.	0.98	0.772	n.a.	n.a.	n.a.	n.a.	0.00	0.00
10.330	13.930	0.790	1239.6	1239.6	21.475	5.935	2.92		Clay	96.9			13.17	1.15	n.a.	n.a.	0.98	0.776	n.a.	n.a.	n.a.	n.a.	0.00	0.00
10.500	14.610	0.737	1260.0	1260.0	22.190	5.271	2.88		Clay	93.2			13.81	1.15	n.a.	n.a.	0.98	0.780	n.a.	n.a.	n.a.	n.a.	0.00	0.00
10.660	15.200	0.765	1279.2	1279.2	22.765	5.251	2.87		Clay	92.5			14.37	1.14	n.a.	n.a.	0.98	0.784	n.a.	n.a.	n.a.	n.a.	0.00	0.00
10.830	15.910	0.810	1299.6	1299.6	23.484	5.305	2.86		Clay	91.9			15.04	1.14	n.a.	n.a.	0.98	0.788	n.a.	n.a.	n.a.	n.a.	0.00	0.00
10.990	16.120	0.853	1318.8	1318.8	23.446	5.517	2.87		Clay	92.9			15.24	1.13	n.a.	n.a.	0.98	0.791	n.a.	n.a.	n.a.	n.a.	0.00	0.00

CORNERSTONE EARTH GROUP

CPT No.	1

PGA (A_{max})	0.89

Total Settlement:	0.36	(Inches)

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Depth (ft)	q_c (tsf)	f_s (tsf)	σ_{vc} (psf)	Insitu σ'_{vc} (psf)	Q	F (%)	I_c	Layer "Plastic" PI > 7	Flag Soil Type	Fines (%)	q_{cN} near interfaces (soft layer)	Thin Layer Factor (K_H)	Interpreted q_{cN}	C_N	q_{c1N}	$q_{c1N\text{-}CS}$	Stress Reduction Coeff, r_d	CSR	K_σ for Sand	$CRR_{M=7.5,\ \sigma'vc = 1\ atm}$	CRR	Factor of Safety (CRR/CSR)	Vertical Strain ε_v	Settlement (Inches)
11.150	16.040	0.858	1338.0	1338.0	22.976	5.581	2.88		Clay	93.7			15.16	1.13	n.a.	n.a.	0.98	0.794	n.a.	n.a.	n.a.	n.a.	0.00	0.00
11.320	16.010	0.799	1358.4	1358.4	22.572	5.213	2.87		Clay	92.5			15.13	1.12	n.a.	n.a.	0.98	0.798	n.a.	n.a.	n.a.	n.a.	0.00	0.00
11.480	16.150	0.797	1377.6	1377.6	22.447	5.156	2.87		Clay	92.4			15.26	1.12	n.a.	n.a.	0.98	0.801	n.a.	n.a.	n.a.	n.a.	0.00	0.00
11.650	16.210	0.864	1398.0	1398.0	22.190	5.568	2.89		Clay	94.5			15.32	1.12	n.a.	n.a.	0.98	0.805	n.a.	n.a.	n.a.	n.a.	0.00	0.00
11.810	16.360	0.881	1417.2	1417.2	22.088	5.629	2.90		Clay	94.9			15.46	1.11	n.a.	n.a.	0.98	0.808	n.a.	n.a.	n.a.	n.a.	0.00	0.00
11.980	16.110	0.871	1437.6	1437.6	21.412	5.661	2.91		Clay	95.8			15.23	1.11	n.a.	n.a.	0.98	0.811	n.a.	n.a.	n.a.	n.a.	0.00	0.00
12.140	16.100	0.852	1456.8	1456.8	21.103	5.541	2.91		Clay	95.7			15.22	1.10	n.a.	n.a.	0.98	0.814	n.a.	n.a.	n.a.	n.a.	0.00	0.00
12.300	15.670	0.799	1476.0	1476.0	20.233	5.350	2.91		Clay	95.9			14.81	1.10	n.a.	n.a.	0.98	0.817	n.a.	n.a.	n.a.	n.a.	0.00	0.00
12.470	15.040	0.740	1496.4	1496.4	19.102	5.176	2.92		Clay	96.7			14.22	1.10	n.a.	n.a.	0.98	0.820	n.a.	n.a.	n.a.	n.a.	0.00	0.00
12.630	14.410	0.640	1515.6	1515.6	18.016	4.685	2.91		Clay	95.9			13.62	1.09	n.a.	n.a.	0.98	0.822	n.a.	n.a.	n.a.	n.a.	0.00	0.00
12.800	14.090	0.505	1536.0	1536.0	17.346	3.793	2.87		Clay	92.3			13.32	1.09	n.a.	n.a.	0.97	0.825	n.a.	n.a.	n.a.	n.a.	0.00	0.00
12.960	14.300	0.351	1555.2	1555.2	17.390	2.599	2.76		Clay	84.2			13.52	1.08	n.a.	n.a.	0.97	0.828	n.a.	n.a.	n.a.	n.a.	0.00	0.00
13.120	20.640	0.308	1574.4	1574.4	21.754	1.553	2.56		Sand	67.6	25.1		25.10	1.17	29.32	88.01	0.97	0.830	1.029	0.123	0.153	0.18	0.04	0.07
13.290	26.560	0.665	1594.8	1594.8	28.048	2.581	2.60		Sand	70.9			25.10	1.16	29.12	88.38	0.97	0.833	1.027	0.124	0.154	0.18	0.04	0.07
13.450	24.260	2.200	1614.0	1614.0	29.062	9.378	2.97		Clay	100.0			22.93	1.07	n.a.	n.a.	0.97	0.836	n.a.	n.a.	n.a.	n.a.	0.00	0.00
13.620	36.480	1.653	1634.4	1634.4	43.640	4.634	2.63		Clay	73.2			34.48	1.07	n.a.	n.a.	0.97	0.838	n.a.	n.a.	n.a.	n.a.	0.00	0.00
13.780	57.550	1.576	1653.6	1653.6	60.648	2.779	2.37		Sand	52.6	58.12	1.8	104.62	1.09	113.80	191.27	0.97	0.840	1.059	1.195	2.784	3.31	0.00	0.00
13.940	61.490	0.906	1672.8	1672.8	64.477	1.493	2.17		Sand	36.5		1.8	104.61	1.09	113.78	179.90	0.97	0.843	1.050	0.723	1.585	1.88	0.00	0.00
14.110	26.600	0.709	1693.2	1686.3	28.533	2.753	2.61		Mixed	71.8	58.12	1.8	104.62	1.08	112.85	196.82	0.97	0.845	1.058	1.587	3.691	4.37	0.00	0.00
14.270	24.930	0.812	1712.4	1695.6	28.396	3.372	2.67		Clay	76.5			23.56	1.06	n.a.	n.a.	0.97	0.847	n.a.	n.a.	n.a.	n.a.	0.00	0.00
14.440	20.990	0.758	1732.8	1705.3	23.601	3.764	2.76		Clay	83.9			19.84	1.06	n.a.	n.a.	0.97	0.850	n.a.	n.a.	n.a.	n.a.	0.00	0.00
14.600	18.670	0.697	1752.0	1714.6	20.756	3.915	2.81		Clay	88.2			17.65	1.06	n.a.	n.a.	0.97	0.852	n.a.	n.a.	n.a.	n.a.	0.00	0.00
14.760	16.770	0.651	1771.2	1723.8	18.430	4.101	2.87		Clay	92.4			15.85	1.06	n.a.	n.a.	0.97	0.854	n.a.	n.a.	n.a.	n.a.	0.00	0.00
14.930	18.300	0.594	1791.6	1733.6	20.079	3.413	2.79		Clay	86.0			17.30	1.05	n.a.	n.a.	0.97	0.856	n.a.	n.a.	n.a.	n.a.	0.00	0.00
15.090	18.480	0.519	1810.8	1742.8	20.168	2.954	2.75		Clay	82.8			17.47	1.05	n.a.	n.a.	0.97	0.858	n.a.	n.a.	n.a.	n.a.	0.00	0.00
15.260	15.740	0.417	1831.2	1752.6	16.917	2.815	2.80		Clay	86.6			14.88	1.05	n.a.	n.a.	0.97	0.860	n.a.	n.a.	n.a.	n.a.	0.00	0.00
15.420	15.100	0.393	1850.4	1761.8	16.091	2.773	2.81		Clay	87.7			14.27	1.05	n.a.	n.a.	0.97	0.862	n.a.	n.a.	n.a.	n.a.	0.00	0.00
15.580	14.280	0.383	1869.6	1771.0	15.071	2.868	2.84		Clay	90.2			13.50	1.05	n.a.	n.a.	0.97	0.864	n.a.	n.a.	n.a.	n.a.	0.00	0.00
15.750	15.940	0.397	1890.0	1780.8	16.841	2.650	2.78		Clay	85.5			15.07	1.05	n.a.	n.a.	0.97	0.866	n.a.	n.a.	n.a.	n.a.	0.00	0.00
15.910	19.900	0.389	1909.2	1790.0	21.168	2.055	2.64		Clay	73.9			18.81	1.05	n.a.	n.a.	0.96	0.867	n.a.	n.a.	n.a.	n.a.	0.00	0.00
16.080	22.140	0.406	1929.6	1799.8	22.415	1.918	2.60	plastic	Clay	70.9			20.93	1.04	n.a.	n.a.	0.96	0.869	n.a.	n.a.	n.a.	n.a.	0.00	0.00
16.240	18.660	0.515	1948.8	1809.0	19.553	2.912	2.75		Clay	83.3			17.64	1.04	n.a.	n.a.	0.96	0.871	n.a.	n.a.	n.a.	n.a.	0.00	0.00
16.400	17.530	0.510	1968.0	1818.2	18.200	3.081	2.79		Clay	86.5			16.57	1.04	n.a.	n.a.	0.96	0.873	n.a.	n.a.	n.a.	n.a.	0.00	0.00
16.570	17.070	0.509	1988.4	1828.0	17.588	3.163	2.81		Clay	88.0			16.13	1.04	n.a.	n.a.	0.96	0.874	n.a.	n.a.	n.a.	n.a.	0.00	0.00
16.730	17.210	0.477	2007.6	1837.2	17.642	2.944	2.79		Clay	86.4			16.27	1.04	n.a.	n.a.	0.96	0.876	n.a.	n.a.	n.a.	n.a.	0.00	0.00
16.900	15.480	0.419	2028.0	1847.0	15.664	2.896	2.83		Clay	89.3			14.63	1.04	n.a.	n.a.	0.96	0.878	n.a.	n.a.	n.a.	n.a.	0.00	0.00
17.060	14.760	0.394	2047.2	1856.3	14.800	2.870	2.85		Clay	90.7			13.95	1.04	n.a.	n.a.	0.96	0.879	n.a.	n.a.	n.a.	n.a.	0.00	0.00
17.220	13.120	0.380	2066.4	1865.5	12.958	3.142	2.92		Clay	96.3			12.40	1.03	n.a.	n.a.	0.96	0.881	n.a.	n.a.	n.a.	n.a.	0.00	0.00
17.390	10.740	0.351	2086.8	1875.3	10.342	3.615	3.03		Clay	100.0			10.15	1.03	n.a.	n.a.	0.96	0.882	n.a.	n.a.	n.a.	n.a.	0.00	0.00
17.550	10.050	0.343	2106.0	1884.5	9.549	3.809	3.07		Clay	100.0			9.50	1.03	n.a.	n.a.	0.96	0.884	n.a.	n.a.	n.a.	n.a.	0.00	0.00
17.720	9.450	0.337	2126.4	1894.3	8.855	4.019	3.11		Clay	100.0			8.93	1.03	n.a.	n.a.	0.96	0.885	n.a.	n.a.	n.a.	n.a.	0.00	0.00
17.880	8.760	0.354	2145.6	1903.5	8.077	4.608	3.18		Clay	100.0			8.28	1.03	n.a.	n.a.	0.96	0.886	n.a.	n.a.	n.a.	n.a.	0.00	0.00
18.040	8.340	0.362	2164.8	1912.7	7.589	4.986	3.22		Clay	100.0			7.88	1.03	n.a.	n.a.	0.96	0.888	n.a.	n.a.	n.a.	n.a.	0.00	0.00
18.210	8.130	0.387	2185.2	1922.5	7.321	5.492	3.26		Clay	100.0			7.68	1.03	n.a.	n.a.	0.96	0.889	n.a.	n.a.	n.a.	n.a.	0.00	0.00
18.370	8.380	0.395	2204.4	1931.7	7.535	5.429	3.25		Clay	100.0			7.92	1.02	n.a.	n.a.	0.96	0.890	n.a.	n.a.	n.a.	n.a.	0.00	0.00
18.540	8.580	0.389	2224.8	1941.5	7.693	5.211	3.23		Clay	100.0			8.11	1.02	n.a.	n.a.	0.96	0.892	n.a.	n.a.	n.a.	n.a.	0.00	0.00
18.700	8.620	0.372	2244.0	1950.7	7.687	4.959	3.22		Clay	100.0			8.15	1.02	n.a.	n.a.	0.96	0.893	n.a.	n.a.	n.a.	n.a.	0.00	0.00
18.860	8.750	0.343	2263.2	1959.9	7.774	4.501	3.19		Clay	100.0			8.27	1.02	n.a.	n.a.	0.95	0.894	n.a.	n.a.	n.a.	n.a.	0.00	0.00
19.030	8.470	0.341	2283.6	1969.7	7.441	4.651	3.21		Clay	100.0			8.01	1.02	n.a.	n.a.	0.95	0.895	n.a.	n.a.	n.a.	n.a.	0.00	0.00
19.190	8.440	0.322	2302.8	1978.9	7.366	4.411	3.20		Clay	100.0			7.98	1.02	n.a.	n.a.	0.95	0.896	n.a.	n.a.	n.a.	n.a.	0.00	0.00
19.360	8.590	0.302	2323.2	1988.7	7.470	4.063	3.18		Clay	100.0			8.12	1.02	n.a.	n.a.	0.95	0.898	n.a.	n.a.	n.a.	n.a.	0.00	0.00
19.520	8.820	0.283	2342.4	1998.0	7.657	3.704	3.14		Clay	100.0			8.34	1.02	n.a.	n.a.	0.95	0.899	n.a.	n.a.	n.a.	n.a.	0.00	0.00
19.690	9.240	0.278	2362.8	2007.7	8.028	3.445	3.11		Clay	100.0			8.73	1.01	n.a.	n.a.	0.95	0.900	n.a.	n.a.	n.a.	n.a.	0.00	0.00
19.850	9.400	0.273	2382.0	2017.0	8.140	3.322	3.10		Clay	100.0			8.88	1.01	n.a.	n.a.	0.95	0.901	n.a.	n.a.	n.a.	n.a.	0.00	0.00
20.010	9.410	0.269	2401.2	2026.2	8.103	3.272	3.09		Clay	100.0			8.89	1.01	n.a.	n.a.	0.95	0.902	n.a.	n.a.	n.a.	n.a.	0.00	0.00
20.180	9.440	0.269	2421.6	2036.0	8.084	3.274	3.09		Clay	100.0			8.92	1.01	n.a.	n.a.	0.95	0.903	n.a.	n.a.	n.a.	n.a.	0.00	0.00
20.340	9.920	0.265	2440.8	2045.2	8.507	3.040	3.06		Clay	100.0			9.38	1.01	n.a.	n.a.	0.95	0.904	n.a.	n.a.	n.a.	n.a.	0.00	0.00
20.510	10.030	0.290	2461.2	2055.0	8.564	3.293	3.08		Clay	100.0			9.48	1.01	n.a.	n.a.	0.95	0.905	n.a.	n.a.	n.a.	n.a.	0.00	0.00
20.670	10.410	0.306	2480.4	2064.2	8.885	3.336	3.07		Clay	100.0			9.84	1.01	n.a.	n.a.	0.95	0.906	n.a.	n.a.	n.a.	n.a.	0.00	0.00
20.830	11.470	0.325	2499.6	2073.4	9.858	3.175	3.02		Clay	100.0			10.84	1.01	n.a.	n.a.	0.95	0.907	n.a.	n.a.	n.a.	n.a.	0.00	0.00
21.000	10.980	0.290	2520.0	2083.2	9.332	2.986	3.02		Clay	100.0			10.38	1.00	n.a.	n.a.	0.95	0.908	n.a.	n.a.	n.a.	n.a.	0.00	0.00
21.160	10.100	0.250	2539.2	2092.4	8.440	2.830	3.04		Clay	100.0			9.55	1.00	n.a.	n.a.	0.95	0.909	n.a.	n.a.	n.a.	n.a.	0.00	0.00
21.330	9.520	0.244	2559.6	2102.2	7.840	2.966	3.08		Clay	100.0			9.00	1.00	n.a.	n.a.	0.95	0.909	n.a.	n.a.	n.a.	n.a.	0.00	0.00
21.490	9.640	0.260	2578.8	2111.4	7.910	3.112	3.09		Clay	100.0			9.11	1.00	n.a.	n.a.	0.95	0.910	n.a.	n.a.	n.a.	n.a.	0.00	0.00
21.650	10.080	0.310	2598.0	2120.6	8.281	3.533	3.10		Clay	100.0			9.53	1.00	n.a.	n.a.	0.95	0.911	n.a.	n.a.	n.a.	n.a.	0.00	0.00
21.820	11.270	0.336	2618.4	2130.4	9.351	3.369	3.05		Clay	100.0			10.65	1.00	n.a.	n.a.	0.94	0.912	n.a.	n.a.	n.a.	n.a.	0.00	0.00
21.980	14.380	0.474	2637.6	2139.6	12.209	3.629	2.97		Clay	100.0			13.59	1.00	n.a.	n.a.	0.94	0.913	n.a.	n.a.	n.a.	n.a.	0.00	0.00

CORNERSTONE EARTH GROUP

CPT No.	1

PGA (A_{max})	0.89

Total Settlement:	0.36	(Inches)

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Depth (ft)	q_c (tsf)	f_s (tsf)	σ_{vc} (psf)	Insitu σ'_{vc} (psf)	Q	F (%)	I_c	Layer "Plastic" PI > 7	Flag Soil Type	Fines (%)	q_{cN} near interfaces (soft layer)	Thin Layer Factor (K_H)	Interpreted q_{cN}	C_N	q_{c1N}	$q_{c1N\text{-}CS}$	Stress Reduction Coeff, r_d	CSR	K_σ for Sand	$CRR_{M=7.5,\ \sigma'vc = 1\ atm}$	CRR	Factor of Safety (CRR/CSR)	Vertical Strain ε_v	Settlement (Inches)
22.150	18.070	0.601	2658.0	2149.4	15.577	3.589	2.89		Clay	94.0			17.08	1.00	n.a.	n.a.	0.94	0.913	n.a.	n.a.	n.a.	n.a.	0.00	0.00
22.310	24.950	0.751	2677.2	2158.7	21.876	3.180	2.74		Clay	82.1			23.58	0.99	n.a.	n.a.	0.94	0.914	n.a.	n.a.	n.a.	n.a.	0.00	0.00
22.470	27.010	0.881	2696.4	2167.9	23.675	3.434	2.73		Clay	81.7			25.53	0.99	n.a.	n.a.	0.94	0.915	n.a.	n.a.	n.a.	n.a.	0.00	0.00
22.640	25.120	0.929	2716.8	2177.7	21.823	3.911	2.80		Clay	86.8			23.74	0.99	n.a.	n.a.	0.94	0.916	n.a.	n.a.	n.a.	n.a.	0.00	0.00
22.800	23.050	0.905	2736.0	2186.9	19.829	4.174	2.85		Clay	90.8			21.79	0.99	n.a.	n.a.	0.94	0.916	n.a.	n.a.	n.a.	n.a.	0.00	0.00
22.970	22.950	0.855	2756.4	2196.7	19.640	3.962	2.84		Clay	89.9			21.69	0.99	n.a.	n.a.	0.94	0.917	n.a.	n.a.	n.a.	n.a.	0.00	0.00
23.130	22.700	0.831	2775.6	2205.9	19.323	3.901	2.84		Clay	90.0			21.46	0.99	n.a.	n.a.	0.94	0.918	n.a.	n.a.	n.a.	n.a.	0.00	0.00
23.290	21.670	0.840	2794.8	2215.1	18.304	4.145	2.87		Clay	92.8			20.48	0.99	n.a.	n.a.	0.94	0.918	n.a.	n.a.	n.a.	n.a.	0.00	0.00
23.460	21.130	0.812	2815.2	2224.9	17.729	4.116	2.88		Clay	93.5			19.97	0.99	n.a.	n.a.	0.94	0.919	n.a.	n.a.	n.a.	n.a.	0.00	0.00
23.620	21.270	0.816	2834.4	2234.1	17.772	4.111	2.88		Clay	93.4			20.10	0.99	n.a.	n.a.	0.94	0.919	n.a.	n.a.	n.a.	n.a.	0.00	0.00
23.790	21.940	0.885	2854.8	2243.9	18.283	4.314	2.88		Clay	93.7			20.74	0.98	n.a.	n.a.	0.94	0.920	n.a.	n.a.	n.a.	n.a.	0.00	0.00
23.950	23.460	1.084	2874.0	2253.1	19.549	4.923	2.90		Clay	94.9			22.17	0.98	n.a.	n.a.	0.94	0.921	n.a.	n.a.	n.a.	n.a.	0.00	0.00
24.110	24.980	1.224	2893.2	2262.3	20.805	5.199	2.89		Clay	94.6			23.61	0.98	n.a.	n.a.	0.94	0.921	n.a.	n.a.	n.a.	n.a.	0.00	0.00
24.280	24.990	1.225	2913.6	2272.1	20.715	5.205	2.90		Clay	94.7			23.62	0.98	n.a.	n.a.	0.94	0.922	n.a.	n.a.	n.a.	n.a.	0.00	0.00
24.440	23.980	1.032	2932.8	2281.3	19.737	4.583	2.88		Clay	93.0			22.67	0.98	n.a.	n.a.	0.93	0.922	n.a.	n.a.	n.a.	n.a.	0.00	0.00
24.610	22.450	0.850	2953.2	2291.1	18.308	4.055	2.87		Clay	92.3			21.22	0.98	n.a.	n.a.	0.93	0.923	n.a.	n.a.	n.a.	n.a.	0.00	0.00
24.770	21.390	0.749	2972.4	2300.4	17.305	3.765	2.86		Clay	92.2			20.22	0.98	n.a.	n.a.	0.93	0.923	n.a.	n.a.	n.a.	n.a.	0.00	0.00
24.930	21.040	0.688	2991.6	2309.6	16.925	3.522	2.85		Clay	91.3			19.89	0.98	n.a.	n.a.	0.93	0.924	n.a.	n.a.	n.a.	n.a.	0.00	0.00
25.100	22.810	0.655	3012.0	2319.4	18.371	3.075	2.79		Clay	86.2			21.56	0.98	n.a.	n.a.	0.93	0.924	n.a.	n.a.	n.a.	n.a.	0.00	0.00
25.260	22.490	0.616	3031.2	2328.6	18.015	2.938	2.78		Clay	85.8			21.26	0.98	n.a.	n.a.	0.93	0.925	n.a.	n.a.	n.a.	n.a.	0.00	0.00
25.430	23.530	0.797	3051.6	2338.4	18.820	3.622	2.83		Clay	89.1			22.24	0.97	n.a.	n.a.	0.93	0.925	n.a.	n.a.	n.a.	n.a.	0.00	0.00
25.590	27.490	0.921	3070.8	2347.6	22.112	3.547	2.77		Clay	84.3			25.98	0.97	n.a.	n.a.	0.93	0.925	n.a.	n.a.	n.a.	n.a.	0.00	0.00
25.750	31.150	0.967	3090.0	2356.8	25.123	3.266	2.70		Clay	79.0			29.44	0.97	n.a.	n.a.	0.93	0.926	n.a.	n.a.	n.a.	n.a.	0.00	0.00
25.920	32.190	1.057	3110.4	2366.6	25.889	3.449	2.71		Clay	79.4			30.43	0.97	n.a.	n.a.	0.93	0.926	n.a.	n.a.	n.a.	n.a.	0.00	0.00
26.080	35.460	1.301	3129.6	2375.8	28.534	3.838	2.70		Clay	79.3			33.52	0.97	n.a.	n.a.	0.93	0.927	n.a.	n.a.	n.a.	n.a.	0.00	0.00
26.250	35.060	1.638	3150.0	2385.6	28.073	4.891	2.78		Clay	85.5			33.14	0.97	n.a.	n.a.	0.93	0.927	n.a.	n.a.	n.a.	n.a.	0.00	0.00
26.410	32.270	1.858	3169.2	2394.8	25.627	6.056	2.87		Clay	92.9			30.50	0.97	n.a.	n.a.	0.93	0.927	n.a.	n.a.	n.a.	n.a.	0.00	0.00
26.570	28.930	1.742	3188.4	2404.0	22.742	6.371	2.93		Clay	97.1			27.34	0.97	n.a.	n.a.	0.93	0.928	n.a.	n.a.	n.a.	n.a.	0.00	0.00
26.740	26.310	1.514	3208.8	2413.8	20.470	6.126	2.95		Clay	98.8			24.87	0.97	n.a.	n.a.	0.93	0.928	n.a.	n.a.	n.a.	n.a.	0.00	0.00
26.900	24.690	1.345	3228.0	2423.0	19.047	5.827	2.96		Clay	99.5			23.34	0.96	n.a.	n.a.	0.93	0.928	n.a.	n.a.	n.a.	n.a.	0.00	0.00
27.070	23.380	1.181	3248.4	2432.8	17.885	5.429	2.96		Clay	99.5			22.10	0.96	n.a.	n.a.	0.92	0.929	n.a.	n.a.	n.a.	n.a.	0.00	0.00
27.230	22.410	1.100	3267.6	2442.0	17.015	5.296	2.97		Clay	100.0			21.18	0.96	n.a.	n.a.	0.92	0.929	n.a.	n.a.	n.a.	n.a.	0.00	0.00
27.400	22.460	1.072	3288.0	2451.8	16.980	5.147	2.96		Clay	99.6			21.23	0.96	n.a.	n.a.	0.92	0.929	n.a.	n.a.	n.a.	n.a.	0.00	0.00
27.560	22.450	0.990	3307.2	2461.1	16.900	4.758	2.94		Clay	98.0			21.22	0.96	n.a.	n.a.	0.92	0.929	n.a.	n.a.	n.a.	n.a.	0.00	0.00
27.720	22.030	0.909	3326.4	2470.3	16.490	4.465	2.93		Clay	97.2			20.82	0.96	n.a.	n.a.	0.92	0.930	n.a.	n.a.	n.a.	n.a.	0.00	0.00
27.890	20.500	0.821	3346.8	2480.1	15.182	4.362	2.95		Clay	98.9			19.38	0.96	n.a.	n.a.	0.92	0.930	n.a.	n.a.	n.a.	n.a.	0.00	0.00
28.050	19.930	0.799	3366.0	2489.3	14.660	4.378	2.96		Clay	99.9			18.84	0.96	n.a.	n.a.	0.92	0.930	n.a.	n.a.	n.a.	n.a.	0.00	0.00
28.220	20.040	0.818	3386.4	2499.1	14.683	4.457	2.97		Clay	100.0			18.94	0.96	n.a.	n.a.	0.92	0.930	n.a.	n.a.	n.a.	n.a.	0.00	0.00
28.380	20.560	0.793	3405.6	2508.3	15.036	4.204	2.94		Clay	98.4			19.43	0.96	n.a.	n.a.	0.92	0.931	n.a.	n.a.	n.a.	n.a.	0.00	0.00
28.540	20.600	0.801	3424.8	2517.5	15.005	4.239	2.95		Clay	98.6			19.47	0.96	n.a.	n.a.	0.92	0.931	n.a.	n.a.	n.a.	n.a.	0.00	0.00
28.710	19.850	0.387	3445.2	2527.3	14.345	2.135	2.78		Clay	85.7			18.76	0.95	n.a.	n.a.	0.92	0.931	n.a.	n.a.	n.a.	n.a.	0.00	0.00
28.870	19.190	0.756	3464.4	2536.5	13.765	4.329	2.98		Clay	100.0			18.14	0.95	n.a.	n.a.	0.92	0.931	n.a.	n.a.	n.a.	n.a.	0.00	0.00
29.040	17.560	0.672	3484.8	2546.3	12.424	4.250	3.01		Clay	100.0			16.60	0.95	n.a.	n.a.	0.92	0.931	n.a.	n.a.	n.a.	n.a.	0.00	0.00
29.200	9.520	0.582	3504.0	2555.5	6.079	7.488	3.41		Clay	100.0			9.00	0.95	n.a.	n.a.	0.92	0.931	n.a.	n.a.	n.a.	n.a.	0.00	0.00
29.360	13.440	0.496	3523.2	2564.7	9.107	4.246	3.12		Clay	100.0			12.70	0.95	n.a.	n.a.	0.92	0.932	n.a.	n.a.	n.a.	n.a.	0.00	0.00
29.530	12.460	0.422	3543.6	2574.5	8.303	3.948	3.13		Clay	100.0			11.78	0.95	n.a.	n.a.	0.91	0.932	n.a.	n.a.	n.a.	n.a.	0.00	0.00
29.690	13.530	0.416	3562.8	2583.7	9.094	3.540	3.07		Clay	100.0			12.79	0.95	n.a.	n.a.	0.91	0.932	n.a.	n.a.	n.a.	n.a.	0.00	0.00
29.860	15.280	0.443	3583.2	2593.5	10.402	3.282	3.01		Clay	100.0			14.44	0.95	n.a.	n.a.	0.91	0.932	n.a.	n.a.	n.a.	n.a.	0.00	0.00
30.020	17.680	0.443	3602.4	2602.8	12.202	2.791	2.91		Clay	95.6			16.71	0.95	n.a.	n.a.	0.91	0.932	n.a.	n.a.	n.a.	n.a.	0.00	0.00
30.180	17.980	0.444	3621.6	2612.0	12.381	2.748	2.90		Clay	94.9			16.99	0.95	n.a.	n.a.	0.91	0.932	n.a.	n.a.	n.a.	n.a.	0.00	0.00
30.350	17.300	0.442	3642.0	2621.8	11.808	2.852	2.93		Clay	97.0			16.35	0.95	n.a.	n.a.	0.91	0.932	n.a.	n.a.	n.a.	n.a.	0.00	0.00
30.510	16.000	0.386	3661.2	2631.0	10.771	2.723	2.95		Clay	98.7			15.12	0.94	n.a.	n.a.	0.91	0.932	n.a.	n.a.	n.a.	n.a.	0.00	0.00
30.680	13.300	0.380	3681.6	2640.8	8.679	3.313	3.07		Clay	100.0			12.57	0.94	n.a.	n.a.	0.91	0.932	n.a.	n.a.	n.a.	n.a.	0.00	0.00
30.840	11.830	0.353	3700.8	2650.0	7.532	3.534	3.14		Clay	100.0			11.18	0.94	n.a.	n.a.	0.91	0.933	n.a.	n.a.	n.a.	n.a.	0.00	0.00
31.000	11.560	0.317	3720.0	2659.2	7.295	3.268	3.13		Clay	100.0			10.93	0.94	n.a.	n.a.	0.91	0.933	n.a.	n.a.	n.a.	n.a.	0.00	0.00
31.170	11.950	0.334	3740.4	2669.0	7.553	3.316	3.12		Clay	100.0			11.29	0.94	n.a.	n.a.	0.91	0.933	n.a.	n.a.	n.a.	n.a.	0.00	0.00
31.330	12.710	0.403	3759.6	2678.2	8.088	3.717	3.13		Clay	100.0			12.01	0.94	n.a.	n.a.	0.91	0.933	n.a.	n.a.	n.a.	n.a.	0.00	0.00
31.500	13.130	0.411	3780.0	2688.0	8.363	3.660	3.11		Clay	100.0			12.41	0.94	n.a.	n.a.	0.91	0.933	n.a.	n.a.	n.a.	n.a.	0.00	0.00
31.660	13.210	0.468	3799.2	2697.2	8.387	4.140	3.14		Clay	100.0			12.49	0.94	n.a.	n.a.	0.91	0.933	n.a.	n.a.	n.a.	n.a.	0.00	0.00
31.820	14.920	0.510	3818.4	2706.4	9.615	3.919	3.08		Clay	100.0			14.10	0.94	n.a.	n.a.	0.91	0.933	n.a.	n.a.	n.a.	n.a.	0.00	0.00
31.990	16.310	0.571	3838.8	2716.2	10.596	3.966	3.05		Clay	100.0			15.42	0.94	n.a.	n.a.	0.90	0.933	n.a.	n.a.	n.a.	n.a.	0.00	0.00
32.150	16.880	0.608	3858.0	2725.4	10.971	4.067	3.04		Clay	100.0			15.95	0.94	n.a.	n.a.	0.90	0.933	n.a.	n.a.	n.a.	n.a.	0.00	0.00
32.320	17.010	0.629	3878.4	2735.2	11.020	4.170	3.05		Clay	100.0			16.08	0.93	n.a.	n.a.	0.90	0.933	n.a.	n.a.	n.a.	n.a.	0.00	0.00
32.480	18.260	0.718	3897.6	2744.4	11.887	4.399	3.03		Clay	100.0			17.26	0.93	n.a.	n.a.	0.90	0.933	n.a.	n.a.	n.a.	n.a.	0.00	0.00
32.640	21.920	0.735	3916.8	2753.7	14.498	3.680	2.92		Clay	96.5			20.72	0.93	n.a.	n.a.	0.90	0.933	n.a.	n.a.	n.a.	n.a.	0.00	0.00
32.810	22.830	0.790	3937.2	2763.5	15.098	3.785	2.91		Clay	96.0			21.58	0.93	n.a.	n.a.	0.90	0.933	n.a.	n.a.	n.a.	n.a.	0.00	0.00
32.970	22.730	0.844	3956.4	2772.7	14.969	4.067	2.93		Clay	97.8			21.48	0.93	n.a.	n.a.	0.90	0.933	n.a.	n.a.	n.a.	n.a.	0.00	0.00

CORNERSTONE EARTH GROUP

CPT No.	1

PGA (A_{max})	0.89

Total Settlement:	0.36	(Inches)

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Depth (ft)	q_c (tsf)	f_s (tsf)	σ_{vc} (psf)	Insitu σ'_{vc} (psf)	Q	F (%)	I_c	Layer "Plastic" PI > 7	Flag Soil Type	Fines (%)	q_{cN} near interfaces (soft layer)	Thin Layer Factor (K_H)	Interpreted q_{cN}	C_N	q_{c1N}	$q_{c1N\text{-}CS}$	Stress Reduction Coeff, r_d	CSR	K_σ for Sand	$CRR_{M=7.5,\ \sigma'vc = 1\ atm}$	CRR	Factor of Safety (CRR/CSR)	Vertical Strain ε_v	Settlement (Inches)
33.140	23.680	0.883	3976.8	2782.5	15.592	4.069	2.92		Clay	96.7			22.38	0.93	n.a.	n.a.	0.90	0.932	n.a.	n.a.	n.a.	n.a.	0.00	0.00
33.300	23.940	0.950	3996.0	2791.7	15.720	4.331	2.94		Clay	97.8			22.63	0.93	n.a.	n.a.	0.90	0.932	n.a.	n.a.	n.a.	n.a.	0.00	0.00
33.460	23.150	0.982	4015.2	2800.9	15.097	4.644	2.97		Clay	100.0			21.88	0.93	n.a.	n.a.	0.90	0.932	n.a.	n.a.	n.a.	n.a.	0.00	0.00
33.630	21.230	0.957	4035.6	2810.7	13.671	4.979	3.02		Clay	100.0			20.07	0.93	n.a.	n.a.	0.90	0.932	n.a.	n.a.	n.a.	n.a.	0.00	0.00
33.790	19.060	0.912	4054.8	2819.9	12.080	5.357	3.08		Clay	100.0			18.02	0.93	n.a.	n.a.	0.90	0.932	n.a.	n.a.	n.a.	n.a.	0.00	0.00
33.960	15.670	0.767	4075.2	2829.7	9.635	5.626	3.17		Clay	100.0			14.81	0.93	n.a.	n.a.	0.90	0.932	n.a.	n.a.	n.a.	n.a.	0.00	0.00
34.120	13.530	0.671	4094.4	2838.9	8.090	5.846	3.24		Clay	100.0			12.79	0.93	n.a.	n.a.	0.90	0.932	n.a.	n.a.	n.a.	n.a.	0.00	0.00
34.280	12.950	0.600	4113.6	2848.1	7.649	5.509	3.25		Clay	100.0			12.24	0.92	n.a.	n.a.	0.90	0.932	n.a.	n.a.	n.a.	n.a.	0.00	0.00
34.450	14.300	0.335	4134.0	2857.9	8.561	2.741	3.03		Clay	100.0			13.52	0.92	n.a.	n.a.	0.89	0.932	n.a.	n.a.	n.a.	n.a.	0.00	0.00
34.610	15.240	0.203	4153.2	2867.1	9.182	1.543	2.88		Clay	93.0			14.40	0.92	n.a.	n.a.	0.89	0.932	n.a.	n.a.	n.a.	n.a.	0.00	0.00
34.780	16.760	0.622	4173.6	2876.9	10.201	4.241	3.08		Clay	100.0			15.84	0.92	n.a.	n.a.	0.89	0.932	n.a.	n.a.	n.a.	n.a.	0.00	0.00
34.940	14.580	0.589	4192.8	2886.1	8.651	4.717	3.16		Clay	100.0			13.78	0.92	n.a.	n.a.	0.89	0.931	n.a.	n.a.	n.a.	n.a.	0.00	0.00
35.100	11.830	0.565	4212.0	2895.4	6.717	5.812	3.30		Clay	100.0			11.18	0.92	n.a.	n.a.	0.89	0.931	n.a.	n.a.	n.a.	n.a.	0.00	0.00
35.270	17.790	0.535	4232.4	2905.2	10.790	3.416	3.00		Clay	100.0			16.81	0.92	n.a.	n.a.	0.89	0.931	n.a.	n.a.	n.a.	n.a.	0.00	0.00
35.430	17.060	0.485	4251.6	2914.4	10.249	3.248	3.01		Clay	100.0			16.12	0.92	n.a.	n.a.	0.89	0.931	n.a.	n.a.	n.a.	n.a.	0.00	0.00
35.600	16.590	0.537	4272.0	2924.2	9.886	3.715	3.05		Clay	100.0			15.68	0.92	n.a.	n.a.	0.89	0.931	n.a.	n.a.	n.a.	n.a.	0.00	0.00
35.760	17.070	0.606	4291.2	2933.4	10.176	4.058	3.07		Clay	100.0			16.13	0.92	n.a.	n.a.	0.89	0.931	n.a.	n.a.	n.a.	n.a.	0.00	0.00
35.930	24.790	0.801	4311.6	2943.2	15.381	3.541	2.89		Clay	94.1			23.43	0.92	n.a.	n.a.	0.89	0.931	n.a.	n.a.	n.a.	n.a.	0.00	0.00
36.090	22.680	0.773	4330.8	2952.4	13.897	3.769	2.94		Clay	98.2			21.44	0.92	n.a.	n.a.	0.89	0.930	n.a.	n.a.	n.a.	n.a.	0.00	0.00
36.250	16.840	0.553	4350.0	2961.6	9.903	3.770	3.06		Clay	100.0			15.92	0.92	n.a.	n.a.	0.89	0.930	n.a.	n.a.	n.a.	n.a.	0.00	0.00
36.420	14.590	0.303	4370.4	2971.4	8.349	2.444	3.01		Clay	100.0			13.79	0.91	n.a.	n.a.	0.89	0.930	n.a.	n.a.	n.a.	n.a.	0.00	0.00
36.580	14.530	0.268	4389.6	2980.6	8.277	2.171	2.99		Clay	100.0			13.73	0.91	n.a.	n.a.	0.89	0.930	n.a.	n.a.	n.a.	n.a.	0.00	0.00
36.750	14.840	0.269	4410.0	2990.4	8.450	2.132	2.98		Clay	100.0			14.03	0.91	n.a.	n.a.	0.89	0.930	n.a.	n.a.	n.a.	n.a.	0.00	0.00
36.910	15.630	0.282	4429.2	2999.6	8.945	2.104	2.95		Clay	99.3			14.77	0.91	n.a.	n.a.	0.88	0.929	n.a.	n.a.	n.a.	n.a.	0.00	0.00
37.070	15.940	0.301	4448.4	3008.8	9.117	2.195	2.96		Clay	99.5			15.07	0.91	n.a.	n.a.	0.88	0.929	n.a.	n.a.	n.a.	n.a.	0.00	0.00
37.240	16.330	0.360	4468.8	3018.6	9.339	2.553	2.98		Clay	100.0			15.43	0.91	n.a.	n.a.	0.88	0.929	n.a.	n.a.	n.a.	n.a.	0.00	0.00
37.400	17.010	0.400	4488.0	3027.8	9.753	2.706	2.98		Clay	100.0			16.08	0.91	n.a.	n.a.	0.88	0.929	n.a.	n.a.	n.a.	n.a.	0.00	0.00
37.570	17.280	0.445	4508.4	3037.6	9.893	2.959	3.00		Clay	100.0			16.33	0.91	n.a.	n.a.	0.88	0.929	n.a.	n.a.	n.a.	n.a.	0.00	0.00
37.730	17.310	0.459	4527.6	3046.8	9.877	3.047	3.01		Clay	100.0			16.36	0.91	n.a.	n.a.	0.88	0.928	n.a.	n.a.	n.a.	n.a.	0.00	0.00
37.890	18.010	0.492	4546.8	3056.1	10.299	3.123	3.00		Clay	100.0			17.02	0.91	n.a.	n.a.	0.88	0.928	n.a.	n.a.	n.a.	n.a.	0.00	0.00
38.060	18.360	0.516	4567.2	3065.9	10.487	3.212	3.00		Clay	100.0			17.35	0.91	n.a.	n.a.	0.88	0.928	n.a.	n.a.	n.a.	n.a.	0.00	0.00
38.220	18.150	0.510	4586.4	3075.1	10.313	3.219	3.00		Clay	100.0			17.16	0.91	n.a.	n.a.	0.88	0.928	n.a.	n.a.	n.a.	n.a.	0.00	0.00
38.390	19.840	0.504	4606.8	3084.9	11.369	2.875	2.94		Clay	98.2			18.75	0.91	n.a.	n.a.	0.88	0.927	n.a.	n.a.	n.a.	n.a.	0.00	0.00
38.550	19.570	0.439	4626.0	3094.1	11.155	2.542	2.92		Clay	96.4			18.50	0.90	n.a.	n.a.	0.88	0.927	n.a.	n.a.	n.a.	n.a.	0.00	0.00
38.710	18.990	0.435	4645.2	3103.3	10.742	2.609	2.94		Clay	98.0			17.95	0.90	n.a.	n.a.	0.88	0.927	n.a.	n.a.	n.a.	n.a.	0.00	0.00
38.880	19.800	0.408	4665.6	3113.1	11.222	2.336	2.89		Clay	94.6			18.71	0.90	n.a.	n.a.	0.88	0.927	n.a.	n.a.	n.a.	n.a.	0.00	0.00
39.040	20.160	0.439	4684.8	3122.3	11.413	2.461	2.90		Clay	95.1			19.05	0.90	n.a.	n.a.	0.88	0.926	n.a.	n.a.	n.a.	n.a.	0.00	0.00
39.210	21.070	0.487	4705.2	3132.1	11.952	2.604	2.90		Clay	94.9			19.91	0.90	n.a.	n.a.	0.87	0.926	n.a.	n.a.	n.a.	n.a.	0.00	0.00
39.370	24.240	0.497	4724.4	3141.3	13.929	2.272	2.81		Clay	87.8			22.91	0.90	n.a.	n.a.	0.87	0.926	n.a.	n.a.	n.a.	n.a.	0.00	0.00
39.530	29.200	0.469	4743.6	3150.5	17.031	1.750	2.67		Clay	77.0			27.60	0.90	n.a.	n.a.	0.87	0.925	n.a.	n.a.	n.a.	n.a.	0.00	0.00
39.700	28.900	1.178	4764.0	3160.3	16.782	4.443	2.92		Clay	96.6			27.32	0.90	n.a.	n.a.	0.87	0.925	n.a.	n.a.	n.a.	n.a.	0.00	0.00
39.860	30.930	1.354	4783.2	3169.5	18.008	4.746	2.92		Clay	96.2			29.23	0.90	n.a.	n.a.	0.87	0.925	n.a.	n.a.	n.a.	n.a.	0.00	0.00
40.030	35.500	1.249	4803.6	3179.3	20.821	3.773	2.80		Clay	87.2			33.55	0.90	n.a.	n.a.	0.87	0.925	n.a.	n.a.	n.a.	n.a.	0.00	0.00
40.190	52.390	1.278	4822.8	3188.5	38.482	2.557	2.49		Sand	62.2		1.78	88.14	0.84	74.44	144.71	0.87	0.924	0.937	0.257	0.388	0.42	0.02	0.04
40.350	52.230	1.143	4842.0	3197.8	38.296	2.294	2.46		Sand	59.9		1.78	87.87	0.84	74.06	143.51	0.87	0.924	0.938	0.251	0.376	0.41	0.02	0.04
40.520	54.820	0.841	4862.4	3207.6	40.218	1.606	2.35		Sand	50.8		1.78	92.23	0.84	77.70	144.67	0.87	0.924	0.936	0.257	0.387	0.42	0.02	0.04
40.680	59.440	0.549	4881.6	3216.8	43.695	0.963	2.19		Sand	38.2		1.78	100.00	0.84	84.17	144.97	0.87	0.923	0.936	0.259	0.390	0.42	0.02	0.04
40.850	42.970	0.361	4902.0	3226.6	31.014	0.890	2.30		Sand	46.9	56.18	1.78	100.00	0.84	84.42	151.17	0.87	0.923	0.932	0.296	0.465	0.50	0.02	0.04
41.010	28.890	0.385	4921.2	3235.8	16.336	1.455	2.65		Clay	74.7			27.31	0.89	n.a.	n.a.	0.87	0.923	n.a.	n.a.	n.a.	n.a.	0.00	0.00
41.170	26.560	0.562	4940.4	3245.0	14.847	2.334	2.79		Clay	86.5			25.10	0.89	n.a.	n.a.	0.87	0.922	n.a.	n.a.	n.a.	n.a.	0.00	0.00
41.340	27.650	0.855	4960.8	3254.8	15.466	3.397	2.88		Clay	93.0			26.13	0.89	n.a.	n.a.	0.87	0.922	n.a.	n.a.	n.a.	n.a.	0.00	0.00
41.500	28.790	1.182	4980.0	3264.0	16.115	4.496	2.94		Clay	98.0			27.21	0.89	n.a.	n.a.	0.86	0.922	n.a.	n.a.	n.a.	n.a.	0.00	0.00
41.670	28.460	1.209	5000.4	3273.8	15.859	4.658	2.95		Clay	99.2			26.90	0.89	n.a.	n.a.	0.86	0.921	n.a.	n.a.	n.a.	n.a.	0.00	0.00
41.830	28.970	1.262	5019.6	3283.0	16.119	4.770	2.95		Clay	99.3			27.38	0.89	n.a.	n.a.	0.86	0.921	n.a.	n.a.	n.a.	n.a.	0.00	0.00
41.990	28.550	1.241	5038.8	3292.2	15.813	4.768	2.96		Clay	99.8			26.98	0.89	n.a.	n.a.	0.86	0.921	n.a.	n.a.	n.a.	n.a.	0.00	0.00
42.160	29.040	1.199	5059.2	3302.0	16.057	4.521	2.94		Clay	98.2			27.45	0.89	n.a.	n.a.	0.86	0.920	n.a.	n.a.	n.a.	n.a.	0.00	0.00
42.320	28.730	1.166	5078.4	3311.2	15.819	4.452	2.94		Clay	98.3			27.16	0.89	n.a.	n.a.	0.86	0.920	n.a.	n.a.	n.a.	n.a.	0.00	0.00
42.490	27.930	1.124	5098.8	3321.0	15.285	4.427	2.95		Clay	99.1			26.40	0.89	n.a.	n.a.	0.86	0.920	n.a.	n.a.	n.a.	n.a.	0.00	0.00
42.650	27.600	1.057	5118.0	3330.2	15.039	4.221	2.94		Clay	98.5			26.09	0.89	n.a.	n.a.	0.86	0.919	n.a.	n.a.	n.a.	n.a.	0.00	0.00
42.810	27.530	1.015	5137.2	3339.5	14.949	4.067	2.94		Clay	97.8			26.02	0.89	n.a.	n.a.	0.86	0.919	n.a.	n.a.	n.a.	n.a.	0.00	0.00
42.980	28.620	0.995	5157.6	3349.2	15.550	3.820	2.90		Clay	95.4			27.05	0.89	n.a.	n.a.	0.86	0.919	n.a.	n.a.	n.a.	n.a.	0.00	0.00
43.140	29.280	1.099	5176.8	3358.5	15.895	4.119	2.92		Clay	96.4			27.67	0.89	n.a.	n.a.	0.86	0.918	n.a.	n.a.	n.a.	n.a.	0.00	0.00
43.310	29.010	1.172	5197.2	3368.3	15.683	4.437	2.94		Clay	98.4			27.42	0.88	n.a.	n.a.	0.86	0.918	n.a.	n.a.	n.a.	n.a.	0.00	0.00
43.470	28.800	1.240	5216.4	3377.5	15.510	4.733	2.96		Clay	100.0			27.22	0.88	n.a.	n.a.	0.86	0.917	n.a.	n.a.	n.a.	n.a.	0.00	0.00
43.640	27.550	1.204	5236.8	3387.3	14.721	4.828	2.99		Clay	100.0			26.04	0.88	n.a.	n.a.	0.86	0.917	n.a.	n.a.	n.a.	n.a.	0.00	0.00
43.800	26.580	1.064	5256.0	3396.5	14.104	4.441	2.98		Clay	100.0			25.12	0.88	n.a.	n.a.	0.85	0.917	n.a.	n.a.	n.a.	n.a.	0.00	0.00
43.960	24.930	0.896	5275.2	3405.7	13.091	4.018	2.98		Clay	100.0			23.56	0.88	n.a.	n.a.	0.85	0.916	n.a.	n.a.	n.a.	n.a.	0.00	0.00

CORNERSTONE EARTH GROUP

CPT No.	1

PGA (A_{max})	0.89

Total Settlement:	0.36	(Inches)

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Depth (ft)	q_c (tsf)	f_s (tsf)	σ_{vc} (psf)	Insitu σ'_{vc} (psf)	Q	F (%)	I_c	Layer "Plastic" PI > 7	Flag Soil Type	Fines (%)	q_{cN} near interfaces (soft layer)	Thin Layer Factor (K_H)	Interpreted q_{cN}	C_N	q_{c1N}	q_{c1N-CS}	Stress Reduction Coeff, r_d	CSR	K_σ for Sand	$CRR_{M=7.5, \sigma'vc = 1 atm}$	CRR	Factor of Safety (CRR/CSR)	Vertical Strain ε_v	Settlement (Inches)
44.130	22.430	0.743	5295.6	3415.5	11.584	3.755	3.00		Clay	100.0			21.20	0.88	n.a.	n.a.	0.85	0.916	n.a.	n.a.	n.a.	n.a.	0.00	0.00
44.290	21.410	0.654	5314.8	3424.7	10.951	3.487	3.00		Clay	100.0			20.24	0.88	n.a.	n.a.	0.85	0.915	n.a.	n.a.	n.a.	n.a.	0.00	0.00
44.460	20.050	0.542	5335.2	3434.5	10.122	3.115	3.00		Clay	100.0			18.95	0.88	n.a.	n.a.	0.85	0.915	n.a.	n.a.	n.a.	n.a.	0.00	0.00
44.620	18.500	0.567	5354.4	3443.7	9.189	3.584	3.07		Clay	100.0			17.49	0.88	n.a.	n.a.	0.85	0.915	n.a.	n.a.	n.a.	n.a.	0.00	0.00
44.780	18.030	0.525	5373.6	3452.9	8.887	3.420	3.07		Clay	100.0			17.04	0.88	n.a.	n.a.	0.85	0.914	n.a.	n.a.	n.a.	n.a.	0.00	0.00
44.950	18.290	0.580	5394.0	3462.7	9.006	3.722	3.09		Clay	100.0			17.29	0.88	n.a.	n.a.	0.85	0.914	n.a.	n.a.	n.a.	n.a.	0.00	0.00
45.110	20.320	0.735	5413.2	3471.9	10.146	4.172	3.08		Clay	100.0			19.21	0.88	n.a.	n.a.	0.85	0.913	n.a.	n.a.	n.a.	n.a.	0.00	0.00
45.280	20.640	0.801	5433.6	3481.7	10.296	4.466	3.09		Clay	100.0			19.51	0.88	n.a.	n.a.	0.85	0.913	n.a.	n.a.	n.a.	n.a.	0.00	0.00
45.440	18.660	0.764	5452.8	3490.9	9.129	4.796	3.15		Clay	100.0			17.64	0.88	n.a.	n.a.	0.85	0.913	n.a.	n.a.	n.a.	n.a.	0.00	0.00
45.600	17.760	0.634	5472.0	3500.2	8.585	4.219	3.14		Clay	100.0			16.79	0.88	n.a.	n.a.	0.85	0.912	n.a.	n.a.	n.a.	n.a.	0.00	0.00
45.770	17.310	0.551	5492.4	3510.0	8.299	3.782	3.12		Clay	100.0			16.36	0.88	n.a.	n.a.	0.85	0.912	n.a.	n.a.	n.a.	n.a.	0.00	0.00
45.930	17.250	0.563	5511.6	3519.2	8.237	3.883	3.13		Clay	100.0			16.30	0.87	n.a.	n.a.	0.85	0.911	n.a.	n.a.	n.a.	n.a.	0.00	0.00
46.100	18.340	0.538	5532.0	3529.0	8.826	3.453	3.08		Clay	100.0			17.33	0.87	n.a.	n.a.	0.84	0.911	n.a.	n.a.	n.a.	n.a.	0.00	0.00
46.260	18.080	0.536	5551.2	3538.2	8.651	3.504	3.09		Clay	100.0			17.09	0.87	n.a.	n.a.	0.84	0.910	n.a.	n.a.	n.a.	n.a.	0.00	0.00
46.420	18.210	0.523	5570.4	3547.4	8.696	3.389	3.08		Clay	100.0			17.21	0.87	n.a.	n.a.	0.84	0.910	n.a.	n.a.	n.a.	n.a.	0.00	0.00
46.590	18.590	0.532	5590.8	3557.2	8.880	3.368	3.07		Clay	100.0			17.57	0.87	n.a.	n.a.	0.84	0.909	n.a.	n.a.	n.a.	n.a.	0.00	0.00
46.750	19.850	0.508	5610.0	3566.4	9.559	2.980	3.01		Clay	100.0			18.76	0.87	n.a.	n.a.	0.84	0.909	n.a.	n.a.	n.a.	n.a.	0.00	0.00
46.920	20.430	0.529	5630.4	3576.2	9.851	3.003	3.00		Clay	100.0			19.31	0.87	n.a.	n.a.	0.84	0.909	n.a.	n.a.	n.a.	n.a.	0.00	0.00
47.080	20.920	0.670	5649.6	3585.4	10.094	3.700	3.05		Clay	100.0			19.77	0.87	n.a.	n.a.	0.84	0.908	n.a.	n.a.	n.a.	n.a.	0.00	0.00
47.240	22.470	0.810	5668.8	3594.6	10.925	4.125	3.05		Clay	100.0			21.24	0.87	n.a.	n.a.	0.84	0.908	n.a.	n.a.	n.a.	n.a.	0.00	0.00
47.410	28.540	0.610	5689.2	3604.4	14.258	2.374	2.81		Clay	88.0			26.98	0.87	n.a.	n.a.	0.84	0.907	n.a.	n.a.	n.a.	n.a.	0.00	0.00
47.570	29.350	0.722	5708.4	3613.6	14.664	2.723	2.84		Clay	89.9			27.74	0.87	n.a.	n.a.	0.84	0.907	n.a.	n.a.	n.a.	n.a.	0.00	0.00
47.740	26.610	0.584	5728.8	3623.4	13.107	2.460	2.85		Clay	91.1			25.15	0.87	n.a.	n.a.	0.84	0.906	n.a.	n.a.	n.a.	n.a.	0.00	0.00
47.900	24.080	0.530	5748.0	3632.6	11.675	2.501	2.90		Clay	94.7			22.76	0.87	n.a.	n.a.	0.84	0.906	n.a.	n.a.	n.a.	n.a.	0.00	0.00
48.060	21.680	0.448	5767.2	3641.9	10.322	2.381	2.93		Clay	97.4			20.49	0.87	n.a.	n.a.	0.84	0.905	n.a.	n.a.	n.a.	n.a.	0.00	0.00
48.230	25.250	0.374	5787.6	3651.6	12.244	1.671	2.78		Clay	85.8			23.87	0.87	n.a.	n.a.	0.84	0.905	n.a.	n.a.	n.a.	n.a.	0.00	0.00
48.390	22.480	0.434	5806.8	3660.9	10.695	2.217	2.90		Clay	95.0			21.25	0.87	n.a.	n.a.	0.83	0.904	n.a.	n.a.	n.a.	n.a.	0.00	0.00
48.560	19.760	0.488	5827.2	3670.7	9.179	2.898	3.02		Clay	100.0			18.68	0.86	n.a.	n.a.	0.83	0.904	n.a.	n.a.	n.a.	n.a.	0.00	0.00
48.720	19.890	0.488	5846.4	3679.9	9.221	2.877	3.02		Clay	100.0			18.80	0.86	n.a.	n.a.	0.83	0.904	n.a.	n.a.	n.a.	n.a.	0.00	0.00
48.880	19.910	0.504	5865.6	3689.1	9.204	2.967	3.02		Clay	100.0			18.82	0.86	n.a.	n.a.	0.83	0.903	n.a.	n.a.	n.a.	n.a.	0.00	0.00
49.050	21.040	0.472	5886.0	3698.9	9.785	2.608	2.97		Clay	100.0			19.89	0.86	n.a.	n.a.	0.83	0.903	n.a.	n.a.	n.a.	n.a.	0.00	0.00
49.210	21.870	0.447	5905.2	3708.1	10.203	2.361	2.93		Clay	97.5			20.67	0.86	n.a.	n.a.	0.83	0.902	n.a.	n.a.	n.a.	n.a.	0.00	0.00
49.380	20.700	0.463	5925.6	3717.9	9.542	2.609	2.98		Clay	100.0			19.57	0.86	n.a.	n.a.	0.83	0.902	n.a.	n.a.	n.a.	n.a.	0.00	0.00
49.540	20.000	0.439	5944.8	3727.1	9.137	2.578	2.99		Clay	100.0			18.90	0.86	n.a.	n.a.	0.83	0.901	n.a.	n.a.	n.a.	n.a.	0.00	0.00
49.700	22.000	0.530	5964.0	3736.3	10.180	2.788	2.97		Clay	100.0			20.79	0.86	n.a.	n.a.	0.83	0.901	n.a.	n.a.	n.a.	n.a.	0.00	0.00
49.870	22.400	0.564	5984.4	3746.1	10.362	2.908	2.98		Clay	100.0			21.17	0.86	n.a.	n.a.	0.83	0.900	n.a.	n.a.	n.a.	n.a.	0.00	0.00
50.030	21.860	0.740	6003.6	3755.3	10.043	3.926	3.06		Clay	100.0			20.66	0.86	n.a.	n.a.	0.83	0.900	n.a.	n.a.	n.a.	n.a.	0.00	0.00
50.200	26.620	0.747	6024.0	3765.1	12.540	3.164	2.93		Clay	97.4			25.16	0.86	n.a.	n.a.	0.83	0.899	n.a.	n.a.	n.a.	n.a.	0.00	0.00
50.360	29.600	0.860	6043.2	3774.3	14.084	3.237	2.90		Clay	94.6			27.98	0.86	n.a.	n.a.	0.83	0.899	n.a.	n.a.	n.a.	n.a.	0.00	0.00
50.520	30.920	1.141	6062.4	3783.6	14.742	4.091	2.94		Clay	98.3			29.22	0.86	n.a.	n.a.	0.83	0.898	n.a.	n.a.	n.a.	n.a.	0.00	0.00
50.690	45.800	1.057	6082.8	3793.3	22.544	2.472	2.66		Clay	75.9			43.29	0.86	n.a.	n.a.	0.82	0.898	n.a.	n.a.	n.a.	n.a.	0.00	0.00
50.850	43.070	0.956	6102.0	3802.6	21.048	2.389	2.68		Clay	77.1			40.71	0.86	n.a.	n.a.	0.82	0.897	n.a.	n.a.	n.a.	n.a.	0.00	0.00
51.020	37.960	0.835	6122.4	3812.4	18.308	2.391	2.73		Clay	81.0			35.88	0.86	n.a.	n.a.	0.82	0.897	n.a.	n.a.	n.a.	n.a.	0.00	0.00
51.180	29.990	1.435	6141.6	3821.6	14.088	5.330	3.03		Clay	100.0			28.35	0.86	n.a.	n.a.	0.82	0.896	n.a.	n.a.	n.a.	n.a.	0.00	0.00
51.350	27.300	1.504	6162.0	3831.4	12.643	6.209	3.11		Clay	100.0			25.80	0.86	n.a.	n.a.	0.82	0.896	n.a.	n.a.	n.a.	n.a.	0.00	0.00
51.510	29.200	1.281	6181.2	3840.6	13.597	4.906	3.02		Clay	100.0			27.60	0.85	n.a.	n.a.	0.82	0.895	n.a.	n.a.	n.a.	n.a.	0.00	0.00
51.670	37.520	1.444	6200.4	3849.8	17.881	4.195	2.88		Clay	93.7			35.46	0.85	n.a.	n.a.	0.82	0.895	n.a.	n.a.	n.a.	n.a.	0.00	0.00
51.840	43.290	1.304	6220.8	3859.6	20.821	3.244	2.76		Clay	83.9			40.92	0.85	n.a.	n.a.	0.82	0.894	n.a.	n.a.	n.a.	n.a.	0.00	0.00
52.000	42.400	1.198	6240.0	3868.8	20.306	3.049	2.75		Clay	83.3			40.08	0.85	n.a.	n.a.	0.82	0.894	n.a.	n.a.	n.a.	n.a.	0.00	0.00
52.170	41.070	1.005	6260.4	3878.6	19.564	2.649	2.73		Clay	81.3			38.82	0.85	n.a.	n.a.	0.82	0.893	n.a.	n.a.	n.a.	n.a.	0.00	0.00
52.330	39.430	0.645	6279.6	3887.8	18.669	1.777	2.64		Clay	74.6			37.27	0.85	n.a.	n.a.	0.82	0.893	n.a.	n.a.	n.a.	n.a.	0.00	0.00
52.490	26.830	0.681	6298.8	3897.0	12.153	2.875	2.92		Clay	96.3			25.36	0.85	n.a.	n.a.	0.82	0.892	n.a.	n.a.	n.a.	n.a.	0.00	0.00
52.660	20.930	0.596	6319.2	3906.8	9.097	3.351	3.06		Clay	100.0			19.78	0.85	n.a.	n.a.	0.82	0.891	n.a.	n.a.	n.a.	n.a.	0.00	0.00
52.820	20.270	0.594	6338.4	3916.0	8.734	3.476	3.08		Clay	100.0			19.16	0.85	n.a.	n.a.	0.82	0.891	n.a.	n.a.	n.a.	n.a.	0.00	0.00
52.990	19.470	0.647	6358.8	3925.8	8.299	3.970	3.13		Clay	100.0			18.40	0.85	n.a.	n.a.	0.81	0.890	n.a.	n.a.	n.a.	n.a.	0.00	0.00
53.150	18.880	0.631	6378.0	3935.0	7.975	4.022	3.15		Clay	100.0			17.84	0.85	n.a.	n.a.	0.81	0.890	n.a.	n.a.	n.a.	n.a.	0.00	0.00
53.310	19.200	0.612	6397.2	3944.3	8.114	3.823	3.13		Clay	100.0			18.15	0.85	n.a.	n.a.	0.81	0.889	n.a.	n.a.	n.a.	n.a.	0.00	0.00
53.480	20.070	0.607	6417.6	3954.0	8.529	3.600	3.10		Clay	100.0			18.97	0.85	n.a.	n.a.	0.81	0.889	n.a.	n.a.	n.a.	n.a.	0.00	0.00
53.640	20.780	0.674	6436.8	3963.3	8.862	3.839	3.10		Clay	100.0			19.64	0.85	n.a.	n.a.	0.81	0.888	n.a.	n.a.	n.a.	n.a.	0.00	0.00
53.810	21.620	0.715	6457.2	3973.1	9.258	3.888	3.09		Clay	100.0			20.43	0.85	n.a.	n.a.	0.81	0.888	n.a.	n.a.	n.a.	n.a.	0.00	0.00
53.970	22.140	0.749	6476.4	3982.3	9.493	3.960	3.08		Clay	100.0			20.93	0.85	n.a.	n.a.	0.81	0.887	n.a.	n.a.	n.a.	n.a.	0.00	0.00
54.130	22.170	0.778	6495.6	3991.5	9.481	4.112	3.10		Clay	100.0			20.95	0.85	n.a.	n.a.	0.81	0.887	n.a.	n.a.	n.a.	n.a.	0.00	0.00
54.300	22.580	0.783	6516.0	4001.3	9.658	4.051	3.08		Clay	100.0			21.34	0.85	n.a.	n.a.	0.81	0.886	n.a.	n.a.	n.a.	n.a.	0.00	0.00
54.460	23.620	0.780	6535.2	4010.5	10.150	3.832	3.05		Clay	100.0			22.33	0.84	n.a.	n.a.	0.81	0.886	n.a.	n.a.	n.a.	n.a.	0.00	0.00
54.630	23.100	0.805	6555.6	4020.3	9.861	4.059	3.08		Clay	100.0			21.83	0.84	n.a.	n.a.	0.81	0.885	n.a.	n.a.	n.a.	n.a.	0.00	0.00
54.790	21.990	0.857	6574.8	4029.5	9.283	4.582	3.13		Clay	100.0			20.78	0.84	n.a.	n.a.	0.81	0.885	n.a.	n.a.	n.a.	n.a.	0.00	0.00
54.950	21.110	0.808	6594.0	4038.7	8.821	4.538	3.15		Clay	100.0			19.95	0.84	n.a.	n.a.	0.81	0.884	n.a.	n.a.	n.a.	n.a.	0.00	0.00

CORNERSTONE EARTH GROUP

CPT No.	1

PGA (A_{max})	0.89

Total Settlement:	0.36	(Inches)

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Depth (ft)	q_c (tsf)	f_s (tsf)	σ_{vc} (psf)	Insitu σ'_{vc} (psf)	Q	F (%)	I_c	Layer "Plastic" PI > 7	Flag Soil Type	Fines (%)	q_{cN} near interfaces (soft layer)	Thin Layer Factor (K_H)	Interpreted q_{cN}	C_N	q_{c1N}	$q_{c1N\text{-}CS}$	Stress Reduction Coeff, r_d	CSR	K_σ for Sand	$CRR_{M=7.5,\ \sigma'vc = 1\ atm}$	CRR	Factor of Safety (CRR/CSR)	Vertical Strain ε_v	Settlement (Inches)
55.120	18.600	0.776	6614.4	4048.5	7.555	5.075	3.23		Clay	100.0			17.58	0.84	n.a.	n.a.	0.81	0.883	n.a.	n.a.	n.a.	n.a.	0.00	0.00
55.280	19.820	0.675	6633.6	4057.7	8.134	4.087	3.15		Clay	100.0			18.73	0.84	n.a.	n.a.	0.80	0.883	n.a.	n.a.	n.a.	n.a.	0.00	0.00
55.450	20.340	0.675	6654.0	4067.5	8.365	3.968	3.13		Clay	100.0			19.22	0.84	n.a.	n.a.	0.80	0.882	n.a.	n.a.	n.a.	n.a.	0.00	0.00
55.610	21.170	0.701	6673.2	4076.7	8.749	3.933	3.11		Clay	100.0			20.01	0.84	n.a.	n.a.	0.80	0.882	n.a.	n.a.	n.a.	n.a.	0.00	0.00
55.770	21.090	0.698	6692.4	4086.0	8.685	3.934	3.11		Clay	100.0			19.93	0.84	n.a.	n.a.	0.80	0.881	n.a.	n.a.	n.a.	n.a.	0.00	0.00
55.940	21.210	0.677	6712.8	4095.7	8.718	3.790	3.10		Clay	100.0			20.05	0.84	n.a.	n.a.	0.80	0.881	n.a.	n.a.	n.a.	n.a.	0.00	0.00
56.100	21.120	0.622	6732.0	4105.0	8.650	3.505	3.09		Clay	100.0			19.96	0.84	n.a.	n.a.	0.80	0.880	n.a.	n.a.	n.a.	n.a.	0.00	0.00
56.270	20.200	0.580	6752.4	4114.8	8.177	3.445	3.10		Clay	100.0			19.09	0.84	n.a.	n.a.	0.80	0.880	n.a.	n.a.	n.a.	n.a.	0.00	0.00
56.430	19.190	0.529	6771.6	4124.0	7.665	3.348	3.12		Clay	100.0			18.14	0.84	n.a.	n.a.	0.80	0.879	n.a.	n.a.	n.a.	n.a.	0.00	0.00
56.590	18.060	0.502	6790.8	4133.2	7.096	3.420	3.15		Clay	100.0			17.07	0.84	n.a.	n.a.	0.80	0.879	n.a.	n.a.	n.a.	n.a.	0.00	0.00
56.760	17.970	0.497	6811.2	4143.0	7.031	3.414	3.15		Clay	100.0			16.98	0.84	n.a.	n.a.	0.80	0.878	n.a.	n.a.	n.a.	n.a.	0.00	0.00
56.920	19.510	0.509	6830.4	4152.2	7.752	3.165	3.10		Clay	100.0			18.44	0.84	n.a.	n.a.	0.80	0.877	n.a.	n.a.	n.a.	n.a.	0.00	0.00
57.090	21.930	0.560	6850.8	4162.0	8.892	3.025	3.04		Clay	100.0			20.73	0.84	n.a.	n.a.	0.80	0.877	n.a.	n.a.	n.a.	n.a.	0.00	0.00
57.250	24.200	0.574	6870.0	4171.2	9.956	2.763	2.98		Clay	100.0			22.87	0.84	n.a.	n.a.	0.80	0.876	n.a.	n.a.	n.a.	n.a.	0.00	0.00
57.410	22.780	0.552	6889.2	4180.4	9.250	2.853	3.01		Clay	100.0			21.53	0.84	n.a.	n.a.	0.80	0.876	n.a.	n.a.	n.a.	n.a.	0.00	0.00
57.580	21.660	0.492	6909.6	4190.2	8.689	2.700	3.02		Clay	100.0			20.47	0.84	n.a.	n.a.	0.79	0.875	n.a.	n.a.	n.a.	n.a.	0.00	0.00
57.740	21.460	0.487	6928.8	4199.4	8.571	2.703	3.03		Clay	100.0			20.28	0.83	n.a.	n.a.	0.79	0.875	n.a.	n.a.	n.a.	n.a.	0.00	0.00
57.910	22.650	0.565	6949.2	4209.2	9.111	2.945	3.03		Clay	100.0			21.41	0.83	n.a.	n.a.	0.79	0.874	n.a.	n.a.	n.a.	n.a.	0.00	0.00
58.070	25.210	0.686	6968.4	4218.4	10.300	3.156	3.00		Clay	100.0			23.83	0.83	n.a.	n.a.	0.79	0.873	n.a.	n.a.	n.a.	n.a.	0.00	0.00
58.230	26.880	0.795	6987.6	4227.6	11.063	3.400	2.99		Clay	100.0			25.41	0.83	n.a.	n.a.	0.79	0.873	n.a.	n.a.	n.a.	n.a.	0.00	0.00
58.400	28.440	0.867	7008.0	4237.4	11.769	3.475	2.98		Clay	100.0			26.88	0.83	n.a.	n.a.	0.79	0.872	n.a.	n.a.	n.a.	n.a.	0.00	0.00
58.560	28.500	0.860	7027.2	4246.7	11.768	3.440	2.97		Clay	100.0			26.94	0.83	n.a.	n.a.	0.79	0.872	n.a.	n.a.	n.a.	n.a.	0.00	0.00
58.730	28.170	0.767	7047.6	4256.4	11.581	3.111	2.95		Clay	99.3			26.63	0.83	n.a.	n.a.	0.79	0.871	n.a.	n.a.	n.a.	n.a.	0.00	0.00
58.890	26.380	0.791	7066.8	4265.7	10.712	3.464	3.01		Clay	100.0			24.93	0.83	n.a.	n.a.	0.79	0.871	n.a.	n.a.	n.a.	n.a.	0.00	0.00
59.060	26.080	0.739	7087.2	4275.5	10.542	3.281	3.00		Clay	100.0			24.65	0.83	n.a.	n.a.	0.79	0.870	n.a.	n.a.	n.a.	n.a.	0.00	0.00
59.220	27.830	0.778	7106.4	4284.7	11.332	3.206	2.97		Clay	100.0			26.30	0.83	n.a.	n.a.	0.79	0.869	n.a.	n.a.	n.a.	n.a.	0.00	0.00
59.380	28.590	1.085	7125.6	4293.9	11.657	4.334	3.04		Clay	100.0			27.02	0.83	n.a.	n.a.	0.79	0.869	n.a.	n.a.	n.a.	n.a.	0.00	0.00
59.550	32.670	1.565	7146.0	4303.7	13.522	5.380	3.05		Clay	100.0			30.88	0.83	n.a.	n.a.	0.79	0.868	n.a.	n.a.	n.a.	n.a.	0.00	0.00
59.710	49.380	1.694	7165.2	4312.9	21.237	3.699	2.79		Clay	86.3			46.67	0.83	n.a.	n.a.	0.79	0.868	n.a.	n.a.	n.a.	n.a.	0.00	0.00
59.880	38.160	1.267	7185.6	4322.7	15.993	3.666	2.88		Clay	93.7			36.07	0.83	n.a.	n.a.	0.78	0.867	n.a.	n.a.	n.a.	n.a.	0.00	0.00
60.040	27.870	1.001	7204.8	4331.9	11.204	4.123	3.04		Clay	100.0			26.34	0.83	n.a.	n.a.	0.78	0.867	n.a.	n.a.	n.a.	n.a.	0.00	0.00
60.200	30.210	1.052	7224.0	4341.1	12.254	3.954	3.00		Clay	100.0			28.55	0.83	n.a.	n.a.	0.78	0.866	n.a.	n.a.	n.a.	n.a.	0.00	0.00
60.370	28.500	0.925	7244.4	4350.9	11.436	3.718	3.00		Clay	100.0			26.94	0.83	n.a.	n.a.	0.78	0.865	n.a.	n.a.	n.a.	n.a.	0.00	0.00
60.530	33.440	0.844	7263.6	4360.1	13.673	2.831	2.87		Clay	92.7			31.61	0.83	n.a.	n.a.	0.78	0.865	n.a.	n.a.	n.a.	n.a.	0.00	0.00
60.700	29.360	0.874	7284.0	4369.9	11.770	3.399	2.97		Clay	100.0			27.75	0.83	n.a.	n.a.	0.78	0.864	n.a.	n.a.	n.a.	n.a.	0.00	0.00
60.860	23.100	0.627	7303.2	4379.1	8.882	3.222	3.06		Clay	100.0			21.83	0.83	n.a.	n.a.	0.78	0.864	n.a.	n.a.	n.a.	n.a.	0.00	0.00
61.020	22.000	0.479	7322.4	4388.4	8.358	2.611	3.03		Clay	100.0			20.79	0.82	n.a.	n.a.	0.78	0.863	n.a.	n.a.	n.a.	n.a.	0.00	0.00
61.190	22.720	0.266	7342.8	4398.1	8.662	1.397	2.88		Clay	93.2			21.47	0.82	n.a.	n.a.	0.78	0.863	n.a.	n.a.	n.a.	n.a.	0.00	0.00
61.350	22.010	0.450	7362.0	4407.4	8.317	2.457	3.02		Clay	100.0			20.80	0.82	n.a.	n.a.	0.78	0.862	n.a.	n.a.	n.a.	n.a.	0.00	0.00
61.520	23.150	0.514	7382.4	4417.2	8.811	2.641	3.01		Clay	100.0			21.88	0.82	n.a.	n.a.	0.78	0.861	n.a.	n.a.	n.a.	n.a.	0.00	0.00
61.680	23.710	0.592	7401.6	4426.4	9.041	2.957	3.03		Clay	100.0			22.41	0.82	n.a.	n.a.	0.78	0.861	n.a.	n.a.	n.a.	n.a.	0.00	0.00
61.840	28.210	0.632	7420.8	4435.6	11.047	2.581	2.92		Clay	96.9			26.66	0.82	n.a.	n.a.	0.78	0.860	n.a.	n.a.	n.a.	n.a.	0.00	0.00
62.010	27.960	0.624	7441.2	4445.4	10.905	2.576	2.93		Clay	97.3			26.43	0.82	n.a.	n.a.	0.78	0.860	n.a.	n.a.	n.a.	n.a.	0.00	0.00
62.170	28.520	0.575	7460.4	4454.6	11.130	2.319	2.90		Clay	94.7			26.96	0.82	n.a.	n.a.	0.77	0.859	n.a.	n.a.	n.a.	n.a.	0.00	0.00
62.340	29.520	0.635	7480.8	4464.4	11.549	2.462	2.90		Clay	94.8			27.90	0.82	n.a.	n.a.	0.77	0.859	n.a.	n.a.	n.a.	n.a.	0.00	0.00
62.500	31.130	0.712	7500.0	4473.6	12.241	2.600	2.89		Clay	94.1			29.42	0.82	n.a.	n.a.	0.77	0.858	n.a.	n.a.	n.a.	n.a.	0.00	0.00
62.660	32.550	0.795	7519.2	4482.8	12.845	2.761	2.89		Clay	94.0			30.77	0.82	n.a.	n.a.	0.77	0.857	n.a.	n.a.	n.a.	n.a.	0.00	0.00
62.830	33.620	0.927	7539.6	4492.6	13.289	3.106	2.90		Clay	95.4			31.78	0.82	n.a.	n.a.	0.77	0.857	n.a.	n.a.	n.a.	n.a.	0.00	0.00
62.990	35.600	0.985	7558.8	4501.8	14.137	3.096	2.88		Clay	93.6			33.65	0.82	n.a.	n.a.	0.77	0.856	n.a.	n.a.	n.a.	n.a.	0.00	0.00
63.160	37.400	1.057	7579.2	4511.6	14.899	3.146	2.87		Clay	92.4			35.35	0.82	n.a.	n.a.	0.77	0.856	n.a.	n.a.	n.a.	n.a.	0.00	0.00
63.320	36.360	1.048	7598.4	4520.8	14.405	3.218	2.89		Clay	93.9			34.37	0.82	n.a.	n.a.	0.77	0.855	n.a.	n.a.	n.a.	n.a.	0.00	0.00
63.480	35.370	1.002	7617.6	4530.0	13.934	3.174	2.89		Clay	94.5			33.43	0.82	n.a.	n.a.	0.77	0.855	n.a.	n.a.	n.a.	n.a.	0.00	0.00
63.650	34.980	0.981	7638.0	4539.8	13.728	3.147	2.90		Clay	94.7			33.06	0.82	n.a.	n.a.	0.77	0.854	n.a.	n.a.	n.a.	n.a.	0.00	0.00
63.810	34.570	1.009	7657.2	4549.1	13.516	3.282	2.91		Clay	96.0			32.67	0.82	n.a.	n.a.	0.77	0.853	n.a.	n.a.	n.a.	n.a.	0.00	0.00
63.980	35.280	1.116	7677.6	4558.8	13.793	3.549	2.93		Clay	97.1			33.35	0.82	n.a.	n.a.	0.77	0.853	n.a.	n.a.	n.a.	n.a.	0.00	0.00
64.140	35.760	1.244	7696.8	4568.1	13.972	3.899	2.95		Clay	98.7			33.80	0.82	n.a.	n.a.	0.77	0.852	n.a.	n.a.	n.a.	n.a.	0.00	0.00
64.300	35.330	1.243	7716.0	4577.3	13.751	3.948	2.96		Clay	99.5			33.39	0.82	n.a.	n.a.	0.77	0.852	n.a.	n.a.	n.a.	n.a.	0.00	0.00
64.470	33.570	1.170	7736.4	4587.1	12.950	3.938	2.98		Clay	100.0			31.73	0.82	n.a.	n.a.	0.77	0.851	n.a.	n.a.	n.a.	n.a.	0.00	0.00
64.630	31.290	1.079	7755.6	4596.3	11.928	3.937	3.00		Clay	100.0			29.57	0.81	n.a.	n.a.	0.76	0.850	n.a.	n.a.	n.a.	n.a.	0.00	0.00
64.800	30.550	1.027	7776.0	4606.1	11.577	3.852	3.01		Clay	100.0			28.88	0.81	n.a.	n.a.	0.76	0.850	n.a.	n.a.	n.a.	n.a.	0.00	0.00
64.960	30.500	1.042	7795.2	4615.3	11.528	3.917	3.01		Clay	100.0			28.83	0.81	n.a.	n.a.	0.76	0.849	n.a.	n.a.	n.a.	n.a.	0.00	0.00
65.120	34.720	1.099	7814.4	4624.5	13.326	3.566	2.94		Clay	98.2			32.82	0.81	n.a.	n.a.	0.76	0.849	n.a.	n.a.	n.a.	n.a.	0.00	0.00
65.290	37.070	1.171	7834.8	4634.3	14.307	3.532	2.91		Clay	96.0			35.04	0.81	n.a.	n.a.	0.76	0.848	n.a.	n.a.	n.a.	n.a.	0.00	0.00
65.450	36.100	1.225	7854.0	4643.5	13.857	3.806	2.94		Clay	98.5			34.12	0.81	n.a.	n.a.	0.76	0.848	n.a.	n.a.	n.a.	n.a.	0.00	0.00
65.620	34.510	1.196	7874.4	4653.3	13.140	3.913	2.97		Clay	100.0			32.62	0.81	n.a.	n.a.	0.76	0.847	n.a.	n.a.	n.a.	n.a.	0.00	0.00
65.780	33.960	1.124	7893.6	4662.5	12.874	3.744	2.96		Clay	100.0			32.10	0.81	n.a.	n.a.	0.76	0.846	n.a.	n.a.	n.a.	n.a.	0.00	0.00
65.940	33.320	1.026	7912.8	4671.7	12.571	3.494	2.95		Clay	99.4			31.49	0.81	n.a.	n.a.	0.76	0.846	n.a.	n.a.	n.a.	n.a.	0.00	0.00

CORNERSTONE EARTH GROUP

CPT No.	1

PGA (A_{max})	0.89

Total Settlement:	0.36	(Inches)

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Depth (ft)	q_c (tsf)	f_s (tsf)	σ_{vc} (psf)	Insitu σ'_{vc} (psf)	Q	F (%)	I_c	Layer "Plastic" PI > 7	Flag Soil Type	Fines (%)	q_{cN} near interfaces (soft layer)	Thin Layer Factor (K_H)	Interpreted q_{cN}	C_N	q_{c1N}	$q_{c1N\text{-}CS}$	Stress Reduction Coeff, r_d	CSR	K_σ for Sand	$CRR_{M=7.5,\ \sigma'vc = 1\ atm}$	CRR	Factor of Safety (CRR/CSR)	Vertical Strain ε_v	Settlement (Inches)
66.110	31.780	0.974	7933.2	4681.5	11.882	3.501	2.97		Clay	100.0			30.04	0.81	n.a.	n.a.	0.76	0.845	n.a.	n.a.	n.a.	n.a.	0.00	0.00
66.270	29.560	0.819	7952.4	4690.8	10.908	3.200	2.98		Clay	100.0			27.94	0.81	n.a.	n.a.	0.76	0.845	n.a.	n.a.	n.a.	n.a.	0.00	0.00
66.440	28.510	0.839	7972.8	4700.5	10.434	3.421	3.01		Clay	100.0			26.95	0.81	n.a.	n.a.	0.76	0.844	n.a.	n.a.	n.a.	n.a.	0.00	0.00
66.600	32.680	0.868	7992.0	4709.8	12.181	3.026	2.93		Clay	97.3			30.89	0.81	n.a.	n.a.	0.76	0.843	n.a.	n.a.	n.a.	n.a.	0.00	0.00
66.770	33.200	0.913	8012.4	4719.6	12.371	3.127	2.93		Clay	97.5			31.38	0.81	n.a.	n.a.	0.76	0.843	n.a.	n.a.	n.a.	n.a.	0.00	0.00
66.930	32.120	1.022	8031.6	4728.8	11.886	3.635	2.98		Clay	100.0			30.36	0.81	n.a.	n.a.	0.76	0.842	n.a.	n.a.	n.a.	n.a.	0.00	0.00
67.090	31.520	1.061	8050.8	4738.0	11.606	3.859	3.01		Clay	100.0			29.79	0.81	n.a.	n.a.	0.75	0.842	n.a.	n.a.	n.a.	n.a.	0.00	0.00
67.260	31.350	1.166	8071.2	4747.8	11.506	4.270	3.04		Clay	100.0			29.63	0.81	n.a.	n.a.	0.75	0.841	n.a.	n.a.	n.a.	n.a.	0.00	0.00
67.420	30.890	1.203	8090.4	4757.0	11.286	4.480	3.06		Clay	100.0			29.20	0.81	n.a.	n.a.	0.75	0.840	n.a.	n.a.	n.a.	n.a.	0.00	0.00
67.590	29.950	1.086	8110.8	4766.8	10.865	4.194	3.05		Clay	100.0			28.31	0.81	n.a.	n.a.	0.75	0.840	n.a.	n.a.	n.a.	n.a.	0.00	0.00
67.750	29.990	0.839	8130.0	4776.0	10.856	3.236	2.99		Clay	100.0			28.35	0.81	n.a.	n.a.	0.75	0.839	n.a.	n.a.	n.a.	n.a.	0.00	0.00
67.910	29.660	0.731	8149.2	4785.2	10.694	2.859	2.96		Clay	99.9			28.03	0.81	n.a.	n.a.	0.75	0.839	n.a.	n.a.	n.a.	n.a.	0.00	0.00
68.080	28.900	0.816	8169.6	4795.0	10.350	3.288	3.01		Clay	100.0			27.32	0.81	n.a.	n.a.	0.75	0.838	n.a.	n.a.	n.a.	n.a.	0.00	0.00
68.240	29.200	0.981	8188.8	4804.2	10.451	3.907	3.05		Clay	100.0			27.60	0.81	n.a.	n.a.	0.75	0.838	n.a.	n.a.	n.a.	n.a.	0.00	0.00
68.410	33.320	1.097	8209.2	4814.0	12.138	3.755	2.99		Clay	100.0			31.49	0.81	n.a.	n.a.	0.75	0.837	n.a.	n.a.	n.a.	n.a.	0.00	0.00
68.570	33.570	0.692	8228.4	4823.2	12.214	2.351	2.87		Clay	92.2			31.73	0.80	n.a.	n.a.	0.75	0.836	n.a.	n.a.	n.a.	n.a.	0.00	0.00
68.730	34.390	0.536	8247.6	4832.4	12.526	1.772	2.79		Clay	86.2			32.50	0.80	n.a.	n.a.	0.75	0.836	n.a.	n.a.	n.a.	n.a.	0.00	0.00
68.900	31.860	0.595	8268.0	4842.2	11.452	2.147	2.87		Clay	92.4			30.11	0.80	n.a.	n.a.	0.75	0.835	n.a.	n.a.	n.a.	n.a.	0.00	0.00
69.060	30.890	0.663	8287.2	4851.5	11.026	2.478	2.92		Clay	96.2			29.20	0.80	n.a.	n.a.	0.75	0.835	n.a.	n.a.	n.a.	n.a.	0.00	0.00
69.230	31.460	0.728	8307.6	4861.2	11.234	2.668	2.93		Clay	97.1			29.74	0.80	n.a.	n.a.	0.75	0.834	n.a.	n.a.	n.a.	n.a.	0.00	0.00
69.390	34.410	0.836	8326.8	4870.5	12.420	2.765	2.90		Clay	94.9			32.52	0.80	n.a.	n.a.	0.75	0.833	n.a.	n.a.	n.a.	n.a.	0.00	0.00
69.550	33.210	0.990	8346.0	4879.7	11.901	3.409	2.97		Clay	100.0			31.39	0.80	n.a.	n.a.	0.74	0.833	n.a.	n.a.	n.a.	n.a.	0.00	0.00
69.720	31.070	1.109	8366.4	4889.5	10.998	4.125	3.04		Clay	100.0			29.37	0.80	n.a.	n.a.	0.74	0.832	n.a.	n.a.	n.a.	n.a.	0.00	0.00
69.880	30.610	1.208	8385.6	4898.7	10.785	4.573	3.08		Clay	100.0			28.93	0.80	n.a.	n.a.	0.74	0.832	n.a.	n.a.	n.a.	n.a.	0.00	0.00
70.050	31.470	1.147	8406.0	4908.5	11.110	4.207	3.05		Clay	100.0			29.74	0.80	n.a.	n.a.	0.74	0.831	n.a.	n.a.	n.a.	n.a.	0.00	0.00
70.210	37.790	1.009	8425.2	4917.7	13.656	3.006	2.89		Clay	93.9			35.72	0.80	n.a.	n.a.	0.74	0.831	n.a.	n.a.	n.a.	n.a.	0.00	0.00
70.370	34.380	1.585	8444.4	4926.9	12.242	5.255	3.07		Clay	100.0			32.50	0.80	n.a.	n.a.	0.74	0.830	n.a.	n.a.	n.a.	n.a.	0.00	0.00
70.540	45.400	2.108	8464.8	4936.7	16.678	5.121	2.96		Clay	100.0			42.91	0.80	n.a.	n.a.	0.74	0.829	n.a.	n.a.	n.a.	n.a.	0.00	0.00
70.700	88.240	1.963	8484.0	4945.9	51.930	2.337	2.37		Sand	52.4			83.40	0.68	56.44	118.37	0.74	0.829	0.896	0.168	0.206	0.25	0.03	0.00
70.870	102.890	1.946	8504.4	4955.7	60.920	1.973	2.27		Sand	44.3			97.25	0.69	66.73	127.50	0.74	0.828	0.887	0.190	0.244	0.29	0.02	0.00
71.030	73.630	2.319	8523.6	4964.9	27.943	3.343	2.67		Clay	76.7			69.59	0.80	n.a.	n.a.	0.74	0.828	n.a.	n.a.	n.a.	n.a.	0.00	0.00
71.190	47.710	1.993	8542.8	4974.1	17.466	4.588	2.92		Clay	96.3			45.09	0.80	n.a.	n.a.	0.74	0.827	n.a.	n.a.	n.a.	n.a.	0.00	0.00
71.360	33.390	1.363	8563.2	4983.9	11.681	4.684	3.06		Clay	100.0			31.56	0.80	n.a.	n.a.	0.74	0.827	n.a.	n.a.	n.a.	n.a.	0.00	0.00
71.520	27.520	1.261	8582.4	4993.2	9.304	5.428	3.17		Clay	100.0			26.01	0.80	n.a.	n.a.	0.74	0.826	n.a.	n.a.	n.a.	n.a.	0.00	0.00
71.690	27.630	0.929	8602.8	5002.9	9.326	3.983	3.09		Clay	100.0			26.12	0.80	n.a.	n.a.	0.74	0.825	n.a.	n.a.	n.a.	n.a.	0.00	0.00
71.850	33.580	0.866	8622.0	5012.2	11.679	2.958	2.94		Clay	98.0			31.74	0.80	n.a.	n.a.	0.74	0.825	n.a.	n.a.	n.a.	n.a.	0.00	0.00
72.010	43.420	1.577	8641.2	5021.4	15.573	4.034	2.92		Clay	96.5			41.04	0.80	n.a.	n.a.	0.74	0.824	n.a.	n.a.	n.a.	n.a.	0.00	0.00
72.180	47.150	2.265	8661.6	5031.2	17.022	5.289	2.96		Clay	100.0			44.57	0.80	n.a.	n.a.	0.73	0.824	n.a.	n.a.	n.a.	n.a.	0.00	0.00
72.340	86.920	2.838	8680.8	5040.4	32.767	3.437	2.63		Clay	73.2			82.16	0.80	n.a.	n.a.	0.73	0.823	n.a.	n.a.	n.a.	n.a.	0.00	0.00
72.510	99.840	2.891	8701.2	5050.2	58.422	3.028	2.41		Sand	55.6			94.37	0.68	64.45	129.77	0.73	0.823	0.883	0.197	0.254	0.31	0.02	0.00
72.670	84.670	2.534	8720.4	5059.4	31.747	3.156	2.61		Clay	72.1			80.03	0.79	n.a.	n.a.	0.73	0.822	n.a.	n.a.	n.a.	n.a.	0.00	0.00
72.830	60.210	1.535	8739.6	5068.6	22.034	2.748	2.70		Clay	78.8			56.91	0.79	n.a.	n.a.	0.73	0.821	n.a.	n.a.	n.a.	n.a.	0.00	0.00
73.000	51.400	0.943	8760.0	5078.4	18.518	2.006	2.68		Clay	77.2			48.58	0.79	n.a.	n.a.	0.73	0.821	n.a.	n.a.	n.a.	n.a.	0.00	0.00
73.160	34.790	0.854	8779.2	5087.6	11.951	2.808	2.92		Clay	96.3			32.88	0.79	n.a.	n.a.	0.73	0.820	n.a.	n.a.	n.a.	n.a.	0.00	0.00
73.330	24.640	0.555	8799.6	5097.4	7.941	2.742	3.06		Clay	100.0			23.29	0.79	n.a.	n.a.	0.73	0.820	n.a.	n.a.	n.a.	n.a.	0.00	0.00
73.490	24.160	0.481	8818.8	5106.6	7.735	2.433	3.04		Clay	100.0			22.84	0.79	n.a.	n.a.	0.73	0.819	n.a.	n.a.	n.a.	n.a.	0.00	0.00
73.650	23.620	0.587	8838.0	5115.8	7.506	3.056	3.10		Clay	100.0			22.33	0.79	n.a.	n.a.	0.73	0.819	n.a.	n.a.	n.a.	n.a.	0.00	0.00
73.820	23.800	0.643	8858.4	5125.6	7.558	3.319	3.12		Clay	100.0			22.50	0.79	n.a.	n.a.	0.73	0.818	n.a.	n.a.	n.a.	n.a.	0.00	0.00
73.980	23.870	0.696	8877.6	5134.8	7.568	3.580	3.14		Clay	100.0			22.56	0.79	n.a.	n.a.	0.73	0.817	n.a.	n.a.	n.a.	n.a.	0.00	0.00
74.150	24.320	0.727	8898.0	5144.6	7.725	3.659	3.14		Clay	100.0			22.99	0.79	n.a.	n.a.	0.73	0.817	n.a.	n.a.	n.a.	n.a.	0.00	0.00
74.310	24.790	0.814	8917.2	5153.9	7.890	4.005	3.15		Clay	100.0			23.43	0.79	n.a.	n.a.	0.73	0.816	n.a.	n.a.	n.a.	n.a.	0.00	0.00
74.480	24.730	0.812	8937.6	5163.6	7.848	4.009	3.16		Clay	100.0			23.37	0.79	n.a.	n.a.	0.73	0.816	n.a.	n.a.	n.a.	n.a.	0.00	0.00
74.640	25.390	0.826	8956.8	5172.9	8.085	3.952	3.14		Clay	100.0			24.00	0.79	n.a.	n.a.	0.73	0.815	n.a.	n.a.	n.a.	n.a.	0.00	0.00
74.800	26.250	0.814	8976.0	5182.1	8.399	3.740	3.11		Clay	100.0			24.81	0.79	n.a.	n.a.	0.72	0.815	n.a.	n.a.	n.a.	n.a.	0.00	0.00
74.970	26.440	0.731	8996.4	5191.9	8.452	3.332	3.08		Clay	100.0			24.99	0.79	n.a.	n.a.	0.72	0.814	n.a.	n.a.	n.a.	n.a.	0.00	0.00
75.130	27.170	0.690	9015.6	5201.1	8.714	3.046	3.05		Clay	100.0			25.68	0.79	n.a.	n.a.	0.72	0.813	n.a.	n.a.	n.a.	n.a.	0.00	0.00
75.300	26.820	0.732	9036.0	5210.9	8.560	3.281	3.07		Clay	100.0			25.35	0.79	n.a.	n.a.	0.72	0.813	n.a.	n.a.	n.a.	n.a.	0.00	0.00
75.460	29.320	0.758	9055.2	5220.1	9.499	3.058	3.02		Clay	100.0			27.71	0.79	n.a.	n.a.	0.72	0.812	n.a.	n.a.	n.a.	n.a.	0.00	0.00
75.620	32.610	0.912	9074.4	5229.3	10.737	3.248	2.99		Clay	100.0			30.82	0.79	n.a.	n.a.	0.72	0.812	n.a.	n.a.	n.a.	n.a.	0.00	0.00
75.790	31.460	1.744	9094.8	5239.1	10.274	6.479	3.19		Clay	100.0			29.74	0.79	n.a.	n.a.	0.72	0.811	n.a.	n.a.	n.a.	n.a.	0.00	0.00
75.950	40.160	2.263	9114.0	5248.3	13.567	6.355	3.09		Clay	100.0			37.96	0.79	n.a.	n.a.	0.72	0.811	n.a.	n.a.	n.a.	n.a.	0.00	0.00
76.120	71.520	2.722	9134.4	5258.1	25.466	4.066	2.76		Clay	83.6			67.60	0.79	n.a.	n.a.	0.72	0.810	n.a.	n.a.	n.a.	n.a.	0.00	0.00
76.280	73.860	2.589	9153.6	5267.3	26.307	3.737	2.72		Clay	80.8			69.81	0.79	n.a.	n.a.	0.72	0.810	n.a.	n.a.	n.a.	n.a.	0.00	0.00
76.440	81.620	2.240	9172.8	5276.5	29.199	2.907	2.62		Clay	72.4			77.15	0.79	n.a.	n.a.	0.72	0.809	n.a.	n.a.	n.a.	n.a.	0.00	0.00
76.610	94.070	1.894	9193.2	5286.3	53.504	2.117	2.33		Sand	49.3			88.91	0.66	58.49	119.68	0.72	0.808	0.886	0.171	0.209	0.26	0.03	0.00
76.770	75.470	1.830	9212.4	5295.6	26.764	2.582	2.61		Clay	72.2			71.33	0.79	n.a.	n.a.	0.72	0.808	n.a.	n.a.	n.a.	n.a.	0.00	0.00
76.940	45.110	1.442	9232.8	5305.3	15.265	3.561	2.89		Clay	94.4			42.64	0.78	n.a.	n.a.	0.72	0.807	n.a.	n.a.	n.a.	n.a.	0.00	0.00

CORNERSTONE EARTH GROUP

CPT No.	1

PGA (A_{max})	0.89

Total Settlement:	0.36	(Inches)

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Depth (ft)	q_c (tsf)	f_s (tsf)	σ_{vc} (psf)	Insitu σ'_{vc} (psf)	Q	F (%)	I_c	Layer "Plastic" PI > 7	Flag Soil Type	Fines (%)	q_{cN} near interfaces (soft layer)	Thin Layer Factor (K_H)	Interpreted q_{cN}	C_N	q_{c1N}	q_{c1N-CS}	Stress Reduction Coeff, r_d	CSR	K_σ for Sand	$CRR_{M=7.5, \sigma'vc = 1 atm}$	CRR	Factor of Safety (CRR/CSR)	Vertical Strain ε_v	Settlement (Inches)
77.100	31.560	1.098	9252.0	5314.6	10.136	4.076	3.07		Clay	100.0			29.83	0.78	n.a.	n.a.	0.72	0.807	n.a.	n.a.	n.a.	n.a.	0.00	0.00
77.260	28.470	0.990	9271.2	5323.8	8.954	4.152	3.12		Clay	100.0			26.91	0.78	n.a.	n.a.	0.72	0.806	n.a.	n.a.	n.a.	n.a.	0.00	0.00
77.430	27.530	0.894	9291.6	5333.6	8.581	3.907	3.12		Clay	100.0			26.02	0.78	n.a.	n.a.	0.72	0.806	n.a.	n.a.	n.a.	n.a.	0.00	0.00
77.590	27.090	0.727	9310.8	5342.8	8.398	3.239	3.08		Clay	100.0			25.60	0.78	n.a.	n.a.	0.71	0.805	n.a.	n.a.	n.a.	n.a.	0.00	0.00
77.760	26.220	0.821	9331.2	5352.6	8.054	3.809	3.13		Clay	100.0			24.78	0.78	n.a.	n.a.	0.71	0.805	n.a.	n.a.	n.a.	n.a.	0.00	0.00
77.920	24.100	0.777	9350.4	5361.8	7.246	3.999	3.18		Clay	100.0			22.78	0.78	n.a.	n.a.	0.71	0.804	n.a.	n.a.	n.a.	n.a.	0.00	0.00
78.080	19.720	0.748	9369.6	5371.0	5.599	4.972	3.33		Clay	100.0			18.64	0.78	n.a.	n.a.	0.71	0.803	n.a.	n.a.	n.a.	n.a.	0.00	0.00
78.250	25.260	0.743	9390.0	5380.8	7.644	3.614	3.14		Clay	100.0			23.88	0.78	n.a.	n.a.	0.71	0.803	n.a.	n.a.	n.a.	n.a.	0.00	0.00
78.410	24.970	0.747	9409.2	5390.0	7.520	3.687	3.15		Clay	100.0			23.60	0.78	n.a.	n.a.	0.71	0.802	n.a.	n.a.	n.a.	n.a.	0.00	0.00
78.580	24.480	0.732	9429.6	5399.8	7.321	3.703	3.16		Clay	100.0			23.14	0.78	n.a.	n.a.	0.71	0.802	n.a.	n.a.	n.a.	n.a.	0.00	0.00
78.740	23.870	0.730	9448.8	5409.0	7.079	3.813	3.18		Clay	100.0			22.56	0.78	n.a.	n.a.	0.71	0.801	n.a.	n.a.	n.a.	n.a.	0.00	0.00
78.900	23.720	0.715	9468.0	5418.2	7.008	3.765	3.18		Clay	100.0			22.42	0.78	n.a.	n.a.	0.71	0.801	n.a.	n.a.	n.a.	n.a.	0.00	0.00
79.070	24.820	0.633	9488.4	5428.0	7.397	3.153	3.12		Clay	100.0			23.46	0.78	n.a.	n.a.	0.71	0.800	n.a.	n.a.	n.a.	n.a.	0.00	0.00
79.230	25.440	0.634	9507.6	5437.2	7.609	3.066	3.10		Clay	100.0			24.05	0.78	n.a.	n.a.	0.71	0.800	n.a.	n.a.	n.a.	n.a.	0.00	0.00
79.400	25.230	0.628	9528.0	5447.0	7.515	3.067	3.11		Clay	100.0			23.85	0.78	n.a.	n.a.	0.71	0.799	n.a.	n.a.	n.a.	n.a.	0.00	0.00
79.560	25.600	0.684	9547.2	5456.3	7.634	3.285	3.12		Clay	100.0			24.20	0.78	n.a.	n.a.	0.71	0.799	n.a.	n.a.	n.a.	n.a.	0.00	0.00
79.720	25.870	0.806	9566.4	5465.5	7.716	3.821	3.15		Clay	100.0			24.45	0.78	n.a.	n.a.	0.71	0.798	n.a.	n.a.	n.a.	n.a.	0.00	0.00
79.890	28.570	0.980	9586.8	5475.3	8.685	4.123	3.13		Clay	100.0			27.00	0.78	n.a.	n.a.	0.71	0.797	n.a.	n.a.	n.a.	n.a.	0.00	0.00
80.050	32.670	1.196	9606.0	5484.5	10.162	4.291	3.08		Clay	100.0			30.88	0.78	n.a.	n.a.	0.71	0.797	n.a.	n.a.	n.a.	n.a.	0.00	0.00
80.220	37.860	1.312	9626.4	5494.3	12.030	3.969	3.00		Clay	100.0			35.78	0.78	n.a.	n.a.	0.71	0.796	n.a.	n.a.	n.a.	n.a.	0.00	0.00
80.380	37.170	1.270	9645.6	5503.5	11.755	3.925	3.01		Clay	100.0			35.13	0.78	n.a.	n.a.	0.70	0.796	n.a.	n.a.	n.a.	n.a.	0.00	0.00
80.540	35.200	1.202	9664.8	5512.7	11.017	3.959	3.03		Clay	100.0			33.27	0.78	n.a.	n.a.	0.70	0.795	n.a.	n.a.	n.a.	n.a.	0.00	0.00
80.710	33.760	1.086	9685.2	5522.5	10.473	3.754	3.04		Clay	100.0			31.91	0.78	n.a.	n.a.	0.70	0.795	n.a.	n.a.	n.a.	n.a.	0.00	0.00
80.870	32.680	0.961	9704.4	5531.7	10.061	3.455	3.03		Clay	100.0			30.89	0.78	n.a.	n.a.	0.70	0.794	n.a.	n.a.	n.a.	n.a.	0.00	0.00
81.040	32.710	0.876	9724.8	5541.5	10.051	3.144	3.01		Clay	100.0			30.92	0.78	n.a.	n.a.	0.70	0.794	n.a.	n.a.	n.a.	n.a.	0.00	0.00
81.200	34.000	0.875	9744.0	5550.7	10.495	3.005	2.98		Clay	100.0			32.14	0.78	n.a.	n.a.	0.70	0.793	n.a.	n.a.	n.a.	n.a.	0.00	0.00
81.360	36.270	0.972	9763.2	5559.9	11.291	3.097	2.96		Clay	99.9			34.28	0.78	n.a.	n.a.	0.70	0.793	n.a.	n.a.	n.a.	n.a.	0.00	0.00
81.530	40.590	1.053	9783.6	5569.7	12.819	2.950	2.90		Clay	95.3			38.36	0.77	n.a.	n.a.	0.70	0.792	n.a.	n.a.	n.a.	n.a.	0.00	0.00
81.690	44.700	1.250	9802.8	5578.9	14.267	3.140	2.88		Clay	93.6			42.25	0.77	n.a.	n.a.	0.70	0.792	n.a.	n.a.	n.a.	n.a.	0.00	0.00
81.860	49.120	1.481	9823.2	5588.7	15.821	3.351	2.86		Clay	92.1			46.43	0.77	n.a.	n.a.	0.70	0.791	n.a.	n.a.	n.a.	n.a.	0.00	0.00
82.020	54.060	1.680	9842.4	5598.0	17.556	3.419	2.83		Clay	89.7			51.10	0.77	n.a.	n.a.	0.70	0.791	n.a.	n.a.	n.a.	n.a.	0.00	0.00
82.190	56.050	1.798	9862.8	5607.7	18.231	3.518	2.83		Clay	89.3			52.98	0.77	n.a.	n.a.	0.70	0.790	n.a.	n.a.	n.a.	n.a.	0.00	0.00
82.350	56.920	1.982	9882.0	5617.0	18.508	3.814	2.85		Clay	90.6			53.80	0.77	n.a.	n.a.	0.70	0.790	n.a.	n.a.	n.a.	n.a.	0.00	0.00
82.510	56.790	1.960	9901.2	5626.2	18.428	3.781	2.84		Clay	90.6			53.68	0.77	n.a.	n.a.	0.70	0.789	n.a.	n.a.	n.a.	n.a.	0.00	0.00
82.680	56.420	1.947	9921.6	5636.0	18.261	3.783	2.85		Clay	90.8			53.33	0.77	n.a.	n.a.	0.70	0.789	n.a.	n.a.	n.a.	n.a.	0.00	0.00
82.840	54.210	1.998	9940.8	5645.2	17.445	4.057	2.88		Clay	93.6			51.24	0.77	n.a.	n.a.	0.70	0.788	n.a.	n.a.	n.a.	n.a.	0.00	0.00
83.010	52.500	1.922	9961.2	5655.0	16.806	4.046	2.89		Clay	94.5			49.62	0.77	n.a.	n.a.	0.70	0.787	n.a.	n.a.	n.a.	n.a.	0.00	0.00
83.170	52.330	1.880	9980.4	5664.2	16.715	3.972	2.89		Clay	94.3			49.46	0.77	n.a.	n.a.	0.70	0.787	n.a.	n.a.	n.a.	n.a.	0.00	0.00
83.330	49.440	1.768	9999.6	5673.4	15.666	3.979	2.91		Clay	96.1			46.73	0.77	n.a.	n.a.	0.69	0.786	n.a.	n.a.	n.a.	n.a.	0.00	0.00
83.500	45.980	1.682	10020.0	5683.2	14.418	4.105	2.95		Clay	99.0			43.46	0.77	n.a.	n.a.	0.69	0.786	n.a.	n.a.	n.a.	n.a.	0.00	0.00
83.660	43.160	1.644	10039.2	5692.4	13.400	4.310	2.99		Clay	100.0			40.79	0.77	n.a.	n.a.	0.69	0.785	n.a.	n.a.	n.a.	n.a.	0.00	0.00
83.830	37.870	1.511	10059.6	5702.2	11.518	4.601	3.06		Clay	100.0			35.79	0.77	n.a.	n.a.	0.69	0.785	n.a.	n.a.	n.a.	n.a.	0.00	0.00
83.990	32.360	1.318	10078.8	5711.4	9.567	4.822	3.13		Clay	100.0			30.59	0.77	n.a.	n.a.	0.69	0.784	n.a.	n.a.	n.a.	n.a.	0.00	0.00
84.150	27.700	1.240	10098.0	5720.6	7.919	5.472	3.23		Clay	100.0			26.18	0.77	n.a.	n.a.	0.69	0.784	n.a.	n.a.	n.a.	n.a.	0.00	0.00
84.320	25.530	1.153	10118.4	5730.4	7.145	5.633	3.28		Clay	100.0			24.13	0.77	n.a.	n.a.	0.69	0.783	n.a.	n.a.	n.a.	n.a.	0.00	0.00
84.480	24.020	1.091	10137.6	5739.6	6.604	5.758	3.31		Clay	100.0			22.70	0.77	n.a.	n.a.	0.69	0.783	n.a.	n.a.	n.a.	n.a.	0.00	0.00
84.650	27.510	1.286	10158.0	5749.4	7.803	5.735	3.25		Clay	100.0			26.00	0.77	n.a.	n.a.	0.69	0.782	n.a.	n.a.	n.a.	n.a.	0.00	0.00
84.810	39.260	1.464	10177.2	5758.7	11.868	4.285	3.03		Clay	100.0			37.11	0.77	n.a.	n.a.	0.69	0.782	n.a.	n.a.	n.a.	n.a.	0.00	0.00
84.970	50.280	1.658	10196.4	5767.9	15.667	3.669	2.89		Clay	94.3			47.52	0.77	n.a.	n.a.	0.69	0.781	n.a.	n.a.	n.a.	n.a.	0.00	0.00
85.140	51.810	1.808	10216.8	5777.7	16.166	3.871	2.90		Clay	94.6			48.97	0.77	n.a.	n.a.	0.69	0.781	n.a.	n.a.	n.a.	n.a.	0.00	0.00
85.300	42.880	1.608	10236.0	5786.9	13.051	4.259	2.99		Clay	100.0			40.53	0.77	n.a.	n.a.	0.69	0.780	n.a.	n.a.	n.a.	n.a.	0.00	0.00
85.470	38.860	1.381	10256.4	5796.7	11.638	4.093	3.02		Clay	100.0			36.73	0.77	n.a.	n.a.	0.69	0.780	n.a.	n.a.	n.a.	n.a.	0.00	0.00
85.630	38.310	1.215	10275.6	5805.9	11.427	3.662	3.00		Clay	100.0			36.21	0.77	n.a.	n.a.	0.69	0.779	n.a.	n.a.	n.a.	n.a.	0.00	0.00
85.790	41.950	1.331	10294.8	5815.1	12.658	3.617	2.96		Clay	99.9			39.65	0.77	n.a.	n.a.	0.69	0.779	n.a.	n.a.	n.a.	n.a.	0.00	0.00
85.960	49.840	1.387	10315.2	5824.9	15.342	3.103	2.85		Clay	91.4			47.11	0.77	n.a.	n.a.	0.69	0.778	n.a.	n.a.	n.a.	n.a.	0.00	0.00
86.120	51.140	1.640	10334.4	5834.1	15.760	3.567	2.88		Clay	93.5			48.34	0.77	n.a.	n.a.	0.69	0.778	n.a.	n.a.	n.a.	n.a.	0.00	0.00
86.290	51.630	1.639	10354.8	5843.9	15.898	3.528	2.88		Clay	93.1			48.80	0.76	n.a.	n.a.	0.69	0.777	n.a.	n.a.	n.a.	n.a.	0.00	0.00
86.450	51.900	1.705	10374.0	5853.1	15.962	3.650	2.88		Clay	93.7			49.05	0.76	n.a.	n.a.	0.69	0.777	n.a.	n.a.	n.a.	n.a.	0.00	0.00
86.610	52.330	2.008	10393.2	5862.3	16.080	4.260	2.92		Clay	96.9			49.46	0.76	n.a.	n.a.	0.68	0.777	n.a.	n.a.	n.a.	n.a.	0.00	0.00
86.780	55.100	1.973	10413.6	5872.1	16.993	3.955	2.88		Clay	93.7			52.08	0.76	n.a.	n.a.	0.68	0.776	n.a.	n.a.	n.a.	n.a.	0.00	0.00
86.940	50.180	1.474	10432.8	5881.3	15.290	3.278	2.87		Clay	92.6			47.43	0.76	n.a.	n.a.	0.68	0.776	n.a.	n.a.	n.a.	n.a.	0.00	0.00
87.110	40.430	1.548	10453.2	5891.1	11.951	4.398	3.03		Clay	100.0			38.21	0.76	n.a.	n.a.	0.68	0.775	n.a.	n.a.	n.a.	n.a.	0.00	0.00
87.270	34.580	1.287	10472.4	5900.4	9.946	4.385	3.10		Clay	100.0			32.68	0.76	n.a.	n.a.	0.68	0.775	n.a.	n.a.	n.a.	n.a.	0.00	0.00
87.430	27.620	1.159	10491.6	5909.6	7.572	5.182	3.23		Clay	100.0			26.11	0.76	n.a.	n.a.	0.68	0.774	n.a.	n.a.	n.a.	n.a.	0.00	0.00
87.600	34.920	0.979	10512.0	5919.4	10.023	3.299	3.02		Clay	100.0			33.01	0.76	n.a.	n.a.	0.68	0.774	n.a.	n.a.	n.a.	n.a.	0.00	0.00
87.760	33.300	0.854	10531.2	5928.6	9.457	3.045	3.02		Clay	100.0			31.47	0.76	n.a.	n.a.	0.68	0.773	n.a.	n.a.	n.a.	n.a.	0.00	0.00
87.930	30.750	0.826	10551.6	5938.4	8.580	3.242	3.07		Clay	100.0			29.06	0.76	n.a.	n.a.	0.68	0.773	n.a.	n.a.	n.a.	n.a.	0.00	0.00

CORNERSTONE EARTH GROUP

CPT No.	1

PGA (A_{max})	0.89

Total Settlement:	0.36	(Inches)

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Depth (ft)	q_c (tsf)	f_s (tsf)	σ_{vc} (psf)	Insitu σ'_{vc} (psf)	Q	F (%)	I_c	Layer "Plastic" PI > 7	Flag Soil Type	Fines (%)	q_{cN} near interfaces (soft layer)	Thin Layer Factor (K_H)	Interpreted q_{cN}	C_N	q_{c1N}	q_{c1N-CS}	Stress Reduction Coeff, r_d	CSR	K_σ for Sand	$CRR_{M=7.5, \sigma'vc = 1 atm}$	CRR	Factor of Safety (CRR/CSR)	Vertical Strain ε_v	Settlement (Inches)
88.090	30.820	0.797	10570.8	5947.6	8.587	3.121	3.06		Clay	100.0			29.13	0.76	n.a.	n.a.	0.68	0.772	n.a.	n.a.	n.a.	n.a.	0.00	0.00
88.250	31.340	0.850	10590.0	5956.8	8.745	3.265	3.07		Clay	100.0			29.62	0.76	n.a.	n.a.	0.68	0.772	n.a.	n.a.	n.a.	n.a.	0.00	0.00
88.420	31.890	0.838	10610.4	5966.6	8.911	3.150	3.05		Clay	100.0			30.14	0.76	n.a.	n.a.	0.68	0.771	n.a.	n.a.	n.a.	n.a.	0.00	0.00
88.580	33.210	0.824	10629.6	5975.8	9.336	2.955	3.02		Clay	100.0			31.39	0.76	n.a.	n.a.	0.68	0.771	n.a.	n.a.	n.a.	n.a.	0.00	0.00
88.750	31.900	0.805	10650.0	5985.6	8.880	3.031	3.04		Clay	100.0			30.15	0.76	n.a.	n.a.	0.68	0.770	n.a.	n.a.	n.a.	n.a.	0.00	0.00
88.910	30.360	0.748	10669.2	5994.8	8.349	2.987	3.06		Clay	100.0			28.70	0.76	n.a.	n.a.	0.68	0.770	n.a.	n.a.	n.a.	n.a.	0.00	0.00
89.070	28.570	0.661	10688.4	6004.0	7.737	2.845	3.08		Clay	100.0			27.00	0.76	n.a.	n.a.	0.68	0.769	n.a.	n.a.	n.a.	n.a.	0.00	0.00
89.240	29.390	0.570	10708.8	6013.8	7.993	2.372	3.02		Clay	100.0			27.78	0.76	n.a.	n.a.	0.68	0.769	n.a.	n.a.	n.a.	n.a.	0.00	0.00
89.400	33.480	0.633	10728.0	6023.0	9.336	2.251	2.95		Clay	99.3			31.64	0.76	n.a.	n.a.	0.68	0.768	n.a.	n.a.	n.a.	n.a.	0.00	0.00
89.570	37.810	0.730	10748.4	6032.8	10.753	2.249	2.90		Clay	95.1			35.74	0.76	n.a.	n.a.	0.68	0.768	n.a.	n.a.	n.a.	n.a.	0.00	0.00
89.730	40.450	0.866	10767.6	6042.0	11.607	2.470	2.90		Clay	94.7			38.23	0.76	n.a.	n.a.	0.68	0.768	n.a.	n.a.	n.a.	n.a.	0.00	0.00
89.900	43.410	1.033	10788.0	6051.8	12.563	2.716	2.89		Clay	94.3			41.03	0.76	n.a.	n.a.	0.67	0.767	n.a.	n.a.	n.a.	n.a.	0.00	0.00
90.060	43.100	1.191	10807.2	6061.1	12.439	3.159	2.93		Clay	97.6			40.74	0.76	n.a.	n.a.	0.67	0.767	n.a.	n.a.	n.a.	n.a.	0.00	0.00
90.220	44.610	1.514	10826.4	6070.3	12.914	3.863	2.97		Clay	100.0			42.16	0.76	n.a.	n.a.	0.67	0.766	n.a.	n.a.	n.a.	n.a.	0.00	0.00
90.390	50.260	1.707	10846.8	6080.1	14.749	3.808	2.92		Clay	96.8			47.50	0.76	n.a.	n.a.	0.67	0.766	n.a.	n.a.	n.a.	n.a.	0.00	0.00
90.550	50.950	1.840	10866.0	6089.3	14.950	4.042	2.93		Clay	97.7			48.16	0.76	n.a.	n.a.	0.67	0.765	n.a.	n.a.	n.a.	n.a.	0.00	0.00
90.720	50.500	1.857	10886.4	6099.1	14.775	4.121	2.94		Clay	98.4			47.73	0.76	n.a.	n.a.	0.67	0.765	n.a.	n.a.	n.a.	n.a.	0.00	0.00
90.880	51.940	1.787	10905.6	6108.3	15.221	3.844	2.91		Clay	96.1			49.09	0.76	n.a.	n.a.	0.67	0.764	n.a.	n.a.	n.a.	n.a.	0.00	0.00
91.040	53.730	1.770	10924.8	6117.5	15.780	3.668	2.89		Clay	94.1			50.78	0.76	n.a.	n.a.	0.67	0.764	n.a.	n.a.	n.a.	n.a.	0.00	0.00
91.210	55.510	1.815	10945.2	6127.3	16.333	3.628	2.87		Clay	92.9			52.47	0.76	n.a.	n.a.	0.67	0.764	n.a.	n.a.	n.a.	n.a.	0.00	0.00
91.370	54.720	1.786	10964.4	6136.5	16.047	3.628	2.88		Clay	93.4			51.72	0.76	n.a.	n.a.	0.67	0.763	n.a.	n.a.	n.a.	n.a.	0.00	0.00
91.540	55.500	1.686	10984.8	6146.3	16.272	3.372	2.86		Clay	91.5			52.46	0.75	n.a.	n.a.	0.67	0.763	n.a.	n.a.	n.a.	n.a.	0.00	0.00
91.700	52.750	1.537	11004.0	6155.5	15.351	3.253	2.87		Clay	92.3			49.86	0.75	n.a.	n.a.	0.67	0.762	n.a.	n.a.	n.a.	n.a.	0.00	0.00
91.860	50.330	1.410	11023.2	6164.7	14.540	3.145	2.88		Clay	93.1			47.57	0.75	n.a.	n.a.	0.67	0.762	n.a.	n.a.	n.a.	n.a.	0.00	0.00
92.030	46.880	1.346	11043.6	6174.5	13.396	3.255	2.91		Clay	96.1			44.31	0.75	n.a.	n.a.	0.67	0.761	n.a.	n.a.	n.a.	n.a.	0.00	0.00
92.190	40.170	1.368	11062.8	6183.7	11.203	3.949	3.03		Clay	100.0			37.97	0.75	n.a.	n.a.	0.67	0.761	n.a.	n.a.	n.a.	n.a.	0.00	0.00
92.360	39.140	1.322	11083.2	6193.5	10.850	3.935	3.04		Clay	100.0			36.99	0.75	n.a.	n.a.	0.67	0.760	n.a.	n.a.	n.a.	n.a.	0.00	0.00
92.520	39.750	1.353	11102.4	6202.8	11.027	3.957	3.03		Clay	100.0			37.57	0.75	n.a.	n.a.	0.67	0.760	n.a.	n.a.	n.a.	n.a.	0.00	0.00
92.680	38.710	1.457	11121.6	6212.0	10.673	4.396	3.07		Clay	100.0			36.59	0.75	n.a.	n.a.	0.67	0.760	n.a.	n.a.	n.a.	n.a.	0.00	0.00
92.850	38.860	1.340	11142.0	6221.8	10.701	4.026	3.05		Clay	100.0			36.73	0.75	n.a.	n.a.	0.67	0.759	n.a.	n.a.	n.a.	n.a.	0.00	0.00
93.010	39.940	1.373	11161.2	6231.0	11.029	3.996	3.03		Clay	100.0			37.75	0.75	n.a.	n.a.	0.67	0.759	n.a.	n.a.	n.a.	n.a.	0.00	0.00
93.180	35.650	1.241	11181.6	6240.8	9.633	4.129	3.09		Clay	100.0			33.70	0.75	n.a.	n.a.	0.67	0.758	n.a.	n.a.	n.a.	n.a.	0.00	0.00
93.340	34.350	1.089	11200.8	6250.0	9.200	3.786	3.08		Clay	100.0			32.47	0.75	n.a.	n.a.	0.67	0.758	n.a.	n.a.	n.a.	n.a.	0.00	0.00
93.500	32.590	0.975	11220.0	6259.2	8.621	3.614	3.10		Clay	100.0			30.80	0.75	n.a.	n.a.	0.66	0.758	n.a.	n.a.	n.a.	n.a.	0.00	0.00
93.670	32.510	0.862	11240.4	6269.0	8.579	3.204	3.07		Clay	100.0			30.73	0.75	n.a.	n.a.	0.66	0.757	n.a.	n.a.	n.a.	n.a.	0.00	0.00
93.830	31.140	0.793	11259.6	6278.2	8.127	3.109	3.08		Clay	100.0			29.43	0.75	n.a.	n.a.	0.66	0.757	n.a.	n.a.	n.a.	n.a.	0.00	0.00
94.000	32.810	0.956	11280.0	6288.0	8.642	3.520	3.09		Clay	100.0			31.01	0.75	n.a.	n.a.	0.66	0.756	n.a.	n.a.	n.a.	n.a.	0.00	0.00
94.160	34.890	1.265	11299.2	6297.2	9.287	4.325	3.12		Clay	100.0			32.98	0.75	n.a.	n.a.	0.66	0.756	n.a.	n.a.	n.a.	n.a.	0.00	0.00
94.320	45.190	1.363	11318.4	6306.4	12.537	3.448	2.95		Clay	99.2			42.71	0.75	n.a.	n.a.	0.66	0.755	n.a.	n.a.	n.a.	n.a.	0.00	0.00
94.490	44.900	1.295	11338.8	6316.2	12.422	3.302	2.94		Clay	98.5			42.44	0.75	n.a.	n.a.	0.66	0.755	n.a.	n.a.	n.a.	n.a.	0.00	0.00
94.650	38.880	1.596	11358.0	6325.4	10.498	4.808	3.10		Clay	100.0			36.75	0.75	n.a.	n.a.	0.66	0.755	n.a.	n.a.	n.a.	n.a.	0.00	0.00
94.820	36.030	1.633	11378.4	6335.2	9.578	5.383	3.16		Clay	100.0			34.05	0.75	n.a.	n.a.	0.66	0.754	n.a.	n.a.	n.a.	n.a.	0.00	0.00
94.980	34.750	1.654	11397.6	6344.4	9.158	5.695	3.19		Clay	100.0			32.84	0.75	n.a.	n.a.	0.66	0.754	n.a.	n.a.	n.a.	n.a.	0.00	0.00
95.140	41.060	1.466	11416.8	6353.7	11.128	4.146	3.04		Clay	100.0			38.81	0.75	n.a.	n.a.	0.66	0.753	n.a.	n.a.	n.a.	n.a.	0.00	0.00
95.310	38.870	1.199	11437.2	6363.5	10.419	3.616	3.03		Clay	100.0			36.74	0.75	n.a.	n.a.	0.66	0.753	n.a.	n.a.	n.a.	n.a.	0.00	0.00
95.470	36.980	0.964	11456.4	6372.7	9.808	3.083	3.01		Clay	100.0			34.95	0.75	n.a.	n.a.	0.66	0.753	n.a.	n.a.	n.a.	n.a.	0.00	0.00
95.640	34.970	0.842	11476.8	6382.5	9.160	2.880	3.02		Clay	100.0			33.05	0.75	n.a.	n.a.	0.66	0.752	n.a.	n.a.	n.a.	n.a.	0.00	0.00
95.800	33.780	0.863	11496.0	6391.7	8.771	3.079	3.05		Clay	100.0			31.93	0.75	n.a.	n.a.	0.66	0.752	n.a.	n.a.	n.a.	n.a.	0.00	0.00
95.960	34.430	0.857	11515.2	6400.9	8.959	2.987	3.04		Clay	100.0			32.54	0.75	n.a.	n.a.	0.66	0.751	n.a.	n.a.	n.a.	n.a.	0.00	0.00
96.130	37.440	0.770	11535.6	6410.7	9.881	2.431	2.95		Clay	99.0			35.39	0.75	n.a.	n.a.	0.66	0.751	n.a.	n.a.	n.a.	n.a.	0.00	0.00
96.290	36.060	1.024	11554.8	6419.9	9.434	3.382	3.05		Clay	100.0			34.08	0.75	n.a.	n.a.	0.66	0.751	n.a.	n.a.	n.a.	n.a.	0.00	0.00
96.460	33.320	0.963	11575.2	6429.7	8.564	3.497	3.09		Clay	100.0			31.49	0.75	n.a.	n.a.	0.66	0.750	n.a.	n.a.	n.a.	n.a.	0.00	0.00
96.620	28.870	0.941	11594.4	6438.9	7.167	4.079	3.19		Clay	100.0			27.29	0.75	n.a.	n.a.	0.66	0.750	n.a.	n.a.	n.a.	n.a.	0.00	0.00
96.780	34.000	1.001	11613.6	6448.1	8.745	3.549	3.09		Clay	100.0			32.14	0.75	n.a.	n.a.	0.66	0.750	n.a.	n.a.	n.a.	n.a.	0.00	0.00
96.950	33.110	0.892	11634.0	6457.9	8.453	3.270	3.08		Clay	100.0			31.29	0.75	n.a.	n.a.	0.66	0.749	n.a.	n.a.	n.a.	n.a.	0.00	0.00
97.110	32.850	0.887	11653.2	6467.1	8.357	3.281	3.08		Clay	100.0			31.05	0.74	n.a.	n.a.	0.66	0.749	n.a.	n.a.	n.a.	n.a.	0.00	0.00
97.280	31.750	0.925	11673.6	6476.9	8.002	3.570	3.12		Clay	100.0			30.01	0.74	n.a.	n.a.	0.66	0.748	n.a.	n.a.	n.a.	n.a.	0.00	0.00
97.440	32.430	0.980	11692.8	6486.1	8.197	3.685	3.12		Clay	100.0			30.65	0.74	n.a.	n.a.	0.66	0.748	n.a.	n.a.	n.a.	n.a.	0.00	0.00
97.600	32.590	0.913	11712.0	6495.4	8.232	3.416	3.10		Clay	100.0			30.80	0.74	n.a.	n.a.	0.65	0.748	n.a.	n.a.	n.a.	n.a.	0.00	0.00
97.770	31.880	0.916	11732.4	6505.2	7.998	3.523	3.12		Clay	100.0			30.13	0.74	n.a.	n.a.	0.65	0.747	n.a.	n.a.	n.a.	n.a.	0.00	0.00
97.930	31.810	0.850	11751.6	6514.4	7.962	3.276	3.10		Clay	100.0			30.07	0.74	n.a.	n.a.	0.65	0.747	n.a.	n.a.	n.a.	n.a.	0.00	0.00
98.100	31.770	0.854	11772.0	6524.2	7.935	3.297	3.10		Clay	100.0			30.03	0.74	n.a.	n.a.	0.65	0.747	n.a.	n.a.	n.a.	n.a.	0.00	0.00
98.260	30.980	0.895	11791.2	6533.4	7.679	3.566	3.13		Clay	100.0			29.28	0.74	n.a.	n.a.	0.65	0.746	n.a.	n.a.	n.a.	n.a.	0.00	0.00
98.430	31.780	0.962	11811.6	6543.2	7.909	3.718	3.13		Clay	100.0			30.04	0.74	n.a.	n.a.	0.65	0.746	n.a.	n.a.	n.a.	n.a.	0.00	0.00
98.590	32.510	0.995	11830.8	6552.4	8.118	3.741	3.13		Clay	100.0			30.73	0.74	n.a.	n.a.	0.65	0.745	n.a.	n.a.	n.a.	n.a.	0.00	0.00
98.750	32.690	1.030	11850.0	6561.6	8.158	3.849	3.13		Clay	100.0			30.90	0.74	n.a.	n.a.	0.65	0.745	n.a.	n.a.	n.a.	n.a.	0.00	0.00
98.920	33.590	0.980	11870.4	6571.4	8.417	3.542	3.10		Clay	100.0			31.75	0.74	n.a.	n.a.	0.65	0.745	n.a.	n.a.	n.a.	n.a.	0.00	0.00

CORNERSTONE EARTH GROUP

CPT No.	1

PGA (A_{max})	0.89

Total Settlement:	0.36	(Inches)

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Depth (ft)	q_c (tsf)	f_s (tsf)	σ_{vc} (psf)	Insitu σ'_{vc} (psf)	Q	F (%)	I_c	Layer "Plastic" PI > 7	Flag Soil Type	Fines (%)	q_{cN} near interfaces (soft layer)	Thin Layer Factor (K_H)	Interpreted q_{cN}	C_N	q_{c1N}	$q_{c1N\text{-}CS}$	Stress Reduction Coeff, r_d	CSR	K_σ for Sand	$CRR_{M=7.5,\ \sigma'vc = 1\ atm}$	CRR	Factor of Safety (CRR/CSR)	Vertical Strain ε_v	Settlement (Inches)
99.080	33.200	0.904	11889.6	6580.6	8.283	3.316	3.09		Clay	100.0			31.38	0.74	n.a.	n.a.	0.65	0.744	n.a.	n.a.	n.a.	n.a.	0.00	0.00
99.250	31.120	0.640	11910.0	6590.4	7.637	2.544	3.06		Clay	100.0			29.41	0.74	n.a.	n.a.	0.65	0.744	n.a.	n.a.	n.a.	n.a.	0.00	0.00
99.410	30.370	0.671	11929.2	6599.6	7.396	2.748	3.09		Clay	100.0			28.71	0.74	n.a.	n.a.	0.65	0.744	n.a.	n.a.	n.a.	n.a.	0.00	0.00
99.570	29.090	0.595	11948.4	6608.8	6.995	2.572	3.09		Clay	100.0			27.50	0.74	n.a.	n.a.	0.65	0.743	n.a.	n.a.	n.a.	n.a.	0.00	0.00
99.740	26.230	0.492	11968.8	6618.6	6.118	2.428	3.13		Clay	100.0			24.79	0.74	n.a.	n.a.	0.65	0.743	n.a.	n.a.	n.a.	n.a.	0.00	0.00
99.900	29.260	0.526	11988.0	6627.8	7.021	2.260	3.06		Clay	100.0			27.66	0.74	n.a.	n.a.	0.65	0.743	n.a.	n.a.	n.a.	n.a.	0.00	0.00
100.070	29.250	0.554	12008.4	6637.6	7.004	2.382	3.07		Clay	100.0			27.65	0.74	n.a.	n.a.	0.65	0.742	n.a.	n.a.	n.a.	n.a.	0.00	0.00
100.230	30.650	0.644	12027.6	6646.8	7.413	2.612	3.07		Clay	100.0			28.97	0.74	n.a.	n.a.	0.65	0.742	n.a.	n.a.	n.a.	n.a.	0.00	0.00
100.390	31.100	0.718	12046.8	6656.1	7.535	2.862	3.09		Clay	100.0			29.40	0.74	n.a.	n.a.	0.65	0.742	n.a.	n.a.	n.a.	n.a.	0.00	0.00
100.560	31.440	0.777	12067.2	6665.9	7.623	3.059	3.10		Clay	100.0			29.72	0.74	n.a.	n.a.	0.65	0.741	n.a.	n.a.	n.a.	n.a.	0.00	0.00
100.720	31.520	0.731	12086.4	6675.1	7.633	2.868	3.08		Clay	100.0			29.79	0.74	n.a.	n.a.	0.65	0.741	n.a.	n.a.	n.a.	n.a.	0.00	0.00
100.890	30.580	0.806	12106.8	6684.9	7.338	3.286	3.13		Clay	100.0			28.90	0.74	n.a.	n.a.	0.65	0.741	n.a.	n.a.	n.a.	n.a.	0.00	0.00
101.050	30.900	0.813	12126.0	6694.1	7.421	3.272	3.13		Clay	100.0			29.21	0.74	n.a.	n.a.	0.65	0.740	n.a.	n.a.	n.a.	n.a.	0.00	0.00
101.210	32.280	0.881	12145.2	6703.3	7.819	3.362	3.11		Clay	100.0			30.51	0.74	n.a.	n.a.	0.65	0.740	n.a.	n.a.	n.a.	n.a.	0.00	0.00
101.380	32.250	0.942	12165.6	6713.1	7.796	3.600	3.13		Clay	100.0			30.48	0.74	n.a.	n.a.	0.65	0.740	n.a.	n.a.	n.a.	n.a.	0.00	0.00
101.540	34.420	1.189	12184.8	6722.3	8.428	4.196	3.14		Clay	100.0			32.53	0.74	n.a.	n.a.	0.65	0.739	n.a.	n.a.	n.a.	n.a.	0.00	0.00
101.710	36.500	1.202	12205.2	6732.1	9.031	3.953	3.10		Clay	100.0			34.50	0.74	n.a.	n.a.	0.65	0.739	n.a.	n.a.	n.a.	n.a.	0.00	0.00
101.870	43.000	0.728	12224.4	6741.3	10.944	1.974	2.86		Clay	92.2			40.64	0.74	n.a.	n.a.	0.65	0.739	n.a.	n.a.	n.a.	n.a.	0.00	0.00
102.030	40.550	0.611	12243.6	6750.5	10.200	1.774	2.87		Clay	92.3			38.33	0.74	n.a.	n.a.	0.65	0.738	n.a.	n.a.	n.a.	n.a.	0.00	0.00
102.200	32.470	0.868	12264.0	6760.3	7.792	3.296	3.11		Clay	100.0			30.69	0.74	n.a.	n.a.	0.64	0.738	n.a.	n.a.	n.a.	n.a.	0.00	0.00
102.360	31.560	0.864	12283.2	6769.5	7.510	3.401	3.13		Clay	100.0			29.83	0.74	n.a.	n.a.	0.64	0.738	n.a.	n.a.	n.a.	n.a.	0.00	0.00
102.530	31.750	0.893	12303.6	6779.3	7.552	3.490	3.13		Clay	100.0			30.01	0.74	n.a.	n.a.	0.64	0.737	n.a.	n.a.	n.a.	n.a.	0.00	0.00
102.690	29.810	0.843	12322.8	6788.5	6.967	3.564	3.17		Clay	100.0			28.18	0.74	n.a.	n.a.	0.64	0.737	n.a.	n.a.	n.a.	n.a.	0.00	0.00
102.850	32.180	0.729	12342.0	6797.8	7.652	2.804	3.08		Clay	100.0			30.42	0.73	n.a.	n.a.	0.64	0.737	n.a.	n.a.	n.a.	n.a.	0.00	0.00
103.020	30.880	0.689	12362.4	6807.6	7.256	2.789	3.10		Clay	100.0			29.19	0.73	n.a.	n.a.	0.64	0.736	n.a.	n.a.	n.a.	n.a.	0.00	0.00
103.180	29.780	0.620	12381.6	6816.8	6.921	2.629	3.10		Clay	100.0			28.15	0.73	n.a.	n.a.	0.64	0.736	n.a.	n.a.	n.a.	n.a.	0.00	0.00
103.350	29.030	0.651	12402.0	6826.6	6.688	2.852	3.13		Clay	100.0			27.44	0.73	n.a.	n.a.	0.64	0.736	n.a.	n.a.	n.a.	n.a.	0.00	0.00
103.510	28.680	0.799	12421.2	6835.8	6.574	3.556	3.19		Clay	100.0			27.11	0.73	n.a.	n.a.	0.64	0.736	n.a.	n.a.	n.a.	n.a.	0.00	0.00
103.670	30.190	0.951	12440.4	6845.0	7.004	3.966	3.19		Clay	100.0			28.53	0.73	n.a.	n.a.	0.64	0.735	n.a.	n.a.	n.a.	n.a.	0.00	0.00
103.840	30.930	0.959	12460.8	6854.8	7.207	3.883	3.18		Clay	100.0			29.23	0.73	n.a.	n.a.	0.64	0.735	n.a.	n.a.	n.a.	n.a.	0.00	0.00
104.000	30.180	0.951	12480.0	6864.0	6.976	3.974	3.19		Clay	100.0			28.53	0.73	n.a.	n.a.	0.64	0.735	n.a.	n.a.	n.a.	n.a.	0.00	0.00
104.170	29.710	0.853	12500.4	6873.8	6.826	3.638	3.18		Clay	100.0			28.08	0.73	n.a.	n.a.	0.64	0.734	n.a.	n.a.	n.a.	n.a.	0.00	0.00
104.330	29.400	0.786	12519.6	6883.0	6.724	3.397	3.17		Clay	100.0			27.79	0.73	n.a.	n.a.	0.64	0.734	n.a.	n.a.	n.a.	n.a.	0.00	0.00
104.490	30.270	0.822	12538.8	6892.2	6.965	3.427	3.16		Clay	100.0			28.61	0.73	n.a.	n.a.	0.64	0.734	n.a.	n.a.	n.a.	n.a.	0.00	0.00
104.660	30.760	0.750	12559.2	6902.0	7.094	3.065	3.13		Clay	100.0			29.07	0.73	n.a.	n.a.	0.64	0.733	n.a.	n.a.	n.a.	n.a.	0.00	0.00
104.820	33.160	1.148	12578.4	6911.2	7.776	4.271	3.17		Clay	100.0			31.34	0.73	n.a.	n.a.	0.64	0.733	n.a.	n.a.	n.a.	n.a.	0.00	0.00
104.990	34.800	1.933	12598.8	6921.0	8.236	6.782	3.28		Clay	100.0			32.89	0.73	n.a.	n.a.	0.64	0.733	n.a.	n.a.	n.a.	n.a.	0.00	0.00
105.150	56.220	2.436	12618.0	6930.2	14.404	4.881	3.00		Clay	100.0			53.14	0.73	n.a.	n.a.	0.64	0.733	n.a.	n.a.	n.a.	n.a.	0.00	0.00
105.320	95.330	2.907	12638.4	6940.0	25.651	3.266	2.69		Clay	78.5			90.10	0.73	n.a.	n.a.	0.64	0.732	n.a.	n.a.	n.a.	n.a.	0.00	0.00
105.480	102.860	2.457	12657.6	6949.2	50.347	2.545	2.40		Sand	55.2			97.22	0.58	56.39	119.35	0.64	0.732	0.853	0.170	0.200	0.27	0.03	0.00
105.640	50.420	2.186	12676.8	6958.5	12.670	4.958	3.05		Clay	100.0			47.66	0.73	n.a.	n.a.	0.64	0.732	n.a.	n.a.	n.a.	n.a.	0.00	0.00
105.810	33.800	1.627	12697.2	6968.3	7.879	5.928	3.25		Clay	100.0			31.95	0.73	n.a.	n.a.	0.64	0.732	n.a.	n.a.	n.a.	n.a.	0.00	0.00
105.970	30.950	1.442	12716.4	6977.5	7.049	5.863	3.29		Clay	100.0			29.25	0.73	n.a.	n.a.	0.64	0.731	n.a.	n.a.	n.a.	n.a.	0.00	0.00
106.140	31.150	1.423	12736.8	6987.3	7.093	5.741	3.28		Clay	100.0			29.44	0.73	n.a.	n.a.	0.64	0.731	n.a.	n.a.	n.a.	n.a.	0.00	0.00
106.300	32.250	1.186	12756.0	6996.5	7.396	4.583	3.21		Clay	100.0			30.48	0.73	n.a.	n.a.	0.64	0.731	n.a.	n.a.	n.a.	n.a.	0.00	0.00
106.460	35.280	0.970	12775.2	7005.7	8.248	3.358	3.09		Clay	100.0			33.35	0.73	n.a.	n.a.	0.64	0.730	n.a.	n.a.	n.a.	n.a.	0.00	0.00
106.630	38.270	0.958	12795.6	7015.5	9.086	3.005	3.03		Clay	100.0			36.17	0.73	n.a.	n.a.	0.64	0.730	n.a.	n.a.	n.a.	n.a.	0.00	0.00
106.790	39.050	1.214	12814.8	7024.7	9.294	3.718	3.08		Clay	100.0			36.91	0.73	n.a.	n.a.	0.64	0.730	n.a.	n.a.	n.a.	n.a.	0.00	0.00
106.960	39.470	1.574	12835.2	7034.5	9.397	4.762	3.14		Clay	100.0			37.31	0.73	n.a.	n.a.	0.64	0.730	n.a.	n.a.	n.a.	n.a.	0.00	0.00
107.120	49.920	2.046	12854.4	7043.7	12.349	4.705	3.04		Clay	100.0			47.18	0.73	n.a.	n.a.	0.64	0.729	n.a.	n.a.	n.a.	n.a.	0.00	0.00
107.280	52.180	1.615	12873.6	7052.9	12.971	3.531	2.95		Clay	98.7			49.32	0.73	n.a.	n.a.	0.64	0.729	n.a.	n.a.	n.a.	n.a.	0.00	0.00
107.450	39.710	1.278	12894.0	7062.7	9.419	3.841	3.08		Clay	100.0			37.53	0.73	n.a.	n.a.	0.64	0.729	n.a.	n.a.	n.a.	n.a.	0.00	0.00
107.610	35.650	0.988	12913.2	7071.9	8.256	3.386	3.10		Clay	100.0			33.70	0.73	n.a.	n.a.	0.64	0.729	n.a.	n.a.	n.a.	n.a.	0.00	0.00
107.780	36.100	1.000	12933.6	7081.7	8.369	3.374	3.09		Clay	100.0			34.12	0.73	n.a.	n.a.	0.63	0.728	n.a.	n.a.	n.a.	n.a.	0.00	0.00
107.940	39.000	1.041	12952.8	7090.9	9.173	3.200	3.04		Clay	100.0			36.86	0.73	n.a.	n.a.	0.63	0.728	n.a.	n.a.	n.a.	n.a.	0.00	0.00
108.100	36.700	1.371	12972.0	7100.2	8.511	4.538	3.16		Clay	100.0			34.69	0.73	n.a.	n.a.	0.63	0.728	n.a.	n.a.	n.a.	n.a.	0.00	0.00
108.270	41.730	1.156	12992.4	7110.0	9.911	3.282	3.02		Clay	100.0			39.44	0.73	n.a.	n.a.	0.63	0.728	n.a.	n.a.	n.a.	n.a.	0.00	0.00
108.430	38.050	1.050	13011.6	7119.2	8.862	3.330	3.07		Clay	100.0			35.96	0.73	n.a.	n.a.	0.63	0.727	n.a.	n.a.	n.a.	n.a.	0.00	0.00
108.600	32.610	0.742	13032.0	7129.0	7.321	2.842	3.10		Clay	100.0			30.82	0.73	n.a.	n.a.	0.63	0.727	n.a.	n.a.	n.a.	n.a.	0.00	0.00
108.760	32.800	0.710	13051.2	7138.2	7.362	2.701	3.08		Clay	100.0			31.00	0.73	n.a.	n.a.	0.63	0.727	n.a.	n.a.	n.a.	n.a.	0.00	0.00
108.920	32.650	0.800	13070.4	7147.4	7.308	3.064	3.12		Clay	100.0			30.86	0.73	n.a.	n.a.	0.63	0.727	n.a.	n.a.	n.a.	n.a.	0.00	0.00
109.090	32.480	0.840	13090.8	7157.2	7.247	3.239	3.13		Clay	100.0			30.70	0.73	n.a.	n.a.	0.63	0.727	n.a.	n.a.	n.a.	n.a.	0.00	0.00
109.250	33.250	0.869	13110.0	7166.4	7.450	3.257	3.12		Clay	100.0			31.43	0.72	n.a.	n.a.	0.63	0.726	n.a.	n.a.	n.a.	n.a.	0.00	0.00
109.420	33.790	0.851	13130.4	7176.2	7.588	3.126	3.11		Clay	100.0			31.94	0.72	n.a.	n.a.	0.63	0.726	n.a.	n.a.	n.a.	n.a.	0.00	0.00
109.580	34.240	0.865	13149.6	7185.4	7.700	3.126	3.10		Clay	100.0			32.36	0.72	n.a.	n.a.	0.63	0.726	n.a.	n.a.	n.a.	n.a.	0.00	0.00
109.740	34.460	0.868	13168.8	7194.6	7.749	3.115	3.10		Clay	100.0			32.57	0.72	n.a.	n.a.	0.63	0.726	n.a.	n.a.	n.a.	n.a.	0.00	0.00
109.910	34.490	0.902	13189.2	7204.4	7.744	3.234	3.11		Clay	100.0			32.60	0.72	n.a.	n.a.	0.63	0.725	n.a.	n.a.	n.a.	n.a.	0.00	0.00

CORNERSTONE EARTH GROUP

CPT No.	1

PGA (A_{max})	0.89

Total Settlement:	0.36	(Inches)

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Depth (ft)	q_c (tsf)	f_s (tsf)	σ_{vc} (psf)	Insitu σ'_{vc} (psf)	Q	F (%)	I_c	Layer "Plastic" PI > 7	Flag Soil Type	Fines (%)	q_{cN} near interfaces (soft layer)	Thin Layer Factor (K_H)	Interpreted q_{cN}	C_N	q_{c1N}	$q_{c1N\text{-}CS}$	Stress Reduction Coeff, r_d	CSR	K_σ for Sand	$CRR_{M=7.5,\ \sigma'vc = 1\ atm}$	CRR	Factor of Safety (CRR/CSR)	Vertical Strain ε_v	Settlement (Inches)
110.070	34.490	0.911	13208.4	7213.6	7.731	3.267	3.11		Clay	100.0			32.60	0.72	n.a.	n.a.	0.63	0.725	n.a.	n.a.	n.a.	n.a.	0.00	0.00
110.240	36.450	0.930	13228.8	7223.4	8.261	3.117	3.07		Clay	100.0			34.45	0.72	n.a.	n.a.	0.63	0.725	n.a.	n.a.	n.a.	n.a.	0.00	0.00
110.400	38.860	0.877	13248.0	7232.6	8.914	2.721	3.01		Clay	100.0			36.73	0.72	n.a.	n.a.	0.63	0.725	n.a.	n.a.	n.a.	n.a.	0.00	0.00
110.560	39.010	0.897	13267.2	7241.9	8.941	2.771	3.02		Clay	100.0			36.87	0.72	n.a.	n.a.	0.63	0.725	n.a.	n.a.	n.a.	n.a.	0.00	0.00
110.730	36.960	0.813	13287.6	7251.6	8.361	2.680	3.03		Clay	100.0			34.93	0.72	n.a.	n.a.	0.63	0.724	n.a.	n.a.	n.a.	n.a.	0.00	0.00
110.890	35.110	0.685	13306.8	7260.9	7.838	2.406	3.03		Clay	100.0			33.19	0.72	n.a.	n.a.	0.63	0.724	n.a.	n.a.	n.a.	n.a.	0.00	0.00
111.060	33.480	0.597	13327.2	7270.7	7.377	2.227	3.04		Clay	100.0			31.64	0.72	n.a.	n.a.	0.63	0.724	n.a.	n.a.	n.a.	n.a.	0.00	0.00
111.220	33.520	0.465	13346.4	7279.9	7.376	1.731	2.98		Clay	100.0			31.68	0.72	n.a.	n.a.	0.63	0.724	n.a.	n.a.	n.a.	n.a.	0.00	0.00
111.380	33.590	0.559	13365.6	7289.1	7.383	2.076	3.02		Clay	100.0			31.75	0.72	n.a.	n.a.	0.63	0.724	n.a.	n.a.	n.a.	n.a.	0.00	0.00
111.550	34.730	1.354	13386.0	7298.9	7.683	4.829	3.21		Clay	100.0			32.83	0.72	n.a.	n.a.	0.63	0.723	n.a.	n.a.	n.a.	n.a.	0.00	0.00
111.710	50.780	2.160	13405.2	7308.1	12.063	4.900	3.06		Clay	100.0			48.00	0.72	n.a.	n.a.	0.63	0.723	n.a.	n.a.	n.a.	n.a.	0.00	0.00
111.880	65.480	1.740	13425.6	7317.9	16.061	2.960	2.83		Clay	89.1			61.89	0.72	n.a.	n.a.	0.63	0.723	n.a.	n.a.	n.a.	n.a.	0.00	0.00
112.040	75.170	1.240	13444.8	7327.1	18.683	1.812	2.65		Clay	74.9			71.05	0.72	n.a.	n.a.	0.63	0.723	n.a.	n.a.	n.a.	n.a.	0.00	0.00
112.200	69.060	1.284	13464.0	7336.3	16.992	2.061	2.71		Clay	80.2			65.27	0.72	n.a.	n.a.	0.63	0.723	n.a.	n.a.	n.a.	n.a.	0.00	0.00
112.370	50.030	1.400	13484.4	7346.1	11.785	3.233	2.96		Clay	99.6			47.29	0.72	n.a.	n.a.	0.63	0.723	n.a.	n.a.	n.a.	n.a.	0.00	0.00
112.530	44.360	0.998	13503.6	7355.3	10.226	2.653	2.96		Clay	99.7			41.93	0.72	n.a.	n.a.	0.63	0.722	n.a.	n.a.	n.a.	n.a.	0.00	0.00
112.700	35.440	0.927	13524.0	7365.1	7.788	3.232	3.10		Clay	100.0			33.50	0.72	n.a.	n.a.	0.63	0.722	n.a.	n.a.	n.a.	n.a.	0.00	0.00
112.860	35.280	0.765	13543.2	7374.3	7.732	2.683	3.06		Clay	100.0			33.35	0.72	n.a.	n.a.	0.63	0.722	n.a.	n.a.	n.a.	n.a.	0.00	0.00
113.020	35.480	0.872	13562.4	7383.6	7.774	3.037	3.09		Clay	100.0			33.53	0.72	n.a.	n.a.	0.63	0.722	n.a.	n.a.	n.a.	n.a.	0.00	0.00
113.190	34.690	0.958	13582.8	7393.3	7.547	3.435	3.13		Clay	100.0			32.79	0.72	n.a.	n.a.	0.63	0.722	n.a.	n.a.	n.a.	n.a.	0.00	0.00
113.350	35.090	0.942	13602.0	7402.6	7.643	3.328	3.12		Clay	100.0			33.17	0.72	n.a.	n.a.	0.63	0.721	n.a.	n.a.	n.a.	n.a.	0.00	0.00
113.520	35.270	0.905	13622.4	7412.4	7.679	3.179	3.11		Clay	100.0			33.34	0.72	n.a.	n.a.	0.63	0.721	n.a.	n.a.	n.a.	n.a.	0.00	0.00
113.680	35.930	0.832	13641.6	7421.6	7.844	2.858	3.07		Clay	100.0			33.96	0.72	n.a.	n.a.	0.63	0.721	n.a.	n.a.	n.a.	n.a.	0.00	0.00
113.850	34.720	0.828	13662.0	7431.4	7.506	2.968	3.10		Clay	100.0			32.82	0.72	n.a.	n.a.	0.63	0.721	n.a.	n.a.	n.a.	n.a.	0.00	0.00
114.010	34.880	0.848	13681.2	7440.6	7.537	3.024	3.10		Clay	100.0			32.97	0.72	n.a.	n.a.	0.63	0.721	n.a.	n.a.	n.a.	n.a.	0.00	0.00
114.170	34.620	0.882	13700.4	7449.8	7.455	3.177	3.12		Clay	100.0			32.72	0.72	n.a.	n.a.	0.63	0.721	n.a.	n.a.	n.a.	n.a.	0.00	0.00
114.340	34.220	0.843	13720.8	7459.6	7.335	3.080	3.11		Clay	100.0			32.34	0.72	n.a.	n.a.	0.63	0.721	n.a.	n.a.	n.a.	n.a.	0.00	0.00
114.500	34.870	0.913	13740.0	7468.8	7.498	3.261	3.12		Clay	100.0			32.96	0.72	n.a.	n.a.	0.63	0.720	n.a.	n.a.	n.a.	n.a.	0.00	0.00
114.670	35.710	1.095	13760.4	7478.6	7.710	3.797	3.15		Clay	100.0			33.75	0.72	n.a.	n.a.	0.63	0.720	n.a.	n.a.	n.a.	n.a.	0.00	0.00
114.830	37.130	1.233	13779.6	7487.8	8.077	4.079	3.15		Clay	100.0			35.09	0.72	n.a.	n.a.	0.63	0.720	n.a.	n.a.	n.a.	n.a.	0.00	0.00
114.990	37.590	1.229	13798.8	7497.0	8.187	4.004	3.14		Clay	100.0			35.53	0.72	n.a.	n.a.	0.63	0.720	n.a.	n.a.	n.a.	n.a.	0.00	0.00
115.160	37.100	1.166	13819.2	7506.8	8.043	3.861	3.14		Clay	100.0			35.07	0.72	n.a.	n.a.	0.63	0.720	n.a.	n.a.	n.a.	n.a.	0.00	0.00
115.320	37.640	1.137	13838.4	7516.0	8.175	3.700	3.12		Clay	100.0			35.58	0.72	n.a.	n.a.	0.63	0.720	n.a.	n.a.	n.a.	n.a.	0.00	0.00
115.490	38.690	1.192	13858.8	7525.8	8.440	3.754	3.11		Clay	100.0			36.57	0.72	n.a.	n.a.	0.63	0.720	n.a.	n.a.	n.a.	n.a.	0.00	0.00
115.650	39.710	1.254	13878.0	7535.0	8.698	3.826	3.11		Clay	100.0			37.53	0.72	n.a.	n.a.	0.62	0.719	n.a.	n.a.	n.a.	n.a.	0.00	0.00
115.810	38.970	1.309	13897.2	7544.3	8.489	4.089	3.13		Clay	100.0			36.83	0.72	n.a.	n.a.	0.62	0.719	n.a.	n.a.	n.a.	n.a.	0.00	0.00
115.980	40.460	1.298	13917.6	7554.0	8.870	3.875	3.10		Clay	100.0			38.24	0.71	n.a.	n.a.	0.62	0.719	n.a.	n.a.	n.a.	n.a.	0.00	0.00
116.140	42.110	1.291	13936.8	7563.3	9.293	3.675	3.07		Clay	100.0			39.80	0.71	n.a.	n.a.	0.62	0.719	n.a.	n.a.	n.a.	n.a.	0.00	0.00
116.310	39.170	1.298	13957.2	7573.1	8.502	4.031	3.13		Clay	100.0			37.02	0.71	n.a.	n.a.	0.62	0.719	n.a.	n.a.	n.a.	n.a.	0.00	0.00
116.470	41.820	1.299	13976.4	7582.3	9.188	3.730	3.08		Clay	100.0			39.53	0.71	n.a.	n.a.	0.62	0.719	n.a.	n.a.	n.a.	n.a.	0.00	0.00
116.630	39.800	1.356	13995.6	7591.5	8.642	4.132	3.13		Clay	100.0			37.62	0.71	n.a.	n.a.	0.62	0.719	n.a.	n.a.	n.a.	n.a.	0.00	0.00
116.800	37.520	1.285	14016.0	7601.3	8.028	4.211	3.16		Clay	100.0			35.46	0.71	n.a.	n.a.	0.62	0.719	n.a.	n.a.	n.a.	n.a.	0.00	0.00
116.960	35.780	1.188	14035.2	7610.5	7.559	4.132	3.18		Clay	100.0			33.82	0.71	n.a.	n.a.	0.62	0.718	n.a.	n.a.	n.a.	n.a.	0.00	0.00
117.130	36.000	1.125	14055.6	7620.3	7.604	3.883	3.16		Clay	100.0			34.03	0.71	n.a.	n.a.	0.62	0.718	n.a.	n.a.	n.a.	n.a.	0.00	0.00
117.290	36.380	1.174	14074.8	7629.5	7.692	4.000	3.16		Clay	100.0			34.39	0.71	n.a.	n.a.	0.62	0.718	n.a.	n.a.	n.a.	n.a.	0.00	0.00
117.450	37.020	1.212	14094.0	7638.7	7.848	4.044	3.16		Clay	100.0			34.99	0.71	n.a.	n.a.	0.62	0.718	n.a.	n.a.	n.a.	n.a.	0.00	0.00
117.620	37.680	1.227	14114.4	7648.5	8.008	4.006	3.15		Clay	100.0			35.61	0.71	n.a.	n.a.	0.62	0.718	n.a.	n.a.	n.a.	n.a.	0.00	0.00
117.780	37.640	1.208	14133.6	7657.7	7.985	3.951	3.15		Clay	100.0			35.58	0.71	n.a.	n.a.	0.62	0.718	n.a.	n.a.	n.a.	n.a.	0.00	0.00
117.950	37.480	1.164	14154.0	7667.5	7.930	3.829	3.14		Clay	100.0			35.43	0.71	n.a.	n.a.	0.62	0.718	n.a.	n.a.	n.a.	n.a.	0.00	0.00
118.110	36.740	1.132	14173.2	7676.7	7.726	3.816	3.15		Clay	100.0			34.73	0.71	n.a.	n.a.	0.62	0.718	n.a.	n.a.	n.a.	n.a.	0.00	0.00
118.270	37.000	1.072	14192.4	7686.0	7.781	3.585	3.13		Clay	100.0			34.97	0.71	n.a.	n.a.	0.62	0.718	n.a.	n.a.	n.a.	n.a.	0.00	0.00
118.440	36.370	0.992	14212.8	7695.7	7.605	3.391	3.13		Clay	100.0			34.38	0.71	n.a.	n.a.	0.62	0.718	n.a.	n.a.	n.a.	n.a.	0.00	0.00
118.600	34.710	0.897	14232.0	7705.0	7.163	3.249	3.14		Clay	100.0			32.81	0.71	n.a.	n.a.	0.62	0.717	n.a.	n.a.	n.a.	n.a.	0.00	0.00
118.770	34.310	0.860	14252.4	7714.8	7.047	3.163	3.14		Clay	100.0			32.43	0.71	n.a.	n.a.	0.62	0.717	n.a.	n.a.	n.a.	n.a.	0.00	0.00
118.930	33.490	0.781	14271.6	7724.0	6.824	2.963	3.13		Clay	100.0			31.65	0.71	n.a.	n.a.	0.62	0.717	n.a.	n.a.	n.a.	n.a.	0.00	0.00
119.090	32.370	0.745	14290.8	7733.2	6.524	2.955	3.15		Clay	100.0			30.60	0.71	n.a.	n.a.	0.62	0.717	n.a.	n.a.	n.a.	n.a.	0.00	0.00
119.260	31.640	0.714	14311.2	7743.0	6.324	2.915	3.16		Clay	100.0			29.91	0.71	n.a.	n.a.	0.62	0.717	n.a.	n.a.	n.a.	n.a.	0.00	0.00
119.420	32.010	0.701	14330.4	7752.2	6.410	2.822	3.14		Clay	100.0			30.26	0.71	n.a.	n.a.	0.62	0.717	n.a.	n.a.	n.a.	n.a.	0.00	0.00
119.590	32.320	0.758	14350.8	7762.0	6.479	3.014	3.16		Clay	100.0			30.55	0.71	n.a.	n.a.	0.62	0.717	n.a.	n.a.	n.a.	n.a.	0.00	0.00
119.750	32.150	0.745	14370.0	7771.2	6.425	2.982	3.16		Clay	100.0			30.39	0.71	n.a.	n.a.	0.62	0.717	n.a.	n.a.	n.a.	n.a.	0.00	0.00
119.910	32.040	0.743	14389.2	7780.4	6.387	2.990	3.16		Clay	100.0			30.28	0.71	n.a.	n.a.	0.62	0.717	n.a.	n.a.	n.a.	n.a.	0.00	0.00
120.080	31.690	0.773	14409.6	7790.2	6.286	3.157	3.18		Clay	100.0			29.95	0.71	n.a.	n.a.	0.62	0.717	n.a.	n.a.	n.a.	n.a.	0.00	0.00
120.240	33.370	0.769	14428.8	7799.4	6.707	2.939	3.14		Clay	100.0			31.54	0.71	n.a.	n.a.	0.62	0.717	n.a.	n.a.	n.a.	n.a.	0.00	0.00
120.410	33.060	0.740	14449.2	7809.2	6.617	2.862	3.14		Clay	100.0			31.25	0.71	n.a.	n.a.	0.62	0.717	n.a.	n.a.	n.a.	n.a.	0.00	0.00
120.570	33.080	0.728	14468.4	7818.4	6.612	2.817	3.13		Clay	100.0			31.27	0.71	n.a.	n.a.	0.62	0.717	n.a.	n.a.	n.a.	n.a.	0.00	0.00
120.730	34.230	0.744	14487.6	7827.6	6.895	2.758	3.11		Clay	100.0			32.35	0.71	n.a.	n.a.	0.62	0.717	n.a.	n.a.	n.a.	n.a.	0.00	0.00
120.900	34.690	0.749	14508.0	7837.4	7.001	2.729	3.10		Clay	100.0			32.79	0.71	n.a.	n.a.	0.62	0.717	n.a.	n.a.	n.a.	n.a.	0.00	0.00

CORNERSTONE EARTH GROUP

CPT No.	1

PGA (A_{max})	0.89

Total Settlement:	0.36	(Inches)

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Depth (ft)	q_c (tsf)	f_s (tsf)	σ_{vc} (psf)	Insitu σ'_{vc} (psf)	Q	F (%)	I_c	Layer "Plastic" PI > 7	Flag Soil Type	Fines (%)	q_{cN} near interfaces (soft layer)	Thin Layer Factor (K_H)	Interpreted q_{cN}	C_N	q_{c1N}	$q_{c1N\text{-}CS}$	Stress Reduction Coeff, r_d	CSR	K_σ for Sand	$CRR_{M=7.5,\ \sigma'vc = 1\ atm}$	CRR	Factor of Safety (CRR/CSR)	Vertical Strain ε_v	Settlement (Inches)
121.060	35.550	0.752	14527.2	7846.7	7.210	2.658	3.09		Clay	100.0			33.60	0.71	n.a.	n.a.	0.62	0.716	n.a.	n.a.	n.a.	n.a.	0.00	0.00
121.230	35.950	0.749	14547.6	7856.4	7.300	2.611	3.08		Clay	100.0			33.98	0.71	n.a.	n.a.	0.62	0.716	n.a.	n.a.	n.a.	n.a.	0.00	0.00
121.390	36.500	0.736	14566.8	7865.7	7.429	2.520	3.06		Clay	100.0			34.50	0.71	n.a.	n.a.	0.62	0.716	n.a.	n.a.	n.a.	n.a.	0.00	0.00
121.560	35.980	0.755	14587.2	7875.5	7.285	2.631	3.08		Clay	100.0			34.01	0.71	n.a.	n.a.	0.62	0.716	n.a.	n.a.	n.a.	n.a.	0.00	0.00
121.720	35.970	0.761	14606.4	7884.7	7.272	2.654	3.08		Clay	100.0			34.00	0.71	n.a.	n.a.	0.62	0.716	n.a.	n.a.	n.a.	n.a.	0.00	0.00
121.880	36.580	0.795	14625.6	7893.9	7.415	2.716	3.08		Clay	100.0			34.57	0.71	n.a.	n.a.	0.62	0.716	n.a.	n.a.	n.a.	n.a.	0.00	0.00
122.050	36.600	0.827	14646.0	7903.7	7.408	2.824	3.09		Clay	100.0			34.59	0.71	n.a.	n.a.	0.62	0.716	n.a.	n.a.	n.a.	n.a.	0.00	0.00
122.210	36.530	0.819	14665.2	7912.9	7.380	2.804	3.09		Clay	100.0			34.53	0.71	n.a.	n.a.	0.62	0.716	n.a.	n.a.	n.a.	n.a.	0.00	0.00
122.380	35.910	0.820	14685.6	7922.7	7.211	2.870	3.10		Clay	100.0			33.94	0.71	n.a.	n.a.	0.62	0.716	n.a.	n.a.	n.a.	n.a.	0.00	0.00
122.540	36.240	0.816	14704.8	7931.9	7.284	2.823	3.10		Clay	100.0			34.25	0.71	n.a.	n.a.	0.62	0.716	n.a.	n.a.	n.a.	n.a.	0.00	0.00
122.700	35.950	0.791	14724.0	7941.1	7.200	2.766	3.10		Clay	100.0			33.98	0.71	n.a.	n.a.	0.62	0.716	n.a.	n.a.	n.a.	n.a.	0.00	0.00
122.870	36.060	0.782	14744.4	7950.9	7.216	2.726	3.09		Clay	100.0			34.08	0.71	n.a.	n.a.	0.62	0.716	n.a.	n.a.	n.a.	n.a.	0.00	0.00
123.030	36.090	0.775	14763.6	7960.1	7.213	2.698	3.09		Clay	100.0			34.11	0.71	n.a.	n.a.	0.62	0.716	n.a.	n.a.	n.a.	n.a.	0.00	0.00
123.200	36.430	0.819	14784.0	7969.9	7.287	2.822	3.10		Clay	100.0			34.43	0.70	n.a.	n.a.	0.62	0.716	n.a.	n.a.	n.a.	n.a.	0.00	0.00
123.360	36.200	0.787	14803.2	7979.1	7.218	2.733	3.09		Clay	100.0			34.22	0.70	n.a.	n.a.	0.62	0.716	n.a.	n.a.	n.a.	n.a.	0.00	0.00
123.520	36.580	0.776	14822.4	7988.4	7.303	2.662	3.08		Clay	100.0			34.57	0.70	n.a.	n.a.	0.62	0.716	n.a.	n.a.	n.a.	n.a.	0.00	0.00
123.690	37.390	0.740	14842.8	7998.1	7.494	2.469	3.06		Clay	100.0			35.34	0.70	n.a.	n.a.	0.62	0.716	n.a.	n.a.	n.a.	n.a.	0.00	0.00
123.850	36.790	0.766	14862.0	8007.4	7.333	2.607	3.08		Clay	100.0			34.77	0.70	n.a.	n.a.	0.62	0.716	n.a.	n.a.	n.a.	n.a.	0.00	0.00
124.020	36.340	0.751	14882.4	8017.2	7.209	2.600	3.08		Clay	100.0			34.35	0.70	n.a.	n.a.	0.62	0.716	n.a.	n.a.	n.a.	n.a.	0.00	0.00
124.180	35.090	0.736	14901.6	8026.4	6.887	2.664	3.10		Clay	100.0			33.17	0.70	n.a.	n.a.	0.62	0.716	n.a.	n.a.	n.a.	n.a.	0.00	0.00
124.340	34.260	0.698	14920.8	8035.6	6.670	2.603	3.11		Clay	100.0			32.38	0.70	n.a.	n.a.	0.62	0.716	n.a.	n.a.	n.a.	n.a.	0.00	0.00
124.510	33.850	0.642	14941.2	8045.4	6.558	2.433	3.10		Clay	100.0			31.99	0.70	n.a.	n.a.	0.62	0.716	n.a.	n.a.	n.a.	n.a.	0.00	0.00
124.670	33.240	0.735	14960.4	8054.6	6.396	2.852	3.15		Clay	100.0			31.42	0.70	n.a.	n.a.	0.62	0.716	n.a.	n.a.	n.a.	n.a.	0.00	0.00
124.840	32.980	0.729	14980.8	8064.4	6.322	2.861	3.15		Clay	100.0			31.17	0.70	n.a.	n.a.	0.62	0.716	n.a.	n.a.	n.a.	n.a.	0.00	0.00
125.000	33.480	0.669	15000.0	8073.6	6.436	2.574	3.12		Clay	100.0			31.64	0.70	n.a.	n.a.	0.62	0.716	n.a.	n.a.	n.a.	n.a.	0.00	0.00
125.160	33.220	0.667	15019.2	8082.8	6.362	2.594	3.13		Clay	100.0			31.40	0.70	n.a.	n.a.	0.62	0.716	n.a.	n.a.	n.a.	n.a.	0.00	0.00
125.330	34.010	0.641	15039.6	8092.6	6.547	2.421	3.10		Clay	100.0			32.15	0.70	n.a.	n.a.	0.62	0.716	n.a.	n.a.	n.a.	n.a.	0.00	0.00
125.490	35.130	0.703	15058.8	8101.8	6.813	2.548	3.10		Clay	100.0			33.20	0.70	n.a.	n.a.	0.62	0.716	n.a.	n.a.	n.a.	n.a.	0.00	0.00
125.660	35.330	0.768	15079.2	8111.6	6.852	2.764	3.11		Clay	100.0			33.39	0.70	n.a.	n.a.	0.62	0.716	n.a.	n.a.	n.a.	n.a.	0.00	0.00
125.820	36.660	0.859	15098.4	8120.8	7.169	2.950	3.11		Clay	100.0			34.65	0.70	n.a.	n.a.	0.62	0.716	n.a.	n.a.	n.a.	n.a.	0.00	0.00
125.980	36.070	0.814	15117.6	8130.0	7.014	2.856	3.11		Clay	100.0			34.09	0.70	n.a.	n.a.	0.62	0.716	n.a.	n.a.	n.a.	n.a.	0.00	0.00
126.150	35.850	0.753	15138.0	8139.8	6.949	2.661	3.10		Clay	100.0			33.88	0.70	n.a.	n.a.	0.62	0.716	n.a.	n.a.	n.a.	n.a.	0.00	0.00
126.310	36.430	0.745	15157.2	8149.1	7.081	2.584	3.09		Clay	100.0			34.43	0.70	n.a.	n.a.	0.62	0.716	n.a.	n.a.	n.a.	n.a.	0.00	0.00
126.480	36.500	0.750	15177.6	8158.8	7.087	2.593	3.09		Clay	100.0			34.50	0.70	n.a.	n.a.	0.62	0.716	n.a.	n.a.	n.a.	n.a.	0.00	0.00
126.640	35.830	0.720	15196.8	8168.1	6.913	2.550	3.09		Clay	100.0			33.87	0.70	n.a.	n.a.	0.62	0.716	n.a.	n.a.	n.a.	n.a.	0.00	0.00
126.800	35.060	0.746	15216.0	8177.3	6.714	2.717	3.12		Clay	100.0			33.14	0.70	n.a.	n.a.	0.62	0.716	n.a.	n.a.	n.a.	n.a.	0.00	0.00
126.970	35.810	0.614	15236.4	8187.1	6.887	2.178	3.06		Clay	100.0			33.85	0.70	n.a.	n.a.	0.62	0.716	n.a.	n.a.	n.a.	n.a.	0.00	0.00
127.130	42.620	0.652	15255.6	8196.3	8.539	1.862	2.94		Clay	98.5			40.28	0.70	n.a.	n.a.	0.62	0.716	n.a.	n.a.	n.a.	n.a.	0.00	0.00
127.300	40.470	0.694	15276.0	8206.1	8.002	2.115	3.00		Clay	100.0			38.25	0.70	n.a.	n.a.	0.62	0.717	n.a.	n.a.	n.a.	n.a.	0.00	0.00
127.460	40.560	0.717	15295.2	8215.3	8.012	2.180	3.00		Clay	100.0			38.34	0.70	n.a.	n.a.	0.62	0.717	n.a.	n.a.	n.a.	n.a.	0.00	0.00
127.620	39.970	0.801	15314.4	8224.5	7.858	2.478	3.04		Clay	100.0			37.78	0.70	n.a.	n.a.	0.62	0.717	n.a.	n.a.	n.a.	n.a.	0.00	0.00
127.790	39.540	0.820	15334.8	8234.3	7.741	2.571	3.05		Clay	100.0			37.37	0.70	n.a.	n.a.	0.62	0.717	n.a.	n.a.	n.a.	n.a.	0.00	0.00
127.950	39.090	0.744	15354.0	8243.5	7.621	2.370	3.04		Clay	100.0			36.95	0.70	n.a.	n.a.	0.62	0.717	n.a.	n.a.	n.a.	n.a.	0.00	0.00
128.120	38.480	0.643	15374.4	8253.3	7.462	2.089	3.02		Clay	100.0			36.37	0.70	n.a.	n.a.	0.62	0.717	n.a.	n.a.	n.a.	n.a.	0.00	0.00
128.280	41.230	0.539	15393.6	8262.5	8.117	1.608	2.93		Clay	97.5			38.97	0.70	n.a.	n.a.	0.62	0.717	n.a.	n.a.	n.a.	n.a.	0.00	0.00
128.440	44.660	0.606	15412.8	8271.7	8.935	1.639	2.90		Clay	94.9			42.21	0.70	n.a.	n.a.	0.62	0.717	n.a.	n.a.	n.a.	n.a.	0.00	0.00
128.610	49.750	1.098	15433.2	8281.5	10.151	2.612	2.96		Clay	99.6			47.02	0.70	n.a.	n.a.	0.62	0.717	n.a.	n.a.	n.a.	n.a.	0.00	0.00
128.770	53.350	0.967	15452.4	8290.8	11.006	2.119	2.88		Clay	93.3			50.43	0.70	n.a.	n.a.	0.62	0.717	n.a.	n.a.	n.a.	n.a.	0.00	0.00
128.940	45.950	0.717	15472.8	8300.5	9.207	1.877	2.92		Clay	96.4			43.43	0.70	n.a.	n.a.	0.62	0.717	n.a.	n.a.	n.a.	n.a.	0.00	0.00
129.100	39.490	0.728	15492.0	8309.8	7.640	2.292	3.03		Clay	100.0			37.33	0.70	n.a.	n.a.	0.62	0.717	n.a.	n.a.	n.a.	n.a.	0.00	0.00
129.270	39.400	0.763	15512.4	8319.6	7.607	2.411	3.04		Clay	100.0			37.24	0.70	n.a.	n.a.	0.62	0.717	n.a.	n.a.	n.a.	n.a.	0.00	0.00
129.430	38.090	0.798	15531.6	8328.8	7.282	2.630	3.08		Clay	100.0			36.00	0.70	n.a.	n.a.	0.62	0.717	n.a.	n.a.	n.a.	n.a.	0.00	0.00
129.590	39.540	0.980	15550.8	8338.0	7.619	3.086	3.10		Clay	100.0			37.37	0.70	n.a.	n.a.	0.62	0.718	n.a.	n.a.	n.a.	n.a.	0.00	0.00
129.760	41.790	1.136	15571.2	8347.8	8.147	3.342	3.10		Clay	100.0			39.50	0.70	n.a.	n.a.	0.62	0.718	n.a.	n.a.	n.a.	n.a.	0.00	0.00
129.920	41.980	1.256	15590.4	8357.0	8.181	3.674	3.12		Clay	100.0			39.68	0.70	n.a.	n.a.	0.62	0.718	n.a.	n.a.	n.a.	n.a.	0.00	0.00
130.090	41.710	1.136	15610.8	8366.8	8.105	3.350	3.10		Clay	100.0			39.42	0.70	n.a.	n.a.	0.62	0.718	n.a.	n.a.	n.a.	n.a.	0.00	0.00
130.250	41.830	1.572	15630.0	8376.0	8.122	4.620	3.18		Clay	100.0			39.54	0.70	n.a.	n.a.	0.62	0.718	n.a.	n.a.	n.a.	n.a.	0.00	0.00
130.410	42.590	2.852	15649.2	8385.2	8.292	8.204	3.33		Clay	100.0			40.26	0.70	n.a.	n.a.	0.62	0.718	n.a.	n.a.	n.a.	n.a.	0.00	0.00
130.580	65.790	3.371	15669.6	8395.0	13.807	5.816	3.06		Clay	100.0			62.18	0.70	n.a.	n.a.	0.62	0.718	n.a.	n.a.	n.a.	n.a.	0.00	0.00
130.740	144.580	3.319	15688.8	8404.2	64.849	2.427	2.31		Sand	47.6			136.65	0.56	76.95	142.15	0.62	0.718	0.794	0.244	0.307	0.43	0.02	0.00
130.910	155.500	1.905	15709.2	8414.0	69.983	1.290	2.10		Sand	31.0			146.98	0.55	81.13	134.12	0.62	0.718	0.807	0.211	0.256	0.36	0.02	0.00
131.070	162.750	2.428	15728.4	8423.2	73.374	1.567	2.14		Sand	34.1			153.83	0.57	87.08	144.81	0.62	0.718	0.789	0.258	0.327	0.46	0.02	0.00
131.230	133.380	1.560	15747.6	8432.4	59.424	1.243	2.15		Sand	34.7			126.07	0.53	67.23	121.05	0.62	0.719	0.826	0.174	0.200	0.28	0.03	0.00
131.400	70.510	1.144	15768.0	8442.2	14.836	1.827	2.73		Clay	81.8			66.64	0.69	n.a.	n.a.	0.62	0.719	n.a.	n.a.	n.a.	n.a.	0.00	0.00
131.560	37.650	0.808	15787.2	8451.5	7.042	2.716	3.10		Clay	100.0			35.59	0.69	n.a.	n.a.	0.62	0.719	n.a.	n.a.	n.a.	n.a.	0.00	0.00
131.730	30.960	0.641	15807.6	8461.2	5.450	2.778	3.20		Clay	100.0			29.26	0.69	n.a.	n.a.	0.62	0.719	n.a.	n.a.	n.a.	n.a.	0.00	0.00
131.890	33.100	0.683	15826.8	8470.5	5.947	2.712	3.16		Clay	100.0			31.29	0.69	n.a.	n.a.	0.62	0.719	n.a.	n.a.	n.a.	n.a.	0.00	0.00

CORNERSTONE EARTH GROUP

CPT No.	1

PGA (A_{max})	0.89

Total Settlement:	0.36	(Inches)

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Depth (ft)	q_c (tsf)	f_s (tsf)	σ_{vc} (psf)	Insitu σ'_{vc} (psf)	Q	F (%)	I_c	Layer "Plastic" PI > 7	Flag Soil Type	Fines (%)	q_{cN} near interfaces (soft layer)	Thin Layer Factor (K_H)	Interpreted q_{cN}	C_N	q_{c1N}	q_{c1N-CS}	Stress Reduction Coeff, r_d	CSR	K_σ for Sand	$CRR_{M=7.5, \sigma'vc = 1 atm}$	CRR	Factor of Safety (CRR/CSR)	Vertical Strain ε_v	Settlement (Inches)
132.050	35.160	0.743	15846.0	8479.7	6.424	2.729	3.14		Clay	100.0			33.23	0.69	n.a.	n.a.	0.62	0.719	n.a.	n.a.	n.a.	n.a.	0.00	0.00
132.220	36.780	0.756	15866.4	8489.5	6.796	2.621	3.11		Clay	100.0			34.76	0.69	n.a.	n.a.	0.62	0.719	n.a.	n.a.	n.a.	n.a.	0.00	0.00
132.380	38.410	0.789	15885.6	8498.7	7.170	2.590	3.08		Clay	100.0			36.30	0.69	n.a.	n.a.	0.62	0.719	n.a.	n.a.	n.a.	n.a.	0.00	0.00
132.550	40.000	0.841	15906.0	8508.5	7.533	2.624	3.07		Clay	100.0			37.81	0.69	n.a.	n.a.	0.62	0.720	n.a.	n.a.	n.a.	n.a.	0.00	0.00
132.710	40.650	0.902	15925.2	8517.7	7.675	2.759	3.07		Clay	100.0			38.42	0.69	n.a.	n.a.	0.62	0.720	n.a.	n.a.	n.a.	n.a.	0.00	0.00
132.870	43.360	0.709	15944.4	8526.9	8.300	2.005	2.97		Clay	100.0			40.98	0.69	n.a.	n.a.	0.62	0.720	n.a.	n.a.	n.a.	n.a.	0.00	0.00
133.040	43.170	0.553	15964.8	8536.7	8.244	1.572	2.92		Clay	96.6			40.80	0.69	n.a.	n.a.	0.62	0.720	n.a.	n.a.	n.a.	n.a.	0.00	0.00
133.200	41.480	0.469	15984.0	8545.9	7.837	1.400	2.92		Clay	96.3			39.21	0.69	n.a.	n.a.	0.62	0.720	n.a.	n.a.	n.a.	n.a.	0.00	0.00
133.370	40.490	0.413	16004.4	8555.7	7.594	1.271	2.91		Clay	95.7			38.27	0.69	n.a.	n.a.	0.62	0.720	n.a.	n.a.	n.a.	n.a.	0.00	0.00
133.530	37.250	0.443	16023.6	8564.9	6.827	1.515	2.98		Clay	100.0			35.21	0.69	n.a.	n.a.	0.62	0.721	n.a.	n.a.	n.a.	n.a.	0.00	0.00
133.690	35.870	0.498	16042.8	8574.1	6.496	1.787	3.04		Clay	100.0			33.90	0.69	n.a.	n.a.	0.62	0.721	n.a.	n.a.	n.a.	n.a.	0.00	0.00
133.860	35.890	0.589	16063.2	8583.9	6.491	2.115	3.07		Clay	100.0			33.92	0.69	n.a.	n.a.	0.62	0.721	n.a.	n.a.	n.a.	n.a.	0.00	0.00
134.020	36.510	0.615	16082.4	8593.2	6.626	2.161	3.07		Clay	100.0			34.51	0.69	n.a.	n.a.	0.62	0.721	n.a.	n.a.	n.a.	n.a.	0.00	0.00
134.190	36.620	0.687	16102.8	8602.9	6.642	2.404	3.09		Clay	100.0			34.61	0.69	n.a.	n.a.	0.62	0.721	n.a.	n.a.	n.a.	n.a.	0.00	0.00
134.350	36.700	0.704	16122.0	8612.2	6.651	2.457	3.10		Clay	100.0			34.69	0.69	n.a.	n.a.	0.62	0.721	n.a.	n.a.	n.a.	n.a.	0.00	0.00
134.510	37.340	0.738	16141.2	8621.4	6.790	2.520	3.10		Clay	100.0			35.29	0.69	n.a.	n.a.	0.62	0.722	n.a.	n.a.	n.a.	n.a.	0.00	0.00
134.680	37.450	0.825	16161.6	8631.2	6.805	2.808	3.12		Clay	100.0			35.40	0.69	n.a.	n.a.	0.62	0.722	n.a.	n.a.	n.a.	n.a.	0.00	0.00
134.840	37.790	0.873	16180.8	8640.4	6.875	2.941	3.13		Clay	100.0			35.72	0.69	n.a.	n.a.	0.62	0.722	n.a.	n.a.	n.a.	n.a.	0.00	0.00
135.010	38.250	0.900	16201.2	8650.2	6.971	2.984	3.13		Clay	100.0			36.15	0.69	n.a.	n.a.	0.62	0.722	n.a.	n.a.	n.a.	n.a.	0.00	0.00
135.170	38.210	0.897	16220.4	8659.4	6.952	2.979	3.13		Clay	100.0			36.12	0.69	n.a.	n.a.	0.62	0.722	n.a.	n.a.	n.a.	n.a.	0.00	0.00
135.330	38.560	0.880	16239.6	8668.6	7.023	2.891	3.12		Clay	100.0			36.45	0.69	n.a.	n.a.	0.62	0.722	n.a.	n.a.	n.a.	n.a.	0.00	0.00
135.500	38.250	0.866	16260.0	8678.4	6.941	2.874	3.12		Clay	100.0			36.15	0.69	n.a.	n.a.	0.62	0.723	n.a.	n.a.	n.a.	n.a.	0.00	0.00
135.660	37.610	0.837	16279.2	8687.6	6.784	2.839	3.12		Clay	100.0			35.55	0.69	n.a.	n.a.	0.62	0.723	n.a.	n.a.	n.a.	n.a.	0.00	0.00
135.830	38.000	0.806	16299.6	8697.4	6.864	2.699	3.11		Clay	100.0			35.92	0.69	n.a.	n.a.	0.62	0.723	n.a.	n.a.	n.a.	n.a.	0.00	0.00
135.990	38.130	0.831	16318.8	8706.6	6.885	2.772	3.11		Clay	100.0			36.04	0.69	n.a.	n.a.	0.62	0.723	n.a.	n.a.	n.a.	n.a.	0.00	0.00
136.150	37.780	0.818	16338.0	8715.8	6.795	2.764	3.12		Clay	100.0			35.71	0.69	n.a.	n.a.	0.62	0.723	n.a.	n.a.	n.a.	n.a.	0.00	0.00
136.320	38.500	0.816	16358.4	8725.6	6.950	2.692	3.10		Clay	100.0			36.39	0.69	n.a.	n.a.	0.62	0.724	n.a.	n.a.	n.a.	n.a.	0.00	0.00
136.480	38.290	0.750	16377.6	8734.8	6.892	2.491	3.09		Clay	100.0			36.19	0.69	n.a.	n.a.	0.62	0.724	n.a.	n.a.	n.a.	n.a.	0.00	0.00
136.650	38.690	0.747	16398.0	8744.6	6.974	2.450	3.08		Clay	100.0			36.57	0.69	n.a.	n.a.	0.62	0.724	n.a.	n.a.	n.a.	n.a.	0.00	0.00
136.810	39.230	0.781	16417.2	8753.9	7.087	2.516	3.08		Clay	100.0			37.08	0.69	n.a.	n.a.	0.62	0.724	n.a.	n.a.	n.a.	n.a.	0.00	0.00
136.980	40.050	0.862	16437.6	8763.6	7.264	2.708	3.09		Clay	100.0			37.85	0.69	n.a.	n.a.	0.62	0.724	n.a.	n.a.	n.a.	n.a.	0.00	0.00
137.140	40.920	0.921	16456.8	8772.9	7.453	2.817	3.09		Clay	100.0			38.68	0.69	n.a.	n.a.	0.63	0.725	n.a.	n.a.	n.a.	n.a.	0.00	0.00
137.300	41.240	0.943	16476.0	8782.1	7.516	2.856	3.09		Clay	100.0			38.98	0.69	n.a.	n.a.	0.63	0.725	n.a.	n.a.	n.a.	n.a.	0.00	0.00
137.470	40.880	0.924	16496.4	8791.9	7.423	2.832	3.09		Clay	100.0			38.64	0.69	n.a.	n.a.	0.63	0.725	n.a.	n.a.	n.a.	n.a.	0.00	0.00
137.630	42.410	0.908	16515.6	8801.1	7.761	2.659	3.06		Clay	100.0			40.09	0.69	n.a.	n.a.	0.63	0.725	n.a.	n.a.	n.a.	n.a.	0.00	0.00
137.800	43.940	0.933	16536.0	8810.9	8.097	2.615	3.04		Clay	100.0			41.53	0.69	n.a.	n.a.	0.63	0.726	n.a.	n.a.	n.a.	n.a.	0.00	0.00
137.960	45.730	0.847	16555.2	8820.1	8.493	2.260	2.99		Clay	100.0			43.22	0.69	n.a.	n.a.	0.63	0.726	n.a.	n.a.	n.a.	n.a.	0.00	0.00
138.120	48.100	1.046	16574.4	8829.3	9.018	2.626	3.00		Clay	100.0			45.46	0.69	n.a.	n.a.	0.63	0.726	n.a.	n.a.	n.a.	n.a.	0.00	0.00
138.290	50.670	1.082	16594.8	8839.1	9.588	2.553	2.97		Clay	100.0			47.89	0.69	n.a.	n.a.	0.63	0.726	n.a.	n.a.	n.a.	n.a.	0.00	0.00
138.450	47.120	1.003	16614.0	8848.3	8.773	2.584	3.01		Clay	100.0			44.54	0.69	n.a.	n.a.	0.63	0.727	n.a.	n.a.	n.a.	n.a.	0.00	0.00
138.620	47.860	0.923	16634.4	8858.1	8.928	2.333	2.98		Clay	100.0			45.24	0.69	n.a.	n.a.	0.63	0.727	n.a.	n.a.	n.a.	n.a.	0.00	0.00
138.780	45.690	0.848	16653.6	8867.3	8.427	2.268	2.99		Clay	100.0			43.19	0.69	n.a.	n.a.	0.63	0.727	n.a.	n.a.	n.a.	n.a.	0.00	0.00
138.940	45.590	0.811	16672.8	8876.5	8.394	2.177	2.98		Clay	100.0			43.09	0.69	n.a.	n.a.	0.63	0.727	n.a.	n.a.	n.a.	n.a.	0.00	0.00
139.110	46.580	1.011	16693.2	8886.3	8.605	2.645	3.02		Clay	100.0			44.03	0.68	n.a.	n.a.	0.63	0.728	n.a.	n.a.	n.a.	n.a.	0.00	0.00
139.270	47.360	1.427	16712.4	8895.6	8.769	3.659	3.09		Clay	100.0			44.76	0.68	n.a.	n.a.	0.63	0.728	n.a.	n.a.	n.a.	n.a.	0.00	0.00
139.440	51.150	2.097	16732.8	8905.3	9.609	4.902	3.14		Clay	100.0			48.35	0.68	n.a.	n.a.	0.63	0.728	n.a.	n.a.	n.a.	n.a.	0.00	0.00
139.600	57.850	4.188	16752.0	8914.6	11.100	8.466	3.24		Clay	100.0			54.68	0.68	n.a.	n.a.	0.63	0.728	n.a.	n.a.	n.a.	n.a.	0.00	0.00
139.760	75.360	4.551	16771.2	8923.8	15.010	6.795	3.08		Clay	100.0			71.23	0.68	n.a.	n.a.	0.63	0.729	n.a.	n.a.	n.a.	n.a.	0.00	0.00
139.930	108.100	5.359	16791.6	8933.6	22.321	5.375	2.88		Clay	93.5			102.17	0.68	n.a.	n.a.	0.63	0.729	n.a.	n.a.	n.a.	n.a.	0.00	0.00

CORNERSTONE EARTH GROUP

CPT No.	2

PGA (A_{max})	0.89

Total Settlement:	0.37	(Inches)

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Depth (ft)	q_c (tsf)	f_s (tsf)	σ_{vc} (psf)	Insitu σ'_{vc} (psf)	Q	F (%)	I_c	Layer "Plastic" PI > 7	Flag Soil Type	Fines (%)	q_{cN} near interfaces (soft layer)	Thin Layer Factor (K_H)	Interpreted q_{cN}	C_N	q_{c1N}	$q_{c1N\text{-}CS}$	Stress Reduction Coeff, r_d	CSR	K_σ for Sand	$CRR_{M=7.5,\ \sigma'vc = 1\ atm}$	CRR	Factor of Safety (CRR/CSR)	Vertical Strain ε_v	Settlement (Inches)
0.160	489.350	0.876	19.2	19.2	4855.485	0.179	0.52		Unsaturated	0.0			462.52	1.70	786.29	786.29	1.00	0.579	1.100	n.a.	n.a.	n.a.	0.00	0.00
0.330	467.210	1.265	39.6	39.6	3227.887	0.271	0.65		Unsaturated	0.0			441.60	1.70	750.72	750.72	1.00	0.579	1.100	n.a.	n.a.	n.a.	0.00	0.00
0.490	294.690	1.419	58.8	58.8	1670.727	0.482	0.94		Unsaturated	0.0			278.53	1.70	473.51	473.51	1.00	0.579	1.100	n.a.	n.a.	n.a.	0.00	0.00
0.660	251.640	2.185	79.2	79.2	1229.195	0.869	1.22		Unsaturated	0.0			237.84	1.70	404.34	404.34	1.00	0.579	1.100	n.a.	n.a.	n.a.	0.00	0.00
0.820	254.650	2.492	98.4	98.4	1115.923	0.979	1.28		Unsaturated	0.0			240.69	1.70	409.17	409.17	1.00	0.579	1.100	n.a.	n.a.	n.a.	0.00	0.00
0.980	282.620	2.925	117.6	117.6	1132.872	1.035	1.30		Unsaturated	0.0			267.13	1.70	454.12	454.12	1.00	0.579	1.100	n.a.	n.a.	n.a.	0.00	0.00
1.150	236.580	2.846	138.0	138.0	875.354	1.203	1.40		Unsaturated	0.0			223.61	1.70	380.14	380.14	1.00	0.579	1.100	n.a.	n.a.	n.a.	0.00	0.00
1.310	202.470	1.771	157.2	157.2	701.840	0.875	1.32		Unsaturated	0.0			191.37	1.70	325.33	325.33	1.00	0.579	1.100	n.a.	n.a.	n.a.	0.00	0.00
1.480	178.690	0.810	177.6	177.6	582.687	0.453	1.12		Unsaturated	0.0			168.89	1.70	287.12	287.12	1.00	0.579	1.100	n.a.	n.a.	n.a.	0.00	0.00
1.640	134.580	0.622	196.8	196.8	416.795	0.463	1.23		Unsaturated	0.0			127.20	1.70	216.24	216.24	1.00	0.579	1.100	n.a.	n.a.	n.a.	0.00	0.00
1.800	83.450	0.569	216.0	216.0	246.552	0.682	1.51		Unsaturated	0.0			78.88	1.70	134.09	134.09	1.00	0.579	1.100	n.a.	n.a.	n.a.	0.00	0.00
1.970	47.850	0.648	236.4	236.4	134.976	1.358	1.90		Unsaturated	15.3			45.23	1.70	76.89	98.87	1.00	0.579	1.100	n.a.	n.a.	n.a.	0.00	0.00
2.130	29.170	0.649	255.6	255.6	78.981	2.235	2.22		Unsaturated	40.7			27.57	1.70	46.87	100.57	1.00	0.579	1.100	n.a.	n.a.	n.a.	0.00	0.00
2.300	14.160	0.542	276.0	276.0	55.150	3.864	2.50		Unsaturated	63.0			13.38	1.70	22.75	78.58	1.00	0.579	1.100	n.a.	n.a.	n.a.	0.00	0.00
2.460	9.960	0.415	295.2	295.2	36.819	4.224	2.65		Unsaturated	75.1			9.41	1.70	16.00	72.12	1.00	0.579	1.100	n.a.	n.a.	n.a.	0.00	0.00
2.620	8.630	0.344	314.4	314.4	30.420	4.062	2.70		Unsaturated	79.0			8.16	1.70	13.87	69.91	1.00	0.579	1.100	n.a.	n.a.	n.a.	0.00	0.00
2.790	7.930	0.340	334.8	334.8	26.671	4.377	2.76		Unsaturated	84.2			7.50	1.70	12.74	69.09	1.00	0.579	1.100	n.a.	n.a.	n.a.	0.00	0.00
2.950	7.600	0.344	354.0	354.0	41.938	4.632	2.64		Unsaturated	74.2			7.18	1.70	12.21	67.07	1.00	0.579	1.100	n.a.	n.a.	n.a.	0.00	0.00
3.120	7.530	0.370	374.4	374.4	39.224	5.042	2.69		Unsaturated	77.9			7.12	1.70	12.10	67.46	1.00	0.578	1.100	n.a.	n.a.	n.a.	0.00	0.00
3.280	8.540	0.394	393.6	393.6	42.394	4.716	2.64		Unsaturated	74.4			8.07	1.70	13.72	69.05	1.00	0.578	1.100	n.a.	n.a.	n.a.	0.00	0.00
3.440	10.110	0.405	412.8	412.8	29.387	4.088	2.71		Unsaturated	80.1			9.56	1.70	16.24	73.13	1.00	0.578	1.100	n.a.	n.a.	n.a.	0.00	0.00
3.610	11.750	0.446	433.2	433.2	33.086	3.870	2.66		Unsaturated	75.7			11.11	1.70	18.88	75.94	1.00	0.578	1.100	n.a.	n.a.	n.a.	0.00	0.00
3.770	13.690	0.501	452.4	452.4	37.469	3.722	2.61		Unsaturated	71.7			12.94	1.70	22.00	79.32	1.00	0.578	1.100	n.a.	n.a.	n.a.	0.00	0.00
3.940	15.440	0.554	472.8	472.8	41.025	3.641	2.57		Unsaturated	68.9			14.59	1.70	24.81	82.44	1.00	0.577	1.100	n.a.	n.a.	n.a.	0.00	0.00
4.100	17.250	0.578	492.0	492.0	44.622	3.397	2.53		Unsaturated	65.1			16.30	1.70	27.72	85.41	1.00	0.577	1.100	n.a.	n.a.	n.a.	0.00	0.00
4.270	17.820	0.489	512.4	512.4	33.735	2.781	2.56		Unsaturated	67.6			16.84	1.70	28.63	87.12	1.00	0.577	1.100	n.a.	n.a.	n.a.	0.00	0.00
4.430	18.570	0.450	531.6	531.6	34.517	2.459	2.52		Unsaturated	64.2			17.55	1.70	29.84	87.95	1.00	0.577	1.100	n.a.	n.a.	n.a.	0.00	0.00
4.590	17.480	0.402	550.8	550.8	31.873	2.334	2.53		Unsaturated	65.2			16.52	1.70	28.09	85.92	1.00	0.576	1.100	n.a.	n.a.	n.a.	0.00	0.00
4.760	16.140	0.315	571.2	571.2	28.842	1.987	2.52		Unsaturated	64.5			15.26	1.70	25.93	83.00	1.00	0.576	1.100	n.a.	n.a.	n.a.	0.00	0.00
4.920	12.570	0.307	590.4	590.4	28.352	2.499	2.59		Unsaturated	69.9			11.88	1.70	20.20	76.67	1.00	0.576	1.100	n.a.	n.a.	n.a.	0.00	0.00
5.090	12.700	0.313	610.8	610.8	27.956	2.529	2.59		Mixed	70.5			12.00	1.70	20.41	77.06	1.00	0.581	1.100	0.113	0.145	0.25	0.04	0.08
5.250	14.590	0.420	630.0	630.0	31.507	2.943	2.60		Mixed	70.7			13.79	1.70	23.44	81.01	0.99	0.590	1.100	0.117	0.152	0.26	0.04	0.08
5.410	19.250	0.392	649.2	649.2	32.294	2.070	2.49		Sand	62.3			18.19	1.70	30.93	88.89	0.99	0.599	1.100	0.124	0.166	0.28	0.04	0.07
5.580	17.100	0.277	669.6	669.6	28.169	1.651	2.48		Sand	61.4	18.19		18.19	1.70	30.92	88.66	0.99	0.608	1.100	0.124	0.165	0.27	0.04	0.07
5.740	11.430	0.279	688.8	688.8	22.986	2.519	2.66		Mixed	75.8	18.19		18.19	1.70	30.92	91.56	0.99	0.616	1.100	0.127	0.171	0.28	0.04	0.07
5.910	9.030	0.279	709.2	709.2	24.465	3.211	2.70		Clay	79.4			8.53	1.33	n.a.	n.a.	0.99	0.625	n.a.	n.a.	n.a.	n.a.	0.00	0.00
6.070	10.300	0.287	728.4	728.4	27.281	2.892	2.64		Clay	74.1			9.74	1.32	n.a.	n.a.	0.99	0.632	n.a.	n.a.	n.a.	n.a.	0.00	0.00
6.230	11.820	0.367	747.6	747.6	30.621	3.208	2.63		Clay	73.4			11.17	1.32	n.a.	n.a.	0.99	0.640	n.a.	n.a.	n.a.	n.a.	0.00	0.00
6.400	10.500	0.431	768.0	768.0	26.344	4.260	2.76		Clay	83.8			9.92	1.31	n.a.	n.a.	0.99	0.648	n.a.	n.a.	n.a.	n.a.	0.00	0.00
6.560	9.290	0.419	787.2	787.2	22.603	4.711	2.84		Clay	90.1			8.78	1.30	n.a.	n.a.	0.99	0.655	n.a.	n.a.	n.a.	n.a.	0.00	0.00
6.730	8.950	0.363	807.6	807.6	21.164	4.243	2.83		Clay	89.4			8.46	1.29	n.a.	n.a.	0.99	0.662	n.a.	n.a.	n.a.	n.a.	0.00	0.00
6.890	8.710	0.317	826.8	826.8	20.069	3.817	2.82		Clay	88.5			8.23	1.28	n.a.	n.a.	0.99	0.669	n.a.	n.a.	n.a.	n.a.	0.00	0.00
7.050	8.640	0.304	846.0	846.0	19.426	3.705	2.82		Clay	88.7			8.17	1.27	n.a.	n.a.	0.99	0.675	n.a.	n.a.	n.a.	n.a.	0.00	0.00
7.220	9.210	0.331	866.4	866.4	20.260	3.771	2.81		Clay	88.0			8.71	1.27	n.a.	n.a.	0.99	0.682	n.a.	n.a.	n.a.	n.a.	0.00	0.00
7.380	10.040	0.368	885.6	885.6	21.674	3.833	2.79		Clay	86.5			9.49	1.26	n.a.	n.a.	0.99	0.688	n.a.	n.a.	n.a.	n.a.	0.00	0.00
7.550	11.020	0.406	906.0	906.0	23.327	3.843	2.77		Clay	84.6			10.42	1.25	n.a.	n.a.	0.99	0.694	n.a.	n.a.	n.a.	n.a.	0.00	0.00
7.710	12.180	0.460	925.2	925.2	25.329	3.923	2.75		Clay	83.0			11.51	1.24	n.a.	n.a.	0.99	0.700	n.a.	n.a.	n.a.	n.a.	0.00	0.00
7.870	13.550	0.518	944.4	944.4	27.695	3.957	2.72		Clay	80.8			12.81	1.24	n.a.	n.a.	0.99	0.706	n.a.	n.a.	n.a.	n.a.	0.00	0.00
8.040	14.850	0.588	964.8	962.3	29.861	4.093	2.71		Clay	79.7			14.04	1.23	n.a.	n.a.	0.99	0.711	n.a.	n.a.	n.a.	n.a.	0.00	0.00
8.200	14.820	0.646	984.0	971.5	29.496	4.509	2.74		Clay	82.3			14.01	1.23	n.a.	n.a.	0.99	0.717	n.a.	n.a.	n.a.	n.a.	0.00	0.00
8.370	14.610	0.741	1004.4	981.3	28.753	5.250	2.79		Clay	86.6			13.81	1.22	n.a.	n.a.	0.99	0.722	n.a.	n.a.	n.a.	n.a.	0.00	0.00
8.530	14.350	0.720	1023.6	990.5	27.941	5.201	2.80		Clay	87.1			13.56	1.22	n.a.	n.a.	0.99	0.727	n.a.	n.a.	n.a.	n.a.	0.00	0.00
8.690	14.410	0.702	1042.8	999.7	27.784	5.052	2.79		Clay	86.5			13.62	1.22	n.a.	n.a.	0.99	0.732	n.a.	n.a.	n.a.	n.a.	0.00	0.00
8.860	14.460	0.656	1063.2	1009.5	27.594	4.708	2.77		Clay	85.0			13.67	1.22	n.a.	n.a.	0.99	0.737	n.a.	n.a.	n.a.	n.a.	0.00	0.00
9.020	14.530	0.687	1082.4	1018.8	27.463	4.910	2.79		Clay	86.1			13.73	1.21	n.a.	n.a.	0.99	0.742	n.a.	n.a.	n.a.	n.a.	0.00	0.00
9.190	14.410	0.636	1102.8	1028.5	26.948	4.592	2.78		Clay	85.0			13.62	1.21	n.a.	n.a.	0.98	0.747	n.a.	n.a.	n.a.	n.a.	0.00	0.00
9.350	14.130	0.622	1122.0	1037.8	26.151	4.585	2.78		Clay	85.7			13.36	1.21	n.a.	n.a.	0.98	0.751	n.a.	n.a.	n.a.	n.a.	0.00	0.00
9.510	14.030	0.657	1141.2	1047.0	25.711	4.880	2.81		Clay	87.6			13.26	1.20	n.a.	n.a.	0.98	0.756	n.a.	n.a.	n.a.	n.a.	0.00	0.00
9.680	13.490	0.648	1161.6	1056.8	24.431	5.019	2.83		Clay	89.6			12.75	1.20	n.a.	n.a.	0.98	0.760	n.a.	n.a.	n.a.	n.a.	0.00	0.00
9.840	13.420	0.648	1180.8	1066.0	24.071	5.053	2.84		Clay	90.1			12.68	1.20	n.a.	n.a.	0.98	0.764	n.a.	n.a.	n.a.	n.a.	0.00	0.00
10.010	13.590	0.643	1201.2	1075.8	24.149	4.952	2.83		Clay	89.6			12.84	1.20	n.a.	n.a.	0.98	0.768	n.a.	n.a.	n.a.	n.a.	0.00	0.00
10.170	13.440	0.630	1220.4	1085.0	23.650	4.907	2.84		Clay	89.9			12.70	1.19	n.a.	n.a.	0.98	0.772	n.a.	n.a.	n.a.	n.a.	0.00	0.00
10.330	13.290	0.614	1239.6	1094.2	23.159	4.848	2.84		Clay	90.2			12.56	1.19	n.a.	n.a.	0.98	0.776	n.a.	n.a.	n.a.	n.a.	0.00	0.00
10.500	13.090	0.596	1260.0	1104.0	22.572	4.784	2.84		Clay	90.5			12.37	1.19	n.a.	n.a.	0.98	0.780	n.a.	n.a.	n.a.	n.a.	0.00	0.00
10.660	13.050	0.564	1279.2	1113.2	22.296	4.541	2.83		Clay	89.6			12.33	1.18	n.a.	n.a.	0.98	0.784	n.a.	n.a.	n.a.	n.a.	0.00	0.00
10.830	13.500	0.550	1299.6	1123.0	22.885	4.280	2.81		Clay	87.6			12.76	1.18	n.a.	n.a.	0.98	0.788	n.a.	n.a.	n.a.	n.a.	0.00	0.00
10.990	13.950	0.538	1318.8	1132.2	23.477	4.049	2.78		Clay	85.7			13.19	1.18	n.a.	n.a.	0.98	0.791	n.a.	n.a.	n.a.	n.a.	0.00	0.00

CORNERSTONE EARTH GROUP

CPT No.	2

PGA (A_{max})	0.89

Total Settlement:	0.37	(Inches)

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Depth (ft)	q_c (tsf)	f_s (tsf)	σ_{vc} (psf)	Insitu σ'_{vc} (psf)	Q	F (%)	I_c	Layer "Plastic" PI > 7	Flag Soil Type	Fines (%)	q_{cN} near interfaces (soft layer)	Thin Layer Factor (K_H)	Interpreted q_{cN}	C_N	q_{c1N}	q_{c1N-CS}	Stress Reduction Coeff, r_d	CSR	K_σ for Sand	$CRR_{M=7.5, \sigma'vc = 1 atm}$	CRR	Factor of Safety (CRR/CSR)	Vertical Strain ε_v	Settlement (Inches)
11.150	14.310	0.529	1338.0	1141.4	23.901	3.879	2.77		Clay	84.2			13.53	1.18	n.a.	n.a.	0.98	0.794	n.a.	n.a.	n.a.	n.a.	0.00	0.00
11.320	14.770	0.522	1358.4	1151.2	24.480	3.705	2.74		Clay	82.5			13.96	1.17	n.a.	n.a.	0.98	0.798	n.a.	n.a.	n.a.	n.a.	0.00	0.00
11.480	15.000	0.525	1377.6	1160.4	24.665	3.670	2.74		Clay	82.1			14.18	1.17	n.a.	n.a.	0.98	0.801	n.a.	n.a.	n.a.	n.a.	0.00	0.00
11.650	15.580	0.506	1398.0	1170.2	25.432	3.398	2.71		Clay	79.6			14.73	1.17	n.a.	n.a.	0.98	0.805	n.a.	n.a.	n.a.	n.a.	0.00	0.00
11.810	15.570	0.520	1417.2	1179.5	25.200	3.501	2.72		Clay	80.5			14.72	1.17	n.a.	n.a.	0.98	0.808	n.a.	n.a.	n.a.	n.a.	0.00	0.00
11.980	15.120	0.523	1437.6	1189.2	24.219	3.633	2.74		Clay	82.4			14.29	1.16	n.a.	n.a.	0.98	0.811	n.a.	n.a.	n.a.	n.a.	0.00	0.00
12.140	13.740	0.538	1456.8	1198.5	21.714	4.136	2.81		Clay	88.2			12.99	1.16	n.a.	n.a.	0.98	0.814	n.a.	n.a.	n.a.	n.a.	0.00	0.00
12.300	15.070	0.524	1476.0	1207.7	23.735	3.656	2.75		Clay	83.1			14.24	1.16	n.a.	n.a.	0.98	0.817	n.a.	n.a.	n.a.	n.a.	0.00	0.00
12.470	15.760	0.559	1496.4	1217.5	24.661	3.721	2.74		Clay	82.4			14.90	1.16	n.a.	n.a.	0.98	0.820	n.a.	n.a.	n.a.	n.a.	0.00	0.00
12.630	17.670	0.564	1515.6	1226.7	27.574	3.334	2.68		Clay	77.0			16.70	1.15	n.a.	n.a.	0.98	0.822	n.a.	n.a.	n.a.	n.a.	0.00	0.00
12.800	17.150	0.544	1536.0	1236.5	26.498	3.318	2.69		Clay	78.0			16.21	1.15	n.a.	n.a.	0.97	0.825	n.a.	n.a.	n.a.	n.a.	0.00	0.00
12.960	16.660	0.598	1555.2	1245.7	25.500	3.766	2.74		Clay	81.8			15.75	1.15	n.a.	n.a.	0.97	0.828	n.a.	n.a.	n.a.	n.a.	0.00	0.00
13.120	16.460	0.574	1574.4	1254.9	24.978	3.659	2.73		Clay	81.7			15.56	1.15	n.a.	n.a.	0.97	0.830	n.a.	n.a.	n.a.	n.a.	0.00	0.00
13.290	17.540	0.575	1594.8	1264.7	26.477	3.433	2.70		Clay	78.8			16.58	1.15	n.a.	n.a.	0.97	0.833	n.a.	n.a.	n.a.	n.a.	0.00	0.00
13.450	16.240	0.520	1614.0	1273.9	24.229	3.371	2.72		Clay	80.7			15.35	1.14	n.a.	n.a.	0.97	0.836	n.a.	n.a.	n.a.	n.a.	0.00	0.00
13.620	17.620	0.459	1634.4	1283.7	26.178	2.731	2.64		Clay	74.0			16.65	1.14	n.a.	n.a.	0.97	0.838	n.a.	n.a.	n.a.	n.a.	0.00	0.00
13.780	18.260	0.467	1653.6	1292.9	26.967	2.681	2.62		Clay	72.8			17.26	1.14	n.a.	n.a.	0.97	0.840	n.a.	n.a.	n.a.	n.a.	0.00	0.00
13.940	16.060	0.488	1672.8	1302.1	23.382	3.208	2.72		Clay	80.5			15.18	1.14	n.a.	n.a.	0.97	0.843	n.a.	n.a.	n.a.	n.a.	0.00	0.00
14.110	16.290	0.398	1693.2	1311.9	23.543	2.577	2.66		Clay	75.6			15.40	1.13	n.a.	n.a.	0.97	0.845	n.a.	n.a.	n.a.	n.a.	0.00	0.00
14.270	14.910	0.336	1712.4	1321.2	21.275	2.387	2.67		Clay	76.8			14.09	1.13	n.a.	n.a.	0.97	0.847	n.a.	n.a.	n.a.	n.a.	0.00	0.00
14.440	11.470	0.203	1732.8	1330.9	15.934	1.911	2.72		Clay	80.6			10.84	1.13	n.a.	n.a.	0.97	0.850	n.a.	n.a.	n.a.	n.a.	0.00	0.00
14.600	9.790	0.247	1752.0	1340.2	13.303	2.774	2.88		Clay	93.1			9.25	1.13	n.a.	n.a.	0.97	0.852	n.a.	n.a.	n.a.	n.a.	0.00	0.00
14.760	9.920	0.648	1771.2	1349.4	13.390	7.174	3.13		Clay	100.0			9.38	1.13	n.a.	n.a.	0.97	0.854	n.a.	n.a.	n.a.	n.a.	0.00	0.00
14.930	31.970	1.233	1791.6	1359.2	40.039	3.969	2.61	plastic	Clay	71.5			30.22	1.12	n.a.	n.a.	0.97	0.856	n.a.	n.a.	n.a.	n.a.	0.00	0.00
15.090	93.170	1.510	1810.8	1368.4	108.443	1.636	2.03		Sand	25.3		1.8	158.51	1.13	178.98	241.02	0.97	0.858	1.100	47.830	115.748	134.91	0.00	0.00
15.260	56.130	1.097	1831.2	1378.2	64.665	1.988	2.25		Sand	42.9	88.06	1.8	158.51	1.12	177.49	265.06	0.97	0.860	1.100	935.914	2264.912	2633.61	0.00	0.00
15.420	29.060	1.215	1850.4	1387.4	40.558	4.318	2.63		Clay	73.3			27.47	1.12	n.a.	n.a.	0.97	0.862	n.a.	n.a.	n.a.	n.a.	0.00	0.00
15.580	26.670	1.545	1869.6	1396.6	36.854	6.002	2.76		Clay	83.8			25.21	1.12	n.a.	n.a.	0.97	0.864	n.a.	n.a.	n.a.	n.a.	0.00	0.00
15.750	42.570	1.909	1890.0	1406.4	48.258	4.587	2.59	plastic	Clay	70.6			40.24	1.11	n.a.	n.a.	0.97	0.866	n.a.	n.a.	n.a.	n.a.	0.00	0.00
15.910	44.210	2.263	1909.2	1415.6	54.169	5.232	2.60	plastic	Clay	71.2			41.79	1.11	n.a.	n.a.	0.96	0.867	n.a.	n.a.	n.a.	n.a.	0.00	0.00
16.080	39.630	1.863	1929.6	1425.4	48.188	4.818	2.61	plastic	Clay	71.8			37.46	1.11	n.a.	n.a.	0.96	0.869	n.a.	n.a.	n.a.	n.a.	0.00	0.00
16.240	33.130	1.552	1948.8	1434.6	44.828	4.827	2.63		Clay	73.6			31.31	1.11	n.a.	n.a.	0.96	0.871	n.a.	n.a.	n.a.	n.a.	0.00	0.00
16.400	29.010	1.205	1968.0	1443.8	38.821	4.299	2.64		Clay	74.3			27.42	1.11	n.a.	n.a.	0.96	0.873	n.a.	n.a.	n.a.	n.a.	0.00	0.00
16.570	27.500	1.052	1988.4	1453.6	36.468	3.970	2.64		Clay	73.9			25.99	1.10	n.a.	n.a.	0.96	0.874	n.a.	n.a.	n.a.	n.a.	0.00	0.00
16.730	25.660	0.899	2007.6	1462.8	33.710	3.647	2.64		Clay	73.9			24.25	1.10	n.a.	n.a.	0.96	0.876	n.a.	n.a.	n.a.	n.a.	0.00	0.00
16.900	22.240	0.782	2028.0	1472.6	28.827	3.685	2.69		Clay	78.1			21.02	1.10	n.a.	n.a.	0.96	0.878	n.a.	n.a.	n.a.	n.a.	0.00	0.00
17.060	19.040	0.679	2047.2	1481.9	24.316	3.767	2.75		Clay	83.1			18.00	1.10	n.a.	n.a.	0.96	0.879	n.a.	n.a.	n.a.	n.a.	0.00	0.00
17.220	15.880	0.542	2066.4	1491.1	19.914	3.649	2.81		Clay	87.7			15.01	1.10	n.a.	n.a.	0.96	0.881	n.a.	n.a.	n.a.	n.a.	0.00	0.00
17.390	16.010	0.483	2086.8	1500.9	19.944	3.229	2.77		Clay	85.0			15.13	1.09	n.a.	n.a.	0.96	0.882	n.a.	n.a.	n.a.	n.a.	0.00	0.00
17.550	12.420	0.422	2106.0	1510.1	15.055	3.712	2.91		Clay	95.7			11.74	1.09	n.a.	n.a.	0.96	0.884	n.a.	n.a.	n.a.	n.a.	0.00	0.00
17.720	11.450	0.326	2126.4	1519.9	13.668	3.142	2.90		Clay	94.8			10.82	1.09	n.a.	n.a.	0.96	0.885	n.a.	n.a.	n.a.	n.a.	0.00	0.00
17.880	10.570	0.300	2145.6	1529.1	12.422	3.162	2.93		Clay	97.6			9.99	1.09	n.a.	n.a.	0.96	0.886	n.a.	n.a.	n.a.	n.a.	0.00	0.00
18.040	9.450	0.283	2164.8	1538.3	10.879	3.377	3.00		Clay	100.0			8.93	1.09	n.a.	n.a.	0.96	0.888	n.a.	n.a.	n.a.	n.a.	0.00	0.00
18.210	8.330	0.252	2185.2	1548.1	9.350	3.479	3.06		Clay	100.0			7.87	1.09	n.a.	n.a.	0.96	0.889	n.a.	n.a.	n.a.	n.a.	0.00	0.00
18.370	7.600	0.242	2204.4	1557.3	8.345	3.727	3.12		Clay	100.0			7.18	1.08	n.a.	n.a.	0.96	0.890	n.a.	n.a.	n.a.	n.a.	0.00	0.00
18.540	7.570	0.280	2224.8	1567.1	8.241	4.331	3.16		Clay	100.0			7.16	1.08	n.a.	n.a.	0.96	0.892	n.a.	n.a.	n.a.	n.a.	0.00	0.00
18.700	8.440	0.339	2244.0	1576.3	9.285	4.638	3.13		Clay	100.0			7.98	1.08	n.a.	n.a.	0.96	0.893	n.a.	n.a.	n.a.	n.a.	0.00	0.00
18.860	9.050	0.377	2263.2	1585.5	9.988	4.764	3.12		Clay	100.0			8.55	1.08	n.a.	n.a.	0.95	0.894	n.a.	n.a.	n.a.	n.a.	0.00	0.00
19.030	8.910	0.378	2283.6	1595.3	9.739	4.867	3.13		Clay	100.0			8.42	1.08	n.a.	n.a.	0.95	0.895	n.a.	n.a.	n.a.	n.a.	0.00	0.00
19.190	8.650	0.378	2302.8	1604.5	9.347	5.041	3.15		Clay	100.0			8.18	1.08	n.a.	n.a.	0.95	0.896	n.a.	n.a.	n.a.	n.a.	0.00	0.00
19.360	8.680	0.393	2323.2	1614.3	9.315	5.222	3.16		Clay	100.0			8.20	1.07	n.a.	n.a.	0.95	0.898	n.a.	n.a.	n.a.	n.a.	0.00	0.00
19.520	8.750	0.373	2342.4	1623.6	9.336	4.919	3.15		Clay	100.0			8.27	1.07	n.a.	n.a.	0.95	0.899	n.a.	n.a.	n.a.	n.a.	0.00	0.00
19.690	9.210	0.311	2362.8	1633.3	9.831	3.877	3.07		Clay	100.0			8.71	1.07	n.a.	n.a.	0.95	0.900	n.a.	n.a.	n.a.	n.a.	0.00	0.00
19.850	9.060	0.298	2382.0	1642.6	9.581	3.791	3.07		Clay	100.0			8.56	1.07	n.a.	n.a.	0.95	0.901	n.a.	n.a.	n.a.	n.a.	0.00	0.00
20.010	9.360	0.432	2401.2	1651.8	9.880	5.293	3.15		Clay	100.0			8.85	1.07	n.a.	n.a.	0.95	0.902	n.a.	n.a.	n.a.	n.a.	0.00	0.00
20.180	9.370	0.557	2421.6	1661.6	9.821	6.822	3.22		Clay	100.0			8.86	1.07	n.a.	n.a.	0.95	0.903	n.a.	n.a.	n.a.	n.a.	0.00	0.00
20.340	9.700	0.682	2440.8	1670.8	10.150	8.045	3.25		Clay	100.0			9.17	1.06	n.a.	n.a.	0.95	0.904	n.a.	n.a.	n.a.	n.a.	0.00	0.00
20.510	11.240	0.592	2461.2	1680.6	11.912	5.913	3.11		Clay	100.0			10.62	1.06	n.a.	n.a.	0.95	0.905	n.a.	n.a.	n.a.	n.a.	0.00	0.00
20.670	10.000	0.444	2480.4	1689.8	10.368	5.067	3.12		Clay	100.0			9.45	1.06	n.a.	n.a.	0.95	0.906	n.a.	n.a.	n.a.	n.a.	0.00	0.00
20.830	9.580	0.383	2499.6	1699.0	9.806	4.592	3.11		Clay	100.0			9.05	1.06	n.a.	n.a.	0.95	0.907	n.a.	n.a.	n.a.	n.a.	0.00	0.00
21.000	9.580	0.324	2520.0	1708.8	9.738	3.893	3.07		Clay	100.0			9.05	1.06	n.a.	n.a.	0.95	0.908	n.a.	n.a.	n.a.	n.a.	0.00	0.00
21.160	9.770	0.332	2539.2	1718.0	9.896	3.900	3.07		Clay	100.0			9.23	1.06	n.a.	n.a.	0.95	0.909	n.a.	n.a.	n.a.	n.a.	0.00	0.00
21.330	10.290	0.310	2559.6	1727.8	10.430	3.441	3.02		Clay	100.0			9.73	1.05	n.a.	n.a.	0.95	0.909	n.a.	n.a.	n.a.	n.a.	0.00	0.00
21.490	10.300	0.303	2578.8	1737.0	10.375	3.365	3.01		Clay	100.0			9.74	1.05	n.a.	n.a.	0.95	0.910	n.a.	n.a.	n.a.	n.a.	0.00	0.00
21.650	10.740	0.287	2598.0	1746.2	10.813	3.039	2.97		Clay	100.0			10.15	1.05	n.a.	n.a.	0.95	0.911	n.a.	n.a.	n.a.	n.a.	0.00	0.00
21.820	10.810	0.290	2618.4	1756.0	10.821	3.049	2.97		Clay	100.0			10.22	1.05	n.a.	n.a.	0.94	0.912	n.a.	n.a.	n.a.	n.a.	0.00	0.00
21.980	10.480	0.238	2637.6	1765.2	10.380	2.602	2.95		Clay	98.9			9.91	1.05	n.a.	n.a.	0.94	0.913	n.a.	n.a.	n.a.	n.a.	0.00	0.00

CORNERSTONE EARTH GROUP

CPT No.	2

PGA (A_{max})	0.89

Total Settlement:	0.37	(Inches)

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Depth (ft)	q_c (tsf)	f_s (tsf)	σ_{vc} (psf)	Insitu σ'_{vc} (psf)	Q	F (%)	I_c	Layer "Plastic" PI > 7	Flag Soil Type	Fines (%)	q_{cN} near interfaces (soft layer)	Thin Layer Factor (K_H)	Interpreted q_{cN}	C_N	q_{c1N}	$q_{c1N\text{-}CS}$	Stress Reduction Coeff, r_d	CSR	K_σ for Sand	$CRR_{M=7.5,\ \sigma'vc = 1\ atm}$	CRR	Factor of Safety (CRR/CSR)	Vertical Strain ε_v	Settlement (Inches)
22.150	10.060	0.217	2658.0	1775.0	9.838	2.488	2.96		Clay	99.6			9.51	1.05	n.a.	n.a.	0.94	0.913	n.a.	n.a.	n.a.	n.a.	0.00	0.00
22.310	10.340	0.235	2677.2	1784.3	10.090	2.610	2.96		Clay	99.8			9.77	1.05	n.a.	n.a.	0.94	0.914	n.a.	n.a.	n.a.	n.a.	0.00	0.00
22.470	11.520	0.268	2696.4	1793.5	11.343	2.639	2.92		Clay	96.6			10.89	1.04	n.a.	n.a.	0.94	0.915	n.a.	n.a.	n.a.	n.a.	0.00	0.00
22.640	12.850	0.342	2716.8	1803.3	12.745	2.972	2.91		Clay	95.7			12.15	1.04	n.a.	n.a.	0.94	0.916	n.a.	n.a.	n.a.	n.a.	0.00	0.00
22.800	15.020	0.414	2736.0	1812.5	15.064	3.031	2.85		Clay	91.4			14.20	1.04	n.a.	n.a.	0.94	0.916	n.a.	n.a.	n.a.	n.a.	0.00	0.00
22.970	18.350	0.475	2756.4	1822.3	18.627	2.799	2.76		Clay	83.8			17.34	1.04	n.a.	n.a.	0.94	0.917	n.a.	n.a.	n.a.	n.a.	0.00	0.00
23.130	20.500	0.568	2775.6	1831.5	20.871	2.971	2.74		Clay	81.9			19.38	1.04	n.a.	n.a.	0.94	0.918	n.a.	n.a.	n.a.	n.a.	0.00	0.00
23.290	21.670	0.639	2794.8	1840.7	22.027	3.153	2.73		Clay	81.8			20.48	1.04	n.a.	n.a.	0.94	0.918	n.a.	n.a.	n.a.	n.a.	0.00	0.00
23.460	23.380	0.723	2815.2	1850.5	23.748	3.290	2.72		Clay	80.7			22.10	1.04	n.a.	n.a.	0.94	0.919	n.a.	n.a.	n.a.	n.a.	0.00	0.00
23.620	24.630	0.816	2834.4	1859.7	24.964	3.517	2.72		Clay	80.9			23.28	1.03	n.a.	n.a.	0.94	0.919	n.a.	n.a.	n.a.	n.a.	0.00	0.00
23.790	25.410	0.909	2854.8	1869.5	25.657	3.791	2.74		Clay	81.8			24.02	1.03	n.a.	n.a.	0.94	0.920	n.a.	n.a.	n.a.	n.a.	0.00	0.00
23.950	25.450	0.953	2874.0	1878.7	25.563	3.969	2.75		Clay	83.0			24.05	1.03	n.a.	n.a.	0.94	0.921	n.a.	n.a.	n.a.	n.a.	0.00	0.00
24.110	24.820	0.969	2893.2	1887.9	24.761	4.147	2.77		Clay	84.8			23.46	1.03	n.a.	n.a.	0.94	0.921	n.a.	n.a.	n.a.	n.a.	0.00	0.00
24.280	24.430	0.961	2913.6	1897.7	24.211	4.181	2.78		Clay	85.6			23.09	1.03	n.a.	n.a.	0.94	0.922	n.a.	n.a.	n.a.	n.a.	0.00	0.00
24.440	26.180	1.031	2932.8	1906.9	25.920	4.173	2.76		Clay	83.8			24.74	1.03	n.a.	n.a.	0.93	0.922	n.a.	n.a.	n.a.	n.a.	0.00	0.00
24.610	28.540	1.120	2953.2	1916.7	28.239	4.137	2.73		Clay	81.4			26.98	1.03	n.a.	n.a.	0.93	0.923	n.a.	n.a.	n.a.	n.a.	0.00	0.00
24.770	29.960	1.054	2972.4	1926.0	29.569	3.702	2.68		Clay	77.6			28.32	1.03	n.a.	n.a.	0.93	0.923	n.a.	n.a.	n.a.	n.a.	0.00	0.00
24.930	27.600	1.156	2991.6	1935.2	26.979	4.430	2.76		Clay	84.1			26.09	1.02	n.a.	n.a.	0.93	0.924	n.a.	n.a.	n.a.	n.a.	0.00	0.00
25.100	24.140	0.660	3012.0	1945.0	23.275	2.915	2.69		Clay	78.6			22.82	1.02	n.a.	n.a.	0.93	0.924	n.a.	n.a.	n.a.	n.a.	0.00	0.00
25.260	18.520	0.762	3031.2	1954.2	17.403	4.479	2.91		Clay	95.8			17.50	1.02	n.a.	n.a.	0.93	0.925	n.a.	n.a.	n.a.	n.a.	0.00	0.00
25.430	19.780	0.779	3051.6	1964.0	18.589	4.265	2.87		Clay	93.0			18.70	1.02	n.a.	n.a.	0.93	0.925	n.a.	n.a.	n.a.	n.a.	0.00	0.00
25.590	15.220	0.805	3070.8	1973.2	13.871	5.885	3.06		Clay	100.0			14.39	1.02	n.a.	n.a.	0.93	0.925	n.a.	n.a.	n.a.	n.a.	0.00	0.00
25.750	20.950	0.827	3090.0	1982.4	19.577	4.261	2.86		Clay	91.6			19.80	1.02	n.a.	n.a.	0.93	0.926	n.a.	n.a.	n.a.	n.a.	0.00	0.00
25.920	17.690	0.801	3110.4	1992.2	16.198	4.964	2.96		Clay	100.0			16.72	1.02	n.a.	n.a.	0.93	0.926	n.a.	n.a.	n.a.	n.a.	0.00	0.00
26.080	15.070	0.679	3129.6	2001.4	13.496	5.030	3.03		Clay	100.0			14.24	1.01	n.a.	n.a.	0.93	0.927	n.a.	n.a.	n.a.	n.a.	0.00	0.00
26.250	12.510	0.515	3150.0	2011.2	10.874	4.706	3.08		Clay	100.0			11.82	1.01	n.a.	n.a.	0.93	0.927	n.a.	n.a.	n.a.	n.a.	0.00	0.00
26.410	12.450	0.393	3169.2	2020.4	10.756	3.612	3.02		Clay	100.0			11.77	1.01	n.a.	n.a.	0.93	0.927	n.a.	n.a.	n.a.	n.a.	0.00	0.00
26.570	11.650	0.297	3188.4	2029.6	9.909	2.954	3.00		Clay	100.0			11.01	1.01	n.a.	n.a.	0.93	0.928	n.a.	n.a.	n.a.	n.a.	0.00	0.00
26.740	12.090	0.285	3208.8	2039.4	10.283	2.716	2.96		Clay	100.0			11.43	1.01	n.a.	n.a.	0.93	0.928	n.a.	n.a.	n.a.	n.a.	0.00	0.00
26.900	14.090	0.287	3228.0	2048.6	12.180	2.303	2.86		Clay	91.9			13.32	1.01	n.a.	n.a.	0.93	0.928	n.a.	n.a.	n.a.	n.a.	0.00	0.00
27.070	15.030	0.303	3248.4	2058.4	13.025	2.256	2.83		Clay	89.6			14.21	1.01	n.a.	n.a.	0.92	0.929	n.a.	n.a.	n.a.	n.a.	0.00	0.00
27.230	16.770	0.325	3267.6	2067.6	14.641	2.148	2.78		Clay	85.3			15.85	1.01	n.a.	n.a.	0.92	0.929	n.a.	n.a.	n.a.	n.a.	0.00	0.00
27.400	19.100	0.398	3288.0	2077.4	16.805	2.281	2.74		Clay	82.5			18.05	1.00	n.a.	n.a.	0.92	0.929	n.a.	n.a.	n.a.	n.a.	0.00	0.00
27.560	21.070	0.555	3307.2	2086.7	18.610	2.859	2.77		Clay	84.3			19.91	1.00	n.a.	n.a.	0.92	0.929	n.a.	n.a.	n.a.	n.a.	0.00	0.00
27.720	23.560	0.702	3326.4	2095.9	20.895	3.206	2.76		Clay	83.6			22.27	1.00	n.a.	n.a.	0.92	0.930	n.a.	n.a.	n.a.	n.a.	0.00	0.00
27.890	26.160	0.824	3346.8	2105.7	23.258	3.363	2.73		Clay	81.7			24.73	1.00	n.a.	n.a.	0.92	0.930	n.a.	n.a.	n.a.	n.a.	0.00	0.00
28.050	27.530	0.977	3366.0	2114.9	24.443	3.778	2.75		Clay	83.0			26.02	1.00	n.a.	n.a.	0.92	0.930	n.a.	n.a.	n.a.	n.a.	0.00	0.00
28.220	28.250	1.114	3386.4	2124.7	24.998	4.193	2.77		Clay	84.8			26.70	1.00	n.a.	n.a.	0.92	0.930	n.a.	n.a.	n.a.	n.a.	0.00	0.00
28.380	28.140	1.218	3405.6	2133.9	24.778	4.606	2.80		Clay	87.2			26.60	1.00	n.a.	n.a.	0.92	0.931	n.a.	n.a.	n.a.	n.a.	0.00	0.00
28.540	25.630	1.104	3424.8	2143.1	22.321	4.614	2.84		Clay	90.0			24.22	1.00	n.a.	n.a.	0.92	0.931	n.a.	n.a.	n.a.	n.a.	0.00	0.00
28.710	24.740	0.994	3445.2	2152.9	21.383	4.318	2.83		Clay	89.6			23.38	1.00	n.a.	n.a.	0.92	0.931	n.a.	n.a.	n.a.	n.a.	0.00	0.00
28.870	26.260	0.939	3464.4	2162.1	22.689	3.830	2.78		Clay	85.3			24.82	0.99	n.a.	n.a.	0.92	0.931	n.a.	n.a.	n.a.	n.a.	0.00	0.00
29.040	24.460	0.981	3484.8	2171.9	20.920	4.318	2.84		Clay	90.2			23.12	0.99	n.a.	n.a.	0.92	0.931	n.a.	n.a.	n.a.	n.a.	0.00	0.00
29.200	22.160	0.909	3504.0	2181.1	18.713	4.456	2.89		Clay	93.8			20.95	0.99	n.a.	n.a.	0.92	0.931	n.a.	n.a.	n.a.	n.a.	0.00	0.00
29.360	19.680	0.777	3523.2	2190.3	16.361	4.338	2.92		Clay	96.8			18.60	0.99	n.a.	n.a.	0.92	0.932	n.a.	n.a.	n.a.	n.a.	0.00	0.00
29.530	18.240	0.637	3543.6	2200.1	14.970	3.869	2.92		Clay	96.7			17.24	0.99	n.a.	n.a.	0.91	0.932	n.a.	n.a.	n.a.	n.a.	0.00	0.00
29.690	18.030	0.531	3562.8	2209.3	14.709	3.269	2.88		Clay	93.6			17.04	0.99	n.a.	n.a.	0.91	0.932	n.a.	n.a.	n.a.	n.a.	0.00	0.00
29.860	17.410	0.558	3583.2	2219.1	14.076	3.575	2.92		Clay	96.7			16.46	0.99	n.a.	n.a.	0.91	0.932	n.a.	n.a.	n.a.	n.a.	0.00	0.00
30.020	15.490	0.616	3602.4	2228.4	12.286	4.499	3.03		Clay	100.0			14.64	0.99	n.a.	n.a.	0.91	0.932	n.a.	n.a.	n.a.	n.a.	0.00	0.00
30.180	12.710	0.527	3621.6	2237.6	9.742	4.833	3.13		Clay	100.0			12.01	0.99	n.a.	n.a.	0.91	0.932	n.a.	n.a.	n.a.	n.a.	0.00	0.00
30.350	11.740	0.430	3642.0	2247.4	8.827	4.338	3.13		Clay	100.0			11.10	0.98	n.a.	n.a.	0.91	0.932	n.a.	n.a.	n.a.	n.a.	0.00	0.00
30.510	10.600	0.382	3661.2	2256.6	7.772	4.351	3.18		Clay	100.0			10.02	0.98	n.a.	n.a.	0.91	0.932	n.a.	n.a.	n.a.	n.a.	0.00	0.00
30.680	9.630	0.357	3681.6	2266.4	6.874	4.587	3.24		Clay	100.0			9.10	0.98	n.a.	n.a.	0.91	0.932	n.a.	n.a.	n.a.	n.a.	0.00	0.00
30.840	9.560	0.352	3700.8	2275.6	6.776	4.561	3.24		Clay	100.0			9.04	0.98	n.a.	n.a.	0.91	0.933	n.a.	n.a.	n.a.	n.a.	0.00	0.00
31.000	10.210	0.321	3720.0	2284.8	7.309	3.849	3.17		Clay	100.0			9.65	0.98	n.a.	n.a.	0.91	0.933	n.a.	n.a.	n.a.	n.a.	0.00	0.00
31.170	10.930	0.328	3740.4	2294.6	7.897	3.619	3.13		Clay	100.0			10.33	0.98	n.a.	n.a.	0.91	0.933	n.a.	n.a.	n.a.	n.a.	0.00	0.00
31.330	11.110	0.335	3759.6	2303.8	8.013	3.629	3.12		Clay	100.0			10.50	0.98	n.a.	n.a.	0.91	0.933	n.a.	n.a.	n.a.	n.a.	0.00	0.00
31.500	11.320	0.244	3780.0	2313.6	8.152	2.584	3.04		Clay	100.0			10.70	0.98	n.a.	n.a.	0.91	0.933	n.a.	n.a.	n.a.	n.a.	0.00	0.00
31.660	11.460	0.329	3799.2	2322.8	8.232	3.441	3.10		Clay	100.0			10.83	0.98	n.a.	n.a.	0.91	0.933	n.a.	n.a.	n.a.	n.a.	0.00	0.00
31.820	11.110	0.335	3818.4	2332.0	7.891	3.639	3.13		Clay	100.0			10.50	0.97	n.a.	n.a.	0.91	0.933	n.a.	n.a.	n.a.	n.a.	0.00	0.00
31.990	7.730	0.338	3838.8	2341.8	4.962	5.810	3.41		Clay	100.0			7.31	0.97	n.a.	n.a.	0.90	0.933	n.a.	n.a.	n.a.	n.a.	0.00	0.00
32.150	12.330	0.328	3858.0	2351.0	8.848	3.156	3.05		Clay	100.0			11.65	0.97	n.a.	n.a.	0.90	0.933	n.a.	n.a.	n.a.	n.a.	0.00	0.00
32.320	12.090	0.340	3878.4	2360.8	8.599	3.352	3.08		Clay	100.0			11.43	0.97	n.a.	n.a.	0.90	0.933	n.a.	n.a.	n.a.	n.a.	0.00	0.00
32.480	12.600	0.391	3897.6	2370.0	8.988	3.668	3.08		Clay	100.0			11.91	0.97	n.a.	n.a.	0.90	0.933	n.a.	n.a.	n.a.	n.a.	0.00	0.00
32.640	14.070	0.441	3916.8	2379.3	10.181	3.641	3.04		Clay	100.0			13.30	0.97	n.a.	n.a.	0.90	0.933	n.a.	n.a.	n.a.	n.a.	0.00	0.00
32.810	15.540	0.526	3937.2	2389.1	11.361	3.873	3.02		Clay	100.0			14.69	0.97	n.a.	n.a.	0.90	0.933	n.a.	n.a.	n.a.	n.a.	0.00	0.00
32.970	17.030	0.601	3956.4	2398.3	12.552	3.992	2.99		Clay	100.0			16.10	0.97	n.a.	n.a.	0.90	0.933	n.a.	n.a.	n.a.	n.a.	0.00	0.00

CORNERSTONE EARTH GROUP

CPT No.	2

PGA (A_{max})	0.89

Total Settlement:	0.37	(Inches)

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Depth (ft)	q_c (tsf)	f_s (tsf)	σ_{vc} (psf)	Insitu σ'_{vc} (psf)	Q	F (%)	I_c	Layer "Plastic" PI > 7	Flag Soil Type	Fines (%)	q_{cN} near interfaces (soft layer)	Thin Layer Factor (K_H)	Interpreted q_{cN}	C_N	q_{c1N}	q_{c1N-CS}	Stress Reduction Coeff, r_d	CSR	K_σ for Sand	$CRR_{M=7.5, \sigma'vc = 1 atm}$	CRR	Factor of Safety (CRR/CSR)	Vertical Strain ε_v	Settlement (Inches)
33.140	18.420	0.647	3976.8	2408.1	13.647	3.940	2.96		Clay	99.6			17.41	0.97	n.a.	n.a.	0.90	0.932	n.a.	n.a.	n.a.	n.a.	0.00	0.00
33.300	19.500	0.667	3996.0	2417.3	14.481	3.813	2.93		Clay	97.3			18.43	0.97	n.a.	n.a.	0.90	0.932	n.a.	n.a.	n.a.	n.a.	0.00	0.00
33.460	19.570	0.718	4015.2	2426.5	14.476	4.091	2.95		Clay	98.8			18.50	0.96	n.a.	n.a.	0.90	0.932	n.a.	n.a.	n.a.	n.a.	0.00	0.00
33.630	21.030	0.843	4035.6	2436.3	15.608	4.433	2.94		Clay	98.5			19.88	0.96	n.a.	n.a.	0.90	0.932	n.a.	n.a.	n.a.	n.a.	0.00	0.00
33.790	24.940	0.934	4054.8	2445.5	18.739	4.077	2.86		Clay	91.8			23.57	0.96	n.a.	n.a.	0.90	0.932	n.a.	n.a.	n.a.	n.a.	0.00	0.00
33.960	26.570	1.127	4075.2	2455.3	19.983	4.594	2.87		Clay	92.8			25.11	0.96	n.a.	n.a.	0.90	0.932	n.a.	n.a.	n.a.	n.a.	0.00	0.00
34.120	27.410	1.324	4094.4	2464.5	20.582	5.221	2.90		Clay	94.9			25.91	0.96	n.a.	n.a.	0.90	0.932	n.a.	n.a.	n.a.	n.a.	0.00	0.00
34.280	26.920	1.339	4113.6	2473.7	20.102	5.385	2.92		Clay	96.3			25.44	0.96	n.a.	n.a.	0.90	0.932	n.a.	n.a.	n.a.	n.a.	0.00	0.00
34.450	24.350	1.150	4134.0	2483.5	17.945	5.160	2.94		Clay	98.2			23.02	0.96	n.a.	n.a.	0.89	0.932	n.a.	n.a.	n.a.	n.a.	0.00	0.00
34.610	23.470	0.709	4153.2	2492.7	17.165	3.312	2.83		Clay	89.6			22.18	0.96	n.a.	n.a.	0.89	0.932	n.a.	n.a.	n.a.	n.a.	0.00	0.00
34.780	21.140	0.805	4173.6	2502.5	15.227	4.223	2.94		Clay	98.1			19.98	0.96	n.a.	n.a.	0.89	0.932	n.a.	n.a.	n.a.	n.a.	0.00	0.00
34.940	19.020	0.702	4192.8	2511.7	13.476	4.146	2.98		Clay	100.0			17.98	0.96	n.a.	n.a.	0.89	0.931	n.a.	n.a.	n.a.	n.a.	0.00	0.00
35.100	13.850	0.553	4212.0	2521.0	9.317	4.710	3.14		Clay	100.0			13.09	0.95	n.a.	n.a.	0.89	0.931	n.a.	n.a.	n.a.	n.a.	0.00	0.00
35.270	16.280	0.521	4232.4	2530.8	11.193	3.680	3.01		Clay	100.0			15.39	0.95	n.a.	n.a.	0.89	0.931	n.a.	n.a.	n.a.	n.a.	0.00	0.00
35.430	15.620	0.437	4251.6	2540.0	10.625	3.241	2.99		Clay	100.0			14.76	0.95	n.a.	n.a.	0.89	0.931	n.a.	n.a.	n.a.	n.a.	0.00	0.00
35.600	15.380	0.428	4272.0	2549.8	10.388	3.232	3.00		Clay	100.0			14.54	0.95	n.a.	n.a.	0.89	0.931	n.a.	n.a.	n.a.	n.a.	0.00	0.00
35.760	15.680	0.406	4291.2	2559.0	10.578	3.002	2.98		Clay	100.0			14.82	0.95	n.a.	n.a.	0.89	0.931	n.a.	n.a.	n.a.	n.a.	0.00	0.00
35.930	15.450	0.403	4311.6	2568.8	10.351	3.034	2.99		Clay	100.0			14.60	0.95	n.a.	n.a.	0.89	0.931	n.a.	n.a.	n.a.	n.a.	0.00	0.00
36.090	14.620	0.384	4330.8	2578.0	9.662	3.081	3.02		Clay	100.0			13.82	0.95	n.a.	n.a.	0.89	0.930	n.a.	n.a.	n.a.	n.a.	0.00	0.00
36.250	15.440	0.323	4350.0	2587.2	10.254	2.433	2.94		Clay	98.0			14.59	0.95	n.a.	n.a.	0.89	0.930	n.a.	n.a.	n.a.	n.a.	0.00	0.00
36.420	16.040	0.330	4370.4	2597.0	10.670	2.383	2.92		Clay	96.4			15.16	0.95	n.a.	n.a.	0.89	0.930	n.a.	n.a.	n.a.	n.a.	0.00	0.00
36.580	15.380	0.344	4389.6	2606.2	10.118	2.611	2.96		Clay	99.7			14.54	0.95	n.a.	n.a.	0.89	0.930	n.a.	n.a.	n.a.	n.a.	0.00	0.00
36.750	15.470	0.372	4410.0	2616.0	10.141	2.807	2.98		Clay	100.0			14.62	0.95	n.a.	n.a.	0.89	0.930	n.a.	n.a.	n.a.	n.a.	0.00	0.00
36.910	15.690	0.406	4429.2	2625.2	10.266	3.013	2.99		Clay	100.0			14.83	0.94	n.a.	n.a.	0.88	0.929	n.a.	n.a.	n.a.	n.a.	0.00	0.00
37.070	16.390	0.472	4448.4	2634.4	10.754	3.328	3.00		Clay	100.0			15.49	0.94	n.a.	n.a.	0.88	0.929	n.a.	n.a.	n.a.	n.a.	0.00	0.00
37.240	16.740	0.478	4468.8	2644.2	10.972	3.293	2.99		Clay	100.0			15.82	0.94	n.a.	n.a.	0.88	0.929	n.a.	n.a.	n.a.	n.a.	0.00	0.00
37.400	16.550	0.506	4488.0	2653.4	10.783	3.536	3.01		Clay	100.0			15.64	0.94	n.a.	n.a.	0.88	0.929	n.a.	n.a.	n.a.	n.a.	0.00	0.00
37.570	16.510	0.520	4508.4	2663.2	10.706	3.646	3.02		Clay	100.0			15.60	0.94	n.a.	n.a.	0.88	0.929	n.a.	n.a.	n.a.	n.a.	0.00	0.00
37.730	17.480	0.551	4527.6	2672.4	11.387	3.619	3.00		Clay	100.0			16.52	0.94	n.a.	n.a.	0.88	0.928	n.a.	n.a.	n.a.	n.a.	0.00	0.00
37.890	16.720	0.521	4546.8	2681.7	10.774	3.607	3.02		Clay	100.0			15.80	0.94	n.a.	n.a.	0.88	0.928	n.a.	n.a.	n.a.	n.a.	0.00	0.00
38.060	16.170	0.530	4567.2	2691.5	10.319	3.817	3.05		Clay	100.0			15.28	0.94	n.a.	n.a.	0.88	0.928	n.a.	n.a.	n.a.	n.a.	0.00	0.00
38.220	15.640	0.442	4586.4	2700.7	9.884	3.310	3.03		Clay	100.0			14.78	0.94	n.a.	n.a.	0.88	0.928	n.a.	n.a.	n.a.	n.a.	0.00	0.00
38.390	14.620	0.443	4606.8	2710.5	9.088	3.594	3.08		Clay	100.0			13.82	0.94	n.a.	n.a.	0.88	0.927	n.a.	n.a.	n.a.	n.a.	0.00	0.00
38.550	14.910	0.493	4626.0	2719.7	9.264	3.911	3.09		Clay	100.0			14.09	0.94	n.a.	n.a.	0.88	0.927	n.a.	n.a.	n.a.	n.a.	0.00	0.00
38.710	16.050	0.583	4645.2	2728.9	10.061	4.248	3.08		Clay	100.0			15.17	0.94	n.a.	n.a.	0.88	0.927	n.a.	n.a.	n.a.	n.a.	0.00	0.00
38.880	18.720	0.539	4665.6	2738.7	11.967	3.289	2.96		Clay	99.5			17.69	0.93	n.a.	n.a.	0.88	0.927	n.a.	n.a.	n.a.	n.a.	0.00	0.00
39.040	20.980	0.465	4684.8	2747.9	13.565	2.495	2.84		Clay	90.4			19.83	0.93	n.a.	n.a.	0.88	0.926	n.a.	n.a.	n.a.	n.a.	0.00	0.00
39.210	18.710	0.429	4705.2	2757.7	11.863	2.623	2.90		Clay	95.2			17.68	0.93	n.a.	n.a.	0.87	0.926	n.a.	n.a.	n.a.	n.a.	0.00	0.00
39.370	17.640	0.368	4724.4	2766.9	11.043	2.411	2.91		Clay	95.6			16.67	0.93	n.a.	n.a.	0.87	0.926	n.a.	n.a.	n.a.	n.a.	0.00	0.00
39.530	18.400	0.334	4743.6	2776.1	11.547	2.084	2.86		Clay	91.6			17.39	0.93	n.a.	n.a.	0.87	0.925	n.a.	n.a.	n.a.	n.a.	0.00	0.00
39.700	20.010	0.314	4764.0	2785.9	12.655	1.780	2.79		Clay	86.0			18.91	0.93	n.a.	n.a.	0.87	0.925	n.a.	n.a.	n.a.	n.a.	0.00	0.00
39.860	20.480	0.286	4783.2	2795.1	12.943	1.581	2.75		Clay	83.2			19.36	0.93	n.a.	n.a.	0.87	0.925	n.a.	n.a.	n.a.	n.a.	0.00	0.00
40.030	18.480	0.262	4803.6	2804.9	11.464	1.626	2.80		Clay	87.3			17.47	0.93	n.a.	n.a.	0.87	0.925	n.a.	n.a.	n.a.	n.a.	0.00	0.00
40.190	17.170	0.455	4822.8	2814.1	10.489	3.084	2.99		Clay	100.0			16.23	0.93	n.a.	n.a.	0.87	0.924	n.a.	n.a.	n.a.	n.a.	0.00	0.00
40.350	17.330	0.416	4842.0	2823.4	10.561	2.793	2.96		Clay	99.8			16.38	0.93	n.a.	n.a.	0.87	0.924	n.a.	n.a.	n.a.	n.a.	0.00	0.00
40.520	16.680	0.383	4862.4	2833.2	10.059	2.690	2.97		Clay	100.0			15.77	0.93	n.a.	n.a.	0.87	0.924	n.a.	n.a.	n.a.	n.a.	0.00	0.00
40.680	20.030	0.436	4881.6	2842.4	12.376	2.476	2.87		Clay	92.9			18.93	0.93	n.a.	n.a.	0.87	0.923	n.a.	n.a.	n.a.	n.a.	0.00	0.00
40.850	21.610	0.490	4902.0	2852.2	13.435	2.559	2.85		Clay	91.2			20.43	0.92	n.a.	n.a.	0.87	0.923	n.a.	n.a.	n.a.	n.a.	0.00	0.00
41.010	23.140	0.624	4921.2	2861.4	14.454	3.017	2.87		Clay	92.4			21.87	0.92	n.a.	n.a.	0.87	0.923	n.a.	n.a.	n.a.	n.a.	0.00	0.00
41.170	23.780	0.809	4940.4	2870.6	14.847	3.796	2.92		Clay	96.5			22.48	0.92	n.a.	n.a.	0.87	0.922	n.a.	n.a.	n.a.	n.a.	0.00	0.00
41.340	23.570	0.969	4960.8	2880.4	14.644	4.595	2.98		Clay	100.0			22.28	0.92	n.a.	n.a.	0.87	0.922	n.a.	n.a.	n.a.	n.a.	0.00	0.00
41.500	23.630	1.013	4980.0	2889.6	14.632	4.791	2.99		Clay	100.0			22.33	0.92	n.a.	n.a.	0.86	0.922	n.a.	n.a.	n.a.	n.a.	0.00	0.00
41.670	23.330	1.011	5000.4	2899.4	14.368	4.851	3.00		Clay	100.0			22.05	0.92	n.a.	n.a.	0.86	0.921	n.a.	n.a.	n.a.	n.a.	0.00	0.00
41.830	23.300	0.947	5019.6	2908.6	14.296	4.556	2.98		Clay	100.0			22.02	0.92	n.a.	n.a.	0.86	0.921	n.a.	n.a.	n.a.	n.a.	0.00	0.00
41.990	24.570	0.853	5038.8	2917.8	15.114	3.868	2.92		Clay	96.4			23.22	0.92	n.a.	n.a.	0.86	0.921	n.a.	n.a.	n.a.	n.a.	0.00	0.00
42.160	25.140	0.805	5059.2	2927.6	15.446	3.562	2.89		Clay	94.1			23.76	0.92	n.a.	n.a.	0.86	0.920	n.a.	n.a.	n.a.	n.a.	0.00	0.00
42.320	23.990	0.800	5078.4	2936.8	14.608	3.730	2.92		Clay	96.6			22.67	0.92	n.a.	n.a.	0.86	0.920	n.a.	n.a.	n.a.	n.a.	0.00	0.00
42.490	25.230	0.819	5098.8	2946.6	15.394	3.611	2.89		Clay	94.5			23.85	0.92	n.a.	n.a.	0.86	0.920	n.a.	n.a.	n.a.	n.a.	0.00	0.00
42.650	24.450	0.803	5118.0	2955.8	14.812	3.668	2.91		Clay	95.8			23.11	0.92	n.a.	n.a.	0.86	0.919	n.a.	n.a.	n.a.	n.a.	0.00	0.00
42.810	23.050	0.862	5137.2	2965.1	13.815	4.208	2.97		Clay	100.0			21.79	0.91	n.a.	n.a.	0.86	0.919	n.a.	n.a.	n.a.	n.a.	0.00	0.00
42.980	22.930	0.793	5157.6	2974.8	13.682	3.896	2.95		Clay	99.3			21.67	0.91	n.a.	n.a.	0.86	0.919	n.a.	n.a.	n.a.	n.a.	0.00	0.00
43.140	23.810	0.850	5176.8	2984.1	14.223	4.003	2.95		Clay	98.8			22.50	0.91	n.a.	n.a.	0.86	0.918	n.a.	n.a.	n.a.	n.a.	0.00	0.00
43.310	22.920	0.822	5197.2	2993.9	13.575	4.044	2.97		Clay	100.0			21.66	0.91	n.a.	n.a.	0.86	0.918	n.a.	n.a.	n.a.	n.a.	0.00	0.00
43.470	20.790	0.774	5216.4	3003.1	12.109	4.256	3.02		Clay	100.0			19.65	0.91	n.a.	n.a.	0.86	0.917	n.a.	n.a.	n.a.	n.a.	0.00	0.00
43.640	19.250	0.777	5236.8	3012.9	11.040	4.674	3.08		Clay	100.0			18.19	0.91	n.a.	n.a.	0.86	0.917	n.a.	n.a.	n.a.	n.a.	0.00	0.00
43.800	19.520	0.761	5256.0	3022.1	11.179	4.504	3.06		Clay	100.0			18.45	0.91	n.a.	n.a.	0.85	0.917	n.a.	n.a.	n.a.	n.a.	0.00	0.00
43.960	19.380	0.771	5275.2	3031.3	11.046	4.604	3.07		Clay	100.0			18.32	0.91	n.a.	n.a.	0.85	0.916	n.a.	n.a.	n.a.	n.a.	0.00	0.00

CORNERSTONE EARTH GROUP

CPT No.	2

PGA (A_{max})	0.89

Total Settlement:	0.37	(Inches)

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Depth (ft)	q_c (tsf)	f_s (tsf)	σ_{vc} (psf)	Insitu σ'_{vc} (psf)	Q	F (%)	I_c	Layer "Plastic" PI > 7	Flag Soil Type	Fines (%)	q_{cN} near interfaces (soft layer)	Thin Layer Factor (K_H)	Interpreted q_{cN}	C_N	q_{c1N}	$q_{c1N\text{-}CS}$	Stress Reduction Coeff, r_d	CSR	K_σ for Sand	$CRR_{M=7.5,\ \sigma'vc = 1\ atm}$	CRR	Factor of Safety (CRR/CSR)	Vertical Strain ε_v	Settlement (Inches)
44.130	18.780	0.704	5295.6	3041.1	10.609	4.366	3.07		Clay	100.0			17.75	0.91	n.a.	n.a.	0.85	0.916	n.a.	n.a.	n.a.	n.a.	0.00	0.00
44.290	18.880	0.635	5314.8	3050.3	10.637	3.914	3.04		Clay	100.0			17.84	0.91	n.a.	n.a.	0.85	0.915	n.a.	n.a.	n.a.	n.a.	0.00	0.00
44.460	17.890	0.569	5335.2	3060.1	9.949	3.741	3.05		Clay	100.0			16.91	0.91	n.a.	n.a.	0.85	0.915	n.a.	n.a.	n.a.	n.a.	0.00	0.00
44.620	16.810	0.555	5354.4	3069.3	9.209	3.928	3.09		Clay	100.0			15.89	0.91	n.a.	n.a.	0.85	0.915	n.a.	n.a.	n.a.	n.a.	0.00	0.00
44.780	16.400	0.544	5373.6	3078.5	8.909	3.964	3.11		Clay	100.0			15.50	0.91	n.a.	n.a.	0.85	0.914	n.a.	n.a.	n.a.	n.a.	0.00	0.00
44.950	17.050	0.544	5394.0	3088.3	9.295	3.788	3.08		Clay	100.0			16.12	0.91	n.a.	n.a.	0.85	0.914	n.a.	n.a.	n.a.	n.a.	0.00	0.00
45.110	17.280	0.567	5413.2	3097.5	9.410	3.893	3.08		Clay	100.0			16.33	0.90	n.a.	n.a.	0.85	0.913	n.a.	n.a.	n.a.	n.a.	0.00	0.00
45.280	17.380	0.581	5433.6	3107.3	9.438	3.961	3.09		Clay	100.0			16.43	0.90	n.a.	n.a.	0.85	0.913	n.a.	n.a.	n.a.	n.a.	0.00	0.00
45.440	17.790	0.540	5452.8	3116.5	9.667	3.587	3.05		Clay	100.0			16.81	0.90	n.a.	n.a.	0.85	0.913	n.a.	n.a.	n.a.	n.a.	0.00	0.00
45.600	17.540	0.554	5472.0	3125.8	9.472	3.743	3.07		Clay	100.0			16.58	0.90	n.a.	n.a.	0.85	0.912	n.a.	n.a.	n.a.	n.a.	0.00	0.00
45.770	17.250	0.529	5492.4	3135.6	9.251	3.645	3.07		Clay	100.0			16.30	0.90	n.a.	n.a.	0.85	0.912	n.a.	n.a.	n.a.	n.a.	0.00	0.00
45.930	17.460	0.514	5511.6	3144.8	9.352	3.494	3.06		Clay	100.0			16.50	0.90	n.a.	n.a.	0.85	0.911	n.a.	n.a.	n.a.	n.a.	0.00	0.00
46.100	17.820	0.508	5532.0	3154.6	9.544	3.372	3.04		Clay	100.0			16.84	0.90	n.a.	n.a.	0.84	0.911	n.a.	n.a.	n.a.	n.a.	0.00	0.00
46.260	17.390	0.529	5551.2	3163.8	9.239	3.620	3.07		Clay	100.0			16.44	0.90	n.a.	n.a.	0.84	0.910	n.a.	n.a.	n.a.	n.a.	0.00	0.00
46.420	18.160	0.527	5570.4	3173.0	9.691	3.424	3.04		Clay	100.0			17.16	0.90	n.a.	n.a.	0.84	0.910	n.a.	n.a.	n.a.	n.a.	0.00	0.00
46.590	18.340	0.558	5590.8	3182.8	9.768	3.588	3.05		Clay	100.0			17.33	0.90	n.a.	n.a.	0.84	0.909	n.a.	n.a.	n.a.	n.a.	0.00	0.00
46.750	18.740	0.569	5610.0	3192.0	9.984	3.571	3.04		Clay	100.0			17.71	0.90	n.a.	n.a.	0.84	0.909	n.a.	n.a.	n.a.	n.a.	0.00	0.00
46.920	19.530	0.500	5630.4	3201.8	10.441	2.990	2.98		Clay	100.0			18.46	0.90	n.a.	n.a.	0.84	0.909	n.a.	n.a.	n.a.	n.a.	0.00	0.00
47.080	19.720	0.609	5649.6	3211.0	10.523	3.603	3.02		Clay	100.0			18.64	0.90	n.a.	n.a.	0.84	0.908	n.a.	n.a.	n.a.	n.a.	0.00	0.00
47.240	20.290	0.644	5668.8	3220.2	10.841	3.689	3.02		Clay	100.0			19.18	0.90	n.a.	n.a.	0.84	0.908	n.a.	n.a.	n.a.	n.a.	0.00	0.00
47.410	21.740	0.676	5689.2	3230.0	11.700	3.577	2.99		Clay	100.0			20.55	0.89	n.a.	n.a.	0.84	0.907	n.a.	n.a.	n.a.	n.a.	0.00	0.00
47.570	21.040	0.630	5708.4	3239.2	11.228	3.466	2.99		Clay	100.0			19.89	0.89	n.a.	n.a.	0.84	0.907	n.a.	n.a.	n.a.	n.a.	0.00	0.00
47.740	20.320	0.624	5728.8	3249.0	10.745	3.572	3.02		Clay	100.0			19.21	0.89	n.a.	n.a.	0.84	0.906	n.a.	n.a.	n.a.	n.a.	0.00	0.00
47.900	20.550	0.652	5748.0	3258.2	10.850	3.688	3.02		Clay	100.0			19.42	0.89	n.a.	n.a.	0.84	0.906	n.a.	n.a.	n.a.	n.a.	0.00	0.00
48.060	20.910	0.645	5767.2	3267.5	11.034	3.579	3.01		Clay	100.0			19.76	0.89	n.a.	n.a.	0.84	0.905	n.a.	n.a.	n.a.	n.a.	0.00	0.00
48.230	21.360	0.604	5787.6	3277.2	11.269	3.271	2.98		Clay	100.0			20.19	0.89	n.a.	n.a.	0.84	0.905	n.a.	n.a.	n.a.	n.a.	0.00	0.00
48.390	20.930	0.562	5806.8	3286.5	10.970	3.117	2.97		Clay	100.0			19.78	0.89	n.a.	n.a.	0.83	0.904	n.a.	n.a.	n.a.	n.a.	0.00	0.00
48.560	20.640	0.610	5827.2	3296.3	10.755	3.442	3.01		Clay	100.0			19.51	0.89	n.a.	n.a.	0.83	0.904	n.a.	n.a.	n.a.	n.a.	0.00	0.00
48.720	21.330	0.670	5846.4	3305.5	11.137	3.641	3.01		Clay	100.0			20.16	0.89	n.a.	n.a.	0.83	0.904	n.a.	n.a.	n.a.	n.a.	0.00	0.00
48.880	24.350	0.611	5865.6	3314.7	12.923	2.852	2.89		Clay	94.4			23.02	0.89	n.a.	n.a.	0.83	0.903	n.a.	n.a.	n.a.	n.a.	0.00	0.00
49.050	24.140	0.720	5886.0	3324.5	12.752	3.397	2.94		Clay	98.4			22.82	0.89	n.a.	n.a.	0.83	0.903	n.a.	n.a.	n.a.	n.a.	0.00	0.00
49.210	21.750	0.778	5905.2	3333.7	11.277	4.140	3.04		Clay	100.0			20.56	0.89	n.a.	n.a.	0.83	0.902	n.a.	n.a.	n.a.	n.a.	0.00	0.00
49.380	21.940	0.578	5925.6	3343.5	11.352	3.045	2.96		Clay	99.4			20.74	0.89	n.a.	n.a.	0.83	0.902	n.a.	n.a.	n.a.	n.a.	0.00	0.00
49.540	23.950	0.618	5944.8	3352.7	12.514	2.945	2.91		Clay	96.0			22.64	0.89	n.a.	n.a.	0.83	0.901	n.a.	n.a.	n.a.	n.a.	0.00	0.00
49.700	21.540	0.954	5964.0	3361.9	11.040	5.139	3.10		Clay	100.0			20.36	0.89	n.a.	n.a.	0.83	0.901	n.a.	n.a.	n.a.	n.a.	0.00	0.00
49.870	21.630	1.147	5984.4	3371.7	11.055	6.155	3.15		Clay	100.0			20.44	0.88	n.a.	n.a.	0.83	0.900	n.a.	n.a.	n.a.	n.a.	0.00	0.00
50.030	30.670	1.510	6003.6	3380.9	16.367	5.456	2.99		Clay	100.0			28.99	0.88	n.a.	n.a.	0.83	0.900	n.a.	n.a.	n.a.	n.a.	0.00	0.00
50.200	39.690	2.677	6024.0	3390.7	21.634	7.298	2.98		Clay	100.0			37.51	0.88	n.a.	n.a.	0.83	0.899	n.a.	n.a.	n.a.	n.a.	0.00	0.00
50.360	40.970	3.115	6043.2	3399.9	22.323	8.209	3.01		Clay	100.0			38.72	0.88	n.a.	n.a.	0.83	0.899	n.a.	n.a.	n.a.	n.a.	0.00	0.00
50.520	43.690	2.727	6062.4	3409.2	23.853	6.707	2.93		Clay	97.2			41.29	0.88	n.a.	n.a.	0.83	0.898	n.a.	n.a.	n.a.	n.a.	0.00	0.00
50.690	77.500	3.240	6082.8	3418.9	43.556	4.352	2.61		Clay	71.7			73.25	0.88	n.a.	n.a.	0.82	0.898	n.a.	n.a.	n.a.	n.a.	0.00	0.00
50.850	80.790	3.766	6102.0	3428.2	45.353	4.844	2.63		Clay	73.4			76.36	0.88	n.a.	n.a.	0.82	0.897	n.a.	n.a.	n.a.	n.a.	0.00	0.00
51.020	80.080	3.992	6122.4	3438.0	44.805	5.183	2.66		Clay	75.4			75.69	0.88	n.a.	n.a.	0.82	0.897	n.a.	n.a.	n.a.	n.a.	0.00	0.00
51.180	72.730	3.329	6141.6	3447.2	40.415	4.778	2.66		Clay	75.9			68.74	0.88	n.a.	n.a.	0.82	0.896	n.a.	n.a.	n.a.	n.a.	0.00	0.00
51.350	61.880	3.476	6162.0	3457.0	34.018	5.912	2.78		Clay	85.3			58.49	0.88	n.a.	n.a.	0.82	0.896	n.a.	n.a.	n.a.	n.a.	0.00	0.00
51.510	60.890	3.590	6181.2	3466.2	33.351	6.212	2.80		Clay	87.0			57.55	0.88	n.a.	n.a.	0.82	0.895	n.a.	n.a.	n.a.	n.a.	0.00	0.00
51.670	63.450	3.381	6200.4	3475.4	34.730	5.602	2.76		Clay	83.5			59.97	0.88	n.a.	n.a.	0.82	0.895	n.a.	n.a.	n.a.	n.a.	0.00	0.00
51.840	70.280	3.047	6220.8	3485.2	38.546	4.536	2.66		Clay	75.7			66.43	0.88	n.a.	n.a.	0.82	0.894	n.a.	n.a.	n.a.	n.a.	0.00	0.00
52.000	91.290	2.721	6240.0	3494.4	64.850	3.086	2.38		Sand	53.5			86.29	0.81	69.62	135.56	0.82	0.894	0.929	0.216	0.305	0.34	0.02	0.00
52.170	88.040	2.430	6260.4	3504.2	62.364	2.862	2.37		Sand	52.6			83.21	0.80	66.82	131.64	0.82	0.893	0.931	0.203	0.279	0.31	0.02	0.00
52.330	79.080	2.396	6279.6	3513.4	55.703	3.155	2.43		Sand	57.8			74.74	0.80	59.54	124.25	0.82	0.893	0.935	0.181	0.240	0.27	0.03	0.00
52.490	51.300	1.844	6298.8	3522.6	27.338	3.829	2.72		Clay	80.4			48.49	0.87	n.a.	n.a.	0.82	0.892	n.a.	n.a.	n.a.	n.a.	0.00	0.00
52.660	31.210	1.443	6319.2	3532.4	15.882	5.143	2.98		Clay	100.0			29.50	0.87	n.a.	n.a.	0.82	0.891	n.a.	n.a.	n.a.	n.a.	0.00	0.00
52.820	21.630	0.996	6338.4	3541.6	10.425	5.394	3.13		Clay	100.0			20.44	0.87	n.a.	n.a.	0.82	0.891	n.a.	n.a.	n.a.	n.a.	0.00	0.00
52.990	19.390	0.772	6358.8	3551.4	9.129	4.760	3.15		Clay	100.0			18.33	0.87	n.a.	n.a.	0.81	0.890	n.a.	n.a.	n.a.	n.a.	0.00	0.00
53.150	18.580	0.681	6378.0	3560.6	8.645	4.425	3.15		Clay	100.0			17.56	0.87	n.a.	n.a.	0.81	0.890	n.a.	n.a.	n.a.	n.a.	0.00	0.00
53.310	17.860	0.645	6397.2	3569.9	8.214	4.399	3.16		Clay	100.0			16.88	0.87	n.a.	n.a.	0.81	0.889	n.a.	n.a.	n.a.	n.a.	0.00	0.00
53.480	17.520	0.611	6417.6	3579.6	7.996	4.267	3.16		Clay	100.0			16.56	0.87	n.a.	n.a.	0.81	0.889	n.a.	n.a.	n.a.	n.a.	0.00	0.00
53.640	17.570	0.625	6436.8	3588.9	7.998	4.353	3.17		Clay	100.0			16.61	0.87	n.a.	n.a.	0.81	0.888	n.a.	n.a.	n.a.	n.a.	0.00	0.00
53.810	18.480	0.660	6457.2	3598.7	8.476	4.327	3.15		Clay	100.0			17.47	0.87	n.a.	n.a.	0.81	0.888	n.a.	n.a.	n.a.	n.a.	0.00	0.00
53.970	20.580	0.647	6476.4	3607.9	9.613	3.730	3.07		Clay	100.0			19.45	0.87	n.a.	n.a.	0.81	0.887	n.a.	n.a.	n.a.	n.a.	0.00	0.00
54.130	20.030	0.584	6495.6	3617.1	9.279	3.477	3.06		Clay	100.0			18.93	0.87	n.a.	n.a.	0.81	0.887	n.a.	n.a.	n.a.	n.a.	0.00	0.00
54.300	19.060	0.569	6516.0	3626.9	8.714	3.603	3.09		Clay	100.0			18.02	0.87	n.a.	n.a.	0.81	0.886	n.a.	n.a.	n.a.	n.a.	0.00	0.00
54.460	19.330	0.564	6535.2	3636.1	8.835	3.513	3.08		Clay	100.0			18.27	0.87	n.a.	n.a.	0.81	0.886	n.a.	n.a.	n.a.	n.a.	0.00	0.00
54.630	19.530	0.583	6555.6	3645.9	8.915	3.585	3.08		Clay	100.0			18.46	0.87	n.a.	n.a.	0.81	0.885	n.a.	n.a.	n.a.	n.a.	0.00	0.00
54.790	19.190	0.589	6574.8	3655.1	8.702	3.706	3.10		Clay	100.0			18.14	0.87	n.a.	n.a.	0.81	0.885	n.a.	n.a.	n.a.	n.a.	0.00	0.00
54.950	20.100	0.654	6594.0	3664.3	9.171	3.895	3.09		Clay	100.0			19.00	0.87	n.a.	n.a.	0.81	0.884	n.a.	n.a.	n.a.	n.a.	0.00	0.00

CORNERSTONE EARTH GROUP

CPT No.	2

PGA (A_{max})	0.89

Total Settlement:	0.37	(Inches)

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Depth (ft)	q_c (tsf)	f_s (tsf)	σ_{vc} (psf)	Insitu σ'_{vc} (psf)	Q	F (%)	I_c	Layer "Plastic" PI > 7	Flag Soil Type	Fines (%)	q_{cN} near interfaces (soft layer)	Thin Layer Factor (K_H)	Interpreted q_{cN}	C_N	q_{c1N}	q_{c1N-CS}	Stress Reduction Coeff, r_d	CSR	K_σ for Sand	$CRR_{M=7.5, \sigma'vc = 1 atm}$	CRR	Factor of Safety (CRR/CSR)	Vertical Strain ε_v	Settlement (Inches)
55.120	22.010	0.751	6614.4	3674.1	10.181	4.013	3.06		Clay	100.0			20.80	0.86	n.a.	n.a.	0.81	0.883	n.a.	n.a.	n.a.	n.a.	0.00	0.00
55.280	23.370	0.859	6633.6	3683.3	10.889	4.283	3.06		Clay	100.0			22.09	0.86	n.a.	n.a.	0.80	0.883	n.a.	n.a.	n.a.	n.a.	0.00	0.00
55.450	23.050	0.813	6654.0	3693.1	10.681	4.123	3.05		Clay	100.0			21.79	0.86	n.a.	n.a.	0.80	0.882	n.a.	n.a.	n.a.	n.a.	0.00	0.00
55.610	22.630	0.841	6673.2	3702.3	10.422	4.360	3.08		Clay	100.0			21.39	0.86	n.a.	n.a.	0.80	0.882	n.a.	n.a.	n.a.	n.a.	0.00	0.00
55.770	23.460	0.868	6692.4	3711.6	10.838	4.315	3.06		Clay	100.0			22.17	0.86	n.a.	n.a.	0.80	0.881	n.a.	n.a.	n.a.	n.a.	0.00	0.00
55.940	24.740	0.792	6712.8	3721.3	11.492	3.702	3.00		Clay	100.0			23.38	0.86	n.a.	n.a.	0.80	0.881	n.a.	n.a.	n.a.	n.a.	0.00	0.00
56.100	24.670	0.737	6732.0	3730.6	11.421	3.460	2.99		Clay	100.0			23.32	0.86	n.a.	n.a.	0.80	0.880	n.a.	n.a.	n.a.	n.a.	0.00	0.00
56.270	24.010	0.699	6752.4	3740.4	11.033	3.389	2.99		Clay	100.0			22.69	0.86	n.a.	n.a.	0.80	0.880	n.a.	n.a.	n.a.	n.a.	0.00	0.00
56.430	22.930	0.729	6771.6	3749.6	10.425	3.731	3.04		Clay	100.0			21.67	0.86	n.a.	n.a.	0.80	0.879	n.a.	n.a.	n.a.	n.a.	0.00	0.00
56.590	23.060	0.782	6790.8	3758.8	10.463	3.977	3.05		Clay	100.0			21.80	0.86	n.a.	n.a.	0.80	0.879	n.a.	n.a.	n.a.	n.a.	0.00	0.00
56.760	25.500	0.879	6811.2	3768.6	11.726	3.980	3.01		Clay	100.0			24.10	0.86	n.a.	n.a.	0.80	0.878	n.a.	n.a.	n.a.	n.a.	0.00	0.00
56.920	28.160	0.977	6830.4	3777.8	13.100	3.946	2.97		Clay	100.0			26.62	0.86	n.a.	n.a.	0.80	0.877	n.a.	n.a.	n.a.	n.a.	0.00	0.00
57.090	28.090	0.970	6850.8	3787.6	13.024	3.934	2.97		Clay	100.0			26.55	0.86	n.a.	n.a.	0.80	0.877	n.a.	n.a.	n.a.	n.a.	0.00	0.00
57.250	25.990	0.889	6870.0	3796.8	11.881	3.943	3.01		Clay	100.0			24.57	0.86	n.a.	n.a.	0.80	0.876	n.a.	n.a.	n.a.	n.a.	0.00	0.00
57.410	23.710	0.826	6889.2	3806.0	10.649	4.077	3.05		Clay	100.0			22.41	0.86	n.a.	n.a.	0.80	0.876	n.a.	n.a.	n.a.	n.a.	0.00	0.00
57.580	23.220	0.765	6909.6	3815.8	10.360	3.872	3.05		Clay	100.0			21.95	0.86	n.a.	n.a.	0.79	0.875	n.a.	n.a.	n.a.	n.a.	0.00	0.00
57.740	22.220	0.676	6928.8	3825.0	9.807	3.605	3.05		Clay	100.0			21.00	0.86	n.a.	n.a.	0.79	0.875	n.a.	n.a.	n.a.	n.a.	0.00	0.00
57.910	21.030	0.732	6949.2	3834.8	9.156	4.170	3.11		Clay	100.0			19.88	0.85	n.a.	n.a.	0.79	0.874	n.a.	n.a.	n.a.	n.a.	0.00	0.00
58.070	22.750	0.738	6968.4	3844.0	10.024	3.829	3.06		Clay	100.0			21.50	0.85	n.a.	n.a.	0.79	0.873	n.a.	n.a.	n.a.	n.a.	0.00	0.00
58.230	23.640	0.789	6987.6	3853.2	10.457	3.916	3.05		Clay	100.0			22.34	0.85	n.a.	n.a.	0.79	0.873	n.a.	n.a.	n.a.	n.a.	0.00	0.00
58.400	24.410	0.760	7008.0	3863.0	10.824	3.637	3.02		Clay	100.0			23.07	0.85	n.a.	n.a.	0.79	0.872	n.a.	n.a.	n.a.	n.a.	0.00	0.00
58.560	24.640	0.727	7027.2	3872.3	10.912	3.440	3.00		Clay	100.0			23.29	0.85	n.a.	n.a.	0.79	0.872	n.a.	n.a.	n.a.	n.a.	0.00	0.00
58.730	23.830	0.728	7047.6	3882.0	10.462	3.584	3.03		Clay	100.0			22.52	0.85	n.a.	n.a.	0.79	0.871	n.a.	n.a.	n.a.	n.a.	0.00	0.00
58.890	22.720	0.720	7066.8	3891.3	9.861	3.753	3.06		Clay	100.0			21.47	0.85	n.a.	n.a.	0.79	0.871	n.a.	n.a.	n.a.	n.a.	0.00	0.00
59.060	23.140	0.633	7087.2	3901.1	10.047	3.232	3.01		Clay	100.0			21.87	0.85	n.a.	n.a.	0.79	0.870	n.a.	n.a.	n.a.	n.a.	0.00	0.00
59.220	24.000	0.708	7106.4	3910.3	10.458	3.462	3.02		Clay	100.0			22.68	0.85	n.a.	n.a.	0.79	0.869	n.a.	n.a.	n.a.	n.a.	0.00	0.00
59.380	24.230	0.819	7125.6	3919.5	10.546	3.963	3.05		Clay	100.0			22.90	0.85	n.a.	n.a.	0.79	0.869	n.a.	n.a.	n.a.	n.a.	0.00	0.00
59.550	27.970	0.999	7146.0	3929.3	12.418	4.096	3.00		Clay	100.0			26.44	0.85	n.a.	n.a.	0.79	0.868	n.a.	n.a.	n.a.	n.a.	0.00	0.00
59.710	31.490	1.300	7165.2	3938.5	14.172	4.659	2.99		Clay	100.0			29.76	0.85	n.a.	n.a.	0.79	0.868	n.a.	n.a.	n.a.	n.a.	0.00	0.00
59.880	29.580	0.990	7185.6	3948.3	13.164	3.810	2.96		Clay	99.9			27.96	0.85	n.a.	n.a.	0.78	0.867	n.a.	n.a.	n.a.	n.a.	0.00	0.00
60.040	21.970	0.678	7204.8	3957.5	9.282	3.691	3.07		Clay	100.0			20.77	0.85	n.a.	n.a.	0.78	0.867	n.a.	n.a.	n.a.	n.a.	0.00	0.00
60.200	22.680	0.568	7224.0	3966.7	9.614	2.981	3.01		Clay	100.0			21.44	0.85	n.a.	n.a.	0.78	0.866	n.a.	n.a.	n.a.	n.a.	0.00	0.00
60.370	22.770	0.541	7244.4	3976.5	9.630	2.824	3.00		Clay	100.0			21.52	0.85	n.a.	n.a.	0.78	0.865	n.a.	n.a.	n.a.	n.a.	0.00	0.00
60.530	22.400	0.596	7263.6	3985.7	9.418	3.177	3.03		Clay	100.0			21.17	0.85	n.a.	n.a.	0.78	0.865	n.a.	n.a.	n.a.	n.a.	0.00	0.00
60.700	23.220	0.678	7284.0	3995.5	9.800	3.463	3.04		Clay	100.0			21.95	0.85	n.a.	n.a.	0.78	0.864	n.a.	n.a.	n.a.	n.a.	0.00	0.00
60.860	23.780	0.716	7303.2	4004.7	10.052	3.556	3.04		Clay	100.0			22.48	0.85	n.a.	n.a.	0.78	0.864	n.a.	n.a.	n.a.	n.a.	0.00	0.00
61.020	24.990	0.739	7322.4	4014.0	10.627	3.463	3.01		Clay	100.0			23.62	0.84	n.a.	n.a.	0.78	0.863	n.a.	n.a.	n.a.	n.a.	0.00	0.00
61.190	26.560	0.799	7342.8	4023.7	11.377	3.490	2.99		Clay	100.0			25.10	0.84	n.a.	n.a.	0.78	0.863	n.a.	n.a.	n.a.	n.a.	0.00	0.00
61.350	31.140	0.827	7362.0	4033.0	13.617	3.011	2.89		Clay	94.1			29.43	0.84	n.a.	n.a.	0.78	0.862	n.a.	n.a.	n.a.	n.a.	0.00	0.00
61.520	31.320	0.963	7382.4	4042.8	13.668	3.485	2.92		Clay	97.0			29.60	0.84	n.a.	n.a.	0.78	0.861	n.a.	n.a.	n.a.	n.a.	0.00	0.00
61.680	30.370	1.044	7401.6	4052.0	13.164	3.914	2.97		Clay	100.0			28.71	0.84	n.a.	n.a.	0.78	0.861	n.a.	n.a.	n.a.	n.a.	0.00	0.00
61.840	30.650	1.103	7420.8	4061.2	13.267	4.094	2.98		Clay	100.0			28.97	0.84	n.a.	n.a.	0.78	0.860	n.a.	n.a.	n.a.	n.a.	0.00	0.00
62.010	32.100	1.174	7441.2	4071.0	13.942	4.138	2.96		Clay	100.0			30.34	0.84	n.a.	n.a.	0.78	0.860	n.a.	n.a.	n.a.	n.a.	0.00	0.00
62.170	32.030	1.237	7460.4	4080.2	13.872	4.371	2.98		Clay	100.0			30.27	0.84	n.a.	n.a.	0.77	0.859	n.a.	n.a.	n.a.	n.a.	0.00	0.00
62.340	32.020	1.296	7480.8	4090.0	13.829	4.584	2.99		Clay	100.0			30.26	0.84	n.a.	n.a.	0.77	0.859	n.a.	n.a.	n.a.	n.a.	0.00	0.00
62.500	32.460	1.320	7500.0	4099.2	14.008	4.596	2.99		Clay	100.0			30.68	0.84	n.a.	n.a.	0.77	0.858	n.a.	n.a.	n.a.	n.a.	0.00	0.00
62.660	33.110	1.302	7519.2	4108.4	14.288	4.437	2.97		Clay	100.0			31.29	0.84	n.a.	n.a.	0.77	0.857	n.a.	n.a.	n.a.	n.a.	0.00	0.00
62.830	32.000	1.239	7539.6	4118.2	13.710	4.388	2.99		Clay	100.0			30.25	0.84	n.a.	n.a.	0.77	0.857	n.a.	n.a.	n.a.	n.a.	0.00	0.00
62.990	30.190	1.159	7558.8	4127.4	12.798	4.389	3.01		Clay	100.0			28.53	0.84	n.a.	n.a.	0.77	0.856	n.a.	n.a.	n.a.	n.a.	0.00	0.00
63.160	28.540	1.100	7579.2	4137.2	11.965	4.443	3.03		Clay	100.0			26.98	0.84	n.a.	n.a.	0.77	0.856	n.a.	n.a.	n.a.	n.a.	0.00	0.00
63.320	28.240	1.157	7598.4	4146.4	11.789	4.734	3.06		Clay	100.0			26.69	0.84	n.a.	n.a.	0.77	0.855	n.a.	n.a.	n.a.	n.a.	0.00	0.00
63.480	32.960	1.068	7617.6	4155.6	14.030	3.663	2.93		Clay	97.3			31.15	0.84	n.a.	n.a.	0.77	0.855	n.a.	n.a.	n.a.	n.a.	0.00	0.00
63.650	28.800	1.000	7638.0	4165.4	11.994	4.002	3.01		Clay	100.0			27.22	0.84	n.a.	n.a.	0.77	0.854	n.a.	n.a.	n.a.	n.a.	0.00	0.00
63.810	26.520	0.841	7657.2	4174.7	10.871	3.706	3.02		Clay	100.0			25.07	0.84	n.a.	n.a.	0.77	0.853	n.a.	n.a.	n.a.	n.a.	0.00	0.00
63.980	26.910	0.829	7677.6	4184.4	11.027	3.595	3.01		Clay	100.0			25.43	0.84	n.a.	n.a.	0.77	0.853	n.a.	n.a.	n.a.	n.a.	0.00	0.00
64.140	25.380	0.851	7696.8	4193.7	10.269	3.950	3.06		Clay	100.0			23.99	0.83	n.a.	n.a.	0.77	0.852	n.a.	n.a.	n.a.	n.a.	0.00	0.00
64.300	26.430	0.804	7716.0	4202.9	10.741	3.561	3.01		Clay	100.0			24.98	0.83	n.a.	n.a.	0.77	0.852	n.a.	n.a.	n.a.	n.a.	0.00	0.00
64.470	25.170	0.778	7736.4	4212.7	10.113	3.650	3.04		Clay	100.0			23.79	0.83	n.a.	n.a.	0.77	0.851	n.a.	n.a.	n.a.	n.a.	0.00	0.00
64.630	23.490	0.763	7755.6	4221.9	9.291	3.891	3.09		Clay	100.0			22.20	0.83	n.a.	n.a.	0.76	0.850	n.a.	n.a.	n.a.	n.a.	0.00	0.00
64.800	23.390	0.817	7776.0	4231.7	9.217	4.191	3.11		Clay	100.0			22.11	0.83	n.a.	n.a.	0.76	0.850	n.a.	n.a.	n.a.	n.a.	0.00	0.00
64.960	24.680	0.797	7795.2	4240.9	9.801	3.836	3.07		Clay	100.0			23.33	0.83	n.a.	n.a.	0.76	0.849	n.a.	n.a.	n.a.	n.a.	0.00	0.00
65.120	24.790	0.826	7814.4	4250.1	9.827	3.953	3.07		Clay	100.0			23.43	0.83	n.a.	n.a.	0.76	0.849	n.a.	n.a.	n.a.	n.a.	0.00	0.00
65.290	25.300	0.733	7834.8	4259.9	10.039	3.426	3.03		Clay	100.0			23.91	0.83	n.a.	n.a.	0.76	0.848	n.a.	n.a.	n.a.	n.a.	0.00	0.00
65.450	24.920	0.678	7854.0	4269.1	9.835	3.229	3.02		Clay	100.0			23.55	0.83	n.a.	n.a.	0.76	0.848	n.a.	n.a.	n.a.	n.a.	0.00	0.00
65.620	24.270	0.734	7874.4	4278.9	9.504	3.608	3.06		Clay	100.0			22.94	0.83	n.a.	n.a.	0.76	0.847	n.a.	n.a.	n.a.	n.a.	0.00	0.00
65.780	24.820	0.736	7893.6	4288.1	9.735	3.524	3.05		Clay	100.0			23.46	0.83	n.a.	n.a.	0.76	0.846	n.a.	n.a.	n.a.	n.a.	0.00	0.00
65.940	30.230	0.936	7912.8	4297.3	12.228	3.564	2.97		Clay	100.0			28.57	0.83	n.a.	n.a.	0.76	0.846	n.a.	n.a.	n.a.	n.a.	0.00	0.00

CORNERSTONE EARTH GROUP

CPT No.	2

PGA (A_{max})	0.89

Total Settlement:	0.37	(Inches)

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Depth (ft)	q_c (tsf)	f_s (tsf)	σ_{vc} (psf)	Insitu σ'_{vc} (psf)	Q	F (%)	I_c	Layer "Plastic" PI > 7	Flag Soil Type	Fines (%)	q_{cN} near interfaces (soft layer)	Thin Layer Factor (K_H)	Interpreted q_{cN}	C_N	q_{c1N}	$q_{c1N\text{-}CS}$	Stress Reduction Coeff, r_d	CSR	K_σ for Sand	$CRR_{M=7.5,\ \sigma'vc = 1\ atm}$	CRR	Factor of Safety (CRR/CSR)	Vertical Strain ε_v	Settlement (Inches)
66.110	30.840	1.361	7933.2	4307.1	12.479	5.066	3.06		Clay	100.0			29.15	0.83	n.a.	n.a.	0.76	0.845	n.a.	n.a.	n.a.	n.a.	0.00	0.00
66.270	31.290	1.558	7952.4	4316.4	12.656	5.702	3.08		Clay	100.0			29.57	0.83	n.a.	n.a.	0.76	0.845	n.a.	n.a.	n.a.	n.a.	0.00	0.00
66.440	34.120	1.576	7972.8	4326.1	13.931	5.231	3.03		Clay	100.0			32.25	0.83	n.a.	n.a.	0.76	0.844	n.a.	n.a.	n.a.	n.a.	0.00	0.00
66.600	39.630	1.504	7992.0	4335.4	16.439	4.222	2.91		Clay	96.1			37.46	0.83	n.a.	n.a.	0.76	0.843	n.a.	n.a.	n.a.	n.a.	0.00	0.00
66.770	37.670	1.825	8012.4	4345.2	15.495	5.422	3.00		Clay	100.0			35.60	0.83	n.a.	n.a.	0.76	0.843	n.a.	n.a.	n.a.	n.a.	0.00	0.00
66.930	40.380	2.000	8031.6	4354.4	16.702	5.499	2.98		Clay	100.0			38.17	0.83	n.a.	n.a.	0.76	0.842	n.a.	n.a.	n.a.	n.a.	0.00	0.00
67.090	109.590	1.275	8050.8	4363.6	69.481	1.208	2.08		Sand	29.8			103.58	0.72	74.96	125.15	0.75	0.842	0.906	0.184	0.237	0.28	0.03	0.00
67.260	205.360	1.822	8071.2	4373.4	132.361	0.905	1.79		Sand	6.2			194.10	0.74	143.92	144.75	0.75	0.841	0.889	0.257	0.368	0.44	0.02	0.00
67.420	167.660	2.649	8090.4	4382.6	107.456	1.619	2.03		Sand	25.2			158.47	0.77	121.29	173.10	0.75	0.840	0.856	0.560	0.949	1.13	0.01	0.00
67.590	114.700	2.168	8110.8	4392.4	72.586	1.959	2.21		Sand	39.6			108.41	0.74	79.84	140.77	0.75	0.840	0.892	0.238	0.333	0.40	0.02	0.00
67.750	61.370	1.865	8130.0	4401.6	26.038	3.255	2.69		Clay	78.0			58.01	0.82	n.a.	n.a.	0.75	0.839	n.a.	n.a.	n.a.	n.a.	0.00	0.00
67.910	33.050	0.932	8149.2	4410.8	13.138	3.216	2.92		Clay	96.4			31.24	0.82	n.a.	n.a.	0.75	0.839	n.a.	n.a.	n.a.	n.a.	0.00	0.00
68.080	27.420	1.036	8169.6	4420.6	10.557	4.441	3.08		Clay	100.0			25.92	0.82	n.a.	n.a.	0.75	0.838	n.a.	n.a.	n.a.	n.a.	0.00	0.00
68.240	28.940	1.952	8188.8	4429.8	11.217	7.855	3.21		Clay	100.0			27.35	0.82	n.a.	n.a.	0.75	0.838	n.a.	n.a.	n.a.	n.a.	0.00	0.00
68.410	55.280	2.278	8209.2	4439.6	23.054	4.452	2.82		Clay	88.3			52.25	0.82	n.a.	n.a.	0.75	0.837	n.a.	n.a.	n.a.	n.a.	0.00	0.00
68.570	126.800	2.338	8228.4	4448.8	79.973	1.906	2.17		Sand	36.5			119.85	0.74	88.72	149.16	0.75	0.836	0.882	0.283	0.414	0.50	0.02	0.00
68.730	173.090	1.618	8247.6	4458.0	110.027	0.958	1.87		Sand	12.3			163.60	0.73	118.74	134.33	0.75	0.836	0.896	0.212	0.286	0.34	0.02	0.00
68.900	219.620	1.596	8268.0	4467.8	140.166	0.741	1.71		Sand	0.1			207.58	0.74	154.39	154.39	0.75	0.835	0.876	0.320	0.483	0.58	0.02	0.00
69.060	227.810	1.349	8287.2	4477.1	145.337	0.603	1.65		Sand	0.0			215.32	0.75	161.34	161.34	0.75	0.835	0.867	0.385	0.605	0.73	0.02	0.00
69.230	159.050	1.132	8307.6	4486.8	100.541	0.731	1.82		Sand	9.0			150.33	0.70	105.10	110.27	0.75	0.834	0.913	0.152	0.184	0.22	0.03	0.00
69.390	182.140	2.703	8326.8	4496.1	115.403	1.519	1.99		Sand	21.9			172.16	0.76	131.14	177.32	0.75	0.833	0.845	0.654	1.130	1.36	0.00	0.00
69.550	127.930	2.526	8346.0	4505.3	80.164	2.041	2.19		Sand	38.1			120.92	0.74	89.29	151.26	0.74	0.833	0.878	0.297	0.439	0.53	0.02	0.00
69.720	77.940	2.289	8366.4	4515.1	47.725	3.104	2.48		Sand	61.2			73.67	0.70	51.75	115.32	0.74	0.832	0.909	0.162	0.199	0.24	0.03	0.00
69.880	50.280	2.205	8385.6	4524.3	20.373	4.785	2.88		Clay	93.2			47.52	0.82	n.a.	n.a.	0.74	0.832	n.a.	n.a.	n.a.	n.a.	0.00	0.00
70.050	36.420	1.809	8406.0	4534.1	14.211	5.615	3.04		Clay	100.0			34.42	0.82	n.a.	n.a.	0.74	0.831	n.a.	n.a.	n.a.	n.a.	0.00	0.00
70.210	39.580	1.183	8425.2	4543.3	15.569	3.343	2.87		Clay	92.5			37.41	0.82	n.a.	n.a.	0.74	0.831	n.a.	n.a.	n.a.	n.a.	0.00	0.00
70.370	33.430	0.873	8444.4	4552.5	12.832	2.989	2.91		Clay	95.6			31.60	0.82	n.a.	n.a.	0.74	0.830	n.a.	n.a.	n.a.	n.a.	0.00	0.00
70.540	27.970	0.698	8464.8	4562.3	10.406	2.939	2.98		Clay	100.0			26.44	0.82	n.a.	n.a.	0.74	0.829	n.a.	n.a.	n.a.	n.a.	0.00	0.00
70.700	27.010	0.621	8484.0	4571.5	9.961	2.728	2.98		Clay	100.0			25.53	0.82	n.a.	n.a.	0.74	0.829	n.a.	n.a.	n.a.	n.a.	0.00	0.00
70.870	27.910	0.684	8504.4	4581.3	10.328	2.891	2.98		Clay	100.0			26.38	0.82	n.a.	n.a.	0.74	0.828	n.a.	n.a.	n.a.	n.a.	0.00	0.00
71.030	25.830	0.724	8523.6	4590.5	9.397	3.358	3.05		Clay	100.0			24.41	0.82	n.a.	n.a.	0.74	0.828	n.a.	n.a.	n.a.	n.a.	0.00	0.00
71.190	25.760	0.749	8542.8	4599.7	9.343	3.485	3.06		Clay	100.0			24.35	0.81	n.a.	n.a.	0.74	0.827	n.a.	n.a.	n.a.	n.a.	0.00	0.00
71.360	27.360	0.728	8563.2	4609.5	10.013	3.155	3.01		Clay	100.0			25.86	0.81	n.a.	n.a.	0.74	0.827	n.a.	n.a.	n.a.	n.a.	0.00	0.00
71.520	28.850	0.866	8582.4	4618.8	10.634	3.527	3.02		Clay	100.0			27.27	0.81	n.a.	n.a.	0.74	0.826	n.a.	n.a.	n.a.	n.a.	0.00	0.00
71.690	30.770	0.974	8602.8	4628.5	11.437	3.678	3.00		Clay	100.0			29.08	0.81	n.a.	n.a.	0.74	0.825	n.a.	n.a.	n.a.	n.a.	0.00	0.00
71.850	35.600	1.583	8622.0	4637.8	13.493	5.058	3.03		Clay	100.0			33.65	0.81	n.a.	n.a.	0.74	0.825	n.a.	n.a.	n.a.	n.a.	0.00	0.00
72.010	44.950	2.864	8641.2	4647.0	17.486	7.049	3.04		Clay	100.0			42.49	0.81	n.a.	n.a.	0.74	0.824	n.a.	n.a.	n.a.	n.a.	0.00	0.00
72.180	78.520	3.622	8661.6	4656.8	31.863	4.882	2.74		Clay	82.2			74.22	0.81	n.a.	n.a.	0.73	0.824	n.a.	n.a.	n.a.	n.a.	0.00	0.00
72.340	119.450	3.960	8680.8	4666.0	73.268	3.440	2.38		Sand	53.4			112.90	0.73	82.24	151.53	0.73	0.823	0.872	0.299	0.440	0.53	0.02	0.00
72.510	167.240	3.514	8701.2	4675.8	103.571	2.157	2.13		Sand	33.3			158.07	0.76	119.55	183.45	0.73	0.823	0.826	0.837	1.486	1.81	0.00	0.00
72.670	238.940	2.365	8720.4	4685.0	149.008	1.008	1.78		Sand	5.6			225.84	0.74	167.68	168.17	0.73	0.822	0.850	0.474	0.768	0.93	0.01	0.00
72.830	277.650	1.962	8739.6	4694.2	173.420	0.718	1.63		Sand	0.0			262.43	0.77	202.33	202.33	0.73	0.821	0.785	2.160	3.729	4.54	0.00	0.00
73.000	234.890	3.307	8760.0	4704.0	146.126	1.435	1.90		Sand	14.8			222.01	0.77	170.34	198.42	0.73	0.821	0.794	1.731	3.023	3.68	0.00	0.00
73.160	122.960	3.078	8779.2	4713.2	75.091	2.596	2.28		Sand	45.7			116.22	0.72	84.16	150.15	0.73	0.820	0.872	0.290	0.422	0.51	0.02	0.00
73.330	69.800	2.582	8799.6	4723.0	27.694	3.947	2.72		Clay	80.8			65.97	0.81	n.a.	n.a.	0.73	0.820	n.a.	n.a.	n.a.	n.a.	0.00	0.00
73.490	40.010	1.583	8818.8	4732.2	15.046	4.447	2.96		Clay	99.6			37.82	0.81	n.a.	n.a.	0.73	0.819	n.a.	n.a.	n.a.	n.a.	0.00	0.00
73.650	32.170	1.246	8838.0	4741.4	11.706	4.491	3.05		Clay	100.0			30.41	0.81	n.a.	n.a.	0.73	0.819	n.a.	n.a.	n.a.	n.a.	0.00	0.00
73.820	31.730	1.213	8858.4	4751.2	11.492	4.442	3.05		Clay	100.0			29.99	0.81	n.a.	n.a.	0.73	0.818	n.a.	n.a.	n.a.	n.a.	0.00	0.00
73.980	32.360	1.158	8877.6	4760.4	11.730	4.148	3.02		Clay	100.0			30.59	0.81	n.a.	n.a.	0.73	0.817	n.a.	n.a.	n.a.	n.a.	0.00	0.00
74.150	30.010	1.008	8898.0	4770.2	10.717	3.943	3.04		Clay	100.0			28.36	0.81	n.a.	n.a.	0.73	0.817	n.a.	n.a.	n.a.	n.a.	0.00	0.00
74.310	28.480	0.951	8917.2	4779.5	10.052	3.957	3.06		Clay	100.0			26.92	0.81	n.a.	n.a.	0.73	0.816	n.a.	n.a.	n.a.	n.a.	0.00	0.00
74.480	27.690	0.858	8937.6	4789.2	9.697	3.694	3.06		Clay	100.0			26.17	0.81	n.a.	n.a.	0.73	0.816	n.a.	n.a.	n.a.	n.a.	0.00	0.00
74.640	29.030	0.725	8956.8	4798.5	10.233	2.952	2.98		Clay	100.0			27.44	0.81	n.a.	n.a.	0.73	0.815	n.a.	n.a.	n.a.	n.a.	0.00	0.00
74.800	29.750	0.784	8976.0	4807.7	10.509	3.103	2.99		Clay	100.0			28.12	0.81	n.a.	n.a.	0.72	0.815	n.a.	n.a.	n.a.	n.a.	0.00	0.00
74.970	29.400	1.568	8996.4	4817.5	10.338	6.296	3.18		Clay	100.0			27.79	0.80	n.a.	n.a.	0.72	0.814	n.a.	n.a.	n.a.	n.a.	0.00	0.00

CORNERSTONE EARTH GROUP

CPT No.	3

PGA (A_{max})	0.89

Total Settlement:	0.36	(Inches)

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Depth (ft)	q_c (tsf)	f_s (tsf)	σ_{vc} (psf)	Insitu σ'_{vc} (psf)	Q	F (%)	I_c	Layer "Plastic" PI > 7	Flag Soil Type	Fines (%)	q_{cN} near interfaces (soft layer)	Thin Layer Factor (K_H)	Interpreted q_{cN}	C_N	q_{c1N}	$q_{c1N\text{-}CS}$	Stress Reduction Coeff, r_d	CSR	K_σ for Sand	$CRR_{M=7.5,\ \sigma'vc = 1\ atm}$	CRR	Factor of Safety (CRR/CSR)	Vertical Strain ε_v	Settlement (Inches)
0.160	229.290	0.947	19.2	19.2	2275.037	0.413	0.84		Unsaturated	0.0			216.72	1.70	368.42	368.42	1.00	0.579	1.100	n.a.	n.a.	n.a.	0.00	0.00
0.330	508.760	1.488	39.6	39.6	3514.962	0.292	0.69		Unsaturated	0.0			480.87	1.70	817.48	817.48	1.00	0.579	1.100	n.a.	n.a.	n.a.	0.00	0.00
0.490	534.260	2.309	58.8	58.8	3029.091	0.432	0.86		Unsaturated	0.0			504.97	1.70	858.45	858.45	1.00	0.579	1.100	n.a.	n.a.	n.a.	0.00	0.00
0.660	331.350	2.499	79.2	79.2	1618.619	0.754	1.13		Unsaturated	0.0			313.19	1.70	532.41	532.41	1.00	0.579	1.100	n.a.	n.a.	n.a.	0.00	0.00
0.820	312.260	2.774	98.4	98.4	1368.430	0.888	1.22		Unsaturated	0.0			295.14	1.70	501.74	501.74	1.00	0.579	1.100	n.a.	n.a.	n.a.	0.00	0.00
0.980	266.410	3.186	117.6	117.6	1067.882	1.196	1.37		Unsaturated	0.0			251.81	1.70	428.07	428.07	1.00	0.579	1.100	n.a.	n.a.	n.a.	0.00	0.00
1.150	267.260	3.503	138.0	138.0	988.905	1.311	1.42		Unsaturated	0.0			252.61	1.70	429.43	429.43	1.00	0.579	1.100	n.a.	n.a.	n.a.	0.00	0.00
1.310	287.470	2.715	157.2	157.2	996.597	0.945	1.28		Unsaturated	0.0			271.71	1.70	461.91	461.91	1.00	0.579	1.100	n.a.	n.a.	n.a.	0.00	0.00
1.480	292.090	1.990	177.6	177.6	952.654	0.681	1.16		Unsaturated	0.0			276.08	1.70	469.33	469.33	1.00	0.579	1.100	n.a.	n.a.	n.a.	0.00	0.00
1.640	287.290	1.452	196.8	196.8	890.085	0.506	1.06		Unsaturated	0.0			271.54	1.70	461.62	461.62	1.00	0.579	1.100	n.a.	n.a.	n.a.	0.00	0.00
1.800	220.370	2.224	216.0	216.0	651.606	1.010	1.39		Unsaturated	0.0			208.29	1.70	354.09	354.09	1.00	0.579	1.100	n.a.	n.a.	n.a.	0.00	0.00
1.970	178.040	1.803	236.4	236.4	503.127	1.014	1.45		Unsaturated	0.0			168.28	1.70	286.08	286.08	1.00	0.579	1.100	n.a.	n.a.	n.a.	0.00	0.00
2.130	112.030	1.839	255.6	255.6	304.320	1.643	1.74		Unsaturated	2.4			105.89	1.70	180.01	180.01	1.00	0.579	1.100	n.a.	n.a.	n.a.	0.00	0.00
2.300	50.580	1.437	276.0	276.0	132.011	2.849	2.15		Unsaturated	35.1			47.81	1.70	81.27	138.61	1.00	0.579	1.100	n.a.	n.a.	n.a.	0.00	0.00
2.460	32.590	1.236	295.2	295.2	82.097	3.810	2.38		Unsaturated	53.4			30.80	1.70	52.37	113.59	1.00	0.579	1.100	n.a.	n.a.	n.a.	0.00	0.00
2.620	15.520	0.735	314.4	314.4	55.158	4.784	2.57		Unsaturated	68.5			14.67	1.70	24.94	82.53	1.00	0.579	1.100	n.a.	n.a.	n.a.	0.00	0.00
2.790	12.290	0.551	334.8	334.8	41.651	4.543	2.64		Unsaturated	73.9			11.62	1.70	19.75	76.78	1.00	0.579	1.100	n.a.	n.a.	n.a.	0.00	0.00
2.950	12.080	0.572	354.0	354.0	39.330	4.807	2.67		Unsaturated	76.7			11.42	1.70	19.41	76.77	1.00	0.579	1.100	n.a.	n.a.	n.a.	0.00	0.00
3.120	11.500	0.630	374.4	374.4	35.943	5.570	2.74		Unsaturated	82.5			10.87	1.70	18.48	76.36	1.00	0.578	1.100	n.a.	n.a.	n.a.	0.00	0.00
3.280	10.470	0.591	393.6	393.6	52.201	5.754	2.64		Unsaturated	74.5			9.90	1.70	16.82	73.09	1.00	0.578	1.100	n.a.	n.a.	n.a.	0.00	0.00
3.440	10.140	0.535	412.8	412.8	48.128	5.385	2.65		Unsaturated	74.7			9.58	1.70	16.29	72.43	1.00	0.578	1.100	n.a.	n.a.	n.a.	0.00	0.00
3.610	11.450	0.513	433.2	433.2	32.226	4.563	2.72		Unsaturated	80.3			10.82	1.70	18.40	75.97	1.00	0.578	1.100	n.a.	n.a.	n.a.	0.00	0.00
3.770	11.470	0.496	452.4	452.4	31.291	4.408	2.72		Unsaturated	80.2			10.84	1.70	18.43	76.00	1.00	0.578	1.100	n.a.	n.a.	n.a.	0.00	0.00
3.940	12.230	0.502	472.8	472.8	32.363	4.188	2.69		Unsaturated	78.2			11.56	1.70	19.65	77.30	1.00	0.577	1.100	n.a.	n.a.	n.a.	0.00	0.00
4.100	13.040	0.528	492.0	492.0	33.574	4.129	2.67		Unsaturated	76.9			12.33	1.70	20.95	78.80	1.00	0.577	1.100	n.a.	n.a.	n.a.	0.00	0.00
4.270	13.410	0.567	512.4	512.4	33.551	4.311	2.69		Unsaturated	78.0			12.67	1.70	21.55	79.73	1.00	0.577	1.100	n.a.	n.a.	n.a.	0.00	0.00
4.430	14.170	0.585	531.6	531.6	34.563	4.210	2.67		Unsaturated	76.6			13.39	1.70	22.77	81.12	1.00	0.577	1.100	n.a.	n.a.	n.a.	0.00	0.00
4.590	15.410	0.585	550.8	550.8	36.699	3.863	2.63		Unsaturated	73.1			14.57	1.70	24.76	83.13	1.00	0.576	1.100	n.a.	n.a.	n.a.	0.00	0.00
4.760	16.920	0.576	571.2	571.2	39.322	3.460	2.57		Unsaturated	68.7			15.99	1.70	27.19	85.48	1.00	0.576	1.100	n.a.	n.a.	n.a.	0.00	0.00
4.920	17.800	0.569	590.4	590.4	40.432	3.253	2.54		Unsaturated	66.5			16.82	1.70	28.60	86.86	1.00	0.576	1.100	n.a.	n.a.	n.a.	0.00	0.00
5.090	18.340	0.569	610.8	610.8	40.677	3.154	2.53	plastic	Clay	65.7			17.33	1.39	n.a.	n.a.	1.00	0.581	n.a.	n.a.	n.a.	n.a.	0.00	0.00
5.250	18.450	0.604	630.0	630.0	40.027	3.329	2.55	plastic	Clay	67.3			17.44	1.38	n.a.	n.a.	0.99	0.590	n.a.	n.a.	n.a.	n.a.	0.00	0.00
5.410	18.440	0.590	649.2	649.2	39.152	3.257	2.55	plastic	Clay	67.4			17.43	1.37	n.a.	n.a.	0.99	0.599	n.a.	n.a.	n.a.	n.a.	0.00	0.00
5.580	17.750	0.557	669.6	669.6	36.833	3.196	2.57	plastic	Clay	68.5			16.78	1.35	n.a.	n.a.	0.99	0.608	n.a.	n.a.	n.a.	n.a.	0.00	0.00
5.740	18.900	0.628	688.8	688.8	38.476	3.385	2.57	plastic	Clay	68.7			17.86	1.34	n.a.	n.a.	0.99	0.616	n.a.	n.a.	n.a.	n.a.	0.00	0.00
5.910	18.060	0.629	709.2	709.2	35.970	3.553	2.61	plastic	Clay	71.6			17.07	1.33	n.a.	n.a.	0.99	0.625	n.a.	n.a.	n.a.	n.a.	0.00	0.00
6.070	19.030	0.759	728.4	728.4	37.219	4.064	2.64	plastic	Clay	73.9			17.99	1.32	n.a.	n.a.	0.99	0.632	n.a.	n.a.	n.a.	n.a.	0.00	0.00
6.230	19.840	0.786	747.6	747.6	38.114	4.038	2.63	plastic	Clay	73.2			18.75	1.32	n.a.	n.a.	0.99	0.640	n.a.	n.a.	n.a.	n.a.	0.00	0.00
6.400	19.170	0.834	768.0	768.0	36.096	4.441	2.67	plastic	Clay	76.8			18.12	1.31	n.a.	n.a.	0.99	0.648	n.a.	n.a.	n.a.	n.a.	0.00	0.00
6.560	18.110	0.783	787.2	787.2	45.011	4.420	2.60		Clay	71.3			17.12	1.30	n.a.	n.a.	0.99	0.655	n.a.	n.a.	n.a.	n.a.	0.00	0.00
6.730	16.610	0.721	807.6	807.6	40.134	4.449	2.64		Clay	74.3			15.70	1.29	n.a.	n.a.	0.99	0.662	n.a.	n.a.	n.a.	n.a.	0.00	0.00
6.890	14.750	0.683	826.8	826.8	34.680	4.767	2.71		Clay	79.6			13.94	1.28	n.a.	n.a.	0.99	0.669	n.a.	n.a.	n.a.	n.a.	0.00	0.00
7.050	13.600	0.599	846.0	846.0	31.151	4.544	2.73		Clay	81.1			12.85	1.27	n.a.	n.a.	0.99	0.675	n.a.	n.a.	n.a.	n.a.	0.00	0.00
7.220	13.140	0.542	866.4	866.4	29.332	4.266	2.73		Clay	81.1			12.42	1.27	n.a.	n.a.	0.99	0.682	n.a.	n.a.	n.a.	n.a.	0.00	0.00
7.380	12.990	0.516	885.6	885.6	28.336	4.113	2.73		Clay	81.1			12.28	1.26	n.a.	n.a.	0.99	0.688	n.a.	n.a.	n.a.	n.a.	0.00	0.00
7.550	12.310	0.509	906.0	906.0	26.174	4.296	2.76		Clay	84.2			11.64	1.25	n.a.	n.a.	0.99	0.694	n.a.	n.a.	n.a.	n.a.	0.00	0.00
7.710	12.130	0.527	925.2	925.2	25.221	4.519	2.79		Clay	86.3			11.47	1.24	n.a.	n.a.	0.99	0.700	n.a.	n.a.	n.a.	n.a.	0.00	0.00
7.870	12.330	0.545	944.4	944.4	25.112	4.594	2.80		Clay	86.8			11.65	1.24	n.a.	n.a.	0.99	0.706	n.a.	n.a.	n.a.	n.a.	0.00	0.00
8.040	12.750	0.549	964.8	964.8	25.430	4.476	2.79		Clay	85.9			12.05	1.23	n.a.	n.a.	0.99	0.711	n.a.	n.a.	n.a.	n.a.	0.00	0.00
8.200	13.010	0.581	984.0	984.0	25.443	4.641	2.80		Clay	86.7			12.30	1.22	n.a.	n.a.	0.99	0.717	n.a.	n.a.	n.a.	n.a.	0.00	0.00
8.370	13.400	0.592	1004.4	1004.4	25.683	4.586	2.79		Clay	86.2			12.67	1.22	n.a.	n.a.	0.99	0.722	n.a.	n.a.	n.a.	n.a.	0.00	0.00
8.530	13.610	0.619	1023.6	1023.6	25.592	4.724	2.80		Clay	87.0			12.86	1.21	n.a.	n.a.	0.99	0.727	n.a.	n.a.	n.a.	n.a.	0.00	0.00
8.690	13.710	0.634	1042.8	1042.8	25.295	4.804	2.81		Clay	87.7			12.96	1.21	n.a.	n.a.	0.99	0.732	n.a.	n.a.	n.a.	n.a.	0.00	0.00
8.860	13.520	0.638	1063.2	1063.2	24.433	4.908	2.83		Clay	89.1			12.78	1.20	n.a.	n.a.	0.99	0.737	n.a.	n.a.	n.a.	n.a.	0.00	0.00
9.020	13.050	0.631	1082.4	1082.4	23.113	5.048	2.85		Clay	91.2			12.33	1.19	n.a.	n.a.	0.99	0.742	n.a.	n.a.	n.a.	n.a.	0.00	0.00
9.190	12.740	0.609	1102.8	1102.8	22.105	5.000	2.86		Clay	92.1			12.04	1.19	n.a.	n.a.	0.98	0.747	n.a.	n.a.	n.a.	n.a.	0.00	0.00
9.350	12.770	0.613	1122.0	1122.0	21.763	5.019	2.87		Clay	92.6			12.07	1.18	n.a.	n.a.	0.98	0.751	n.a.	n.a.	n.a.	n.a.	0.00	0.00
9.510	12.800	0.615	1141.2	1141.2	21.433	5.026	2.88		Clay	93.0			12.10	1.18	n.a.	n.a.	0.98	0.756	n.a.	n.a.	n.a.	n.a.	0.00	0.00
9.680	12.990	0.623	1161.6	1161.6	21.366	5.020	2.88		Clay	93.1			12.28	1.17	n.a.	n.a.	0.98	0.760	n.a.	n.a.	n.a.	n.a.	0.00	0.00
9.840	13.060	0.612	1180.8	1180.8	21.121	4.910	2.87		Clay	92.8			12.34	1.17	n.a.	n.a.	0.98	0.764	n.a.	n.a.	n.a.	n.a.	0.00	0.00
10.010	12.990	0.599	1201.2	1200.6	20.639	4.831	2.88		Clay	93.1			12.28	1.16	n.a.	n.a.	0.98	0.768	n.a.	n.a.	n.a.	n.a.	0.00	0.00
10.170	12.990	0.594	1220.4	1209.8	20.466	4.801	2.88		Clay	93.1			12.28	1.16	n.a.	n.a.	0.98	0.772	n.a.	n.a.	n.a.	n.a.	0.00	0.00
10.330	13.080	0.597	1239.6	1219.0	20.443	4.794	2.88		Clay	93.1			12.36	1.16	n.a.	n.a.	0.98	0.776	n.a.	n.a.	n.a.	n.a.	0.00	0.00
10.500	13.450	0.603	1260.0	1228.8	20.866	4.704	2.86		Clay	92.2			12.71	1.15	n.a.	n.a.	0.98	0.780	n.a.	n.a.	n.a.	n.a.	0.00	0.00
10.660	13.470	0.617	1279.2	1238.0	20.727	4.810	2.87		Clay	92.9			12.73	1.15	n.a.	n.a.	0.98	0.784	n.a.	n.a.	n.a.	n.a.	0.00	0.00
10.830	13.590	0.608	1299.6	1247.8	20.741	4.701	2.87		Clay	92.3			12.84	1.15	n.a.	n.a.	0.98	0.788	n.a.	n.a.	n.a.	n.a.	0.00	0.00
10.990	13.710	0.596	1318.8	1257.0	20.764	4.570	2.86		Clay	91.6			12.96	1.15	n.a.	n.a.	0.98	0.791	n.a.	n.a.	n.a.	n.a.	0.00	0.00

CORNERSTONE EARTH GROUP

CPT No.	3

PGA (A_{max})	0.89

Total Settlement:	0.36	(Inches)

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Depth (ft)	q_c (tsf)	f_s (tsf)	σ_{vc} (psf)	Insitu σ'_{vc} (psf)	Q	F (%)	I_c	Layer "Plastic" PI > 7	Flag Soil Type	Fines (%)	q_{cN} near interfaces (soft layer)	Thin Layer Factor (K_H)	Interpreted q_{cN}	C_N	q_{c1N}	$q_{c1N\text{-}CS}$	Stress Reduction Coeff, r_d	CSR	K_σ for Sand	$CRR_{M=7.5,\ \sigma'vc = 1\ atm}$	CRR	Factor of Safety (CRR/CSR)	Vertical Strain ε_v	Settlement (Inches)
11.150	13.580	0.560	1338.0	1266.2	20.393	4.340	2.85		Clay	90.9			12.84	1.15	n.a.	n.a.	0.98	0.794	n.a.	n.a.	n.a.	n.a.	0.00	0.00
11.320	14.260	0.564	1358.4	1276.0	21.286	4.151	2.82		Clay	88.8			13.48	1.14	n.a.	n.a.	0.98	0.798	n.a.	n.a.	n.a.	n.a.	0.00	0.00
11.480	14.790	0.566	1377.6	1285.2	21.943	4.015	2.80		Clay	87.2			13.98	1.14	n.a.	n.a.	0.98	0.801	n.a.	n.a.	n.a.	n.a.	0.00	0.00
11.650	15.180	0.596	1398.0	1295.0	22.364	4.116	2.80		Clay	87.3			14.35	1.14	n.a.	n.a.	0.98	0.805	n.a.	n.a.	n.a.	n.a.	0.00	0.00
11.810	16.060	0.631	1417.2	1304.3	23.540	4.110	2.79		Clay	85.9			15.18	1.14	n.a.	n.a.	0.98	0.808	n.a.	n.a.	n.a.	n.a.	0.00	0.00
11.980	16.470	0.612	1437.6	1314.0	23.974	3.884	2.76		Clay	84.2			15.57	1.13	n.a.	n.a.	0.98	0.811	n.a.	n.a.	n.a.	n.a.	0.00	0.00
12.140	17.040	0.587	1456.8	1323.3	24.654	3.597	2.73		Clay	81.7			16.11	1.13	n.a.	n.a.	0.98	0.814	n.a.	n.a.	n.a.	n.a.	0.00	0.00
12.300	16.120	0.574	1476.0	1332.5	23.088	3.732	2.77		Clay	84.3			15.24	1.13	n.a.	n.a.	0.98	0.817	n.a.	n.a.	n.a.	n.a.	0.00	0.00
12.470	15.970	0.572	1496.4	1342.3	22.681	3.759	2.77		Clay	84.9			15.09	1.13	n.a.	n.a.	0.98	0.820	n.a.	n.a.	n.a.	n.a.	0.00	0.00
12.630	15.850	0.578	1515.6	1351.5	22.334	3.828	2.78		Clay	85.7			14.98	1.13	n.a.	n.a.	0.98	0.822	n.a.	n.a.	n.a.	n.a.	0.00	0.00
12.800	15.770	0.594	1536.0	1361.3	22.041	3.961	2.80		Clay	86.8			14.91	1.12	n.a.	n.a.	0.97	0.825	n.a.	n.a.	n.a.	n.a.	0.00	0.00
12.960	15.800	0.583	1555.2	1370.5	21.923	3.884	2.79		Clay	86.5			14.93	1.12	n.a.	n.a.	0.97	0.828	n.a.	n.a.	n.a.	n.a.	0.00	0.00
13.120	15.580	0.586	1574.4	1379.7	21.443	3.963	2.81		Clay	87.6			14.73	1.12	n.a.	n.a.	0.97	0.830	n.a.	n.a.	n.a.	n.a.	0.00	0.00
13.290	14.840	0.554	1594.8	1389.5	20.212	3.945	2.83		Clay	89.0			14.03	1.12	n.a.	n.a.	0.97	0.833	n.a.	n.a.	n.a.	n.a.	0.00	0.00
13.450	14.670	0.525	1614.0	1398.7	19.822	3.788	2.82		Clay	88.6			13.87	1.12	n.a.	n.a.	0.97	0.836	n.a.	n.a.	n.a.	n.a.	0.00	0.00
13.620	13.730	0.509	1634.4	1408.5	18.335	3.943	2.86		Clay	91.6			12.98	1.11	n.a.	n.a.	0.97	0.838	n.a.	n.a.	n.a.	n.a.	0.00	0.00
13.780	13.440	0.482	1653.6	1417.7	17.794	3.824	2.86		Clay	91.8			12.70	1.11	n.a.	n.a.	0.97	0.840	n.a.	n.a.	n.a.	n.a.	0.00	0.00
13.940	13.510	0.468	1672.8	1426.9	17.763	3.695	2.85		Clay	91.1			12.77	1.11	n.a.	n.a.	0.97	0.843	n.a.	n.a.	n.a.	n.a.	0.00	0.00
14.110	13.680	0.467	1693.2	1436.7	17.865	3.640	2.84		Clay	90.6			12.93	1.11	n.a.	n.a.	0.97	0.845	n.a.	n.a.	n.a.	n.a.	0.00	0.00
14.270	13.910	0.456	1712.4	1446.0	18.056	3.491	2.83		Clay	89.4			13.15	1.11	n.a.	n.a.	0.97	0.847	n.a.	n.a.	n.a.	n.a.	0.00	0.00
14.440	12.650	0.463	1732.8	1455.7	16.189	3.929	2.90		Clay	94.9			11.96	1.10	n.a.	n.a.	0.97	0.850	n.a.	n.a.	n.a.	n.a.	0.00	0.00
14.600	12.000	0.459	1752.0	1465.0	15.187	4.122	2.93		Clay	97.7			11.34	1.10	n.a.	n.a.	0.97	0.852	n.a.	n.a.	n.a.	n.a.	0.00	0.00
14.760	11.280	0.432	1771.2	1474.2	14.102	4.153	2.96		Clay	99.9			10.66	1.10	n.a.	n.a.	0.97	0.854	n.a.	n.a.	n.a.	n.a.	0.00	0.00
14.930	10.810	0.398	1791.6	1484.0	13.362	4.011	2.97		Clay	100.0			10.22	1.10	n.a.	n.a.	0.97	0.856	n.a.	n.a.	n.a.	n.a.	0.00	0.00
15.090	10.310	0.367	1810.8	1493.2	12.597	3.907	2.98		Clay	100.0			9.74	1.10	n.a.	n.a.	0.97	0.858	n.a.	n.a.	n.a.	n.a.	0.00	0.00
15.260	9.450	0.331	1831.2	1503.0	11.357	3.875	3.02		Clay	100.0			8.93	1.09	n.a.	n.a.	0.97	0.860	n.a.	n.a.	n.a.	n.a.	0.00	0.00
15.420	9.780	0.347	1850.4	1512.2	11.711	3.914	3.01		Clay	100.0			9.24	1.09	n.a.	n.a.	0.97	0.862	n.a.	n.a.	n.a.	n.a.	0.00	0.00
15.580	11.200	0.377	1869.6	1521.4	13.494	3.672	2.94		Clay	98.4			10.59	1.09	n.a.	n.a.	0.97	0.864	n.a.	n.a.	n.a.	n.a.	0.00	0.00
15.750	11.900	0.360	1890.0	1531.2	14.309	3.283	2.89		Clay	94.5			11.25	1.09	n.a.	n.a.	0.97	0.866	n.a.	n.a.	n.a.	n.a.	0.00	0.00
15.910	12.630	0.365	1909.2	1540.4	15.159	3.130	2.86		Clay	91.9			11.94	1.09	n.a.	n.a.	0.96	0.867	n.a.	n.a.	n.a.	n.a.	0.00	0.00
16.080	11.690	0.362	1929.6	1550.2	13.837	3.372	2.91		Clay	96.0			11.05	1.09	n.a.	n.a.	0.96	0.869	n.a.	n.a.	n.a.	n.a.	0.00	0.00
16.240	12.370	0.382	1948.8	1559.4	14.615	3.348	2.89		Clay	94.3			11.69	1.08	n.a.	n.a.	0.96	0.871	n.a.	n.a.	n.a.	n.a.	0.00	0.00
16.400	14.900	0.446	1968.0	1568.6	17.743	3.201	2.81		Clay	88.0			14.08	1.08	n.a.	n.a.	0.96	0.873	n.a.	n.a.	n.a.	n.a.	0.00	0.00
16.570	16.460	0.615	1988.4	1578.4	19.596	3.975	2.84		Clay	90.0			15.56	1.08	n.a.	n.a.	0.96	0.874	n.a.	n.a.	n.a.	n.a.	0.00	0.00
16.730	17.480	0.727	2007.6	1587.6	20.755	4.414	2.85		Clay	90.9			16.52	1.08	n.a.	n.a.	0.96	0.876	n.a.	n.a.	n.a.	n.a.	0.00	0.00
16.900	21.960	0.813	2028.0	1597.4	26.224	3.883	2.74		Clay	81.8			20.76	1.08	n.a.	n.a.	0.96	0.878	n.a.	n.a.	n.a.	n.a.	0.00	0.00
17.060	29.400	0.869	2047.2	1606.7	32.523	3.062	2.60		Mixed	70.7			27.79	1.15	32.03	92.12	0.96	0.879	1.028	0.128	0.161	0.18	0.03	0.07
17.220	25.280	0.784	2066.4	1615.9	30.011	3.234	2.64		Clay	74.1			23.89	1.07	n.a.	n.a.	0.96	0.881	n.a.	n.a.	n.a.	n.a.	0.00	0.00
17.390	23.370	0.669	2086.8	1625.7	27.468	2.996	2.65		Clay	74.7			22.09	1.07	n.a.	n.a.	0.96	0.882	n.a.	n.a.	n.a.	n.a.	0.00	0.00
17.550	20.730	0.647	2106.0	1634.9	24.071	3.289	2.72		Clay	80.3			19.59	1.07	n.a.	n.a.	0.96	0.884	n.a.	n.a.	n.a.	n.a.	0.00	0.00
17.720	17.730	0.579	2126.4	1644.7	20.268	3.476	2.79		Clay	86.2			16.76	1.07	n.a.	n.a.	0.96	0.885	n.a.	n.a.	n.a.	n.a.	0.00	0.00
17.880	14.850	0.488	2145.6	1653.9	16.660	3.544	2.86		Clay	91.9			14.04	1.07	n.a.	n.a.	0.96	0.886	n.a.	n.a.	n.a.	n.a.	0.00	0.00
18.040	12.770	0.438	2164.8	1663.1	14.055	3.747	2.93		Clay	97.7			12.07	1.07	n.a.	n.a.	0.96	0.888	n.a.	n.a.	n.a.	n.a.	0.00	0.00
18.210	13.170	0.420	2185.2	1672.9	14.439	3.477	2.91		Clay	95.4			12.45	1.06	n.a.	n.a.	0.96	0.889	n.a.	n.a.	n.a.	n.a.	0.00	0.00
18.370	16.110	0.433	2204.4	1682.1	17.844	2.884	2.78		Clay	85.6			15.23	1.06	n.a.	n.a.	0.96	0.890	n.a.	n.a.	n.a.	n.a.	0.00	0.00
18.540	14.810	0.452	2224.8	1691.9	16.192	3.301	2.85		Clay	91.2			14.00	1.06	n.a.	n.a.	0.96	0.892	n.a.	n.a.	n.a.	n.a.	0.00	0.00
18.700	12.170	0.439	2244.0	1701.1	12.989	3.973	2.98		Clay	100.0			11.50	1.06	n.a.	n.a.	0.96	0.893	n.a.	n.a.	n.a.	n.a.	0.00	0.00
18.860	10.930	0.384	2263.2	1710.3	11.458	3.921	3.02		Clay	100.0			10.33	1.06	n.a.	n.a.	0.95	0.894	n.a.	n.a.	n.a.	n.a.	0.00	0.00
19.030	9.160	0.331	2283.6	1720.1	9.323	4.126	3.10		Clay	100.0			8.66	1.06	n.a.	n.a.	0.95	0.895	n.a.	n.a.	n.a.	n.a.	0.00	0.00
19.190	8.020	0.293	2302.8	1729.3	7.944	4.267	3.17		Clay	100.0			7.58	1.05	n.a.	n.a.	0.95	0.896	n.a.	n.a.	n.a.	n.a.	0.00	0.00
19.360	7.880	0.270	2323.2	1739.1	7.726	4.011	3.16		Clay	100.0			7.45	1.05	n.a.	n.a.	0.95	0.898	n.a.	n.a.	n.a.	n.a.	0.00	0.00
19.520	8.260	0.283	2342.4	1748.4	8.109	3.991	3.14		Clay	100.0			7.81	1.05	n.a.	n.a.	0.95	0.899	n.a.	n.a.	n.a.	n.a.	0.00	0.00
19.690	8.140	0.287	2362.8	1758.1	7.916	4.123	3.16		Clay	100.0			7.69	1.05	n.a.	n.a.	0.95	0.900	n.a.	n.a.	n.a.	n.a.	0.00	0.00
19.850	7.540	0.279	2382.0	1767.4	7.185	4.393	3.21		Clay	100.0			7.13	1.05	n.a.	n.a.	0.95	0.901	n.a.	n.a.	n.a.	n.a.	0.00	0.00
20.010	7.310	0.240	2401.2	1776.6	6.878	3.923	3.20		Clay	100.0			6.91	1.05	n.a.	n.a.	0.95	0.902	n.a.	n.a.	n.a.	n.a.	0.00	0.00
20.180	7.590	0.219	2421.6	1786.4	7.142	3.428	3.15		Clay	100.0			7.17	1.05	n.a.	n.a.	0.95	0.903	n.a.	n.a.	n.a.	n.a.	0.00	0.00
20.340	8.000	0.229	2440.8	1795.6	7.551	3.375	3.13		Clay	100.0			7.56	1.04	n.a.	n.a.	0.95	0.904	n.a.	n.a.	n.a.	n.a.	0.00	0.00
20.510	8.290	0.251	2461.2	1805.4	7.820	3.557	3.13		Clay	100.0			7.84	1.04	n.a.	n.a.	0.95	0.905	n.a.	n.a.	n.a.	n.a.	0.00	0.00
20.670	8.590	0.249	2480.4	1814.6	8.101	3.385	3.10		Clay	100.0			8.12	1.04	n.a.	n.a.	0.95	0.906	n.a.	n.a.	n.a.	n.a.	0.00	0.00
20.830	8.420	0.264	2499.6	1823.8	7.863	3.683	3.13		Clay	100.0			7.96	1.04	n.a.	n.a.	0.95	0.907	n.a.	n.a.	n.a.	n.a.	0.00	0.00
21.000	8.490	0.269	2520.0	1833.6	7.886	3.726	3.14		Clay	100.0			8.02	1.04	n.a.	n.a.	0.95	0.908	n.a.	n.a.	n.a.	n.a.	0.00	0.00
21.160	8.770	0.281	2539.2	1842.8	8.140	3.740	3.12		Clay	100.0			8.29	1.04	n.a.	n.a.	0.95	0.909	n.a.	n.a.	n.a.	n.a.	0.00	0.00
21.330	9.100	0.287	2559.6	1852.6	8.442	3.667	3.11		Clay	100.0			8.60	1.04	n.a.	n.a.	0.95	0.909	n.a.	n.a.	n.a.	n.a.	0.00	0.00
21.490	9.410	0.277	2578.8	1861.8	8.723	3.407	3.08		Clay	100.0			8.89	1.03	n.a.	n.a.	0.95	0.910	n.a.	n.a.	n.a.	n.a.	0.00	0.00
21.650	9.210	0.236	2598.0	1871.0	8.456	2.979	3.06		Clay	100.0			8.71	1.03	n.a.	n.a.	0.95	0.911	n.a.	n.a.	n.a.	n.a.	0.00	0.00
21.820	9.050	0.205	2618.4	1880.8	8.231	2.644	3.04		Clay	100.0			8.55	1.03	n.a.	n.a.	0.94	0.912	n.a.	n.a.	n.a.	n.a.	0.00	0.00
21.980	9.460	0.237	2637.6	1890.0	8.615	2.914	3.04		Clay	100.0			8.94	1.03	n.a.	n.a.	0.94	0.913	n.a.	n.a.	n.a.	n.a.	0.00	0.00

CORNERSTONE EARTH GROUP

CPT No.	3

PGA (A_{max})	0.89

Total Settlement:	0.36	(Inches)

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Depth (ft)	q_c (tsf)	f_s (tsf)	σ_{vc} (psf)	Insitu σ'_{vc} (psf)	Q	F (%)	I_c	Layer "Plastic" PI > 7	Flag Soil Type	Fines (%)	q_{cN} near interfaces (soft layer)	Thin Layer Factor (K_H)	Interpreted q_{cN}	C_N	q_{c1N}	$q_{c1N\text{-}CS}$	Stress Reduction Coeff, r_d	CSR	K_σ for Sand	$CRR_{M=7.5,\ \sigma'vc = 1\ atm}$	CRR	Factor of Safety (CRR/CSR)	Vertical Strain ε_v	Settlement (Inches)
22.150	10.950	0.275	2658.0	1899.8	10.128	2.854	2.98		Clay	100.0			10.35	1.03	n.a.	n.a.	0.94	0.913	n.a.	n.a.	n.a.	n.a.	0.00	0.00
22.310	14.040	0.350	2677.2	1909.1	13.306	2.757	2.87		Clay	92.9			13.27	1.03	n.a.	n.a.	0.94	0.914	n.a.	n.a.	n.a.	n.a.	0.00	0.00
22.470	17.150	0.453	2696.4	1918.3	16.475	2.868	2.81		Clay	87.7			16.21	1.03	n.a.	n.a.	0.94	0.915	n.a.	n.a.	n.a.	n.a.	0.00	0.00
22.640	21.250	0.579	2716.8	1928.1	20.634	2.908	2.74		Clay	81.8			20.09	1.02	n.a.	n.a.	0.94	0.916	n.a.	n.a.	n.a.	n.a.	0.00	0.00
22.800	24.550	0.692	2736.0	1937.3	23.933	2.986	2.69		Clay	78.3			23.20	1.02	n.a.	n.a.	0.94	0.916	n.a.	n.a.	n.a.	n.a.	0.00	0.00
22.970	24.620	0.814	2756.4	1947.1	23.874	3.502	2.74		Clay	81.9			23.27	1.02	n.a.	n.a.	0.94	0.917	n.a.	n.a.	n.a.	n.a.	0.00	0.00
23.130	26.760	0.952	2775.6	1956.3	25.939	3.753	2.73		Clay	81.3			25.29	1.02	n.a.	n.a.	0.94	0.918	n.a.	n.a.	n.a.	n.a.	0.00	0.00
23.290	28.050	1.024	2794.8	1965.5	27.120	3.841	2.72		Clay	80.7			26.51	1.02	n.a.	n.a.	0.94	0.918	n.a.	n.a.	n.a.	n.a.	0.00	0.00
23.460	29.010	1.015	2815.2	1975.3	27.948	3.677	2.70		Clay	78.9			27.42	1.02	n.a.	n.a.	0.94	0.919	n.a.	n.a.	n.a.	n.a.	0.00	0.00
23.620	28.910	0.923	2834.4	1984.5	27.707	3.357	2.68		Clay	77.0			27.33	1.02	n.a.	n.a.	0.94	0.919	n.a.	n.a.	n.a.	n.a.	0.00	0.00
23.790	27.640	0.883	2854.8	1994.3	26.287	3.367	2.69		Clay	78.5			26.12	1.02	n.a.	n.a.	0.94	0.920	n.a.	n.a.	n.a.	n.a.	0.00	0.00
23.950	26.620	0.967	2874.0	2003.5	25.139	3.839	2.75		Clay	82.7			25.16	1.01	n.a.	n.a.	0.94	0.921	n.a.	n.a.	n.a.	n.a.	0.00	0.00
24.110	27.200	0.948	2893.2	2012.7	25.590	3.679	2.73		Clay	81.2			25.71	1.01	n.a.	n.a.	0.94	0.921	n.a.	n.a.	n.a.	n.a.	0.00	0.00
24.280	24.670	0.847	2913.6	2022.5	22.955	3.651	2.76		Clay	83.9			23.32	1.01	n.a.	n.a.	0.94	0.922	n.a.	n.a.	n.a.	n.a.	0.00	0.00
24.440	21.840	0.675	2932.8	2031.7	20.055	3.314	2.78		Clay	85.4			20.64	1.01	n.a.	n.a.	0.93	0.922	n.a.	n.a.	n.a.	n.a.	0.00	0.00
24.610	18.350	0.528	2953.2	2041.5	16.530	3.130	2.83		Clay	89.5			17.34	1.01	n.a.	n.a.	0.93	0.923	n.a.	n.a.	n.a.	n.a.	0.00	0.00
24.770	15.640	0.399	2972.4	2050.8	13.804	2.816	2.87		Clay	92.3			14.78	1.01	n.a.	n.a.	0.93	0.923	n.a.	n.a.	n.a.	n.a.	0.00	0.00
24.930	13.690	0.420	2991.6	2060.0	11.839	3.448	2.97		Clay	100.0			12.94	1.01	n.a.	n.a.	0.93	0.924	n.a.	n.a.	n.a.	n.a.	0.00	0.00
25.100	14.430	0.577	3012.0	2069.8	12.488	4.464	3.02		Clay	100.0			13.64	1.01	n.a.	n.a.	0.93	0.924	n.a.	n.a.	n.a.	n.a.	0.00	0.00
25.260	18.940	0.744	3031.2	2079.0	16.762	4.272	2.91		Clay	95.8			17.90	1.00	n.a.	n.a.	0.93	0.925	n.a.	n.a.	n.a.	n.a.	0.00	0.00
25.430	22.510	0.828	3051.6	2088.8	20.092	3.946	2.83		Clay	89.2			21.28	1.00	n.a.	n.a.	0.93	0.925	n.a.	n.a.	n.a.	n.a.	0.00	0.00
25.590	22.840	0.751	3070.8	2098.0	20.310	3.526	2.79		Clay	86.4			21.59	1.00	n.a.	n.a.	0.93	0.925	n.a.	n.a.	n.a.	n.a.	0.00	0.00
25.750	22.940	0.689	3090.0	2107.2	20.307	3.222	2.77		Clay	84.4			21.68	1.00	n.a.	n.a.	0.93	0.926	n.a.	n.a.	n.a.	n.a.	0.00	0.00
25.920	23.980	0.664	3110.4	2117.0	21.186	2.962	2.73		Clay	81.5			22.67	1.00	n.a.	n.a.	0.93	0.926	n.a.	n.a.	n.a.	n.a.	0.00	0.00
26.080	25.150	0.704	3129.6	2126.2	22.185	2.984	2.72		Clay	80.4			23.77	1.00	n.a.	n.a.	0.93	0.927	n.a.	n.a.	n.a.	n.a.	0.00	0.00
26.250	26.470	0.760	3150.0	2136.0	23.310	3.054	2.71		Clay	79.5			25.02	1.00	n.a.	n.a.	0.93	0.927	n.a.	n.a.	n.a.	n.a.	0.00	0.00
26.410	27.190	0.871	3169.2	2145.2	23.872	3.400	2.73		Clay	81.3			25.70	1.00	n.a.	n.a.	0.93	0.927	n.a.	n.a.	n.a.	n.a.	0.00	0.00
26.570	26.120	0.857	3188.4	2154.4	22.768	3.494	2.75		Clay	83.2			24.69	1.00	n.a.	n.a.	0.93	0.928	n.a.	n.a.	n.a.	n.a.	0.00	0.00
26.740	24.310	0.787	3208.8	2164.2	20.983	3.464	2.78		Clay	85.1			22.98	0.99	n.a.	n.a.	0.93	0.928	n.a.	n.a.	n.a.	n.a.	0.00	0.00
26.900	22.120	0.721	3228.0	2173.4	18.870	3.514	2.82		Clay	88.3			20.91	0.99	n.a.	n.a.	0.93	0.928	n.a.	n.a.	n.a.	n.a.	0.00	0.00
27.070	19.060	0.632	3248.4	2183.2	15.972	3.622	2.88		Clay	93.5			18.02	0.99	n.a.	n.a.	0.92	0.929	n.a.	n.a.	n.a.	n.a.	0.00	0.00
27.230	17.080	0.572	3267.6	2192.4	14.090	3.706	2.93		Clay	97.4			16.14	0.99	n.a.	n.a.	0.92	0.929	n.a.	n.a.	n.a.	n.a.	0.00	0.00
27.400	14.980	0.500	3288.0	2202.2	12.111	3.746	2.99		Clay	100.0			14.16	0.99	n.a.	n.a.	0.92	0.929	n.a.	n.a.	n.a.	n.a.	0.00	0.00
27.560	13.240	0.516	3307.2	2211.5	10.479	4.449	3.08		Clay	100.0			12.51	0.99	n.a.	n.a.	0.92	0.929	n.a.	n.a.	n.a.	n.a.	0.00	0.00
27.720	12.460	0.467	3326.4	2220.7	9.724	4.324	3.10		Clay	100.0			11.78	0.99	n.a.	n.a.	0.92	0.930	n.a.	n.a.	n.a.	n.a.	0.00	0.00
27.890	11.030	0.491	3346.8	2230.5	8.390	5.252	3.20		Clay	100.0			10.43	0.99	n.a.	n.a.	0.92	0.930	n.a.	n.a.	n.a.	n.a.	0.00	0.00
28.050	10.310	0.466	3366.0	2239.7	7.704	5.399	3.24		Clay	100.0			9.74	0.99	n.a.	n.a.	0.92	0.930	n.a.	n.a.	n.a.	n.a.	0.00	0.00
28.220	10.430	0.445	3386.4	2249.5	7.768	5.093	3.22		Clay	100.0			9.86	0.98	n.a.	n.a.	0.92	0.930	n.a.	n.a.	n.a.	n.a.	0.00	0.00
28.380	10.840	0.460	3405.6	2258.7	8.091	5.030	3.20		Clay	100.0			10.25	0.98	n.a.	n.a.	0.92	0.931	n.a.	n.a.	n.a.	n.a.	0.00	0.00
28.540	12.640	0.504	3424.8	2267.9	9.637	4.610	3.12		Clay	100.0			11.95	0.98	n.a.	n.a.	0.92	0.931	n.a.	n.a.	n.a.	n.a.	0.00	0.00
28.710	15.820	0.534	3445.2	2277.7	12.379	3.789	2.98		Clay	100.0			14.95	0.98	n.a.	n.a.	0.92	0.931	n.a.	n.a.	n.a.	n.a.	0.00	0.00
28.870	18.250	0.551	3464.4	2286.9	14.446	3.336	2.89		Clay	94.5			17.25	0.98	n.a.	n.a.	0.92	0.931	n.a.	n.a.	n.a.	n.a.	0.00	0.00
29.040	18.640	0.529	3484.8	2296.7	14.715	3.132	2.87		Clay	92.7			17.62	0.98	n.a.	n.a.	0.92	0.931	n.a.	n.a.	n.a.	n.a.	0.00	0.00
29.200	17.600	0.512	3504.0	2305.9	13.745	3.232	2.90		Clay	95.3			16.64	0.98	n.a.	n.a.	0.92	0.931	n.a.	n.a.	n.a.	n.a.	0.00	0.00
29.360	16.560	0.476	3523.2	2315.1	12.784	3.215	2.93		Clay	97.2			15.65	0.98	n.a.	n.a.	0.92	0.932	n.a.	n.a.	n.a.	n.a.	0.00	0.00
29.530	15.200	0.405	3543.6	2324.9	11.551	3.019	2.95		Clay	98.8			14.37	0.98	n.a.	n.a.	0.91	0.932	n.a.	n.a.	n.a.	n.a.	0.00	0.00
29.690	14.040	0.394	3562.8	2334.1	10.504	3.217	3.00		Clay	100.0			13.27	0.97	n.a.	n.a.	0.91	0.932	n.a.	n.a.	n.a.	n.a.	0.00	0.00
29.860	12.950	0.352	3583.2	2343.9	9.521	3.155	3.03		Clay	100.0			12.24	0.97	n.a.	n.a.	0.91	0.932	n.a.	n.a.	n.a.	n.a.	0.00	0.00
30.020	13.130	0.341	3602.4	2353.2	9.629	3.012	3.01		Clay	100.0			12.41	0.97	n.a.	n.a.	0.91	0.932	n.a.	n.a.	n.a.	n.a.	0.00	0.00
30.180	13.500	0.359	3621.6	2362.4	9.896	3.072	3.01		Clay	100.0			12.76	0.97	n.a.	n.a.	0.91	0.932	n.a.	n.a.	n.a.	n.a.	0.00	0.00
30.350	14.600	0.380	3642.0	2372.2	10.774	2.973	2.97		Clay	100.0			13.80	0.97	n.a.	n.a.	0.91	0.932	n.a.	n.a.	n.a.	n.a.	0.00	0.00
30.510	14.430	0.424	3661.2	2381.4	10.582	3.366	3.01		Clay	100.0			13.64	0.97	n.a.	n.a.	0.91	0.932	n.a.	n.a.	n.a.	n.a.	0.00	0.00
30.680	14.460	0.433	3681.6	2391.2	10.555	3.428	3.01		Clay	100.0			13.67	0.97	n.a.	n.a.	0.91	0.932	n.a.	n.a.	n.a.	n.a.	0.00	0.00
30.840	15.830	0.478	3700.8	2400.4	11.648	3.422	2.98		Clay	100.0			14.96	0.97	n.a.	n.a.	0.91	0.933	n.a.	n.a.	n.a.	n.a.	0.00	0.00
31.000	16.890	0.502	3720.0	2409.6	12.475	3.339	2.95		Clay	98.6			15.96	0.97	n.a.	n.a.	0.91	0.933	n.a.	n.a.	n.a.	n.a.	0.00	0.00
31.170	16.370	0.502	3740.4	2419.4	11.986	3.462	2.97		Clay	100.0			15.47	0.97	n.a.	n.a.	0.91	0.933	n.a.	n.a.	n.a.	n.a.	0.00	0.00
31.330	16.810	0.511	3759.6	2428.6	12.295	3.423	2.96		Clay	99.6			15.89	0.96	n.a.	n.a.	0.91	0.933	n.a.	n.a.	n.a.	n.a.	0.00	0.00
31.500	17.960	0.520	3780.0	2438.4	13.181	3.233	2.92		Clay	96.4			16.98	0.96	n.a.	n.a.	0.91	0.933	n.a.	n.a.	n.a.	n.a.	0.00	0.00
31.660	19.720	0.617	3799.2	2447.6	14.561	3.461	2.90		Clay	95.1			18.64	0.96	n.a.	n.a.	0.91	0.933	n.a.	n.a.	n.a.	n.a.	0.00	0.00
31.820	21.980	0.686	3818.4	2456.8	16.339	3.417	2.86		Clay	91.6			20.78	0.96	n.a.	n.a.	0.91	0.933	n.a.	n.a.	n.a.	n.a.	0.00	0.00
31.990	23.350	0.767	3838.8	2466.6	17.376	3.578	2.85		Clay	90.9			22.07	0.96	n.a.	n.a.	0.90	0.933	n.a.	n.a.	n.a.	n.a.	0.00	0.00
32.150	24.040	0.805	3858.0	2475.8	17.861	3.641	2.84		Clay	90.6			22.72	0.96	n.a.	n.a.	0.90	0.933	n.a.	n.a.	n.a.	n.a.	0.00	0.00
32.320	24.520	0.814	3878.4	2485.6	18.169	3.604	2.84		Clay	89.9			23.18	0.96	n.a.	n.a.	0.90	0.933	n.a.	n.a.	n.a.	n.a.	0.00	0.00
32.480	23.950	0.823	3897.6	2494.8	17.637	3.738	2.86		Clay	91.5			22.64	0.96	n.a.	n.a.	0.90	0.933	n.a.	n.a.	n.a.	n.a.	0.00	0.00
32.640	23.240	0.811	3916.8	2504.1	16.998	3.809	2.87		Clay	92.9			21.97	0.96	n.a.	n.a.	0.90	0.933	n.a.	n.a.	n.a.	n.a.	0.00	0.00
32.810	23.030	0.788	3937.2	2513.9	16.756	3.742	2.87		Clay	92.9			21.77	0.96	n.a.	n.a.	0.90	0.933	n.a.	n.a.	n.a.	n.a.	0.00	0.00
32.970	22.540	0.767	3956.4	2523.1	16.299	3.730	2.88		Clay	93.6			21.30	0.95	n.a.	n.a.	0.90	0.933	n.a.	n.a.	n.a.	n.a.	0.00	0.00

CORNERSTONE EARTH GROUP

CPT No.	3

PGA (A_{max})	0.89

Total Settlement:	0.36	(Inches)

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Depth (ft)	q_c (tsf)	f_s (tsf)	σ_{vc} (psf)	Insitu σ'_{vc} (psf)	Q	F (%)	I_c	Layer "Plastic" PI > 7	Flag Soil Type	Fines (%)	q_{cN} near interfaces (soft layer)	Thin Layer Factor (K_H)	Interpreted q_{cN}	C_N	q_{c1N}	$q_{c1N\text{-}CS}$	Stress Reduction Coeff, r_d	CSR	K_σ for Sand	$CRR_{M=7.5,\ \sigma'vc = 1\ atm}$	CRR	Factor of Safety (CRR/CSR)	Vertical Strain ε_v	Settlement (Inches)
33.140	20.170	0.724	3976.8	2532.9	14.357	3.981	2.94		Clay	98.5			19.06	0.95	n.a.	n.a.	0.90	0.932	n.a.	n.a.	n.a.	n.a.	0.00	0.00
33.300	17.080	0.673	3996.0	2542.1	11.866	4.464	3.04		Clay	100.0			16.14	0.95	n.a.	n.a.	0.90	0.932	n.a.	n.a.	n.a.	n.a.	0.00	0.00
33.460	14.770	0.591	4015.2	2551.3	10.005	4.632	3.11		Clay	100.0			13.96	0.95	n.a.	n.a.	0.90	0.932	n.a.	n.a.	n.a.	n.a.	0.00	0.00
33.630	14.410	0.527	4035.6	2561.1	9.677	4.254	3.10		Clay	100.0			13.62	0.95	n.a.	n.a.	0.90	0.932	n.a.	n.a.	n.a.	n.a.	0.00	0.00
33.790	13.980	0.515	4054.8	2570.3	9.301	4.305	3.11		Clay	100.0			13.21	0.95	n.a.	n.a.	0.90	0.932	n.a.	n.a.	n.a.	n.a.	0.00	0.00
33.960	13.180	0.542	4075.2	2580.1	8.637	4.860	3.17		Clay	100.0			12.46	0.95	n.a.	n.a.	0.90	0.932	n.a.	n.a.	n.a.	n.a.	0.00	0.00
34.120	13.050	0.526	4094.4	2589.3	8.499	4.779	3.17		Clay	100.0			12.33	0.95	n.a.	n.a.	0.90	0.932	n.a.	n.a.	n.a.	n.a.	0.00	0.00
34.280	13.210	0.447	4113.6	2598.5	8.584	4.005	3.12		Clay	100.0			12.49	0.95	n.a.	n.a.	0.90	0.932	n.a.	n.a.	n.a.	n.a.	0.00	0.00
34.450	14.050	0.388	4134.0	2608.3	9.188	3.236	3.05		Clay	100.0			13.28	0.95	n.a.	n.a.	0.89	0.932	n.a.	n.a.	n.a.	n.a.	0.00	0.00
34.610	13.570	0.399	4153.2	2617.5	8.782	3.472	3.08		Clay	100.0			12.83	0.95	n.a.	n.a.	0.89	0.932	n.a.	n.a.	n.a.	n.a.	0.00	0.00
34.780	14.440	0.406	4173.6	2627.3	9.404	3.285	3.04		Clay	100.0			13.65	0.94	n.a.	n.a.	0.89	0.932	n.a.	n.a.	n.a.	n.a.	0.00	0.00
34.940	16.410	0.427	4192.8	2636.5	10.858	2.986	2.97		Clay	100.0			15.51	0.94	n.a.	n.a.	0.89	0.931	n.a.	n.a.	n.a.	n.a.	0.00	0.00
35.100	18.560	0.493	4212.0	2645.8	12.438	2.996	2.92		Clay	96.5			17.54	0.94	n.a.	n.a.	0.89	0.931	n.a.	n.a.	n.a.	n.a.	0.00	0.00
35.270	18.450	0.525	4232.4	2655.6	12.302	3.215	2.94		Clay	98.3			17.44	0.94	n.a.	n.a.	0.89	0.931	n.a.	n.a.	n.a.	n.a.	0.00	0.00
35.430	17.580	0.529	4251.6	2664.8	11.599	3.421	2.98		Clay	100.0			16.62	0.94	n.a.	n.a.	0.89	0.931	n.a.	n.a.	n.a.	n.a.	0.00	0.00
35.600	17.840	0.521	4272.0	2674.6	11.743	3.320	2.97		Clay	100.0			16.86	0.94	n.a.	n.a.	0.89	0.931	n.a.	n.a.	n.a.	n.a.	0.00	0.00
35.760	17.340	0.518	4291.2	2683.8	11.323	3.408	2.98		Clay	100.0			16.39	0.94	n.a.	n.a.	0.89	0.931	n.a.	n.a.	n.a.	n.a.	0.00	0.00
35.930	17.330	0.480	4311.6	2693.6	11.267	3.161	2.97		Clay	100.0			16.38	0.94	n.a.	n.a.	0.89	0.931	n.a.	n.a.	n.a.	n.a.	0.00	0.00
36.090	17.490	0.496	4330.8	2702.8	11.340	3.239	2.97		Clay	100.0			16.53	0.94	n.a.	n.a.	0.89	0.930	n.a.	n.a.	n.a.	n.a.	0.00	0.00
36.250	16.460	0.498	4350.0	2712.0	10.535	3.486	3.02		Clay	100.0			15.56	0.94	n.a.	n.a.	0.89	0.930	n.a.	n.a.	n.a.	n.a.	0.00	0.00
36.420	16.570	0.481	4370.4	2721.8	10.570	3.341	3.00		Clay	100.0			15.66	0.94	n.a.	n.a.	0.89	0.930	n.a.	n.a.	n.a.	n.a.	0.00	0.00
36.580	16.770	0.445	4389.6	2731.0	10.674	3.055	2.98		Clay	100.0			15.85	0.93	n.a.	n.a.	0.89	0.930	n.a.	n.a.	n.a.	n.a.	0.00	0.00
36.750	15.950	0.402	4410.0	2740.8	10.030	2.921	2.99		Clay	100.0			15.08	0.93	n.a.	n.a.	0.89	0.930	n.a.	n.a.	n.a.	n.a.	0.00	0.00
36.910	15.010	0.357	4429.2	2750.0	9.306	2.787	3.00		Clay	100.0			14.19	0.93	n.a.	n.a.	0.88	0.929	n.a.	n.a.	n.a.	n.a.	0.00	0.00
37.070	14.250	0.317	4448.4	2759.2	8.717	2.637	3.02		Clay	100.0			13.47	0.93	n.a.	n.a.	0.88	0.929	n.a.	n.a.	n.a.	n.a.	0.00	0.00
37.240	14.330	0.346	4468.8	2769.0	8.736	2.863	3.03		Clay	100.0			13.54	0.93	n.a.	n.a.	0.88	0.929	n.a.	n.a.	n.a.	n.a.	0.00	0.00
37.400	14.830	0.753	4488.0	2778.2	9.060	5.979	3.21		Clay	100.0			14.02	0.93	n.a.	n.a.	0.88	0.929	n.a.	n.a.	n.a.	n.a.	0.00	0.00
37.570	18.310	1.341	4508.4	2788.0	11.518	8.350	3.22		Clay	100.0			17.31	0.93	n.a.	n.a.	0.88	0.929	n.a.	n.a.	n.a.	n.a.	0.00	0.00
37.730	36.780	1.397	4527.6	2797.2	24.679	4.046	2.77		Clay	84.3			34.76	0.93	n.a.	n.a.	0.88	0.928	n.a.	n.a.	n.a.	n.a.	0.00	0.00
37.890	67.600	1.911	4546.8	2806.5	53.615	2.925	2.42		Sand	56.9	173.61		173.61	0.93	161.12	253.59	0.88	0.928	0.915	201.308	405.358	436.76	0.00	0.00
38.060	93.100	2.235	4567.2	2816.3	74.405	2.461	2.27		Sand	44.6	173.61		173.61	0.92	160.54	245.23	0.88	0.928	0.914	75.330	151.513	163.29	0.00	0.00
38.220	114.750	2.365	4586.4	2825.5	91.984	2.103	2.16		Sand	35.5	173.61		173.61	0.92	159.87	235.43	0.88	0.928	0.913	27.231	54.711	58.98	0.00	0.00
38.390	135.900	2.493	4606.8	2835.3	109.086	1.866	2.07		Sand	28.4	173.61		173.61	0.92	159.06	223.80	0.88	0.927	0.912	9.651	19.369	20.89	0.00	0.00
38.550	147.930	2.489	4626.0	2844.5	118.709	1.709	2.01		Sand	24.2	173.61		173.61	0.91	158.35	214.22	0.88	0.927	0.911	4.652	9.325	10.06	0.00	0.00
38.710	157.520	2.790	4645.2	2853.7	126.314	1.798	2.01		Sand	24.0	173.61		173.61	0.91	158.14	213.51	0.88	0.927	0.910	4.425	8.862	9.56	0.00	0.00
38.880	165.470	1.473	4665.6	2863.5	132.549	0.903	1.79		Sand	6.1	173.61		173.61	0.89	154.04	154.81	0.88	0.927	0.950	0.324	0.531	0.57	0.02	0.04
39.040	175.940	1.800	4684.8	2872.7	140.822	1.037	1.81		Sand	7.7	173.61		173.61	0.89	154.02	157.14	0.88	0.926	0.948	0.344	0.572	0.62	0.02	0.04
39.210	183.680	2.406	4705.2	2882.5	146.842	1.327	1.87		Sand	12.7			173.61	0.89	155.04	174.01	0.87	0.926	0.938	0.578	1.082	1.17	0.01	0.01
39.370	188.950	3.321	4724.4	2891.7	150.861	1.780	1.96		Sand	19.6			178.59	0.90	161.49	205.47	0.87	0.926	0.912	2.609	5.237	5.66	0.00	0.00
39.530	179.010	3.625	4743.6	2900.9	142.590	2.052	2.02		Sand	24.6			169.20	0.90	153.06	209.01	0.87	0.925	0.908	3.264	6.517	7.04	0.00	0.00
39.700	173.730	3.681	4764.0	2910.7	138.086	2.148	2.04		Sand	26.5			164.21	0.90	148.29	207.44	0.87	0.925	0.908	2.950	5.896	6.37	0.00	0.00
39.860	176.590	3.366	4783.2	2919.9	140.162	1.932	2.00		Sand	23.4			166.91	0.90	150.30	203.04	0.87	0.925	0.912	2.252	4.520	4.89	0.00	0.00
40.030	170.370	2.742	4803.6	2929.7	134.923	1.632	1.96		Sand	19.9			161.03	0.89	143.80	186.53	0.87	0.925	0.926	0.958	1.952	2.11	0.00	0.00
40.190	163.970	2.731	4822.8	2938.9	129.571	1.690	1.98		Sand	21.8			154.98	0.89	138.15	185.05	0.87	0.924	0.927	0.897	1.810	1.96	0.00	0.00
40.350	154.840	3.131	4842.0	2948.2	122.049	2.054	2.06		Sand	28.2			146.35	0.89	130.58	189.42	0.87	0.924	0.923	1.094	2.220	2.40	0.00	0.00
40.520	142.760	2.688	4862.4	2958.0	112.182	1.916	2.07		Sand	28.4			134.93	0.89	119.52	176.55	0.87	0.924	0.931	0.635	1.203	1.30	0.00	0.00
40.680	119.850	2.485	4881.6	2967.2	93.714	2.117	2.15		Sand	35.2			113.28	0.88	99.43	161.01	0.87	0.923	0.940	0.382	0.649	0.70	0.02	0.03
40.850	100.640	1.773	4902.0	2977.0	78.244	1.805	2.16		Sand	35.8			95.12	0.87	82.45	140.76	0.87	0.923	0.950	0.238	0.354	0.38	0.02	0.04
41.010	122.670	1.191	4921.2	2986.2	95.643	0.991	1.92		Sand	16.8			115.95	0.86	99.59	128.02	0.87	0.923	0.954	0.192	0.265	0.29	0.02	0.05
41.170	132.640	1.339	4940.4	2995.4	103.408	1.029	1.91		Sand	15.6			125.37	0.86	107.90	133.39	0.87	0.922	0.952	0.208	0.297	0.32	0.02	0.05
41.340	121.930	1.624	4960.8	3005.2	94.737	1.359	2.02		Sand	24.2	125.37		125.37	0.87	109.27	157.05	0.87	0.922	0.940	0.343	0.566	0.61	0.02	0.04
41.500	78.210	1.336	4980.0	3014.4	59.963	1.764	2.24		Sand	42.1	125.37		125.37	0.88	110.53	180.82	0.86	0.922	0.924	0.750	1.459	1.58	0.00	0.00
41.670	43.110	1.100	5000.4	3024.2	26.857	2.709	2.63		Clay	73.1			40.75	0.91	n.a.	n.a.	0.86	0.921	n.a.	n.a.	n.a.	n.a.	0.00	0.00
41.830	19.850	0.674	5019.6	3033.4	11.433	3.888	3.02		Clay	100.0			18.76	0.91	n.a.	n.a.	0.86	0.921	n.a.	n.a.	n.a.	n.a.	0.00	0.00
41.990	20.580	0.665	5038.8	3042.6	11.872	3.681	2.99		Clay	100.0			19.45	0.91	n.a.	n.a.	0.86	0.921	n.a.	n.a.	n.a.	n.a.	0.00	0.00
42.160	20.750	0.702	5059.2	3052.4	11.938	3.855	3.00		Clay	100.0			19.61	0.91	n.a.	n.a.	0.86	0.920	n.a.	n.a.	n.a.	n.a.	0.00	0.00
42.320	21.610	0.751	5078.4	3061.6	12.458	3.937	2.99		Clay	100.0			20.43	0.91	n.a.	n.a.	0.86	0.920	n.a.	n.a.	n.a.	n.a.	0.00	0.00
42.490	21.650	0.761	5098.8	3071.4	12.438	3.983	2.99		Clay	100.0			20.46	0.91	n.a.	n.a.	0.86	0.920	n.a.	n.a.	n.a.	n.a.	0.00	0.00
42.650	21.850	0.813	5118.0	3080.6	12.524	4.216	3.01		Clay	100.0			20.65	0.91	n.a.	n.a.	0.86	0.919	n.a.	n.a.	n.a.	n.a.	0.00	0.00
42.810	21.840	0.829	5137.2	3089.9	12.474	4.303	3.01		Clay	100.0			20.64	0.90	n.a.	n.a.	0.86	0.919	n.a.	n.a.	n.a.	n.a.	0.00	0.00
42.980	23.470	0.844	5157.6	3099.6	13.480	4.038	2.97		Clay	100.0			22.18	0.90	n.a.	n.a.	0.86	0.919	n.a.	n.a.	n.a.	n.a.	0.00	0.00
43.140	25.950	0.924	5176.8	3108.9	15.029	3.957	2.93		Clay	97.1			24.53	0.90	n.a.	n.a.	0.86	0.918	n.a.	n.a.	n.a.	n.a.	0.00	0.00
43.310	25.120	0.918	5197.2	3118.7	14.443	4.075	2.95		Clay	98.8			23.74	0.90	n.a.	n.a.	0.86	0.918	n.a.	n.a.	n.a.	n.a.	0.00	0.00
43.470	23.200	0.836	5216.4	3127.9	13.167	4.060	2.98		Clay	100.0			21.93	0.90	n.a.	n.a.	0.86	0.917	n.a.	n.a.	n.a.	n.a.	0.00	0.00
43.640	21.260	0.712	5236.8	3137.7	11.882	3.818	3.00		Clay	100.0			20.09	0.90	n.a.	n.a.	0.86	0.917	n.a.	n.a.	n.a.	n.a.	0.00	0.00
43.800	21.020	0.612	5256.0	3146.9	11.689	3.328	2.97		Clay	100.0			19.87	0.90	n.a.	n.a.	0.85	0.917	n.a.	n.a.	n.a.	n.a.	0.00	0.00
43.960	20.870	0.631	5275.2	3156.1	11.554	3.459	2.98		Clay	100.0			19.73	0.90	n.a.	n.a.	0.85	0.916	n.a.	n.a.	n.a.	n.a.	0.00	0.00

CORNERSTONE EARTH GROUP

CPT No.	3

PGA (A_{max})	0.89

Total Settlement:	0.36	(Inches)

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Depth (ft)	q_c (tsf)	f_s (tsf)	σ_{vc} (psf)	Insitu σ'_{vc} (psf)	Q	F (%)	I_c	Layer "Plastic" PI > 7	Flag Soil Type	Fines (%)	q_{cN} near interfaces (soft layer)	Thin Layer Factor (K_H)	Interpreted q_{cN}	C_N	q_{c1N}	$q_{c1N\text{-}CS}$	Stress Reduction Coeff, r_d	CSR	K_σ for Sand	$CRR_{M=7.5,\ \sigma'vc = 1\ atm}$	CRR	Factor of Safety (CRR/CSR)	Vertical Strain ε_v	Settlement (Inches)
44.130	19.970	0.638	5295.6	3165.9	10.943	3.681	3.02		Clay	100.0			18.88	0.90	n.a.	n.a.	0.85	0.916	n.a.	n.a.	n.a.	n.a.	0.00	0.00
44.290	18.570	0.596	5314.8	3175.1	10.023	3.748	3.05		Clay	100.0			17.55	0.90	n.a.	n.a.	0.85	0.915	n.a.	n.a.	n.a.	n.a.	0.00	0.00
44.460	17.630	0.555	5335.2	3184.9	9.396	3.712	3.07		Clay	100.0			16.66	0.90	n.a.	n.a.	0.85	0.915	n.a.	n.a.	n.a.	n.a.	0.00	0.00
44.620	17.790	0.527	5354.4	3194.1	9.463	3.485	3.05		Clay	100.0			16.81	0.90	n.a.	n.a.	0.85	0.915	n.a.	n.a.	n.a.	n.a.	0.00	0.00
44.780	18.080	0.497	5373.6	3203.3	9.611	3.228	3.03		Clay	100.0			17.09	0.90	n.a.	n.a.	0.85	0.914	n.a.	n.a.	n.a.	n.a.	0.00	0.00
44.950	19.580	0.533	5394.0	3213.1	10.509	3.158	2.99		Clay	100.0			18.51	0.90	n.a.	n.a.	0.85	0.914	n.a.	n.a.	n.a.	n.a.	0.00	0.00
45.110	20.090	0.511	5413.2	3222.3	10.789	2.938	2.96		Clay	100.0			18.99	0.89	n.a.	n.a.	0.85	0.913	n.a.	n.a.	n.a.	n.a.	0.00	0.00
45.280	20.740	0.566	5433.6	3232.1	11.153	3.138	2.97		Clay	100.0			19.60	0.89	n.a.	n.a.	0.85	0.913	n.a.	n.a.	n.a.	n.a.	0.00	0.00
45.440	21.120	0.498	5452.8	3241.3	11.349	2.707	2.93		Clay	97.1			19.96	0.89	n.a.	n.a.	0.85	0.913	n.a.	n.a.	n.a.	n.a.	0.00	0.00
45.600	20.220	0.485	5472.0	3250.6	10.758	2.773	2.95		Clay	99.1			19.11	0.89	n.a.	n.a.	0.85	0.912	n.a.	n.a.	n.a.	n.a.	0.00	0.00
45.770	19.690	0.463	5492.4	3260.4	10.394	2.730	2.96		Clay	99.8			18.61	0.89	n.a.	n.a.	0.85	0.912	n.a.	n.a.	n.a.	n.a.	0.00	0.00
45.930	19.720	0.484	5511.6	3269.6	10.377	2.854	2.97		Clay	100.0			18.64	0.89	n.a.	n.a.	0.85	0.911	n.a.	n.a.	n.a.	n.a.	0.00	0.00
46.100	20.610	0.455	5532.0	3279.4	10.883	2.552	2.93		Clay	97.2			19.48	0.89	n.a.	n.a.	0.84	0.911	n.a.	n.a.	n.a.	n.a.	0.00	0.00
46.260	21.340	0.549	5551.2	3288.6	11.290	2.958	2.95		Clay	99.0			20.17	0.89	n.a.	n.a.	0.84	0.910	n.a.	n.a.	n.a.	n.a.	0.00	0.00
46.420	21.890	0.602	5570.4	3297.8	11.586	3.149	2.96		Clay	99.5			20.69	0.89	n.a.	n.a.	0.84	0.910	n.a.	n.a.	n.a.	n.a.	0.00	0.00
46.590	23.620	0.627	5590.8	3307.6	12.592	3.009	2.92		Clay	96.3			22.33	0.89	n.a.	n.a.	0.84	0.909	n.a.	n.a.	n.a.	n.a.	0.00	0.00
46.750	26.390	0.586	5610.0	3316.8	14.222	2.483	2.82		Clay	88.9			24.94	0.89	n.a.	n.a.	0.84	0.909	n.a.	n.a.	n.a.	n.a.	0.00	0.00
46.920	25.970	0.598	5630.4	3326.6	13.921	2.583	2.84		Clay	90.3			24.55	0.89	n.a.	n.a.	0.84	0.909	n.a.	n.a.	n.a.	n.a.	0.00	0.00
47.080	24.150	0.541	5649.6	3335.8	12.786	2.536	2.87		Clay	92.4			22.83	0.89	n.a.	n.a.	0.84	0.908	n.a.	n.a.	n.a.	n.a.	0.00	0.00
47.240	22.220	0.572	5668.8	3345.0	11.591	2.953	2.94		Clay	98.2			21.00	0.89	n.a.	n.a.	0.84	0.908	n.a.	n.a.	n.a.	n.a.	0.00	0.00
47.410	21.720	0.558	5689.2	3354.8	11.253	2.957	2.95		Clay	99.1			20.53	0.89	n.a.	n.a.	0.84	0.907	n.a.	n.a.	n.a.	n.a.	0.00	0.00
47.570	20.750	0.599	5708.4	3364.0	10.639	3.348	3.00		Clay	100.0			19.61	0.88	n.a.	n.a.	0.84	0.907	n.a.	n.a.	n.a.	n.a.	0.00	0.00
47.740	19.860	0.668	5728.8	3373.8	10.075	3.933	3.06		Clay	100.0			18.77	0.88	n.a.	n.a.	0.84	0.906	n.a.	n.a.	n.a.	n.a.	0.00	0.00
47.900	19.820	0.664	5748.0	3383.0	10.018	3.920	3.06		Clay	100.0			18.73	0.88	n.a.	n.a.	0.84	0.906	n.a.	n.a.	n.a.	n.a.	0.00	0.00
48.060	20.170	0.717	5767.2	3392.3	10.192	4.146	3.07		Clay	100.0			19.06	0.88	n.a.	n.a.	0.84	0.905	n.a.	n.a.	n.a.	n.a.	0.00	0.00
48.230	21.280	0.785	5787.6	3402.0	10.809	4.270	3.06		Clay	100.0			20.11	0.88	n.a.	n.a.	0.84	0.905	n.a.	n.a.	n.a.	n.a.	0.00	0.00
48.390	23.890	0.869	5806.8	3411.3	12.304	4.143	3.01		Clay	100.0			22.58	0.88	n.a.	n.a.	0.83	0.904	n.a.	n.a.	n.a.	n.a.	0.00	0.00
48.560	26.610	1.103	5827.2	3421.1	13.853	4.654	3.00		Clay	100.0			25.15	0.88	n.a.	n.a.	0.83	0.904	n.a.	n.a.	n.a.	n.a.	0.00	0.00
48.720	30.760	1.521	5846.4	3430.3	16.230	5.463	2.99		Clay	100.0			29.07	0.88	n.a.	n.a.	0.83	0.904	n.a.	n.a.	n.a.	n.a.	0.00	0.00
48.880	39.240	1.382	5865.6	3439.5	21.112	3.806	2.80		Clay	87.1			37.09	0.88	n.a.	n.a.	0.83	0.903	n.a.	n.a.	n.a.	n.a.	0.00	0.00
49.050	42.850	1.008	5886.0	3449.3	23.139	2.527	2.66		Clay	75.7			40.50	0.88	n.a.	n.a.	0.83	0.903	n.a.	n.a.	n.a.	n.a.	0.00	0.00
49.210	33.940	0.917	5905.2	3458.5	17.920	2.959	2.79		Clay	86.0			32.08	0.88	n.a.	n.a.	0.83	0.902	n.a.	n.a.	n.a.	n.a.	0.00	0.00
49.380	29.270	0.921	5925.6	3468.3	15.170	3.500	2.89		Clay	94.2			27.67	0.88	n.a.	n.a.	0.83	0.902	n.a.	n.a.	n.a.	n.a.	0.00	0.00
49.540	30.800	1.124	5944.8	3477.5	16.004	4.038	2.91		Clay	95.8			29.11	0.88	n.a.	n.a.	0.83	0.901	n.a.	n.a.	n.a.	n.a.	0.00	0.00
49.700	31.160	1.632	5964.0	3486.7	16.163	5.792	3.01		Clay	100.0			29.45	0.88	n.a.	n.a.	0.83	0.901	n.a.	n.a.	n.a.	n.a.	0.00	0.00
49.870	41.350	2.055	5984.4	3496.5	21.941	5.358	2.89		Clay	93.9			39.08	0.88	n.a.	n.a.	0.83	0.900	n.a.	n.a.	n.a.	n.a.	0.00	0.00
50.030	50.450	2.422	6003.6	3505.7	27.069	5.104	2.81		Clay	87.4			47.68	0.88	n.a.	n.a.	0.83	0.900	n.a.	n.a.	n.a.	n.a.	0.00	0.00
50.200	56.710	2.155	6024.0	3515.5	30.549	4.013	2.70		Clay	78.6			53.60	0.87	n.a.	n.a.	0.83	0.899	n.a.	n.a.	n.a.	n.a.	0.00	0.00
50.360	64.680	1.998	6043.2	3524.7	45.155	3.241	2.51		Sand	63.6			61.13	0.78	47.99	111.14	0.83	0.899	0.941	0.154	0.192	0.21	0.03	0.00
50.520	61.140	1.747	6062.4	3534.0	42.499	3.006	2.50		Sand	63.4			57.79	0.78	45.13	107.40	0.83	0.898	0.942	0.148	0.181	0.20	0.03	0.00
50.690	42.110	1.520	6082.8	3543.7	22.049	3.889	2.79		Clay	86.4			39.80	0.87	n.a.	n.a.	0.82	0.898	n.a.	n.a.	n.a.	n.a.	0.00	0.00
50.850	33.360	1.839	6102.0	3553.0	17.061	6.067	3.00		Clay	100.0			31.53	0.87	n.a.	n.a.	0.82	0.897	n.a.	n.a.	n.a.	n.a.	0.00	0.00
51.020	36.110	2.408	6122.4	3562.8	18.552	7.285	3.03		Clay	100.0			34.13	0.87	n.a.	n.a.	0.82	0.897	n.a.	n.a.	n.a.	n.a.	0.00	0.00
51.180	50.730	2.873	6141.6	3572.0	26.685	6.027	2.86		Clay	91.8			47.95	0.87	n.a.	n.a.	0.82	0.896	n.a.	n.a.	n.a.	n.a.	0.00	0.00
51.350	88.610	3.727	6162.0	3581.8	62.135	4.358	2.50		Sand	63.3			83.75	0.80	66.84	135.26	0.82	0.896	0.926	0.215	0.302	0.34	0.02	0.00
51.510	113.260	4.675	6181.2	3591.0	79.933	4.243	2.42		Sand	56.8			107.05	0.81	87.17	159.20	0.82	0.895	0.908	0.363	0.588	0.66	0.02	0.00
51.670	103.420	5.186	6200.4	3600.2	72.694	5.169	2.52		Sand	64.2			97.75	0.81	78.97	151.10	0.82	0.895	0.914	0.296	0.455	0.51	0.02	0.00
51.840	117.590	4.409	6220.8	3610.0	82.841	3.851	2.38		Sand	53.5			111.14	0.81	90.54	162.13	0.82	0.894	0.905	0.394	0.650	0.73	0.02	0.00
52.000	192.500	3.106	6240.0	3619.2	136.867	1.640	1.96		Sand	19.7			181.95	0.83	151.91	195.09	0.82	0.894	0.867	1.449	2.762	3.09	0.00	0.00
52.170	271.180	2.273	6260.4	3629.0	193.462	0.848	1.65		Sand	0.0			256.31	0.85	217.15	217.15	0.82	0.893	0.838	5.751	10.604	11.87	0.00	0.00
52.330	322.120	1.633	6279.6	3638.2	229.928	0.512	1.45		Sand	0.0			304.46	0.87	263.90	263.90	0.82	0.893	0.837	792.346	1459.742	1635.50	0.00	0.00
52.490	340.800	1.373	6298.8	3647.4	243.079	0.407	1.36		Sand	0.0			322.12	0.87	279.01	279.01	0.82	0.892	0.837	8392.168	15446.911	17316.66	0.00	0.00
52.660	354.970	1.867	6319.2	3657.2	252.933	0.531	1.43		Sand	0.0			335.51	0.87	290.41	290.41	0.82	0.891	0.836	67496.734	########	139225.47	0.00	0.00
52.820	380.170	2.197	6338.4	3666.4	270.703	0.583	1.43		Sand	0.0			359.33	0.87	310.82	310.82	0.82	0.891	0.835	#########	########	##########	0.00	0.00
52.990	390.230	2.492	6358.8	3676.2	277.549	0.644	1.45		Sand	0.0			368.84	0.86	318.82	318.82	0.81	0.890	0.834	#########	########	##########	0.00	0.00
53.150	413.100	2.586	6378.0	3685.4	293.574	0.631	1.43		Sand	0.0			390.45	0.86	337.28	337.28	0.81	0.890	0.834	#########	########	##########	0.00	0.00
53.310	413.640	2.886	6397.2	3694.7	293.587	0.703	1.46		Sand	0.0			390.96	0.86	337.50	337.50	0.81	0.889	0.833	#########	########	##########	0.00	0.00
53.480	406.550	3.175	6417.6	3704.4	288.126	0.787	1.51		Sand	0.0			384.26	0.86	331.49	331.49	0.81	0.889	0.832	#########	########	##########	0.00	0.00
53.640	418.570	3.082	6436.8	3713.7	296.338	0.742	1.48		Sand	0.0			395.62	0.86	341.06	341.06	0.81	0.888	0.831	#########	########	##########	0.00	0.00
53.810	445.140	2.986	6457.2	3723.5	314.872	0.676	1.43		Sand	0.0			420.74	0.86	362.46	362.46	0.81	0.888	0.830	#########	########	##########	0.00	0.00
53.970	444.620	2.774	6476.4	3732.7	314.106	0.629	1.41		Sand	0.0			420.25	0.86	361.80	361.80	0.81	0.887	0.830	#########	########	##########	0.00	0.00
54.130	433.340	3.257	6495.6	3741.9	305.695	0.757	1.48		Sand	0.0			409.58	0.86	352.39	352.39	0.81	0.887	0.829	#########	########	##########	0.00	0.00
54.300	441.740	1.783	6516.0	3751.7	311.251	0.407	1.28		Sand	0.0			417.52	0.86	358.98	358.98	0.81	0.886	0.828	#########	########	##########	0.00	0.00
54.460	453.200	3.791	6535.2	3760.9	318.988	0.842	1.50		Sand	0.0			428.36	0.86	368.05	368.05	0.81	0.886	0.827	#########	########	##########	0.00	0.00
54.630	453.940	4.134	6555.6	3770.7	319.090	0.917	1.53		Sand	0.0			429.05	0.86	368.40	368.40	0.81	0.885	0.827	#########	########	##########	0.00	0.00
54.790	426.520	4.311	6574.8	3779.9	299.303	1.018	1.58		Sand	0.0			403.14	0.86	345.92	345.92	0.81	0.885	0.826	#########	########	##########	0.00	0.00
54.950	431.680	4.157	6594.0	3789.1	302.577	0.970	1.56		Sand	0.0			408.02	0.86	349.88	349.88	0.81	0.884	0.825	#########	########	##########	0.00	0.00

CORNERSTONE EARTH GROUP

CPT No.	3

PGA (A_{max})	0.89

Total Settlement:	0.36	(Inches)

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Depth (ft)	q_c (tsf)	f_s (tsf)	σ_{vc} (psf)	Insitu σ'_{vc} (psf)	Q	F (%)	I_c	Layer "Plastic" PI > 7	Flag Soil Type	Fines (%)	q_{cN} near interfaces (soft layer)	Thin Layer Factor (K_H)	Interpreted q_{cN}	C_N	q_{c1N}	$q_{c1N\text{-}CS}$	Stress Reduction Coeff, r_d	CSR	K_σ for Sand	$CRR_{M=7.5,\ \sigma'vc = 1\ atm}$	CRR	Factor of Safety (CRR/CSR)	Vertical Strain ε_v	Settlement (Inches)
55.120	439.880	3.655	6614.4	3798.9	307.963	0.837	1.51		Sand	0.0			415.77	0.86	356.29	356.29	0.81	0.883	0.824	#########	########	##########	0.00	0.00
55.280	413.910	3.630	6633.6	3808.1	289.286	0.884	1.54		Sand	0.0			391.22	0.86	335.04	335.04	0.80	0.883	0.824	#########	########	##########	0.00	0.00
55.450	408.100	3.162	6654.0	3817.9	284.820	0.781	1.51		Sand	0.0			385.73	0.86	330.11	330.11	0.80	0.882	0.823	#########	########	##########	0.00	0.00
55.610	411.020	3.095	6673.2	3827.1	286.522	0.759	1.50		Sand	0.0			388.49	0.86	332.26	332.26	0.80	0.882	0.822	#########	########	##########	0.00	0.00
55.770	393.020	2.709	6692.4	3836.4	273.536	0.695	1.48		Sand	0.0			371.47	0.85	317.51	317.51	0.80	0.881	0.822	#########	########	##########	0.00	0.00
55.940	382.400	2.337	6712.8	3846.1	265.735	0.616	1.45		Sand	0.0			361.44	0.85	308.72	308.72	0.80	0.881	0.821	#########	########	7336798.12	0.00	0.00
56.100	398.870	1.693	6732.0	3855.4	276.943	0.428	1.33		Sand	0.0			377.00	0.85	321.82	321.82	0.80	0.880	0.820	#########	########	##########	0.00	0.00
56.270	383.450	2.044	6752.4	3865.2	265.801	0.538	1.41		Sand	0.0			362.43	0.85	309.17	309.17	0.80	0.880	0.819	#########	########	8159740.07	0.00	0.00
56.430	365.660	1.967	6771.6	3874.4	253.052	0.543	1.43		Sand	0.0			345.61	0.85	294.64	294.64	0.80	0.879	0.819	#########	########	322232.15	0.00	0.00
56.590	349.660	2.388	6790.8	3883.6	241.582	0.690	1.52		Sand	0.0			330.49	0.85	281.57	281.57	0.80	0.879	0.818	13074.547	23524.086	26776.65	0.00	0.00
56.760	331.520	1.838	6811.2	3893.4	228.631	0.560	1.47		Sand	0.0			313.35	0.85	266.78	266.78	0.80	0.878	0.817	1202.645	2161.834	2462.36	0.00	0.00
56.920	348.230	1.675	6830.4	3902.6	239.984	0.486	1.42		Sand	0.0			329.14	0.85	280.06	280.06	0.80	0.877	0.816	10039.492	18030.979	20550.23	0.00	0.00
57.090	348.720	2.086	6850.8	3912.4	240.017	0.604	1.48		Sand	0.0			329.60	0.85	280.27	280.27	0.80	0.877	0.816	10409.250	18677.849	21301.53	0.00	0.00
57.250	337.830	2.372	6870.0	3921.6	232.167	0.709	1.54		Sand	0.0			319.31	0.85	271.34	271.34	0.80	0.876	0.815	2399.114	4301.127	4908.36	0.00	0.00
57.410	351.200	2.085	6889.2	3930.8	241.160	0.600	1.48		Sand	0.0			331.95	0.85	281.91	281.91	0.80	0.876	0.814	13882.475	24866.971	28395.40	0.00	0.00
57.580	360.800	1.530	6909.6	3940.6	247.502	0.428	1.37		Sand	0.0			341.02	0.85	289.42	289.42	0.79	0.875	0.813	55737.558	99748.326	113977.52	0.00	0.00
57.740	385.310	2.096	6928.8	3949.8	264.162	0.549	1.42		Sand	0.0			364.19	0.85	308.90	308.90	0.79	0.875	0.813	#########	########	7627629.26	0.00	0.00
57.910	402.840	1.785	6949.2	3959.6	275.941	0.447	1.35		Sand	0.0			380.76	0.85	322.74	322.74	0.79	0.874	0.812	#########	########	##########	0.00	0.00
58.070	384.370	1.780	6968.4	3968.8	262.867	0.467	1.38		Sand	0.0			363.30	0.85	307.75	307.75	0.79	0.873	0.811	#########	########	5805016.86	0.00	0.00
58.230	392.160	2.157	6987.6	3978.0	267.925	0.555	1.42		Sand	0.0			370.66	0.85	313.80	313.80	0.79	0.873	0.811	#########	########	##########	0.00	0.00
58.400	393.130	2.176	7008.0	3987.8	268.257	0.558	1.42		Sand	0.0			371.58	0.85	314.37	314.37	0.79	0.872	0.810	#########	########	##########	0.00	0.00
58.560	394.290	2.491	7027.2	3997.1	268.739	0.638	1.46		Sand	0.0			372.67	0.85	315.11	315.11	0.79	0.872	0.809	#########	########	##########	0.00	0.00
58.730	394.660	2.598	7047.6	4006.8	268.657	0.664	1.47		Sand	0.0			373.02	0.84	315.20	315.20	0.79	0.871	0.808	#########	########	##########	0.00	0.00
58.890	378.970	2.316	7066.8	4016.1	257.578	0.617	1.46		Sand	0.0			358.19	0.84	302.48	302.48	0.79	0.871	0.808	#########	########	1723629.90	0.00	0.00
59.060	381.440	1.727	7087.2	4025.9	258.950	0.457	1.38		Sand	0.0			360.53	0.84	304.26	304.26	0.79	0.870	0.807	#########	########	2573671.14	0.00	0.00
59.220	355.130	2.058	7106.4	4035.1	240.639	0.585	1.47		Sand	0.0			335.66	0.84	283.10	283.10	0.79	0.869	0.806	17169.482	30458.184	35029.57	0.00	0.00
59.380	326.250	2.694	7125.6	4044.3	220.614	0.835	1.60		Sand	0.0			308.36	0.84	259.92	259.92	0.79	0.869	0.806	457.112	810.215	932.41	0.00	0.00
59.550	281.990	4.239	7146.0	4054.1	190.117	1.523	1.84		Sand	10.2			266.53	0.83	221.00	232.90	0.79	0.868	0.805	21.402	37.901	43.65	0.00	0.00
59.710	154.440	5.090	7165.2	4063.3	102.896	3.374	2.28		Sand	45.1			145.97	0.80	116.77	190.73	0.79	0.868	0.845	1.164	2.166	2.50	0.00	0.00
59.880	102.420	4.963	7185.6	4073.1	48.527	5.021	2.62		Clay	72.7			96.81	0.84	n.a.	n.a.	0.78	0.867	n.a.	n.a.	n.a.	n.a.	0.00	0.00
60.040	157.060	4.584	7204.8	4082.3	104.426	2.987	2.23		Sand	41.5			148.45	0.80	118.52	190.30	0.78	0.867	0.845	1.141	2.121	2.45	0.00	0.00
60.200	295.550	3.934	7224.0	4091.5	198.436	1.347	1.79		Sand	6.0			279.35	0.83	230.79	231.70	0.78	0.866	0.802	19.142	33.782	39.01	0.00	0.00
60.370	295.320	3.346	7244.4	4101.3	198.036	1.147	1.74		Sand	1.9			279.13	0.82	230.17	230.17	0.78	0.865	0.801	16.673	29.398	33.97	0.00	0.00
60.530	306.120	3.271	7263.6	4110.5	205.131	1.081	1.71		Sand	0.0			289.34	0.83	240.35	240.35	0.78	0.865	0.801	44.594	78.563	90.83	0.00	0.00
60.700	327.820	3.026	7284.0	4120.3	219.579	0.933	1.64		Sand	0.0			309.85	0.84	259.89	259.89	0.78	0.864	0.800	455.303	801.413	927.21	0.00	0.00
60.860	346.310	2.786	7303.2	4129.5	231.837	0.813	1.58		Sand	0.0			327.33	0.84	274.39	274.39	0.78	0.864	0.799	3889.895	6841.155	7920.13	0.00	0.00
61.020	348.240	1.555	7322.4	4138.8	232.877	0.451	1.41		Sand	0.0			329.15	0.84	275.76	275.76	0.78	0.863	0.799	4860.833	8541.592	9895.20	0.00	0.00
61.190	338.250	1.635	7342.8	4148.5	225.851	0.489	1.44		Sand	0.0			319.71	0.84	267.68	267.68	0.78	0.863	0.798	1372.994	2410.522	2794.46	0.00	0.00
61.350	331.750	1.657	7362.0	4157.8	221.211	0.505	1.46		Sand	0.0			313.56	0.84	262.38	262.38	0.78	0.862	0.797	640.329	1123.268	1303.03	0.00	0.00
61.520	261.200	1.776	7382.4	4167.6	173.430	0.690	1.62		Sand	0.0			246.88	0.80	196.91	196.91	0.78	0.861	0.828	1.595	2.905	3.37	0.00	0.00
61.680	272.620	2.191	7401.6	4176.8	180.915	0.815	1.66		Sand	0.0			257.67	0.80	207.30	207.30	0.78	0.861	0.805	2.924	5.178	6.01	0.00	0.00
61.840	192.180	1.776	7420.8	4186.0	126.653	0.942	1.82		Sand	8.2			181.64	0.75	136.45	140.45	0.78	0.860	0.900	0.236	0.333	0.39	0.02	0.00
62.010	81.630	1.431	7441.2	4195.8	52.294	1.837	2.30		Sand	46.7			77.16	0.73	56.09	115.41	0.78	0.860	0.918	0.162	0.201	0.23	0.03	0.00
62.170	42.350	1.032	7460.4	4205.0	18.369	2.673	2.75		Clay	83.2			40.03	0.83	n.a.	n.a.	0.77	0.859	n.a.	n.a.	n.a.	n.a.	0.00	0.00
62.340	38.390	0.491	7480.8	4214.8	16.442	1.416	2.64		Clay	74.1			36.29	0.83	n.a.	n.a.	0.77	0.859	n.a.	n.a.	n.a.	n.a.	0.00	0.00
62.500	39.020	0.488	7500.0	4224.0	16.700	1.384	2.63		Clay	73.2			36.88	0.83	n.a.	n.a.	0.77	0.858	n.a.	n.a.	n.a.	n.a.	0.00	0.00
62.660	39.420	0.486	7519.2	4233.2	16.848	1.362	2.62		Clay	72.6			37.26	0.83	n.a.	n.a.	0.77	0.857	n.a.	n.a.	n.a.	n.a.	0.00	0.00
62.830	39.890	0.541	7539.6	4243.0	17.026	1.499	2.64		Clay	74.1			37.70	0.83	n.a.	n.a.	0.77	0.857	n.a.	n.a.	n.a.	n.a.	0.00	0.00
62.990	40.350	0.577	7558.8	4252.2	17.201	1.579	2.65		Clay	74.7			38.14	0.83	n.a.	n.a.	0.77	0.856	n.a.	n.a.	n.a.	n.a.	0.00	0.00
63.160	40.840	0.548	7579.2	4262.0	17.386	1.479	2.63		Clay	73.2			38.60	0.83	n.a.	n.a.	0.77	0.856	n.a.	n.a.	n.a.	n.a.	0.00	0.00
63.320	39.580	0.536	7598.4	4271.2	16.754	1.498	2.64		Clay	74.5			37.41	0.83	n.a.	n.a.	0.77	0.855	n.a.	n.a.	n.a.	n.a.	0.00	0.00
63.480	38.630	0.520	7617.6	4280.4	16.270	1.492	2.65		Clay	75.3			36.51	0.83	n.a.	n.a.	0.77	0.855	n.a.	n.a.	n.a.	n.a.	0.00	0.00
63.650	39.200	0.524	7638.0	4290.2	16.494	1.480	2.65		Clay	74.8			37.05	0.83	n.a.	n.a.	0.77	0.854	n.a.	n.a.	n.a.	n.a.	0.00	0.00
63.810	40.010	0.580	7657.2	4299.5	16.831	1.603	2.66		Clay	75.6			37.82	0.83	n.a.	n.a.	0.77	0.853	n.a.	n.a.	n.a.	n.a.	0.00	0.00
63.980	39.810	0.647	7677.6	4309.2	16.695	1.799	2.69		Clay	78.1			37.63	0.83	n.a.	n.a.	0.77	0.853	n.a.	n.a.	n.a.	n.a.	0.00	0.00
64.140	38.780	0.694	7696.8	4318.5	16.178	1.986	2.72		Clay	80.9			36.65	0.83	n.a.	n.a.	0.77	0.852	n.a.	n.a.	n.a.	n.a.	0.00	0.00
64.300	37.060	0.722	7716.0	4327.7	15.344	2.175	2.76		Clay	84.2			35.03	0.83	n.a.	n.a.	0.77	0.852	n.a.	n.a.	n.a.	n.a.	0.00	0.00
64.470	35.950	0.687	7736.4	4337.5	14.793	2.142	2.77		Clay	84.9			33.98	0.83	n.a.	n.a.	0.77	0.851	n.a.	n.a.	n.a.	n.a.	0.00	0.00
64.630	36.500	0.662	7755.6	4346.7	15.010	2.030	2.76		Clay	83.5			34.50	0.83	n.a.	n.a.	0.76	0.850	n.a.	n.a.	n.a.	n.a.	0.00	0.00
64.800	35.920	0.631	7776.0	4356.5	14.705	1.969	2.76		Clay	83.5			33.95	0.83	n.a.	n.a.	0.76	0.850	n.a.	n.a.	n.a.	n.a.	0.00	0.00
64.960	34.920	0.629	7795.2	4365.7	14.212	2.027	2.78		Clay	85.0			33.01	0.83	n.a.	n.a.	0.76	0.849	n.a.	n.a.	n.a.	n.a.	0.00	0.00
65.120	33.950	0.545	7814.4	4374.9	13.734	1.814	2.76		Clay	83.9			32.09	0.83	n.a.	n.a.	0.76	0.849	n.a.	n.a.	n.a.	n.a.	0.00	0.00
65.290	33.660	0.488	7834.8	4384.7	13.567	1.640	2.74		Clay	82.4			31.81	0.83	n.a.	n.a.	0.76	0.848	n.a.	n.a.	n.a.	n.a.	0.00	0.00
65.450	34.300	0.497	7854.0	4393.9	13.825	1.635	2.74		Clay	81.8			32.42	0.82	n.a.	n.a.	0.76	0.848	n.a.	n.a.	n.a.	n.a.	0.00	0.00
65.620	33.950	0.549	7874.4	4403.7	13.631	1.829	2.77		Clay	84.3			32.09	0.82	n.a.	n.a.	0.76	0.847	n.a.	n.a.	n.a.	n.a.	0.00	0.00
65.780	33.410	0.549	7893.6	4412.9	13.353	1.864	2.78		Clay	85.2			31.58	0.82	n.a.	n.a.	0.76	0.846	n.a.	n.a.	n.a.	n.a.	0.00	0.00
65.940	33.320	0.523	7912.8	4422.1	13.280	1.780	2.77		Clay	84.5			31.49	0.82	n.a.	n.a.	0.76	0.846	n.a.	n.a.	n.a.	n.a.	0.00	0.00

CORNERSTONE EARTH GROUP

CPT No.	3

PGA (A_{max})	0.89

Total Settlement:	0.36	(Inches)

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Depth (ft)	q_c (tsf)	f_s (tsf)	σ_{vc} (psf)	Insitu σ'_{vc} (psf)	Q	F (%)	I_c	Layer "Plastic" PI > 7	Flag Soil Type	Fines (%)	q_{cN} near interfaces (soft layer)	Thin Layer Factor (K_H)	Interpreted q_{cN}	C_N	q_{c1N}	$q_{c1N\text{-}CS}$	Stress Reduction Coeff, r_d	CSR	K_σ for Sand	$CRR_{M=7.5,\ \sigma'vc = 1\ atm}$	CRR	Factor of Safety (CRR/CSR)	Vertical Strain ε_v	Settlement (Inches)
66.110	33.530	0.489	7933.2	4431.9	13.341	1.655	2.75		Clay	83.1			31.69	0.82	n.a.	n.a.	0.76	0.845	n.a.	n.a.	n.a.	n.a.	0.00	0.00
66.270	34.000	0.520	7952.4	4441.2	13.521	1.732	2.76		Clay	83.5			32.14	0.82	n.a.	n.a.	0.76	0.845	n.a.	n.a.	n.a.	n.a.	0.00	0.00
66.440	33.310	0.545	7972.8	4450.9	13.176	1.858	2.78		Clay	85.6			31.48	0.82	n.a.	n.a.	0.76	0.844	n.a.	n.a.	n.a.	n.a.	0.00	0.00
66.600	32.280	0.505	7992.0	4460.2	12.683	1.784	2.79		Clay	86.0			30.51	0.82	n.a.	n.a.	0.76	0.843	n.a.	n.a.	n.a.	n.a.	0.00	0.00
66.770	34.200	0.493	8012.4	4470.0	13.510	1.631	2.74		Clay	82.5			32.33	0.82	n.a.	n.a.	0.76	0.843	n.a.	n.a.	n.a.	n.a.	0.00	0.00
66.930	39.080	0.486	8031.6	4479.2	15.657	1.387	2.65		Clay	75.1			36.94	0.82	n.a.	n.a.	0.76	0.842	n.a.	n.a.	n.a.	n.a.	0.00	0.00
67.090	41.880	0.517	8050.8	4488.4	16.868	1.365	2.62		Clay	72.6			39.58	0.82	n.a.	n.a.	0.75	0.842	n.a.	n.a.	n.a.	n.a.	0.00	0.00
67.260	41.440	0.607	8071.2	4498.2	16.631	1.624	2.67		Clay	76.2			39.17	0.82	n.a.	n.a.	0.75	0.841	n.a.	n.a.	n.a.	n.a.	0.00	0.00
67.420	39.530	0.701	8090.4	4507.4	15.745	1.974	2.73		Clay	81.5			37.36	0.82	n.a.	n.a.	0.75	0.840	n.a.	n.a.	n.a.	n.a.	0.00	0.00
67.590	42.000	0.686	8110.8	4517.2	16.800	1.807	2.69		Clay	78.0			39.70	0.82	n.a.	n.a.	0.75	0.840	n.a.	n.a.	n.a.	n.a.	0.00	0.00
67.750	43.900	1.073	8130.0	4526.4	17.601	2.695	2.77		Clay	84.6			41.49	0.82	n.a.	n.a.	0.75	0.839	n.a.	n.a.	n.a.	n.a.	0.00	0.00
67.910	43.910	1.451	8149.2	4535.6	17.566	3.643	2.85		Clay	91.0			41.50	0.82	n.a.	n.a.	0.75	0.839	n.a.	n.a.	n.a.	n.a.	0.00	0.00
68.080	55.330	2.133	8169.6	4545.4	22.548	4.162	2.80		Clay	87.3			52.30	0.82	n.a.	n.a.	0.75	0.838	n.a.	n.a.	n.a.	n.a.	0.00	0.00
68.240	59.290	2.593	8188.8	4554.6	24.237	4.697	2.82		Clay	88.3			56.04	0.82	n.a.	n.a.	0.75	0.838	n.a.	n.a.	n.a.	n.a.	0.00	0.00
68.410	60.490	2.139	8209.2	4564.4	24.707	3.794	2.75		Clay	82.8			57.17	0.82	n.a.	n.a.	0.75	0.837	n.a.	n.a.	n.a.	n.a.	0.00	0.00
68.570	72.530	1.389	8228.4	4573.6	43.984	2.031	2.38		Sand	53.5			68.55	0.69	47.25	107.13	0.75	0.836	0.913	0.147	0.175	0.21	0.03	0.00
68.730	63.990	1.213	8247.6	4582.8	38.449	2.027	2.43		Sand	57.1			60.48	0.68	41.20	100.61	0.75	0.836	0.917	0.138	0.160	0.19	0.03	0.00
68.900	48.070	1.319	8268.0	4592.6	19.133	3.003	2.77		Clay	84.6			45.43	0.82	n.a.	n.a.	0.75	0.835	n.a.	n.a.	n.a.	n.a.	0.00	0.00
69.060	35.600	1.253	8287.2	4601.9	13.671	3.983	2.96		Clay	99.8			33.65	0.81	n.a.	n.a.	0.75	0.835	n.a.	n.a.	n.a.	n.a.	0.00	0.00
69.230	35.650	0.945	8307.6	4611.6	13.659	2.999	2.89		Clay	93.9			33.70	0.81	n.a.	n.a.	0.75	0.834	n.a.	n.a.	n.a.	n.a.	0.00	0.00
69.390	34.900	0.908	8326.8	4620.9	13.303	2.953	2.89		Clay	94.3			32.99	0.81	n.a.	n.a.	0.75	0.833	n.a.	n.a.	n.a.	n.a.	0.00	0.00
69.550	30.810	0.991	8346.0	4630.1	11.506	3.720	3.00		Clay	100.0			29.12	0.81	n.a.	n.a.	0.74	0.833	n.a.	n.a.	n.a.	n.a.	0.00	0.00
69.720	30.330	1.151	8366.4	4639.9	11.270	4.404	3.05		Clay	100.0			28.67	0.81	n.a.	n.a.	0.74	0.832	n.a.	n.a.	n.a.	n.a.	0.00	0.00
69.880	35.220	0.984	8385.6	4649.1	13.348	3.170	2.91		Clay	95.7			33.29	0.81	n.a.	n.a.	0.74	0.832	n.a.	n.a.	n.a.	n.a.	0.00	0.00
70.050	40.070	1.116	8406.0	4658.9	15.397	3.111	2.85		Clay	91.3			37.87	0.81	n.a.	n.a.	0.74	0.831	n.a.	n.a.	n.a.	n.a.	0.00	0.00
70.210	36.400	1.294	8425.2	4668.1	13.790	4.020	2.96		Clay	99.8			34.40	0.81	n.a.	n.a.	0.74	0.831	n.a.	n.a.	n.a.	n.a.	0.00	0.00
70.370	34.140	1.304	8444.4	4677.3	12.793	4.359	3.01		Clay	100.0			32.27	0.81	n.a.	n.a.	0.74	0.830	n.a.	n.a.	n.a.	n.a.	0.00	0.00
70.540	36.610	1.083	8464.8	4687.1	13.816	3.345	2.91		Clay	95.8			34.60	0.81	n.a.	n.a.	0.74	0.829	n.a.	n.a.	n.a.	n.a.	0.00	0.00
70.700	42.790	0.881	8484.0	4696.3	16.416	2.284	2.75		Clay	83.2			40.44	0.81	n.a.	n.a.	0.74	0.829	n.a.	n.a.	n.a.	n.a.	0.00	0.00
70.870	37.170	1.056	8504.4	4706.1	13.989	3.207	2.90		Clay	94.6			35.13	0.81	n.a.	n.a.	0.74	0.828	n.a.	n.a.	n.a.	n.a.	0.00	0.00
71.030	31.200	1.516	8523.6	4715.3	11.426	5.628	3.11		Clay	100.0			29.49	0.81	n.a.	n.a.	0.74	0.828	n.a.	n.a.	n.a.	n.a.	0.00	0.00
71.190	35.110	1.341	8542.8	4724.5	13.055	4.347	3.00		Clay	100.0			33.19	0.81	n.a.	n.a.	0.74	0.827	n.a.	n.a.	n.a.	n.a.	0.00	0.00
71.360	47.920	1.164	8563.2	4734.3	18.435	2.668	2.75		Clay	83.1			45.29	0.81	n.a.	n.a.	0.74	0.827	n.a.	n.a.	n.a.	n.a.	0.00	0.00
71.520	51.220	1.107	8582.4	4743.6	19.786	2.358	2.69		Clay	78.6			48.41	0.81	n.a.	n.a.	0.74	0.826	n.a.	n.a.	n.a.	n.a.	0.00	0.00
71.690	35.830	0.971	8602.8	4753.3	13.266	3.080	2.90		Clay	95.3			33.87	0.81	n.a.	n.a.	0.74	0.825	n.a.	n.a.	n.a.	n.a.	0.00	0.00
71.850	32.300	0.950	8622.0	4762.6	11.754	3.393	2.97		Clay	100.0			30.53	0.81	n.a.	n.a.	0.74	0.825	n.a.	n.a.	n.a.	n.a.	0.00	0.00
72.010	52.340	1.194	8641.2	4771.8	20.126	2.486	2.70		Clay	79.2			49.47	0.81	n.a.	n.a.	0.74	0.824	n.a.	n.a.	n.a.	n.a.	0.00	0.00
72.180	80.730	1.661	8661.6	4781.6	48.037	2.174	2.37		Sand	52.7			76.30	0.68	51.98	112.84	0.73	0.824	0.904	0.157	0.190	0.23	0.03	0.00
72.340	53.640	1.230	8680.8	4790.8	20.581	2.496	2.70		Clay	78.6			50.70	0.81	n.a.	n.a.	0.73	0.823	n.a.	n.a.	n.a.	n.a.	0.00	0.00
72.510	33.170	1.157	8701.2	4800.6	12.007	4.015	3.01		Clay	100.0			31.35	0.81	n.a.	n.a.	0.73	0.823	n.a.	n.a.	n.a.	n.a.	0.00	0.00
72.670	27.730	0.861	8720.4	4809.8	9.718	3.683	3.06		Clay	100.0			26.21	0.81	n.a.	n.a.	0.73	0.822	n.a.	n.a.	n.a.	n.a.	0.00	0.00
72.830	26.140	0.722	8739.6	4819.0	9.035	3.317	3.06		Clay	100.0			24.71	0.80	n.a.	n.a.	0.73	0.821	n.a.	n.a.	n.a.	n.a.	0.00	0.00
73.000	26.320	1.023	8760.0	4828.8	9.087	4.661	3.14		Clay	100.0			24.88	0.80	n.a.	n.a.	0.73	0.821	n.a.	n.a.	n.a.	n.a.	0.00	0.00
73.160	28.540	1.734	8779.2	4838.0	9.984	7.178	3.23		Clay	100.0			26.98	0.80	n.a.	n.a.	0.73	0.820	n.a.	n.a.	n.a.	n.a.	0.00	0.00
73.330	47.890	1.816	8799.6	4847.8	17.942	4.177	2.88		Clay	93.5			45.26	0.80	n.a.	n.a.	0.73	0.820	n.a.	n.a.	n.a.	n.a.	0.00	0.00
73.490	95.200	2.595	8818.8	4857.0	56.641	2.858	2.40		Sand	54.9			89.98	0.69	62.22	126.70	0.73	0.819	0.891	0.188	0.241	0.29	0.03	0.00
73.650	120.170	2.462	8838.0	4866.2	72.144	2.127	2.23		Sand	41.8			113.58	0.71	80.39	142.98	0.73	0.819	0.875	0.248	0.346	0.42	0.02	0.00
73.820	92.580	3.131	8858.4	4876.0	36.157	3.552	2.61		Clay	71.5			87.50	0.80	n.a.	n.a.	0.73	0.818	n.a.	n.a.	n.a.	n.a.	0.00	0.00
73.980	62.940	2.545	8877.6	4885.2	23.950	4.350	2.80		Clay	86.8			59.49	0.80	n.a.	n.a.	0.73	0.817	n.a.	n.a.	n.a.	n.a.	0.00	0.00
74.150	63.810	1.611	8898.0	4895.0	24.254	2.714	2.66		Clay	75.9			60.31	0.80	n.a.	n.a.	0.73	0.817	n.a.	n.a.	n.a.	n.a.	0.00	0.00
74.310	37.620	1.278	8917.2	4904.3	13.524	3.855	2.96		Clay	99.4			35.56	0.80	n.a.	n.a.	0.73	0.816	n.a.	n.a.	n.a.	n.a.	0.00	0.00
74.480	25.770	0.997	8937.6	4914.0	8.670	4.678	3.16		Clay	100.0			24.36	0.80	n.a.	n.a.	0.73	0.816	n.a.	n.a.	n.a.	n.a.	0.00	0.00
74.640	21.690	0.919	8956.8	4923.3	6.992	5.339	3.27		Clay	100.0			20.50	0.80	n.a.	n.a.	0.73	0.815	n.a.	n.a.	n.a.	n.a.	0.00	0.00
74.800	20.880	0.901	8976.0	4932.5	6.647	5.497	3.29		Clay	100.0			19.74	0.80	n.a.	n.a.	0.72	0.815	n.a.	n.a.	n.a.	n.a.	0.00	0.00
74.970	22.010	0.989	8996.4	4942.3	7.087	5.647	3.28		Clay	100.0			20.80	0.80	n.a.	n.a.	0.72	0.814	n.a.	n.a.	n.a.	n.a.	0.00	0.00
75.130	22.780	1.088	9015.6	4951.5	7.380	5.954	3.28		Clay	100.0			21.53	0.80	n.a.	n.a.	0.72	0.813	n.a.	n.a.	n.a.	n.a.	0.00	0.00
75.300	23.960	1.161	9036.0	4961.3	7.837	5.974	3.26		Clay	100.0			22.65	0.80	n.a.	n.a.	0.72	0.813	n.a.	n.a.	n.a.	n.a.	0.00	0.00
75.460	27.430	1.591	9055.2	4970.5	9.215	6.947	3.24		Clay	100.0			25.93	0.80	n.a.	n.a.	0.72	0.812	n.a.	n.a.	n.a.	n.a.	0.00	0.00
75.620	35.130	2.480	9074.4	4979.7	12.287	8.106	3.19		Clay	100.0			33.20	0.80	n.a.	n.a.	0.72	0.812	n.a.	n.a.	n.a.	n.a.	0.00	0.00
75.790	61.870	2.750	9094.8	4989.5	22.977	4.797	2.84		Clay	90.1			58.48	0.80	n.a.	n.a.	0.72	0.811	n.a.	n.a.	n.a.	n.a.	0.00	0.00
75.950	85.250	2.425	9114.0	4998.7	49.622	3.006	2.46		Sand	59.5			80.58	0.67	54.23	117.99	0.72	0.811	0.895	0.167	0.205	0.25	0.03	0.00
76.120	100.840	2.257	9134.4	5008.5	59.145	2.344	2.33		Sand	49.1			95.31	0.68	65.15	128.00	0.72	0.810	0.886	0.191	0.246	0.30	0.02	0.00
76.280	136.300	2.329	9153.6	5017.7	80.850	1.768	2.14		Sand	34.5			128.83	0.71	90.93	149.85	0.72	0.810	0.862	0.288	0.413	0.51	0.02	0.00
76.440	146.110	2.707	9172.8	5026.9	86.786	1.913	2.14		Sand	34.6			138.10	0.71	98.72	159.50	0.72	0.809	0.849	0.366	0.555	0.69	0.02	0.00
76.610	164.020	2.451	9193.2	5036.7	97.667	1.537	2.04		Sand	26.4			155.03	0.72	111.33	163.44	0.72	0.808	0.844	0.410	0.635	0.79	0.01	0.00
76.770	163.220	1.568	9212.4	5046.0	97.083	0.988	1.92		Sand	16.4			154.27	0.69	106.08	133.83	0.72	0.808	0.879	0.210	0.277	0.34	0.02	0.00
76.940	150.590	1.611	9232.8	5055.7	89.259	1.104	1.98		Sand	21.1			142.33	0.69	98.36	137.63	0.72	0.807	0.875	0.224	0.302	0.37	0.02	0.00

CORNERSTONE EARTH GROUP

CPT No.	3

PGA (A_{max})	0.89

Total Settlement:	0.36	(Inches)

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Depth (ft)	q_c (tsf)	f_s (tsf)	σ_{vc} (psf)	Insitu σ'_{vc} (psf)	Q	F (%)	I_c	Layer "Plastic" PI > 7	Flag Soil Type	Fines (%)	q_{cN} near interfaces (soft layer)	Thin Layer Factor (K_H)	Interpreted q_{cN}	C_N	q_{c1N}	$q_{c1N\text{-}CS}$	Stress Reduction Coeff, r_d	CSR	K_σ for Sand	$CRR_{M=7.5,\ \sigma'vc = 1\ atm}$	CRR	Factor of Safety (CRR/CSR)	Vertical Strain ε_v	Settlement (Inches)
77.100	139.470	2.177	9252.0	5065.0	82.379	1.615	2.11		Sand	31.9			131.82	0.70	92.57	148.94	0.72	0.807	0.862	0.282	0.402	0.50	0.02	0.00
77.260	119.870	2.487	9271.2	5074.2	70.335	2.158	2.25		Sand	42.8			113.30	0.69	78.63	141.44	0.72	0.806	0.870	0.241	0.330	0.41	0.02	0.00
77.430	70.500	2.411	9291.6	5084.0	25.907	3.661	2.72		Clay	80.8			66.64	0.79	n.a.	n.a.	0.72	0.806	n.a.	n.a.	n.a.	n.a.	0.00	0.00
77.590	43.290	2.487	9310.8	5093.2	15.171	6.436	3.06		Clay	100.0			40.92	0.79	n.a.	n.a.	0.71	0.805	n.a.	n.a.	n.a.	n.a.	0.00	0.00
77.760	39.530	2.666	9331.2	5103.0	13.664	7.646	3.14		Clay	100.0			37.36	0.79	n.a.	n.a.	0.71	0.805	n.a.	n.a.	n.a.	n.a.	0.00	0.00
77.920	79.500	2.604	9350.4	5112.2	29.273	3.480	2.67		Clay	76.4			75.14	0.79	n.a.	n.a.	0.71	0.804	n.a.	n.a.	n.a.	n.a.	0.00	0.00
78.080	122.590	2.700	9369.6	5121.4	71.633	2.290	2.26		Sand	43.7			115.87	0.69	80.45	144.34	0.71	0.803	0.865	0.255	0.355	0.44	0.02	0.00
78.250	120.740	3.157	9390.0	5131.2	70.435	2.720	2.32		Sand	48.4			114.12	0.70	79.32	145.53	0.71	0.803	0.864	0.262	0.366	0.46	0.02	0.00
78.410	91.940	2.685	9409.2	5140.4	52.901	3.078	2.44		Sand	58.4			86.90	0.67	58.21	122.77	0.71	0.802	0.887	0.178	0.222	0.28	0.03	0.00
78.580	51.170	1.983	9429.6	5150.2	18.040	4.269	2.89		Clay	93.8			48.36	0.79	n.a.	n.a.	0.71	0.802	n.a.	n.a.	n.a.	n.a.	0.00	0.00
78.740	29.620	1.241	9448.8	5159.4	9.651	4.986	3.14		Clay	100.0			28.00	0.79	n.a.	n.a.	0.71	0.801	n.a.	n.a.	n.a.	n.a.	0.00	0.00
78.900	25.670	0.985	9468.0	5168.6	8.101	4.706	3.18		Clay	100.0			24.26	0.79	n.a.	n.a.	0.71	0.801	n.a.	n.a.	n.a.	n.a.	0.00	0.00
79.070	24.830	0.878	9488.4	5178.4	7.757	4.372	3.18		Clay	100.0			23.47	0.79	n.a.	n.a.	0.71	0.800	n.a.	n.a.	n.a.	n.a.	0.00	0.00
79.230	24.100	0.830	9507.6	5187.6	7.459	4.292	3.19		Clay	100.0			22.78	0.79	n.a.	n.a.	0.71	0.800	n.a.	n.a.	n.a.	n.a.	0.00	0.00
79.400	23.160	0.864	9528.0	5197.4	7.079	4.694	3.23		Clay	100.0			21.89	0.79	n.a.	n.a.	0.71	0.799	n.a.	n.a.	n.a.	n.a.	0.00	0.00
79.560	23.310	0.890	9547.2	5206.7	7.120	4.800	3.24		Clay	100.0			22.03	0.79	n.a.	n.a.	0.71	0.799	n.a.	n.a.	n.a.	n.a.	0.00	0.00
79.720	24.620	0.934	9566.4	5215.9	7.606	4.706	3.21		Clay	100.0			23.27	0.79	n.a.	n.a.	0.71	0.798	n.a.	n.a.	n.a.	n.a.	0.00	0.00
79.890	26.140	1.064	9586.8	5225.7	8.170	4.984	3.20		Clay	100.0			24.71	0.79	n.a.	n.a.	0.71	0.797	n.a.	n.a.	n.a.	n.a.	0.00	0.00
80.050	28.110	1.088	9606.0	5234.9	8.905	4.667	3.15		Clay	100.0			26.57	0.79	n.a.	n.a.	0.71	0.797	n.a.	n.a.	n.a.	n.a.	0.00	0.00
80.220	31.490	1.158	9626.4	5244.7	10.173	4.342	3.08		Clay	100.0			29.76	0.79	n.a.	n.a.	0.71	0.796	n.a.	n.a.	n.a.	n.a.	0.00	0.00
80.380	34.320	1.176	9645.6	5253.9	11.229	3.988	3.03		Clay	100.0			32.44	0.79	n.a.	n.a.	0.70	0.796	n.a.	n.a.	n.a.	n.a.	0.00	0.00
80.540	35.570	1.325	9664.8	5263.1	11.680	4.311	3.04		Clay	100.0			33.62	0.79	n.a.	n.a.	0.70	0.795	n.a.	n.a.	n.a.	n.a.	0.00	0.00
80.710	40.340	1.478	9685.2	5272.9	13.464	4.163	2.98		Clay	100.0			38.13	0.79	n.a.	n.a.	0.70	0.795	n.a.	n.a.	n.a.	n.a.	0.00	0.00
80.870	43.720	1.612	9704.4	5282.1	14.717	4.148	2.95		Clay	98.7			41.32	0.79	n.a.	n.a.	0.70	0.794	n.a.	n.a.	n.a.	n.a.	0.00	0.00
81.040	45.010	1.542	9724.8	5291.9	15.173	3.841	2.91		Clay	96.2			42.54	0.79	n.a.	n.a.	0.70	0.794	n.a.	n.a.	n.a.	n.a.	0.00	0.00
81.200	44.880	1.455	9744.0	5301.1	15.094	3.637	2.90		Clay	95.1			42.42	0.78	n.a.	n.a.	0.70	0.793	n.a.	n.a.	n.a.	n.a.	0.00	0.00
81.360	45.230	1.542	9763.2	5310.3	15.196	3.821	2.91		Clay	96.0			42.75	0.78	n.a.	n.a.	0.70	0.793	n.a.	n.a.	n.a.	n.a.	0.00	0.00
81.530	46.370	1.589	9783.6	5320.1	15.593	3.831	2.90		Clay	95.4			43.83	0.78	n.a.	n.a.	0.70	0.792	n.a.	n.a.	n.a.	n.a.	0.00	0.00
81.690	47.890	1.574	9802.8	5329.3	16.133	3.661	2.88		Clay	93.5			45.26	0.78	n.a.	n.a.	0.70	0.792	n.a.	n.a.	n.a.	n.a.	0.00	0.00
81.860	48.790	1.442	9823.2	5339.1	16.437	3.287	2.85		Clay	90.7			46.12	0.78	n.a.	n.a.	0.70	0.791	n.a.	n.a.	n.a.	n.a.	0.00	0.00
82.020	48.650	1.825	9842.4	5348.4	16.352	4.174	2.91		Clay	95.9			45.98	0.78	n.a.	n.a.	0.70	0.791	n.a.	n.a.	n.a.	n.a.	0.00	0.00
82.190	49.960	2.121	9862.8	5358.1	16.808	4.710	2.94		Clay	97.9			47.22	0.78	n.a.	n.a.	0.70	0.790	n.a.	n.a.	n.a.	n.a.	0.00	0.00
82.350	134.650	2.054	9882.0	5367.4	76.977	1.584	2.13		Sand	33.1			127.27	0.68	86.49	143.04	0.70	0.790	0.860	0.249	0.340	0.43	0.02	0.00
82.510	287.920	1.893	9901.2	5376.6	167.787	0.669	1.63		Sand	0.0			272.14	0.74	200.19	200.19	0.70	0.789	0.754	1.910	3.170	4.02	0.00	0.00
82.680	335.740	2.398	9921.6	5386.4	195.958	0.725	1.60		Sand	0.0			317.33	0.77	245.89	245.89	0.70	0.789	0.720	81.129	128.454	162.90	0.00	0.00
82.840	301.850	3.774	9940.8	5395.6	175.725	1.271	1.80		Sand	7.3			285.30	0.75	213.85	216.66	0.70	0.788	0.719	5.545	8.773	11.13	0.00	0.00
83.010	264.630	6.054	9961.2	5405.4	153.549	2.331	2.04		Sand	26.3			250.12	0.78	195.30	262.69	0.70	0.787	0.719	668.650	1057.140	1342.43	0.00	0.00
83.170	239.080	3.166	9980.4	5414.6	138.316	1.353	1.90		Sand	14.6			225.97	0.73	163.90	190.90	0.70	0.787	0.777	1.174	2.007	2.55	0.00	0.00
83.330	202.590	4.239	9999.6	5423.8	116.650	2.145	2.09		Sand	30.3			191.48	0.74	141.46	205.97	0.69	0.786	0.734	2.691	4.348	5.53	0.00	0.00
83.500	205.090	4.249	10020.0	5433.6	118.014	2.124	2.09		Sand	29.8			193.85	0.74	143.39	207.45	0.69	0.786	0.729	2.952	4.735	6.02	0.00	0.00
83.660	88.030	3.253	10039.2	5442.8	30.503	3.919	2.69		Clay	78.1			83.20	0.78	n.a.	n.a.	0.69	0.785	n.a.	n.a.	n.a.	n.a.	0.00	0.00
83.830	145.350	3.053	10059.6	5452.6	82.621	2.176	2.20		Sand	39.0			137.38	0.69	95.10	159.13	0.69	0.785	0.836	0.363	0.540	0.69	0.02	0.00
83.990	73.530	3.082	10078.8	5461.8	25.080	4.499	2.79		Clay	86.4			69.50	0.78	n.a.	n.a.	0.69	0.784	n.a.	n.a.	n.a.	n.a.	0.00	0.00
84.150	57.310	2.375	10098.0	5471.0	19.105	4.545	2.88		Clay	93.7			54.17	0.78	n.a.	n.a.	0.69	0.784	n.a.	n.a.	n.a.	n.a.	0.00	0.00
84.320	62.170	2.225	10118.4	5480.8	20.840	3.895	2.81		Clay	87.9			58.76	0.78	n.a.	n.a.	0.69	0.783	n.a.	n.a.	n.a.	n.a.	0.00	0.00
84.480	63.890	1.938	10137.6	5490.0	21.428	3.294	2.76		Clay	83.5			60.39	0.78	n.a.	n.a.	0.69	0.783	n.a.	n.a.	n.a.	n.a.	0.00	0.00
84.650	61.860	2.051	10158.0	5499.8	20.648	3.611	2.79		Clay	86.5			58.47	0.78	n.a.	n.a.	0.69	0.782	n.a.	n.a.	n.a.	n.a.	0.00	0.00
84.810	58.550	2.140	10177.2	5509.1	19.409	4.003	2.84		Clay	90.4			55.34	0.78	n.a.	n.a.	0.69	0.782	n.a.	n.a.	n.a.	n.a.	0.00	0.00
84.970	57.780	2.346	10196.4	5518.3	19.094	4.454	2.88		Clay	93.3			54.61	0.78	n.a.	n.a.	0.69	0.781	n.a.	n.a.	n.a.	n.a.	0.00	0.00
85.140	68.600	2.155	10216.8	5528.1	22.971	3.394	2.74		Clay	82.3			64.84	0.78	n.a.	n.a.	0.69	0.781	n.a.	n.a.	n.a.	n.a.	0.00	0.00
85.300	61.220	1.987	10236.0	5537.3	20.263	3.541	2.79		Clay	86.6			57.86	0.78	n.a.	n.a.	0.69	0.780	n.a.	n.a.	n.a.	n.a.	0.00	0.00
85.470	53.670	1.741	10256.4	5547.1	17.502	3.586	2.85		Clay	90.8			50.73	0.78	n.a.	n.a.	0.69	0.780	n.a.	n.a.	n.a.	n.a.	0.00	0.00
85.630	51.880	1.476	10275.6	5556.3	16.825	3.158	2.83		Clay	89.2			49.04	0.78	n.a.	n.a.	0.69	0.779	n.a.	n.a.	n.a.	n.a.	0.00	0.00
85.790	57.330	1.623	10294.8	5565.5	18.752	3.111	2.79		Clay	85.9			54.19	0.77	n.a.	n.a.	0.69	0.779	n.a.	n.a.	n.a.	n.a.	0.00	0.00
85.960	51.350	1.751	10315.2	5575.3	16.570	3.790	2.88		Clay	93.5			48.53	0.77	n.a.	n.a.	0.69	0.778	n.a.	n.a.	n.a.	n.a.	0.00	0.00
86.120	48.160	1.741	10334.4	5584.5	15.397	4.049	2.92		Clay	96.9			45.52	0.77	n.a.	n.a.	0.69	0.778	n.a.	n.a.	n.a.	n.a.	0.00	0.00
86.290	46.650	1.593	10354.8	5594.3	14.827	3.842	2.92		Clay	96.8			44.09	0.77	n.a.	n.a.	0.69	0.777	n.a.	n.a.	n.a.	n.a.	0.00	0.00
86.450	47.620	1.535	10374.0	5603.5	15.145	3.617	2.90		Clay	94.9			45.01	0.77	n.a.	n.a.	0.69	0.777	n.a.	n.a.	n.a.	n.a.	0.00	0.00
86.610	50.510	1.580	10393.2	5612.7	16.147	3.486	2.87		Clay	92.4			47.74	0.77	n.a.	n.a.	0.68	0.777	n.a.	n.a.	n.a.	n.a.	0.00	0.00
86.780	53.320	0.850	10413.6	5622.5	17.114	1.766	2.67		Clay	77.0			50.40	0.77	n.a.	n.a.	0.68	0.776	n.a.	n.a.	n.a.	n.a.	0.00	0.00
86.940	53.540	1.647	10432.8	5631.7	17.161	3.409	2.84		Clay	90.2			50.60	0.77	n.a.	n.a.	0.68	0.776	n.a.	n.a.	n.a.	n.a.	0.00	0.00
87.110	51.040	1.757	10453.2	5641.5	16.241	3.836	2.89		Clay	94.3			48.24	0.77	n.a.	n.a.	0.68	0.775	n.a.	n.a.	n.a.	n.a.	0.00	0.00
87.270	31.820	1.732	10472.4	5650.8	9.409	6.516	3.22		Clay	100.0			30.08	0.77	n.a.	n.a.	0.68	0.775	n.a.	n.a.	n.a.	n.a.	0.00	0.00
87.430	52.850	1.745	10491.6	5660.0	16.821	3.666	2.87		Clay	92.4			49.95	0.77	n.a.	n.a.	0.68	0.774	n.a.	n.a.	n.a.	n.a.	0.00	0.00
87.600	50.080	1.518	10512.0	5669.8	15.812	3.386	2.87		Clay	92.4			47.33	0.77	n.a.	n.a.	0.68	0.774	n.a.	n.a.	n.a.	n.a.	0.00	0.00
87.760	44.400	1.285	10531.2	5679.0	13.782	3.285	2.91		Clay	95.5			41.97	0.77	n.a.	n.a.	0.68	0.773	n.a.	n.a.	n.a.	n.a.	0.00	0.00
87.930	42.260	1.258	10551.6	5688.8	13.003	3.401	2.94		Clay	97.9			39.94	0.77	n.a.	n.a.	0.68	0.773	n.a.	n.a.	n.a.	n.a.	0.00	0.00

CORNERSTONE EARTH GROUP

CPT No.	3

PGA (A_{max})	0.89

Total Settlement:	0.36	(Inches)

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Depth (ft)	q_c (tsf)	f_s (tsf)	σ_{vc} (psf)	Insitu σ'_{vc} (psf)	Q	F (%)	I_c	Layer "Plastic" PI > 7	Flag Soil Type	Fines (%)	q_{cN} near interfaces (soft layer)	Thin Layer Factor (K_H)	Interpreted q_{cN}	C_N	q_{c1N}	q_{c1N-CS}	Stress Reduction Coeff, r_d	CSR	K_σ for Sand	$CRR_{M=7.5, \sigma'vc = 1 atm}$	CRR	Factor of Safety (CRR/CSR)	Vertical Strain ε_v	Settlement (Inches)
88.090	46.040	1.264	10570.8	5698.0	14.305	3.102	2.88		Clay	93.3			43.52	0.77	n.a.	n.a.	0.68	0.772	n.a.	n.a.	n.a.	n.a.	0.00	0.00
88.250	45.380	1.425	10590.0	5707.2	14.047	3.556	2.92		Clay	96.6			42.89	0.77	n.a.	n.a.	0.68	0.772	n.a.	n.a.	n.a.	n.a.	0.00	0.00
88.420	42.060	1.341	10610.4	5717.0	12.858	3.649	2.96		Clay	99.6			39.75	0.77	n.a.	n.a.	0.68	0.771	n.a.	n.a.	n.a.	n.a.	0.00	0.00
88.580	38.120	1.156	10629.6	5726.2	11.458	3.523	2.99		Clay	100.0			36.03	0.77	n.a.	n.a.	0.68	0.771	n.a.	n.a.	n.a.	n.a.	0.00	0.00
88.750	36.540	0.935	10650.0	5736.0	10.884	2.995	2.97		Clay	100.0			34.54	0.77	n.a.	n.a.	0.68	0.770	n.a.	n.a.	n.a.	n.a.	0.00	0.00
88.910	33.320	0.912	10669.2	5745.2	9.742	3.259	3.03		Clay	100.0			31.49	0.77	n.a.	n.a.	0.68	0.770	n.a.	n.a.	n.a.	n.a.	0.00	0.00
89.070	32.010	0.870	10688.4	5754.4	9.268	3.263	3.04		Clay	100.0			30.26	0.77	n.a.	n.a.	0.68	0.769	n.a.	n.a.	n.a.	n.a.	0.00	0.00
89.240	32.080	0.811	10708.8	5764.2	9.273	3.033	3.03		Clay	100.0			30.32	0.77	n.a.	n.a.	0.68	0.769	n.a.	n.a.	n.a.	n.a.	0.00	0.00
89.400	31.510	0.831	10728.0	5773.4	9.057	3.178	3.05		Clay	100.0			29.78	0.77	n.a.	n.a.	0.68	0.768	n.a.	n.a.	n.a.	n.a.	0.00	0.00
89.570	29.890	0.856	10748.4	5783.2	8.478	3.492	3.09		Clay	100.0			28.25	0.77	n.a.	n.a.	0.68	0.768	n.a.	n.a.	n.a.	n.a.	0.00	0.00
89.730	29.050	0.722	10767.6	5792.4	8.171	3.051	3.07		Clay	100.0			27.46	0.77	n.a.	n.a.	0.68	0.768	n.a.	n.a.	n.a.	n.a.	0.00	0.00
89.900	28.760	0.777	10788.0	5802.2	8.054	3.326	3.10		Clay	100.0			27.18	0.77	n.a.	n.a.	0.67	0.767	n.a.	n.a.	n.a.	n.a.	0.00	0.00
90.060	28.030	0.738	10807.2	5811.5	7.787	3.263	3.11		Clay	100.0			26.49	0.77	n.a.	n.a.	0.67	0.767	n.a.	n.a.	n.a.	n.a.	0.00	0.00
90.220	24.000	0.716	10826.4	5820.7	6.386	3.850	3.22		Clay	100.0			22.68	0.77	n.a.	n.a.	0.67	0.766	n.a.	n.a.	n.a.	n.a.	0.00	0.00
90.390	28.220	0.701	10846.8	5830.5	7.820	3.073	3.09		Clay	100.0			26.67	0.77	n.a.	n.a.	0.67	0.766	n.a.	n.a.	n.a.	n.a.	0.00	0.00
90.550	29.040	0.681	10866.0	5839.7	8.085	2.886	3.06		Clay	100.0			27.45	0.77	n.a.	n.a.	0.67	0.765	n.a.	n.a.	n.a.	n.a.	0.00	0.00
90.720	29.960	0.702	10886.4	5849.5	8.383	2.863	3.05		Clay	100.0			28.32	0.76	n.a.	n.a.	0.67	0.765	n.a.	n.a.	n.a.	n.a.	0.00	0.00
90.880	32.150	0.781	10905.6	5858.7	9.114	2.925	3.02		Clay	100.0			30.39	0.76	n.a.	n.a.	0.67	0.764	n.a.	n.a.	n.a.	n.a.	0.00	0.00
91.040	35.810	0.826	10924.8	5867.9	10.344	2.721	2.96		Clay	99.9			33.85	0.76	n.a.	n.a.	0.67	0.764	n.a.	n.a.	n.a.	n.a.	0.00	0.00
91.210	39.210	0.905	10945.2	5877.7	11.480	2.682	2.92		Clay	96.6			37.06	0.76	n.a.	n.a.	0.67	0.764	n.a.	n.a.	n.a.	n.a.	0.00	0.00
91.370	41.010	1.004	10964.4	5886.9	12.070	2.825	2.91		Clay	96.2			38.76	0.76	n.a.	n.a.	0.67	0.763	n.a.	n.a.	n.a.	n.a.	0.00	0.00
91.540	43.380	1.159	10984.8	5896.7	12.850	3.059	2.91		Clay	96.0			41.00	0.76	n.a.	n.a.	0.67	0.763	n.a.	n.a.	n.a.	n.a.	0.00	0.00
91.700	45.680	1.323	11004.0	5905.9	13.606	3.294	2.91		Clay	95.9			43.18	0.76	n.a.	n.a.	0.67	0.762	n.a.	n.a.	n.a.	n.a.	0.00	0.00
91.860	48.180	1.487	11023.2	5915.1	14.427	3.486	2.91		Clay	95.5			45.54	0.76	n.a.	n.a.	0.67	0.762	n.a.	n.a.	n.a.	n.a.	0.00	0.00
92.030	47.760	1.590	11043.6	5924.9	14.258	3.764	2.93		Clay	97.4			45.14	0.76	n.a.	n.a.	0.67	0.761	n.a.	n.a.	n.a.	n.a.	0.00	0.00
92.190	49.200	1.587	11062.8	5934.1	14.718	3.633	2.91		Clay	95.8			46.50	0.76	n.a.	n.a.	0.67	0.761	n.a.	n.a.	n.a.	n.a.	0.00	0.00
92.360	50.270	1.535	11083.2	5943.9	15.050	3.431	2.89		Clay	94.0			47.51	0.76	n.a.	n.a.	0.67	0.760	n.a.	n.a.	n.a.	n.a.	0.00	0.00
92.520	45.890	1.513	11102.4	5953.2	13.552	3.751	2.95		Clay	98.8			43.37	0.76	n.a.	n.a.	0.67	0.760	n.a.	n.a.	n.a.	n.a.	0.00	0.00
92.680	46.420	1.547	11121.6	5962.4	13.706	3.786	2.95		Clay	98.7			43.88	0.76	n.a.	n.a.	0.67	0.760	n.a.	n.a.	n.a.	n.a.	0.00	0.00
92.850	46.040	1.640	11142.0	5972.2	13.553	4.052	2.97		Clay	100.0			43.52	0.76	n.a.	n.a.	0.67	0.759	n.a.	n.a.	n.a.	n.a.	0.00	0.00
93.010	45.960	1.719	11161.2	5981.4	13.502	4.256	2.98		Clay	100.0			43.44	0.76	n.a.	n.a.	0.67	0.759	n.a.	n.a.	n.a.	n.a.	0.00	0.00
93.180	46.380	1.721	11181.6	5991.2	13.616	4.220	2.98		Clay	100.0			43.84	0.76	n.a.	n.a.	0.67	0.758	n.a.	n.a.	n.a.	n.a.	0.00	0.00
93.340	49.320	1.703	11200.8	6000.4	14.572	3.895	2.93		Clay	97.6			46.62	0.76	n.a.	n.a.	0.67	0.758	n.a.	n.a.	n.a.	n.a.	0.00	0.00
93.500	52.550	1.681	11220.0	6009.6	15.622	3.582	2.89		Clay	93.9			49.67	0.76	n.a.	n.a.	0.66	0.758	n.a.	n.a.	n.a.	n.a.	0.00	0.00
93.670	52.200	1.655	11240.4	6019.4	15.477	3.552	2.89		Clay	94.0			49.34	0.76	n.a.	n.a.	0.66	0.757	n.a.	n.a.	n.a.	n.a.	0.00	0.00
93.830	53.670	1.701	11259.6	6028.6	15.937	3.541	2.88		Clay	93.1			50.73	0.76	n.a.	n.a.	0.66	0.757	n.a.	n.a.	n.a.	n.a.	0.00	0.00
94.000	54.920	1.752	11280.0	6038.4	16.322	3.556	2.87		Clay	92.5			51.91	0.76	n.a.	n.a.	0.66	0.756	n.a.	n.a.	n.a.	n.a.	0.00	0.00
94.160	53.410	1.750	11299.2	6047.6	15.795	3.665	2.89		Clay	94.1			50.48	0.76	n.a.	n.a.	0.66	0.756	n.a.	n.a.	n.a.	n.a.	0.00	0.00
94.320	50.720	1.803	11318.4	6056.8	14.879	4.000	2.93		Clay	97.6			47.94	0.76	n.a.	n.a.	0.66	0.755	n.a.	n.a.	n.a.	n.a.	0.00	0.00
94.490	47.380	1.845	11338.8	6066.6	13.751	4.423	2.99		Clay	100.0			44.78	0.76	n.a.	n.a.	0.66	0.755	n.a.	n.a.	n.a.	n.a.	0.00	0.00
94.650	43.270	1.901	11358.0	6075.8	12.374	5.057	3.06		Clay	100.0			40.90	0.76	n.a.	n.a.	0.66	0.755	n.a.	n.a.	n.a.	n.a.	0.00	0.00
94.820	41.370	1.816	11378.4	6085.6	11.726	5.089	3.08		Clay	100.0			39.10	0.76	n.a.	n.a.	0.66	0.754	n.a.	n.a.	n.a.	n.a.	0.00	0.00
94.980	39.280	1.619	11397.6	6094.8	11.020	4.822	3.08		Clay	100.0			37.13	0.76	n.a.	n.a.	0.66	0.754	n.a.	n.a.	n.a.	n.a.	0.00	0.00
95.140	37.030	1.705	11416.8	6104.1	10.263	5.442	3.14		Clay	100.0			35.00	0.76	n.a.	n.a.	0.66	0.753	n.a.	n.a.	n.a.	n.a.	0.00	0.00
95.310	36.570	2.263	11437.2	6113.9	10.092	7.336	3.23		Clay	100.0			34.57	0.76	n.a.	n.a.	0.66	0.753	n.a.	n.a.	n.a.	n.a.	0.00	0.00
95.470	59.780	2.427	11456.4	6123.1	17.655	4.491	2.91		Clay	95.5			56.50	0.76	n.a.	n.a.	0.66	0.753	n.a.	n.a.	n.a.	n.a.	0.00	0.00
95.640	50.280	2.374	11476.8	6132.9	14.526	5.329	3.02		Clay	100.0			47.52	0.76	n.a.	n.a.	0.66	0.752	n.a.	n.a.	n.a.	n.a.	0.00	0.00
95.800	41.010	1.291	11496.0	6142.1	11.482	3.660	3.00		Clay	100.0			38.76	0.75	n.a.	n.a.	0.66	0.752	n.a.	n.a.	n.a.	n.a.	0.00	0.00
95.960	35.070	1.221	11515.2	6151.3	9.530	4.164	3.10		Clay	100.0			33.15	0.75	n.a.	n.a.	0.66	0.751	n.a.	n.a.	n.a.	n.a.	0.00	0.00
96.130	31.680	1.171	11535.6	6161.1	8.412	4.518	3.16		Clay	100.0			29.94	0.75	n.a.	n.a.	0.66	0.751	n.a.	n.a.	n.a.	n.a.	0.00	0.00
96.290	30.540	1.037	11554.8	6170.3	8.026	4.187	3.16		Clay	100.0			28.87	0.75	n.a.	n.a.	0.66	0.751	n.a.	n.a.	n.a.	n.a.	0.00	0.00
96.460	33.080	1.031	11575.2	6180.1	8.832	3.778	3.10		Clay	100.0			31.27	0.75	n.a.	n.a.	0.66	0.750	n.a.	n.a.	n.a.	n.a.	0.00	0.00
96.620	31.700	0.928	11594.4	6189.3	8.370	3.583	3.10		Clay	100.0			29.96	0.75	n.a.	n.a.	0.66	0.750	n.a.	n.a.	n.a.	n.a.	0.00	0.00
96.780	30.330	0.886	11613.6	6198.5	7.913	3.611	3.13		Clay	100.0			28.67	0.75	n.a.	n.a.	0.66	0.750	n.a.	n.a.	n.a.	n.a.	0.00	0.00
96.950	30.120	0.905	11634.0	6208.3	7.829	3.725	3.14		Clay	100.0			28.47	0.75	n.a.	n.a.	0.66	0.749	n.a.	n.a.	n.a.	n.a.	0.00	0.00
97.110	30.290	0.922	11653.2	6217.5	7.869	3.767	3.14		Clay	100.0			28.63	0.75	n.a.	n.a.	0.66	0.749	n.a.	n.a.	n.a.	n.a.	0.00	0.00
97.280	31.120	0.951	11673.6	6227.3	8.120	3.763	3.13		Clay	100.0			29.41	0.75	n.a.	n.a.	0.66	0.748	n.a.	n.a.	n.a.	n.a.	0.00	0.00
97.440	31.790	1.002	11692.8	6236.5	8.320	3.862	3.13		Clay	100.0			30.05	0.75	n.a.	n.a.	0.66	0.748	n.a.	n.a.	n.a.	n.a.	0.00	0.00
97.600	31.810	1.084	11712.0	6245.8	8.311	4.177	3.15		Clay	100.0			30.07	0.75	n.a.	n.a.	0.65	0.748	n.a.	n.a.	n.a.	n.a.	0.00	0.00
97.770	32.110	1.123	11732.4	6255.6	8.391	4.280	3.15		Clay	100.0			30.35	0.75	n.a.	n.a.	0.65	0.747	n.a.	n.a.	n.a.	n.a.	0.00	0.00
97.930	32.590	1.147	11751.6	6264.8	8.528	4.292	3.14		Clay	100.0			30.80	0.75	n.a.	n.a.	0.65	0.747	n.a.	n.a.	n.a.	n.a.	0.00	0.00
98.100	32.540	1.161	11772.0	6274.6	8.496	4.356	3.15		Clay	100.0			30.76	0.75	n.a.	n.a.	0.65	0.747	n.a.	n.a.	n.a.	n.a.	0.00	0.00
98.260	32.240	1.105	11791.2	6283.8	8.385	4.194	3.14		Clay	100.0			30.47	0.75	n.a.	n.a.	0.65	0.746	n.a.	n.a.	n.a.	n.a.	0.00	0.00
98.430	32.490	1.098	11811.6	6293.6	8.448	4.129	3.14		Clay	100.0			30.71	0.75	n.a.	n.a.	0.65	0.746	n.a.	n.a.	n.a.	n.a.	0.00	0.00
98.590	32.430	1.021	11830.8	6302.8	8.414	3.851	3.12		Clay	100.0			30.65	0.75	n.a.	n.a.	0.65	0.745	n.a.	n.a.	n.a.	n.a.	0.00	0.00
98.750	31.730	1.036	11850.0	6312.0	8.176	4.013	3.14		Clay	100.0			29.99	0.75	n.a.	n.a.	0.65	0.745	n.a.	n.a.	n.a.	n.a.	0.00	0.00
98.920	32.330	1.146	11870.4	6321.8	8.350	4.341	3.15		Clay	100.0			30.56	0.75	n.a.	n.a.	0.65	0.745	n.a.	n.a.	n.a.	n.a.	0.00	0.00

CORNERSTONE EARTH GROUP

CPT No.	3

PGA (A_{max})	0.89

Total Settlement:	0.36	(Inches)

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Depth (ft)	q_c (tsf)	f_s (tsf)	σ_{vc} (psf)	Insitu σ'_{vc} (psf)	Q	F (%)	I_c	Layer "Plastic" PI > 7	Flag Soil Type	Fines (%)	q_{cN} near interfaces (soft layer)	Thin Layer Factor (K_H)	Interpreted q_{cN}	C_N	q_{c1N}	$q_{c1N\text{-}CS}$	Stress Reduction Coeff, r_d	CSR	K_σ for Sand	$CRR_{M=7.5,\ \sigma'vc = 1\ atm}$	CRR	Factor of Safety (CRR/CSR)	Vertical Strain ε_v	Settlement (Inches)
99.080	33.810	1.208	11889.6	6331.0	8.803	4.333	3.13		Clay	100.0			31.96	0.75	n.a.	n.a.	0.65	0.744	n.a.	n.a.	n.a.	n.a.	0.00	0.00
99.250	35.460	1.128	11910.0	6340.8	9.306	3.823	3.08		Clay	100.0			33.52	0.75	n.a.	n.a.	0.65	0.744	n.a.	n.a.	n.a.	n.a.	0.00	0.00
99.410	32.270	1.158	11929.2	6350.0	8.285	4.404	3.16		Clay	100.0			30.50	0.75	n.a.	n.a.	0.65	0.744	n.a.	n.a.	n.a.	n.a.	0.00	0.00
99.570	32.170	1.081	11948.4	6359.2	8.239	4.127	3.15		Clay	100.0			30.41	0.75	n.a.	n.a.	0.65	0.743	n.a.	n.a.	n.a.	n.a.	0.00	0.00
99.740	30.770	1.038	11968.8	6369.0	7.783	4.189	3.17		Clay	100.0			29.08	0.75	n.a.	n.a.	0.65	0.743	n.a.	n.a.	n.a.	n.a.	0.00	0.00
99.900	33.360	1.019	11988.0	6378.2	8.581	3.724	3.11		Clay	100.0			31.53	0.75	n.a.	n.a.	0.65	0.743	n.a.	n.a.	n.a.	n.a.	0.00	0.00
100.070	32.860	0.949	12008.4	6388.0	8.408	3.534	3.10		Clay	100.0			31.06	0.75	n.a.	n.a.	0.65	0.742	n.a.	n.a.	n.a.	n.a.	0.00	0.00
100.230	32.040	0.971	12027.6	6397.2	8.137	3.732	3.12		Clay	100.0			30.28	0.75	n.a.	n.a.	0.65	0.742	n.a.	n.a.	n.a.	n.a.	0.00	0.00
100.390	32.060	1.124	12046.8	6406.5	8.128	4.318	3.16		Clay	100.0			30.30	0.75	n.a.	n.a.	0.65	0.742	n.a.	n.a.	n.a.	n.a.	0.00	0.00

CORNERSTONE EARTH GROUP

CPT No.	4

PGA (A_{max})	0.89

Total Settlement:	0.07	(Inches)

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Depth (ft)	q_c (tsf)	f_s (tsf)	σ_{vc} (psf)	Insitu σ'_{vc} (psf)	Q	F (%)	I_c	Layer "Plastic" PI > 7	Flag Soil Type	Fines (%)	q_{cN} near interfaces (soft layer)	Thin Layer Factor (K_H)	Interpreted q_{cN}	C_N	q_{c1N}	$q_{c1N\text{-}CS}$	Stress Reduction Coeff, r_d	CSR	K_σ for Sand	$CRR_{M=7.5, \sigma'vc = 1 atm}$	CRR	Factor of Safety (CRR/CSR)	Vertical Strain ε_v	Settlement (Inches)
0.160	331.190	4.586	19.2	19.2	3286.141	1.385	1.36		Unsaturated	0.0			313.03	1.70	532.16	532.16	1.00	0.579	1.100	n.a.	n.a.	n.a.	0.00	0.00
0.330	478.060	5.790	39.6	39.6	3302.851	1.211	1.30		Unsaturated	0.0			451.85	1.70	768.15	768.15	1.00	0.579	1.100	n.a.	n.a.	n.a.	0.00	0.00
0.490	369.510	5.313	58.8	58.8	2094.957	1.438	1.39		Unsaturated	0.0			349.25	1.70	593.73	593.73	1.00	0.579	1.100	n.a.	n.a.	n.a.	0.00	0.00
0.660	302.530	4.384	79.2	79.2	1477.819	1.449	1.41		Unsaturated	0.0			285.95	1.70	486.11	486.11	1.00	0.579	1.100	n.a.	n.a.	n.a.	0.00	0.00
0.820	134.420	2.804	98.4	98.4	588.951	2.086	1.69		Unsaturated	0.0			127.05	1.70	215.99	215.99	1.00	0.579	1.100	n.a.	n.a.	n.a.	0.00	0.00
0.980	93.850	1.592	117.6	117.6	376.037	1.698	1.70		Unsaturated	0.0			88.71	1.70	150.80	150.80	1.00	0.579	1.100	n.a.	n.a.	n.a.	0.00	0.00
1.150	58.920	1.178	138.0	138.0	217.814	2.002	1.90		Unsaturated	14.7			55.69	1.70	94.67	116.38	1.00	0.579	1.100	n.a.	n.a.	n.a.	0.00	0.00
1.310	27.080	0.990	157.2	157.2	93.634	3.666	2.33		Unsaturated	49.4			25.60	1.70	43.51	100.80	1.00	0.579	1.100	n.a.	n.a.	n.a.	0.00	0.00
1.480	17.090	0.818	177.6	177.6	55.466	4.813	2.57		Unsaturated	68.5			16.15	1.70	27.46	85.79	1.00	0.579	1.100	n.a.	n.a.	n.a.	0.00	0.00
1.640	15.720	0.604	196.8	196.8	48.416	3.868	2.54		Unsaturated	66.2			14.86	1.70	25.26	82.49	1.00	0.579	1.100	n.a.	n.a.	n.a.	0.00	0.00
1.800	13.630	0.574	216.0	216.0	63.139	4.241	2.49		Unsaturated	62.2			12.88	1.70	21.90	77.29	1.00	0.579	1.100	n.a.	n.a.	n.a.	0.00	0.00
1.970	11.670	0.549	236.4	236.4	50.637	4.752	2.59		Unsaturated	70.3			11.03	1.70	18.75	74.89	1.00	0.579	1.100	n.a.	n.a.	n.a.	0.00	0.00
2.130	11.230	0.531	255.6	255.6	46.078	4.779	2.62		Unsaturated	72.7			10.61	1.70	18.04	74.38	1.00	0.579	1.100	n.a.	n.a.	n.a.	0.00	0.00
2.300	12.330	0.504	276.0	276.0	47.953	4.135	2.56		Unsaturated	68.1			11.65	1.70	19.81	75.85	1.00	0.579	1.100	n.a.	n.a.	n.a.	0.00	0.00
2.460	13.540	0.484	295.2	295.2	50.252	3.615	2.51		Unsaturated	63.6			12.80	1.70	21.76	77.43	1.00	0.579	1.100	n.a.	n.a.	n.a.	0.00	0.00
2.620	14.760	0.490	314.4	314.4	35.807	3.353	2.59		Unsaturated	70.4			13.95	1.70	23.72	81.31	1.00	0.579	1.100	n.a.	n.a.	n.a.	0.00	0.00
2.790	16.480	0.508	334.8	334.8	38.762	3.115	2.54		Unsaturated	66.6			15.58	1.70	26.48	84.14	1.00	0.579	1.100	n.a.	n.a.	n.a.	0.00	0.00
2.950	18.360	0.528	354.0	354.0	42.018	2.905	2.50		Unsaturated	62.9			17.35	1.70	29.50	87.20	1.00	0.579	1.100	n.a.	n.a.	n.a.	0.00	0.00
3.120	19.550	0.535	374.4	374.4	43.508	2.760	2.47		Unsaturated	60.8			18.48	1.70	31.41	89.14	1.00	0.578	1.100	n.a.	n.a.	n.a.	0.00	0.00
3.280	19.580	0.549	393.6	393.6	42.479	2.833	2.49		Unsaturated	62.0			18.51	1.70	31.46	89.51	1.00	0.578	1.100	n.a.	n.a.	n.a.	0.00	0.00
3.440	21.260	0.534	412.8	412.8	45.054	2.537	2.44		Unsaturated	57.9			20.09	1.70	34.16	91.88	1.00	0.578	1.100	n.a.	n.a.	n.a.	0.00	0.00
3.610	20.320	0.437	433.2	433.2	41.995	2.172	2.42		Unsaturated	56.2			19.21	1.70	32.65	89.45	1.00	0.578	1.100	n.a.	n.a.	n.a.	0.00	0.00
3.770	19.140	0.386	452.4	452.4	38.662	2.041	2.43		Unsaturated	57.1			18.09	1.70	30.75	87.28	1.00	0.578	1.100	n.a.	n.a.	n.a.	0.00	0.00
3.940	12.650	0.359	472.8	472.8	33.496	2.891	2.57		Unsaturated	68.7			11.96	1.70	20.33	76.62	1.00	0.577	1.100	n.a.	n.a.	n.a.	0.00	0.00
4.100	13.360	0.363	492.0	492.0	34.414	2.770	2.55		Unsaturated	67.0			12.63	1.70	21.47	77.76	1.00	0.577	1.100	n.a.	n.a.	n.a.	0.00	0.00
4.270	13.760	0.332	512.4	512.4	34.443	2.460	2.52		Unsaturated	64.3			13.01	1.70	22.11	78.03	1.00	0.577	1.100	n.a.	n.a.	n.a.	0.00	0.00
4.430	13.760	0.315	531.6	531.6	33.544	2.337	2.51		Unsaturated	63.9			13.01	1.70	22.11	77.94	1.00	0.577	1.100	n.a.	n.a.	n.a.	0.00	0.00
4.590	14.980	0.319	550.8	550.8	27.241	2.167	2.56		Unsaturated	67.9			14.16	1.70	24.07	81.30	1.00	0.576	1.100	n.a.	n.a.	n.a.	0.00	0.00
4.760	15.000	0.373	571.2	571.2	34.783	2.534	2.52		Unsaturated	64.7			14.18	1.70	24.10	80.68	1.00	0.576	1.100	n.a.	n.a.	n.a.	0.00	0.00
4.920	13.600	0.388	590.4	590.4	30.731	2.913	2.60		Unsaturated	71.1			12.85	1.70	21.85	79.03	1.00	0.576	1.100	n.a.	n.a.	n.a.	0.00	0.00
5.090	12.430	0.334	610.8	610.8	27.347	2.751	2.62	plastic	Clay	73.0			11.75	1.39	n.a.	n.a.	1.00	0.581	n.a.	n.a.	n.a.	n.a.	0.00	0.00
5.250	11.980	0.303	630.0	630.0	25.747	2.599	2.63	plastic	Clay	73.3			11.32	1.38	n.a.	n.a.	0.99	0.590	n.a.	n.a.	n.a.	n.a.	0.00	0.00
5.410	11.300	0.333	649.2	649.2	23.721	3.031	2.70	plastic	Clay	78.9			10.68	1.37	n.a.	n.a.	0.99	0.599	n.a.	n.a.	n.a.	n.a.	0.00	0.00
5.580	10.950	0.324	669.6	669.6	31.706	3.048	2.60		Clay	71.3			10.35	1.35	n.a.	n.a.	0.99	0.608	n.a.	n.a.	n.a.	n.a.	0.00	0.00
5.740	10.730	0.319	688.8	688.8	30.156	3.069	2.62		Clay	72.8			10.14	1.34	n.a.	n.a.	0.99	0.616	n.a.	n.a.	n.a.	n.a.	0.00	0.00
5.910	10.270	0.316	709.2	709.2	27.962	3.186	2.66		Clay	75.6			9.71	1.33	n.a.	n.a.	0.99	0.625	n.a.	n.a.	n.a.	n.a.	0.00	0.00
6.070	9.990	0.332	728.4	728.4	26.430	3.449	2.70		Clay	78.9			9.44	1.32	n.a.	n.a.	0.99	0.632	n.a.	n.a.	n.a.	n.a.	0.00	0.00
6.230	10.040	0.344	747.6	747.6	25.859	3.556	2.71		Clay	80.2			9.49	1.32	n.a.	n.a.	0.99	0.640	n.a.	n.a.	n.a.	n.a.	0.00	0.00
6.400	10.180	0.367	768.0	768.0	25.510	3.745	2.73		Clay	81.7			9.62	1.31	n.a.	n.a.	0.99	0.648	n.a.	n.a.	n.a.	n.a.	0.00	0.00
6.560	10.670	0.404	787.2	787.2	26.109	3.929	2.74		Clay	82.2			10.09	1.30	n.a.	n.a.	0.99	0.655	n.a.	n.a.	n.a.	n.a.	0.00	0.00
6.730	10.880	0.427	807.6	807.6	25.944	4.074	2.75		Clay	83.2			10.28	1.29	n.a.	n.a.	0.99	0.662	n.a.	n.a.	n.a.	n.a.	0.00	0.00
6.890	11.220	0.447	826.8	826.8	26.141	4.133	2.75		Clay	83.3			10.60	1.28	n.a.	n.a.	0.99	0.669	n.a.	n.a.	n.a.	n.a.	0.00	0.00
7.050	11.560	0.441	846.0	846.0	26.329	3.961	2.74		Clay	82.2			10.93	1.27	n.a.	n.a.	0.99	0.675	n.a.	n.a.	n.a.	n.a.	0.00	0.00
7.220	11.820	0.445	866.4	866.4	26.285	3.904	2.74		Clay	81.9			11.17	1.27	n.a.	n.a.	0.99	0.682	n.a.	n.a.	n.a.	n.a.	0.00	0.00
7.380	12.270	0.464	885.6	885.6	26.710	3.925	2.73		Clay	81.6			11.60	1.26	n.a.	n.a.	0.99	0.688	n.a.	n.a.	n.a.	n.a.	0.00	0.00
7.550	12.590	0.475	906.0	906.0	26.792	3.917	2.73		Clay	81.5			11.90	1.25	n.a.	n.a.	0.99	0.694	n.a.	n.a.	n.a.	n.a.	0.00	0.00
7.710	12.750	0.507	925.2	925.2	26.562	4.124	2.75		Clay	82.9			12.05	1.24	n.a.	n.a.	0.99	0.700	n.a.	n.a.	n.a.	n.a.	0.00	0.00
7.870	12.670	0.517	944.4	944.4	25.832	4.240	2.77		Clay	84.2			11.98	1.24	n.a.	n.a.	0.99	0.706	n.a.	n.a.	n.a.	n.a.	0.00	0.00
8.040	12.950	0.535	964.8	964.8	25.845	4.290	2.77		Clay	84.5			12.24	1.23	n.a.	n.a.	0.99	0.711	n.a.	n.a.	n.a.	n.a.	0.00	0.00
8.200	13.480	0.563	984.0	984.0	26.398	4.332	2.76		Clay	84.2			12.74	1.22	n.a.	n.a.	0.99	0.717	n.a.	n.a.	n.a.	n.a.	0.00	0.00
8.370	14.270	0.580	1004.4	1004.4	27.415	4.209	2.74		Clay	82.5			13.49	1.22	n.a.	n.a.	0.99	0.722	n.a.	n.a.	n.a.	n.a.	0.00	0.00
8.530	14.720	0.668	1023.6	1023.6	27.761	4.698	2.77		Clay	84.8			13.91	1.21	n.a.	n.a.	0.99	0.727	n.a.	n.a.	n.a.	n.a.	0.00	0.00
8.690	14.870	0.653	1042.8	1042.8	27.519	4.552	2.77		Clay	84.3			14.05	1.21	n.a.	n.a.	0.99	0.732	n.a.	n.a.	n.a.	n.a.	0.00	0.00
8.860	14.810	0.625	1063.2	1063.2	26.859	4.374	2.76		Clay	84.0			14.00	1.20	n.a.	n.a.	0.99	0.737	n.a.	n.a.	n.a.	n.a.	0.00	0.00
9.020	14.890	0.587	1082.4	1082.4	26.513	4.093	2.75		Clay	82.7			14.07	1.19	n.a.	n.a.	0.99	0.742	n.a.	n.a.	n.a.	n.a.	0.00	0.00
9.190	14.440	0.586	1102.8	1102.8	25.188	4.218	2.77		Clay	84.8			13.65	1.19	n.a.	n.a.	0.98	0.747	n.a.	n.a.	n.a.	n.a.	0.00	0.00
9.350	14.250	0.598	1122.0	1122.0	24.401	4.371	2.79		Clay	86.4			13.47	1.18	n.a.	n.a.	0.98	0.751	n.a.	n.a.	n.a.	n.a.	0.00	0.00
9.510	13.980	0.613	1141.2	1141.2	23.501	4.572	2.82		Clay	88.4			13.21	1.18	n.a.	n.a.	0.98	0.756	n.a.	n.a.	n.a.	n.a.	0.00	0.00
9.680	14.080	0.605	1161.6	1161.6	23.242	4.482	2.82		Clay	88.3			13.31	1.17	n.a.	n.a.	0.98	0.760	n.a.	n.a.	n.a.	n.a.	0.00	0.00
9.840	14.190	0.557	1180.8	1180.8	23.035	4.092	2.79		Clay	86.4			13.41	1.17	n.a.	n.a.	0.98	0.764	n.a.	n.a.	n.a.	n.a.	0.00	0.00
10.010	14.480	0.534	1201.2	1201.2	23.109	3.849	2.77		Clay	84.9			13.69	1.16	n.a.	n.a.	0.98	0.768	n.a.	n.a.	n.a.	n.a.	0.00	0.00
10.170	15.000	0.524	1220.4	1220.4	23.582	3.639	2.75		Clay	83.1			14.18	1.16	n.a.	n.a.	0.98	0.772	n.a.	n.a.	n.a.	n.a.	0.00	0.00
10.330	16.140	0.531	1239.6	1239.6	25.041	3.421	2.71		Clay	80.1			15.26	1.15	n.a.	n.a.	0.98	0.776	n.a.	n.a.	n.a.	n.a.	0.00	0.00
10.500	16.480	0.550	1260.0	1260.0	25.159	3.470	2.72		Clay	80.3			15.58	1.15	n.a.	n.a.	0.98	0.780	n.a.	n.a.	n.a.	n.a.	0.00	0.00
10.660	17.240	0.563	1279.2	1279.2	25.954	3.392	2.70		Clay	79.0			16.29	1.14	n.a.	n.a.	0.98	0.784	n.a.	n.a.	n.a.	n.a.	0.00	0.00
10.830	16.970	0.579	1299.6	1299.6	25.116	3.550	2.72		Clay	80.9			16.04	1.14	n.a.	n.a.	0.98	0.788	n.a.	n.a.	n.a.	n.a.	0.00	0.00
10.990	16.280	0.573	1318.8	1318.8	23.689	3.670	2.75		Clay	83.2			15.39	1.13	n.a.	n.a.	0.98	0.791	n.a.	n.a.	n.a.	n.a.	0.00	0.00

CORNERSTONE EARTH GROUP

CPT No.	4

PGA (A_{max})	0.89

Total Settlement:	0.07	(Inches)

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Depth (ft)	q_c (tsf)	f_s (tsf)	σ_{vc} (psf)	Insitu σ'_{vc} (psf)	Q	F (%)	I_c	Layer "Plastic" PI > 7	Flag Soil Type	Fines (%)	q_{cN} near interfaces (soft layer)	Thin Layer Factor (K_H)	Interpreted q_{cN}	C_N	q_{c1N}	q_{c1N-CS}	Stress Reduction Coeff, r_d	CSR	K_σ for Sand	$CRR_{M=7.5, \sigma'vc = 1 atm}$	CRR	Factor of Safety (CRR/CSR)	Vertical Strain ε_v	Settlement (Inches)
11.150	16.290	0.562	1338.0	1338.0	23.350	3.599	2.75		Clay	83.1			15.40	1.13	n.a.	n.a.	0.98	0.794	n.a.	n.a.	n.a.	n.a.	0.00	0.00
11.320	16.000	0.545	1358.4	1358.4	22.557	3.555	2.76		Clay	83.8			15.12	1.12	n.a.	n.a.	0.98	0.798	n.a.	n.a.	n.a.	n.a.	0.00	0.00
11.480	15.730	0.561	1377.6	1377.6	21.837	3.727	2.78		Clay	85.7			14.87	1.12	n.a.	n.a.	0.98	0.801	n.a.	n.a.	n.a.	n.a.	0.00	0.00
11.650	15.850	0.567	1398.0	1398.0	21.675	3.740	2.79		Clay	86.0			14.98	1.12	n.a.	n.a.	0.98	0.805	n.a.	n.a.	n.a.	n.a.	0.00	0.00
11.810	16.200	0.564	1417.2	1417.2	21.862	3.640	2.78		Clay	85.1			15.31	1.11	n.a.	n.a.	0.98	0.808	n.a.	n.a.	n.a.	n.a.	0.00	0.00
11.980	16.250	0.542	1437.6	1437.6	21.607	3.491	2.77		Clay	84.5			15.36	1.11	n.a.	n.a.	0.98	0.811	n.a.	n.a.	n.a.	n.a.	0.00	0.00
12.140	17.190	0.474	1456.8	1456.8	22.600	2.878	2.70		Clay	79.1			16.25	1.10	n.a.	n.a.	0.98	0.814	n.a.	n.a.	n.a.	n.a.	0.00	0.00
12.300	17.140	0.431	1476.0	1476.0	22.225	2.627	2.68		Clay	77.6			16.20	1.10	n.a.	n.a.	0.98	0.817	n.a.	n.a.	n.a.	n.a.	0.00	0.00
12.470	16.160	0.408	1496.4	1496.4	20.599	2.645	2.71		Clay	79.8			15.27	1.10	n.a.	n.a.	0.98	0.820	n.a.	n.a.	n.a.	n.a.	0.00	0.00
12.630	16.270	0.444	1515.6	1515.6	20.470	2.862	2.73		Clay	81.7			15.38	1.09	n.a.	n.a.	0.98	0.822	n.a.	n.a.	n.a.	n.a.	0.00	0.00
12.800	16.130	0.441	1536.0	1536.0	20.003	2.871	2.74		Clay	82.4			15.25	1.09	n.a.	n.a.	0.97	0.825	n.a.	n.a.	n.a.	n.a.	0.00	0.00
12.960	16.230	0.435	1555.2	1555.2	19.872	2.814	2.74		Clay	82.1			15.34	1.08	n.a.	n.a.	0.97	0.828	n.a.	n.a.	n.a.	n.a.	0.00	0.00
13.120	16.380	0.442	1574.4	1574.4	19.808	2.835	2.74		Clay	82.4			15.48	1.08	n.a.	n.a.	0.97	0.830	n.a.	n.a.	n.a.	n.a.	0.00	0.00
13.290	15.330	0.391	1594.8	1594.8	18.225	2.688	2.76		Clay	83.6			14.49	1.08	n.a.	n.a.	0.97	0.833	n.a.	n.a.	n.a.	n.a.	0.00	0.00
13.450	14.880	0.352	1614.0	1614.0	17.439	2.498	2.75		Clay	83.3			14.06	1.07	n.a.	n.a.	0.97	0.836	n.a.	n.a.	n.a.	n.a.	0.00	0.00
13.620	14.160	0.315	1634.4	1634.4	16.327	2.359	2.76		Clay	84.0			13.38	1.07	n.a.	n.a.	0.97	0.838	n.a.	n.a.	n.a.	n.a.	0.00	0.00
13.780	14.070	0.279	1653.6	1653.6	16.017	2.103	2.74		Clay	82.3			13.30	1.07	n.a.	n.a.	0.97	0.840	n.a.	n.a.	n.a.	n.a.	0.00	0.00
13.940	14.010	0.271	1672.8	1672.8	15.750	2.060	2.74		Clay	82.4			13.24	1.06	n.a.	n.a.	0.97	0.843	n.a.	n.a.	n.a.	n.a.	0.00	0.00
14.110	13.650	0.313	1693.2	1686.3	15.185	2.448	2.80		Clay	86.8			12.90	1.06	n.a.	n.a.	0.97	0.845	n.a.	n.a.	n.a.	n.a.	0.00	0.00
14.270	13.840	0.414	1712.4	1695.6	15.315	3.189	2.86		Clay	92.0			13.08	1.06	n.a.	n.a.	0.97	0.847	n.a.	n.a.	n.a.	n.a.	0.00	0.00
14.440	14.490	0.489	1732.8	1705.3	15.978	3.590	2.88		Clay	93.3			13.70	1.06	n.a.	n.a.	0.97	0.850	n.a.	n.a.	n.a.	n.a.	0.00	0.00
14.600	16.130	0.552	1752.0	1714.6	17.793	3.620	2.84		Clay	90.6			15.25	1.06	n.a.	n.a.	0.97	0.852	n.a.	n.a.	n.a.	n.a.	0.00	0.00
14.760	16.560	0.537	1771.2	1723.8	18.186	3.425	2.82		Clay	88.8			15.65	1.06	n.a.	n.a.	0.97	0.854	n.a.	n.a.	n.a.	n.a.	0.00	0.00
14.930	18.670	0.535	1791.6	1733.6	20.506	3.009	2.75		Clay	82.7			17.65	1.05	n.a.	n.a.	0.97	0.856	n.a.	n.a.	n.a.	n.a.	0.00	0.00
15.090	22.350	0.658	1810.8	1742.8	24.610	3.069	2.69		Clay	78.2			21.12	1.05	n.a.	n.a.	0.97	0.858	n.a.	n.a.	n.a.	n.a.	0.00	0.00
15.260	20.760	0.837	1831.2	1752.6	22.646	4.219	2.81		Clay	87.5			19.62	1.05	n.a.	n.a.	0.97	0.860	n.a.	n.a.	n.a.	n.a.	0.00	0.00
15.420	27.090	0.919	1850.4	1761.8	29.702	3.510	2.67		Clay	76.2			25.60	1.05	n.a.	n.a.	0.97	0.862	n.a.	n.a.	n.a.	n.a.	0.00	0.00
15.580	30.830	0.943	1869.6	1771.0	32.005	3.153	2.61	plastic	Clay	71.8			29.14	1.05	n.a.	n.a.	0.97	0.864	n.a.	n.a.	n.a.	n.a.	0.00	0.00
15.750	27.410	0.902	1890.0	1780.8	29.723	3.408	2.66		Clay	75.5			25.91	1.05	n.a.	n.a.	0.97	0.866	n.a.	n.a.	n.a.	n.a.	0.00	0.00
15.910	27.760	0.748	1909.2	1790.0	28.484	2.790	2.61	plastic	Clay	72.2			26.24	1.05	n.a.	n.a.	0.96	0.867	n.a.	n.a.	n.a.	n.a.	0.00	0.00
16.080	24.400	0.653	1929.6	1799.8	26.042	2.784	2.64		Clay	74.5			23.06	1.04	n.a.	n.a.	0.96	0.869	n.a.	n.a.	n.a.	n.a.	0.00	0.00
16.240	16.560	0.514	1948.8	1809.0	17.231	3.295	2.83		Clay	89.4			15.65	1.04	n.a.	n.a.	0.96	0.871	n.a.	n.a.	n.a.	n.a.	0.00	0.00
16.400	14.640	0.345	1968.0	1818.2	15.021	2.523	2.81		Clay	87.7			13.84	1.04	n.a.	n.a.	0.96	0.873	n.a.	n.a.	n.a.	n.a.	0.00	0.00
16.570	15.940	0.452	1988.4	1828.0	16.352	3.021	2.83		Clay	89.0			15.07	1.04	n.a.	n.a.	0.96	0.874	n.a.	n.a.	n.a.	n.a.	0.00	0.00
16.730	13.830	0.428	2007.6	1837.2	13.962	3.335	2.91		Clay	95.5			13.07	1.04	n.a.	n.a.	0.96	0.876	n.a.	n.a.	n.a.	n.a.	0.00	0.00
16.900	18.870	0.386	2028.0	1847.0	19.335	2.159	2.68		Clay	77.4			17.84	1.04	n.a.	n.a.	0.96	0.878	n.a.	n.a.	n.a.	n.a.	0.00	0.00
17.060	17.450	0.357	2047.2	1856.3	17.698	2.173	2.71		Clay	80.1			16.49	1.04	n.a.	n.a.	0.96	0.879	n.a.	n.a.	n.a.	n.a.	0.00	0.00
17.220	14.660	0.291	2066.4	1865.5	14.609	2.138	2.78		Clay	85.2			13.86	1.03	n.a.	n.a.	0.96	0.881	n.a.	n.a.	n.a.	n.a.	0.00	0.00
17.390	11.270	0.250	2086.8	1875.3	10.907	2.440	2.92		Clay	96.2			10.65	1.03	n.a.	n.a.	0.96	0.882	n.a.	n.a.	n.a.	n.a.	0.00	0.00
17.550	9.790	0.221	2106.0	1884.5	9.273	2.533	2.98		Clay	100.0			9.25	1.03	n.a.	n.a.	0.96	0.884	n.a.	n.a.	n.a.	n.a.	0.00	0.00
17.720	9.060	0.226	2126.4	1894.3	8.443	2.820	3.04		Clay	100.0			8.56	1.03	n.a.	n.a.	0.96	0.885	n.a.	n.a.	n.a.	n.a.	0.00	0.00
17.880	9.340	0.243	2145.6	1903.5	8.686	2.939	3.04		Clay	100.0			8.83	1.03	n.a.	n.a.	0.96	0.886	n.a.	n.a.	n.a.	n.a.	0.00	0.00
18.040	9.960	0.251	2164.8	1912.7	9.283	2.831	3.01		Clay	100.0			9.41	1.03	n.a.	n.a.	0.96	0.888	n.a.	n.a.	n.a.	n.a.	0.00	0.00
18.210	10.840	0.341	2185.2	1922.5	10.140	3.498	3.03		Clay	100.0			10.25	1.03	n.a.	n.a.	0.96	0.889	n.a.	n.a.	n.a.	n.a.	0.00	0.00
18.370	11.780	0.378	2204.4	1931.7	11.055	3.537	3.00		Clay	100.0			11.13	1.02	n.a.	n.a.	0.96	0.890	n.a.	n.a.	n.a.	n.a.	0.00	0.00
18.540	12.050	0.383	2224.8	1941.5	11.267	3.501	2.99		Clay	100.0			11.39	1.02	n.a.	n.a.	0.96	0.892	n.a.	n.a.	n.a.	n.a.	0.00	0.00
18.700	14.120	0.393	2244.0	1950.7	13.326	3.022	2.90		Clay	94.7			13.35	1.02	n.a.	n.a.	0.96	0.893	n.a.	n.a.	n.a.	n.a.	0.00	0.00
18.860	14.220	0.437	2263.2	1959.9	13.356	3.337	2.92		Clay	96.7			13.44	1.02	n.a.	n.a.	0.95	0.894	n.a.	n.a.	n.a.	n.a.	0.00	0.00
19.030	15.480	0.547	2283.6	1969.7	14.559	3.817	2.93		Clay	97.2			14.63	1.02	n.a.	n.a.	0.95	0.895	n.a.	n.a.	n.a.	n.a.	0.00	0.00
19.190	18.480	0.642	2302.8	1978.9	17.513	3.703	2.86		Clay	91.5			17.47	1.02	n.a.	n.a.	0.95	0.896	n.a.	n.a.	n.a.	n.a.	0.00	0.00
19.360	19.580	0.842	2323.2	1988.7	18.523	4.569	2.90		Clay	94.6			18.51	1.02	n.a.	n.a.	0.95	0.898	n.a.	n.a.	n.a.	n.a.	0.00	0.00
19.520	21.210	1.023	2342.4	1998.0	20.059	5.107	2.90		Clay	95.1			20.05	1.02	n.a.	n.a.	0.95	0.899	n.a.	n.a.	n.a.	n.a.	0.00	0.00
19.690	25.350	1.129	2362.8	2007.7	24.075	4.669	2.82		Clay	88.3			23.96	1.01	n.a.	n.a.	0.95	0.900	n.a.	n.a.	n.a.	n.a.	0.00	0.00
19.850	27.970	1.017	2382.0	2017.0	26.554	3.797	2.72		Clay	81.0			26.44	1.01	n.a.	n.a.	0.95	0.901	n.a.	n.a.	n.a.	n.a.	0.00	0.00
20.010	22.750	0.859	2401.2	2026.2	21.271	3.985	2.81		Clay	87.9			21.50	1.01	n.a.	n.a.	0.95	0.902	n.a.	n.a.	n.a.	n.a.	0.00	0.00
20.180	19.090	0.828	2421.6	2036.0	17.563	4.633	2.92		Clay	96.4			18.04	1.01	n.a.	n.a.	0.95	0.903	n.a.	n.a.	n.a.	n.a.	0.00	0.00
20.340	19.240	0.958	2440.8	2045.2	17.621	5.319	2.96		Clay	99.4			18.19	1.01	n.a.	n.a.	0.95	0.904	n.a.	n.a.	n.a.	n.a.	0.00	0.00
20.510	21.770	0.729	2461.2	2055.0	19.990	3.549	2.80		Clay	87.0			20.58	1.01	n.a.	n.a.	0.95	0.905	n.a.	n.a.	n.a.	n.a.	0.00	0.00
20.670	26.740	0.545	2480.4	2064.2	24.402	2.136	2.60		Sand	70.7			25.27	1.01	25.61	83.81	0.95	0.906	1.002	0.119	0.142	0.16	0.04	0.07
20.830	28.280	0.654	2499.6	2073.4	26.073	2.420	2.61		Clay	71.5			26.73	1.01	n.a.	n.a.	0.95	0.907	n.a.	n.a.	n.a.	n.a.	0.00	0.00
21.000	21.900	0.802	2520.0	2083.2	19.816	3.884	2.83		Clay	89.2			20.70	1.00	n.a.	n.a.	0.95	0.908	n.a.	n.a.	n.a.	n.a.	0.00	0.00
21.160	21.870	0.888	2539.2	2092.4	19.691	4.313	2.86		Clay	91.7			20.67	1.00	n.a.	n.a.	0.95	0.909	n.a.	n.a.	n.a.	n.a.	0.00	0.00
21.330	23.600	0.931	2559.6	2102.2	21.235	4.170	2.82		Clay	89.0			22.31	1.00	n.a.	n.a.	0.95	0.909	n.a.	n.a.	n.a.	n.a.	0.00	0.00
21.490	23.590	0.823	2578.8	2111.4	21.124	3.688	2.79		Clay	86.4			22.30	1.00	n.a.	n.a.	0.95	0.910	n.a.	n.a.	n.a.	n.a.	0.00	0.00
21.650	22.190	0.692	2598.0	2120.6	19.703	3.313	2.79		Clay	85.9			20.97	1.00	n.a.	n.a.	0.95	0.911	n.a.	n.a.	n.a.	n.a.	0.00	0.00
21.820	16.720	0.539	2618.4	2130.4	14.467	3.495	2.91		Clay	95.5			15.80	1.00	n.a.	n.a.	0.94	0.912	n.a.	n.a.	n.a.	n.a.	0.00	0.00
21.980	14.660	0.449	2637.6	2139.6	12.470	3.363	2.95		Clay	98.8			13.86	1.00	n.a.	n.a.	0.94	0.913	n.a.	n.a.	n.a.	n.a.	0.00	0.00

CORNERSTONE EARTH GROUP

CPT No.	4

PGA (A_{max})	0.89

Total Settlement:	0.07	(Inches)

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Depth (ft)	q_c (tsf)	f_s (tsf)	σ_{vc} (psf)	Insitu σ'_{vc} (psf)	Q	F (%)	I_c	Layer "Plastic" PI > 7	Flag Soil Type	Fines (%)	q_{cN} near interfaces (soft layer)	Thin Layer Factor (K_H)	Interpreted q_{cN}	C_N	q_{c1N}	q_{c1N-CS}	Stress Reduction Coeff, r_d	CSR	K_σ for Sand	$CRR_{M=7.5, \sigma'vc = 1 atm}$	CRR	Factor of Safety (CRR/CSR)	Vertical Strain ε_v	Settlement (Inches)
22.150	13.440	0.382	2658.0	2149.4	11.269	3.155	2.97		Clay	100.0			12.70	1.00	n.a.	n.a.	0.94	0.913	n.a.	n.a.	n.a.	n.a.	0.00	0.00
22.310	12.930	0.340	2677.2	2158.7	10.739	2.934	2.97		Clay	100.0			12.22	0.99	n.a.	n.a.	0.94	0.914	n.a.	n.a.	n.a.	n.a.	0.00	0.00
22.470	12.020	0.283	2696.4	2167.9	9.845	2.654	2.97		Clay	100.0			11.36	0.99	n.a.	n.a.	0.94	0.915	n.a.	n.a.	n.a.	n.a.	0.00	0.00
22.640	10.840	0.240	2716.8	2177.7	8.708	2.529	3.01		Clay	100.0			10.25	0.99	n.a.	n.a.	0.94	0.916	n.a.	n.a.	n.a.	n.a.	0.00	0.00
22.800	10.650	0.204	2736.0	2186.9	8.489	2.193	2.98		Clay	100.0			10.07	0.99	n.a.	n.a.	0.94	0.916	n.a.	n.a.	n.a.	n.a.	0.00	0.00
22.970	10.570	0.189	2756.4	2196.7	8.369	2.052	2.97		Clay	100.0			9.99	0.99	n.a.	n.a.	0.94	0.917	n.a.	n.a.	n.a.	n.a.	0.00	0.00
23.130	10.540	0.182	2775.6	2205.9	8.298	1.991	2.97		Clay	100.0			9.96	0.99	n.a.	n.a.	0.94	0.918	n.a.	n.a.	n.a.	n.a.	0.00	0.00
23.290	10.730	0.183	2794.8	2215.1	8.426	1.964	2.96		Clay	99.8			10.14	0.99	n.a.	n.a.	0.94	0.918	n.a.	n.a.	n.a.	n.a.	0.00	0.00
23.460	10.640	0.196	2815.2	2224.9	8.299	2.120	2.98		Clay	100.0			10.06	0.99	n.a.	n.a.	0.94	0.919	n.a.	n.a.	n.a.	n.a.	0.00	0.00
23.620	12.330	0.153	2834.4	2234.1	9.769	1.403	2.83		Clay	89.6			11.65	0.99	n.a.	n.a.	0.94	0.919	n.a.	n.a.	n.a.	n.a.	0.00	0.00
23.790	11.250	0.164	2854.8	2243.9	8.755	1.667	2.91		Clay	95.8			10.63	0.98	n.a.	n.a.	0.94	0.920	n.a.	n.a.	n.a.	n.a.	0.00	0.00
23.950	10.280	0.170	2874.0	2253.1	7.850	1.918	2.98		Clay	100.0			9.72	0.98	n.a.	n.a.	0.94	0.921	n.a.	n.a.	n.a.	n.a.	0.00	0.00
24.110	10.800	0.175	2893.2	2262.3	8.269	1.869	2.96		Clay	99.5			10.21	0.98	n.a.	n.a.	0.94	0.921	n.a.	n.a.	n.a.	n.a.	0.00	0.00
24.280	11.820	0.228	2913.6	2272.1	9.122	2.195	2.96		Clay	99.5			11.17	0.98	n.a.	n.a.	0.94	0.922	n.a.	n.a.	n.a.	n.a.	0.00	0.00
24.440	13.290	0.279	2932.8	2281.3	10.365	2.357	2.93		Clay	97.1			12.56	0.98	n.a.	n.a.	0.93	0.922	n.a.	n.a.	n.a.	n.a.	0.00	0.00
24.610	15.080	0.346	2953.2	2291.1	11.875	2.541	2.89		Clay	94.6			14.25	0.98	n.a.	n.a.	0.93	0.923	n.a.	n.a.	n.a.	n.a.	0.00	0.00
24.770	16.590	0.466	2972.4	2300.4	13.132	3.087	2.91		Clay	95.6			15.68	0.98	n.a.	n.a.	0.93	0.923	n.a.	n.a.	n.a.	n.a.	0.00	0.00
24.930	18.960	0.537	2991.6	2309.6	15.123	3.073	2.86		Clay	91.5			17.92	0.98	n.a.	n.a.	0.93	0.924	n.a.	n.a.	n.a.	n.a.	0.00	0.00
25.100	20.950	0.593	3012.0	2319.4	16.767	3.050	2.82		Clay	88.5			19.80	0.98	n.a.	n.a.	0.93	0.924	n.a.	n.a.	n.a.	n.a.	0.00	0.00
25.260	22.450	0.586	3031.2	2328.6	17.980	2.801	2.77		Clay	84.8			21.22	0.98	n.a.	n.a.	0.93	0.925	n.a.	n.a.	n.a.	n.a.	0.00	0.00
25.430	22.240	0.587	3051.6	2338.4	17.717	2.831	2.78		Clay	85.4			21.02	0.97	n.a.	n.a.	0.93	0.925	n.a.	n.a.	n.a.	n.a.	0.00	0.00
25.590	22.990	0.618	3070.8	2347.6	18.278	2.882	2.77		Clay	84.9			21.73	0.97	n.a.	n.a.	0.93	0.925	n.a.	n.a.	n.a.	n.a.	0.00	0.00
25.750	24.240	0.654	3090.0	2356.8	19.259	2.882	2.76		Clay	83.5			22.91	0.97	n.a.	n.a.	0.93	0.926	n.a.	n.a.	n.a.	n.a.	0.00	0.00
25.920	25.660	0.736	3110.4	2366.6	20.371	3.055	2.75		Clay	83.2			24.25	0.97	n.a.	n.a.	0.93	0.926	n.a.	n.a.	n.a.	n.a.	0.00	0.00
26.080	27.510	0.793	3129.6	2375.8	21.841	3.057	2.73		Clay	81.3			26.00	0.97	n.a.	n.a.	0.93	0.927	n.a.	n.a.	n.a.	n.a.	0.00	0.00
26.250	29.280	0.835	3150.0	2385.6	23.227	3.014	2.70		Clay	79.4			27.67	0.97	n.a.	n.a.	0.93	0.927	n.a.	n.a.	n.a.	n.a.	0.00	0.00
26.410	31.530	0.884	3169.2	2394.8	25.009	2.950	2.67		Clay	76.9			29.80	0.97	n.a.	n.a.	0.93	0.927	n.a.	n.a.	n.a.	n.a.	0.00	0.00
26.570	32.980	0.972	3188.4	2404.0	26.111	3.097	2.67		Clay	76.8			31.17	0.97	n.a.	n.a.	0.93	0.928	n.a.	n.a.	n.a.	n.a.	0.00	0.00
26.740	33.360	0.973	3208.8	2413.8	26.311	3.064	2.67		Clay	76.4			31.53	0.97	n.a.	n.a.	0.93	0.928	n.a.	n.a.	n.a.	n.a.	0.00	0.00
26.900	33.340	1.023	3228.0	2423.0	26.187	3.224	2.68		Clay	77.6			31.51	0.96	n.a.	n.a.	0.93	0.928	n.a.	n.a.	n.a.	n.a.	0.00	0.00
27.070	32.940	1.094	3248.4	2432.8	25.744	3.492	2.71		Clay	79.9			31.13	0.96	n.a.	n.a.	0.92	0.929	n.a.	n.a.	n.a.	n.a.	0.00	0.00
27.230	34.170	1.098	3267.6	2442.0	26.647	3.374	2.69		Clay	78.2			32.30	0.96	n.a.	n.a.	0.92	0.929	n.a.	n.a.	n.a.	n.a.	0.00	0.00
27.400	35.430	1.098	3288.0	2451.8	27.560	3.249	2.67		Clay	76.4			33.49	0.96	n.a.	n.a.	0.92	0.929	n.a.	n.a.	n.a.	n.a.	0.00	0.00
27.560	35.750	1.059	3307.2	2461.1	27.709	3.106	2.65		Clay	75.3			33.79	0.96	n.a.	n.a.	0.92	0.929	n.a.	n.a.	n.a.	n.a.	0.00	0.00
27.720	35.930	1.057	3326.4	2470.3	27.743	3.085	2.65		Clay	75.1			33.96	0.96	n.a.	n.a.	0.92	0.930	n.a.	n.a.	n.a.	n.a.	0.00	0.00
27.890	36.720	1.117	3346.8	2480.1	28.263	3.187	2.65		Clay	75.4			34.71	0.96	n.a.	n.a.	0.92	0.930	n.a.	n.a.	n.a.	n.a.	0.00	0.00
28.050	37.180	1.090	3366.0	2489.3	28.520	3.072	2.64		Clay	74.3			35.14	0.96	n.a.	n.a.	0.92	0.930	n.a.	n.a.	n.a.	n.a.	0.00	0.00
28.220	35.700	1.074	3386.4	2499.1	27.216	3.157	2.66		Clay	76.1			33.74	0.96	n.a.	n.a.	0.92	0.930	n.a.	n.a.	n.a.	n.a.	0.00	0.00
28.380	30.560	1.052	3405.6	2508.3	23.009	3.644	2.76		Clay	83.8			28.88	0.96	n.a.	n.a.	0.92	0.931	n.a.	n.a.	n.a.	n.a.	0.00	0.00
28.540	30.360	0.981	3424.8	2517.5	22.759	3.424	2.75		Clay	82.7			28.70	0.96	n.a.	n.a.	0.92	0.931	n.a.	n.a.	n.a.	n.a.	0.00	0.00
28.710	28.010	0.875	3445.2	2527.3	20.803	3.329	2.77		Clay	84.5			26.47	0.95	n.a.	n.a.	0.92	0.931	n.a.	n.a.	n.a.	n.a.	0.00	0.00
28.870	25.270	0.763	3464.4	2536.5	18.559	3.242	2.80		Clay	87.0			23.88	0.95	n.a.	n.a.	0.92	0.931	n.a.	n.a.	n.a.	n.a.	0.00	0.00
29.040	23.700	0.693	3484.8	2546.3	17.247	3.154	2.82		Clay	88.5			22.40	0.95	n.a.	n.a.	0.92	0.931	n.a.	n.a.	n.a.	n.a.	0.00	0.00
29.200	23.090	0.722	3504.0	2555.5	16.700	3.383	2.85		Clay	90.8			21.82	0.95	n.a.	n.a.	0.92	0.931	n.a.	n.a.	n.a.	n.a.	0.00	0.00
29.360	22.810	0.732	3523.2	2564.7	16.414	3.477	2.86		Clay	91.9			21.56	0.95	n.a.	n.a.	0.92	0.932	n.a.	n.a.	n.a.	n.a.	0.00	0.00
29.530	22.300	0.684	3543.6	2574.5	15.947	3.333	2.86		Clay	91.8			21.08	0.95	n.a.	n.a.	0.91	0.932	n.a.	n.a.	n.a.	n.a.	0.00	0.00
29.690	21.030	0.616	3562.8	2583.7	14.900	3.200	2.87		Clay	92.8			19.88	0.95	n.a.	n.a.	0.91	0.932	n.a.	n.a.	n.a.	n.a.	0.00	0.00
29.860	19.080	0.557	3583.2	2593.5	13.332	3.222	2.91		Clay	96.0			18.03	0.95	n.a.	n.a.	0.91	0.932	n.a.	n.a.	n.a.	n.a.	0.00	0.00
30.020	17.990	0.523	3602.4	2602.8	12.440	3.231	2.94		Clay	98.0			17.00	0.95	n.a.	n.a.	0.91	0.932	n.a.	n.a.	n.a.	n.a.	0.00	0.00
30.180	17.220	0.495	3621.6	2612.0	11.799	3.210	2.96		Clay	99.4			16.28	0.95	n.a.	n.a.	0.91	0.932	n.a.	n.a.	n.a.	n.a.	0.00	0.00
30.350	16.590	0.451	3642.0	2621.8	11.266	3.052	2.96		Clay	99.7			15.68	0.95	n.a.	n.a.	0.91	0.932	n.a.	n.a.	n.a.	n.a.	0.00	0.00
30.510	16.760	0.425	3661.2	2631.0	11.349	2.845	2.94		Clay	98.1			15.84	0.94	n.a.	n.a.	0.91	0.932	n.a.	n.a.	n.a.	n.a.	0.00	0.00
30.680	17.220	0.419	3681.6	2640.8	11.648	2.723	2.92		Clay	96.5			16.28	0.94	n.a.	n.a.	0.91	0.932	n.a.	n.a.	n.a.	n.a.	0.00	0.00
30.840	17.850	0.475	3700.8	2650.0	12.075	2.966	2.93		Clay	97.1			16.87	0.94	n.a.	n.a.	0.91	0.933	n.a.	n.a.	n.a.	n.a.	0.00	0.00
31.000	18.840	0.485	3720.0	2659.2	12.771	2.853	2.90		Clay	94.8			17.81	0.94	n.a.	n.a.	0.91	0.933	n.a.	n.a.	n.a.	n.a.	0.00	0.00
31.170	20.220	0.550	3740.4	2669.0	13.750	2.999	2.88		Clay	93.7			19.11	0.94	n.a.	n.a.	0.91	0.933	n.a.	n.a.	n.a.	n.a.	0.00	0.00
31.330	20.430	0.525	3759.6	2678.2	13.853	2.831	2.87		Clay	92.3			19.31	0.94	n.a.	n.a.	0.91	0.933	n.a.	n.a.	n.a.	n.a.	0.00	0.00
31.500	20.180	0.453	3780.0	2688.0	13.609	2.478	2.84		Clay	90.2			19.07	0.94	n.a.	n.a.	0.91	0.933	n.a.	n.a.	n.a.	n.a.	0.00	0.00
31.660	18.900	0.434	3799.2	2697.2	12.606	2.553	2.87		Clay	92.9			17.86	0.94	n.a.	n.a.	0.91	0.933	n.a.	n.a.	n.a.	n.a.	0.00	0.00
31.820	18.580	0.485	3818.4	2706.4	12.319	2.909	2.91		Clay	96.2			17.56	0.94	n.a.	n.a.	0.91	0.933	n.a.	n.a.	n.a.	n.a.	0.00	0.00
31.990	20.210	0.472	3838.8	2716.2	13.468	2.579	2.85		Clay	91.3			19.10	0.94	n.a.	n.a.	0.90	0.933	n.a.	n.a.	n.a.	n.a.	0.00	0.00
32.150	19.400	0.509	3858.0	2725.4	12.821	2.911	2.90		Clay	95.1			18.34	0.94	n.a.	n.a.	0.90	0.933	n.a.	n.a.	n.a.	n.a.	0.00	0.00
32.320	20.490	0.446	3878.4	2735.2	13.564	2.406	2.83		Clay	89.7			19.37	0.93	n.a.	n.a.	0.90	0.933	n.a.	n.a.	n.a.	n.a.	0.00	0.00
32.480	22.850	0.432	3897.6	2744.4	15.232	2.066	2.75		Clay	83.4			21.60	0.93	n.a.	n.a.	0.90	0.933	n.a.	n.a.	n.a.	n.a.	0.00	0.00
32.640	23.160	0.467	3916.8	2753.7	15.399	2.204	2.77		Clay	84.3			21.89	0.93	n.a.	n.a.	0.90	0.933	n.a.	n.a.	n.a.	n.a.	0.00	0.00
32.810	24.030	0.502	3937.2	2763.5	15.967	2.275	2.76		Clay	83.9			22.71	0.93	n.a.	n.a.	0.90	0.933	n.a.	n.a.	n.a.	n.a.	0.00	0.00
32.970	25.060	0.572	3956.4	2772.7	16.649	2.476	2.77		Clay	84.4			23.69	0.93	n.a.	n.a.	0.90	0.933	n.a.	n.a.	n.a.	n.a.	0.00	0.00

CORNERSTONE EARTH GROUP

CPT No.	4

PGA (A_{max})	0.89

Total Settlement:	0.07	(Inches)

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Depth (ft)	q_c (tsf)	f_s (tsf)	σ_{vc} (psf)	Insitu σ'_{vc} (psf)	Q	F (%)	I_c	Layer "Plastic" PI > 7	Flag Soil Type	Fines (%)	q_{cN} near interfaces (soft layer)	Thin Layer Factor (K_H)	Interpreted q_{cN}	C_N	q_{c1N}	q_{c1N-CS}	Stress Reduction Coeff, r_d	CSR	K_σ for Sand	$CRR_{M=7.5, \sigma'vc = 1 atm}$	CRR	Factor of Safety (CRR/CSR)	Vertical Strain ε_v	Settlement (Inches)
33.140	26.040	0.639	3976.8	2782.5	17.288	2.657	2.77		Clay	84.8			24.61	0.93	n.a.	n.a.	0.90	0.932	n.a.	n.a.	n.a.	n.a.	0.00	0.00
33.300	27.040	0.702	3996.0	2791.7	17.940	2.804	2.77		Clay	84.9			25.56	0.93	n.a.	n.a.	0.90	0.932	n.a.	n.a.	n.a.	n.a.	0.00	0.00
33.460	26.230	0.827	4015.2	2800.9	17.296	3.415	2.84		Clay	90.1			24.79	0.93	n.a.	n.a.	0.90	0.932	n.a.	n.a.	n.a.	n.a.	0.00	0.00
33.630	24.870	0.785	4035.6	2810.7	16.261	3.435	2.86		Clay	91.9			23.51	0.93	n.a.	n.a.	0.90	0.932	n.a.	n.a.	n.a.	n.a.	0.00	0.00
33.790	23.890	0.686	4054.8	2819.9	15.506	3.136	2.85		Clay	91.3			22.58	0.93	n.a.	n.a.	0.90	0.932	n.a.	n.a.	n.a.	n.a.	0.00	0.00
33.960	21.490	0.632	4075.2	2829.7	13.749	3.248	2.90		Clay	95.4			20.31	0.93	n.a.	n.a.	0.90	0.932	n.a.	n.a.	n.a.	n.a.	0.00	0.00
34.120	17.550	0.549	4094.4	2838.9	10.922	3.542	3.01		Clay	100.0			16.59	0.93	n.a.	n.a.	0.90	0.932	n.a.	n.a.	n.a.	n.a.	0.00	0.00
34.280	15.610	0.482	4113.6	2848.1	9.517	3.554	3.06		Clay	100.0			14.75	0.92	n.a.	n.a.	0.90	0.932	n.a.	n.a.	n.a.	n.a.	0.00	0.00
34.450	15.700	0.435	4134.0	2857.9	9.541	3.187	3.03		Clay	100.0			14.84	0.92	n.a.	n.a.	0.89	0.932	n.a.	n.a.	n.a.	n.a.	0.00	0.00
34.610	15.890	0.383	4153.2	2867.1	9.636	2.772	2.99		Clay	100.0			15.02	0.92	n.a.	n.a.	0.89	0.932	n.a.	n.a.	n.a.	n.a.	0.00	0.00
34.780	16.690	0.392	4173.6	2876.9	10.152	2.687	2.96		Clay	100.0			15.78	0.92	n.a.	n.a.	0.89	0.932	n.a.	n.a.	n.a.	n.a.	0.00	0.00
34.940	17.410	0.375	4192.8	2886.1	10.612	2.447	2.93		Clay	97.1			16.46	0.92	n.a.	n.a.	0.89	0.931	n.a.	n.a.	n.a.	n.a.	0.00	0.00
35.100	18.050	0.469	4212.0	2895.4	11.013	2.940	2.96		Clay	99.6			17.06	0.92	n.a.	n.a.	0.89	0.931	n.a.	n.a.	n.a.	n.a.	0.00	0.00
35.270	20.000	0.616	4232.4	2905.2	12.312	3.444	2.96		Clay	99.6			18.90	0.92	n.a.	n.a.	0.89	0.931	n.a.	n.a.	n.a.	n.a.	0.00	0.00
35.430	24.580	0.569	4251.6	2914.4	15.409	2.534	2.80		Clay	87.1			23.23	0.92	n.a.	n.a.	0.89	0.931	n.a.	n.a.	n.a.	n.a.	0.00	0.00
35.600	24.480	0.546	4272.0	2924.2	15.282	2.445	2.79		Clay	86.6			23.14	0.92	n.a.	n.a.	0.89	0.931	n.a.	n.a.	n.a.	n.a.	0.00	0.00
35.760	22.100	0.438	4291.2	2933.4	13.605	2.194	2.81		Clay	87.8			20.89	0.92	n.a.	n.a.	0.89	0.931	n.a.	n.a.	n.a.	n.a.	0.00	0.00
35.930	20.540	0.350	4311.6	2943.2	12.493	1.901	2.81		Clay	87.6			19.41	0.92	n.a.	n.a.	0.89	0.931	n.a.	n.a.	n.a.	n.a.	0.00	0.00
36.090	19.250	0.318	4330.8	2952.4	11.573	1.860	2.83		Clay	89.4			18.19	0.92	n.a.	n.a.	0.89	0.930	n.a.	n.a.	n.a.	n.a.	0.00	0.00
36.250	17.840	0.280	4350.0	2961.6	10.579	1.785	2.85		Clay	91.3			16.86	0.92	n.a.	n.a.	0.89	0.930	n.a.	n.a.	n.a.	n.a.	0.00	0.00
36.420	16.700	0.276	4370.4	2971.4	9.770	1.901	2.90		Clay	94.8			15.78	0.91	n.a.	n.a.	0.89	0.930	n.a.	n.a.	n.a.	n.a.	0.00	0.00
36.580	16.150	0.263	4389.6	2980.6	9.364	1.885	2.91		Clay	95.9			15.26	0.91	n.a.	n.a.	0.89	0.930	n.a.	n.a.	n.a.	n.a.	0.00	0.00
36.750	15.890	0.280	4410.0	2990.4	9.153	2.047	2.94		Clay	98.1			15.02	0.91	n.a.	n.a.	0.89	0.930	n.a.	n.a.	n.a.	n.a.	0.00	0.00
36.910	16.430	0.304	4429.2	2999.6	9.478	2.141	2.94		Clay	97.9			15.53	0.91	n.a.	n.a.	0.88	0.929	n.a.	n.a.	n.a.	n.a.	0.00	0.00
37.070	17.210	0.349	4448.4	3008.8	9.961	2.332	2.94		Clay	98.0			16.27	0.91	n.a.	n.a.	0.88	0.929	n.a.	n.a.	n.a.	n.a.	0.00	0.00
37.240	17.870	0.410	4468.8	3018.6	10.359	2.620	2.95		Clay	99.1			16.89	0.91	n.a.	n.a.	0.88	0.929	n.a.	n.a.	n.a.	n.a.	0.00	0.00
37.400	18.630	0.419	4488.0	3027.8	10.824	2.556	2.93		Clay	97.4			17.61	0.91	n.a.	n.a.	0.88	0.929	n.a.	n.a.	n.a.	n.a.	0.00	0.00
37.570	18.830	0.424	4508.4	3037.6	10.914	2.558	2.93		Clay	97.1			17.80	0.91	n.a.	n.a.	0.88	0.929	n.a.	n.a.	n.a.	n.a.	0.00	0.00
37.730	18.530	0.418	4527.6	3046.8	10.677	2.569	2.94		Clay	97.8			17.51	0.91	n.a.	n.a.	0.88	0.928	n.a.	n.a.	n.a.	n.a.	0.00	0.00
37.890	17.960	0.398	4546.8	3056.1	10.266	2.540	2.95		Clay	98.8			16.98	0.91	n.a.	n.a.	0.88	0.928	n.a.	n.a.	n.a.	n.a.	0.00	0.00
38.060	17.700	0.357	4567.2	3065.9	10.057	2.316	2.93		Clay	97.6			16.73	0.91	n.a.	n.a.	0.88	0.928	n.a.	n.a.	n.a.	n.a.	0.00	0.00
38.220	18.000	0.330	4586.4	3075.1	10.216	2.098	2.90		Clay	95.3			17.01	0.91	n.a.	n.a.	0.88	0.928	n.a.	n.a.	n.a.	n.a.	0.00	0.00
38.390	17.610	0.304	4606.8	3084.9	9.924	1.984	2.90		Clay	95.1			16.64	0.91	n.a.	n.a.	0.88	0.927	n.a.	n.a.	n.a.	n.a.	0.00	0.00
38.550	18.070	0.279	4626.0	3094.1	10.185	1.767	2.87		Clay	92.3			17.08	0.90	n.a.	n.a.	0.88	0.927	n.a.	n.a.	n.a.	n.a.	0.00	0.00
38.710	18.170	0.283	4645.2	3103.3	10.213	1.786	2.87		Clay	92.4			17.17	0.90	n.a.	n.a.	0.88	0.927	n.a.	n.a.	n.a.	n.a.	0.00	0.00
38.880	19.300	0.264	4665.6	3113.1	10.901	1.553	2.81		Clay	88.0			18.24	0.90	n.a.	n.a.	0.88	0.927	n.a.	n.a.	n.a.	n.a.	0.00	0.00
39.040	19.810	0.259	4684.8	3122.3	11.189	1.481	2.79		Clay	86.4			18.72	0.90	n.a.	n.a.	0.88	0.926	n.a.	n.a.	n.a.	n.a.	0.00	0.00
39.210	20.010	0.243	4705.2	3132.1	11.275	1.374	2.77		Clay	84.8			18.91	0.90	n.a.	n.a.	0.87	0.926	n.a.	n.a.	n.a.	n.a.	0.00	0.00
39.370	20.150	0.223	4724.4	3141.3	11.325	1.254	2.75		Clay	83.2			19.05	0.90	n.a.	n.a.	0.87	0.926	n.a.	n.a.	n.a.	n.a.	0.00	0.00
39.530	19.400	0.189	4743.6	3150.5	10.810	1.112	2.75		Clay	82.6			18.34	0.90	n.a.	n.a.	0.87	0.925	n.a.	n.a.	n.a.	n.a.	0.00	0.00
39.700	18.000	0.188	4764.0	3160.3	9.884	1.206	2.80		Clay	86.7			17.01	0.90	n.a.	n.a.	0.87	0.925	n.a.	n.a.	n.a.	n.a.	0.00	0.00
39.860	16.910	0.227	4783.2	3169.5	9.161	1.561	2.88		Clay	93.3			15.98	0.90	n.a.	n.a.	0.87	0.925	n.a.	n.a.	n.a.	n.a.	0.00	0.00
40.030	17.560	0.324	4803.6	3179.3	9.535	2.139	2.93		Clay	97.7			16.60	0.90	n.a.	n.a.	0.87	0.925	n.a.	n.a.	n.a.	n.a.	0.00	0.00
40.190	20.370	0.480	4822.8	3188.5	11.264	2.671	2.93		Clay	97.1			19.25	0.90	n.a.	n.a.	0.87	0.924	n.a.	n.a.	n.a.	n.a.	0.00	0.00
40.350	21.880	0.649	4842.0	3197.8	12.170	3.336	2.95		Clay	99.3			20.68	0.90	n.a.	n.a.	0.87	0.924	n.a.	n.a.	n.a.	n.a.	0.00	0.00
40.520	22.960	0.742	4862.4	3207.6	12.800	3.612	2.96		Clay	99.6			21.70	0.90	n.a.	n.a.	0.87	0.924	n.a.	n.a.	n.a.	n.a.	0.00	0.00
40.680	22.770	0.773	4881.6	3216.8	12.640	3.801	2.97		Clay	100.0			21.52	0.90	n.a.	n.a.	0.87	0.923	n.a.	n.a.	n.a.	n.a.	0.00	0.00
40.850	23.170	0.827	4902.0	3226.6	12.843	3.989	2.98		Clay	100.0			21.90	0.89	n.a.	n.a.	0.87	0.923	n.a.	n.a.	n.a.	n.a.	0.00	0.00
41.010	24.080	0.921	4921.2	3235.8	13.363	4.260	2.99		Clay	100.0			22.76	0.89	n.a.	n.a.	0.87	0.923	n.a.	n.a.	n.a.	n.a.	0.00	0.00
41.170	25.770	0.924	4940.4	3245.0	14.360	3.967	2.94		Clay	98.4			24.36	0.89	n.a.	n.a.	0.87	0.922	n.a.	n.a.	n.a.	n.a.	0.00	0.00
41.340	26.270	0.935	4960.8	3254.8	14.618	3.929	2.93		Clay	97.7			24.83	0.89	n.a.	n.a.	0.87	0.922	n.a.	n.a.	n.a.	n.a.	0.00	0.00
41.500	27.620	0.981	4980.0	3264.0	15.398	3.904	2.91		Clay	96.1			26.11	0.89	n.a.	n.a.	0.86	0.922	n.a.	n.a.	n.a.	n.a.	0.00	0.00
41.670	28.760	0.958	5000.4	3273.8	16.042	3.648	2.88		Clay	93.5			27.18	0.89	n.a.	n.a.	0.86	0.921	n.a.	n.a.	n.a.	n.a.	0.00	0.00
41.830	30.380	0.990	5019.6	3283.0	16.978	3.551	2.86		Clay	91.4			28.71	0.89	n.a.	n.a.	0.86	0.921	n.a.	n.a.	n.a.	n.a.	0.00	0.00
41.990	32.400	1.060	5038.8	3292.2	18.152	3.546	2.83		Clay	89.6			30.62	0.89	n.a.	n.a.	0.86	0.921	n.a.	n.a.	n.a.	n.a.	0.00	0.00
42.160	38.110	1.228	5059.2	3302.0	21.551	3.450	2.77		Clay	84.3			36.02	0.89	n.a.	n.a.	0.86	0.920	n.a.	n.a.	n.a.	n.a.	0.00	0.00
42.320	37.910	1.275	5078.4	3311.2	21.364	3.605	2.78		Clay	85.5			35.83	0.89	n.a.	n.a.	0.86	0.920	n.a.	n.a.	n.a.	n.a.	0.00	0.00
42.490	33.490	1.191	5098.8	3321.0	18.633	3.851	2.85		Clay	90.7			31.65	0.89	n.a.	n.a.	0.86	0.920	n.a.	n.a.	n.a.	n.a.	0.00	0.00
42.650	32.820	1.104	5118.0	3330.2	18.173	3.648	2.84		Clay	90.2			31.02	0.89	n.a.	n.a.	0.86	0.919	n.a.	n.a.	n.a.	n.a.	0.00	0.00
42.810	31.640	1.079	5137.2	3339.5	17.411	3.711	2.86		Clay	91.7			29.91	0.89	n.a.	n.a.	0.86	0.919	n.a.	n.a.	n.a.	n.a.	0.00	0.00
42.980	30.590	1.019	5157.6	3349.2	16.727	3.639	2.87		Clay	92.3			28.91	0.89	n.a.	n.a.	0.86	0.919	n.a.	n.a.	n.a.	n.a.	0.00	0.00
43.140	29.590	0.944	5176.8	3358.5	16.080	3.497	2.87		Clay	92.6			27.97	0.89	n.a.	n.a.	0.86	0.918	n.a.	n.a.	n.a.	n.a.	0.00	0.00
43.310	29.770	0.890	5197.2	3368.3	16.134	3.274	2.85		Clay	91.1			28.14	0.88	n.a.	n.a.	0.86	0.918	n.a.	n.a.	n.a.	n.a.	0.00	0.00
43.470	28.580	0.866	5216.4	3377.5	15.379	3.333	2.87		Clay	92.8			27.01	0.88	n.a.	n.a.	0.86	0.917	n.a.	n.a.	n.a.	n.a.	0.00	0.00
43.640	27.060	0.818	5236.8	3387.3	14.431	3.346	2.90		Clay	94.6			25.58	0.88	n.a.	n.a.	0.86	0.917	n.a.	n.a.	n.a.	n.a.	0.00	0.00
43.800	26.790	0.817	5256.0	3396.5	14.228	3.379	2.90		Clay	95.2			25.32	0.88	n.a.	n.a.	0.85	0.917	n.a.	n.a.	n.a.	n.a.	0.00	0.00
43.960	25.440	0.826	5275.2	3405.7	13.391	3.623	2.94		Clay	98.4			24.05	0.88	n.a.	n.a.	0.85	0.916	n.a.	n.a.	n.a.	n.a.	0.00	0.00

CORNERSTONE EARTH GROUP

CPT No.	4

PGA (A_{max})	0.89

Total Settlement:	0.07	(Inches)

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Depth (ft)	q_c (tsf)	f_s (tsf)	σ_{vc} (psf)	Insitu σ'_{vc} (psf)	Q	F (%)	I_c	Layer "Plastic" PI > 7	Flag Soil Type	Fines (%)	q_{cN} near interfaces (soft layer)	Thin Layer Factor (K_H)	Interpreted q_{cN}	C_N	q_{c1N}	q_{c1N-CS}	Stress Reduction Coeff, r_d	CSR	K_σ for Sand	$CRR_{M=7.5, \sigma'vc = 1 atm}$	CRR	Factor of Safety (CRR/CSR)	Vertical Strain ε_v	Settlement (Inches)
44.130	23.360	0.743	5295.6	3415.5	12.128	3.588	2.97		Clay	100.0			22.08	0.88	n.a.	n.a.	0.85	0.916	n.a.	n.a.	n.a.	n.a.	0.00	0.00
44.290	21.600	0.546	5314.8	3424.7	11.062	2.881	2.95		Clay	99.1			20.42	0.88	n.a.	n.a.	0.85	0.915	n.a.	n.a.	n.a.	n.a.	0.00	0.00
44.460	21.480	0.539	5335.2	3434.5	10.955	2.865	2.95		Clay	99.2			20.30	0.88	n.a.	n.a.	0.85	0.915	n.a.	n.a.	n.a.	n.a.	0.00	0.00
44.620	20.250	0.588	5354.4	3443.7	10.206	3.344	3.02		Clay	100.0			19.14	0.88	n.a.	n.a.	0.85	0.915	n.a.	n.a.	n.a.	n.a.	0.00	0.00
44.780	23.140	0.581	5373.6	3452.9	11.847	2.841	2.92		Clay	96.8			21.87	0.88	n.a.	n.a.	0.85	0.914	n.a.	n.a.	n.a.	n.a.	0.00	0.00
44.950	23.270	0.588	5394.0	3462.7	11.883	2.858	2.92		Clay	96.9			21.99	0.88	n.a.	n.a.	0.85	0.914	n.a.	n.a.	n.a.	n.a.	0.00	0.00
45.110	23.960	0.574	5413.2	3471.9	12.243	2.701	2.90		Clay	94.9			22.65	0.88	n.a.	n.a.	0.85	0.913	n.a.	n.a.	n.a.	n.a.	0.00	0.00
45.280	23.920	0.566	5433.6	3481.7	12.180	2.668	2.90		Clay	94.8			22.61	0.88	n.a.	n.a.	0.85	0.913	n.a.	n.a.	n.a.	n.a.	0.00	0.00
45.440	22.920	0.538	5452.8	3490.9	11.569	2.662	2.92		Clay	96.2			21.66	0.88	n.a.	n.a.	0.85	0.913	n.a.	n.a.	n.a.	n.a.	0.00	0.00
45.600	22.110	0.468	5472.0	3500.2	11.070	2.413	2.91		Clay	95.6			20.90	0.88	n.a.	n.a.	0.85	0.912	n.a.	n.a.	n.a.	n.a.	0.00	0.00
45.770	21.700	0.401	5492.4	3510.0	10.800	2.118	2.89		Clay	93.8			20.51	0.88	n.a.	n.a.	0.85	0.912	n.a.	n.a.	n.a.	n.a.	0.00	0.00
45.930	22.130	0.413	5511.6	3519.2	11.011	2.133	2.88		Clay	93.4			20.92	0.87	n.a.	n.a.	0.85	0.911	n.a.	n.a.	n.a.	n.a.	0.00	0.00
46.100	21.240	0.403	5532.0	3529.0	10.470	2.180	2.90		Clay	95.3			20.08	0.87	n.a.	n.a.	0.84	0.911	n.a.	n.a.	n.a.	n.a.	0.00	0.00
46.260	21.390	0.392	5551.2	3538.2	10.522	2.107	2.89		Clay	94.5			20.22	0.87	n.a.	n.a.	0.84	0.910	n.a.	n.a.	n.a.	n.a.	0.00	0.00
46.420	20.980	0.418	5570.4	3547.4	10.258	2.295	2.92		Clay	96.9			19.83	0.87	n.a.	n.a.	0.84	0.910	n.a.	n.a.	n.a.	n.a.	0.00	0.00
46.590	20.170	0.421	5590.8	3557.2	9.769	2.424	2.95		Clay	99.3			19.06	0.87	n.a.	n.a.	0.84	0.909	n.a.	n.a.	n.a.	n.a.	0.00	0.00
46.750	20.380	0.505	5610.0	3566.4	9.856	2.873	2.99		Clay	100.0			19.26	0.87	n.a.	n.a.	0.84	0.909	n.a.	n.a.	n.a.	n.a.	0.00	0.00
46.920	21.700	0.576	5630.4	3576.2	10.561	3.051	2.98		Clay	100.0			20.51	0.87	n.a.	n.a.	0.84	0.909	n.a.	n.a.	n.a.	n.a.	0.00	0.00
47.080	23.260	0.625	5649.6	3585.4	11.399	3.060	2.96		Clay	99.4			21.98	0.87	n.a.	n.a.	0.84	0.908	n.a.	n.a.	n.a.	n.a.	0.00	0.00
47.240	24.130	0.668	5668.8	3594.6	11.849	3.136	2.95		Clay	98.8			22.81	0.87	n.a.	n.a.	0.84	0.908	n.a.	n.a.	n.a.	n.a.	0.00	0.00
47.410	23.890	0.580	5689.2	3604.4	11.678	2.755	2.92		Clay	96.6			22.58	0.87	n.a.	n.a.	0.84	0.907	n.a.	n.a.	n.a.	n.a.	0.00	0.00
47.570	22.680	0.507	5708.4	3613.6	10.973	2.556	2.92		Clay	97.0			21.44	0.87	n.a.	n.a.	0.84	0.907	n.a.	n.a.	n.a.	n.a.	0.00	0.00
47.740	21.300	0.499	5728.8	3623.4	10.176	2.705	2.97		Clay	100.0			20.13	0.87	n.a.	n.a.	0.84	0.906	n.a.	n.a.	n.a.	n.a.	0.00	0.00
47.900	20.940	0.653	5748.0	3632.6	9.946	3.612	3.05		Clay	100.0			19.79	0.87	n.a.	n.a.	0.84	0.906	n.a.	n.a.	n.a.	n.a.	0.00	0.00
48.060	22.060	0.661	5767.2	3641.9	10.531	3.447	3.01		Clay	100.0			20.85	0.87	n.a.	n.a.	0.84	0.905	n.a.	n.a.	n.a.	n.a.	0.00	0.00
48.230	25.290	0.624	5787.6	3651.6	12.266	2.785	2.91		Clay	95.4			23.90	0.87	n.a.	n.a.	0.84	0.905	n.a.	n.a.	n.a.	n.a.	0.00	0.00
48.390	23.830	0.574	5806.8	3660.9	11.433	2.742	2.93		Clay	97.1			22.52	0.87	n.a.	n.a.	0.83	0.904	n.a.	n.a.	n.a.	n.a.	0.00	0.00
48.560	22.210	0.498	5827.2	3670.7	10.514	2.583	2.94		Clay	98.4			20.99	0.86	n.a.	n.a.	0.83	0.904	n.a.	n.a.	n.a.	n.a.	0.00	0.00
48.720	22.090	0.506	5846.4	3679.9	10.417	2.638	2.95		Clay	99.1			20.88	0.86	n.a.	n.a.	0.83	0.904	n.a.	n.a.	n.a.	n.a.	0.00	0.00
48.880	22.300	0.618	5865.6	3689.1	10.500	3.192	2.99		Clay	100.0			21.08	0.86	n.a.	n.a.	0.83	0.903	n.a.	n.a.	n.a.	n.a.	0.00	0.00
49.050	24.900	0.655	5886.0	3698.9	11.872	2.983	2.93		Clay	97.7			23.53	0.86	n.a.	n.a.	0.83	0.903	n.a.	n.a.	n.a.	n.a.	0.00	0.00
49.210	28.270	0.770	5905.2	3708.1	13.655	3.042	2.89		Clay	94.2			26.72	0.86	n.a.	n.a.	0.83	0.902	n.a.	n.a.	n.a.	n.a.	0.00	0.00
49.380	28.810	1.069	5925.6	3717.9	13.904	4.135	2.96		Clay	100.0			27.23	0.86	n.a.	n.a.	0.83	0.902	n.a.	n.a.	n.a.	n.a.	0.00	0.00
49.540	32.180	2.375	5944.8	3727.1	15.673	8.130	3.12		Clay	100.0			30.42	0.86	n.a.	n.a.	0.83	0.901	n.a.	n.a.	n.a.	n.a.	0.00	0.00
49.700	42.940	3.033	5964.0	3736.3	21.389	7.590	3.00		Clay	100.0			40.59	0.86	n.a.	n.a.	0.83	0.901	n.a.	n.a.	n.a.	n.a.	0.00	0.00
49.870	66.220	3.291	5984.4	3746.1	33.756	5.204	2.74		Clay	82.4			62.59	0.86	n.a.	n.a.	0.83	0.900	n.a.	n.a.	n.a.	n.a.	0.00	0.00
50.030	93.150	3.014	6003.6	3755.3	63.960	3.343	2.41		Sand	55.9			88.04	0.78	68.88	135.50	0.83	0.900	0.919	0.216	0.301	0.33	0.02	0.00
50.200	89.400	2.228	6024.0	3765.1	61.212	2.579	2.34		Sand	50.5			84.50	0.78	65.60	129.21	0.83	0.899	0.923	0.195	0.263	0.29	0.02	0.00
50.360	68.050	1.535	6043.2	3774.3	46.021	2.360	2.41		Sand	55.7			64.32	0.76	48.80	109.87	0.83	0.899	0.934	0.152	0.187	0.21	0.03	0.00
50.520	46.750	1.454	6062.4	3783.6	23.110	3.327	2.73		Clay	81.7			44.19	0.86	n.a.	n.a.	0.83	0.898	n.a.	n.a.	n.a.	n.a.	0.00	0.00
50.690	30.100	1.355	6082.8	3793.3	14.266	5.008	3.01		Clay	100.0			28.45	0.86	n.a.	n.a.	0.82	0.898	n.a.	n.a.	n.a.	n.a.	0.00	0.00
50.850	33.360	1.839	6102.0	3802.6	15.941	6.067	3.03		Clay	100.0			31.53	0.86	n.a.	n.a.	0.82	0.897	n.a.	n.a.	n.a.	n.a.	0.00	0.00
51.020	36.110	2.408	6122.4	3812.4	17.338	7.285	3.05		Clay	100.0			34.13	0.86	n.a.	n.a.	0.82	0.897	n.a.	n.a.	n.a.	n.a.	0.00	0.00
51.180	50.730	2.873	6141.6	3821.6	24.942	6.027	2.88		Clay	93.5			47.95	0.86	n.a.	n.a.	0.82	0.896	n.a.	n.a.	n.a.	n.a.	0.00	0.00
51.350	88.610	3.727	6162.0	3831.4	44.647	4.358	2.60		Clay	71.2			83.75	0.86	n.a.	n.a.	0.82	0.896	n.a.	n.a.	n.a.	n.a.	0.00	0.00
51.510	113.260	4.675	6181.2	3840.6	77.292	4.243	2.43		Sand	57.6			107.05	0.79	84.69	156.31	0.82	0.895	0.899	0.336	0.528	0.59	0.02	0.00
51.670	103.420	5.186	6200.4	3849.8	52.117	5.169	2.61		Clay	71.8			97.75	0.85	n.a.	n.a.	0.82	0.895	n.a.	n.a.	n.a.	n.a.	0.00	0.00
51.840	117.590	4.409	6220.8	3859.6	80.118	3.851	2.39		Sand	54.2			111.14	0.79	88.00	159.23	0.82	0.894	0.896	0.363	0.580	0.65	0.02	0.00
52.000	192.500	3.106	6240.0	3868.8	132.379	1.640	1.97		Sand	20.5			181.95	0.82	148.33	193.30	0.82	0.894	0.853	1.322	2.481	2.78	0.00	0.00
52.170	271.180	2.273	6260.4	3878.6	187.133	0.848	1.66		Sand	0.0			256.31	0.83	211.90	211.90	0.82	0.893	0.818	3.960	7.128	7.98	0.00	0.00
52.330	322.120	1.633	6279.6	3887.8	222.425	0.512	1.46		Sand	0.0			304.46	0.85	259.32	259.32	0.82	0.893	0.818	421.435	757.955	849.22	0.00	0.00
52.490	340.800	1.373	6298.8	3897.0	235.165	0.407	1.38		Sand	0.0			322.12	0.85	274.18	274.18	0.82	0.892	0.817	3762.910	6761.751	7580.22	0.00	0.00
52.660	354.970	1.867	6319.2	3906.8	244.720	0.531	1.44		Sand	0.0			335.51	0.85	285.40	285.40	0.82	0.891	0.816	26059.340	46784.102	52478.87	0.00	0.00
52.820	380.170	2.197	6338.4	3916.0	261.934	0.583	1.44		Sand	0.0			359.33	0.85	305.47	305.47	0.82	0.891	0.815	#########	########	3350473.35	0.00	0.00
52.990	390.230	2.492	6358.8	3925.8	268.581	0.644	1.46		Sand	0.0			368.84	0.85	313.34	313.34	0.81	0.890	0.815	#########	########	#########	0.00	0.00
53.150	413.100	2.586	6378.0	3935.0	284.110	0.631	1.44		Sand	0.0			390.45	0.85	331.50	331.50	0.81	0.890	0.814	#########	########	#########	0.00	0.00
53.310	413.640	2.886	6397.2	3944.3	284.145	0.703	1.47		Sand	0.0			390.96	0.85	331.73	331.73	0.81	0.889	0.813	#########	########	#########	0.00	0.00
53.480	406.550	3.175	6417.6	3954.0	278.884	0.787	1.52		Sand	0.0			384.26	0.85	325.83	325.83	0.81	0.889	0.812	#########	########	#########	0.00	0.00
53.640	418.570	3.082	6436.8	3963.3	286.854	0.742	1.49		Sand	0.0			395.62	0.85	335.26	335.26	0.81	0.888	0.812	#########	########	#########	0.00	0.00
53.810	445.140	2.986	6457.2	3973.1	304.821	0.676	1.44		Sand	0.0			420.74	0.85	356.31	356.31	0.81	0.888	0.811	#########	########	#########	0.00	0.00
53.970	444.620	2.774	6476.4	3982.3	304.103	0.629	1.42		Sand	0.0			420.25	0.85	355.67	355.67	0.81	0.887	0.810	#########	########	#########	0.00	0.00
54.130	433.340	3.257	6495.6	3991.5	295.983	0.757	1.49		Sand	0.0			409.58	0.85	346.44	346.44	0.81	0.887	0.810	#########	########	#########	0.00	0.00
54.300	441.740	1.783	6516.0	4001.3	301.387	0.407	1.29		Sand	0.0			417.52	0.85	352.93	352.93	0.81	0.886	0.809	#########	########	#########	0.00	0.00
54.460	453.200	3.791	6535.2	4010.5	308.902	0.842	1.51		Sand	0.0			428.36	0.84	361.86	361.86	0.81	0.886	0.808	#########	########	#########	0.00	0.00
54.630	453.940	4.134	6555.6	4020.3	309.026	0.917	1.54		Sand	0.0			429.05	0.84	362.22	362.22	0.81	0.885	0.807	#########	########	#########	0.00	0.00
54.790	426.520	4.311	6574.8	4029.5	289.885	1.018	1.59		Sand	0.0			403.14	0.84	340.14	340.14	0.81	0.885	0.807	#########	########	#########	0.00	0.00
54.950	431.680	4.157	6594.0	4038.7	293.078	0.970	1.57		Sand	0.0			408.02	0.84	344.04	344.04	0.81	0.884	0.806	#########	########	#########	0.00	0.00

CORNERSTONE EARTH GROUP

CPT No.	4

PGA (A_{max})	0.89

Total Settlement:	0.07	(Inches)

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Depth (ft)	q_c (tsf)	f_s (tsf)	σ_{vc} (psf)	Insitu σ'_{vc} (psf)	Q	F (%)	I_c	Layer "Plastic" PI > 7	Flag Soil Type	Fines (%)	q_{cN} near interfaces (soft layer)	Thin Layer Factor (K_H)	Interpreted q_{cN}	C_N	q_{c1N}	$q_{c1N\text{-}CS}$	Stress Reduction Coeff, r_d	CSR	K_σ for Sand	$CRR_{M=7.5,\ \sigma'vc = 1\ atm}$	CRR	Factor of Safety (CRR/CSR)	Vertical Strain ε_v	Settlement (Inches)
55.120	439.880	3.655	6614.4	4048.5	298.319	0.837	1.52		Sand	0.0			415.77	0.84	350.35	350.35	0.81	0.883	0.805	#########	########	##########	0.00	0.00
55.280	413.910	3.630	6633.6	4057.7	280.248	0.884	1.55		Sand	0.0			391.22	0.84	329.47	329.47	0.80	0.883	0.805	#########	########	##########	0.00	0.00
55.450	408.100	3.162	6654.0	4067.5	275.943	0.781	1.52		Sand	0.0			385.73	0.84	324.64	324.64	0.80	0.882	0.804	#########	########	##########	0.00	0.00
55.610	411.020	3.095	6673.2	4076.7	277.612	0.759	1.50		Sand	0.0			388.49	0.84	326.77	326.77	0.80	0.882	0.803	#########	########	##########	0.00	0.00
55.770	393.020	2.709	6692.4	4086.0	265.049	0.695	1.49		Sand	0.0			371.47	0.84	312.27	312.27	0.80	0.881	0.803	#########	########	##########	0.00	0.00
55.940	382.400	2.337	6712.8	4095.7	257.510	0.616	1.46		Sand	0.0			361.44	0.84	303.64	303.64	0.80	0.881	0.802	#########	########	2196100.93	0.00	0.00
56.100	398.870	1.693	6732.0	4105.0	268.391	0.428	1.35		Sand	0.0			377.00	0.84	316.53	316.53	0.80	0.880	0.801	#########	########	##########	0.00	0.00
56.270	383.450	2.044	6752.4	4114.8	257.613	0.538	1.42		Sand	0.0			362.43	0.84	304.10	304.10	0.80	0.880	0.800	#########	########	2437924.96	0.00	0.00
56.430	365.660	1.967	6771.6	4124.0	245.274	0.543	1.44		Sand	0.0			345.61	0.84	289.82	289.82	0.80	0.879	0.800	60225.332	########	120549.79	0.00	0.00
56.590	349.660	2.388	6790.8	4133.2	234.174	0.690	1.53		Sand	0.0			330.49	0.84	276.98	276.98	0.80	0.879	0.799	5951.757	10463.881	11910.67	0.00	0.00
56.760	331.520	1.838	6811.2	4143.0	221.636	0.560	1.48		Sand	0.0			313.35	0.84	262.45	262.45	0.80	0.878	0.798	646.118	1134.941	1292.71	0.00	0.00
56.920	348.230	1.675	6830.4	4152.2	232.659	0.486	1.43		Sand	0.0			329.14	0.84	275.51	275.51	0.80	0.877	0.798	4670.270	8196.736	9341.97	0.00	0.00
57.090	348.720	2.086	6850.8	4162.0	232.708	0.604	1.49		Sand	0.0			329.60	0.84	275.73	275.73	0.80	0.877	0.797	4838.995	8485.339	9677.28	0.00	0.00
57.250	337.830	2.372	6870.0	4171.2	225.113	0.709	1.55		Sand	0.0			319.31	0.84	266.96	266.96	0.80	0.876	0.796	1234.752	2163.377	2468.80	0.00	0.00
57.410	351.200	2.085	6889.2	4180.4	233.849	0.600	1.49		Sand	0.0			331.95	0.84	277.37	277.37	0.80	0.876	0.796	6349.784	11116.040	12693.32	0.00	0.00
57.580	360.800	1.530	6909.6	4190.2	240.017	0.428	1.38		Sand	0.0			341.02	0.84	284.77	284.77	0.79	0.875	0.795	23243.052	40653.792	46453.10	0.00	0.00
57.740	385.310	2.096	6928.8	4199.4	256.192	0.549	1.43		Sand	0.0			364.19	0.83	303.94	303.94	0.79	0.875	0.794	#########	########	2344799.26	0.00	0.00
57.910	402.840	1.785	6949.2	4209.2	267.634	0.447	1.36		Sand	0.0			380.76	0.83	317.58	317.58	0.79	0.874	0.794	#########	########	##########	0.00	0.00
58.070	384.370	1.780	6968.4	4218.4	254.971	0.467	1.39		Sand	0.0			363.30	0.83	302.84	302.84	0.79	0.873	0.793	#########	########	1827063.25	0.00	0.00
58.230	392.160	2.157	6987.6	4227.6	259.896	0.555	1.43		Sand	0.0			370.66	0.83	308.80	308.80	0.79	0.873	0.792	#########	########	7280665.03	0.00	0.00
58.400	393.130	2.176	7008.0	4237.4	260.237	0.558	1.43		Sand	0.0			371.58	0.83	309.37	309.37	0.79	0.872	0.792	#########	########	8357649.21	0.00	0.00
58.560	394.290	2.491	7027.2	4246.7	260.722	0.638	1.47		Sand	0.0			372.67	0.83	310.11	310.11	0.79	0.872	0.791	#########	########	9982932.11	0.00	0.00
58.730	394.660	2.598	7047.6	4256.4	260.661	0.664	1.48		Sand	0.0			373.02	0.83	310.21	310.21	0.79	0.871	0.790	#########	########	##########	0.00	0.00
58.890	378.970	2.316	7066.8	4265.7	249.928	0.617	1.47		Sand	0.0			358.19	0.83	297.71	297.71	0.79	0.871	0.790	#########	########	595530.96	0.00	0.00
59.060	381.440	1.727	7087.2	4275.5	251.278	0.457	1.39		Sand	0.0			360.53	0.83	299.47	299.47	0.79	0.870	0.789	#########	########	867969.55	0.00	0.00
59.220	355.130	2.058	7106.4	4284.7	233.525	0.585	1.48		Sand	0.0			335.66	0.83	278.65	278.65	0.79	0.869	0.788	7891.433	13686.579	15740.76	0.00	0.00
59.380	326.250	2.694	7125.6	4293.9	214.106	0.835	1.61		Sand	0.0			308.36	0.83	255.85	255.85	0.79	0.869	0.788	267.606	463.746	533.69	0.00	0.00
59.550	281.990	4.239	7146.0	4303.7	184.522	1.523	1.85		Sand	10.9			266.53	0.81	216.97	231.51	0.79	0.868	0.787	18.818	32.582	37.52	0.00	0.00
59.710	154.440	5.090	7165.2	4312.9	99.874	3.374	2.28		Sand	45.8			145.97	0.78	114.09	187.79	0.79	0.868	0.837	1.014	1.867	2.15	0.00	0.00
59.880	102.420	4.963	7185.6	4322.7	45.725	5.021	2.64		Clay	74.1			96.81	0.83	n.a.	n.a.	0.78	0.867	n.a.	n.a.	n.a.	n.a.	0.00	0.00
60.040	157.060	4.584	7204.8	4331.9	101.373	2.987	2.24		Sand	42.2			148.45	0.78	115.80	187.44	0.78	0.867	0.836	0.998	1.836	2.12	0.00	0.00
60.200	295.550	3.934	7224.0	4341.1	192.647	1.347	1.80		Sand	6.7			279.35	0.81	226.12	227.86	0.78	0.866	0.784	13.592	23.457	27.08	0.00	0.00
60.370	295.320	3.346	7244.4	4350.9	192.272	1.147	1.74		Sand	2.6			279.13	0.81	225.28	225.28	0.78	0.865	0.784	10.909	18.809	21.73	0.00	0.00
60.530	306.120	3.271	7263.6	4360.1	199.173	1.081	1.72		Sand	0.2			289.34	0.81	235.44	235.44	0.78	0.865	0.783	27.256	46.958	54.29	0.00	0.00
60.700	327.820	3.026	7284.0	4369.9	213.216	0.933	1.65		Sand	0.0			309.85	0.83	255.89	255.89	0.78	0.864	0.782	269.101	463.219	535.93	0.00	0.00
60.860	346.310	2.786	7303.2	4379.1	225.133	0.813	1.59		Sand	0.0			327.33	0.83	270.17	270.17	0.78	0.864	0.782	2002.012	3443.393	3986.48	0.00	0.00
61.020	348.240	1.555	7322.4	4388.4	226.157	0.451	1.42		Sand	0.0			329.15	0.82	271.53	271.53	0.78	0.863	0.781	2469.270	4243.634	4916.13	0.00	0.00
61.190	338.250	1.635	7342.8	4398.1	219.349	0.489	1.45		Sand	0.0			319.71	0.82	263.59	263.59	0.78	0.863	0.781	758.064	1301.678	1509.00	0.00	0.00
61.350	331.750	1.657	7362.0	4407.4	214.856	0.505	1.47		Sand	0.0			313.56	0.82	258.38	258.38	0.78	0.862	0.780	371.860	638.010	740.11	0.00	0.00
61.520	261.200	1.776	7382.4	4417.2	168.459	0.690	1.63		Sand	0.0			246.88	0.78	192.23	192.23	0.78	0.861	0.823	1.253	2.268	2.63	0.00	0.00
61.680	272.620	2.191	7401.6	4426.4	175.740	0.815	1.67		Sand	0.0			257.67	0.79	202.55	202.55	0.78	0.861	0.800	2.189	3.853	4.48	0.00	0.00
61.840	192.180	1.776	7420.8	4435.6	123.038	0.942	1.82		Sand	9.0			181.64	0.73	132.87	138.65	0.78	0.860	0.893	0.229	0.316	0.37	0.02	0.00
62.010	81.630	1.431	7441.2	4445.4	50.805	1.837	2.31		Sand	47.4			77.16	0.71	54.47	113.73	0.78	0.860	0.912	0.159	0.194	0.23	0.03	0.00
62.170	42.350	1.032	7460.4	4454.6	17.339	2.673	2.77		Clay	84.8			40.03	0.82	n.a.	n.a.	0.77	0.859	n.a.	n.a.	n.a.	n.a.	0.00	0.00
62.340	38.390	0.491	7480.8	4464.4	15.523	1.416	2.66		Clay	75.8			36.29	0.82	n.a.	n.a.	0.77	0.859	n.a.	n.a.	n.a.	n.a.	0.00	0.00
62.500	39.020	0.488	7500.0	4473.6	15.768	1.384	2.65		Clay	74.9			36.88	0.82	n.a.	n.a.	0.77	0.858	n.a.	n.a.	n.a.	n.a.	0.00	0.00
62.660	39.420	0.486	7519.2	4482.8	15.910	1.362	2.64		Clay	74.3			37.26	0.82	n.a.	n.a.	0.77	0.857	n.a.	n.a.	n.a.	n.a.	0.00	0.00
62.830	39.890	0.541	7539.6	4492.6	16.080	1.499	2.66		Clay	75.8			37.70	0.82	n.a.	n.a.	0.77	0.857	n.a.	n.a.	n.a.	n.a.	0.00	0.00
62.990	40.350	0.577	7558.8	4501.8	16.247	1.579	2.67		Clay	76.4			38.14	0.82	n.a.	n.a.	0.77	0.856	n.a.	n.a.	n.a.	n.a.	0.00	0.00
63.160	40.840	0.548	7579.2	4511.6	16.424	1.479	2.65		Clay	74.9			38.60	0.82	n.a.	n.a.	0.77	0.856	n.a.	n.a.	n.a.	n.a.	0.00	0.00
63.320	39.580	0.536	7598.4	4520.8	15.829	1.498	2.67		Clay	76.2			37.41	0.82	n.a.	n.a.	0.77	0.855	n.a.	n.a.	n.a.	n.a.	0.00	0.00
63.480	38.630	0.520	7617.6	4530.0	15.373	1.492	2.68		Clay	77.0			36.51	0.82	n.a.	n.a.	0.77	0.855	n.a.	n.a.	n.a.	n.a.	0.00	0.00
63.650	39.200	0.524	7638.0	4539.8	15.587	1.480	2.67		Clay	76.4			37.05	0.82	n.a.	n.a.	0.77	0.854	n.a.	n.a.	n.a.	n.a.	0.00	0.00
63.810	40.010	0.580	7657.2	4549.1	15.907	1.603	2.68		Clay	77.3			37.82	0.82	n.a.	n.a.	0.77	0.853	n.a.	n.a.	n.a.	n.a.	0.00	0.00
63.980	39.810	0.647	7677.6	4558.8	15.781	1.799	2.71		Clay	79.7			37.63	0.82	n.a.	n.a.	0.77	0.853	n.a.	n.a.	n.a.	n.a.	0.00	0.00
64.140	38.780	0.694	7696.8	4568.1	15.294	1.986	2.74		Clay	82.5			36.65	0.82	n.a.	n.a.	0.77	0.852	n.a.	n.a.	n.a.	n.a.	0.00	0.00
64.300	37.060	0.722	7716.0	4577.3	14.507	2.175	2.78		Clay	85.8			35.03	0.82	n.a.	n.a.	0.77	0.852	n.a.	n.a.	n.a.	n.a.	0.00	0.00
64.470	35.950	0.687	7736.4	4587.1	13.988	2.142	2.79		Clay	86.5			33.98	0.82	n.a.	n.a.	0.77	0.851	n.a.	n.a.	n.a.	n.a.	0.00	0.00
64.630	36.500	0.662	7755.6	4596.3	14.195	2.030	2.78		Clay	85.1			34.50	0.81	n.a.	n.a.	0.76	0.850	n.a.	n.a.	n.a.	n.a.	0.00	0.00
64.800	35.920	0.631	7776.0	4606.1	13.909	1.969	2.78		Clay	85.1			33.95	0.81	n.a.	n.a.	0.76	0.850	n.a.	n.a.	n.a.	n.a.	0.00	0.00
64.960	34.920	0.629	7795.2	4615.3	13.443	2.027	2.80		Clay	86.6			33.01	0.81	n.a.	n.a.	0.76	0.849	n.a.	n.a.	n.a.	n.a.	0.00	0.00
65.120	33.950	0.545	7814.4	4624.5	12.993	1.814	2.78		Clay	85.5			32.09	0.81	n.a.	n.a.	0.76	0.849	n.a.	n.a.	n.a.	n.a.	0.00	0.00
65.290	33.660	0.488	7834.8	4634.3	12.836	1.640	2.76		Clay	84.1			31.81	0.81	n.a.	n.a.	0.76	0.848	n.a.	n.a.	n.a.	n.a.	0.00	0.00
65.450	34.300	0.497	7854.0	4643.5	13.082	1.635	2.76		Clay	83.4			32.42	0.81	n.a.	n.a.	0.76	0.848	n.a.	n.a.	n.a.	n.a.	0.00	0.00
65.620	33.950	0.549	7874.4	4653.3	12.900	1.829	2.79		Clay	85.9			32.09	0.81	n.a.	n.a.	0.76	0.847	n.a.	n.a.	n.a.	n.a.	0.00	0.00
65.780	33.410	0.549	7893.6	4662.5	12.638	1.864	2.80		Clay	86.9			31.58	0.81	n.a.	n.a.	0.76	0.846	n.a.	n.a.	n.a.	n.a.	0.00	0.00
65.940	33.320	0.523	7912.8	4671.7	12.571	1.780	2.79		Clay	86.2			31.49	0.81	n.a.	n.a.	0.76	0.846	n.a.	n.a.	n.a.	n.a.	0.00	0.00

CORNERSTONE EARTH GROUP

CPT No.	4

PGA (A_{max})	0.89

Total Settlement:	0.07	(Inches)

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Depth (ft)	q_c (tsf)	f_s (tsf)	σ_{vc} (psf)	Insitu σ'_{vc} (psf)	Q	F (%)	I_c	Layer "Plastic" PI > 7	Flag Soil Type	Fines (%)	q_{cN} near interfaces (soft layer)	Thin Layer Factor (K_H)	Interpreted q_{cN}	C_N	q_{c1N}	$q_{c1N\text{-}CS}$	Stress Reduction Coeff, r_d	CSR	K_σ for Sand	$CRR_{M=7.5,\ \sigma'vc = 1\ atm}$	CRR	Factor of Safety (CRR/CSR)	Vertical Strain ε_v	Settlement (Inches)
66.110	33.530	0.489	7933.2	4681.5	12.630	1.655	2.77		Clay	84.7			31.69	0.81	n.a.	n.a.	0.76	0.845	n.a.	n.a.	n.a.	n.a.	0.00	0.00
66.270	34.000	0.520	7952.4	4690.8	12.801	1.732	2.78		Clay	85.1			32.14	0.81	n.a.	n.a.	0.76	0.845	n.a.	n.a.	n.a.	n.a.	0.00	0.00
66.440	33.310	0.545	7972.8	4700.5	12.477	1.858	2.80		Clay	87.2			31.48	0.81	n.a.	n.a.	0.76	0.844	n.a.	n.a.	n.a.	n.a.	0.00	0.00
66.600	32.280	0.505	7992.0	4709.8	12.011	1.784	2.81		Clay	87.6			30.51	0.81	n.a.	n.a.	0.76	0.843	n.a.	n.a.	n.a.	n.a.	0.00	0.00
66.770	34.200	0.493	8012.4	4719.6	12.795	1.631	2.76		Clay	84.1			32.33	0.81	n.a.	n.a.	0.76	0.843	n.a.	n.a.	n.a.	n.a.	0.00	0.00
66.930	39.080	0.486	8031.6	4728.8	14.830	1.387	2.67		Clay	76.8			36.94	0.81	n.a.	n.a.	0.76	0.842	n.a.	n.a.	n.a.	n.a.	0.00	0.00
67.090	41.880	0.517	8050.8	4738.0	15.979	1.365	2.64		Clay	74.3			39.58	0.81	n.a.	n.a.	0.75	0.842	n.a.	n.a.	n.a.	n.a.	0.00	0.00
67.260	41.440	0.607	8071.2	4747.8	15.757	1.624	2.69		Clay	77.8			39.17	0.81	n.a.	n.a.	0.75	0.841	n.a.	n.a.	n.a.	n.a.	0.00	0.00
67.420	39.530	0.701	8090.4	4757.0	14.919	1.974	2.75		Clay	83.1			37.36	0.81	n.a.	n.a.	0.75	0.840	n.a.	n.a.	n.a.	n.a.	0.00	0.00
67.590	42.000	0.686	8110.8	4766.8	15.920	1.807	2.71		Clay	79.5			39.70	0.81	n.a.	n.a.	0.75	0.840	n.a.	n.a.	n.a.	n.a.	0.00	0.00
67.750	43.900	1.073	8130.0	4776.0	16.681	2.695	2.79		Clay	86.1			41.49	0.81	n.a.	n.a.	0.75	0.839	n.a.	n.a.	n.a.	n.a.	0.00	0.00
67.910	43.910	1.451	8149.2	4785.2	16.649	3.643	2.87		Clay	92.5			41.50	0.81	n.a.	n.a.	0.75	0.839	n.a.	n.a.	n.a.	n.a.	0.00	0.00
68.080	55.330	2.133	8169.6	4795.0	21.374	4.162	2.82		Clay	88.8			52.30	0.81	n.a.	n.a.	0.75	0.838	n.a.	n.a.	n.a.	n.a.	0.00	0.00
68.240	59.290	2.593	8188.8	4804.2	22.978	4.697	2.83		Clay	89.6			56.04	0.81	n.a.	n.a.	0.75	0.838	n.a.	n.a.	n.a.	n.a.	0.00	0.00
68.410	60.490	2.139	8209.2	4814.0	23.426	3.794	2.77		Clay	84.2			57.17	0.81	n.a.	n.a.	0.75	0.837	n.a.	n.a.	n.a.	n.a.	0.00	0.00
68.570	72.530	1.389	8228.4	4823.2	42.831	2.031	2.39		Sand	54.2			68.55	0.67	45.94	105.72	0.75	0.836	0.908	0.145	0.171	0.20	0.03	0.00
68.730	63.990	1.213	8247.6	4832.4	37.443	2.027	2.43		Sand	57.8			60.48	0.66	40.03	99.34	0.75	0.836	0.913	0.136	0.157	0.19	0.03	0.00
68.900	48.070	1.319	8268.0	4842.2	18.147	3.003	2.79		Clay	86.0			45.43	0.80	n.a.	n.a.	0.75	0.835	n.a.	n.a.	n.a.	n.a.	0.00	0.00
69.060	35.600	1.253	8287.2	4851.5	12.968	3.983	2.98		Clay	100.0			33.65	0.80	n.a.	n.a.	0.75	0.835	n.a.	n.a.	n.a.	n.a.	0.00	0.00
69.230	35.650	0.945	8307.6	4861.2	12.958	2.999	2.90		Clay	95.4			33.70	0.80	n.a.	n.a.	0.75	0.834	n.a.	n.a.	n.a.	n.a.	0.00	0.00
69.390	34.900	0.908	8326.8	4870.5	12.622	2.953	2.91		Clay	95.8			32.99	0.80	n.a.	n.a.	0.75	0.833	n.a.	n.a.	n.a.	n.a.	0.00	0.00
69.550	30.810	0.991	8346.0	4879.7	10.918	3.720	3.02		Clay	100.0			29.12	0.80	n.a.	n.a.	0.74	0.833	n.a.	n.a.	n.a.	n.a.	0.00	0.00
69.720	30.330	1.151	8366.4	4889.5	10.695	4.404	3.07		Clay	100.0			28.67	0.80	n.a.	n.a.	0.74	0.832	n.a.	n.a.	n.a.	n.a.	0.00	0.00
69.880	35.220	0.984	8385.6	4898.7	12.668	3.170	2.93		Clay	97.1			33.29	0.80	n.a.	n.a.	0.74	0.832	n.a.	n.a.	n.a.	n.a.	0.00	0.00
70.050	40.070	1.116	8406.0	4908.5	14.614	3.111	2.87		Clay	92.8			37.87	0.80	n.a.	n.a.	0.74	0.831	n.a.	n.a.	n.a.	n.a.	0.00	0.00
70.210	36.400	1.294	8425.2	4917.7	13.090	4.020	2.98		Clay	100.0			34.40	0.80	n.a.	n.a.	0.74	0.831	n.a.	n.a.	n.a.	n.a.	0.00	0.00
70.370	34.140	1.304	8444.4	4926.9	12.145	4.359	3.02		Clay	100.0			32.27	0.80	n.a.	n.a.	0.74	0.830	n.a.	n.a.	n.a.	n.a.	0.00	0.00
70.540	36.610	1.083	8464.8	4936.7	13.117	3.345	2.93		Clay	97.3			34.60	0.80	n.a.	n.a.	0.74	0.829	n.a.	n.a.	n.a.	n.a.	0.00	0.00
70.700	42.790	0.881	8484.0	4945.9	15.588	2.284	2.77		Clay	84.7			40.44	0.80	n.a.	n.a.	0.74	0.829	n.a.	n.a.	n.a.	n.a.	0.00	0.00
70.870	37.170	1.056	8504.4	4955.7	13.285	3.207	2.91		Clay	96.1			35.13	0.80	n.a.	n.a.	0.74	0.828	n.a.	n.a.	n.a.	n.a.	0.00	0.00
71.030	31.200	1.516	8523.6	4964.9	10.851	5.628	3.13		Clay	100.0			29.49	0.80	n.a.	n.a.	0.74	0.828	n.a.	n.a.	n.a.	n.a.	0.00	0.00
71.190	35.110	1.341	8542.8	4974.1	12.400	4.347	3.02		Clay	100.0			33.19	0.80	n.a.	n.a.	0.74	0.827	n.a.	n.a.	n.a.	n.a.	0.00	0.00
71.360	47.920	1.164	8563.2	4983.9	17.512	2.668	2.77		Clay	84.5			45.29	0.80	n.a.	n.a.	0.74	0.827	n.a.	n.a.	n.a.	n.a.	0.00	0.00
71.520	51.220	1.107	8582.4	4993.2	18.797	2.358	2.71		Clay	80.0			48.41	0.80	n.a.	n.a.	0.74	0.826	n.a.	n.a.	n.a.	n.a.	0.00	0.00
71.690	35.830	0.971	8602.8	5002.9	12.604	3.080	2.92		Clay	96.7			33.87	0.80	n.a.	n.a.	0.74	0.825	n.a.	n.a.	n.a.	n.a.	0.00	0.00
71.850	32.300	0.950	8622.0	5012.2	11.168	3.393	2.99		Clay	100.0			30.53	0.80	n.a.	n.a.	0.74	0.825	n.a.	n.a.	n.a.	n.a.	0.00	0.00
72.010	52.340	1.194	8641.2	5021.4	19.126	2.486	2.72		Clay	80.6			49.47	0.80	n.a.	n.a.	0.74	0.824	n.a.	n.a.	n.a.	n.a.	0.00	0.00
72.180	80.730	1.661	8661.6	5031.2	46.830	2.174	2.38		Sand	53.4			76.30	0.66	50.61	111.36	0.73	0.824	0.899	0.154	0.184	0.22	0.03	0.00
72.340	53.640	1.230	8680.8	5040.4	19.562	2.496	2.71		Clay	80.1			50.70	0.80	n.a.	n.a.	0.73	0.823	n.a.	n.a.	n.a.	n.a.	0.00	0.00
72.510	33.170	1.157	8701.2	5050.2	11.413	4.015	3.02		Clay	100.0			31.35	0.79	n.a.	n.a.	0.73	0.823	n.a.	n.a.	n.a.	n.a.	0.00	0.00
72.670	27.730	0.861	8720.4	5059.4	9.238	3.683	3.08		Clay	100.0			26.21	0.79	n.a.	n.a.	0.73	0.822	n.a.	n.a.	n.a.	n.a.	0.00	0.00
72.830	26.140	0.722	8739.6	5068.6	8.590	3.317	3.08		Clay	100.0			24.71	0.79	n.a.	n.a.	0.73	0.821	n.a.	n.a.	n.a.	n.a.	0.00	0.00
73.000	26.320	1.023	8760.0	5078.4	8.641	4.661	3.16		Clay	100.0			24.88	0.79	n.a.	n.a.	0.73	0.821	n.a.	n.a.	n.a.	n.a.	0.00	0.00
73.160	28.540	1.734	8779.2	5087.6	9.494	7.178	3.24		Clay	100.0			26.98	0.79	n.a.	n.a.	0.73	0.820	n.a.	n.a.	n.a.	n.a.	0.00	0.00
73.330	47.890	1.816	8799.6	5097.4	17.064	4.177	2.90		Clay	94.8			45.26	0.79	n.a.	n.a.	0.73	0.820	n.a.	n.a.	n.a.	n.a.	0.00	0.00
73.490	95.200	2.595	8818.8	5106.6	55.239	2.858	2.41		Sand	55.6			89.98	0.67	60.68	124.95	0.73	0.819	0.886	0.183	0.231	0.28	0.03	0.00
73.650	120.170	2.462	8838.0	5115.8	70.362	2.127	2.24		Sand	42.4			113.58	0.69	78.51	141.05	0.73	0.819	0.869	0.239	0.327	0.40	0.02	0.00
73.820	92.580	3.131	8858.4	5125.6	34.396	3.552	2.62		Clay	72.7			87.50	0.79	n.a.	n.a.	0.73	0.818	n.a.	n.a.	n.a.	n.a.	0.00	0.00
73.980	62.940	2.545	8877.6	5134.8	22.786	4.350	2.81		Clay	88.1			59.49	0.79	n.a.	n.a.	0.73	0.817	n.a.	n.a.	n.a.	n.a.	0.00	0.00
74.150	63.810	1.611	8898.0	5144.6	23.077	2.714	2.68		Clay	77.3			60.31	0.79	n.a.	n.a.	0.73	0.817	n.a.	n.a.	n.a.	n.a.	0.00	0.00
74.310	37.620	1.278	8917.2	5153.9	12.869	3.855	2.97		Clay	100.0			35.56	0.79	n.a.	n.a.	0.73	0.816	n.a.	n.a.	n.a.	n.a.	0.00	0.00
74.480	25.770	0.997	8937.6	5163.6	8.250	4.678	3.18		Clay	100.0			24.36	0.79	n.a.	n.a.	0.73	0.816	n.a.	n.a.	n.a.	n.a.	0.00	0.00
74.640	21.690	0.919	8956.8	5172.9	6.655	5.339	3.29		Clay	100.0			20.50	0.79	n.a.	n.a.	0.73	0.815	n.a.	n.a.	n.a.	n.a.	0.00	0.00
74.800	20.880	0.901	8976.0	5182.1	6.326	5.497	3.31		Clay	100.0			19.74	0.79	n.a.	n.a.	0.72	0.815	n.a.	n.a.	n.a.	n.a.	0.00	0.00
74.970	22.010	0.989	8996.4	5191.9	6.746	5.647	3.30		Clay	100.0			20.80	0.79	n.a.	n.a.	0.72	0.814	n.a.	n.a.	n.a.	n.a.	0.00	0.00
75.130	22.780	1.088	9015.6	5201.1	7.026	5.954	3.30		Clay	100.0			21.53	0.79	n.a.	n.a.	0.72	0.813	n.a.	n.a.	n.a.	n.a.	0.00	0.00
75.300	23.960	1.161	9036.0	5210.9	7.462	5.974	3.28		Clay	100.0			22.65	0.79	n.a.	n.a.	0.72	0.813	n.a.	n.a.	n.a.	n.a.	0.00	0.00
75.460	27.430	1.591	9055.2	5220.1	8.775	6.947	3.26		Clay	100.0			25.93	0.79	n.a.	n.a.	0.72	0.812	n.a.	n.a.	n.a.	n.a.	0.00	0.00
75.620	35.130	2.480	9074.4	5229.3	11.701	8.106	3.21		Clay	100.0			33.20	0.79	n.a.	n.a.	0.72	0.812	n.a.	n.a.	n.a.	n.a.	0.00	0.00
75.790	61.870	2.750	9094.8	5239.1	21.883	4.797	2.85		Clay	91.4			58.48	0.79	n.a.	n.a.	0.72	0.811	n.a.	n.a.	n.a.	n.a.	0.00	0.00
75.950	85.250	2.425	9114.0	5248.3	30.750	3.006	2.61		Clay	71.8			80.58	0.79	n.a.	n.a.	0.72	0.811	n.a.	n.a.	n.a.	n.a.	0.00	0.00
76.120	100.840	2.257	9134.4	5258.1	57.725	2.344	2.33		Sand	49.7			95.31	0.67	63.58	126.30	0.72	0.810	0.881	0.187	0.236	0.29	0.03	0.00
76.280	136.300	2.329	9153.6	5267.3	78.911	1.768	2.15		Sand	35.1			128.83	0.69	88.92	148.01	0.72	0.810	0.857	0.276	0.389	0.48	0.02	0.00
76.440	146.110	2.707	9172.8	5276.5	84.708	1.913	2.15		Sand	35.2			138.10	0.70	96.60	157.53	0.72	0.809	0.844	0.347	0.516	0.64	0.02	0.00
76.610	164.020	2.451	9193.2	5286.3	95.334	1.537	2.05		Sand	27.0			155.03	0.70	109.03	161.77	0.72	0.808	0.837	0.390	0.593	0.73	0.01	0.00
76.770	163.220	1.568	9212.4	5295.6	94.767	0.988	1.93		Sand	17.0			154.27	0.67	103.79	133.23	0.72	0.808	0.873	0.208	0.271	0.34	0.02	0.00
76.940	150.590	1.611	9232.8	5305.3	87.134	1.104	1.98		Sand	21.7			142.33	0.68	96.21	136.62	0.72	0.807	0.869	0.220	0.292	0.36	0.02	0.00

CORNERSTONE EARTH GROUP

CPT No.	4

PGA (A_{max})	0.89

Total Settlement:	0.07	(Inches)

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Depth (ft)	q_c (tsf)	f_s (tsf)	σ_{vc} (psf)	Insitu σ'_{vc} (psf)	Q	F (%)	I_c	Layer "Plastic" PI > 7	Flag Soil Type	Fines (%)	q_{cN} near interfaces (soft layer)	Thin Layer Factor (K_H)	Interpreted q_{cN}	C_N	q_{c1N}	$q_{c1N\text{-}CS}$	Stress Reduction Coeff, r_d	CSR	K_σ for Sand	$CRR_{M=7.5,\ \sigma'vc = 1\ atm}$	CRR	Factor of Safety (CRR/CSR)	Vertical Strain ε_v	Settlement (Inches)
77.100	139.470	2.177	9252.0	5314.6	80.421	1.615	2.12		Sand	32.5			131.82	0.69	90.54	147.20	0.72	0.807	0.856	0.271	0.380	0.47	0.02	0.00
77.260	119.870	2.487	9271.2	5323.8	68.666	2.158	2.25		Sand	43.4			113.30	0.68	76.84	139.59	0.72	0.806	0.865	0.233	0.313	0.39	0.02	0.00
77.430	70.500	2.411	9291.6	5333.6	24.694	3.661	2.74		Clay	82.0			66.64	0.78	n.a.	n.a.	0.72	0.806	n.a.	n.a.	n.a.	n.a.	0.00	0.00
77.590	43.290	2.487	9310.8	5342.8	14.462	6.436	3.07		Clay	100.0			40.92	0.78	n.a.	n.a.	0.71	0.805	n.a.	n.a.	n.a.	n.a.	0.00	0.00
77.760	39.530	2.666	9331.2	5352.6	13.027	7.646	3.16		Clay	100.0			37.36	0.78	n.a.	n.a.	0.71	0.805	n.a.	n.a.	n.a.	n.a.	0.00	0.00
77.920	79.500	2.604	9350.4	5361.8	27.910	3.480	2.68		Clay	77.7			75.14	0.78	n.a.	n.a.	0.71	0.804	n.a.	n.a.	n.a.	n.a.	0.00	0.00
78.080	122.590	2.700	9369.6	5371.0	69.948	2.290	2.27		Sand	44.3			115.87	0.68	78.65	142.45	0.71	0.803	0.860	0.246	0.335	0.42	0.02	0.00
78.250	120.740	3.157	9390.0	5380.8	68.782	2.720	2.32		Sand	49.0			114.12	0.68	77.55	143.59	0.71	0.803	0.859	0.251	0.345	0.43	0.02	0.00
78.410	91.940	2.685	9409.2	5390.0	51.662	3.078	2.45		Sand	59.0			86.90	0.65	56.82	121.17	0.71	0.802	0.882	0.174	0.214	0.27	0.03	0.00
78.580	51.170	1.983	9429.6	5399.8	17.206	4.269	2.90		Clay	95.1			48.36	0.78	n.a.	n.a.	0.71	0.802	n.a.	n.a.	n.a.	n.a.	0.00	0.00
78.740	29.620	1.241	9448.8	5409.0	9.205	4.986	3.16		Clay	100.0			28.00	0.78	n.a.	n.a.	0.71	0.801	n.a.	n.a.	n.a.	n.a.	0.00	0.00
78.900	25.670	0.985	9468.0	5418.2	7.728	4.706	3.20		Clay	100.0			24.26	0.78	n.a.	n.a.	0.71	0.801	n.a.	n.a.	n.a.	n.a.	0.00	0.00
79.070	24.830	0.878	9488.4	5428.0	7.401	4.372	3.20		Clay	100.0			23.47	0.78	n.a.	n.a.	0.71	0.800	n.a.	n.a.	n.a.	n.a.	0.00	0.00
79.230	24.100	0.830	9507.6	5437.2	7.116	4.292	3.21		Clay	100.0			22.78	0.78	n.a.	n.a.	0.71	0.800	n.a.	n.a.	n.a.	n.a.	0.00	0.00
79.400	23.160	0.864	9528.0	5447.0	6.754	4.694	3.25		Clay	100.0			21.89	0.78	n.a.	n.a.	0.71	0.799	n.a.	n.a.	n.a.	n.a.	0.00	0.00
79.560	23.310	0.890	9547.2	5456.3	6.795	4.800	3.25		Clay	100.0			22.03	0.78	n.a.	n.a.	0.71	0.799	n.a.	n.a.	n.a.	n.a.	0.00	0.00
79.720	24.620	0.934	9566.4	5465.5	7.259	4.706	3.22		Clay	100.0			23.27	0.78	n.a.	n.a.	0.71	0.798	n.a.	n.a.	n.a.	n.a.	0.00	0.00
79.890	26.140	1.064	9586.8	5475.3	7.797	4.984	3.21		Clay	100.0			24.71	0.78	n.a.	n.a.	0.71	0.797	n.a.	n.a.	n.a.	n.a.	0.00	0.00
80.050	28.110	1.088	9606.0	5484.5	8.499	4.667	3.17		Clay	100.0			26.57	0.78	n.a.	n.a.	0.71	0.797	n.a.	n.a.	n.a.	n.a.	0.00	0.00
80.220	31.490	1.158	9626.4	5494.3	9.711	4.342	3.10		Clay	100.0			29.76	0.78	n.a.	n.a.	0.71	0.796	n.a.	n.a.	n.a.	n.a.	0.00	0.00
80.380	34.320	1.176	9645.6	5503.5	10.719	3.988	3.04		Clay	100.0			32.44	0.78	n.a.	n.a.	0.70	0.796	n.a.	n.a.	n.a.	n.a.	0.00	0.00
80.540	35.570	1.325	9664.8	5512.7	11.152	4.311	3.05		Clay	100.0			33.62	0.78	n.a.	n.a.	0.70	0.795	n.a.	n.a.	n.a.	n.a.	0.00	0.00
80.710	40.340	1.478	9685.2	5522.5	12.856	4.163	2.99		Clay	100.0			38.13	0.78	n.a.	n.a.	0.70	0.795	n.a.	n.a.	n.a.	n.a.	0.00	0.00
80.870	43.720	1.612	9704.4	5531.7	14.053	4.148	2.96		Clay	99.9			41.32	0.78	n.a.	n.a.	0.70	0.794	n.a.	n.a.	n.a.	n.a.	0.00	0.00
81.040	45.010	1.542	9724.8	5541.5	14.490	3.841	2.93		Clay	97.4			42.54	0.78	n.a.	n.a.	0.70	0.794	n.a.	n.a.	n.a.	n.a.	0.00	0.00
81.200	44.880	1.455	9744.0	5550.7	14.415	3.637	2.92		Clay	96.4			42.42	0.78	n.a.	n.a.	0.70	0.793	n.a.	n.a.	n.a.	n.a.	0.00	0.00
81.360	45.230	1.542	9763.2	5559.9	14.514	3.821	2.93		Clay	97.3			42.75	0.78	n.a.	n.a.	0.70	0.793	n.a.	n.a.	n.a.	n.a.	0.00	0.00
81.530	46.370	1.589	9783.6	5569.7	14.894	3.831	2.92		Clay	96.6			43.83	0.77	n.a.	n.a.	0.70	0.792	n.a.	n.a.	n.a.	n.a.	0.00	0.00
81.690	47.890	1.574	9802.8	5578.9	15.411	3.661	2.90		Clay	94.7			45.26	0.77	n.a.	n.a.	0.70	0.792	n.a.	n.a.	n.a.	n.a.	0.00	0.00
81.860	48.790	1.442	9823.2	5588.7	15.702	3.287	2.86		Clay	91.9			46.12	0.77	n.a.	n.a.	0.70	0.791	n.a.	n.a.	n.a.	n.a.	0.00	0.00
82.020	48.650	1.825	9842.4	5598.0	15.623	4.174	2.93		Clay	97.2			45.98	0.77	n.a.	n.a.	0.70	0.791	n.a.	n.a.	n.a.	n.a.	0.00	0.00
82.190	49.960	2.121	9862.8	5607.7	16.059	4.710	2.95		Clay	99.1			47.22	0.77	n.a.	n.a.	0.70	0.790	n.a.	n.a.	n.a.	n.a.	0.00	0.00
82.350	134.650	2.054	9882.0	5617.0	75.247	1.584	2.13		Sand	33.7			127.27	0.67	84.65	141.41	0.70	0.790	0.855	0.241	0.324	0.41	0.02	0.00
82.510	287.920	1.893	9901.2	5626.2	164.023	0.669	1.63		Sand	0.0			272.14	0.72	196.19	196.19	0.70	0.789	0.754	1.534	2.545	3.23	0.00	0.00
82.680	335.740	2.398	9921.6	5636.0	191.569	0.725	1.61		Sand	0.0			317.33	0.76	241.74	241.74	0.70	0.789	0.706	51.583	80.131	101.62	0.00	0.00
82.840	301.850	3.774	9940.8	5645.2	171.796	1.271	1.81		Sand	7.9			285.30	0.74	210.26	214.23	0.70	0.788	0.706	4.655	7.226	9.17	0.00	0.00
83.010	264.630	6.054	9961.2	5655.0	150.122	2.331	2.05		Sand	26.8			250.12	0.77	192.98	261.06	0.70	0.787	0.705	533.417	827.444	1050.74	0.00	0.00
83.170	239.080	3.166	9980.4	5664.2	135.234	1.353	1.90		Sand	15.2			225.97	0.71	161.21	190.08	0.70	0.787	0.768	1.129	1.908	2.42	0.00	0.00
83.330	202.590	4.239	9999.6	5673.4	114.055	2.145	2.10		Sand	30.9			191.48	0.73	139.05	203.86	0.69	0.786	0.729	2.365	3.791	4.82	0.00	0.00
83.500	205.090	4.249	10020.0	5683.2	115.393	2.124	2.09		Sand	30.3			193.85	0.73	140.96	205.35	0.69	0.786	0.723	2.589	4.121	5.24	0.00	0.00
83.660	88.030	3.253	10039.2	5692.4	29.165	3.919	2.70		Clay	79.3			83.20	0.77	n.a.	n.a.	0.69	0.785	n.a.	n.a.	n.a.	n.a.	0.00	0.00
83.830	145.350	3.053	10059.6	5702.2	80.792	2.176	2.21		Sand	39.5			137.38	0.68	93.18	157.20	0.69	0.785	0.831	0.344	0.502	0.64	0.02	0.00
83.990	73.530	3.082	10078.8	5711.4	23.984	4.499	2.81		Clay	87.5			69.50	0.77	n.a.	n.a.	0.69	0.784	n.a.	n.a.	n.a.	n.a.	0.00	0.00
84.150	57.310	2.375	10098.0	5720.6	18.271	4.545	2.90		Clay	94.9			54.17	0.77	n.a.	n.a.	0.69	0.784	n.a.	n.a.	n.a.	n.a.	0.00	0.00
84.320	62.170	2.225	10118.4	5730.4	19.932	3.895	2.83		Clay	89.1			58.76	0.77	n.a.	n.a.	0.69	0.783	n.a.	n.a.	n.a.	n.a.	0.00	0.00
84.480	63.890	1.938	10137.6	5739.6	20.496	3.294	2.77		Clay	84.7			60.39	0.77	n.a.	n.a.	0.69	0.783	n.a.	n.a.	n.a.	n.a.	0.00	0.00
84.650	61.860	2.051	10158.0	5749.4	19.752	3.611	2.81		Clay	87.7			58.47	0.77	n.a.	n.a.	0.69	0.782	n.a.	n.a.	n.a.	n.a.	0.00	0.00
84.810	58.550	2.140	10177.2	5758.7	18.567	4.003	2.86		Clay	91.6			55.34	0.77	n.a.	n.a.	0.69	0.782	n.a.	n.a.	n.a.	n.a.	0.00	0.00
84.970	57.780	2.346	10196.4	5767.9	18.267	4.454	2.89		Clay	94.4			54.61	0.77	n.a.	n.a.	0.69	0.781	n.a.	n.a.	n.a.	n.a.	0.00	0.00
85.140	68.600	2.155	10216.8	5777.7	21.978	3.394	2.76		Clay	83.4			64.84	0.77	n.a.	n.a.	0.69	0.781	n.a.	n.a.	n.a.	n.a.	0.00	0.00
85.300	61.220	1.987	10236.0	5786.9	19.389	3.541	2.81		Clay	87.8			57.86	0.77	n.a.	n.a.	0.69	0.780	n.a.	n.a.	n.a.	n.a.	0.00	0.00
85.470	53.670	1.741	10256.4	5796.7	16.748	3.586	2.86		Clay	92.0			50.73	0.77	n.a.	n.a.	0.69	0.780	n.a.	n.a.	n.a.	n.a.	0.00	0.00
85.630	51.880	1.476	10275.6	5805.9	16.102	3.158	2.84		Clay	90.4			49.04	0.77	n.a.	n.a.	0.69	0.779	n.a.	n.a.	n.a.	n.a.	0.00	0.00
85.790	57.330	1.623	10294.8	5815.1	17.947	3.111	2.80		Clay	87.1			54.19	0.77	n.a.	n.a.	0.69	0.779	n.a.	n.a.	n.a.	n.a.	0.00	0.00
85.960	51.350	1.751	10315.2	5824.9	15.860	3.790	2.90		Clay	94.7			48.53	0.77	n.a.	n.a.	0.69	0.778	n.a.	n.a.	n.a.	n.a.	0.00	0.00
86.120	48.160	1.741	10334.4	5834.1	14.738	4.049	2.94		Clay	98.1			45.52	0.77	n.a.	n.a.	0.69	0.778	n.a.	n.a.	n.a.	n.a.	0.00	0.00
86.290	46.650	1.593	10354.8	5843.9	14.193	3.842	2.94		Clay	98.0			44.09	0.76	n.a.	n.a.	0.69	0.777	n.a.	n.a.	n.a.	n.a.	0.00	0.00
86.450	47.620	1.535	10374.0	5853.1	14.499	3.617	2.91		Clay	96.1			45.01	0.76	n.a.	n.a.	0.69	0.777	n.a.	n.a.	n.a.	n.a.	0.00	0.00
86.610	50.510	1.580	10393.2	5862.3	15.459	3.486	2.88		Clay	93.6			47.74	0.76	n.a.	n.a.	0.68	0.777	n.a.	n.a.	n.a.	n.a.	0.00	0.00
86.780	53.320	0.850	10413.6	5872.1	16.387	1.766	2.69		Clay	78.2			50.40	0.76	n.a.	n.a.	0.68	0.776	n.a.	n.a.	n.a.	n.a.	0.00	0.00
86.940	53.540	1.647	10432.8	5881.3	16.433	3.409	2.86		Clay	91.4			50.60	0.76	n.a.	n.a.	0.68	0.776	n.a.	n.a.	n.a.	n.a.	0.00	0.00
87.110	51.040	1.757	10453.2	5891.1	15.553	3.836	2.91		Clay	95.5			48.24	0.76	n.a.	n.a.	0.68	0.775	n.a.	n.a.	n.a.	n.a.	0.00	0.00
87.270	31.820	1.732	10472.4	5900.4	9.011	6.516	3.23		Clay	100.0			30.08	0.76	n.a.	n.a.	0.68	0.775	n.a.	n.a.	n.a.	n.a.	0.00	0.00
87.430	52.850	1.745	10491.6	5909.6	16.111	3.666	2.88		Clay	93.5			49.95	0.76	n.a.	n.a.	0.68	0.774	n.a.	n.a.	n.a.	n.a.	0.00	0.00
87.600	50.080	1.518	10512.0	5919.4	15.145	3.386	2.88		Clay	93.5			47.33	0.76	n.a.	n.a.	0.68	0.774	n.a.	n.a.	n.a.	n.a.	0.00	0.00
87.760	44.400	1.285	10531.2	5928.6	13.202	3.285	2.92		Clay	96.7			41.97	0.76	n.a.	n.a.	0.68	0.773	n.a.	n.a.	n.a.	n.a.	0.00	0.00
87.930	42.260	1.258	10551.6	5938.4	12.456	3.401	2.95		Clay	99.1			39.94	0.76	n.a.	n.a.	0.68	0.773	n.a.	n.a.	n.a.	n.a.	0.00	0.00

CORNERSTONE EARTH GROUP

CPT No.	4

PGA (A_{max})	0.89

Total Settlement:	0.07	(Inches)

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Depth (ft)	q_c (tsf)	f_s (tsf)	σ_{vc} (psf)	Insitu σ'_{vc} (psf)	Q	F (%)	I_c	Layer "Plastic" PI > 7	Flag Soil Type	Fines (%)	q_{cN} near interfaces (soft layer)	Thin Layer Factor (K_H)	Interpreted q_{cN}	C_N	q_{c1N}	$q_{c1N\text{-}CS}$	Stress Reduction Coeff, r_d	CSR	K_σ for Sand	$CRR_{M=7.5,\ \sigma'vc = 1\ atm}$	CRR	Factor of Safety (CRR/CSR)	Vertical Strain ε_v	Settlement (Inches)
88.090	46.040	1.264	10570.8	5947.6	13.705	3.102	2.89		Clay	94.5			43.52	0.76	n.a.	n.a.	0.68	0.772	n.a.	n.a.	n.a.	n.a.	0.00	0.00
88.250	45.380	1.425	10590.0	5956.8	13.459	3.556	2.94		Clay	97.8			42.89	0.76	n.a.	n.a.	0.68	0.772	n.a.	n.a.	n.a.	n.a.	0.00	0.00
88.420	42.060	1.341	10610.4	5966.6	12.320	3.649	2.97		Clay	100.0			39.75	0.76	n.a.	n.a.	0.68	0.771	n.a.	n.a.	n.a.	n.a.	0.00	0.00
88.580	38.120	1.156	10629.6	5975.8	10.979	3.523	3.00		Clay	100.0			36.03	0.76	n.a.	n.a.	0.68	0.771	n.a.	n.a.	n.a.	n.a.	0.00	0.00
88.750	36.540	0.935	10650.0	5985.6	10.430	2.995	2.98		Clay	100.0			34.54	0.76	n.a.	n.a.	0.68	0.770	n.a.	n.a.	n.a.	n.a.	0.00	0.00
88.910	33.320	0.912	10669.2	5994.8	9.337	3.259	3.04		Clay	100.0			31.49	0.76	n.a.	n.a.	0.68	0.770	n.a.	n.a.	n.a.	n.a.	0.00	0.00
89.070	32.010	0.870	10688.4	6004.0	8.883	3.263	3.06		Clay	100.0			30.26	0.76	n.a.	n.a.	0.68	0.769	n.a.	n.a.	n.a.	n.a.	0.00	0.00
89.240	32.080	0.811	10708.8	6013.8	8.888	3.033	3.04		Clay	100.0			30.32	0.76	n.a.	n.a.	0.68	0.769	n.a.	n.a.	n.a.	n.a.	0.00	0.00
89.400	31.510	0.831	10728.0	6023.0	8.682	3.178	3.06		Clay	100.0			29.78	0.76	n.a.	n.a.	0.68	0.768	n.a.	n.a.	n.a.	n.a.	0.00	0.00
89.570	29.890	0.856	10748.4	6032.8	8.127	3.492	3.11		Clay	100.0			28.25	0.76	n.a.	n.a.	0.68	0.768	n.a.	n.a.	n.a.	n.a.	0.00	0.00
89.730	29.050	0.722	10767.6	6042.0	7.834	3.051	3.09		Clay	100.0			27.46	0.76	n.a.	n.a.	0.68	0.768	n.a.	n.a.	n.a.	n.a.	0.00	0.00
89.900	28.760	0.777	10788.0	6051.8	7.722	3.326	3.11		Clay	100.0			27.18	0.76	n.a.	n.a.	0.67	0.767	n.a.	n.a.	n.a.	n.a.	0.00	0.00
90.060	28.030	0.738	10807.2	6061.1	7.466	3.263	3.12		Clay	100.0			26.49	0.76	n.a.	n.a.	0.67	0.767	n.a.	n.a.	n.a.	n.a.	0.00	0.00
90.220	24.000	0.716	10826.4	6070.3	6.124	3.850	3.23		Clay	100.0			22.68	0.76	n.a.	n.a.	0.67	0.766	n.a.	n.a.	n.a.	n.a.	0.00	0.00
90.390	28.220	0.701	10846.8	6080.1	7.499	3.073	3.11		Clay	100.0			26.67	0.76	n.a.	n.a.	0.67	0.766	n.a.	n.a.	n.a.	n.a.	0.00	0.00
90.550	29.040	0.681	10866.0	6089.3	7.754	2.886	3.08		Clay	100.0			27.45	0.76	n.a.	n.a.	0.67	0.765	n.a.	n.a.	n.a.	n.a.	0.00	0.00
90.720	29.960	0.702	10886.4	6099.1	8.040	2.863	3.06		Clay	100.0			28.32	0.76	n.a.	n.a.	0.67	0.765	n.a.	n.a.	n.a.	n.a.	0.00	0.00
90.880	32.150	0.781	10905.6	6108.3	8.741	2.925	3.04		Clay	100.0			30.39	0.76	n.a.	n.a.	0.67	0.764	n.a.	n.a.	n.a.	n.a.	0.00	0.00
91.040	35.810	0.826	10924.8	6117.5	9.922	2.721	2.98		Clay	100.0			33.85	0.76	n.a.	n.a.	0.67	0.764	n.a.	n.a.	n.a.	n.a.	0.00	0.00
91.210	39.210	0.905	10945.2	6127.3	11.012	2.682	2.93		Clay	97.8			37.06	0.76	n.a.	n.a.	0.67	0.764	n.a.	n.a.	n.a.	n.a.	0.00	0.00
91.370	41.010	1.004	10964.4	6136.5	11.579	2.825	2.93		Clay	97.4			38.76	0.76	n.a.	n.a.	0.67	0.763	n.a.	n.a.	n.a.	n.a.	0.00	0.00
91.540	43.380	1.159	10984.8	6146.3	12.329	3.059	2.93		Clay	97.2			41.00	0.75	n.a.	n.a.	0.67	0.763	n.a.	n.a.	n.a.	n.a.	0.00	0.00
91.700	45.680	1.323	11004.0	6155.5	13.054	3.294	2.93		Clay	97.1			43.18	0.75	n.a.	n.a.	0.67	0.762	n.a.	n.a.	n.a.	n.a.	0.00	0.00
91.860	48.180	1.487	11023.2	6164.7	13.843	3.486	2.92		Clay	96.6			45.54	0.75	n.a.	n.a.	0.67	0.762	n.a.	n.a.	n.a.	n.a.	0.00	0.00
92.030	47.760	1.590	11043.6	6174.5	13.681	3.764	2.94		Clay	98.6			45.14	0.75	n.a.	n.a.	0.67	0.761	n.a.	n.a.	n.a.	n.a.	0.00	0.00
92.190	49.200	1.587	11062.8	6183.7	14.124	3.633	2.92		Clay	97.0			46.50	0.75	n.a.	n.a.	0.67	0.761	n.a.	n.a.	n.a.	n.a.	0.00	0.00
92.360	50.270	1.535	11083.2	6193.5	14.444	3.431	2.90		Clay	95.1			47.51	0.75	n.a.	n.a.	0.67	0.760	n.a.	n.a.	n.a.	n.a.	0.00	0.00
92.520	45.890	1.513	11102.4	6202.8	13.007	3.751	2.96		Clay	99.9			43.37	0.75	n.a.	n.a.	0.67	0.760	n.a.	n.a.	n.a.	n.a.	0.00	0.00
92.680	46.420	1.547	11121.6	6212.0	13.155	3.786	2.96		Clay	99.8			43.88	0.75	n.a.	n.a.	0.67	0.760	n.a.	n.a.	n.a.	n.a.	0.00	0.00
92.850	46.040	1.640	11142.0	6221.8	13.009	4.052	2.98		Clay	100.0			43.52	0.75	n.a.	n.a.	0.67	0.759	n.a.	n.a.	n.a.	n.a.	0.00	0.00
93.010	45.960	1.719	11161.2	6231.0	12.961	4.256	3.00		Clay	100.0			43.44	0.75	n.a.	n.a.	0.67	0.759	n.a.	n.a.	n.a.	n.a.	0.00	0.00
93.180	46.380	1.721	11181.6	6240.8	13.072	4.220	2.99		Clay	100.0			43.84	0.75	n.a.	n.a.	0.67	0.758	n.a.	n.a.	n.a.	n.a.	0.00	0.00
93.340	49.320	1.703	11200.8	6250.0	13.990	3.895	2.95		Clay	98.7			46.62	0.75	n.a.	n.a.	0.67	0.758	n.a.	n.a.	n.a.	n.a.	0.00	0.00
93.500	52.550	1.681	11220.0	6259.2	14.999	3.582	2.90		Clay	95.0			49.67	0.75	n.a.	n.a.	0.66	0.758	n.a.	n.a.	n.a.	n.a.	0.00	0.00
93.670	52.200	1.655	11240.4	6269.0	14.860	3.552	2.90		Clay	95.1			49.34	0.75	n.a.	n.a.	0.66	0.757	n.a.	n.a.	n.a.	n.a.	0.00	0.00
93.830	53.670	1.701	11259.6	6278.2	15.304	3.541	2.89		Clay	94.2			50.73	0.75	n.a.	n.a.	0.66	0.757	n.a.	n.a.	n.a.	n.a.	0.00	0.00
94.000	54.920	1.752	11280.0	6288.0	15.674	3.556	2.88		Clay	93.6			51.91	0.75	n.a.	n.a.	0.66	0.756	n.a.	n.a.	n.a.	n.a.	0.00	0.00
94.160	53.410	1.750	11299.2	6297.2	15.169	3.665	2.90		Clay	95.2			50.48	0.75	n.a.	n.a.	0.66	0.756	n.a.	n.a.	n.a.	n.a.	0.00	0.00
94.320	50.720	1.803	11318.4	6306.4	14.290	4.000	2.95		Clay	98.7			47.94	0.75	n.a.	n.a.	0.66	0.755	n.a.	n.a.	n.a.	n.a.	0.00	0.00
94.490	47.380	1.845	11338.8	6316.2	13.207	4.423	3.00		Clay	100.0			44.78	0.75	n.a.	n.a.	0.66	0.755	n.a.	n.a.	n.a.	n.a.	0.00	0.00
94.650	43.270	1.901	11358.0	6325.4	11.886	5.057	3.07		Clay	100.0			40.90	0.75	n.a.	n.a.	0.66	0.755	n.a.	n.a.	n.a.	n.a.	0.00	0.00
94.820	41.370	1.816	11378.4	6335.2	11.264	5.089	3.09		Clay	100.0			39.10	0.75	n.a.	n.a.	0.66	0.754	n.a.	n.a.	n.a.	n.a.	0.00	0.00
94.980	39.280	1.619	11397.6	6344.4	10.586	4.822	3.10		Clay	100.0			37.13	0.75	n.a.	n.a.	0.66	0.754	n.a.	n.a.	n.a.	n.a.	0.00	0.00
95.140	37.030	1.705	11416.8	6353.7	9.859	5.442	3.16		Clay	100.0			35.00	0.75	n.a.	n.a.	0.66	0.753	n.a.	n.a.	n.a.	n.a.	0.00	0.00
95.310	36.570	2.263	11437.2	6363.5	9.696	7.336	3.24		Clay	100.0			34.57	0.75	n.a.	n.a.	0.66	0.753	n.a.	n.a.	n.a.	n.a.	0.00	0.00
95.470	59.780	2.427	11456.4	6372.7	16.964	4.491	2.92		Clay	96.6			56.50	0.75	n.a.	n.a.	0.66	0.753	n.a.	n.a.	n.a.	n.a.	0.00	0.00
95.640	50.280	2.374	11476.8	6382.5	13.957	5.329	3.03		Clay	100.0			47.52	0.75	n.a.	n.a.	0.66	0.752	n.a.	n.a.	n.a.	n.a.	0.00	0.00
95.800	41.010	1.291	11496.0	6391.7	11.034	3.660	3.01		Clay	100.0			38.76	0.75	n.a.	n.a.	0.66	0.752	n.a.	n.a.	n.a.	n.a.	0.00	0.00
95.960	35.070	1.221	11515.2	6400.9	9.159	4.164	3.11		Clay	100.0			33.15	0.75	n.a.	n.a.	0.66	0.751	n.a.	n.a.	n.a.	n.a.	0.00	0.00
96.130	31.680	1.171	11535.6	6410.7	8.084	4.518	3.18		Clay	100.0			29.94	0.75	n.a.	n.a.	0.66	0.751	n.a.	n.a.	n.a.	n.a.	0.00	0.00
96.290	30.540	1.037	11554.8	6419.9	7.714	4.187	3.17		Clay	100.0			28.87	0.75	n.a.	n.a.	0.66	0.751	n.a.	n.a.	n.a.	n.a.	0.00	0.00
96.460	33.080	1.031	11575.2	6429.7	8.489	3.778	3.11		Clay	100.0			31.27	0.75	n.a.	n.a.	0.66	0.750	n.a.	n.a.	n.a.	n.a.	0.00	0.00
96.620	31.700	0.928	11594.4	6438.9	8.046	3.583	3.12		Clay	100.0			29.96	0.75	n.a.	n.a.	0.66	0.750	n.a.	n.a.	n.a.	n.a.	0.00	0.00
96.780	30.330	0.886	11613.6	6448.1	7.606	3.611	3.14		Clay	100.0			28.67	0.75	n.a.	n.a.	0.66	0.750	n.a.	n.a.	n.a.	n.a.	0.00	0.00
96.950	30.120	0.905	11634.0	6457.9	7.527	3.725	3.15		Clay	100.0			28.47	0.75	n.a.	n.a.	0.66	0.749	n.a.	n.a.	n.a.	n.a.	0.00	0.00
97.110	30.290	0.922	11653.2	6467.1	7.565	3.767	3.15		Clay	100.0			28.63	0.74	n.a.	n.a.	0.66	0.749	n.a.	n.a.	n.a.	n.a.	0.00	0.00
97.280	31.120	0.951	11673.6	6476.9	7.807	3.763	3.14		Clay	100.0			29.41	0.74	n.a.	n.a.	0.66	0.748	n.a.	n.a.	n.a.	n.a.	0.00	0.00
97.440	31.790	1.002	11692.8	6486.1	8.000	3.862	3.14		Clay	100.0			30.05	0.74	n.a.	n.a.	0.66	0.748	n.a.	n.a.	n.a.	n.a.	0.00	0.00
97.600	31.810	1.084	11712.0	6495.4	7.992	4.177	3.16		Clay	100.0			30.07	0.74	n.a.	n.a.	0.65	0.748	n.a.	n.a.	n.a.	n.a.	0.00	0.00
97.770	32.110	1.123	11732.4	6505.2	8.069	4.280	3.16		Clay	100.0			30.35	0.74	n.a.	n.a.	0.65	0.747	n.a.	n.a.	n.a.	n.a.	0.00	0.00
97.930	32.590	1.147	11751.6	6514.4	8.202	4.292	3.16		Clay	100.0			30.80	0.74	n.a.	n.a.	0.65	0.747	n.a.	n.a.	n.a.	n.a.	0.00	0.00
98.100	32.540	1.161	11772.0	6524.2	8.171	4.356	3.16		Clay	100.0			30.76	0.74	n.a.	n.a.	0.65	0.747	n.a.	n.a.	n.a.	n.a.	0.00	0.00
98.260	32.240	1.105	11791.2	6533.4	8.065	4.194	3.16		Clay	100.0			30.47	0.74	n.a.	n.a.	0.65	0.746	n.a.	n.a.	n.a.	n.a.	0.00	0.00
98.430	32.490	1.098	11811.6	6543.2	8.126	4.129	3.15		Clay	100.0			30.71	0.74	n.a.	n.a.	0.65	0.746	n.a.	n.a.	n.a.	n.a.	0.00	0.00
98.590	32.430	1.021	11830.8	6552.4	8.093	3.851	3.13		Clay	100.0			30.65	0.74	n.a.	n.a.	0.65	0.745	n.a.	n.a.	n.a.	n.a.	0.00	0.00
98.750	31.730	1.036	11850.0	6561.6	7.865	4.013	3.15		Clay	100.0			29.99	0.74	n.a.	n.a.	0.65	0.745	n.a.	n.a.	n.a.	n.a.	0.00	0.00
98.920	32.330	1.146	11870.4	6571.4	8.033	4.341	3.17		Clay	100.0			30.56	0.74	n.a.	n.a.	0.65	0.745	n.a.	n.a.	n.a.	n.a.	0.00	0.00

CORNERSTONE EARTH GROUP

CPT No.	4

PGA (A_{max})	0.89

Total Settlement:	0.07	(Inches)

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Depth (ft)	q_c (tsf)	f_s (tsf)	σ_{vc} (psf)	Insitu σ'_{vc} (psf)	Q	F (%)	I_c	Layer "Plastic" PI > 7	Flag Soil Type	Fines (%)	q_{cN} near interfaces (soft layer)	Thin Layer Factor (K_H)	Interpreted q_{cN}	C_N	q_{c1N}	$q_{c1N\text{-}CS}$	Stress Reduction Coeff, r_d	CSR	K_σ for Sand	$CRR_{M=7.5,\ \sigma'vc = 1\ atm}$	CRR	Factor of Safety (CRR/CSR)	Vertical Strain ε_v	Settlement (Inches)
99.080	33.810	1.208	11889.6	6580.6	8.469	4.333	3.15		Clay	100.0			31.96	0.74	n.a.	n.a.	0.65	0.744	n.a.	n.a.	n.a.	n.a.	0.00	0.00
99.250	35.460	1.128	11910.0	6590.4	8.954	3.823	3.10		Clay	100.0			33.52	0.74	n.a.	n.a.	0.65	0.744	n.a.	n.a.	n.a.	n.a.	0.00	0.00
99.410	32.270	1.158	11929.2	6599.6	7.972	4.404	3.17		Clay	100.0			30.50	0.74	n.a.	n.a.	0.65	0.744	n.a.	n.a.	n.a.	n.a.	0.00	0.00
99.570	32.170	1.081	11948.4	6608.8	7.928	4.127	3.16		Clay	100.0			30.41	0.74	n.a.	n.a.	0.65	0.743	n.a.	n.a.	n.a.	n.a.	0.00	0.00
99.740	30.770	1.038	11968.8	6618.6	7.490	4.189	3.18		Clay	100.0			29.08	0.74	n.a.	n.a.	0.65	0.743	n.a.	n.a.	n.a.	n.a.	0.00	0.00
99.900	33.360	1.019	11988.0	6627.8	8.258	3.724	3.12		Clay	100.0			31.53	0.74	n.a.	n.a.	0.65	0.743	n.a.	n.a.	n.a.	n.a.	0.00	0.00
100.070	32.860	0.949	12008.4	6637.6	8.092	3.534	3.11		Clay	100.0			31.06	0.74	n.a.	n.a.	0.65	0.742	n.a.	n.a.	n.a.	n.a.	0.00	0.00
100.230	32.040	0.971	12027.6	6646.8	7.831	3.732	3.14		Clay	100.0			30.28	0.74	n.a.	n.a.	0.65	0.742	n.a.	n.a.	n.a.	n.a.	0.00	0.00
100.390	32.060	1.124	12046.8	6656.1	7.823	4.318	3.18		Clay	100.0			30.30	0.74	n.a.	n.a.	0.65	0.742	n.a.	n.a.	n.a.	n.a.	0.00	0.00

CORNERSTONE EARTH GROUP

CPT No.	5

PGA (A_{max})	0.89

Total Settlement:	0.19	(Inches)

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Depth (ft)	q_c (tsf)	f_s (tsf)	σ_{vc} (psf)	Insitu σ'_{vc} (psf)	Q	F (%)	I_c	Layer "Plastic" PI > 7	Flag Soil Type	Fines (%)	q_{cN} near interfaces (soft layer)	Thin Layer Factor (K_H)	Interpreted q_{cN}	C_N	q_{c1N}	$q_{c1N\text{-}CS}$	Stress Reduction Coeff, r_d	CSR	K_σ for Sand	$CRR_{M=7.5,\ \sigma'vc = 1\ atm}$	CRR	Factor of Safety (CRR/CSR)	Vertical Strain ε_v	Settlement (Inches)
0.330	3.230	0.262	39.6	39.6	49.150	8.146	2.78		Unsaturated	85.0			3.05	1.70	5.19	59.35	1.00	0.579	1.100	n.a.	n.a.	n.a.	0.00	0.00
0.490	6.120	0.423	58.8	58.8	70.708	6.940	2.62		Unsaturated	72.8			5.78	1.70	9.83	63.77	1.00	0.579	1.100	n.a.	n.a.	n.a.	0.00	0.00
0.660	5.340	0.582	79.2	79.2	133.848	10.980	2.63		Unsaturated	73.4			5.05	1.70	8.58	62.24	1.00	0.579	1.100	n.a.	n.a.	n.a.	0.00	0.00
0.820	12.400	0.827	98.4	98.4	99.994	6.693	2.52		Unsaturated	64.5			11.72	1.70	19.92	75.27	1.00	0.579	1.100	n.a.	n.a.	n.a.	0.00	0.00
0.980	107.310	1.493	117.6	117.6	430.002	1.392	1.60		Unsaturated	0.0			101.43	1.70	172.43	172.43	1.00	0.579	1.100	n.a.	n.a.	n.a.	0.00	0.00
1.150	156.440	1.624	138.0	138.0	578.747	1.038	1.42		Unsaturated	0.0			147.86	1.70	251.37	251.37	1.00	0.579	1.100	n.a.	n.a.	n.a.	0.00	0.00
1.310	89.390	1.841	157.2	157.2	309.708	2.061	1.82		Unsaturated	8.6			84.49	1.70	143.63	148.57	1.00	0.579	1.100	n.a.	n.a.	n.a.	0.00	0.00
1.480	43.980	1.668	177.6	177.6	143.195	3.801	2.23		Unsaturated	41.3			41.57	1.70	70.67	130.54	1.00	0.579	1.100	n.a.	n.a.	n.a.	0.00	0.00
1.640	25.800	1.351	196.8	196.8	79.656	5.258	2.50		Unsaturated	62.6			24.39	1.70	41.46	102.49	1.00	0.579	1.100	n.a.	n.a.	n.a.	0.00	0.00
1.800	16.630	0.943	216.0	216.0	77.147	5.709	2.53		Unsaturated	65.6			15.72	1.70	26.72	84.24	1.00	0.579	1.100	n.a.	n.a.	n.a.	0.00	0.00
1.970	14.550	0.784	236.4	236.4	63.262	5.432	2.57		Unsaturated	68.6			13.75	1.70	23.38	80.55	1.00	0.579	1.100	n.a.	n.a.	n.a.	0.00	0.00
2.130	13.810	0.728	255.6	255.6	56.786	5.321	2.59		Unsaturated	70.5			13.05	1.70	22.19	79.37	1.00	0.579	1.100	n.a.	n.a.	n.a.	0.00	0.00
2.300	13.230	0.718	276.0	276.0	51.493	5.481	2.63		Unsaturated	73.6			12.50	1.70	21.26	78.68	1.00	0.579	1.100	n.a.	n.a.	n.a.	0.00	0.00
2.460	12.780	0.710	295.2	295.2	47.400	5.621	2.66		Unsaturated	76.2			12.08	1.70	20.53	78.15	1.00	0.579	1.100	n.a.	n.a.	n.a.	0.00	0.00
2.620	12.670	0.756	314.4	314.4	44.925	6.045	2.70		Unsaturated	79.3			11.98	1.70	20.36	78.37	1.00	0.579	1.100	n.a.	n.a.	n.a.	0.00	0.00
2.790	12.910	0.779	334.8	334.8	43.781	6.111	2.71		Unsaturated	80.2			12.20	1.70	20.74	78.99	1.00	0.579	1.100	n.a.	n.a.	n.a.	0.00	0.00
2.950	14.450	0.814	354.0	354.0	47.162	5.706	2.67		Unsaturated	76.7			13.66	1.70	23.22	81.71	1.00	0.579	1.100	n.a.	n.a.	n.a.	0.00	0.00
3.120	14.380	0.764	374.4	374.4	45.093	5.384	2.67		Unsaturated	76.2			13.59	1.70	23.11	81.50	1.00	0.578	1.100	n.a.	n.a.	n.a.	0.00	0.00
3.280	13.410	0.697	393.6	393.6	40.536	5.277	2.69		Unsaturated	78.3			12.67	1.70	21.55	79.77	1.00	0.578	1.100	n.a.	n.a.	n.a.	0.00	0.00
3.440	13.020	0.622	412.8	412.8	38.021	4.851	2.68		Unsaturated	77.7			12.31	1.70	20.92	78.88	1.00	0.578	1.100	n.a.	n.a.	n.a.	0.00	0.00
3.610	12.640	0.615	433.2	433.2	35.640	4.950	2.71		Unsaturated	79.8			11.95	1.70	20.31	78.38	1.00	0.578	1.100	n.a.	n.a.	n.a.	0.00	0.00
3.770	12.140	0.575	452.4	452.4	33.156	4.828	2.72		Unsaturated	81.0			11.47	1.70	19.51	77.50	1.00	0.578	1.100	n.a.	n.a.	n.a.	0.00	0.00
3.940	12.260	0.578	472.8	472.8	32.444	4.805	2.73		Unsaturated	81.4			11.59	1.70	19.70	77.80	1.00	0.577	1.100	n.a.	n.a.	n.a.	0.00	0.00
4.100	11.710	0.565	492.0	492.0	46.602	4.927	2.63		Unsaturated	73.2			11.07	1.70	18.82	75.46	1.00	0.577	1.100	n.a.	n.a.	n.a.	0.00	0.00
4.270	11.440	0.556	512.4	512.4	43.653	4.968	2.65		Unsaturated	75.0			10.81	1.70	18.38	75.18	1.00	0.577	1.100	n.a.	n.a.	n.a.	0.00	0.00
4.430	11.390	0.519	531.6	531.6	41.852	4.669	2.64		Unsaturated	74.4			10.77	1.70	18.30	74.99	1.00	0.577	1.100	n.a.	n.a.	n.a.	0.00	0.00
4.590	10.770	0.480	550.8	550.8	38.107	4.571	2.67		Unsaturated	76.2			10.18	1.70	17.31	73.97	1.00	0.576	1.100	n.a.	n.a.	n.a.	0.00	0.00
4.760	9.250	0.430	571.2	571.2	31.388	4.792	2.74		Unsaturated	82.2			8.74	1.70	14.86	71.61	1.00	0.576	1.100	n.a.	n.a.	n.a.	0.00	0.00
4.920	7.020	0.396	590.4	590.4	22.780	5.881	2.90		Unsaturated	95.1			6.64	1.70	11.28	68.30	1.00	0.576	1.100	n.a.	n.a.	n.a.	0.00	0.00
5.090	5.250	0.319	610.8	610.8	16.191	6.447	3.04		Clay	100.0			4.96	1.39	n.a.	n.a.	1.00	0.581	n.a.	n.a.	n.a.	n.a.	0.00	0.00
5.250	3.930	0.262	630.0	630.0	11.476	7.250	3.18		Clay	100.0			3.71	1.38	n.a.	n.a.	0.99	0.590	n.a.	n.a.	n.a.	n.a.	0.00	0.00
5.410	3.700	0.253	649.2	649.2	10.399	7.504	3.23		Clay	100.0			3.50	1.37	n.a.	n.a.	0.99	0.599	n.a.	n.a.	n.a.	n.a.	0.00	0.00
5.580	5.630	0.271	669.6	669.6	15.816	5.122	2.98		Clay	100.0			5.32	1.35	n.a.	n.a.	0.99	0.608	n.a.	n.a.	n.a.	n.a.	0.00	0.00
5.740	6.170	0.256	688.8	688.8	16.915	4.401	2.92		Clay	96.2			5.83	1.34	n.a.	n.a.	0.99	0.616	n.a.	n.a.	n.a.	n.a.	0.00	0.00
5.910	6.590	0.254	709.2	709.2	17.584	4.074	2.88		Clay	93.5			6.23	1.33	n.a.	n.a.	0.99	0.625	n.a.	n.a.	n.a.	n.a.	0.00	0.00
6.070	7.150	0.302	728.4	728.4	18.632	4.445	2.89		Clay	93.9			6.76	1.32	n.a.	n.a.	0.99	0.632	n.a.	n.a.	n.a.	n.a.	0.00	0.00
6.230	8.050	0.345	747.6	747.6	20.536	4.489	2.86		Clay	91.5			7.61	1.32	n.a.	n.a.	0.99	0.640	n.a.	n.a.	n.a.	n.a.	0.00	0.00
6.400	8.890	0.409	768.0	768.0	22.151	4.808	2.85		Clay	91.1			8.40	1.31	n.a.	n.a.	0.99	0.648	n.a.	n.a.	n.a.	n.a.	0.00	0.00
6.560	9.520	0.451	787.2	787.2	23.187	4.936	2.84		Clay	90.6			9.00	1.30	n.a.	n.a.	0.99	0.655	n.a.	n.a.	n.a.	n.a.	0.00	0.00
6.730	10.120	0.493	807.6	807.6	24.062	5.073	2.84		Clay	90.3			9.57	1.29	n.a.	n.a.	0.99	0.662	n.a.	n.a.	n.a.	n.a.	0.00	0.00
6.890	9.930	0.510	826.8	826.8	23.020	5.363	2.87		Clay	92.7			9.39	1.28	n.a.	n.a.	0.99	0.669	n.a.	n.a.	n.a.	n.a.	0.00	0.00
7.050	9.650	0.492	846.0	842.9	21.894	5.331	2.89		Clay	93.8			9.12	1.27	n.a.	n.a.	0.99	0.675	n.a.	n.a.	n.a.	n.a.	0.00	0.00
7.220	9.970	0.500	866.4	852.7	22.369	5.245	2.87		Clay	92.9			9.42	1.27	n.a.	n.a.	0.99	0.682	n.a.	n.a.	n.a.	n.a.	0.00	0.00
7.380	10.220	0.507	885.6	861.9	22.688	5.182	2.87		Clay	92.3			9.66	1.27	n.a.	n.a.	0.99	0.688	n.a.	n.a.	n.a.	n.a.	0.00	0.00
7.550	10.530	0.501	906.0	871.7	23.121	4.970	2.85		Clay	90.8			9.95	1.26	n.a.	n.a.	0.99	0.694	n.a.	n.a.	n.a.	n.a.	0.00	0.00
7.710	10.560	0.487	925.2	880.9	22.925	4.826	2.84		Clay	90.3			9.98	1.26	n.a.	n.a.	0.99	0.700	n.a.	n.a.	n.a.	n.a.	0.00	0.00
7.870	10.910	0.474	944.4	890.1	23.453	4.536	2.82		Clay	88.3			10.31	1.26	n.a.	n.a.	0.99	0.706	n.a.	n.a.	n.a.	n.a.	0.00	0.00
8.040	10.690	0.491	964.8	899.9	22.686	4.808	2.84		Clay	90.5			10.10	1.25	n.a.	n.a.	0.99	0.711	n.a.	n.a.	n.a.	n.a.	0.00	0.00
8.200	10.240	0.508	984.0	909.1	21.445	5.214	2.89		Clay	93.8			9.68	1.25	n.a.	n.a.	0.99	0.717	n.a.	n.a.	n.a.	n.a.	0.00	0.00
8.370	10.160	0.516	1004.4	918.9	21.020	5.345	2.90		Clay	94.9			9.60	1.25	n.a.	n.a.	0.99	0.722	n.a.	n.a.	n.a.	n.a.	0.00	0.00
8.530	10.920	0.564	1023.6	928.1	22.428	5.420	2.88		Clay	93.6			10.32	1.24	n.a.	n.a.	0.99	0.727	n.a.	n.a.	n.a.	n.a.	0.00	0.00
8.690	11.900	0.610	1042.8	937.3	24.278	5.364	2.85		Clay	91.3			11.25	1.24	n.a.	n.a.	0.99	0.732	n.a.	n.a.	n.a.	n.a.	0.00	0.00
8.860	12.230	0.671	1063.2	947.1	24.703	5.732	2.87		Clay	92.5			11.56	1.24	n.a.	n.a.	0.99	0.737	n.a.	n.a.	n.a.	n.a.	0.00	0.00
9.020	12.480	0.691	1082.4	956.4	24.967	5.787	2.87		Clay	92.4			11.80	1.23	n.a.	n.a.	0.99	0.742	n.a.	n.a.	n.a.	n.a.	0.00	0.00
9.190	12.570	0.700	1102.8	966.1	24.880	5.826	2.87		Clay	92.7			11.88	1.23	n.a.	n.a.	0.98	0.747	n.a.	n.a.	n.a.	n.a.	0.00	0.00
9.350	12.540	0.699	1122.0	975.4	24.563	5.834	2.88		Clay	93.1			11.85	1.23	n.a.	n.a.	0.98	0.751	n.a.	n.a.	n.a.	n.a.	0.00	0.00
9.510	12.510	0.677	1141.2	984.6	24.253	5.669	2.87		Clay	92.7			11.82	1.22	n.a.	n.a.	0.98	0.756	n.a.	n.a.	n.a.	n.a.	0.00	0.00
9.680	12.490	0.681	1161.6	994.4	23.953	5.721	2.88		Clay	93.2			11.81	1.22	n.a.	n.a.	0.98	0.760	n.a.	n.a.	n.a.	n.a.	0.00	0.00
9.840	12.680	0.672	1180.8	1003.6	24.093	5.555	2.87		Clay	92.4			11.98	1.22	n.a.	n.a.	0.98	0.764	n.a.	n.a.	n.a.	n.a.	0.00	0.00
10.010	12.850	0.658	1201.2	1013.4	24.175	5.374	2.86		Clay	91.5			12.15	1.21	n.a.	n.a.	0.98	0.768	n.a.	n.a.	n.a.	n.a.	0.00	0.00
10.170	12.710	0.629	1220.4	1022.6	23.665	5.198	2.85		Clay	91.2			12.01	1.21	n.a.	n.a.	0.98	0.772	n.a.	n.a.	n.a.	n.a.	0.00	0.00
10.330	12.680	0.623	1239.6	1031.8	23.377	5.165	2.86		Clay	91.4			11.98	1.21	n.a.	n.a.	0.98	0.776	n.a.	n.a.	n.a.	n.a.	0.00	0.00
10.500	12.840	0.624	1260.0	1041.6	23.445	5.108	2.85		Clay	91.1			12.14	1.21	n.a.	n.a.	0.98	0.780	n.a.	n.a.	n.a.	n.a.	0.00	0.00
10.660	13.380	0.634	1279.2	1050.8	24.249	4.977	2.83		Clay	89.6			12.65	1.20	n.a.	n.a.	0.98	0.784	n.a.	n.a.	n.a.	n.a.	0.00	0.00
10.830	13.590	0.630	1299.6	1060.6	24.401	4.865	2.82		Clay	88.9			12.84	1.20	n.a.	n.a.	0.98	0.788	n.a.	n.a.	n.a.	n.a.	0.00	0.00
10.990	13.520	0.642	1318.8	1069.8	24.042	4.992	2.84		Clay	89.9			12.78	1.20	n.a.	n.a.	0.98	0.791	n.a.	n.a.	n.a.	n.a.	0.00	0.00
11.150	13.750	0.639	1338.0	1079.0	24.246	4.888	2.83		Clay	89.2			13.00	1.19	n.a.	n.a.	0.98	0.794	n.a.	n.a.	n.a.	n.a.	0.00	0.00

CORNERSTONE EARTH GROUP

CPT No.	5

PGA (A_{max})	0.89

Total Settlement:	0.19	(Inches)

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Depth (ft)	q_c (tsf)	f_s (tsf)	σ_{vc} (psf)	Insitu σ'_{vc} (psf)	Q	F (%)	I_c	Layer "Plastic" PI > 7	Flag Soil Type	Fines (%)	q_{cN} near interfaces (soft layer)	Thin Layer Factor (K_H)	Interpreted q_{cN}	C_N	q_{c1N}	$q_{c1N\text{-}CS}$	Stress Reduction Coeff, r_d	CSR	K_σ for Sand	$CRR_{M=7.5,\ \sigma'vc = 1\ atm}$	CRR	Factor of Safety (CRR/CSR)	Vertical Strain ε_v	Settlement (Inches)
11.320	13.630	0.647	1358.4	1088.8	23.788	4.993	2.84		Clay	90.2			12.88	1.19	n.a.	n.a.	0.98	0.798	n.a.	n.a.	n.a.	n.a.	0.00	0.00
11.480	14.000	0.633	1377.6	1098.0	24.245	4.752	2.82		Clay	88.5			13.23	1.19	n.a.	n.a.	0.98	0.801	n.a.	n.a.	n.a.	n.a.	0.00	0.00
11.650	14.370	0.648	1398.0	1107.8	24.680	4.742	2.81		Clay	88.0			13.58	1.19	n.a.	n.a.	0.98	0.805	n.a.	n.a.	n.a.	n.a.	0.00	0.00
11.810	14.580	0.674	1417.2	1117.1	24.836	4.862	2.82		Clay	88.4			13.78	1.18	n.a.	n.a.	0.98	0.808	n.a.	n.a.	n.a.	n.a.	0.00	0.00
11.980	14.950	0.692	1437.6	1126.8	25.258	4.862	2.81		Clay	88.0			14.13	1.18	n.a.	n.a.	0.98	0.811	n.a.	n.a.	n.a.	n.a.	0.00	0.00
12.140	15.920	0.703	1456.8	1136.1	26.744	4.625	2.78		Clay	85.4			15.05	1.18	n.a.	n.a.	0.98	0.814	n.a.	n.a.	n.a.	n.a.	0.00	0.00
12.300	16.580	0.714	1476.0	1145.3	27.665	4.509	2.76		Clay	83.9			15.67	1.18	n.a.	n.a.	0.98	0.817	n.a.	n.a.	n.a.	n.a.	0.00	0.00
12.470	16.970	0.739	1496.4	1155.1	28.088	4.554	2.76		Clay	83.8			16.04	1.17	n.a.	n.a.	0.98	0.820	n.a.	n.a.	n.a.	n.a.	0.00	0.00
12.630	17.020	0.682	1515.6	1164.3	27.935	4.192	2.74		Clay	81.9			16.09	1.17	n.a.	n.a.	0.98	0.822	n.a.	n.a.	n.a.	n.a.	0.00	0.00
12.800	16.770	0.632	1536.0	1174.1	27.259	3.946	2.73		Clay	81.2			15.85	1.17	n.a.	n.a.	0.97	0.825	n.a.	n.a.	n.a.	n.a.	0.00	0.00
12.960	16.090	0.588	1555.2	1183.3	25.881	3.837	2.74		Clay	81.9			15.21	1.17	n.a.	n.a.	0.97	0.828	n.a.	n.a.	n.a.	n.a.	0.00	0.00
13.120	15.550	0.627	1574.4	1192.5	24.759	4.249	2.78		Clay	85.4			14.70	1.16	n.a.	n.a.	0.97	0.830	n.a.	n.a.	n.a.	n.a.	0.00	0.00
13.290	15.150	0.661	1594.8	1202.3	23.875	4.604	2.81		Clay	88.2			14.32	1.16	n.a.	n.a.	0.97	0.833	n.a.	n.a.	n.a.	n.a.	0.00	0.00
13.450	15.370	0.645	1614.0	1211.5	24.041	4.429	2.80		Clay	87.1			14.53	1.16	n.a.	n.a.	0.97	0.836	n.a.	n.a.	n.a.	n.a.	0.00	0.00
13.620	15.820	0.622	1634.4	1221.3	24.568	4.145	2.78		Clay	85.0			14.95	1.16	n.a.	n.a.	0.97	0.838	n.a.	n.a.	n.a.	n.a.	0.00	0.00
13.780	15.700	0.593	1653.6	1230.5	24.174	3.988	2.77		Clay	84.5			14.84	1.15	n.a.	n.a.	0.97	0.840	n.a.	n.a.	n.a.	n.a.	0.00	0.00
13.940	16.090	0.610	1672.8	1239.7	24.608	4.002	2.76		Clay	84.2			15.21	1.15	n.a.	n.a.	0.97	0.843	n.a.	n.a.	n.a.	n.a.	0.00	0.00
14.110	16.110	0.605	1693.2	1249.5	24.431	3.964	2.76		Clay	84.1			15.23	1.15	n.a.	n.a.	0.97	0.845	n.a.	n.a.	n.a.	n.a.	0.00	0.00
14.270	15.730	0.585	1712.4	1258.8	23.633	3.934	2.77		Clay	84.8			14.87	1.15	n.a.	n.a.	0.97	0.847	n.a.	n.a.	n.a.	n.a.	0.00	0.00
14.440	16.280	0.558	1732.8	1268.5	24.301	3.623	2.74		Clay	82.2			15.39	1.14	n.a.	n.a.	0.97	0.850	n.a.	n.a.	n.a.	n.a.	0.00	0.00
14.600	17.050	0.599	1752.0	1277.8	25.316	3.706	2.73		Clay	81.7			16.12	1.14	n.a.	n.a.	0.97	0.852	n.a.	n.a.	n.a.	n.a.	0.00	0.00
14.760	16.280	0.672	1771.2	1287.0	23.923	4.364	2.80		Clay	86.9			15.39	1.14	n.a.	n.a.	0.97	0.854	n.a.	n.a.	n.a.	n.a.	0.00	0.00
14.930	15.640	0.694	1791.6	1296.8	22.740	4.708	2.84		Clay	90.0			14.78	1.14	n.a.	n.a.	0.97	0.856	n.a.	n.a.	n.a.	n.a.	0.00	0.00
15.090	14.880	0.657	1810.8	1306.0	21.401	4.699	2.86		Clay	91.5			14.06	1.14	n.a.	n.a.	0.97	0.858	n.a.	n.a.	n.a.	n.a.	0.00	0.00
15.260	14.240	0.570	1831.2	1315.8	20.253	4.281	2.85		Clay	90.8			13.46	1.13	n.a.	n.a.	0.97	0.860	n.a.	n.a.	n.a.	n.a.	0.00	0.00
15.420	17.920	0.422	1850.4	1325.0	25.653	2.485	2.62		Clay	72.5			16.94	1.13	n.a.	n.a.	0.97	0.862	n.a.	n.a.	n.a.	n.a.	0.00	0.00
15.580	14.680	0.358	1869.6	1334.2	20.604	2.604	2.71		Clay	79.5			13.88	1.13	n.a.	n.a.	0.97	0.864	n.a.	n.a.	n.a.	n.a.	0.00	0.00
15.750	9.670	0.328	1890.0	1344.0	12.984	3.760	2.96		Clay	100.0			9.14	1.13	n.a.	n.a.	0.97	0.866	n.a.	n.a.	n.a.	n.a.	0.00	0.00
15.910	9.060	0.374	1909.2	1353.2	11.979	4.613	3.04		Clay	100.0			8.56	1.13	n.a.	n.a.	0.96	0.867	n.a.	n.a.	n.a.	n.a.	0.00	0.00
16.080	16.890	0.468	1929.6	1363.0	23.368	2.938	2.70		Clay	78.6			15.96	1.12	n.a.	n.a.	0.96	0.869	n.a.	n.a.	n.a.	n.a.	0.00	0.00
16.240	22.780	0.601	1948.8	1372.2	27.909	2.758	2.62	plastic	Clay	72.5			21.53	1.12	n.a.	n.a.	0.96	0.871	n.a.	n.a.	n.a.	n.a.	0.00	0.00
16.400	22.690	0.669	1968.0	1381.4	31.425	3.083	2.61		Clay	71.8			21.45	1.12	n.a.	n.a.	0.96	0.873	n.a.	n.a.	n.a.	n.a.	0.00	0.00
16.570	20.990	0.747	1988.4	1391.2	28.745	3.734	2.69		Clay	78.5			19.84	1.12	n.a.	n.a.	0.96	0.874	n.a.	n.a.	n.a.	n.a.	0.00	0.00
16.730	22.870	0.800	2007.6	1400.4	31.227	3.659	2.66		Clay	75.9			21.62	1.12	n.a.	n.a.	0.96	0.876	n.a.	n.a.	n.a.	n.a.	0.00	0.00
16.900	22.260	0.835	2028.0	1410.2	30.131	3.930	2.69		Clay	78.5			21.04	1.11	n.a.	n.a.	0.96	0.878	n.a.	n.a.	n.a.	n.a.	0.00	0.00
17.060	21.190	0.797	2047.2	1419.5	28.414	3.951	2.71		Clay	80.1			20.03	1.11	n.a.	n.a.	0.96	0.879	n.a.	n.a.	n.a.	n.a.	0.00	0.00
17.220	21.130	0.599	2066.4	1428.7	28.134	2.981	2.64		Clay	74.0			19.97	1.11	n.a.	n.a.	0.96	0.881	n.a.	n.a.	n.a.	n.a.	0.00	0.00
17.390	17.640	0.502	2086.8	1438.5	23.075	3.025	2.71		Clay	79.6			16.67	1.11	n.a.	n.a.	0.96	0.882	n.a.	n.a.	n.a.	n.a.	0.00	0.00
17.550	14.990	0.397	2106.0	1447.7	19.254	2.846	2.75		Clay	83.2			14.17	1.11	n.a.	n.a.	0.96	0.884	n.a.	n.a.	n.a.	n.a.	0.00	0.00
17.720	12.400	0.354	2126.4	1457.5	15.557	3.125	2.85		Clay	91.1			11.72	1.10	n.a.	n.a.	0.96	0.885	n.a.	n.a.	n.a.	n.a.	0.00	0.00
17.880	12.220	0.319	2145.6	1466.7	15.201	2.861	2.84		Clay	89.9			11.55	1.10	n.a.	n.a.	0.96	0.886	n.a.	n.a.	n.a.	n.a.	0.00	0.00
18.040	9.050	0.294	2164.8	1475.9	10.797	3.687	3.02		Clay	100.0			8.55	1.10	n.a.	n.a.	0.96	0.888	n.a.	n.a.	n.a.	n.a.	0.00	0.00
18.210	7.640	0.250	2185.2	1485.7	8.814	3.811	3.10		Clay	100.0			7.22	1.10	n.a.	n.a.	0.96	0.889	n.a.	n.a.	n.a.	n.a.	0.00	0.00
18.370	7.040	0.235	2204.4	1494.9	7.944	3.961	3.15		Clay	100.0			6.65	1.10	n.a.	n.a.	0.96	0.890	n.a.	n.a.	n.a.	n.a.	0.00	0.00
18.540	7.330	0.240	2224.8	1504.7	8.264	3.863	3.13		Clay	100.0			6.93	1.09	n.a.	n.a.	0.96	0.892	n.a.	n.a.	n.a.	n.a.	0.00	0.00
18.700	7.940	0.280	2244.0	1513.9	9.007	4.110	3.11		Clay	100.0			7.50	1.09	n.a.	n.a.	0.96	0.893	n.a.	n.a.	n.a.	n.a.	0.00	0.00
18.860	8.070	0.301	2263.2	1523.1	9.111	4.334	3.12		Clay	100.0			7.63	1.09	n.a.	n.a.	0.95	0.894	n.a.	n.a.	n.a.	n.a.	0.00	0.00
19.030	8.760	0.292	2283.6	1532.9	9.939	3.836	3.06		Clay	100.0			8.28	1.09	n.a.	n.a.	0.95	0.895	n.a.	n.a.	n.a.	n.a.	0.00	0.00
19.190	9.600	0.318	2302.8	1542.1	10.957	3.764	3.02		Clay	100.0			9.07	1.09	n.a.	n.a.	0.95	0.896	n.a.	n.a.	n.a.	n.a.	0.00	0.00
19.360	10.490	0.297	2323.2	1551.9	12.022	3.181	2.95		Clay	98.7			9.91	1.09	n.a.	n.a.	0.95	0.898	n.a.	n.a.	n.a.	n.a.	0.00	0.00
19.520	10.310	0.277	2342.4	1561.2	11.708	3.028	2.94		Clay	98.4			9.74	1.08	n.a.	n.a.	0.95	0.899	n.a.	n.a.	n.a.	n.a.	0.00	0.00
19.690	9.310	0.279	2362.8	1570.9	10.349	3.427	3.02		Clay	100.0			8.80	1.08	n.a.	n.a.	0.95	0.900	n.a.	n.a.	n.a.	n.a.	0.00	0.00
19.850	9.210	0.286	2382.0	1580.2	10.150	3.572	3.04		Clay	100.0			8.71	1.08	n.a.	n.a.	0.95	0.901	n.a.	n.a.	n.a.	n.a.	0.00	0.00
20.010	9.920	0.292	2401.2	1589.4	10.972	3.351	2.99		Clay	100.0			9.38	1.08	n.a.	n.a.	0.95	0.902	n.a.	n.a.	n.a.	n.a.	0.00	0.00
20.180	9.180	0.281	2421.6	1599.2	9.967	3.521	3.04		Clay	100.0			8.68	1.08	n.a.	n.a.	0.95	0.903	n.a.	n.a.	n.a.	n.a.	0.00	0.00
20.340	8.650	0.254	2440.8	1608.4	9.239	3.419	3.06		Clay	100.0			8.18	1.08	n.a.	n.a.	0.95	0.904	n.a.	n.a.	n.a.	n.a.	0.00	0.00
20.510	8.340	0.214	2461.2	1618.2	8.787	3.012	3.04		Clay	100.0			7.88	1.07	n.a.	n.a.	0.95	0.905	n.a.	n.a.	n.a.	n.a.	0.00	0.00
20.670	8.180	0.206	2480.4	1627.4	8.529	2.970	3.05		Clay	100.0			7.73	1.07	n.a.	n.a.	0.95	0.906	n.a.	n.a.	n.a.	n.a.	0.00	0.00
20.830	8.420	0.206	2499.6	1636.6	8.762	2.876	3.03		Clay	100.0			7.96	1.07	n.a.	n.a.	0.95	0.907	n.a.	n.a.	n.a.	n.a.	0.00	0.00
21.000	8.720	0.229	2520.0	1646.4	9.062	3.067	3.04		Clay	100.0			8.24	1.07	n.a.	n.a.	0.95	0.908	n.a.	n.a.	n.a.	n.a.	0.00	0.00
21.160	8.990	0.257	2539.2	1655.6	9.326	3.330	3.05		Clay	100.0			8.50	1.07	n.a.	n.a.	0.95	0.909	n.a.	n.a.	n.a.	n.a.	0.00	0.00
21.330	9.300	0.267	2559.6	1665.4	9.632	3.323	3.04		Clay	100.0			8.79	1.07	n.a.	n.a.	0.95	0.909	n.a.	n.a.	n.a.	n.a.	0.00	0.00
21.490	9.590	0.264	2578.8	1674.6	9.913	3.182	3.01		Clay	100.0			9.06	1.06	n.a.	n.a.	0.95	0.910	n.a.	n.a.	n.a.	n.a.	0.00	0.00
21.650	9.810	0.232	2598.0	1683.8	10.109	2.725	2.97		Clay	100.0			9.27	1.06	n.a.	n.a.	0.95	0.911	n.a.	n.a.	n.a.	n.a.	0.00	0.00
21.820	9.700	0.241	2618.4	1693.6	9.909	2.872	2.99		Clay	100.0			9.17	1.06	n.a.	n.a.	0.94	0.912	n.a.	n.a.	n.a.	n.a.	0.00	0.00
21.980	10.480	0.239	2637.6	1702.8	10.760	2.607	2.94		Clay	97.9			9.91	1.06	n.a.	n.a.	0.94	0.913	n.a.	n.a.	n.a.	n.a.	0.00	0.00
22.150	11.120	0.268	2658.0	1712.6	11.434	2.739	2.93		Clay	97.1			10.51	1.06	n.a.	n.a.	0.94	0.913	n.a.	n.a.	n.a.	n.a.	0.00	0.00

CORNERSTONE EARTH GROUP

CPT No.	5

PGA (A_{max})	0.89

Total Settlement:	0.19	(Inches)

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Depth (ft)	q_c (tsf)	f_s (tsf)	σ_{vc} (psf)	Insitu σ'_{vc} (psf)	Q	F (%)	I_c	Layer "Plastic" PI > 7	Flag Soil Type	Fines (%)	q_{cN} near interfaces (soft layer)	Thin Layer Factor (K_H)	Interpreted q_{cN}	C_N	q_{c1N}	$q_{c1N\text{-}CS}$	Stress Reduction Coeff, r_d	CSR	K_σ for Sand	$CRR_{M=7.5,\ \sigma'vc = 1\ atm}$	CRR	Factor of Safety (CRR/CSR)	Vertical Strain ε_v	Settlement (Inches)
22.310	12.750	0.313	2677.2	1721.9	13.255	2.743	2.87		Clay	92.9			12.05	1.06	n.a.	n.a.	0.94	0.914	n.a.	n.a.	n.a.	n.a.	0.00	0.00
22.470	15.290	0.374	2696.4	1731.1	16.108	2.683	2.80		Clay	87.0			14.45	1.05	n.a.	n.a.	0.94	0.915	n.a.	n.a.	n.a.	n.a.	0.00	0.00
22.640	17.800	0.439	2716.8	1740.9	18.889	2.667	2.74		Clay	82.4			16.82	1.05	n.a.	n.a.	0.94	0.916	n.a.	n.a.	n.a.	n.a.	0.00	0.00
22.800	20.300	0.506	2736.0	1750.1	21.636	2.673	2.70		Clay	78.7			19.19	1.05	n.a.	n.a.	0.94	0.916	n.a.	n.a.	n.a.	n.a.	0.00	0.00
22.970	21.490	0.580	2756.4	1759.9	22.856	2.882	2.70		Clay	78.8			20.31	1.05	n.a.	n.a.	0.94	0.917	n.a.	n.a.	n.a.	n.a.	0.00	0.00
23.130	23.900	0.662	2775.6	1769.1	25.451	2.939	2.67		Clay	76.3			22.59	1.05	n.a.	n.a.	0.94	0.918	n.a.	n.a.	n.a.	n.a.	0.00	0.00
23.290	25.790	0.684	2794.8	1778.3	27.434	2.805	2.63		Clay	73.3			24.38	1.05	n.a.	n.a.	0.94	0.918	n.a.	n.a.	n.a.	n.a.	0.00	0.00
23.460	27.990	0.774	2815.2	1788.1	29.733	2.912	2.61		Clay	72.0			26.46	1.05	n.a.	n.a.	0.94	0.919	n.a.	n.a.	n.a.	n.a.	0.00	0.00
23.620	31.500	0.898	2834.4	1797.3	31.876	2.985	2.60		Mixed	70.7	32		32.00	1.09	34.77	95.64	0.94	0.919	1.017	0.132	0.166	0.18	0.03	0.07
23.790	33.860	1.015	2854.8	1807.1	33.171	3.128	2.60		Sand	70.7			32.00	1.08	34.68	95.53	0.94	0.920	1.016	0.132	0.166	0.18	0.03	0.06
23.950	32.550	1.110	2874.0	1816.3	34.259	3.569	2.62		Clay	72.9			30.77	1.04	n.a.	n.a.	0.94	0.921	n.a.	n.a.	n.a.	n.a.	0.00	0.00
24.110	29.160	0.957	2893.2	1825.5	30.362	3.455	2.65		Clay	75.3			27.56	1.04	n.a.	n.a.	0.94	0.921	n.a.	n.a.	n.a.	n.a.	0.00	0.00
24.280	26.830	0.808	2913.6	1835.3	27.650	3.186	2.66		Clay	75.9			25.36	1.04	n.a.	n.a.	0.94	0.922	n.a.	n.a.	n.a.	n.a.	0.00	0.00
24.440	25.440	0.669	2932.8	1844.5	25.994	2.790	2.65		Clay	74.6			24.05	1.04	n.a.	n.a.	0.93	0.922	n.a.	n.a.	n.a.	n.a.	0.00	0.00
24.610	24.780	0.656	2953.2	1854.3	25.134	2.815	2.66		Clay	75.7			23.42	1.04	n.a.	n.a.	0.93	0.923	n.a.	n.a.	n.a.	n.a.	0.00	0.00
24.770	24.590	0.661	2972.4	1863.6	24.795	2.859	2.67		Clay	76.4			23.24	1.03	n.a.	n.a.	0.93	0.923	n.a.	n.a.	n.a.	n.a.	0.00	0.00
24.930	26.030	0.605	2991.6	1872.8	26.201	2.467	2.61		Clay	71.7			24.60	1.03	n.a.	n.a.	0.93	0.924	n.a.	n.a.	n.a.	n.a.	0.00	0.00
25.100	25.670	0.678	3012.0	1882.6	25.671	2.807	2.65		Clay	75.1			24.26	1.03	n.a.	n.a.	0.93	0.924	n.a.	n.a.	n.a.	n.a.	0.00	0.00
25.260	25.970	0.847	3031.2	1891.8	25.853	3.462	2.71		Clay	79.6			24.55	1.03	n.a.	n.a.	0.93	0.925	n.a.	n.a.	n.a.	n.a.	0.00	0.00
25.430	29.340	0.943	3051.6	1901.6	29.254	3.389	2.66		Clay	75.8			27.73	1.03	n.a.	n.a.	0.93	0.925	n.a.	n.a.	n.a.	n.a.	0.00	0.00
25.590	27.040	0.975	3070.8	1910.8	26.695	3.821	2.72		Clay	81.0			25.56	1.03	n.a.	n.a.	0.93	0.925	n.a.	n.a.	n.a.	n.a.	0.00	0.00
25.750	25.590	0.955	3090.0	1920.0	25.047	3.973	2.76		Clay	83.5			24.19	1.03	n.a.	n.a.	0.93	0.926	n.a.	n.a.	n.a.	n.a.	0.00	0.00
25.920	25.610	0.886	3110.4	1929.8	24.930	3.684	2.74		Clay	81.9			24.21	1.02	n.a.	n.a.	0.93	0.926	n.a.	n.a.	n.a.	n.a.	0.00	0.00
26.080	24.470	0.801	3129.6	1939.0	23.626	3.497	2.74		Clay	82.2			23.13	1.02	n.a.	n.a.	0.93	0.927	n.a.	n.a.	n.a.	n.a.	0.00	0.00
26.250	23.270	0.718	3150.0	1948.8	22.265	3.307	2.74		Clay	82.5			21.99	1.02	n.a.	n.a.	0.93	0.927	n.a.	n.a.	n.a.	n.a.	0.00	0.00
26.410	23.100	0.683	3169.2	1958.0	21.977	3.175	2.74		Clay	82.0			21.83	1.02	n.a.	n.a.	0.93	0.927	n.a.	n.a.	n.a.	n.a.	0.00	0.00
26.570	23.270	0.659	3188.4	1967.2	22.037	3.038	2.72		Clay	81.0			21.99	1.02	n.a.	n.a.	0.93	0.928	n.a.	n.a.	n.a.	n.a.	0.00	0.00
26.740	23.210	0.622	3208.8	1977.0	21.857	2.879	2.71		Clay	80.0			21.94	1.02	n.a.	n.a.	0.93	0.928	n.a.	n.a.	n.a.	n.a.	0.00	0.00
26.900	23.090	0.638	3228.0	1986.2	21.625	2.969	2.72		Clay	81.0			21.82	1.02	n.a.	n.a.	0.93	0.928	n.a.	n.a.	n.a.	n.a.	0.00	0.00
27.070	23.670	0.669	3248.4	1996.0	22.090	3.033	2.72		Clay	80.8			22.37	1.02	n.a.	n.a.	0.92	0.929	n.a.	n.a.	n.a.	n.a.	0.00	0.00
27.230	24.250	0.734	3267.6	2005.2	22.557	3.245	2.73		Clay	81.8			22.92	1.01	n.a.	n.a.	0.92	0.929	n.a.	n.a.	n.a.	n.a.	0.00	0.00
27.400	24.840	0.788	3288.0	2015.0	23.023	3.398	2.74		Clay	82.2			23.48	1.01	n.a.	n.a.	0.92	0.929	n.a.	n.a.	n.a.	n.a.	0.00	0.00
27.560	26.040	0.826	3307.2	2024.3	24.094	3.388	2.72		Clay	81.0			24.61	1.01	n.a.	n.a.	0.92	0.929	n.a.	n.a.	n.a.	n.a.	0.00	0.00
27.720	27.410	0.846	3326.4	2033.5	25.323	3.286	2.70		Clay	78.9			25.91	1.01	n.a.	n.a.	0.92	0.930	n.a.	n.a.	n.a.	n.a.	0.00	0.00
27.890	27.260	0.881	3346.8	2043.3	25.045	3.442	2.72		Clay	80.3			25.77	1.01	n.a.	n.a.	0.92	0.930	n.a.	n.a.	n.a.	n.a.	0.00	0.00
28.050	26.690	0.869	3366.0	2052.5	24.368	3.473	2.73		Clay	81.2			25.23	1.01	n.a.	n.a.	0.92	0.930	n.a.	n.a.	n.a.	n.a.	0.00	0.00
28.220	25.160	0.771	3386.4	2062.3	22.758	3.284	2.73		Clay	81.8			23.78	1.01	n.a.	n.a.	0.92	0.930	n.a.	n.a.	n.a.	n.a.	0.00	0.00
28.380	23.660	0.718	3405.6	2071.5	21.199	3.268	2.76		Clay	83.6			22.36	1.01	n.a.	n.a.	0.92	0.931	n.a.	n.a.	n.a.	n.a.	0.00	0.00
28.540	22.240	0.665	3424.8	2080.7	19.731	3.238	2.78		Clay	85.3			21.02	1.00	n.a.	n.a.	0.92	0.931	n.a.	n.a.	n.a.	n.a.	0.00	0.00
28.710	21.780	0.640	3445.2	2090.5	19.189	3.189	2.78		Clay	85.8			20.59	1.00	n.a.	n.a.	0.92	0.931	n.a.	n.a.	n.a.	n.a.	0.00	0.00
28.870	20.870	0.583	3464.4	2099.7	18.229	3.046	2.79		Clay	86.2			19.73	1.00	n.a.	n.a.	0.92	0.931	n.a.	n.a.	n.a.	n.a.	0.00	0.00
29.040	20.380	0.511	3484.8	2109.5	17.670	2.739	2.77		Clay	84.8			19.26	1.00	n.a.	n.a.	0.92	0.931	n.a.	n.a.	n.a.	n.a.	0.00	0.00
29.200	18.810	0.473	3504.0	2118.7	16.102	2.772	2.81		Clay	87.7			17.78	1.00	n.a.	n.a.	0.92	0.931	n.a.	n.a.	n.a.	n.a.	0.00	0.00
29.360	17.490	0.444	3523.2	2127.9	14.783	2.825	2.84		Clay	90.4			16.53	1.00	n.a.	n.a.	0.92	0.932	n.a.	n.a.	n.a.	n.a.	0.00	0.00
29.530	16.180	0.411	3543.6	2137.7	13.480	2.849	2.88		Clay	93.2			15.29	1.00	n.a.	n.a.	0.91	0.932	n.a.	n.a.	n.a.	n.a.	0.00	0.00
29.690	15.720	0.381	3562.8	2146.9	12.985	2.733	2.88		Clay	93.5			14.86	1.00	n.a.	n.a.	0.91	0.932	n.a.	n.a.	n.a.	n.a.	0.00	0.00
29.860	14.170	0.343	3583.2	2156.7	11.479	2.769	2.93		Clay	97.2			13.39	0.99	n.a.	n.a.	0.91	0.932	n.a.	n.a.	n.a.	n.a.	0.00	0.00
30.020	12.990	0.312	3602.4	2166.0	10.332	2.789	2.97		Clay	100.0			12.28	0.99	n.a.	n.a.	0.91	0.932	n.a.	n.a.	n.a.	n.a.	0.00	0.00
30.180	13.190	0.296	3621.6	2175.2	10.463	2.599	2.95		Clay	98.7			12.47	0.99	n.a.	n.a.	0.91	0.932	n.a.	n.a.	n.a.	n.a.	0.00	0.00
30.350	13.570	0.305	3642.0	2185.0	10.754	2.596	2.94		Clay	97.8			12.83	0.99	n.a.	n.a.	0.91	0.932	n.a.	n.a.	n.a.	n.a.	0.00	0.00
30.510	13.930	0.321	3661.2	2194.2	11.029	2.656	2.93		Clay	97.6			13.17	0.99	n.a.	n.a.	0.91	0.932	n.a.	n.a.	n.a.	n.a.	0.00	0.00
30.680	14.130	0.346	3681.6	2204.0	11.152	2.815	2.94		Clay	98.4			13.36	0.99	n.a.	n.a.	0.91	0.932	n.a.	n.a.	n.a.	n.a.	0.00	0.00
30.840	14.560	0.377	3700.8	2213.2	11.485	2.968	2.94		Clay	98.6			13.76	0.99	n.a.	n.a.	0.91	0.933	n.a.	n.a.	n.a.	n.a.	0.00	0.00
31.000	15.500	0.450	3720.0	2222.4	12.275	3.298	2.95		Clay	98.8			14.65	0.99	n.a.	n.a.	0.91	0.933	n.a.	n.a.	n.a.	n.a.	0.00	0.00
31.170	17.120	0.520	3740.4	2232.2	13.664	3.413	2.92		Clay	96.6			16.18	0.99	n.a.	n.a.	0.91	0.933	n.a.	n.a.	n.a.	n.a.	0.00	0.00
31.330	19.310	0.558	3759.6	2241.4	15.553	3.203	2.86		Clay	91.6			18.25	0.98	n.a.	n.a.	0.91	0.933	n.a.	n.a.	n.a.	n.a.	0.00	0.00
31.500	20.310	0.625	3780.0	2251.2	16.365	3.393	2.86		Clay	91.4			19.20	0.98	n.a.	n.a.	0.91	0.933	n.a.	n.a.	n.a.	n.a.	0.00	0.00
31.660	20.000	0.642	3799.2	2260.4	16.015	3.544	2.87		Clay	93.0			18.90	0.98	n.a.	n.a.	0.91	0.933	n.a.	n.a.	n.a.	n.a.	0.00	0.00
31.820	19.380	0.602	3818.4	2269.6	15.395	3.445	2.88		Clay	93.5			18.32	0.98	n.a.	n.a.	0.91	0.933	n.a.	n.a.	n.a.	n.a.	0.00	0.00
31.990	20.030	0.616	3838.8	2279.4	15.891	3.403	2.87		Clay	92.3			18.93	0.98	n.a.	n.a.	0.90	0.933	n.a.	n.a.	n.a.	n.a.	0.00	0.00
32.150	19.500	0.600	3858.0	2288.6	15.355	3.415	2.88		Clay	93.3			18.43	0.98	n.a.	n.a.	0.90	0.933	n.a.	n.a.	n.a.	n.a.	0.00	0.00
32.320	20.460	0.628	3878.4	2298.4	16.116	3.389	2.86		Clay	91.8			19.34	0.98	n.a.	n.a.	0.90	0.933	n.a.	n.a.	n.a.	n.a.	0.00	0.00
32.480	21.600	0.622	3897.6	2307.6	17.031	3.163	2.82		Clay	88.9			20.42	0.98	n.a.	n.a.	0.90	0.933	n.a.	n.a.	n.a.	n.a.	0.00	0.00
32.640	21.840	0.620	3916.8	2316.9	17.163	3.118	2.82		Clay	88.3			20.64	0.98	n.a.	n.a.	0.90	0.933	n.a.	n.a.	n.a.	n.a.	0.00	0.00
32.810	20.090	0.612	3937.2	2326.7	15.577	3.375	2.87		Clay	92.7			18.99	0.98	n.a.	n.a.	0.90	0.933	n.a.	n.a.	n.a.	n.a.	0.00	0.00
32.970	17.970	0.609	3956.4	2335.9	13.692	3.809	2.95		Clay	98.8			16.98	0.97	n.a.	n.a.	0.90	0.933	n.a.	n.a.	n.a.	n.a.	0.00	0.00
33.140	15.910	0.583	3976.8	2345.7	11.870	4.185	3.02		Clay	100.0			15.04	0.97	n.a.	n.a.	0.90	0.932	n.a.	n.a.	n.a.	n.a.	0.00	0.00

CORNERSTONE EARTH GROUP

CPT No.	5

PGA (A_{max})	0.89

Total Settlement:	0.19	(Inches)

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Depth (ft)	q_c (tsf)	f_s (tsf)	σ_{vc} (psf)	Insitu σ'_{vc} (psf)	Q	F (%)	I_c	Layer "Plastic" PI > 7	Flag Soil Type	Fines (%)	q_{cN} near interfaces (soft layer)	Thin Layer Factor (K_H)	Interpreted q_{cN}	C_N	q_{c1N}	$q_{c1N\text{-}CS}$	Stress Reduction Coeff, r_d	CSR	K_σ for Sand	$CRR_{M=7.5,\ \sigma'vc = 1\ atm}$	CRR	Factor of Safety (CRR/CSR)	Vertical Strain ε_v	Settlement (Inches)
33.300	13.680	0.512	3996.0	2354.9	9.922	4.379	3.10		Clay	100.0			12.93	0.97	n.a.	n.a.	0.90	0.932	n.a.	n.a.	n.a.	n.a.	0.00	0.00
33.460	13.130	0.414	4015.2	2364.1	9.409	3.725	3.07		Clay	100.0			12.41	0.97	n.a.	n.a.	0.90	0.932	n.a.	n.a.	n.a.	n.a.	0.00	0.00
33.630	14.210	0.310	4035.6	2373.9	10.272	2.542	2.95		Clay	98.8			13.43	0.97	n.a.	n.a.	0.90	0.932	n.a.	n.a.	n.a.	n.a.	0.00	0.00
33.790	13.740	0.314	4054.8	2383.1	9.830	2.680	2.98		Clay	100.0			12.99	0.97	n.a.	n.a.	0.90	0.932	n.a.	n.a.	n.a.	n.a.	0.00	0.00
33.960	13.600	0.260	4075.2	2392.9	9.664	2.244	2.94		Clay	98.2			12.85	0.97	n.a.	n.a.	0.90	0.932	n.a.	n.a.	n.a.	n.a.	0.00	0.00
34.120	12.560	0.300	4094.4	2402.1	8.753	2.855	3.03		Clay	100.0			11.87	0.97	n.a.	n.a.	0.90	0.932	n.a.	n.a.	n.a.	n.a.	0.00	0.00
34.280	13.490	0.292	4113.6	2411.3	9.483	2.553	2.98		Clay	100.0			12.75	0.97	n.a.	n.a.	0.90	0.932	n.a.	n.a.	n.a.	n.a.	0.00	0.00
34.450	13.850	0.331	4134.0	2421.1	9.734	2.807	2.99		Clay	100.0			13.09	0.97	n.a.	n.a.	0.89	0.932	n.a.	n.a.	n.a.	n.a.	0.00	0.00
34.610	13.010	0.393	4153.2	2430.3	8.997	3.594	3.08		Clay	100.0			12.30	0.96	n.a.	n.a.	0.89	0.932	n.a.	n.a.	n.a.	n.a.	0.00	0.00
34.780	13.140	0.412	4173.6	2440.1	9.060	3.729	3.09		Clay	100.0			12.42	0.96	n.a.	n.a.	0.89	0.932	n.a.	n.a.	n.a.	n.a.	0.00	0.00
34.940	14.930	0.436	4192.8	2449.3	10.479	3.396	3.01		Clay	100.0			14.11	0.96	n.a.	n.a.	0.89	0.931	n.a.	n.a.	n.a.	n.a.	0.00	0.00
35.100	16.850	0.424	4212.0	2458.6	11.994	2.878	2.92		Clay	96.7			15.93	0.96	n.a.	n.a.	0.89	0.931	n.a.	n.a.	n.a.	n.a.	0.00	0.00
35.270	16.740	0.438	4232.4	2468.4	11.849	2.992	2.94		Clay	97.9			15.82	0.96	n.a.	n.a.	0.89	0.931	n.a.	n.a.	n.a.	n.a.	0.00	0.00
35.430	16.600	0.446	4251.6	2477.6	11.684	3.079	2.95		Clay	98.8			15.69	0.96	n.a.	n.a.	0.89	0.931	n.a.	n.a.	n.a.	n.a.	0.00	0.00
35.600	16.990	0.483	4272.0	2487.4	11.944	3.254	2.95		Clay	99.3			16.06	0.96	n.a.	n.a.	0.89	0.931	n.a.	n.a.	n.a.	n.a.	0.00	0.00
35.760	17.580	0.503	4291.2	2496.6	12.364	3.258	2.94		Clay	98.4			16.62	0.96	n.a.	n.a.	0.89	0.931	n.a.	n.a.	n.a.	n.a.	0.00	0.00
35.930	19.430	0.474	4311.6	2506.4	13.784	2.746	2.86		Clay	91.9			18.36	0.96	n.a.	n.a.	0.89	0.931	n.a.	n.a.	n.a.	n.a.	0.00	0.00
36.090	21.220	0.457	4330.8	2515.6	15.149	2.400	2.79		Clay	86.5			20.06	0.96	n.a.	n.a.	0.89	0.930	n.a.	n.a.	n.a.	n.a.	0.00	0.00
36.250	19.270	0.426	4350.0	2524.8	13.542	2.492	2.84		Clay	90.4			18.21	0.95	n.a.	n.a.	0.89	0.930	n.a.	n.a.	n.a.	n.a.	0.00	0.00
36.420	16.640	0.409	4370.4	2534.6	11.406	2.830	2.94		Clay	97.8			15.73	0.95	n.a.	n.a.	0.89	0.930	n.a.	n.a.	n.a.	n.a.	0.00	0.00
36.580	16.030	0.371	4389.6	2543.8	10.878	2.682	2.94		Clay	98.1			15.15	0.95	n.a.	n.a.	0.89	0.930	n.a.	n.a.	n.a.	n.a.	0.00	0.00
36.750	15.980	0.380	4410.0	2553.6	10.789	2.756	2.95		Clay	98.9			15.10	0.95	n.a.	n.a.	0.89	0.930	n.a.	n.a.	n.a.	n.a.	0.00	0.00
36.910	15.250	0.353	4429.2	2562.8	10.173	2.706	2.97		Clay	100.0			14.41	0.95	n.a.	n.a.	0.88	0.929	n.a.	n.a.	n.a.	n.a.	0.00	0.00
37.070	16.960	0.370	4448.4	2572.0	11.458	2.511	2.90		Clay	95.4			16.03	0.95	n.a.	n.a.	0.88	0.929	n.a.	n.a.	n.a.	n.a.	0.00	0.00
37.240	14.810	0.595	4468.8	2581.8	9.742	4.729	3.12		Clay	100.0			14.00	0.95	n.a.	n.a.	0.88	0.929	n.a.	n.a.	n.a.	n.a.	0.00	0.00
37.400	18.110	0.840	4488.0	2591.0	12.247	5.294	3.07		Clay	100.0			17.12	0.95	n.a.	n.a.	0.88	0.929	n.a.	n.a.	n.a.	n.a.	0.00	0.00
37.570	27.460	1.234	4508.4	2600.8	19.383	4.894	2.90		Clay	95.0			25.95	0.95	n.a.	n.a.	0.88	0.929	n.a.	n.a.	n.a.	n.a.	0.00	0.00
37.730	33.790	1.537	4527.6	2610.0	24.158	4.875	2.83		Clay	89.2			31.94	0.95	n.a.	n.a.	0.88	0.928	n.a.	n.a.	n.a.	n.a.	0.00	0.00
37.890	40.750	1.467	4546.8	2619.3	29.380	3.812	2.69		Clay	78.4			38.52	0.95	n.a.	n.a.	0.88	0.928	n.a.	n.a.	n.a.	n.a.	0.00	0.00
38.060	50.250	1.561	4567.2	2629.1	40.673	3.254	2.54		Sand	66.4			47.50	0.90	42.73	105.02	0.88	0.928	0.976	0.144	0.181	0.20	0.03	0.06
38.220	43.090	2.562	4586.4	2638.3	30.927	6.280	2.83		Clay	89.2			40.73	0.94	n.a.	n.a.	0.88	0.928	n.a.	n.a.	n.a.	n.a.	0.00	0.00
38.390	45.850	2.057	4606.8	2648.1	32.889	4.724	2.72		Clay	80.7			43.34	0.94	n.a.	n.a.	0.88	0.927	n.a.	n.a.	n.a.	n.a.	0.00	0.00
38.550	73.600	2.121	4626.0	2657.3	60.126	2.975	2.39		Sand	54.4	260		260.00	0.94	244.84	358.89	0.88	0.927	0.932	#########	########	##########	0.00	0.00
38.710	189.030	2.084	4645.2	2666.5	157.204	1.116	1.80		Sand	6.8	260		260.00	0.94	244.10	246.03	0.88	0.927	0.931	82.425	168.756	182.07	0.00	0.00
38.880	275.080	2.321	4665.6	2676.3	229.227	0.851	1.60		Sand	0.0			260.00	0.94	243.71	243.71	0.88	0.927	0.930	63.736	130.337	140.66	0.00	0.00
39.040	284.180	1.988	4684.8	2685.5	236.460	0.705	1.53		Sand	0.0			268.60	0.94	252.10	252.10	0.88	0.926	0.928	167.669	342.496	369.74	0.00	0.00
39.210	295.930	2.578	4705.2	2695.3	245.862	0.878	1.59		Sand	0.0			279.71	0.94	262.41	262.41	0.87	0.926	0.927	642.688	1311.272	1416.01	0.00	0.00
39.370	301.660	1.526	4724.4	2704.5	250.225	0.510	1.42		Sand	0.0			285.12	0.94	267.25	267.25	0.87	0.926	0.926	1287.914	2624.821	2835.31	0.00	0.00
39.530	328.590	3.745	4743.6	2713.7	272.268	1.148	1.65		Sand	0.0			310.58	0.94	290.85	290.85	0.87	0.925	0.925	73499.203	########	161676.82	0.00	0.00
39.700	366.790	3.211	4764.0	2723.5	303.595	0.881	1.53		Sand	0.0			346.68	0.94	324.35	324.35	0.87	0.925	0.924	#########	########	##########	0.00	0.00
39.860	344.810	2.329	4783.2	2732.7	284.794	0.680	1.46		Sand	0.0			325.91	0.93	304.64	304.64	0.87	0.925	0.923	#########	########	3022362.21	0.00	0.00
40.030	307.510	1.882	4803.6	2742.5	253.309	0.617	1.47		Sand	0.0			290.65	0.93	271.43	271.43	0.87	0.925	0.922	2431.125	4932.333	5334.62	0.00	0.00
40.190	275.210	1.215	4822.8	2751.7	226.105	0.446	1.41		Sand	0.0			260.12	0.93	241.82	241.82	0.87	0.924	0.921	52.067	105.520	114.16	0.00	0.00
40.350	252.960	1.681	4842.0	2761.0	207.309	0.671	1.56		Sand	0.0			239.09	0.92	220.57	220.57	0.87	0.924	0.920	7.454	15.090	16.33	0.00	0.00
40.520	248.320	1.104	4862.4	2770.8	203.101	0.449	1.45		Sand	0.0			234.71	0.92	215.95	215.95	0.87	0.924	0.919	5.267	10.650	11.53	0.00	0.00
40.680	221.740	1.178	4881.6	2780.0	180.838	0.537	1.54		Sand	0.0			209.58	0.91	190.92	190.92	0.87	0.923	0.935	1.175	2.418	2.62	0.00	0.00
40.850	201.160	1.795	4902.0	2789.8	163.571	0.903	1.72		Sand	0.7	209.58		209.58	0.91	190.67	190.67	0.87	0.923	0.935	1.161	2.387	2.59	0.00	0.00
41.010	127.390	1.749	4921.2	2799.0	102.669	1.400	2.00		Sand	22.9	209.58		209.58	0.93	194.62	253.17	0.87	0.923	0.916	191.082	385.103	417.36	0.00	0.00
41.170	67.310	1.426	4940.4	2808.2	53.199	2.199	2.34		Sand	50.3	209.58		209.58	0.93	194.50	292.24	0.87	0.922	0.915	96808.905	########	211293.78	0.00	0.00
41.340	29.600	0.716	4960.8	2818.0	19.248	2.639	2.73		Clay	81.7			27.98	0.93	n.a.	n.a.	0.87	0.922	n.a.	n.a.	n.a.	n.a.	0.00	0.00
41.500	25.940	0.689	4980.0	2827.2	16.589	2.938	2.81		Clay	88.0			24.52	0.93	n.a.	n.a.	0.86	0.922	n.a.	n.a.	n.a.	n.a.	0.00	0.00
41.670	24.810	0.761	5000.4	2837.0	15.728	3.411	2.87		Clay	92.7			23.45	0.93	n.a.	n.a.	0.86	0.921	n.a.	n.a.	n.a.	n.a.	0.00	0.00
41.830	24.120	0.850	5019.6	2846.2	15.185	3.932	2.92		Clay	96.7			22.80	0.92	n.a.	n.a.	0.86	0.921	n.a.	n.a.	n.a.	n.a.	0.00	0.00
41.990	25.530	0.861	5038.8	2855.4	16.117	3.740	2.89		Clay	94.0			24.13	0.92	n.a.	n.a.	0.86	0.921	n.a.	n.a.	n.a.	n.a.	0.00	0.00
42.160	26.870	0.892	5059.2	2865.2	16.990	3.664	2.86		Clay	92.1			25.40	0.92	n.a.	n.a.	0.86	0.920	n.a.	n.a.	n.a.	n.a.	0.00	0.00
42.320	27.290	0.853	5078.4	2874.4	17.221	3.445	2.84		Clay	90.4			25.79	0.92	n.a.	n.a.	0.86	0.920	n.a.	n.a.	n.a.	n.a.	0.00	0.00
42.490	27.140	0.792	5098.8	2884.2	17.052	3.222	2.83		Clay	89.2			25.65	0.92	n.a.	n.a.	0.86	0.920	n.a.	n.a.	n.a.	n.a.	0.00	0.00
42.650	27.910	0.810	5118.0	2893.4	17.523	3.195	2.82		Clay	88.3			26.38	0.92	n.a.	n.a.	0.86	0.919	n.a.	n.a.	n.a.	n.a.	0.00	0.00
42.810	27.390	0.849	5137.2	2902.7	17.103	3.418	2.84		Clay	90.4			25.89	0.92	n.a.	n.a.	0.86	0.919	n.a.	n.a.	n.a.	n.a.	0.00	0.00
42.980	27.830	0.904	5157.6	2912.4	17.340	3.578	2.85		Clay	91.0			26.30	0.92	n.a.	n.a.	0.86	0.919	n.a.	n.a.	n.a.	n.a.	0.00	0.00
43.140	26.380	0.804	5176.8	2921.7	16.286	3.378	2.86		Clay	91.5			24.93	0.92	n.a.	n.a.	0.86	0.918	n.a.	n.a.	n.a.	n.a.	0.00	0.00
43.310	24.010	0.654	5197.2	2931.5	14.608	3.055	2.87		Clay	92.4			22.69	0.92	n.a.	n.a.	0.86	0.918	n.a.	n.a.	n.a.	n.a.	0.00	0.00
43.470	22.910	0.588	5216.4	2940.7	13.808	2.894	2.87		Clay	92.9			21.65	0.92	n.a.	n.a.	0.86	0.917	n.a.	n.a.	n.a.	n.a.	0.00	0.00
43.640	23.300	0.563	5236.8	2950.5	14.019	2.720	2.85		Clay	91.2			22.02	0.92	n.a.	n.a.	0.86	0.917	n.a.	n.a.	n.a.	n.a.	0.00	0.00
43.800	24.330	0.597	5256.0	2959.7	14.665	2.749	2.84		Clay	90.1			23.00	0.92	n.a.	n.a.	0.85	0.917	n.a.	n.a.	n.a.	n.a.	0.00	0.00
43.960	25.570	0.673	5275.2	2968.9	15.448	2.933	2.84		Clay	90.0			24.17	0.91	n.a.	n.a.	0.85	0.916	n.a.	n.a.	n.a.	n.a.	0.00	0.00
44.130	26.420	0.727	5295.6	2978.7	15.962	3.058	2.84		Clay	89.9			24.97	0.91	n.a.	n.a.	0.85	0.916	n.a.	n.a.	n.a.	n.a.	0.00	0.00

CORNERSTONE EARTH GROUP

CPT No.	5

PGA (A_{max})	0.89

Total Settlement:	0.19	(Inches)

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Depth (ft)	q_c (tsf)	f_s (tsf)	σ_{vc} (psf)	Insitu σ'_{vc} (psf)	Q	F (%)	I_c	Layer "Plastic" PI > 7	Flag Soil Type	Fines (%)	q_{cN} near interfaces (soft layer)	Thin Layer Factor (K_H)	Interpreted q_{cN}	C_N	q_{c1N}	$q_{c1N\text{-}CS}$	Stress Reduction Coeff, r_d	CSR	K_σ for Sand	$CRR_{M=7.5,\ \sigma'vc = 1\ atm}$	CRR	Factor of Safety (CRR/CSR)	Vertical Strain ε_v	Settlement (Inches)
44.290	24.980	0.781	5314.8	2987.9	14.942	3.498	2.89		Clay	94.6			23.61	0.91	n.a.	n.a.	0.85	0.915	n.a.	n.a.	n.a.	n.a.	0.00	0.00
44.460	22.480	0.836	5335.2	2997.7	13.218	4.220	2.99		Clay	100.0			21.25	0.91	n.a.	n.a.	0.85	0.915	n.a.	n.a.	n.a.	n.a.	0.00	0.00
44.620	19.530	0.747	5354.4	3006.9	11.209	4.434	3.06		Clay	100.0			18.46	0.91	n.a.	n.a.	0.85	0.915	n.a.	n.a.	n.a.	n.a.	0.00	0.00
44.780	16.710	0.620	5373.6	3016.1	9.299	4.418	3.12		Clay	100.0			15.79	0.91	n.a.	n.a.	0.85	0.914	n.a.	n.a.	n.a.	n.a.	0.00	0.00
44.950	14.880	0.485	5394.0	3025.9	8.052	3.981	3.14		Clay	100.0			14.06	0.91	n.a.	n.a.	0.85	0.914	n.a.	n.a.	n.a.	n.a.	0.00	0.00
45.110	14.320	0.457	5413.2	3035.1	7.653	3.934	3.16		Clay	100.0			13.53	0.91	n.a.	n.a.	0.85	0.913	n.a.	n.a.	n.a.	n.a.	0.00	0.00
45.280	14.180	0.521	5433.6	3044.9	7.529	4.542	3.20		Clay	100.0			13.40	0.91	n.a.	n.a.	0.85	0.913	n.a.	n.a.	n.a.	n.a.	0.00	0.00
45.440	15.700	0.570	5452.8	3054.1	8.496	4.390	3.15		Clay	100.0			14.84	0.91	n.a.	n.a.	0.85	0.913	n.a.	n.a.	n.a.	n.a.	0.00	0.00
45.600	19.620	0.577	5472.0	3063.4	11.023	3.419	2.99		Clay	100.0			18.54	0.91	n.a.	n.a.	0.85	0.912	n.a.	n.a.	n.a.	n.a.	0.00	0.00
45.770	20.460	0.605	5492.4	3073.2	11.528	3.418	2.98		Clay	100.0			19.34	0.91	n.a.	n.a.	0.85	0.912	n.a.	n.a.	n.a.	n.a.	0.00	0.00
45.930	19.860	0.548	5511.6	3082.4	11.098	3.204	2.98		Clay	100.0			18.77	0.91	n.a.	n.a.	0.85	0.911	n.a.	n.a.	n.a.	n.a.	0.00	0.00
46.100	19.300	0.511	5532.0	3092.2	10.694	3.089	2.98		Clay	100.0			18.24	0.90	n.a.	n.a.	0.84	0.911	n.a.	n.a.	n.a.	n.a.	0.00	0.00
46.260	19.420	0.421	5551.2	3101.4	10.734	2.528	2.93		Clay	97.4			18.36	0.90	n.a.	n.a.	0.84	0.910	n.a.	n.a.	n.a.	n.a.	0.00	0.00
46.420	18.070	0.359	5570.4	3110.6	9.828	2.350	2.94		Clay	98.6			17.08	0.90	n.a.	n.a.	0.84	0.910	n.a.	n.a.	n.a.	n.a.	0.00	0.00
46.590	16.960	0.392	5590.8	3120.4	9.079	2.765	3.01		Clay	100.0			16.03	0.90	n.a.	n.a.	0.84	0.909	n.a.	n.a.	n.a.	n.a.	0.00	0.00
46.750	17.970	0.389	5610.0	3129.6	9.691	2.567	2.97		Clay	100.0			16.98	0.90	n.a.	n.a.	0.84	0.909	n.a.	n.a.	n.a.	n.a.	0.00	0.00
46.920	19.550	0.410	5630.4	3139.4	10.661	2.449	2.92		Clay	97.0			18.48	0.90	n.a.	n.a.	0.84	0.909	n.a.	n.a.	n.a.	n.a.	0.00	0.00
47.080	19.670	0.461	5649.6	3148.6	10.700	2.735	2.95		Clay	99.0			18.59	0.90	n.a.	n.a.	0.84	0.908	n.a.	n.a.	n.a.	n.a.	0.00	0.00
47.240	19.230	0.437	5668.8	3157.8	10.384	2.663	2.95		Clay	99.3			18.18	0.90	n.a.	n.a.	0.84	0.908	n.a.	n.a.	n.a.	n.a.	0.00	0.00
47.410	19.000	0.468	5689.2	3167.6	10.200	2.895	2.98		Clay	100.0			17.96	0.90	n.a.	n.a.	0.84	0.907	n.a.	n.a.	n.a.	n.a.	0.00	0.00
47.570	20.170	0.467	5708.4	3176.8	10.901	2.695	2.94		Clay	98.2			19.06	0.90	n.a.	n.a.	0.84	0.907	n.a.	n.a.	n.a.	n.a.	0.00	0.00
47.740	21.980	0.561	5728.8	3186.6	11.997	2.937	2.93		Clay	97.1			20.78	0.90	n.a.	n.a.	0.84	0.906	n.a.	n.a.	n.a.	n.a.	0.00	0.00
47.900	22.220	0.597	5748.0	3195.8	12.107	3.083	2.94		Clay	97.9			21.00	0.90	n.a.	n.a.	0.84	0.906	n.a.	n.a.	n.a.	n.a.	0.00	0.00
48.060	20.510	0.576	5767.2	3205.1	10.999	3.270	2.98		Clay	100.0			19.39	0.90	n.a.	n.a.	0.84	0.905	n.a.	n.a.	n.a.	n.a.	0.00	0.00
48.230	20.630	0.500	5787.6	3214.8	11.034	2.821	2.95		Clay	98.7			19.50	0.90	n.a.	n.a.	0.84	0.905	n.a.	n.a.	n.a.	n.a.	0.00	0.00
48.390	19.710	0.437	5806.8	3224.1	10.426	2.600	2.95		Clay	98.8			18.63	0.89	n.a.	n.a.	0.83	0.904	n.a.	n.a.	n.a.	n.a.	0.00	0.00
48.560	19.110	0.428	5827.2	3233.9	10.017	2.639	2.97		Clay	100.0			18.06	0.89	n.a.	n.a.	0.83	0.904	n.a.	n.a.	n.a.	n.a.	0.00	0.00
48.720	19.840	0.407	5846.4	3243.1	10.433	2.406	2.93		Clay	97.3			18.75	0.89	n.a.	n.a.	0.83	0.904	n.a.	n.a.	n.a.	n.a.	0.00	0.00
48.880	21.340	0.428	5865.6	3252.3	11.320	2.323	2.89		Clay	94.2			20.17	0.89	n.a.	n.a.	0.83	0.903	n.a.	n.a.	n.a.	n.a.	0.00	0.00
49.050	22.040	0.441	5886.0	3262.1	11.708	2.307	2.88		Clay	93.1			20.83	0.89	n.a.	n.a.	0.83	0.903	n.a.	n.a.	n.a.	n.a.	0.00	0.00
49.210	21.560	0.476	5905.2	3271.3	11.376	2.558	2.91		Clay	95.9			20.38	0.89	n.a.	n.a.	0.83	0.902	n.a.	n.a.	n.a.	n.a.	0.00	0.00
49.380	21.190	0.492	5925.6	3281.1	11.110	2.701	2.93		Clay	97.7			20.03	0.89	n.a.	n.a.	0.83	0.902	n.a.	n.a.	n.a.	n.a.	0.00	0.00
49.540	21.100	0.496	5944.8	3290.3	11.019	2.735	2.94		Clay	98.1			19.94	0.89	n.a.	n.a.	0.83	0.901	n.a.	n.a.	n.a.	n.a.	0.00	0.00
49.700	20.710	0.471	5964.0	3299.5	10.746	2.655	2.94		Clay	98.3			19.57	0.89	n.a.	n.a.	0.83	0.901	n.a.	n.a.	n.a.	n.a.	0.00	0.00
49.870	20.270	0.490	5984.4	3309.3	10.442	2.838	2.97		Clay	100.0			19.16	0.89	n.a.	n.a.	0.83	0.900	n.a.	n.a.	n.a.	n.a.	0.00	0.00
50.030	20.940	0.483	6003.6	3318.5	10.811	2.691	2.94		Clay	98.4			19.79	0.89	n.a.	n.a.	0.83	0.900	n.a.	n.a.	n.a.	n.a.	0.00	0.00

CORNERSTONE EARTH GROUP

CPT No.	6

PGA (A_{max})	0.89

Total Settlement:	0.34	(Inches)

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Depth (ft)	q_c (tsf)	f_s (tsf)	σ_{vc} (psf)	Insitu σ'_{vc} (psf)	Q	F (%)	I_c	Layer "Plastic" PI > 7	Flag Soil Type	Fines (%)	q_{cN} near interfaces (soft layer)	Thin Layer Factor (K_H)	Interpreted q_{cN}	C_N	q_{c1N}	$q_{c1N\text{-}CS}$	Stress Reduction Coeff, r_d	CSR	K_σ for Sand	$CRR_{M=7.5, \sigma'vc = 1 atm}$	CRR	Factor of Safety (CRR/CSR)	Vertical Strain ε_v	Settlement (Inches)
0.160	361.500	1.162	19.2	19.2	3586.892	0.321	0.73		Unsaturated	0.0			341.68	1.70	580.86	580.86	1.00	0.579	1.100	n.a.	n.a.	n.a.	0.00	0.00
0.330	230.300	1.441	39.6	39.6	1591.040	0.626	1.05		Unsaturated	0.0			217.67	1.70	370.05	370.05	1.00	0.579	1.100	n.a.	n.a.	n.a.	0.00	0.00
0.490	169.660	2.210	58.8	58.8	961.806	1.303	1.42		Unsaturated	0.0			160.36	1.70	272.61	272.61	1.00	0.579	1.100	n.a.	n.a.	n.a.	0.00	0.00
0.660	276.610	2.680	79.2	79.2	1351.186	0.969	1.25		Unsaturated	0.0			261.45	1.70	444.46	444.46	1.00	0.579	1.100	n.a.	n.a.	n.a.	0.00	0.00
0.820	355.170	3.085	98.4	98.4	1556.506	0.869	1.19		Unsaturated	0.0			335.70	1.70	570.69	570.69	1.00	0.579	1.100	n.a.	n.a.	n.a.	0.00	0.00
0.980	350.760	3.406	117.6	117.6	1406.066	0.971	1.25		Unsaturated	0.0			331.53	1.70	563.60	563.60	1.00	0.579	1.100	n.a.	n.a.	n.a.	0.00	0.00
1.150	395.800	2.878	138.0	138.0	1464.646	0.727	1.12		Unsaturated	0.0			374.10	1.70	635.97	635.97	1.00	0.579	1.100	n.a.	n.a.	n.a.	0.00	0.00
1.310	393.490	2.726	157.2	157.2	1364.246	0.693	1.11		Unsaturated	0.0			371.92	1.70	632.26	632.26	1.00	0.579	1.100	n.a.	n.a.	n.a.	0.00	0.00
1.480	316.790	2.835	177.6	177.6	1033.238	0.895	1.26		Unsaturated	0.0			299.42	1.70	509.02	509.02	1.00	0.579	1.100	n.a.	n.a.	n.a.	0.00	0.00
1.640	197.620	3.172	196.8	196.8	612.173	1.606	1.58		Unsaturated	0.0			186.79	1.70	317.54	317.54	1.00	0.579	1.100	n.a.	n.a.	n.a.	0.00	0.00
1.800	114.100	3.055	216.0	216.0	337.225	2.680	1.90		Unsaturated	14.9			107.84	1.70	183.34	212.87	1.00	0.579	1.100	n.a.	n.a.	n.a.	0.00	0.00
1.970	65.550	2.754	236.4	236.4	185.028	4.209	2.20		Unsaturated	39.1			61.96	1.70	105.33	171.94	1.00	0.579	1.100	n.a.	n.a.	n.a.	0.00	0.00
2.130	60.210	2.833	255.6	255.6	163.395	4.715	2.27		Unsaturated	44.8			56.91	1.70	96.75	165.43	1.00	0.579	1.100	n.a.	n.a.	n.a.	0.00	0.00
2.300	47.440	2.452	276.0	276.0	123.793	5.184	2.37		Unsaturated	53.0			44.84	1.70	76.23	143.74	1.00	0.579	1.100	n.a.	n.a.	n.a.	0.00	0.00
2.460	40.280	2.331	295.2	295.2	101.557	5.807	2.47		Unsaturated	60.2			38.07	1.70	64.72	131.65	1.00	0.579	1.100	n.a.	n.a.	n.a.	0.00	0.00
2.620	34.590	1.773	314.4	314.4	84.431	5.150	2.47		Unsaturated	60.8			32.69	1.70	55.58	120.11	1.00	0.579	1.100	n.a.	n.a.	n.a.	0.00	0.00
2.790	26.200	1.605	334.8	334.8	89.442	6.166	2.52		Unsaturated	64.5			24.76	1.70	42.10	103.78	1.00	0.579	1.100	n.a.	n.a.	n.a.	0.00	0.00
2.950	29.700	1.715	354.0	354.0	68.223	5.810	2.57		Unsaturated	68.7			28.07	1.70	47.72	111.98	1.00	0.579	1.100	n.a.	n.a.	n.a.	0.00	0.00
3.120	31.340	1.711	374.4	374.4	70.001	5.492	2.55		Unsaturated	66.7			29.62	1.70	50.36	114.91	1.00	0.578	1.100	n.a.	n.a.	n.a.	0.00	0.00
3.280	29.100	2.167	393.6	393.6	88.671	7.496	2.59		Unsaturated	70.2			27.50	1.70	46.76	111.03	1.00	0.578	1.100	n.a.	n.a.	n.a.	0.00	0.00
3.440	65.330	2.193	412.8	412.8	139.361	3.368	2.19		Unsaturated	38.5			61.75	1.70	104.97	170.93	1.00	0.578	1.100	n.a.	n.a.	n.a.	0.00	0.00
3.610	115.480	2.112	433.2	433.2	240.779	1.833	1.84		Unsaturated	10.2			109.15	1.70	185.55	196.26	1.00	0.578	1.100	n.a.	n.a.	n.a.	0.00	0.00
3.770	121.250	1.677	452.4	452.4	247.390	1.386	1.74		Unsaturated	1.9			114.60	1.69	193.23	193.23	1.00	0.578	1.100	n.a.	n.a.	n.a.	0.00	0.00
3.940	111.060	1.057	472.8	472.8	221.598	0.953	1.64		Unsaturated	0.0			104.97	1.70	178.45	178.45	1.00	0.577	1.100	n.a.	n.a.	n.a.	0.00	0.00
4.100	79.380	0.601	492.0	492.0	155.115	0.759	1.69		Unsaturated	0.0			75.03	1.70	127.55	127.55	1.00	0.577	1.100	n.a.	n.a.	n.a.	0.00	0.00
4.270	54.840	0.452	512.4	512.4	104.841	0.828	1.84		Unsaturated	10.4			51.83	1.70	88.12	96.64	1.00	0.577	1.100	n.a.	n.a.	n.a.	0.00	0.00
4.430	38.010	0.439	531.6	531.6	71.175	1.164	2.07		Unsaturated	28.3			35.93	1.70	61.07	106.67	1.00	0.577	1.100	n.a.	n.a.	n.a.	0.00	0.00
4.590	25.570	0.478	550.8	550.8	46.860	1.890	2.34		Unsaturated	50.2			24.17	1.70	41.09	98.06	1.00	0.576	1.100	n.a.	n.a.	n.a.	0.00	0.00
4.760	17.060	0.554	571.2	571.2	39.652	3.305	2.56		Unsaturated	67.4			16.12	1.70	27.41	85.51	1.00	0.576	1.100	n.a.	n.a.	n.a.	0.00	0.00
4.920	13.330	0.568	590.4	590.4	44.156	4.354	2.61		Unsaturated	71.4			12.60	1.70	21.42	78.52	1.00	0.576	1.100	n.a.	n.a.	n.a.	0.00	0.00
5.090	11.410	0.608	610.8	610.8	36.361	5.473	2.74		Clay	81.8			10.78	1.39	n.a.	n.a.	1.00	0.581	n.a.	n.a.	n.a.	n.a.	0.00	0.00
5.250	9.660	0.632	630.0	630.0	29.667	6.765	2.86		Clay	92.0			9.13	1.38	n.a.	n.a.	0.99	0.590	n.a.	n.a.	n.a.	n.a.	0.00	0.00
5.410	10.870	0.685	649.2	649.2	32.487	6.500	2.82		Clay	88.8			10.27	1.37	n.a.	n.a.	0.99	0.599	n.a.	n.a.	n.a.	n.a.	0.00	0.00
5.580	12.140	0.736	669.6	669.6	35.260	6.233	2.78		Clay	85.8			11.47	1.35	n.a.	n.a.	0.99	0.608	n.a.	n.a.	n.a.	n.a.	0.00	0.00
5.740	12.670	0.773	688.8	688.8	35.789	6.273	2.78		Clay	85.6			11.98	1.34	n.a.	n.a.	0.99	0.616	n.a.	n.a.	n.a.	n.a.	0.00	0.00
5.910	13.220	0.768	709.2	709.2	36.281	5.968	2.76		Clay	84.0			12.50	1.33	n.a.	n.a.	0.99	0.625	n.a.	n.a.	n.a.	n.a.	0.00	0.00
6.070	13.270	0.750	728.4	728.4	35.436	5.809	2.76		Clay	83.9			12.54	1.32	n.a.	n.a.	0.99	0.632	n.a.	n.a.	n.a.	n.a.	0.00	0.00
6.230	13.070	0.710	747.6	747.6	33.965	5.594	2.76		Clay	84.0			12.35	1.32	n.a.	n.a.	0.99	0.640	n.a.	n.a.	n.a.	n.a.	0.00	0.00
6.400	12.820	0.692	768.0	768.0	32.385	5.565	2.78		Clay	85.0			12.12	1.31	n.a.	n.a.	0.99	0.648	n.a.	n.a.	n.a.	n.a.	0.00	0.00
6.560	12.270	0.659	787.2	787.2	30.174	5.549	2.80		Clay	86.7			11.60	1.30	n.a.	n.a.	0.99	0.655	n.a.	n.a.	n.a.	n.a.	0.00	0.00
6.730	11.970	0.626	807.6	807.6	28.643	5.410	2.80		Clay	87.4			11.31	1.29	n.a.	n.a.	0.99	0.662	n.a.	n.a.	n.a.	n.a.	0.00	0.00
6.890	11.430	0.590	826.8	826.8	26.649	5.356	2.82		Clay	89.0			10.80	1.28	n.a.	n.a.	0.99	0.669	n.a.	n.a.	n.a.	n.a.	0.00	0.00
7.050	11.220	0.574	846.0	842.9	25.619	5.318	2.83		Clay	89.8			10.60	1.27	n.a.	n.a.	0.99	0.675	n.a.	n.a.	n.a.	n.a.	0.00	0.00
7.220	11.060	0.584	866.4	852.7	24.926	5.492	2.85		Clay	91.2			10.45	1.27	n.a.	n.a.	0.99	0.682	n.a.	n.a.	n.a.	n.a.	0.00	0.00
7.380	11.250	0.571	885.6	861.9	25.078	5.284	2.84		Clay	90.2			10.63	1.27	n.a.	n.a.	0.99	0.688	n.a.	n.a.	n.a.	n.a.	0.00	0.00
7.550	11.000	0.556	906.0	871.7	24.199	5.267	2.85		Clay	91.0			10.40	1.26	n.a.	n.a.	0.99	0.694	n.a.	n.a.	n.a.	n.a.	0.00	0.00
7.710	11.320	0.530	925.2	880.9	24.651	4.884	2.82		Clay	88.7			10.70	1.26	n.a.	n.a.	0.99	0.700	n.a.	n.a.	n.a.	n.a.	0.00	0.00
7.870	11.310	0.541	944.4	890.1	24.352	4.988	2.83		Clay	89.5			10.69	1.26	n.a.	n.a.	0.99	0.706	n.a.	n.a.	n.a.	n.a.	0.00	0.00
8.040	10.720	0.545	964.8	899.9	22.753	5.321	2.87		Clay	92.8			10.13	1.25	n.a.	n.a.	0.99	0.711	n.a.	n.a.	n.a.	n.a.	0.00	0.00
8.200	10.620	0.527	984.0	909.1	22.281	5.203	2.87		Clay	92.8			10.04	1.25	n.a.	n.a.	0.99	0.717	n.a.	n.a.	n.a.	n.a.	0.00	0.00
8.370	11.030	0.504	1004.4	918.9	22.914	4.790	2.84		Clay	90.2			10.43	1.25	n.a.	n.a.	0.99	0.722	n.a.	n.a.	n.a.	n.a.	0.00	0.00
8.530	11.830	0.494	1023.6	928.1	24.389	4.364	2.79		Clay	86.4			11.18	1.24	n.a.	n.a.	0.99	0.727	n.a.	n.a.	n.a.	n.a.	0.00	0.00
8.690	12.070	0.410	1042.8	937.3	24.641	3.548	2.73		Clay	81.4			11.41	1.24	n.a.	n.a.	0.99	0.732	n.a.	n.a.	n.a.	n.a.	0.00	0.00
8.860	11.810	0.319	1063.2	947.1	23.816	2.832	2.68		Clay	77.3			11.16	1.24	n.a.	n.a.	0.99	0.737	n.a.	n.a.	n.a.	n.a.	0.00	0.00
9.020	9.530	0.285	1082.4	956.4	18.798	3.174	2.79		Clay	86.2			9.01	1.23	n.a.	n.a.	0.99	0.742	n.a.	n.a.	n.a.	n.a.	0.00	0.00
9.190	9.150	0.336	1102.8	966.1	17.800	3.910	2.87		Clay	92.2			8.65	1.23	n.a.	n.a.	0.98	0.747	n.a.	n.a.	n.a.	n.a.	0.00	0.00
9.350	9.650	0.431	1122.0	975.4	18.637	4.745	2.90		Clay	95.3			9.12	1.23	n.a.	n.a.	0.98	0.751	n.a.	n.a.	n.a.	n.a.	0.00	0.00
9.510	9.890	0.525	1141.2	984.6	18.931	5.634	2.95		Clay	98.9			9.35	1.22	n.a.	n.a.	0.98	0.756	n.a.	n.a.	n.a.	n.a.	0.00	0.00
9.680	9.720	0.535	1161.6	994.4	18.382	5.857	2.97		Clay	100.0			9.19	1.22	n.a.	n.a.	0.98	0.760	n.a.	n.a.	n.a.	n.a.	0.00	0.00
9.840	9.650	0.510	1180.8	1003.6	18.054	5.625	2.96		Clay	100.0			9.12	1.22	n.a.	n.a.	0.98	0.764	n.a.	n.a.	n.a.	n.a.	0.00	0.00
10.010	9.770	0.473	1201.2	1013.4	18.097	5.153	2.94		Clay	98.0			9.23	1.21	n.a.	n.a.	0.98	0.768	n.a.	n.a.	n.a.	n.a.	0.00	0.00
10.170	9.590	0.459	1220.4	1022.6	17.563	5.115	2.94		Clay	98.6			9.06	1.21	n.a.	n.a.	0.98	0.772	n.a.	n.a.	n.a.	n.a.	0.00	0.00
10.330	9.410	0.468	1239.6	1031.8	17.038	5.325	2.97		Clay	100.0			8.89	1.21	n.a.	n.a.	0.98	0.776	n.a.	n.a.	n.a.	n.a.	0.00	0.00
10.500	9.420	0.468	1260.0	1041.6	16.878	5.319	2.97		Clay	100.0			8.90	1.21	n.a.	n.a.	0.98	0.780	n.a.	n.a.	n.a.	n.a.	0.00	0.00
10.660	9.150	0.459	1279.2	1050.8	16.198	5.392	2.99		Clay	100.0			8.65	1.20	n.a.	n.a.	0.98	0.784	n.a.	n.a.	n.a.	n.a.	0.00	0.00
10.830	9.380	0.439	1299.6	1060.6	16.463	5.029	2.96		Clay	99.9			8.87	1.20	n.a.	n.a.	0.98	0.788	n.a.	n.a.	n.a.	n.a.	0.00	0.00
10.990	9.580	0.435	1318.8	1069.8	16.677	4.881	2.95		Clay	98.9			9.05	1.20	n.a.	n.a.	0.98	0.791	n.a.	n.a.	n.a.	n.a.	0.00	0.00

CORNERSTONE EARTH GROUP

CPT No.	6

PGA (A_{max})	0.89

Total Settlement:	0.34	(Inches)

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Depth (ft)	q_c (tsf)	f_s (tsf)	σ_{vc} (psf)	Insitu σ'_{vc} (psf)	Q	F (%)	I_c	Layer "Plastic" PI > 7	Flag Soil Type	Fines (%)	q_{cN} near interfaces (soft layer)	Thin Layer Factor (K_H)	Interpreted q_{cN}	C_N	q_{c1N}	q_{c1N-CS}	Stress Reduction Coeff, r_d	CSR	K_σ for Sand	$CRR_{M=7.5, \sigma'vc = 1 atm}$	CRR	Factor of Safety (CRR/CSR)	Vertical Strain ε_v	Settlement (Inches)
11.150	9.020	0.419	1338.0	1079.0	15.479	5.017	2.98		Clay	100.0			8.53	1.19	n.a.	n.a.	0.98	0.794	n.a.	n.a.	n.a.	n.a.	0.00	0.00
11.320	8.060	0.424	1358.4	1088.8	13.557	5.742	3.06		Clay	100.0			7.62	1.19	n.a.	n.a.	0.98	0.798	n.a.	n.a.	n.a.	n.a.	0.00	0.00
11.480	6.450	0.383	1377.6	1098.0	10.494	6.653	3.19		Clay	100.0			6.10	1.19	n.a.	n.a.	0.98	0.801	n.a.	n.a.	n.a.	n.a.	0.00	0.00
11.650	6.030	0.336	1398.0	1107.8	9.624	6.305	3.20		Clay	100.0			5.70	1.19	n.a.	n.a.	0.98	0.805	n.a.	n.a.	n.a.	n.a.	0.00	0.00
11.810	5.950	0.315	1417.2	1117.1	9.384	6.014	3.20		Clay	100.0			5.62	1.18	n.a.	n.a.	0.98	0.808	n.a.	n.a.	n.a.	n.a.	0.00	0.00
11.980	6.900	0.372	1437.6	1126.8	10.971	6.010	3.15		Clay	100.0			6.52	1.18	n.a.	n.a.	0.98	0.811	n.a.	n.a.	n.a.	n.a.	0.00	0.00
12.140	8.160	0.430	1456.8	1136.1	13.083	5.787	3.08		Clay	100.0			7.71	1.18	n.a.	n.a.	0.98	0.814	n.a.	n.a.	n.a.	n.a.	0.00	0.00
12.300	8.680	0.452	1476.0	1145.3	13.869	5.695	3.05		Clay	100.0			8.20	1.18	n.a.	n.a.	0.98	0.817	n.a.	n.a.	n.a.	n.a.	0.00	0.00
12.470	8.660	0.446	1496.4	1155.1	13.699	5.642	3.05		Clay	100.0			8.19	1.17	n.a.	n.a.	0.98	0.820	n.a.	n.a.	n.a.	n.a.	0.00	0.00
12.630	8.840	0.455	1515.6	1164.3	13.884	5.628	3.05		Clay	100.0			8.36	1.17	n.a.	n.a.	0.98	0.822	n.a.	n.a.	n.a.	n.a.	0.00	0.00
12.800	8.780	0.475	1536.0	1174.1	13.648	5.925	3.07		Clay	100.0			8.30	1.17	n.a.	n.a.	0.97	0.825	n.a.	n.a.	n.a.	n.a.	0.00	0.00
12.960	9.300	0.522	1555.2	1183.3	14.405	6.127	3.06		Clay	100.0			8.79	1.17	n.a.	n.a.	0.97	0.828	n.a.	n.a.	n.a.	n.a.	0.00	0.00
13.120	9.710	0.511	1574.4	1192.5	14.965	5.731	3.03		Clay	100.0			9.18	1.16	n.a.	n.a.	0.97	0.830	n.a.	n.a.	n.a.	n.a.	0.00	0.00
13.290	9.650	0.592	1594.8	1202.3	14.726	6.691	3.08		Clay	100.0			9.12	1.16	n.a.	n.a.	0.97	0.833	n.a.	n.a.	n.a.	n.a.	0.00	0.00
13.450	9.430	0.600	1614.0	1211.5	14.235	6.960	3.10		Clay	100.0			8.91	1.16	n.a.	n.a.	0.97	0.836	n.a.	n.a.	n.a.	n.a.	0.00	0.00
13.620	8.680	0.556	1634.4	1221.3	12.876	7.076	3.14		Clay	100.0			8.20	1.16	n.a.	n.a.	0.97	0.838	n.a.	n.a.	n.a.	n.a.	0.00	0.00
13.780	8.890	0.498	1653.6	1230.5	13.105	6.175	3.09		Clay	100.0			8.40	1.15	n.a.	n.a.	0.97	0.840	n.a.	n.a.	n.a.	n.a.	0.00	0.00
13.940	8.460	0.452	1672.8	1239.7	12.299	5.924	3.10		Clay	100.0			8.00	1.15	n.a.	n.a.	0.97	0.843	n.a.	n.a.	n.a.	n.a.	0.00	0.00
14.110	8.190	0.438	1693.2	1249.5	11.754	5.969	3.12		Clay	100.0			7.74	1.15	n.a.	n.a.	0.97	0.845	n.a.	n.a.	n.a.	n.a.	0.00	0.00
14.270	7.830	0.414	1712.4	1258.8	11.080	5.934	3.14		Clay	100.0			7.40	1.15	n.a.	n.a.	0.97	0.847	n.a.	n.a.	n.a.	n.a.	0.00	0.00
14.440	7.490	0.388	1732.8	1268.5	10.443	5.850	3.16		Clay	100.0			7.08	1.14	n.a.	n.a.	0.97	0.850	n.a.	n.a.	n.a.	n.a.	0.00	0.00
14.600	7.370	0.382	1752.0	1277.8	10.165	5.882	3.17		Clay	100.0			6.97	1.14	n.a.	n.a.	0.97	0.852	n.a.	n.a.	n.a.	n.a.	0.00	0.00
14.760	7.820	0.430	1771.2	1287.0	10.776	6.205	3.16		Clay	100.0			7.39	1.14	n.a.	n.a.	0.97	0.854	n.a.	n.a.	n.a.	n.a.	0.00	0.00
14.930	8.250	0.461	1791.6	1296.8	11.342	6.264	3.15		Clay	100.0			7.80	1.14	n.a.	n.a.	0.97	0.856	n.a.	n.a.	n.a.	n.a.	0.00	0.00
15.090	8.920	0.489	1810.8	1306.0	12.274	6.101	3.11		Clay	100.0			8.43	1.14	n.a.	n.a.	0.97	0.858	n.a.	n.a.	n.a.	n.a.	0.00	0.00
15.260	10.390	0.537	1831.2	1315.8	14.401	5.669	3.04		Clay	100.0			9.82	1.13	n.a.	n.a.	0.97	0.860	n.a.	n.a.	n.a.	n.a.	0.00	0.00
15.420	11.700	0.577	1850.4	1325.0	16.264	5.359	2.98		Clay	100.0			11.06	1.13	n.a.	n.a.	0.97	0.862	n.a.	n.a.	n.a.	n.a.	0.00	0.00
15.580	12.090	0.615	1869.6	1334.2	16.722	5.510	2.98		Clay	100.0			11.43	1.13	n.a.	n.a.	0.97	0.864	n.a.	n.a.	n.a.	n.a.	0.00	0.00
15.750	12.170	0.630	1890.0	1344.0	16.704	5.612	2.99		Clay	100.0			11.50	1.13	n.a.	n.a.	0.97	0.866	n.a.	n.a.	n.a.	n.a.	0.00	0.00
15.910	11.320	0.626	1909.2	1353.2	15.320	6.042	3.04		Clay	100.0			10.70	1.13	n.a.	n.a.	0.96	0.867	n.a.	n.a.	n.a.	n.a.	0.00	0.00
16.080	10.770	0.597	1929.6	1363.0	14.388	6.090	3.06		Clay	100.0			10.18	1.12	n.a.	n.a.	0.96	0.869	n.a.	n.a.	n.a.	n.a.	0.00	0.00
16.240	10.620	0.576	1948.8	1372.2	14.058	5.970	3.06		Clay	100.0			10.04	1.12	n.a.	n.a.	0.96	0.871	n.a.	n.a.	n.a.	n.a.	0.00	0.00
16.400	10.560	0.572	1968.0	1381.4	13.864	5.977	3.07		Clay	100.0			9.98	1.12	n.a.	n.a.	0.96	0.873	n.a.	n.a.	n.a.	n.a.	0.00	0.00
16.570	10.840	0.578	1988.4	1391.2	14.154	5.868	3.05		Clay	100.0			10.25	1.12	n.a.	n.a.	0.96	0.874	n.a.	n.a.	n.a.	n.a.	0.00	0.00
16.730	11.360	0.586	2007.6	1400.4	14.790	5.660	3.03		Clay	100.0			10.74	1.12	n.a.	n.a.	0.96	0.876	n.a.	n.a.	n.a.	n.a.	0.00	0.00
16.900	11.910	0.580	2028.0	1410.2	15.453	5.321	3.00		Clay	100.0			11.26	1.11	n.a.	n.a.	0.96	0.878	n.a.	n.a.	n.a.	n.a.	0.00	0.00
17.060	12.840	0.566	2047.2	1419.5	16.649	4.788	2.94		Clay	98.5			12.14	1.11	n.a.	n.a.	0.96	0.879	n.a.	n.a.	n.a.	n.a.	0.00	0.00
17.220	13.570	0.549	2066.4	1428.7	17.550	4.375	2.90		Clay	95.1			12.83	1.11	n.a.	n.a.	0.96	0.881	n.a.	n.a.	n.a.	n.a.	0.00	0.00
17.390	13.130	0.523	2086.8	1438.5	16.805	4.324	2.91		Clay	96.0			12.41	1.11	n.a.	n.a.	0.96	0.882	n.a.	n.a.	n.a.	n.a.	0.00	0.00
17.550	12.370	0.487	2106.0	1447.7	15.635	4.303	2.94		Clay	97.8			11.69	1.11	n.a.	n.a.	0.96	0.884	n.a.	n.a.	n.a.	n.a.	0.00	0.00
17.720	11.270	0.432	2126.4	1457.5	14.006	4.231	2.97		Clay	100.0			10.65	1.10	n.a.	n.a.	0.96	0.885	n.a.	n.a.	n.a.	n.a.	0.00	0.00
17.880	10.610	0.364	2145.6	1466.7	13.005	3.813	2.97		Clay	100.0			10.03	1.10	n.a.	n.a.	0.96	0.886	n.a.	n.a.	n.a.	n.a.	0.00	0.00
18.040	10.320	0.438	2164.8	1475.9	12.518	4.738	3.04		Clay	100.0			9.75	1.10	n.a.	n.a.	0.96	0.888	n.a.	n.a.	n.a.	n.a.	0.00	0.00
18.210	10.970	0.474	2185.2	1485.7	13.297	4.803	3.02		Clay	100.0			10.37	1.10	n.a.	n.a.	0.96	0.889	n.a.	n.a.	n.a.	n.a.	0.00	0.00
18.370	12.450	0.491	2204.4	1494.9	15.182	4.326	2.95		Clay	98.7			11.77	1.10	n.a.	n.a.	0.96	0.890	n.a.	n.a.	n.a.	n.a.	0.00	0.00
18.540	12.200	0.469	2224.8	1504.7	14.737	4.229	2.95		Clay	99.0			11.53	1.09	n.a.	n.a.	0.96	0.892	n.a.	n.a.	n.a.	n.a.	0.00	0.00
18.700	10.990	0.421	2244.0	1513.9	13.036	4.268	2.99		Clay	100.0			10.39	1.09	n.a.	n.a.	0.96	0.893	n.a.	n.a.	n.a.	n.a.	0.00	0.00
18.860	9.290	0.353	2263.2	1523.1	10.713	4.328	3.07		Clay	100.0			8.78	1.09	n.a.	n.a.	0.95	0.894	n.a.	n.a.	n.a.	n.a.	0.00	0.00
19.030	8.790	0.332	2283.6	1532.9	9.979	4.336	3.09		Clay	100.0			8.31	1.09	n.a.	n.a.	0.95	0.895	n.a.	n.a.	n.a.	n.a.	0.00	0.00
19.190	8.360	0.317	2302.8	1542.1	9.349	4.392	3.12		Clay	100.0			7.90	1.09	n.a.	n.a.	0.95	0.896	n.a.	n.a.	n.a.	n.a.	0.00	0.00
19.360	8.180	0.327	2323.2	1551.9	9.045	4.652	3.14		Clay	100.0			7.73	1.09	n.a.	n.a.	0.95	0.898	n.a.	n.a.	n.a.	n.a.	0.00	0.00
19.520	8.700	0.370	2342.4	1561.2	9.645	4.910	3.14		Clay	100.0			8.22	1.08	n.a.	n.a.	0.95	0.899	n.a.	n.a.	n.a.	n.a.	0.00	0.00
19.690	8.990	0.411	2362.8	1570.9	9.941	5.257	3.14		Clay	100.0			8.50	1.08	n.a.	n.a.	0.95	0.900	n.a.	n.a.	n.a.	n.a.	0.00	0.00
19.850	8.970	0.417	2382.0	1580.2	9.846	5.355	3.15		Clay	100.0			8.48	1.08	n.a.	n.a.	0.95	0.901	n.a.	n.a.	n.a.	n.a.	0.00	0.00
20.010	9.240	0.433	2401.2	1589.4	10.116	5.385	3.14		Clay	100.0			8.73	1.08	n.a.	n.a.	0.95	0.902	n.a.	n.a.	n.a.	n.a.	0.00	0.00
20.180	9.530	0.421	2421.6	1599.2	10.404	5.059	3.12		Clay	100.0			9.01	1.08	n.a.	n.a.	0.95	0.903	n.a.	n.a.	n.a.	n.a.	0.00	0.00
20.340	10.480	0.424	2440.8	1608.4	11.514	4.579	3.06		Clay	100.0			9.91	1.08	n.a.	n.a.	0.95	0.904	n.a.	n.a.	n.a.	n.a.	0.00	0.00
20.510	11.030	0.454	2461.2	1618.2	12.112	4.629	3.04		Clay	100.0			10.43	1.07	n.a.	n.a.	0.95	0.905	n.a.	n.a.	n.a.	n.a.	0.00	0.00
20.670	11.670	0.498	2480.4	1627.4	12.818	4.776	3.03		Clay	100.0			11.03	1.07	n.a.	n.a.	0.95	0.906	n.a.	n.a.	n.a.	n.a.	0.00	0.00
20.830	13.780	0.547	2499.6	1636.6	15.312	4.367	2.95		Clay	98.7			13.02	1.07	n.a.	n.a.	0.95	0.907	n.a.	n.a.	n.a.	n.a.	0.00	0.00
21.000	15.430	0.585	2520.0	1646.4	17.213	4.128	2.89		Clay	94.3			14.58	1.07	n.a.	n.a.	0.95	0.908	n.a.	n.a.	n.a.	n.a.	0.00	0.00
21.160	16.970	0.611	2539.2	1655.6	18.966	3.894	2.84		Clay	90.4			16.04	1.07	n.a.	n.a.	0.95	0.909	n.a.	n.a.	n.a.	n.a.	0.00	0.00
21.330	17.600	0.611	2559.6	1665.4	19.599	3.742	2.82		Clay	88.7			16.64	1.07	n.a.	n.a.	0.95	0.909	n.a.	n.a.	n.a.	n.a.	0.00	0.00
21.490	18.220	0.625	2578.8	1674.6	20.220	3.690	2.81		Clay	87.5			17.22	1.06	n.a.	n.a.	0.95	0.910	n.a.	n.a.	n.a.	n.a.	0.00	0.00
21.650	17.930	0.655	2598.0	1683.8	19.754	3.936	2.83		Clay	89.6			16.95	1.06	n.a.	n.a.	0.95	0.911	n.a.	n.a.	n.a.	n.a.	0.00	0.00
21.820	17.910	0.626	2618.4	1693.6	19.604	3.769	2.82		Clay	88.8			16.93	1.06	n.a.	n.a.	0.94	0.912	n.a.	n.a.	n.a.	n.a.	0.00	0.00
21.980	17.930	0.589	2637.6	1702.8	19.510	3.546	2.81		Clay	87.6			16.95	1.06	n.a.	n.a.	0.94	0.913	n.a.	n.a.	n.a.	n.a.	0.00	0.00

CORNERSTONE EARTH GROUP

CPT No.	6

PGA (A_{max})	0.89

Total Settlement:	0.34	(Inches)

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Depth (ft)	q_c (tsf)	f_s (tsf)	σ_{vc} (psf)	Insitu σ'_{vc} (psf)	Q	F (%)	I_c	Layer "Plastic" PI > 7	Flag Soil Type	Fines (%)	q_{cN} near interfaces (soft layer)	Thin Layer Factor (K_H)	Interpreted q_{cN}	C_N	q_{c1N}	$q_{c1N\text{-}CS}$	Stress Reduction Coeff, r_d	CSR	K_σ for Sand	$CRR_{M=7.5,\ \sigma'vc = 1\ atm}$	CRR	Factor of Safety (CRR/CSR)	Vertical Strain ε_v	Settlement (Inches)
22.150	17.740	0.527	2658.0	1712.6	19.165	3.210	2.79		Clay	85.9			16.77	1.06	n.a.	n.a.	0.94	0.913	n.a.	n.a.	n.a.	n.a.	0.00	0.00
22.310	16.990	0.509	2677.2	1721.9	18.180	3.254	2.81		Clay	87.7			16.06	1.06	n.a.	n.a.	0.94	0.914	n.a.	n.a.	n.a.	n.a.	0.00	0.00
22.470	16.700	0.488	2696.4	1731.1	17.737	3.179	2.81		Clay	87.9			15.78	1.05	n.a.	n.a.	0.94	0.915	n.a.	n.a.	n.a.	n.a.	0.00	0.00
22.640	15.720	0.483	2716.8	1740.9	16.499	3.366	2.85		Clay	91.1			14.86	1.05	n.a.	n.a.	0.94	0.916	n.a.	n.a.	n.a.	n.a.	0.00	0.00
22.800	15.080	0.454	2736.0	1750.1	15.670	3.308	2.86		Clay	92.1			14.25	1.05	n.a.	n.a.	0.94	0.916	n.a.	n.a.	n.a.	n.a.	0.00	0.00
22.970	14.210	0.422	2756.4	1759.9	14.583	3.289	2.89		Clay	94.0			13.43	1.05	n.a.	n.a.	0.94	0.917	n.a.	n.a.	n.a.	n.a.	0.00	0.00
23.130	14.130	0.443	2775.6	1769.1	14.405	3.477	2.91		Clay	95.5			13.36	1.05	n.a.	n.a.	0.94	0.918	n.a.	n.a.	n.a.	n.a.	0.00	0.00
23.290	13.900	0.496	2794.8	1778.3	14.061	3.966	2.95		Clay	98.9			13.14	1.05	n.a.	n.a.	0.94	0.918	n.a.	n.a.	n.a.	n.a.	0.00	0.00
23.460	14.680	0.577	2815.2	1788.1	14.845	4.347	2.96		Clay	99.4			13.88	1.05	n.a.	n.a.	0.94	0.919	n.a.	n.a.	n.a.	n.a.	0.00	0.00
23.620	15.390	0.556	2834.4	1797.3	15.549	3.981	2.92		Clay	96.3			14.55	1.04	n.a.	n.a.	0.94	0.919	n.a.	n.a.	n.a.	n.a.	0.00	0.00
23.790	14.600	0.484	2854.8	1807.1	14.579	3.670	2.92		Clay	96.3			13.80	1.04	n.a.	n.a.	0.94	0.920	n.a.	n.a.	n.a.	n.a.	0.00	0.00
23.950	14.510	0.455	2874.0	1816.3	14.395	3.477	2.91		Clay	95.5			13.71	1.04	n.a.	n.a.	0.94	0.921	n.a.	n.a.	n.a.	n.a.	0.00	0.00
24.110	15.760	0.481	2893.2	1825.5	15.681	3.357	2.87		Clay	92.4			14.90	1.04	n.a.	n.a.	0.94	0.921	n.a.	n.a.	n.a.	n.a.	0.00	0.00
24.280	16.640	0.473	2913.6	1835.3	16.545	3.118	2.83		Clay	89.4			15.73	1.04	n.a.	n.a.	0.94	0.922	n.a.	n.a.	n.a.	n.a.	0.00	0.00
24.440	17.040	0.443	2932.8	1844.5	16.886	2.843	2.80		Clay	86.9			16.11	1.04	n.a.	n.a.	0.93	0.922	n.a.	n.a.	n.a.	n.a.	0.00	0.00
24.610	17.100	0.480	2953.2	1854.3	16.851	3.073	2.82		Clay	88.5			16.16	1.04	n.a.	n.a.	0.93	0.923	n.a.	n.a.	n.a.	n.a.	0.00	0.00
24.770	18.300	0.504	2972.4	1863.6	18.045	2.999	2.79		Clay	86.1			17.30	1.03	n.a.	n.a.	0.93	0.923	n.a.	n.a.	n.a.	n.a.	0.00	0.00
24.930	20.050	0.480	2991.6	1872.8	19.815	2.588	2.72		Clay	80.5			18.95	1.03	n.a.	n.a.	0.93	0.924	n.a.	n.a.	n.a.	n.a.	0.00	0.00
25.100	20.370	0.499	3012.0	1882.6	20.041	2.643	2.72		Clay	80.6			19.25	1.03	n.a.	n.a.	0.93	0.924	n.a.	n.a.	n.a.	n.a.	0.00	0.00
25.260	21.530	0.526	3031.2	1891.8	21.159	2.629	2.70		Clay	79.0			20.35	1.03	n.a.	n.a.	0.93	0.925	n.a.	n.a.	n.a.	n.a.	0.00	0.00
25.430	27.260	0.620	3051.6	1901.6	26.212	2.410	2.60		Mixed	71.2	32.33		32.33	1.06	34.14	94.94	0.93	0.925	1.011	0.131	0.164	0.18	0.03	0.07
25.590	29.810	0.637	3070.8	1910.8	28.123	2.254	2.56		Sand	67.9	32.33		32.33	1.05	34.06	94.18	0.93	0.925	1.010	0.130	0.162	0.18	0.03	0.07
25.750	30.800	0.717	3090.0	1920.0	29.028	2.452	2.57		Sand	68.8	32.33		32.33	1.05	33.98	94.26	0.93	0.926	1.010	0.130	0.162	0.18	0.03	0.07
25.920	32.260	0.826	3110.4	1929.8	30.389	2.689	2.58		Sand	69.6	32.33		32.33	1.05	33.89	94.30	0.93	0.926	1.009	0.130	0.162	0.18	0.03	0.07
26.080	34.200	0.953	3129.6	1939.0	32.223	2.921	2.59		Sand	69.9			32.33	1.05	33.80	94.25	0.93	0.927	1.009	0.130	0.162	0.17	0.03	0.07
26.250	33.340	0.994	3150.0	1948.8	32.600	3.129	2.60		Clay	71.2			31.51	1.02	n.a.	n.a.	0.93	0.927	n.a.	n.a.	n.a.	n.a.	0.00	0.00
26.410	33.310	0.995	3169.2	1958.0	32.406	3.137	2.60		Clay	71.4			31.48	1.02	n.a.	n.a.	0.93	0.927	n.a.	n.a.	n.a.	n.a.	0.00	0.00
26.570	32.960	0.950	3188.4	1967.2	31.888	3.028	2.60		Clay	71.0			31.15	1.02	n.a.	n.a.	0.93	0.928	n.a.	n.a.	n.a.	n.a.	0.00	0.00
26.740	32.250	0.910	3208.8	1977.0	31.002	2.970	2.60		Clay	71.3			30.48	1.02	n.a.	n.a.	0.93	0.928	n.a.	n.a.	n.a.	n.a.	0.00	0.00
26.900	29.470	0.879	3228.0	1986.2	28.049	3.156	2.65		Clay	75.3			27.85	1.02	n.a.	n.a.	0.93	0.928	n.a.	n.a.	n.a.	n.a.	0.00	0.00
27.070	24.750	0.853	3248.4	1996.0	23.172	3.690	2.76		Clay	83.9			23.39	1.02	n.a.	n.a.	0.92	0.929	n.a.	n.a.	n.a.	n.a.	0.00	0.00
27.230	20.090	0.729	3267.6	2005.2	18.408	3.949	2.86		Clay	91.5			18.99	1.01	n.a.	n.a.	0.92	0.929	n.a.	n.a.	n.a.	n.a.	0.00	0.00
27.400	16.990	0.566	3288.0	2015.0	15.231	3.686	2.90		Clay	95.2			16.06	1.01	n.a.	n.a.	0.92	0.929	n.a.	n.a.	n.a.	n.a.	0.00	0.00
27.560	15.720	0.496	3307.2	2024.3	13.898	3.523	2.92		Clay	96.7			14.86	1.01	n.a.	n.a.	0.92	0.929	n.a.	n.a.	n.a.	n.a.	0.00	0.00
27.720	16.510	0.519	3326.4	2033.5	14.602	3.498	2.90		Clay	95.2			15.60	1.01	n.a.	n.a.	0.92	0.930	n.a.	n.a.	n.a.	n.a.	0.00	0.00
27.890	18.160	0.568	3346.8	2043.3	16.138	3.446	2.86		Clay	92.2			17.16	1.01	n.a.	n.a.	0.92	0.930	n.a.	n.a.	n.a.	n.a.	0.00	0.00
28.050	18.210	0.518	3366.0	2052.5	16.104	3.131	2.84		Clay	90.2			17.21	1.01	n.a.	n.a.	0.92	0.930	n.a.	n.a.	n.a.	n.a.	0.00	0.00
28.220	19.520	0.686	3386.4	2062.3	17.289	3.850	2.87		Clay	92.7			18.45	1.01	n.a.	n.a.	0.92	0.930	n.a.	n.a.	n.a.	n.a.	0.00	0.00
28.380	20.820	0.756	3405.6	2071.5	18.457	3.956	2.86		Clay	91.5			19.68	1.01	n.a.	n.a.	0.92	0.931	n.a.	n.a.	n.a.	n.a.	0.00	0.00
28.540	16.210	0.745	3424.8	2080.7	13.935	5.142	3.02		Clay	100.0			15.32	1.00	n.a.	n.a.	0.92	0.931	n.a.	n.a.	n.a.	n.a.	0.00	0.00
28.710	16.310	0.613	3445.2	2090.5	13.956	4.204	2.97		Clay	100.0			15.42	1.00	n.a.	n.a.	0.92	0.931	n.a.	n.a.	n.a.	n.a.	0.00	0.00
28.870	13.460	0.468	3464.4	2099.7	11.171	3.987	3.03		Clay	100.0			12.72	1.00	n.a.	n.a.	0.92	0.931	n.a.	n.a.	n.a.	n.a.	0.00	0.00
29.040	12.320	0.407	3484.8	2109.5	10.029	3.851	3.06		Clay	100.0			11.64	1.00	n.a.	n.a.	0.92	0.931	n.a.	n.a.	n.a.	n.a.	0.00	0.00
29.200	13.960	0.398	3504.0	2118.7	11.524	3.263	2.97		Clay	100.0			13.19	1.00	n.a.	n.a.	0.92	0.931	n.a.	n.a.	n.a.	n.a.	0.00	0.00
29.360	13.860	0.389	3523.2	2127.9	11.371	3.215	2.97		Clay	100.0			13.10	1.00	n.a.	n.a.	0.92	0.932	n.a.	n.a.	n.a.	n.a.	0.00	0.00
29.530	11.430	0.328	3543.6	2137.7	9.036	3.395	3.06		Clay	100.0			10.80	1.00	n.a.	n.a.	0.91	0.932	n.a.	n.a.	n.a.	n.a.	0.00	0.00
29.690	9.010	0.263	3562.8	2146.9	6.734	3.631	3.19		Clay	100.0			8.52	1.00	n.a.	n.a.	0.91	0.932	n.a.	n.a.	n.a.	n.a.	0.00	0.00
29.860	8.810	0.210	3583.2	2156.7	6.508	2.995	3.15		Clay	100.0			8.33	0.99	n.a.	n.a.	0.91	0.932	n.a.	n.a.	n.a.	n.a.	0.00	0.00
30.020	8.930	0.219	3602.4	2166.0	6.583	3.072	3.15		Clay	100.0			8.44	0.99	n.a.	n.a.	0.91	0.932	n.a.	n.a.	n.a.	n.a.	0.00	0.00
30.180	9.310	0.243	3621.6	2175.2	6.895	3.246	3.15		Clay	100.0			8.80	0.99	n.a.	n.a.	0.91	0.932	n.a.	n.a.	n.a.	n.a.	0.00	0.00
30.350	9.180	0.251	3642.0	2185.0	6.736	3.404	3.17		Clay	100.0			8.68	0.99	n.a.	n.a.	0.91	0.932	n.a.	n.a.	n.a.	n.a.	0.00	0.00
30.510	9.420	0.229	3661.2	2194.2	6.918	3.020	3.13		Clay	100.0			8.90	0.99	n.a.	n.a.	0.91	0.932	n.a.	n.a.	n.a.	n.a.	0.00	0.00
30.680	9.180	0.234	3681.6	2204.0	6.660	3.190	3.16		Clay	100.0			8.68	0.99	n.a.	n.a.	0.91	0.932	n.a.	n.a.	n.a.	n.a.	0.00	0.00
30.840	9.400	0.233	3700.8	2213.2	6.822	3.089	3.14		Clay	100.0			8.88	0.99	n.a.	n.a.	0.91	0.933	n.a.	n.a.	n.a.	n.a.	0.00	0.00
31.000	9.420	0.248	3720.0	2222.4	6.803	3.279	3.16		Clay	100.0			8.90	0.99	n.a.	n.a.	0.91	0.933	n.a.	n.a.	n.a.	n.a.	0.00	0.00
31.170	9.310	0.261	3740.4	2232.2	6.666	3.507	3.18		Clay	100.0			8.80	0.99	n.a.	n.a.	0.91	0.933	n.a.	n.a.	n.a.	n.a.	0.00	0.00
31.330	9.620	0.274	3759.6	2241.4	6.907	3.537	3.17		Clay	100.0			9.09	0.98	n.a.	n.a.	0.91	0.933	n.a.	n.a.	n.a.	n.a.	0.00	0.00
31.500	9.590	0.274	3780.0	2251.2	6.841	3.558	3.17		Clay	100.0			9.06	0.98	n.a.	n.a.	0.91	0.933	n.a.	n.a.	n.a.	n.a.	0.00	0.00
31.660	9.840	0.257	3799.2	2260.4	7.026	3.234	3.14		Clay	100.0			9.30	0.98	n.a.	n.a.	0.91	0.933	n.a.	n.a.	n.a.	n.a.	0.00	0.00
31.820	10.420	0.250	3818.4	2269.6	7.500	2.942	3.10		Clay	100.0			9.85	0.98	n.a.	n.a.	0.91	0.933	n.a.	n.a.	n.a.	n.a.	0.00	0.00
31.990	10.260	0.231	3838.8	2279.4	7.318	2.767	3.09		Clay	100.0			9.70	0.98	n.a.	n.a.	0.90	0.933	n.a.	n.a.	n.a.	n.a.	0.00	0.00
32.150	10.440	0.213	3858.0	2288.6	7.438	2.504	3.06		Clay	100.0			9.87	0.98	n.a.	n.a.	0.90	0.933	n.a.	n.a.	n.a.	n.a.	0.00	0.00
32.320	10.570	0.231	3878.4	2298.4	7.510	2.674	3.07		Clay	100.0			9.99	0.98	n.a.	n.a.	0.90	0.933	n.a.	n.a.	n.a.	n.a.	0.00	0.00
32.480	10.430	0.231	3897.6	2307.6	7.351	2.727	3.09		Clay	100.0			9.86	0.98	n.a.	n.a.	0.90	0.933	n.a.	n.a.	n.a.	n.a.	0.00	0.00
32.640	11.030	0.225	3916.8	2316.9	7.831	2.480	3.04		Clay	100.0			10.43	0.98	n.a.	n.a.	0.90	0.933	n.a.	n.a.	n.a.	n.a.	0.00	0.00
32.810	10.970	0.241	3937.2	2326.7	7.738	2.682	3.06		Clay	100.0			10.37	0.98	n.a.	n.a.	0.90	0.933	n.a.	n.a.	n.a.	n.a.	0.00	0.00
32.970	11.520	0.235	3956.4	2335.9	8.170	2.463	3.02		Clay	100.0			10.89	0.97	n.a.	n.a.	0.90	0.933	n.a.	n.a.	n.a.	n.a.	0.00	0.00

CORNERSTONE EARTH GROUP

CPT No.	6

PGA (A_{max})	0.89

Total Settlement:	0.34	(Inches)

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Depth (ft)	q_c (tsf)	f_s (tsf)	σ_{vc} (psf)	Insitu σ'_{vc} (psf)	Q	F (%)	I_c	Layer "Plastic" PI > 7	Flag Soil Type	Fines (%)	q_{cN} near interfaces (soft layer)	Thin Layer Factor (K_H)	Interpreted q_{cN}	C_N	q_{c1N}	$q_{c1N\text{-}CS}$	Stress Reduction Coeff, r_d	CSR	K_σ for Sand	$CRR_{M=7.5,\ \sigma'vc = 1\ atm}$	CRR	Factor of Safety (CRR/CSR)	Vertical Strain ε_v	Settlement (Inches)
33.140	11.810	0.250	3976.8	2345.7	8.374	2.549	3.02		Clay	100.0			11.16	0.97	n.a.	n.a.	0.90	0.932	n.a.	n.a.	n.a.	n.a.	0.00	0.00
33.300	11.960	0.272	3996.0	2354.9	8.461	2.733	3.03		Clay	100.0			11.30	0.97	n.a.	n.a.	0.90	0.932	n.a.	n.a.	n.a.	n.a.	0.00	0.00
33.460	12.310	0.307	4015.2	2364.1	8.716	2.983	3.04		Clay	100.0			11.64	0.97	n.a.	n.a.	0.90	0.932	n.a.	n.a.	n.a.	n.a.	0.00	0.00
33.630	12.770	0.348	4035.6	2373.9	9.059	3.237	3.05		Clay	100.0			12.07	0.97	n.a.	n.a.	0.90	0.932	n.a.	n.a.	n.a.	n.a.	0.00	0.00
33.790	12.940	0.363	4054.8	2383.1	9.158	3.326	3.05		Clay	100.0			12.23	0.97	n.a.	n.a.	0.90	0.932	n.a.	n.a.	n.a.	n.a.	0.00	0.00
33.960	12.980	0.409	4075.2	2392.9	9.146	3.735	3.08		Clay	100.0			12.27	0.97	n.a.	n.a.	0.90	0.932	n.a.	n.a.	n.a.	n.a.	0.00	0.00
34.120	13.330	0.410	4094.4	2402.1	9.394	3.635	3.07		Clay	100.0			12.60	0.97	n.a.	n.a.	0.90	0.932	n.a.	n.a.	n.a.	n.a.	0.00	0.00
34.280	14.000	0.419	4113.6	2411.3	9.906	3.509	3.04		Clay	100.0			13.23	0.97	n.a.	n.a.	0.90	0.932	n.a.	n.a.	n.a.	n.a.	0.00	0.00
34.450	15.110	0.441	4134.0	2421.1	10.774	3.382	3.00		Clay	100.0			14.28	0.97	n.a.	n.a.	0.89	0.932	n.a.	n.a.	n.a.	n.a.	0.00	0.00
34.610	15.310	0.511	4153.2	2430.3	10.890	3.864	3.03		Clay	100.0			14.47	0.96	n.a.	n.a.	0.89	0.932	n.a.	n.a.	n.a.	n.a.	0.00	0.00
34.780	15.610	0.503	4173.6	2440.1	11.084	3.719	3.01		Clay	100.0			14.75	0.96	n.a.	n.a.	0.89	0.932	n.a.	n.a.	n.a.	n.a.	0.00	0.00
34.940	14.770	0.475	4192.8	2449.3	10.349	3.751	3.04		Clay	100.0			13.96	0.96	n.a.	n.a.	0.89	0.931	n.a.	n.a.	n.a.	n.a.	0.00	0.00
35.100	14.100	0.421	4212.0	2458.6	9.757	3.508	3.04		Clay	100.0			13.33	0.96	n.a.	n.a.	0.89	0.931	n.a.	n.a.	n.a.	n.a.	0.00	0.00
35.270	13.670	0.406	4232.4	2468.4	9.362	3.515	3.06		Clay	100.0			12.92	0.96	n.a.	n.a.	0.89	0.931	n.a.	n.a.	n.a.	n.a.	0.00	0.00
35.430	12.850	0.361	4251.6	2477.6	8.657	3.370	3.08		Clay	100.0			12.15	0.96	n.a.	n.a.	0.89	0.931	n.a.	n.a.	n.a.	n.a.	0.00	0.00
35.600	13.560	0.398	4272.0	2487.4	9.186	3.483	3.06		Clay	100.0			12.82	0.96	n.a.	n.a.	0.89	0.931	n.a.	n.a.	n.a.	n.a.	0.00	0.00
35.760	14.940	0.402	4291.2	2496.6	10.250	3.140	3.00		Clay	100.0			14.12	0.96	n.a.	n.a.	0.89	0.931	n.a.	n.a.	n.a.	n.a.	0.00	0.00
35.930	16.050	0.479	4311.6	2506.4	11.087	3.450	3.00		Clay	100.0			15.17	0.96	n.a.	n.a.	0.89	0.931	n.a.	n.a.	n.a.	n.a.	0.00	0.00
36.090	17.210	0.507	4330.8	2515.6	11.961	3.372	2.96		Clay	100.0			16.27	0.96	n.a.	n.a.	0.89	0.930	n.a.	n.a.	n.a.	n.a.	0.00	0.00
36.250	17.580	0.503	4350.0	2524.8	12.203	3.266	2.95		Clay	98.8			16.62	0.95	n.a.	n.a.	0.89	0.930	n.a.	n.a.	n.a.	n.a.	0.00	0.00
36.420	16.690	0.509	4370.4	2534.6	11.445	3.507	2.99		Clay	100.0			15.78	0.95	n.a.	n.a.	0.89	0.930	n.a.	n.a.	n.a.	n.a.	0.00	0.00
36.580	15.990	0.489	4389.6	2543.8	10.846	3.542	3.01		Clay	100.0			15.11	0.95	n.a.	n.a.	0.89	0.930	n.a.	n.a.	n.a.	n.a.	0.00	0.00
36.750	15.380	0.486	4410.0	2553.6	10.319	3.687	3.04		Clay	100.0			14.54	0.95	n.a.	n.a.	0.89	0.930	n.a.	n.a.	n.a.	n.a.	0.00	0.00
36.910	14.600	0.496	4429.2	2562.8	9.665	4.006	3.08		Clay	100.0			13.80	0.95	n.a.	n.a.	0.88	0.929	n.a.	n.a.	n.a.	n.a.	0.00	0.00
37.070	13.950	0.482	4448.4	2572.0	9.118	4.108	3.11		Clay	100.0			13.19	0.95	n.a.	n.a.	0.88	0.929	n.a.	n.a.	n.a.	n.a.	0.00	0.00
37.240	15.160	0.487	4468.8	2581.8	10.013	3.770	3.05		Clay	100.0			14.33	0.95	n.a.	n.a.	0.88	0.929	n.a.	n.a.	n.a.	n.a.	0.00	0.00
37.400	15.310	0.457	4488.0	2591.0	10.086	3.501	3.03		Clay	100.0			14.47	0.95	n.a.	n.a.	0.88	0.929	n.a.	n.a.	n.a.	n.a.	0.00	0.00
37.570	14.100	0.460	4508.4	2600.8	9.109	3.884	3.09		Clay	100.0			13.33	0.95	n.a.	n.a.	0.88	0.929	n.a.	n.a.	n.a.	n.a.	0.00	0.00
37.730	14.130	0.459	4527.6	2610.0	9.093	3.867	3.09		Clay	100.0			13.36	0.95	n.a.	n.a.	0.88	0.928	n.a.	n.a.	n.a.	n.a.	0.00	0.00
37.890	14.980	0.505	4546.8	2619.3	9.702	3.971	3.08		Clay	100.0			14.16	0.95	n.a.	n.a.	0.88	0.928	n.a.	n.a.	n.a.	n.a.	0.00	0.00
38.060	16.000	0.583	4567.2	2629.1	10.434	4.253	3.07		Clay	100.0			15.12	0.94	n.a.	n.a.	0.88	0.928	n.a.	n.a.	n.a.	n.a.	0.00	0.00
38.220	16.720	0.847	4586.4	2638.3	10.937	5.873	3.14		Clay	100.0			15.80	0.94	n.a.	n.a.	0.88	0.928	n.a.	n.a.	n.a.	n.a.	0.00	0.00
38.390	20.690	1.130	4606.8	2648.1	13.887	6.145	3.07		Clay	100.0			19.56	0.94	n.a.	n.a.	0.88	0.927	n.a.	n.a.	n.a.	n.a.	0.00	0.00
38.550	33.100	1.480	4626.0	2657.3	23.172	4.806	2.84		Clay	90.0			31.29	0.94	n.a.	n.a.	0.88	0.927	n.a.	n.a.	n.a.	n.a.	0.00	0.00
38.710	39.540	2.464	4645.2	2666.5	27.915	6.620	2.87		Clay	93.0			37.37	0.94	n.a.	n.a.	0.88	0.927	n.a.	n.a.	n.a.	n.a.	0.00	0.00
38.880	61.470	3.532	4665.6	2676.3	44.193	5.973	2.70		Clay	79.4			58.10	0.94	n.a.	n.a.	0.88	0.927	n.a.	n.a.	n.a.	n.a.	0.00	0.00
39.040	117.660	2.687	4684.8	2685.5	96.751	2.330	2.17		Sand	36.9	238.77		238.77	0.94	224.22	316.28	0.88	0.926	0.928	#########	########	##########	0.00	0.00
39.210	192.530	2.305	4705.2	2695.3	159.268	1.212	1.82		Sand	8.5	238.77		238.77	0.93	222.38	228.19	0.87	0.926	0.927	13.979	28.522	30.80	0.00	0.00
39.370	252.620	2.479	4724.4	2704.5	209.226	0.991	1.67		Sand	0.0			238.77	0.93	221.73	221.73	0.87	0.926	0.926	8.170	16.650	17.98	0.00	0.00
39.530	257.940	2.726	4743.6	2713.7	213.302	1.066	1.69		Sand	0.0			243.80	0.93	226.50	226.50	0.87	0.925	0.925	12.088	24.609	26.59	0.00	0.00
39.700	261.520	2.768	4764.0	2723.5	215.893	1.068	1.69		Sand	0.0			247.18	0.93	229.62	229.62	0.87	0.925	0.924	15.861	32.252	34.86	0.00	0.00
39.860	256.730	3.702	4783.2	2732.7	211.536	1.456	1.80		Sand	6.6			242.66	0.93	224.98	226.62	0.87	0.925	0.923	12.214	24.809	26.82	0.00	0.00
40.030	272.460	3.548	4803.6	2742.5	224.209	1.314	1.74		Sand	2.6			257.52	0.93	239.46	239.46	0.87	0.925	0.922	40.695	82.563	89.30	0.00	0.00
40.190	300.010	2.931	4822.8	2751.7	246.660	0.985	1.62		Sand	0.0			283.56	0.93	264.58	264.58	0.87	0.924	0.921	872.747	1768.720	1913.59	0.00	0.00
40.350	312.860	2.632	4842.0	2761.0	256.873	0.848	1.56		Sand	0.0			295.71	0.93	275.66	275.66	0.87	0.924	0.920	4787.430	9691.704	10488.91	0.00	0.00
40.520	313.360	2.898	4862.4	2770.8	256.823	0.932	1.59		Sand	0.0			296.18	0.93	275.85	275.85	0.87	0.924	0.919	4933.443	9975.766	10800.11	0.00	0.00
40.680	330.250	2.389	4881.6	2780.0	270.317	0.729	1.50		Sand	0.0			312.15	0.93	290.46	290.46	0.87	0.923	0.918	68165.607	########	149113.54	0.00	0.00
40.850	329.250	2.053	4902.0	2789.8	269.011	0.628	1.46		Sand	0.0			311.20	0.93	289.31	289.31	0.87	0.923	0.917	54545.573	########	119225.18	0.00	0.00
41.010	351.820	1.593	4921.2	2799.0	287.108	0.456	1.34		Sand	0.0			332.53	0.93	308.88	308.88	0.87	0.923	0.916	#########	########	8111175.52	0.00	0.00
41.170	340.260	1.565	4940.4	2808.2	277.144	0.463	1.36		Sand	0.0			321.61	0.93	298.47	298.47	0.87	0.922	0.915	#########	########	765736.04	0.00	0.00
41.340	346.140	1.999	4960.8	2818.0	281.470	0.582	1.42		Sand	0.0			327.16	0.93	303.35	303.35	0.87	0.922	0.914	#########	########	2236626.30	0.00	0.00
41.500	356.460	2.174	4980.0	2827.2	289.441	0.614	1.43		Sand	0.0			336.92	0.93	312.12	312.12	0.86	0.922	0.913	#########	########	##########	0.00	0.00
41.670	346.270	2.346	5000.4	2837.0	280.615	0.683	1.47		Sand	0.0			327.29	0.93	302.92	302.92	0.86	0.921	0.912	#########	########	2029971.03	0.00	0.00
41.830	349.860	2.448	5019.6	2846.2	283.078	0.705	1.48		Sand	0.0			330.68	0.92	305.80	305.80	0.86	0.921	0.911	#########	########	3914383.77	0.00	0.00
41.990	347.940	2.815	5038.8	2855.4	281.051	0.815	1.52		Sand	0.0			328.87	0.92	303.87	303.87	0.86	0.921	0.910	#########	########	2507522.45	0.00	0.00
42.160	362.250	2.427	5059.2	2865.2	292.185	0.675	1.45		Sand	0.0			342.39	0.92	316.08	316.08	0.86	0.920	0.909	#########	########	##########	0.00	0.00
42.320	357.460	2.278	5078.4	2874.4	287.824	0.642	1.44		Sand	0.0			337.86	0.92	311.63	311.63	0.86	0.920	0.908	#########	########	##########	0.00	0.00
42.490	322.920	2.457	5098.8	2884.2	259.364	0.767	1.53		Sand	0.0			305.22	0.92	281.27	281.27	0.86	0.920	0.907	12401.094	24747.367	26910.73	0.00	0.00
42.650	320.490	2.474	5118.0	2893.4	256.979	0.778	1.54		Sand	0.0			302.92	0.92	278.92	278.92	0.86	0.919	0.906	8253.481	16453.097	17898.30	0.00	0.00
42.810	332.280	2.519	5137.2	2902.7	266.078	0.764	1.52		Sand	0.0			314.06	0.92	288.94	288.94	0.86	0.919	0.905	50723.783	########	109925.44	0.00	0.00
42.980	342.220	2.224	5157.6	2912.4	273.630	0.655	1.46		Sand	0.0			323.46	0.92	297.31	297.31	0.86	0.919	0.904	#########	########	594511.57	0.00	0.00
43.140	349.020	2.484	5176.8	2921.7	278.660	0.717	1.49		Sand	0.0			329.89	0.92	302.97	302.97	0.86	0.918	0.903	#########	########	2038336.15	0.00	0.00
43.310	303.810	2.001	5197.2	2931.5	241.881	0.664	1.51		Sand	0.0			287.16	0.92	263.49	263.49	0.86	0.918	0.902	748.146	1484.963	1618.04	0.00	0.00
43.470	297.020	1.718	5216.4	2940.7	236.050	0.583	1.47		Sand	0.0			280.74	0.92	257.39	257.39	0.86	0.917	0.901	326.612	647.601	705.92	0.00	0.00
43.640	269.850	1.642	5236.8	2950.5	213.902	0.614	1.52		Sand	0.0			255.06	0.91	231.64	231.64	0.86	0.917	0.900	19.052	37.734	41.15	0.00	0.00
43.800	263.250	0.966	5256.0	2959.7	208.286	0.371	1.40		Sand	0.0			248.82	0.91	225.18	225.18	0.85	0.917	0.899	10.819	21.405	23.35	0.00	0.00
43.960	256.490	1.491	5275.2	2968.9	202.561	0.587	1.53		Sand	0.0			242.43	0.90	218.60	218.60	0.85	0.916	0.898	6.407	12.662	13.82	0.00	0.00

CORNERSTONE EARTH GROUP

CPT No.	6

PGA (A_{max})	0.89

Total Settlement:	0.34	(Inches)

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Depth (ft)	q_c (tsf)	f_s (tsf)	σ_{vc} (psf)	Insitu σ'_{vc} (psf)	Q	F (%)	I_c	Layer "Plastic" PI > 7	Flag Soil Type	Fines (%)	q_{cN} near interfaces (soft layer)	Thin Layer Factor (K_H)	Interpreted q_{cN}	C_N	q_{c1N}	q_{c1N-CS}	Stress Reduction Coeff, r_d	CSR	K_σ for Sand	$CRR_{M=7.5,\ \sigma'vc = 1\ atm}$	CRR	Factor of Safety (CRR/CSR)	Vertical Strain ε_v	Settlement (Inches)
44.130	257.830	1.387	5295.6	2978.7	203.287	0.544	1.50		Sand	0.0			243.70	0.90	219.61	219.61	0.85	0.916	0.897	6.923	13.667	14.92	0.00	0.00
44.290	266.970	1.881	5314.8	2987.9	210.236	0.712	1.57		Sand	0.0			252.33	0.90	227.99	227.99	0.85	0.915	0.896	13.744	27.106	29.61	0.00	0.00
44.460	281.940	1.833	5335.2	2997.7	221.772	0.656	1.53		Sand	0.0			266.48	0.91	241.93	241.93	0.85	0.915	0.896	52.646	103.719	113.35	0.00	0.00
44.620	283.500	1.217	5354.4	3006.9	222.661	0.433	1.41		Sand	0.0			267.96	0.91	243.18	243.18	0.85	0.915	0.895	60.218	118.515	129.58	0.00	0.00
44.780	286.980	1.056	5373.6	3016.1	225.068	0.371	1.37		Sand	0.0			271.25	0.91	246.27	246.27	0.85	0.914	0.894	84.635	166.398	182.01	0.00	0.00
44.950	273.430	0.896	5394.0	3025.9	213.986	0.331	1.36		Sand	0.0			258.44	0.90	233.16	233.16	0.85	0.914	0.893	21.924	43.056	47.12	0.00	0.00
45.110	258.010	0.715	5413.2	3035.1	201.484	0.280	1.34		Sand	0.0			243.87	0.90	218.39	218.39	0.85	0.913	0.892	6.310	12.379	13.55	0.00	0.00
45.280	242.730	1.186	5433.6	3044.9	189.112	0.494	1.50		Sand	0.0			229.42	0.89	203.88	203.88	0.85	0.913	0.900	2.367	4.687	5.13	0.00	0.00
45.440	188.150	1.731	5452.8	3054.1	145.879	0.934	1.77		Sand	4.4	229.42		229.42	0.89	203.66	203.72	0.85	0.913	0.899	2.346	4.641	5.09	0.00	0.00
45.600	121.080	1.537	5472.0	3063.4	92.965	1.298	2.01		Sand	23.7	229.42		229.42	0.91	208.08	270.98	0.85	0.912	0.889	2268.202	4436.171	4863.59	0.00	0.00
45.770	55.180	1.234	5492.4	3073.2	41.124	2.354	2.45		Sand	58.6	229.42		229.42	0.91	207.91	314.22	0.85	0.912	0.888	#########	#########	##########	0.00	0.00
45.930	30.290	0.966	5511.6	3082.4	17.866	3.510	2.83		Clay	89.8			28.63	0.91	n.a.	n.a.	0.85	0.911	n.a.	n.a.	n.a.	n.a.	0.00	0.00
46.100	22.880	0.465	5532.0	3092.2	13.010	2.310	2.84		Clay	90.1			21.63	0.90	n.a.	n.a.	0.84	0.911	n.a.	n.a.	n.a.	n.a.	0.00	0.00
46.260	22.160	0.380	5551.2	3101.4	12.501	1.961	2.81		Clay	88.1			20.95	0.90	n.a.	n.a.	0.84	0.910	n.a.	n.a.	n.a.	n.a.	0.00	0.00
46.420	21.060	0.384	5570.4	3110.6	11.750	2.099	2.85		Clay	91.2			19.91	0.90	n.a.	n.a.	0.84	0.910	n.a.	n.a.	n.a.	n.a.	0.00	0.00
46.590	19.810	0.438	5590.8	3120.4	10.905	2.575	2.93		Clay	97.3			18.72	0.90	n.a.	n.a.	0.84	0.909	n.a.	n.a.	n.a.	n.a.	0.00	0.00
46.750	19.250	0.459	5610.0	3129.6	10.509	2.794	2.96		Clay	99.9			18.19	0.90	n.a.	n.a.	0.84	0.909	n.a.	n.a.	n.a.	n.a.	0.00	0.00
46.920	18.350	0.473	5630.4	3139.4	9.897	3.047	3.00		Clay	100.0			17.34	0.90	n.a.	n.a.	0.84	0.909	n.a.	n.a.	n.a.	n.a.	0.00	0.00
47.080	17.530	0.513	5649.6	3148.6	9.341	3.489	3.06		Clay	100.0			16.57	0.90	n.a.	n.a.	0.84	0.908	n.a.	n.a.	n.a.	n.a.	0.00	0.00
47.240	18.050	0.453	5668.8	3157.8	9.637	2.975	3.01		Clay	100.0			17.06	0.90	n.a.	n.a.	0.84	0.908	n.a.	n.a.	n.a.	n.a.	0.00	0.00
47.410	18.880	0.476	5689.2	3167.6	10.125	2.966	2.99		Clay	100.0			17.84	0.90	n.a.	n.a.	0.84	0.907	n.a.	n.a.	n.a.	n.a.	0.00	0.00
47.570	18.000	0.454	5708.4	3176.8	9.535	2.998	3.01		Clay	100.0			17.01	0.90	n.a.	n.a.	0.84	0.907	n.a.	n.a.	n.a.	n.a.	0.00	0.00
47.740	21.350	0.455	5728.8	3186.6	11.602	2.462	2.90		Clay	94.6			20.18	0.90	n.a.	n.a.	0.84	0.906	n.a.	n.a.	n.a.	n.a.	0.00	0.00
47.900	19.680	0.490	5748.0	3195.8	10.517	2.914	2.97		Clay	100.0			18.60	0.90	n.a.	n.a.	0.84	0.906	n.a.	n.a.	n.a.	n.a.	0.00	0.00
48.060	19.480	0.574	5767.2	3205.1	10.356	3.461	3.02		Clay	100.0			18.41	0.90	n.a.	n.a.	0.84	0.905	n.a.	n.a.	n.a.	n.a.	0.00	0.00
48.230	21.850	0.594	5787.6	3214.8	11.793	3.132	2.95		Clay	98.9			20.65	0.90	n.a.	n.a.	0.84	0.905	n.a.	n.a.	n.a.	n.a.	0.00	0.00
48.390	21.270	0.578	5806.8	3224.1	11.393	3.148	2.96		Clay	100.0			20.10	0.89	n.a.	n.a.	0.83	0.904	n.a.	n.a.	n.a.	n.a.	0.00	0.00
48.560	20.910	0.544	5827.2	3233.9	11.130	3.021	2.96		Clay	99.8			19.76	0.89	n.a.	n.a.	0.83	0.904	n.a.	n.a.	n.a.	n.a.	0.00	0.00
48.720	21.480	0.512	5846.4	3243.1	11.444	2.760	2.93		Clay	97.2			20.30	0.89	n.a.	n.a.	0.83	0.904	n.a.	n.a.	n.a.	n.a.	0.00	0.00
48.880	21.770	0.530	5865.6	3252.3	11.584	2.815	2.93		Clay	97.3			20.58	0.89	n.a.	n.a.	0.83	0.903	n.a.	n.a.	n.a.	n.a.	0.00	0.00
49.050	21.480	0.513	5886.0	3262.1	11.365	2.765	2.93		Clay	97.5			20.30	0.89	n.a.	n.a.	0.83	0.903	n.a.	n.a.	n.a.	n.a.	0.00	0.00
49.210	22.290	0.434	5905.2	3271.3	11.822	2.243	2.87		Clay	92.3			21.07	0.89	n.a.	n.a.	0.83	0.902	n.a.	n.a.	n.a.	n.a.	0.00	0.00
49.380	19.590	0.385	5925.6	3281.1	10.135	2.314	2.93		Clay	97.4			18.52	0.89	n.a.	n.a.	0.83	0.902	n.a.	n.a.	n.a.	n.a.	0.00	0.00
49.540	16.550	0.326	5944.8	3290.3	8.253	2.404	3.01		Clay	100.0			15.64	0.89	n.a.	n.a.	0.83	0.901	n.a.	n.a.	n.a.	n.a.	0.00	0.00
49.700	16.080	0.281	5964.0	3299.5	7.939	2.144	3.00		Clay	100.0			15.20	0.89	n.a.	n.a.	0.83	0.901	n.a.	n.a.	n.a.	n.a.	0.00	0.00
49.870	16.970	0.306	5984.4	3309.3	8.448	2.186	2.98		Clay	100.0			16.04	0.89	n.a.	n.a.	0.83	0.900	n.a.	n.a.	n.a.	n.a.	0.00	0.00
50.030	17.150	0.246	6003.6	3318.5	8.527	1.739	2.93		Clay	97.3			16.21	0.89	n.a.	n.a.	0.83	0.900	n.a.	n.a.	n.a.	n.a.	0.00	0.00

CORNERSTONE EARTH GROUP

CPT No.	7

PGA (A_{max})	0.89

Total Settlement:	0.17	(Inches)

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Depth (ft)	q_c (tsf)	f_s (tsf)	σ_{vc} (psf)	Insitu σ'_{vc} (psf)	Q	F (%)	I_c	Layer "Plastic" PI > 7	Flag Soil Type	Fines (%)	q_{cN} near interfaces (soft layer)	Thin Layer Factor (K_H)	Interpreted q_{cN}	C_N	q_{c1N}	$q_{c1N\text{-}CS}$	Stress Reduction Coeff, r_d	CSR	K_σ for Sand	$CRR_{M=7.5,\ \sigma'vc = 1\ atm}$	CRR	Factor of Safety (CRR/CSR)	Vertical Strain ε_v	Settlement (Inches)
0.160	289.270	0.758	19.2	19.2	2870.189	0.262	0.64		Unsaturated	0.0			273.41	1.70	464.80	464.80	1.00	0.579	1.100	n.a.	n.a.	n.a.	0.00	0.00
0.330	211.370	1.054	39.6	39.6	1460.250	0.499	0.97		Unsaturated	0.0			199.78	1.70	339.63	339.63	1.00	0.579	1.100	n.a.	n.a.	n.a.	0.00	0.00
0.490	175.650	1.649	58.8	58.8	995.770	0.939	1.28		Unsaturated	0.0			166.02	1.70	282.24	282.24	1.00	0.579	1.100	n.a.	n.a.	n.a.	0.00	0.00
0.660	214.030	1.818	79.2	79.2	1045.451	0.850	1.23		Unsaturated	0.0			202.30	1.70	343.90	343.90	1.00	0.579	1.100	n.a.	n.a.	n.a.	0.00	0.00
0.820	320.190	1.789	98.4	98.4	1403.187	0.559	1.02		Unsaturated	0.0			302.64	1.70	514.48	514.48	1.00	0.579	1.100	n.a.	n.a.	n.a.	0.00	0.00
0.980	310.240	1.755	117.6	117.6	1243.609	0.566	1.04		Unsaturated	0.0			293.23	1.70	498.50	498.50	1.00	0.579	1.100	n.a.	n.a.	n.a.	0.00	0.00
1.150	291.540	2.088	138.0	138.0	1078.768	0.717	1.16		Unsaturated	0.0			275.56	1.70	468.45	468.45	1.00	0.579	1.100	n.a.	n.a.	n.a.	0.00	0.00
1.310	266.410	2.189	157.2	157.2	923.567	0.822	1.24		Unsaturated	0.0			251.81	1.70	428.07	428.07	1.00	0.579	1.100	n.a.	n.a.	n.a.	0.00	0.00
1.480	146.640	2.356	177.6	177.6	478.123	1.607	1.63		Unsaturated	0.0			138.60	1.70	235.62	235.62	1.00	0.579	1.100	n.a.	n.a.	n.a.	0.00	0.00
1.640	69.940	1.827	196.8	196.8	216.458	2.616	1.99		Unsaturated	22.4			66.11	1.70	112.38	156.77	1.00	0.579	1.100	n.a.	n.a.	n.a.	0.00	0.00
1.800	34.200	1.865	216.0	216.0	100.855	5.472	2.45		Unsaturated	58.7			32.33	1.70	54.95	118.68	1.00	0.579	1.100	n.a.	n.a.	n.a.	0.00	0.00
1.970	31.510	1.818	236.4	236.4	88.770	5.793	2.50		Unsaturated	63.0			29.78	1.70	50.63	114.35	1.00	0.579	1.100	n.a.	n.a.	n.a.	0.00	0.00
2.130	30.610	1.741	255.6	255.6	82.897	5.713	2.51		Unsaturated	64.0			28.93	1.70	49.18	112.77	1.00	0.579	1.100	n.a.	n.a.	n.a.	0.00	0.00
2.300	26.630	1.484	276.0	276.0	69.332	5.601	2.56		Unsaturated	67.4			25.17	1.70	42.79	105.33	1.00	0.579	1.100	n.a.	n.a.	n.a.	0.00	0.00
2.460	23.200	1.077	295.2	295.2	58.335	4.671	2.54		Unsaturated	66.5			21.93	1.70	37.28	98.04	1.00	0.579	1.100	n.a.	n.a.	n.a.	0.00	0.00
2.620	19.430	0.894	314.4	314.4	69.196	4.638	2.49		Unsaturated	62.4			18.36	1.70	31.22	89.30	1.00	0.579	1.100	n.a.	n.a.	n.a.	0.00	0.00
2.790	18.770	0.816	334.8	334.8	63.914	4.386	2.50		Unsaturated	62.8			17.74	1.70	30.16	88.03	1.00	0.579	1.100	n.a.	n.a.	n.a.	0.00	0.00
2.950	14.940	0.754	354.0	354.0	48.781	5.104	2.63		Unsaturated	73.0			14.12	1.70	24.01	82.15	1.00	0.579	1.100	n.a.	n.a.	n.a.	0.00	0.00
3.120	17.820	1.033	374.4	374.4	56.022	5.859	2.63		Unsaturated	73.4			16.84	1.70	28.63	88.20	1.00	0.578	1.100	n.a.	n.a.	n.a.	0.00	0.00
3.280	24.590	1.180	393.6	393.6	53.458	4.837	2.58		Unsaturated	69.5			23.24	1.70	39.51	101.54	1.00	0.578	1.100	n.a.	n.a.	n.a.	0.00	0.00
3.440	22.670	1.529	412.8	412.8	66.656	6.806	2.63		Unsaturated	73.5			21.43	1.70	36.43	98.31	1.00	0.578	1.100	n.a.	n.a.	n.a.	0.00	0.00
3.610	31.900	1.564	433.2	433.2	66.185	4.935	2.53		Unsaturated	65.1			30.15	1.70	51.26	115.69	1.00	0.578	1.100	n.a.	n.a.	n.a.	0.00	0.00
3.770	40.260	1.438	452.4	452.4	81.835	3.593	2.36		Unsaturated	51.9			38.05	1.70	64.69	128.66	1.00	0.578	1.100	n.a.	n.a.	n.a.	0.00	0.00
3.940	32.290	1.071	472.8	472.8	64.093	3.341	2.41		Unsaturated	55.8			30.52	1.70	51.88	113.82	1.00	0.577	1.100	n.a.	n.a.	n.a.	0.00	0.00
4.100	24.540	0.775	492.0	492.0	47.620	3.190	2.49		Unsaturated	61.9			23.19	1.70	39.43	99.71	1.00	0.577	1.100	n.a.	n.a.	n.a.	0.00	0.00
4.270	19.400	0.616	512.4	512.4	36.770	3.217	2.57		Unsaturated	68.7			18.34	1.70	31.17	90.62	1.00	0.577	1.100	n.a.	n.a.	n.a.	0.00	0.00
4.430	14.670	0.598	531.6	531.6	35.806	4.152	2.66		Unsaturated	75.4			13.87	1.70	23.57	81.97	1.00	0.577	1.100	n.a.	n.a.	n.a.	0.00	0.00
4.590	11.520	0.572	550.8	550.8	40.830	5.082	2.68		Unsaturated	77.2			10.89	1.70	18.51	75.67	1.00	0.576	1.100	n.a.	n.a.	n.a.	0.00	0.00
4.760	10.950	0.597	571.2	571.2	37.340	5.597	2.73		Unsaturated	81.7			10.35	1.70	17.59	75.11	1.00	0.576	1.100	n.a.	n.a.	n.a.	0.00	0.00
4.920	11.350	0.713	590.4	590.4	37.449	6.450	2.78		Unsaturated	85.2			10.73	1.70	18.24	76.37	1.00	0.576	1.100	n.a.	n.a.	n.a.	0.00	0.00
5.090	14.570	0.887	610.8	610.8	46.708	6.221	2.70		Clay	79.1			13.77	1.39	n.a.	n.a.	1.00	0.581	n.a.	n.a.	n.a.	n.a.	0.00	0.00
5.250	16.250	1.068	630.0	630.0	50.587	6.702	2.70		Clay	79.2			15.36	1.38	n.a.	n.a.	0.99	0.590	n.a.	n.a.	n.a.	n.a.	0.00	0.00
5.410	15.360	1.019	649.2	649.2	46.320	6.778	2.73		Clay	81.5			14.52	1.37	n.a.	n.a.	0.99	0.599	n.a.	n.a.	n.a.	n.a.	0.00	0.00
5.580	14.770	0.949	669.6	669.6	43.116	6.574	2.74		Clay	82.4			13.96	1.35	n.a.	n.a.	0.99	0.608	n.a.	n.a.	n.a.	n.a.	0.00	0.00
5.740	14.990	0.896	688.8	688.8	42.525	6.121	2.72		Clay	80.9			14.17	1.34	n.a.	n.a.	0.99	0.616	n.a.	n.a.	n.a.	n.a.	0.00	0.00
5.910	14.420	0.841	709.2	709.2	39.666	5.979	2.74		Clay	81.9			13.63	1.33	n.a.	n.a.	0.99	0.625	n.a.	n.a.	n.a.	n.a.	0.00	0.00
6.070	13.940	0.782	728.4	728.4	37.276	5.757	2.74		Clay	82.5			13.18	1.32	n.a.	n.a.	0.99	0.632	n.a.	n.a.	n.a.	n.a.	0.00	0.00
6.230	13.530	0.735	747.6	747.6	35.196	5.584	2.75		Clay	83.1			12.79	1.32	n.a.	n.a.	0.99	0.640	n.a.	n.a.	n.a.	n.a.	0.00	0.00
6.400	13.600	0.704	768.0	768.0	34.417	5.327	2.74		Clay	82.5			12.85	1.31	n.a.	n.a.	0.99	0.648	n.a.	n.a.	n.a.	n.a.	0.00	0.00
6.560	13.910	0.672	787.2	787.2	34.340	4.968	2.72		Clay	80.8			13.15	1.30	n.a.	n.a.	0.99	0.655	n.a.	n.a.	n.a.	n.a.	0.00	0.00
6.730	13.630	0.704	807.6	807.6	32.754	5.324	2.76		Clay	83.7			12.88	1.29	n.a.	n.a.	0.99	0.662	n.a.	n.a.	n.a.	n.a.	0.00	0.00
6.890	12.960	0.729	826.8	826.8	30.350	5.810	2.81		Clay	87.7			12.25	1.28	n.a.	n.a.	0.99	0.669	n.a.	n.a.	n.a.	n.a.	0.00	0.00
7.050	13.380	0.723	846.0	846.0	30.631	5.579	2.79		Clay	86.5			12.65	1.27	n.a.	n.a.	0.99	0.675	n.a.	n.a.	n.a.	n.a.	0.00	0.00
7.220	13.680	0.669	866.4	866.4	30.579	5.052	2.76		Clay	84.1			12.93	1.27	n.a.	n.a.	0.99	0.682	n.a.	n.a.	n.a.	n.a.	0.00	0.00
7.380	14.140	0.608	885.6	885.6	30.933	4.440	2.72		Clay	80.7			13.36	1.26	n.a.	n.a.	0.99	0.688	n.a.	n.a.	n.a.	n.a.	0.00	0.00
7.550	14.130	0.614	906.0	906.0	30.192	4.487	2.73		Clay	81.6			13.36	1.25	n.a.	n.a.	0.99	0.694	n.a.	n.a.	n.a.	n.a.	0.00	0.00
7.710	15.060	0.634	925.2	925.2	31.555	4.345	2.71		Clay	79.7			14.23	1.24	n.a.	n.a.	0.99	0.700	n.a.	n.a.	n.a.	n.a.	0.00	0.00
7.870	15.530	0.711	944.4	944.4	31.889	4.722	2.73		Clay	81.4			14.68	1.24	n.a.	n.a.	0.99	0.706	n.a.	n.a.	n.a.	n.a.	0.00	0.00
8.040	15.150	0.714	964.8	964.8	30.405	4.864	2.75		Clay	83.3			14.32	1.23	n.a.	n.a.	0.99	0.711	n.a.	n.a.	n.a.	n.a.	0.00	0.00
8.200	16.400	0.753	984.0	984.0	32.333	4.735	2.73		Clay	81.1			15.50	1.22	n.a.	n.a.	0.99	0.717	n.a.	n.a.	n.a.	n.a.	0.00	0.00
8.370	15.800	0.785	1004.4	1004.4	30.462	5.132	2.77		Clay	84.6			14.93	1.22	n.a.	n.a.	0.99	0.722	n.a.	n.a.	n.a.	n.a.	0.00	0.00
8.530	19.020	0.562	1023.6	1023.6	29.084	3.038	2.63		Mixed	73.5	49.16	1.6	78.66	1.29	101.66	182.74	0.99	0.727	1.100	0.813	1.909	2.63	0.00	0.00
8.690	28.110	0.577	1042.8	1042.8	37.145	2.093	2.45		Sand	58.7	49.16	1.6	78.66	1.29	101.46	178.16	0.99	0.732	1.100	0.675	1.530	2.09	0.00	0.00
8.860	42.130	0.445	1063.2	1063.2	55.468	1.070	2.13		Sand	33.5	49.16	1.6	78.66	1.30	102.38	162.73	0.99	0.737	1.100	0.401	0.807	1.09	0.01	0.01
9.020	52.010	0.230	1082.4	1082.4	68.018	0.447	1.85		Sand	11.4		1.6	78.65	1.36	106.98	118.90	0.99	0.742	1.083	0.169	0.252	0.34	0.03	0.05
9.190	48.230	0.140	1102.8	1102.8	62.423	0.294	1.81		Sand	7.9	49.16	1.6	78.66	1.36	107.29	110.18	0.98	0.747	1.075	0.152	0.216	0.29	0.03	0.06
9.350	35.300	0.154	1122.0	1122.0	45.091	0.442	2.01		Sand	23.9	49.16	1.6	78.66	1.29	101.83	147.74	0.98	0.751	1.099	0.274	0.496	0.66	0.02	0.04
9.510	22.660	0.149	1141.2	1141.2	28.430	0.673	2.27		Sand	44.8	49.16	1.6	78.66	1.26	99.11	168.37	0.98	0.756	1.100	0.477	1.002	1.33	0.00	0.00
9.680	12.540	0.135	1161.6	1161.6	17.200	1.128	2.57		Mixed	68.7	49.16	1.6	78.66	1.24	97.74	176.50	0.98	0.760	1.100	0.634	1.417	1.86	0.00	0.00
9.840	8.050	0.089	1180.8	1180.8	12.635	1.192	2.70		Clay	79.0			7.61	1.17	n.a.	n.a.	0.98	0.764	n.a.	n.a.	n.a.	n.a.	0.00	0.00
10.010	6.500	0.151	1201.2	1200.6	9.828	2.560	2.96		Clay	100.0			6.14	1.16	n.a.	n.a.	0.98	0.768	n.a.	n.a.	n.a.	n.a.	0.00	0.00
10.170	5.990	0.237	1220.4	1209.8	8.894	4.409	3.14		Clay	100.0			5.66	1.16	n.a.	n.a.	0.98	0.772	n.a.	n.a.	n.a.	n.a.	0.00	0.00
10.330	5.500	0.272	1239.6	1219.0	8.007	5.582	3.23		Clay	100.0			5.20	1.16	n.a.	n.a.	0.98	0.776	n.a.	n.a.	n.a.	n.a.	0.00	0.00
10.500	5.050	0.234	1260.0	1228.8	7.194	5.303	3.26		Clay	100.0			4.77	1.15	n.a.	n.a.	0.98	0.780	n.a.	n.a.	n.a.	n.a.	0.00	0.00
10.660	4.770	0.212	1279.2	1238.0	6.673	5.133	3.28		Clay	100.0			4.51	1.15	n.a.	n.a.	0.98	0.784	n.a.	n.a.	n.a.	n.a.	0.00	0.00
10.830	4.670	0.219	1299.6	1247.8	6.444	5.440	3.30		Clay	100.0			4.41	1.15	n.a.	n.a.	0.98	0.788	n.a.	n.a.	n.a.	n.a.	0.00	0.00
10.990	4.970	0.239	1318.8	1257.0	6.858	5.538	3.29		Clay	100.0			4.70	1.15	n.a.	n.a.	0.98	0.791	n.a.	n.a.	n.a.	n.a.	0.00	0.00

CORNERSTONE EARTH GROUP

CPT No.	7

PGA (A_{max})	0.89

Total Settlement:	0.17	(Inches)

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Depth (ft)	q_c (tsf)	f_s (tsf)	σ_{vc} (psf)	Insitu σ'_{vc} (psf)	Q	F (%)	I_c	Layer "Plastic" PI > 7	Flag Soil Type	Fines (%)	q_{cN} near interfaces (soft layer)	Thin Layer Factor (K_H)	Interpreted q_{cN}	C_N	q_{c1N}	q_{c1N-CS}	Stress Reduction Coeff, r_d	CSR	K_σ for Sand	$CRR_{M=7.5,\ \sigma'vc = 1\ atm}$	CRR	Factor of Safety (CRR/CSR)	Vertical Strain ε_v	Settlement (Inches)
11.150	4.820	0.235	1338.0	1266.2	6.556	5.659	3.31		Clay	100.0			4.56	1.15	n.a.	n.a.	0.98	0.794	n.a.	n.a.	n.a.	n.a.	0.00	0.00
11.320	4.860	0.225	1358.4	1276.0	6.553	5.387	3.29		Clay	100.0			4.59	1.14	n.a.	n.a.	0.98	0.798	n.a.	n.a.	n.a.	n.a.	0.00	0.00
11.480	5.190	0.238	1377.6	1285.2	7.004	5.283	3.27		Clay	100.0			4.91	1.14	n.a.	n.a.	0.98	0.801	n.a.	n.a.	n.a.	n.a.	0.00	0.00
11.650	5.870	0.277	1398.0	1295.0	7.986	5.357	3.22		Clay	100.0			5.55	1.14	n.a.	n.a.	0.98	0.805	n.a.	n.a.	n.a.	n.a.	0.00	0.00
11.810	6.740	0.353	1417.2	1304.3	9.249	5.848	3.20		Clay	100.0			6.37	1.14	n.a.	n.a.	0.98	0.808	n.a.	n.a.	n.a.	n.a.	0.00	0.00
11.980	7.730	0.385	1437.6	1314.0	10.671	5.484	3.13		Clay	100.0			7.31	1.13	n.a.	n.a.	0.98	0.811	n.a.	n.a.	n.a.	n.a.	0.00	0.00
12.140	7.590	0.384	1456.8	1323.3	10.371	5.599	3.15		Clay	100.0			7.17	1.13	n.a.	n.a.	0.98	0.814	n.a.	n.a.	n.a.	n.a.	0.00	0.00
12.300	7.120	0.371	1476.0	1332.5	9.579	5.819	3.18		Clay	100.0			6.73	1.13	n.a.	n.a.	0.98	0.817	n.a.	n.a.	n.a.	n.a.	0.00	0.00
12.470	6.230	0.329	1496.4	1342.3	8.168	5.998	3.25		Clay	100.0			5.89	1.13	n.a.	n.a.	0.98	0.820	n.a.	n.a.	n.a.	n.a.	0.00	0.00
12.630	5.590	0.275	1515.6	1351.5	7.151	5.697	3.28		Clay	100.0			5.28	1.13	n.a.	n.a.	0.98	0.822	n.a.	n.a.	n.a.	n.a.	0.00	0.00
12.800	5.320	0.260	1536.0	1361.3	6.688	5.701	3.30		Clay	100.0			5.03	1.12	n.a.	n.a.	0.97	0.825	n.a.	n.a.	n.a.	n.a.	0.00	0.00
12.960	5.820	0.217	1555.2	1370.5	7.359	4.307	3.20		Clay	100.0			5.50	1.12	n.a.	n.a.	0.97	0.828	n.a.	n.a.	n.a.	n.a.	0.00	0.00
13.120	7.710	0.247	1574.4	1379.7	10.035	3.569	3.04		Clay	100.0			7.29	1.12	n.a.	n.a.	0.97	0.830	n.a.	n.a.	n.a.	n.a.	0.00	0.00
13.290	9.750	0.288	1594.8	1389.5	12.886	3.217	2.92		Clay	97.0			9.22	1.12	n.a.	n.a.	0.97	0.833	n.a.	n.a.	n.a.	n.a.	0.00	0.00
13.450	9.100	0.495	1614.0	1398.7	11.858	5.974	3.12		Clay	100.0			8.60	1.12	n.a.	n.a.	0.97	0.836	n.a.	n.a.	n.a.	n.a.	0.00	0.00
13.620	9.570	0.539	1634.4	1408.5	12.428	6.159	3.11		Clay	100.0			9.05	1.11	n.a.	n.a.	0.97	0.838	n.a.	n.a.	n.a.	n.a.	0.00	0.00
13.780	9.270	0.554	1653.6	1417.7	11.911	6.564	3.14		Clay	100.0			8.76	1.11	n.a.	n.a.	0.97	0.840	n.a.	n.a.	n.a.	n.a.	0.00	0.00
13.940	11.100	0.575	1672.8	1426.9	14.385	5.597	3.04		Clay	100.0			10.49	1.11	n.a.	n.a.	0.97	0.843	n.a.	n.a.	n.a.	n.a.	0.00	0.00
14.110	11.680	0.574	1693.2	1436.7	15.081	5.302	3.01		Clay	100.0			11.04	1.11	n.a.	n.a.	0.97	0.845	n.a.	n.a.	n.a.	n.a.	0.00	0.00
14.270	11.950	0.566	1712.4	1446.0	15.345	5.100	2.99		Clay	100.0			11.29	1.11	n.a.	n.a.	0.97	0.847	n.a.	n.a.	n.a.	n.a.	0.00	0.00
14.440	12.270	0.561	1732.8	1455.7	15.667	4.923	2.97		Clay	100.0			11.60	1.10	n.a.	n.a.	0.97	0.850	n.a.	n.a.	n.a.	n.a.	0.00	0.00
14.600	12.490	0.591	1752.0	1465.0	15.856	5.089	2.98		Clay	100.0			11.81	1.10	n.a.	n.a.	0.97	0.852	n.a.	n.a.	n.a.	n.a.	0.00	0.00
14.760	12.550	0.612	1771.2	1474.2	15.825	5.242	2.99		Clay	100.0			11.86	1.10	n.a.	n.a.	0.97	0.854	n.a.	n.a.	n.a.	n.a.	0.00	0.00
14.930	12.820	0.659	1791.6	1484.0	16.071	5.527	3.00		Clay	100.0			12.12	1.10	n.a.	n.a.	0.97	0.856	n.a.	n.a.	n.a.	n.a.	0.00	0.00
15.090	13.440	0.702	1810.8	1493.2	16.789	5.597	2.99		Clay	100.0			12.70	1.10	n.a.	n.a.	0.97	0.858	n.a.	n.a.	n.a.	n.a.	0.00	0.00
15.260	13.440	0.724	1831.2	1503.0	16.666	5.778	3.00		Clay	100.0			12.70	1.09	n.a.	n.a.	0.97	0.860	n.a.	n.a.	n.a.	n.a.	0.00	0.00
15.420	13.610	0.715	1850.4	1512.2	16.777	5.637	2.99		Clay	100.0			12.86	1.09	n.a.	n.a.	0.97	0.862	n.a.	n.a.	n.a.	n.a.	0.00	0.00
15.580	14.320	0.722	1869.6	1521.4	17.596	5.394	2.96		Clay	99.8			13.53	1.09	n.a.	n.a.	0.97	0.864	n.a.	n.a.	n.a.	n.a.	0.00	0.00
15.750	15.280	0.729	1890.0	1531.2	18.724	5.088	2.92		Clay	96.8			14.44	1.09	n.a.	n.a.	0.97	0.866	n.a.	n.a.	n.a.	n.a.	0.00	0.00
15.910	15.560	0.721	1909.2	1540.4	18.963	4.935	2.91		Clay	95.8			14.71	1.09	n.a.	n.a.	0.96	0.867	n.a.	n.a.	n.a.	n.a.	0.00	0.00
16.080	15.930	0.714	1929.6	1550.2	19.307	4.768	2.89		Clay	94.5			15.06	1.09	n.a.	n.a.	0.96	0.869	n.a.	n.a.	n.a.	n.a.	0.00	0.00
16.240	15.560	0.690	1948.8	1559.4	18.706	4.729	2.90		Clay	95.2			14.71	1.08	n.a.	n.a.	0.96	0.871	n.a.	n.a.	n.a.	n.a.	0.00	0.00
16.400	15.600	0.719	1968.0	1568.6	18.635	4.916	2.91		Clay	96.1			14.74	1.08	n.a.	n.a.	0.96	0.873	n.a.	n.a.	n.a.	n.a.	0.00	0.00
16.570	15.450	0.725	1988.4	1578.4	18.317	5.017	2.93		Clay	97.1			14.60	1.08	n.a.	n.a.	0.96	0.874	n.a.	n.a.	n.a.	n.a.	0.00	0.00
16.730	15.200	0.724	2007.6	1587.6	17.883	5.101	2.94		Clay	98.1			14.37	1.08	n.a.	n.a.	0.96	0.876	n.a.	n.a.	n.a.	n.a.	0.00	0.00
16.900	14.380	0.739	2028.0	1597.4	16.734	5.530	2.98		Clay	100.0			13.59	1.08	n.a.	n.a.	0.96	0.878	n.a.	n.a.	n.a.	n.a.	0.00	0.00
17.060	14.130	0.751	2047.2	1606.7	16.315	5.730	3.00		Clay	100.0			13.36	1.08	n.a.	n.a.	0.96	0.879	n.a.	n.a.	n.a.	n.a.	0.00	0.00
17.220	14.160	0.744	2066.4	1615.9	16.247	5.668	3.00		Clay	100.0			13.38	1.07	n.a.	n.a.	0.96	0.881	n.a.	n.a.	n.a.	n.a.	0.00	0.00
17.390	13.920	0.724	2086.8	1625.7	15.842	5.619	3.01		Clay	100.0			13.16	1.07	n.a.	n.a.	0.96	0.882	n.a.	n.a.	n.a.	n.a.	0.00	0.00
17.550	13.920	0.709	2106.0	1634.9	15.741	5.509	3.00		Clay	100.0			13.16	1.07	n.a.	n.a.	0.96	0.884	n.a.	n.a.	n.a.	n.a.	0.00	0.00
17.720	14.210	0.689	2126.4	1644.7	15.987	5.242	2.98		Clay	100.0			13.43	1.07	n.a.	n.a.	0.96	0.885	n.a.	n.a.	n.a.	n.a.	0.00	0.00
17.880	14.180	0.492	2145.6	1653.9	15.850	3.756	2.89		Clay	94.5			13.40	1.07	n.a.	n.a.	0.96	0.886	n.a.	n.a.	n.a.	n.a.	0.00	0.00
18.040	14.090	0.438	2164.8	1663.1	15.643	3.363	2.87		Clay	92.5			13.32	1.07	n.a.	n.a.	0.96	0.888	n.a.	n.a.	n.a.	n.a.	0.00	0.00
18.210	13.290	0.366	2185.2	1672.9	14.582	2.997	2.86		Clay	92.0			12.56	1.06	n.a.	n.a.	0.96	0.889	n.a.	n.a.	n.a.	n.a.	0.00	0.00
18.370	12.280	0.300	2204.4	1682.1	13.290	2.684	2.87		Clay	92.4			11.61	1.06	n.a.	n.a.	0.96	0.890	n.a.	n.a.	n.a.	n.a.	0.00	0.00
18.540	12.430	0.303	2224.8	1691.9	13.379	2.679	2.87		Clay	92.2			11.75	1.06	n.a.	n.a.	0.96	0.892	n.a.	n.a.	n.a.	n.a.	0.00	0.00
18.700	13.310	0.336	2244.0	1701.1	14.329	2.758	2.85		Clay	90.8			12.58	1.06	n.a.	n.a.	0.96	0.893	n.a.	n.a.	n.a.	n.a.	0.00	0.00
18.860	14.950	0.399	2263.2	1710.3	16.159	2.890	2.82		Clay	88.4			14.13	1.06	n.a.	n.a.	0.95	0.894	n.a.	n.a.	n.a.	n.a.	0.00	0.00
19.030	15.990	0.468	2283.6	1720.1	17.264	3.154	2.82		Clay	88.4			15.11	1.06	n.a.	n.a.	0.95	0.895	n.a.	n.a.	n.a.	n.a.	0.00	0.00
19.190	15.660	0.484	2302.8	1729.3	16.779	3.337	2.84		Clay	90.4			14.80	1.05	n.a.	n.a.	0.95	0.896	n.a.	n.a.	n.a.	n.a.	0.00	0.00
19.360	15.200	0.468	2323.2	1739.1	16.144	3.333	2.86		Clay	91.4			14.37	1.05	n.a.	n.a.	0.95	0.898	n.a.	n.a.	n.a.	n.a.	0.00	0.00
19.520	14.660	0.472	2342.4	1748.4	15.430	3.495	2.88		Clay	93.7			13.86	1.05	n.a.	n.a.	0.95	0.899	n.a.	n.a.	n.a.	n.a.	0.00	0.00
19.690	14.620	0.490	2362.8	1758.1	15.287	3.648	2.90		Clay	94.9			13.82	1.05	n.a.	n.a.	0.95	0.900	n.a.	n.a.	n.a.	n.a.	0.00	0.00
19.850	14.940	0.530	2382.0	1767.4	15.559	3.858	2.91		Clay	95.6			14.12	1.05	n.a.	n.a.	0.95	0.901	n.a.	n.a.	n.a.	n.a.	0.00	0.00
20.010	14.930	0.553	2401.2	1776.6	15.456	4.031	2.92		Clay	96.7			14.11	1.05	n.a.	n.a.	0.95	0.902	n.a.	n.a.	n.a.	n.a.	0.00	0.00
20.180	14.590	0.503	2421.6	1786.4	14.979	3.757	2.91		Clay	96.0			13.79	1.05	n.a.	n.a.	0.95	0.903	n.a.	n.a.	n.a.	n.a.	0.00	0.00
20.340	13.720	0.450	2440.8	1795.6	13.923	3.603	2.93		Clay	97.2			12.97	1.04	n.a.	n.a.	0.95	0.904	n.a.	n.a.	n.a.	n.a.	0.00	0.00
20.510	13.270	0.455	2461.2	1805.4	13.337	3.778	2.95		Clay	99.4			12.54	1.04	n.a.	n.a.	0.95	0.905	n.a.	n.a.	n.a.	n.a.	0.00	0.00
20.670	13.340	0.521	2480.4	1814.6	13.336	4.307	2.99		Clay	100.0			12.61	1.04	n.a.	n.a.	0.95	0.906	n.a.	n.a.	n.a.	n.a.	0.00	0.00
20.830	12.560	0.511	2499.6	1823.8	12.403	4.516	3.03		Clay	100.0			11.87	1.04	n.a.	n.a.	0.95	0.907	n.a.	n.a.	n.a.	n.a.	0.00	0.00
21.000	10.730	0.385	2520.0	1833.6	10.329	4.065	3.06		Clay	100.0			10.14	1.04	n.a.	n.a.	0.95	0.908	n.a.	n.a.	n.a.	n.a.	0.00	0.00
21.160	9.760	0.257	2539.2	1842.8	9.215	3.029	3.03		Clay	100.0			9.22	1.04	n.a.	n.a.	0.95	0.909	n.a.	n.a.	n.a.	n.a.	0.00	0.00
21.330	8.440	0.207	2559.6	1852.6	7.730	2.894	3.08		Clay	100.0			7.98	1.04	n.a.	n.a.	0.95	0.909	n.a.	n.a.	n.a.	n.a.	0.00	0.00
21.490	8.110	0.196	2578.8	1861.8	7.327	2.869	3.10		Clay	100.0			7.67	1.03	n.a.	n.a.	0.95	0.910	n.a.	n.a.	n.a.	n.a.	0.00	0.00
21.650	8.050	0.215	2598.0	1871.0	7.216	3.191	3.13		Clay	100.0			7.61	1.03	n.a.	n.a.	0.95	0.911	n.a.	n.a.	n.a.	n.a.	0.00	0.00
21.820	8.000	0.223	2618.4	1880.8	7.115	3.337	3.15		Clay	100.0			7.56	1.03	n.a.	n.a.	0.94	0.912	n.a.	n.a.	n.a.	n.a.	0.00	0.00
21.980	7.470	0.221	2637.6	1890.0	6.509	3.594	3.20		Clay	100.0			7.06	1.03	n.a.	n.a.	0.94	0.913	n.a.	n.a.	n.a.	n.a.	0.00	0.00

CORNERSTONE EARTH GROUP

CPT No.	7

PGA (A_{max})	0.89

Total Settlement:	0.17	(Inches)

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Depth (ft)	q_c (tsf)	f_s (tsf)	σ_{vc} (psf)	Insitu σ'_{vc} (psf)	Q	F (%)	I_c	Layer "Plastic" PI > 7	Flag Soil Type	Fines (%)	q_{cN} near interfaces (soft layer)	Thin Layer Factor (K_H)	Interpreted q_{cN}	C_N	q_{c1N}	q_{c1N-CS}	Stress Reduction Coeff, r_d	CSR	K_σ for Sand	$CRR_{M=7.5, \sigma'vc = 1 atm}$	CRR	Factor of Safety (CRR/CSR)	Vertical Strain ε_v	Settlement (Inches)
22.150	7.770	0.215	2658.0	1899.8	6.781	3.338	3.16		Clay	100.0			7.34	1.03	n.a.	n.a.	0.94	0.913	n.a.	n.a.	n.a.	n.a.	0.00	0.00
22.310	7.590	0.188	2677.2	1909.1	6.549	2.999	3.15		Clay	100.0			7.17	1.03	n.a.	n.a.	0.94	0.914	n.a.	n.a.	n.a.	n.a.	0.00	0.00
22.470	7.600	0.165	2696.4	1918.3	6.518	2.633	3.12		Clay	100.0			7.18	1.03	n.a.	n.a.	0.94	0.915	n.a.	n.a.	n.a.	n.a.	0.00	0.00
22.640	7.340	0.140	2716.8	1928.1	6.205	2.332	3.11		Clay	100.0			6.94	1.02	n.a.	n.a.	0.94	0.916	n.a.	n.a.	n.a.	n.a.	0.00	0.00
22.800	6.750	0.133	2736.0	1937.3	5.556	2.477	3.17		Clay	100.0			6.38	1.02	n.a.	n.a.	0.94	0.916	n.a.	n.a.	n.a.	n.a.	0.00	0.00
22.970	6.730	0.136	2756.4	1947.1	5.497	2.536	3.18		Clay	100.0			6.36	1.02	n.a.	n.a.	0.94	0.917	n.a.	n.a.	n.a.	n.a.	0.00	0.00
23.130	6.900	0.173	2775.6	1956.3	5.635	3.144	3.22		Clay	100.0			6.52	1.02	n.a.	n.a.	0.94	0.918	n.a.	n.a.	n.a.	n.a.	0.00	0.00
23.290	7.670	0.229	2794.8	1965.5	6.383	3.644	3.21		Clay	100.0			7.25	1.02	n.a.	n.a.	0.94	0.918	n.a.	n.a.	n.a.	n.a.	0.00	0.00
23.460	9.030	0.276	2815.2	1975.3	7.718	3.614	3.14		Clay	100.0			8.53	1.02	n.a.	n.a.	0.94	0.919	n.a.	n.a.	n.a.	n.a.	0.00	0.00
23.620	9.620	0.305	2834.4	1984.5	8.267	3.721	3.12		Clay	100.0			9.09	1.02	n.a.	n.a.	0.94	0.919	n.a.	n.a.	n.a.	n.a.	0.00	0.00
23.790	9.820	0.305	2854.8	1994.3	8.417	3.632	3.11		Clay	100.0			9.28	1.02	n.a.	n.a.	0.94	0.920	n.a.	n.a.	n.a.	n.a.	0.00	0.00
23.950	10.020	0.287	2874.0	2003.5	8.568	3.346	3.08		Clay	100.0			9.47	1.01	n.a.	n.a.	0.94	0.921	n.a.	n.a.	n.a.	n.a.	0.00	0.00
24.110	10.120	0.274	2893.2	2012.7	8.619	3.158	3.06		Clay	100.0			9.57	1.01	n.a.	n.a.	0.94	0.921	n.a.	n.a.	n.a.	n.a.	0.00	0.00
24.280	9.970	0.229	2913.6	2022.5	8.418	2.692	3.03		Clay	100.0			9.42	1.01	n.a.	n.a.	0.94	0.922	n.a.	n.a.	n.a.	n.a.	0.00	0.00
24.440	9.760	0.223	2932.8	2031.7	8.164	2.691	3.04		Clay	100.0			9.22	1.01	n.a.	n.a.	0.93	0.922	n.a.	n.a.	n.a.	n.a.	0.00	0.00
24.610	9.470	0.203	2953.2	2041.5	7.831	2.543	3.05		Clay	100.0			8.95	1.01	n.a.	n.a.	0.93	0.923	n.a.	n.a.	n.a.	n.a.	0.00	0.00
24.770	10.240	0.202	2972.4	2050.8	8.537	2.303	2.99		Clay	100.0			9.68	1.01	n.a.	n.a.	0.93	0.923	n.a.	n.a.	n.a.	n.a.	0.00	0.00
24.930	9.970	0.206	2991.6	2060.0	8.228	2.430	3.02		Clay	100.0			9.42	1.01	n.a.	n.a.	0.93	0.924	n.a.	n.a.	n.a.	n.a.	0.00	0.00
25.100	10.390	0.238	3012.0	2069.8	8.585	2.677	3.02		Clay	100.0			9.82	1.01	n.a.	n.a.	0.93	0.924	n.a.	n.a.	n.a.	n.a.	0.00	0.00
25.260	11.660	0.265	3031.2	2079.0	9.759	2.607	2.97		Clay	100.0			11.02	1.00	n.a.	n.a.	0.93	0.925	n.a.	n.a.	n.a.	n.a.	0.00	0.00
25.430	12.360	0.323	3051.6	2088.8	10.374	2.978	2.98		Clay	100.0			11.68	1.00	n.a.	n.a.	0.93	0.925	n.a.	n.a.	n.a.	n.a.	0.00	0.00
25.590	13.060	0.271	3070.8	2098.0	10.986	2.351	2.90		Clay	95.3			12.34	1.00	n.a.	n.a.	0.93	0.925	n.a.	n.a.	n.a.	n.a.	0.00	0.00
25.750	12.980	0.238	3090.0	2107.2	10.853	2.080	2.88		Clay	93.4			12.27	1.00	n.a.	n.a.	0.93	0.926	n.a.	n.a.	n.a.	n.a.	0.00	0.00
25.920	11.930	0.213	3110.4	2117.0	9.801	2.048	2.91		Clay	96.1			11.28	1.00	n.a.	n.a.	0.93	0.926	n.a.	n.a.	n.a.	n.a.	0.00	0.00
26.080	11.770	0.200	3129.6	2126.2	9.599	1.963	2.91		Clay	95.9			11.12	1.00	n.a.	n.a.	0.93	0.927	n.a.	n.a.	n.a.	n.a.	0.00	0.00
26.250	12.590	0.207	3150.0	2136.0	10.314	1.878	2.88		Clay	93.0			11.90	1.00	n.a.	n.a.	0.93	0.927	n.a.	n.a.	n.a.	n.a.	0.00	0.00
26.410	14.150	0.224	3169.2	2145.2	11.715	1.781	2.82		Clay	88.3			13.37	1.00	n.a.	n.a.	0.93	0.927	n.a.	n.a.	n.a.	n.a.	0.00	0.00
26.570	15.010	0.241	3188.4	2154.4	12.454	1.796	2.80		Clay	86.6			14.19	1.00	n.a.	n.a.	0.93	0.928	n.a.	n.a.	n.a.	n.a.	0.00	0.00
26.740	15.710	0.282	3208.8	2164.2	13.035	1.999	2.80		Clay	87.3			14.85	0.99	n.a.	n.a.	0.93	0.928	n.a.	n.a.	n.a.	n.a.	0.00	0.00
26.900	17.240	0.344	3228.0	2173.4	14.379	2.203	2.79		Clay	86.3			16.29	0.99	n.a.	n.a.	0.93	0.928	n.a.	n.a.	n.a.	n.a.	0.00	0.00
27.070	20.560	0.445	3248.4	2183.2	17.347	2.348	2.74		Clay	82.2			19.43	0.99	n.a.	n.a.	0.92	0.929	n.a.	n.a.	n.a.	n.a.	0.00	0.00
27.230	24.050	0.584	3267.6	2192.4	20.449	2.606	2.71		Clay	79.7			22.73	0.99	n.a.	n.a.	0.92	0.929	n.a.	n.a.	n.a.	n.a.	0.00	0.00
27.400	24.850	0.696	3288.0	2202.2	21.075	3.001	2.74		Clay	81.9			23.49	0.99	n.a.	n.a.	0.92	0.929	n.a.	n.a.	n.a.	n.a.	0.00	0.00
27.560	24.440	0.740	3307.2	2211.5	20.608	3.245	2.77		Clay	84.2			23.10	0.99	n.a.	n.a.	0.92	0.929	n.a.	n.a.	n.a.	n.a.	0.00	0.00
27.720	22.890	0.799	3326.4	2220.7	19.117	3.766	2.83		Clay	89.5			21.64	0.99	n.a.	n.a.	0.92	0.930	n.a.	n.a.	n.a.	n.a.	0.00	0.00
27.890	22.530	0.813	3346.8	2230.5	18.702	3.900	2.85		Clay	90.8			21.29	0.99	n.a.	n.a.	0.92	0.930	n.a.	n.a.	n.a.	n.a.	0.00	0.00
28.050	23.300	0.828	3366.0	2239.7	19.304	3.831	2.83		Clay	89.6			22.02	0.99	n.a.	n.a.	0.92	0.930	n.a.	n.a.	n.a.	n.a.	0.00	0.00
28.220	23.420	0.733	3386.4	2249.5	19.317	3.374	2.80		Clay	86.8			22.14	0.98	n.a.	n.a.	0.92	0.930	n.a.	n.a.	n.a.	n.a.	0.00	0.00
28.380	22.660	0.676	3405.6	2258.7	18.557	3.226	2.80		Clay	86.9			21.42	0.98	n.a.	n.a.	0.92	0.931	n.a.	n.a.	n.a.	n.a.	0.00	0.00
28.540	20.910	0.632	3424.8	2267.9	16.930	3.292	2.84		Clay	89.9			19.76	0.98	n.a.	n.a.	0.92	0.931	n.a.	n.a.	n.a.	n.a.	0.00	0.00
28.710	20.570	0.700	3445.2	2277.7	16.550	3.715	2.88		Clay	93.1			19.44	0.98	n.a.	n.a.	0.92	0.931	n.a.	n.a.	n.a.	n.a.	0.00	0.00
28.870	23.040	0.770	3464.4	2286.9	18.635	3.615	2.83		Clay	89.3			21.78	0.98	n.a.	n.a.	0.92	0.931	n.a.	n.a.	n.a.	n.a.	0.00	0.00
29.040	24.060	0.772	3484.8	2296.7	19.434	3.460	2.80		Clay	87.2			22.74	0.98	n.a.	n.a.	0.92	0.931	n.a.	n.a.	n.a.	n.a.	0.00	0.00
29.200	23.370	0.784	3504.0	2305.9	18.750	3.628	2.83		Clay	89.2			22.09	0.98	n.a.	n.a.	0.92	0.931	n.a.	n.a.	n.a.	n.a.	0.00	0.00
29.360	23.680	0.771	3523.2	2315.1	18.935	3.515	2.82		Clay	88.2			22.38	0.98	n.a.	n.a.	0.92	0.932	n.a.	n.a.	n.a.	n.a.	0.00	0.00
29.530	24.690	0.787	3543.6	2324.9	19.715	3.434	2.80		Clay	86.6			23.34	0.98	n.a.	n.a.	0.91	0.932	n.a.	n.a.	n.a.	n.a.	0.00	0.00
29.690	25.790	0.826	3562.8	2334.1	20.572	3.438	2.78		Clay	85.5			24.38	0.97	n.a.	n.a.	0.91	0.932	n.a.	n.a.	n.a.	n.a.	0.00	0.00
29.860	25.950	0.855	3583.2	2343.9	20.614	3.541	2.79		Clay	86.1			24.53	0.97	n.a.	n.a.	0.91	0.932	n.a.	n.a.	n.a.	n.a.	0.00	0.00
30.020	26.250	0.848	3602.4	2353.2	20.780	3.470	2.78		Clay	85.4			24.81	0.97	n.a.	n.a.	0.91	0.932	n.a.	n.a.	n.a.	n.a.	0.00	0.00
30.180	26.090	0.796	3621.6	2362.4	20.555	3.277	2.77		Clay	84.5			24.66	0.97	n.a.	n.a.	0.91	0.932	n.a.	n.a.	n.a.	n.a.	0.00	0.00
30.350	26.370	0.669	3642.0	2372.2	20.698	2.726	2.72		Clay	80.3			24.92	0.97	n.a.	n.a.	0.91	0.932	n.a.	n.a.	n.a.	n.a.	0.00	0.00
30.510	24.500	0.541	3661.2	2381.4	19.039	2.386	2.71		Clay	79.9			23.16	0.97	n.a.	n.a.	0.91	0.932	n.a.	n.a.	n.a.	n.a.	0.00	0.00
30.680	19.380	0.464	3681.6	2391.2	14.670	2.644	2.83		Clay	89.3			18.32	0.97	n.a.	n.a.	0.91	0.932	n.a.	n.a.	n.a.	n.a.	0.00	0.00
30.840	13.720	0.377	3700.8	2400.4	9.890	3.174	3.01		Clay	100.0			12.97	0.97	n.a.	n.a.	0.91	0.933	n.a.	n.a.	n.a.	n.a.	0.00	0.00
31.000	10.720	0.264	3720.0	2409.6	7.354	2.981	3.11		Clay	100.0			10.13	0.97	n.a.	n.a.	0.91	0.933	n.a.	n.a.	n.a.	n.a.	0.00	0.00
31.170	9.470	0.214	3740.4	2419.4	6.282	2.811	3.15		Clay	100.0			8.95	0.97	n.a.	n.a.	0.91	0.933	n.a.	n.a.	n.a.	n.a.	0.00	0.00
31.330	9.020	0.237	3759.6	2428.6	5.880	3.325	3.21		Clay	100.0			8.53	0.96	n.a.	n.a.	0.91	0.933	n.a.	n.a.	n.a.	n.a.	0.00	0.00
31.500	9.500	0.284	3780.0	2438.4	6.242	3.725	3.22		Clay	100.0			8.98	0.96	n.a.	n.a.	0.91	0.933	n.a.	n.a.	n.a.	n.a.	0.00	0.00
31.660	10.490	0.323	3799.2	2447.6	7.019	3.765	3.18		Clay	100.0			9.91	0.96	n.a.	n.a.	0.91	0.933	n.a.	n.a.	n.a.	n.a.	0.00	0.00
31.820	11.980	0.392	3818.4	2456.8	8.198	3.890	3.13		Clay	100.0			11.32	0.96	n.a.	n.a.	0.91	0.933	n.a.	n.a.	n.a.	n.a.	0.00	0.00
31.990	15.690	0.502	3838.8	2466.6	11.166	3.643	3.01		Clay	100.0			14.83	0.96	n.a.	n.a.	0.90	0.933	n.a.	n.a.	n.a.	n.a.	0.00	0.00
32.150	17.660	0.600	3858.0	2475.8	12.708	3.814	2.97		Clay	100.0			16.69	0.96	n.a.	n.a.	0.90	0.933	n.a.	n.a.	n.a.	n.a.	0.00	0.00
32.320	17.480	0.647	3878.4	2485.6	12.505	4.165	3.00		Clay	100.0			16.52	0.96	n.a.	n.a.	0.90	0.933	n.a.	n.a.	n.a.	n.a.	0.00	0.00
32.480	15.710	0.580	3897.6	2494.8	11.032	4.212	3.05		Clay	100.0			14.85	0.96	n.a.	n.a.	0.90	0.933	n.a.	n.a.	n.a.	n.a.	0.00	0.00
32.640	13.270	0.470	3916.8	2504.1	9.035	4.158	3.11		Clay	100.0			12.54	0.96	n.a.	n.a.	0.90	0.933	n.a.	n.a.	n.a.	n.a.	0.00	0.00
32.810	11.800	0.376	3937.2	2513.9	7.822	3.829	3.14		Clay	100.0			11.15	0.96	n.a.	n.a.	0.90	0.933	n.a.	n.a.	n.a.	n.a.	0.00	0.00
32.970	10.860	0.324	3956.4	2523.1	7.040	3.648	3.17		Clay	100.0			10.26	0.95	n.a.	n.a.	0.90	0.933	n.a.	n.a.	n.a.	n.a.	0.00	0.00

CORNERSTONE EARTH GROUP

CPT No.	7

PGA (A_{max})	0.89

Total Settlement:	0.17	(Inches)

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Depth (ft)	q_c (tsf)	f_s (tsf)	σ_{vc} (psf)	Insitu σ'_{vc} (psf)	Q	F (%)	I_c	Layer "Plastic" PI > 7	Flag Soil Type	Fines (%)	q_{cN} near interfaces (soft layer)	Thin Layer Factor (K_H)	Interpreted q_{cN}	C_N	q_{c1N}	$q_{c1N\text{-}CS}$	Stress Reduction Coeff, r_d	CSR	K_σ for Sand	$CRR_{M=7.5,\ \sigma'vc = 1\ atm}$	CRR	Factor of Safety (CRR/CSR)	Vertical Strain ε_v	Settlement (Inches)
33.140	11.560	0.333	3976.8	2532.9	7.558	3.480	3.13		Clay	100.0			10.93	0.95	n.a.	n.a.	0.90	0.932	n.a.	n.a.	n.a.	n.a.	0.00	0.00
33.300	12.240	0.337	3996.0	2542.1	8.058	3.287	3.10		Clay	100.0			11.57	0.95	n.a.	n.a.	0.90	0.932	n.a.	n.a.	n.a.	n.a.	0.00	0.00
33.460	12.660	0.316	4015.2	2551.3	8.351	2.966	3.06		Clay	100.0			11.97	0.95	n.a.	n.a.	0.90	0.932	n.a.	n.a.	n.a.	n.a.	0.00	0.00
33.630	13.000	0.299	4035.6	2561.1	8.576	2.720	3.03		Clay	100.0			12.29	0.95	n.a.	n.a.	0.90	0.932	n.a.	n.a.	n.a.	n.a.	0.00	0.00
33.790	12.250	0.299	4054.8	2570.3	7.954	2.922	3.07		Clay	100.0			11.58	0.95	n.a.	n.a.	0.90	0.932	n.a.	n.a.	n.a.	n.a.	0.00	0.00
33.960	12.160	0.292	4075.2	2580.1	7.847	2.883	3.07		Clay	100.0			11.49	0.95	n.a.	n.a.	0.90	0.932	n.a.	n.a.	n.a.	n.a.	0.00	0.00
34.120	11.740	0.287	4094.4	2589.3	7.487	2.956	3.10		Clay	100.0			11.10	0.95	n.a.	n.a.	0.90	0.932	n.a.	n.a.	n.a.	n.a.	0.00	0.00
34.280	11.650	0.309	4113.6	2598.5	7.384	3.225	3.12		Clay	100.0			11.01	0.95	n.a.	n.a.	0.90	0.932	n.a.	n.a.	n.a.	n.a.	0.00	0.00
34.450	11.770	0.299	4134.0	2608.3	7.440	3.083	3.11		Clay	100.0			11.12	0.95	n.a.	n.a.	0.89	0.932	n.a.	n.a.	n.a.	n.a.	0.00	0.00
34.610	12.210	0.315	4153.2	2617.5	7.743	3.105	3.10		Clay	100.0			11.54	0.95	n.a.	n.a.	0.89	0.932	n.a.	n.a.	n.a.	n.a.	0.00	0.00
34.780	11.690	0.315	4173.6	2627.3	7.310	3.282	3.13		Clay	100.0			11.05	0.94	n.a.	n.a.	0.89	0.932	n.a.	n.a.	n.a.	n.a.	0.00	0.00
34.940	11.420	0.303	4192.8	2636.5	7.073	3.252	3.14		Clay	100.0			10.79	0.94	n.a.	n.a.	0.89	0.931	n.a.	n.a.	n.a.	n.a.	0.00	0.00
35.100	11.950	0.326	4212.0	2645.8	7.441	3.315	3.13		Clay	100.0			11.29	0.94	n.a.	n.a.	0.89	0.931	n.a.	n.a.	n.a.	n.a.	0.00	0.00
35.270	12.660	0.414	4232.4	2655.6	7.941	3.923	3.15		Clay	100.0			11.97	0.94	n.a.	n.a.	0.89	0.931	n.a.	n.a.	n.a.	n.a.	0.00	0.00
35.430	14.340	0.491	4251.6	2664.8	9.167	4.017	3.10		Clay	100.0			13.55	0.94	n.a.	n.a.	0.89	0.931	n.a.	n.a.	n.a.	n.a.	0.00	0.00
35.600	16.080	0.547	4272.0	2674.6	10.427	3.926	3.05		Clay	100.0			15.20	0.94	n.a.	n.a.	0.89	0.931	n.a.	n.a.	n.a.	n.a.	0.00	0.00
35.760	16.870	0.532	4291.2	2683.8	10.973	3.610	3.01		Clay	100.0			15.95	0.94	n.a.	n.a.	0.89	0.931	n.a.	n.a.	n.a.	n.a.	0.00	0.00
35.930	17.090	0.542	4311.6	2693.6	11.089	3.626	3.01		Clay	100.0			16.15	0.94	n.a.	n.a.	0.89	0.931	n.a.	n.a.	n.a.	n.a.	0.00	0.00
36.090	17.080	0.537	4330.8	2702.8	11.036	3.603	3.01		Clay	100.0			16.14	0.94	n.a.	n.a.	0.89	0.930	n.a.	n.a.	n.a.	n.a.	0.00	0.00
36.250	16.770	0.532	4350.0	2712.0	10.763	3.648	3.02		Clay	100.0			15.85	0.94	n.a.	n.a.	0.89	0.930	n.a.	n.a.	n.a.	n.a.	0.00	0.00
36.420	15.990	0.562	4370.4	2721.8	10.144	4.069	3.07		Clay	100.0			15.11	0.94	n.a.	n.a.	0.89	0.930	n.a.	n.a.	n.a.	n.a.	0.00	0.00
36.580	14.290	0.501	4389.6	2731.0	8.858	4.143	3.12		Clay	100.0			13.51	0.93	n.a.	n.a.	0.89	0.930	n.a.	n.a.	n.a.	n.a.	0.00	0.00
36.750	13.010	0.492	4410.0	2740.8	7.885	4.553	3.19		Clay	100.0			12.30	0.93	n.a.	n.a.	0.89	0.930	n.a.	n.a.	n.a.	n.a.	0.00	0.00
36.910	13.480	0.481	4429.2	2750.0	8.193	4.265	3.16		Clay	100.0			12.74	0.93	n.a.	n.a.	0.88	0.929	n.a.	n.a.	n.a.	n.a.	0.00	0.00
37.070	14.840	0.524	4448.4	2759.2	9.144	4.157	3.11		Clay	100.0			14.03	0.93	n.a.	n.a.	0.88	0.929	n.a.	n.a.	n.a.	n.a.	0.00	0.00
37.240	17.470	0.610	4468.8	2769.0	11.004	4.005	3.04		Clay	100.0			16.51	0.93	n.a.	n.a.	0.88	0.929	n.a.	n.a.	n.a.	n.a.	0.00	0.00
37.400	18.910	0.697	4488.0	2778.2	11.998	4.181	3.02		Clay	100.0			17.87	0.93	n.a.	n.a.	0.88	0.929	n.a.	n.a.	n.a.	n.a.	0.00	0.00
37.570	18.570	0.678	4508.4	2788.0	11.704	4.154	3.02		Clay	100.0			17.55	0.93	n.a.	n.a.	0.88	0.929	n.a.	n.a.	n.a.	n.a.	0.00	0.00
37.730	17.250	0.681	4527.6	2797.2	10.715	4.544	3.08		Clay	100.0			16.30	0.93	n.a.	n.a.	0.88	0.928	n.a.	n.a.	n.a.	n.a.	0.00	0.00
37.890	15.760	0.653	4546.8	2806.5	9.611	4.843	3.13		Clay	100.0			14.90	0.93	n.a.	n.a.	0.88	0.928	n.a.	n.a.	n.a.	n.a.	0.00	0.00
38.060	15.540	0.652	4567.2	2816.3	9.414	4.918	3.14		Clay	100.0			14.69	0.93	n.a.	n.a.	0.88	0.928	n.a.	n.a.	n.a.	n.a.	0.00	0.00
38.220	15.060	0.623	4586.4	2825.5	9.037	4.881	3.16		Clay	100.0			14.23	0.93	n.a.	n.a.	0.88	0.928	n.a.	n.a.	n.a.	n.a.	0.00	0.00
38.390	16.020	0.561	4606.8	2835.3	9.676	4.090	3.09		Clay	100.0			15.14	0.93	n.a.	n.a.	0.88	0.927	n.a.	n.a.	n.a.	n.a.	0.00	0.00
38.550	15.720	0.525	4626.0	2844.5	9.427	3.914	3.08		Clay	100.0			14.86	0.92	n.a.	n.a.	0.88	0.927	n.a.	n.a.	n.a.	n.a.	0.00	0.00
38.710	14.950	0.500	4645.2	2853.7	8.850	3.959	3.11		Clay	100.0			14.13	0.92	n.a.	n.a.	0.88	0.927	n.a.	n.a.	n.a.	n.a.	0.00	0.00
38.880	14.540	0.473	4665.6	2863.5	8.526	3.875	3.12		Clay	100.0			13.74	0.92	n.a.	n.a.	0.88	0.927	n.a.	n.a.	n.a.	n.a.	0.00	0.00
39.040	14.450	0.436	4684.8	2872.7	8.429	3.602	3.10		Clay	100.0			13.66	0.92	n.a.	n.a.	0.88	0.926	n.a.	n.a.	n.a.	n.a.	0.00	0.00
39.210	14.610	0.488	4705.2	2882.5	8.505	3.978	3.12		Clay	100.0			13.81	0.92	n.a.	n.a.	0.87	0.926	n.a.	n.a.	n.a.	n.a.	0.00	0.00
39.370	15.610	0.511	4724.4	2891.7	9.163	3.854	3.09		Clay	100.0			14.75	0.92	n.a.	n.a.	0.87	0.926	n.a.	n.a.	n.a.	n.a.	0.00	0.00
39.530	17.640	0.560	4743.6	2900.9	10.526	3.666	3.03		Clay	100.0			16.67	0.92	n.a.	n.a.	0.87	0.925	n.a.	n.a.	n.a.	n.a.	0.00	0.00
39.700	19.220	0.539	4764.0	2910.7	11.570	3.199	2.96		Clay	99.9			18.17	0.92	n.a.	n.a.	0.87	0.925	n.a.	n.a.	n.a.	n.a.	0.00	0.00
39.860	18.720	0.730	4783.2	2919.9	11.184	4.470	3.06		Clay	100.0			17.69	0.92	n.a.	n.a.	0.87	0.925	n.a.	n.a.	n.a.	n.a.	0.00	0.00
40.030	20.760	0.793	4803.6	2929.7	12.532	4.319	3.01		Clay	100.0			19.62	0.92	n.a.	n.a.	0.87	0.925	n.a.	n.a.	n.a.	n.a.	0.00	0.00
40.190	28.260	0.707	4822.8	2938.9	17.590	2.734	2.77		Clay	84.9			26.71	0.92	n.a.	n.a.	0.87	0.924	n.a.	n.a.	n.a.	n.a.	0.00	0.00
40.350	29.480	0.797	4842.0	2948.2	18.357	2.944	2.78		Clay	85.3			27.86	0.92	n.a.	n.a.	0.87	0.924	n.a.	n.a.	n.a.	n.a.	0.00	0.00
40.520	26.350	1.079	4862.4	2958.0	16.173	4.512	2.94		Clay	98.0			24.91	0.92	n.a.	n.a.	0.87	0.924	n.a.	n.a.	n.a.	n.a.	0.00	0.00
40.680	29.100	1.572	4881.6	2967.2	17.969	5.896	2.98		Clay	100.0			27.50	0.91	n.a.	n.a.	0.87	0.923	n.a.	n.a.	n.a.	n.a.	0.00	0.00
40.850	37.220	1.900	4902.0	2977.0	23.359	5.465	2.87		Clay	92.8			35.18	0.91	n.a.	n.a.	0.87	0.923	n.a.	n.a.	n.a.	n.a.	0.00	0.00
41.010	47.290	1.656	4921.2	2986.2	30.025	3.694	2.68		Clay	77.1			44.70	0.91	n.a.	n.a.	0.87	0.923	n.a.	n.a.	n.a.	n.a.	0.00	0.00
41.170	49.800	1.912	4940.4	2995.4	31.602	4.040	2.69		Clay	77.9			47.07	0.91	n.a.	n.a.	0.87	0.922	n.a.	n.a.	n.a.	n.a.	0.00	0.00
41.340	45.410	1.572	4960.8	3005.2	28.570	3.662	2.69		Clay	78.2			42.92	0.91	n.a.	n.a.	0.87	0.922	n.a.	n.a.	n.a.	n.a.	0.00	0.00
41.500	48.680	1.426	4980.0	3014.4	30.646	3.086	2.62		Clay	72.5			46.01	0.91	n.a.	n.a.	0.86	0.922	n.a.	n.a.	n.a.	n.a.	0.00	0.00
41.670	35.680	1.059	5000.4	3024.2	21.943	3.191	2.74		Clay	82.1			33.72	0.91	n.a.	n.a.	0.86	0.921	n.a.	n.a.	n.a.	n.a.	0.00	0.00
41.830	30.110	1.068	5019.6	3033.4	18.197	3.868	2.86		Clay	91.4			28.46	0.91	n.a.	n.a.	0.86	0.921	n.a.	n.a.	n.a.	n.a.	0.00	0.00
41.990	29.060	1.371	5038.8	3042.6	17.446	5.167	2.95		Clay	99.0			27.47	0.91	n.a.	n.a.	0.86	0.921	n.a.	n.a.	n.a.	n.a.	0.00	0.00
42.160	47.360	1.671	5059.2	3052.4	29.374	3.728	2.69		Clay	77.9			44.76	0.91	n.a.	n.a.	0.86	0.920	n.a.	n.a.	n.a.	n.a.	0.00	0.00
42.320	62.450	2.457	5078.4	3061.6	39.137	4.100	2.62		Clay	72.9			59.03	0.91	n.a.	n.a.	0.86	0.920	n.a.	n.a.	n.a.	n.a.	0.00	0.00
42.490	131.570	2.159	5098.8	3071.4	101.219	1.673	2.06		Sand	27.5	141.94	1.78	252.65	0.91	229.00	305.38	0.86	0.920	0.888	########	########	3468252.43	0.00	0.00
42.650	150.170	1.587	5118.0	3080.6	115.630	1.075	1.88		Sand	13.6		1.78	252.65	0.91	228.81	256.41	0.86	0.919	0.887	287.533	561.293	610.60	0.00	0.00
42.810	119.220	1.991	5137.2	3089.9	91.242	1.707	2.09		Sand	30.6	141.94	1.78	252.65	0.90	228.64	311.45	0.86	0.919	0.886	########	########	#########	0.00	0.00
42.980	77.850	2.521	5157.6	3099.6	58.782	3.349	2.44		Sand	57.9	141.94	1.78	252.65	0.90	228.45	340.10	0.86	0.919	0.885	########	########	#########	0.00	0.00
43.140	35.830	2.709	5176.8	3108.9	21.385	8.150	3.02		Clay	100.0			33.87	0.90	n.a.	n.a.	0.86	0.918	n.a.	n.a.	n.a.	n.a.	0.00	0.00
43.310	71.240	2.629	5197.2	3118.7	53.441	3.830	2.51		Sand	63.6	203.83		203.83	0.90	184.00	285.86	0.86	0.918	0.884	28399.510	55208.725	60156.37	0.00	0.00
43.470	108.260	2.409	5216.4	3127.9	82.134	2.280	2.22		Sand	40.3	203.83		203.83	0.90	183.86	270.42	0.86	0.917	0.883	2079.467	4038.441	4402.14	0.00	0.00
43.640	135.960	2.661	5236.8	3137.7	103.499	1.995	2.10		Sand	31.3	203.83		203.83	0.90	183.71	258.54	0.86	0.917	0.882	379.788	736.786	803.49	0.00	0.00
43.800	150.900	2.607	5256.0	3146.9	114.919	1.758	2.03		Sand	25.6	203.83		203.83	0.90	182.95	246.54	0.85	0.917	0.881	87.266	169.127	184.51	0.00	0.00
43.960	184.590	1.988	5275.2	3156.1	140.817	1.092	1.82		Sand	9.0	203.83		203.83	0.87	177.07	183.62	0.85	0.916	0.912	0.843	1.655	1.81	0.00	0.00

CORNERSTONE EARTH GROUP

CPT No.	7

PGA (A_{max})	0.89

Total Settlement:	0.17	(Inches)

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Depth (ft)	q_c (tsf)	f_s (tsf)	σ_{vc} (psf)	Insitu σ'_{vc} (psf)	Q	F (%)	I_c	Layer "Plastic" PI > 7	Flag Soil Type	Fines (%)	q_{cN} near interfaces (soft layer)	Thin Layer Factor (K_H)	Interpreted q_{cN}	C_N	q_{c1N}	$q_{c1N\text{-}CS}$	Stress Reduction Coeff, r_d	CSR	K_σ for Sand	$CRR_{M=7.5,\ \sigma'vc = 1\ atm}$	CRR	Factor of Safety (CRR/CSR)	Vertical Strain ε_v	Settlement (Inches)
44.130	215.650	1.898	5295.6	3165.9	164.592	0.891	1.71		Sand	0.2			203.83	0.86	176.11	176.11	0.85	0.916	0.918	0.625	1.162	1.27	0.00	0.01
44.290	229.180	1.714	5314.8	3175.1	174.785	0.757	1.65		Sand	0.0			216.62	0.87	188.28	188.28	0.85	0.915	0.906	1.037	2.068	2.26	0.00	0.00
44.460	225.230	0.957	5335.2	3184.9	171.465	0.430	1.50		Sand	0.0			212.88	0.87	184.43	184.43	0.85	0.915	0.909	0.873	1.720	1.88	0.00	0.00
44.620	219.820	1.339	5354.4	3194.1	167.048	0.617	1.60		Sand	0.0			207.77	0.86	179.27	179.27	0.85	0.915	0.913	0.705	1.339	1.46	0.00	0.00
44.780	236.820	1.906	5373.6	3203.3	179.860	0.814	1.66		Sand	0.0			223.84	0.87	194.67	194.67	0.85	0.914	0.897	1.418	2.799	3.06	0.00	0.00
44.950	248.040	1.619	5394.0	3213.1	188.184	0.660	1.58		Sand	0.0			234.44	0.87	204.84	204.84	0.85	0.914	0.884	2.510	4.880	5.34	0.00	0.00
45.110	277.080	1.278	5413.2	3222.3	210.150	0.466	1.45		Sand	0.0			261.89	0.89	231.88	231.88	0.85	0.913	0.874	19.475	37.439	40.99	0.00	0.00
45.280	278.700	0.929	5433.6	3232.1	211.062	0.336	1.37		Sand	0.0			263.42	0.89	233.19	233.19	0.85	0.913	0.873	21.986	42.222	46.25	0.00	0.00
45.440	268.620	0.675	5452.8	3241.3	203.057	0.254	1.32		Sand	0.0			253.89	0.88	223.45	223.45	0.85	0.913	0.872	9.374	17.984	19.71	0.00	0.00
45.600	239.130	0.531	5472.0	3250.6	180.273	0.225	1.34		Sand	0.0	254.89		254.89	0.88	224.22	224.22	0.85	0.912	0.871	9.990	19.147	20.99	0.00	0.00
45.770	193.280	0.783	5492.4	3260.4	145.081	0.411	1.55		Sand	0.0	254.89		254.89	0.88	223.99	223.99	0.85	0.912	0.870	9.804	18.771	20.59	0.00	0.00
45.930	134.170	1.337	5511.6	3269.6	99.924	1.017	1.92		Sand	16.2	254.89		254.89	0.89	227.25	266.43	0.85	0.911	0.869	1141.525	2183.524	2396.17	0.00	0.00
46.100	67.720	1.055	5532.0	3279.4	49.316	1.624	2.28		Sand	45.5	254.89		254.89	0.89	227.07	329.48	0.84	0.911	0.869	#########	########	#########	0.00	0.00
46.260	41.140	1.082	5551.2	3288.6	23.332	2.821	2.68		Clay	77.8			38.88	0.89	n.a.	n.a.	0.84	0.910	n.a.	n.a.	n.a.	n.a.	0.00	0.00
46.420	22.030	0.655	5570.4	3297.8	11.671	3.405	2.97		Clay	100.0			20.82	0.89	n.a.	n.a.	0.84	0.910	n.a.	n.a.	n.a.	n.a.	0.00	0.00
46.590	16.750	0.510	5590.8	3307.6	8.438	3.655	3.11		Clay	100.0			15.83	0.89	n.a.	n.a.	0.84	0.909	n.a.	n.a.	n.a.	n.a.	0.00	0.00
46.750	16.700	0.531	5610.0	3316.8	8.379	3.824	3.12		Clay	100.0			15.78	0.89	n.a.	n.a.	0.84	0.909	n.a.	n.a.	n.a.	n.a.	0.00	0.00
46.920	17.850	0.568	5630.4	3326.6	9.039	3.775	3.09		Clay	100.0			16.87	0.89	n.a.	n.a.	0.84	0.909	n.a.	n.a.	n.a.	n.a.	0.00	0.00
47.080	18.540	0.596	5649.6	3335.8	9.422	3.790	3.08		Clay	100.0			17.52	0.89	n.a.	n.a.	0.84	0.908	n.a.	n.a.	n.a.	n.a.	0.00	0.00
47.240	18.890	0.612	5668.8	3345.0	9.600	3.811	3.07		Clay	100.0			17.85	0.89	n.a.	n.a.	0.84	0.908	n.a.	n.a.	n.a.	n.a.	0.00	0.00
47.410	18.440	0.623	5689.2	3354.8	9.297	3.994	3.09		Clay	100.0			17.43	0.89	n.a.	n.a.	0.84	0.907	n.a.	n.a.	n.a.	n.a.	0.00	0.00
47.570	18.440	0.618	5708.4	3364.0	9.266	3.964	3.09		Clay	100.0			17.43	0.88	n.a.	n.a.	0.84	0.907	n.a.	n.a.	n.a.	n.a.	0.00	0.00
47.740	20.140	0.636	5728.8	3373.8	10.241	3.681	3.04		Clay	100.0			19.04	0.88	n.a.	n.a.	0.84	0.906	n.a.	n.a.	n.a.	n.a.	0.00	0.00
47.900	19.890	0.598	5748.0	3383.0	10.060	3.517	3.03		Clay	100.0			18.80	0.88	n.a.	n.a.	0.84	0.906	n.a.	n.a.	n.a.	n.a.	0.00	0.00
48.060	17.900	0.518	5767.2	3392.3	8.853	3.448	3.07		Clay	100.0			16.92	0.88	n.a.	n.a.	0.84	0.905	n.a.	n.a.	n.a.	n.a.	0.00	0.00
48.230	18.420	0.446	5787.6	3402.0	9.128	2.873	3.02		Clay	100.0			17.41	0.88	n.a.	n.a.	0.84	0.905	n.a.	n.a.	n.a.	n.a.	0.00	0.00
48.390	18.720	0.422	5806.8	3411.3	9.273	2.669	3.00		Clay	100.0			17.69	0.88	n.a.	n.a.	0.83	0.904	n.a.	n.a.	n.a.	n.a.	0.00	0.00
48.560	18.710	0.425	5827.2	3421.1	9.235	2.689	3.00		Clay	100.0			17.68	0.88	n.a.	n.a.	0.83	0.904	n.a.	n.a.	n.a.	n.a.	0.00	0.00
48.720	19.240	0.428	5846.4	3430.3	9.513	2.623	2.98		Clay	100.0			18.19	0.88	n.a.	n.a.	0.83	0.904	n.a.	n.a.	n.a.	n.a.	0.00	0.00
48.880	19.630	0.412	5865.6	3439.5	9.709	2.468	2.96		Clay	99.8			18.55	0.88	n.a.	n.a.	0.83	0.903	n.a.	n.a.	n.a.	n.a.	0.00	0.00
49.050	19.440	0.371	5886.0	3449.3	9.565	2.251	2.94		Clay	98.5			18.37	0.88	n.a.	n.a.	0.83	0.903	n.a.	n.a.	n.a.	n.a.	0.00	0.00
49.210	17.910	0.327	5905.2	3458.5	8.650	2.189	2.97		Clay	100.0			16.93	0.88	n.a.	n.a.	0.83	0.902	n.a.	n.a.	n.a.	n.a.	0.00	0.00
49.380	15.990	0.316	5925.6	3468.3	7.512	2.424	3.05		Clay	100.0			15.11	0.88	n.a.	n.a.	0.83	0.902	n.a.	n.a.	n.a.	n.a.	0.00	0.00
49.540	15.240	0.316	5944.8	3477.5	7.055	2.577	3.09		Clay	100.0			14.40	0.88	n.a.	n.a.	0.83	0.901	n.a.	n.a.	n.a.	n.a.	0.00	0.00
49.700	15.500	0.320	5964.0	3486.7	7.180	2.552	3.08		Clay	100.0			14.65	0.88	n.a.	n.a.	0.83	0.901	n.a.	n.a.	n.a.	n.a.	0.00	0.00
49.870	17.730	0.337	5984.4	3496.5	8.430	2.287	2.99		Clay	100.0			16.76	0.88	n.a.	n.a.	0.83	0.900	n.a.	n.a.	n.a.	n.a.	0.00	0.00
50.030	18.140	0.461	6003.6	3505.7	8.636	3.047	3.05		Clay	100.0			17.15	0.88	n.a.	n.a.	0.83	0.900	n.a.	n.a.	n.a.	n.a.	0.00	0.00
50.200	19.530	0.414	6024.0	3515.5	9.397	2.506	2.98		Clay	100.0			18.46	0.87	n.a.	n.a.	0.83	0.899	n.a.	n.a.	n.a.	n.a.	0.00	0.00
50.360	20.050	0.499	6043.2	3524.7	9.662	2.929	3.00		Clay	100.0			18.95	0.87	n.a.	n.a.	0.83	0.899	n.a.	n.a.	n.a.	n.a.	0.00	0.00
50.520	20.190	0.472	6062.4	3534.0	9.711	2.753	2.99		Clay	100.0			19.08	0.87	n.a.	n.a.	0.83	0.898	n.a.	n.a.	n.a.	n.a.	0.00	0.00
50.690	20.910	0.520	6082.8	3543.7	10.085	2.908	2.99		Clay	100.0			19.76	0.87	n.a.	n.a.	0.82	0.898	n.a.	n.a.	n.a.	n.a.	0.00	0.00
50.850	20.600	0.552	6102.0	3553.0	9.879	3.144	3.01		Clay	100.0			19.47	0.87	n.a.	n.a.	0.82	0.897	n.a.	n.a.	n.a.	n.a.	0.00	0.00
51.020	20.510	0.580	6122.4	3562.8	9.795	3.326	3.03		Clay	100.0			19.39	0.87	n.a.	n.a.	0.82	0.897	n.a.	n.a.	n.a.	n.a.	0.00	0.00
51.180	20.880	0.541	6141.6	3572.0	9.972	3.035	3.00		Clay	100.0			19.74	0.87	n.a.	n.a.	0.82	0.896	n.a.	n.a.	n.a.	n.a.	0.00	0.00
51.350	20.740	0.559	6162.0	3581.8	9.861	3.164	3.02		Clay	100.0			19.60	0.87	n.a.	n.a.	0.82	0.896	n.a.	n.a.	n.a.	n.a.	0.00	0.00
51.510	20.380	0.533	6181.2	3591.0	9.629	3.080	3.02		Clay	100.0			19.26	0.87	n.a.	n.a.	0.82	0.895	n.a.	n.a.	n.a.	n.a.	0.00	0.00
51.670	20.790	0.512	6200.4	3600.2	9.827	2.896	2.99		Clay	100.0			19.65	0.87	n.a.	n.a.	0.82	0.895	n.a.	n.a.	n.a.	n.a.	0.00	0.00
51.840	19.760	0.480	6220.8	3610.0	9.224	2.883	3.02		Clay	100.0			18.68	0.87	n.a.	n.a.	0.82	0.894	n.a.	n.a.	n.a.	n.a.	0.00	0.00
52.000	19.820	0.445	6240.0	3619.2	9.229	2.666	3.00		Clay	100.0			18.73	0.87	n.a.	n.a.	0.82	0.894	n.a.	n.a.	n.a.	n.a.	0.00	0.00
52.170	19.980	0.470	6260.4	3629.0	9.286	2.786	3.01		Clay	100.0			18.88	0.87	n.a.	n.a.	0.82	0.893	n.a.	n.a.	n.a.	n.a.	0.00	0.00
52.330	20.980	0.548	6279.6	3638.2	9.807	3.069	3.01		Clay	100.0			19.83	0.87	n.a.	n.a.	0.82	0.893	n.a.	n.a.	n.a.	n.a.	0.00	0.00
52.490	22.730	0.558	6298.8	3647.4	10.737	2.847	2.96		Clay	99.7			21.48	0.87	n.a.	n.a.	0.82	0.892	n.a.	n.a.	n.a.	n.a.	0.00	0.00
52.660	23.600	0.555	6319.2	3657.2	11.178	2.717	2.93		Clay	97.6			22.31	0.87	n.a.	n.a.	0.82	0.891	n.a.	n.a.	n.a.	n.a.	0.00	0.00
52.820	23.060	0.508	6338.4	3666.4	10.850	2.554	2.93		Clay	97.3			21.80	0.87	n.a.	n.a.	0.82	0.891	n.a.	n.a.	n.a.	n.a.	0.00	0.00
52.990	21.460	0.504	6358.8	3676.2	9.945	2.757	2.98		Clay	100.0			20.28	0.86	n.a.	n.a.	0.81	0.890	n.a.	n.a.	n.a.	n.a.	0.00	0.00
53.150	21.950	0.559	6378.0	3685.4	10.181	2.980	2.99		Clay	100.0			20.75	0.86	n.a.	n.a.	0.81	0.890	n.a.	n.a.	n.a.	n.a.	0.00	0.00
53.310	22.940	0.674	6397.2	3694.7	10.686	3.414	3.01		Clay	100.0			21.68	0.86	n.a.	n.a.	0.81	0.889	n.a.	n.a.	n.a.	n.a.	0.00	0.00
53.480	25.140	0.877	6417.6	3704.4	11.840	3.998	3.01		Clay	100.0			23.76	0.86	n.a.	n.a.	0.81	0.889	n.a.	n.a.	n.a.	n.a.	0.00	0.00
53.640	27.330	0.840	6436.8	3713.7	12.985	3.484	2.94		Clay	98.4			25.83	0.86	n.a.	n.a.	0.81	0.888	n.a.	n.a.	n.a.	n.a.	0.00	0.00
53.810	29.450	0.874	6457.2	3723.5	14.084	3.333	2.90		Clay	95.2			27.84	0.86	n.a.	n.a.	0.81	0.888	n.a.	n.a.	n.a.	n.a.	0.00	0.00
53.970	28.200	0.896	6476.4	3732.7	13.375	3.587	2.94		Clay	98.2			26.65	0.86	n.a.	n.a.	0.81	0.887	n.a.	n.a.	n.a.	n.a.	0.00	0.00
54.130	28.940	0.716	6495.6	3741.9	13.732	2.788	2.87		Clay	92.3			27.35	0.86	n.a.	n.a.	0.81	0.887	n.a.	n.a.	n.a.	n.a.	0.00	0.00
54.300	29.270	0.997	6516.0	3751.7	13.867	3.834	2.94		Clay	98.6			27.67	0.86	n.a.	n.a.	0.81	0.886	n.a.	n.a.	n.a.	n.a.	0.00	0.00
54.460	25.930	1.190	6535.2	3760.9	12.052	5.253	3.08		Clay	100.0			24.51	0.86	n.a.	n.a.	0.81	0.886	n.a.	n.a.	n.a.	n.a.	0.00	0.00
54.630	27.480	1.702	6555.6	3770.7	12.837	7.033	3.14		Clay	100.0			25.97	0.86	n.a.	n.a.	0.81	0.885	n.a.	n.a.	n.a.	n.a.	0.00	0.00
54.790	47.850	2.204	6574.8	3779.9	23.579	4.946	2.84		Clay	90.2			45.23	0.86	n.a.	n.a.	0.81	0.885	n.a.	n.a.	n.a.	n.a.	0.00	0.00
54.950	64.170	2.254	6594.0	3789.1	32.130	3.703	2.66		Clay	75.5			60.65	0.86	n.a.	n.a.	0.81	0.884	n.a.	n.a.	n.a.	n.a.	0.00	0.00

CORNERSTONE EARTH GROUP

CPT No.	7

PGA (A_{max})	0.89

Total Settlement:	0.17	(Inches)

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Depth (ft)	q_c (tsf)	f_s (tsf)	σ_{vc} (psf)	Insitu σ'_{vc} (psf)	Q	F (%)	I_c	Layer "Plastic" PI > 7	Flag Soil Type	Fines (%)	q_{cN} near interfaces (soft layer)	Thin Layer Factor (K_H)	Interpreted q_{cN}	C_N	q_{c1N}	$q_{c1N\text{-}CS}$	Stress Reduction Coeff, r_d	CSR	K_σ for Sand	$CRR_{M=7.5,\ \sigma'vc = 1\ atm}$	CRR	Factor of Safety (CRR/CSR)	Vertical Strain ε_v	Settlement (Inches)
55.120	65.580	1.816	6614.4	3798.9	43.928	2.917	2.49		Sand	61.8			61.98	0.76	46.85	109.20	0.81	0.883	0.933	0.151	0.185	0.21	0.03	0.00
55.280	48.310	1.808	6633.6	3808.1	23.630	4.019	2.78		Clay	85.3			45.66	0.86	n.a.	n.a.	0.80	0.883	n.a.	n.a.	n.a.	n.a.	0.00	0.00
55.450	40.380	2.301	6654.0	3817.9	19.410	6.209	2.97		Clay	100.0			38.17	0.86	n.a.	n.a.	0.80	0.882	n.a.	n.a.	n.a.	n.a.	0.00	0.00
55.610	49.320	2.138	6673.2	3827.1	24.030	4.649	2.82		Clay	88.2			46.62	0.86	n.a.	n.a.	0.80	0.882	n.a.	n.a.	n.a.	n.a.	0.00	0.00
55.770	92.700	1.774	6692.4	3836.4	62.723	1.985	2.26		Sand	43.7			87.62	0.77	67.37	127.94	0.80	0.881	0.921	0.191	0.255	0.29	0.02	0.00
55.940	117.630	1.811	6712.8	3846.1	80.113	1.585	2.11		Sand	32.1			111.18	0.78	86.69	142.14	0.80	0.881	0.911	0.244	0.352	0.40	0.02	0.00
56.100	119.470	1.992	6732.0	3855.4	81.299	1.715	2.13		Sand	33.6			112.92	0.78	88.28	145.72	0.80	0.880	0.908	0.263	0.386	0.44	0.02	0.00
56.270	98.160	2.084	6752.4	3865.2	66.286	2.198	2.27		Sand	44.7			92.78	0.77	71.56	133.77	0.80	0.880	0.916	0.210	0.288	0.33	0.02	0.00
56.430	52.760	1.612	6771.6	3874.4	25.488	3.265	2.70		Clay	78.6			49.87	0.85	n.a.	n.a.	0.80	0.879	n.a.	n.a.	n.a.	n.a.	0.00	0.00
56.590	34.050	1.198	6790.8	3883.6	15.787	3.909	2.91		Clay	95.5			32.18	0.85	n.a.	n.a.	0.80	0.879	n.a.	n.a.	n.a.	n.a.	0.00	0.00
56.760	23.810	0.921	6811.2	3893.4	10.482	4.515	3.08		Clay	100.0			22.50	0.85	n.a.	n.a.	0.80	0.878	n.a.	n.a.	n.a.	n.a.	0.00	0.00
56.920	20.730	0.706	6830.4	3902.6	8.873	4.079	3.12		Clay	100.0			19.59	0.85	n.a.	n.a.	0.80	0.877	n.a.	n.a.	n.a.	n.a.	0.00	0.00
57.090	20.750	0.678	6850.8	3912.4	8.856	3.915	3.11		Clay	100.0			19.61	0.85	n.a.	n.a.	0.80	0.877	n.a.	n.a.	n.a.	n.a.	0.00	0.00
57.250	20.310	0.661	6870.0	3921.6	8.606	3.916	3.12		Clay	100.0			19.20	0.85	n.a.	n.a.	0.80	0.876	n.a.	n.a.	n.a.	n.a.	0.00	0.00
57.410	20.660	0.653	6889.2	3930.8	8.759	3.793	3.10		Clay	100.0			19.53	0.85	n.a.	n.a.	0.80	0.876	n.a.	n.a.	n.a.	n.a.	0.00	0.00
57.580	20.930	0.685	6909.6	3940.6	8.869	3.917	3.11		Clay	100.0			19.78	0.85	n.a.	n.a.	0.79	0.875	n.a.	n.a.	n.a.	n.a.	0.00	0.00
57.740	21.150	0.695	6928.8	3949.8	8.955	3.931	3.10		Clay	100.0			19.99	0.85	n.a.	n.a.	0.79	0.875	n.a.	n.a.	n.a.	n.a.	0.00	0.00
57.910	21.440	0.721	6949.2	3959.6	9.074	4.012	3.10		Clay	100.0			20.26	0.85	n.a.	n.a.	0.79	0.874	n.a.	n.a.	n.a.	n.a.	0.00	0.00
58.070	21.500	0.718	6968.4	3968.8	9.079	3.983	3.10		Clay	100.0			20.32	0.85	n.a.	n.a.	0.79	0.873	n.a.	n.a.	n.a.	n.a.	0.00	0.00
58.230	22.210	0.704	6987.6	3978.0	9.410	3.762	3.08		Clay	100.0			20.99	0.85	n.a.	n.a.	0.79	0.873	n.a.	n.a.	n.a.	n.a.	0.00	0.00
58.400	22.400	0.733	7008.0	3987.8	9.477	3.879	3.08		Clay	100.0			21.17	0.85	n.a.	n.a.	0.79	0.872	n.a.	n.a.	n.a.	n.a.	0.00	0.00
58.560	23.480	0.718	7027.2	3997.1	9.991	3.594	3.04		Clay	100.0			22.19	0.85	n.a.	n.a.	0.79	0.872	n.a.	n.a.	n.a.	n.a.	0.00	0.00
58.730	24.020	0.749	7047.6	4006.8	10.231	3.652	3.04		Clay	100.0			22.70	0.84	n.a.	n.a.	0.79	0.871	n.a.	n.a.	n.a.	n.a.	0.00	0.00
58.890	24.210	0.779	7066.8	4016.1	10.297	3.769	3.04		Clay	100.0			22.88	0.84	n.a.	n.a.	0.79	0.871	n.a.	n.a.	n.a.	n.a.	0.00	0.00
59.060	24.190	0.732	7087.2	4025.9	10.257	3.544	3.03		Clay	100.0			22.86	0.84	n.a.	n.a.	0.79	0.870	n.a.	n.a.	n.a.	n.a.	0.00	0.00
59.220	24.160	0.722	7106.4	4035.1	10.214	3.503	3.03		Clay	100.0			22.84	0.84	n.a.	n.a.	0.79	0.869	n.a.	n.a.	n.a.	n.a.	0.00	0.00
59.380	23.190	0.777	7125.6	4044.3	9.706	3.960	3.08		Clay	100.0			21.92	0.84	n.a.	n.a.	0.79	0.869	n.a.	n.a.	n.a.	n.a.	0.00	0.00
59.550	23.230	0.767	7146.0	4054.1	9.697	3.899	3.07		Clay	100.0			21.96	0.84	n.a.	n.a.	0.79	0.868	n.a.	n.a.	n.a.	n.a.	0.00	0.00
59.710	22.140	0.694	7165.2	4063.3	9.134	3.738	3.08		Clay	100.0			20.93	0.84	n.a.	n.a.	0.79	0.868	n.a.	n.a.	n.a.	n.a.	0.00	0.00
59.880	21.120	0.629	7185.6	4073.1	8.606	3.587	3.09		Clay	100.0			19.96	0.84	n.a.	n.a.	0.78	0.867	n.a.	n.a.	n.a.	n.a.	0.00	0.00
60.040	20.790	0.586	7204.8	4082.3	8.421	3.408	3.09		Clay	100.0			19.65	0.84	n.a.	n.a.	0.78	0.867	n.a.	n.a.	n.a.	n.a.	0.00	0.00
60.200	20.700	0.562	7224.0	4091.5	8.353	3.290	3.08		Clay	100.0			19.57	0.84	n.a.	n.a.	0.78	0.866	n.a.	n.a.	n.a.	n.a.	0.00	0.00
60.370	20.850	0.573	7244.4	4101.3	8.401	3.325	3.08		Clay	100.0			19.71	0.84	n.a.	n.a.	0.78	0.865	n.a.	n.a.	n.a.	n.a.	0.00	0.00
60.530	21.190	0.571	7263.6	4110.5	8.543	3.251	3.07		Clay	100.0			20.03	0.84	n.a.	n.a.	0.78	0.865	n.a.	n.a.	n.a.	n.a.	0.00	0.00
60.700	21.750	0.563	7284.0	4120.3	8.790	3.108	3.05		Clay	100.0			20.56	0.84	n.a.	n.a.	0.78	0.864	n.a.	n.a.	n.a.	n.a.	0.00	0.00
60.860	22.130	0.554	7303.2	4129.5	8.949	3.000	3.04		Clay	100.0			20.92	0.84	n.a.	n.a.	0.78	0.864	n.a.	n.a.	n.a.	n.a.	0.00	0.00
61.020	21.920	0.614	7322.4	4138.8	8.823	3.363	3.07		Clay	100.0			20.72	0.84	n.a.	n.a.	0.78	0.863	n.a.	n.a.	n.a.	n.a.	0.00	0.00
61.190	22.010	0.658	7342.8	4148.5	8.841	3.587	3.09		Clay	100.0			20.80	0.84	n.a.	n.a.	0.78	0.863	n.a.	n.a.	n.a.	n.a.	0.00	0.00
61.350	24.420	0.628	7362.0	4157.8	9.976	3.026	3.00		Clay	100.0			23.08	0.84	n.a.	n.a.	0.78	0.862	n.a.	n.a.	n.a.	n.a.	0.00	0.00
61.520	23.320	0.593	7382.4	4167.6	9.420	3.019	3.02		Clay	100.0			22.04	0.84	n.a.	n.a.	0.78	0.861	n.a.	n.a.	n.a.	n.a.	0.00	0.00
61.680	22.820	0.535	7401.6	4176.8	9.155	2.797	3.01		Clay	100.0			21.57	0.84	n.a.	n.a.	0.78	0.861	n.a.	n.a.	n.a.	n.a.	0.00	0.00
61.840	24.400	0.537	7420.8	4186.0	9.885	2.597	2.97		Clay	100.0			23.06	0.84	n.a.	n.a.	0.78	0.860	n.a.	n.a.	n.a.	n.a.	0.00	0.00
62.010	23.650	0.548	7441.2	4195.8	9.500	2.750	2.99		Clay	100.0			22.35	0.83	n.a.	n.a.	0.78	0.860	n.a.	n.a.	n.a.	n.a.	0.00	0.00
62.170	24.210	0.584	7460.4	4205.0	9.741	2.852	2.99		Clay	100.0			22.88	0.83	n.a.	n.a.	0.77	0.859	n.a.	n.a.	n.a.	n.a.	0.00	0.00
62.340	24.490	0.568	7480.8	4214.8	9.846	2.736	2.98		Clay	100.0			23.15	0.83	n.a.	n.a.	0.77	0.859	n.a.	n.a.	n.a.	n.a.	0.00	0.00
62.500	25.580	0.672	7500.0	4224.0	10.336	3.079	2.99		Clay	100.0			24.18	0.83	n.a.	n.a.	0.77	0.858	n.a.	n.a.	n.a.	n.a.	0.00	0.00
62.660	28.320	1.188	7519.2	4233.2	11.604	4.835	3.07		Clay	100.0			26.77	0.83	n.a.	n.a.	0.77	0.857	n.a.	n.a.	n.a.	n.a.	0.00	0.00
62.830	32.690	1.236	7539.6	4243.0	13.632	4.273	2.98		Clay	100.0			30.90	0.83	n.a.	n.a.	0.77	0.857	n.a.	n.a.	n.a.	n.a.	0.00	0.00
62.990	52.850	1.492	7558.8	4252.2	23.080	3.040	2.71		Clay	79.7			49.95	0.83	n.a.	n.a.	0.77	0.856	n.a.	n.a.	n.a.	n.a.	0.00	0.00
63.160	49.150	1.988	7579.2	4262.0	21.286	4.382	2.84		Clay	90.0			46.46	0.83	n.a.	n.a.	0.77	0.856	n.a.	n.a.	n.a.	n.a.	0.00	0.00
63.320	57.800	2.157	7598.4	4271.2	25.286	3.995	2.76		Clay	83.4			54.63	0.83	n.a.	n.a.	0.77	0.855	n.a.	n.a.	n.a.	n.a.	0.00	0.00
63.480	100.930	1.989	7617.6	4280.4	64.542	2.048	2.26		Sand	43.7			95.40	0.74	70.21	131.49	0.77	0.855	0.904	0.202	0.270	0.32	0.02	0.00
63.650	65.620	1.628	7638.0	4290.2	41.023	2.635	2.48		Sand	61.2			62.02	0.71	43.98	105.36	0.77	0.854	0.922	0.145	0.172	0.20	0.03	0.00
63.810	39.560	1.379	7657.2	4299.5	16.621	3.859	2.88		Clay	93.8			37.39	0.83	n.a.	n.a.	0.77	0.853	n.a.	n.a.	n.a.	n.a.	0.00	0.00
63.980	26.750	0.837	7677.6	4309.2	10.634	3.652	3.02		Clay	100.0			25.28	0.83	n.a.	n.a.	0.77	0.853	n.a.	n.a.	n.a.	n.a.	0.00	0.00
64.140	26.570	0.700	7696.8	4318.5	10.523	3.082	2.99		Clay	100.0			25.11	0.83	n.a.	n.a.	0.77	0.852	n.a.	n.a.	n.a.	n.a.	0.00	0.00
64.300	26.640	0.674	7716.0	4327.7	10.529	2.959	2.98		Clay	100.0			25.18	0.83	n.a.	n.a.	0.77	0.852	n.a.	n.a.	n.a.	n.a.	0.00	0.00
64.470	25.720	0.752	7736.4	4337.5	10.076	3.440	3.03		Clay	100.0			24.31	0.83	n.a.	n.a.	0.77	0.851	n.a.	n.a.	n.a.	n.a.	0.00	0.00
64.630	28.720	0.753	7755.6	4346.7	11.430	3.032	2.95		Clay	99.1			27.15	0.83	n.a.	n.a.	0.76	0.850	n.a.	n.a.	n.a.	n.a.	0.00	0.00
64.800	28.220	0.702	7776.0	4356.5	11.170	2.883	2.95		Clay	98.8			26.67	0.83	n.a.	n.a.	0.76	0.850	n.a.	n.a.	n.a.	n.a.	0.00	0.00
64.960	27.500	0.651	7795.2	4365.7	10.813	2.760	2.95		Clay	98.9			25.99	0.83	n.a.	n.a.	0.76	0.849	n.a.	n.a.	n.a.	n.a.	0.00	0.00
65.120	26.370	0.703	7814.4	4374.9	10.269	3.127	3.00		Clay	100.0			24.92	0.83	n.a.	n.a.	0.76	0.849	n.a.	n.a.	n.a.	n.a.	0.00	0.00
65.290	26.470	0.690	7834.8	4384.7	10.287	3.060	2.99		Clay	100.0			25.02	0.83	n.a.	n.a.	0.76	0.848	n.a.	n.a.	n.a.	n.a.	0.00	0.00
65.450	26.520	0.692	7854.0	4393.9	10.284	3.063	2.99		Clay	100.0			25.07	0.82	n.a.	n.a.	0.76	0.848	n.a.	n.a.	n.a.	n.a.	0.00	0.00
65.620	26.130	0.701	7874.4	4403.7	10.079	3.158	3.01		Clay	100.0			24.70	0.82	n.a.	n.a.	0.76	0.847	n.a.	n.a.	n.a.	n.a.	0.00	0.00
65.780	26.680	0.657	7893.6	4412.9	10.303	2.889	2.98		Clay	100.0			25.22	0.82	n.a.	n.a.	0.76	0.846	n.a.	n.a.	n.a.	n.a.	0.00	0.00
65.940	26.320	0.699	7912.8	4422.1	10.114	3.127	3.00		Clay	100.0			24.88	0.82	n.a.	n.a.	0.76	0.846	n.a.	n.a.	n.a.	n.a.	0.00	0.00

CORNERSTONE EARTH GROUP

CPT No.	7

PGA (A_{max})	0.89

Total Settlement:	0.17	(Inches)

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Depth (ft)	q_c (tsf)	f_s (tsf)	σ_{vc} (psf)	Insitu σ'_{vc} (psf)	Q	F (%)	I_c	Layer "Plastic" PI > 7	Flag Soil Type	Fines (%)	q_{cN} near interfaces (soft layer)	Thin Layer Factor (K_H)	Interpreted q_{cN}	C_N	q_{c1N}	$q_{c1N\text{-}CS}$	Stress Reduction Coeff, r_d	CSR	K_σ for Sand	$CRR_{M=7.5,\ \sigma'vc = 1\ atm}$	CRR	Factor of Safety (CRR/CSR)	Vertical Strain ε_v	Settlement (Inches)
66.110	25.740	0.608	7933.2	4431.9	9.826	2.793	2.99		Clay	100.0			24.33	0.82	n.a.	n.a.	0.76	0.845	n.a.	n.a.	n.a.	n.a.	0.00	0.00
66.270	26.910	0.601	7952.4	4441.2	10.328	2.621	2.95		Clay	99.2			25.43	0.82	n.a.	n.a.	0.76	0.845	n.a.	n.a.	n.a.	n.a.	0.00	0.00
66.440	26.610	0.592	7972.8	4450.9	10.166	2.615	2.96		Clay	99.6			25.15	0.82	n.a.	n.a.	0.76	0.844	n.a.	n.a.	n.a.	n.a.	0.00	0.00
66.600	24.380	0.626	7992.0	4460.2	9.140	3.072	3.03		Clay	100.0			23.04	0.82	n.a.	n.a.	0.76	0.843	n.a.	n.a.	n.a.	n.a.	0.00	0.00
66.770	23.250	0.647	8012.4	4470.0	8.610	3.361	3.08		Clay	100.0			21.98	0.82	n.a.	n.a.	0.76	0.843	n.a.	n.a.	n.a.	n.a.	0.00	0.00
66.930	23.560	0.664	8031.6	4479.2	8.727	3.395	3.08		Clay	100.0			22.27	0.82	n.a.	n.a.	0.76	0.842	n.a.	n.a.	n.a.	n.a.	0.00	0.00
67.090	24.380	0.701	8050.8	4488.4	9.070	3.442	3.07		Clay	100.0			23.04	0.82	n.a.	n.a.	0.75	0.842	n.a.	n.a.	n.a.	n.a.	0.00	0.00
67.260	26.890	0.784	8071.2	4498.2	10.162	3.432	3.02		Clay	100.0			25.42	0.82	n.a.	n.a.	0.75	0.841	n.a.	n.a.	n.a.	n.a.	0.00	0.00
67.420	31.870	0.863	8090.4	4507.4	12.346	3.102	2.93		Clay	97.4			30.12	0.82	n.a.	n.a.	0.75	0.840	n.a.	n.a.	n.a.	n.a.	0.00	0.00
67.590	33.200	1.085	8110.8	4517.2	12.904	3.721	2.96		Clay	100.0			31.38	0.82	n.a.	n.a.	0.75	0.840	n.a.	n.a.	n.a.	n.a.	0.00	0.00
67.750	32.890	1.064	8130.0	4526.4	12.736	3.691	2.96		Clay	100.0			31.09	0.82	n.a.	n.a.	0.75	0.839	n.a.	n.a.	n.a.	n.a.	0.00	0.00
67.910	33.830	0.994	8149.2	4535.6	13.121	3.339	2.93		Clay	97.2			31.98	0.82	n.a.	n.a.	0.75	0.839	n.a.	n.a.	n.a.	n.a.	0.00	0.00
68.080	31.070	0.929	8169.6	4545.4	11.874	3.442	2.97		Clay	100.0			29.37	0.82	n.a.	n.a.	0.75	0.838	n.a.	n.a.	n.a.	n.a.	0.00	0.00
68.240	30.650	0.829	8188.8	4554.6	11.661	3.123	2.95		Clay	99.2			28.97	0.82	n.a.	n.a.	0.75	0.838	n.a.	n.a.	n.a.	n.a.	0.00	0.00
68.410	31.150	0.806	8209.2	4564.4	11.851	2.979	2.93		Clay	97.8			29.44	0.82	n.a.	n.a.	0.75	0.837	n.a.	n.a.	n.a.	n.a.	0.00	0.00
68.570	31.990	0.833	8228.4	4573.6	12.190	2.990	2.93		Clay	97.0			30.24	0.82	n.a.	n.a.	0.75	0.836	n.a.	n.a.	n.a.	n.a.	0.00	0.00
68.730	30.970	0.777	8247.6	4582.8	11.716	2.895	2.93		Clay	97.5			29.27	0.82	n.a.	n.a.	0.75	0.836	n.a.	n.a.	n.a.	n.a.	0.00	0.00
68.900	31.390	1.124	8268.0	4592.6	11.869	4.123	3.02		Clay	100.0			29.67	0.82	n.a.	n.a.	0.75	0.835	n.a.	n.a.	n.a.	n.a.	0.00	0.00
69.060	43.060	1.400	8287.2	4601.9	16.913	3.597	2.86		Clay	91.8			40.70	0.81	n.a.	n.a.	0.75	0.835	n.a.	n.a.	n.a.	n.a.	0.00	0.00
69.230	44.490	1.649	8307.6	4611.6	17.493	4.089	2.88		Clay	93.7			42.05	0.81	n.a.	n.a.	0.75	0.834	n.a.	n.a.	n.a.	n.a.	0.00	0.00
69.390	36.760	1.445	8326.8	4620.9	14.108	4.433	2.98		Clay	100.0			34.74	0.81	n.a.	n.a.	0.75	0.833	n.a.	n.a.	n.a.	n.a.	0.00	0.00
69.550	32.650	1.159	8346.0	4630.1	12.301	4.070	3.00		Clay	100.0			30.86	0.81	n.a.	n.a.	0.74	0.833	n.a.	n.a.	n.a.	n.a.	0.00	0.00
69.720	28.780	0.892	8366.4	4639.9	10.602	3.625	3.02		Clay	100.0			27.20	0.81	n.a.	n.a.	0.74	0.832	n.a.	n.a.	n.a.	n.a.	0.00	0.00
69.880	26.050	0.795	8385.6	4649.1	9.403	3.636	3.07		Clay	100.0			24.62	0.81	n.a.	n.a.	0.74	0.832	n.a.	n.a.	n.a.	n.a.	0.00	0.00
70.050	24.130	0.781	8406.0	4658.9	8.554	3.921	3.12		Clay	100.0			22.81	0.81	n.a.	n.a.	0.74	0.831	n.a.	n.a.	n.a.	n.a.	0.00	0.00
70.210	25.590	0.807	8425.2	4668.1	9.159	3.777	3.09		Clay	100.0			24.19	0.81	n.a.	n.a.	0.74	0.831	n.a.	n.a.	n.a.	n.a.	0.00	0.00
70.370	28.150	0.867	8444.4	4677.3	10.231	3.623	3.04		Clay	100.0			26.61	0.81	n.a.	n.a.	0.74	0.830	n.a.	n.a.	n.a.	n.a.	0.00	0.00
70.540	28.580	0.967	8464.8	4687.1	10.389	3.973	3.05		Clay	100.0			27.01	0.81	n.a.	n.a.	0.74	0.829	n.a.	n.a.	n.a.	n.a.	0.00	0.00
70.700	30.070	1.415	8484.0	4696.3	10.999	5.479	3.12		Clay	100.0			28.42	0.81	n.a.	n.a.	0.74	0.829	n.a.	n.a.	n.a.	n.a.	0.00	0.00
70.870	31.320	2.176	8504.4	4706.1	11.503	8.040	3.21		Clay	100.0			29.60	0.81	n.a.	n.a.	0.74	0.828	n.a.	n.a.	n.a.	n.a.	0.00	0.00
71.030	39.810	1.947	8523.6	4715.3	15.078	5.478	3.01		Clay	100.0			37.63	0.81	n.a.	n.a.	0.74	0.828	n.a.	n.a.	n.a.	n.a.	0.00	0.00
71.190	75.730	1.349	8542.8	4724.5	45.201	1.888	2.35		Sand	51.2			71.58	0.68	48.64	108.01	0.74	0.827	0.909	0.149	0.177	0.21	0.03	0.00
71.360	61.850	1.465	8563.2	4734.3	24.320	2.545	2.64		Clay	74.4			58.46	0.81	n.a.	n.a.	0.74	0.827	n.a.	n.a.	n.a.	n.a.	0.00	0.00
71.520	41.780	1.524	8582.4	4743.6	15.806	4.066	2.92		Clay	96.3			39.49	0.81	n.a.	n.a.	0.74	0.826	n.a.	n.a.	n.a.	n.a.	0.00	0.00
71.690	35.360	1.271	8602.8	4753.3	13.068	4.091	2.98		Clay	100.0			33.42	0.81	n.a.	n.a.	0.74	0.825	n.a.	n.a.	n.a.	n.a.	0.00	0.00
71.850	37.670	1.049	8622.0	4762.6	14.009	3.145	2.89		Clay	94.2			35.60	0.81	n.a.	n.a.	0.74	0.825	n.a.	n.a.	n.a.	n.a.	0.00	0.00
72.010	34.730	1.037	8641.2	4771.8	12.746	3.410	2.94		Clay	98.5			32.83	0.81	n.a.	n.a.	0.74	0.824	n.a.	n.a.	n.a.	n.a.	0.00	0.00
72.180	32.220	0.918	8661.6	4781.6	11.665	3.290	2.97		Clay	100.0			30.45	0.81	n.a.	n.a.	0.73	0.824	n.a.	n.a.	n.a.	n.a.	0.00	0.00
72.340	31.870	0.926	8680.8	4790.8	11.493	3.365	2.98		Clay	100.0			30.12	0.81	n.a.	n.a.	0.73	0.823	n.a.	n.a.	n.a.	n.a.	0.00	0.00
72.510	32.980	1.062	8701.2	4800.6	11.927	3.711	2.99		Clay	100.0			31.17	0.81	n.a.	n.a.	0.73	0.823	n.a.	n.a.	n.a.	n.a.	0.00	0.00
72.670	32.020	1.501	8720.4	4809.8	11.501	5.426	3.10		Clay	100.0			30.26	0.81	n.a.	n.a.	0.73	0.822	n.a.	n.a.	n.a.	n.a.	0.00	0.00
72.830	36.620	1.438	8739.6	4819.0	13.385	4.459	3.00		Clay	100.0			34.61	0.80	n.a.	n.a.	0.73	0.821	n.a.	n.a.	n.a.	n.a.	0.00	0.00
73.000	56.100	1.286	8760.0	4828.8	21.421	2.486	2.68		Clay	77.4			53.02	0.80	n.a.	n.a.	0.73	0.821	n.a.	n.a.	n.a.	n.a.	0.00	0.00
73.160	51.320	1.597	8779.2	4838.0	19.401	3.402	2.80		Clay	86.9			48.51	0.80	n.a.	n.a.	0.73	0.820	n.a.	n.a.	n.a.	n.a.	0.00	0.00
73.330	35.550	2.120	8799.6	4847.8	12.851	6.807	3.13		Clay	100.0			33.60	0.80	n.a.	n.a.	0.73	0.820	n.a.	n.a.	n.a.	n.a.	0.00	0.00
73.490	45.050	2.330	8818.8	4857.0	16.735	5.733	2.99		Clay	100.0			42.58	0.80	n.a.	n.a.	0.73	0.819	n.a.	n.a.	n.a.	n.a.	0.00	0.00
73.650	73.700	2.576	8838.0	4866.2	28.474	3.718	2.70		Clay	78.7			69.66	0.80	n.a.	n.a.	0.73	0.819	n.a.	n.a.	n.a.	n.a.	0.00	0.00
73.820	87.980	2.866	8858.4	4876.0	34.270	3.430	2.61		Clay	72.0			83.16	0.80	n.a.	n.a.	0.73	0.818	n.a.	n.a.	n.a.	n.a.	0.00	0.00
73.980	76.760	2.982	8877.6	4885.2	29.608	4.123	2.71		Clay	80.1			72.55	0.80	n.a.	n.a.	0.73	0.817	n.a.	n.a.	n.a.	n.a.	0.00	0.00
74.150	70.480	2.746	8898.0	4895.0	26.979	4.159	2.75		Clay	82.7			66.62	0.80	n.a.	n.a.	0.73	0.817	n.a.	n.a.	n.a.	n.a.	0.00	0.00
74.310	68.730	2.208	8917.2	4904.3	26.210	3.435	2.70		Clay	79.0			64.96	0.80	n.a.	n.a.	0.73	0.816	n.a.	n.a.	n.a.	n.a.	0.00	0.00
74.480	53.370	1.872	8937.6	4914.0	19.903	3.827	2.82		Clay	88.8			50.44	0.80	n.a.	n.a.	0.73	0.816	n.a.	n.a.	n.a.	n.a.	0.00	0.00
74.640	42.760	1.399	8956.8	4923.3	15.551	3.655	2.89		Clay	94.4			40.42	0.80	n.a.	n.a.	0.73	0.815	n.a.	n.a.	n.a.	n.a.	0.00	0.00
74.800	31.430	1.098	8976.0	4932.5	10.924	4.074	3.04		Clay	100.0			29.71	0.80	n.a.	n.a.	0.72	0.815	n.a.	n.a.	n.a.	n.a.	0.00	0.00
74.970	32.090	0.846	8996.4	4942.3	11.166	3.064	2.96		Clay	100.0			30.33	0.80	n.a.	n.a.	0.72	0.814	n.a.	n.a.	n.a.	n.a.	0.00	0.00
75.130	28.820	0.798	9015.6	4951.5	9.820	3.281	3.03		Clay	100.0			27.24	0.80	n.a.	n.a.	0.72	0.813	n.a.	n.a.	n.a.	n.a.	0.00	0.00
75.300	25.990	0.725	9036.0	4961.3	8.656	3.377	3.08		Clay	100.0			24.57	0.80	n.a.	n.a.	0.72	0.813	n.a.	n.a.	n.a.	n.a.	0.00	0.00
75.460	24.610	0.667	9055.2	4970.5	8.081	3.319	3.10		Clay	100.0			23.26	0.80	n.a.	n.a.	0.72	0.812	n.a.	n.a.	n.a.	n.a.	0.00	0.00
75.620	25.580	0.896	9074.4	4979.7	8.451	4.258	3.14		Clay	100.0			24.18	0.80	n.a.	n.a.	0.72	0.812	n.a.	n.a.	n.a.	n.a.	0.00	0.00
75.790	30.600	0.638	9094.8	4989.5	10.443	2.447	2.93		Clay	97.6			28.92	0.80	n.a.	n.a.	0.72	0.811	n.a.	n.a.	n.a.	n.a.	0.00	0.00
75.950	32.670	0.580	9114.0	4998.7	11.248	2.061	2.86		Clay	92.2			30.88	0.80	n.a.	n.a.	0.72	0.811	n.a.	n.a.	n.a.	n.a.	0.00	0.00
76.120	27.030	0.575	9134.4	5008.5	8.970	2.558	3.00		Clay	100.0			25.55	0.80	n.a.	n.a.	0.72	0.810	n.a.	n.a.	n.a.	n.a.	0.00	0.00
76.280	25.380	0.488	9153.6	5017.7	8.292	2.347	3.01		Clay	100.0			23.99	0.80	n.a.	n.a.	0.72	0.810	n.a.	n.a.	n.a.	n.a.	0.00	0.00
76.440	25.400	0.433	9172.8	5026.9	8.281	2.079	2.98		Clay	100.0			24.01	0.80	n.a.	n.a.	0.72	0.809	n.a.	n.a.	n.a.	n.a.	0.00	0.00
76.610	26.540	0.579	9193.2	5036.7	8.713	2.638	3.02		Clay	100.0			25.09	0.80	n.a.	n.a.	0.72	0.808	n.a.	n.a.	n.a.	n.a.	0.00	0.00
76.770	25.780	1.166	9212.4	5046.0	8.392	5.505	3.21		Clay	100.0			24.37	0.80	n.a.	n.a.	0.72	0.808	n.a.	n.a.	n.a.	n.a.	0.00	0.00
76.940	29.780	1.663	9232.8	5055.7	9.954	6.610	3.21		Clay	100.0			28.15	0.79	n.a.	n.a.	0.72	0.807	n.a.	n.a.	n.a.	n.a.	0.00	0.00

CORNERSTONE EARTH GROUP

CPT No.	7

PGA (A_{max})	0.89

Total Settlement:	0.17	(Inches)

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Depth (ft)	q_c (tsf)	f_s (tsf)	σ_{vc} (psf)	Insitu σ'_{vc} (psf)	Q	F (%)	I_c	Layer "Plastic" PI > 7	Flag Soil Type	Fines (%)	q_{cN} near interfaces (soft layer)	Thin Layer Factor (K_H)	Interpreted q_{cN}	C_N	q_{c1N}	$q_{c1N\text{-}CS}$	Stress Reduction Coeff, r_d	CSR	K_σ for Sand	$CRR_{M=7.5,\ \sigma'vc = 1\ atm}$	CRR	Factor of Safety (CRR/CSR)	Vertical Strain ε_v	Settlement (Inches)
77.100	50.800	1.606	9252.0	5065.0	18.233	3.478	2.83		Clay	89.0			48.02	0.79	n.a.	n.a.	0.72	0.807	n.a.	n.a.	n.a.	n.a.	0.00	0.00
77.260	59.480	2.193	9271.2	5074.2	21.617	3.999	2.81		Clay	87.6			56.22	0.79	n.a.	n.a.	0.72	0.806	n.a.	n.a.	n.a.	n.a.	0.00	0.00
77.430	47.320	2.449	9291.6	5084.0	16.788	5.739	2.99		Clay	100.0			44.73	0.79	n.a.	n.a.	0.72	0.806	n.a.	n.a.	n.a.	n.a.	0.00	0.00
77.590	35.190	2.899	9310.8	5093.2	11.990	9.494	3.25		Clay	100.0			33.26	0.79	n.a.	n.a.	0.71	0.805	n.a.	n.a.	n.a.	n.a.	0.00	0.00
77.760	61.710	3.237	9331.2	5103.0	22.357	5.674	2.90		Clay	94.8			58.33	0.79	n.a.	n.a.	0.71	0.805	n.a.	n.a.	n.a.	n.a.	0.00	0.00
77.920	92.410	3.585	9350.4	5112.2	34.324	4.086	2.66		Clay	76.1			87.34	0.79	n.a.	n.a.	0.71	0.804	n.a.	n.a.	n.a.	n.a.	0.00	0.00
78.080	96.020	2.894	9369.6	5121.4	55.490	3.168	2.44		Sand	58.0			90.76	0.68	61.28	126.54	0.71	0.803	0.884	0.187	0.238	0.30	0.03	0.00
78.250	73.690	1.902	9390.0	5131.2	26.892	2.757	2.63		Clay	73.5			69.65	0.79	n.a.	n.a.	0.71	0.803	n.a.	n.a.	n.a.	n.a.	0.00	0.00
78.410	45.700	1.410	9409.2	5140.4	15.950	3.440	2.87		Clay	92.4			43.19	0.79	n.a.	n.a.	0.71	0.802	n.a.	n.a.	n.a.	n.a.	0.00	0.00
78.580	28.610	0.919	9429.6	5150.2	9.279	3.847	3.09		Clay	100.0			27.04	0.79	n.a.	n.a.	0.71	0.802	n.a.	n.a.	n.a.	n.a.	0.00	0.00
78.740	23.750	0.601	9448.8	5159.4	7.375	3.157	3.12		Clay	100.0			22.45	0.79	n.a.	n.a.	0.71	0.801	n.a.	n.a.	n.a.	n.a.	0.00	0.00
78.900	23.090	0.547	9468.0	5168.6	7.103	2.980	3.12		Clay	100.0			21.82	0.79	n.a.	n.a.	0.71	0.801	n.a.	n.a.	n.a.	n.a.	0.00	0.00
79.070	23.070	0.604	9488.4	5178.4	7.078	3.295	3.14		Clay	100.0			21.81	0.79	n.a.	n.a.	0.71	0.800	n.a.	n.a.	n.a.	n.a.	0.00	0.00
79.230	23.590	0.638	9507.6	5187.6	7.262	3.389	3.14		Clay	100.0			22.30	0.79	n.a.	n.a.	0.71	0.800	n.a.	n.a.	n.a.	n.a.	0.00	0.00
79.400	24.090	0.649	9528.0	5197.4	7.437	3.356	3.13		Clay	100.0			22.77	0.79	n.a.	n.a.	0.71	0.799	n.a.	n.a.	n.a.	n.a.	0.00	0.00
79.560	25.110	0.717	9547.2	5206.7	7.812	3.528	3.13		Clay	100.0			23.73	0.79	n.a.	n.a.	0.71	0.799	n.a.	n.a.	n.a.	n.a.	0.00	0.00
79.720	27.130	0.596	9566.4	5215.9	8.569	2.669	3.02		Clay	100.0			25.64	0.79	n.a.	n.a.	0.71	0.798	n.a.	n.a.	n.a.	n.a.	0.00	0.00
79.890	28.610	0.553	9586.8	5225.7	9.115	2.321	2.97		Clay	100.0			27.04	0.79	n.a.	n.a.	0.71	0.797	n.a.	n.a.	n.a.	n.a.	0.00	0.00
80.050	25.940	0.547	9606.0	5234.9	8.075	2.589	3.04		Clay	100.0			24.52	0.79	n.a.	n.a.	0.71	0.797	n.a.	n.a.	n.a.	n.a.	0.00	0.00
80.220	25.130	0.560	9626.4	5244.7	7.748	2.757	3.07		Clay	100.0			23.75	0.79	n.a.	n.a.	0.71	0.796	n.a.	n.a.	n.a.	n.a.	0.00	0.00
80.380	25.700	0.597	9645.6	5253.9	7.947	2.857	3.07		Clay	100.0			24.29	0.79	n.a.	n.a.	0.70	0.796	n.a.	n.a.	n.a.	n.a.	0.00	0.00
80.540	25.330	0.625	9664.8	5263.1	7.789	3.051	3.09		Clay	100.0			23.94	0.79	n.a.	n.a.	0.70	0.795	n.a.	n.a.	n.a.	n.a.	0.00	0.00
80.710	24.810	0.668	9685.2	5272.9	7.574	3.343	3.12		Clay	100.0			23.45	0.79	n.a.	n.a.	0.70	0.795	n.a.	n.a.	n.a.	n.a.	0.00	0.00
80.870	25.030	0.662	9704.4	5282.1	7.640	3.283	3.12		Clay	100.0			23.66	0.79	n.a.	n.a.	0.70	0.794	n.a.	n.a.	n.a.	n.a.	0.00	0.00
81.040	24.760	0.672	9724.8	5291.9	7.520	3.377	3.13		Clay	100.0			23.40	0.79	n.a.	n.a.	0.70	0.794	n.a.	n.a.	n.a.	n.a.	0.00	0.00
81.200	25.400	0.681	9744.0	5301.1	7.745	3.318	3.11		Clay	100.0			24.01	0.78	n.a.	n.a.	0.70	0.793	n.a.	n.a.	n.a.	n.a.	0.00	0.00
81.360	25.900	0.664	9763.2	5310.3	7.916	3.158	3.09		Clay	100.0			24.48	0.78	n.a.	n.a.	0.70	0.793	n.a.	n.a.	n.a.	n.a.	0.00	0.00
81.530	25.380	0.619	9783.6	5320.1	7.702	3.021	3.09		Clay	100.0			23.99	0.78	n.a.	n.a.	0.70	0.792	n.a.	n.a.	n.a.	n.a.	0.00	0.00
81.690	24.520	0.578	9802.8	5329.3	7.362	2.944	3.10		Clay	100.0			23.18	0.78	n.a.	n.a.	0.70	0.792	n.a.	n.a.	n.a.	n.a.	0.00	0.00
81.860	24.230	0.537	9823.2	5339.1	7.237	2.780	3.10		Clay	100.0			22.90	0.78	n.a.	n.a.	0.70	0.791	n.a.	n.a.	n.a.	n.a.	0.00	0.00
82.020	24.570	0.526	9842.4	5348.4	7.348	2.674	3.08		Clay	100.0			23.22	0.78	n.a.	n.a.	0.70	0.791	n.a.	n.a.	n.a.	n.a.	0.00	0.00
82.190	24.660	0.537	9862.8	5358.1	7.364	2.720	3.08		Clay	100.0			23.31	0.78	n.a.	n.a.	0.70	0.790	n.a.	n.a.	n.a.	n.a.	0.00	0.00
82.350	25.400	0.515	9882.0	5367.4	7.623	2.518	3.05		Clay	100.0			24.01	0.78	n.a.	n.a.	0.70	0.790	n.a.	n.a.	n.a.	n.a.	0.00	0.00
82.510	26.060	0.530	9901.2	5376.6	7.852	2.510	3.04		Clay	100.0			24.63	0.78	n.a.	n.a.	0.70	0.789	n.a.	n.a.	n.a.	n.a.	0.00	0.00
82.680	26.500	0.593	9921.6	5386.4	7.998	2.752	3.06		Clay	100.0			25.05	0.78	n.a.	n.a.	0.70	0.789	n.a.	n.a.	n.a.	n.a.	0.00	0.00
82.840	27.650	0.727	9940.8	5395.6	8.407	3.204	3.08		Clay	100.0			26.13	0.78	n.a.	n.a.	0.70	0.788	n.a.	n.a.	n.a.	n.a.	0.00	0.00
83.010	30.190	0.610	9961.2	5405.4	9.328	2.419	2.97		Clay	100.0			28.53	0.78	n.a.	n.a.	0.70	0.787	n.a.	n.a.	n.a.	n.a.	0.00	0.00
83.170	30.240	0.823	9980.4	5414.6	9.327	3.260	3.04		Clay	100.0			28.58	0.78	n.a.	n.a.	0.70	0.787	n.a.	n.a.	n.a.	n.a.	0.00	0.00
83.330	30.780	0.970	9999.6	5423.8	9.506	3.764	3.07		Clay	100.0			29.09	0.78	n.a.	n.a.	0.69	0.786	n.a.	n.a.	n.a.	n.a.	0.00	0.00
83.500	36.890	0.950	10020.0	5433.6	11.734	2.980	2.94		Clay	98.1			34.87	0.78	n.a.	n.a.	0.69	0.786	n.a.	n.a.	n.a.	n.a.	0.00	0.00
83.660	38.700	0.994	10039.2	5442.8	12.376	2.950	2.92		Clay	96.3			36.58	0.78	n.a.	n.a.	0.69	0.785	n.a.	n.a.	n.a.	n.a.	0.00	0.00
83.830	36.090	0.908	10059.6	5452.6	11.393	2.923	2.94		Clay	98.5			34.11	0.78	n.a.	n.a.	0.69	0.785	n.a.	n.a.	n.a.	n.a.	0.00	0.00
83.990	35.300	0.875	10078.8	5461.8	11.081	2.891	2.95		Clay	99.1			33.36	0.78	n.a.	n.a.	0.69	0.784	n.a.	n.a.	n.a.	n.a.	0.00	0.00
84.150	34.040	0.937	10098.0	5471.0	10.598	3.231	2.99		Clay	100.0			32.17	0.78	n.a.	n.a.	0.69	0.784	n.a.	n.a.	n.a.	n.a.	0.00	0.00
84.320	32.470	0.948	10118.4	5480.8	10.002	3.460	3.03		Clay	100.0			30.69	0.78	n.a.	n.a.	0.69	0.783	n.a.	n.a.	n.a.	n.a.	0.00	0.00
84.480	31.870	1.003	10137.6	5490.0	9.764	3.742	3.06		Clay	100.0			30.12	0.78	n.a.	n.a.	0.69	0.783	n.a.	n.a.	n.a.	n.a.	0.00	0.00
84.650	30.730	0.928	10158.0	5499.8	9.328	3.617	3.07		Clay	100.0			29.05	0.78	n.a.	n.a.	0.69	0.782	n.a.	n.a.	n.a.	n.a.	0.00	0.00
84.810	29.790	0.827	10177.2	5509.1	8.968	3.348	3.06		Clay	100.0			28.16	0.78	n.a.	n.a.	0.69	0.782	n.a.	n.a.	n.a.	n.a.	0.00	0.00
84.970	29.010	0.769	10196.4	5518.3	8.666	3.216	3.07		Clay	100.0			27.42	0.78	n.a.	n.a.	0.69	0.781	n.a.	n.a.	n.a.	n.a.	0.00	0.00
85.140	28.800	0.691	10216.8	5528.1	8.571	2.915	3.05		Clay	100.0			27.22	0.78	n.a.	n.a.	0.69	0.781	n.a.	n.a.	n.a.	n.a.	0.00	0.00
85.300	26.990	0.673	10236.0	5537.3	7.900	3.077	3.09		Clay	100.0			25.51	0.78	n.a.	n.a.	0.69	0.780	n.a.	n.a.	n.a.	n.a.	0.00	0.00
85.470	26.200	0.639	10256.4	5547.1	7.597	3.034	3.10		Clay	100.0			24.76	0.78	n.a.	n.a.	0.69	0.780	n.a.	n.a.	n.a.	n.a.	0.00	0.00
85.630	26.390	0.611	10275.6	5556.3	7.650	2.875	3.08		Clay	100.0			24.94	0.78	n.a.	n.a.	0.69	0.779	n.a.	n.a.	n.a.	n.a.	0.00	0.00
85.790	26.440	0.587	10294.8	5565.5	7.652	2.759	3.07		Clay	100.0			24.99	0.77	n.a.	n.a.	0.69	0.779	n.a.	n.a.	n.a.	n.a.	0.00	0.00
85.960	26.370	0.543	10315.2	5575.3	7.609	2.559	3.06		Clay	100.0			24.92	0.77	n.a.	n.a.	0.69	0.778	n.a.	n.a.	n.a.	n.a.	0.00	0.00
86.120	24.680	0.520	10334.4	5584.5	6.988	2.667	3.10		Clay	100.0			23.33	0.77	n.a.	n.a.	0.69	0.778	n.a.	n.a.	n.a.	n.a.	0.00	0.00
86.290	24.730	0.594	10354.8	5594.3	6.990	3.039	3.13		Clay	100.0			23.37	0.77	n.a.	n.a.	0.69	0.777	n.a.	n.a.	n.a.	n.a.	0.00	0.00
86.450	27.970	0.796	10374.0	5603.5	8.132	3.494	3.11		Clay	100.0			26.44	0.77	n.a.	n.a.	0.69	0.777	n.a.	n.a.	n.a.	n.a.	0.00	0.00
86.610	31.230	0.949	10393.2	5612.7	9.277	3.645	3.07		Clay	100.0			29.52	0.77	n.a.	n.a.	0.68	0.777	n.a.	n.a.	n.a.	n.a.	0.00	0.00
86.780	33.190	0.999	10413.6	5622.5	9.954	3.569	3.04		Clay	100.0			31.37	0.77	n.a.	n.a.	0.68	0.776	n.a.	n.a.	n.a.	n.a.	0.00	0.00
86.940	37.320	1.056	10432.8	5631.7	11.401	3.288	2.97		Clay	100.0			35.27	0.77	n.a.	n.a.	0.68	0.776	n.a.	n.a.	n.a.	n.a.	0.00	0.00
87.110	39.420	1.196	10453.2	5641.5	12.122	3.497	2.97		Clay	100.0			37.26	0.77	n.a.	n.a.	0.68	0.775	n.a.	n.a.	n.a.	n.a.	0.00	0.00
87.270	42.650	1.287	10472.4	5650.8	13.242	3.439	2.93		Clay	97.6			40.31	0.77	n.a.	n.a.	0.68	0.775	n.a.	n.a.	n.a.	n.a.	0.00	0.00
87.430	45.040	1.362	10491.6	5660.0	14.062	3.423	2.91		Clay	95.8			42.57	0.77	n.a.	n.a.	0.68	0.774	n.a.	n.a.	n.a.	n.a.	0.00	0.00
87.600	45.220	1.373	10512.0	5669.8	14.097	3.435	2.91		Clay	95.8			42.74	0.77	n.a.	n.a.	0.68	0.774	n.a.	n.a.	n.a.	n.a.	0.00	0.00
87.760	45.570	1.280	10531.2	5679.0	14.194	3.176	2.89		Clay	94.0			43.07	0.77	n.a.	n.a.	0.68	0.773	n.a.	n.a.	n.a.	n.a.	0.00	0.00
87.930	43.830	1.249	10551.6	5688.8	13.554	3.239	2.91		Clay	95.7			41.43	0.77	n.a.	n.a.	0.68	0.773	n.a.	n.a.	n.a.	n.a.	0.00	0.00

CORNERSTONE EARTH GROUP

CPT No.	7

PGA (A_{max})	0.89

Total Settlement:	0.17	(Inches)

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Depth (ft)	q_c (tsf)	f_s (tsf)	σ_{vc} (psf)	Insitu σ'_{vc} (psf)	Q	F (%)	I_c	Layer "Plastic" PI > 7	Flag Soil Type	Fines (%)	q_{cN} near interfaces (soft layer)	Thin Layer Factor (K_H)	Interpreted q_{cN}	C_N	q_{c1N}	q_{c1N-CS}	Stress Reduction Coeff, r_d	CSR	K_σ for Sand	$CRR_{M=7.5, \sigma'vc = 1 atm}$	CRR	Factor of Safety (CRR/CSR)	Vertical Strain ε_v	Settlement (Inches)
88.090	41.920	1.218	10570.8	5698.0	12.859	3.324	2.93		Clay	97.7			39.62	0.77	n.a.	n.a.	0.68	0.772	n.a.	n.a.	n.a.	n.a.	0.00	0.00
88.250	41.060	1.156	10590.0	5707.2	12.533	3.231	2.94		Clay	97.8			38.81	0.77	n.a.	n.a.	0.68	0.772	n.a.	n.a.	n.a.	n.a.	0.00	0.00
88.420	40.790	1.196	10610.4	5717.0	12.414	3.370	2.95		Clay	99.0			38.55	0.77	n.a.	n.a.	0.68	0.771	n.a.	n.a.	n.a.	n.a.	0.00	0.00
88.580	41.350	1.263	10629.6	5726.2	12.586	3.504	2.95		Clay	99.4			39.08	0.77	n.a.	n.a.	0.68	0.771	n.a.	n.a.	n.a.	n.a.	0.00	0.00
88.750	42.710	1.465	10650.0	5736.0	13.035	3.918	2.97		Clay	100.0			40.37	0.77	n.a.	n.a.	0.68	0.770	n.a.	n.a.	n.a.	n.a.	0.00	0.00
88.910	45.190	1.668	10669.2	5745.2	13.874	4.185	2.97		Clay	100.0			42.71	0.77	n.a.	n.a.	0.68	0.770	n.a.	n.a.	n.a.	n.a.	0.00	0.00
89.070	47.160	1.714	10688.4	5754.4	14.533	4.098	2.95		Clay	98.7			44.57	0.77	n.a.	n.a.	0.68	0.769	n.a.	n.a.	n.a.	n.a.	0.00	0.00
89.240	48.790	1.721	10708.8	5764.2	15.071	3.961	2.93		Clay	97.0			46.12	0.77	n.a.	n.a.	0.68	0.769	n.a.	n.a.	n.a.	n.a.	0.00	0.00
89.400	49.040	1.713	10728.0	5773.4	15.130	3.922	2.92		Clay	96.7			46.35	0.77	n.a.	n.a.	0.68	0.768	n.a.	n.a.	n.a.	n.a.	0.00	0.00
89.570	49.520	1.798	10748.4	5783.2	15.267	4.073	2.93		Clay	97.3			46.81	0.77	n.a.	n.a.	0.68	0.768	n.a.	n.a.	n.a.	n.a.	0.00	0.00
89.730	51.920	1.886	10767.6	5792.4	16.068	4.053	2.91		Clay	95.8			49.07	0.77	n.a.	n.a.	0.68	0.768	n.a.	n.a.	n.a.	n.a.	0.00	0.00
89.900	58.320	2.044	10788.0	5802.2	18.243	3.861	2.85		Clay	91.3			55.12	0.77	n.a.	n.a.	0.67	0.767	n.a.	n.a.	n.a.	n.a.	0.00	0.00
90.060	53.320	1.929	10807.2	5811.5	16.490	4.026	2.90		Clay	94.9			50.40	0.77	n.a.	n.a.	0.67	0.767	n.a.	n.a.	n.a.	n.a.	0.00	0.00
90.220	42.600	1.740	10826.4	5820.7	12.777	4.679	3.03		Clay	100.0			40.26	0.77	n.a.	n.a.	0.67	0.766	n.a.	n.a.	n.a.	n.a.	0.00	0.00
90.390	37.220	1.599	10846.8	5830.5	10.907	5.029	3.10		Clay	100.0			35.18	0.77	n.a.	n.a.	0.67	0.766	n.a.	n.a.	n.a.	n.a.	0.00	0.00
90.550	39.440	1.354	10866.0	5839.7	11.647	3.980	3.02		Clay	100.0			37.28	0.77	n.a.	n.a.	0.67	0.765	n.a.	n.a.	n.a.	n.a.	0.00	0.00
90.720	38.200	1.304	10886.4	5849.5	11.200	3.981	3.03		Clay	100.0			36.11	0.76	n.a.	n.a.	0.67	0.765	n.a.	n.a.	n.a.	n.a.	0.00	0.00
90.880	42.390	1.151	10905.6	5858.7	12.609	3.116	2.92		Clay	96.9			40.07	0.76	n.a.	n.a.	0.67	0.764	n.a.	n.a.	n.a.	n.a.	0.00	0.00
91.040	42.860	1.179	10924.8	5867.9	12.746	3.153	2.92		Clay	96.9			40.51	0.76	n.a.	n.a.	0.67	0.764	n.a.	n.a.	n.a.	n.a.	0.00	0.00
91.210	41.650	1.302	10945.2	5877.7	12.310	3.599	2.97		Clay	100.0			39.37	0.76	n.a.	n.a.	0.67	0.764	n.a.	n.a.	n.a.	n.a.	0.00	0.00
91.370	36.620	1.295	10964.4	5886.9	10.579	4.158	3.06		Clay	100.0			34.61	0.76	n.a.	n.a.	0.67	0.763	n.a.	n.a.	n.a.	n.a.	0.00	0.00
91.540	34.730	1.219	10984.8	5896.7	9.917	4.168	3.08		Clay	100.0			32.83	0.76	n.a.	n.a.	0.67	0.763	n.a.	n.a.	n.a.	n.a.	0.00	0.00
91.700	33.110	1.023	11004.0	5905.9	9.349	3.706	3.07		Clay	100.0			31.29	0.76	n.a.	n.a.	0.67	0.762	n.a.	n.a.	n.a.	n.a.	0.00	0.00
91.860	34.600	0.993	11023.2	5915.1	9.835	3.415	3.03		Clay	100.0			32.70	0.76	n.a.	n.a.	0.67	0.762	n.a.	n.a.	n.a.	n.a.	0.00	0.00
92.030	35.080	1.127	11043.6	5924.9	9.978	3.813	3.06		Clay	100.0			33.16	0.76	n.a.	n.a.	0.67	0.761	n.a.	n.a.	n.a.	n.a.	0.00	0.00
92.190	40.100	1.354	11062.8	5934.1	11.651	3.916	3.01		Clay	100.0			37.90	0.76	n.a.	n.a.	0.67	0.761	n.a.	n.a.	n.a.	n.a.	0.00	0.00
92.360	46.910	1.450	11083.2	5943.9	13.920	3.504	2.92		Clay	96.6			44.34	0.76	n.a.	n.a.	0.67	0.760	n.a.	n.a.	n.a.	n.a.	0.00	0.00
92.520	43.560	1.133	11102.4	5953.2	12.769	2.981	2.91		Clay	95.7			41.17	0.76	n.a.	n.a.	0.67	0.760	n.a.	n.a.	n.a.	n.a.	0.00	0.00
92.680	39.170	0.988	11121.6	5962.4	11.274	2.940	2.95		Clay	98.9			37.02	0.76	n.a.	n.a.	0.67	0.760	n.a.	n.a.	n.a.	n.a.	0.00	0.00
92.850	34.060	1.737	11142.0	5972.2	9.541	6.097	3.20		Clay	100.0			32.19	0.76	n.a.	n.a.	0.67	0.759	n.a.	n.a.	n.a.	n.a.	0.00	0.00
93.010	31.630	1.649	11161.2	5981.4	8.710	6.330	3.24		Clay	100.0			29.90	0.76	n.a.	n.a.	0.67	0.759	n.a.	n.a.	n.a.	n.a.	0.00	0.00
93.180	32.070	1.533	11181.6	5991.2	8.839	5.790	3.21		Clay	100.0			30.31	0.76	n.a.	n.a.	0.67	0.758	n.a.	n.a.	n.a.	n.a.	0.00	0.00
93.340	38.470	1.383	11200.8	6000.4	10.956	4.206	3.05		Clay	100.0			36.36	0.76	n.a.	n.a.	0.67	0.758	n.a.	n.a.	n.a.	n.a.	0.00	0.00
93.500	37.060	0.847	11220.0	6009.6	10.467	2.694	2.95		Clay	99.3			35.03	0.76	n.a.	n.a.	0.66	0.758	n.a.	n.a.	n.a.	n.a.	0.00	0.00
93.670	38.410	1.287	11240.4	6019.4	10.895	3.925	3.03		Clay	100.0			36.30	0.76	n.a.	n.a.	0.66	0.757	n.a.	n.a.	n.a.	n.a.	0.00	0.00
93.830	39.100	1.283	11259.6	6028.6	11.104	3.834	3.02		Clay	100.0			36.96	0.76	n.a.	n.a.	0.66	0.757	n.a.	n.a.	n.a.	n.a.	0.00	0.00
94.000	27.310	1.243	11280.0	6038.4	7.177	5.734	3.28		Clay	100.0			25.81	0.76	n.a.	n.a.	0.66	0.756	n.a.	n.a.	n.a.	n.a.	0.00	0.00
94.160	40.690	1.270	11299.2	6047.6	11.588	3.625	2.99		Clay	100.0			38.46	0.76	n.a.	n.a.	0.66	0.756	n.a.	n.a.	n.a.	n.a.	0.00	0.00
94.320	44.610	1.355	11318.4	6056.8	12.862	3.478	2.95		Clay	98.6			42.16	0.76	n.a.	n.a.	0.66	0.755	n.a.	n.a.	n.a.	n.a.	0.00	0.00
94.490	49.900	1.405	11338.8	6066.6	14.582	3.177	2.88		Clay	93.3			47.16	0.76	n.a.	n.a.	0.66	0.755	n.a.	n.a.	n.a.	n.a.	0.00	0.00
94.650	53.370	1.497	11358.0	6075.8	15.699	3.139	2.85		Clay	91.0			50.44	0.76	n.a.	n.a.	0.66	0.755	n.a.	n.a.	n.a.	n.a.	0.00	0.00
94.820	56.240	1.718	11378.4	6085.6	16.613	3.399	2.85		Clay	91.1			53.16	0.76	n.a.	n.a.	0.66	0.754	n.a.	n.a.	n.a.	n.a.	0.00	0.00
94.980	59.820	1.997	11397.6	6094.8	17.760	3.690	2.85		Clay	91.0			56.54	0.76	n.a.	n.a.	0.66	0.754	n.a.	n.a.	n.a.	n.a.	0.00	0.00
95.140	60.230	2.113	11416.8	6104.1	17.864	3.875	2.86		Clay	91.9			56.93	0.76	n.a.	n.a.	0.66	0.753	n.a.	n.a.	n.a.	n.a.	0.00	0.00
95.310	60.510	2.067	11437.2	6113.9	17.924	3.772	2.85		Clay	91.3			57.19	0.76	n.a.	n.a.	0.66	0.753	n.a.	n.a.	n.a.	n.a.	0.00	0.00
95.470	61.600	2.107	11456.4	6123.1	18.250	3.771	2.85		Clay	90.8			58.22	0.76	n.a.	n.a.	0.66	0.753	n.a.	n.a.	n.a.	n.a.	0.00	0.00
95.640	63.150	2.299	11476.8	6132.9	18.723	4.004	2.86		Clay	91.4			59.69	0.76	n.a.	n.a.	0.66	0.752	n.a.	n.a.	n.a.	n.a.	0.00	0.00
95.800	64.910	2.364	11496.0	6142.1	19.264	3.996	2.84		Clay	90.6			61.35	0.75	n.a.	n.a.	0.66	0.752	n.a.	n.a.	n.a.	n.a.	0.00	0.00
95.960	64.860	2.437	11515.2	6151.3	19.216	4.123	2.85		Clay	91.4			61.30	0.75	n.a.	n.a.	0.66	0.751	n.a.	n.a.	n.a.	n.a.	0.00	0.00
96.130	66.580	2.353	11535.6	6161.1	19.741	3.870	2.83		Clay	89.2			62.93	0.75	n.a.	n.a.	0.66	0.751	n.a.	n.a.	n.a.	n.a.	0.00	0.00
96.290	63.890	2.127	11554.8	6170.3	18.836	3.660	2.83		Clay	89.3			60.39	0.75	n.a.	n.a.	0.66	0.751	n.a.	n.a.	n.a.	n.a.	0.00	0.00
96.460	64.570	2.042	11575.2	6180.1	19.023	3.474	2.81		Clay	87.9			61.03	0.75	n.a.	n.a.	0.66	0.750	n.a.	n.a.	n.a.	n.a.	0.00	0.00
96.620	66.260	2.369	11594.4	6189.3	19.538	3.918	2.83		Clay	89.8			62.63	0.75	n.a.	n.a.	0.66	0.750	n.a.	n.a.	n.a.	n.a.	0.00	0.00
96.780	69.130	3.304	11613.6	6198.5	20.432	5.217	2.90		Clay	95.1			65.34	0.75	n.a.	n.a.	0.66	0.750	n.a.	n.a.	n.a.	n.a.	0.00	0.00
96.950	86.330	4.272	11634.0	6208.3	25.937	5.306	2.83		Clay	89.4			81.60	0.75	n.a.	n.a.	0.66	0.749	n.a.	n.a.	n.a.	n.a.	0.00	0.00
97.110	163.990	4.689	11653.2	6217.5	87.211	2.965	2.28		Sand	45.5			155.00	0.68	104.81	175.95	0.66	0.749	0.781	0.621	0.982	1.31	0.00	0.00
97.280	193.560	2.302	11673.6	6227.3	103.428	1.226	1.96		Sand	19.6			182.95	0.66	120.21	158.81	0.66	0.748	0.813	0.359	0.519	0.69	0.02	0.00
97.440	220.160	2.479	11692.8	6236.5	117.991	1.157	1.90		Sand	14.8			208.09	0.66	137.68	163.26	0.66	0.748	0.805	0.408	0.603	0.81	0.01	0.00
97.600	260.370	2.468	11712.0	6245.8	140.020	0.970	1.79		Sand	6.3			246.10	0.66	162.92	163.93	0.65	0.748	0.804	0.416	0.617	0.82	0.01	0.00
97.770	268.330	2.586	11732.4	6255.6	144.281	0.985	1.79		Sand	5.9			253.62	0.67	169.55	170.23	0.65	0.747	0.792	0.507	0.777	1.04	0.01	0.00
97.930	259.550	2.849	11751.6	6264.8	139.346	1.123	1.84		Sand	9.9			245.32	0.67	164.95	174.15	0.65	0.747	0.783	0.581	0.909	1.22	0.00	0.00
98.100	253.360	3.584	11772.0	6274.6	135.835	1.448	1.92		Sand	16.8			239.47	0.70	168.27	203.67	0.65	0.747	0.702	2.339	3.611	4.84	0.00	0.00
98.260	223.360	4.709	11791.2	6283.8	119.275	2.166	2.09		Sand	30.1			211.12	0.72	151.08	217.11	0.65	0.746	0.673	5.734	8.496	11.39	0.00	0.00
98.430	216.800	2.398	11811.6	6293.6	115.582	1.137	1.90		Sand	14.9			204.91	0.66	134.40	160.15	0.65	0.746	0.809	0.373	0.541	0.73	0.02	0.00
98.590	222.260	2.579	11830.8	6302.8	118.482	1.192	1.91		Sand	15.4			210.08	0.66	139.34	167.18	0.65	0.745	0.796	0.459	0.692	0.93	0.01	0.00
98.750	270.070	2.373	11850.0	6312.0	144.554	0.898	1.76		Sand	3.7			255.26	0.67	170.02	170.03	0.65	0.745	0.790	0.504	0.770	1.03	0.01	0.00
98.920	237.230	2.109	11870.4	6321.8	126.479	0.912	1.81		Sand	7.5			224.22	0.64	143.10	145.75	0.65	0.745	0.831	0.263	0.354	0.48	0.02	0.00

CORNERSTONE EARTH GROUP

CPT No.	7

PGA (A_{max})	0.89

Total Settlement:	0.17	(Inches)

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Depth (ft)	q_c (tsf)	f_s (tsf)	σ_{vc} (psf)	Insitu σ'_{vc} (psf)	Q	F (%)	I_c	Layer "Plastic" PI > 7	Flag Soil Type	Fines (%)	q_{cN} near interfaces (soft layer)	Thin Layer Factor (K_H)	Interpreted q_{cN}	C_N	q_{c1N}	$q_{c1N\text{-}CS}$	Stress Reduction Coeff, r_d	CSR	K_σ for Sand	$CRR_{M=7.5,\ \sigma'vc = 1\ atm}$	CRR	Factor of Safety (CRR/CSR)	Vertical Strain ε_v	Settlement (Inches)
99.080	353.580	1.739	11889.6	6331.0	189.959	0.500	1.50		Sand	0.0			334.20	0.74	248.63	248.63	0.65	0.744	0.671	110.923	163.798	220.05	0.00	0.00
99.250	388.800	1.886	11910.0	6340.8	209.037	0.493	1.47		Sand	0.0			367.49	0.75	275.10	275.10	0.65	0.744	0.671	4366.794	6443.924	8661.28	0.00	0.00
99.410	386.000	2.161	11929.2	6350.0	207.352	0.569	1.51		Sand	0.0			364.84	0.75	273.02	273.02	0.65	0.744	0.670	3121.090	4602.691	6189.33	0.00	0.00
99.570	352.260	4.183	11948.4	6359.2	188.801	1.208	1.77		Sand	4.3			332.95	0.74	246.89	246.96	0.65	0.743	0.670	91.479	134.817	181.37	0.00	0.00
99.740	279.170	4.957	11968.8	6369.0	148.831	1.815	1.97		Sand	20.4			263.87	0.74	195.50	246.65	0.65	0.743	0.669	88.303	130.046	175.04	0.00	0.00
99.900	184.170	4.818	11988.0	6378.2	97.000	2.704	2.22		Sand	40.6			174.07	0.69	119.32	190.55	0.65	0.743	0.739	1.155	1.877	2.53	0.00	0.00
100.070	106.550	3.885	12008.4	6388.0	31.479	3.864	2.67		Clay	77.0			100.71	0.75	n.a.	n.a.	0.65	0.742	n.a.	n.a.	n.a.	n.a.	0.00	0.00
100.230	97.460	2.720	12027.6	6397.2	28.589	2.975	2.63		Clay	73.5			92.12	0.75	n.a.	n.a.	0.65	0.742	n.a.	n.a.	n.a.	n.a.	0.00	0.00
100.390	64.120	1.843	12046.8	6406.5	18.137	3.172	2.80		Clay	87.2			60.60	0.75	n.a.	n.a.	0.65	0.742	n.a.	n.a.	n.a.	n.a.	0.00	0.00

CORNERSTONE EARTH GROUP

CPT No.	8

PGA (A_{max})	0.89

Total Settlement:	0.14	(Inches)

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Depth (ft)	q_c (tsf)	f_s (tsf)	σ_{vc} (psf)	Insitu σ'_{vc} (psf)	Q	F (%)	I_c	Layer "Plastic" PI > 7	Flag Soil Type	Fines (%)	q_{cN} near interfaces (soft layer)	Thin Layer Factor (K_H)	Interpreted q_{cN}	C_N	q_{c1N}	$q_{c1N\text{-}CS}$	Stress Reduction Coeff, r_d	CSR	K_σ for Sand	$CRR_{M=7.5, \sigma'vc = 1 atm}$	CRR	Factor of Safety (CRR/CSR)	Vertical Strain ε_v	Settlement (Inches)
0.160	1.220	0.571	19.2	19.2	126.083	47.199	3.20		Unsaturated	100.0			1.15	1.70	1.96	56.50	1.00	0.579	1.100	n.a.	n.a.	n.a.	0.00	0.00
0.330	12.100	0.991	39.6	39.6	184.954	8.201	2.45		Unsaturated	59.0			11.44	1.70	19.44	73.35	1.00	0.579	1.100	n.a.	n.a.	n.a.	0.00	0.00
0.490	26.980	1.225	58.8	58.8	152.810	4.544	2.28		Unsaturated	45.0			25.50	1.70	43.35	98.60	1.00	0.579	1.100	n.a.	n.a.	n.a.	0.00	0.00
0.660	243.420	1.440	79.2	79.2	1189.036	0.591	1.07		Unsaturated	0.0			230.08	1.70	391.13	391.13	1.00	0.579	1.100	n.a.	n.a.	n.a.	0.00	0.00
0.820	195.290	1.956	98.4	98.4	855.747	1.002	1.33		Unsaturated	0.0			184.58	1.70	313.79	313.79	1.00	0.579	1.100	n.a.	n.a.	n.a.	0.00	0.00
0.980	145.610	2.003	117.6	117.6	583.558	1.376	1.53		Unsaturated	0.0			137.63	1.70	233.97	233.97	1.00	0.579	1.100	n.a.	n.a.	n.a.	0.00	0.00
1.150	167.490	1.956	138.0	138.0	619.644	1.168	1.46		Unsaturated	0.0			158.31	1.70	269.12	269.12	1.00	0.579	1.100	n.a.	n.a.	n.a.	0.00	0.00
1.310	150.790	2.150	157.2	157.2	522.627	1.426	1.57		Unsaturated	0.0			142.52	1.70	242.29	242.29	1.00	0.579	1.100	n.a.	n.a.	n.a.	0.00	0.00
1.480	125.040	2.274	177.6	177.6	407.653	1.820	1.71		Unsaturated	0.0			118.19	1.70	200.91	200.91	1.00	0.579	1.100	n.a.	n.a.	n.a.	0.00	0.00
1.640	99.980	2.378	196.8	196.8	309.560	2.381	1.87		Unsaturated	12.8			94.50	1.70	160.65	180.53	1.00	0.579	1.100	n.a.	n.a.	n.a.	0.00	0.00
1.800	62.560	1.708	216.0	216.0	184.753	2.735	2.05		Unsaturated	26.8			59.13	1.70	100.52	151.43	1.00	0.579	1.100	n.a.	n.a.	n.a.	0.00	0.00
1.970	36.380	1.496	236.4	236.4	102.541	4.124	2.34		Unsaturated	50.6			34.39	1.70	58.46	120.19	1.00	0.579	1.100	n.a.	n.a.	n.a.	0.00	0.00
2.130	23.600	1.208	255.6	255.6	63.833	5.146	2.55		Unsaturated	67.0			22.31	1.70	37.92	98.97	1.00	0.579	1.100	n.a.	n.a.	n.a.	0.00	0.00
2.300	17.240	0.895	276.0	276.0	67.264	5.233	2.54		Unsaturated	66.3			16.29	1.70	27.70	85.65	1.00	0.579	1.100	n.a.	n.a.	n.a.	0.00	0.00
2.460	14.740	0.706	295.2	295.2	54.755	4.836	2.57		Unsaturated	68.9			13.93	1.70	23.68	81.00	1.00	0.579	1.100	n.a.	n.a.	n.a.	0.00	0.00
2.620	12.500	0.646	314.4	314.4	44.315	5.232	2.66		Unsaturated	75.9			11.81	1.70	20.09	77.53	1.00	0.579	1.100	n.a.	n.a.	n.a.	0.00	0.00
2.790	10.850	0.600	334.8	334.8	36.703	5.617	2.74		Unsaturated	82.2			10.26	1.70	17.43	74.96	1.00	0.579	1.100	n.a.	n.a.	n.a.	0.00	0.00
2.950	10.510	0.565	354.0	354.0	34.143	5.468	2.75		Unsaturated	83.3			9.93	1.70	16.89	74.38	1.00	0.579	1.100	n.a.	n.a.	n.a.	0.00	0.00
3.120	11.400	0.560	374.4	374.4	35.625	4.993	2.71		Unsaturated	80.0			10.78	1.70	18.32	75.82	1.00	0.578	1.100	n.a.	n.a.	n.a.	0.00	0.00
3.280	11.490	0.554	393.6	393.6	34.646	4.905	2.72		Unsaturated	80.3			10.86	1.70	18.46	76.05	1.00	0.578	1.100	n.a.	n.a.	n.a.	0.00	0.00
3.440	11.790	0.542	412.8	412.8	34.372	4.681	2.70		Unsaturated	79.3			11.14	1.70	18.94	76.54	1.00	0.578	1.100	n.a.	n.a.	n.a.	0.00	0.00
3.610	13.070	0.539	433.2	433.2	36.873	4.197	2.65		Unsaturated	74.9			12.35	1.70	21.00	78.57	1.00	0.578	1.100	n.a.	n.a.	n.a.	0.00	0.00
3.770	14.000	0.529	452.4	452.4	38.332	3.842	2.61		Unsaturated	71.8			13.23	1.70	22.50	79.99	1.00	0.578	1.100	n.a.	n.a.	n.a.	0.00	0.00
3.940	14.130	0.509	472.8	472.8	37.490	3.661	2.60		Unsaturated	71.2			13.36	1.70	22.70	80.16	1.00	0.577	1.100	n.a.	n.a.	n.a.	0.00	0.00
4.100	13.170	0.496	492.0	492.0	33.915	3.835	2.65		Unsaturated	74.9			12.45	1.70	21.16	78.77	1.00	0.577	1.100	n.a.	n.a.	n.a.	0.00	0.00
4.270	12.120	0.477	512.4	512.4	30.260	4.017	2.70		Unsaturated	78.9			11.46	1.70	19.47	77.17	1.00	0.577	1.100	n.a.	n.a.	n.a.	0.00	0.00
4.430	10.990	0.448	531.6	531.6	40.347	4.181	2.62		Unsaturated	72.6			10.39	1.70	17.66	73.87	1.00	0.577	1.100	n.a.	n.a.	n.a.	0.00	0.00
4.590	10.310	0.411	550.8	550.8	36.436	4.097	2.65		Unsaturated	74.7			9.74	1.70	16.57	72.78	1.00	0.576	1.100	n.a.	n.a.	n.a.	0.00	0.00
4.760	10.400	0.360	571.2	571.2	35.415	3.557	2.61		Unsaturated	72.0			9.83	1.70	16.71	72.54	1.00	0.576	1.100	n.a.	n.a.	n.a.	0.00	0.00
4.920	10.190	0.323	590.4	590.4	33.519	3.259	2.60		Unsaturated	71.4			9.63	1.70	16.37	72.00	1.00	0.576	1.100	n.a.	n.a.	n.a.	0.00	0.00
5.090	9.040	0.290	610.8	610.8	28.601	3.325	2.66		Clay	76.0			8.54	1.39	n.a.	n.a.	1.00	0.581	n.a.	n.a.	n.a.	n.a.	0.00	0.00
5.250	8.700	0.269	630.0	630.0	26.619	3.209	2.68		Clay	77.1			8.22	1.38	n.a.	n.a.	0.99	0.590	n.a.	n.a.	n.a.	n.a.	0.00	0.00
5.410	8.830	0.256	649.2	649.2	26.203	3.010	2.66		Clay	76.1			8.35	1.37	n.a.	n.a.	0.99	0.599	n.a.	n.a.	n.a.	n.a.	0.00	0.00
5.580	8.390	0.230	669.6	669.6	24.060	2.858	2.68		Clay	77.2			7.93	1.35	n.a.	n.a.	0.99	0.608	n.a.	n.a.	n.a.	n.a.	0.00	0.00
5.740	7.930	0.218	688.8	688.8	22.026	2.871	2.71		Clay	79.7			7.50	1.34	n.a.	n.a.	0.99	0.616	n.a.	n.a.	n.a.	n.a.	0.00	0.00
5.910	7.070	0.202	709.2	709.2	18.938	3.012	2.77		Clay	84.9			6.68	1.33	n.a.	n.a.	0.99	0.625	n.a.	n.a.	n.a.	n.a.	0.00	0.00
6.070	6.400	0.198	728.4	728.4	16.573	3.277	2.84		Clay	90.4			6.05	1.32	n.a.	n.a.	0.99	0.632	n.a.	n.a.	n.a.	n.a.	0.00	0.00
6.230	5.500	0.203	747.6	747.6	13.714	3.966	2.96		Clay	99.6			5.20	1.32	n.a.	n.a.	0.99	0.640	n.a.	n.a.	n.a.	n.a.	0.00	0.00
6.400	5.130	0.215	768.0	768.0	12.359	4.530	3.03		Clay	100.0			4.85	1.31	n.a.	n.a.	0.99	0.648	n.a.	n.a.	n.a.	n.a.	0.00	0.00
6.560	4.680	0.219	787.2	787.2	10.890	5.116	3.10		Clay	100.0			4.42	1.30	n.a.	n.a.	0.99	0.655	n.a.	n.a.	n.a.	n.a.	0.00	0.00
6.730	4.790	0.209	807.6	807.6	10.862	4.756	3.09		Clay	100.0			4.53	1.29	n.a.	n.a.	0.99	0.662	n.a.	n.a.	n.a.	n.a.	0.00	0.00
6.890	5.090	0.210	826.8	826.8	11.313	4.486	3.06		Clay	100.0			4.81	1.28	n.a.	n.a.	0.99	0.669	n.a.	n.a.	n.a.	n.a.	0.00	0.00
7.050	5.510	0.223	846.0	846.0	12.026	4.376	3.03		Clay	100.0			5.21	1.27	n.a.	n.a.	0.99	0.675	n.a.	n.a.	n.a.	n.a.	0.00	0.00
7.220	6.110	0.240	866.4	866.4	13.104	4.233	2.99		Clay	100.0			5.78	1.27	n.a.	n.a.	0.99	0.682	n.a.	n.a.	n.a.	n.a.	0.00	0.00
7.380	6.730	0.263	885.6	885.6	14.199	4.183	2.96		Clay	99.8			6.36	1.26	n.a.	n.a.	0.99	0.688	n.a.	n.a.	n.a.	n.a.	0.00	0.00
7.550	7.580	0.287	906.0	902.9	15.787	4.023	2.91		Clay	96.1			7.16	1.25	n.a.	n.a.	0.99	0.694	n.a.	n.a.	n.a.	n.a.	0.00	0.00
7.710	8.810	0.306	925.2	912.1	18.304	3.666	2.84		Clay	90.1			8.33	1.25	n.a.	n.a.	0.99	0.700	n.a.	n.a.	n.a.	n.a.	0.00	0.00
7.870	9.320	0.334	944.4	921.3	19.207	3.778	2.83		Clay	89.4			8.81	1.25	n.a.	n.a.	0.99	0.706	n.a.	n.a.	n.a.	n.a.	0.00	0.00
8.040	10.140	0.376	964.8	931.1	20.744	3.893	2.81		Clay	88.0			9.58	1.24	n.a.	n.a.	0.99	0.711	n.a.	n.a.	n.a.	n.a.	0.00	0.00
8.200	10.310	0.416	984.0	940.3	20.882	4.235	2.83		Clay	89.8			9.74	1.24	n.a.	n.a.	0.99	0.717	n.a.	n.a.	n.a.	n.a.	0.00	0.00
8.370	10.110	0.411	1004.4	950.1	20.225	4.279	2.85		Clay	90.8			9.56	1.24	n.a.	n.a.	0.99	0.722	n.a.	n.a.	n.a.	n.a.	0.00	0.00
8.530	9.460	0.402	1023.6	959.3	18.655	4.493	2.89		Clay	94.1			8.94	1.23	n.a.	n.a.	0.99	0.727	n.a.	n.a.	n.a.	n.a.	0.00	0.00
8.690	9.350	0.399	1042.8	968.5	18.231	4.517	2.90		Clay	94.8			8.84	1.23	n.a.	n.a.	0.99	0.732	n.a.	n.a.	n.a.	n.a.	0.00	0.00
8.860	10.580	0.441	1063.2	978.3	20.542	4.391	2.85		Clay	91.0			10.00	1.23	n.a.	n.a.	0.99	0.737	n.a.	n.a.	n.a.	n.a.	0.00	0.00
9.020	13.130	0.500	1082.4	987.6	25.495	3.969	2.75		Clay	83.1			12.41	1.22	n.a.	n.a.	0.99	0.742	n.a.	n.a.	n.a.	n.a.	0.00	0.00
9.190	13.640	0.560	1102.8	997.3	26.247	4.276	2.76		Clay	84.0			12.89	1.22	n.a.	n.a.	0.98	0.747	n.a.	n.a.	n.a.	n.a.	0.00	0.00
9.350	14.030	0.615	1122.0	1006.6	26.762	4.565	2.78		Clay	85.0			13.26	1.22	n.a.	n.a.	0.98	0.751	n.a.	n.a.	n.a.	n.a.	0.00	0.00
9.510	14.260	0.662	1141.2	1015.8	26.954	4.835	2.79		Clay	86.2			13.48	1.21	n.a.	n.a.	0.98	0.756	n.a.	n.a.	n.a.	n.a.	0.00	0.00
9.680	14.570	0.688	1161.6	1025.6	27.281	4.917	2.79		Clay	86.3			13.77	1.21	n.a.	n.a.	0.98	0.760	n.a.	n.a.	n.a.	n.a.	0.00	0.00
9.840	14.720	0.690	1180.8	1034.8	27.309	4.880	2.79		Clay	86.1			13.91	1.21	n.a.	n.a.	0.98	0.764	n.a.	n.a.	n.a.	n.a.	0.00	0.00
10.010	15.170	0.677	1201.2	1044.6	27.895	4.646	2.77		Clay	84.4			14.34	1.20	n.a.	n.a.	0.98	0.768	n.a.	n.a.	n.a.	n.a.	0.00	0.00
10.170	15.040	0.589	1220.4	1053.8	27.386	4.081	2.74		Clay	81.8			14.22	1.20	n.a.	n.a.	0.98	0.772	n.a.	n.a.	n.a.	n.a.	0.00	0.00
10.330	15.180	0.750	1239.6	1063.0	27.394	5.148	2.80		Clay	87.3			14.35	1.20	n.a.	n.a.	0.98	0.776	n.a.	n.a.	n.a.	n.a.	0.00	0.00
10.500	15.330	0.712	1260.0	1072.8	27.405	4.840	2.79		Clay	85.8			14.49	1.20	n.a.	n.a.	0.98	0.780	n.a.	n.a.	n.a.	n.a.	0.00	0.00
10.660	14.230	0.713	1279.2	1082.0	25.121	5.247	2.84		Clay	90.0			13.45	1.19	n.a.	n.a.	0.98	0.784	n.a.	n.a.	n.a.	n.a.	0.00	0.00
10.830	15.580	0.702	1299.6	1091.8	27.349	4.703	2.78		Clay	85.2			14.73	1.19	n.a.	n.a.	0.98	0.788	n.a.	n.a.	n.a.	n.a.	0.00	0.00
10.990	15.410	0.697	1318.8	1101.0	26.794	4.727	2.79		Clay	85.8			14.57	1.19	n.a.	n.a.	0.98	0.791	n.a.	n.a.	n.a.	n.a.	0.00	0.00

CORNERSTONE EARTH GROUP

CPT No.	8

PGA (A_{max})	0.89

Total Settlement:	0.14	(Inches)

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Depth (ft)	q_c (tsf)	f_s (tsf)	σ_{vc} (psf)	Insitu σ'_{vc} (psf)	Q	F (%)	I_c	Layer "Plastic" PI > 7	Flag Soil Type	Fines (%)	q_{cN} near interfaces (soft layer)	Thin Layer Factor (K_H)	Interpreted q_{cN}	C_N	q_{c1N}	$q_{c1N\text{-}CS}$	Stress Reduction Coeff, r_d	CSR	K_σ for Sand	$CRR_{M=7.5,\ \sigma'vc = 1\ atm}$	CRR	Factor of Safety (CRR/CSR)	Vertical Strain ε_v	Settlement (Inches)
11.150	15.220	0.691	1338.0	1110.2	26.212	4.752	2.79		Clay	86.5			14.39	1.19	n.a.	n.a.	0.98	0.794	n.a.	n.a.	n.a.	n.a.	0.00	0.00
11.320	15.490	0.776	1358.4	1120.0	26.447	5.241	2.82		Clay	88.6			14.64	1.18	n.a.	n.a.	0.98	0.798	n.a.	n.a.	n.a.	n.a.	0.00	0.00
11.480	15.760	0.748	1377.6	1129.2	26.692	4.961	2.80		Clay	87.1			14.90	1.18	n.a.	n.a.	0.98	0.801	n.a.	n.a.	n.a.	n.a.	0.00	0.00
11.650	15.460	0.760	1398.0	1139.0	25.918	5.149	2.82		Clay	88.7			14.61	1.18	n.a.	n.a.	0.98	0.805	n.a.	n.a.	n.a.	n.a.	0.00	0.00
11.810	15.690	0.759	1417.2	1148.3	26.094	5.065	2.81		Clay	88.1			14.83	1.18	n.a.	n.a.	0.98	0.808	n.a.	n.a.	n.a.	n.a.	0.00	0.00
11.980	17.040	0.755	1437.6	1158.0	28.187	4.628	2.76		Clay	84.1			16.11	1.17	n.a.	n.a.	0.98	0.811	n.a.	n.a.	n.a.	n.a.	0.00	0.00
12.140	17.620	0.752	1456.8	1167.3	28.942	4.449	2.74		Clay	82.4			16.65	1.17	n.a.	n.a.	0.98	0.814	n.a.	n.a.	n.a.	n.a.	0.00	0.00
12.300	18.680	0.768	1476.0	1176.5	30.501	4.280	2.71		Clay	80.2			17.66	1.17	n.a.	n.a.	0.98	0.817	n.a.	n.a.	n.a.	n.a.	0.00	0.00
12.470	19.180	0.848	1496.4	1186.3	31.075	4.599	2.73		Clay	81.4			18.13	1.16	n.a.	n.a.	0.98	0.820	n.a.	n.a.	n.a.	n.a.	0.00	0.00
12.630	19.790	0.911	1515.6	1195.5	31.840	4.786	2.73		Clay	81.8			18.71	1.16	n.a.	n.a.	0.98	0.822	n.a.	n.a.	n.a.	n.a.	0.00	0.00
12.800	19.580	0.922	1536.0	1205.3	31.216	4.903	2.75		Clay	82.9			18.51	1.16	n.a.	n.a.	0.97	0.825	n.a.	n.a.	n.a.	n.a.	0.00	0.00
12.960	18.850	0.946	1555.2	1214.5	29.761	5.232	2.78		Clay	85.6			17.82	1.16	n.a.	n.a.	0.97	0.828	n.a.	n.a.	n.a.	n.a.	0.00	0.00
13.120	17.780	0.916	1574.4	1223.7	27.773	5.393	2.81		Clay	88.1			16.81	1.16	n.a.	n.a.	0.97	0.830	n.a.	n.a.	n.a.	n.a.	0.00	0.00
13.290	17.310	0.872	1594.8	1233.5	26.773	5.281	2.82		Clay	88.5			16.36	1.15	n.a.	n.a.	0.97	0.833	n.a.	n.a.	n.a.	n.a.	0.00	0.00
13.450	17.400	0.812	1614.0	1242.7	26.704	4.894	2.80		Clay	86.7			16.45	1.15	n.a.	n.a.	0.97	0.836	n.a.	n.a.	n.a.	n.a.	0.00	0.00
13.620	16.610	0.763	1634.4	1252.5	25.218	4.832	2.81		Clay	87.9			15.70	1.15	n.a.	n.a.	0.97	0.838	n.a.	n.a.	n.a.	n.a.	0.00	0.00
13.780	15.560	0.713	1653.6	1261.7	23.354	4.841	2.84		Clay	89.9			14.71	1.15	n.a.	n.a.	0.97	0.840	n.a.	n.a.	n.a.	n.a.	0.00	0.00
13.940	15.260	0.666	1672.8	1270.9	22.697	4.620	2.83		Clay	89.6			14.42	1.14	n.a.	n.a.	0.97	0.843	n.a.	n.a.	n.a.	n.a.	0.00	0.00
14.110	15.200	0.630	1693.2	1280.7	22.414	4.389	2.82		Clay	88.7			14.37	1.14	n.a.	n.a.	0.97	0.845	n.a.	n.a.	n.a.	n.a.	0.00	0.00
14.270	15.180	0.591	1712.4	1290.0	22.208	4.123	2.81		Clay	87.5			14.35	1.14	n.a.	n.a.	0.97	0.847	n.a.	n.a.	n.a.	n.a.	0.00	0.00
14.440	15.250	0.572	1732.8	1299.7	22.133	3.974	2.80		Clay	86.8			14.41	1.14	n.a.	n.a.	0.97	0.850	n.a.	n.a.	n.a.	n.a.	0.00	0.00
14.600	14.610	0.553	1752.0	1309.0	20.985	4.024	2.82		Clay	88.5			13.81	1.14	n.a.	n.a.	0.97	0.852	n.a.	n.a.	n.a.	n.a.	0.00	0.00
14.760	14.170	0.513	1771.2	1318.2	20.156	3.864	2.82		Clay	88.6			13.39	1.13	n.a.	n.a.	0.97	0.854	n.a.	n.a.	n.a.	n.a.	0.00	0.00
14.930	13.840	0.420	1791.6	1328.0	19.495	3.246	2.78		Clay	85.7			13.08	1.13	n.a.	n.a.	0.97	0.856	n.a.	n.a.	n.a.	n.a.	0.00	0.00
15.090	14.010	0.457	1810.8	1337.2	19.600	3.484	2.80		Clay	87.1			13.24	1.13	n.a.	n.a.	0.97	0.858	n.a.	n.a.	n.a.	n.a.	0.00	0.00
15.260	15.320	0.528	1831.2	1347.0	21.388	3.666	2.79		Clay	85.9			14.48	1.13	n.a.	n.a.	0.97	0.860	n.a.	n.a.	n.a.	n.a.	0.00	0.00
15.420	17.250	0.647	1850.4	1356.2	24.074	3.963	2.77		Clay	84.5			16.30	1.12	n.a.	n.a.	0.97	0.862	n.a.	n.a.	n.a.	n.a.	0.00	0.00
15.580	17.170	0.764	1869.6	1365.4	23.781	4.708	2.82		Clay	88.8			16.23	1.12	n.a.	n.a.	0.97	0.864	n.a.	n.a.	n.a.	n.a.	0.00	0.00
15.750	16.880	0.795	1890.0	1375.2	23.175	4.987	2.85		Clay	90.8			15.95	1.12	n.a.	n.a.	0.97	0.866	n.a.	n.a.	n.a.	n.a.	0.00	0.00
15.910	16.780	0.796	1909.2	1384.4	22.862	5.027	2.85		Clay	91.3			15.86	1.12	n.a.	n.a.	0.96	0.867	n.a.	n.a.	n.a.	n.a.	0.00	0.00
16.080	16.860	0.738	1929.6	1394.2	22.802	4.644	2.83		Clay	89.6			15.94	1.12	n.a.	n.a.	0.96	0.869	n.a.	n.a.	n.a.	n.a.	0.00	0.00
16.240	17.730	0.680	1948.8	1403.4	23.878	4.056	2.78		Clay	85.3			16.76	1.11	n.a.	n.a.	0.96	0.871	n.a.	n.a.	n.a.	n.a.	0.00	0.00
16.400	17.530	0.598	1968.0	1412.6	23.426	3.615	2.75		Clay	83.2			16.57	1.11	n.a.	n.a.	0.96	0.873	n.a.	n.a.	n.a.	n.a.	0.00	0.00
16.570	16.290	0.543	1988.4	1422.4	21.507	3.552	2.78		Clay	85.0			15.40	1.11	n.a.	n.a.	0.96	0.874	n.a.	n.a.	n.a.	n.a.	0.00	0.00
16.730	14.970	0.509	2007.6	1431.6	19.511	3.645	2.82		Clay	88.2			14.15	1.11	n.a.	n.a.	0.96	0.876	n.a.	n.a.	n.a.	n.a.	0.00	0.00
16.900	15.250	0.475	2028.0	1441.4	19.752	3.333	2.79		Clay	85.9			14.41	1.11	n.a.	n.a.	0.96	0.878	n.a.	n.a.	n.a.	n.a.	0.00	0.00
17.060	16.920	0.483	2047.2	1450.7	21.916	3.040	2.73		Clay	81.1			15.99	1.10	n.a.	n.a.	0.96	0.879	n.a.	n.a.	n.a.	n.a.	0.00	0.00
17.220	17.650	0.499	2066.4	1459.9	22.765	3.002	2.71		Clay	79.8			16.68	1.10	n.a.	n.a.	0.96	0.881	n.a.	n.a.	n.a.	n.a.	0.00	0.00
17.390	17.540	0.492	2086.8	1469.7	22.449	2.983	2.71		Clay	80.1			16.58	1.10	n.a.	n.a.	0.96	0.882	n.a.	n.a.	n.a.	n.a.	0.00	0.00
17.550	16.070	0.452	2106.0	1478.9	20.309	3.009	2.75		Clay	83.0			15.19	1.10	n.a.	n.a.	0.96	0.884	n.a.	n.a.	n.a.	n.a.	0.00	0.00
17.720	13.070	0.365	2126.4	1488.7	16.131	3.037	2.83		Clay	89.5			12.35	1.10	n.a.	n.a.	0.96	0.885	n.a.	n.a.	n.a.	n.a.	0.00	0.00
17.880	10.630	0.303	2145.6	1497.9	12.761	3.166	2.92		Clay	96.9			10.05	1.10	n.a.	n.a.	0.96	0.886	n.a.	n.a.	n.a.	n.a.	0.00	0.00
18.040	9.500	0.284	2164.8	1507.1	11.171	3.368	2.99		Clay	100.0			8.98	1.09	n.a.	n.a.	0.96	0.888	n.a.	n.a.	n.a.	n.a.	0.00	0.00
18.210	9.310	0.289	2185.2	1516.9	10.834	3.514	3.01		Clay	100.0			8.80	1.09	n.a.	n.a.	0.96	0.889	n.a.	n.a.	n.a.	n.a.	0.00	0.00
18.370	9.170	0.270	2204.4	1526.1	10.573	3.349	3.00		Clay	100.0			8.67	1.09	n.a.	n.a.	0.96	0.890	n.a.	n.a.	n.a.	n.a.	0.00	0.00
18.540	8.710	0.220	2224.8	1535.9	9.893	2.890	2.99		Clay	100.0			8.23	1.09	n.a.	n.a.	0.96	0.892	n.a.	n.a.	n.a.	n.a.	0.00	0.00
18.700	7.560	0.216	2244.0	1545.1	8.333	3.352	3.09		Clay	100.0			7.15	1.09	n.a.	n.a.	0.96	0.893	n.a.	n.a.	n.a.	n.a.	0.00	0.00
18.860	6.960	0.241	2263.2	1554.3	7.500	4.142	3.18		Clay	100.0			6.58	1.08	n.a.	n.a.	0.95	0.894	n.a.	n.a.	n.a.	n.a.	0.00	0.00
19.030	8.750	0.284	2283.6	1564.1	9.728	3.730	3.06		Clay	100.0			8.27	1.08	n.a.	n.a.	0.95	0.895	n.a.	n.a.	n.a.	n.a.	0.00	0.00
19.190	9.990	0.274	2302.8	1573.3	11.235	3.103	2.96		Clay	100.0			9.44	1.08	n.a.	n.a.	0.95	0.896	n.a.	n.a.	n.a.	n.a.	0.00	0.00
19.360	9.520	0.270	2323.2	1583.1	10.559	3.233	3.00		Clay	100.0			9.00	1.08	n.a.	n.a.	0.95	0.898	n.a.	n.a.	n.a.	n.a.	0.00	0.00
19.520	9.130	0.219	2342.4	1592.4	9.996	2.753	2.98		Clay	100.0			8.63	1.08	n.a.	n.a.	0.95	0.899	n.a.	n.a.	n.a.	n.a.	0.00	0.00
19.690	8.040	0.225	2362.8	1602.1	8.562	3.276	3.07		Clay	100.0			7.60	1.08	n.a.	n.a.	0.95	0.900	n.a.	n.a.	n.a.	n.a.	0.00	0.00
19.850	7.160	0.225	2382.0	1611.4	7.409	3.768	3.16		Clay	100.0			6.77	1.07	n.a.	n.a.	0.95	0.901	n.a.	n.a.	n.a.	n.a.	0.00	0.00
20.010	7.200	0.224	2401.2	1620.6	7.404	3.732	3.16		Clay	100.0			6.81	1.07	n.a.	n.a.	0.95	0.902	n.a.	n.a.	n.a.	n.a.	0.00	0.00
20.180	7.430	0.207	2421.6	1630.4	7.629	3.330	3.12		Clay	100.0			7.02	1.07	n.a.	n.a.	0.95	0.903	n.a.	n.a.	n.a.	n.a.	0.00	0.00
20.340	7.690	0.218	2440.8	1639.6	7.892	3.374	3.11		Clay	100.0			7.27	1.07	n.a.	n.a.	0.95	0.904	n.a.	n.a.	n.a.	n.a.	0.00	0.00
20.510	7.810	0.244	2461.2	1649.4	7.978	3.712	3.13		Clay	100.0			7.38	1.07	n.a.	n.a.	0.95	0.905	n.a.	n.a.	n.a.	n.a.	0.00	0.00
20.670	8.210	0.248	2480.4	1658.6	8.404	3.560	3.10		Clay	100.0			7.76	1.07	n.a.	n.a.	0.95	0.906	n.a.	n.a.	n.a.	n.a.	0.00	0.00
20.830	8.400	0.237	2499.6	1667.8	8.574	3.319	3.08		Clay	100.0			7.94	1.06	n.a.	n.a.	0.95	0.907	n.a.	n.a.	n.a.	n.a.	0.00	0.00
21.000	8.150	0.225	2520.0	1677.6	8.214	3.266	3.09		Clay	100.0			7.70	1.06	n.a.	n.a.	0.95	0.908	n.a.	n.a.	n.a.	n.a.	0.00	0.00
21.160	8.010	0.230	2539.2	1686.8	7.992	3.412	3.11		Clay	100.0			7.57	1.06	n.a.	n.a.	0.95	0.909	n.a.	n.a.	n.a.	n.a.	0.00	0.00
21.330	8.030	0.214	2559.6	1696.6	7.957	3.169	3.09		Clay	100.0			7.59	1.06	n.a.	n.a.	0.95	0.909	n.a.	n.a.	n.a.	n.a.	0.00	0.00
21.490	7.920	0.210	2578.8	1705.8	7.774	3.161	3.10		Clay	100.0			7.49	1.06	n.a.	n.a.	0.95	0.910	n.a.	n.a.	n.a.	n.a.	0.00	0.00
21.650	7.910	0.208	2598.0	1715.0	7.709	3.142	3.10		Clay	100.0			7.48	1.06	n.a.	n.a.	0.95	0.911	n.a.	n.a.	n.a.	n.a.	0.00	0.00
21.820	8.450	0.247	2618.4	1724.8	8.280	3.455	3.10		Clay	100.0			7.99	1.06	n.a.	n.a.	0.94	0.912	n.a.	n.a.	n.a.	n.a.	0.00	0.00
21.980	9.210	0.214	2637.6	1734.0	9.101	2.713	3.01		Clay	100.0			8.71	1.05	n.a.	n.a.	0.94	0.913	n.a.	n.a.	n.a.	n.a.	0.00	0.00

CORNERSTONE EARTH GROUP

CPT No.	8

PGA (A_{max})	0.89

Total Settlement:	0.14	(Inches)

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Depth (ft)	q_c (tsf)	f_s (tsf)	σ_{vc} (psf)	Insitu σ'_{vc} (psf)	Q	F (%)	I_c	Layer "Plastic" PI > 7	Flag Soil Type	Fines (%)	q_{cN} near interfaces (soft layer)	Thin Layer Factor (K_H)	Interpreted q_{cN}	C_N	q_{c1N}	$q_{c1N\text{-}CS}$	Stress Reduction Coeff, r_d	CSR	K_σ for Sand	$CRR_{M=7.5,\ \sigma'vc = 1\ atm}$	CRR	Factor of Safety (CRR/CSR)	Vertical Strain ε_v	Settlement (Inches)
22.150	9.420	0.241	2658.0	1743.8	9.280	2.979	3.02		Clay	100.0			8.90	1.05	n.a.	n.a.	0.94	0.913	n.a.	n.a.	n.a.	n.a.	0.00	0.00
22.310	9.410	0.248	2677.2	1753.1	9.208	3.066	3.03		Clay	100.0			8.89	1.05	n.a.	n.a.	0.94	0.914	n.a.	n.a.	n.a.	n.a.	0.00	0.00
22.470	9.180	0.193	2696.4	1762.3	8.888	2.462	2.99		Clay	100.0			8.68	1.05	n.a.	n.a.	0.94	0.915	n.a.	n.a.	n.a.	n.a.	0.00	0.00
22.640	9.480	0.206	2716.8	1772.1	9.166	2.538	2.99		Clay	100.0			8.96	1.05	n.a.	n.a.	0.94	0.916	n.a.	n.a.	n.a.	n.a.	0.00	0.00
22.800	10.410	0.179	2736.0	1781.3	10.152	1.981	2.89		Clay	94.4			9.84	1.05	n.a.	n.a.	0.94	0.916	n.a.	n.a.	n.a.	n.a.	0.00	0.00
22.970	11.320	0.211	2756.4	1791.1	11.102	2.118	2.88		Clay	93.0			10.70	1.04	n.a.	n.a.	0.94	0.917	n.a.	n.a.	n.a.	n.a.	0.00	0.00
23.130	12.740	0.330	2775.6	1800.3	12.612	2.910	2.91		Clay	95.5			12.04	1.04	n.a.	n.a.	0.94	0.918	n.a.	n.a.	n.a.	n.a.	0.00	0.00
23.290	13.280	0.424	2794.8	1809.5	13.134	3.564	2.94		Clay	98.6			12.55	1.04	n.a.	n.a.	0.94	0.918	n.a.	n.a.	n.a.	n.a.	0.00	0.00
23.460	17.060	0.554	2815.2	1819.3	17.207	3.542	2.85		Clay	91.0			16.12	1.04	n.a.	n.a.	0.94	0.919	n.a.	n.a.	n.a.	n.a.	0.00	0.00
23.620	20.770	0.690	2834.4	1828.5	21.168	3.566	2.78		Clay	85.5			19.63	1.04	n.a.	n.a.	0.94	0.919	n.a.	n.a.	n.a.	n.a.	0.00	0.00
23.790	23.030	0.772	2854.8	1838.3	23.503	3.572	2.75		Clay	82.8			21.77	1.04	n.a.	n.a.	0.94	0.920	n.a.	n.a.	n.a.	n.a.	0.00	0.00
23.950	24.570	0.848	2874.0	1847.5	25.042	3.664	2.73		Clay	81.7			23.22	1.04	n.a.	n.a.	0.94	0.921	n.a.	n.a.	n.a.	n.a.	0.00	0.00
24.110	24.830	0.891	2893.2	1856.7	25.188	3.811	2.74		Clay	82.4			23.47	1.04	n.a.	n.a.	0.94	0.921	n.a.	n.a.	n.a.	n.a.	0.00	0.00
24.280	26.610	0.924	2913.6	1866.5	26.952	3.672	2.71		Clay	79.8			25.15	1.03	n.a.	n.a.	0.94	0.922	n.a.	n.a.	n.a.	n.a.	0.00	0.00
24.440	26.880	0.906	2932.8	1875.7	27.097	3.563	2.70		Clay	79.0			25.41	1.03	n.a.	n.a.	0.93	0.922	n.a.	n.a.	n.a.	n.a.	0.00	0.00
24.610	24.600	0.895	2953.2	1885.5	24.527	3.870	2.76		Clay	83.5			23.25	1.03	n.a.	n.a.	0.93	0.923	n.a.	n.a.	n.a.	n.a.	0.00	0.00
24.770	21.470	0.835	2972.4	1894.8	21.094	4.179	2.83		Clay	89.2			20.29	1.03	n.a.	n.a.	0.93	0.923	n.a.	n.a.	n.a.	n.a.	0.00	0.00
24.930	18.080	0.769	2991.6	1904.0	17.421	4.639	2.92		Clay	96.6			17.09	1.03	n.a.	n.a.	0.93	0.924	n.a.	n.a.	n.a.	n.a.	0.00	0.00
25.100	14.430	0.668	3012.0	1913.8	13.506	5.166	3.03		Clay	100.0			13.64	1.03	n.a.	n.a.	0.93	0.924	n.a.	n.a.	n.a.	n.a.	0.00	0.00
25.260	12.790	0.617	3031.2	1923.0	11.726	5.469	3.10		Clay	100.0			12.09	1.03	n.a.	n.a.	0.93	0.925	n.a.	n.a.	n.a.	n.a.	0.00	0.00
25.430	14.840	0.453	3051.6	1932.8	13.777	3.403	2.92		Clay	96.3			14.03	1.02	n.a.	n.a.	0.93	0.925	n.a.	n.a.	n.a.	n.a.	0.00	0.00
25.590	16.140	0.491	3070.8	1942.0	15.041	3.365	2.88		Clay	93.6			15.26	1.02	n.a.	n.a.	0.93	0.925	n.a.	n.a.	n.a.	n.a.	0.00	0.00
25.750	17.590	0.573	3090.0	1951.2	16.446	3.568	2.87		Clay	92.4			16.63	1.02	n.a.	n.a.	0.93	0.926	n.a.	n.a.	n.a.	n.a.	0.00	0.00
25.920	19.100	0.703	3110.4	1961.0	17.894	4.005	2.87		Clay	92.6			18.05	1.02	n.a.	n.a.	0.93	0.926	n.a.	n.a.	n.a.	n.a.	0.00	0.00
26.080	19.960	0.721	3129.6	1970.2	18.673	3.919	2.85		Clay	91.0			18.87	1.02	n.a.	n.a.	0.93	0.927	n.a.	n.a.	n.a.	n.a.	0.00	0.00
26.250	21.040	0.784	3150.0	1980.0	19.662	4.027	2.84		Clay	90.2			19.89	1.02	n.a.	n.a.	0.93	0.927	n.a.	n.a.	n.a.	n.a.	0.00	0.00
26.410	23.210	0.808	3169.2	1989.2	21.743	3.737	2.79		Clay	85.9			21.94	1.02	n.a.	n.a.	0.93	0.927	n.a.	n.a.	n.a.	n.a.	0.00	0.00
26.570	24.260	0.833	3188.4	1998.4	22.684	3.673	2.77		Clay	84.4			22.93	1.02	n.a.	n.a.	0.93	0.928	n.a.	n.a.	n.a.	n.a.	0.00	0.00
26.740	24.730	0.829	3208.8	2008.2	23.031	3.587	2.76		Clay	83.4			23.37	1.01	n.a.	n.a.	0.93	0.928	n.a.	n.a.	n.a.	n.a.	0.00	0.00
26.900	25.740	0.774	3228.0	2017.4	23.917	3.209	2.71		Clay	79.9			24.33	1.01	n.a.	n.a.	0.93	0.928	n.a.	n.a.	n.a.	n.a.	0.00	0.00
27.070	26.920	0.701	3248.4	2027.2	24.956	2.771	2.66		Clay	75.6			25.44	1.01	n.a.	n.a.	0.92	0.929	n.a.	n.a.	n.a.	n.a.	0.00	0.00
27.230	28.460	0.794	3267.6	2036.4	26.346	2.961	2.66		Clay	75.6			26.90	1.01	n.a.	n.a.	0.92	0.929	n.a.	n.a.	n.a.	n.a.	0.00	0.00
27.400	28.260	0.755	3288.0	2046.2	26.015	2.835	2.65		Clay	75.0			26.71	1.01	n.a.	n.a.	0.92	0.929	n.a.	n.a.	n.a.	n.a.	0.00	0.00
27.560	23.220	0.686	3307.2	2055.5	20.985	3.182	2.75		Clay	83.3			21.95	1.01	n.a.	n.a.	0.92	0.929	n.a.	n.a.	n.a.	n.a.	0.00	0.00
27.720	24.340	0.720	3326.4	2064.7	21.966	3.173	2.74		Clay	82.0			23.01	1.01	n.a.	n.a.	0.92	0.930	n.a.	n.a.	n.a.	n.a.	0.00	0.00
27.890	20.520	0.662	3346.8	2074.5	18.170	3.512	2.83		Clay	89.3			19.40	1.01	n.a.	n.a.	0.92	0.930	n.a.	n.a.	n.a.	n.a.	0.00	0.00
28.050	18.060	0.602	3366.0	2083.7	15.719	3.677	2.89		Clay	94.3			17.07	1.00	n.a.	n.a.	0.92	0.930	n.a.	n.a.	n.a.	n.a.	0.00	0.00
28.220	15.900	0.511	3386.4	2093.5	13.572	3.594	2.94		Clay	97.8			15.03	1.00	n.a.	n.a.	0.92	0.930	n.a.	n.a.	n.a.	n.a.	0.00	0.00
28.380	14.620	0.517	3405.6	2102.7	12.286	4.006	3.00		Clay	100.0			13.82	1.00	n.a.	n.a.	0.92	0.931	n.a.	n.a.	n.a.	n.a.	0.00	0.00
28.540	15.060	0.573	3424.8	2111.9	12.640	4.291	3.01		Clay	100.0			14.23	1.00	n.a.	n.a.	0.92	0.931	n.a.	n.a.	n.a.	n.a.	0.00	0.00
28.710	16.370	0.624	3445.2	2121.7	13.807	4.261	2.97		Clay	100.0			15.47	1.00	n.a.	n.a.	0.92	0.931	n.a.	n.a.	n.a.	n.a.	0.00	0.00
28.870	17.260	0.727	3464.4	2130.9	14.574	4.681	2.98		Clay	100.0			16.31	1.00	n.a.	n.a.	0.92	0.931	n.a.	n.a.	n.a.	n.a.	0.00	0.00
29.040	18.060	0.729	3484.8	2140.7	15.245	4.468	2.95		Clay	99.3			17.07	1.00	n.a.	n.a.	0.92	0.931	n.a.	n.a.	n.a.	n.a.	0.00	0.00
29.200	18.130	0.757	3504.0	2149.9	15.236	4.623	2.96		Clay	100.0			17.14	1.00	n.a.	n.a.	0.92	0.931	n.a.	n.a.	n.a.	n.a.	0.00	0.00
29.360	17.230	0.701	3523.2	2159.1	14.328	4.532	2.98		Clay	100.0			16.29	0.99	n.a.	n.a.	0.92	0.932	n.a.	n.a.	n.a.	n.a.	0.00	0.00
29.530	17.880	0.636	3543.6	2168.9	14.854	3.950	2.93		Clay	97.4			16.90	0.99	n.a.	n.a.	0.91	0.932	n.a.	n.a.	n.a.	n.a.	0.00	0.00
29.690	18.160	0.565	3562.8	2178.1	15.039	3.450	2.89		Clay	94.1			17.16	0.99	n.a.	n.a.	0.91	0.932	n.a.	n.a.	n.a.	n.a.	0.00	0.00
29.860	20.430	0.585	3583.2	2187.9	17.037	3.136	2.82		Clay	88.7			19.31	0.99	n.a.	n.a.	0.91	0.932	n.a.	n.a.	n.a.	n.a.	0.00	0.00
30.020	23.170	0.646	3602.4	2197.2	19.451	3.021	2.77		Clay	84.2			21.90	0.99	n.a.	n.a.	0.91	0.932	n.a.	n.a.	n.a.	n.a.	0.00	0.00
30.180	25.410	0.727	3621.6	2206.4	21.392	3.082	2.74		Clay	82.1			24.02	0.99	n.a.	n.a.	0.91	0.932	n.a.	n.a.	n.a.	n.a.	0.00	0.00
30.350	25.520	0.749	3642.0	2216.2	21.387	3.162	2.75		Clay	82.6			24.12	0.99	n.a.	n.a.	0.91	0.932	n.a.	n.a.	n.a.	n.a.	0.00	0.00
30.510	24.650	0.733	3661.2	2225.4	20.508	3.213	2.76		Clay	84.1			23.30	0.99	n.a.	n.a.	0.91	0.932	n.a.	n.a.	n.a.	n.a.	0.00	0.00
30.680	23.350	0.684	3681.6	2235.2	19.246	3.181	2.78		Clay	85.6			22.07	0.99	n.a.	n.a.	0.91	0.932	n.a.	n.a.	n.a.	n.a.	0.00	0.00
30.840	21.610	0.659	3700.8	2244.4	17.608	3.337	2.83		Clay	89.1			20.43	0.98	n.a.	n.a.	0.91	0.933	n.a.	n.a.	n.a.	n.a.	0.00	0.00
31.000	20.960	0.642	3720.0	2253.6	16.951	3.362	2.84		Clay	90.3			19.81	0.98	n.a.	n.a.	0.91	0.933	n.a.	n.a.	n.a.	n.a.	0.00	0.00
31.170	20.220	0.604	3740.4	2263.4	16.214	3.290	2.85		Clay	91.0			19.11	0.98	n.a.	n.a.	0.91	0.933	n.a.	n.a.	n.a.	n.a.	0.00	0.00
31.330	20.340	0.618	3759.6	2272.6	16.246	3.348	2.85		Clay	91.4			19.22	0.98	n.a.	n.a.	0.91	0.933	n.a.	n.a.	n.a.	n.a.	0.00	0.00
31.500	20.470	0.599	3780.0	2282.4	16.281	3.223	2.84		Clay	90.5			19.35	0.98	n.a.	n.a.	0.91	0.933	n.a.	n.a.	n.a.	n.a.	0.00	0.00
31.660	18.280	0.576	3799.2	2291.6	14.296	3.513	2.91		Clay	95.9			17.28	0.98	n.a.	n.a.	0.91	0.933	n.a.	n.a.	n.a.	n.a.	0.00	0.00
31.820	20.920	0.665	3818.4	2300.8	16.525	3.495	2.86		Clay	91.8			19.77	0.98	n.a.	n.a.	0.91	0.933	n.a.	n.a.	n.a.	n.a.	0.00	0.00
31.990	21.470	0.698	3838.8	2310.6	16.922	3.572	2.86		Clay	91.6			20.29	0.98	n.a.	n.a.	0.90	0.933	n.a.	n.a.	n.a.	n.a.	0.00	0.00
32.150	21.850	0.734	3858.0	2319.8	17.174	3.685	2.86		Clay	91.9			20.65	0.98	n.a.	n.a.	0.90	0.933	n.a.	n.a.	n.a.	n.a.	0.00	0.00
32.320	21.690	0.749	3878.4	2329.6	16.956	3.790	2.87		Clay	92.9			20.50	0.97	n.a.	n.a.	0.90	0.933	n.a.	n.a.	n.a.	n.a.	0.00	0.00
32.480	22.150	0.793	3897.6	2338.8	17.274	3.926	2.88		Clay	93.1			20.94	0.97	n.a.	n.a.	0.90	0.933	n.a.	n.a.	n.a.	n.a.	0.00	0.00
32.640	22.720	0.854	3916.8	2348.1	17.684	4.111	2.88		Clay	93.5			21.47	0.97	n.a.	n.a.	0.90	0.933	n.a.	n.a.	n.a.	n.a.	0.00	0.00
32.810	23.030	0.870	3937.2	2357.9	17.865	4.131	2.88		Clay	93.3			21.77	0.97	n.a.	n.a.	0.90	0.933	n.a.	n.a.	n.a.	n.a.	0.00	0.00
32.970	21.990	0.845	3956.4	2367.1	16.908	4.223	2.90		Clay	95.3			20.78	0.97	n.a.	n.a.	0.90	0.933	n.a.	n.a.	n.a.	n.a.	0.00	0.00

CORNERSTONE EARTH GROUP

CPT No.	8

PGA (A_{max})	0.89

Total Settlement:	0.14	(Inches)

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Depth (ft)	q_c (tsf)	f_s (tsf)	σ_{vc} (psf)	Insitu σ'_{vc} (psf)	Q	F (%)	I_c	Layer "Plastic" PI > 7	Flag Soil Type	Fines (%)	q_{cN} near interfaces (soft layer)	Thin Layer Factor (K_H)	Interpreted q_{cN}	C_N	q_{c1N}	$q_{c1N\text{-}CS}$	Stress Reduction Coeff, r_d	CSR	K_σ for Sand	$CRR_{M=7.5,\ \sigma'vc = 1\ atm}$	CRR	Factor of Safety (CRR/CSR)	Vertical Strain ε_v	Settlement (Inches)
33.140	21.010	0.802	3976.8	2376.9	16.006	4.215	2.92		Clay	96.7			19.86	0.97	n.a.	n.a.	0.90	0.932	n.a.	n.a.	n.a.	n.a.	0.00	0.00
33.300	19.800	0.701	3996.0	2386.1	14.922	3.939	2.93		Clay	97.2			18.71	0.97	n.a.	n.a.	0.90	0.932	n.a.	n.a.	n.a.	n.a.	0.00	0.00
33.460	19.070	0.594	4015.2	2395.3	14.247	3.482	2.91		Clay	95.8			18.02	0.97	n.a.	n.a.	0.90	0.932	n.a.	n.a.	n.a.	n.a.	0.00	0.00
33.630	18.100	0.514	4035.6	2405.1	13.373	3.194	2.91		Clay	95.8			17.11	0.97	n.a.	n.a.	0.90	0.932	n.a.	n.a.	n.a.	n.a.	0.00	0.00
33.790	16.860	0.470	4054.8	2414.3	12.287	3.171	2.94		Clay	98.0			15.94	0.97	n.a.	n.a.	0.90	0.932	n.a.	n.a.	n.a.	n.a.	0.00	0.00
33.960	15.970	0.386	4075.2	2424.1	11.495	2.772	2.93		Clay	97.2			15.09	0.96	n.a.	n.a.	0.90	0.932	n.a.	n.a.	n.a.	n.a.	0.00	0.00
34.120	14.380	0.371	4094.4	2433.3	10.137	3.004	2.99		Clay	100.0			13.59	0.96	n.a.	n.a.	0.90	0.932	n.a.	n.a.	n.a.	n.a.	0.00	0.00
34.280	13.360	0.355	4113.6	2442.5	9.255	3.139	3.04		Clay	100.0			12.63	0.96	n.a.	n.a.	0.90	0.932	n.a.	n.a.	n.a.	n.a.	0.00	0.00
34.450	14.440	0.358	4134.0	2452.3	10.091	2.891	2.98		Clay	100.0			13.65	0.96	n.a.	n.a.	0.89	0.932	n.a.	n.a.	n.a.	n.a.	0.00	0.00
34.610	14.720	0.341	4153.2	2461.5	10.273	2.694	2.96		Clay	99.9			13.91	0.96	n.a.	n.a.	0.89	0.932	n.a.	n.a.	n.a.	n.a.	0.00	0.00
34.780	14.750	0.488	4173.6	2471.3	10.248	3.851	3.05		Clay	100.0			13.94	0.96	n.a.	n.a.	0.89	0.932	n.a.	n.a.	n.a.	n.a.	0.00	0.00
34.940	15.100	0.555	4192.8	2480.5	10.484	4.271	3.07		Clay	100.0			14.27	0.96	n.a.	n.a.	0.89	0.931	n.a.	n.a.	n.a.	n.a.	0.00	0.00
35.100	16.540	0.600	4212.0	2489.8	11.595	4.157	3.03		Clay	100.0			15.63	0.96	n.a.	n.a.	0.89	0.931	n.a.	n.a.	n.a.	n.a.	0.00	0.00
35.270	17.600	0.609	4232.4	2499.6	12.389	3.935	2.99		Clay	100.0			16.64	0.96	n.a.	n.a.	0.89	0.931	n.a.	n.a.	n.a.	n.a.	0.00	0.00
35.430	16.500	0.480	4251.6	2508.8	11.459	3.337	2.98		Clay	100.0			15.60	0.96	n.a.	n.a.	0.89	0.931	n.a.	n.a.	n.a.	n.a.	0.00	0.00
35.600	15.170	0.392	4272.0	2518.6	10.350	3.004	2.98		Clay	100.0			14.34	0.96	n.a.	n.a.	0.89	0.931	n.a.	n.a.	n.a.	n.a.	0.00	0.00
35.760	15.300	0.342	4291.2	2527.8	10.408	2.601	2.95		Clay	98.8			14.46	0.95	n.a.	n.a.	0.89	0.931	n.a.	n.a.	n.a.	n.a.	0.00	0.00
35.930	14.960	0.386	4311.6	2537.6	10.092	3.012	2.99		Clay	100.0			14.14	0.95	n.a.	n.a.	0.89	0.931	n.a.	n.a.	n.a.	n.a.	0.00	0.00
36.090	15.980	0.526	4330.8	2546.8	10.849	3.808	3.03		Clay	100.0			15.10	0.95	n.a.	n.a.	0.89	0.930	n.a.	n.a.	n.a.	n.a.	0.00	0.00
36.250	17.780	0.735	4350.0	2556.0	12.210	4.710	3.04		Clay	100.0			16.81	0.95	n.a.	n.a.	0.89	0.930	n.a.	n.a.	n.a.	n.a.	0.00	0.00
36.420	20.960	0.699	4370.4	2565.8	14.635	3.725	2.92		Clay	96.5			19.81	0.95	n.a.	n.a.	0.89	0.930	n.a.	n.a.	n.a.	n.a.	0.00	0.00
36.580	22.710	0.625	4389.6	2575.0	15.934	3.045	2.84		Clay	89.9			21.47	0.95	n.a.	n.a.	0.89	0.930	n.a.	n.a.	n.a.	n.a.	0.00	0.00
36.750	22.860	0.652	4410.0	2584.8	15.982	3.155	2.84		Clay	90.6			21.61	0.95	n.a.	n.a.	0.89	0.930	n.a.	n.a.	n.a.	n.a.	0.00	0.00
36.910	19.910	0.830	4429.2	2594.0	13.643	4.689	3.00		Clay	100.0			18.82	0.95	n.a.	n.a.	0.88	0.929	n.a.	n.a.	n.a.	n.a.	0.00	0.00
37.070	22.420	0.994	4448.4	2603.2	15.516	4.920	2.97		Clay	100.0			21.19	0.95	n.a.	n.a.	0.88	0.929	n.a.	n.a.	n.a.	n.a.	0.00	0.00
37.240	26.990	1.272	4468.8	2613.0	18.948	5.136	2.92		Clay	96.7			25.51	0.95	n.a.	n.a.	0.88	0.929	n.a.	n.a.	n.a.	n.a.	0.00	0.00
37.400	34.860	1.629	4488.0	2622.2	24.876	4.994	2.83		Clay	89.0			32.95	0.94	n.a.	n.a.	0.88	0.929	n.a.	n.a.	n.a.	n.a.	0.00	0.00
37.570	44.540	1.737	4508.4	2632.0	32.132	4.107	2.69		Clay	77.9			42.10	0.94	n.a.	n.a.	0.88	0.929	n.a.	n.a.	n.a.	n.a.	0.00	0.00
37.730	49.440	1.305	4527.6	2641.2	39.911	2.766	2.50		Sand	63.1			46.73	0.90	41.91	103.18	0.88	0.928	0.976	0.142	0.177	0.19	0.03	0.06
37.890	49.030	1.517	4546.8	2650.5	39.487	3.245	2.55		Sand	67.1			46.34	0.90	41.50	103.59	0.88	0.928	0.975	0.142	0.178	0.19	0.03	0.06
38.060	38.580	2.256	4567.2	2660.3	27.288	6.215	2.86		Clay	92.0			36.47	0.94	n.a.	n.a.	0.88	0.928	n.a.	n.a.	n.a.	n.a.	0.00	0.00
38.220	35.560	2.574	4586.4	2669.5	24.924	7.738	2.96		Clay	99.6			33.61	0.94	n.a.	n.a.	0.88	0.928	n.a.	n.a.	n.a.	n.a.	0.00	0.00
38.390	82.680	2.159	4606.8	2679.3	67.514	2.686	2.33		Sand	49.1	142.75		142.75	0.93	132.61	213.20	0.88	0.927	0.929	4.330	8.852	9.55	0.00	0.00
38.550	132.180	2.034	4626.0	2688.5	108.897	1.566	2.01		Sand	24.1	142.75		142.75	0.92	131.15	182.34	0.88	0.927	0.948	0.799	1.613	1.74	0.00	0.00
38.710	150.460	2.086	4645.2	2697.7	124.005	1.408	1.94		Sand	18.3	142.75		142.75	0.91	130.25	166.46	0.88	0.927	0.955	0.449	0.807	0.87	0.01	0.02
38.880	151.030	2.493	4665.6	2707.5	124.249	1.676	1.99		Sand	22.6			142.75	0.92	130.64	178.32	0.88	0.927	0.949	0.679	1.329	1.43	0.00	0.00
39.040	148.150	2.471	4684.8	2716.7	121.627	1.695	2.00		Sand	23.4			140.03	0.91	127.93	176.97	0.88	0.926	0.949	0.645	1.249	1.35	0.00	0.00
39.210	165.090	2.887	4705.2	2726.5	135.506	1.774	1.99		Sand	22.0			156.04	0.92	143.10	191.19	0.87	0.926	0.940	1.191	2.462	2.66	0.00	0.00
39.370	173.630	2.692	4724.4	2735.7	142.368	1.572	1.93		Sand	17.7			164.11	0.91	150.09	186.77	0.87	0.926	0.942	0.968	2.005	2.17	0.00	0.00
39.530	175.570	4.067	4743.6	2744.9	143.731	2.348	2.06		Sand	28.0			165.95	0.92	153.13	215.98	0.87	0.925	0.922	5.276	10.701	11.56	0.00	0.00
39.700	193.410	4.390	4764.0	2754.7	158.245	2.298	2.03		Sand	25.3			182.81	0.93	169.25	229.60	0.87	0.925	0.921	15.840	32.090	34.69	0.00	0.00
39.860	299.770	4.063	4783.2	2763.9	245.933	1.366	1.73		Sand	1.6			283.34	0.93	264.06	264.06	0.87	0.925	0.920	810.363	1639.929	1773.09	0.00	0.00
40.030	351.360	3.671	4803.6	2773.7	288.080	1.052	1.60		Sand	0.0			332.10	0.93	309.21	309.21	0.87	0.925	0.919	#########	########	8797933.16	0.00	0.00
40.190	388.960	3.895	4822.8	2782.9	318.584	1.008	1.56		Sand	0.0			367.64	0.93	342.00	342.00	0.87	0.924	0.918	#########	########	##########	0.00	0.00
40.350	439.520	3.441	4842.0	2792.2	359.651	0.787	1.44		Sand	0.0			415.43	0.93	386.12	386.12	0.87	0.924	0.917	#########	########	##########	0.00	0.00
40.520	470.140	3.370	4862.4	2802.0	384.165	0.721	1.39		Sand	0.0			444.37	0.93	412.64	412.64	0.87	0.924	0.916	#########	########	##########	0.00	0.00
40.680	439.990	3.392	4881.6	2811.2	358.803	0.775	1.44		Sand	0.0			415.87	0.93	385.84	385.84	0.87	0.923	0.915	#########	########	##########	0.00	0.00
40.850	408.310	4.664	4902.0	2821.0	332.238	1.149	1.59		Sand	0.0			385.93	0.93	357.73	357.73	0.87	0.923	0.914	#########	########	##########	0.00	0.00
41.010	433.030	4.173	4921.2	2830.2	351.891	0.969	1.52		Sand	0.0			409.29	0.93	379.06	379.06	0.87	0.923	0.913	#########	########	##########	0.00	0.00
41.170	437.810	3.378	4940.4	2839.4	355.212	0.776	1.44		Sand	0.0			413.81	0.93	382.92	382.92	0.87	0.922	0.912	#########	########	##########	0.00	0.00
41.340	355.160	2.282	4960.8	2849.2	287.271	0.647	1.44		Sand	0.0			335.69	0.92	310.35	310.35	0.87	0.922	0.911	#########	########	##########	0.00	0.00
41.500	311.790	1.640	4980.0	2858.4	251.530	0.530	1.43		Sand	0.0			294.70	0.92	272.22	272.22	0.86	0.922	0.910	2751.254	5506.677	5974.32	0.00	0.00
41.670	303.330	1.673	5000.4	2868.2	244.224	0.556	1.45		Sand	0.0			286.70	0.92	264.59	264.59	0.86	0.921	0.909	875.090	1749.532	1898.83	0.00	0.00
41.830	282.280	1.305	5019.6	2877.4	226.763	0.466	1.43		Sand	0.0			266.81	0.92	245.28	245.28	0.86	0.921	0.908	75.762	151.306	164.28	0.00	0.00
41.990	265.770	1.142	5038.8	2886.6	213.033	0.434	1.43		Sand	0.0			251.20	0.91	229.40	229.40	0.86	0.921	0.907	15.557	31.036	33.71	0.00	0.00
42.160	281.530	1.250	5059.2	2896.4	225.396	0.448	1.42		Sand	0.0			266.10	0.92	244.08	244.08	0.86	0.920	0.906	66.394	132.310	143.76	0.00	0.00
42.320	299.480	1.472	5078.4	2905.6	239.509	0.496	1.42		Sand	0.0			283.06	0.92	260.34	260.34	0.86	0.920	0.905	483.896	963.292	1047.08	0.00	0.00
42.490	285.270	1.498	5098.8	2915.4	227.656	0.530	1.46		Sand	0.0			269.63	0.92	247.16	247.16	0.86	0.920	0.904	93.607	186.135	202.41	0.00	0.00
42.650	273.790	1.940	5118.0	2924.6	218.060	0.715	1.56		Sand	0.0			258.78	0.91	236.02	236.02	0.86	0.919	0.903	28.843	57.293	62.33	0.00	0.00
42.810	254.680	1.222	5137.2	2933.9	202.370	0.485	1.47		Sand	0.0			240.72	0.90	217.77	217.77	0.86	0.919	0.902	6.020	11.946	13.00	0.00	0.00
42.980	235.040	1.940	5157.6	2943.6	186.286	0.835	1.66		Sand	0.0			222.16	0.90	199.19	199.19	0.86	0.919	0.914	1.805	3.631	3.95	0.00	0.00
43.140	176.660	2.081	5176.8	2952.9	139.277	1.195	1.86		Sand	11.4	222.16		222.16	0.90	200.49	216.66	0.86	0.918	0.900	5.544	10.977	11.96	0.00	0.00
43.310	106.530	1.811	5197.2	2962.7	83.019	1.743	2.13		Sand	33.5	222.16		222.16	0.92	203.28	285.70	0.86	0.918	0.899	27575.003	54539.807	59427.50	0.00	0.00
43.470	51.110	1.799	5216.4	2971.9	32.641	3.708	2.65		Clay	75.1			48.31	0.91	n.a.	n.a.	0.86	0.917	n.a.	n.a.	n.a.	n.a.	0.00	0.00
43.640	32.350	0.643	5236.8	2981.7	19.943	2.162	2.67		Clay	76.6			30.58	0.91	n.a.	n.a.	0.86	0.917	n.a.	n.a.	n.a.	n.a.	0.00	0.00
43.800	30.980	0.569	5256.0	2990.9	18.959	2.005	2.67		Clay	76.5			29.28	0.91	n.a.	n.a.	0.85	0.917	n.a.	n.a.	n.a.	n.a.	0.00	0.00
43.960	28.550	0.628	5275.2	3000.1	17.274	2.422	2.75		Clay	82.9			26.98	0.91	n.a.	n.a.	0.85	0.916	n.a.	n.a.	n.a.	n.a.	0.00	0.00

CORNERSTONE EARTH GROUP

CPT No.	8

PGA (A_{max})	0.89

Total Settlement:	0.14	(Inches)

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Depth (ft)	q_c (tsf)	f_s (tsf)	σ_{vc} (psf)	Insitu σ'_{vc} (psf)	Q	F (%)	I_c	Layer "Plastic" PI > 7	Flag Soil Type	Fines (%)	q_{cN} near interfaces (soft layer)	Thin Layer Factor (K_H)	Interpreted q_{cN}	C_N	q_{c1N}	$q_{c1N\text{-}CS}$	Stress Reduction Coeff, r_d	CSR	K_σ for Sand	$CRR_{M=7.5,\ \sigma'vc = 1\ atm}$	CRR	Factor of Safety (CRR/CSR)	Vertical Strain ε_v	Settlement (Inches)
44.130	28.390	0.586	5295.6	3009.9	17.105	2.276	2.74		Clay	82.0			26.83	0.91	n.a.	n.a.	0.85	0.916	n.a.	n.a.	n.a.	n.a.	0.00	0.00
44.290	33.270	0.856	5314.8	3019.1	20.279	2.796	2.73		Clay	81.4			31.45	0.91	n.a.	n.a.	0.85	0.915	n.a.	n.a.	n.a.	n.a.	0.00	0.00
44.460	33.160	1.021	5335.2	3028.9	20.134	3.349	2.78		Clay	85.5			31.34	0.91	n.a.	n.a.	0.85	0.915	n.a.	n.a.	n.a.	n.a.	0.00	0.00
44.620	37.080	1.105	5354.4	3038.1	22.647	3.212	2.73		Clay	81.4			35.05	0.91	n.a.	n.a.	0.85	0.915	n.a.	n.a.	n.a.	n.a.	0.00	0.00
44.780	37.010	1.239	5373.6	3047.3	22.527	3.611	2.76		Clay	84.2			34.98	0.91	n.a.	n.a.	0.85	0.914	n.a.	n.a.	n.a.	n.a.	0.00	0.00
44.950	36.680	1.273	5394.0	3057.1	22.232	3.745	2.78		Clay	85.3			34.67	0.91	n.a.	n.a.	0.85	0.914	n.a.	n.a.	n.a.	n.a.	0.00	0.00
45.110	34.980	1.143	5413.2	3066.3	21.050	3.542	2.78		Clay	85.6			33.06	0.91	n.a.	n.a.	0.85	0.913	n.a.	n.a.	n.a.	n.a.	0.00	0.00
45.280	31.940	1.254	5433.6	3076.1	19.000	4.290	2.87		Clay	92.5			30.19	0.91	n.a.	n.a.	0.85	0.913	n.a.	n.a.	n.a.	n.a.	0.00	0.00
45.440	29.200	1.094	5452.8	3085.3	17.161	4.133	2.89		Clay	94.4			27.60	0.91	n.a.	n.a.	0.85	0.913	n.a.	n.a.	n.a.	n.a.	0.00	0.00
45.600	25.470	0.970	5472.0	3094.6	14.693	4.265	2.95		Clay	99.3			24.07	0.90	n.a.	n.a.	0.85	0.912	n.a.	n.a.	n.a.	n.a.	0.00	0.00
45.770	22.140	0.825	5492.4	3104.4	12.495	4.251	3.01		Clay	100.0			20.93	0.90	n.a.	n.a.	0.85	0.912	n.a.	n.a.	n.a.	n.a.	0.00	0.00
45.930	21.800	0.747	5511.6	3113.6	12.233	3.921	2.99		Clay	100.0			20.60	0.90	n.a.	n.a.	0.85	0.911	n.a.	n.a.	n.a.	n.a.	0.00	0.00
46.100	22.020	0.703	5532.0	3123.4	12.329	3.651	2.97		Clay	100.0			20.81	0.90	n.a.	n.a.	0.84	0.911	n.a.	n.a.	n.a.	n.a.	0.00	0.00
46.260	22.430	0.661	5551.2	3132.6	12.548	3.361	2.95		Clay	98.6			21.20	0.90	n.a.	n.a.	0.84	0.910	n.a.	n.a.	n.a.	n.a.	0.00	0.00
46.420	21.870	0.623	5570.4	3141.8	12.149	3.266	2.95		Clay	98.9			20.67	0.90	n.a.	n.a.	0.84	0.910	n.a.	n.a.	n.a.	n.a.	0.00	0.00
46.590	21.700	0.572	5590.8	3151.6	11.997	3.023	2.93		Clay	97.7			20.51	0.90	n.a.	n.a.	0.84	0.909	n.a.	n.a.	n.a.	n.a.	0.00	0.00
46.750	21.930	0.602	5610.0	3160.8	12.101	3.149	2.94		Clay	98.3			20.73	0.90	n.a.	n.a.	0.84	0.909	n.a.	n.a.	n.a.	n.a.	0.00	0.00
46.920	22.300	0.666	5630.4	3170.6	12.291	3.418	2.96		Clay	99.5			21.08	0.90	n.a.	n.a.	0.84	0.909	n.a.	n.a.	n.a.	n.a.	0.00	0.00
47.080	22.940	0.696	5649.6	3179.8	12.652	3.458	2.95		Clay	99.0			21.68	0.90	n.a.	n.a.	0.84	0.908	n.a.	n.a.	n.a.	n.a.	0.00	0.00
47.240	22.630	0.643	5668.8	3189.0	12.415	3.249	2.94		Clay	98.2			21.39	0.90	n.a.	n.a.	0.84	0.908	n.a.	n.a.	n.a.	n.a.	0.00	0.00
47.410	21.120	0.588	5689.2	3198.8	11.426	3.215	2.97		Clay	100.0			19.96	0.90	n.a.	n.a.	0.84	0.907	n.a.	n.a.	n.a.	n.a.	0.00	0.00
47.570	20.640	0.515	5708.4	3208.0	11.088	2.897	2.95		Clay	99.1			19.51	0.90	n.a.	n.a.	0.84	0.907	n.a.	n.a.	n.a.	n.a.	0.00	0.00
47.740	19.510	0.512	5728.8	3217.8	10.346	3.073	2.99		Clay	100.0			18.44	0.90	n.a.	n.a.	0.84	0.906	n.a.	n.a.	n.a.	n.a.	0.00	0.00
47.900	18.970	0.499	5748.0	3227.0	9.976	3.099	3.01		Clay	100.0			17.93	0.89	n.a.	n.a.	0.84	0.906	n.a.	n.a.	n.a.	n.a.	0.00	0.00
48.060	19.960	0.468	5767.2	3236.3	10.553	2.740	2.96		Clay	99.4			18.87	0.89	n.a.	n.a.	0.84	0.905	n.a.	n.a.	n.a.	n.a.	0.00	0.00
48.230	19.480	0.449	5787.6	3246.0	10.219	2.707	2.96		Clay	100.0			18.41	0.89	n.a.	n.a.	0.84	0.905	n.a.	n.a.	n.a.	n.a.	0.00	0.00
48.390	18.540	0.511	5806.8	3255.3	9.607	3.266	3.03		Clay	100.0			17.52	0.89	n.a.	n.a.	0.83	0.904	n.a.	n.a.	n.a.	n.a.	0.00	0.00
48.560	19.360	0.820	5827.2	3265.1	10.074	4.985	3.12		Clay	100.0			18.30	0.89	n.a.	n.a.	0.83	0.904	n.a.	n.a.	n.a.	n.a.	0.00	0.00
48.720	24.300	0.725	5846.4	3274.3	13.057	3.390	2.93		Clay	97.7			22.97	0.89	n.a.	n.a.	0.83	0.904	n.a.	n.a.	n.a.	n.a.	0.00	0.00
48.880	30.240	0.706	5865.6	3283.5	16.633	2.584	2.78		Clay	85.3			28.58	0.89	n.a.	n.a.	0.83	0.903	n.a.	n.a.	n.a.	n.a.	0.00	0.00
49.050	26.990	0.607	5886.0	3293.3	14.604	2.524	2.82		Clay	88.5			25.51	0.89	n.a.	n.a.	0.83	0.903	n.a.	n.a.	n.a.	n.a.	0.00	0.00
49.210	24.650	0.592	5905.2	3302.5	13.140	2.728	2.88		Clay	93.1			23.30	0.89	n.a.	n.a.	0.83	0.902	n.a.	n.a.	n.a.	n.a.	0.00	0.00
49.380	22.610	0.564	5925.6	3312.3	11.863	2.870	2.92		Clay	97.0			21.37	0.89	n.a.	n.a.	0.83	0.902	n.a.	n.a.	n.a.	n.a.	0.00	0.00
49.540	22.800	0.596	5944.8	3321.5	11.939	3.007	2.93		Clay	97.7			21.55	0.89	n.a.	n.a.	0.83	0.901	n.a.	n.a.	n.a.	n.a.	0.00	0.00
49.700	22.150	0.616	5964.0	3330.7	11.510	3.212	2.96		Clay	100.0			20.94	0.89	n.a.	n.a.	0.83	0.901	n.a.	n.a.	n.a.	n.a.	0.00	0.00
49.870	22.180	0.646	5984.4	3340.5	11.488	3.366	2.98		Clay	100.0			20.96	0.89	n.a.	n.a.	0.83	0.900	n.a.	n.a.	n.a.	n.a.	0.00	0.00
50.030	23.740	0.666	6003.6	3349.7	12.382	3.211	2.94		Clay	98.0			22.44	0.89	n.a.	n.a.	0.83	0.900	n.a.	n.a.	n.a.	n.a.	0.00	0.00
50.200	25.010	0.744	6024.0	3359.5	13.096	3.381	2.93		Clay	97.5			23.64	0.89	n.a.	n.a.	0.83	0.899	n.a.	n.a.	n.a.	n.a.	0.00	0.00
50.360	27.220	0.778	6043.2	3368.7	14.366	3.213	2.89		Clay	93.9			25.73	0.88	n.a.	n.a.	0.83	0.899	n.a.	n.a.	n.a.	n.a.	0.00	0.00
50.520	30.860	1.024	6062.4	3378.0	16.477	3.679	2.87		Clay	93.0			29.17	0.88	n.a.	n.a.	0.83	0.898	n.a.	n.a.	n.a.	n.a.	0.00	0.00
50.690	29.720	0.973	6082.8	3387.7	15.750	3.647	2.89		Clay	94.0			28.09	0.88	n.a.	n.a.	0.82	0.898	n.a.	n.a.	n.a.	n.a.	0.00	0.00
50.850	28.860	0.999	6102.0	3397.0	15.195	3.872	2.92		Clay	96.3			27.28	0.88	n.a.	n.a.	0.82	0.897	n.a.	n.a.	n.a.	n.a.	0.00	0.00
51.020	28.380	0.775	6122.4	3406.8	14.864	3.060	2.86		Clay	91.9			26.82	0.88	n.a.	n.a.	0.82	0.897	n.a.	n.a.	n.a.	n.a.	0.00	0.00
51.180	24.690	0.734	6141.6	3416.0	12.658	3.396	2.94		Clay	98.6			23.34	0.88	n.a.	n.a.	0.82	0.896	n.a.	n.a.	n.a.	n.a.	0.00	0.00
51.350	26.000	1.221	6162.0	3425.8	13.380	5.325	3.05		Clay	100.0			24.57	0.88	n.a.	n.a.	0.82	0.896	n.a.	n.a.	n.a.	n.a.	0.00	0.00
51.510	26.980	1.546	6181.2	3435.0	13.910	6.471	3.09		Clay	100.0			25.50	0.88	n.a.	n.a.	0.82	0.895	n.a.	n.a.	n.a.	n.a.	0.00	0.00
51.670	68.500	1.558	6200.4	3444.2	48.451	2.382	2.39		Sand	54.6			64.74	0.80	51.47	112.89	0.82	0.895	0.943	0.157	0.198	0.22	0.03	0.00
51.840	123.950	1.518	6220.8	3454.0	89.397	1.256	2.01		Sand	23.9			117.16	0.81	95.38	140.22	0.82	0.894	0.928	0.235	0.341	0.38	0.02	0.00
52.000	142.480	1.666	6240.0	3463.2	102.961	1.195	1.95		Sand	19.1			134.67	0.82	110.05	146.05	0.82	0.894	0.924	0.265	0.397	0.44	0.02	0.00
52.170	138.500	1.637	6260.4	3473.0	99.872	1.209	1.96		Sand	20.2			130.91	0.82	106.76	145.06	0.82	0.893	0.924	0.259	0.386	0.43	0.02	0.00
52.330	103.280	1.758	6279.6	3482.2	73.782	1.756	2.17		Sand	36.6			97.62	0.81	79.00	137.28	0.82	0.893	0.929	0.223	0.317	0.36	0.02	0.00
52.490	55.030	1.494	6298.8	3491.4	29.719	2.879	2.61		Clay	71.7			52.01	0.88	n.a.	n.a.	0.82	0.892	n.a.	n.a.	n.a.	n.a.	0.00	0.00
52.660	32.100	1.033	6319.2	3501.2	16.532	3.570	2.87		Clay	92.3			30.34	0.88	n.a.	n.a.	0.82	0.891	n.a.	n.a.	n.a.	n.a.	0.00	0.00
52.820	23.930	0.708	6338.4	3510.4	11.828	3.408	2.97		Clay	100.0			22.62	0.87	n.a.	n.a.	0.82	0.891	n.a.	n.a.	n.a.	n.a.	0.00	0.00
52.990	21.860	0.608	6358.8	3520.2	10.613	3.256	3.00		Clay	100.0			20.66	0.87	n.a.	n.a.	0.81	0.890	n.a.	n.a.	n.a.	n.a.	0.00	0.00
53.150	21.470	0.654	6378.0	3529.4	10.359	3.577	3.03		Clay	100.0			20.29	0.87	n.a.	n.a.	0.81	0.890	n.a.	n.a.	n.a.	n.a.	0.00	0.00
53.310	21.110	0.658	6397.2	3538.7	10.123	3.671	3.04		Clay	100.0			19.95	0.87	n.a.	n.a.	0.81	0.889	n.a.	n.a.	n.a.	n.a.	0.00	0.00
53.480	21.250	0.644	6417.6	3548.4	10.169	3.572	3.03		Clay	100.0			20.09	0.87	n.a.	n.a.	0.81	0.889	n.a.	n.a.	n.a.	n.a.	0.00	0.00
53.640	20.040	0.631	6436.8	3557.7	9.457	3.751	3.07		Clay	100.0			18.94	0.87	n.a.	n.a.	0.81	0.888	n.a.	n.a.	n.a.	n.a.	0.00	0.00
53.810	19.090	0.605	6457.2	3567.5	8.892	3.814	3.10		Clay	100.0			18.04	0.87	n.a.	n.a.	0.81	0.888	n.a.	n.a.	n.a.	n.a.	0.00	0.00
53.970	18.580	0.597	6476.4	3576.7	8.579	3.893	3.12		Clay	100.0			17.56	0.87	n.a.	n.a.	0.81	0.887	n.a.	n.a.	n.a.	n.a.	0.00	0.00
54.130	18.600	0.632	6495.6	3585.9	8.563	4.119	3.13		Clay	100.0			17.58	0.87	n.a.	n.a.	0.81	0.887	n.a.	n.a.	n.a.	n.a.	0.00	0.00
54.300	19.140	0.683	6516.0	3595.7	8.834	4.298	3.13		Clay	100.0			18.09	0.87	n.a.	n.a.	0.81	0.886	n.a.	n.a.	n.a.	n.a.	0.00	0.00
54.460	21.020	0.722	6535.2	3604.9	9.849	4.065	3.08		Clay	100.0			19.87	0.87	n.a.	n.a.	0.81	0.886	n.a.	n.a.	n.a.	n.a.	0.00	0.00
54.630	22.670	0.723	6555.6	3614.7	10.730	3.728	3.03		Clay	100.0			21.43	0.87	n.a.	n.a.	0.81	0.885	n.a.	n.a.	n.a.	n.a.	0.00	0.00
54.790	23.400	0.731	6574.8	3623.9	11.100	3.637	3.01		Clay	100.0			22.12	0.87	n.a.	n.a.	0.81	0.885	n.a.	n.a.	n.a.	n.a.	0.00	0.00
54.950	23.320	0.731	6594.0	3633.1	11.022	3.651	3.01		Clay	100.0			22.04	0.87	n.a.	n.a.	0.81	0.884	n.a.	n.a.	n.a.	n.a.	0.00	0.00

CORNERSTONE EARTH GROUP

CPT No.	8

PGA (A_{max})	0.89

Total Settlement:	0.14	(Inches)

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Depth (ft)	q_c (tsf)	f_s (tsf)	σ_{vc} (psf)	Insitu σ'_{vc} (psf)	Q	F (%)	I_c	Layer "Plastic" PI > 7	Flag Soil Type	Fines (%)	q_{cN} near interfaces (soft layer)	Thin Layer Factor (K_H)	Interpreted q_{cN}	C_N	q_{c1N}	q_{c1N-CS}	Stress Reduction Coeff, r_d	CSR	K_σ for Sand	$CRR_{M=7.5, \sigma'vc = 1 atm}$	CRR	Factor of Safety (CRR/CSR)	Vertical Strain ε_v	Settlement (Inches)
55.120	23.210	0.740	6614.4	3642.9	10.927	3.719	3.02		Clay	100.0			21.94	0.87	n.a.	n.a.	0.81	0.883	n.a.	n.a.	n.a.	n.a.	0.00	0.00
55.280	22.120	0.707	6633.6	3652.1	10.297	3.761	3.04		Clay	100.0			20.91	0.87	n.a.	n.a.	0.80	0.883	n.a.	n.a.	n.a.	n.a.	0.00	0.00
55.450	21.410	0.655	6654.0	3661.9	9.876	3.622	3.05		Clay	100.0			20.24	0.87	n.a.	n.a.	0.80	0.882	n.a.	n.a.	n.a.	n.a.	0.00	0.00
55.610	20.660	0.614	6673.2	3671.1	9.438	3.546	3.06		Clay	100.0			19.53	0.86	n.a.	n.a.	0.80	0.882	n.a.	n.a.	n.a.	n.a.	0.00	0.00
55.770	20.330	0.623	6692.4	3680.4	9.229	3.670	3.08		Clay	100.0			19.22	0.86	n.a.	n.a.	0.80	0.881	n.a.	n.a.	n.a.	n.a.	0.00	0.00
55.940	20.290	0.670	6712.8	3690.1	9.178	3.955	3.10		Clay	100.0			19.18	0.86	n.a.	n.a.	0.80	0.881	n.a.	n.a.	n.a.	n.a.	0.00	0.00
56.100	20.750	0.823	6732.0	3699.4	9.398	4.737	3.13		Clay	100.0			19.61	0.86	n.a.	n.a.	0.80	0.880	n.a.	n.a.	n.a.	n.a.	0.00	0.00
56.270	27.030	0.770	6752.4	3709.2	12.754	3.255	2.93		Clay	97.5			25.55	0.86	n.a.	n.a.	0.80	0.880	n.a.	n.a.	n.a.	n.a.	0.00	0.00
56.430	32.620	0.614	6771.6	3718.4	15.724	2.100	2.75		Clay	82.8			30.83	0.86	n.a.	n.a.	0.80	0.879	n.a.	n.a.	n.a.	n.a.	0.00	0.00
56.590	25.130	0.517	6790.8	3727.6	11.661	2.377	2.88		Clay	93.8			23.75	0.86	n.a.	n.a.	0.80	0.879	n.a.	n.a.	n.a.	n.a.	0.00	0.00
56.760	20.460	0.482	6811.2	3737.4	9.126	2.827	3.02		Clay	100.0			19.34	0.86	n.a.	n.a.	0.80	0.878	n.a.	n.a.	n.a.	n.a.	0.00	0.00
56.920	19.340	0.456	6830.4	3746.6	8.501	2.863	3.04		Clay	100.0			18.28	0.86	n.a.	n.a.	0.80	0.877	n.a.	n.a.	n.a.	n.a.	0.00	0.00
57.090	19.710	0.483	6850.8	3756.4	8.670	2.963	3.05		Clay	100.0			18.63	0.86	n.a.	n.a.	0.80	0.877	n.a.	n.a.	n.a.	n.a.	0.00	0.00
57.250	20.750	0.830	6870.0	3765.6	9.196	4.794	3.15		Clay	100.0			19.61	0.86	n.a.	n.a.	0.80	0.876	n.a.	n.a.	n.a.	n.a.	0.00	0.00
57.410	23.100	1.024	6889.2	3774.8	10.414	5.209	3.12		Clay	100.0			21.83	0.86	n.a.	n.a.	0.80	0.876	n.a.	n.a.	n.a.	n.a.	0.00	0.00
57.580	28.250	0.925	6909.6	3784.6	13.103	3.729	2.96		Clay	99.6			26.70	0.86	n.a.	n.a.	0.79	0.875	n.a.	n.a.	n.a.	n.a.	0.00	0.00
57.740	31.560	0.701	6928.8	3793.8	14.811	2.493	2.81		Clay	87.9			29.83	0.86	n.a.	n.a.	0.79	0.875	n.a.	n.a.	n.a.	n.a.	0.00	0.00
57.910	25.040	0.554	6949.2	3803.6	11.339	2.569	2.91		Clay	96.1			23.67	0.86	n.a.	n.a.	0.79	0.874	n.a.	n.a.	n.a.	n.a.	0.00	0.00
58.070	22.200	0.503	6968.4	3812.8	9.817	2.685	2.98		Clay	100.0			20.98	0.86	n.a.	n.a.	0.79	0.873	n.a.	n.a.	n.a.	n.a.	0.00	0.00
58.230	21.620	0.478	6987.6	3822.0	9.485	2.638	2.98		Clay	100.0			20.43	0.86	n.a.	n.a.	0.79	0.873	n.a.	n.a.	n.a.	n.a.	0.00	0.00
58.400	20.940	0.492	7008.0	3831.8	9.101	2.823	3.02		Clay	100.0			19.79	0.85	n.a.	n.a.	0.79	0.872	n.a.	n.a.	n.a.	n.a.	0.00	0.00
58.560	20.430	0.502	7027.2	3841.1	8.808	2.966	3.04		Clay	100.0			19.31	0.85	n.a.	n.a.	0.79	0.872	n.a.	n.a.	n.a.	n.a.	0.00	0.00
58.730	20.990	0.550	7047.6	3850.8	9.071	3.147	3.04		Clay	100.0			19.84	0.85	n.a.	n.a.	0.79	0.871	n.a.	n.a.	n.a.	n.a.	0.00	0.00
58.890	22.710	0.513	7066.8	3860.1	9.936	2.676	2.97		Clay	100.0			21.47	0.85	n.a.	n.a.	0.79	0.871	n.a.	n.a.	n.a.	n.a.	0.00	0.00
59.060	23.070	0.455	7087.2	3869.9	10.092	2.328	2.93		Clay	97.6			21.81	0.85	n.a.	n.a.	0.79	0.870	n.a.	n.a.	n.a.	n.a.	0.00	0.00
59.220	21.780	0.443	7106.4	3879.1	9.398	2.433	2.97		Clay	100.0			20.59	0.85	n.a.	n.a.	0.79	0.869	n.a.	n.a.	n.a.	n.a.	0.00	0.00
59.380	21.480	0.427	7125.6	3888.3	9.216	2.383	2.97		Clay	100.0			20.30	0.85	n.a.	n.a.	0.79	0.869	n.a.	n.a.	n.a.	n.a.	0.00	0.00
59.550	20.540	0.457	7146.0	3898.1	8.705	2.694	3.02		Clay	100.0			19.41	0.85	n.a.	n.a.	0.79	0.868	n.a.	n.a.	n.a.	n.a.	0.00	0.00
59.710	20.070	0.507	7165.2	3907.3	8.439	3.075	3.06		Clay	100.0			18.97	0.85	n.a.	n.a.	0.79	0.868	n.a.	n.a.	n.a.	n.a.	0.00	0.00
59.880	19.720	0.537	7185.6	3917.1	8.234	3.332	3.09		Clay	100.0			18.64	0.85	n.a.	n.a.	0.78	0.867	n.a.	n.a.	n.a.	n.a.	0.00	0.00
60.040	20.130	0.588	7204.8	3926.3	8.419	3.560	3.10		Clay	100.0			19.03	0.85	n.a.	n.a.	0.78	0.867	n.a.	n.a.	n.a.	n.a.	0.00	0.00
60.200	20.790	0.597	7224.0	3935.5	8.730	3.475	3.08		Clay	100.0			19.65	0.85	n.a.	n.a.	0.78	0.866	n.a.	n.a.	n.a.	n.a.	0.00	0.00
60.370	22.320	0.613	7244.4	3945.3	9.478	3.277	3.04		Clay	100.0			21.10	0.85	n.a.	n.a.	0.78	0.865	n.a.	n.a.	n.a.	n.a.	0.00	0.00
60.530	24.130	0.773	7263.6	3954.5	10.367	3.773	3.04		Clay	100.0			22.81	0.85	n.a.	n.a.	0.78	0.865	n.a.	n.a.	n.a.	n.a.	0.00	0.00
60.700	25.330	0.873	7284.0	3964.3	10.942	4.023	3.04		Clay	100.0			23.94	0.85	n.a.	n.a.	0.78	0.864	n.a.	n.a.	n.a.	n.a.	0.00	0.00
60.860	25.830	0.845	7303.2	3973.5	11.163	3.811	3.02		Clay	100.0			24.41	0.85	n.a.	n.a.	0.78	0.864	n.a.	n.a.	n.a.	n.a.	0.00	0.00
61.020	27.800	0.749	7322.4	3982.8	12.122	3.101	2.94		Clay	97.9			26.28	0.85	n.a.	n.a.	0.78	0.863	n.a.	n.a.	n.a.	n.a.	0.00	0.00
61.190	26.330	0.624	7342.8	3992.5	11.350	2.752	2.93		Clay	97.4			24.89	0.85	n.a.	n.a.	0.78	0.863	n.a.	n.a.	n.a.	n.a.	0.00	0.00
61.350	24.250	0.570	7362.0	4001.8	10.280	2.773	2.97		Clay	100.0			22.92	0.85	n.a.	n.a.	0.78	0.862	n.a.	n.a.	n.a.	n.a.	0.00	0.00
61.520	26.060	0.587	7382.4	4011.6	11.152	2.624	2.92		Clay	97.0			24.63	0.84	n.a.	n.a.	0.78	0.861	n.a.	n.a.	n.a.	n.a.	0.00	0.00
61.680	28.200	0.719	7401.6	4020.8	12.186	2.936	2.92		Clay	96.7			26.65	0.84	n.a.	n.a.	0.78	0.861	n.a.	n.a.	n.a.	n.a.	0.00	0.00
61.840	31.820	0.758	7420.8	4030.0	13.950	2.697	2.85		Clay	91.1			30.08	0.84	n.a.	n.a.	0.78	0.860	n.a.	n.a.	n.a.	n.a.	0.00	0.00
62.010	34.040	0.843	7441.2	4039.8	15.010	2.780	2.83		Clay	89.7			32.17	0.84	n.a.	n.a.	0.78	0.860	n.a.	n.a.	n.a.	n.a.	0.00	0.00
62.170	32.900	0.846	7460.4	4049.0	14.408	2.899	2.86		Clay	91.7			31.10	0.84	n.a.	n.a.	0.77	0.859	n.a.	n.a.	n.a.	n.a.	0.00	0.00
62.340	30.850	0.791	7480.8	4058.8	13.358	2.918	2.89		Clay	94.0			29.16	0.84	n.a.	n.a.	0.77	0.859	n.a.	n.a.	n.a.	n.a.	0.00	0.00
62.500	28.950	0.774	7500.0	4068.0	12.389	3.071	2.93		Clay	97.1			27.36	0.84	n.a.	n.a.	0.77	0.858	n.a.	n.a.	n.a.	n.a.	0.00	0.00
62.660	29.250	0.734	7519.2	4077.2	12.504	2.878	2.91		Clay	95.6			27.65	0.84	n.a.	n.a.	0.77	0.857	n.a.	n.a.	n.a.	n.a.	0.00	0.00
62.830	31.530	0.690	7539.6	4087.0	13.585	2.485	2.84		Clay	90.3			29.80	0.84	n.a.	n.a.	0.77	0.857	n.a.	n.a.	n.a.	n.a.	0.00	0.00
62.990	29.870	0.760	7558.8	4096.2	12.739	2.913	2.90		Clay	95.3			28.23	0.84	n.a.	n.a.	0.77	0.856	n.a.	n.a.	n.a.	n.a.	0.00	0.00
63.160	29.350	0.749	7579.2	4106.0	12.450	2.929	2.91		Clay	96.0			27.74	0.84	n.a.	n.a.	0.77	0.856	n.a.	n.a.	n.a.	n.a.	0.00	0.00
63.320	29.210	0.886	7598.4	4115.2	12.350	3.486	2.96		Clay	99.8			27.61	0.84	n.a.	n.a.	0.77	0.855	n.a.	n.a.	n.a.	n.a.	0.00	0.00
63.480	26.460	0.893	7617.6	4124.4	10.984	3.941	3.03		Clay	100.0			25.01	0.84	n.a.	n.a.	0.77	0.855	n.a.	n.a.	n.a.	n.a.	0.00	0.00
63.650	23.650	0.835	7638.0	4134.2	9.594	4.210	3.10		Clay	100.0			22.35	0.84	n.a.	n.a.	0.77	0.854	n.a.	n.a.	n.a.	n.a.	0.00	0.00
63.810	20.510	0.770	7657.2	4143.5	8.052	4.618	3.18		Clay	100.0			19.39	0.84	n.a.	n.a.	0.77	0.853	n.a.	n.a.	n.a.	n.a.	0.00	0.00
63.980	18.180	0.710	7677.6	4153.2	6.906	4.950	3.25		Clay	100.0			17.18	0.84	n.a.	n.a.	0.77	0.853	n.a.	n.a.	n.a.	n.a.	0.00	0.00
64.140	16.430	0.604	7696.8	4162.5	6.045	4.801	3.29		Clay	100.0			15.53	0.84	n.a.	n.a.	0.77	0.852	n.a.	n.a.	n.a.	n.a.	0.00	0.00
64.300	15.180	0.528	7716.0	4171.7	5.428	4.663	3.32		Clay	100.0			14.35	0.84	n.a.	n.a.	0.77	0.852	n.a.	n.a.	n.a.	n.a.	0.00	0.00
64.470	16.750	0.495	7736.4	4181.5	6.161	3.845	3.23		Clay	100.0			15.83	0.84	n.a.	n.a.	0.77	0.851	n.a.	n.a.	n.a.	n.a.	0.00	0.00
64.630	19.800	0.497	7755.6	4190.7	7.599	3.118	3.11		Clay	100.0			18.71	0.84	n.a.	n.a.	0.76	0.850	n.a.	n.a.	n.a.	n.a.	0.00	0.00
64.800	20.070	0.549	7776.0	4200.5	7.705	3.395	3.12		Clay	100.0			18.97	0.83	n.a.	n.a.	0.76	0.850	n.a.	n.a.	n.a.	n.a.	0.00	0.00
64.960	21.450	0.555	7795.2	4209.7	8.339	3.162	3.07		Clay	100.0			20.27	0.83	n.a.	n.a.	0.76	0.849	n.a.	n.a.	n.a.	n.a.	0.00	0.00
65.120	21.680	0.676	7814.4	4218.9	8.425	3.801	3.12		Clay	100.0			20.49	0.83	n.a.	n.a.	0.76	0.849	n.a.	n.a.	n.a.	n.a.	0.00	0.00
65.290	24.180	0.659	7834.8	4228.7	9.583	3.251	3.03		Clay	100.0			22.85	0.83	n.a.	n.a.	0.76	0.848	n.a.	n.a.	n.a.	n.a.	0.00	0.00
65.450	25.590	0.704	7854.0	4237.9	10.223	3.248	3.01		Clay	100.0			24.19	0.83	n.a.	n.a.	0.76	0.848	n.a.	n.a.	n.a.	n.a.	0.00	0.00
65.620	24.730	0.603	7874.4	4247.7	9.790	2.899	3.00		Clay	100.0			23.37	0.83	n.a.	n.a.	0.76	0.847	n.a.	n.a.	n.a.	n.a.	0.00	0.00
65.780	23.780	0.535	7893.6	4256.9	9.318	2.697	3.00		Clay	100.0			22.48	0.83	n.a.	n.a.	0.76	0.846	n.a.	n.a.	n.a.	n.a.	0.00	0.00
65.940	22.240	0.501	7912.8	4266.1	8.571	2.741	3.03		Clay	100.0			21.02	0.83	n.a.	n.a.	0.76	0.846	n.a.	n.a.	n.a.	n.a.	0.00	0.00

CORNERSTONE EARTH GROUP

CPT No.	8

PGA (A_{max})	0.89

Total Settlement:	0.14	(Inches)

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Depth (ft)	q_c (tsf)	f_s (tsf)	σ_{vc} (psf)	Insitu σ'_{vc} (psf)	Q	F (%)	I_c	Layer "Plastic" PI > 7	Flag Soil Type	Fines (%)	q_{cN} near interfaces (soft layer)	Thin Layer Factor (K_H)	Interpreted q_{cN}	C_N	q_{c1N}	$q_{c1N\text{-}CS}$	Stress Reduction Coeff, r_d	CSR	K_σ for Sand	$CRR_{M=7.5,\ \sigma'vc = 1\ atm}$	CRR	Factor of Safety (CRR/CSR)	Vertical Strain ε_v	Settlement (Inches)
66.110	22.190	0.599	7933.2	4275.9	8.524	3.289	3.08		Clay	100.0			20.97	0.83	n.a.	n.a.	0.76	0.845	n.a.	n.a.	n.a.	n.a.	0.00	0.00
66.270	24.470	0.606	7952.4	4285.2	9.565	2.956	3.01		Clay	100.0			23.13	0.83	n.a.	n.a.	0.76	0.845	n.a.	n.a.	n.a.	n.a.	0.00	0.00
66.440	25.710	0.733	7972.8	4294.9	10.116	3.376	3.02		Clay	100.0			24.30	0.83	n.a.	n.a.	0.76	0.844	n.a.	n.a.	n.a.	n.a.	0.00	0.00
66.600	28.710	0.812	7992.0	4304.2	11.484	3.285	2.97		Clay	100.0			27.14	0.83	n.a.	n.a.	0.76	0.843	n.a.	n.a.	n.a.	n.a.	0.00	0.00
66.770	29.250	0.995	8012.4	4314.0	11.703	3.942	3.01		Clay	100.0			27.65	0.83	n.a.	n.a.	0.76	0.843	n.a.	n.a.	n.a.	n.a.	0.00	0.00
66.930	28.220	1.152	8031.6	4323.2	11.197	4.759	3.08		Clay	100.0			26.67	0.83	n.a.	n.a.	0.76	0.842	n.a.	n.a.	n.a.	n.a.	0.00	0.00
67.090	27.210	1.082	8050.8	4332.4	10.703	4.668	3.09		Clay	100.0			25.72	0.83	n.a.	n.a.	0.75	0.842	n.a.	n.a.	n.a.	n.a.	0.00	0.00
67.260	34.480	1.117	8071.2	4342.2	14.023	3.669	2.93		Clay	97.4			32.59	0.83	n.a.	n.a.	0.75	0.841	n.a.	n.a.	n.a.	n.a.	0.00	0.00
67.420	32.790	1.002	8090.4	4351.4	13.212	3.484	2.94		Clay	97.9			30.99	0.83	n.a.	n.a.	0.75	0.840	n.a.	n.a.	n.a.	n.a.	0.00	0.00
67.590	27.820	0.892	8110.8	4361.2	10.898	3.752	3.02		Clay	100.0			26.29	0.83	n.a.	n.a.	0.75	0.840	n.a.	n.a.	n.a.	n.a.	0.00	0.00
67.750	27.890	0.814	8130.0	4370.4	10.903	3.418	3.00		Clay	100.0			26.36	0.83	n.a.	n.a.	0.75	0.839	n.a.	n.a.	n.a.	n.a.	0.00	0.00
67.910	28.200	0.697	8149.2	4379.6	11.017	2.887	2.95		Clay	99.2			26.65	0.83	n.a.	n.a.	0.75	0.839	n.a.	n.a.	n.a.	n.a.	0.00	0.00
68.080	29.800	0.741	8169.6	4389.4	11.717	2.880	2.93		Clay	97.4			28.17	0.82	n.a.	n.a.	0.75	0.838	n.a.	n.a.	n.a.	n.a.	0.00	0.00
68.240	29.280	0.775	8188.8	4398.6	11.452	3.078	2.95		Clay	99.4			27.67	0.82	n.a.	n.a.	0.75	0.838	n.a.	n.a.	n.a.	n.a.	0.00	0.00
68.410	28.070	0.768	8209.2	4408.4	10.873	3.204	2.98		Clay	100.0			26.53	0.82	n.a.	n.a.	0.75	0.837	n.a.	n.a.	n.a.	n.a.	0.00	0.00
68.570	28.250	0.709	8228.4	4417.6	10.927	2.935	2.96		Clay	99.8			26.70	0.82	n.a.	n.a.	0.75	0.836	n.a.	n.a.	n.a.	n.a.	0.00	0.00
68.730	28.100	0.894	8247.6	4426.8	10.832	3.727	3.02		Clay	100.0			26.56	0.82	n.a.	n.a.	0.75	0.836	n.a.	n.a.	n.a.	n.a.	0.00	0.00
68.900	30.280	1.452	8268.0	4436.6	11.786	5.554	3.10		Clay	100.0			28.62	0.82	n.a.	n.a.	0.75	0.835	n.a.	n.a.	n.a.	n.a.	0.00	0.00
69.060	38.430	1.753	8287.2	4445.9	15.424	5.111	2.99		Clay	100.0			36.32	0.82	n.a.	n.a.	0.75	0.835	n.a.	n.a.	n.a.	n.a.	0.00	0.00
69.230	59.300	1.806	8307.6	4455.6	24.753	3.276	2.71		Clay	79.5			56.05	0.82	n.a.	n.a.	0.75	0.834	n.a.	n.a.	n.a.	n.a.	0.00	0.00
69.390	58.130	1.587	8326.8	4464.9	24.174	2.940	2.68		Clay	77.7			54.94	0.82	n.a.	n.a.	0.75	0.833	n.a.	n.a.	n.a.	n.a.	0.00	0.00
69.550	46.460	1.433	8346.0	4474.1	18.903	3.388	2.81		Clay	87.5			43.91	0.82	n.a.	n.a.	0.74	0.833	n.a.	n.a.	n.a.	n.a.	0.00	0.00
69.720	38.680	0.908	8366.4	4483.9	15.387	2.632	2.81		Clay	87.9			36.56	0.82	n.a.	n.a.	0.74	0.832	n.a.	n.a.	n.a.	n.a.	0.00	0.00
69.880	33.190	1.351	8385.6	4493.1	12.907	4.660	3.02		Clay	100.0			31.37	0.82	n.a.	n.a.	0.74	0.832	n.a.	n.a.	n.a.	n.a.	0.00	0.00
70.050	30.110	1.099	8406.0	4502.9	11.507	4.241	3.04		Clay	100.0			28.46	0.82	n.a.	n.a.	0.74	0.831	n.a.	n.a.	n.a.	n.a.	0.00	0.00
70.210	28.420	1.030	8425.2	4512.1	10.730	4.256	3.06		Clay	100.0			26.86	0.82	n.a.	n.a.	0.74	0.831	n.a.	n.a.	n.a.	n.a.	0.00	0.00
70.370	38.010	0.840	8444.4	4521.3	14.946	2.486	2.81		Clay	87.6			35.93	0.82	n.a.	n.a.	0.74	0.830	n.a.	n.a.	n.a.	n.a.	0.00	0.00
70.540	32.160	0.769	8464.8	4531.1	12.327	2.754	2.90		Clay	95.1			30.40	0.82	n.a.	n.a.	0.74	0.829	n.a.	n.a.	n.a.	n.a.	0.00	0.00
70.700	25.720	0.762	8484.0	4540.3	9.461	3.546	3.06		Clay	100.0			24.31	0.82	n.a.	n.a.	0.74	0.829	n.a.	n.a.	n.a.	n.a.	0.00	0.00
70.870	24.890	0.623	8504.4	4550.1	9.071	3.016	3.03		Clay	100.0			23.53	0.82	n.a.	n.a.	0.74	0.828	n.a.	n.a.	n.a.	n.a.	0.00	0.00
71.030	28.810	0.571	8523.6	4559.3	10.768	2.326	2.91		Clay	95.7			27.23	0.82	n.a.	n.a.	0.74	0.828	n.a.	n.a.	n.a.	n.a.	0.00	0.00
71.190	28.790	0.597	8542.8	4568.5	10.734	2.434	2.92		Clay	96.6			27.21	0.82	n.a.	n.a.	0.74	0.827	n.a.	n.a.	n.a.	n.a.	0.00	0.00
71.360	27.480	0.636	8563.2	4578.3	10.134	2.743	2.97		Clay	100.0			25.97	0.82	n.a.	n.a.	0.74	0.827	n.a.	n.a.	n.a.	n.a.	0.00	0.00
71.520	27.620	0.658	8582.4	4587.6	10.170	2.820	2.98		Clay	100.0			26.11	0.82	n.a.	n.a.	0.74	0.826	n.a.	n.a.	n.a.	n.a.	0.00	0.00
71.690	27.940	0.756	8602.8	4597.3	10.284	3.200	3.00		Clay	100.0			26.41	0.81	n.a.	n.a.	0.74	0.825	n.a.	n.a.	n.a.	n.a.	0.00	0.00
71.850	29.650	0.707	8622.0	4606.6	11.001	2.789	2.94		Clay	98.6			28.02	0.81	n.a.	n.a.	0.74	0.825	n.a.	n.a.	n.a.	n.a.	0.00	0.00
72.010	30.850	0.865	8641.2	4615.8	11.495	3.261	2.97		Clay	100.0			29.16	0.81	n.a.	n.a.	0.74	0.824	n.a.	n.a.	n.a.	n.a.	0.00	0.00
72.180	32.760	1.114	8661.6	4625.6	12.292	3.919	2.99		Clay	100.0			30.96	0.81	n.a.	n.a.	0.73	0.824	n.a.	n.a.	n.a.	n.a.	0.00	0.00
72.340	39.220	1.426	8680.8	4634.8	15.051	4.088	2.93		Clay	97.7			37.07	0.81	n.a.	n.a.	0.73	0.823	n.a.	n.a.	n.a.	n.a.	0.00	0.00
72.510	47.220	1.814	8701.2	4644.6	18.460	4.231	2.88		Clay	93.0			44.63	0.81	n.a.	n.a.	0.73	0.823	n.a.	n.a.	n.a.	n.a.	0.00	0.00
72.670	76.820	1.868	8720.4	4653.8	46.181	2.577	2.43		Sand	57.7			72.61	0.69	50.03	112.07	0.73	0.822	0.908	0.156	0.188	0.23	0.03	0.00
72.830	104.820	1.941	8739.6	4663.0	63.957	1.932	2.24		Sand	42.6			99.07	0.71	70.17	130.75	0.73	0.821	0.893	0.200	0.263	0.32	0.02	0.00
73.000	88.950	1.650	8760.0	4672.8	53.790	1.951	2.30		Sand	47.3			84.07	0.69	58.43	118.65	0.73	0.821	0.902	0.168	0.209	0.25	0.03	0.00
73.160	59.090	1.849	8779.2	4682.0	23.366	3.379	2.73		Clay	81.7			55.85	0.81	n.a.	n.a.	0.73	0.820	n.a.	n.a.	n.a.	n.a.	0.00	0.00
73.330	39.270	3.040	8799.6	4691.8	14.864	8.719	3.15		Clay	100.0			37.12	0.81	n.a.	n.a.	0.73	0.820	n.a.	n.a.	n.a.	n.a.	0.00	0.00
73.490	46.290	3.463	8818.8	4701.0	17.818	8.270	3.08		Clay	100.0			43.75	0.81	n.a.	n.a.	0.73	0.819	n.a.	n.a.	n.a.	n.a.	0.00	0.00
73.650	50.320	3.589	8838.0	4710.2	19.490	7.820	3.04		Clay	100.0			47.56	0.81	n.a.	n.a.	0.73	0.819	n.a.	n.a.	n.a.	n.a.	0.00	0.00
73.820	72.430	3.154	8858.4	4720.0	28.814	4.638	2.76		Clay	83.5			68.46	0.81	n.a.	n.a.	0.73	0.818	n.a.	n.a.	n.a.	n.a.	0.00	0.00
73.980	109.460	2.010	8877.6	4729.2	66.398	1.914	2.23		Sand	41.4			103.46	0.71	73.14	133.67	0.73	0.817	0.888	0.209	0.279	0.34	0.02	0.00
74.150	174.620	0.957	8898.0	4739.0	107.476	0.562	1.74		Sand	1.8			165.05	0.68	112.91	112.91	0.73	0.817	0.905	0.157	0.190	0.23	0.03	0.00
74.310	187.640	1.344	8917.2	4748.3	115.581	0.734	1.78		Sand	5.2			177.35	0.70	123.27	123.50	0.73	0.816	0.896	0.179	0.227	0.28	0.03	0.00
74.480	147.830	1.471	8937.6	4758.0	90.363	1.026	1.95		Sand	19.1			139.73	0.70	98.42	133.01	0.73	0.816	0.888	0.207	0.275	0.34	0.02	0.00
74.640	75.930	1.291	8956.8	4767.3	44.993	1.806	2.34		Sand	50.3			71.77	0.68	48.52	107.51	0.73	0.815	0.908	0.148	0.175	0.21	0.03	0.00
74.800	39.740	0.943	8976.0	4776.5	14.761	2.675	2.83		Clay	89.4			37.56	0.81	n.a.	n.a.	0.72	0.815	n.a.	n.a.	n.a.	n.a.	0.00	0.00
74.970	37.050	0.563	8996.4	4786.3	13.602	1.728	2.75		Clay	83.3			35.02	0.81	n.a.	n.a.	0.72	0.814	n.a.	n.a.	n.a.	n.a.	0.00	0.00
75.130	36.710	0.580	9015.6	4795.5	13.430	1.800	2.77		Clay	84.4			34.70	0.81	n.a.	n.a.	0.72	0.813	n.a.	n.a.	n.a.	n.a.	0.00	0.00

CORNERSTONE EARTH GROUP

CPT No.	9

PGA (A_{max})	0.89

Total Settlement:	0.46	(Inches)

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Depth (ft)	q_c (tsf)	f_s (tsf)	σ_{vc} (psf)	Insitu σ'_{vc} (psf)	Q	F (%)	I_c	Layer "Plastic" PI > 7	Flag Soil Type	Fines (%)	q_{cN} near interfaces (soft layer)	Thin Layer Factor (K_H)	Interpreted q_{cN}	C_N	q_{c1N}	$q_{c1N\text{-}CS}$	Stress Reduction Coeff, r_d	CSR	K_σ for Sand	$CRR_{M=7.5,\ \sigma'vc = 1\ atm}$	CRR	Factor of Safety (CRR/CSR)	Vertical Strain ε_v	Settlement (Inches)
0.160	679.060	1.142	19.2	19.2	6737.884	0.168	0.57		Unsaturated	0.0			641.83	1.70	1091.12	1091.12	1.00	0.579	1.100	n.a.	n.a.	n.a.	0.00	0.00
0.330	670.680	1.590	39.6	39.6	4633.691	0.237	0.63		Unsaturated	0.0			633.91	1.70	1077.65	1077.65	1.00	0.579	1.100	n.a.	n.a.	n.a.	0.00	0.00
0.490	495.090	1.526	58.8	58.8	2806.996	0.308	0.71		Unsaturated	0.0			467.95	1.70	795.51	795.51	1.00	0.579	1.100	n.a.	n.a.	n.a.	0.00	0.00
0.660	351.310	1.794	79.2	79.2	1716.134	0.511	0.96		Unsaturated	0.0			332.05	1.70	564.49	564.49	1.00	0.579	1.100	n.a.	n.a.	n.a.	0.00	0.00
0.820	228.530	1.427	98.4	98.4	1001.439	0.625	1.12		Unsaturated	0.0			216.00	1.70	367.20	367.20	1.00	0.579	1.100	n.a.	n.a.	n.a.	0.00	0.00
0.980	152.430	1.214	117.6	117.6	610.902	0.797	1.31		Unsaturated	0.0			144.07	1.70	244.93	244.93	1.00	0.579	1.100	n.a.	n.a.	n.a.	0.00	0.00
1.150	78.740	1.250	138.0	138.0	291.170	1.589	1.74		Unsaturated	2.3			74.42	1.70	126.52	126.52	1.00	0.579	1.100	n.a.	n.a.	n.a.	0.00	0.00
1.310	42.680	1.293	157.2	157.2	147.730	3.035	2.14		Unsaturated	34.4			40.34	1.70	68.58	122.42	1.00	0.579	1.100	n.a.	n.a.	n.a.	0.00	0.00
1.480	23.690	1.208	177.6	177.6	76.999	5.119	2.50		Unsaturated	62.7			22.39	1.70	38.07	98.15	1.00	0.579	1.100	n.a.	n.a.	n.a.	0.00	0.00
1.640	19.380	0.957	196.8	196.8	59.759	4.961	2.56		Unsaturated	67.5			18.32	1.70	31.14	90.34	1.00	0.579	1.100	n.a.	n.a.	n.a.	0.00	0.00
1.800	16.290	0.784	216.0	216.0	75.560	4.846	2.48		Unsaturated	61.6			15.40	1.70	26.17	82.63	1.00	0.579	1.100	n.a.	n.a.	n.a.	0.00	0.00
1.970	15.270	0.712	236.4	236.4	66.418	4.702	2.51		Unsaturated	63.7			14.43	1.70	24.54	81.02	1.00	0.579	1.100	n.a.	n.a.	n.a.	0.00	0.00
2.130	15.190	0.636	255.6	255.6	62.513	4.221	2.49		Unsaturated	62.3			14.36	1.70	24.41	80.54	1.00	0.579	1.100	n.a.	n.a.	n.a.	0.00	0.00
2.300	12.490	0.578	276.0	276.0	48.582	4.677	2.60		Unsaturated	70.9			11.81	1.70	20.07	76.69	1.00	0.579	1.100	n.a.	n.a.	n.a.	0.00	0.00
2.460	11.080	0.508	295.2	295.2	41.021	4.650	2.65		Unsaturated	74.8			10.47	1.70	17.80	74.41	1.00	0.579	1.100	n.a.	n.a.	n.a.	0.00	0.00
2.620	9.870	0.415	314.4	314.4	34.872	4.268	2.67		Unsaturated	76.7			9.33	1.70	15.86	72.17	1.00	0.579	1.100	n.a.	n.a.	n.a.	0.00	0.00
2.790	8.970	0.397	334.8	334.8	30.244	4.507	2.73		Unsaturated	81.6			8.48	1.70	14.41	70.96	1.00	0.579	1.100	n.a.	n.a.	n.a.	0.00	0.00
2.950	10.640	0.411	354.0	354.0	34.572	3.932	2.65		Unsaturated	75.0			10.06	1.70	17.10	73.52	1.00	0.579	1.100	n.a.	n.a.	n.a.	0.00	0.00
3.120	11.540	0.428	374.4	374.4	36.070	3.774	2.62		Unsaturated	72.9			10.91	1.70	18.54	75.07	1.00	0.578	1.100	n.a.	n.a.	n.a.	0.00	0.00
3.280	11.580	0.436	393.6	393.6	34.922	3.826	2.64		Unsaturated	74.1			10.95	1.70	18.61	75.33	1.00	0.578	1.100	n.a.	n.a.	n.a.	0.00	0.00
3.440	11.760	0.476	412.8	412.8	34.283	4.116	2.67		Unsaturated	76.3			11.12	1.70	18.90	76.05	1.00	0.578	1.100	n.a.	n.a.	n.a.	0.00	0.00
3.610	14.880	0.529	433.2	433.2	42.066	3.608	2.56		Unsaturated	68.0			14.06	1.70	23.91	81.11	1.00	0.578	1.100	n.a.	n.a.	n.a.	0.00	0.00
3.770	16.530	0.546	452.4	452.4	45.373	3.349	2.52		Unsaturated	64.3			15.62	1.70	26.56	83.76	1.00	0.578	1.100	n.a.	n.a.	n.a.	0.00	0.00
3.940	16.860	0.630	472.8	472.8	44.857	3.790	2.56		Unsaturated	67.6			15.94	1.70	27.09	85.13	1.00	0.577	1.100	n.a.	n.a.	n.a.	0.00	0.00
4.100	16.920	0.608	492.0	492.0	43.756	3.645	2.55		Unsaturated	67.3			15.99	1.70	27.19	85.19	1.00	0.577	1.100	n.a.	n.a.	n.a.	0.00	0.00
4.270	17.040	0.593	512.4	512.4	42.809	3.535	2.55		Unsaturated	67.1			16.11	1.70	27.38	85.40	1.00	0.577	1.100	n.a.	n.a.	n.a.	0.00	0.00
4.430	15.500	0.576	531.6	531.6	37.869	3.780	2.61		Unsaturated	71.8			14.65	1.70	24.91	83.09	1.00	0.577	1.100	n.a.	n.a.	n.a.	0.00	0.00
4.590	17.290	0.546	550.8	550.8	41.257	3.211	2.53		Unsaturated	65.7			16.34	1.70	27.78	85.63	1.00	0.576	1.100	n.a.	n.a.	n.a.	0.00	0.00
4.760	21.710	0.596	571.2	571.2	38.975	2.783	2.51		Unsaturated	63.8			20.52	1.70	34.88	94.34	1.00	0.576	1.100	n.a.	n.a.	n.a.	0.00	0.00
4.920	27.550	0.554	590.4	590.4	48.769	2.033	2.35		Unsaturated	50.8			26.04	1.70	44.27	102.32	1.00	0.576	1.100	n.a.	n.a.	n.a.	0.00	0.00
5.090	30.020	0.427	610.8	610.8	52.275	1.435	2.23		Sand	41.2			28.37	1.70	48.24	102.59	1.00	0.581	1.100	0.141	0.197	0.34	0.03	0.06
5.250	29.610	0.282	630.0	630.0	50.745	0.964	2.14		Sand	33.9	28.37		28.37	1.70	48.23	97.14	0.99	0.590	1.100	0.134	0.183	0.31	0.03	0.06
5.410	23.110	0.172	649.2	649.2	38.881	0.756	2.18		Sand	37.2	28.37		28.37	1.70	48.23	99.85	0.99	0.599	1.100	0.137	0.190	0.32	0.03	0.07
5.580	14.750	0.106	669.6	664.6	24.311	0.732	2.35		Sand	51.0	28.37		28.37	1.70	48.23	107.40	0.99	0.608	1.100	0.148	0.212	0.35	0.03	0.06
5.740	8.920	0.105	688.8	673.8	18.057	1.229	2.57		Mixed	68.7	28.37		28.37	1.70	48.23	112.63	0.99	0.616	1.100	0.157	0.230	0.37	0.03	0.06
5.910	5.810	0.150	709.2	683.6	15.960	2.748	2.81		Clay	87.7			5.49	1.35	n.a.	n.a.	0.99	0.625	n.a.	n.a.	n.a.	n.a.	0.00	0.00
6.070	4.950	0.206	728.4	692.8	13.238	4.486	3.00		Clay	100.0			4.68	1.34	n.a.	n.a.	0.99	0.632	n.a.	n.a.	n.a.	n.a.	0.00	0.00
6.230	4.830	0.226	747.6	702.0	12.695	5.069	3.05		Clay	100.0			4.57	1.34	n.a.	n.a.	0.99	0.640	n.a.	n.a.	n.a.	n.a.	0.00	0.00
6.400	4.680	0.225	768.0	711.8	12.070	5.247	3.08		Clay	100.0			4.42	1.33	n.a.	n.a.	0.99	0.648	n.a.	n.a.	n.a.	n.a.	0.00	0.00
6.560	4.420	0.203	787.2	721.1	11.168	5.047	3.09		Clay	100.0			4.18	1.33	n.a.	n.a.	0.99	0.655	n.a.	n.a.	n.a.	n.a.	0.00	0.00
6.730	4.340	0.195	807.6	730.8	10.772	4.964	3.10		Clay	100.0			4.10	1.32	n.a.	n.a.	0.99	0.662	n.a.	n.a.	n.a.	n.a.	0.00	0.00
6.890	4.210	0.185	826.8	740.1	10.260	4.868	3.11		Clay	100.0			3.98	1.32	n.a.	n.a.	0.99	0.669	n.a.	n.a.	n.a.	n.a.	0.00	0.00
7.050	4.430	0.183	846.0	749.3	10.696	4.562	3.08		Clay	100.0			4.19	1.32	n.a.	n.a.	0.99	0.675	n.a.	n.a.	n.a.	n.a.	0.00	0.00
7.220	4.610	0.192	866.4	759.1	11.005	4.592	3.07		Clay	100.0			4.36	1.31	n.a.	n.a.	0.99	0.682	n.a.	n.a.	n.a.	n.a.	0.00	0.00
7.380	5.310	0.215	885.6	768.3	12.670	4.411	3.01		Clay	100.0			5.02	1.31	n.a.	n.a.	0.99	0.688	n.a.	n.a.	n.a.	n.a.	0.00	0.00
7.550	5.920	0.238	906.0	778.1	14.053	4.355	2.97		Clay	100.0			5.60	1.30	n.a.	n.a.	0.99	0.694	n.a.	n.a.	n.a.	n.a.	0.00	0.00
7.710	6.720	0.275	925.2	787.3	15.896	4.393	2.94		Clay	97.8			6.35	1.30	n.a.	n.a.	0.99	0.700	n.a.	n.a.	n.a.	n.a.	0.00	0.00
7.870	7.000	0.295	944.4	796.5	16.391	4.513	2.93		Clay	97.6			6.62	1.29	n.a.	n.a.	0.99	0.706	n.a.	n.a.	n.a.	n.a.	0.00	0.00
8.040	6.950	0.314	964.8	806.3	16.043	4.849	2.96		Clay	99.8			6.57	1.29	n.a.	n.a.	0.99	0.711	n.a.	n.a.	n.a.	n.a.	0.00	0.00
8.200	6.470	0.321	984.0	815.5	14.661	5.376	3.02		Clay	100.0			6.12	1.29	n.a.	n.a.	0.99	0.717	n.a.	n.a.	n.a.	n.a.	0.00	0.00
8.370	5.800	0.309	1004.4	825.3	12.838	5.827	3.09		Clay	100.0			5.48	1.28	n.a.	n.a.	0.99	0.722	n.a.	n.a.	n.a.	n.a.	0.00	0.00
8.530	5.080	0.212	1023.6	834.5	10.948	4.630	3.08		Clay	100.0			4.80	1.28	n.a.	n.a.	0.99	0.727	n.a.	n.a.	n.a.	n.a.	0.00	0.00
8.690	4.960	0.160	1042.8	843.7	10.521	3.605	3.02		Clay	100.0			4.69	1.27	n.a.	n.a.	0.99	0.732	n.a.	n.a.	n.a.	n.a.	0.00	0.00
8.860	4.960	0.182	1063.2	853.5	10.377	4.110	3.06		Clay	100.0			4.69	1.27	n.a.	n.a.	0.99	0.737	n.a.	n.a.	n.a.	n.a.	0.00	0.00
9.020	6.170	0.253	1082.4	862.8	13.048	4.489	3.01		Clay	100.0			5.83	1.27	n.a.	n.a.	0.99	0.742	n.a.	n.a.	n.a.	n.a.	0.00	0.00
9.190	7.430	0.317	1102.8	872.5	15.767	4.611	2.95		Clay	99.1			7.02	1.26	n.a.	n.a.	0.98	0.747	n.a.	n.a.	n.a.	n.a.	0.00	0.00
9.350	9.410	0.414	1122.0	881.8	20.071	4.682	2.88		Clay	93.1			8.89	1.26	n.a.	n.a.	0.98	0.751	n.a.	n.a.	n.a.	n.a.	0.00	0.00
9.510	10.280	0.478	1141.2	891.0	21.795	4.925	2.86		Clay	92.1			9.72	1.26	n.a.	n.a.	0.98	0.756	n.a.	n.a.	n.a.	n.a.	0.00	0.00
9.680	11.390	0.501	1161.6	900.8	24.000	4.635	2.82		Clay	88.2			10.77	1.25	n.a.	n.a.	0.98	0.760	n.a.	n.a.	n.a.	n.a.	0.00	0.00
9.840	11.830	0.520	1180.8	910.0	24.703	4.622	2.80		Clay	87.4			11.18	1.25	n.a.	n.a.	0.98	0.764	n.a.	n.a.	n.a.	n.a.	0.00	0.00
10.010	12.190	0.546	1201.2	919.8	25.200	4.709	2.80		Clay	87.3			11.52	1.25	n.a.	n.a.	0.98	0.768	n.a.	n.a.	n.a.	n.a.	0.00	0.00
10.170	12.880	0.590	1220.4	929.0	26.415	4.810	2.80		Clay	86.6			12.17	1.24	n.a.	n.a.	0.98	0.772	n.a.	n.a.	n.a.	n.a.	0.00	0.00
10.330	13.060	0.638	1239.6	938.2	26.519	5.128	2.81		Clay	88.0			12.34	1.24	n.a.	n.a.	0.98	0.776	n.a.	n.a.	n.a.	n.a.	0.00	0.00
10.500	13.630	0.638	1260.0	948.0	27.426	4.908	2.79		Clay	86.1			12.88	1.24	n.a.	n.a.	0.98	0.780	n.a.	n.a.	n.a.	n.a.	0.00	0.00
10.660	13.500	0.637	1279.2	957.2	26.870	4.956	2.80		Clay	86.9			12.76	1.23	n.a.	n.a.	0.98	0.784	n.a.	n.a.	n.a.	n.a.	0.00	0.00
10.830	13.830	0.641	1299.6	967.0	27.260	4.860	2.79		Clay	86.1			13.07	1.23	n.a.	n.a.	0.98	0.788	n.a.	n.a.	n.a.	n.a.	0.00	0.00
10.990	13.540	0.666	1318.8	976.2	26.389	5.169	2.82		Clay	88.3			12.80	1.23	n.a.	n.a.	0.98	0.791	n.a.	n.a.	n.a.	n.a.	0.00	0.00

CORNERSTONE EARTH GROUP

CPT No.	9

PGA (A_{max})	0.89

Total Settlement:	0.46	(Inches)

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Depth (ft)	q_c (tsf)	f_s (tsf)	σ_{vc} (psf)	Insitu σ'_{vc} (psf)	Q	F (%)	I_c	Layer "Plastic" PI > 7	Flag Soil Type	Fines (%)	q_{cN} near interfaces (soft layer)	Thin Layer Factor (K_H)	Interpreted q_{cN}	C_N	q_{c1N}	$q_{c1N\text{-}CS}$	Stress Reduction Coeff, r_d	CSR	K_σ for Sand	$CRR_{M=7.5,\ \sigma'vc = 1\ atm}$	CRR	Factor of Safety (CRR/CSR)	Vertical Strain ε_v	Settlement (Inches)
11.150	13.920	0.671	1338.0	985.4	26.894	5.062	2.80		Clay	87.4			13.16	1.22	n.a.	n.a.	0.98	0.794	n.a.	n.a.	n.a.	n.a.	0.00	0.00
11.320	14.200	0.697	1358.4	995.2	27.171	5.156	2.81		Clay	87.6			13.42	1.22	n.a.	n.a.	0.98	0.798	n.a.	n.a.	n.a.	n.a.	0.00	0.00
11.480	14.020	0.686	1377.6	1004.4	26.544	5.147	2.81		Clay	88.1			13.25	1.22	n.a.	n.a.	0.98	0.801	n.a.	n.a.	n.a.	n.a.	0.00	0.00
11.650	14.200	0.699	1398.0	1014.2	26.623	5.180	2.81		Clay	88.2			13.42	1.21	n.a.	n.a.	0.98	0.805	n.a.	n.a.	n.a.	n.a.	0.00	0.00
11.810	14.720	0.740	1417.2	1023.5	27.381	5.281	2.81		Clay	87.9			13.91	1.21	n.a.	n.a.	0.98	0.808	n.a.	n.a.	n.a.	n.a.	0.00	0.00
11.980	15.380	0.711	1437.6	1033.2	28.379	4.849	2.77		Clay	85.0			14.54	1.21	n.a.	n.a.	0.98	0.811	n.a.	n.a.	n.a.	n.a.	0.00	0.00
12.140	16.170	0.711	1456.8	1042.5	29.625	4.604	2.75		Clay	82.7			15.28	1.21	n.a.	n.a.	0.98	0.814	n.a.	n.a.	n.a.	n.a.	0.00	0.00
12.300	17.430	0.724	1476.0	1051.7	31.743	4.337	2.71		Clay	79.5			16.47	1.20	n.a.	n.a.	0.98	0.817	n.a.	n.a.	n.a.	n.a.	0.00	0.00
12.470	17.110	0.736	1496.4	1061.5	30.829	4.498	2.73		Clay	81.1			16.17	1.20	n.a.	n.a.	0.98	0.820	n.a.	n.a.	n.a.	n.a.	0.00	0.00
12.630	16.520	0.770	1515.6	1070.7	29.443	4.883	2.77		Clay	84.2			15.61	1.20	n.a.	n.a.	0.98	0.822	n.a.	n.a.	n.a.	n.a.	0.00	0.00
12.800	16.930	0.750	1536.0	1080.5	29.916	4.641	2.75		Clay	82.6			16.00	1.19	n.a.	n.a.	0.97	0.825	n.a.	n.a.	n.a.	n.a.	0.00	0.00
12.960	17.210	0.741	1555.2	1089.7	30.160	4.511	2.73		Clay	81.7			16.27	1.19	n.a.	n.a.	0.97	0.828	n.a.	n.a.	n.a.	n.a.	0.00	0.00
13.120	16.030	0.705	1574.4	1098.9	27.742	4.626	2.77		Clay	84.4			15.15	1.19	n.a.	n.a.	0.97	0.830	n.a.	n.a.	n.a.	n.a.	0.00	0.00
13.290	15.210	0.696	1594.8	1108.7	25.999	4.828	2.80		Clay	87.1			14.38	1.19	n.a.	n.a.	0.97	0.833	n.a.	n.a.	n.a.	n.a.	0.00	0.00
13.450	14.580	0.678	1614.0	1117.9	24.640	4.923	2.82		Clay	88.9			13.78	1.18	n.a.	n.a.	0.97	0.836	n.a.	n.a.	n.a.	n.a.	0.00	0.00
13.620	14.230	0.653	1634.4	1127.7	23.788	4.869	2.83		Clay	89.6			13.45	1.18	n.a.	n.a.	0.97	0.838	n.a.	n.a.	n.a.	n.a.	0.00	0.00
13.780	13.850	0.632	1653.6	1136.9	22.909	4.852	2.84		Clay	90.5			13.09	1.18	n.a.	n.a.	0.97	0.840	n.a.	n.a.	n.a.	n.a.	0.00	0.00
13.940	13.460	0.611	1672.8	1146.1	22.028	4.843	2.86		Clay	91.4			12.72	1.18	n.a.	n.a.	0.97	0.843	n.a.	n.a.	n.a.	n.a.	0.00	0.00
14.110	12.990	0.578	1693.2	1155.9	21.011	4.761	2.87		Clay	92.3			12.28	1.17	n.a.	n.a.	0.97	0.845	n.a.	n.a.	n.a.	n.a.	0.00	0.00
14.270	12.710	0.543	1712.4	1165.2	20.347	4.580	2.87		Clay	92.2			12.01	1.17	n.a.	n.a.	0.97	0.847	n.a.	n.a.	n.a.	n.a.	0.00	0.00
14.440	12.210	0.465	1732.8	1174.9	19.309	4.102	2.85		Clay	91.1			11.54	1.17	n.a.	n.a.	0.97	0.850	n.a.	n.a.	n.a.	n.a.	0.00	0.00
14.600	11.300	0.430	1752.0	1184.2	17.606	4.122	2.88		Clay	93.7			10.68	1.17	n.a.	n.a.	0.97	0.852	n.a.	n.a.	n.a.	n.a.	0.00	0.00
14.760	10.470	0.413	1771.2	1193.4	16.063	4.304	2.93		Clay	97.1			9.90	1.16	n.a.	n.a.	0.97	0.854	n.a.	n.a.	n.a.	n.a.	0.00	0.00
14.930	11.090	0.429	1791.6	1203.2	16.946	4.206	2.90		Clay	95.2			10.48	1.16	n.a.	n.a.	0.97	0.856	n.a.	n.a.	n.a.	n.a.	0.00	0.00
15.090	13.670	0.564	1810.8	1212.4	21.057	4.417	2.84		Clay	90.5			12.92	1.16	n.a.	n.a.	0.97	0.858	n.a.	n.a.	n.a.	n.a.	0.00	0.00
15.260	16.340	0.682	1831.2	1222.2	25.241	4.423	2.79		Clay	85.8			15.44	1.16	n.a.	n.a.	0.97	0.860	n.a.	n.a.	n.a.	n.a.	0.00	0.00
15.420	16.830	0.718	1850.4	1231.4	25.832	4.512	2.78		Clay	85.7			15.91	1.15	n.a.	n.a.	0.97	0.862	n.a.	n.a.	n.a.	n.a.	0.00	0.00
15.580	17.820	0.722	1869.6	1240.6	27.221	4.274	2.75		Clay	83.1			16.84	1.15	n.a.	n.a.	0.97	0.864	n.a.	n.a.	n.a.	n.a.	0.00	0.00
15.750	17.580	0.729	1890.0	1250.4	26.607	4.384	2.77		Clay	84.2			16.62	1.15	n.a.	n.a.	0.97	0.866	n.a.	n.a.	n.a.	n.a.	0.00	0.00
15.910	18.320	0.842	1909.2	1259.6	27.573	4.851	2.78		Clay	85.7			17.32	1.15	n.a.	n.a.	0.96	0.867	n.a.	n.a.	n.a.	n.a.	0.00	0.00
16.080	18.480	0.868	1929.6	1269.4	27.596	4.955	2.79		Clay	86.2			17.47	1.14	n.a.	n.a.	0.96	0.869	n.a.	n.a.	n.a.	n.a.	0.00	0.00
16.240	19.110	0.896	1948.8	1278.6	28.367	4.939	2.78		Clay	85.4			18.06	1.14	n.a.	n.a.	0.96	0.871	n.a.	n.a.	n.a.	n.a.	0.00	0.00
16.400	20.190	0.913	1968.0	1287.8	29.827	4.754	2.75		Clay	83.3			19.08	1.14	n.a.	n.a.	0.96	0.873	n.a.	n.a.	n.a.	n.a.	0.00	0.00
16.570	20.580	0.866	1988.4	1297.6	30.187	4.422	2.73		Clay	81.2			19.45	1.14	n.a.	n.a.	0.96	0.874	n.a.	n.a.	n.a.	n.a.	0.00	0.00
16.730	18.680	0.771	2007.6	1306.8	27.052	4.361	2.76		Clay	83.7			17.66	1.14	n.a.	n.a.	0.96	0.876	n.a.	n.a.	n.a.	n.a.	0.00	0.00
16.900	16.460	0.693	2028.0	1316.6	23.463	4.485	2.81		Clay	88.0			15.56	1.13	n.a.	n.a.	0.96	0.878	n.a.	n.a.	n.a.	n.a.	0.00	0.00
17.060	14.820	0.621	2047.2	1325.9	20.811	4.498	2.85		Clay	91.2			14.01	1.13	n.a.	n.a.	0.96	0.879	n.a.	n.a.	n.a.	n.a.	0.00	0.00
17.220	15.610	0.574	2066.4	1335.1	21.837	3.936	2.80		Clay	86.9			14.75	1.13	n.a.	n.a.	0.96	0.881	n.a.	n.a.	n.a.	n.a.	0.00	0.00
17.390	16.820	0.493	2086.8	1344.9	23.462	3.122	2.71		Clay	79.9			15.90	1.13	n.a.	n.a.	0.96	0.882	n.a.	n.a.	n.a.	n.a.	0.00	0.00
17.550	14.670	0.430	2106.0	1354.1	20.113	3.160	2.77		Clay	84.3			13.87	1.12	n.a.	n.a.	0.96	0.884	n.a.	n.a.	n.a.	n.a.	0.00	0.00
17.720	11.660	0.329	2126.4	1363.9	15.539	3.103	2.85		Clay	91.0			11.02	1.12	n.a.	n.a.	0.96	0.885	n.a.	n.a.	n.a.	n.a.	0.00	0.00
17.880	8.970	0.274	2145.6	1373.1	11.503	3.475	2.98		Clay	100.0			8.48	1.12	n.a.	n.a.	0.96	0.886	n.a.	n.a.	n.a.	n.a.	0.00	0.00
18.040	7.820	0.248	2164.8	1382.3	9.748	3.681	3.06		Clay	100.0			7.39	1.12	n.a.	n.a.	0.96	0.888	n.a.	n.a.	n.a.	n.a.	0.00	0.00
18.210	7.290	0.227	2185.2	1392.1	8.904	3.668	3.09		Clay	100.0			6.89	1.12	n.a.	n.a.	0.96	0.889	n.a.	n.a.	n.a.	n.a.	0.00	0.00
18.370	7.010	0.209	2204.4	1401.3	8.432	3.529	3.10		Clay	100.0			6.63	1.11	n.a.	n.a.	0.96	0.890	n.a.	n.a.	n.a.	n.a.	0.00	0.00
18.540	7.540	0.237	2224.8	1411.1	9.110	3.692	3.08		Clay	100.0			7.13	1.11	n.a.	n.a.	0.96	0.892	n.a.	n.a.	n.a.	n.a.	0.00	0.00
18.700	8.530	0.300	2244.0	1420.3	10.431	4.052	3.06		Clay	100.0			8.06	1.11	n.a.	n.a.	0.96	0.893	n.a.	n.a.	n.a.	n.a.	0.00	0.00
18.860	9.680	0.287	2263.2	1429.5	11.960	3.352	2.96		Clay	99.9			9.15	1.11	n.a.	n.a.	0.95	0.894	n.a.	n.a.	n.a.	n.a.	0.00	0.00
19.030	9.950	0.286	2283.6	1439.3	12.239	3.245	2.94		Clay	98.6			9.40	1.11	n.a.	n.a.	0.95	0.895	n.a.	n.a.	n.a.	n.a.	0.00	0.00
19.190	9.400	0.267	2302.8	1448.5	11.389	3.234	2.97		Clay	100.0			8.88	1.11	n.a.	n.a.	0.95	0.896	n.a.	n.a.	n.a.	n.a.	0.00	0.00
19.360	8.740	0.255	2323.2	1458.3	10.393	3.369	3.01		Clay	100.0			8.26	1.10	n.a.	n.a.	0.95	0.898	n.a.	n.a.	n.a.	n.a.	0.00	0.00
19.520	8.900	0.255	2342.4	1467.6	10.533	3.294	3.00		Clay	100.0			8.41	1.10	n.a.	n.a.	0.95	0.899	n.a.	n.a.	n.a.	n.a.	0.00	0.00
19.690	9.120	0.257	2362.8	1477.3	10.747	3.231	2.99		Clay	100.0			8.62	1.10	n.a.	n.a.	0.95	0.900	n.a.	n.a.	n.a.	n.a.	0.00	0.00
19.850	9.800	0.267	2382.0	1486.6	11.582	3.097	2.95		Clay	99.2			9.26	1.10	n.a.	n.a.	0.95	0.901	n.a.	n.a.	n.a.	n.a.	0.00	0.00
20.010	10.240	0.290	2401.2	1495.8	12.087	3.206	2.95		Clay	98.7			9.68	1.10	n.a.	n.a.	0.95	0.902	n.a.	n.a.	n.a.	n.a.	0.00	0.00
20.180	10.840	0.245	2421.6	1505.6	12.791	2.548	2.87		Clay	92.5			10.25	1.09	n.a.	n.a.	0.95	0.903	n.a.	n.a.	n.a.	n.a.	0.00	0.00
20.340	11.660	0.325	2440.8	1514.8	13.784	3.111	2.89		Clay	94.4			11.02	1.09	n.a.	n.a.	0.95	0.904	n.a.	n.a.	n.a.	n.a.	0.00	0.00
20.510	11.880	0.338	2461.2	1524.6	13.970	3.176	2.89		Clay	94.4			11.23	1.09	n.a.	n.a.	0.95	0.905	n.a.	n.a.	n.a.	n.a.	0.00	0.00
20.670	9.390	0.335	2480.4	1533.8	10.627	4.104	3.05		Clay	100.0			8.88	1.09	n.a.	n.a.	0.95	0.906	n.a.	n.a.	n.a.	n.a.	0.00	0.00
20.830	12.100	0.335	2499.6	1543.0	14.064	3.090	2.88		Clay	93.7			11.44	1.09	n.a.	n.a.	0.95	0.907	n.a.	n.a.	n.a.	n.a.	0.00	0.00
21.000	11.910	0.346	2520.0	1552.8	13.717	3.244	2.90		Clay	95.4			11.26	1.09	n.a.	n.a.	0.95	0.908	n.a.	n.a.	n.a.	n.a.	0.00	0.00
21.160	11.890	0.346	2539.2	1562.0	13.598	3.257	2.91		Clay	95.7			11.24	1.08	n.a.	n.a.	0.95	0.909	n.a.	n.a.	n.a.	n.a.	0.00	0.00
21.330	11.810	0.331	2559.6	1571.8	13.399	3.141	2.90		Clay	95.4			11.16	1.08	n.a.	n.a.	0.95	0.909	n.a.	n.a.	n.a.	n.a.	0.00	0.00
21.490	11.160	0.258	2578.8	1581.0	12.486	2.617	2.88		Clay	93.7			10.55	1.08	n.a.	n.a.	0.95	0.910	n.a.	n.a.	n.a.	n.a.	0.00	0.00
21.650	10.240	0.235	2598.0	1590.2	11.245	2.632	2.92		Clay	96.8			9.68	1.08	n.a.	n.a.	0.95	0.911	n.a.	n.a.	n.a.	n.a.	0.00	0.00
21.820	9.380	0.230	2618.4	1600.0	10.088	2.847	2.98		Clay	100.0			8.87	1.08	n.a.	n.a.	0.94	0.912	n.a.	n.a.	n.a.	n.a.	0.00	0.00
21.980	10.200	0.245	2637.6	1609.2	11.038	2.761	2.94		Clay	98.3			9.64	1.07	n.a.	n.a.	0.94	0.913	n.a.	n.a.	n.a.	n.a.	0.00	0.00

CORNERSTONE EARTH GROUP

CPT No.	9

PGA (A_{max})	0.89

Total Settlement:	0.46	(Inches)

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Depth (ft)	q_c (tsf)	f_s (tsf)	σ_{vc} (psf)	Insitu σ'_{vc} (psf)	Q	F (%)	I_c	Layer "Plastic" PI > 7	Flag Soil Type	Fines (%)	q_{cN} near interfaces (soft layer)	Thin Layer Factor (K_H)	Interpreted q_{cN}	C_N	q_{c1N}	q_{c1N-CS}	Stress Reduction Coeff, r_d	CSR	K_σ for Sand	$CRR_{M=7.5, \sigma'vc = 1 atm}$	CRR	Factor of Safety (CRR/CSR)	Vertical Strain ε_v	Settlement (Inches)
22.150	11.590	0.234	2658.0	1619.0	12.675	2.280	2.84		Clay	90.6			10.95	1.07	n.a.	n.a.	0.94	0.913	n.a.	n.a.	n.a.	n.a.	0.00	0.00
22.310	12.000	0.254	2677.2	1628.3	13.095	2.379	2.84		Clay	90.5			11.34	1.07	n.a.	n.a.	0.94	0.914	n.a.	n.a.	n.a.	n.a.	0.00	0.00
22.470	11.960	0.246	2696.4	1637.5	12.961	2.321	2.84		Clay	90.3			11.30	1.07	n.a.	n.a.	0.94	0.915	n.a.	n.a.	n.a.	n.a.	0.00	0.00
22.640	12.790	0.281	2716.8	1647.3	13.879	2.455	2.83		Clay	89.4			12.09	1.07	n.a.	n.a.	0.94	0.916	n.a.	n.a.	n.a.	n.a.	0.00	0.00
22.800	14.700	0.299	2736.0	1656.5	16.097	2.245	2.76		Clay	83.4			13.89	1.07	n.a.	n.a.	0.94	0.916	n.a.	n.a.	n.a.	n.a.	0.00	0.00
22.970	16.100	0.340	2756.4	1666.3	17.670	2.307	2.73		Clay	81.3			15.22	1.07	n.a.	n.a.	0.94	0.917	n.a.	n.a.	n.a.	n.a.	0.00	0.00
23.130	16.810	0.428	2775.6	1675.5	18.409	2.773	2.76		Clay	83.9			15.89	1.06	n.a.	n.a.	0.94	0.918	n.a.	n.a.	n.a.	n.a.	0.00	0.00
23.290	18.830	0.507	2794.8	1684.7	20.695	2.910	2.73		Clay	81.7			17.80	1.06	n.a.	n.a.	0.94	0.918	n.a.	n.a.	n.a.	n.a.	0.00	0.00
23.460	21.500	0.692	2815.2	1694.5	23.715	3.442	2.73		Clay	81.7			20.32	1.06	n.a.	n.a.	0.94	0.919	n.a.	n.a.	n.a.	n.a.	0.00	0.00
23.620	24.700	0.866	2834.4	1703.7	27.332	3.718	2.71		Clay	79.7			23.35	1.06	n.a.	n.a.	0.94	0.919	n.a.	n.a.	n.a.	n.a.	0.00	0.00
23.790	28.000	1.039	2854.8	1713.5	31.016	3.908	2.68		Clay	77.6			26.47	1.06	n.a.	n.a.	0.94	0.920	n.a.	n.a.	n.a.	n.a.	0.00	0.00
23.950	26.920	1.124	2874.0	1722.7	29.585	4.409	2.73		Clay	81.7			25.44	1.06	n.a.	n.a.	0.94	0.921	n.a.	n.a.	n.a.	n.a.	0.00	0.00
24.110	25.600	1.082	2893.2	1731.9	27.892	4.478	2.76		Clay	83.5			24.20	1.05	n.a.	n.a.	0.94	0.921	n.a.	n.a.	n.a.	n.a.	0.00	0.00
24.280	25.920	1.059	2913.6	1741.7	28.091	4.330	2.74		Clay	82.6			24.50	1.05	n.a.	n.a.	0.94	0.922	n.a.	n.a.	n.a.	n.a.	0.00	0.00
24.440	26.190	1.031	2932.8	1750.9	28.240	4.169	2.73		Clay	81.5			24.75	1.05	n.a.	n.a.	0.93	0.922	n.a.	n.a.	n.a.	n.a.	0.00	0.00
24.610	26.480	0.973	2953.2	1760.7	28.401	3.890	2.71		Clay	79.8			25.03	1.05	n.a.	n.a.	0.93	0.923	n.a.	n.a.	n.a.	n.a.	0.00	0.00
24.770	25.600	0.902	2972.4	1770.0	27.248	3.741	2.71		Clay	80.0			24.20	1.05	n.a.	n.a.	0.93	0.923	n.a.	n.a.	n.a.	n.a.	0.00	0.00
24.930	24.490	0.839	2991.6	1779.2	25.848	3.650	2.72		Clay	80.8			23.15	1.05	n.a.	n.a.	0.93	0.924	n.a.	n.a.	n.a.	n.a.	0.00	0.00
25.100	23.830	0.831	3012.0	1789.0	24.958	3.722	2.74		Clay	82.1			22.52	1.05	n.a.	n.a.	0.93	0.924	n.a.	n.a.	n.a.	n.a.	0.00	0.00
25.260	23.940	0.895	3031.2	1798.2	24.941	3.991	2.76		Clay	83.7			22.63	1.04	n.a.	n.a.	0.93	0.925	n.a.	n.a.	n.a.	n.a.	0.00	0.00
25.430	27.120	0.960	3051.6	1808.0	28.313	3.751	2.70		Clay	79.0			25.63	1.04	n.a.	n.a.	0.93	0.925	n.a.	n.a.	n.a.	n.a.	0.00	0.00
25.590	24.960	0.926	3070.8	1817.2	25.781	3.951	2.75		Clay	82.7			23.59	1.04	n.a.	n.a.	0.93	0.925	n.a.	n.a.	n.a.	n.a.	0.00	0.00
25.750	22.850	0.843	3090.0	1826.4	23.330	3.954	2.78		Clay	85.3			21.60	1.04	n.a.	n.a.	0.93	0.926	n.a.	n.a.	n.a.	n.a.	0.00	0.00
25.920	22.100	0.704	3110.4	1836.2	22.378	3.428	2.75		Clay	83.2			20.89	1.04	n.a.	n.a.	0.93	0.926	n.a.	n.a.	n.a.	n.a.	0.00	0.00
26.080	20.670	0.635	3129.6	1845.4	20.706	3.325	2.77		Clay	84.6			19.54	1.04	n.a.	n.a.	0.93	0.927	n.a.	n.a.	n.a.	n.a.	0.00	0.00
26.250	17.340	0.586	3150.0	1855.2	16.995	3.718	2.87		Clay	92.4			16.39	1.04	n.a.	n.a.	0.93	0.927	n.a.	n.a.	n.a.	n.a.	0.00	0.00
26.410	15.550	0.578	3169.2	1864.4	14.981	4.137	2.94		Clay	98.1			14.70	1.03	n.a.	n.a.	0.93	0.927	n.a.	n.a.	n.a.	n.a.	0.00	0.00
26.570	16.480	0.577	3188.4	1873.6	15.890	3.876	2.90		Clay	95.1			15.58	1.03	n.a.	n.a.	0.93	0.928	n.a.	n.a.	n.a.	n.a.	0.00	0.00
26.740	19.810	0.634	3208.8	1883.4	19.332	3.480	2.81		Clay	87.5			18.72	1.03	n.a.	n.a.	0.93	0.928	n.a.	n.a.	n.a.	n.a.	0.00	0.00
26.900	21.270	0.639	3228.0	1892.6	20.771	3.251	2.76		Clay	84.0			20.10	1.03	n.a.	n.a.	0.93	0.928	n.a.	n.a.	n.a.	n.a.	0.00	0.00
27.070	23.710	0.620	3248.4	1902.4	23.218	2.808	2.69		Clay	77.8			22.41	1.03	n.a.	n.a.	0.92	0.929	n.a.	n.a.	n.a.	n.a.	0.00	0.00
27.230	24.490	0.621	3267.6	1911.6	23.913	2.716	2.67		Clay	76.3			23.15	1.03	n.a.	n.a.	0.92	0.929	n.a.	n.a.	n.a.	n.a.	0.00	0.00
27.400	25.690	0.577	3288.0	1921.4	25.029	2.399	2.62		Clay	72.4			24.28	1.03	n.a.	n.a.	0.92	0.929	n.a.	n.a.	n.a.	n.a.	0.00	0.00
27.560	25.620	0.538	3307.2	1930.7	24.827	2.244	2.60		Clay	71.2			24.22	1.02	n.a.	n.a.	0.92	0.929	n.a.	n.a.	n.a.	n.a.	0.00	0.00
27.720	24.370	0.555	3326.4	1939.9	23.411	2.444	2.65		Clay	74.6			23.03	1.02	n.a.	n.a.	0.92	0.930	n.a.	n.a.	n.a.	n.a.	0.00	0.00
27.890	22.450	0.619	3346.8	1949.7	21.313	2.978	2.73		Clay	81.4			21.22	1.02	n.a.	n.a.	0.92	0.930	n.a.	n.a.	n.a.	n.a.	0.00	0.00
28.050	19.490	0.611	3366.0	1958.9	18.181	3.433	2.82		Clay	88.8			18.42	1.02	n.a.	n.a.	0.92	0.930	n.a.	n.a.	n.a.	n.a.	0.00	0.00
28.220	17.650	0.534	3386.4	1968.7	16.211	3.347	2.86		Clay	91.4			16.68	1.02	n.a.	n.a.	0.92	0.930	n.a.	n.a.	n.a.	n.a.	0.00	0.00
28.380	18.190	0.577	3405.6	1977.9	16.672	3.498	2.86		Clay	91.6			17.19	1.02	n.a.	n.a.	0.92	0.931	n.a.	n.a.	n.a.	n.a.	0.00	0.00
28.540	20.880	0.695	3424.8	1987.1	19.292	3.625	2.82		Clay	88.4			19.74	1.02	n.a.	n.a.	0.92	0.931	n.a.	n.a.	n.a.	n.a.	0.00	0.00
28.710	22.750	0.796	3445.2	1996.9	21.060	3.784	2.80		Clay	87.0			21.50	1.02	n.a.	n.a.	0.92	0.931	n.a.	n.a.	n.a.	n.a.	0.00	0.00
28.870	24.820	0.812	3464.4	2006.1	23.017	3.517	2.75		Clay	83.0			23.46	1.01	n.a.	n.a.	0.92	0.931	n.a.	n.a.	n.a.	n.a.	0.00	0.00
29.040	24.650	0.757	3484.8	2015.9	22.727	3.306	2.74		Clay	82.0			23.30	1.01	n.a.	n.a.	0.92	0.931	n.a.	n.a.	n.a.	n.a.	0.00	0.00
29.200	24.790	0.769	3504.0	2025.1	22.752	3.339	2.74		Clay	82.2			23.43	1.01	n.a.	n.a.	0.92	0.931	n.a.	n.a.	n.a.	n.a.	0.00	0.00
29.360	25.550	0.799	3523.2	2034.3	23.387	3.357	2.73		Clay	81.5			24.15	1.01	n.a.	n.a.	0.92	0.932	n.a.	n.a.	n.a.	n.a.	0.00	0.00
29.530	25.960	0.833	3543.6	2044.1	23.666	3.443	2.73		Clay	81.8			24.54	1.01	n.a.	n.a.	0.91	0.932	n.a.	n.a.	n.a.	n.a.	0.00	0.00
29.690	25.980	0.804	3562.8	2053.3	23.570	3.323	2.73		Clay	81.1			24.56	1.01	n.a.	n.a.	0.91	0.932	n.a.	n.a.	n.a.	n.a.	0.00	0.00
29.860	25.900	0.766	3583.2	2063.1	23.371	3.179	2.72		Clay	80.4			24.48	1.01	n.a.	n.a.	0.91	0.932	n.a.	n.a.	n.a.	n.a.	0.00	0.00
30.020	24.210	0.722	3602.4	2072.4	21.626	3.222	2.75		Clay	82.7			22.88	1.01	n.a.	n.a.	0.91	0.932	n.a.	n.a.	n.a.	n.a.	0.00	0.00
30.180	22.960	0.660	3621.6	2081.6	20.320	3.118	2.76		Clay	83.7			21.70	1.00	n.a.	n.a.	0.91	0.932	n.a.	n.a.	n.a.	n.a.	0.00	0.00
30.350	21.430	0.614	3642.0	2091.4	18.752	3.131	2.79		Clay	86.0			20.26	1.00	n.a.	n.a.	0.91	0.932	n.a.	n.a.	n.a.	n.a.	0.00	0.00
30.510	20.680	0.606	3661.2	2100.6	17.947	3.215	2.81		Clay	87.8			19.55	1.00	n.a.	n.a.	0.91	0.932	n.a.	n.a.	n.a.	n.a.	0.00	0.00
30.680	20.990	0.557	3681.6	2110.4	18.148	2.908	2.78		Clay	85.3			19.84	1.00	n.a.	n.a.	0.91	0.932	n.a.	n.a.	n.a.	n.a.	0.00	0.00
30.840	20.470	0.570	3700.8	2119.6	17.569	3.062	2.80		Clay	87.3			19.35	1.00	n.a.	n.a.	0.91	0.933	n.a.	n.a.	n.a.	n.a.	0.00	0.00
31.000	19.460	0.543	3720.0	2128.8	16.535	3.086	2.83		Clay	89.2			18.39	1.00	n.a.	n.a.	0.91	0.933	n.a.	n.a.	n.a.	n.a.	0.00	0.00
31.170	18.920	0.533	3740.4	2138.6	15.945	3.125	2.84		Clay	90.4			17.88	1.00	n.a.	n.a.	0.91	0.933	n.a.	n.a.	n.a.	n.a.	0.00	0.00
31.330	18.270	0.507	3759.6	2147.8	15.262	3.093	2.86		Clay	91.4			17.27	1.00	n.a.	n.a.	0.91	0.933	n.a.	n.a.	n.a.	n.a.	0.00	0.00
31.500	17.970	0.506	3780.0	2157.6	14.905	3.146	2.87		Clay	92.4			16.98	0.99	n.a.	n.a.	0.91	0.933	n.a.	n.a.	n.a.	n.a.	0.00	0.00
31.660	17.620	0.500	3799.2	2166.8	14.510	3.181	2.88		Clay	93.4			16.65	0.99	n.a.	n.a.	0.91	0.933	n.a.	n.a.	n.a.	n.a.	0.00	0.00
31.820	16.690	0.473	3818.4	2176.0	13.585	3.199	2.90		Clay	95.4			15.78	0.99	n.a.	n.a.	0.91	0.933	n.a.	n.a.	n.a.	n.a.	0.00	0.00
31.990	16.370	0.467	3838.8	2185.8	13.222	3.228	2.92		Clay	96.3			15.47	0.99	n.a.	n.a.	0.90	0.933	n.a.	n.a.	n.a.	n.a.	0.00	0.00
32.150	15.890	0.432	3858.0	2195.0	12.720	3.092	2.92		Clay	96.5			15.02	0.99	n.a.	n.a.	0.90	0.933	n.a.	n.a.	n.a.	n.a.	0.00	0.00
32.320	15.610	0.451	3878.4	2204.8	12.401	3.298	2.94		Clay	98.5			14.75	0.99	n.a.	n.a.	0.90	0.933	n.a.	n.a.	n.a.	n.a.	0.00	0.00
32.480	15.570	0.425	3897.6	2214.0	12.304	3.121	2.93		Clay	97.6			14.72	0.99	n.a.	n.a.	0.90	0.933	n.a.	n.a.	n.a.	n.a.	0.00	0.00
32.640	15.190	0.450	3916.8	2223.3	11.903	3.397	2.97		Clay	100.0			14.36	0.99	n.a.	n.a.	0.90	0.933	n.a.	n.a.	n.a.	n.a.	0.00	0.00
32.810	14.620	0.402	3937.2	2233.1	11.331	3.174	2.97		Clay	100.0			13.82	0.99	n.a.	n.a.	0.90	0.933	n.a.	n.a.	n.a.	n.a.	0.00	0.00
32.970	14.690	0.390	3956.4	2242.3	11.338	3.065	2.96		Clay	99.6			13.88	0.98	n.a.	n.a.	0.90	0.933	n.a.	n.a.	n.a.	n.a.	0.00	0.00

CORNERSTONE EARTH GROUP

CPT No.	9

PGA (A_{max})	0.89

Total Settlement:	0.46	(Inches)

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Depth (ft)	q_c (tsf)	f_s (tsf)	σ_{vc} (psf)	Insitu σ'_{vc} (psf)	Q	F (%)	I_c	Layer "Plastic" PI > 7	Flag Soil Type	Fines (%)	q_{cN} near interfaces (soft layer)	Thin Layer Factor (K_H)	Interpreted q_{cN}	C_N	q_{c1N}	$q_{c1N\text{-}CS}$	Stress Reduction Coeff, r_d	CSR	K_σ for Sand	$CRR_{M=7.5,\ \sigma'vc = 1\ atm}$	CRR	Factor of Safety (CRR/CSR)	Vertical Strain ε_v	Settlement (Inches)
33.140	16.310	0.433	3976.8	2252.1	12.719	3.021	2.91		Clay	96.1			15.42	0.98	n.a.	n.a.	0.90	0.932	n.a.	n.a.	n.a.	n.a.	0.00	0.00
33.300	17.650	0.509	3996.0	2261.3	13.843	3.251	2.90		Clay	95.2			16.68	0.98	n.a.	n.a.	0.90	0.932	n.a.	n.a.	n.a.	n.a.	0.00	0.00
33.460	20.360	0.603	4015.2	2270.5	16.166	3.285	2.85		Clay	91.1			19.24	0.98	n.a.	n.a.	0.90	0.932	n.a.	n.a.	n.a.	n.a.	0.00	0.00
33.630	23.320	0.704	4035.6	2280.3	18.684	3.305	2.80		Clay	87.3			22.04	0.98	n.a.	n.a.	0.90	0.932	n.a.	n.a.	n.a.	n.a.	0.00	0.00
33.790	23.120	0.796	4054.8	2289.5	18.425	3.775	2.84		Clay	90.5			21.85	0.98	n.a.	n.a.	0.90	0.932	n.a.	n.a.	n.a.	n.a.	0.00	0.00
33.960	22.770	0.843	4075.2	2299.3	18.034	4.067	2.87		Clay	92.7			21.52	0.98	n.a.	n.a.	0.90	0.932	n.a.	n.a.	n.a.	n.a.	0.00	0.00
34.120	21.760	0.808	4094.4	2308.5	17.078	4.100	2.89		Clay	94.4			20.57	0.98	n.a.	n.a.	0.90	0.932	n.a.	n.a.	n.a.	n.a.	0.00	0.00
34.280	19.990	0.707	4113.6	2317.7	15.475	3.945	2.92		Clay	96.2			18.89	0.98	n.a.	n.a.	0.90	0.932	n.a.	n.a.	n.a.	n.a.	0.00	0.00
34.450	17.930	0.600	4134.0	2327.5	13.631	3.785	2.95		Clay	98.8			16.95	0.98	n.a.	n.a.	0.89	0.932	n.a.	n.a.	n.a.	n.a.	0.00	0.00
34.610	17.360	0.582	4153.2	2336.7	13.081	3.805	2.96		Clay	100.0			16.41	0.97	n.a.	n.a.	0.89	0.932	n.a.	n.a.	n.a.	n.a.	0.00	0.00
34.780	17.970	0.551	4173.6	2346.5	13.538	3.469	2.93		Clay	97.2			16.98	0.97	n.a.	n.a.	0.89	0.932	n.a.	n.a.	n.a.	n.a.	0.00	0.00
34.940	19.100	0.590	4192.8	2355.7	14.436	3.467	2.90		Clay	95.4			18.05	0.97	n.a.	n.a.	0.89	0.931	n.a.	n.a.	n.a.	n.a.	0.00	0.00
35.100	20.530	0.515	4212.0	2365.0	15.581	2.793	2.82		Clay	88.7			19.40	0.97	n.a.	n.a.	0.89	0.931	n.a.	n.a.	n.a.	n.a.	0.00	0.00
35.270	19.060	0.611	4232.4	2374.8	14.270	3.607	2.92		Clay	96.5			18.02	0.97	n.a.	n.a.	0.89	0.931	n.a.	n.a.	n.a.	n.a.	0.00	0.00
35.430	19.350	0.424	4251.6	2384.0	14.450	2.463	2.82		Clay	88.3			18.29	0.97	n.a.	n.a.	0.89	0.931	n.a.	n.a.	n.a.	n.a.	0.00	0.00
35.600	18.150	0.387	4272.0	2393.8	13.380	2.418	2.84		Clay	90.2			17.16	0.97	n.a.	n.a.	0.89	0.931	n.a.	n.a.	n.a.	n.a.	0.00	0.00
35.760	16.420	0.420	4291.2	2403.0	11.881	2.939	2.93		Clay	97.4			15.52	0.97	n.a.	n.a.	0.89	0.931	n.a.	n.a.	n.a.	n.a.	0.00	0.00
35.930	16.350	0.447	4311.6	2412.8	11.766	3.151	2.95		Clay	99.1			15.45	0.97	n.a.	n.a.	0.89	0.931	n.a.	n.a.	n.a.	n.a.	0.00	0.00
36.090	18.450	0.528	4330.8	2422.0	13.447	3.243	2.91		Clay	95.9			17.44	0.96	n.a.	n.a.	0.89	0.930	n.a.	n.a.	n.a.	n.a.	0.00	0.00
36.250	19.740	0.666	4350.0	2431.2	14.450	3.792	2.93		Clay	97.2			18.66	0.96	n.a.	n.a.	0.89	0.930	n.a.	n.a.	n.a.	n.a.	0.00	0.00
36.420	23.170	0.664	4370.4	2441.0	17.194	3.163	2.82		Clay	88.6			21.90	0.96	n.a.	n.a.	0.89	0.930	n.a.	n.a.	n.a.	n.a.	0.00	0.00
36.580	22.330	0.838	4389.6	2450.2	16.436	4.164	2.91		Clay	95.8			21.11	0.96	n.a.	n.a.	0.89	0.930	n.a.	n.a.	n.a.	n.a.	0.00	0.00
36.750	24.900	0.856	4410.0	2460.0	18.451	3.773	2.84		Clay	90.5			23.53	0.96	n.a.	n.a.	0.89	0.930	n.a.	n.a.	n.a.	n.a.	0.00	0.00
36.910	27.820	0.923	4429.2	2469.2	20.740	3.604	2.79		Clay	86.3			26.29	0.96	n.a.	n.a.	0.88	0.929	n.a.	n.a.	n.a.	n.a.	0.00	0.00
37.070	32.110	0.829	4448.4	2478.4	24.117	2.773	2.67		Clay	76.5			30.35	0.96	n.a.	n.a.	0.88	0.929	n.a.	n.a.	n.a.	n.a.	0.00	0.00
37.240	31.480	0.834	4468.8	2488.2	23.507	2.850	2.69		Clay	77.8			29.75	0.96	n.a.	n.a.	0.88	0.929	n.a.	n.a.	n.a.	n.a.	0.00	0.00
37.400	29.250	0.715	4488.0	2497.4	21.627	2.649	2.69		Clay	78.5			27.65	0.96	n.a.	n.a.	0.88	0.929	n.a.	n.a.	n.a.	n.a.	0.00	0.00
37.570	23.460	0.509	4508.4	2507.2	16.916	2.402	2.75		Clay	83.4			22.17	0.96	n.a.	n.a.	0.88	0.929	n.a.	n.a.	n.a.	n.a.	0.00	0.00
37.730	18.570	0.372	4527.6	2516.4	12.960	2.281	2.84		Clay	89.9			17.55	0.96	n.a.	n.a.	0.88	0.928	n.a.	n.a.	n.a.	n.a.	0.00	0.00
37.890	16.370	0.272	4546.8	2525.7	11.163	1.931	2.85		Clay	91.2			15.47	0.95	n.a.	n.a.	0.88	0.928	n.a.	n.a.	n.a.	n.a.	0.00	0.00
38.060	17.240	0.304	4567.2	2535.5	11.798	2.029	2.84		Clay	90.5			16.29	0.95	n.a.	n.a.	0.88	0.928	n.a.	n.a.	n.a.	n.a.	0.00	0.00
38.220	17.780	0.356	4586.4	2544.7	12.172	2.299	2.86		Clay	91.9			16.81	0.95	n.a.	n.a.	0.88	0.928	n.a.	n.a.	n.a.	n.a.	0.00	0.00
38.390	18.670	0.380	4606.8	2554.5	12.814	2.322	2.85		Clay	90.6			17.65	0.95	n.a.	n.a.	0.88	0.927	n.a.	n.a.	n.a.	n.a.	0.00	0.00
38.550	20.530	0.409	4626.0	2563.7	14.212	2.245	2.80		Clay	87.0			19.40	0.95	n.a.	n.a.	0.88	0.927	n.a.	n.a.	n.a.	n.a.	0.00	0.00
38.710	20.730	0.390	4645.2	2572.9	14.309	2.118	2.78		Clay	85.7			19.59	0.95	n.a.	n.a.	0.88	0.927	n.a.	n.a.	n.a.	n.a.	0.00	0.00
38.880	21.620	0.404	4665.6	2582.7	14.936	2.094	2.77		Clay	84.2			20.43	0.95	n.a.	n.a.	0.88	0.927	n.a.	n.a.	n.a.	n.a.	0.00	0.00
39.040	21.730	0.465	4684.8	2591.9	14.960	2.400	2.80		Clay	86.8			20.54	0.95	n.a.	n.a.	0.88	0.926	n.a.	n.a.	n.a.	n.a.	0.00	0.00
39.210	23.890	0.408	4705.2	2601.7	16.556	1.893	2.70		Clay	79.3			22.58	0.95	n.a.	n.a.	0.87	0.926	n.a.	n.a.	n.a.	n.a.	0.00	0.00
39.370	26.970	0.350	4724.4	2610.9	20.939	1.424	2.55		Sand	67.0			25.49	0.89	22.72	79.39	0.87	0.926	0.981	0.115	0.133	0.14	0.04	0.08
39.530	25.180	0.292	4743.6	2620.1	19.373	1.279	2.55		Sand	67.4	25.49		25.49	0.89	22.67	79.39	0.87	0.925	0.981	0.115	0.133	0.14	0.04	0.08
39.700	22.110	0.255	4764.0	2629.9	15.003	1.291	2.65		Clay	75.2			20.90	0.94	n.a.	n.a.	0.87	0.925	n.a.	n.a.	n.a.	n.a.	0.00	0.00
39.860	19.630	0.291	4783.2	2639.1	13.064	1.686	2.76		Clay	84.0			18.55	0.94	n.a.	n.a.	0.87	0.925	n.a.	n.a.	n.a.	n.a.	0.00	0.00
40.030	18.470	0.387	4803.6	2648.9	12.132	2.408	2.87		Clay	92.9			17.46	0.94	n.a.	n.a.	0.87	0.925	n.a.	n.a.	n.a.	n.a.	0.00	0.00
40.190	24.220	0.510	4822.8	2658.1	16.409	2.338	2.76		Clay	83.7			22.89	0.94	n.a.	n.a.	0.87	0.924	n.a.	n.a.	n.a.	n.a.	0.00	0.00
40.350	28.420	0.639	4842.0	2667.4	19.494	2.459	2.71		Clay	79.9			26.86	0.94	n.a.	n.a.	0.87	0.924	n.a.	n.a.	n.a.	n.a.	0.00	0.00
40.520	30.880	0.908	4862.4	2677.2	21.253	3.191	2.75		Clay	83.0			29.19	0.94	n.a.	n.a.	0.87	0.924	n.a.	n.a.	n.a.	n.a.	0.00	0.00
40.680	33.940	0.977	4881.6	2686.4	23.451	3.102	2.71		Clay	79.7			32.08	0.94	n.a.	n.a.	0.87	0.923	n.a.	n.a.	n.a.	n.a.	0.00	0.00
40.850	35.490	1.183	4902.0	2696.2	24.508	3.581	2.73		Clay	81.7			33.54	0.94	n.a.	n.a.	0.87	0.923	n.a.	n.a.	n.a.	n.a.	0.00	0.00
41.010	32.900	1.224	4921.2	2705.4	22.503	4.020	2.80		Clay	86.6			31.10	0.94	n.a.	n.a.	0.87	0.923	n.a.	n.a.	n.a.	n.a.	0.00	0.00
41.170	33.930	1.306	4940.4	2714.6	23.178	4.151	2.79		Clay	86.6			32.07	0.94	n.a.	n.a.	0.87	0.922	n.a.	n.a.	n.a.	n.a.	0.00	0.00
41.340	35.030	1.283	4960.8	2724.4	23.895	3.943	2.77		Clay	84.6			33.11	0.94	n.a.	n.a.	0.87	0.922	n.a.	n.a.	n.a.	n.a.	0.00	0.00
41.500	34.440	1.296	4980.0	2733.6	23.376	4.055	2.79		Clay	85.8			32.55	0.93	n.a.	n.a.	0.86	0.922	n.a.	n.a.	n.a.	n.a.	0.00	0.00
41.670	36.360	1.304	5000.4	2743.4	24.685	3.851	2.75		Clay	83.2			34.37	0.93	n.a.	n.a.	0.86	0.921	n.a.	n.a.	n.a.	n.a.	0.00	0.00
41.830	36.800	1.367	5019.6	2752.6	24.915	3.987	2.76		Clay	83.8			34.78	0.93	n.a.	n.a.	0.86	0.921	n.a.	n.a.	n.a.	n.a.	0.00	0.00
41.990	38.760	1.409	5038.8	2761.8	26.244	3.888	2.74		Clay	81.8			36.64	0.93	n.a.	n.a.	0.86	0.921	n.a.	n.a.	n.a.	n.a.	0.00	0.00
42.160	39.950	1.562	5059.2	2771.6	27.003	4.173	2.75		Clay	82.7			37.76	0.93	n.a.	n.a.	0.86	0.920	n.a.	n.a.	n.a.	n.a.	0.00	0.00
42.320	39.430	1.536	5078.4	2780.8	26.532	4.163	2.75		Clay	83.1			37.27	0.93	n.a.	n.a.	0.86	0.920	n.a.	n.a.	n.a.	n.a.	0.00	0.00
42.490	38.090	1.471	5098.8	2790.6	25.471	4.138	2.76		Clay	84.0			36.00	0.93	n.a.	n.a.	0.86	0.920	n.a.	n.a.	n.a.	n.a.	0.00	0.00
42.650	35.150	1.317	5118.0	2799.8	23.281	4.040	2.79		Clay	85.8			33.22	0.93	n.a.	n.a.	0.86	0.919	n.a.	n.a.	n.a.	n.a.	0.00	0.00
42.810	32.690	1.244	5137.2	2809.1	21.446	4.130	2.82		Clay	88.5			30.90	0.93	n.a.	n.a.	0.86	0.919	n.a.	n.a.	n.a.	n.a.	0.00	0.00
42.980	30.600	1.160	5157.6	2818.8	19.881	4.140	2.84		Clay	90.5			28.92	0.93	n.a.	n.a.	0.86	0.919	n.a.	n.a.	n.a.	n.a.	0.00	0.00
43.140	26.780	1.033	5176.8	2828.1	17.108	4.270	2.90		Clay	95.2			25.31	0.93	n.a.	n.a.	0.86	0.918	n.a.	n.a.	n.a.	n.a.	0.00	0.00
43.310	23.370	0.834	5197.2	2837.9	14.639	4.015	2.94		Clay	98.1			22.09	0.93	n.a.	n.a.	0.86	0.918	n.a.	n.a.	n.a.	n.a.	0.00	0.00
43.470	20.920	0.657	5216.4	2847.1	12.864	3.589	2.95		Clay	99.3			19.77	0.92	n.a.	n.a.	0.86	0.917	n.a.	n.a.	n.a.	n.a.	0.00	0.00
43.640	19.450	0.556	5236.8	2856.9	11.783	3.302	2.96		Clay	100.0			18.38	0.92	n.a.	n.a.	0.86	0.917	n.a.	n.a.	n.a.	n.a.	0.00	0.00
43.800	18.740	0.556	5256.0	2866.1	11.243	3.451	2.99		Clay	100.0			17.71	0.92	n.a.	n.a.	0.85	0.917	n.a.	n.a.	n.a.	n.a.	0.00	0.00
43.960	18.770	0.543	5275.2	2875.3	11.221	3.366	2.98		Clay	100.0			17.74	0.92	n.a.	n.a.	0.85	0.916	n.a.	n.a.	n.a.	n.a.	0.00	0.00

CORNERSTONE EARTH GROUP

CPT No.	9

PGA (A_{max})	0.89

Total Settlement:	0.46	(Inches)

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Depth (ft)	q_c (tsf)	f_s (tsf)	σ_{vc} (psf)	Insitu σ'_{vc} (psf)	Q	F (%)	I_c	Layer "Plastic" PI > 7	Flag Soil Type	Fines (%)	q_{cN} near interfaces (soft layer)	Thin Layer Factor (K_H)	Interpreted q_{cN}	C_N	q_{c1N}	$q_{c1N\text{-}CS}$	Stress Reduction Coeff, r_d	CSR	K_σ for Sand	$CRR_{M=7.5,\ \sigma'vc = 1\ atm}$	CRR	Factor of Safety (CRR/CSR)	Vertical Strain ε_v	Settlement (Inches)
44.130	19.060	0.551	5295.6	2885.1	11.377	3.356	2.98		Clay	100.0			18.02	0.92	n.a.	n.a.	0.85	0.916	n.a.	n.a.	n.a.	n.a.	0.00	0.00
44.290	19.200	0.552	5314.8	2894.3	11.431	3.336	2.98		Clay	100.0			18.15	0.92	n.a.	n.a.	0.85	0.915	n.a.	n.a.	n.a.	n.a.	0.00	0.00
44.460	19.880	0.555	5335.2	2904.1	11.854	3.224	2.95		Clay	99.4			18.79	0.92	n.a.	n.a.	0.85	0.915	n.a.	n.a.	n.a.	n.a.	0.00	0.00
44.620	20.270	0.559	5354.4	2913.3	12.078	3.178	2.94		Clay	98.5			19.16	0.92	n.a.	n.a.	0.85	0.915	n.a.	n.a.	n.a.	n.a.	0.00	0.00
44.780	19.980	0.569	5373.6	2922.5	11.834	3.288	2.96		Clay	99.8			18.88	0.92	n.a.	n.a.	0.85	0.914	n.a.	n.a.	n.a.	n.a.	0.00	0.00
44.950	20.260	0.564	5394.0	2932.3	11.979	3.210	2.95		Clay	99.0			19.15	0.92	n.a.	n.a.	0.85	0.914	n.a.	n.a.	n.a.	n.a.	0.00	0.00
45.110	20.440	0.562	5413.2	2941.5	12.057	3.168	2.94		Clay	98.5			19.32	0.92	n.a.	n.a.	0.85	0.913	n.a.	n.a.	n.a.	n.a.	0.00	0.00
45.280	20.040	0.467	5433.6	2951.3	11.739	2.694	2.91		Clay	96.0			18.94	0.92	n.a.	n.a.	0.85	0.913	n.a.	n.a.	n.a.	n.a.	0.00	0.00
45.440	18.820	0.447	5452.8	2960.5	10.872	2.777	2.95		Clay	98.8			17.79	0.92	n.a.	n.a.	0.85	0.913	n.a.	n.a.	n.a.	n.a.	0.00	0.00
45.600	17.900	0.463	5472.0	2969.8	10.212	3.056	2.99		Clay	100.0			16.92	0.91	n.a.	n.a.	0.85	0.912	n.a.	n.a.	n.a.	n.a.	0.00	0.00
45.770	18.170	0.487	5492.4	2979.6	10.353	3.156	3.00		Clay	100.0			17.17	0.91	n.a.	n.a.	0.85	0.912	n.a.	n.a.	n.a.	n.a.	0.00	0.00
45.930	20.140	0.456	5511.6	2988.8	11.633	2.621	2.91		Clay	95.8			19.04	0.91	n.a.	n.a.	0.85	0.911	n.a.	n.a.	n.a.	n.a.	0.00	0.00
46.100	20.570	0.495	5532.0	2998.6	11.875	2.779	2.92		Clay	96.3			19.44	0.91	n.a.	n.a.	0.84	0.911	n.a.	n.a.	n.a.	n.a.	0.00	0.00
46.260	20.440	0.519	5551.2	3007.8	11.746	2.938	2.93		Clay	97.7			19.32	0.91	n.a.	n.a.	0.84	0.910	n.a.	n.a.	n.a.	n.a.	0.00	0.00
46.420	21.920	0.525	5570.4	3017.0	12.685	2.745	2.89		Clay	94.2			20.72	0.91	n.a.	n.a.	0.84	0.910	n.a.	n.a.	n.a.	n.a.	0.00	0.00
46.590	21.320	0.452	5590.8	3026.8	12.240	2.439	2.87		Clay	92.9			20.15	0.91	n.a.	n.a.	0.84	0.909	n.a.	n.a.	n.a.	n.a.	0.00	0.00
46.750	20.420	0.476	5610.0	3036.0	11.604	2.705	2.92		Clay	96.4			19.30	0.91	n.a.	n.a.	0.84	0.909	n.a.	n.a.	n.a.	n.a.	0.00	0.00
46.920	20.450	0.449	5630.4	3045.8	11.580	2.547	2.90		Clay	95.3			19.33	0.91	n.a.	n.a.	0.84	0.909	n.a.	n.a.	n.a.	n.a.	0.00	0.00
47.080	20.220	0.462	5649.6	3055.0	11.388	2.657	2.92		Clay	96.6			19.11	0.91	n.a.	n.a.	0.84	0.908	n.a.	n.a.	n.a.	n.a.	0.00	0.00
47.240	19.740	0.458	5668.8	3064.2	11.034	2.706	2.94		Clay	97.9			18.66	0.91	n.a.	n.a.	0.84	0.908	n.a.	n.a.	n.a.	n.a.	0.00	0.00
47.410	20.760	0.493	5689.2	3074.0	11.656	2.750	2.92		Clay	96.6			19.62	0.91	n.a.	n.a.	0.84	0.907	n.a.	n.a.	n.a.	n.a.	0.00	0.00
47.570	21.740	0.500	5708.4	3083.2	12.251	2.650	2.89		Clay	94.5			20.55	0.91	n.a.	n.a.	0.84	0.907	n.a.	n.a.	n.a.	n.a.	0.00	0.00
47.740	20.150	0.536	5728.8	3093.0	11.177	3.101	2.97		Clay	100.0			19.05	0.90	n.a.	n.a.	0.84	0.906	n.a.	n.a.	n.a.	n.a.	0.00	0.00
47.900	20.620	0.587	5748.0	3102.2	11.441	3.310	2.97		Clay	100.0			19.49	0.90	n.a.	n.a.	0.84	0.906	n.a.	n.a.	n.a.	n.a.	0.00	0.00
48.060	21.010	0.612	5767.2	3111.5	11.651	3.375	2.97		Clay	100.0			19.86	0.90	n.a.	n.a.	0.84	0.905	n.a.	n.a.	n.a.	n.a.	0.00	0.00
48.230	21.730	0.571	5787.6	3121.2	12.070	3.031	2.93		Clay	97.6			20.54	0.90	n.a.	n.a.	0.84	0.905	n.a.	n.a.	n.a.	n.a.	0.00	0.00
48.390	21.910	0.550	5806.8	3130.5	12.143	2.895	2.92		Clay	96.5			20.71	0.90	n.a.	n.a.	0.83	0.904	n.a.	n.a.	n.a.	n.a.	0.00	0.00
48.560	21.640	0.540	5827.2	3140.3	11.927	2.885	2.92		Clay	96.9			20.45	0.90	n.a.	n.a.	0.83	0.904	n.a.	n.a.	n.a.	n.a.	0.00	0.00
48.720	22.170	0.539	5846.4	3149.5	12.222	2.803	2.91		Clay	95.7			20.95	0.90	n.a.	n.a.	0.83	0.904	n.a.	n.a.	n.a.	n.a.	0.00	0.00
48.880	22.090	0.526	5865.6	3158.7	12.130	2.746	2.91		Clay	95.5			20.88	0.90	n.a.	n.a.	0.83	0.903	n.a.	n.a.	n.a.	n.a.	0.00	0.00
49.050	21.460	0.565	5886.0	3168.5	11.688	3.052	2.95		Clay	98.6			20.28	0.90	n.a.	n.a.	0.83	0.903	n.a.	n.a.	n.a.	n.a.	0.00	0.00
49.210	22.120	0.579	5905.2	3177.7	12.064	3.019	2.93		Clay	97.5			20.91	0.90	n.a.	n.a.	0.83	0.902	n.a.	n.a.	n.a.	n.a.	0.00	0.00
49.380	24.000	0.570	5925.6	3187.5	13.200	2.709	2.87		Clay	92.8			22.68	0.90	n.a.	n.a.	0.83	0.902	n.a.	n.a.	n.a.	n.a.	0.00	0.00
49.540	22.940	0.605	5944.8	3196.7	12.493	3.031	2.92		Clay	96.6			21.68	0.90	n.a.	n.a.	0.83	0.901	n.a.	n.a.	n.a.	n.a.	0.00	0.00
49.700	23.700	0.610	5964.0	3205.9	12.925	2.945	2.90		Clay	95.1			22.40	0.90	n.a.	n.a.	0.83	0.901	n.a.	n.a.	n.a.	n.a.	0.00	0.00
49.870	24.200	0.720	5984.4	3215.7	13.190	3.395	2.93		Clay	97.4			22.87	0.90	n.a.	n.a.	0.83	0.900	n.a.	n.a.	n.a.	n.a.	0.00	0.00
50.030	26.480	1.263	6003.6	3224.9	14.560	5.378	3.02		Clay	100.0			25.03	0.89	n.a.	n.a.	0.83	0.900	n.a.	n.a.	n.a.	n.a.	0.00	0.00
50.200	27.120	1.755	6024.0	3234.7	14.906	7.280	3.10		Clay	100.0			25.63	0.89	n.a.	n.a.	0.83	0.899	n.a.	n.a.	n.a.	n.a.	0.00	0.00

CORNERSTONE EARTH GROUP

CPT No.	10

PGA (A_{max})	0.89

Total Settlement:	0.06	(Inches)

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Depth (ft)	q_c (tsf)	f_s (tsf)	σ_{vc} (psf)	Insitu σ'_{vc} (psf)	Q	F (%)	I_c	Layer "Plastic" PI > 7	Flag Soil Type	Fines (%)	q_{cN} near interfaces (soft layer)	Thin Layer Factor (K_H)	Interpreted q_{cN}	C_N	q_{c1N}	$q_{c1N\text{-}CS}$	Stress Reduction Coeff, r_d	CSR	K_σ for Sand	$CRR_{M=7.5,\ \sigma'vc = 1\ atm}$	CRR	Factor of Safety (CRR/CSR)	Vertical Strain ε_v	Settlement (Inches)
0.160	0.080	0.296	19.2	19.2	7.333	420.881	4.64		Unsaturated	100.0			0.08	1.70	0.13	54.10	1.00	0.579	1.100	n.a.	n.a.	n.a.	0.00	0.00
0.330	3.110	0.245	39.6	39.6	47.312	7.938	2.78		Unsaturated	85.2			2.94	1.70	5.00	59.12	1.00	0.579	1.100	n.a.	n.a.	n.a.	0.00	0.00
0.490	115.430	0.458	58.8	58.8	654.322	0.397	1.05		Unsaturated	0.0			109.10	1.70	185.47	185.47	1.00	0.579	1.100	n.a.	n.a.	n.a.	0.00	0.00
0.660	155.530	0.487	79.2	79.2	759.649	0.313	0.93		Unsaturated	0.0			147.00	1.70	249.91	249.91	1.00	0.579	1.100	n.a.	n.a.	n.a.	0.00	0.00
0.820	106.810	0.583	98.4	98.4	467.936	0.546	1.25		Unsaturated	0.0			100.95	1.70	171.62	171.62	1.00	0.579	1.100	n.a.	n.a.	n.a.	0.00	0.00
0.980	76.930	0.454	117.6	117.6	308.200	0.591	1.39		Unsaturated	0.0			72.71	1.70	123.61	123.61	1.00	0.579	1.100	n.a.	n.a.	n.a.	0.00	0.00
1.150	72.870	0.742	138.0	138.0	269.445	1.019	1.61		Unsaturated	0.0			68.88	1.70	117.09	117.09	1.00	0.579	1.100	n.a.	n.a.	n.a.	0.00	0.00
1.310	61.770	0.924	157.2	157.2	213.929	1.497	1.80		Unsaturated	7.1			58.38	1.70	99.25	100.97	1.00	0.579	1.100	n.a.	n.a.	n.a.	0.00	0.00
1.480	67.990	1.236	177.6	177.6	221.528	1.820	1.86		Unsaturated	11.7			64.26	1.70	109.25	122.38	1.00	0.579	1.100	n.a.	n.a.	n.a.	0.00	0.00
1.640	47.780	1.011	196.8	196.8	147.778	2.119	2.02		Unsaturated	24.6			45.16	1.70	76.77	119.75	1.00	0.579	1.100	n.a.	n.a.	n.a.	0.00	0.00
1.800	45.780	1.017	216.0	216.0	135.112	2.226	2.06		Unsaturated	27.9			43.27	1.70	73.56	121.05	1.00	0.579	1.100	n.a.	n.a.	n.a.	0.00	0.00
1.970	18.230	1.086	236.4	236.4	79.393	5.997	2.54		Unsaturated	66.3			17.23	1.70	29.29	87.70	1.00	0.579	1.100	n.a.	n.a.	n.a.	0.00	0.00
2.130	13.760	0.755	255.6	255.6	56.578	5.535	2.61		Unsaturated	71.7			13.01	1.70	22.11	79.46	1.00	0.579	1.100	n.a.	n.a.	n.a.	0.00	0.00
2.300	10.450	0.626	276.0	276.0	40.558	6.072	2.73		Unsaturated	81.8			9.88	1.70	16.79	74.07	1.00	0.579	1.100	n.a.	n.a.	n.a.	0.00	0.00
2.460	8.390	0.509	295.2	295.2	55.843	6.172	2.65		Unsaturated	74.8			7.93	1.70	13.48	68.81	1.00	0.579	1.100	n.a.	n.a.	n.a.	0.00	0.00
2.620	7.320	0.476	314.4	314.4	45.565	6.641	2.73		Unsaturated	81.4			6.92	1.70	11.76	67.48	1.00	0.579	1.100	n.a.	n.a.	n.a.	0.00	0.00
2.790	7.160	0.479	334.8	334.8	41.772	6.853	2.77		Unsaturated	84.2			6.77	1.70	11.50	67.48	1.00	0.579	1.100	n.a.	n.a.	n.a.	0.00	0.00
2.950	7.500	0.476	354.0	354.0	41.373	6.506	2.75		Unsaturated	83.1			7.09	1.70	12.05	68.06	1.00	0.579	1.100	n.a.	n.a.	n.a.	0.00	0.00
3.120	7.800	0.466	374.4	374.4	40.667	6.119	2.74		Unsaturated	81.9			7.37	1.70	12.53	68.55	1.00	0.578	1.100	n.a.	n.a.	n.a.	0.00	0.00
3.280	8.300	0.458	393.6	393.6	41.175	5.647	2.71		Unsaturated	79.6			7.84	1.70	13.34	69.29	1.00	0.578	1.100	n.a.	n.a.	n.a.	0.00	0.00
3.440	9.830	0.470	412.8	412.8	46.626	4.879	2.62		Unsaturated	72.9			9.29	1.70	15.79	71.51	1.00	0.578	1.100	n.a.	n.a.	n.a.	0.00	0.00
3.610	10.860	0.461	433.2	433.2	30.533	4.328	2.72		Unsaturated	80.4			10.26	1.70	17.45	74.75	1.00	0.578	1.100	n.a.	n.a.	n.a.	0.00	0.00
3.770	11.720	0.473	452.4	452.4	31.987	4.113	2.69		Unsaturated	78.0			11.08	1.70	18.83	76.22	1.00	0.578	1.100	n.a.	n.a.	n.a.	0.00	0.00
3.940	13.390	0.523	472.8	472.8	35.493	3.978	2.65		Unsaturated	74.6			12.66	1.70	21.52	79.18	1.00	0.577	1.100	n.a.	n.a.	n.a.	0.00	0.00
4.100	16.370	0.569	492.0	492.0	42.313	3.531	2.55		Unsaturated	67.3			15.47	1.70	26.30	84.07	1.00	0.577	1.100	n.a.	n.a.	n.a.	0.00	0.00
4.270	17.780	0.627	512.4	512.4	44.697	3.575	2.54		Unsaturated	66.3			16.81	1.70	28.57	86.76	1.00	0.577	1.100	n.a.	n.a.	n.a.	0.00	0.00
4.430	17.710	0.645	531.6	531.6	43.363	3.696	2.56		Unsaturated	67.8			16.74	1.70	28.46	86.94	1.00	0.577	1.100	n.a.	n.a.	n.a.	0.00	0.00
4.590	16.950	0.573	550.8	550.8	40.433	3.438	2.56		Unsaturated	67.8			16.02	1.70	27.24	85.37	1.00	0.576	1.100	n.a.	n.a.	n.a.	0.00	0.00
4.760	15.510	0.526	571.2	571.2	35.988	3.455	2.60		Unsaturated	70.9			14.66	1.70	24.92	82.97	1.00	0.576	1.100	n.a.	n.a.	n.a.	0.00	0.00
4.920	13.270	0.494	590.4	590.4	29.969	3.810	2.69		Unsaturated	77.9			12.54	1.70	21.32	79.43	1.00	0.576	1.100	n.a.	n.a.	n.a.	0.00	0.00
5.090	15.320	0.417	610.8	605.2	34.085	2.777	2.55	plastic	Clay	67.3			14.48	1.39	n.a.	n.a.	1.00	0.581	n.a.	n.a.	n.a.	n.a.	0.00	0.00
5.250	11.910	0.251	630.0	614.4	26.045	2.163	2.58	plastic	Clay	69.1			11.26	1.39	n.a.	n.a.	0.99	0.590	n.a.	n.a.	n.a.	n.a.	0.00	0.00
5.410	9.450	0.194	649.2	623.6	20.285	2.125	2.66	plastic	Clay	75.7			8.93	1.38	n.a.	n.a.	0.99	0.599	n.a.	n.a.	n.a.	n.a.	0.00	0.00
5.580	8.450	0.202	669.6	633.4	25.624	2.487	2.62		Clay	72.5			7.99	1.37	n.a.	n.a.	0.99	0.608	n.a.	n.a.	n.a.	n.a.	0.00	0.00
5.740	7.690	0.263	688.8	642.6	22.861	3.584	2.76		Clay	83.6			7.27	1.37	n.a.	n.a.	0.99	0.616	n.a.	n.a.	n.a.	n.a.	0.00	0.00
5.910	6.880	0.333	709.2	652.4	20.004	5.100	2.90		Clay	95.1			6.50	1.36	n.a.	n.a.	0.99	0.625	n.a.	n.a.	n.a.	n.a.	0.00	0.00
6.070	6.060	0.356	728.4	661.6	17.217	6.248	3.01		Clay	100.0			5.73	1.36	n.a.	n.a.	0.99	0.632	n.a.	n.a.	n.a.	n.a.	0.00	0.00
6.230	6.410	0.344	747.6	670.8	17.996	5.694	2.97		Clay	100.0			6.06	1.35	n.a.	n.a.	0.99	0.640	n.a.	n.a.	n.a.	n.a.	0.00	0.00
6.400	6.810	0.354	768.0	680.6	18.882	5.515	2.94		Clay	98.4			6.44	1.35	n.a.	n.a.	0.99	0.648	n.a.	n.a.	n.a.	n.a.	0.00	0.00
6.560	6.370	0.337	787.2	689.9	17.327	5.634	2.98		Clay	100.0			6.02	1.34	n.a.	n.a.	0.99	0.655	n.a.	n.a.	n.a.	n.a.	0.00	0.00
6.730	6.090	0.311	807.6	699.6	16.254	5.468	2.99		Clay	100.0			5.76	1.34	n.a.	n.a.	0.99	0.662	n.a.	n.a.	n.a.	n.a.	0.00	0.00
6.890	5.920	0.295	826.8	708.9	15.536	5.363	3.00		Clay	100.0			5.60	1.33	n.a.	n.a.	0.99	0.669	n.a.	n.a.	n.a.	n.a.	0.00	0.00
7.050	6.030	0.297	846.0	718.1	15.617	5.290	2.99		Clay	100.0			5.70	1.33	n.a.	n.a.	0.99	0.675	n.a.	n.a.	n.a.	n.a.	0.00	0.00
7.220	6.190	0.305	866.4	727.9	15.818	5.302	2.99		Clay	100.0			5.85	1.33	n.a.	n.a.	0.99	0.682	n.a.	n.a.	n.a.	n.a.	0.00	0.00
7.380	6.300	0.300	885.6	737.1	15.893	5.113	2.98		Clay	100.0			5.95	1.32	n.a.	n.a.	0.99	0.688	n.a.	n.a.	n.a.	n.a.	0.00	0.00
7.550	6.530	0.308	906.0	746.9	16.273	5.070	2.97		Clay	100.0			6.17	1.32	n.a.	n.a.	0.99	0.694	n.a.	n.a.	n.a.	n.a.	0.00	0.00
7.710	7.030	0.324	925.2	756.1	17.372	4.932	2.94		Clay	98.1			6.64	1.31	n.a.	n.a.	0.99	0.700	n.a.	n.a.	n.a.	n.a.	0.00	0.00
7.870	8.150	0.355	944.4	765.3	20.064	4.619	2.87		Clay	92.8			7.70	1.31	n.a.	n.a.	0.99	0.706	n.a.	n.a.	n.a.	n.a.	0.00	0.00
8.040	9.260	0.403	964.8	775.1	22.649	4.588	2.83		Clay	89.5			8.75	1.30	n.a.	n.a.	0.99	0.711	n.a.	n.a.	n.a.	n.a.	0.00	0.00
8.200	10.320	0.443	984.0	784.3	25.061	4.508	2.79		Clay	86.4			9.75	1.30	n.a.	n.a.	0.99	0.717	n.a.	n.a.	n.a.	n.a.	0.00	0.00
8.370	10.760	0.459	1004.4	794.1	25.835	4.474	2.78		Clay	85.5			10.17	1.30	n.a.	n.a.	0.99	0.722	n.a.	n.a.	n.a.	n.a.	0.00	0.00
8.530	11.190	0.492	1023.6	803.3	26.585	4.607	2.78		Clay	85.4			10.58	1.29	n.a.	n.a.	0.99	0.727	n.a.	n.a.	n.a.	n.a.	0.00	0.00
8.690	11.770	0.472	1042.8	812.5	27.687	4.192	2.74		Clay	82.2			11.12	1.29	n.a.	n.a.	0.99	0.732	n.a.	n.a.	n.a.	n.a.	0.00	0.00
8.860	12.110	0.496	1063.2	822.3	28.160	4.286	2.74		Clay	82.3			11.45	1.28	n.a.	n.a.	0.99	0.737	n.a.	n.a.	n.a.	n.a.	0.00	0.00
9.020	13.090	0.557	1082.4	831.6	30.182	4.442	2.73		Clay	81.3			12.37	1.28	n.a.	n.a.	0.99	0.742	n.a.	n.a.	n.a.	n.a.	0.00	0.00
9.190	13.700	0.633	1102.8	841.3	31.256	4.817	2.74		Clay	82.4			12.95	1.28	n.a.	n.a.	0.98	0.747	n.a.	n.a.	n.a.	n.a.	0.00	0.00
9.350	14.120	0.671	1122.0	850.6	31.883	4.947	2.74		Clay	82.6			13.35	1.27	n.a.	n.a.	0.98	0.751	n.a.	n.a.	n.a.	n.a.	0.00	0.00
9.510	14.570	0.693	1141.2	859.8	32.565	4.952	2.74		Clay	82.0			13.77	1.27	n.a.	n.a.	0.98	0.756	n.a.	n.a.	n.a.	n.a.	0.00	0.00
9.680	14.720	0.755	1161.6	869.6	32.520	5.338	2.76		Clay	83.9			13.91	1.26	n.a.	n.a.	0.98	0.760	n.a.	n.a.	n.a.	n.a.	0.00	0.00
9.840	15.270	0.776	1180.8	878.8	33.409	5.286	2.75		Clay	83.0			14.43	1.26	n.a.	n.a.	0.98	0.764	n.a.	n.a.	n.a.	n.a.	0.00	0.00
10.010	15.710	0.800	1201.2	888.6	34.008	5.295	2.75		Clay	82.6			14.85	1.26	n.a.	n.a.	0.98	0.768	n.a.	n.a.	n.a.	n.a.	0.00	0.00
10.170	16.450	0.808	1220.4	897.8	35.286	5.103	2.72		Clay	80.8			15.55	1.25	n.a.	n.a.	0.98	0.772	n.a.	n.a.	n.a.	n.a.	0.00	0.00
10.330	16.400	0.809	1239.6	907.0	34.796	5.127	2.73		Clay	81.3			15.50	1.25	n.a.	n.a.	0.98	0.776	n.a.	n.a.	n.a.	n.a.	0.00	0.00
10.500	16.090	0.802	1260.0	916.8	33.726	5.185	2.74		Clay	82.3			15.21	1.25	n.a.	n.a.	0.98	0.780	n.a.	n.a.	n.a.	n.a.	0.00	0.00
10.660	16.000	0.769	1279.2	926.0	33.175	5.008	2.74		Clay	81.9			15.12	1.24	n.a.	n.a.	0.98	0.784	n.a.	n.a.	n.a.	n.a.	0.00	0.00
10.830	15.610	0.748	1299.6	935.8	31.973	5.001	2.75		Clay	82.7			14.75	1.24	n.a.	n.a.	0.98	0.788	n.a.	n.a.	n.a.	n.a.	0.00	0.00
10.990	15.220	0.731	1318.8	945.0	30.815	5.023	2.76		Clay	83.8			14.39	1.24	n.a.	n.a.	0.98	0.791	n.a.	n.a.	n.a.	n.a.	0.00	0.00

CORNERSTONE EARTH GROUP

CPT No.	10

PGA (A_{max})	0.89

Total Settlement:	0.06	(Inches)

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Depth (ft)	q_c (tsf)	f_s (tsf)	σ_{vc} (psf)	Insitu σ'_{vc} (psf)	Q	F (%)	I_c	Layer "Plastic" PI > 7	Flag Soil Type	Fines (%)	q_{cN} near interfaces (soft layer)	Thin Layer Factor (K_H)	Interpreted q_{cN}	C_N	q_{c1N}	q_{c1N-CS}	Stress Reduction Coeff, r_d	CSR	K_σ for Sand	$CRR_{M=7.5, \sigma'vc = 1 atm}$	CRR	Factor of Safety (CRR/CSR)	Vertical Strain ε_v	Settlement (Inches)
11.150	15.140	0.713	1338.0	954.2	30.330	4.926	2.76		Clay	83.7			14.31	1.23	n.a.	n.a.	0.98	0.794	n.a.	n.a.	n.a.	n.a.	0.00	0.00
11.320	14.900	0.697	1358.4	964.0	29.503	4.903	2.77		Clay	84.3			14.08	1.23	n.a.	n.a.	0.98	0.798	n.a.	n.a.	n.a.	n.a.	0.00	0.00
11.480	14.550	0.661	1377.6	973.2	28.484	4.766	2.77		Clay	84.5			13.75	1.23	n.a.	n.a.	0.98	0.801	n.a.	n.a.	n.a.	n.a.	0.00	0.00
11.650	15.160	0.680	1398.0	983.0	29.421	4.700	2.75		Clay	83.3			14.33	1.22	n.a.	n.a.	0.98	0.805	n.a.	n.a.	n.a.	n.a.	0.00	0.00
11.810	16.290	0.707	1417.2	992.3	31.406	4.535	2.72		Clay	80.8			15.40	1.22	n.a.	n.a.	0.98	0.808	n.a.	n.a.	n.a.	n.a.	0.00	0.00
11.980	18.010	0.768	1437.6	1002.0	34.512	4.439	2.69		Clay	78.0			17.02	1.22	n.a.	n.a.	0.98	0.811	n.a.	n.a.	n.a.	n.a.	0.00	0.00
12.140	20.090	0.831	1456.8	1011.3	38.292	4.293	2.64		Clay	74.6			18.99	1.22	n.a.	n.a.	0.98	0.814	n.a.	n.a.	n.a.	n.a.	0.00	0.00
12.300	19.950	0.841	1476.0	1020.5	37.653	4.377	2.66		Clay	75.4			18.86	1.21	n.a.	n.a.	0.98	0.817	n.a.	n.a.	n.a.	n.a.	0.00	0.00
12.470	19.240	0.811	1496.4	1030.3	35.897	4.385	2.67		Clay	76.7			18.19	1.21	n.a.	n.a.	0.98	0.820	n.a.	n.a.	n.a.	n.a.	0.00	0.00
12.630	18.320	0.746	1515.6	1039.5	33.790	4.248	2.68		Clay	77.4			17.32	1.21	n.a.	n.a.	0.98	0.822	n.a.	n.a.	n.a.	n.a.	0.00	0.00
12.800	17.580	0.733	1536.0	1049.3	32.045	4.360	2.70		Clay	79.4			16.62	1.20	n.a.	n.a.	0.97	0.825	n.a.	n.a.	n.a.	n.a.	0.00	0.00
12.960	17.040	0.756	1555.2	1058.5	30.727	4.647	2.74		Clay	82.0			16.11	1.20	n.a.	n.a.	0.97	0.828	n.a.	n.a.	n.a.	n.a.	0.00	0.00
13.120	17.500	0.798	1574.4	1067.7	31.306	4.777	2.74		Clay	82.2			16.54	1.20	n.a.	n.a.	0.97	0.830	n.a.	n.a.	n.a.	n.a.	0.00	0.00
13.290	17.490	0.754	1594.8	1077.5	30.984	4.515	2.73		Clay	81.1			16.53	1.19	n.a.	n.a.	0.97	0.833	n.a.	n.a.	n.a.	n.a.	0.00	0.00
13.450	17.730	0.728	1614.0	1086.7	31.145	4.304	2.71		Clay	79.8			16.76	1.19	n.a.	n.a.	0.97	0.836	n.a.	n.a.	n.a.	n.a.	0.00	0.00
13.620	16.470	0.716	1634.4	1096.5	28.550	4.572	2.76		Clay	83.4			15.57	1.19	n.a.	n.a.	0.97	0.838	n.a.	n.a.	n.a.	n.a.	0.00	0.00
13.780	15.820	0.712	1653.6	1105.7	27.119	4.748	2.78		Clay	85.6			14.95	1.19	n.a.	n.a.	0.97	0.840	n.a.	n.a.	n.a.	n.a.	0.00	0.00
13.940	15.820	0.649	1672.8	1114.9	26.878	4.334	2.76		Clay	83.7			14.95	1.18	n.a.	n.a.	0.97	0.843	n.a.	n.a.	n.a.	n.a.	0.00	0.00
14.110	15.980	0.669	1693.2	1124.7	26.910	4.421	2.76		Clay	84.2			15.10	1.18	n.a.	n.a.	0.97	0.845	n.a.	n.a.	n.a.	n.a.	0.00	0.00
14.270	16.050	0.611	1712.4	1134.0	26.798	4.024	2.74		Clay	82.1			15.17	1.18	n.a.	n.a.	0.97	0.847	n.a.	n.a.	n.a.	n.a.	0.00	0.00
14.440	17.270	0.581	1732.8	1143.7	28.684	3.541	2.68		Clay	77.4			16.32	1.18	n.a.	n.a.	0.97	0.850	n.a.	n.a.	n.a.	n.a.	0.00	0.00
14.600	17.320	0.588	1752.0	1153.0	28.525	3.575	2.68		Clay	77.7			16.37	1.17	n.a.	n.a.	0.97	0.852	n.a.	n.a.	n.a.	n.a.	0.00	0.00
14.760	17.420	0.564	1771.2	1162.2	28.454	3.409	2.67		Clay	76.7			16.47	1.17	n.a.	n.a.	0.97	0.854	n.a.	n.a.	n.a.	n.a.	0.00	0.00
14.930	18.760	0.601	1791.6	1172.0	30.486	3.361	2.64		Clay	74.6			17.73	1.17	n.a.	n.a.	0.97	0.856	n.a.	n.a.	n.a.	n.a.	0.00	0.00
15.090	22.180	0.599	1810.8	1181.2	30.242	2.817	2.60	plastic	Clay	70.8			20.96	1.17	n.a.	n.a.	0.97	0.858	n.a.	n.a.	n.a.	n.a.	0.00	0.00
15.260	21.660	0.707	1831.2	1191.0	34.836	3.406	2.61		Clay	71.4			20.47	1.16	n.a.	n.a.	0.97	0.860	n.a.	n.a.	n.a.	n.a.	0.00	0.00
15.420	23.570	0.746	1850.4	1200.2	31.832	3.293	2.62	plastic	Clay	73.0			22.28	1.16	n.a.	n.a.	0.97	0.862	n.a.	n.a.	n.a.	n.a.	0.00	0.00
15.580	28.460	0.809	1869.6	1209.4	34.413	2.939	2.57	plastic	Clay	68.3			26.90	1.16	n.a.	n.a.	0.97	0.864	n.a.	n.a.	n.a.	n.a.	0.00	0.00
15.750	27.600	1.069	1890.0	1219.2	37.060	4.009	2.63	plastic	Clay	73.7			26.09	1.16	n.a.	n.a.	0.97	0.866	n.a.	n.a.	n.a.	n.a.	0.00	0.00
15.910	29.030	1.380	1909.2	1228.4	45.710	4.916	2.63		Clay	73.6			27.44	1.15	n.a.	n.a.	0.96	0.867	n.a.	n.a.	n.a.	n.a.	0.00	0.00
16.080	52.650	1.658	1929.6	1238.2	63.862	3.209	2.40	plastic	Clay	54.9			49.76	1.15	n.a.	n.a.	0.96	0.869	n.a.	n.a.	n.a.	n.a.	0.00	0.00
16.240	39.630	1.647	1948.8	1247.4	47.586	4.261	2.58	plastic	Clay	69.0			37.46	1.15	n.a.	n.a.	0.96	0.871	n.a.	n.a.	n.a.	n.a.	0.00	0.00
16.400	37.790	1.654	1968.0	1256.6	50.101	4.492	2.58	plastic	Clay	69.1			35.72	1.15	n.a.	n.a.	0.96	0.873	n.a.	n.a.	n.a.	n.a.	0.00	0.00
16.570	43.670	2.038	1988.4	1266.4	52.139	4.776	2.58	plastic	Clay	69.7			41.28	1.15	n.a.	n.a.	0.96	0.874	n.a.	n.a.	n.a.	n.a.	0.00	0.00
16.730	51.790	2.065	2007.6	1275.6	61.823	4.065	2.48	plastic	Clay	61.6			48.95	1.14	n.a.	n.a.	0.96	0.876	n.a.	n.a.	n.a.	n.a.	0.00	0.00
16.900	50.030	2.179	2028.0	1285.4	59.441	4.445	2.52	plastic	Clay	64.8			47.29	1.14	n.a.	n.a.	0.96	0.878	n.a.	n.a.	n.a.	n.a.	0.00	0.00
17.060	53.090	2.101	2047.2	1294.7	62.915	4.034	2.48	plastic	Clay	61.0			50.18	1.14	n.a.	n.a.	0.96	0.879	n.a.	n.a.	n.a.	n.a.	0.00	0.00
17.220	50.360	2.218	2066.4	1303.9	59.393	4.497	2.53	plastic	Clay	65.2			47.60	1.14	n.a.	n.a.	0.96	0.881	n.a.	n.a.	n.a.	n.a.	0.00	0.00
17.390	46.280	2.065	2086.8	1313.7	54.265	4.564	2.56	plastic	Clay	67.6			43.74	1.13	n.a.	n.a.	0.96	0.882	n.a.	n.a.	n.a.	n.a.	0.00	0.00
17.550	44.310	1.708	2106.0	1322.9	51.709	3.948	2.53	plastic	Clay	65.1			41.88	1.13	n.a.	n.a.	0.96	0.884	n.a.	n.a.	n.a.	n.a.	0.00	0.00
17.720	36.400	1.286	2126.4	1332.7	42.086	3.639	2.56	plastic	Clay	68.2			34.40	1.13	n.a.	n.a.	0.96	0.885	n.a.	n.a.	n.a.	n.a.	0.00	0.00
17.880	29.910	1.128	2145.6	1341.9	37.491	3.913	2.62	plastic	Clay	72.8			28.27	1.13	n.a.	n.a.	0.96	0.886	n.a.	n.a.	n.a.	n.a.	0.00	0.00
18.040	28.160	1.049	2164.8	1351.1	35.035	3.873	2.64	plastic	Clay	74.3			26.62	1.13	n.a.	n.a.	0.96	0.888	n.a.	n.a.	n.a.	n.a.	0.00	0.00
18.210	27.100	1.012	2185.2	1360.9	38.221	3.891	2.62		Clay	72.2			25.61	1.12	n.a.	n.a.	0.96	0.889	n.a.	n.a.	n.a.	n.a.	0.00	0.00
18.370	24.290	0.853	2204.4	1370.1	33.848	3.680	2.64		Clay	74.0			22.96	1.12	n.a.	n.a.	0.96	0.890	n.a.	n.a.	n.a.	n.a.	0.00	0.00
18.540	21.220	0.727	2224.8	1379.9	29.143	3.614	2.68		Clay	77.4			20.06	1.12	n.a.	n.a.	0.96	0.892	n.a.	n.a.	n.a.	n.a.	0.00	0.00
18.700	18.480	0.626	2244.0	1389.1	24.991	3.609	2.73		Clay	81.4			17.47	1.12	n.a.	n.a.	0.96	0.893	n.a.	n.a.	n.a.	n.a.	0.00	0.00
18.860	15.860	0.545	2263.2	1398.3	21.066	3.698	2.79		Clay	86.5			14.99	1.12	n.a.	n.a.	0.95	0.894	n.a.	n.a.	n.a.	n.a.	0.00	0.00
19.030	15.050	0.483	2283.6	1408.1	19.754	3.470	2.80		Clay	86.8			14.22	1.11	n.a.	n.a.	0.95	0.895	n.a.	n.a.	n.a.	n.a.	0.00	0.00
19.190	14.880	0.419	2302.8	1417.3	19.372	3.054	2.77		Clay	84.6			14.06	1.11	n.a.	n.a.	0.95	0.896	n.a.	n.a.	n.a.	n.a.	0.00	0.00
19.360	14.430	0.412	2323.2	1427.1	18.594	3.104	2.79		Clay	86.0			13.64	1.11	n.a.	n.a.	0.95	0.898	n.a.	n.a.	n.a.	n.a.	0.00	0.00
19.520	14.090	0.423	2342.4	1436.4	17.988	3.273	2.81		Clay	88.1			13.32	1.11	n.a.	n.a.	0.95	0.899	n.a.	n.a.	n.a.	n.a.	0.00	0.00
19.690	14.260	0.460	2362.8	1446.1	18.088	3.515	2.83		Clay	89.5			13.48	1.11	n.a.	n.a.	0.95	0.900	n.a.	n.a.	n.a.	n.a.	0.00	0.00
19.850	14.360	0.457	2382.0	1455.4	18.097	3.470	2.83		Clay	89.2			13.57	1.10	n.a.	n.a.	0.95	0.901	n.a.	n.a.	n.a.	n.a.	0.00	0.00
20.010	13.680	0.444	2401.2	1464.6	17.042	3.560	2.85		Clay	91.4			12.93	1.10	n.a.	n.a.	0.95	0.902	n.a.	n.a.	n.a.	n.a.	0.00	0.00
20.180	13.770	0.462	2421.6	1474.4	17.037	3.677	2.86		Clay	92.1			13.02	1.10	n.a.	n.a.	0.95	0.903	n.a.	n.a.	n.a.	n.a.	0.00	0.00
20.340	13.500	0.433	2440.8	1483.6	16.554	3.523	2.86		Clay	91.9			12.76	1.10	n.a.	n.a.	0.95	0.904	n.a.	n.a.	n.a.	n.a.	0.00	0.00
20.510	13.160	0.448	2461.2	1493.4	15.976	3.759	2.89		Clay	94.3			12.44	1.10	n.a.	n.a.	0.95	0.905	n.a.	n.a.	n.a.	n.a.	0.00	0.00
20.670	12.890	0.449	2480.4	1502.6	15.506	3.852	2.91		Clay	95.6			12.18	1.09	n.a.	n.a.	0.95	0.906	n.a.	n.a.	n.a.	n.a.	0.00	0.00
20.830	13.110	0.493	2499.6	1511.8	15.690	4.156	2.92		Clay	97.0			12.39	1.09	n.a.	n.a.	0.95	0.907	n.a.	n.a.	n.a.	n.a.	0.00	0.00
21.000	14.030	0.518	2520.0	1521.6	16.785	4.056	2.90		Clay	94.6			13.26	1.09	n.a.	n.a.	0.95	0.908	n.a.	n.a.	n.a.	n.a.	0.00	0.00
21.160	14.680	0.596	2539.2	1530.8	17.521	4.445	2.91		Clay	95.5			13.88	1.09	n.a.	n.a.	0.95	0.909	n.a.	n.a.	n.a.	n.a.	0.00	0.00
21.330	16.170	0.574	2559.6	1540.6	19.330	3.852	2.83		Clay	89.7			15.28	1.09	n.a.	n.a.	0.95	0.909	n.a.	n.a.	n.a.	n.a.	0.00	0.00
21.490	15.460	0.607	2578.8	1549.8	18.287	4.284	2.88		Clay	93.5			14.61	1.09	n.a.	n.a.	0.95	0.910	n.a.	n.a.	n.a.	n.a.	0.00	0.00
21.650	15.410	0.601	2598.0	1559.0	18.102	4.256	2.88		Clay	93.7			14.57	1.08	n.a.	n.a.	0.95	0.911	n.a.	n.a.	n.a.	n.a.	0.00	0.00
21.820	15.510	0.575	2618.4	1568.8	18.104	4.046	2.87		Clay	92.5			14.66	1.08	n.a.	n.a.	0.94	0.912	n.a.	n.a.	n.a.	n.a.	0.00	0.00
21.980	15.590	0.576	2637.6	1578.0	18.087	4.034	2.87		Clay	92.5			14.74	1.08	n.a.	n.a.	0.94	0.913	n.a.	n.a.	n.a.	n.a.	0.00	0.00

CORNERSTONE EARTH GROUP

CPT No.	10

PGA (A_{max})	0.89

Total Settlement:	0.06	(Inches)

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Depth (ft)	q_c (tsf)	f_s (tsf)	σ_{vc} (psf)	Insitu σ'_{vc} (psf)	Q	F (%)	I_c	Layer "Plastic" PI > 7	Flag Soil Type	Fines (%)	q_{cN} near interfaces (soft layer)	Thin Layer Factor (K_H)	Interpreted q_{cN}	C_N	q_{c1N}	$q_{c1N\text{-}CS}$	Stress Reduction Coeff, r_d	CSR	K_σ for Sand	$CRR_{M=7.5,\ \sigma'vc = 1\ atm}$	CRR	Factor of Safety (CRR/CSR)	Vertical Strain ε_v	Settlement (Inches)
22.150	14.730	0.542	2658.0	1587.8	16.880	4.047	2.89		Clay	94.4			13.92	1.08	n.a.	n.a.	0.94	0.913	n.a.	n.a.	n.a.	n.a.	0.00	0.00
22.310	12.960	0.449	2677.2	1597.1	14.554	3.865	2.93		Clay	97.4			12.25	1.08	n.a.	n.a.	0.94	0.914	n.a.	n.a.	n.a.	n.a.	0.00	0.00
22.470	12.310	0.364	2696.4	1606.3	13.649	3.319	2.91		Clay	96.0			11.64	1.08	n.a.	n.a.	0.94	0.915	n.a.	n.a.	n.a.	n.a.	0.00	0.00
22.640	12.270	0.301	2716.8	1616.1	13.504	2.759	2.87		Clay	92.5			11.60	1.07	n.a.	n.a.	0.94	0.916	n.a.	n.a.	n.a.	n.a.	0.00	0.00
22.800	12.420	0.300	2736.0	1625.3	13.600	2.718	2.86		Clay	92.0			11.74	1.07	n.a.	n.a.	0.94	0.916	n.a.	n.a.	n.a.	n.a.	0.00	0.00
22.970	12.770	0.335	2756.4	1635.1	13.934	2.942	2.87		Clay	92.9			12.07	1.07	n.a.	n.a.	0.94	0.917	n.a.	n.a.	n.a.	n.a.	0.00	0.00
23.130	14.350	0.361	2775.6	1644.3	15.766	2.781	2.82		Clay	88.3			13.56	1.07	n.a.	n.a.	0.94	0.918	n.a.	n.a.	n.a.	n.a.	0.00	0.00
23.290	16.470	0.437	2794.8	1653.5	18.231	2.898	2.78		Clay	85.1			15.57	1.07	n.a.	n.a.	0.94	0.918	n.a.	n.a.	n.a.	n.a.	0.00	0.00
23.460	18.350	0.574	2815.2	1663.3	20.372	3.390	2.78		Clay	85.5			17.34	1.07	n.a.	n.a.	0.94	0.919	n.a.	n.a.	n.a.	n.a.	0.00	0.00
23.620	21.780	0.739	2834.4	1672.5	24.350	3.629	2.74		Clay	82.2			20.59	1.06	n.a.	n.a.	0.94	0.919	n.a.	n.a.	n.a.	n.a.	0.00	0.00
23.790	24.360	0.885	2854.8	1682.3	27.263	3.858	2.72		Clay	80.6			23.02	1.06	n.a.	n.a.	0.94	0.920	n.a.	n.a.	n.a.	n.a.	0.00	0.00
23.950	25.250	1.001	2874.0	1691.5	28.156	4.203	2.74		Clay	81.8			23.87	1.06	n.a.	n.a.	0.94	0.921	n.a.	n.a.	n.a.	n.a.	0.00	0.00
24.110	26.220	1.077	2893.2	1700.7	29.133	4.347	2.73		Clay	81.7			24.78	1.06	n.a.	n.a.	0.94	0.921	n.a.	n.a.	n.a.	n.a.	0.00	0.00
24.280	28.210	1.180	2913.6	1710.5	31.281	4.412	2.72		Clay	80.3			26.66	1.06	n.a.	n.a.	0.94	0.922	n.a.	n.a.	n.a.	n.a.	0.00	0.00
24.440	31.100	1.285	2932.8	1719.7	34.463	4.336	2.68		Clay	77.4			29.40	1.06	n.a.	n.a.	0.93	0.922	n.a.	n.a.	n.a.	n.a.	0.00	0.00
24.610	33.450	1.356	2953.2	1729.5	36.973	4.241	2.65		Clay	75.1			31.62	1.05	n.a.	n.a.	0.93	0.923	n.a.	n.a.	n.a.	n.a.	0.00	0.00
24.770	33.860	1.392	2972.4	1738.8	37.238	4.300	2.65		Clay	75.3			32.00	1.05	n.a.	n.a.	0.93	0.923	n.a.	n.a.	n.a.	n.a.	0.00	0.00
24.930	32.360	1.348	2991.6	1748.0	35.314	4.368	2.67		Clay	77.0			30.59	1.05	n.a.	n.a.	0.93	0.924	n.a.	n.a.	n.a.	n.a.	0.00	0.00
25.100	30.020	1.243	3012.0	1757.8	32.444	4.359	2.70		Clay	79.1			28.37	1.05	n.a.	n.a.	0.93	0.924	n.a.	n.a.	n.a.	n.a.	0.00	0.00
25.260	28.280	1.103	3031.2	1767.0	30.294	4.119	2.71		Clay	79.5			26.73	1.05	n.a.	n.a.	0.93	0.925	n.a.	n.a.	n.a.	n.a.	0.00	0.00
25.430	25.420	0.945	3051.6	1776.8	26.896	3.954	2.73		Clay	81.6			24.03	1.05	n.a.	n.a.	0.93	0.925	n.a.	n.a.	n.a.	n.a.	0.00	0.00
25.590	23.450	0.837	3070.8	1786.0	24.541	3.818	2.75		Clay	83.2			22.16	1.05	n.a.	n.a.	0.93	0.925	n.a.	n.a.	n.a.	n.a.	0.00	0.00
25.750	22.000	0.751	3090.0	1795.2	22.789	3.671	2.77		Clay	84.2			20.79	1.04	n.a.	n.a.	0.93	0.926	n.a.	n.a.	n.a.	n.a.	0.00	0.00
25.920	21.770	0.739	3110.4	1805.0	22.399	3.654	2.77		Clay	84.6			20.58	1.04	n.a.	n.a.	0.93	0.926	n.a.	n.a.	n.a.	n.a.	0.00	0.00
26.080	22.580	0.810	3129.6	1814.2	23.167	3.854	2.77		Clay	84.9			21.34	1.04	n.a.	n.a.	0.93	0.927	n.a.	n.a.	n.a.	n.a.	0.00	0.00
26.250	24.480	0.886	3150.0	1824.0	25.115	3.866	2.75		Clay	82.8			23.14	1.04	n.a.	n.a.	0.93	0.927	n.a.	n.a.	n.a.	n.a.	0.00	0.00
26.410	24.950	0.972	3169.2	1833.2	25.491	4.159	2.76		Clay	84.1			23.58	1.04	n.a.	n.a.	0.93	0.927	n.a.	n.a.	n.a.	n.a.	0.00	0.00
26.570	22.080	0.892	3188.4	1842.4	22.238	4.356	2.82		Clay	88.7			20.87	1.04	n.a.	n.a.	0.93	0.928	n.a.	n.a.	n.a.	n.a.	0.00	0.00
26.740	19.660	0.717	3208.8	1852.2	19.496	3.972	2.84		Clay	90.1			18.58	1.04	n.a.	n.a.	0.93	0.928	n.a.	n.a.	n.a.	n.a.	0.00	0.00
26.900	16.990	0.546	3228.0	1861.4	16.521	3.553	2.86		Clay	92.2			16.06	1.03	n.a.	n.a.	0.93	0.928	n.a.	n.a.	n.a.	n.a.	0.00	0.00
27.070	16.530	0.453	3248.4	1871.2	15.932	3.037	2.84		Clay	89.9			15.62	1.03	n.a.	n.a.	0.92	0.929	n.a.	n.a.	n.a.	n.a.	0.00	0.00
27.230	16.640	0.481	3267.6	1880.4	15.960	3.208	2.85		Clay	91.0			15.73	1.03	n.a.	n.a.	0.92	0.929	n.a.	n.a.	n.a.	n.a.	0.00	0.00
27.400	17.520	0.524	3288.0	1890.2	16.798	3.300	2.84		Clay	90.1			16.56	1.03	n.a.	n.a.	0.92	0.929	n.a.	n.a.	n.a.	n.a.	0.00	0.00
27.560	19.610	0.583	3307.2	1899.5	18.907	3.247	2.79		Clay	86.6			18.53	1.03	n.a.	n.a.	0.92	0.929	n.a.	n.a.	n.a.	n.a.	0.00	0.00
27.720	22.150	0.545	3326.4	1908.7	21.467	2.662	2.70		Clay	78.8			20.94	1.03	n.a.	n.a.	0.92	0.930	n.a.	n.a.	n.a.	n.a.	0.00	0.00
27.890	24.390	0.554	3346.8	1918.5	23.682	2.437	2.64		Clay	74.3			23.05	1.03	n.a.	n.a.	0.92	0.930	n.a.	n.a.	n.a.	n.a.	0.00	0.00
28.050	25.670	0.617	3366.0	1927.7	24.887	2.573	2.64		Clay	74.1			24.26	1.02	n.a.	n.a.	0.92	0.930	n.a.	n.a.	n.a.	n.a.	0.00	0.00
28.220	27.450	0.737	3386.4	1937.5	26.588	2.859	2.64		Clay	74.6			25.95	1.02	n.a.	n.a.	0.92	0.930	n.a.	n.a.	n.a.	n.a.	0.00	0.00
28.380	30.230	0.936	3405.6	1946.7	29.308	3.282	2.65		Clay	75.1			28.57	1.02	n.a.	n.a.	0.92	0.931	n.a.	n.a.	n.a.	n.a.	0.00	0.00
28.540	33.190	1.004	3424.8	1955.9	32.187	3.188	2.61		Clay	71.9			31.37	1.02	n.a.	n.a.	0.92	0.931	n.a.	n.a.	n.a.	n.a.	0.00	0.00
28.710	35.760	1.104	3445.2	1965.7	33.874	3.243	2.60		Mixed	71.0			33.80	1.04	35.09	96.12	0.92	0.931	1.008	0.132	0.166	0.18	0.03	0.06
28.870	34.320	1.070	3464.4	1974.9	33.002	3.284	2.61		Clay	72.0			32.44	1.02	n.a.	n.a.	0.92	0.931	n.a.	n.a.	n.a.	n.a.	0.00	0.00
29.040	32.140	1.034	3484.8	1984.7	30.632	3.400	2.65		Clay	74.7			30.38	1.02	n.a.	n.a.	0.92	0.931	n.a.	n.a.	n.a.	n.a.	0.00	0.00
29.200	30.700	1.057	3504.0	1993.9	29.036	3.651	2.68		Clay	77.7			29.02	1.02	n.a.	n.a.	0.92	0.931	n.a.	n.a.	n.a.	n.a.	0.00	0.00
29.360	29.380	1.084	3523.2	2003.1	27.575	3.926	2.72		Clay	80.8			27.77	1.01	n.a.	n.a.	0.92	0.932	n.a.	n.a.	n.a.	n.a.	0.00	0.00
29.530	28.380	1.061	3543.6	2012.9	26.437	3.989	2.74		Clay	82.2			26.82	1.01	n.a.	n.a.	0.91	0.932	n.a.	n.a.	n.a.	n.a.	0.00	0.00
29.690	27.260	1.059	3562.8	2022.1	25.200	4.155	2.77		Clay	84.4			25.77	1.01	n.a.	n.a.	0.91	0.932	n.a.	n.a.	n.a.	n.a.	0.00	0.00
29.860	26.940	1.094	3583.2	2031.9	24.753	4.349	2.79		Clay	85.9			25.46	1.01	n.a.	n.a.	0.91	0.932	n.a.	n.a.	n.a.	n.a.	0.00	0.00
30.020	27.200	1.118	3602.4	2041.2	24.887	4.403	2.79		Clay	86.1			25.71	1.01	n.a.	n.a.	0.91	0.932	n.a.	n.a.	n.a.	n.a.	0.00	0.00
30.180	29.680	1.084	3621.6	2050.4	27.185	3.889	2.72		Clay	80.9			28.05	1.01	n.a.	n.a.	0.91	0.932	n.a.	n.a.	n.a.	n.a.	0.00	0.00
30.350	30.400	1.073	3642.0	2060.2	27.744	3.755	2.71		Clay	79.6			28.73	1.01	n.a.	n.a.	0.91	0.932	n.a.	n.a.	n.a.	n.a.	0.00	0.00
30.510	29.480	1.021	3661.2	2069.4	26.722	3.691	2.71		Clay	80.2			27.86	1.01	n.a.	n.a.	0.91	0.932	n.a.	n.a.	n.a.	n.a.	0.00	0.00
30.680	26.940	0.960	3681.6	2079.2	24.144	3.824	2.76		Clay	83.6			25.46	1.00	n.a.	n.a.	0.91	0.932	n.a.	n.a.	n.a.	n.a.	0.00	0.00
30.840	23.290	0.859	3700.8	2088.4	20.532	4.005	2.82		Clay	88.9			22.01	1.00	n.a.	n.a.	0.91	0.933	n.a.	n.a.	n.a.	n.a.	0.00	0.00
31.000	20.280	0.722	3720.0	2097.6	17.563	3.919	2.87		Clay	92.6			19.17	1.00	n.a.	n.a.	0.91	0.933	n.a.	n.a.	n.a.	n.a.	0.00	0.00
31.170	18.150	0.624	3740.4	2107.4	15.450	3.832	2.91		Clay	95.6			17.16	1.00	n.a.	n.a.	0.91	0.933	n.a.	n.a.	n.a.	n.a.	0.00	0.00
31.330	16.150	0.574	3759.6	2116.6	13.484	4.025	2.97		Clay	100.0			15.26	1.00	n.a.	n.a.	0.91	0.933	n.a.	n.a.	n.a.	n.a.	0.00	0.00
31.500	13.930	0.479	3780.0	2126.4	11.324	3.978	3.02		Clay	100.0			13.17	1.00	n.a.	n.a.	0.91	0.933	n.a.	n.a.	n.a.	n.a.	0.00	0.00
31.660	13.360	0.451	3799.2	2135.6	10.733	3.933	3.04		Clay	100.0			12.63	1.00	n.a.	n.a.	0.91	0.933	n.a.	n.a.	n.a.	n.a.	0.00	0.00
31.820	14.730	0.455	3818.4	2144.8	11.955	3.545	2.98		Clay	100.0			13.92	1.00	n.a.	n.a.	0.91	0.933	n.a.	n.a.	n.a.	n.a.	0.00	0.00
31.990	15.760	0.480	3838.8	2154.6	12.847	3.470	2.95		Clay	98.6			14.90	1.00	n.a.	n.a.	0.90	0.933	n.a.	n.a.	n.a.	n.a.	0.00	0.00
32.150	16.150	0.504	3858.0	2163.8	13.144	3.543	2.94		Clay	98.4			15.26	0.99	n.a.	n.a.	0.90	0.933	n.a.	n.a.	n.a.	n.a.	0.00	0.00
32.320	16.330	0.506	3878.4	2173.6	13.241	3.517	2.94		Clay	98.1			15.43	0.99	n.a.	n.a.	0.90	0.933	n.a.	n.a.	n.a.	n.a.	0.00	0.00
32.480	16.460	0.454	3897.6	2182.8	13.296	3.126	2.91		Clay	95.5			15.56	0.99	n.a.	n.a.	0.90	0.933	n.a.	n.a.	n.a.	n.a.	0.00	0.00
32.640	16.310	0.427	3916.8	2192.1	13.094	2.975	2.90		Clay	94.9			15.42	0.99	n.a.	n.a.	0.90	0.933	n.a.	n.a.	n.a.	n.a.	0.00	0.00
32.810	16.040	0.406	3937.2	2201.9	12.781	2.883	2.90		Clay	95.0			15.16	0.99	n.a.	n.a.	0.90	0.933	n.a.	n.a.	n.a.	n.a.	0.00	0.00
32.970	16.330	0.415	3956.4	2211.1	12.982	2.891	2.89		Clay	94.6			15.43	0.99	n.a.	n.a.	0.90	0.933	n.a.	n.a.	n.a.	n.a.	0.00	0.00

CORNERSTONE EARTH GROUP

CPT No.	10

PGA (A_{max})	0.89

Total Settlement:	0.06	(Inches)

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Depth (ft)	q_c (tsf)	f_s (tsf)	σ_{vc} (psf)	Insitu σ'_{vc} (psf)	Q	F (%)	I_c	Layer "Plastic" PI > 7	Flag Soil Type	Fines (%)	q_{cN} near interfaces (soft layer)	Thin Layer Factor (K_H)	Interpreted q_{cN}	C_N	q_{c1N}	$q_{c1N\text{-}CS}$	Stress Reduction Coeff, r_d	CSR	K_σ for Sand	$CRR_{M=7.5,\ \sigma'vc = 1\ atm}$	CRR	Factor of Safety (CRR/CSR)	Vertical Strain ε_v	Settlement (Inches)
33.140	16.870	0.427	3976.8	2220.9	13.402	2.867	2.88		Clay	93.5			15.95	0.99	n.a.	n.a.	0.90	0.932	n.a.	n.a.	n.a.	n.a.	0.00	0.00
33.300	16.870	0.432	3996.0	2230.1	13.338	2.904	2.89		Clay	93.9			15.95	0.99	n.a.	n.a.	0.90	0.932	n.a.	n.a.	n.a.	n.a.	0.00	0.00
33.460	17.300	0.476	4015.2	2239.3	13.658	3.111	2.90		Clay	94.6			16.35	0.99	n.a.	n.a.	0.90	0.932	n.a.	n.a.	n.a.	n.a.	0.00	0.00
33.630	17.260	0.449	4035.6	2249.1	13.554	2.948	2.88		Clay	93.8			16.31	0.98	n.a.	n.a.	0.90	0.932	n.a.	n.a.	n.a.	n.a.	0.00	0.00
33.790	16.670	0.496	4054.8	2258.3	12.968	3.386	2.94		Clay	97.8			15.76	0.98	n.a.	n.a.	0.90	0.932	n.a.	n.a.	n.a.	n.a.	0.00	0.00
33.960	17.070	0.612	4075.2	2268.1	13.256	4.070	2.98		Clay	100.0			16.13	0.98	n.a.	n.a.	0.90	0.932	n.a.	n.a.	n.a.	n.a.	0.00	0.00
34.120	19.000	0.726	4094.4	2277.3	14.888	4.281	2.95		Clay	99.0			17.96	0.98	n.a.	n.a.	0.90	0.932	n.a.	n.a.	n.a.	n.a.	0.00	0.00
34.280	20.610	0.766	4113.6	2286.5	16.228	4.131	2.91		Clay	95.9			19.48	0.98	n.a.	n.a.	0.90	0.932	n.a.	n.a.	n.a.	n.a.	0.00	0.00
34.450	23.100	0.728	4134.0	2296.3	18.319	3.463	2.82		Clay	88.8			21.83	0.98	n.a.	n.a.	0.89	0.932	n.a.	n.a.	n.a.	n.a.	0.00	0.00
34.610	23.060	1.353	4153.2	2305.5	18.203	6.448	3.00		Clay	100.0			21.80	0.98	n.a.	n.a.	0.89	0.932	n.a.	n.a.	n.a.	n.a.	0.00	0.00
34.780	23.900	1.613	4173.6	2315.3	18.842	7.393	3.03		Clay	100.0			22.59	0.98	n.a.	n.a.	0.89	0.932	n.a.	n.a.	n.a.	n.a.	0.00	0.00
34.940	25.100	1.395	4192.8	2324.5	19.792	6.065	2.96		Clay	99.4			23.72	0.98	n.a.	n.a.	0.89	0.931	n.a.	n.a.	n.a.	n.a.	0.00	0.00
35.100	31.430	1.072	4212.0	2333.8	25.130	3.655	2.73		Clay	81.5			29.71	0.97	n.a.	n.a.	0.89	0.931	n.a.	n.a.	n.a.	n.a.	0.00	0.00
35.270	24.100	0.723	4232.4	2343.6	18.761	3.289	2.80		Clay	87.0			22.78	0.97	n.a.	n.a.	0.89	0.931	n.a.	n.a.	n.a.	n.a.	0.00	0.00
35.430	19.620	0.589	4251.6	2352.8	14.871	3.365	2.89		Clay	93.9			18.54	0.97	n.a.	n.a.	0.89	0.931	n.a.	n.a.	n.a.	n.a.	0.00	0.00
35.600	19.840	0.501	4272.0	2362.6	14.987	2.832	2.84		Clay	90.1			18.75	0.97	n.a.	n.a.	0.89	0.931	n.a.	n.a.	n.a.	n.a.	0.00	0.00
35.760	18.470	0.479	4291.2	2371.8	13.766	2.933	2.88		Clay	93.2			17.46	0.97	n.a.	n.a.	0.89	0.931	n.a.	n.a.	n.a.	n.a.	0.00	0.00
35.930	16.700	0.447	4311.6	2381.6	12.214	3.071	2.93		Clay	97.5			15.78	0.97	n.a.	n.a.	0.89	0.931	n.a.	n.a.	n.a.	n.a.	0.00	0.00
36.090	16.820	0.400	4330.8	2390.8	12.259	2.728	2.90		Clay	95.0			15.90	0.97	n.a.	n.a.	0.89	0.930	n.a.	n.a.	n.a.	n.a.	0.00	0.00
36.250	16.910	0.441	4350.0	2400.0	12.279	2.993	2.92		Clay	96.9			15.98	0.97	n.a.	n.a.	0.89	0.930	n.a.	n.a.	n.a.	n.a.	0.00	0.00
36.420	17.270	0.489	4370.4	2409.8	12.520	3.240	2.94		Clay	97.9			16.32	0.97	n.a.	n.a.	0.89	0.930	n.a.	n.a.	n.a.	n.a.	0.00	0.00
36.580	16.910	0.518	4389.6	2419.0	12.166	3.521	2.97		Clay	100.0			15.98	0.97	n.a.	n.a.	0.89	0.930	n.a.	n.a.	n.a.	n.a.	0.00	0.00
36.750	16.420	0.536	4410.0	2428.8	11.705	3.771	3.00		Clay	100.0			15.52	0.96	n.a.	n.a.	0.89	0.930	n.a.	n.a.	n.a.	n.a.	0.00	0.00
36.910	15.800	0.515	4429.2	2438.0	11.145	3.791	3.02		Clay	100.0			14.93	0.96	n.a.	n.a.	0.88	0.929	n.a.	n.a.	n.a.	n.a.	0.00	0.00
37.070	15.590	0.514	4448.4	2447.2	10.923	3.847	3.03		Clay	100.0			14.74	0.96	n.a.	n.a.	0.88	0.929	n.a.	n.a.	n.a.	n.a.	0.00	0.00
37.240	16.390	0.514	4468.8	2457.0	11.523	3.632	2.99		Clay	100.0			15.49	0.96	n.a.	n.a.	0.88	0.929	n.a.	n.a.	n.a.	n.a.	0.00	0.00
37.400	16.870	0.538	4488.0	2466.2	11.861	3.676	2.99		Clay	100.0			15.95	0.96	n.a.	n.a.	0.88	0.929	n.a.	n.a.	n.a.	n.a.	0.00	0.00
37.570	17.360	0.607	4508.4	2476.0	12.202	4.015	3.00		Clay	100.0			16.41	0.96	n.a.	n.a.	0.88	0.929	n.a.	n.a.	n.a.	n.a.	0.00	0.00
37.730	18.370	0.595	4527.6	2485.2	12.961	3.695	2.96		Clay	99.7			17.36	0.96	n.a.	n.a.	0.88	0.928	n.a.	n.a.	n.a.	n.a.	0.00	0.00
37.890	19.790	0.663	4546.8	2494.5	14.044	3.783	2.94		Clay	98.0			18.71	0.96	n.a.	n.a.	0.88	0.928	n.a.	n.a.	n.a.	n.a.	0.00	0.00
38.060	23.310	0.712	4567.2	2504.3	16.793	3.385	2.85		Clay	90.7			22.03	0.96	n.a.	n.a.	0.88	0.928	n.a.	n.a.	n.a.	n.a.	0.00	0.00
38.220	26.620	0.817	4586.4	2513.5	19.357	3.360	2.80		Clay	86.7			25.16	0.96	n.a.	n.a.	0.88	0.928	n.a.	n.a.	n.a.	n.a.	0.00	0.00
38.390	27.690	0.938	4606.8	2523.3	20.122	3.695	2.81		Clay	87.7			26.17	0.95	n.a.	n.a.	0.88	0.927	n.a.	n.a.	n.a.	n.a.	0.00	0.00
38.550	28.330	1.040	4626.0	2532.5	20.547	3.998	2.82		Clay	88.9			26.78	0.95	n.a.	n.a.	0.88	0.927	n.a.	n.a.	n.a.	n.a.	0.00	0.00
38.710	29.840	1.049	4645.2	2541.7	21.653	3.811	2.79		Clay	86.4			28.20	0.95	n.a.	n.a.	0.88	0.927	n.a.	n.a.	n.a.	n.a.	0.00	0.00
38.880	30.500	1.032	4665.6	2551.5	22.079	3.662	2.78		Clay	85.0			28.83	0.95	n.a.	n.a.	0.88	0.927	n.a.	n.a.	n.a.	n.a.	0.00	0.00
39.040	31.240	0.949	4684.8	2560.7	22.570	3.283	2.74		Clay	82.0			29.53	0.95	n.a.	n.a.	0.88	0.926	n.a.	n.a.	n.a.	n.a.	0.00	0.00
39.210	30.590	0.855	4705.2	2570.5	21.970	3.026	2.72		Clay	81.0			28.91	0.95	n.a.	n.a.	0.87	0.926	n.a.	n.a.	n.a.	n.a.	0.00	0.00
39.370	29.480	0.800	4724.4	2579.7	21.024	2.951	2.73		Clay	81.6			27.86	0.95	n.a.	n.a.	0.87	0.926	n.a.	n.a.	n.a.	n.a.	0.00	0.00
39.530	30.680	0.636	4743.6	2588.9	21.869	2.246	2.65		Clay	74.8			29.00	0.95	n.a.	n.a.	0.87	0.925	n.a.	n.a.	n.a.	n.a.	0.00	0.00
39.700	30.700	1.056	4764.0	2598.7	21.794	3.729	2.78		Clay	85.8			29.02	0.95	n.a.	n.a.	0.87	0.925	n.a.	n.a.	n.a.	n.a.	0.00	0.00
39.860	29.320	1.296	4783.2	2607.9	20.651	4.814	2.87		Clay	93.0			27.71	0.95	n.a.	n.a.	0.87	0.925	n.a.	n.a.	n.a.	n.a.	0.00	0.00
40.030	29.910	1.010	4803.6	2617.7	21.017	3.670	2.79		Clay	86.4			28.27	0.95	n.a.	n.a.	0.87	0.925	n.a.	n.a.	n.a.	n.a.	0.00	0.00
40.190	39.940	1.078	4822.8	2626.9	28.572	2.872	2.62		Clay	72.7			37.75	0.94	n.a.	n.a.	0.87	0.924	n.a.	n.a.	n.a.	n.a.	0.00	0.00
40.350	38.160	1.110	4842.0	2636.2	27.114	3.105	2.66		Clay	75.9			36.07	0.94	n.a.	n.a.	0.87	0.924	n.a.	n.a.	n.a.	n.a.	0.00	0.00
40.520	40.100	1.235	4862.4	2646.0	28.473	3.280	2.66		Clay	75.8			37.90	0.94	n.a.	n.a.	0.87	0.924	n.a.	n.a.	n.a.	n.a.	0.00	0.00
40.680	39.040	2.191	4881.6	2655.2	27.568	5.986	2.85		Clay	90.8			36.90	0.94	n.a.	n.a.	0.87	0.923	n.a.	n.a.	n.a.	n.a.	0.00	0.00
40.850	40.070	2.983	4902.0	2665.0	28.232	7.928	2.93		Clay	97.2			37.87	0.94	n.a.	n.a.	0.87	0.923	n.a.	n.a.	n.a.	n.a.	0.00	0.00
41.010	110.500	4.176	4921.2	2674.2	90.836	3.866	2.36		Sand	51.5		1.8	188.00	0.94	176.74	270.50	0.87	0.923	0.930	2104.828	4305.394	4666.00	0.00	0.00
41.170	103.890	4.985	4940.4	2683.4	85.124	4.915	2.45		Sand	59.4	104.44	1.8	187.99	0.94	176.57	274.51	0.87	0.922	0.929	3964.642	8100.613	8782.13	0.00	0.00
41.340	89.930	4.086	4960.8	2693.2	73.265	4.672	2.48		Sand	61.3	104.44	1.8	187.99	0.94	176.40	275.17	0.87	0.922	0.928	4412.556	9005.189	9766.46	0.00	0.00
41.500	58.660	2.745	4980.0	2702.4	41.570	4.887	2.66		Clay	75.7			55.44	0.94	n.a.	n.a.	0.86	0.922	n.a.	n.a.	n.a.	n.a.	0.00	0.00
41.670	37.520	1.429	5000.4	2712.2	25.824	4.080	2.75		Clay	83.3			35.46	0.94	n.a.	n.a.	0.86	0.921	n.a.	n.a.	n.a.	n.a.	0.00	0.00
41.830	30.910	0.899	5019.6	2721.4	20.872	3.166	2.75		Clay	83.3			29.22	0.94	n.a.	n.a.	0.86	0.921	n.a.	n.a.	n.a.	n.a.	0.00	0.00
41.990	28.350	0.791	5038.8	2730.6	18.919	3.063	2.78		Clay	85.3			26.80	0.93	n.a.	n.a.	0.86	0.921	n.a.	n.a.	n.a.	n.a.	0.00	0.00
42.160	28.710	0.870	5059.2	2740.4	19.107	3.322	2.80		Clay	86.8			27.14	0.93	n.a.	n.a.	0.86	0.920	n.a.	n.a.	n.a.	n.a.	0.00	0.00
42.320	30.560	0.964	5078.4	2749.6	20.381	3.439	2.78		Clay	85.8			28.88	0.93	n.a.	n.a.	0.86	0.920	n.a.	n.a.	n.a.	n.a.	0.00	0.00
42.490	33.220	1.056	5098.8	2759.4	22.230	3.444	2.76		Clay	83.5			31.40	0.93	n.a.	n.a.	0.86	0.920	n.a.	n.a.	n.a.	n.a.	0.00	0.00
42.650	33.020	1.049	5118.0	2768.6	22.004	3.442	2.76		Clay	83.7			31.21	0.93	n.a.	n.a.	0.86	0.919	n.a.	n.a.	n.a.	n.a.	0.00	0.00
42.810	32.540	1.080	5137.2	2777.9	21.579	3.602	2.78		Clay	85.3			30.76	0.93	n.a.	n.a.	0.86	0.919	n.a.	n.a.	n.a.	n.a.	0.00	0.00
42.980	31.620	1.069	5157.6	2787.6	20.836	3.682	2.80		Clay	86.7			29.89	0.93	n.a.	n.a.	0.86	0.919	n.a.	n.a.	n.a.	n.a.	0.00	0.00
43.140	30.520	1.041	5176.8	2796.9	19.974	3.728	2.81		Clay	88.1			28.85	0.93	n.a.	n.a.	0.86	0.918	n.a.	n.a.	n.a.	n.a.	0.00	0.00
43.310	28.200	1.000	5197.2	2806.7	18.243	3.907	2.86		Clay	91.6			26.65	0.93	n.a.	n.a.	0.86	0.918	n.a.	n.a.	n.a.	n.a.	0.00	0.00
43.470	25.730	0.951	5216.4	2815.9	16.422	4.111	2.91		Clay	95.5			24.32	0.93	n.a.	n.a.	0.86	0.917	n.a.	n.a.	n.a.	n.a.	0.00	0.00
43.640	23.520	0.825	5236.8	2825.7	14.794	3.945	2.93		Clay	97.4			22.23	0.93	n.a.	n.a.	0.86	0.917	n.a.	n.a.	n.a.	n.a.	0.00	0.00
43.800	20.790	0.688	5256.0	2834.9	12.813	3.790	2.97		Clay	100.0			19.65	0.93	n.a.	n.a.	0.85	0.917	n.a.	n.a.	n.a.	n.a.	0.00	0.00
43.960	19.360	0.545	5275.2	2844.1	11.759	3.257	2.96		Clay	99.8			18.30	0.92	n.a.	n.a.	0.85	0.916	n.a.	n.a.	n.a.	n.a.	0.00	0.00

CORNERSTONE EARTH GROUP

CPT No.	10

PGA (A_{max})	0.89

Total Settlement:	0.06	(Inches)

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Depth (ft)	q_c (tsf)	f_s (tsf)	σ_{vc} (psf)	Insitu σ'_{vc} (psf)	Q	F (%)	I_c	Layer "Plastic" PI > 7	Flag Soil Type	Fines (%)	q_{cN} near interfaces (soft layer)	Thin Layer Factor (K_H)	Interpreted q_{cN}	C_N	q_{c1N}	$q_{c1N\text{-}CS}$	Stress Reduction Coeff, r_d	CSR	K_σ for Sand	$CRR_{M=7.5,\ \sigma'vc = 1\ atm}$	CRR	Factor of Safety (CRR/CSR)	Vertical Strain ε_v	Settlement (Inches)
44.130	17.810	0.478	5295.6	2853.9	10.626	3.151	2.99		Clay	100.0			16.83	0.92	n.a.	n.a.	0.85	0.916	n.a.	n.a.	n.a.	n.a.	0.00	0.00
44.290	18.450	0.502	5314.8	2863.1	11.032	3.181	2.98		Clay	100.0			17.44	0.92	n.a.	n.a.	0.85	0.915	n.a.	n.a.	n.a.	n.a.	0.00	0.00
44.460	19.430	0.516	5335.2	2872.9	11.669	3.081	2.95		Clay	98.9			18.36	0.92	n.a.	n.a.	0.85	0.915	n.a.	n.a.	n.a.	n.a.	0.00	0.00
44.620	19.750	0.587	5354.4	2882.1	11.847	3.436	2.97		Clay	100.0			18.67	0.92	n.a.	n.a.	0.85	0.915	n.a.	n.a.	n.a.	n.a.	0.00	0.00
44.780	19.670	0.655	5373.6	2891.3	11.748	3.856	3.00		Clay	100.0			18.59	0.92	n.a.	n.a.	0.85	0.914	n.a.	n.a.	n.a.	n.a.	0.00	0.00
44.950	20.950	0.720	5394.0	2901.1	12.583	3.945	2.99		Clay	100.0			19.80	0.92	n.a.	n.a.	0.85	0.914	n.a.	n.a.	n.a.	n.a.	0.00	0.00
45.110	22.890	0.654	5413.2	2910.3	13.870	3.238	2.90		Clay	95.0			21.64	0.92	n.a.	n.a.	0.85	0.913	n.a.	n.a.	n.a.	n.a.	0.00	0.00
45.280	22.040	0.686	5433.6	2920.1	13.234	3.552	2.94		Clay	98.3			20.83	0.92	n.a.	n.a.	0.85	0.913	n.a.	n.a.	n.a.	n.a.	0.00	0.00
45.440	22.090	0.795	5452.8	2929.3	13.220	4.107	2.98		Clay	100.0			20.88	0.92	n.a.	n.a.	0.85	0.913	n.a.	n.a.	n.a.	n.a.	0.00	0.00
45.600	22.930	0.780	5472.0	2938.6	13.744	3.860	2.95		Clay	99.0			21.67	0.92	n.a.	n.a.	0.85	0.912	n.a.	n.a.	n.a.	n.a.	0.00	0.00
45.770	22.740	0.710	5492.4	2948.4	13.563	3.552	2.93		Clay	97.6			21.49	0.92	n.a.	n.a.	0.85	0.912	n.a.	n.a.	n.a.	n.a.	0.00	0.00
45.930	22.060	0.650	5511.6	2957.6	13.054	3.368	2.93		Clay	97.6			20.85	0.92	n.a.	n.a.	0.85	0.911	n.a.	n.a.	n.a.	n.a.	0.00	0.00
46.100	21.280	0.594	5532.0	2967.4	12.478	3.207	2.94		Clay	97.8			20.11	0.91	n.a.	n.a.	0.84	0.911	n.a.	n.a.	n.a.	n.a.	0.00	0.00
46.260	20.440	0.531	5551.2	2976.6	11.869	3.007	2.94		Clay	97.9			19.32	0.91	n.a.	n.a.	0.84	0.910	n.a.	n.a.	n.a.	n.a.	0.00	0.00
46.420	20.950	0.576	5570.4	2985.8	12.167	3.173	2.94		Clay	98.3			19.80	0.91	n.a.	n.a.	0.84	0.910	n.a.	n.a.	n.a.	n.a.	0.00	0.00
46.590	20.980	0.586	5590.8	2995.6	12.141	3.221	2.95		Clay	98.7			19.83	0.91	n.a.	n.a.	0.84	0.909	n.a.	n.a.	n.a.	n.a.	0.00	0.00
46.750	21.730	0.562	5610.0	3004.8	12.597	2.970	2.91		Clay	96.0			20.54	0.91	n.a.	n.a.	0.84	0.909	n.a.	n.a.	n.a.	n.a.	0.00	0.00
46.920	22.210	0.513	5630.4	3014.6	12.867	2.646	2.88		Clay	93.1			20.99	0.91	n.a.	n.a.	0.84	0.909	n.a.	n.a.	n.a.	n.a.	0.00	0.00
47.080	21.090	0.463	5649.6	3023.8	12.081	2.536	2.89		Clay	94.0			19.93	0.91	n.a.	n.a.	0.84	0.908	n.a.	n.a.	n.a.	n.a.	0.00	0.00
47.240	20.180	0.437	5668.8	3033.0	11.438	2.517	2.91		Clay	95.5			19.07	0.91	n.a.	n.a.	0.84	0.908	n.a.	n.a.	n.a.	n.a.	0.00	0.00
47.410	20.000	0.414	5689.2	3042.8	11.276	2.414	2.90		Clay	95.1			18.90	0.91	n.a.	n.a.	0.84	0.907	n.a.	n.a.	n.a.	n.a.	0.00	0.00
47.570	19.930	0.408	5708.4	3052.0	11.190	2.387	2.90		Clay	95.1			18.84	0.91	n.a.	n.a.	0.84	0.907	n.a.	n.a.	n.a.	n.a.	0.00	0.00
47.740	20.050	0.414	5728.8	3061.8	11.226	2.408	2.90		Clay	95.1			18.95	0.91	n.a.	n.a.	0.84	0.906	n.a.	n.a.	n.a.	n.a.	0.00	0.00
47.900	19.910	0.498	5748.0	3071.0	11.095	2.922	2.95		Clay	99.3			18.82	0.91	n.a.	n.a.	0.84	0.906	n.a.	n.a.	n.a.	n.a.	0.00	0.00
48.060	20.750	0.650	5767.2	3080.3	11.601	3.639	2.99		Clay	100.0			19.61	0.91	n.a.	n.a.	0.84	0.905	n.a.	n.a.	n.a.	n.a.	0.00	0.00
48.230	21.850	0.682	5787.6	3090.0	12.269	3.596	2.97		Clay	100.0			20.65	0.90	n.a.	n.a.	0.84	0.905	n.a.	n.a.	n.a.	n.a.	0.00	0.00
48.390	22.390	0.716	5806.8	3099.3	12.575	3.674	2.97		Clay	100.0			21.16	0.90	n.a.	n.a.	0.83	0.904	n.a.	n.a.	n.a.	n.a.	0.00	0.00
48.560	21.640	0.641	5827.2	3109.1	12.046	3.423	2.96		Clay	100.0			20.45	0.90	n.a.	n.a.	0.83	0.904	n.a.	n.a.	n.a.	n.a.	0.00	0.00
48.720	20.740	0.596	5846.4	3118.3	11.427	3.345	2.98		Clay	100.0			19.60	0.90	n.a.	n.a.	0.83	0.904	n.a.	n.a.	n.a.	n.a.	0.00	0.00
48.880	20.380	0.530	5865.6	3127.5	11.157	3.035	2.96		Clay	99.9			19.26	0.90	n.a.	n.a.	0.83	0.903	n.a.	n.a.	n.a.	n.a.	0.00	0.00
49.050	20.320	0.493	5886.0	3137.3	11.078	2.837	2.95		Clay	98.7			19.21	0.90	n.a.	n.a.	0.83	0.903	n.a.	n.a.	n.a.	n.a.	0.00	0.00
49.210	19.400	0.470	5905.2	3146.5	10.454	2.855	2.97		Clay	100.0			18.34	0.90	n.a.	n.a.	0.83	0.902	n.a.	n.a.	n.a.	n.a.	0.00	0.00
49.380	19.630	0.480	5925.6	3156.3	10.561	2.882	2.97		Clay	100.0			18.55	0.90	n.a.	n.a.	0.83	0.902	n.a.	n.a.	n.a.	n.a.	0.00	0.00
49.540	20.970	0.494	5944.8	3165.5	11.371	2.742	2.93		Clay	97.3			19.82	0.90	n.a.	n.a.	0.83	0.901	n.a.	n.a.	n.a.	n.a.	0.00	0.00
49.700	21.470	0.655	5964.0	3174.7	11.647	3.543	2.98		Clay	100.0			20.29	0.90	n.a.	n.a.	0.83	0.901	n.a.	n.a.	n.a.	n.a.	0.00	0.00
49.870	21.850	0.852	5984.4	3184.5	11.843	4.520	3.04		Clay	100.0			20.65	0.90	n.a.	n.a.	0.83	0.900	n.a.	n.a.	n.a.	n.a.	0.00	0.00
50.030	23.240	0.935	6003.6	3193.7	12.674	4.621	3.03		Clay	100.0			21.97	0.90	n.a.	n.a.	0.83	0.900	n.a.	n.a.	n.a.	n.a.	0.00	0.00
50.200	26.820	0.907	6024.0	3203.5	14.864	3.810	2.92		Clay	96.6			25.35	0.90	n.a.	n.a.	0.83	0.899	n.a.	n.a.	n.a.	n.a.	0.00	0.00
50.360	26.330	0.949	6043.2	3212.7	14.510	4.071	2.95		Clay	98.6			24.89	0.90	n.a.	n.a.	0.83	0.899	n.a.	n.a.	n.a.	n.a.	0.00	0.00
50.520	25.630	0.919	6062.4	3222.0	14.028	4.067	2.96		Clay	99.5			24.22	0.90	n.a.	n.a.	0.83	0.898	n.a.	n.a.	n.a.	n.a.	0.00	0.00
50.690	27.770	0.912	6082.8	3231.7	15.304	3.688	2.90		Clay	95.1			26.25	0.89	n.a.	n.a.	0.82	0.898	n.a.	n.a.	n.a.	n.a.	0.00	0.00
50.850	27.590	0.839	6102.0	3241.0	15.143	3.418	2.88		Clay	93.7			26.08	0.89	n.a.	n.a.	0.82	0.897	n.a.	n.a.	n.a.	n.a.	0.00	0.00
51.020	26.230	0.884	6122.4	3250.8	14.254	3.815	2.93		Clay	97.7			24.79	0.89	n.a.	n.a.	0.82	0.897	n.a.	n.a.	n.a.	n.a.	0.00	0.00
51.180	25.040	1.502	6141.6	3260.0	13.478	6.835	3.11		Clay	100.0			23.67	0.89	n.a.	n.a.	0.82	0.896	n.a.	n.a.	n.a.	n.a.	0.00	0.00
51.350	27.170	1.633	6162.0	3269.8	14.734	6.777	3.08		Clay	100.0			25.68	0.89	n.a.	n.a.	0.82	0.896	n.a.	n.a.	n.a.	n.a.	0.00	0.00
51.510	32.590	1.309	6181.2	3279.0	17.993	4.438	2.90		Clay	94.8			30.80	0.89	n.a.	n.a.	0.82	0.895	n.a.	n.a.	n.a.	n.a.	0.00	0.00
51.670	37.270	1.331	6200.4	3288.2	20.783	3.895	2.81		Clay	88.0			35.23	0.89	n.a.	n.a.	0.82	0.895	n.a.	n.a.	n.a.	n.a.	0.00	0.00
51.840	30.900	1.335	6220.8	3298.0	16.852	4.805	2.94		Clay	98.3			29.21	0.89	n.a.	n.a.	0.82	0.894	n.a.	n.a.	n.a.	n.a.	0.00	0.00
52.000	32.590	1.090	6240.0	3307.2	17.822	3.699	2.85		Clay	91.0			30.80	0.89	n.a.	n.a.	0.82	0.894	n.a.	n.a.	n.a.	n.a.	0.00	0.00
52.170	34.670	0.738	6260.4	3317.0	19.017	2.339	2.71		Clay	79.5			32.77	0.89	n.a.	n.a.	0.82	0.893	n.a.	n.a.	n.a.	n.a.	0.00	0.00
52.330	32.220	0.659	6279.6	3326.2	17.485	2.266	2.73		Clay	81.2			30.45	0.89	n.a.	n.a.	0.82	0.893	n.a.	n.a.	n.a.	n.a.	0.00	0.00
52.490	25.700	0.938	6298.8	3335.4	13.522	4.158	2.98		Clay	100.0			24.29	0.89	n.a.	n.a.	0.82	0.892	n.a.	n.a.	n.a.	n.a.	0.00	0.00
52.660	25.240	1.726	6319.2	3345.2	13.201	7.818	3.16		Clay	100.0			23.86	0.89	n.a.	n.a.	0.82	0.891	n.a.	n.a.	n.a.	n.a.	0.00	0.00
52.820	37.220	2.482	6338.4	3354.4	20.302	7.288	3.00		Clay	100.0			35.18	0.89	n.a.	n.a.	0.82	0.891	n.a.	n.a.	n.a.	n.a.	0.00	0.00
52.990	59.720	2.680	6358.8	3364.2	33.613	4.740	2.71		Clay	80.2			56.45	0.88	n.a.	n.a.	0.81	0.890	n.a.	n.a.	n.a.	n.a.	0.00	0.00
53.150	84.560	2.373	6378.0	3373.4	60.912	2.916	2.38		Sand	53.6			79.92	0.82	65.16	129.94	0.81	0.890	0.937	0.197	0.271	0.30	0.02	0.00
53.310	91.150	1.737	6397.2	3382.7	65.749	1.975	2.24		Sand	42.4			86.15	0.81	70.19	130.65	0.81	0.889	0.936	0.199	0.275	0.31	0.02	0.00
53.480	78.920	1.221	6417.6	3392.4	56.517	1.612	2.23		Sand	41.7			74.59	0.80	59.99	117.49	0.81	0.889	0.942	0.166	0.214	0.24	0.03	0.00
53.640	56.820	1.318	6436.8	3401.7	39.958	2.458	2.47		Sand	60.3			53.71	0.79	42.54	103.27	0.81	0.888	0.948	0.142	0.172	0.19	0.03	0.00
53.810	34.390	1.120	6457.2	3411.5	18.269	3.595	2.83		Clay	89.7			32.50	0.88	n.a.	n.a.	0.81	0.888	n.a.	n.a.	n.a.	n.a.	0.00	0.00
53.970	25.590	0.697	6476.4	3420.7	13.069	3.117	2.91		Clay	95.9			24.19	0.88	n.a.	n.a.	0.81	0.887	n.a.	n.a.	n.a.	n.a.	0.00	0.00
54.130	22.540	0.528	6495.6	3429.9	11.249	2.735	2.93		Clay	97.6			21.30	0.88	n.a.	n.a.	0.81	0.887	n.a.	n.a.	n.a.	n.a.	0.00	0.00
54.300	21.520	0.518	6516.0	3439.7	10.618	2.837	2.96		Clay	99.9			20.34	0.88	n.a.	n.a.	0.81	0.886	n.a.	n.a.	n.a.	n.a.	0.00	0.00
54.460	22.230	0.599	6535.2	3448.9	10.996	3.158	2.98		Clay	100.0			21.01	0.88	n.a.	n.a.	0.81	0.886	n.a.	n.a.	n.a.	n.a.	0.00	0.00
54.630	23.230	0.678	6555.6	3458.7	11.537	3.397	2.98		Clay	100.0			21.96	0.88	n.a.	n.a.	0.81	0.885	n.a.	n.a.	n.a.	n.a.	0.00	0.00
54.790	23.840	0.716	6574.8	3467.9	11.853	3.483	2.97		Clay	100.0			22.53	0.88	n.a.	n.a.	0.81	0.885	n.a.	n.a.	n.a.	n.a.	0.00	0.00
54.950	22.660	0.685	6594.0	3477.1	11.137	3.539	3.00		Clay	100.0			21.42	0.88	n.a.	n.a.	0.81	0.884	n.a.	n.a.	n.a.	n.a.	0.00	0.00

CORNERSTONE EARTH GROUP

CPT No.	10

PGA (A_{max})	0.89

Total Settlement:	0.06	(Inches)

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Depth (ft)	q_c (tsf)	f_s (tsf)	σ_{vc} (psf)	Insitu σ'_{vc} (psf)	Q	F (%)	I_c	Layer "Plastic" PI > 7	Flag Soil Type	Fines (%)	q_{cN} near interfaces (soft layer)	Thin Layer Factor (K_H)	Interpreted q_{cN}	C_N	q_{c1N}	q_{c1N-CS}	Stress Reduction Coeff, r_d	CSR	K_σ for Sand	$CRR_{M=7.5, \sigma'vc = 1 atm}$	CRR	Factor of Safety (CRR/CSR)	Vertical Strain ε_v	Settlement (Inches)
55.120	22.330	0.646	6614.4	3486.9	10.911	3.393	3.00		Clay	100.0			21.11	0.88	n.a.	n.a.	0.81	0.883	n.a.	n.a.	n.a.	n.a.	0.00	0.00
55.280	21.170	0.588	6633.6	3496.1	10.213	3.293	3.01		Clay	100.0			20.01	0.88	n.a.	n.a.	0.80	0.883	n.a.	n.a.	n.a.	n.a.	0.00	0.00
55.450	19.710	0.553	6654.0	3505.9	9.346	3.377	3.05		Clay	100.0			18.63	0.88	n.a.	n.a.	0.80	0.882	n.a.	n.a.	n.a.	n.a.	0.00	0.00
55.610	18.990	0.538	6673.2	3515.1	8.906	3.438	3.07		Clay	100.0			17.95	0.87	n.a.	n.a.	0.80	0.882	n.a.	n.a.	n.a.	n.a.	0.00	0.00
55.770	19.020	0.530	6692.4	3524.4	8.895	3.383	3.07		Clay	100.0			17.98	0.87	n.a.	n.a.	0.80	0.881	n.a.	n.a.	n.a.	n.a.	0.00	0.00
55.940	19.270	0.552	6712.8	3534.1	9.006	3.469	3.07		Clay	100.0			18.21	0.87	n.a.	n.a.	0.80	0.881	n.a.	n.a.	n.a.	n.a.	0.00	0.00
56.100	20.270	0.607	6732.0	3543.4	9.541	3.593	3.06		Clay	100.0			19.16	0.87	n.a.	n.a.	0.80	0.880	n.a.	n.a.	n.a.	n.a.	0.00	0.00
56.270	21.550	0.647	6752.4	3553.2	10.230	3.562	3.03		Clay	100.0			20.37	0.87	n.a.	n.a.	0.80	0.880	n.a.	n.a.	n.a.	n.a.	0.00	0.00
56.430	22.240	0.664	6771.6	3562.4	10.585	3.520	3.02		Clay	100.0			21.02	0.87	n.a.	n.a.	0.80	0.879	n.a.	n.a.	n.a.	n.a.	0.00	0.00
56.590	22.560	0.736	6790.8	3571.6	10.732	3.840	3.03		Clay	100.0			21.32	0.87	n.a.	n.a.	0.80	0.879	n.a.	n.a.	n.a.	n.a.	0.00	0.00
56.760	22.770	0.716	6811.2	3581.4	10.814	3.699	3.02		Clay	100.0			21.52	0.87	n.a.	n.a.	0.80	0.878	n.a.	n.a.	n.a.	n.a.	0.00	0.00
56.920	23.170	0.696	6830.4	3590.6	11.004	3.524	3.00		Clay	100.0			21.90	0.87	n.a.	n.a.	0.80	0.877	n.a.	n.a.	n.a.	n.a.	0.00	0.00
57.090	23.010	0.714	6850.8	3600.4	10.879	3.647	3.02		Clay	100.0			21.75	0.87	n.a.	n.a.	0.80	0.877	n.a.	n.a.	n.a.	n.a.	0.00	0.00
57.250	22.890	0.797	6870.0	3609.6	10.780	4.097	3.05		Clay	100.0			21.64	0.87	n.a.	n.a.	0.80	0.876	n.a.	n.a.	n.a.	n.a.	0.00	0.00
57.410	25.240	1.391	6889.2	3618.8	12.046	6.383	3.13		Clay	100.0			23.86	0.87	n.a.	n.a.	0.80	0.876	n.a.	n.a.	n.a.	n.a.	0.00	0.00
57.580	31.820	1.531	6909.6	3628.6	15.634	5.399	3.00		Clay	100.0			30.08	0.87	n.a.	n.a.	0.79	0.875	n.a.	n.a.	n.a.	n.a.	0.00	0.00
57.740	54.860	1.423	6928.8	3637.8	28.256	2.768	2.62		Clay	72.2			51.85	0.87	n.a.	n.a.	0.79	0.875	n.a.	n.a.	n.a.	n.a.	0.00	0.00
57.910	51.890	1.540	6949.2	3647.6	26.546	3.181	2.67		Clay	77.0			49.05	0.87	n.a.	n.a.	0.79	0.874	n.a.	n.a.	n.a.	n.a.	0.00	0.00
58.070	33.420	1.431	6968.4	3656.8	16.373	4.779	2.95		Clay	98.9			31.59	0.87	n.a.	n.a.	0.79	0.873	n.a.	n.a.	n.a.	n.a.	0.00	0.00
58.230	41.580	1.499	6987.6	3666.0	20.778	3.936	2.82		Clay	88.2			39.30	0.87	n.a.	n.a.	0.79	0.873	n.a.	n.a.	n.a.	n.a.	0.00	0.00
58.400	43.950	1.387	7008.0	3675.8	22.006	3.429	2.76		Clay	83.6			41.54	0.86	n.a.	n.a.	0.79	0.872	n.a.	n.a.	n.a.	n.a.	0.00	0.00
58.560	32.380	1.245	7027.2	3685.1	15.667	4.314	2.94		Clay	97.8			30.60	0.86	n.a.	n.a.	0.79	0.872	n.a.	n.a.	n.a.	n.a.	0.00	0.00
58.730	30.140	1.344	7047.6	3694.8	14.407	5.051	3.01		Clay	100.0			28.49	0.86	n.a.	n.a.	0.79	0.871	n.a.	n.a.	n.a.	n.a.	0.00	0.00
58.890	43.310	0.997	7066.8	3704.1	21.477	2.508	2.68		Clay	77.6			40.94	0.86	n.a.	n.a.	0.79	0.871	n.a.	n.a.	n.a.	n.a.	0.00	0.00
59.060	37.230	1.073	7087.2	3713.9	18.141	3.184	2.80		Clay	87.3			35.19	0.86	n.a.	n.a.	0.79	0.870	n.a.	n.a.	n.a.	n.a.	0.00	0.00
59.220	29.190	1.424	7106.4	3723.1	13.772	5.555	3.05		Clay	100.0			27.59	0.86	n.a.	n.a.	0.79	0.869	n.a.	n.a.	n.a.	n.a.	0.00	0.00
59.380	32.720	1.286	7125.6	3732.3	15.624	4.410	2.94		Clay	98.4			30.93	0.86	n.a.	n.a.	0.79	0.869	n.a.	n.a.	n.a.	n.a.	0.00	0.00
59.550	48.750	1.199	7146.0	3742.1	24.145	2.654	2.66		Clay	75.5			46.08	0.86	n.a.	n.a.	0.79	0.868	n.a.	n.a.	n.a.	n.a.	0.00	0.00
59.710	41.190	1.741	7165.2	3751.3	20.050	4.630	2.87		Clay	92.9			38.93	0.86	n.a.	n.a.	0.79	0.868	n.a.	n.a.	n.a.	n.a.	0.00	0.00
59.880	34.300	1.699	7185.6	3761.1	16.329	5.533	2.99		Clay	100.0			32.42	0.86	n.a.	n.a.	0.78	0.867	n.a.	n.a.	n.a.	n.a.	0.00	0.00
60.040	33.510	1.236	7204.8	3770.3	15.865	4.132	2.92		Clay	96.5			31.67	0.86	n.a.	n.a.	0.78	0.867	n.a.	n.a.	n.a.	n.a.	0.00	0.00
60.200	35.150	0.991	7224.0	3779.5	16.689	3.142	2.83		Clay	89.3			33.22	0.86	n.a.	n.a.	0.78	0.866	n.a.	n.a.	n.a.	n.a.	0.00	0.00
60.370	28.290	0.700	7244.4	3789.3	13.020	2.839	2.89		Clay	94.1			26.74	0.86	n.a.	n.a.	0.78	0.865	n.a.	n.a.	n.a.	n.a.	0.00	0.00
60.530	24.950	0.605	7263.6	3798.5	11.224	2.838	2.94		Clay	98.3			23.58	0.86	n.a.	n.a.	0.78	0.865	n.a.	n.a.	n.a.	n.a.	0.00	0.00
60.700	23.440	0.567	7284.0	3808.3	10.397	2.864	2.97		Clay	100.0			22.16	0.86	n.a.	n.a.	0.78	0.864	n.a.	n.a.	n.a.	n.a.	0.00	0.00
60.860	22.280	0.545	7303.2	3817.5	9.759	2.927	3.00		Clay	100.0			21.06	0.86	n.a.	n.a.	0.78	0.864	n.a.	n.a.	n.a.	n.a.	0.00	0.00
61.020	20.960	0.429	7322.4	3826.8	9.041	2.479	2.99		Clay	100.0			19.81	0.86	n.a.	n.a.	0.78	0.863	n.a.	n.a.	n.a.	n.a.	0.00	0.00
61.190	20.740	0.511	7342.8	3836.5	8.898	2.991	3.04		Clay	100.0			19.60	0.85	n.a.	n.a.	0.78	0.863	n.a.	n.a.	n.a.	n.a.	0.00	0.00
61.350	21.490	0.651	7362.0	3845.8	9.262	3.656	3.07		Clay	100.0			20.31	0.85	n.a.	n.a.	0.78	0.862	n.a.	n.a.	n.a.	n.a.	0.00	0.00
61.520	25.450	0.753	7382.4	3855.6	11.287	3.461	2.99		Clay	100.0			24.05	0.85	n.a.	n.a.	0.78	0.861	n.a.	n.a.	n.a.	n.a.	0.00	0.00
61.680	28.060	0.834	7401.6	3864.8	12.606	3.422	2.95		Clay	98.9			26.52	0.85	n.a.	n.a.	0.78	0.861	n.a.	n.a.	n.a.	n.a.	0.00	0.00
61.840	29.540	0.867	7420.8	3874.0	13.335	3.357	2.92		Clay	96.9			27.92	0.85	n.a.	n.a.	0.78	0.860	n.a.	n.a.	n.a.	n.a.	0.00	0.00
62.010	29.210	0.844	7441.2	3883.8	13.126	3.310	2.93		Clay	97.0			27.61	0.85	n.a.	n.a.	0.78	0.860	n.a.	n.a.	n.a.	n.a.	0.00	0.00
62.170	31.650	0.773	7460.4	3893.0	14.344	2.768	2.85		Clay	90.9			29.91	0.85	n.a.	n.a.	0.77	0.859	n.a.	n.a.	n.a.	n.a.	0.00	0.00
62.340	31.830	0.884	7480.8	3902.8	14.395	3.145	2.88		Clay	93.4			30.09	0.85	n.a.	n.a.	0.77	0.859	n.a.	n.a.	n.a.	n.a.	0.00	0.00
62.500	36.900	0.938	7500.0	3912.0	16.948	2.831	2.80		Clay	86.7			34.88	0.85	n.a.	n.a.	0.77	0.858	n.a.	n.a.	n.a.	n.a.	0.00	0.00
62.660	39.490	1.016	7519.2	3921.2	18.224	2.843	2.77		Clay	84.7			37.33	0.85	n.a.	n.a.	0.77	0.857	n.a.	n.a.	n.a.	n.a.	0.00	0.00
62.830	41.810	1.118	7539.6	3931.0	19.354	2.939	2.76		Clay	83.8			39.52	0.85	n.a.	n.a.	0.77	0.857	n.a.	n.a.	n.a.	n.a.	0.00	0.00
62.990	46.470	1.192	7558.8	3940.2	21.669	2.793	2.71		Clay	79.6			43.92	0.85	n.a.	n.a.	0.77	0.856	n.a.	n.a.	n.a.	n.a.	0.00	0.00
63.160	50.230	1.368	7579.2	3950.0	23.514	2.945	2.69		Clay	78.5			47.48	0.85	n.a.	n.a.	0.77	0.856	n.a.	n.a.	n.a.	n.a.	0.00	0.00
63.320	52.510	1.449	7598.4	3959.2	24.606	2.974	2.68		Clay	77.5			49.63	0.85	n.a.	n.a.	0.77	0.855	n.a.	n.a.	n.a.	n.a.	0.00	0.00
63.480	52.200	1.503	7617.6	3968.4	24.388	3.107	2.70		Clay	78.7			49.34	0.85	n.a.	n.a.	0.77	0.855	n.a.	n.a.	n.a.	n.a.	0.00	0.00
63.650	50.120	1.497	7638.0	3978.2	23.277	3.234	2.72		Clay	80.8			47.37	0.85	n.a.	n.a.	0.77	0.854	n.a.	n.a.	n.a.	n.a.	0.00	0.00
63.810	43.490	1.435	7657.2	3987.5	19.893	3.617	2.81		Clay	87.5			41.11	0.85	n.a.	n.a.	0.77	0.853	n.a.	n.a.	n.a.	n.a.	0.00	0.00
63.980	37.530	1.262	7677.6	3997.2	16.857	3.746	2.87		Clay	92.8			35.47	0.85	n.a.	n.a.	0.77	0.853	n.a.	n.a.	n.a.	n.a.	0.00	0.00
64.140	35.250	1.283	7696.8	4006.5	15.675	4.087	2.92		Clay	96.6			33.32	0.84	n.a.	n.a.	0.77	0.852	n.a.	n.a.	n.a.	n.a.	0.00	0.00
64.300	36.910	1.374	7716.0	4015.7	16.461	4.157	2.91		Clay	95.7			34.89	0.84	n.a.	n.a.	0.77	0.852	n.a.	n.a.	n.a.	n.a.	0.00	0.00
64.470	41.190	1.481	7736.4	4025.5	18.543	3.967	2.86		Clay	91.5			38.93	0.84	n.a.	n.a.	0.77	0.851	n.a.	n.a.	n.a.	n.a.	0.00	0.00
64.630	39.620	1.256	7755.6	4034.7	17.717	3.515	2.84		Clay	90.0			37.45	0.84	n.a.	n.a.	0.76	0.850	n.a.	n.a.	n.a.	n.a.	0.00	0.00
64.800	34.030	1.054	7776.0	4044.5	14.905	3.497	2.90		Clay	94.7			32.16	0.84	n.a.	n.a.	0.76	0.850	n.a.	n.a.	n.a.	n.a.	0.00	0.00
64.960	28.970	0.918	7795.2	4053.7	12.370	3.660	2.97		Clay	100.0			27.38	0.84	n.a.	n.a.	0.76	0.849	n.a.	n.a.	n.a.	n.a.	0.00	0.00
65.120	26.960	0.835	7814.4	4062.9	11.348	3.623	3.00		Clay	100.0			25.48	0.84	n.a.	n.a.	0.76	0.849	n.a.	n.a.	n.a.	n.a.	0.00	0.00
65.290	23.280	0.742	7834.8	4072.7	9.508	3.833	3.08		Clay	100.0			22.00	0.84	n.a.	n.a.	0.76	0.848	n.a.	n.a.	n.a.	n.a.	0.00	0.00
65.450	21.670	0.681	7854.0	4081.9	8.693	3.838	3.11		Clay	100.0			20.48	0.84	n.a.	n.a.	0.76	0.848	n.a.	n.a.	n.a.	n.a.	0.00	0.00
65.620	21.800	0.671	7874.4	4091.7	8.731	3.758	3.10		Clay	100.0			20.60	0.84	n.a.	n.a.	0.76	0.847	n.a.	n.a.	n.a.	n.a.	0.00	0.00
65.780	23.750	0.856	7893.6	4100.9	9.658	4.324	3.10		Clay	100.0			22.45	0.84	n.a.	n.a.	0.76	0.846	n.a.	n.a.	n.a.	n.a.	0.00	0.00
65.940	27.900	1.032	7912.8	4110.1	11.651	4.310	3.04		Clay	100.0			26.37	0.84	n.a.	n.a.	0.76	0.846	n.a.	n.a.	n.a.	n.a.	0.00	0.00

CORNERSTONE EARTH GROUP

CPT No.	10

PGA (A_{max})	0.89

Total Settlement:	0.06	(Inches)

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Depth (ft)	q_c (tsf)	f_s (tsf)	σ_{vc} (psf)	Insitu σ'_{vc} (psf)	Q	F (%)	I_c	Layer "Plastic" PI > 7	Flag Soil Type	Fines (%)	q_{cN} near interfaces (soft layer)	Thin Layer Factor (K_H)	Interpreted q_{cN}	C_N	q_{c1N}	$q_{c1N\text{-}CS}$	Stress Reduction Coeff, r_d	CSR	K_σ for Sand	$CRR_{M=7.5,\ \sigma'vc = 1\ atm}$	CRR	Factor of Safety (CRR/CSR)	Vertical Strain ε_v	Settlement (Inches)
66.110	38.760	1.387	7933.2	4119.9	16.890	3.985	2.89		Clay	94.1			36.64	0.84	n.a.	n.a.	0.76	0.845	n.a.	n.a.	n.a.	n.a.	0.00	0.00
66.270	41.810	2.161	7952.4	4129.2	18.325	5.712	2.96		Clay	100.0			39.52	0.84	n.a.	n.a.	0.76	0.845	n.a.	n.a.	n.a.	n.a.	0.00	0.00
66.440	44.540	2.118	7972.8	4138.9	19.596	5.223	2.92		Clay	96.2			42.10	0.84	n.a.	n.a.	0.76	0.844	n.a.	n.a.	n.a.	n.a.	0.00	0.00
66.600	45.810	1.672	7992.0	4148.2	20.160	3.998	2.83		Clay	89.4			43.30	0.84	n.a.	n.a.	0.76	0.843	n.a.	n.a.	n.a.	n.a.	0.00	0.00
66.770	37.060	1.437	8012.4	4158.0	15.899	4.348	2.93		Clay	97.6			35.03	0.84	n.a.	n.a.	0.76	0.843	n.a.	n.a.	n.a.	n.a.	0.00	0.00
66.930	32.770	1.150	8031.6	4167.2	13.800	4.000	2.96		Clay	99.6			30.97	0.84	n.a.	n.a.	0.76	0.842	n.a.	n.a.	n.a.	n.a.	0.00	0.00
67.090	34.390	1.051	8050.8	4176.4	14.541	3.461	2.90		Clay	95.1			32.50	0.84	n.a.	n.a.	0.75	0.842	n.a.	n.a.	n.a.	n.a.	0.00	0.00
67.260	32.010	0.923	8071.2	4186.2	13.365	3.301	2.92		Clay	96.5			30.26	0.84	n.a.	n.a.	0.75	0.841	n.a.	n.a.	n.a.	n.a.	0.00	0.00
67.420	29.510	0.964	8090.4	4195.4	12.139	3.786	2.99		Clay	100.0			27.89	0.83	n.a.	n.a.	0.75	0.840	n.a.	n.a.	n.a.	n.a.	0.00	0.00
67.590	30.000	1.393	8110.8	4205.2	12.339	5.368	3.08		Clay	100.0			28.36	0.83	n.a.	n.a.	0.75	0.840	n.a.	n.a.	n.a.	n.a.	0.00	0.00
67.750	31.000	2.192	8130.0	4214.4	12.782	8.138	3.18		Clay	100.0			29.30	0.83	n.a.	n.a.	0.75	0.839	n.a.	n.a.	n.a.	n.a.	0.00	0.00
67.910	66.880	2.111	8149.2	4223.6	29.740	3.361	2.65		Clay	75.2			63.21	0.83	n.a.	n.a.	0.75	0.839	n.a.	n.a.	n.a.	n.a.	0.00	0.00
68.080	149.410	2.185	8169.6	4233.4	97.111	1.503	2.04		Sand	26.0			141.22	0.76	107.80	158.58	0.75	0.838	0.880	0.357	0.558	0.67	0.02	0.00
68.240	189.590	2.278	8188.8	4242.6	123.819	1.228	1.90		Sand	15.0			179.20	0.77	137.43	163.69	0.75	0.838	0.874	0.413	0.665	0.79	0.01	0.00
68.410	216.740	2.662	8209.2	4252.4	141.772	1.252	1.86		Sand	12.1			204.86	0.78	159.01	175.97	0.75	0.837	0.858	0.621	1.079	1.29	0.00	0.00
68.570	245.290	3.091	8228.4	4261.6	160.627	1.282	1.83		Sand	9.7			231.84	0.79	182.60	191.46	0.75	0.836	0.833	1.206	2.211	2.64	0.00	0.00
68.730	266.750	3.538	8247.6	4270.8	174.724	1.347	1.82		Sand	8.9			252.13	0.80	201.61	208.51	0.75	0.836	0.796	3.161	5.532	6.62	0.00	0.00
68.900	278.530	3.801	8268.0	4280.6	182.346	1.385	1.82		Sand	8.7			263.26	0.81	212.25	218.49	0.75	0.835	0.789	6.356	11.027	13.20	0.00	0.00
69.060	282.580	3.143	8287.2	4289.9	184.832	1.129	1.75		Sand	3.1			267.09	0.80	214.42	214.42	0.75	0.835	0.788	4.717	8.178	9.80	0.00	0.00
69.230	279.200	2.508	8307.6	4299.6	182.373	0.912	1.69		Sand	0.0			263.89	0.80	211.06	211.06	0.75	0.834	0.787	3.741	6.479	7.77	0.00	0.00
69.390	278.700	2.670	8326.8	4308.9	181.841	0.973	1.71		Sand	0.0			263.42	0.80	210.42	210.42	0.75	0.833	0.788	3.583	6.210	7.45	0.00	0.00
69.550	284.340	2.561	8346.0	4318.1	185.372	0.914	1.69		Sand	0.0			268.75	0.80	215.53	215.53	0.74	0.833	0.786	5.107	8.832	10.60	0.00	0.00
69.720	272.200	1.497	8366.4	4327.9	177.132	0.559	1.56		Sand	0.0			257.28	0.79	204.01	204.01	0.74	0.832	0.803	2.387	4.215	5.06	0.00	0.00
69.880	205.650	2.668	8385.6	4337.1	133.001	1.324	1.90		Sand	15.1			194.38	0.77	150.04	177.54	0.74	0.832	0.852	0.659	1.151	1.38	0.00	0.00
70.050	110.750	2.258	8406.0	4346.9	70.263	2.119	2.24		Sand	42.3			104.68	0.74	77.31	139.52	0.74	0.831	0.895	0.232	0.323	0.39	0.02	0.00
70.210	75.350	2.586	8425.2	4356.1	32.661	3.635	2.64		Clay	74.6			71.22	0.83	n.a.	n.a.	0.74	0.831	n.a.	n.a.	n.a.	n.a.	0.00	0.00
70.370	53.990	2.174	8444.4	4365.3	22.801	4.369	2.81		Clay	88.2			51.03	0.83	n.a.	n.a.	0.74	0.830	n.a.	n.a.	n.a.	n.a.	0.00	0.00
70.540	54.400	1.843	8464.8	4375.1	22.933	3.674	2.76		Clay	84.1			51.42	0.83	n.a.	n.a.	0.74	0.829	n.a.	n.a.	n.a.	n.a.	0.00	0.00
70.700	56.790	2.210	8484.0	4384.3	23.971	4.206	2.79		Clay	86.0			53.68	0.83	n.a.	n.a.	0.74	0.829	n.a.	n.a.	n.a.	n.a.	0.00	0.00
70.870	43.210	2.137	8504.4	4394.1	17.732	5.485	2.96		Clay	99.9			40.84	0.82	n.a.	n.a.	0.74	0.828	n.a.	n.a.	n.a.	n.a.	0.00	0.00
71.030	34.790	1.571	8523.6	4403.3	13.866	5.145	3.02		Clay	100.0			32.88	0.82	n.a.	n.a.	0.74	0.828	n.a.	n.a.	n.a.	n.a.	0.00	0.00
71.190	56.350	1.565	8542.8	4412.5	23.605	3.004	2.70		Clay	78.8			53.26	0.82	n.a.	n.a.	0.74	0.827	n.a.	n.a.	n.a.	n.a.	0.00	0.00
71.360	94.300	1.838	8563.2	4422.3	58.854	2.042	2.29		Sand	46.0			89.13	0.72	64.11	125.15	0.74	0.827	0.904	0.184	0.237	0.29	0.03	0.00
71.520	51.660	1.568	8582.4	4431.6	21.378	3.311	2.76		Clay	83.6			48.83	0.82	n.a.	n.a.	0.74	0.826	n.a.	n.a.	n.a.	n.a.	0.00	0.00
71.690	32.690	1.122	8602.8	4441.3	12.784	3.953	2.98		Clay	100.0			30.90	0.82	n.a.	n.a.	0.74	0.825	n.a.	n.a.	n.a.	n.a.	0.00	0.00
71.850	24.490	0.564	8622.0	4450.6	9.068	2.796	3.01		Clay	100.0			23.15	0.82	n.a.	n.a.	0.74	0.825	n.a.	n.a.	n.a.	n.a.	0.00	0.00
72.010	23.910	0.533	8641.2	4459.8	8.785	2.719	3.02		Clay	100.0			22.60	0.82	n.a.	n.a.	0.74	0.824	n.a.	n.a.	n.a.	n.a.	0.00	0.00
72.180	24.290	0.653	8661.6	4469.6	8.931	3.273	3.06		Clay	100.0			22.96	0.82	n.a.	n.a.	0.73	0.824	n.a.	n.a.	n.a.	n.a.	0.00	0.00
72.340	26.830	1.202	8680.8	4478.8	10.043	5.342	3.14		Clay	100.0			25.36	0.82	n.a.	n.a.	0.73	0.823	n.a.	n.a.	n.a.	n.a.	0.00	0.00
72.510	31.880	1.997	8701.2	4488.6	12.266	7.252	3.16		Clay	100.0			30.13	0.82	n.a.	n.a.	0.73	0.823	n.a.	n.a.	n.a.	n.a.	0.00	0.00
72.670	71.540	2.200	8720.4	4497.8	29.872	3.275	2.64		Clay	74.5			67.62	0.82	n.a.	n.a.	0.73	0.822	n.a.	n.a.	n.a.	n.a.	0.00	0.00
72.830	149.820	1.932	8739.6	4507.0	94.198	1.328	2.01		Sand	23.8			141.61	0.74	104.48	150.69	0.73	0.821	0.878	0.293	0.432	0.53	0.02	0.00
73.000	184.770	2.000	8760.0	4516.8	116.700	1.109	1.89		Sand	14.1			174.64	0.74	128.83	151.24	0.73	0.821	0.877	0.297	0.439	0.53	0.02	0.00
73.160	188.920	2.220	8779.2	4526.0	119.256	1.203	1.91		Sand	15.5			178.56	0.75	133.12	160.57	0.73	0.820	0.866	0.377	0.588	0.72	0.02	0.00
73.330	133.780	2.605	8799.6	4535.8	83.524	2.014	2.17		Sand	36.8			126.45	0.74	93.60	155.38	0.73	0.820	0.872	0.329	0.497	0.61	0.02	0.00
73.490	78.650	2.309	8818.8	4545.0	47.879	3.111	2.48		Sand	61.2			74.34	0.70	52.10	115.75	0.73	0.819	0.908	0.162	0.200	0.24	0.03	0.00
73.650	46.830	1.653	8838.0	4554.2	18.625	3.896	2.85		Clay	90.9			44.26	0.82	n.a.	n.a.	0.73	0.819	n.a.	n.a.	n.a.	n.a.	0.00	0.00
73.820	33.930	1.342	8858.4	4564.0	12.928	4.548	3.01		Clay	100.0			32.07	0.82	n.a.	n.a.	0.73	0.818	n.a.	n.a.	n.a.	n.a.	0.00	0.00
73.980	26.520	1.166	8877.6	4573.2	9.657	5.281	3.15		Clay	100.0			25.07	0.82	n.a.	n.a.	0.73	0.817	n.a.	n.a.	n.a.	n.a.	0.00	0.00
74.150	26.960	1.080	8898.0	4583.0	9.824	4.795	3.12		Clay	100.0			25.48	0.82	n.a.	n.a.	0.73	0.817	n.a.	n.a.	n.a.	n.a.	0.00	0.00
74.310	36.600	0.854	8917.2	4592.3	13.998	2.656	2.85		Clay	90.7			34.59	0.82	n.a.	n.a.	0.73	0.816	n.a.	n.a.	n.a.	n.a.	0.00	0.00
74.480	34.340	0.665	8937.6	4602.0	12.982	2.228	2.83		Clay	89.4			32.46	0.81	n.a.	n.a.	0.73	0.816	n.a.	n.a.	n.a.	n.a.	0.00	0.00
74.640	22.900	0.895	8956.8	4611.3	7.990	4.858	3.20		Clay	100.0			21.64	0.81	n.a.	n.a.	0.73	0.815	n.a.	n.a.	n.a.	n.a.	0.00	0.00
74.800	20.350	0.663	8976.0	4620.5	6.866	4.180	3.21		Clay	100.0			19.23	0.81	n.a.	n.a.	0.72	0.815	n.a.	n.a.	n.a.	n.a.	0.00	0.00
74.970	19.650	0.607	8996.4	4630.3	6.545	4.006	3.22		Clay	100.0			18.57	0.81	n.a.	n.a.	0.72	0.814	n.a.	n.a.	n.a.	n.a.	0.00	0.00
75.130	20.400	0.536	9015.6	4639.5	6.851	3.374	3.16		Clay	100.0			19.28	0.81	n.a.	n.a.	0.72	0.813	n.a.	n.a.	n.a.	n.a.	0.00	0.00
75.300	19.500	0.496	9036.0	4649.3	6.445	3.310	3.18		Clay	100.0			18.43	0.81	n.a.	n.a.	0.72	0.813	n.a.	n.a.	n.a.	n.a.	0.00	0.00
75.460	18.630	0.458	9055.2	4658.5	6.054	3.251	3.20		Clay	100.0			17.61	0.81	n.a.	n.a.	0.72	0.812	n.a.	n.a.	n.a.	n.a.	0.00	0.00
75.620	18.970	0.487	9074.4	4667.7	6.184	3.372	3.20		Clay	100.0			17.93	0.81	n.a.	n.a.	0.72	0.812	n.a.	n.a.	n.a.	n.a.	0.00	0.00
75.790	20.040	0.554	9094.8	4677.5	6.624	3.576	3.19		Clay	100.0			18.94	0.81	n.a.	n.a.	0.72	0.811	n.a.	n.a.	n.a.	n.a.	0.00	0.00
75.950	21.450	0.601	9114.0	4686.7	7.209	3.557	3.16		Clay	100.0			20.27	0.81	n.a.	n.a.	0.72	0.811	n.a.	n.a.	n.a.	n.a.	0.00	0.00
76.120	22.030	0.613	9134.4	4696.5	7.436	3.509	3.14		Clay	100.0			20.82	0.81	n.a.	n.a.	0.72	0.810	n.a.	n.a.	n.a.	n.a.	0.00	0.00
76.280	22.640	0.575	9153.6	4705.7	7.677	3.183	3.11		Clay	100.0			21.40	0.81	n.a.	n.a.	0.72	0.810	n.a.	n.a.	n.a.	n.a.	0.00	0.00
76.440	23.820	0.583	9172.8	4714.9	8.159	3.030	3.07		Clay	100.0			22.51	0.81	n.a.	n.a.	0.72	0.809	n.a.	n.a.	n.a.	n.a.	0.00	0.00
76.610	24.990	0.585	9193.2	4724.7	8.633	2.869	3.04		Clay	100.0			23.62	0.81	n.a.	n.a.	0.72	0.808	n.a.	n.a.	n.a.	n.a.	0.00	0.00
76.770	26.940	0.590	9212.4	4734.0	9.436	2.643	2.99		Clay	100.0			25.46	0.81	n.a.	n.a.	0.72	0.808	n.a.	n.a.	n.a.	n.a.	0.00	0.00
76.940	27.340	0.923	9232.8	4743.7	9.580	4.060	3.09		Clay	100.0			25.84	0.81	n.a.	n.a.	0.72	0.807	n.a.	n.a.	n.a.	n.a.	0.00	0.00

CORNERSTONE EARTH GROUP

CPT No.	10

PGA (A_{max})	0.89

Total Settlement:	0.06	(Inches)

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Depth (ft)	q_c (tsf)	f_s (tsf)	σ_{vc} (psf)	Insitu σ'_{vc} (psf)	Q	F (%)	I_c	Layer "Plastic" PI > 7	Flag Soil Type	Fines (%)	q_{cN} near interfaces (soft layer)	Thin Layer Factor (K_H)	Interpreted q_{cN}	C_N	q_{c1N}	$q_{c1N\text{-}CS}$	Stress Reduction Coeff, r_d	CSR	K_σ for Sand	$CRR_{M=7.5,\ \sigma'vc = 1\ atm}$	CRR	Factor of Safety (CRR/CSR)	Vertical Strain ε_v	Settlement (Inches)
77.100	26.910	0.992	9252.0	4753.0	9.377	4.453	3.12		Clay	100.0			25.43	0.81	n.a.	n.a.	0.72	0.807	n.a.	n.a.	n.a.	n.a.	0.00	0.00
77.260	27.150	1.040	9271.2	4762.2	9.456	4.621	3.13		Clay	100.0			25.66	0.81	n.a.	n.a.	0.72	0.806	n.a.	n.a.	n.a.	n.a.	0.00	0.00
77.430	35.100	1.110	9291.6	4772.0	12.764	3.645	2.96		Clay	99.8			33.18	0.81	n.a.	n.a.	0.72	0.806	n.a.	n.a.	n.a.	n.a.	0.00	0.00
77.590	36.750	1.122	9310.8	4781.2	13.425	3.495	2.93		Clay	97.5			34.74	0.81	n.a.	n.a.	0.71	0.805	n.a.	n.a.	n.a.	n.a.	0.00	0.00
77.760	38.530	1.073	9331.2	4791.0	14.137	3.170	2.89		Clay	94.1			36.42	0.81	n.a.	n.a.	0.71	0.805	n.a.	n.a.	n.a.	n.a.	0.00	0.00
77.920	34.260	0.866	9350.4	4800.2	12.327	2.927	2.92		Clay	96.3			32.38	0.81	n.a.	n.a.	0.71	0.804	n.a.	n.a.	n.a.	n.a.	0.00	0.00
78.080	30.930	0.757	9369.6	4809.4	10.914	2.885	2.96		Clay	99.5			29.23	0.81	n.a.	n.a.	0.71	0.803	n.a.	n.a.	n.a.	n.a.	0.00	0.00
78.250	30.210	0.818	9390.0	4819.2	10.589	3.206	2.99		Clay	100.0			28.55	0.80	n.a.	n.a.	0.71	0.803	n.a.	n.a.	n.a.	n.a.	0.00	0.00
78.410	30.600	1.251	9409.2	4828.4	10.726	4.832	3.09		Clay	100.0			28.92	0.80	n.a.	n.a.	0.71	0.802	n.a.	n.a.	n.a.	n.a.	0.00	0.00
78.580	37.460	1.787	9429.6	4838.2	13.536	5.458	3.05		Clay	100.0			35.41	0.80	n.a.	n.a.	0.71	0.802	n.a.	n.a.	n.a.	n.a.	0.00	0.00
78.740	45.580	2.580	9448.8	4847.4	16.857	6.314	3.02		Clay	100.0			43.08	0.80	n.a.	n.a.	0.71	0.801	n.a.	n.a.	n.a.	n.a.	0.00	0.00
78.900	52.000	2.469	9468.0	4856.6	19.464	5.224	2.92		Clay	96.4			49.15	0.80	n.a.	n.a.	0.71	0.801	n.a.	n.a.	n.a.	n.a.	0.00	0.00
79.070	95.020	2.229	9488.4	4866.4	56.265	2.469	2.36		Sand	51.6			89.81	0.69	61.88	124.96	0.71	0.800	0.892	0.183	0.233	0.29	0.03	0.00
79.230	161.990	1.888	9507.6	4875.6	97.906	1.201	1.97		Sand	20.5			153.11	0.71	109.15	148.66	0.71	0.800	0.868	0.280	0.402	0.50	0.02	0.00
79.400	194.180	1.046	9528.0	4885.4	117.825	0.552	1.70		Sand	0.0			183.53	0.69	126.55	126.55	0.71	0.799	0.890	0.187	0.240	0.30	0.03	0.00
79.560	206.560	1.716	9547.2	4894.7	125.402	0.851	1.79		Sand	6.2			195.24	0.70	136.78	137.62	0.71	0.799	0.879	0.224	0.303	0.38	0.02	0.00
79.720	200.760	2.293	9566.4	4903.9	121.677	1.170	1.89		Sand	14.3			189.75	0.72	137.21	160.93	0.71	0.798	0.852	0.381	0.586	0.73	0.02	0.00
79.890	106.330	2.262	9586.8	4913.7	62.978	2.228	2.29		Sand	46.3			100.50	0.69	69.75	132.40	0.71	0.797	0.884	0.205	0.270	0.34	0.02	0.00
80.050	64.530	2.252	9606.0	4922.9	24.265	3.771	2.75		Clay	83.2			60.99	0.80	n.a.	n.a.	0.71	0.797	n.a.	n.a.	n.a.	n.a.	0.00	0.00
80.220	48.130	1.703	9626.4	4932.7	17.563	3.932	2.87		Clay	92.7			45.49	0.80	n.a.	n.a.	0.71	0.796	n.a.	n.a.	n.a.	n.a.	0.00	0.00
80.380	34.470	1.032	9645.6	4941.9	11.998	3.482	2.97		Clay	100.0			32.58	0.80	n.a.	n.a.	0.70	0.796	n.a.	n.a.	n.a.	n.a.	0.00	0.00
80.540	28.490	0.816	9664.8	4951.1	9.556	3.447	3.05		Clay	100.0			26.93	0.80	n.a.	n.a.	0.70	0.795	n.a.	n.a.	n.a.	n.a.	0.00	0.00
80.710	27.400	0.705	9685.2	4960.9	9.094	3.125	3.04		Clay	100.0			25.90	0.80	n.a.	n.a.	0.70	0.795	n.a.	n.a.	n.a.	n.a.	0.00	0.00
80.870	27.040	0.682	9704.4	4970.1	8.928	3.072	3.04		Clay	100.0			25.56	0.80	n.a.	n.a.	0.70	0.794	n.a.	n.a.	n.a.	n.a.	0.00	0.00
81.040	27.120	0.698	9724.8	4979.9	8.939	3.134	3.05		Clay	100.0			25.63	0.80	n.a.	n.a.	0.70	0.794	n.a.	n.a.	n.a.	n.a.	0.00	0.00
81.200	26.910	0.684	9744.0	4989.1	8.834	3.103	3.05		Clay	100.0			25.43	0.80	n.a.	n.a.	0.70	0.793	n.a.	n.a.	n.a.	n.a.	0.00	0.00
81.360	28.100	0.750	9763.2	4998.3	9.290	3.228	3.04		Clay	100.0			26.56	0.80	n.a.	n.a.	0.70	0.793	n.a.	n.a.	n.a.	n.a.	0.00	0.00
81.530	32.040	0.822	9783.6	5008.1	10.842	3.027	2.97		Clay	100.0			30.28	0.80	n.a.	n.a.	0.70	0.792	n.a.	n.a.	n.a.	n.a.	0.00	0.00
81.690	33.560	0.852	9802.8	5017.3	11.424	2.973	2.95		Clay	98.8			31.72	0.80	n.a.	n.a.	0.70	0.792	n.a.	n.a.	n.a.	n.a.	0.00	0.00
81.860	33.430	0.841	9823.2	5027.1	11.346	2.950	2.95		Clay	98.8			31.60	0.80	n.a.	n.a.	0.70	0.791	n.a.	n.a.	n.a.	n.a.	0.00	0.00
82.020	31.400	0.711	9842.4	5036.4	10.515	2.684	2.95		Clay	99.1			29.68	0.80	n.a.	n.a.	0.70	0.791	n.a.	n.a.	n.a.	n.a.	0.00	0.00
82.190	29.370	0.673	9862.8	5046.1	9.686	2.753	2.99		Clay	100.0			27.76	0.80	n.a.	n.a.	0.70	0.790	n.a.	n.a.	n.a.	n.a.	0.00	0.00
82.350	28.750	0.718	9882.0	5055.4	9.419	3.017	3.02		Clay	100.0			27.17	0.79	n.a.	n.a.	0.70	0.790	n.a.	n.a.	n.a.	n.a.	0.00	0.00
82.510	28.940	0.755	9901.2	5064.6	9.473	3.146	3.03		Clay	100.0			27.35	0.79	n.a.	n.a.	0.70	0.789	n.a.	n.a.	n.a.	n.a.	0.00	0.00
82.680	30.650	0.796	9921.6	5074.4	10.125	3.099	3.00		Clay	100.0			28.97	0.79	n.a.	n.a.	0.70	0.789	n.a.	n.a.	n.a.	n.a.	0.00	0.00
82.840	32.430	0.972	9940.8	5083.6	10.803	3.540	3.01		Clay	100.0			30.65	0.79	n.a.	n.a.	0.70	0.788	n.a.	n.a.	n.a.	n.a.	0.00	0.00
83.010	34.090	0.985	9961.2	5093.4	11.430	3.384	2.98		Clay	100.0			32.22	0.79	n.a.	n.a.	0.70	0.787	n.a.	n.a.	n.a.	n.a.	0.00	0.00
83.170	33.810	0.936	9980.4	5102.6	11.296	3.249	2.97		Clay	100.0			31.96	0.79	n.a.	n.a.	0.70	0.787	n.a.	n.a.	n.a.	n.a.	0.00	0.00
83.330	30.550	0.767	9999.6	5111.8	9.997	3.003	3.00		Clay	100.0			28.88	0.79	n.a.	n.a.	0.69	0.786	n.a.	n.a.	n.a.	n.a.	0.00	0.00
83.500	29.010	0.627	10020.0	5121.6	9.372	2.613	2.99		Clay	100.0			27.42	0.79	n.a.	n.a.	0.69	0.786	n.a.	n.a.	n.a.	n.a.	0.00	0.00
83.660	28.700	0.659	10039.2	5130.8	9.231	2.781	3.01		Clay	100.0			27.13	0.79	n.a.	n.a.	0.69	0.785	n.a.	n.a.	n.a.	n.a.	0.00	0.00
83.830	30.040	0.822	10059.6	5140.6	9.730	3.287	3.03		Clay	100.0			28.39	0.79	n.a.	n.a.	0.69	0.785	n.a.	n.a.	n.a.	n.a.	0.00	0.00
83.990	33.620	0.906	10078.8	5149.8	11.100	3.171	2.97		Clay	100.0			31.78	0.79	n.a.	n.a.	0.69	0.784	n.a.	n.a.	n.a.	n.a.	0.00	0.00
84.150	39.700	1.015	10098.0	5159.0	13.433	2.930	2.89		Clay	93.9			37.52	0.79	n.a.	n.a.	0.69	0.784	n.a.	n.a.	n.a.	n.a.	0.00	0.00
84.320	41.240	1.080	10118.4	5168.8	14.000	2.984	2.88		Clay	93.1			38.98	0.79	n.a.	n.a.	0.69	0.783	n.a.	n.a.	n.a.	n.a.	0.00	0.00
84.480	43.500	1.151	10137.6	5178.0	14.844	2.995	2.86		Clay	91.5			41.12	0.79	n.a.	n.a.	0.69	0.783	n.a.	n.a.	n.a.	n.a.	0.00	0.00
84.650	46.410	1.220	10158.0	5187.8	15.934	2.951	2.83		Clay	89.3			43.87	0.79	n.a.	n.a.	0.69	0.782	n.a.	n.a.	n.a.	n.a.	0.00	0.00
84.810	50.320	1.385	10177.2	5197.1	17.407	3.062	2.81		Clay	87.6			47.56	0.79	n.a.	n.a.	0.69	0.782	n.a.	n.a.	n.a.	n.a.	0.00	0.00
84.970	53.580	1.528	10196.4	5206.3	18.624	3.151	2.79		Clay	86.3			50.64	0.79	n.a.	n.a.	0.69	0.781	n.a.	n.a.	n.a.	n.a.	0.00	0.00
85.140	57.910	1.667	10216.8	5216.1	20.246	3.156	2.76		Clay	84.1			54.74	0.79	n.a.	n.a.	0.69	0.781	n.a.	n.a.	n.a.	n.a.	0.00	0.00
85.300	55.570	1.725	10236.0	5225.3	19.311	3.419	2.80		Clay	87.1			52.52	0.79	n.a.	n.a.	0.69	0.780	n.a.	n.a.	n.a.	n.a.	0.00	0.00
85.470	47.690	1.586	10256.4	5235.1	16.260	3.725	2.88		Clay	93.6			45.08	0.79	n.a.	n.a.	0.69	0.780	n.a.	n.a.	n.a.	n.a.	0.00	0.00
85.630	42.810	1.454	10275.6	5244.3	14.367	3.859	2.93		Clay	97.8			40.46	0.79	n.a.	n.a.	0.69	0.779	n.a.	n.a.	n.a.	n.a.	0.00	0.00
85.790	42.210	1.307	10294.8	5253.5	14.110	3.525	2.92		Clay	96.3			39.90	0.79	n.a.	n.a.	0.69	0.779	n.a.	n.a.	n.a.	n.a.	0.00	0.00
85.960	43.650	1.593	10315.2	5263.3	14.627	4.138	2.95		Clay	98.8			41.26	0.79	n.a.	n.a.	0.69	0.778	n.a.	n.a.	n.a.	n.a.	0.00	0.00
86.120	46.600	1.561	10334.4	5272.5	15.717	3.767	2.90		Clay	94.8			44.05	0.79	n.a.	n.a.	0.69	0.778	n.a.	n.a.	n.a.	n.a.	0.00	0.00
86.290	55.600	1.569	10354.8	5282.3	19.091	3.112	2.78		Clay	85.4			52.55	0.79	n.a.	n.a.	0.69	0.777	n.a.	n.a.	n.a.	n.a.	0.00	0.00
86.450	54.950	1.456	10374.0	5291.5	18.809	2.926	2.77		Clay	84.5			51.94	0.79	n.a.	n.a.	0.69	0.777	n.a.	n.a.	n.a.	n.a.	0.00	0.00
86.610	50.760	1.736	10393.2	5300.7	17.191	3.810	2.87		Clay	92.6			47.98	0.78	n.a.	n.a.	0.68	0.777	n.a.	n.a.	n.a.	n.a.	0.00	0.00
86.780	41.310	1.550	10413.6	5310.5	13.597	4.293	2.98		Clay	100.0			39.05	0.78	n.a.	n.a.	0.68	0.776	n.a.	n.a.	n.a.	n.a.	0.00	0.00
86.940	40.310	1.508	10432.8	5319.7	13.194	4.296	2.99		Clay	100.0			38.10	0.78	n.a.	n.a.	0.68	0.776	n.a.	n.a.	n.a.	n.a.	0.00	0.00
87.110	42.740	1.543	10453.2	5329.5	14.078	4.113	2.96		Clay	99.7			40.40	0.78	n.a.	n.a.	0.68	0.775	n.a.	n.a.	n.a.	n.a.	0.00	0.00
87.270	45.490	1.498	10472.4	5338.8	15.080	3.721	2.91		Clay	95.7			43.00	0.78	n.a.	n.a.	0.68	0.775	n.a.	n.a.	n.a.	n.a.	0.00	0.00
87.430	46.800	1.548	10491.6	5348.0	15.540	3.726	2.90		Clay	94.9			44.23	0.78	n.a.	n.a.	0.68	0.774	n.a.	n.a.	n.a.	n.a.	0.00	0.00
87.600	48.070	1.625	10512.0	5357.8	15.982	3.795	2.89		Clay	94.5			45.43	0.78	n.a.	n.a.	0.68	0.774	n.a.	n.a.	n.a.	n.a.	0.00	0.00
87.760	49.590	1.792	10531.2	5367.0	16.517	4.042	2.90		Clay	95.0			46.87	0.78	n.a.	n.a.	0.68	0.773	n.a.	n.a.	n.a.	n.a.	0.00	0.00
87.930	51.600	1.896	10551.6	5376.8	17.231	4.092	2.89		Clay	94.1			48.77	0.78	n.a.	n.a.	0.68	0.773	n.a.	n.a.	n.a.	n.a.	0.00	0.00

CORNERSTONE EARTH GROUP

CPT No.	10

PGA (A_{max})	0.89

Total Settlement:	0.06	(Inches)

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Depth (ft)	q_c (tsf)	f_s (tsf)	σ_{vc} (psf)	Insitu σ'_{vc} (psf)	Q	F (%)	I_c	Layer "Plastic" PI > 7	Flag Soil Type	Fines (%)	q_{cN} near interfaces (soft layer)	Thin Layer Factor (K_H)	Interpreted q_{cN}	C_N	q_{c1N}	$q_{c1N\text{-}CS}$	Stress Reduction Coeff, r_d	CSR	K_σ for Sand	$CRR_{M=7.5,\ \sigma'vc = 1\ atm}$	CRR	Factor of Safety (CRR/CSR)	Vertical Strain ε_v	Settlement (Inches)
88.090	53.870	1.962	10570.8	5386.0	18.041	4.039	2.87		Clay	92.6			50.92	0.78	n.a.	n.a.	0.68	0.772	n.a.	n.a.	n.a.	n.a.	0.00	0.00
88.250	55.040	1.969	10590.0	5395.2	18.440	3.957	2.86		Clay	91.5			52.02	0.78	n.a.	n.a.	0.68	0.772	n.a.	n.a.	n.a.	n.a.	0.00	0.00
88.420	55.220	1.934	10610.4	5405.0	18.470	3.874	2.85		Clay	91.0			52.19	0.78	n.a.	n.a.	0.68	0.771	n.a.	n.a.	n.a.	n.a.	0.00	0.00
88.580	55.650	1.848	10629.6	5414.2	18.594	3.672	2.83		Clay	89.7			52.60	0.78	n.a.	n.a.	0.68	0.771	n.a.	n.a.	n.a.	n.a.	0.00	0.00
88.750	55.690	1.808	10650.0	5424.0	18.571	3.589	2.83		Clay	89.2			52.64	0.78	n.a.	n.a.	0.68	0.770	n.a.	n.a.	n.a.	n.a.	0.00	0.00
88.910	56.860	1.733	10669.2	5433.2	18.967	3.363	2.80		Clay	87.2			53.74	0.78	n.a.	n.a.	0.68	0.770	n.a.	n.a.	n.a.	n.a.	0.00	0.00
89.070	53.700	1.603	10688.4	5442.4	17.770	3.315	2.82		Clay	88.7			50.76	0.78	n.a.	n.a.	0.68	0.769	n.a.	n.a.	n.a.	n.a.	0.00	0.00
89.240	48.710	1.478	10708.8	5452.2	15.904	3.408	2.87		Clay	92.3			46.04	0.78	n.a.	n.a.	0.68	0.769	n.a.	n.a.	n.a.	n.a.	0.00	0.00
89.400	43.570	1.326	10728.0	5461.4	13.991	3.472	2.92		Clay	96.3			41.18	0.78	n.a.	n.a.	0.68	0.768	n.a.	n.a.	n.a.	n.a.	0.00	0.00
89.570	39.920	1.225	10748.4	5471.2	12.628	3.545	2.96		Clay	99.5			37.73	0.78	n.a.	n.a.	0.68	0.768	n.a.	n.a.	n.a.	n.a.	0.00	0.00
89.730	37.430	1.283	10767.6	5480.4	11.695	4.003	3.02		Clay	100.0			35.38	0.78	n.a.	n.a.	0.68	0.768	n.a.	n.a.	n.a.	n.a.	0.00	0.00
89.900	35.800	1.329	10788.0	5490.2	11.076	4.370	3.06		Clay	100.0			33.84	0.78	n.a.	n.a.	0.67	0.767	n.a.	n.a.	n.a.	n.a.	0.00	0.00
90.060	33.980	1.349	10807.2	5499.5	10.392	4.721	3.10		Clay	100.0			32.12	0.78	n.a.	n.a.	0.67	0.767	n.a.	n.a.	n.a.	n.a.	0.00	0.00
90.220	37.740	1.142	10826.4	5508.7	11.737	3.532	2.98		Clay	100.0			35.67	0.78	n.a.	n.a.	0.67	0.766	n.a.	n.a.	n.a.	n.a.	0.00	0.00
90.390	32.130	0.916	10846.8	5518.5	9.679	3.431	3.04		Clay	100.0			30.37	0.78	n.a.	n.a.	0.67	0.766	n.a.	n.a.	n.a.	n.a.	0.00	0.00
90.550	27.850	0.703	10866.0	5527.7	8.111	3.136	3.08		Clay	100.0			26.32	0.78	n.a.	n.a.	0.67	0.765	n.a.	n.a.	n.a.	n.a.	0.00	0.00
90.720	25.440	0.574	10886.4	5537.5	7.222	2.870	3.10		Clay	100.0			24.05	0.78	n.a.	n.a.	0.67	0.765	n.a.	n.a.	n.a.	n.a.	0.00	0.00
90.880	24.840	0.505	10905.6	5546.7	6.991	2.607	3.09		Clay	100.0			23.48	0.78	n.a.	n.a.	0.67	0.764	n.a.	n.a.	n.a.	n.a.	0.00	0.00
91.040	25.530	0.508	10924.8	5555.9	7.224	2.531	3.07		Clay	100.0			24.13	0.78	n.a.	n.a.	0.67	0.764	n.a.	n.a.	n.a.	n.a.	0.00	0.00
91.210	28.390	0.617	10945.2	5565.7	8.235	2.691	3.04		Clay	100.0			26.83	0.77	n.a.	n.a.	0.67	0.764	n.a.	n.a.	n.a.	n.a.	0.00	0.00
91.370	32.170	0.714	10964.4	5574.9	9.574	2.675	2.98		Clay	100.0			30.41	0.77	n.a.	n.a.	0.67	0.763	n.a.	n.a.	n.a.	n.a.	0.00	0.00
91.540	36.560	0.835	10984.8	5584.7	11.126	2.689	2.93		Clay	97.5			34.56	0.77	n.a.	n.a.	0.67	0.763	n.a.	n.a.	n.a.	n.a.	0.00	0.00
91.700	40.480	1.229	11004.0	5593.9	12.506	3.512	2.96		Clay	99.6			38.26	0.77	n.a.	n.a.	0.67	0.762	n.a.	n.a.	n.a.	n.a.	0.00	0.00
91.860	46.810	1.472	11023.2	5603.1	14.741	3.563	2.90		Clay	95.4			44.24	0.77	n.a.	n.a.	0.67	0.762	n.a.	n.a.	n.a.	n.a.	0.00	0.00
92.030	58.380	1.688	11043.6	5612.9	18.834	3.194	2.79		Clay	86.3			55.18	0.77	n.a.	n.a.	0.67	0.761	n.a.	n.a.	n.a.	n.a.	0.00	0.00
92.190	56.350	1.859	11062.8	5622.1	18.078	3.658	2.84		Clay	90.4			53.26	0.77	n.a.	n.a.	0.67	0.761	n.a.	n.a.	n.a.	n.a.	0.00	0.00
92.360	53.710	1.716	11083.2	5631.9	17.105	3.563	2.85		Clay	91.3			50.77	0.77	n.a.	n.a.	0.67	0.760	n.a.	n.a.	n.a.	n.a.	0.00	0.00
92.520	49.170	1.493	11102.4	5641.2	15.465	3.423	2.88		Clay	93.2			46.47	0.77	n.a.	n.a.	0.67	0.760	n.a.	n.a.	n.a.	n.a.	0.00	0.00
92.680	46.250	1.535	11121.6	5650.4	14.402	3.772	2.93		Clay	97.2			43.71	0.77	n.a.	n.a.	0.67	0.760	n.a.	n.a.	n.a.	n.a.	0.00	0.00
92.850	45.300	1.558	11142.0	5660.2	14.038	3.922	2.95		Clay	98.7			42.82	0.77	n.a.	n.a.	0.67	0.759	n.a.	n.a.	n.a.	n.a.	0.00	0.00
93.010	48.630	1.829	11161.2	5669.4	15.187	4.248	2.94		Clay	98.3			45.96	0.77	n.a.	n.a.	0.67	0.759	n.a.	n.a.	n.a.	n.a.	0.00	0.00
93.180	58.280	2.163	11181.6	5679.2	18.555	4.105	2.86		Clay	92.2			55.09	0.77	n.a.	n.a.	0.67	0.758	n.a.	n.a.	n.a.	n.a.	0.00	0.00
93.340	67.790	2.399	11200.8	5688.4	21.865	3.857	2.79		Clay	86.4			64.07	0.77	n.a.	n.a.	0.67	0.758	n.a.	n.a.	n.a.	n.a.	0.00	0.00
93.500	82.120	2.469	11220.0	5697.6	26.857	3.227	2.67		Clay	77.0			77.62	0.77	n.a.	n.a.	0.66	0.758	n.a.	n.a.	n.a.	n.a.	0.00	0.00
93.670	65.630	2.344	11240.4	5707.4	21.029	3.906	2.81		Clay	87.8			62.03	0.77	n.a.	n.a.	0.66	0.757	n.a.	n.a.	n.a.	n.a.	0.00	0.00
93.830	53.140	2.462	11259.6	5716.6	16.622	5.181	2.97		Clay	100.0			50.23	0.77	n.a.	n.a.	0.66	0.757	n.a.	n.a.	n.a.	n.a.	0.00	0.00
94.000	64.280	3.032	11280.0	5726.4	20.481	5.170	2.90		Clay	94.8			60.76	0.77	n.a.	n.a.	0.66	0.756	n.a.	n.a.	n.a.	n.a.	0.00	0.00
94.160	77.700	3.605	11299.2	5735.6	25.124	5.003	2.82		Clay	88.8			73.44	0.77	n.a.	n.a.	0.66	0.756	n.a.	n.a.	n.a.	n.a.	0.00	0.00
94.320	103.890	3.835	11318.4	5744.8	34.198	3.904	2.65		Clay	75.1			98.19	0.77	n.a.	n.a.	0.66	0.755	n.a.	n.a.	n.a.	n.a.	0.00	0.00
94.490	168.000	4.148	11338.8	5754.6	93.039	2.555	2.21		Sand	40.1			158.79	0.70	111.06	179.90	0.66	0.755	0.788	0.723	1.190	1.58	0.00	0.00
94.650	147.860	3.477	11358.0	5763.8	81.425	2.446	2.24		Sand	42.2			139.75	0.68	95.04	161.55	0.66	0.755	0.822	0.388	0.578	0.77	0.01	0.00
94.820	89.690	2.920	11378.4	5773.6	29.098	3.476	2.67		Clay	76.6			84.77	0.77	n.a.	n.a.	0.66	0.754	n.a.	n.a.	n.a.	n.a.	0.00	0.00
94.980	56.140	2.206	11397.6	5782.8	17.445	4.374	2.90		Clay	95.3			53.06	0.77	n.a.	n.a.	0.66	0.754	n.a.	n.a.	n.a.	n.a.	0.00	0.00
95.140	43.070	1.307	11416.8	5792.1	12.901	3.499	2.95		Clay	98.7			40.71	0.77	n.a.	n.a.	0.66	0.753	n.a.	n.a.	n.a.	n.a.	0.00	0.00
95.310	33.820	0.888	11437.2	5801.9	9.687	3.161	3.02		Clay	100.0			31.97	0.77	n.a.	n.a.	0.66	0.753	n.a.	n.a.	n.a.	n.a.	0.00	0.00
95.470	29.470	0.682	11456.4	5811.1	8.171	2.872	3.06		Clay	100.0			27.85	0.77	n.a.	n.a.	0.66	0.753	n.a.	n.a.	n.a.	n.a.	0.00	0.00
95.640	30.250	0.688	11476.8	5820.9	8.422	2.805	3.04		Clay	100.0			28.59	0.77	n.a.	n.a.	0.66	0.752	n.a.	n.a.	n.a.	n.a.	0.00	0.00
95.800	30.370	0.797	11496.0	5830.1	8.447	3.237	3.08		Clay	100.0			28.71	0.77	n.a.	n.a.	0.66	0.752	n.a.	n.a.	n.a.	n.a.	0.00	0.00
95.960	30.940	0.950	11515.2	5839.3	8.625	3.771	3.11		Clay	100.0			29.24	0.77	n.a.	n.a.	0.66	0.751	n.a.	n.a.	n.a.	n.a.	0.00	0.00
96.130	31.700	1.082	11535.6	5849.1	8.867	4.173	3.12		Clay	100.0			29.96	0.76	n.a.	n.a.	0.66	0.751	n.a.	n.a.	n.a.	n.a.	0.00	0.00
96.290	32.940	1.188	11554.8	5858.3	9.273	4.372	3.12		Clay	100.0			31.13	0.76	n.a.	n.a.	0.66	0.751	n.a.	n.a.	n.a.	n.a.	0.00	0.00
96.460	33.550	1.216	11575.2	5868.1	9.462	4.380	3.11		Clay	100.0			31.71	0.76	n.a.	n.a.	0.66	0.750	n.a.	n.a.	n.a.	n.a.	0.00	0.00
96.620	34.560	1.236	11594.4	5877.3	9.788	4.298	3.10		Clay	100.0			32.67	0.76	n.a.	n.a.	0.66	0.750	n.a.	n.a.	n.a.	n.a.	0.00	0.00
96.780	36.260	1.307	11613.6	5886.5	10.347	4.291	3.08		Clay	100.0			34.27	0.76	n.a.	n.a.	0.66	0.750	n.a.	n.a.	n.a.	n.a.	0.00	0.00
96.950	37.610	1.447	11634.0	5896.3	10.784	4.552	3.08		Clay	100.0			35.55	0.76	n.a.	n.a.	0.66	0.749	n.a.	n.a.	n.a.	n.a.	0.00	0.00
97.110	38.730	1.626	11653.2	5905.5	11.143	4.942	3.09		Clay	100.0			36.61	0.76	n.a.	n.a.	0.66	0.749	n.a.	n.a.	n.a.	n.a.	0.00	0.00
97.280	38.330	1.597	11673.6	5915.3	10.986	4.913	3.09		Clay	100.0			36.23	0.76	n.a.	n.a.	0.66	0.748	n.a.	n.a.	n.a.	n.a.	0.00	0.00
97.440	36.500	1.416	11692.8	5924.5	10.348	4.620	3.10		Clay	100.0			34.50	0.76	n.a.	n.a.	0.66	0.748	n.a.	n.a.	n.a.	n.a.	0.00	0.00
97.600	35.060	1.307	11712.0	5933.8	9.843	4.476	3.10		Clay	100.0			33.14	0.76	n.a.	n.a.	0.65	0.748	n.a.	n.a.	n.a.	n.a.	0.00	0.00
97.770	35.170	1.226	11732.4	5943.6	9.861	4.183	3.09		Clay	100.0			33.24	0.76	n.a.	n.a.	0.65	0.747	n.a.	n.a.	n.a.	n.a.	0.00	0.00
97.930	34.890	1.320	11751.6	5952.8	9.748	4.549	3.11		Clay	100.0			32.98	0.76	n.a.	n.a.	0.65	0.747	n.a.	n.a.	n.a.	n.a.	0.00	0.00
98.100	35.730	1.239	11772.0	5962.6	10.010	4.152	3.08		Clay	100.0			33.77	0.76	n.a.	n.a.	0.65	0.747	n.a.	n.a.	n.a.	n.a.	0.00	0.00
98.260	38.650	1.323	11791.2	5971.8	10.970	4.040	3.04		Clay	100.0			36.53	0.76	n.a.	n.a.	0.65	0.746	n.a.	n.a.	n.a.	n.a.	0.00	0.00
98.430	35.870	1.267	11811.6	5981.6	10.019	4.228	3.08		Clay	100.0			33.90	0.76	n.a.	n.a.	0.65	0.746	n.a.	n.a.	n.a.	n.a.	0.00	0.00
98.590	35.720	1.177	11830.8	5990.8	9.950	3.949	3.07		Clay	100.0			33.76	0.76	n.a.	n.a.	0.65	0.745	n.a.	n.a.	n.a.	n.a.	0.00	0.00
98.750	34.090	1.199	11850.0	6000.0	9.388	4.256	3.11		Clay	100.0			32.22	0.76	n.a.	n.a.	0.65	0.745	n.a.	n.a.	n.a.	n.a.	0.00	0.00
98.920	34.600	1.198	11870.4	6009.8	9.539	4.179	3.10		Clay	100.0			32.70	0.76	n.a.	n.a.	0.65	0.745	n.a.	n.a.	n.a.	n.a.	0.00	0.00

CORNERSTONE EARTH GROUP

CPT No.	10

PGA (A_{max})	0.89

Total Settlement:	0.06	(Inches)

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Depth (ft)	q_c (tsf)	f_s (tsf)	σ_{vc} (psf)	Insitu σ'_{vc} (psf)	Q	F (%)	I_c	Layer "Plastic" PI > 7	Flag Soil Type	Fines (%)	q_{cN} near interfaces (soft layer)	Thin Layer Factor (K_H)	Interpreted q_{cN}	C_N	q_{c1N}	$q_{c1N\text{-}CS}$	Stress Reduction Coeff, r_d	CSR	K_σ for Sand	$CRR_{M=7.5,\ \sigma'vc = 1\ atm}$	CRR	Factor of Safety (CRR/CSR)	Vertical Strain ε_v	Settlement (Inches)
99.080	35.530	1.203	11889.6	6019.0	9.831	4.067	3.08		Clay	100.0			33.58	0.76	n.a.	n.a.	0.65	0.744	n.a.	n.a.	n.a.	n.a.	0.00	0.00
99.250	37.670	1.162	11910.0	6028.8	10.521	3.664	3.03		Clay	100.0			35.60	0.76	n.a.	n.a.	0.65	0.744	n.a.	n.a.	n.a.	n.a.	0.00	0.00
99.410	37.100	1.089	11929.2	6038.0	10.313	3.499	3.02		Clay	100.0			35.07	0.76	n.a.	n.a.	0.65	0.744	n.a.	n.a.	n.a.	n.a.	0.00	0.00
99.570	35.550	1.003	11948.4	6047.2	9.782	3.392	3.04		Clay	100.0			33.60	0.76	n.a.	n.a.	0.65	0.743	n.a.	n.a.	n.a.	n.a.	0.00	0.00
99.740	35.110	1.004	11968.8	6057.0	9.617	3.447	3.05		Clay	100.0			33.19	0.76	n.a.	n.a.	0.65	0.743	n.a.	n.a.	n.a.	n.a.	0.00	0.00
99.900	37.360	1.204	11988.0	6066.2	10.341	3.838	3.05		Clay	100.0			35.31	0.76	n.a.	n.a.	0.65	0.743	n.a.	n.a.	n.a.	n.a.	0.00	0.00
100.070	38.230	1.228	12008.4	6076.0	10.608	3.810	3.04		Clay	100.0			36.13	0.76	n.a.	n.a.	0.65	0.742	n.a.	n.a.	n.a.	n.a.	0.00	0.00
100.230	39.760	1.340	12027.6	6085.2	11.091	3.972	3.03		Clay	100.0			37.58	0.76	n.a.	n.a.	0.65	0.742	n.a.	n.a.	n.a.	n.a.	0.00	0.00

CORNERSTONE EARTH GROUP

Boring EB-4

Total Settlement: 1.0 (Inches)

Point Number	Depth (ft)	Layer thickness (ft)	Measured N-Value (bpf)	Flags	Fines Content (%)	C_E	C_B	C_R	C_S	N_{60} (bpf)	σ_{vo} (psf)	σ'_{vo} (psf)	C_N	$(N_1)_{60}$ (bpf)	N_{fines} (bpf)	$(N_1)_{60\text{-}cs}$ (bpf)	r_d	CSR	MSF	$K\sigma$	CRR @ M=7.5 σ'_{vo}=1atm	CRR	FS	γ_{lim} (%)	Parameter F_α	γ_{max} (%)	ΔH_i (ft)	ΔLDI_i (ft)	ε_{vert} (%)	ΔS_i (in)
1	26.0	2.0	23	Sand	5	0.85	1.00	0.75	1.00	14.9	3120.00	2371.20	0.95	14.1	0.0	14.1	0.93	0.707	0.979	0.99	0.149	0.144	0.20	0.304	0.791	0.304	2.0	0.000	0.030	0.721
2	27.0	1.0	36	Sand	5	0.85	1.00	0.75	1.00	22.9	3240.00	2428.80	0.94	21.6	0.0	21.6	0.92	0.714	0.979	0.98	0.227	0.218	0.31	0.133	0.431	0.133	1.0	0.000	0.022	0.259
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Appendix F

Transportation Impact Analysis

TRANSPORTATION IMPACT ANALYSIS

880 Doolittle Drive

PREPARED FOR:

PROLOGIS

JANUARY 2024 | DRAFT

Prepared By:

Kimley»Horn

WARNING!

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1. INTRODUCTION

The following transportation impact analysis (TIA) has been prepared to determine potential Vehicle Miles Traveled (VMT) impacts and/or Level of Service (LOS) deficiencies associated with the proposed 880 Doolittle Drive project ("Project") in the City of San Leandro, CA. The project proposes to redevelop the existing building to become a warehousing and distribution spec building totaling 239,573 square feet.

Figure 1 illustrates the location of the project site in relation to the adjacent roadway network. The site would be accessed by an unsignalized full access driveway along Doolittle Drive and an unsignalized full access driveway along Hester Street. The Project site plan is presented in **Figure 2**.

This TIS was prepared to address the Project's VMT and LOS effects in order to assist the City of San Leandro ("City") with planning and the identification of conditions of approval and to mitigate the Project's VMT impacts or improve identified LOS deficiencies, if necessary. The following discusses the methodology, analysis, and results of the traffic assessment.

STUDY METHODOLOGY

VEHICLE MILES TRAVELED (VMT)

With the passage of SB 743, Vehicle Miles Traveled (VMT) has become an important indicator for determining if a new development will result in a "significant transportation impact" under the California Environmental Quality Act (CEQA). This report summarizes the VMT analysis and resultant findings for the proposed development.

The Alameda County Transportation Commission (ACTC) was developed to implement transportation programs and project across Alameda County. One of its responsibilities is to develop and manage the Countywide travel demand model, which is used for estimating future volumes and VMT based on future land uses and the future roadway network. ACTC has developed maps displaying estimates of VMT per employee based on traffic analysis zone (TAZ) estimates from the Alameda Countywide Travel Demand Model that were used to determine if the project would cause a significant impact.

The City does not have a specified VMT criteria, and therefore per guidance provided by the Governor's Office of Planning and Research (OPR) *Technical Advisory on Evaluating Transportation Impacts in CEQA*, the threshold for employment-based VMT uses is set at 15 percent below the regional average.

TRAFFIC OPERATIONS ANALYSIS

A transportation impact analysis was conducted to evaluate the Project's effect on LOS operations at eight (8) intersections within the project site and adjacent to the project site.

Study Area

The proposed project will generate new vehicular trips that may increase traffic volumes on the nearby street network. To assess changes in traffic conditions associated with the proposed project, the following intersections listed below were evaluated and are shown in **Figure 1**. The study intersections were selected based on the estimated vehicle trips generated by the project and the distribution of the trips to the roadway network.

1. Doolittle Drive and West Project Driveway – Unsignalized
2. Hester Street and North Project Driveway – Unsignalized
3. Hester Street and Adams Avenue – Unsignalized
4. Doolittle Drive and Adams Avenue – Signalized
5. Doolittle Drive and Davis Street – Signalized
6. Davis Street and SB I-880 Ramps – Signalized
7. Davis Street and NB I-880 Ramps – Signalized
8. Airport Access Road and 98th Avenue – Signalized

Analysis Scenarios

This traffic analysis evaluated the following five (5) scenarios:

- Existing Conditions – Based on Existing (2020) traffic counts from the *880 Doolittle Traffic Analysis* prepared by Urban Crossroads in October 2021 shown in **Appendix A**, and existing roadway geometry and traffic control in 2022. Existing (2020) counts were adjusted to the current Existing year (2022) by increasing the volumes by 0.772 percent per year (compounded annually). Trips from the existing site were removed to reflect the vacancy in 2023 conditions. This annual growth rate used in the Urban Crossroads study is based on the average Association of Bay Area Governments (ABAG) projected growth for employment, population, and households for San Leandro.
- Near Term Conditions – Based on adjusted existing traffic volumes, ambient growth along major roadways, and traffic generated by approved developments in the study area. This scenario is based on the roadway geometry and traffic control assumed for year 2024.
- Near Term Plus Project Conditions – Based on traffic generated by the proposed project added to Near Term traffic volumes. This scenario is based on the roadway geometry and traffic control assumed for year 2024.
- Cumulative Conditions – Based on future year traffic forecasts from the Alameda County Transportation Commission (ACTC) travel demand model. This scenario is based on the roadway geometry and traffic control assumed for year 2040.
- Cumulative Plus Project Conditions – Based on traffic generated by the proposed project added to Cumulative traffic volumes. This scenario is based on the roadway geometry and traffic control assumed for year 2040.

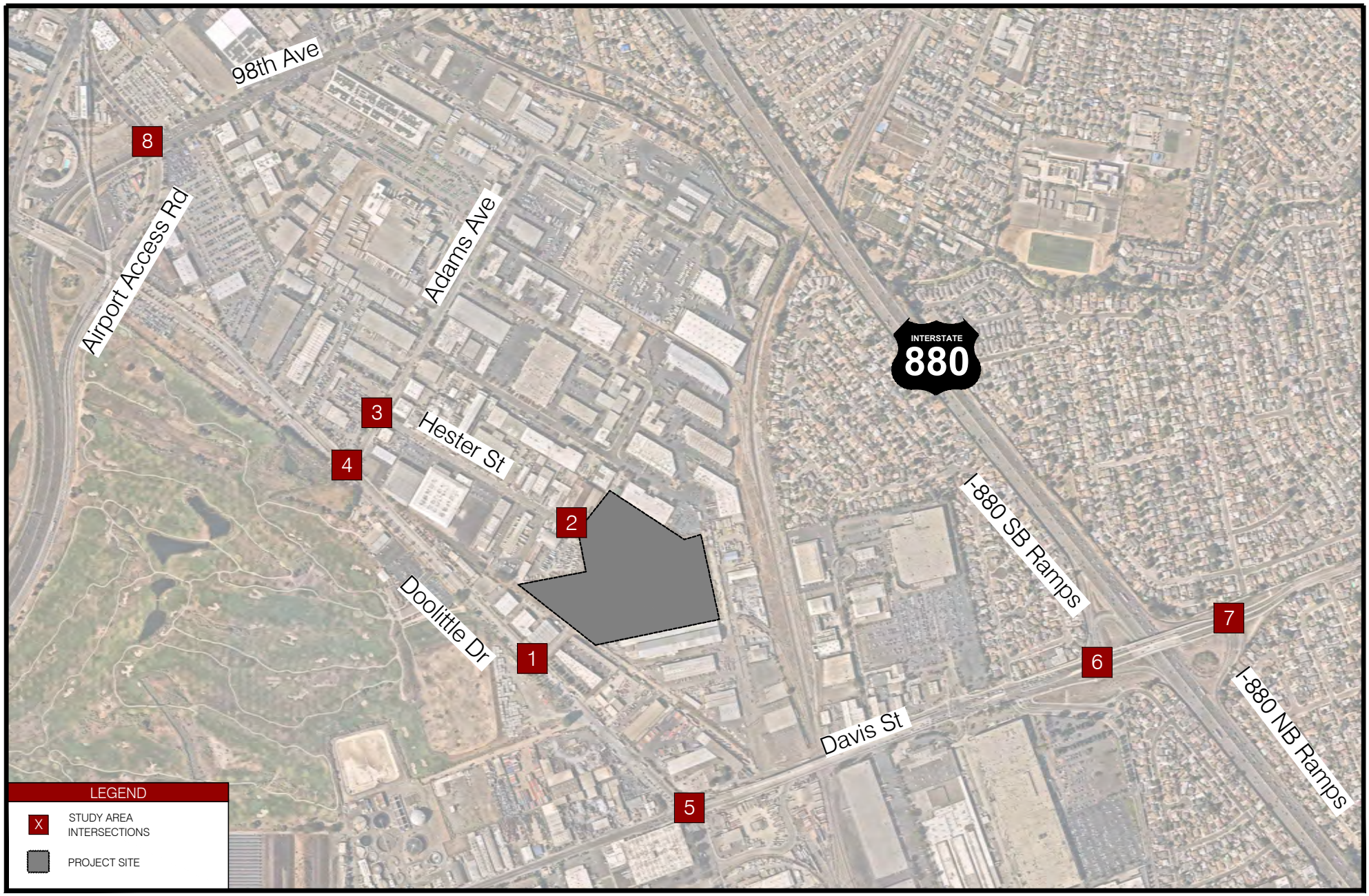

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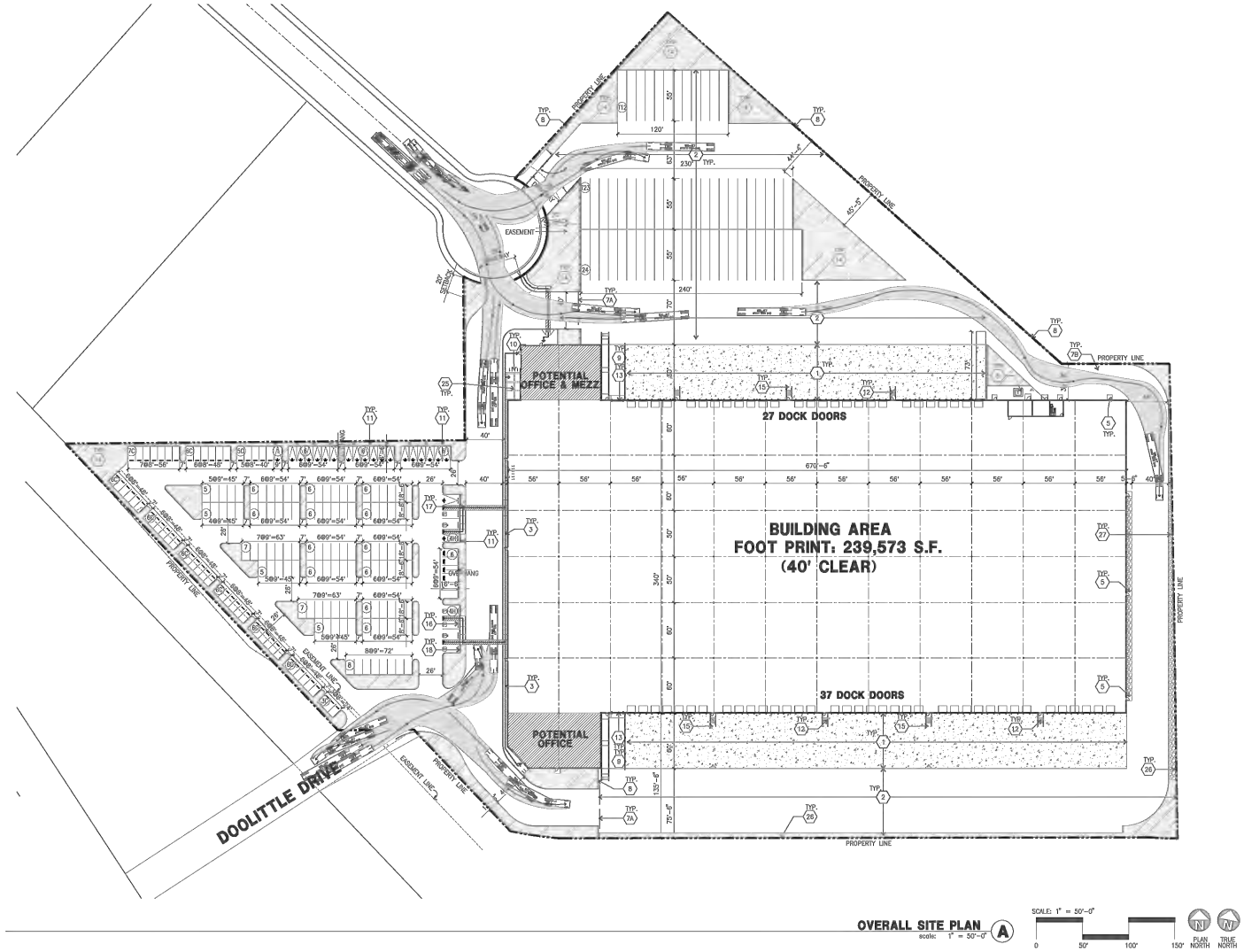
FIGURE 1
STUDY AREA AND INTERSECTIONS



Source: HPA Architecture

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FIGURE 2
SITE PLAN

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880 Doolittle Drive

Level of Service Standards

Analysis of the study intersections were based on the concept of Level of Service (LOS) and is a qualitative measure used to describe operational conditions. LOS ranges from A (best), which represents minimal delay, to F (worst), which represents heavy delay and a facility that is operating at or near its functional capacity. Levels of service for this study were determined using methods defined in the *Highway Capacity Manual, 6th Edition* (HCM 6) and *Highway Capacity Manual, 2000* (HCM 2000) within Synchro analysis software. Intersections with standard signal phasing were analyzed with HCM 6. Intersections with non-standard signal phasing or non-standard intersection control were analyzed using HCM 2000 methodologies due to HCM 6 methodology limitations within Synchro. This analysis was prepared based on the standards and methodologies set forth by the City of San Leandro (City).

It should be noted that recent changes to the California Environmental Quality Act (CEQA) now recognizes vehicle miles traveled (VMT) as the primary standard of review for project impacts and is no longer based on intersection delay and LOS. Therefore, the LOS evaluation is provided for informational purposes only and to document the operational changes as a result of the project. The VMT evaluation has been provided in Chapter 4.

The HCM includes procedures for analyzing side street stop controlled (SSSC) and signalized intersections. The SSSC procedure defines LOS as a function of average control delay for the worst approach. Conversely, the signalized intersection procedures define LOS as a function of average control delay for the intersection as a whole. **Table 1** relates the operational characteristics associated with each LOS category for signalized and unsignalized intersections.

Table 1 – Intersection Level of Service Definitions

Level of Service	Description	Signalized (Avg. control delay per vehicle sec/veh.)	Unsignalized (Avg. control delay per vehicle sec/veh.)
A	Free flow with no delays. Users are virtually unaffected by others in the traffic stream	≤ 10	≤ 10
B	Stable traffic. Traffic flows smoothly with few delays.	> 10 – 20	> 10 – 15
C	Stable flow but the operation of individual users becomes affected by other vehicles. Modest delays.	> 20 – 35	> 15 – 25
D	Approaching unstable flow. Operation of individual users becomes significantly affected by other vehicles. Delays may be more than one cycle during peak hours.	> 35 – 55	> 25 – 35
E	Unstable flow with operating conditions at or near the capacity level. Long delays and vehicle queuing.	> 55 – 80	> 35 – 50
F	Forced or breakdown flow that causes reduced capacity. Stop and go traffic conditions. Excessive long delays and vehicle queuing.	> 80	> 50

Sources: Transportation Research Board, Highway Capacity Manual 6th Edition, National Research Council, 2016.

The LOS standards as outlined in the City of San Leandro General Plan[1] is LOS D. The City does not have a written significant impact criteria. Based on the *880 Doolittle Traffic Analysis* by Urban Crossroads, dated October 2021, a project would create a deficiency under the following conditions:

- When a study intersection operates at an acceptable LOS for without project conditions and the addition of project trips causes the intersection to operate at an unacceptable LOS.
- When a study intersection operates at an unacceptable LOS for without project conditions and the addition of project trips causes the intersection volume-over-capacity ratio (v/c) to increase by 0.05 or more.

Queuing

The effects of vehicle queuing were analyzed and the 95th percentile queue is reported for all study intersections. The 95th percentile queue length represents a condition where 95 percent of the time during the peak hour, traffic queues will be less than or equal to the queue length determined by the analysis. This is referred to as the "95th percentile queue." Average queuing is generally less.

Queues that exceed the turn pocket length can create potentially hazardous conditions by blocking through traffic in adjacent travel lanes. The City does not have standards for queuing. For the purpose of this analysis, queuing deficiencies would be considered as operational issues and were considered to occur under conditions where project traffic causes the queue to extend beyond the turn pocket by 25 feet or more (i.e., the length of one vehicle) into adjacent traffic lanes that operate separately from the left or right turn lane. Where the vehicle queue already exceeds that turn pocket length under pre-project conditions, a queuing deficiency would occur if project traffic lengthened the queue by 25 feet or more.

REPORT ORGANIZATION

The remainder of the report is divided into the following chapters:

- Chapter 2: Existing Conditions – describes existing conditions on the roadway network.
- Chapter 3: Project Description – describes the project including project trip generation, distribution, and assignment.
- Chapter 4: Vehicles Miles Traveled – describes the Project's Vehicle Miles Traveled (VMT) methodology, analysis, and results.
- Chapter 5: Traffic Operations Analysis – describes intersection level of service analysis, roadway level of service, and intersection queuing.
- Chapter 6: Alameda County Transportation Commission Land Use Analysis Program – describes results of the Alameda CTC Land Use analysis under Year 2020 and Year 2040 Conditions.
- Chapter 7: Site Access and Circulation – describes site access and circulation and parking for the site. This chapters also includes potential effects the proposed project may have on the transit system, pedestrian facilities, and bicycle facilities.
- Chapter 8: Parking – describes the vehicle and bicycle parking for the proposed project, as well as required parking.
- Chapter 9: Conclusion – summarizes potential deficiencies and improvements of the proposed project, if necessary.

[1] *City of San Leandro General Plan, Transportation Element*, City of San Leandro, September 2016

2. EXISTING CONDITIONS

This chapter describes the existing conditions of the roadway network within the vicinity of the project site. The chapter also presents existing turning movement volumes and intersection levels of service.

EXISTING ROADWAY NETWORK

INTERSTATE 880 (I-880)

Interstate 880 (I-880) is a north-south freeway that connects to Interstate 280 and State Route 17 to the south to Interstate 80 and Interstate 580 to the north. Within the study area, the roadway consists of six southbound lanes (including one HOV lane) and four northbound lanes. I-880 serves as regional access to the project site. The posted speed limit on I-880 within the study area is 65 mph.

DOOLITTLE DRIVE

Doolittle Drive is a north-south arterial. It connects to Otis Drive and Fernside Boulevard to the north and Belvedere Avenue to the south. The roadway within the study area is two lanes in each direction and has a center two-way left-turn lane (TWLTL). It serves mainly industrial uses along the corridor. Within the study area, the speed limit on Doolittle Drive is 45 miles per hour.

DAVIS STREET

Davis Street is a four-lane, east-west arterial which runs between Business Center Drive and E 14th Street. The roadway serves residential and commercial uses. Within the study area, the speed limit on Davis Street is 35 miles per hour.

ADAMS AVENUE

Adams Avenue is a two-lane, east-west collector between Doolittle Drive and Bigge Street. The roadway includes Class II bike lanes and on-street parking and serves industrial uses. Within the study area, the speed limit on Adams Avenue is 35 miles per hour.

HESTER STREET

Hester Street is a two-lane, north-south local road connecting to Adams Avenue. The roadway includes on-street parking and serves industrial uses. Within the study area, there is no posted speed limit but given the classification of the road, it is assumed that the speed limit is 25 miles per hour.

AIRPORT ACCESS ROAD

Airport Access Road is a five-lane, minor collector that connects to Bessie Coleman Drive and Hegenberger Road. The roadway provides access to the Oakland International Airport. Within the study area, there is no posted speed limit but given the classification of the road, it is assumed that the speed limit is 35 miles per hour.

98TH AVENUE

98th Avenue is a minor arterial which connects to Bessie Coleman Drive to the west and Golf Links Road to the east. The roadway within the study area consists of six-lanes and serves multiple uses. Within the study area, the posted speed limit is 30 miles per hour.

EXISTING LANE CONFIGURATION AND TRAFFIC CONTROL

Existing intersection lane configuration and traffic controls are illustrated in **Figure 3**.

EXISTING PEAK-HOUR TURNING MOVEMENT VOLUMES

Volumes are based on Existing (2020) traffic counts from the *880 Doolittle Traffic Analysis*[2] prepared by Urban Crossroads in October 2021, and existing roadway geometry and traffic control in 2022. Existing (2020) counts were adjusted to the current Existing year (2022) by growing the volumes by 0.772 percent per year (compounded annually). Trips from the existing site were removed to reflect the vacancy in 2023 conditions. This annual growth rate used in the Urban Crossroads study is based on the average ABAG projected growth for employment, population, and households for San Leandro. Existing peak hour turning movement volumes are shown in **Figure 4.**

[2] *880 Doolittle Traffic Analysis,* Urban Crossroads, Inc., October 2021

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FIGURE 3
EXISTING LANE GEOMETRY AND TRAFFIC CONTROL

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880 Doolittle Drive

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FIGURE 4
EXISTING PEAK HOUR TURNING MOVEMENT VOLUMES

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880 Doolittle Drive

3. PROJECT DESCRIPTION

This chapter presents a description of the proposed site use, trip generation, trip distribution, and trip assignment for the proposed project on the transportation system.

PROPOSED SITE USE

The project proposes to redevelop the existing building to become a warehousing and distribution spec building totaling 239,573 square feet. The existing building has been vacant since 2020 (after the counts were taken) and was not occupied during Existing (2023) conditions. Therefore, no existing trip credits were taken.

Figure 1 illustrates the location of the project site in relation to the adjacent roadway network. The site would be accessed by an unsignalized full access driveway along Doolittle Drive and an unsignalized full access driveway along Hester Street. The Project site plan is presented in **Figure 2**.

TRIP GENERATION

Trip generation for projects are typically calculated based on information contained in the Institute of Transportation Engineer's (ITE) publication, *Trip Generation Manual, 11th Edition*[3]. The manual is a standard reference used by jurisdictions throughout the country for the estimation of trip generation of proposed projects. A trip is defined in the *Trip Generation Manual* as a single or one-directional vehicle movement with either the origin or destination at the project site. In other words, a trip can be either "to" or "from" the site and therefore, a single visitor to a site is counted as two.

For purposes of determining the worst-case deficiencies of traffic on the surrounding street network, the trips generated by a proposed project are estimated for the AM peak hour (between the hours of 7:00 AM and 9:00 AM), and for the PM peak hour (between 4:00 PM and 6:00 PM) on a typical weekday. Trips generated by the proposed project were based on the rates for ITE Land Use 155 (High-Cube Fulfillment Center – Sort).

Table 2 presents the trip generation for the proposed project. The project would generate 208 trips in the AM peak hour and 287 trips in the PM peak hour.

[3] *Trip Generation Manual, 11th Edition*, Institute of Transportation Engineers, 2021.

Table 2 – Project Trip Generation

Vehicle Type	Daily	AM Peak Hour (7:00-9:00)			PM Peak Hour (4:00-6:00)		
		In	Out	Total	In	Out	Total
100% ITE (LU 155 Sort) High-Cube Fulfillment Center[2]							
Rates							
Passenger Car	6.25	0.69	0.16	0.85	0.46	0.72	1.18
Truck	0.19	0.01	0.01	0.02	0.01	0.01	0.02
Trips							
Passenger Car	1,497	167	36	203	110	172	282
Truck	46	2	3	5	2	3	5
Total	1,543	169	39	208	112	175	287

[1] Existing trip generation is based on the 880 Doolittle Traffic Analysis prepared by Urban Crossroads in October 2021.
[2] Proposed trip generation based on ITE *Trip Generation Manual, 11th Edition*.

PROJECT TRIP DISTRIBUTION AND ASSIGNMENT

The Project's trip distribution was estimated based on the project access locations, freeway access, and roadway network within the study area. **Figure 5** presents the trip distribution assumed for the Near Term Plus Project and Cumulative Plus Project analysis.

Based on the assumed trip distribution, the volumes generated by the project were assigned to the roadway network. Trip assignment to the project driveways was based on the on-site circulation and available movements for each driveway. **Figure 6** presents the project's AM and PM peak hour trip assignment.

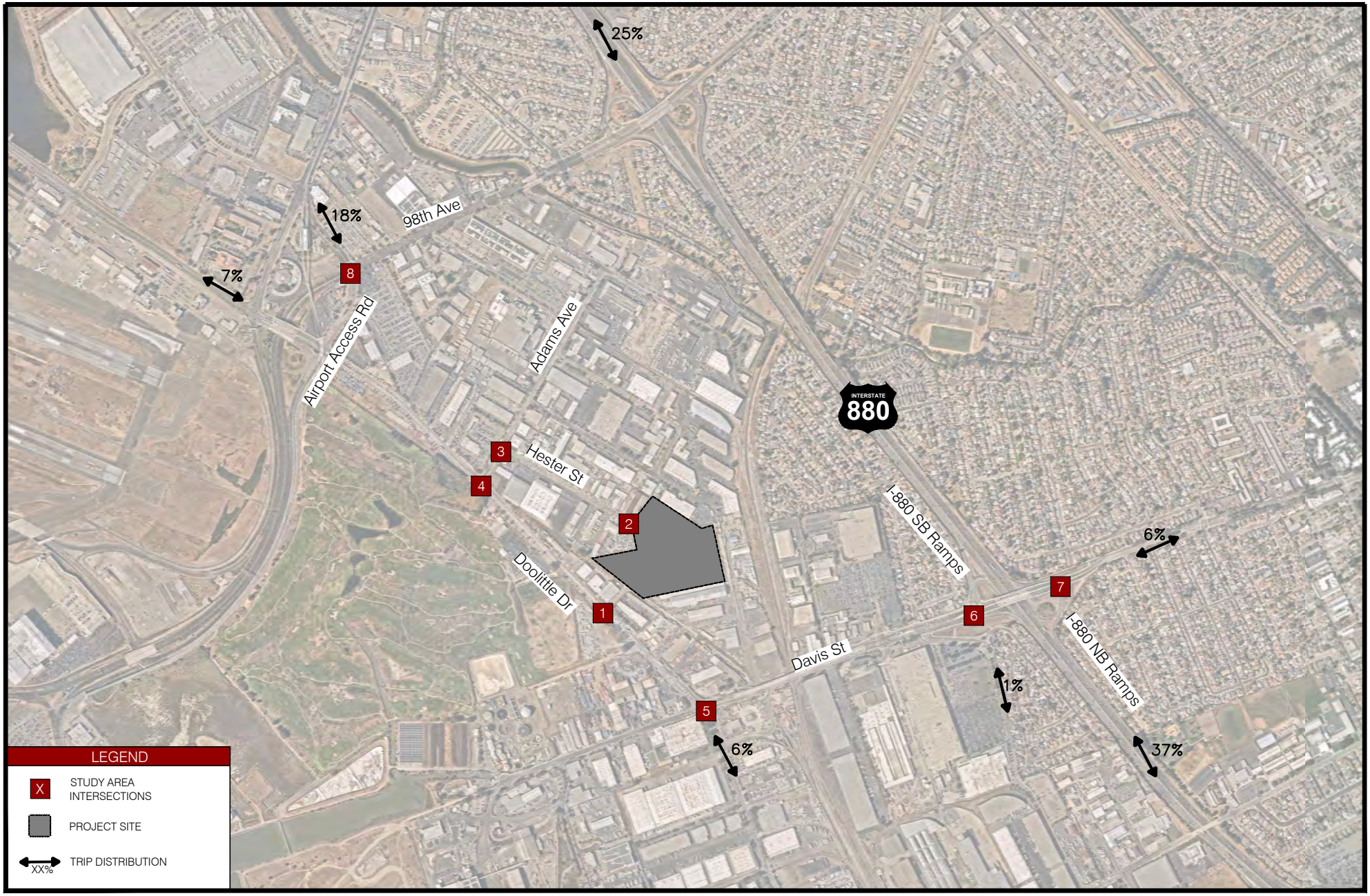

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FIGURE 5
PROJECT TRIP DISTRIBUTION

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FIGURE 6
PROJECT PEAK HOUR TURNING MOVEMENT VOLUMES

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880 Doolittle Drive

4. VEHICLE MILES TRAVELED (VMT)

This chapter summarizes the Project's Vehicle Miles Traveled (VMT) methodology, analysis, and results.

VMT METHODOLOGY

The City has not yet adopted VMT guidelines or a methodology for determining VMT impacts. Therefore, the Project's VMT evaluation relied on guidance provided by the Governor's Office of Planning and Research (OPR) Technical Advisory on Evaluating Transportation Impacts in CEQA[4] to determine potential impacts under Senate Bill (SB) 743. It should be noted that the ACTC VMT tools and maps are consistent with OPR methodology and the recommended 15 percent below regional average threshold. The approach outlined by the OPR Technical Advisory does not specifically address industrial facilities. However, for the purposes of this analysis, it is assumed that the employee VMT for this Project would have a similar VMT as an employee for an office use. Therefore, the Project was analyzed as an office project, which is evaluated based on VMT per employee since the predominant driver of VMT for the proposed Project would be commute trips and other employee-based trips. This approach is consistent with OPR guidelines which states, "where methodologies exist that can estimate the full extent of vehicle miles traveled from a project, the lead agency should apply them to do so".

VMT ANALYSIS

The ACTC has developed maps displaying estimates of VMT per employee based on traffic analysis zone (TAZ) estimates from the Alameda Countywide Travel Demand Model. Based on the VMT per Employee map for the Central Planning Area shown in **Appendix B**, the project is located in an area with a VMT equal to 15.34 in 2020 and 16.08 in 2040.

Based on the VMT per Employee map for the Central Planning Area in year 2020 provided by the ACTC, the project is located in an area with a VMT equal to 15.34. The target VMT, which is 15 percent below the average, for Central Planning Area is 16.3. Since the proposed project VMT does not exceeds the Central Planning Area threshold, the project will result in a less than significant VMT impact.

Based on the VMT per Employee table for the Central Planning Area in year 2040 provided by the ACTC, the project is located in an area with a VMT equal to 16.08. The target VMT, which is 15 percent below the average, for Central Planning Area is 16.2. Since the proposed project VMT does not exceeds the Central Planning Area threshold, the project will result in a less than significant VMT impact.

Table 3 summarizes the VMT analysis.

[4] Technical Advisory on Evaluating Transportation Impacts in CEQA, Governor's Office of Planning and Research, December 2018.

Table 3 – VMT Analysis Summary

Category	2020	2040
	Central Planning Area	Central Planning Area
Average VMT per Employee	19.2	19.1
Threshold VMT per Employee (85% of Average)	16.3	16.2
Project TAZ Average VMT per Employee	15.34	16.08
VMT Reduction Percentage Needed	0%	0%

5. TRAFFIC OPERATIONS ANALYSIS

This chapter will discuss the traffic operations analysis that was conducted to determine the effect of the proposed project on the transportation system. The operations analysis includes intersection level of service and intersection queuing.

EXISTING CONDITIONS

Existing conditions represent operations based on the existing roadway configuration (**Figure 3**) and existing volumes (**Figure 4**).

INTERSECTION LEVEL OF SERVICE

Traffic operations were evaluated at the study intersections under existing traffic conditions. Results of the analysis are presented in **Table 4**. All study intersections function within acceptable LOS standards under this analysis scenario except for Intersection #5 – Doolittle Drive and Davis Street in the AM peak hour.

Table 4 – Existing Peak Hour LOS Summary

#	Intersection	LOS Criteria	Jurisdiction	Control[1]	Existing					
					AM Peak			PM Peak		
					LOS	Delay[2] (sec)	v/c	LOS	Delay[2] (sec)	v/c
1	Doolittle Drive/West Project Driveway	D	City	SSSC	A	0.3	-	A	0.2	-
	Worst Approach				C	17.9	0.37	B	13.5	0.36
2	Hester Street/North Project Driveway[4]	D	City	SSSC	A	6.7	-	A	8.4	-
	Worst Approach				A	9.6	0.03	A	9.4	0.05
3	Hester Street/Adams Avenue	D	City	SSSC	A	0.6	-	A	2.3	-
	Worst Approach				B	10.9	0.20	B	10.6	0.11
4	Doolittle Drive/Adams Avenue[3]	D	City	Signal	B	10.9	0.43	B	10.7	0.68
5	Doolittle Drive/Davis Street	D	City	Signal	**F**	**107.4**	**0.93**	D	54.5	0.72
6	Davis Street/SB I-880 Ramps[3]	D	City	Signal	B	13.3	0.70	B	14.3	0.59
7	Davis Street/NB I-880 Ramps[3]	D	City	Signal	B	11	0.61	B	13.7	0.64
8	Airport Access Road/98th Avenue[3]	D	City	Signal	C	34.8	0.40	D	40.1	0.49

Note: Intersections that are operating below acceptable levels are shown in **BOLD**.
1 SSSC = Side Street Stop Control
2 The average control delay is reported for signalized intersections. The average control delay and the delay for the worst approach are reported for SSSC intersections.
3 Analyzed using HCM 2000 due to non-NEMA phasing.
4 Analyzed using HCM 2000 due to errors with HCM 6 within Synchro 11.

Analysis sheets are provided in **Appendix C**.

NEAR TERM TRAFFIC CONDITIONS

LANE GEOMETRY

Under Near Term conditions, no roadway improvements were assumed, therefore existing lane geometry was assumed as shown in **Figure 3**.

TRAFFIC VOLUMES

At the time of the analysis (November 2022), the San Leandro Developments map and table was downloaded from the City's website and used to determine which projects would be included in the Near Term Conditions. Projects within the vicinity of the project site that were proposed or approved were assumed to be generating vehicle traffic under Near Term Conditions. All pending and approved projects were considered; however, only the projects that would generate a substantial number of trips and were located close enough to affect the study area were included in the analysis. **Figure 7** lists the projects that were included in the Near Term traffic and shows the location of all approved and pending projects. Locations shown in red were included in the analysis and locations shown in blue were considered but not included in the analysis. Specifically, the Oakland Airport Golf Course Parking Lot project was included. Volumes along major arterials such as Doolittle Drive and 98th Avenue were also grown by 0.772 percent per year (compounded annually) to account for trips generated by future developments outside of San Leandro. Pending and approved project volumes are shown in **Figure 8**.

INTERSECTION LEVEL OF SERVICE

Near Term volumes were evaluated at the study intersections and are presented in **Figure 9**. Results are presented in **Table 5**. All study intersections function within acceptable LOS standards under this analysis scenario except for Intersection #5 – Doolittle Drive and Davis Street.

Analysis sheets are provided in **Appendix C**.

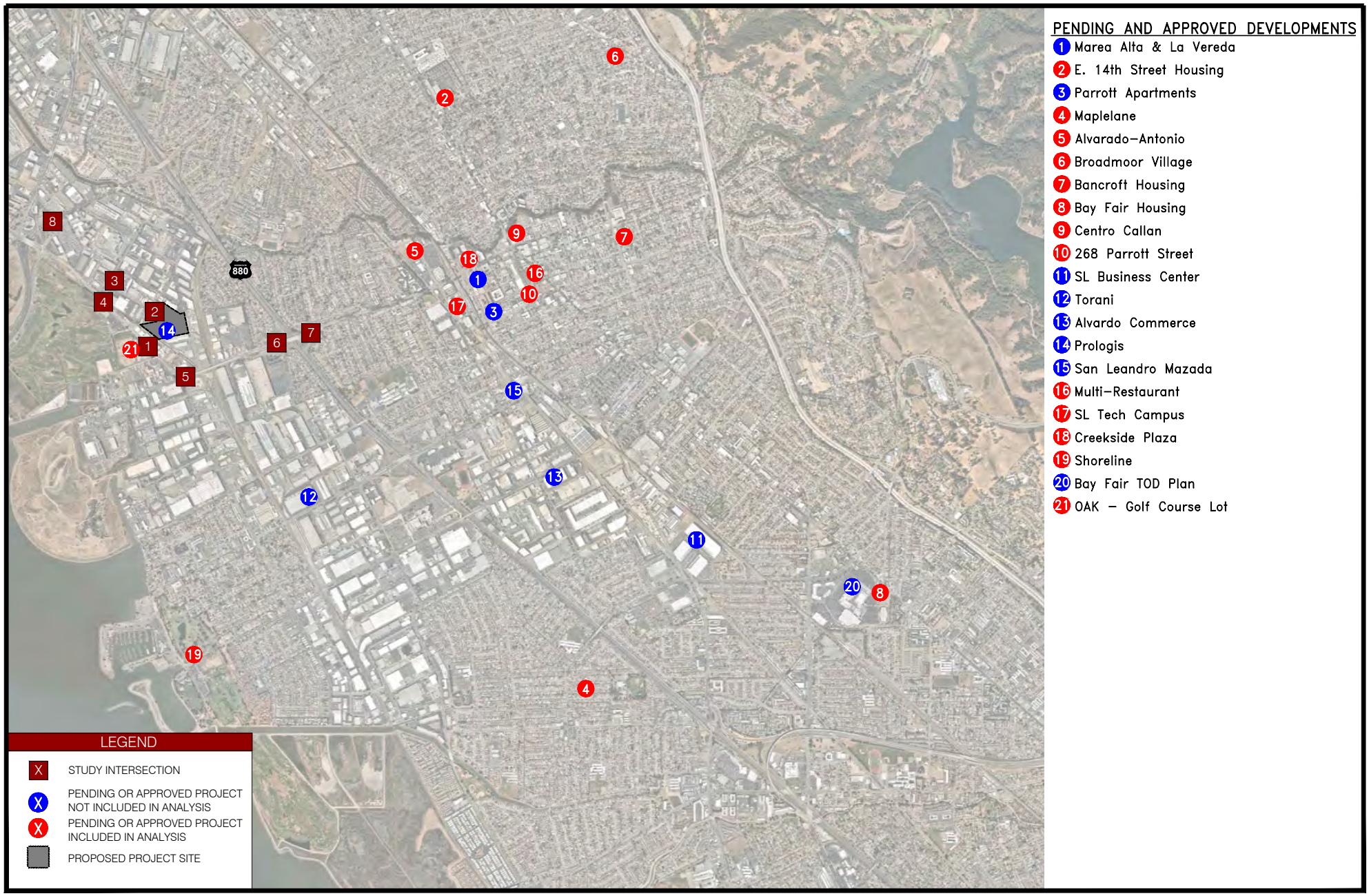

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FIGURE 7

PENDING AND APPROVED PROJECT LOCATIONS

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FIGURE 8
PENDING AND APPROVED PROJECT PEAK HOUR TURNING MOVEMENT VOLUMES

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FIGURE 9
NEAR TERM PEAK HOUR TURNING MOVEMENT VOLUMES

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880 Doolittle Drive

Table 5 – Near Term and Near Term Plus Project Peak Hour LOS Summary

#	Intersection	LOS Criteria	Jurisdiction	Control[1]	Near Term						Near Term Plus Project									
					AM Peak			PM Peak			AM Peak					PM Peak				
					LOS	Delay[2] (sec)	v/c	LOS	Delay[2] (sec)	v/c	LOS	Delay[2] (sec)	Delay Var (sec)	v/c	v/c Var	LOS	Delay[2] (sec)	Delay Var (sec)	v/c	v/c Var
1	Doolittle Drive/West Project Driveway	D	City	SSSC	A	0.3	-	A	0.2	-	A	0.4	0.1	-	-	A	0.6	0.4	-	-
	Worst Approach				C	19.2	0.4	B	14.1	0.39	C	19.8	0.6	0.40	0.00	C	18.7	4.6	0.39	0.00
2	Hester Street/North Project Driveway[4]	D	City	SSSC	A	6.7	-	A	8.4	-	A	4.9	-1.8	-	-	A	8.1	-0.3	-	-
	Worst Approach				A	9.6	0.03	A	9.4	0.05	B	10.4	0.8	0.06	0.03	B	10.7	1.3	0.21	0.16
3	Hester Street/Adams Avenue	D	City	SSSC	A	0.8	-	A	2.5	-	A	1.9	1.1	-	-	A	4.9	2.4	-	-
	Worst Approach				B	11.0	0.20	B	10.7	0.12	B	11.7	0.7	0.23	0.03	B	12.1	1.4	0.30	0.18
4	Doolittle Drive/Adams Avenue[3]	D	City	Signal	B	11.0	0.46	B	12.0	0.71	B	13.4	2.4	0.49	0.03	B	13.7	1.7	0.72	0.01
5	Doolittle Drive/Davis Street	D	City	Signal	**F**	**110.7**	**0.97**	**E**	**62.7**	**0.76**	**F**	**127.4**	**16.7**	**1.04**	**0.07**	**E**	**67.4**	**4.7**	**0.80**	**0.04**
6	Davis Street/SB I-880 Ramps[3]	D	City	Signal	B	14.1	0.75	B	14.7	0.64	B	14.7	0.6	0.78	0.03	B	14.9	0.2	0.66	0.02
7	Davis Street/NB I-880 Ramps[3]	D	City	Signal	B	11.8	0.67	B	14.4	0.66	B	12.2	0.4	0.69	0.02	B	14.5	0.1	0.68	0.02
8	Airport Access Road/98th Avenue[3]	D	City	Signal	C	34.8	0.40	D	40.9	0.50	C	34.5	-0.3	0.40	0.00	D	40.4	-0.5	0.51	0.01

Note: Intersections that are operating below acceptable levels are shown in **BOLD**. Project caused deficiencies are shaded.
1 SSSC = Side Street Stop Control
2 The average control delay is reported for signalized intersections. The average control delay and the delay for the worst approach is reported for SSSC intersections.
3 Analyzed using HCM 2000 due to non-NEMA phasing.
4 Analyzed using HCM 2000 due to errors with HCM 6 within Synchro 11.

NEAR TERM PLUS PROJECT

LANE GEOMETRY AND CONTROL

The project is not proposing any roadway improvements at any study intersection and therefore Near Term Plus Project conditions assumed existing lane geometry as illustrated in **Figure 3**.

TRAFFIC VOLUMES

The Project is estimated to generate a net 497 daily trips, a total of 49 AM peak hour trips (89 inbound and -40 outbound), and 152 PM peak hour trips (55 inbound and 97 outbound). Near Term Plus Project volumes were determined by adding the total project traffic, **Figure 6**, to the Near Term conditions volume, **Figure 9**. Near Term Plus Project peak hour volumes are shown in **Figure 10**.

INTERSECTION LEVEL OF SERVICE

Near Term Plus Project traffic conditions were evaluated at the study intersections. Results are presented in **Table 5**. All study intersections function within acceptable LOS standards under this analysis scenario during the AM and PM peak hours except for Intersection #5 – Doolittle Drive and Davis Street. In the AM peak hour, this intersection deficiency is considered a project deficiency because it operates at an unacceptable LOS for without project conditions and the addition of project trips causes the intersection v/c to increase by 0.05 or more.

Analysis sheets are provided in **Appendix C**.

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FIGURE 10
NEAR TERM PLUS PROJECT PEAK HOUR TURNING MOVEMENT VOLUMES

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880 Doolittle Drive

CUMULATIVE TRAFFIC CONDITIONS

LANE GEOMETRY

Under Cumulative conditions, no roadway improvements were assumed, therefore existing lane geometry was assumed as shown in **Figure 3**.

TRAFFIC VOLUMES

To account for future development and growth within the County, the Cumulative traffic volumes were developed by determining a growth rate from the ACTC Model. Existing and future year model outputs were acquired for the roadway links in the study area. These link volumes were then used to determine an annual growth rate that was applied to the Existing volumes. The volumes were reviewed to ensure that there would be no decrease in volumes from Existing or Near Term to the Cumulative year. For locations where the volumes would decrease, they were conservatively assumed to equal the Near Term volume and rounded up to the nearest 10 vehicles. Cumulative peak hour volumes are presented in **Figure 11.**

INTERSECTION LEVEL OF SERVICE

Cumulative volumes were evaluated at the study intersections. Results are presented in **Table 6**. All study intersections function within acceptable LOS standards under this analysis scenario except for Intersection #5 – Doolittle Drive and Davis Street and Intersection #8 – Airport Access Road and 98th Avenue.

Analysis sheets are provided in **Appendix C.**

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FIGURE 11
CUMULATIVE PEAK HOUR TURNING MOVEMENT VOLUMES

197546001 January 2024

880 Doolittle Drive

Table 6 – Cumulative and Cumulative Plus Project Peak Hour LOS Summary

#	Intersection	LOS Criteria	Jurisdiction	Control[1]	Cumulative						Cumulative Plus Project									
					AM Peak			PM Peak			AM Peak					PM Peak				
					LOS	Delay[2] (sec)	v/c	LOS	Delay[2] (sec)	v/c	LOS	Delay[2] (sec)	Delay Var (sec)	v/c	v/c Var	LOS	Delay[2] (sec)	Delay Var (sec)	v/c	v/c Var
1	Doolittle Drive/West Project Driveway	D	City	SSSC	A	0.3	-	A	0.2	-	A	0.5	0.2	-	-	A	0.8	0.6	-	-
	Worst Approach				C	24.9	0.51	C	21.1	0.51	D	27.2	2.3	0.51	0.00	D	28.4	7.3	0.51	0.00
2	Hester Street/North Project Driveway[4]	D	City	SSSC	A	6.4	-	A	7.7	-	A	5.2	-1.2	-	-	A	8.1	0.4	-	-
	Worst Approach				A	10.0	0.04	A	9.7	0.06	B	10.8	0.8	0.07	0.03	B	11.2	1.5	0.23	0.17
3	Hester Street/Adams Avenue	D	City	SSSC	A	1.5	-	A	2.3	-	A	2.5	1.0	-	-	A	4.7	2.4	-	-
	Worst Approach				C	15.1	0.26	B	11.6	0.14	C	17.6	2.5	0.28	0.02	B	13.2	1.6	0.34	0.20
4	Doolittle Drive/Adams Avenue[3]	D	City	Signal	B	11.8	0.6	C	27.2	1.02	B	13.3	1.5	0.62	0.02	C	30.6	3.4	1.02	0.00
5	Doolittle Drive/Davis Street	D	City	Signal	**F**	**156.8**	**1.20**	**F**	**177.8**	**1.17**	**F**	**173.2**	16.4	**1.27**	**0.07**	**F**	**189.8**	12.0	**1.21**	0.04
6	Davis Street/SB I-880 Ramps[3]	D	City	Signal	B	14.2	0.76	C	21.3	0.85	B	14.6	0.4	0.78	0.02	C	23.6	2.3	0.87	0.02
7	Davis Street/NB I-880 Ramps[3]	D	City	Signal	B	11.8	0.77	C	28.5	0.89	B	12.2	0.4	0.78	0.01	C	29.4	0.9	0.90	0.01
8	Airport Access Road/98th Avenue[3]	D	City	Signal	**E**	**66.9**	**0.61**	**F**	**441.7**	**1.29**	**E**	**66.4**	-0.5	**0.61**	0.00	**F**	**437.1**	-4.6	**1.30**	0.01

Note: Intersections that are operating below acceptable levels are shown in **BOLD**. Project caused deficiencies are shaded.

1 SSSC = Side Street Stop Control
2 The average control delay is reported for signalized intersections. The average control delay and the delay for the worst approach is reported for SSSC intersections.
3 Analyzed using HCM 2000 due to non-NEMA phasing.
4 Analyzed using HCM 2000 due to errors with HCM 6 within Synchro 11.

CUMULATIVE PLUS PROJECT

LANE GEOMETRY AND CONTROL

The project is not proposing any roadway improvements at any study intersection and therefore Cumulative Plus Project conditions assumed existing lane geometry as illustrated in **Figure 3**.

TRAFFIC VOLUMES

The Project is estimated to generate a net 497 daily trips, a total of 49 AM peak hour trips (89 inbound and -40 outbound), and 152 PM peak hour trips (55 inbound and 97 outbound). Cumulative Plus Project volumes were determined by adding the total project traffic, **Figure 6**, to the Cumulative conditions volume, **Figure 11**. Cumulative Plus Project peak hour volumes are shown in **Figure 12**.

INTERSECTION LEVEL OF SERVICE

Cumulative Plus Project traffic conditions were evaluated at the study intersections. Results are presented in **Table 6**. Intersections operate unacceptably but are not considered a project deficiency if the intersection is operating unacceptably without the project and the increase in v/c is less than 0.05. Intersection #8 – Airport Access Road and 98th Avenue operates unacceptably in the AM and PM peak hours, but is not considered a project deficiency because the project increases the v/c by less than 0.05. Intersection #5 – Doolittle Drive and Davis Street operates unacceptably in the AM and PM peak hours and is considered a project deficiency in the AM peak hour because the project increases the v/c by more than 0.05.

Analysis sheets are provided in **Appendix C**.

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FIGURE 12
CUMULATIVE PLUS PROJECT PEAK HOUR TURNING MOVEMENT VOLUMES

197546001 January 2024

880 Doolittle Drive

VEHICLE QUEUING

As congestion increases, it is common for traffic at intersections to form lines of stopped (or queued) vehicles. Queue lengths were determined for turn lanes in which significant project trips are being added, and the distance that vehicles will back up approaching an intersection were estimated. Synchro software calculates the 95th percentile queues based on Synchro software methodology. The 95th percentile queue is used to account for fluctuations in traffic and represents a condition where 95 percent of the time during the peak period, traffic volumes will be less than or equal to the queue determined by the analysis. It is used as a benchmark for determining deficiencies as a standard transportation engineering practice. A typical vehicle length of 25 feet was used in the queuing analysis. The effect of vehicle queuing was analyzed by reporting the 95th percentile queues for turning movements where the project would add trips to existing or proposed turn pockets. Left-turn lane vehicle queuing that exceeds a turn pocket length can create potentially hazardous conditions by blocking or disrupting through traffic in adjacent travel lanes. An operational deficiency, and not a significant impact, was assumed to occur if the left turn queue increases by one or more vehicles and the vehicle queue exceeds the left turn pocket length.

All queue lengths are contained within the available storage and the project does not increase the queue by one or more vehicles, except for the following movements:

- Intersection #5 – Doolittle Drive and Davis Street
    - Westbound right-turn (AM peak hour in Near Term plus Project and Cumulative plus Project scenarios)

The analysis showed that the westbound right-turn queue at Doolittle Drive and Davis Street exceeds the storage bay length of 120 feet. In the Near Term plus Project scenario and Cumulative plus Project scenario, the project trips increased the westbound right-turn queue by 146 feet and 141 feet in the AM peak hour, respectively. However, since the westbound right-turn vehicles will go during the same signal phase as the westbound through vehicles, this is not considered a queuing deficiency. Therefore, although the westbound right-turn queue extends beyond the storage length, it is not expected to cause any safety issues and no improvement is necessary.

The vehicle queuing summary is shown in **Table 7**.

Table 7 – Vehicle Queuing Summary

#	Intersection	Control	Movement	Storage Length (ft)	Existing		Near Term		Near Term Plus Project		Cumulative		Cumulative Plus Project	
					AM Peak	PM Peak	AM Peak	PM Peak	AM Peak	PM Peak	AM Peak	PM Peak	AM Peak	PM Peak
4	Doolittle Dr/Adams Ave	Signal	WBR	85	<25	25	<25	25	<25	30	<25	26	<25	29
			NBR	230	44	26	46	27	46	27	49	28	49	28
			SBL	275	51	<25	51	<25	107	41	76	<25	131	43
5	Doolittle Dr/Davis St	Signal	WBR	120	**904**	**282**	**935**	**323**	**1,081**	**394**	**1,309**	**988**	**1,450**	**1,086**
			SBL	260	183	**458**	206	**477**	209	**500**	**580**	**765**	**586**	**788**
6	Davis St/SB I-880	Signal	EBR	400	40	53	40	54	41	54	41	54	41	55
			SBR	350	201	154	209	163	214	166	222	257	222	257

Note: NBR=northbound right, SBL=southbound left, SBR=southbound right, EBR=eastbound right, WBL=westbound left, WBR=westbound right
Queues exceeding available storage by greater than 25 feet are shown in bold.
Deficient queues that increase by more than 25 feet under project conditions are shaded.

6. ALAMEDA COUNTY TRANSPORTATION COMMISSION LAND USE ANALYSIS PROGRAM

This chapter presents the results of the Alameda CTC Land Use analysis under Year 2020 and Year 2040 Conditions, with and without the Project, in the PM peak hour.

YEAR 2020 AND YEAR 2040 NO PROJECT CONDITIONS

The Alameda CTC Land Use analysis was performed to comply with its congestion management plan (CMP) Land Use Analysis Program. In the CMP, development projects generating more than 100 PM net new peak hour trips are analyzed to determine its impact on Metropolitan Transportation System (MTS) roadways. Since the ACTC Land Use Analysis Program's 100-trip criteria is in the PM peak hour and the project generates greater project trips in the PM peak hour than the AM peak hour, the analysis was evaluated in the PM peak hour only.

The Alameda CTC travel demand model for Year 2020 and Year 2040 was used to determine 2020 and 2040 traffic volumes in the PM peak hour along the MTS roadways of Doolittle Drive and Davis Street. Traffic volumes and the number of lanes in each direction were used to determine the segment v/c ratio. It is assumed that the capacity of the roadway segment is 800 vehicles per hour per lane (vphpl).

Based on the analysis, the following MTS roadway segments operate at an unacceptable LOS F in Year 2020 and 2040 Conditions during the PM peak hour:

Year 2020 Conditions

- Northbound Doolittle Drive from Davis Street to Adams Avenue
- Eastbound Davis Street from Doolittle Drive to I-880 SB Ramps

Year 2040 Conditions

- Northbound Doolittle Drive from Davis Street to Adams Avenue
- Southbound Doolittle Drive from Adams Avenue to Davis Street
- Eastbound Davis Street from Doolittle Drive to I-880 SB Ramps
- Westbound Davis Street from I-880 SB Ramps to Doolittle Drive

YEAR 2020 AND YEAR 2040 PLUS PROJECT CONDITIONS

Project trips during the PM peak hour were added to the roadway segments under Year 2020 and Year 2040 Conditions to determine the v/c ratio under Plus Project Conditions. Based on the analysis, the following roadway segments continue to operate at an unacceptable LOS F in Plus Project Conditions:

Year 2020 Plus Project Conditions

- Northbound Doolittle Drive from Davis Street to West Project Driveway
    - With the addition of the project trips, this results in an increase in v/c of more than 0.02 – **Project Deficiency**
- Northbound Doolittle Drive from Adams Avenue to West Project Driveway
    - With the addition of the project trips, this results in an increase in v/c of less than 0.02 – **Not a Deficiency**
- Eastbound Davis Street from Doolittle Drive to I-880 SB Ramps
    - With the addition of the project trips, this results in an increase in v/c of less than 0.02 – **Not a Deficiency**

Year 2040 Plus Project Conditions

- Northbound Doolittle Drive from Davis Street to West Project Driveway
  - With the addition of the project trips, this results in an increase in v/c of more than 0.02 – **Project Deficiency**
- Northbound Doolittle Drive from Adams Avenue to West Project Driveway
  - With the addition of the project trips, this results in an increase in v/c of less than 0.02 – **Not a Deficiency**
- Southbound Doolittle Drive from Adams Avenue to West Project Driveway
  - With the addition of the project trips, this results in an increase in v/c of less than 0.02 – **Not a Deficiency**
- Southbound Doolittle Drive from West Project Driveway to Davis Street
  - With the addition of the project trips, this results in an increase in v/c of more than 0.02 – **Project Deficiency**
- Eastbound Davis Street from Doolittle Drive to I-880 SB Ramps
  - With the addition of the project trips, this results in an increase in v/c of less than 0.02 – **Not a Deficiency**
- Westbound Davis Street from I-880 SB Ramps to Doolittle Drive
  - With the addition of the project trips, this results in an increase in v/c of more than 0.02 – **Project Deficiency**

Table 8 and **Table 9** summarize the roadway segment capacity analysis for Year 2020 and Year 2040, respectively.

Table 8 – Year 2020 ACTC Roadway Segment Analysis

Location	Limits	# of Lanes	Capacity (vphpl)	No Project - Year 2020 (PM)			With Project - Year 2020 (PM)				
				Volume (vph)	LOS	V/C	Project Generated Trips	Volume (vph)	LOS	V/C	Δ V/C
Arterial Segment											
NB Doolittle Dr	Davis St (Int #5) to Project Dwy (Int #1)	2	800	1,764	**F**	**1.103**	56	1,791	**F**	**1.119**	**0.035**
	Project Dwy (Int #1) to Adams Ave (Int #4)	2	800	1,764	**F**	**1.103**	22	1,756	**F**	**1.098**	**0.014**
SB Doolittle Dr	Adams Ave (Int #4) to Project Dwy (Int #1)	2	800	1,599	E	0.999	5	1,589	E	0.993	0.003
	Project Dwy (Int #1) to Davis St (Int #5)	2	800	1,599	E	0.999	32	1,591	E	0.994	0.020
EB Davis St	Doolittle Dr (Int #5) to I-880 SB Ramps (Int #6)	2	800	2,095	**F**	**1.309**	23	2,088	**F**	**1.305**	**0.014**
	I-880 SB Ramps (Int #6) to I-880 NB Ramps (Int #7)	3	800	1,497	C	0.624	10	1,495	C	0.623	0.004
WB Davis St	I-880 NB Ramps (Int #7) to I-880 SB Ramps (Int #6)	3	800	1,362	B	0.568	48	1,392	B	0.580	0.020
	I-880 SB Ramps (Int #6) to Doolittle Dr (Int #5)	2	800	1,532	E	0.958	49	1,559	E	0.974	0.031

Note: Segments that are operating below acceptable levels are shown in **BOLD**. Project caused deficiencies are shaded.

Table 9 – Year 2040 ACTC Roadway Segment Analysis

Location	Limits	# of Lanes	Capacity (vphpl)	No Project - Year 2040 (PM)			With Project - Year 2040 (PM)				
				Volume (vph)	LOS	V/C	Project Generated Trips	Volume (vph)	LOS	V/C	Δ V/C
Arterial Segment											
NB Doolittle Dr	Davis St (Int #5) to Project Dwy (Int #1)	2	800	2,084	**F**	**1.303**	56	2,111	**F**	**1.319**	**0.035**
	Project Dwy (Int #1) to Adams Ave (Int #4)	2	800	2,084	**F**	**1.303**	22	2,076	**F**	**1.298**	**0.014**
SB Doolittle Dr	Adams Ave (Int #4) to Project Dwy (Int #1)	2	800	2,270	**F**	**1.419**	5	2,260	**F**	**1.413**	**0.003**
	Project Dwy (Int #1) to Davis St (Int #5)	2	800	2,270	**F**	**1.419**	32	2,262	**F**	**1.414**	**0.020**
EB Davis St	Doolittle Dr (Int #5) to I-880 SB Ramps (Int #6)	2	800	2,314	**F**	**1.446**	23	2,307	**F**	**1.442**	**0.014**
	I-880 SB Ramps (Int #6) to I-880 NB Ramps (Int #7)	3	800	2,073	D	0.864	10	2,071	D	0.863	0.004
WB Davis St	I-880 NB Ramps (Int #7) to I-880 SB Ramps (Int #6)	3	800	1,887	D	0.786	48	1,917	D	0.799	0.020
	I-880 SB Ramps (Int #6) to Doolittle Dr (Int #5)	2	800	2,087	**F**	**1.304**	49	2,114	**F**	**1.321**	**0.031**

Note: Segments that are operating below acceptable levels are shown in **BOLD**. Project caused deficiencies are shaded.

7. SITE ACCESS AND CIRCULATION

This section discusses site access, site circulation, pedestrian facilities, bicycle facilities, transit recommendations, and sight distance analysis for the project.

The following summarizes the project access locations:

- Doolittle Drive and West Project Driveway
  - Stop-controlled westbound movement for project driveway
  - Full access
- Hester Street and North Project Driveway
  - Stop-controlled eastbound and westbound movement for project driveway
  - Full access

Appendix C contains the queuing worksheets for the Project's driveways. These AM/PM peak hour worksheets are the results of the Cumulative Plus Project Conditions and show that the west and north project driveway throat depths are sufficient to accommodate the project outbound queues during the peak hours. For the west project driveway, the throat depth was measured as approximately 50 feet, which is the distance from Doolittle Drive to the internal drive aisle at 900 Doolittle Drive. As shown, the estimated outbound vehicle queue is less than 25 feet, which does not exceed the throat depth of 50 feet. However, it is possible that a truck with a vehicle length of more than 50 feet may temporarily block the drive aisle at 900 Doolittle Drive. In this case, vehicles may queue within the drive aisle; however, this should not result in vehicles queuing onto Doolittle Drive and therefore does not require any improvements. For the north project driveway, the throat depths were measured as approximately 50 feet for both the eastbound and westbound approach, which is the distance from Hester Street to the first parking space. As shown, the estimated outbound vehicle queue is less than 25 feet, which does not exceed the throat depth of 50 feet. Therefore, there are no anticipated conflicts or excessive queuing.

VEHICLE SITE CIRCULATION

Passenger cars and trucks may use the West Project Driveway and North Project Driveway to enter the site. All truck parking is located on the north side of the site and the passenger car parking spaces are located to the west of the site. 24 dock doors are located on the north site of the building and 37 dock doors are located on the south side. Vehicles may use the drive aisles proposed on all sides of the building to access these parking spaces and docks.

PEDESTRIAN FACILITIES

There are existing continuous sidewalks on both sides of Doolittle Drive adjacent to the project site where pedestrians can access the site, as well as existing continuous sidewalks on both sides of Adams Avenue and on the east side of Hester Street. There are also existing crosswalks along the east, south, and west legs at the signalized intersection of Doolittle Drive and Davis Street, and existing crosswalks on the east and south legs at the signalized intersection of Doolittle Drive and Adams Street.

Within the project site, there are marked pedestrian crosswalks connecting the accessible parking spaces to the sidewalks along the west side of the building. These sidewalks along the west side of the building provide access to the office spaces. There are sufficient pedestrian facilities adjacent to the project and to nearby complimentary uses.

BICYCLE FACILITIES

Bicycles will have access to the project site using the Class II bicycle lanes along Doolittle Drive and Adams Avenue. Existing bicycle facilities are shown in **Figure 13**.

Within the project site, bicycle parking will be provided on the ground level. The project provides 12 short-term and 12 long-term bicycle parking spaces, which meets the City's requirements. Since there are sufficient bicycle facilities adjacent to the project, to nearby complimentary uses, and within the project site, no additional bicycle facilities are recommended to be constructed by the project.

TRANSIT

For those taking transit, Alameda-Contra Costa Transit District (AC Transit) bus routes 34, 35, 73, 98, 805 operate within the study area. The nearest bus stop is located at the intersection of Westgate Parkway and Davis Street, which is approximately 0.9 miles southeast of the project site. The San Leandro BART station, which serves the Blue, Green, and Orange BART lines, is located within 2.1 miles east of the project site. The San Leandro LINKS shuttle is a free shuttle to and from the San Leandro BART station that operates a North Loop and South Loop. The North Loop runs along Davis Street from the BART station to Marina Boulevard, Merced Street, Williams Street, Doolittle Drive, and Davis Street. There is an existing stop located at Doolittle Drive and Davis Street. Pedestrians can travel between the LINKS bus stop and the project site using the existing sidewalks located along both sides of Davis Street. Existing transit facilities are shown in **Figure 14**.

Since the LINKS route serves as a sufficient transit facility in proximity to the project along Davis Street to nearby complimentary uses, no additional transit facilities are recommended to be constructed by the project.

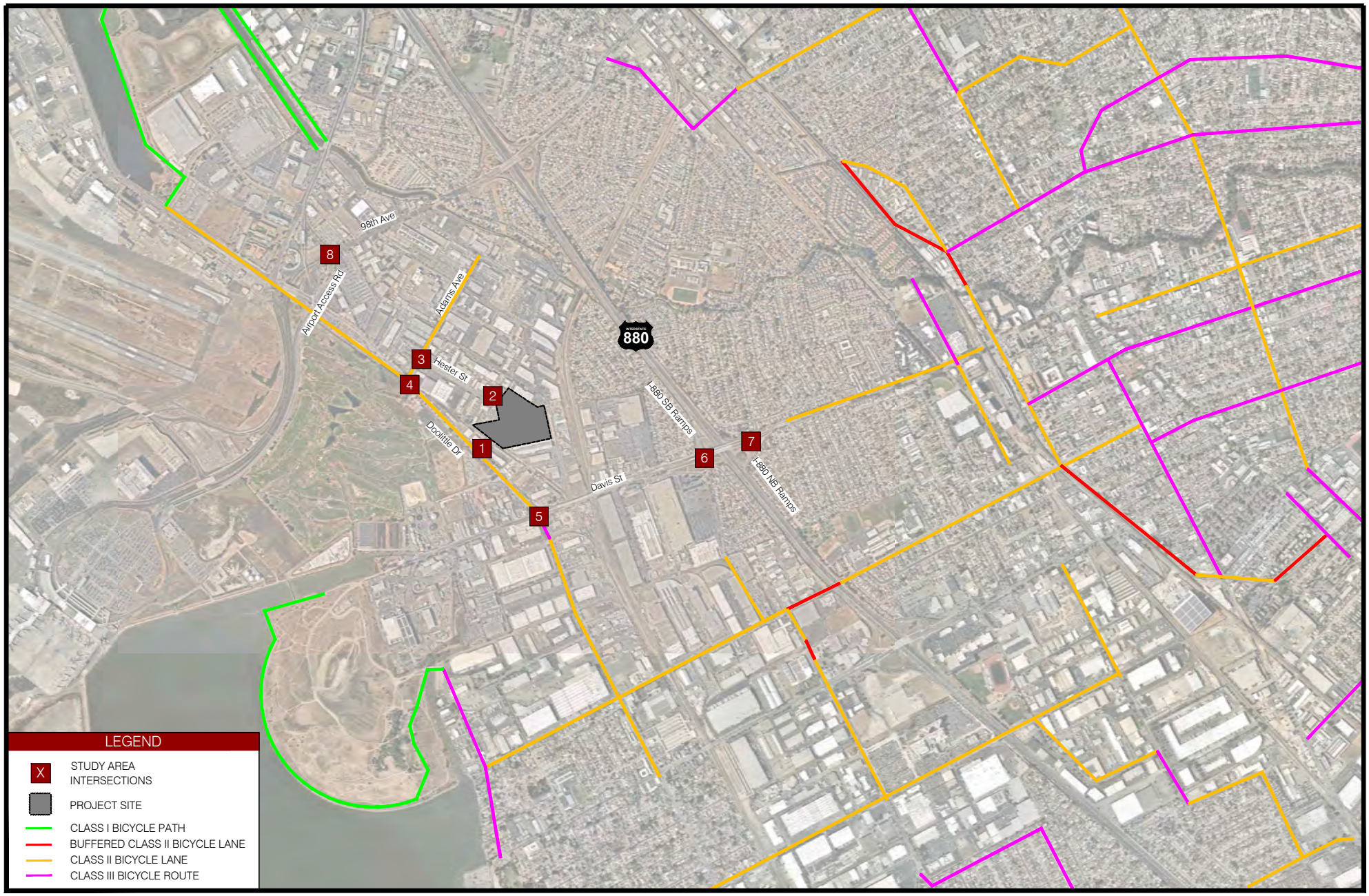

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FIGURE 13
BICYCLE FACILITIES

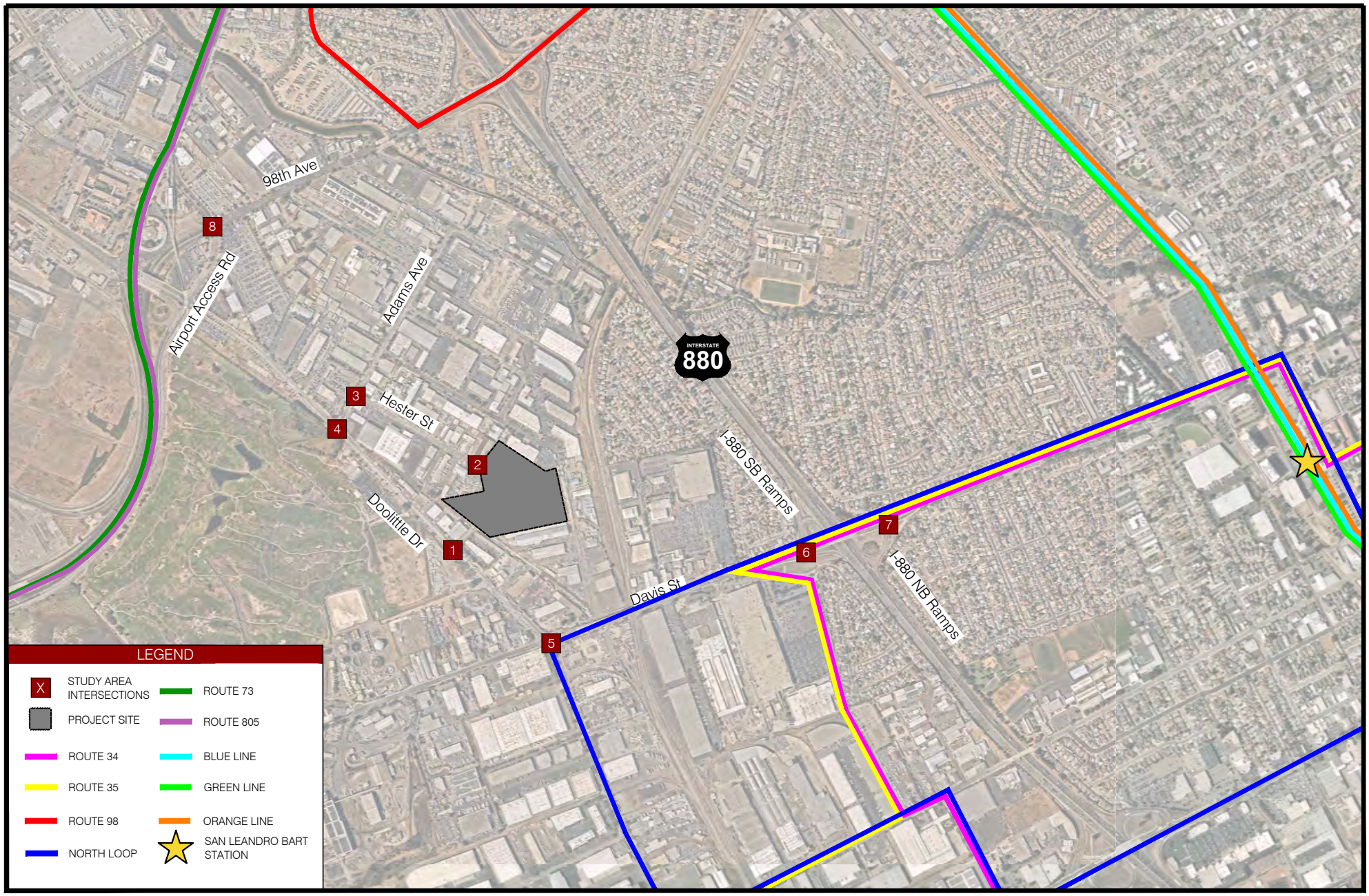

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FIGURE 14
TRANSIT FACILITIES

SIGHT DISTANCE

A sight distance analysis for the project driveways was conducted to determine if vehicles exiting the driveway would have adequate sight distance to observe conflicting traffic along the major roadway adjacent to the project site. Intersection sight distance for the project driveway was evaluated following methodology from the American Association of State Highway and Transportation Officials (AASHTO), *A Policy on Geometric Design of Highway and Street, 7th Edition*[5]. Sight distance for each project driveway was determined based on the proposed project site plan and the following AASHTO intersection sight distance criteria formula:

$$\text{Intersection Sight Distance} = 1.47 \times V_{major} \times t_g$$

Where V_{major} is the design speed of the major road and t_g is the time gap for the vehicle to exit the project driveway and enter the major road. No spot speed study was conducted; design speeds were used to determine sight distance.

Intersection #1 – Doolittle Drive and West Project Driveway

Using the time gap for passenger cars, the time gap is 8.5 seconds for a truck to make a right-turn movement onto Doolittle Drive and 10.2 seconds to make a left-turn movement. With a 50-mph design speed along Doolittle Drive, the sight distance criteria for trucks making a right-turn is 625 feet and the sight distance criteria for trucks making a left-turn is 750 feet. As shown in the **Figure 15**, the sight triangles at the West Project Driveway should be clear of obstructions for a vehicle exiting the driveway to observe oncoming northbound and southbound vehicles along Doolittle Drive.

[5] *A Policy on Geometric Design of Highway and Street, 7th Edition,* American Association of State Highway and Transportation Officials (AASHTO), 2018.

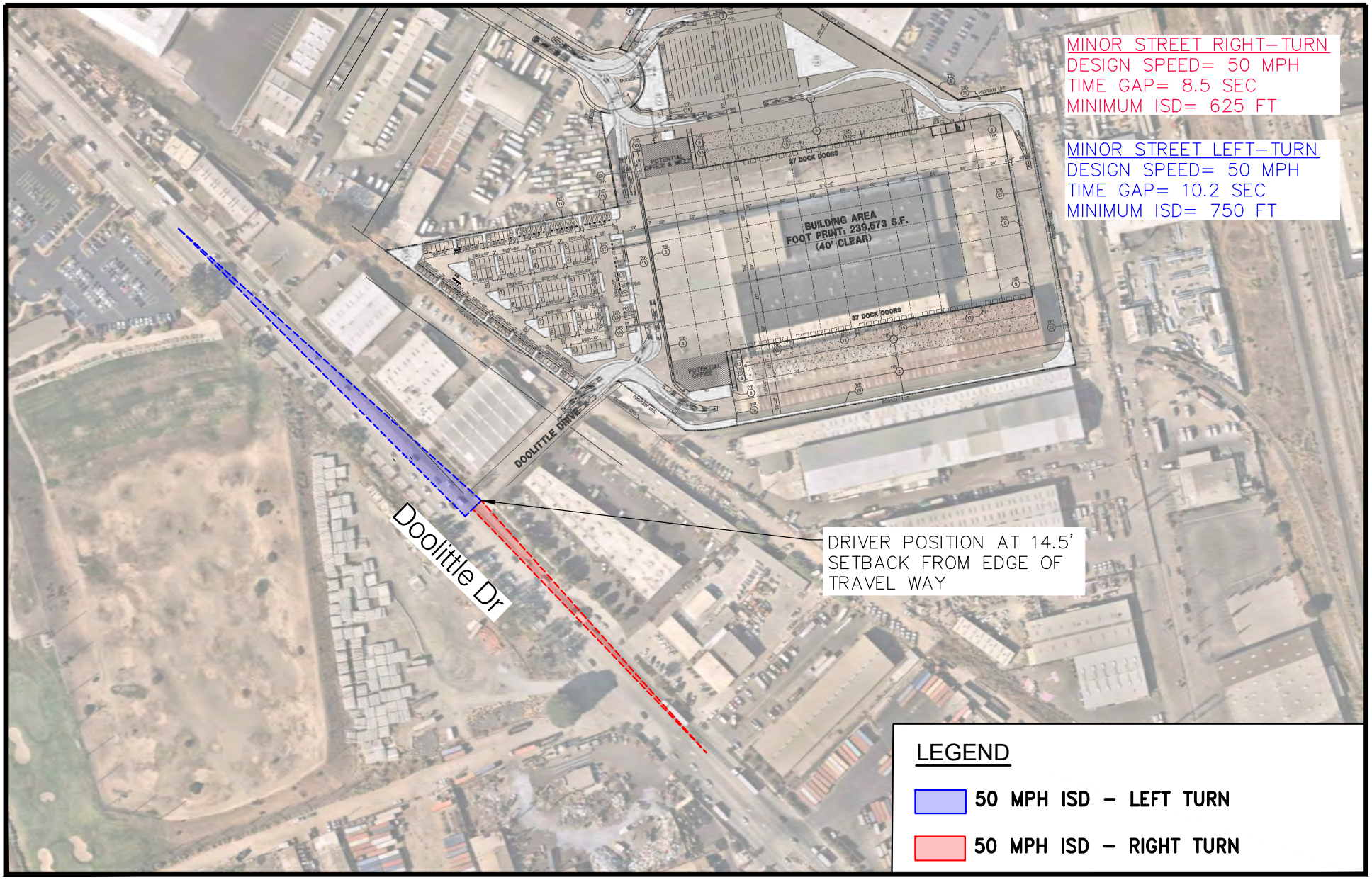

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FIGURE 15

INTERSECTION #1 INTERSECTION SIGHT DISTANCE

8. PARKING

This chapter summarizes the Project's parking requirements.

SAN LEANDRO PARKING REQUIREMENTS

Parking requirements for land uses within the City of San Leandro are provided in Chapter 4.08.108 of the San Leandro Municipal Code. This section includes parking requirements for vehicles and bicycles.

VEHICLE PARKING REQUIRED

Required parking for vehicles is based on land use. In accordance with the San Leandro Municipal Code, parking for office, warehousing, distributions, and storage facilities shall be provided at the following rates:

- Office: 1 space per 300 square feet
- Warehousing, Distributions and Storage Facilities: 1 space per 1,500 square feet

Assuming the project site has a 10,000-square foot office and a 229,573-square foot warehouse, the City requires 203 spaces. The project provides a total of 204 parking spaces and 59 trailer parking stalls, which provides adequate parking as required by the City.

The California Green Building Standard Code requires at least 10 percent of the total parking spaces to be Electric Vehicle (EV) Ready parking spaces. With the proposed 204 parking spaces, the project would be required to designate at least 21 EV Ready parking spaces. 21 EV spaces are proposed, which meets the requirement.

The 2010 Americans with Disabilities Act (ADA) Standards for Accessible Design requires at least seven accessible parking spaces for a parking facility with 201 to 300 parking spaces. With the proposed 204 parking spaces, the project would be required to designate at least seven accessible parking spaces. The project is proposing eight accessible parking spaces, which meets the requirement.

BICYCLE PARKING REQUIRED

Required parking for bicycles is based on type of land use. Bicycle parking for office, warehousing, distribution, and storage facilities is to be provided at the following rates:

- Short-term: 5% of the requirement for automobile parking spaces
- Long-term: 5% of the requirement for automobile parking spaces

With 204 parking spaces proposed, this results in 11 required long-term and 11 short-term bicycle parking spaces.

The site provides 12 long-term and 12 short-term bicycle parking spaces, which meets the City's requirement.

9. CONCLUSION

This section summarizes the results and recommendations of this TIA.

PROJECT RECOMMENDATIONS

OFF-SITE ROADWAY IMPROVEMENTS

The project does not propose any off-site roadway improvements associated with the project design.

PEDESTRIAN FACILITIES

Continuous sidewalks exist on both sides of Doolittle Drive, both sides of Adams Avenue, and on the east side of Hester Street. There are also existing signalized crossings in the north, east, and south directions at the intersection of Doolittle Drive and Davis Street, and existing signalized crossings in the north and east directions at the intersection of Doolittle Drive and Davis Street.

Within the project site, there are marked pedestrian crosswalks connecting the accessible parking spaces to the west side building sidewalk. There are sidewalks along the west side of the building which provide access to the office spaces.

BICYCLE FACILITIES

Bicycles will have access to the project site using the Class II bicycle lanes along Doolittle Drive and Adams Avenue. Therefore, no additional bicycle facilities are proposed. The project is proposing to include 12 short-term and 12 long-term bicycle parking spaces on-site, which satisfy the City's requirements.

TRANSIT FACILITIES

Alameda-Contra Costa Transit District (AC Transit) bus routes 34, 35, 73, 98, 805 operate within the study area, with the nearest bus stop located at the intersection of Westgate Parkway and Davis Street, which is approximately 0.9 miles southeast of the project site. The San Leandro LINKS shuttle is a free shuttle to and from the San Leandro BART station, which is 2.1 miles east of the project site, that operates a North Loop and South Loop. The North Loop has an existing stop located at Doolittle Drive and Davis Street. Pedestrians can travel between the LINKS bus stop and the project site using the existing sidewalks located along both sides of Davis Street. Since the LINKS route serves as a sufficient transit facility in proximity to the project along Davis Street to nearby complimentary uses, no additional transit facilities are recommended to be constructed by the project.

PARKING REQUIREMENTS

The project is proposing to provide 204 parking spaces and 59 trailer parking stalls. The City requires a minimum of 204 spaces. Therefore, the project does provide enough parking to satisfy the City's requirements.

The California Green Building Standard Code requires at least 10 percent of the total parking spaces to be Electric Vehicle (EV) Ready parking spaces. With the proposed 204 parking spaces, the project would be required to designate 21 EV Ready parking spaces. 21 EV spaces are proposed, which meets the requirement.

The 2010 Americans with Disabilities Act (ADA) Standards for Accessible Design requires at least seven accessible parking spaces for a parking facility with 201 to 300 parking spaces. With the proposed 204 parking spaces, the project would be required to designate at least seven accessible parking spaces. The project is proposing eight accessible parking spaces, which meets the requirement.

PROJECT DRIVEWAYS

The development of the proposed Project will access the following existing driveways:

- Doolittle Drive and West Project Driveway
  - Stop-controlled westbound movement for project driveway
  - Full access
- Hester Street and North Project Driveway
  - Stop-controlled eastbound and westbound movement for project driveway
  - Full access

PROJECT IMPACTS AND MITIGATIONS

As discussed previously in the Chapter 6, the project VMT/employee (i.e. 15.34 in 2020 and 16.08 in 2040) is not expected to exceed the threshold of significance for VMT/employee for Central Planning Area (i.e. 16.3 in 2020 and 16.2 in 2040) and the project will result in a less than significant transportation impact. No mitigation needed.

PROJECT DEFICIENCIES

LOS DEFICIENCIES

In cases when the project traffic worsens an intersection from an acceptable LOS to an unacceptable LOS or if the project traffic increases the intersection v/c by 0.05 for an intersection that is already operating unacceptably without the project, this is considered a project deficiency. Based on the results of the traffic analysis, the following intersection project deficiencies are noted:

- Intersection #5 – Doolittle Drive and Davis Street
  - Near Term Plus Project (AM peak hour)
  - Cumulative Plus Project (AM peak hour)

Project LOS Deficiency: Doolittle Drive and Davis Street (Intersection #5)

The intersection of Doolittle Drive and Davis Street will have an LOS deficiency in the Near Term Plus Project and Cumulative Plus Project for the AM peak hour.

Near Term Plus Project

In the Near Term Plus Project conditions, the intersection of Doolittle Drive and Davis Street will operate at an unacceptable LOS F with a delay of 127.4 seconds and a v/c ratio of 1.04 in the AM peak hour. The intersection operates at an unacceptable LOS F without the project with a delay of 110.7 seconds and a v/c ratio of 0.97 in the AM peak hour. Since the intersection operates at an unacceptable LOS for without project conditions and the addition of project trips causes the v/c ratio to increase by more than 0.04, this is a project deficiency.

Deficiency Improvement. Optimizing signal timings for this intersection would improve the delay to 89.7 seconds and the v/c ratio to 1.01 in the AM peak hour in the Near Term Plus Project condition. Since the v/c ratio would increase by less than 0.05, this would no longer be a deficiency with the proposed improvement. Traffic signal control analysis sheets can be found in **Appendix C**.

Cumulative Plus Project

In the Cumulative Plus Project conditions, the intersection of Doolittle Drive and Davis Street will operate at an unacceptable LOS F with a delay of 173.2 seconds and a v/c ratio of 1.27 in the AM peak hour. The intersection operates at an unacceptable LOS F without the project with a delay of 156.8 seconds and a v/c ratio of 1.20 in the AM peak hour. Since the intersection operates at an unacceptable LOS for without project conditions and the addition of project trips causes the v/c ratio to increase by more than 0.04, this is a project deficiency.

Deficiency Improvement. Optimizing signal timings for this intersection would improve the delay to 129.6 seconds and the v/c ratio to 1.22 in the AM peak hour in the Cumulative Plus Project condition. Since the v/c ratio would increase by less than 0.05, this would no longer be a deficiency with the proposed improvement. Traffic signal control analysis sheets can be found in **Appendix C**.

QUEUING DEFICIENCIES

In cases when the addition of project trips causes a queue to exceed the turn pocket length or increase by one or more vehicles for vehicle queues that already exceed the turn pocket length, an intersection project queuing deficiency was identified. Based on the results of the traffic analysis, no intersection project queuing deficiencies are noted.

ROADWAY SEGMENT DEFICIENCIES

In cases when the addition of project trips causes an acceptably operating roadway segment to operate at an unacceptable LOS F or increases the v/c of an unacceptably operating roadway segment by more than 0.02, a roadway segment project deficiency was identified. Based on the results of the traffic analysis, the following roadway segment project deficiencies are noted:

- Year 2020 Plus Project
    - Northbound Doolittle Drive from Davis Street to West Project Driveway
- Year 2040 Plus Project
    - Northbound Doolittle Drive from Davis Street to West Project Driveway
    - Southbound Doolittle Drive from West Project Driveway to Davis Street
    - Westbound Davis Street from I-880 SB Ramps to Doolittle Drive

Based on the Alameda CTC methodology, each roadway segment would need to be widened to add additional through lanes on Doolittle Drive and Davis Street. Since each roadway segment has adjacent land uses and is built out, it is infeasible to add additional travel lanes on Doolittle Drive and Davis Street. In addition, Davis Street between the I-880 SB Ramps and Doolittle Drive includes a bridge section that would make widening infeasible.

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B - ACTC CENTRAL PLANNING AREA VMT MAPS

C - SYNCHRO OUTPUTS

A- URBAN CROSSROADS STUDY

880 Doolittle

TRAFFIC ANALYSIS
CITY OF SAN LEANDRO

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OCTOBER 21, 2021

13698-05 TA Report REV

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LIST OF ABBREVIATED TERMS

(1)	Reference
ABAG	Association of Bay Area Governments
AC Transit	Alameda-Contra Costa Transit District
ADT	Average Daily Traffic
BART	Bay Area Rapid Transit
CA MUTCD	California Manual on Uniform Traffic Control Devices
Caltrans	California Department of Transportation
CMP	Congestion Management Program
E+P	Existing Plus Project
HCM	Highway Capacity Manual
ITE	Institute of Transportation Engineers
LOS	Level of Service
N/A	Not Applicable
NCHRP	National Cooperative Highway Research Program
NP	No Project (or Without Project)
PHF	Peak Hour Factor
Project	880 Doolittle
RTA	Riverside Transit Authority
sf	Square Feet
TA	Traffic Analysis
TSF	Thousand Square Feet
UPRR	Union Pacific Railroad
WP	With Project
v/c	Volume to Capacity
VMT	Vehicle Miles Traveled

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1 INTRODUCTION

This report presents the results of the traffic analysis (TA) for the proposed 880 Doolittle development (Project), which is located at 880 Doolittle Drive within the City of San Leandro as shown on Exhibit 1-1.

The purpose of this TA is to evaluate the potential deficiencies related to traffic and circulation system operations that may result from the development of the proposed Project, and to recommend improvements to mitigate potential deficiencies in order to achieve acceptable circulation system operations. This report has been prepared through consultation with City of San Leandro staff and their consultants.

1.1 SUMMARY OF FINDINGS

The following improvement has been identified as a cumulative traffic deficiency under Horizon Year (2040) traffic conditions:

- The intersection of Doolittle Drive and Project Driveway was found to operate at an acceptable LOS for Existing, E+P, and Horizon Year (2040) Without Project traffic conditions, however the intersection was found to operate at an unacceptable LOS during the peak hours under Horizon Year (2040) With Project traffic conditions. As such, a traffic signal has been recommended at this location and the Project should contribute fair share payment towards this improvement.

Additional details and intersection lane geometrics are provided in Section 1.7 *Site Access Improvements* of this report. The proposed Project will contribute to both existing and future year deficiencies, however, the net change in the proposed Project traffic is not anticipated to have a measurable effect with the exception of the intersection of the intersection of Doolittle Drive and Project Driveway.

1.2 PROJECT OVERVIEW

The Project is proposed to consist of a 106,190 square foot distribution warehouse use (square footage includes mezzanine space). Vehicular and truck traffic access will be provided via Hester Street and Doolittle Drive (see Exhibit 1-2). Specifically, all truck access to the site will occur off Hester Street, employee access is provided via both Hester Street and Doolittle Drive (via Project Driveway), and all van access is to occur off of Doolittle Drive (via Project Driveway). Regional access to the Project site is provided via the I-880 Freeway via 98th Avenue and Davis Street interchanges.

EXHIBIT 1-1: LOCATION MAP

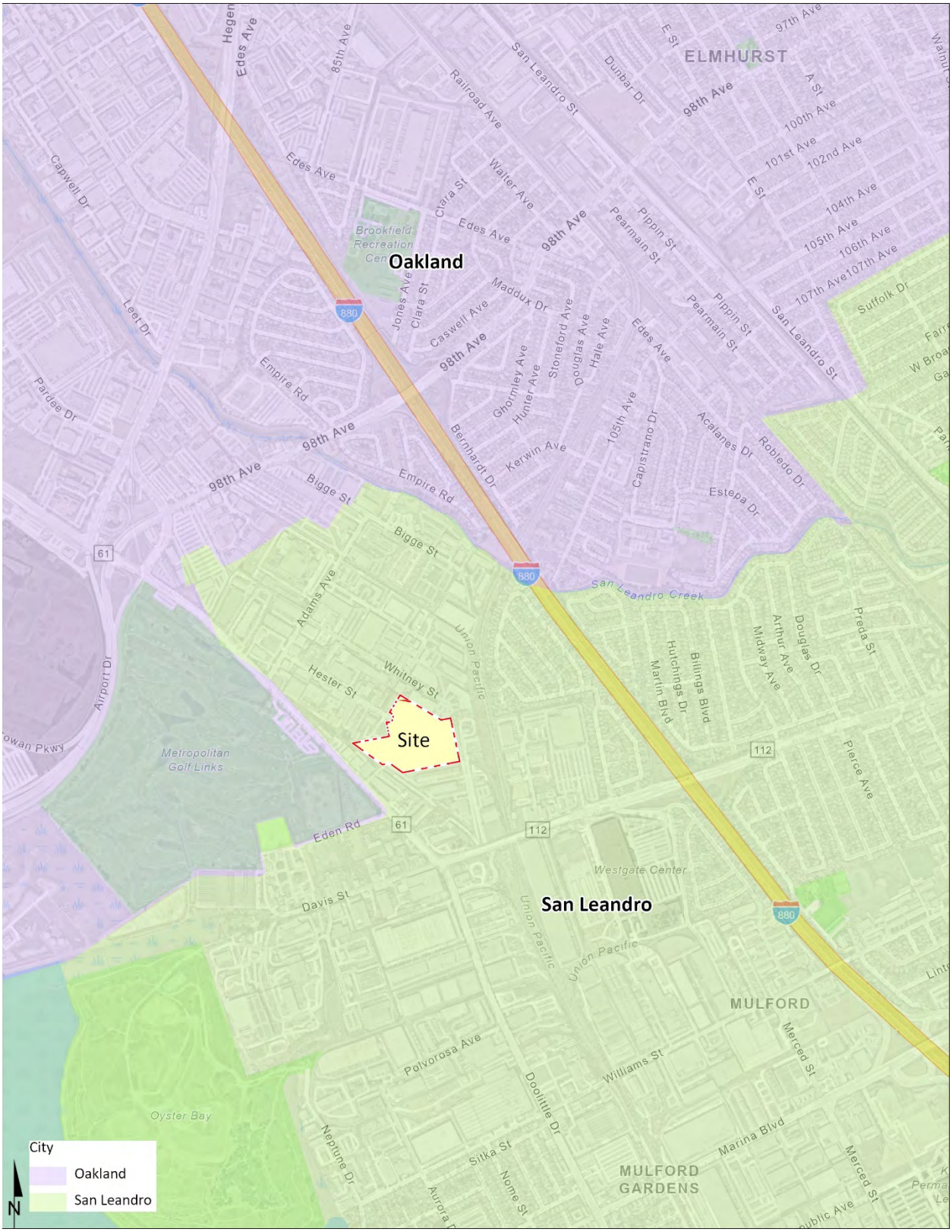


EXHIBIT 1-2: PRELIMINARY SITE PLAN

The trip generation estimates for the proposed Project have been developed using data provided by the future tenant. The Project is estimated to generate 1,136 two-way trips per day on a typical weekday with approximately 196 AM peak hour trips and 83 PM peak hour trips. The site is currently occupied by an existing use, as such, the Project is anticipated to generate 409 fewer two-way trips per day, with 32 net new AM peak hour trips and 58 fewer net PM peak hour trips. The assumptions and methods used to estimate the Project's trip generation characteristics are discussed in greater detail in Section 4.1 *Project Trip Generation* of this report.

1.3 ANALYSIS SCENARIOS

For the purposes of this traffic study, potential deficiencies to traffic and circulation have been assessed for each of the following conditions:

- Existing (2020)
- Existing Plus Project (E+P)
- Horizon Year (2040) Without and With Project

1.3.1 EXISTING (2020) CONDITIONS

Information for Existing (2020) conditions is disclosed to represent the baseline traffic conditions as they existed at the time this report was prepared. Due to the currently ongoing COVID-19 pandemic, 2015 traffic counts were adjusted by 0.772% per year (compounded annually) over 5 years to reflect 2020 baseline traffic conditions. This annual growth rate is based on the average Association of Bay Area Governments (ABAG) projected growth for employment, population, and households for San Leandro. The 2015 counts (adjusted to 2020) were then compared to the recently collected 2020 counts in order to determine the net changes and to develop an adjustment factor. The average of all applicable locations was calculated to be 127% for AM and 106% for the PM. As such, the locations where historic count data were not available, the 2020 counts that were recently collected were increased by 127% in the AM peak hour and 106% in the PM peak hour. For the locations where both historic and actual 2020 data is available, the final adjusted 2020 traffic volumes were developed by taking the higher of the 2 volumes (between either the adjusted 2015 or the actual 2020).

1.3.2 EXISTING PLUS PROJECT CONDITIONS

The Existing Plus Project (E+P) analysis determines any traffic operation and circulation system deficiencies that would occur on the existing roadway system in the scenario of the Project being placed upon Existing conditions. The net new traffic proposed to be generated by the Project has been utilized for the purposes of this TA (delta of the proposed Project and existing use).

1.3.3 HORIZON YEAR (2040) CONDITIONS

The City's traffic consultant has provided future long-range Horizon Year (2040) Without Project traffic forecasts based on the Alameda Countywide Travel Demand Model. Net new Project traffic has been added to develop the Horizon Year (2040) With Project traffic forecasts. A

comparison of Horizon Year (2040) Without and With Project traffic conditions will be used to identify long-range peak hour cumulative intersection operational deficiencies.

1.4 STUDY AREA

To ensure that this TA satisfies the City of San Leandro traffic study requirements, Urban Crossroads, Inc. has coordinated with City staff to determine the proposed study area for this TA. The 14 study area intersections shown on Exhibit 1-3 and listed in Table 1-1 were selected for this TA. It should be noted, the Project contributes fewer than 50 net new peak hour trips at all study area intersections.

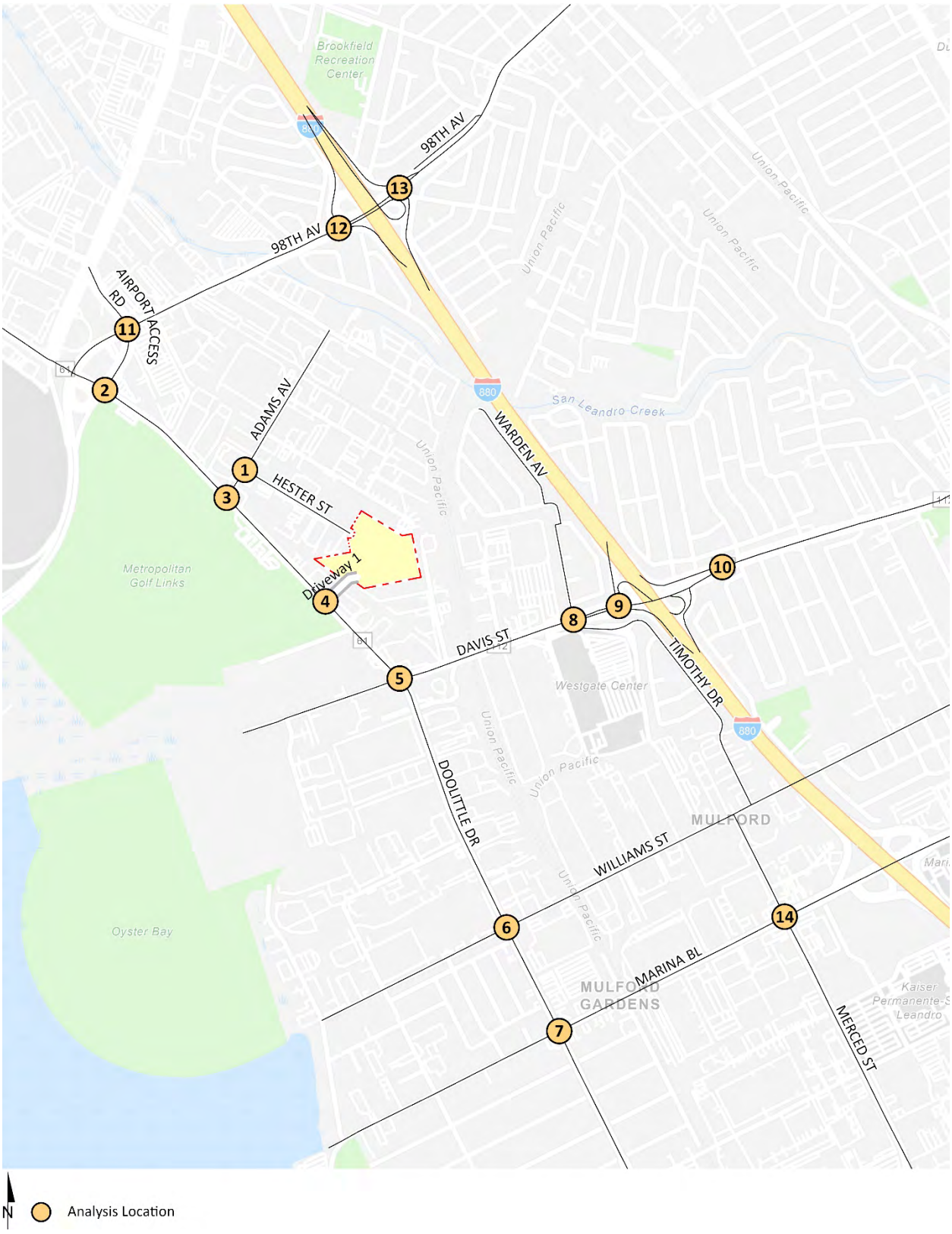
TABLE 1-1: INTERSECTION ANALYSIS LOCATIONS

ID	Intersection	Jurisdiction	CMP?
1	Hester St. & Adams Av.	City of San Leandro	No
2	Doolittle Dr. & Airport Access Rd.	City of Oakland	Yes
3	Doolittle Dr. & Adams Av.	City of San Leandro, City of Oakland	No
4	Doolittle Dr. & Project Dwy.	City of San Leandro, City of Oakland	No
5	Doolittle Dr. & Davis St.	City of San Leandro	Yes
6	Doolittle Dr. & Williams St.	City of San Leandro	No
7	Doolittle Dr. & Marina Bl.	City of San Leandro	Yes
8	Warden Av. & Davis St.	City of San Leandro	No
9	I-880 SB Ramps & Davis St.	City of San Leandro	Yes
10	I-880 NB Ramps & Davis St.	City of San Leandro	Yes
11	Airport Access Rd. & 98th Av.	City of Oakland	Yes
12	I-880 SB Ramps & 98th Av.	City of Oakland	Yes
13	I-880 NB Ramps & 98th Av.	City of Oakland	Yes
14	Merced St. & Marina Bl.	City of San Leandro	Yes

Note: A CMP intersection has been identified for any two CMP roadways that intersect one another.

The intent of a Congestion Management Program (CMP) is to more directly link land use, transportation, and air quality, thereby prompting reasonable growth management programs that will effectively utilize new transportation funds, alleviate traffic congestion and related deficiencies, and improve air quality. Counties within California have developed CMPs with varying methods and strategies to meet the intent of the CMP legislation. (1)

EXHIBIT 1-3: STUDY AREA



1.5 DEFICIENCIES

This section provides a summary of deficiencies by analysis scenario. Section 2 *Methodologies* provides information on the methodologies used in the analysis and Section 6 *Horizon Year (2040) Traffic Conditions* includes the detailed analysis. A summary of level of service (LOS) results for all analysis scenarios is presented on Table 1-2, which indicates that the following intersections will experience deficiencies under Existing and E+P traffic conditions:

- Doolittle Dr. & David St. (#5) – LOS E AM peak hour only
- Merced St. & Marina Bl. (#14) – LOS E PM peak hour only

As shown in Table 1-2, the following additional intersections are anticipated to operate at an unacceptable LOS during one or more peak hours under Horizon Year (2040) Without and With Project traffic conditions:

- Doolittle Dr. & Project Driveway (#4) – LOS E AM peak hour only (With Project only)
- Doolittle Dr. & Marina Bl. (#7) – LOS E PM peak hour only
- Airport Access Rd. & 98th Av. (#11) – LOS F PM peak hour only
- Merced St. & Marina Bl. (#14) – LOS E AM and PM peak hours

TABLE 1-2: SUMMARY OF LOS BY ANALYSIS SCENARIO

		Existing		E+P		2040 Without Project		2040 With Project	
#	Intersection	AM	PM	AM	PM	AM	PM	AM	PM
1	Hester St. & Adams Av.	A-D	A-D	A-D	A-D	A-D	A-D	A-D	A-D
2	Doolittle Dr. & Airport Access Rd.	A-D	A-D	A-D	A-D	A-D	A-D	A-D	A-D
3	Doolittle Dr. & Adams Av.	A-D	A-D	A-D	A-D	A-D	A-D	A-D	A-D
4	Doolittle Dr. & Project Dwy.	A-D	A-D	A-D	A-D	A-D	A-D	E	A-D
5	Doolittle Dr. & Davis St.	E	A-D	E	A-D	F	F	E	F
6	Doolittle Dr. & Williams St.	A-D	A-D	A-D	A-D	A-D	A-D	A-D	A-D
7	Doolittle Dr. & Marina Bl.	A-D	A-D	A-D	A-D	A-D	E	A-D	E
8	Warden Av. & Davis St.	A-D	A-D	A-D	A-D	A-D	A-D	A-D	A-D
9	I-880 SB Ramps & Davis St.	A-D	A-D	A-D	A-D	A-D	A-D	A-D	A-D
10	I-880 NB Ramps & Davis St.	A-D	A-D	A-D	A-D	A-D	A-D	A-D	A-D
11	Airport Access Rd. & 98th Av.	A-D	A-D	A-D	A-D	A-D	F	A-D	F
12	I-880 SB Ramps & 98th Av.	A-D	A-D	A-D	A-D	A-D	A-D	A-D	A-D
13	I-880 NB Ramps & 98th Av.	A-D	A-D	A-D	A-D	A-D	A-D	A-D	A-D
14	Merced St. & Marina Bl.	A-D	E	A-D	E	E	E	E	E

A-D = LOS=A-D E = LOS=E F = LOS=F

1.6 RECOMMENDATIONS

This section provides a summary of deficiencies by analysis scenario. Section 2 *Methodologies* provides information on the methodologies used in the analysis and Section 5 *E+P Traffic Conditions* and Section 6 *Horizon Year (2040) Traffic Conditions* includes the detailed analysis.

1.6.1 E+P CONDITIONS

The following study area intersections are anticipated to operate at an unacceptable LOS under E+P traffic conditions:

- Doolittle Dr. & Davis St. (#5) – LOS E AM peak hour only (consistent with Existing conditions)
- Merced St. & Marina Bl. (#14) – LOS E PM peak hour only (consistent with Existing conditions)

The addition of Project traffic at these two locations is anticipated to result in a change to the volume-to-capacity (v/c) ratio of less than 0.05. As such, no improvements have been recommended at these locations for E+P traffic conditions.

The following turning movements are anticipated to experience queuing issues for E+P traffic conditions and are consistent with existing deficient turning movements, however, the addition of Project traffic to these existing deficiencies result in nominal changes:

- Doolittle Dr. & Davis St. (#5) – Southbound left PM peak hour only
- Doolittle Dr. & Davis St. (#5) – Westbound right turn lane AM and PM peak hours
- Doolittle Dr. & Williams St. (#6) – Southbound left PM peak hour only
- Doolittle Dr. & Marina Bl. (#7) – Southbound left AM and PM peak hours
- Doolittle Dr. & Marina Bl. (#7) – Westbound left AM and PM peak hours
- Warden Av. & Davis St. (#8) – Southbound left AM peak hour only
- Airport Access Rd. & 98th Av. (#11) – Westbound left PM peak hour only

1.6.2 HORIZON YEAR (2040) CONDITIONS

The following study area intersections are anticipated to operate at a deficient LOS during one or both peak hours under Horizon Year (2040) Without Project traffic conditions:

- Doolittle Dr. & Davis St. (#5) – LOS F AM and PM peak hours
- Doolittle Dr. & Marina Bl. (#7) – LOS E PM peak hour only
- Airport Access Rd. & 98th Av. (#11) – LOS F PM peak hour only
- Merced St. & Marina Bl. (#14) – LOS E AM and PM peak hours

The addition of Project traffic is anticipated to have a significant effect on the intersection of Doolittle Drive and the Project Driveway only. The addition of Project traffic at the other two locations is anticipated to result in a change to the v/c ratio of less than 0.05. As such, no improvements have been recommended at those locations for Horizon Year (2040) With Project traffic conditions. Additional details and intersection lane geometrics are provided in Section 1.7 *Recommendations* of this report.

The following additional turning movements are anticipated to experience queuing issues for Horizon Year (2040) Without Project traffic conditions in addition to the existing deficient turning movements, however, the addition of Project traffic to these pre-project deficiencies result in nominal changes:

- Airport Access Rd. & 98th Av. (#11) – Southbound left PM peak hour only
- Merced St. & Marina Bl. (#14) – Westbound left AM peak hour only

1.7 SITE ACCESS IMPROVEMENTS

The recommended site access driveway improvements for the Project are described below. Exhibit 1-4 illustrates the site access improvements. Construction of on-site and site adjacent improvements shall occur in conjunction with adjacent Project development activity or as needed for Project access purposes.

Hester St. & Adams Av. (#1) – Maintain existing traffic control and lane geometrics at this intersection.

Hester St. & Project Driveway – This is a new Project driveway/access at the southern terminus of Hester Street. The southbound approach on Hester Street approaching the Project is an existing lane. There is also a new driveway proposed to the southeast corner of the cul-de-sac that will lead into the truck court. There is also a new driveway proposed to the southwest corner of the cul-de-sac that will lead to the passenger car parking lot. Both the Project access points at the southern terminus should be signed with stop controls for the exiting Project traffic.

Doolittle Dr. & Project Driveway (#4) – It is recommended the Project will install a traffic signal at Driveway 1 on Doolittle Drive but would defer the installation of the traffic signal to a future date when the intersection meets the appropriate California Manual on Uniform Traffic Control Devices (CA MUTCD) warrants. The intersection should be monitored, and a traffic signal installed when the appropriate warrants are met. No other lane improvements are recommended.

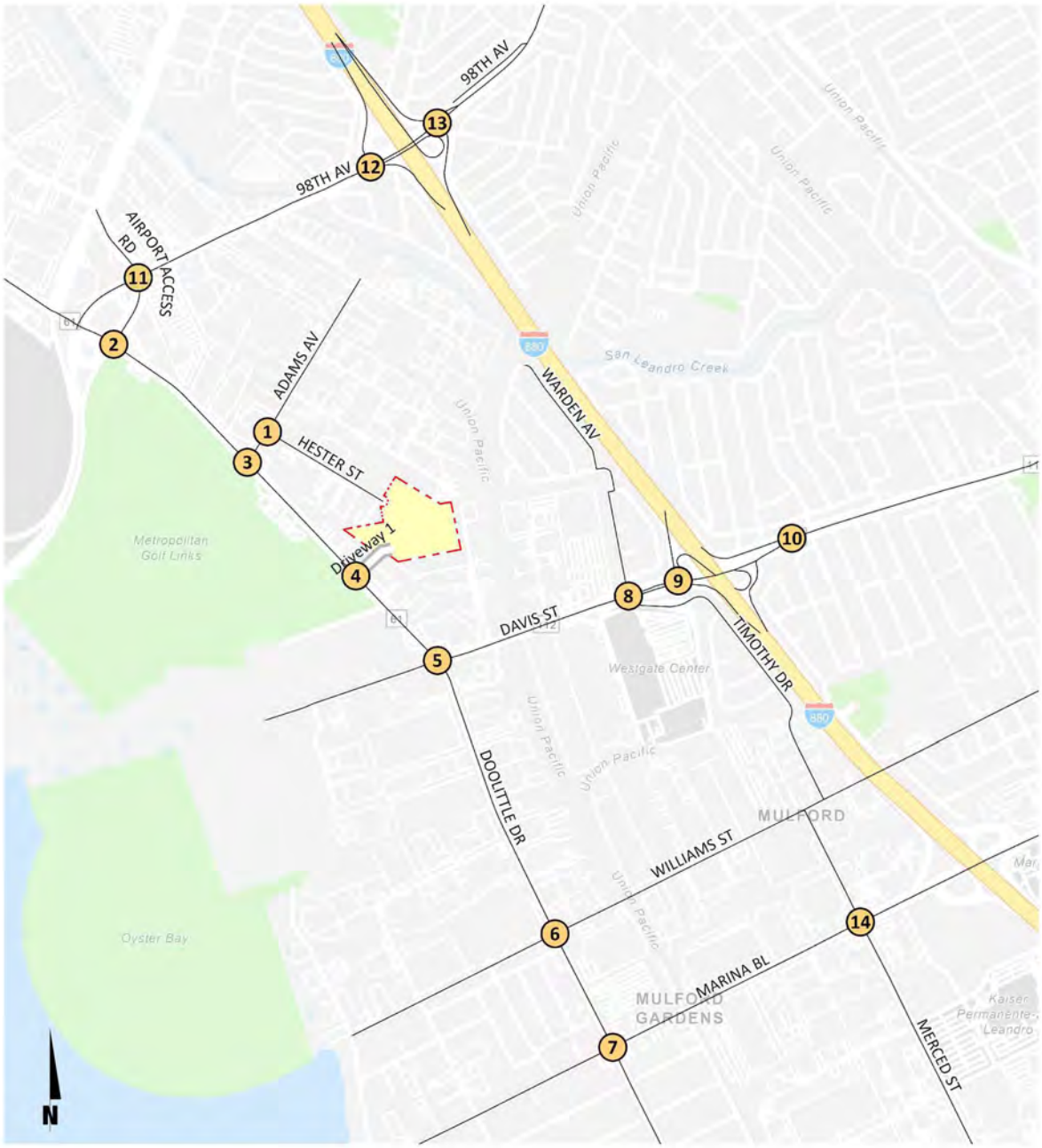
Site access improvements for the driveways at the southern terminus of Hester Street are also shown on Exhibit 1-4.

Wherever necessary, roadways adjacent to the Project, site access points and site-adjacent intersections will be constructed to be consistent with the identified roadway classifications and respective cross-sections in the City of San Leandro General Plan Circulation Element.

On-site traffic signing and striping should be implemented agreeable with the provisions of the California Manual on Uniform Traffic Control Devices (CA MUTCD) and in conjunction with detailed construction plans for the Project site.

Sight distance at each project access point should be reviewed with respect to standard City of San Leandro sight distance standards at the time of preparation of final grading, landscape, and street improvement plans.

EXHIBIT 1-4: SITE ACCESS RECOMMENDATIONS



= New Traffic Signal
= Stop Sign
= Stop Sign Improvement
= Existing Lane
= Lane Improvement

Note: The Project will install a traffic signal at Driveway 1 on Doolittle Drive but would defer the installation of the traffic signal to a future date when the intersection meets the appropriate CA MUTCD warrants. The intersection should be monitored and a traffic signal installed when the appropriate warrants are met.

1.8 QUEUING ANALYSIS AT THE PROJECT DRIVEWAYS

A queuing analysis was conducted for the Project Driveway on Doolittle Drive in addition to the intersection of Hester Street at Adams Avenue for Horizon Year (2040) With Project traffic conditions to determine the 95th percentile queues. The analysis was conducted for the weekday AM and weekday PM peak hours. The traffic modeling and signal timing optimization software package Synchro/SimTraffic (Version 10) has been utilized to assess queues at the aforementioned intersections.

Synchro is a macroscopic traffic software program that is based on the signalized and unsignalized intersection capacity analyses as specified in the Highway Capacity Manual (HCM). SimTraffic is designed to model networks of signalized and unsignalized intersections, with the primary purpose of checking and fine-tuning signal operations. SimTraffic uses the input parameters from Synchro to generate random simulations. The 95th percentile queue is not necessarily ever observed; it is simply based on statistical calculations (or Average Queue plus 1.65 standard deviations). Many jurisdictions utilize the 95th percentile queues for design purposes. SimTraffic simulations have been recorded 5 times, during the weekday AM and weekday PM peak hours, and have been seeded for 15-minute periods with 60-minute recording intervals. Queuing results are provided in Appendix 1.1. Analysis results are summarized in Table 1-3.

TABLE 1-3: SITE ACCESS PEAK HOUR QUEUING SUMMARY

#	Intersection	Movement	Available Stacking Distance (Feet)	2040 With Project 95th % Queue (ft)		2040 With Project Acceptable? [1]	
				AM	PM	AM	PM
1	Hester St. & Adams Av.	NBL/R	100	68	60	Yes	Yes
		EBT/R	135	4	0	Yes	Yes
		WBL/T	150	34	21	Yes	Yes
4	Doolittle Dr. & Project Driveway	NBT/R	300	168	169	Yes	Yes
		SBL	100	47	32	Yes	Yes
		SBT/R	300	186	160	Yes	Yes
		WBL/R	265	150	86	Yes	Yes

[1] Stacking Distance is acceptable if the required stacking distance is less than or equal to the stacking distance provided. An additional 25 feet (1 car length) of stacking which is assumed to be provided in the transition for turn pockets is reflected in the stacking distance shown on this table, where applicable.

As shown in Table 1-3, there are no queuing issues anticipated at the site access locations for Horizon Year (2040) With Project traffic conditions. Note there is an existing at-grade rail spur located approximately 265-feet east of Doolittle Drive along the Project Driveway. However, the 95th peak hour queues demonstrate that queues are not anticipated to extend back to the existing rail spur.

1.9 TRUCK ACCESS

Due to the typical wide turning radius of large trucks, a truck turning template has been overlaid on the site plan at the applicable driveway at the southern terminus of Hester Street in conjunction with the intersection of Hester Street at Adams Avenue in order to determine appropriate curb radii and to verify that trucks will have sufficient space to execute turning maneuvers. As shown on Exhibit 1-5, the existing and proposed curb radii are anticipated to accommodate the wide turning radius of heavy trucks (WB-67, which has a 53-foot trailer). As such, no modifications have been recommended.

1.10 VEHICLE PARKING

Based on the City's Municipal Code (Section 4.08.108) the Project's minimum parking is as follows:

- Office = 1 space / 300 square feet (sf) = 12,605 sf / 300 = 42 spaces
- Warehouse = 1 space / 1,000 sf = 93,585 sf / 1,500 = 94 spaces
- **Total of 136 spaces**

However, the Project is anticipated to provide the following parking spaces:

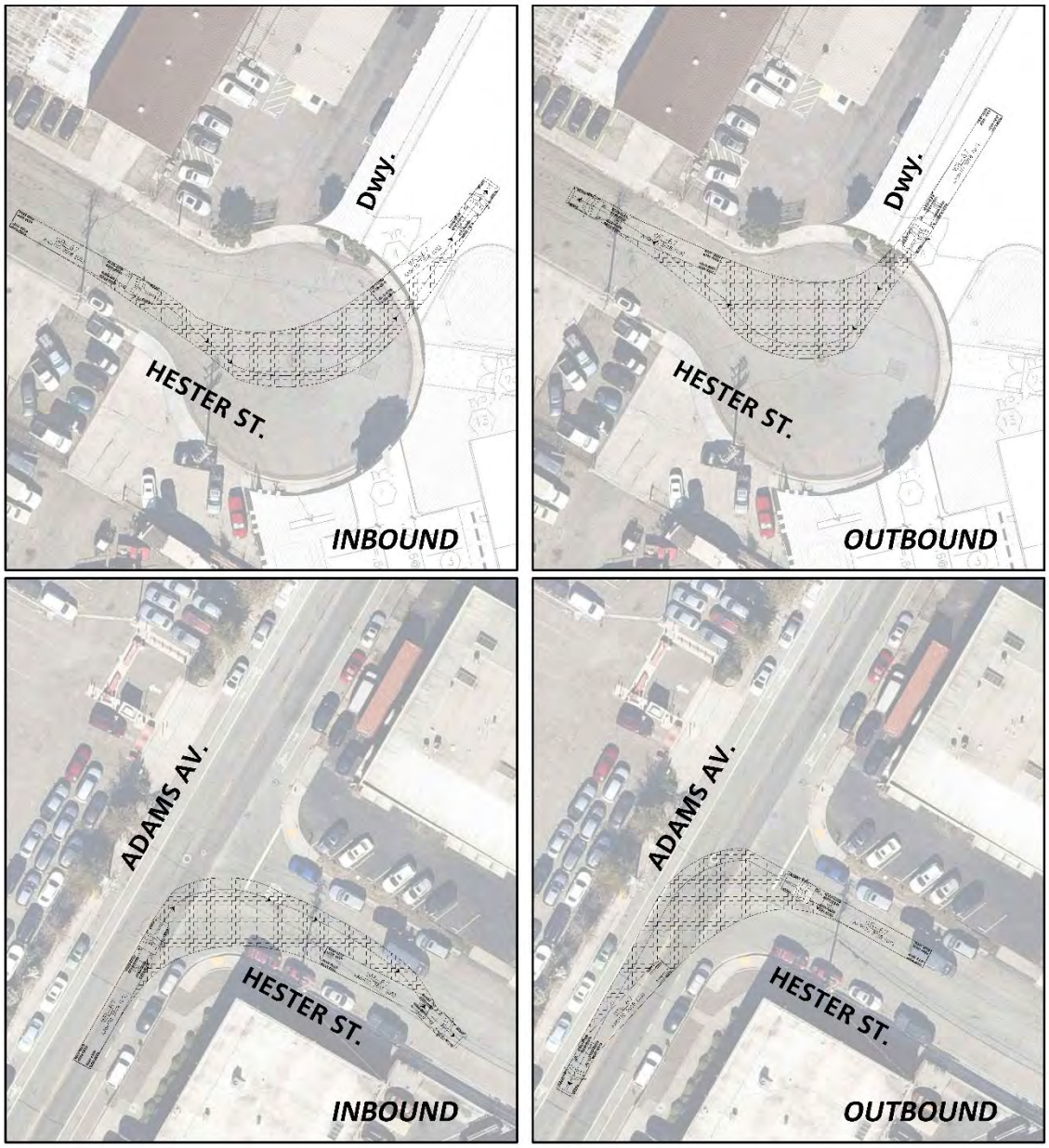
- Standard Stalls = 197 spaces
- Americans with Disabilities Act (ADA) Standard Stalls = 8 spaces
- ADA Van Stalls = 2 spaces
- Van Stalls = 434 spaces
- Van Staging = 40 spaces
- Van Loading = 36 spaces
- Trailer Stalls = 18 spaces
- **Total of 735 spaces**

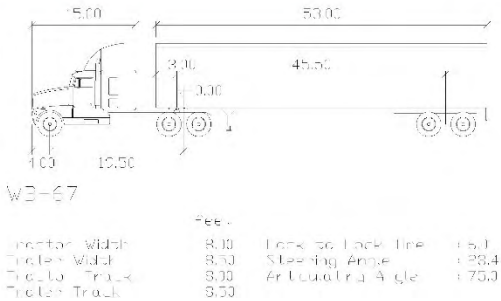
Although the City's Municipal Code does not account for the proposed van parking spaces, it has been verified that the proposed number of van stalls can accommodate the anticipated number of vans (434 stalls plus 2 ADA stalls). The Project is anticipated to generate 250 van trips per day which equates to 125 vans. The proposed number of van stalls (436) can adequately park the proposed 125 vans per day and the 125 van drivers that would park their personal vehicles near their vans. As such, the proposed Project exceeds the City's standard parking requirements based on both the standard stall spaces and total parking spaces.

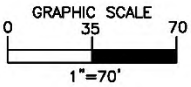
1.11 BICYCLE PARKING

Based on the City's Municipal Code (Section 4.08.128), the minimum bicycle parking is determined based on 5 percent of the vehicle parking, or 10 bicycle parking spaces (based on 207 standard vehicle parking spaces). The Project intends to accommodate 1 bike rack for every 2 spaces, or 104 bicycle racks based on a total of 207 standard vehicle parking spaces.

EXHIBIT 1-5: TRUCK TEMPLATES







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2 METHODOLOGIES

This section of the report presents the methodologies used to perform the traffic analyses summarized in this report. The methodologies described are generally consistent with City of San Leandro traffic study guidelines.

2.1 LEVEL OF SERVICE

Traffic operations of roadway facilities are described using the term "Level of Service" (LOS). LOS is a qualitative description of traffic flow based on several factors such as speed, travel time, delay, and freedom to maneuver. Six levels are typically defined ranging from LOS A, representing completely free-flow conditions, to LOS F, representing breakdown in flow resulting in stop-and-go conditions. LOS E represents operations at or near capacity, an unstable level where vehicles are operating with the minimum spacing for maintaining uniform flow.

2.2 INTERSECTION CAPACITY ANALYSIS

The definitions of LOS for interrupted traffic flow (flow restrained by the existence of traffic signals and other traffic control devices) differ slightly depending on the type of traffic control. The LOS is typically dependent on the quality of traffic flow at the intersections along a roadway. The Highway Capacity Manual (HCM) methodology expresses the LOS at an intersection in terms of delay time for the various intersection approaches. (2) The HCM uses different procedures depending on the type of intersection control.

2.2.1 SIGNALIZED INTERSECTIONS

The City of San Leandro and City of Oakland require signalized intersection operations analysis based on the methodology described in the HCM. (2) Intersection LOS operations are based on an intersection's average control delay. Control delay includes initial deceleration delay, queue move-up time, stopped delay, and final acceleration delay. For signalized intersections, LOS is directly related to the average control delay per vehicle and is correlated to a LOS designation as described in Table 2-1. Study area intersections have been evaluated using the Synchro (Version 10) analysis software package.

Synchro is a macroscopic traffic software program that is based on the signalized intersection capacity analysis as specified in the HCM. Macroscopic level models represent traffic in terms of aggregate measures for each movement at the study intersections. Equations are used to determine measures of effectiveness such as delay and queue length. The level of service and capacity analysis performed by Synchro takes into consideration optimization and coordination of signalized intersections within a network.

TABLE 2-1: SIGNALIZED INTERSECTION LOS THRESHOLDS

Description	Average Control Delay (Seconds), V/C ≤ 1.0	Level of Service, V/C ≤ 1.0	Level of Service, V/C > 1.0
Operations with very low delay occurring with favorable progression and/or short cycle length.	0 to 10.00	A	F
Operations with low delay occurring with good progression and/or short cycle lengths.	10.01 to 20.00	B	F
Operations with average delays resulting from fair progression and/or longer cycle lengths. Individual cycle failures begin to appear.	20.01 to 35.00	C	F
Operations with longer delays due to a combination of unfavorable progression, long cycle lengths, or high V/C ratios. Many vehicles stop and individual cycle failures are noticeable.	35.01 to 55.00	D	F
Operations with high delay values indicating poor progression, long cycle lengths, and high V/C ratios. Individual cycle failures are frequent occurrences. This is considered to be the limit of acceptable delay.	55.01 to 80.00	E	F
Operation with delays unacceptable to most drivers occurring due to over saturation, poor progression, or very long cycle lengths	80.01 and up	F	F

Source: HCM 2000

The peak hour traffic volumes have been adjusted using a peak hour factor (PHF) to reflect peak 15-minute volumes. Common practice for LOS analysis is to use a peak 15-minute rate of flow. However, flow rates are typically expressed in vehicles per hour. The PHF is the relationship between the peak 15-minute flow rate and the full hourly volume (e.g., PHF = [Hourly Volume] / [4 x Peak 15-minute Flow Rate]). The use of a 15-minute PHF produces a more detailed analysis as compared to analyzing vehicles per hour. Existing PHFs have been used for Existing (2020) baseline, E+P, and Horizon Year (2040) traffic conditions.

2.2.2 UNSIGNALIZED INTERSECTIONS

The City of San Leandro and City of Oakland require the operations of unsignalized intersections be evaluated using the methodology described the HCM. (2) The LOS rating is based on the weighted average control delay expressed in seconds per vehicle (see Table 2-2).

TABLE 2-2: UNSIGNALIZED INTERSECTION LOS THRESHOLDS

Description	Average Control Delay Per Vehicle (Seconds)	Level of Service, V/C ≤ 1.0	Level of Service, V/C > 1.0
Little or no delays.	0 to 10.00	A	F
Short traffic delays.	10.01 to 15.00	B	F
Average traffic delays.	15.01 to 25.00	C	F
Long traffic delays.	25.01 to 35.00	D	F
Very long traffic delays.	35.01 to 50.00	E	F
Extreme traffic delays with intersection capacity exceeded.	> 50.00	F	F

Source: HCM 2000

At two-way or side-street stop-controlled intersections, LOS is calculated for each controlled movement and for the left turn movement from the major street, as well as for the intersection as a whole. For approaches composed of a single lane, the delay is computed as the average of all movements in that lane. The "worst case" movement delay and LOS is reported for the intersection. For all-way stop controlled intersections, LOS is computed for the intersection as a whole.

2.3 TRAFFIC SIGNAL WARRANT ANALYSIS METHODOLOGY

The term "signal warrants" refers to the list of established criteria used by the Caltrans and other public agencies to quantitatively justify or ascertain the potential need for installation of a traffic signal at an otherwise unsignalized intersection. This TA uses the signal warrant criteria presented in the latest edition of the California Department of Transportation (Caltrans) California Manual on Uniform Traffic Control Devices *(CA MUTCD)* for all study area intersections. (3)

The signal warrant criteria for Existing conditions are based upon several factors, including volume of vehicular and pedestrian traffic, frequency of accidents, and location of school areas. The Caltrans CA MUTCD indicates that the installation of a traffic signal should be considered if one or more of the signal warrants are met. (3) Specifically, this TA utilizes the Peak Hour Volume-based Warrant 3 as the appropriate representative traffic signal warrant analysis for existing study area intersections for all analysis scenarios. Warrant 3 is appropriate to use for this TA because it provides specialized warrant criteria for intersections with rural characteristics (e.g., located in communities with populations of less than 10,000 persons or with adjacent major streets operating above 40 miles per hour). For the purposes of this study, the speed limit was the basis for determining whether Urban or Rural warrants were used for a given intersection.

Future intersections that do not currently exist have been assessed regarding the potential need for new traffic signals based on future average daily traffic (ADT) volumes, using the Caltrans planning level ADT-based signal warrant analysis worksheets. Traffic signal warrant analyses were performed for the following study area intersection shown in Table 2-3:

TABLE 2-3: TRAFFIC SIGNAL WARRANT ANALYSIS LOCATIONS

ID	Intersection	Jurisdiction
1	Hester St. & Adams Av.	City of San Leandro
4	Doolittle Dr. & Project Dwy.	City of San Leandro, City of Oakland

Traffic signal warrant analyses were performed for all of the full access unsignalized study area intersections. The traffic signal warrant analyses for future conditions are presented in Section 5 *E+P Traffic Analysis* and Section 6 *Horizon Year (2040) Traffic Analysis* of this report.

It is important to note that a signal warrant defines the minimum condition under which the installation of a traffic signal might be warranted. Meeting this threshold condition does not require that a traffic control signal be installed at a particular location, but rather, that other traffic factors and conditions be evaluated in order to determine whether the signal is truly justified. It should also be noted that signal warrants do not necessarily correlate with LOS. An

intersection may satisfy a signal warrant condition and operate at or above acceptable LOS or operate below acceptable LOS and not meet a signal warrant.

2.4 QUEUING ANALYSIS

The 95th percentile queuing of vehicles has been assessed at the signalized study area intersections to determine potential queuing deficiencies for turn pockets (note the queuing at unsignalized intersections were addressed as part of the site access evaluation in Chapter 1). Specifically, the queuing analysis is utilized to identify any potential queuing and "spill back" into the adjacent through lanes.

The traffic progression analysis tool and HCM intersection analysis program, Synchro, has been used to assess the potential deficiencies/needs of the intersections with traffic added from the proposed Project. Storage (turn-pocket) length recommendations at the ramps have been based upon the 95th percentile queue resulting from the Synchro progression analysis. The footnote from the Synchro output sheets indicates if the 95th percentile cycle exceeds capacity. Traffic is simulated for two complete cycles of the 95th percentile traffic in Synchro in order to account for the effects of spillover between cycles. In practice, the 95th percentile queue shown will rarely be exceeded and the queues shown with the footnote are acceptable for the design of storage bays.

Although only the 95th percentile queue has been reported in the tables, the 50th percentile queue can be found in the appendix alongside the 95th percentile queue for each study area intersection. The queue length reported is for the lane with the highest queue in the lane group. The 50th percentile or average queue represents the typical queue length for peak hour traffic conditions, while the 95th percentile queue is derived from the average queue plus 1.65 standard deviations. The 95th percentile queue is not necessarily ever observed it is simply based on statistical calculations.

Similar to the peak hour operations analysis, turn pocket storage recommendations have only been recommended if the intersection operations analysis indicates a deficiency during the peak hours.

2.5 MINIMUM LEVEL OF SERVICE (LOS)

2.5.1 CITY OF SAN LEANDRO

The definition of an intersection deficiency has been obtained from the City of San Leandro' 2035 General Plan. LOS D or better is to be maintained at all City-controlled intersections. (4)

2.5.2 CITY OF OAKLAND

The definition of an intersection deficiency has been obtained from the City of Oakland's General Plan. LOS D or better is to be maintained at all City-controlled intersections outside of the Downtown Area and LOS E or better for intersections located within the Downtown Area. (5)

2.5.3 ALAMEDA CMP

The definition of an intersection deficiency has been obtained from the Alameda County 2018 Level of Service Monitoring Report. LOS E or better is to be maintained at CMP intersections, with the exception of the locations that were found to operate at LOS F in the base monitoring years of 1991 and 1992. (1)

2.5.4 CALTRANS

Although Caltrans has gone away from LOS and has focused their determination of traffic impacts and mitigation on vehicle miles traveled (VMT), a minimum LOS D has been utilized for Caltrans controlled ramp-to-arterial intersections for the purposes of this TA.

2.6 SIGNIFICANCE CRITERIA

This section outlines the methodology used in this analysis related to identifying circulation system deficiencies. The following deficiency criteria has been utilized for the study area intersections. To determine whether the addition of project-related traffic at a study intersection would result in a deficiency, the following will be utilized:

- A project-related deficiency is considered significant when a study intersection operates at an acceptable LOS for existing conditions (or pre-project conditions) and the addition of project trips causes the intersection to operate at an unacceptable LOS for existing plus project (E+P) traffic conditions.
- A project-related deficiency is considered significant when a study intersection operates at an unacceptable LOS for existing conditions (or pre-project conditions) and the addition of project trips causes the intersection v/c to increase by 0.05 or more.

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3 AREA CONDITIONS

This section provides a summary of the existing circulation network, the City of San Leandro General Plan Circulation Network, and a review of existing peak hour intersection operations, traffic signal warrant, and queuing analyses.

3.1 EXISTING CIRCULATION NETWORK

Pursuant to discussions with the City of San Leandro staff, the study area includes a total of 14 existing intersections as shown previously on Exhibit 1-3. Exhibit 3-1 illustrates the study area intersections located near the proposed Project and identifies the number of through traffic lanes for existing roadways and intersection traffic controls.

3.2 GENERAL PLAN CIRCULATION ELEMENTS

As noted previously, the Project site is located within the City of San Leandro however portions of the study area are lie within the City of Oakland. Exhibit 3-2 shows the City of San Leandro and City of Oakland General Plan Street Classifications.

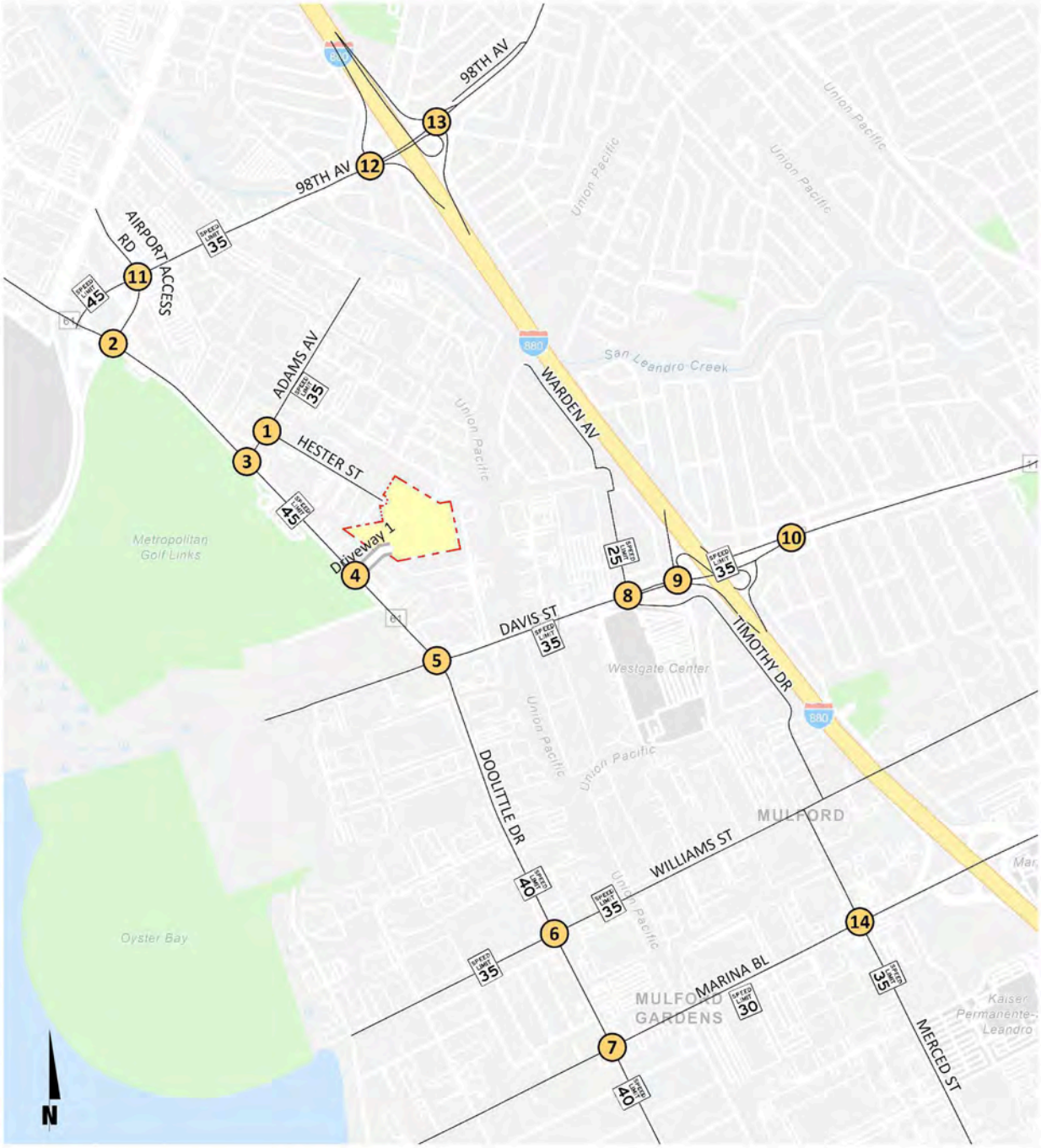
Arterials can accommodate two to six travel lanes. These facilities serve regional through traffic and connect the major destinations within the City to the freeway system. Access from abutting property is generally restricted. The following roadways are classified as an Arterial within the study area:

- Doolittle Dr.
- Davis St., east of Doolittle Dr.
- Marina Bl.
- Merced St.
- 98th Avenue

Collectors can accommodate two travel lanes with on-street parking and signalized intersections at major intersections. These facilities carry low volumes (less than 10,000 vehicles per day) and connect residential areas to arterials. The following roadways are classified as a Collector within the study area:

- Davis St., west of Doolittle Dr.
- Williams St.
- Timothy Dr./W. Gate Pkwy.
- Adams Av.

EXHIBIT 3-1: EXISTING NUMBER OF THROUGH LANES AND INTERSECTION CONTROLS



SPEED LIMIT 25 = Speed Limit (MPH)

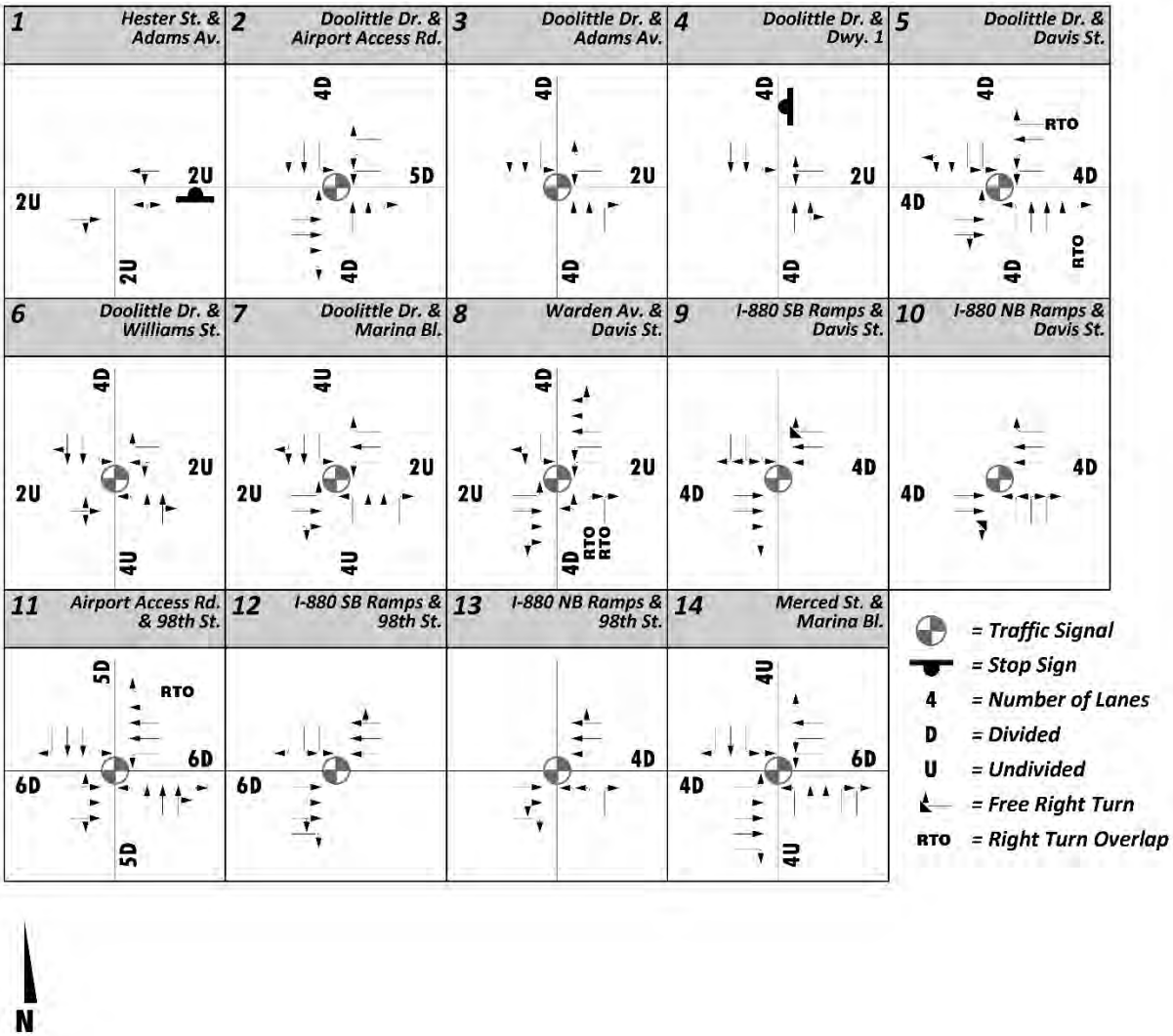
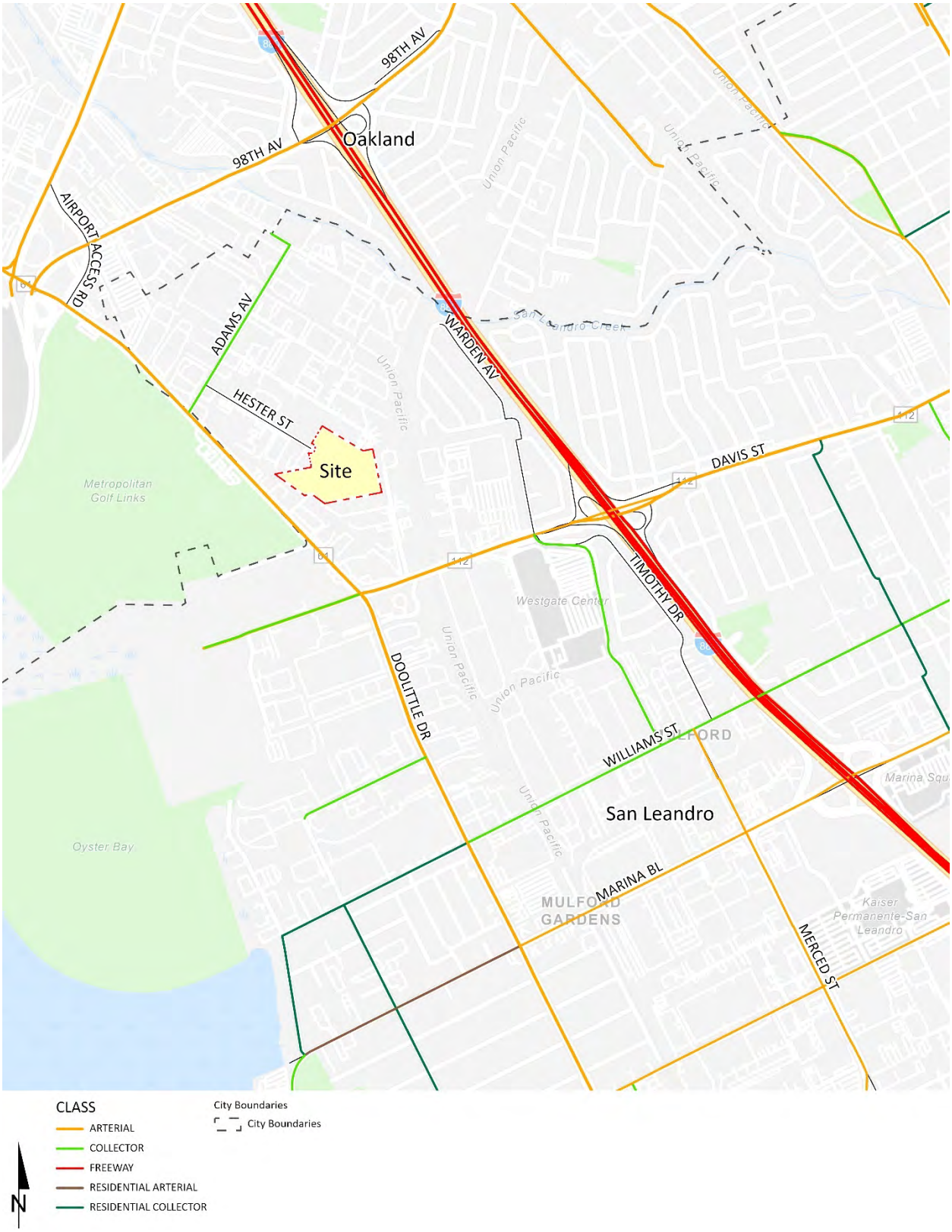

1 Hester St. & Adams Av.
2 Doolittle Dr. & Airport Access Rd.
3 Doolittle Dr. & Adams Av.
4 Doolittle Dr. & Dwy. 1
5 Doolittle Dr. & Davis St.
6 Doolittle Dr. & Williams St.
7 Doolittle Dr. & Marina Bl.
8 Warden Av. & Davis St.
9 I-880 SB Ramps & Davis St.
10 I-880 NB Ramps & Davis St.
11 Airport Access Rd. & 98th St.
12 I-880 SB Ramps & 98th St.
13 I-880 NB Ramps & 98th St.
14 Merced St. & Marina Bl.
= Traffic Signal
= Stop Sign
4 = Number of Lanes
D = Divided
U = Undivided
= Free Right Turn
RTO = Right Turn Overlap
N

EXHIBIT 3-2: CITY OF SAN LEANDRO & CITY OF OAKLAND GENERAL PLAN STREET CLASSIFICATION



Local Streets/Residential Collector can accommodate two travel lanes with on-street parking typically provided on one side only. These facilities are low-volume and low-speed roadways that connect individual parcels to either Collectors or Arterials. The following roadways are classified as a Local Street within the study area:

- Hester St.
- Warden Av.

3.3 TRUCK ROUTES

The City of San Leandro designated truck route map is shown on Exhibit 3-3. Doolittle Drive, Davis Street, Williams Street, Marina Boulevard, and Merced Street are identified as designated truck routes within the City. These designated truck route maps have been utilized to route truck traffic from the Project throughout the study area.

3.4 TRANSIT SERVICE

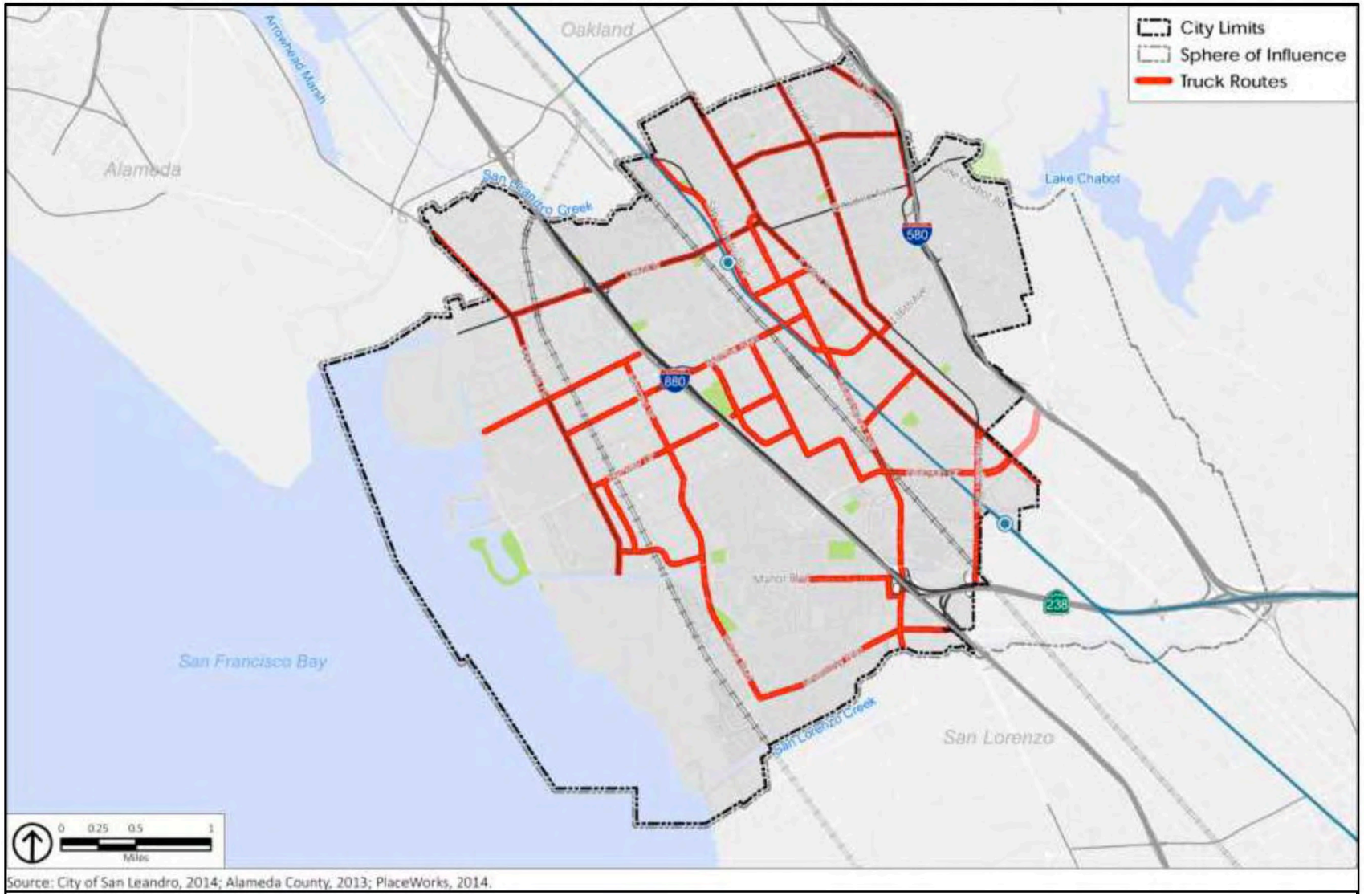
Mass transit routes within the study area are shown on Exhibit 3-4. The study area is currently served by Alameda-Contra Costa Transit District (AC Transit), the 3rd largest public bus system in California which serves 13 cities and unincorporated areas of Alameda and Contra Costa counties (364-square mile service area). AC Transit currently has 175,000 riders daily served by their 158 bus lines with approximately 5,400 bus stop locations. AC Transit Routes 34 and 35 runs along Davis Street from east of the I-880 Freeway to Timothy Drive/W. Gate Parkway to Williams Street and Merced Street within the City of San Leandro. AC Transit Route 98 runs along 98th Avenue from Empire Road to east of the I-880 Freeway within the City of Oakland.

The study area is also served by the San Francisco Bay Area Rapid Transit (BART). BART is a public rail transit system that connects the San Francisco Peninsula with communities located in East and South Bays. BART operates 131 miles of track with 50 stations and carry approximately 405,000 trips on an average weekday. The San Leandro BART station is located approximately 1-mile to the east of the I-880 Freeway south of Davis Street on San Leandro Boulevard. The station has connecting transit routes served by AC Transit, LINKS, and the FLEX shuttle. The lines served by the San Leandro BART station include:

- Dublin/Pleasanton to/from Daly City
- Richmond to/from Berryessa/North San Jose Station
- Daly City to/from Berryessa/North San Jose station
- MacArthur to/from Dublin/Pleasanton

The San Leandro LINKS shuttle is a free shuttle to and from BART. There is a North Loop and South Loop. The North Loop runs along Davis Street from the BART station to Marina Boulevard, Merced Street, Williams Street, Doolittle Drive, and Davis Street. There is an existing stop located at Doolittle Drive and Davis Street.

EXHIBIT 3-3: CITY OF SAN LEANDRO TRUCK ROUTES



Source: City of San Leandro, 2014; Alameda County, 2013; PlaceWorks, 2014.

EXHIBIT 3-4: EXISTING TRANSIT ROUTES – AC TRANSIT AND BART

The FLEX Shuttle is a fixed route service similar to LINKS. There is a North Route and South Route through the City of San Leandro. The FLEX Shuttle serves seniors ages 50+ and persons with disabilities (aged 18+) who reside within the City. The North Route runs along portions of Williams Street, Doolittle Drive, Timothy Drive/W. Gate Parkway, and Davis Street (east of Timothy Drive).

There are no existing transit routes along Doolittle Drive near the project site although the San Leandro LINKS shuttle has a stop located at the intersection of Doolittle Drive and Davis Street. Transit service is reviewed and updated periodically to address ridership, budget, and community demand needs. Changes in land use can affect these periodic adjustments which may lead to either enhanced or reduced service where appropriate.

3.5 Bicycle & Pedestrian Facilities

In an effort to promote alternative modes of transportation, the City of San Leandro also includes the existing and proposed bicycle network (see Exhibit 3-5). As shown on Exhibit 3-5, the study area includes existing Class II bike lanes along Adams Street, Doolittle Drive, Williams Street and Merced Street. Class II bike lanes are proposed along Davis Street. Doolittle Drive is proposed as a Class IV bikeway (on-street bike lanes, separated from vehicular traffic via a physical separation). There is also a 5.2-mile shared-use path (Class I) located in the San Leandro Marina Park, which is part of the Bay Trail. The Class I path is an off-street facility that can be used by both bicyclists and pedestrians.

Exhibit 3-6 illustrates the existing pedestrian facilities, which includes sidewalks and crosswalk locations. Sidewalks exist throughout most of the study area with crosswalks provided at all signalized study area intersections.

3.6 Existing Rail Crossings

There are 3 major rail lines within the City of San Leandro (Oakland Subdivision, Niles Subdivision, Coastal Subdivision) and these lines connect industrial areas within the City to the Port of Oakland, other markets along the West Coast, and the other areas throughout the State/Nation. All rail lines are under the ownership of Union Pacific Railroad (UPRR). Amtrak also runs along the UPRR within the study area, however, there are no stops within the study area. There are 2 grade-separated railroad crossings within the study area: the overpass on Davis Street and the overpass at the intersection of Doolittle Drive and Airport Access Road. There are also a number of at-grade crossings from various spurs or the UPRR line within the study area:

- Project Driveway, approximately 265-feet east of Doolittle Drive
- Doolittle Drive, approximately 380-feet south of Davis Street
- Williams Street, approximately 840-feet east of Doolittle Drive
- Marina Boulevard, approximately 840-feet east of Doolittle Drive

A queuing analysis will also be prepared to determine whether there are queuing issues at each of the aforementioned at-grade railroad crossings with respect to the adjacent study area intersections. This analysis has been conducted for Horizon Year traffic conditions only.

EXHIBIT 3-5: CITY OF SAN LEANDRO BICYCLE & PEDESTRIAN PLAN

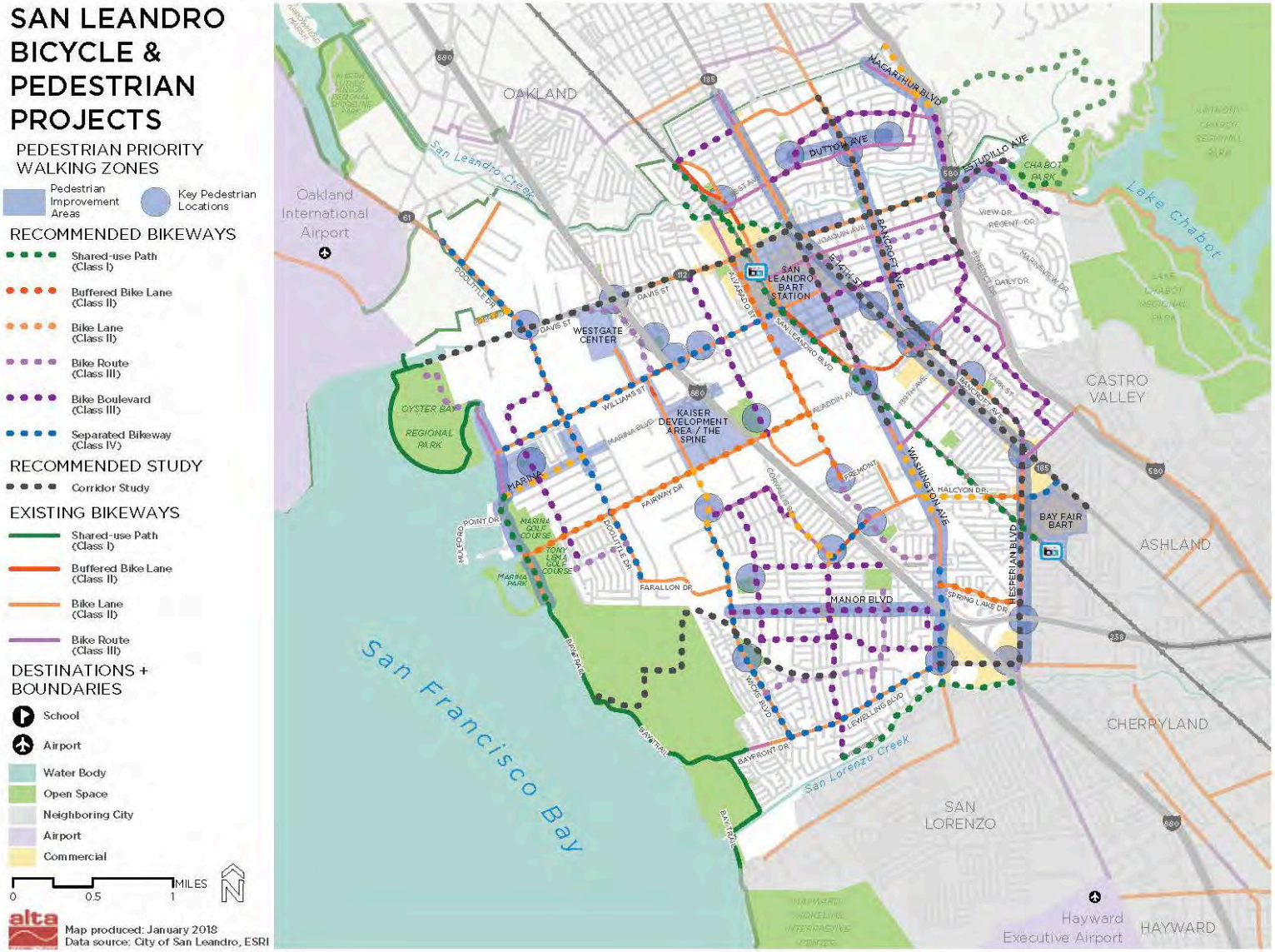
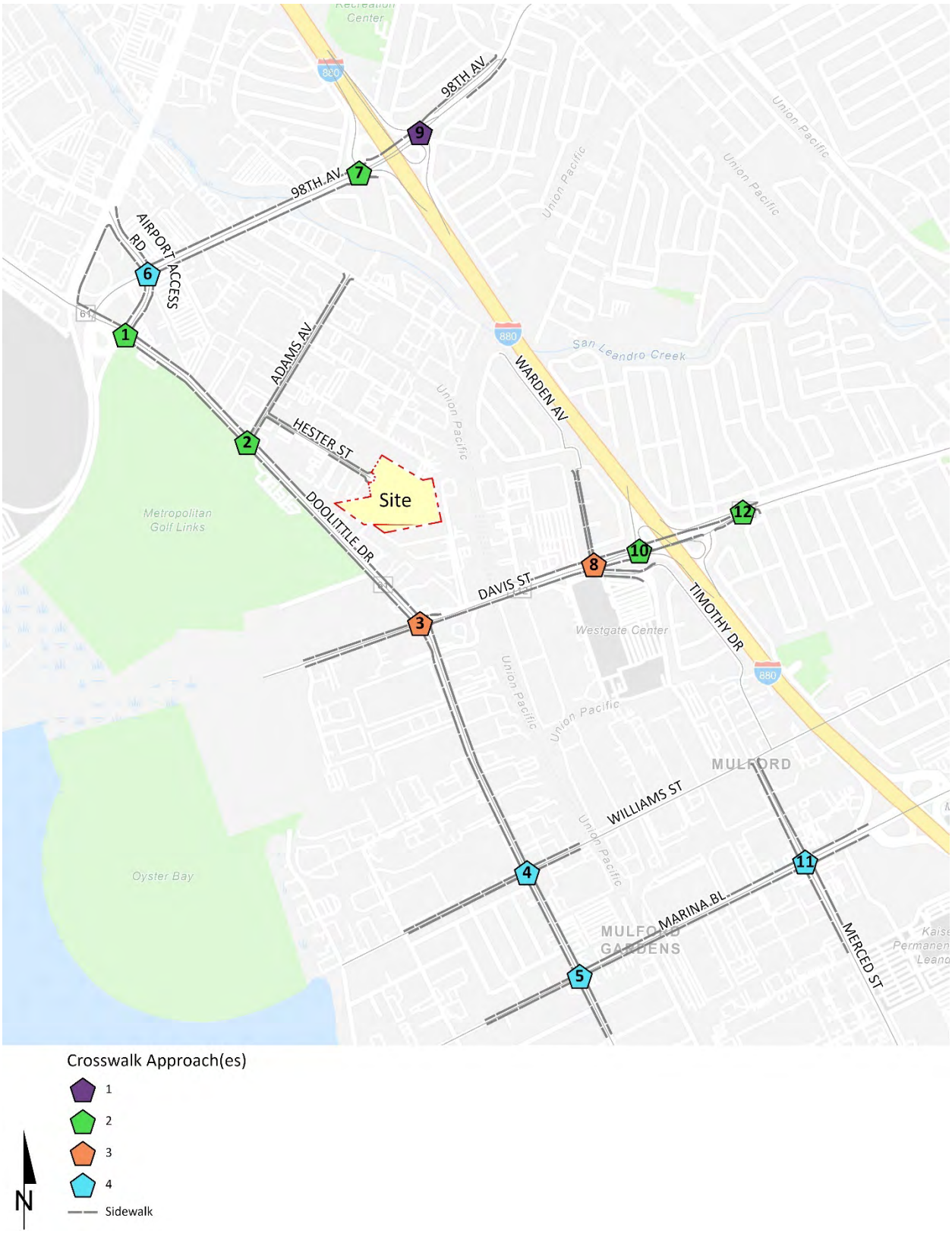


EXHIBIT 3-6: EXISTING PEDESTRIAN FACILITIES



3.7 EXISTING TRAFFIC COUNTS

Due to the currently ongoing COVID-19 pandemic, historic 2015 traffic counts were adjusted by 0.772% per year (compounded annually) over 5 years to reflect 2020 baseline traffic conditions. This annual growth rate is based on the average ABAG projected growth for employment, population, and households for San Leandro. The 2015 counts (adjusted to 2020) were then compared to the recently collected November 2020 counts in order to determine the net changes and to develop an adjustment factor. The average of all applicable locations was calculated to be 127% for AM and 106% for the PM. As such, the locations where historic count data were not available, the 2020 counts that were recently collected were increased by 127% in the AM peak hour and 106% in the PM peak hour. For the locations where both historic and actual 2020 data is available, the final adjusted 2020 traffic volumes used for the purposes of this TA were developed by taking the higher of the 2 volumes (between either the adjusted 2015 or the actual 2020). The following peak hours were selected for analysis for the November 2020 traffic counts:

- Weekday AM Peak Hour (peak hour between 7:00 AM and 11:00 AM)
- Weekday PM Peak Hour (peak hour between 4:00 PM and 7:00 PM)

The raw manual peak hour turning movement traffic count data sheets are included in Appendix 3.1. These raw turning volumes have been flow conserved between intersections with limited access, no access, and where there are currently no uses generating traffic. The traffic counts collected in November 2020 include the vehicle classifications as shown below:

- Passenger Cars
- 2-Axle Trucks
- 3-Axle Trucks
- 4 or More Axle Trucks

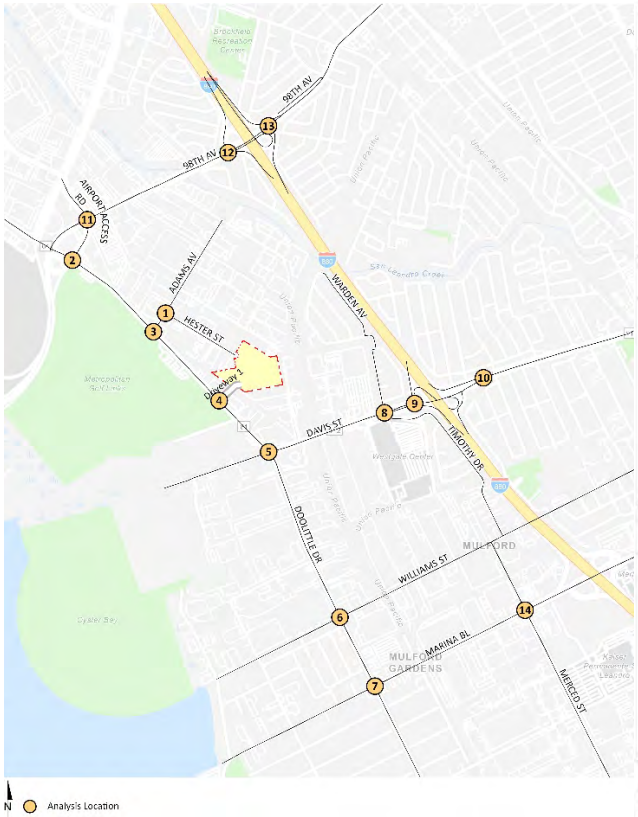
Truck traffic has been accounted for in the peak hour operations analysis by entering the percentage of heavy vehicles in the analysis software. The methodology used to derive the existing traffic counts have been reviewed and approved by City staff.

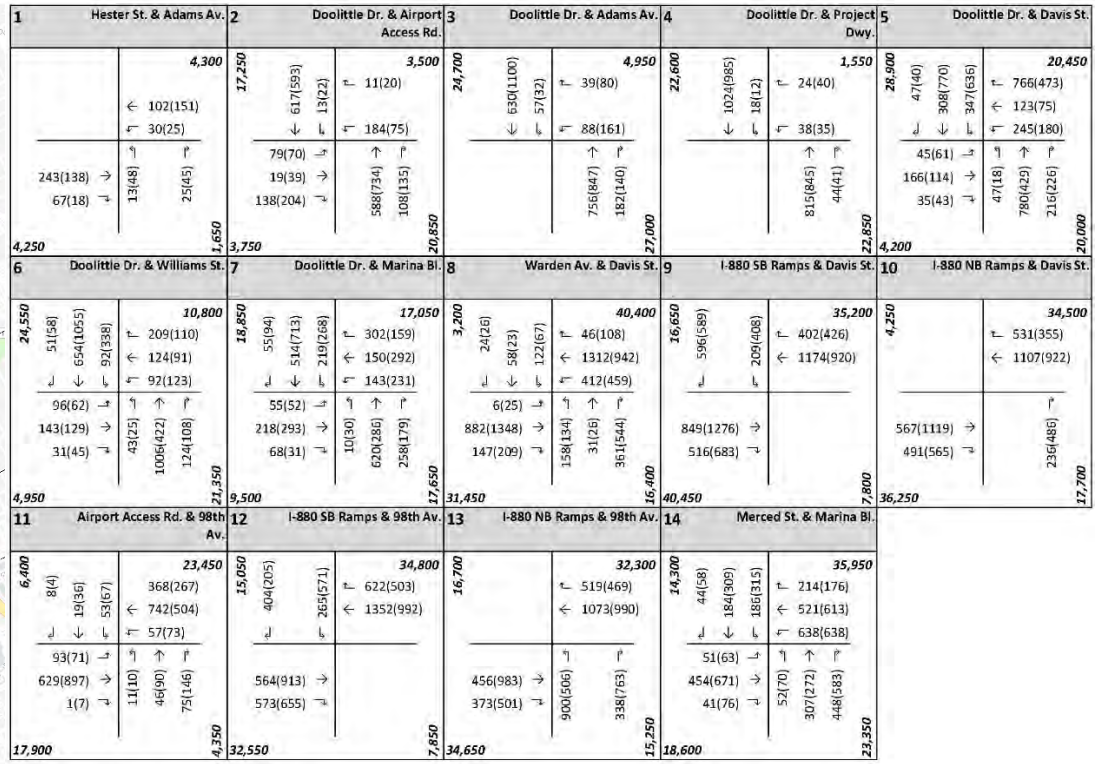
Existing weekday ADT volumes on arterial highways throughout the study area are shown on Exhibit 3-7. Existing ADT volumes were based upon factored intersection peak hour counts collected by Urban Crossroads, Inc. using the following formula for each intersection leg:

Weekday PM Peak Hour (Approach Volume + Exit Volume) x 12 = Leg Volume

Existing weekday AM and weekday PM peak hour intersection volumes are also shown on Exhibit 3-7.

EXHIBIT 3-7: EXISTING (2020) TRAFFIC VOLUMES





##(##) AM(PM) Peak Hour Intersection Volumes

Average Daily Trips

3.8 INTERSECTION OPERATIONS ANALYSIS

Existing peak hour traffic operations have been evaluated for the study area intersections based on the analysis methodologies presented in Section 2.2 *Intersection Capacity Analysis* of this report. The intersection operations analysis results are summarized in Table 3-1 which indicates that the study area intersections are currently operating at an acceptable LOS during the peak hours (i.e., LOS D or better), with the exception of the following locations:

- Doolittle Dr. & Davis St. (#5) – LOS E AM peak hour only
- Merced St. & Marina Bl. (#14) – LOS E PM peak hour only

The intersection operations analysis worksheets are included in Appendix 3.2 of this TA.

TABLE 3-1: INTERSECTION ANALYSIS FOR EXISTING (2020) CONDITIONS

#	Intersection	Traffic Control[1]	Delay[2] (secs.)		Volume-to-Capacity (v/c)		Level of Service	
			AM	PM	AM	PM	AM	PM
1	Hester St. & Adams Av.	CSS	11.5	11.0	0.07	0.15	B	B
2	Doolittle Dr. & Airport Access Rd.	TS	20.4	18.3	0.54	0.47	C	B
3	Doolittle Dr. & Adams Av.	TS	9.7	11.0	0.46	0.67	A	B
4	Doolittle Dr. & Project Dwy.	CSS	16.0	15.0	0.18	0.18	C	C
5	Doolittle Dr. & Davis St.	TS	**74.4**	45.4	**0.96**	0.72	**E**	D
6	Doolittle Dr. & Williams St.	TS	25.2	30.7	0.85	0.83	C	C
7	Doolittle Dr. & Marina Bl.	TS	36.2	35.4	0.64	0.71	D	D
8	Warden Av. & Davis St.	TS	41.3	32.8	0.74	0.72	D	C
9	I-880 SB Ramps & Davis St.	TS	13.4	14.5	0.71	0.63	B	B
10	I-880 NB Ramps & Davis St.	TS	11.1	14.6	0.61	0.76	B	B
11	Airport Access Rd. & 98th Av.	TS	30.9	33.4	0.41	0.49	C	C
12	I-880 SB Ramps & 98th Av.	TS	17.9	12.4	0.84	0.58	B	B
13	I-880 NB Ramps & 98th Av.	TS	18.8	34.0	0.80	0.96	B	C
14	Merced St. & Marina Bl.	TS	43.2	**57.9**	0.81	**0.93**	D	**E**

* **BOLD** = LOS does not meet the applicable jurisdictional requirements (i.e., unacceptable LOS).

1 CSS = Cross-street Stop; TS = Traffic Signal

2 Per the Highway Capacity Manual (HCM 2000), overall average intersection delay and level of service are shown for intersections with a traffic signal or all way stop control. For intersections with cross street stop control, the delay and level of service for the worst individual movement (or movements sharing a single lane) are shown.

3.9 TRAFFIC SIGNAL WARRANTS ANALYSIS

Traffic signal warrants for Existing traffic conditions are based on existing peak hour intersection turning volumes. The following unsignalized study area intersection currently warrants a traffic signal for Existing (2020) traffic conditions based on PM peak hour volumes:

- Doolittle Dr. & Project Driveway (#4)

However, this intersection is currently operating at an acceptable LOS as a cross-street stop-controlled intersection. As such, installation of a traffic signal does not appear necessary from an operational perspective. Existing conditions traffic signal warrant analysis worksheets are provided in Appendix 3.3.

3.10 QUEUING ANALYSIS

A queuing analysis was performed for the signalized study area intersections to assess vehicle queues for the turn pockets that may potentially "spill back" into the adjacent through lanes. Queuing analysis findings are presented in Table 3-2 for Existing traffic conditions. As shown in Table 3-2, the following movements are currently experiencing queuing issues during the weekday AM or weekday PM peak 95th percentile traffic flows:

- Doolittle Dr. & Davis St. (#5) – Southbound left PM peak hour only currently spills out of the dual turn pockets and spills back into the adjacent southbound through lane. Due to existing driveways located to the north does not appear feasible as there are existing driveways where access would get affected by an extension of the turn pocket.
- Doolittle Dr. & Davis St. (#5) – Westbound right turn lane AM and PM peak hours currently spills out of the right turn pocket and spills back into the adjacent westbound through lane. The right turn pocket lies within the downgrade of the grade separation over the UPRR rail line and may not be feasible to accommodate additional storage.
- Doolittle Dr. & Williams St. (#6) – Southbound left PM peak hour only is accommodated within the existing two-way left turn lane (striped median) and does not conflict with southbound through traffic.
- Doolittle Dr. & Marina Bl. (#7) – Southbound left AM and PM peak hours currently spills out of the left turn pocket and into the adjacent southbound through lane. The left turn pocket storage cannot be extended due to the existing back-to-back left turn at Barrow Street.
- Doolittle Dr. & Marina Bl. (#7) – Westbound left AM and PM peak hours currently spills out of the left turn pocket and into the adjacent westbound through lane. The left turn pocket storage cannot be extended due to the proximity of the existing driveways to the east and potentially blocking driveway access.
- Warden Av. & Davis St. (#8) – Southbound left AM peak hour only currently spills out of the left turn pocket and into the adjacent southbound through lane. The left turn pocket storage cannot be extended due to the existing intersection of Laura Avenue to the north.
- Airport Access Rd. & 98th Av. (#11) – Westbound left PM peak hour only is accommodated within the existing two-way left turn lane (striped median) and does not conflict with westbound through traffic.

TABLE 3-2: PEAK HOUR TURN LANE QUEUING SUMMARY FOR EXISTING (2020) CONDITIONS

#	Intersection	Movement	Available Stacking Distance (Feet)	95th % Queue (ft)		Acceptable? [1]	
				AM	PM	AM	PM
2	Doolittle Dr. & Airport Access Rd.	NBR	385	9	21	Yes	Yes
		SBL	150	24	32	Yes	Yes
		EBL	200	83	71	Yes	Yes
		EBR	200	31	58	Yes	Yes
		WBL	135	72	32	Yes	Yes
3	Doolittle Dr. & Adams Av.	NBR	270	35	27	Yes	Yes
		SBL	230	52	35	Yes	Yes
		WBR	85	19	24	Yes	Yes
5	Doolittle Dr. & Davis St.	NBL	130	81	41	Yes	Yes
		NBR	180	48	46	Yes	Yes
		SBL	265	200	**458** [2]	Yes	**No**
		EBL	300	78	98	Yes	Yes
		WBL	235	213 [2]	168 [2]	Yes	Yes
		WBR	100	**916** [2]	**304**	**No**	**No**
6	Doolittle Dr. & Williams St.	NBL	90	48	39	Yes	Yes
		SBL	100	117 [2]	**354** [2]	Yes	**No**
		WBR	100	43	23	Yes	Yes
7	Doolittle Dr. & Marina Bl.	NBL	50	23	52	Yes	Yes
		NBR	100	95	39	Yes	Yes
		SBL	100	**305** [2]	**359** [2]	**No**	**No**
		EBL	120	73	76	Yes	Yes
		WBL	120	**223** [2]	**320** [2]	**No**	**No**
		WBR	850	64	47	Yes	Yes
8	Warden Av. & Davis St.	NBR	600	37	70	Yes	Yes
		SBL	50	**104**	70	**No**	Yes
		EBL	85	15	40	Yes	Yes
		WBL	250	225 [2]	225 [2]	Yes	Yes
9	I-880 SB Ramps & Davis St.	SBR	350	152	125	Yes	Yes
		WBR	550	35	44	Yes	Yes
10	I-880 NB Ramps & Davis St.	NBL	300	110	82	Yes	Yes
		EBR	800	91	0	Yes	Yes

#	Intersection	Movement	Available Stacking Distance (Feet)	95th % Queue (ft)		Acceptable? [1]	
				AM	PM	AM	PM
11	Airport Access Rd. & 98th Av.	NBL	60	27	24	Yes	Yes
		NBR	150	0	6	Yes	Yes
		SBL	100	97 [2]	121 [2]	Yes	Yes
		SBR	190	0	0	Yes	Yes
		WBL	100	104 [2]	**128** [2]	Yes	**No**
		WBR	260	43	37	Yes	Yes
12	I-880 SB Ramps & 98th Av.	SBR	400	225 [2]	85	Yes	Yes
		EBR	290	40	41	Yes	Yes
13	I-880 NB Ramps & 98th Av.	NBL	675	208	79	Yes	Yes
14	Merced Av. & Marina Bl.	NBL	150	71	87	Yes	Yes
		NBR	415	206	293 [2]	Yes	Yes
		SBL	300	131 [2]	198 [2]	Yes	Yes
		SBR	150	0	0	Yes	Yes
		EBL	80	70	95 [2]	Yes	Yes
		EBR	50	0	0	Yes	Yes
		WBL	365	336 [2]	359 [2]	Yes	Yes

BOLD = 95th percentile queue exceeds the available storage.

[1] Stacking Distance is acceptable if the required stacking distance is less than or equal to the stacking distance provided. An additional 25 feet (1 car length) of stacking which is assumed to be provided in the transition for turn pockets is reflected in the stacking distance shown on this table, where applicable.

[2] 95th percentile volume exceeds capacity, queue may be longer. Queue shown is maximum after two cycles.

Worksheets for Existing (2020) traffic conditions queuing analysis worksheets are provided in Appendix 3.4.

4 PROJECTED FUTURE TRAFFIC

The Project is proposed to consist of a 106,190 square foot distribution warehouse use (square footage includes mezzanine space). Vehicular and truck traffic access will be provided via Hester Street and Doolittle Drive (see Exhibit 1-2). Specifically, all truck access to the site will occur off Hester Street, employee access is provided via both Hester Street and Doolittle Drive (via Project Driveway), and all van access is to occur off of Doolittle Drive (via Project Driveway). Regional access to the Project site is provided via the I-880 Freeway via 98th Avenue and Davis Street interchanges.

4.1 PROJECT TRIP GENERATION

4.1.1 EXISTING TRIP GENERATION

Existing traffic counts were collected at 880 Doolittle Drive in order to determine the existing trips currently being generated on the site that would be replaced by the Project. Table 4-1 summarizes the counts collected at each driveway and the total for the site. Trip generation has been derived for passenger cars, vans (passenger cars), and trucks. An expanded summary of the existing driveway counts is provided in Appendix 4.1 of this TA.

TABLE 4-1: EXISTING EMPIRICAL DATA

	AM Peak Hour			PM Peak Hour			
Land Use	**In**	**Out**	**Total**	**In**	**Out**	**Total**	**Daily**
Doolittle Access							
Passenger Cars:	61	30	91	17	61	78	792
Vans:	7	45	52	35	1	36	414
Truck Trips:	3	4	7	1	1	2	43
Total Trips[1]	**71**	**79**	**150**	**53**	**63**	**116**	**1,249**
Hester Access							
Passenger Cars:	12	1	13	4	19	23	245
Vans:	0	1	1	3	0	3	51
Truck Trips:	0	0	0	0	0	0	2
Total Trips[1]	**12**	**2**	**14**	**7**	**19**	**26**	**297**
Total							
Passenger Cars:	73	31	104	21	80	101	1,037
Vans:	7	46	53	38	1	39	465
Truck Trips:	3	4	7	1	1	2	45
Total Trips[1]	**83**	**80**	**164**	**60**	**82**	**142**	**1,546**

[1] Total Trips = Passenger Cars + Truck Trips.

4.1.2 PROPOSED PROJECT TRIP GENERATION

Trip generation represents the amount of traffic that is attracted and produced by a development and is based upon the specific land uses planned for a given project. Trip generation estimates for the proposed Project have been developed using tenant supplied data for the proposed facility. Since the trip generation is based on tenant supplied data, trip generation rates from the Institute of Transportation Engineers (ITE) Trip Generation Manual, 10th Edition, 2017, have not been utilized. Table 4-2 summarizes the Project's trip generation. The proposed Project is anticipated to generate 1,136 two-way trips per day with 196 AM peak hour trips and 83 PM peak hour trips.

TABLE 4-2: PROPOSED PROJECT TRIP GENERATION SUMMARY

	AM Peak Hour			PM Peak Hour			
Land Use	**In**	**Out**	**Total**	**In**	**Out**	**Total**	**Daily**
Proposed Project							
Associates/Drivers:	59	0	59	0	0	0	506
Vans:	0	120	120	0	0	0	250
Flex Vehicles:	0	0	0	40	20	60	80
Self Service Kiosk:[1]	8	8	16	11	11	22	272
4+-axle Trucks:	0	1	1	1	0	1	28
Proposed Project Total	**67**	**129**	**196**	**52**	**31**	**83**	**1,136**

[1] Self service kiosk estimate shown is a maximum projection to conduct a conservative analysis. There is no point of sale associated with these trips.

4.1.3 NET NEW TRIP GENERATION

A comparison between the proposed Project trip generation estimates and the existing use is summarized on Table 4-3. For the purposes of this TA, the net new traffic generated by the proposed Project (less the traffic currently being generated by the site) will be evaluated. As shown in Table 4-3, the Project is anticipated to generate 409 fewer two-way trips per day than the existing use with 32 more AM peak hour trips and 58 fewer PM peak hour trips.

TABLE 4-3: TRIP GENERATION COMPARISON

	AM Peak Hour			PM Peak Hour			
Land Use	**In**	**Out**	**Total**	**In**	**Out**	**Total**	**Daily**
Proposed Project							
Passenger Cars:	67	8	75	11	11	22	778
Vans/Flex Vehicles:	0	120	120	40	20	60	330
Total Truck Trips:	0	1	1	1	0	1	28
Proposed Project Total	**67**	**129**	**196**	**52**	**31**	**83**	**1,136**
Existing Passenger Cars:	73	31	104	21	80	101	1,037
Existing Vans:	7	46	53	38	1	39	465
Existing Trucks:	3	4	7	1	1	2	45
Existing Total:	**83**	**80**	**164**	**60**	**82**	**142**	**1,546**
Variance Passenger Cars:	-6	-23	-29	-10	-69	-79	-259
Variance Vans:	-7	74	67	2	19	21	-134
Variance Trucks:	-3	-3	-6	0	0	0	-17
Variance Total (Net New Traffic)	**-16**	**48**	**32**	**-8**	**-50**	**-58**	**-409**

4.2 PROJECT TRIP DISTRIBUTION

Trip distribution is the process of identifying the probable destinations, directions, or traffic routes that will be utilized by Project traffic. The potential interaction between the planned land uses and surrounding regional access routes are considered to identify the route where the Project traffic would distribute. The passenger car trip distribution patterns shown on Exhibit 4-1 are based on the select zone run distribution that was prepared by the City's traffic consultant. However, adjustments have been made to account for the Project access onto Doolittle in addition to other minor changes to routes based on ultimate destination and considerations to the surrounding roadway network. Exhibit 4-2 shows the delivery van/truck distributions and are consistent with the service area zip code data provided by the Project Applicant for the VMT analysis. Each of these distribution patterns was reviewed and approved by the City of San Leandro as part of the traffic study scoping process.

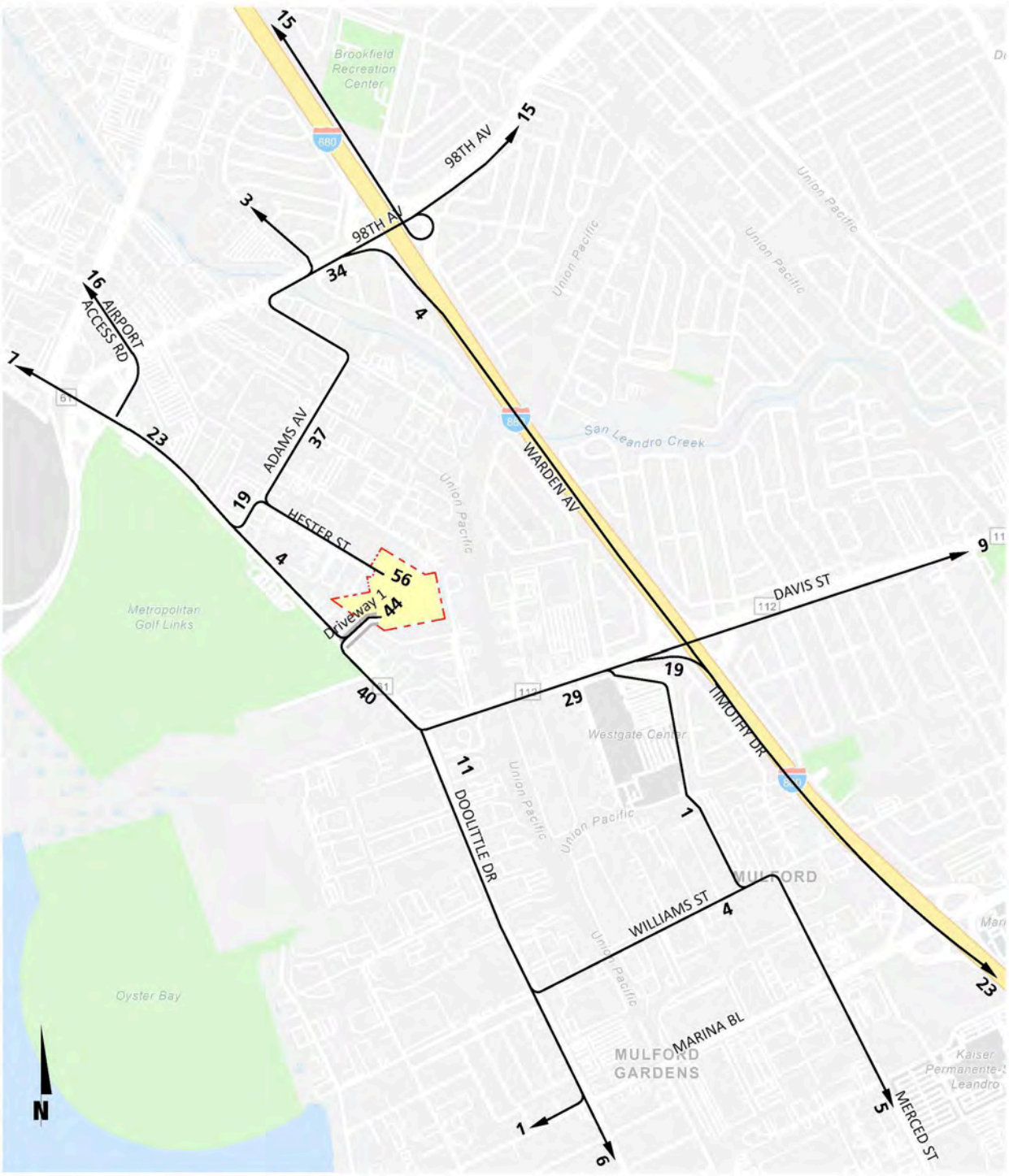
4.3 MODAL SPLIT

The traffic reducing potential of public transit, walking, or bicycling have not been considered in this TA. Essentially, the traffic projections are "conservative" in that these alternative travel modes might be able to reduce the forecasted traffic volumes (employee trips only).

4.4 PROJECT TRIP ASSIGNMENT

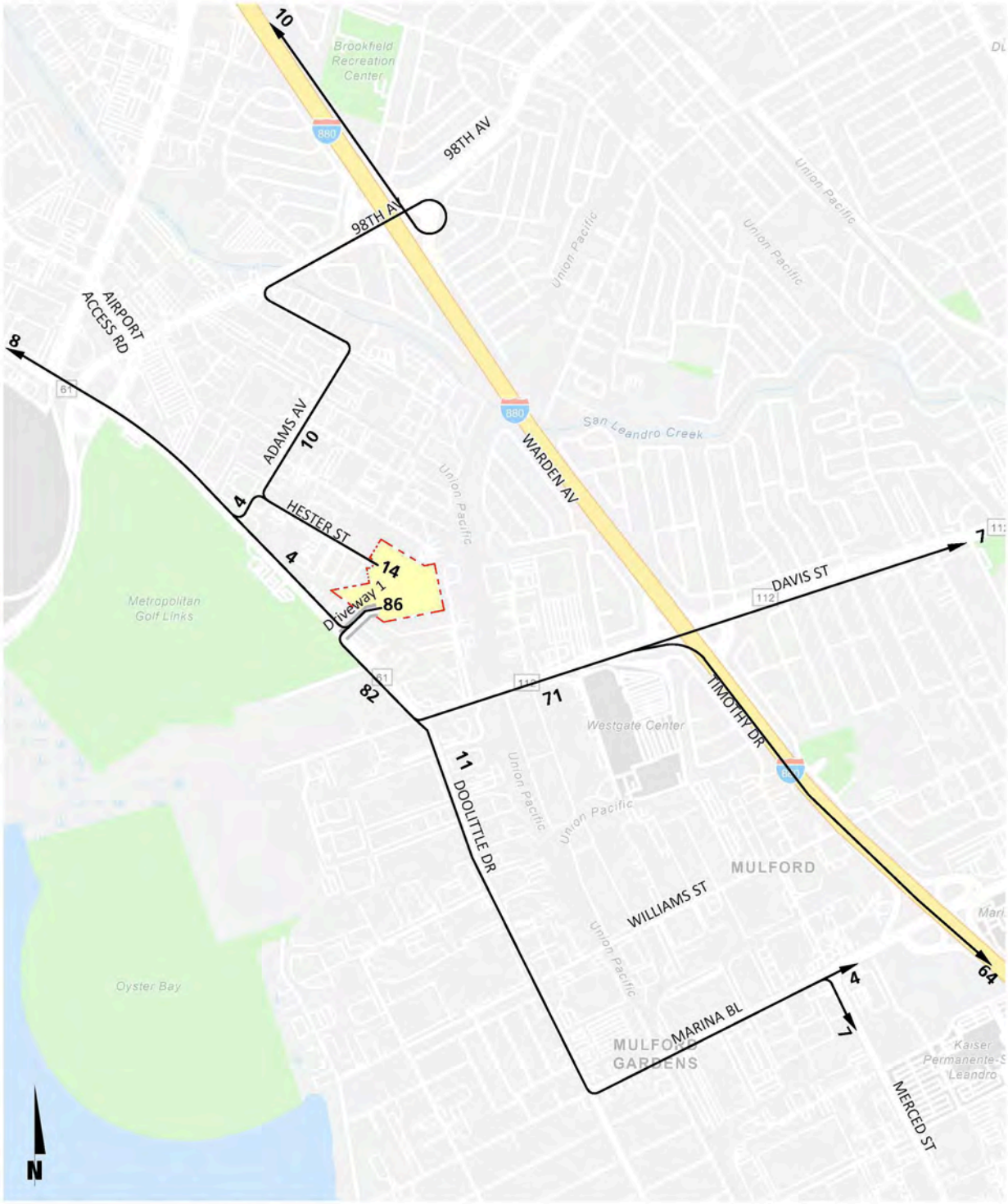
The assignment of traffic from the Project area to the adjoining roadway system is based upon the Project trip generation, trip distribution, and the arterial highway and local street system improvements that would be in place by the time of initial occupancy of the Project. Based on the identified Project traffic generation and trip distribution patterns, Project ADT and peak hour intersection turning movement volumes are shown on Exhibit 4-3.

EXHIBIT 4-1: PROJECT (PASSENGER CAR) TRIP DISTRIBUTION



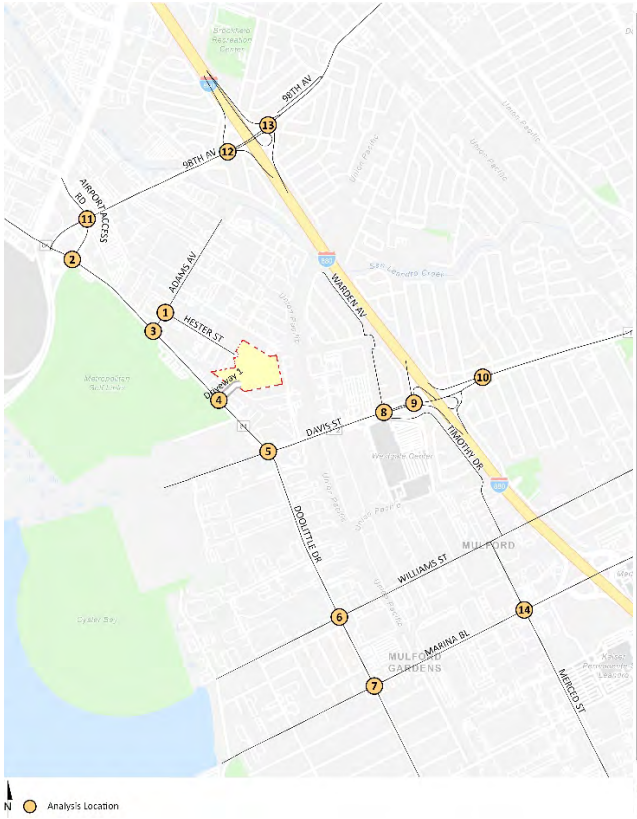
10 = *Percent To/From Project*

EXHIBIT 4-2: PROJECT (DELIVERY VAN/TRUCK) TRIP DISTRIBUTION



10 = *Percent To/From Project*

EXHIBIT 4-3: PROJECT ONLY TRAFFIC VOLUMES



1 Hester St. & Adams Av.	2 Doolittle Dr. & Airport Access Rd.	3 Doolittle Dr. & Adams Av.	4 Doolittle Dr. & Project Dwy.	5 Doolittle Dr. & Davis St.
-110 -3(-3) ↰ -2(-12) ↑ ↱ -1(-24) ↱ -2(-2) ↳ -60 / -170	-30 / -40 -1(-1) ← -1(-2) ↰ 4(-3) → ↱ -4(-11) ↱ -70	-70 / -60 -1(0) ← ↲ -2(-2) ↲ -2(-12) ↱ 2(-2) → -20	-20 / -240 -1(0) ↲ 2(-2) ↰ 49(-12) ↰ -11(-2) ↱ -230	-230 / -180 5(-6) ← ↲ 44(-7) ↲ -9(-1) ↱ -2(-1) → -40
6 Doolittle Dr. & Williams St.	**7 Doolittle Dr. & Marina Bl.**	**8 Warden Av. & Davis St.**	**9 I-880 SB Ramps & Davis St.**	**10 I-880 NB Ramps & Davis St.**
-40 / -10 6(-3) ← ↲ -1(-3) ↲ -2(0) → -34	-30 / -20 0(-1) ↳ -1(-4) ← 8(2) ↲ -1(0) ↱ 0(-1) → -20	-180 -9(-1) ← 44(-6) → 0(-1) ↳ -180	-180 / -110 -9(-1) ← 3(-5) → 41(-1) ↳ -70	-110 / -30 -1(-1) ← 3(-5) → -70
11 Airport Access Rd. & 98th Av.	**12 I-880 SB Ramps & 98th Av.**	**13 I-880 NB Ramps & 98th Av.**	**14 Merced St. & Marina Bl.**	
-40 -1(-2) ← -4(-11) → -40	-30 / -70 -2(-1) ↳ -1(-2) ← 0(-19) → -1(-3) ↳ -100	-40 -1(-2) ← -3(-10) → 4(-8) ↳ -70 / -30	-10 -1(-3) ← 3(1) → 5(1) ↳ -1(0) ↳ 0(-1) → -20	

##(##) AM(PM) Peak Hour Intersection Volumes

Average Daily Trips

4.5 HORIZON YEAR (2040) TRAFFIC FORECASTS

The City's traffic consultant has provided future long-range Horizon Year (2040) Without Project traffic forecasts based on the Alameda Countywide Travel Demand Model using accepted procedures for model forecast refinement and smoothing for study area intersections located within the City of San Leandro. Traffic Counts

The traffic forecasts reflect the area-wide growth anticipated between Existing (2020) conditions and Horizon Year (2040) traffic conditions. In most instances the traffic model zone structure is not designed to provide accurate turning movements along arterial roadways unless refinement and reasonableness checking is performed. Therefore, the Horizon Year peak hour forecasts were refined using the model derived long range forecasts, base (validation) year model forecasts, along with existing baseline traffic (adjusted baseline).

The refined future peak hour approach and departure volumes obtained from the model output data are then entered into a spreadsheet program consistent with the National Cooperative Highway Research Program (NCHRP Report 255), along with initial estimates of turning movement proportions. A linear programming algorithm is used to calculate individual turning movements which match the known directional roadway segment forecast volumes computed in the previous step. This program computes a likely set of intersection turning movements from intersection approach counts and the initial turning proportions from each approach leg.

The future Horizon Year (2040) Without Project traffic forecasts provided by the City's traffic consultant are included in Appendix 4.2. The future Horizon Year (2040) Without Project peak hour turning movements were then reviewed by Urban Crossroads, Inc. for reasonableness, and in some cases, were adjusted to achieve flow conservation. Flow conservation checks ensure that traffic flow between two closely spaced intersections, such as two adjacent driveway locations, is verified in order to make certain that vehicles leaving one intersection are entering the adjacent intersection and that there is no unexplained loss of vehicles. The result of this traffic forecasting procedure is a series of traffic volumes which are suitable for traffic operations analysis. Lastly, net new Project traffic was then added to develop Horizon Year (2040) With Project traffic forecasts.

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5 E+P TRAFFIC ANALYSIS

This section discusses the traffic forecasts for Existing Plus Project (E+P) conditions and the resulting intersection operations, traffic signal warrant, and queuing analyses.

5.1 ROADWAY IMPROVEMENTS

The lane configurations and traffic controls assumed to be in place for E+P conditions are consistent with those shown previously on Exhibit 3-1.

5.2 E+P TRAFFIC VOLUME FORECASTS

This scenario includes Existing (adjusted) traffic volumes plus net new Project traffic. The ADT and peak hour intersection turning movement volumes, which can be expected for E+P traffic conditions are shown on Exhibit 5-1.

5.3 INTERSECTION OPERATIONS ANALYSIS

E+P peak hour traffic operations have been evaluated for the study area intersections based on the analysis methodologies presented in Section 2 *Methodologies* of this TA. The intersection analysis results are summarized in Table 5-1, which indicates that there are no additional study area intersections anticipated to operate at an unacceptable LOS, in addition to the locations identified previously under Existing (2020) traffic conditions. The intersection operations analysis worksheets are included in Appendix 5.1 of this TA.

TABLE 5-1: INTERSECTION ANALYSIS FOR E+P CONDITIONS

			Existing (2020)						E+P							
			Delay[1] (secs.)		Volume-to-Capacity (v/c)		Level of Service		Delay[1] (secs.)		Volume-to-Capacity (v/c)		Level of Service		Change in v/c[3]	
#	Intersection	Traffic Control[2]	AM	PM	AM	PM	AM	PM	AM	PM	AM	PM	AM	PM	AM	PM
1	Hester St. & Adams Av.	CSS	11.5	11.0	0.07	0.15	B	B	12.0	10.9	0.07	0.10	B	B	--	--
2	Doolittle Dr. & Airport Access Rd.	TS	20.4	18.3	0.54	0.47	C	B	20.5	18.3	0.48	0.51	C	B	--	--
3	Doolittle Dr. & Adams St.	TS	9.7	11.0	0.46	0.67	A	B	9.6	10.8	0.46	0.67	A	B	--	--
4	Doolittle Dr. & Project Dwy.	CSS	16.0	15.0	0.18	0.18	C	C	33.8	17.1	0.41	0.18	D	C	--	--
5	Doolittle Dr. & Davis St.	TS	**74.4**	45.4	**0.96**	0.72	**E**	D	**71.5**	45.7	**0.92**	0.72	**E**	D	-0.04	--
6	Doolittle Dr. & Williams St.	TS	25.2	30.7	0.85	0.83	C	C	24.9	30.4	0.80	0.83	C	C	--	--
7	Doolittle Dr. & Marina Bl.	TS	36.2	35.4	0.64	0.71	D	D	37.9	36.4	0.65	0.75	D	D	--	--
8	Warden Av. & Davis St.	TS	41.3	32.8	0.74	0.72	D	C	42.3	32.9	0.74	0.72	D	C	--	--
9	I-880 SB Ramps & Davis St.	TS	13.4	14.5	0.71	0.63	B	B	13.3	14.5	0.71	0.63	B	B	--	--
10	I-880 NB Ramps & Davis St.	TS	11.1	14.6	0.61	0.76	B	B	11.1	14.6	0.61	0.76	B	B	--	--
11	Airport Access Rd. & 98th Av.	TS	30.9	33.4	0.41	0.49	C	C	30.9	33.5	0.41	0.49	C	C	--	--
12	I-880 SB Ramps & 98th Av.	TS	17.9	12.4	0.84	0.58	B	B	17.8	12.4	0.83	0.58	B	B	--	--
13	I-880 NB Ramps & 98th Av.	TS	18.8	34.0	0.80	0.96	B	C	18.8	34.7	0.80	0.96	B	C	--	--
14	Merced St. & Marina Bl.	TS	43.2	**57.9**	0.81	**0.93**	D	**E**	43.2	**58.0**	0.81	**0.93**	D	**E**	--	0.00

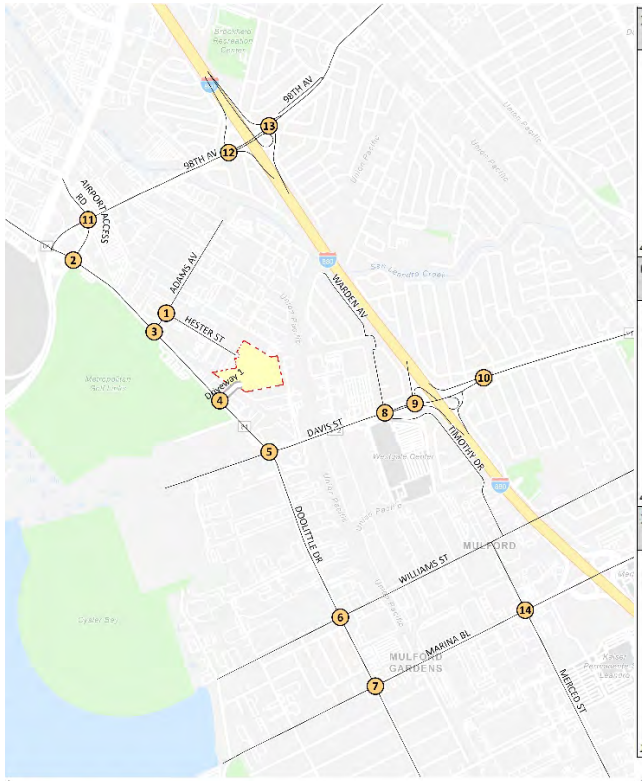
* **BOLD** = Level of Service (LOS) does not meet the applicable jurisdictional requirements (i.e., unacceptable LOS).

1 Per the Highway Capacity Manual (HCM 2000), overall average intersection delay and level of service are shown for intersections with a traffic signal or all way stop control. For intersections with cross street stop control, the delay and level of service for the worst individual movement (or movements sharing a single lane) are shown.

2 CSS = Cross-street Stop; TS = Traffic Signal

3 For intersections operating below LOS D, an impact would occur if new trips added by the project causes the v/c to increase by 0.05 or more.

EXHIBIT 5-1: E+P TRAFFIC VOLUMES



1 Hester St. & Adams Av.

					4,200
			← 102(151)		
			↰ 27(22)		
			↰	↱	
243(138) →		11(36)		24(21)	
65(16) ↳					
4,200					1,450

2 Doolittle Dr. & Airport Access Rd.

17,250					3,450
	616(592)	13(22)	↰ 11(20)		
	↓	↳	↰ 183(73)		
79(70) ↳			↑	↱	
19(39) →					
138(204) ↳			592(731)	104(124)	
3,750					20,800

3 Doolittle Dr. & Adams Av.

24,650					4,900
	629(1100)	55(30)	↱ 37(68)		
	↓	↳	↰ 88(161)		
			↑	↱	
			758(845)	182(140)	
					26,950

4 Doolittle Dr. & Project Dwy.

22,550					1,300
	1024(985)	17(12)	↱ 26(38)		
	↓	↳	↰ 87(23)		
			↑	↱	
			815(845)	33(39)	
					22,650

5 Doolittle Dr. & Davis St.

28,700					20,250
	47(40)	313(764)	391(629)	↱ 757(472)	
				← 123(75)	
	↲	↓	↳	↰ 245(180)	
45(61) ↳			↰	↑	↱
166(114) →					
35(43) ↳			47(18)	778(428)	216(226)
4,200					19,950

6 Doolittle Dr. & Williams St.

24,500					10,800
	51(58)	660(1052)	91(335)	← 209(110)	
				← 124(91)	
	↲	↓	↳	↰ 92(123)	
96(62) ↳			↰	↑	↱
143(129) →					
31(45) ↳			43(25)	1004(422)	124(108)
4,950					21,300

7 Doolittle Dr. & Marina Bl.

18,800					17,050
	55(93)	513(709)	227(270)	← 301(159)	
				← 150(292)	
	↲	↓	↳	↰ 143(231)	
55(52) ↳			↰	↑	↱
218(293) →					
68(31) ↳			10(30)	620(285)	258(179)
9,500					17,600

8 Warden Av. & Davis St.

3,300					41,450
	24(26)	58(23)	122(67)	← 46(108)	
				← 1303(941)	
	↲	↓	↳	↰ 412(459)	
6(25) ↳			↰	↑	↱
926(1342) →					
147(208) ↳			158(134)	31(26)	361(544)
32,050					16,750

9 I-880 SB Ramps & Davis St.

17,100					36,250
	596(589)	209(408)	← 402(426)		
			← 1165(919)		
	↲	↳			
852(1271) →					
557(682) ↳					
41,400					8,100

10 I-880 NB Ramps & Davis St.

4,250					34,550
			← 531(355)		
			← 1106(921)		
				↱	
570(1114) →					
491(565) ↳				236(486)	
36,250					17,600

11 Airport Access Rd. & 98th Av.

6,400					23,450
	8(4)	18(34)	53(67)	368(267)	
				← 742(504)	
	↲	↓	↳	↰ 57(73)	
93(71) ↳			↰	↑	↱
629(897) →					
1(7) ↳			11(10)	42(79)	75(146)
17,900					4,300

12 I-880 SB Ramps & 98th Av.

15,300					35,700
	402(204)	265(571)	← 622(503)		
			← 1351(990)		
	↲	↳			
564(894) →					
572(652) ↳					
33,050					7,850

13 I-880 NB Ramps & 98th Av.

5,600					38,400
			← 519(469)		
			← 1072(988)		
			↰	↱	
453(973) →			900(506)	338(763)	
377(493) ↳					
35,700					21,200

14 Merced St. & Marina Bl.

14,300					35,950
	44(58)	183(306)	186(315)	← 214(176)	
				← 521(613)	
	↲	↓	↳	↰ 638(638)	
51(63) ↳			↰	↑	↱
457(672) →					
46(77) ↳			51(70)	307(271)	448(583)
18,600					23,350

##(##) AM(PM) Peak Hour Intersection Volumes

Average Daily Trips

5.4 TRAFFIC SIGNAL WARRANTS ANALYSIS

There are no other unsignalized study area intersections anticipated to meet peak hour volume-based traffic signal warrants under E+P traffic conditions in addition to the location previously warranted under Existing traffic conditions (see Appendix 5.2).

5.5 QUEUING ANALYSIS

A queuing analysis was performed for the signalized study area intersections to assess vehicle queues for the turn pockets that may potentially "spill back" into the adjacent through lanes. Queuing analysis findings are presented in Table 5-2 for E+P traffic conditions. As shown in Table 5-2, the following turning movements are anticipated to experience queuing issues for E+P traffic conditions and are consistent with existing deficient turning movements, however, the addition of Project traffic to these existing deficiencies result in nominal changes:

- Doolittle Dr. & Davis St. (#5) – Southbound left PM peak hour only
- Doolittle Dr. & Davis St. (#5) – Westbound right turn lane AM and PM peak hours
- Doolittle Dr. & Williams St. (#6) – Southbound left PM peak hour only
- Doolittle Dr. & Marina Bl. (#7) – Southbound left AM and PM peak hours
- Doolittle Dr. & Marina Bl. (#7) – Westbound left AM and PM peak hours
- Warden Av. & Davis St. (#8) – Southbound left AM peak hour only
- Airport Access Rd. & 98th Av. (#11) – Westbound left PM peak hour only

Worksheets for E+P traffic conditions queuing analysis worksheets are provided in Appendix 5.3.

5.6 RECOMMENDED IMPROVEMENTS

Improvement strategies have been recommended at intersections that have been identified as deficient under E+P traffic conditions and where the addition of Project traffic would have a significant effect. Improvements have been identified in an effort to achieve an acceptable LOS (i.e., LOS D or better).

TABLE 5-2: PEAK HOUR TURN LANE QUEUING SUMMARY FOR E+P CONDITIONS

#	Intersection	Movement	Available Stacking Distance (Feet)	Existing (2021) 95th % Queue (ft) AM	Existing (2021) 95th % Queue (ft) PM	Existing (2021) Acceptable? [1] AM	Existing (2021) Acceptable? [1] PM	E+P 95th % Queue (ft) AM	E+P 95th % Queue (ft) PM	E+P Acceptable? [1] AM	E+P Acceptable? [1] PM
2	Doolittle Dr. & Airport Access Rd.	NBR	385	9	21	Yes	Yes	8	16	Yes	Yes
		SBL	150	24	32	Yes	Yes	24	32	Yes	Yes
		EBL	200	83	71	Yes	Yes	83	71	Yes	Yes
		EBR	200	31	58	Yes	Yes	31	58	Yes	Yes
		WBL	135	72	32	Yes	Yes	72	31	Yes	Yes
3	Doolittle Dr. & Adams Av.	NBR	270	35	27	Yes	Yes	35	27	Yes	Yes
		SBL	230	52	35	Yes	Yes	51	34	Yes	Yes
		WBR	85	19	24	Yes	Yes	19	22	Yes	Yes
5	Doolittle Dr. & Davis St.	NBL	130	81	41	Yes	Yes	81	41	Yes	Yes
		NBR	180	48	46	Yes	Yes	48	46	Yes	Yes
		SBL	265	200	**458** [2]	Yes	**No**	264 [2]	**456** [2]	Yes	**No**
		EBL	300	78	98	Yes	Yes	78	98	Yes	Yes
		WBL	235	213 [2]	168 [2]	Yes	Yes	213 [2]	168 [2]	Yes	Yes
		WBR	100	**916** [2]	**304**	**No**	**No**	**894** [2]	**293**	**No**	**No**
6	Doolittle Dr. & Williams St.	NBL	90	48	39	Yes	Yes	48	39	Yes	Yes
		SBL	100	117 [2]	**354** [2]	Yes	**No**	116 [2]	**352** [2]	Yes	**No**
		WBR	100	43	23	Yes	Yes	43	23	Yes	Yes
7	Doolittle Dr. & Marina Bl.	NBL	50	23	52	Yes	Yes	23	52	Yes	Yes
		NBR	100	95	39	Yes	Yes	95	39	Yes	Yes
		SBL	100	**305** [2]	**359** [2]	**No**	**No**	**320** [2]	**363** [2]	**No**	**No**
		EBL	120	73	76	Yes	Yes	73	76	Yes	Yes
		WBL	120	**223** [2]	**320** [2]	**No**	**No**	**223** [2]	**320** [2]	**No**	**No**
		WBR	850	64	47	Yes	Yes	63	47	Yes	Yes
8	Warden Av. & Davis St.	NBR	600	37	70	Yes	Yes	38	70	Yes	Yes
		SBL	50	**104**	70	**No**	Yes	**104**	70	**No**	Yes
		EBL	85	15	40	Yes	Yes	15	40	Yes	Yes
		WBL	250	225 [2]	225 [2]	Yes	Yes	225 [2]	225 [2]	Yes	Yes

#	Intersection	Movement	Available Stacking Distance (Feet)	Existing (2021) 95th % Queue (ft) AM	Existing (2021) 95th % Queue (ft) PM	Existing (2021) Acceptable? [1] AM	Existing (2021) Acceptable? [1] PM	E+P 95th % Queue (ft) AM	E+P 95th % Queue (ft) PM	E+P Acceptable? [1] AM	E+P Acceptable? [1] PM
9	I-880 SB Ramps & Davis St.	SBR	350	152	125	Yes	Yes	152	125	Yes	Yes
		WBR	550	35	44	Yes	Yes	35	44	Yes	Yes
10	I-880 NB Ramps & Davis St.	NBL	300	110	82	Yes	Yes	108	82	Yes	Yes
		EBR	800	91	0	Yes	Yes	0	0	Yes	Yes
11	Airport Access Rd. & 98th Av.	NBL	60	27	24	Yes	Yes	27	24	Yes	Yes
		NBR	150	0	6	Yes	Yes	0	6	Yes	Yes
		SBL	100	97 [2]	121 [2]	Yes	Yes	97 [2]	121 [2]	Yes	Yes
		SBR	190	0	0	Yes	Yes	0	0	Yes	Yes
		WBL	100	104 [2]	**128 [2]**	Yes	**No**	104 [2]	**128 [2]**	Yes	**No**
		WBR	260	43	37	Yes	Yes	43	37	Yes	Yes
12	I-880 SB Ramps & 98th Av.	SBR	400	225 [2]	85	Yes	Yes	254 [2]	88	Yes	Yes
		EBR	290	40	41	Yes	Yes	40	40	Yes	Yes
13	I-880 NB Ramps & 98th Av.	NBL	675	208	79	Yes	Yes	208	79	Yes	Yes
14	Merced Av. & Marina Bl.	NBL	150	71	87	Yes	Yes	70	88	Yes	Yes
		NBR	415	206	293 [2]	Yes	Yes	206	293 [2]	Yes	Yes
		SBL	300	131 [2]	198 [2]	Yes	Yes	131 [2]	198 [2]	Yes	Yes
		SBR	150	0	0	Yes	Yes	0	0	Yes	Yes
		EBL	80	70	95 [2]	Yes	Yes	70	95 [2]	Yes	Yes
		EBR	50	0	0	Yes	Yes	0	0	Yes	Yes
		WBL	365	336 [2]	359 [2]	Yes	Yes	336 [2]	359 [2]	Yes	Yes

BOLD = 95th percentile queue exceeds the available storage.

[1] Stacking Distance is acceptable if the required stacking distance is less than or equal to the stacking distance provided. An additional 25 feet (1 car length) of stacking which is assumed to be provided in the transition for turn pockets is reflected in the stacking distance shown on this table, where applicable.

[2] 95th percentile volume exceeds capacity, queue may be longer. Queue shown is maximum after two cycles.

5.6.1 Recommended Improvements To Address Deficiencies At Intersections

As shown previously in Table 5-1, the addition of Project traffic at the two deficient locations is anticipated to result in a change to the v/c ratio of less than 0.05. As such, no improvements have been recommended at these locations for E+P traffic conditions.

5.6.2 Recommended Improvements To Address Deficiencies On Queues

As shown previously in Table 5-2, there are movements anticipated to experience queuing issues during the weekday AM or weekday PM peak 95th percentile traffic flows under E+P traffic conditions. However, these are existing queuing issues, and the addition of Project traffic is anticipated to have a nominal effect on the peak hour queues. As discussed previously in Section 3.10 *Queuing Analysis*, improvements at some of the turn lanes would not be feasible given the physical surroundings. The peak hour intersection operations analyses for these study area intersections show that the addition of Project traffic is not anticipated to have a significant effect (v/c increase of less than 0.05). As such, consistent with the peak hour intersection operations analyses, no improvements have been recommended to address the peak hour queuing deficiencies.

6 HORIZON YEAR (2040) TRAFFIC ANALYSIS

This section discusses the methods used to develop Horizon Year (2040) traffic forecasts and the resulting intersection operations, traffic signal warrant, and queuing analyses.

6.1 ROADWAY IMPROVEMENTS

The lane configurations and traffic controls assumed to be in place for Horizon Year (2040) conditions are consistent with those shown previously on Exhibit 3-1.

6.2 HORIZON YEAR (2040) WITHOUT PROJECT TRAFFIC VOLUME FORECASTS

This scenario includes the refined post-processed volumes obtained from the Alameda Countywide Travel Demand Model (see Section 4.5 *Horizon Year (2040) Traffic Forecasts* of this TA for a detailed discussion on the post-processing methodology). The weekday ADT and weekday AM and PM peak hour volumes which can be expected for Horizon Year (2040) Without Project traffic conditions are shown on Exhibit 6-1.

6.3 HORIZON YEAR (2040) WITH PROJECT TRAFFIC VOLUME FORECASTS

This scenario includes the refined post-processed volumes obtained from the Alameda Countywide Travel Demand Model plus net new Project traffic. The weekday ADT and weekday AM and PM peak hour volumes which can be expected for Horizon Year (2040) With Project traffic conditions are shown on Exhibit 6-2.

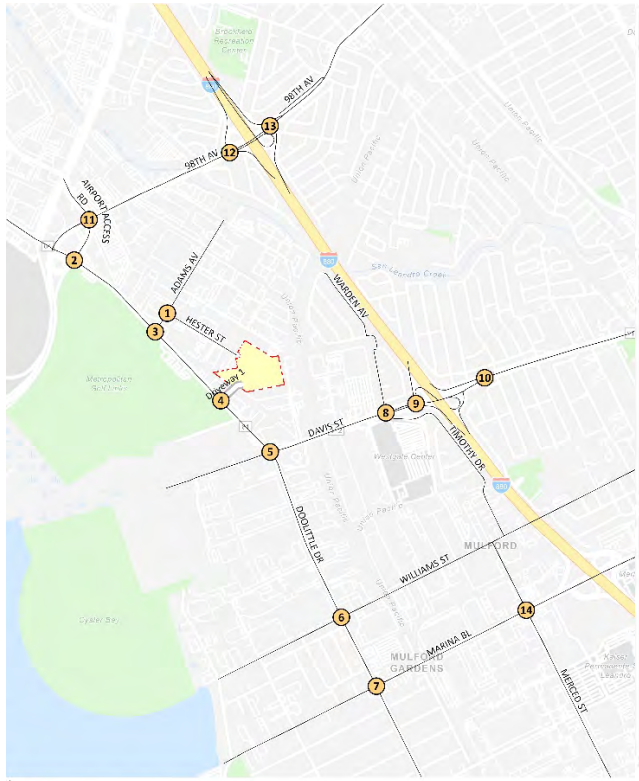
6.4 INTERSECTION OPERATIONS ANALYSIS

LOS calculations were conducted for the study intersections to evaluate their operations under Horizon Year (2040) Without Project conditions with roadway and intersection geometrics consistent with Section 6.1 *Roadway Improvements*. As shown in Table 6-1, the following study area intersections are anticipated to operate at an unacceptable LOS during the peak hours under Horizon Year (2040) Without Project traffic conditions:

- Doolittle Dr. & Davis St. (#5) – LOS F AM and PM peak hours
- Doolittle Dr. & Marina Bl. (#7) – LOS E PM peak hour only
- Airport Access Rd. & 98th Av. (#11) – LOS F PM peak hour only
- Merced St. & Marina Bl. (#14) – LOS E AM and PM peak hours

The addition of Project traffic is anticipated to have a significant effect on the intersection of Doolittle Drive and the Project Driveway only. The intersection operations analysis worksheets for Horizon Year (2040) Without and With Project traffic conditions are included in Appendix 6.1 and Appendix 6.2 of this TA, respectively.

EXHIBIT 6-1: HORIZON YEAR (2040) WITHOUT PROJECT TRAFFIC VOLUMES



1 Hester St. & Adams Av.

				4,400
			← 102(153)	
			↖ 37(27)	
		↰	↱	
255(138) →		13(64)	28(45)	
75(20) ↳				
4,400				1,800

2 Doolittle Dr. & Airport Access Rd.

17,250				3,950
	624(593)	32(22)	↱ 11(20)	
	↓	↳	← 184(104)	
			↰ ↑ ↱	
	79(70) ↲		651(1070)	108(135)
	19(39) →			
	195(350) ↲			
4,650				24,050

3 Doolittle Dr. & Adams Av.

24,800				5,150
	691(1115)	57(32)	↱ 39(82)	
	↓	↳	↖ 88(178)	
			↑ ↱	
			810(1166)	202(141)
30,450				

4 Doolittle Dr. & Project Dwy.

22,800				1,550
	1086(1016)	18(12)	↱ 24(40)	
	↓	↳	↖ 38(35)	
			↑ ↱	
			891(1166)	44(41)
25,750				

5 Doolittle Dr. & Davis St.

30,850				26,600
	47(40)	308(926)	454(636)	↱ 790(816)
	↲	↓	↳	← 132(88)
				↖ 266(180)
				↰ ↑ ↱
	45(61) ↲			71(19)
	179(144) →			834(429)
	36(46) ↳			310(291)
4,700				22,300

6 Doolittle Dr. & Williams St.

26,000				11,550
	51(58)	654(1244)	94(338)	↱ 303(127)
	↲	↓	↳	← 126(97)
				↖ 92(124)
				↰ ↑ ↱
	96(80) ↲			43(25)
	148(129) →			1103(455)
	31(45) ↳			124(108)
5,400				21,900

7 Doolittle Dr. & Marina Bl.

22,750				20,100
	57(103)	514(782)	220(380)	↱ 315(161)
	↲	↓	↳	← 261(444)
				↖ 143(231)
				↰ ↑ ↱
	92(58) ↲			10(31)
	327(297) →			669(310)
	68(36) ↳			258(179)
10,350				18,350

8 Warden Av. & Davis St.

3,550				48,000
	24(26)	66(31)	142(73)	↱ 46(126)
	↲	↓	↳	← 1414(1276)
				↖ 432(451)
				↰ ↑ ↱
	6(25) ↲			158(165)
	1069(1486) →			31(29)
	169(232) ↳			363(635)
32,600				18,750

9 I-880 SB Ramps & Davis St.

17,850				39,550
	651(601)	225(524)	↱ 407(430)	
	↲	↳	← 1240(1252)	
1008(1544) →				
567(650) ↳				
43,900				7,800

10 I-880 NB Ramps & Davis St.

4,250				37,750
			↱ 572(392)	
			← 1178(1088)	
			↱	
644(1395) →			248(486)	
589(672) ↳				
41,500				20,100

11 Airport Access Rd. & 98th Av.

6,650				27,400
	20(4)	19(36)	53(74)	368(267)
	↲	↓	↳	← 1183(666)
				↖ 57(86)
				↰ ↑ ↱
	93(71) ↲			11(10)
	680(1315) →			46(90)
	1(7) ↳			104(146)
20,700				4,350

12 I-880 SB Ramps & 98th Av.

18,050				35,550
	587(327)	265(571)	↱ 627(497)	
	↲	↳	← 1359(1041)	
564(1127) →				
621(655) ↳				
35,100				7,850

13 I-880 NB Ramps & 98th Av.

16,700				32,400
			↱ 519(469)	
			← 1086(999)	
			↰ ↑ ↱	
455(985) →			900(539)	363(763)
374(713) ↳				
39,500				15,550

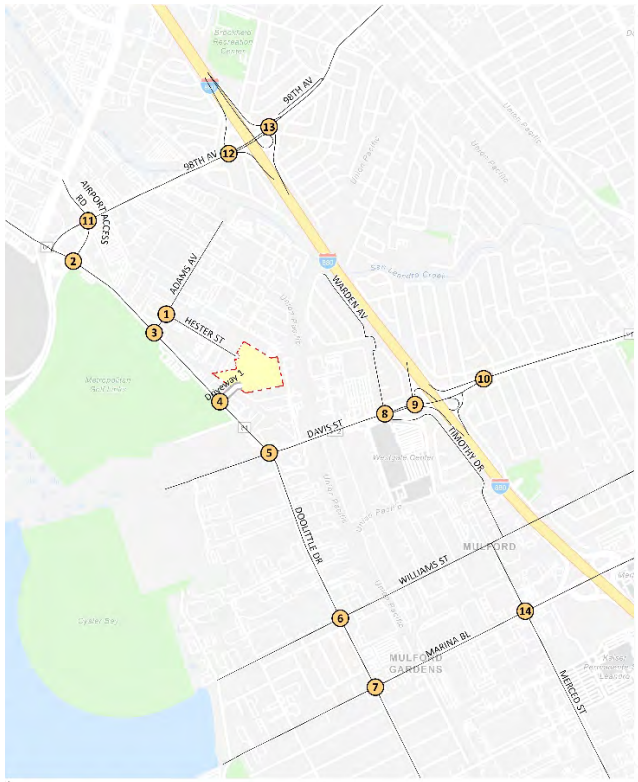
14 Merced St. & Marina Bl.

15,250				40,150
	45(60)	209(358)	186(315)	↱ 278(191)
	↲	↓	↳	← 683(774)
				↖ 781(638)
				↰ ↑ ↱
	52(66) ↲			60(81)
	560(774) →			307(315)
	47(98) ↳			448(641)
21,600				26,600

##(##) AM(PM) Peak Hour Intersection Volumes

Average Daily Trips

EXHIBIT 6-2: HORIZON YEAR (2040) WITH PROJECT TRAFFIC VOLUMES



Location	Volumes	Average Daily Trips
1 Hester St. & Adams Av.	4,350 / 1,650	4,250
2 Doolittle Dr. & Airport Access Rd.	4,650 / 24,000	3,900
3 Doolittle Dr. & Adams Av.	30,400	5,100
4 Doolittle Dr. & Project Dwy.	25,550	1,300
5 Doolittle Dr. & Davis St.	4,700 / 22,250	26,400
6 Doolittle Dr. & Williams St.	5,400 / 21,850	11,550
7 Doolittle Dr. & Marina Bl.	10,350 / 18,350	20,100
8 Warden Av. & Davis St.	33,200 / 19,150	49,250
9 I-880 SB Ramps & Davis St.	44,950 / 8,100	40,750
10 I-880 NB Ramps & Davis St.	41,550 / 20,000	37,850
11 Airport Access Rd. & 98th Av.	20,700 / 4,300	27,400
12 I-880 SB Ramps & 98th Av.	35,650 / 7,850	36,400
13 I-880 NB Ramps & 98th Av.	35,250 / 21,650	38,550
14 Merced St. & Marina Bl.	21,550 / 26,600	40,150

##(##) AM(PM) Peak Hour Intersection Volumes

Average Daily Trips

TABLE 6-1: INTERSECTION ANALYSIS FOR HORIZON YEAR (2040) CONDITIONS

			2040 Without Project						2040 With Project							
			Delay[1] (secs.)		Volume-to-Capacity (v/c)		Level of Service		Delay[1] (secs.)		Volume-to-Capacity (v/c)		Level of Service		Change in v/c[3]	
#	Intersection	Traffic Control[2]	AM	PM	AM	PM	AM	PM	AM	PM	AM	PM	AM	PM	AM	PM
1	Hester St. & Adams Av.	CSS	11.7	11.4	0.08	0.18	B	B	12.2	11.3	0.08	0.13	B	B	--	--
2	Doolittle Dr. & Airport Access Rd.	TS	22.0	22.3	0.59	0.66	C	C	22.1	22.4	0.59	0.66	C	C	--	--
3	Doolittle Dr. & Adams St.	TS	9.8	14.6	0.48	0.77	A	B	9.7	14.4	0.48	0.76	A	B	--	--
4	Doolittle Dr. & Project Dwy.	CSS	16.8	20.4	0.19	0.26	C	C	**38.5**	25.6	**0.56**	0.27	**E**	D	**0.37**	--
5	Doolittle Dr. & Davis St.[4]	TS	**79.3**	**88.5**	**1.01**	**0.99**	**F**	**F**	**79.6**	**84.9**	**0.99**	**0.97**	**E**	**F**	-0.02	-0.02
6	Doolittle Dr. & Williams St.	TS	28.0	33.4	0.89	0.90	C	C	27.7	33.1	0.89	0.90	C	C	--	--
7	Doolittle Dr. & Marina Bl.	TS	38.5	**61.0**	0.77	**0.94**	D	**E**	40.3	**62.4**	0.78	**0.94**	D	**E**	--	0.00
8	Warden Av. & Davis St.	TS	46.4	37.2	0.79	0.79	D	D	47.1	37.5	0.81	0.79	D	D	--	--
9	I-880 SB Ramps & Davis St.	TS	14.2	17.8	0.76	0.82	B	B	14.2	17.9	0.76	0.83	B	B	--	--
10	I-880 NB Ramps & Davis St.	TS	11.3	20.1	0.67	0.86	B	C	11.2	19.9	0.67	0.86	B	B	--	--
11	Airport Access Rd. & 98th Av.	TS	31.7	**86.9**	0.48	**0.66**	C	**F**	31.1	**87.2**	0.47	**0.66**	C	**F**	--	0.00
12	I-880 SB Ramps & 98th Av.	TS	28.1	13.3	0.99	0.62	C	B	27.9	13.3	0.99	0.62	C	B	--	--
13	I-880 NB Ramps & 98th Av.	TS	19.1	37.2	0.80	0.97	B	D	19.1	36.4	0.80	0.97	B	D	--	--
14	Merced St. & Marina Bl.	TS	**66.9**	**62.7**	**0.94**	**1.00**	**E**	**E**	**67.1**	**62.8**	0.94	**1.00**	**E**	**E**	0.00	0.00

* **BOLD** = Level of Service (LOS) does not meet the applicable jurisdictional requirements (i.e., unacceptable LOS).

1 Per the Highway Capacity Manual (HCM 2000), overall average intersection delay and level of service are shown for intersections with a traffic signal or all way stop control. For intersections with cross street stop control, the delay and level of service for the worst individual movement (or movements sharing a single lane) are shown.

2 CSS = Cross-street Stop; TS = Traffic Signal

3 For intersections operating below LOS D, an impact would occur if new trips added by the project causes the v/c to increase by 0.05 or more.

4 Per the HCM methodology, if volume-to-capacity exceeds 1.00 then the level of service is LOS F.

6.5 TRAFFIC SIGNAL WARRANTS ANALYSIS

There is no other unsignalized study area intersections anticipated to meet peak hour volume-based traffic signal warrants under Horizon Year (2040) Without and With Project traffic conditions in addition to the location previously warranted under Existing traffic conditions (see Appendix 6.3 and Appendix 6.4).

6.6 QUEUING ANALYSIS

A queuing analysis was performed for the signalized study area intersections to assess vehicle queues for the turn pockets that may potentially "spill back" into the adjacent through lanes. Queuing analysis findings are presented in Table 6-2 for Horizon Year (2040) Without and With Project traffic conditions. As shown in Table 6-2, the following turning movements are anticipated to experience queuing issues for Horizon Year (2040) Without Project traffic conditions (see Appendix 6.5):

- Doolittle Dr. & Davis St. (#5) – Southbound left PM peak hour only
- Doolittle Dr. & Davis St. (#5) – Westbound right turn lane AM and PM peak hours
- Doolittle Dr. & Williams St. (#6) – Southbound left PM peak hour only
- Doolittle Dr. & Marina Bl. (#7) – Southbound left AM and PM peak hours
- Doolittle Dr. & Marina Bl. (#7) – Westbound left AM and PM peak hours
- Warden Av. & Davis St. (#8) – Southbound left AM peak hour only

TABLE 6-2: PEAK HOUR TURN LANE QUEUING SUMMARY FOR HORIZON YEAR (2040) CONDITIONS

#	Intersection	Movement	Available Stacking Distance (Feet)	2040 Without Project 95th % Queue (ft) AM	2040 Without Project 95th % Queue (ft) PM	2040 Without Project Acceptable?[1] AM	2040 Without Project Acceptable?[1] PM	2040 With Project 95th % Queue (ft) AM	2040 With Project 95th % Queue (ft) PM	2040 With Project Acceptable?[1] AM	2040 With Project Acceptable?[1] PM
2	Doolittle Dr. & Airport Access Rd.	NBR	385	9	21	Yes	Yes	8	16	Yes	Yes
		SBL	150	44	32	Yes	Yes	44	32	Yes	Yes
		EBL	200	83	71	Yes	Yes	83	71	Yes	Yes
		EBR	200	67	150 [2]	Yes	Yes	66	158 [2]	Yes	Yes
		WBL	135	72	42	Yes	Yes	72	41	Yes	Yes
3	Doolittle Dr. & Adams Av.	NBR	270	37	27	Yes	Yes	37	27	Yes	Yes
		SBL	230	52	35	Yes	Yes	51	34	Yes	Yes
		WBR	85	19	24	Yes	Yes	18	23	Yes	Yes
5	Doolittle Dr. & Davis St.	NBL	130	124 [2]	43	Yes	Yes	124 [2]	43	Yes	Yes
		NBR	180	75	52	Yes	Yes	76	52 [2]	Yes	Yes
		SBL	265	**305 [2]**	**458 [2]**	**No**	**No**	**365 [2]**	**456 [2]**	**No**	**No**
		EBL	300	78	98	Yes	Yes	78	98	Yes	Yes
		WBL	235	235 [2]	168 [2]	Yes	Yes	235 [2]	168 [2]	Yes	Yes
		WBR	100	**964 [2]**	**954 [2]**	**No**	**No**	**942 [2]**	**934 [2]**	**No**	**No**
6	Doolittle Dr. & Williams St.	NBL	90	48	39	Yes	Yes	48	39	Yes	Yes
		SBL	100	121 [2]	**354 [2]**	Yes	**No**	119 [2]	**352 [2]**	Yes	**No**
		WBR	100	96	32	Yes	Yes	96	32	Yes	Yes
7	Doolittle Dr. & Marina Bl.	NBL	50	23	52	Yes	No	23	52	Yes	Yes
		NBR	100	105	39	Yes	Yes	105	39	Yes	Yes
		SBL	100	**306 [2]**	**545 [2]**	**No**	**No**	**322 [2]**	**550 [2]**	**No**	**No**
		EBL	120	139 [2]	82	Yes	Yes	139 [2]	82	Yes	Yes
		WBL	120	**223 [2]**	**320 [2]**	**No**	**No**	**223 [2]**	**320 [2]**	**No**	**No**
		WBR	850	96	48	Yes	Yes	96	48	Yes	Yes
8	Warden Av. & Davis St.	NBR	600	51	112	Yes	Yes	52	112	Yes	Yes
		SBL	50	**119**	75	**No**	Yes	**119**	75	**No**	Yes
		EBL	85	15	40	Yes	Yes	15	40	Yes	Yes
		WBL	250	237 [2]	220 [2]	Yes	Yes	237 [2]	220 [2]	Yes	Yes

#	Intersection	Movement	Available Stacking Distance (Feet)	2040 Without Project 95th % Queue (ft) AM	2040 Without Project 95th % Queue (ft) PM	2040 Without Project Acceptable? [1] AM	2040 Without Project Acceptable? [1] PM	2040 With Project 95th % Queue (ft) AM	2040 With Project 95th % Queue (ft) PM	2040 With Project Acceptable? [1] AM	2040 With Project Acceptable? [1] PM
9	I-880 SB Ramps & Davis St.	SBR	350	199 [2]	142	Yes	Yes	198 [2]	142	Yes	Yes
		WBR	550	35	44	Yes	Yes	35	44	Yes	Yes
10	I-880 NB Ramps & Davis St.	NBL	300	110	118	Yes	Yes	108	118	Yes	Yes
		EBR	800	0	0	Yes	Yes	0	0	Yes	Yes
11	Airport Access Rd. & 98th Av.	NBL	60	27	24	Yes	Yes	27	24	Yes	Yes
		NBR	150	0	6	Yes	Yes	0	6	Yes	Yes
		SBL	100	97 [2]	**135** [2]	Yes	**No**	97 [2]	**135** [2]	Yes	**No**
		SBR	190	0	0	Yes	Yes	0	0	Yes	Yes
		WBL	100	104 [2]	**154** [2]	Yes	**No**	104 [2]	**492** [2]	Yes	**No**
		WBR	260	43	37	Yes	Yes	43	37	Yes	Yes
12	I-880 SB Ramps & 98th Av.	SBR	400	432 [2]	131	Yes[3]	Yes	430 [2]	159	Yes[3]	Yes
		EBR	290	41	44	Yes	Yes	41	43	Yes	Yes
13	I-880 NB Ramps & 98th Av.	NBL	675	208	84	Yes	Yes	208	84	Yes	Yes
14	Merced Av. & Marina Bl.	NBL	150	80	98	Yes	Yes	79	99	Yes	Yes
		NBR	415	206	340 [2]	Yes	Yes	206	340 [2]	Yes	Yes
		SBL	300	131 [2]	198 [2]	Yes	Yes	131 [2]	198 [2]	Yes	Yes
		SBR	150	0	0	Yes	Yes	0	0	Yes	Yes
		EBL	80	71	102 [2]	Yes	Yes	71	102 [2]	Yes	Yes
		EBR	50	0	3	Yes	Yes	0	3	Yes	Yes
		WBL	365	**442** [2]	359 [2]	**No**	Yes	**442** [2]	359 [2]	**No**	Yes

BOLD = 95th percentile queue exceeds the available storage.

[1] Stacking Distance is acceptable if the required stacking distance is less than or equal to the stacking distance provided. An additional 25 feet (1 car length) of stacking which is assumed to be provided in the transition for turn pockets is reflected in the stacking distance shown on this table, where applicable.

[2] 95th percentile volume exceeds capacity, queue may be longer. Queue shown is maximum after two cycles.

[3] Although 95th percentile queue is anticipated to exceed the available storage for the turn lane, the adjacent through lane has sufficient storage to accommodate any spillover without spilling back and affecting the I-880 Freeway mainline.

- Airport Access Rd. & 98th Av. (#11) – Southbound left PM peak hour only
- Airport Access Rd. & 98th Av. (#11) – Westbound left PM peak hour only
- Merced St. & Marina Bl. (#14) – Westbound left AM peak hour only

The addition of Project traffic to these pre-project deficiencies is anticipated to result in nominal changes (see Appendix 6.6). There are no new queuing deficiencies anticipated as a result of Project traffic.

6.7 RAILROAD QUEUING ANALYSIS

The queuing analysis results for the at-grade railroad crossings have also been summarized on Table 6-3 for Horizon Year (2040) With Project traffic conditions only. As shown in Table 6-3, only the westbound through movement at Doolittle Drive and Marina Boulevard may potentially extend back to the at-grade railroad crossing. It should be noted that while the 95th percentile queue indicates a queuing issue in the PM peak hour only, the average (50th percentile) peak hour queue does not. The 95th percentile queue, while typically used for design purposes, in reality occurs approximately 5 percent of the time. The existing railroad crossing has striping and signing for advance notification of the crossing in both directions of travel on Marina Boulevard. In addition, the crossing itself is equipped with mast arms and warning lights. A potential recommendation for the City to improve peak hour queues in the westbound approach would be to modify the signal timing at Doolittle Drive and Marina Boulevard to clear any queues in advance of approaching trains. Worksheets for Horizon Year (2040) traffic conditions queuing analysis worksheets are provided in Appendix 6.7.

TABLE 6-3: AT-GRADE RAILROAD CROSSING PEAK HOUR QUEUING SUMMARY

#	Intersection	Movement	Available Stacking Distance (Feet)	2040 With Project 95th % Queue (ft)		2040 With Project Acceptable? [1]	
				AM	PM	AM	PM
4	Doolittle Dr. & Project Driveway	WBL/R	265	150	86	Yes	Yes
5	Doolittle Dr. & Davis St. (SR-112)	NBT	380	265	103	Yes	Yes
6	Doolittle Dr. & Williams St.	WBT	840	222	346	Yes	Yes
7	Doolittle Dr. & Marina Bl.	WBT	840	419	**932**	Yes	**No**

BOLD = 95th percentile queue exceeds the available storage.

[1] Stacking Distance is acceptable if the required stacking distance is less than or equal to the stacking distance provided. An additional 25 feet (1 car length) of stacking which is assumed to be provided in the transition for turn pockets is reflected in the stacking distance shown on this table, where applicable.

6.8 RECOMMENDED IMPROVEMENTS

Improvement strategies have been recommended at intersections that have been identified as deficient under Horizon Year (2040) Without and With Project traffic conditions and where the addition of Project traffic would have a significant effect. Improvements have been identified in an effort to achieve an acceptable LOS (i.e., LOS D or better).

6.8.1 RECOMMENDED IMPROVEMENTS TO ADDRESS DEFICIENCIES AT INTERSECTIONS

The effectiveness of the recommended improvement strategies to address Horizon Year (2040) With Project traffic deficiencies are presented in Table 6-4. As noted previously, the addition of Project traffic is anticipated to have a significant effect on the intersection of Doolittle Drive and the Project Driveway only. The addition of Project traffic at the other four deficient locations is anticipated to result in a change to the v/c ratio of less than 0.05. As such, no improvements have been recommended at those locations for Horizon Year (2040) With Project traffic conditions. It is recommended that the Project contribute fair share payment towards the recommended improvement (signalization). Worksheets for Horizon Year (2040) With Project conditions, with improvements, HCM calculation worksheets are provided in Appendix 6.8.

TABLE 6-4: INTERSECTION ANALYSIS FOR HORIZON YEAR (2040) CONDITIONS WITH IMPROVEMENTS

			Intersection Approach Lanes[1]												Delay[2] (secs.)		Level of Service	
		Traffic	Northbound			Southbound			Eastbound			Westbound						
#	Intersection	Control[3]	L	T	R	L	T	R	L	T	R	L	T	R	AM	PM	AM	PM
4	Doolittle Dr. & Project Dwy.																	
	Without Improvements	CSS	0	2	0	1	2	0	0	0	0	0	1	0	**38.5**	25.6	**E**	D
	With Improvements	**TS**	0	2	0	1	2	0	0	0	0	0	1	0	9.4	7.4	A	A

* **BOLD** = Level of Service (LOS) does not meet the applicable jurisdictional requirements (i.e., unacceptable LOS).

1 When a right turn is designated, the lane can either be striped or unstriped. To function as a right turn lane there must be sufficient width for right turning vehicles to travel outside the through lanes.

L = Left; T = Through; R = Right

2 Per the Highway Capacity Manual (HCM 2000), overall average intersection delay and level of service are shown for intersections with a traffic signal or all way stop control. For intersections with cross street stop control, the delay and level of service for the worst individual movement (or movements sharing a single lane) are shown.

3 CSS = Cross-Street Stop; TS = Traffic Signal; **TS** = Improvement

Table 6-5 provides the fair share calculation for the intersection of Doolittle Drive and Project Driveway. As stated above, the Project should contribute fair share payment towards the identified improvement at this location.

TABLE 6-5: PROJECT FAIR SHARE CALCULATIONS

#	Intersection		Existing	Project	Horizon Year (2040) With Project	Total New Traffic	Project % of New Traffic
4	Doolittle Dr. & Project Dwy.						
		AM:	1,963	39	2,140	177	**22.0%**
		PM:	1,958	-16	2,294	336	0.0%

BOLD = Denotes highest fair share percentage.

6.8.2 RECOMMENDED IMPROVEMENTS TO ADDRESS DEFICIENCIES ON QUEUES

As shown previously in Table 6-2, there are movements anticipated to experience queuing issues during the weekday AM or weekday PM peak 95th percentile traffic flows under Horizon Year (2040) traffic conditions. However, these are pre-project queuing issues, and the addition of Project traffic is anticipated to have a nominal effect on the peak hour queues. The peak hour intersection operations analysis for these study area intersections show that the addition of Project traffic is not anticipated to have a significant effect (v/c increase of less than 0.05). Similarly, the addition of Project traffic is also not anticipated to have a significant effect to the PM peak hour queue identified at the intersection of Doolittle Drive and Marina Boulevard on Table 6-3. As such, consistent with the peak hour intersection operations analyses, no improvements have been recommended to address the peak hour queuing deficiencies.

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7 REFERENCES

1. **Alameda County Transportation Commission.** *2018 Level of Service Monitoring Report.* Alameda County : Iteris, Inc., December 2018.
2. **Transportation Research Board.** *Highway Capacity Manual (HCM).* s.l. : National Academy of Sciences, 2000.
3. **Caltrans.** California Manual on Uniform Traffic Control Devices (MUTCD). [book auth.] California Department of Transportation. *California Manual on Uniform Traffic Control Devices (CAMUTCD).* 2017.
4. **City of San Leandro.** *San Leandro 2035 General Plan.* City of San Leandro : s.n., Adopted September 19, 2016.
5. **City of Oakland.** *Envision Oakland: City of Oakland General Plan.* City of Oakland : s.n., March 1998.

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B- ACTC CENTRAL PLANNING AREA VMT MAP

Vehicle Miles Traveled Per Employee
Central Planning Area

Central Planning Area Average (Target -15%): 19.2 (16.3)
Alameda County Average (Target -15%): 15.9 (13.5)

Data Source: Alameda Countywide Travel Model, Plan Bay Area 2040 version, May 2019

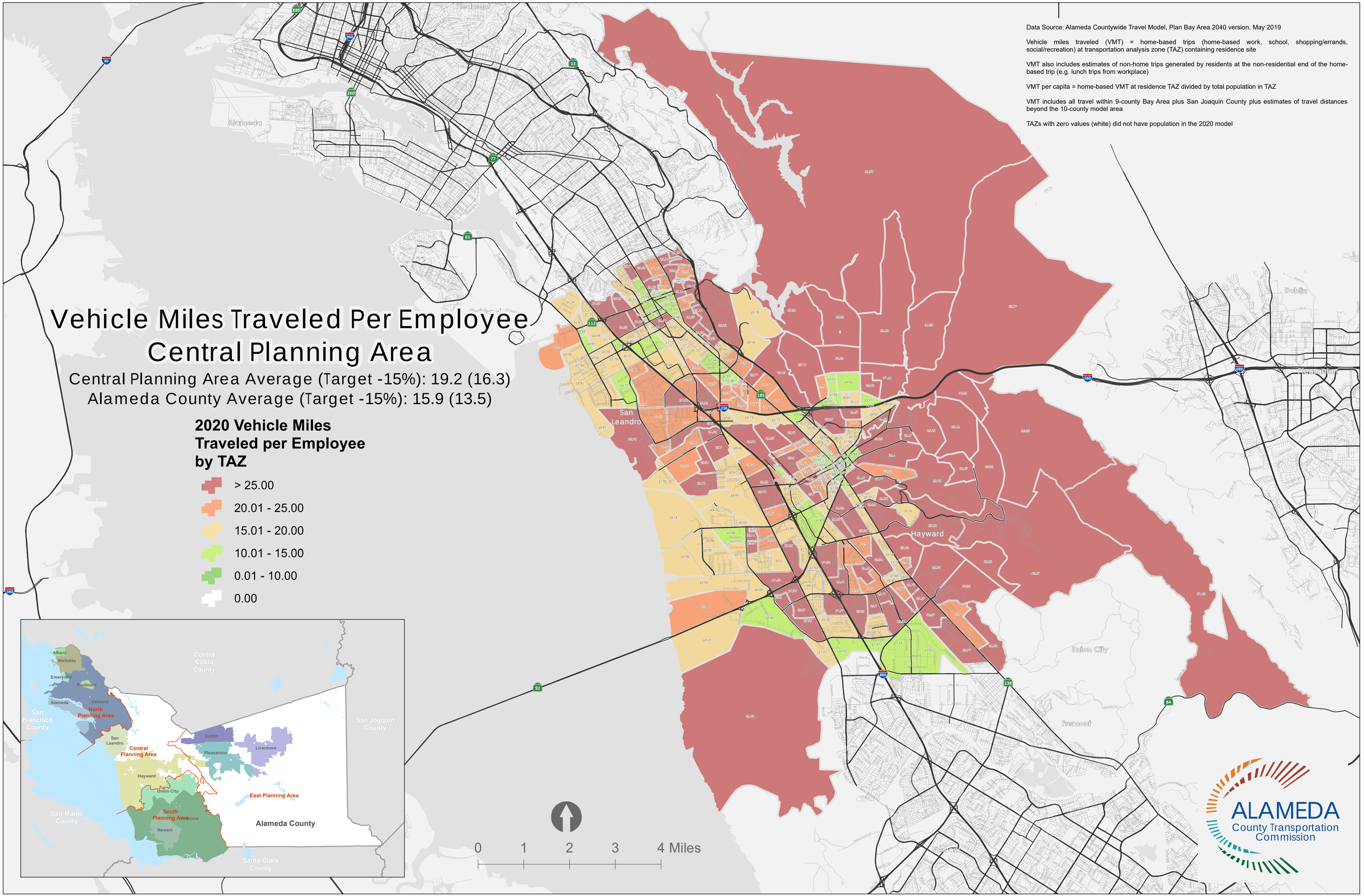
Vehicle miles traveled (VMT) = home-based trips (home-based work, school, shopping/errands, social/recreation) at transportation analysis zone (TAZ) containing residence site

VMT also includes estimates of non-home trips generated by residents at the non-residential end of the home-based trip (e.g. lunch trips from workplace)

VMT per capita = home-based VMT at residence TAZ divided by total population in TAZ

VMT includes all travel within 9-county Bay Area plus San Joaquin County plus estimates of travel distances beyond the 10-county model area

TAZs with zero values (white) did not have population in the 2020 model



Alameda County Vehicle Miles of Travel (VMT) from Alameda Countywide Model
Year 2040

2040 VMT by City

City	Population	Household VMT	VMT/Capita	Employment	Employee VMT	VMT/Employee
Alameda	95,451	1,481,856	15.5	42,793	784,739	18.3
Alameda County	14,951	607,768	40.7	3,356	106,172	31.6
Albany	20,684	296,838	14.4	5,313	128,467	24.2
Ashland	31,245	495,916	15.9	3,381	76,696	22.7
Berkeley	141,229	1,617,236	11.5	121,710	1,566,754	12.9
Castro Valley	63,012	1,594,380	25.3	13,641	309,278	22.7
Cherryland	13,530	214,462	15.9	1,702	39,848	23.4
Dublin	80,567	1,928,070	23.9	28,752	390,985	13.6
Emeryville	34,640	279,816	8.1	19,818	297,394	15.0
Fremont	279,534	5,696,285	20.4	118,617	2,093,184	17.6
Hayward	188,515	3,556,157	18.9	75,880	1,423,579	18.8
Livermore	111,523	3,606,029	32.3	53,083	861,662	16.2
Newark	51,768	1,055,939	20.4	22,871	412,749	18.0
Oakland	632,032	7,608,601	12.0	273,838	4,113,381	15.0
Piedmont	11,222	201,917	18.0	1,905	50,586	26.6
Pleasanton	91,844	2,424,144	26.4	74,589	1,209,697	16.2
San Leandro	108,465	1,822,008	16.8	53,925	938,059	17.4
San Lorenzo	31,412	582,257	18.5	5,038	119,863	23.8
Union City	81,258	1,682,360	20.7	28,575	419,408	14.7
Total	**2,082,882**	**36,752,038**	**17.6**	**948,787**	**15,342,500**	**16.2**

2040 VMT by County Planning Area

Planning Area	Population	VMT_HH	VMT/Capita	Employment	VMT_EMP	VMT/Employee
Central	449,474	8,688,886	19.3	155,296	2,965,019	19.1
East	286,842	8,172,267	28.5	158,268	2,516,869	15.9
North	935,258	11,486,264	12.3	465,377	6,941,322	14.9
South	411,308	8,404,621	20.4	169,846	2,919,290	17.2
Total	**2,082,882**	**36,752,038**	**17.6**	**948,787**	**15,342,500**	**16.2**

2040 VMT by County

County	Population	Household VMT	VMT/Capita	Employment	Employee VMT	VMT/Employee
San Francisco	1,167,689	11,650,405	10.0	872,499	10,136,949	11.6
San Mateo	915,365	12,471,097	13.6	472,056	10,593,123	22.4
Santa Clara	2,532,772	36,180,473	14.3	1,289,874	26,377,230	20.4
Alameda	2,082,882	36,752,038	17.6	948,787	15,342,500	16.2
Contra Costa	1,385,902	33,135,623	23.9	497,765	9,229,910	18.5
Solano	509,796	15,238,660	29.9	150,981	3,150,727	20.9
Napa	158,040	4,787,877	30.3	83,364	2,121,900	25.5
Sonoma	596,627	25,597,907	42.9	243,588	5,252,439	21.6
Marin	277,254	7,730,790	27.9	134,960	3,326,875	24.7
Total	**9,626,327**	**183,544,870**	**19.1**	**4,693,874**	**85,531,653**	**18.2**

Household VMT = All home-based productions plus proportional share of Non-Home-Based trips at destinations
Employee VMT = Home-Based Work attractions

TAZ	COUNTY	VMT_EMP	JURIS	REGION
597.00	4.00	16.08	San Leandro	Central

C- SYNCHRO OUTPUT

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (veh/h)	14	2	828	11	18	1040
Future Volume (Veh/h)	14	2	828	11	18	1040
Sign Control	Stop		Free			Free
Grade	0%		0%			0%
Peak Hour Factor	0.88	0.88	0.88	0.88	0.88	0.88
Hourly flow rate (vph)	16	2	941	12	20	1182
Pedestrians	1					
Lane Width (ft)	12.0					
Walking Speed (ft/s)	3.5					
Percent Blockage	0					
Right turn flare (veh)						
Median type			TWLTL			TWLTL
Median storage veh)			2			2
Upstream signal (ft)			750			512
pX, platoon unblocked	0.93	0.90			0.90	
vC, conflicting volume	1579	478			954	
vC1, stage 1 conf vol	948					
vC2, stage 2 conf vol	631					
vCu, unblocked vol	1110	184			716	
tC, single (s)	6.8	6.9			4.1	
tC, 2 stage (s)	5.8					
tF (s)	3.5	3.3			2.2	
p0 queue free %	96	100			98	
cM capacity (veh/h)	359	746			800	

Direction, Lane #	WB 1	NB 1	NB 2	SB 1	SB 2	SB 3
Volume Total	18	627	326	20	591	591
Volume Left	16	0	0	20	0	0
Volume Right	2	0	12	0	0	0
cSH	381	1700	1700	800	1700	1700
Volume to Capacity	0.05	0.37	0.19	0.02	0.35	0.35
Queue Length 95th (ft)	4	0	0	2	0	0
Control Delay (s)	14.9	0.0	0.0	9.6	0.0	0.0
Lane LOS	B			A		
Approach Delay (s)	14.9	0.0		0.2		
Approach LOS	B					

Intersection Summary			
Average Delay	0.2		
Intersection Capacity Utilization	38.7%	ICU Level of Service	A
Analysis Period (min)	15		

Intersection	
Int Delay, s/veh	0.3

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Vol, veh/h	14	2	828	11	18	1040
Future Vol, veh/h	14	2	828	11	18	1040
Conflicting Peds, #/hr	0	0	0	1	1	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	-	50	-
Veh in Median Storage, #	2	-	0	-	-	0
Grade, %	0	-	0	-	-	0
Peak Hour Factor	88	88	88	88	88	88
Heavy Vehicles, %	0	0	14	9	0	17
Mvmt Flow	16	2	941	13	20	1182

Major/Minor	Minor1		Major1		Major2	
Conflicting Flow All	1580	478	0	0	955	0
Stage 1	949	-	-	-	-	-
Stage 2	631	-	-	-	-	-
Critical Hdwy	6.8	6.9	-	-	4.1	-
Critical Hdwy Stg 1	5.8	-	-	-	-	-
Critical Hdwy Stg 2	5.8	-	-	-	-	-
Follow-up Hdwy	3.5	3.3	-	-	2.2	-
Pot Cap-1 Maneuver	102	539	-	-	728	-
Stage 1	341	-	-	-	-	-
Stage 2	498	-	-	-	-	-
Platoon blocked, %			-	-		-
Mov Cap-1 Maneuver	99	538	-	-	727	-
Mov Cap-2 Maneuver	279	-	-	-	-	-
Stage 1	341	-	-	-	-	-
Stage 2	484	-	-	-	-	-

Approach	WB	NB	SB
HCM Control Delay, s	17.9	0	0.2
HCM LOS	C		

Minor Lane/Major Mvmt	NBT	NBR	WBLn1	SBL	SBT
Capacity (veh/h)	-	-	297	727	-
HCM Lane V/C Ratio	-	-	0.061	0.028	-
HCM Control Delay (s)	-	-	17.9	10.1	-
HCM Lane LOS	-	-	C	B	-
HCM 95th %tile Q(veh)	-	-	0.2	0.1	-

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Volume (veh/h)	10	0	0	10	46	12
Future Volume (Veh/h)	10	0	0	10	46	12
Sign Control		Stop	Stop		Free	
Grade		0%	0%		0%	
Peak Hour Factor	0.86	0.86	0.86	0.86	0.86	0.86
Hourly flow rate (vph)	12	0	0	12	53	14
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type					None	
Median storage veh)						
Upstream signal (ft)						
pX, platoon unblocked						
vC, conflicting volume	125	113	120	0	0	
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	125	113	120	0	0	
tC, single (s)	7.2	6.7	6.7	6.4	4.2	
tC, 2 stage (s)						
tF (s)	3.6	4.1	4.1	3.4	2.3	
p0 queue free %	98	100	100	99	97	
cM capacity (veh/h)	789	728	721	1048	1542	

Direction, Lane #	EB 1	WB 1	SB 1
Volume Total	12	12	67
Volume Left	12	0	53
Volume Right	0	12	14
cSH	789	1048	1542
Volume to Capacity	0.02	0.01	0.03
Queue Length 95th (ft)	1	1	3
Control Delay (s)	9.6	8.5	5.9
Lane LOS	A	A	A
Approach Delay (s)	9.6	8.5	5.9
Approach LOS	A	A	

Intersection Summary			
Average Delay	6.7		
Intersection Capacity Utilization	17.2%	ICU Level of Service	A
Analysis Period (min)	15		

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Volume (veh/h)	247	52	5	102	6	14
Future Volume (Veh/h)	247	52	5	102	6	14
Sign Control	Free			Free	Stop	
Grade	0%			0%	0%	
Peak Hour Factor	0.86	0.86	0.86	0.86	0.86	0.86
Hourly flow rate (vph)	287	60	6	119	7	16
Pedestrians				1		
Lane Width (ft)				12.0		
Walking Speed (ft/s)				3.5		
Percent Blockage				0		
Right turn flare (veh)						
Median type	None			None		
Median storage veh)						
Upstream signal (ft)	426					
pX, platoon unblocked						
vC, conflicting volume			347		448	318
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol			347		448	318
tC, single (s)			4.1		6.5	6.4
tC, 2 stage (s)						
tF (s)			2.2		3.6	3.5
p0 queue free %			100		99	98
cM capacity (veh/h)			1201		551	682

Direction, Lane #	EB 1	WB 1	NB 1
Volume Total	347	125	23
Volume Left	0	6	7
Volume Right	60	0	16
cSH	1700	1201	636
Volume to Capacity	0.20	0.00	0.04
Queue Length 95th (ft)	0	0	3
Control Delay (s)	0.0	0.4	10.9
Lane LOS		A	B
Approach Delay (s)	0.0	0.4	10.9
Approach LOS			B

Intersection Summary			
Average Delay	0.6		
Intersection Capacity Utilization	26.5%	ICU Level of Service	A
Analysis Period (min)	15		

Intersection	
Int Delay, s/veh	0.6

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Vol, veh/h	247	52	5	102	6	14
Future Vol, veh/h	247	52	5	102	6	14
Conflicting Peds, #/hr	0	0	0	0	0	1
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	0	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	86	86	86	86	86	86
Heavy Vehicles, %	8	2	4	14	10	20
Mvmt Flow	287	60	6	119	7	16

Major/Minor	Major1		Major2		Minor1	
Conflicting Flow All	0	0	347	0	448	318
Stage 1	-	-	-	-	317	-
Stage 2	-	-	-	-	131	-
Critical Hdwy	-	-	4.14	-	6.5	6.4
Critical Hdwy Stg 1	-	-	-	-	5.5	-
Critical Hdwy Stg 2	-	-	-	-	5.5	-
Follow-up Hdwy	-	-	2.236	-	3.59	3.48
Pot Cap-1 Maneuver	-	-	1201	-	554	683
Stage 1	-	-	-	-	721	-
Stage 2	-	-	-	-	876	-
Platoon blocked, %	-	-		-		
Mov Cap-1 Maneuver	-	-	1201	-	551	682
Mov Cap-2 Maneuver	-	-	-	-	551	-
Stage 1	-	-	-	-	721	-
Stage 2	-	-	-	-	872	-

Approach	EB	WB	NB
HCM Control Delay, s	0	0.4	10.9
HCM LOS			B

Minor Lane/Major Mvmt	NBLn1	EBT	EBR	WBL	WBT
Capacity (veh/h)	637	-	-	1201	-
HCM Lane V/C Ratio	0.037	-	-	0.005	-
HCM Control Delay (s)	10.9	-	-	8	0
HCM Lane LOS	B	-	-	A	A
HCM 95th %tile Q(veh)	0.1	-	-	0	-

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (vph)	88	32	740	185	41	637
Future Volume (vph)	88	32	740	185	41	637
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost time (s)	5.2	5.2	5.8	5.8	4.6	5.8
Lane Util. Factor	1.00	1.00	0.95	1.00	1.00	0.95
Frpb, ped/bikes	1.00	1.00	1.00	0.98	1.00	1.00
Flpb, ped/bikes	1.00	1.00	1.00	1.00	1.00	1.00
Frt	1.00	0.85	1.00	0.85	1.00	1.00
Flt Protected	0.95	1.00	1.00	1.00	0.95	1.00
Satd. Flow (prot)	1467	1282	3312	1346	1687	3223
Flt Permitted	0.95	1.00	1.00	1.00	0.95	1.00
Satd. Flow (perm)	1467	1282	3312	1346	1687	3223
Peak-hour factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95
Adj. Flow (vph)	93	34	779	195	43	671
RTOR Reduction (vph)	0	28	0	92	0	0
Lane Group Flow (vph)	93	6	779	103	43	671
Confl. Peds. (#/hr)	1			2		
Confl. Bikes (#/hr)				3		
Heavy Vehicles (%)	23%	26%	9%	17%	7%	12%
Turn Type	Perm	Perm	NA	Perm	Prot	NA
Protected Phases			2		1	6
Permitted Phases	8	8		2		
Actuated Green, G (s)	11.5	11.5	32.6	32.6	1.9	39.1
Effective Green, g (s)	11.5	11.5	32.6	32.6	1.9	39.1
Actuated g/C Ratio	0.19	0.19	0.53	0.53	0.03	0.63
Clearance Time (s)	5.2	5.2	5.8	5.8	4.6	5.8
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0	3.0
Lane Grp Cap (vph)	273	239	1752	712	52	2045
v/s Ratio Prot			c0.24		c0.03	0.21
v/s Ratio Perm	c0.06	0.00		0.08		
v/c Ratio	0.34	0.03	0.44	0.14	0.83	0.33
Uniform Delay, d1	21.8	20.5	8.9	7.4	29.7	5.2
Progression Factor	1.00	1.00	1.00	1.00	1.00	1.00
Incremental Delay, d2	0.7	0.0	0.8	0.4	64.4	0.4
Delay (s)	22.5	20.5	9.7	7.8	94.1	5.6
Level of Service	C	C	A	A	F	A
Approach Delay (s)	22.0		9.4			10.9
Approach LOS	C		A			B

Intersection Summary			
HCM 2000 Control Delay	10.9	HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio	0.43		
Actuated Cycle Length (s)	61.6	Sum of lost time (s)	15.6
Intersection Capacity Utilization	46.0%	ICU Level of Service	A
Analysis Period (min)	15		
c Critical Lane Group			

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	45	169	36	249	125	748	48	783	219	326	299	47
Future Volume (vph)	45	169	36	249	125	748	48	783	219	326	299	47
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.6	5.2		4.6	5.2	4.6	4.6	5.4	4.6	4.6	5.8	
Lane Util. Factor	1.00	0.95		0.97	1.00	1.00	1.00	0.91	1.00	0.97	0.95	
Frpb, ped/bikes	1.00	1.00		1.00	1.00	1.00	1.00	1.00	0.99	1.00	1.00	
Flpb, ped/bikes	1.00	1.00		1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	
Frt	1.00	0.97		1.00	1.00	0.85	1.00	1.00	0.85	1.00	0.98	
Flt Protected	0.95	1.00		0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	
Satd. Flow (prot)	1211	2280		3019	1357	1495	1318	4673	1238	3242	2998	
Flt Permitted	0.95	1.00		0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	
Satd. Flow (perm)	1211	2280		3019	1357	1495	1318	4673	1238	3242	2998	
Peak-hour factor, PHF	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91
Adj. Flow (vph)	49	186	40	274	137	822	53	860	241	358	329	52
RTOR Reduction (vph)	0	17	0	0	0	101	0	0	137	0	9	0
Lane Group Flow (vph)	49	209	0	274	137	721	53	860	104	358	372	0
Confl. Peds. (#/hr)									1	1		
Confl. Bikes (#/hr)			1									3
Heavy Vehicles (%)	49%	55%	48%	16%	40%	8%	37%	11%	29%	8%	15%	34%
Turn Type	Prot	NA		Prot	NA	pm+ov	Prot	NA	pm+ov	Prot	NA	
Protected Phases	7	4		3	8	1	5	2	3	1	6	
Permitted Phases						8			2			
Actuated Green, G (s)	8.4	20.6		6.4	18.6	40.1	4.9	40.2	46.6	21.5	56.4	
Effective Green, g (s)	8.4	20.6		6.4	18.6	40.1	4.9	40.2	46.6	21.5	56.4	
Actuated g/C Ratio	0.08	0.19		0.06	0.17	0.37	0.05	0.37	0.43	0.20	0.52	
Clearance Time (s)	4.6	5.2		4.6	5.2	4.6	4.6	5.4	4.6	4.6	5.8	
Vehicle Extension (s)	3.0	3.0		3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	
Lane Grp Cap (vph)	93	432		178	232	552	59	1731	531	642	1558	
v/s Ratio Prot	0.04	0.09		c0.09	0.10	c0.26	0.04	c0.18	0.01	0.11	0.12	
v/s Ratio Perm						0.22			0.07			
v/c Ratio	0.53	0.48		1.54	0.59	1.31	0.90	0.50	0.19	0.56	0.24	
Uniform Delay, d1	48.1	39.2		51.0	41.4	34.2	51.6	26.3	19.3	39.2	14.3	
Progression Factor	1.00	1.00		1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	
Incremental Delay, d2	5.3	0.9		268.8	4.0	150.6	80.5	1.0	0.2	1.1	0.4	
Delay (s)	53.4	40.1		319.8	45.4	184.8	132.0	27.4	19.5	40.3	14.6	
Level of Service	D	D		F	D	F	F	C	B	D	B	
Approach Delay (s)		42.4			199.3			30.5			27.1	
Approach LOS		D			F			C			C	

Intersection Summary			
HCM 2000 Control Delay	91.9	HCM 2000 Level of Service	F
HCM 2000 Volume to Capacity ratio	0.93		
Actuated Cycle Length (s)	108.5	Sum of lost time (s)	20.2
Intersection Capacity Utilization	95.1%	ICU Level of Service	F
Analysis Period (min)	15		
c Critical Lane Group			

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	45	169	36	249	125	748	48	783	219	326	299	47
Future Volume (veh/h)	45	169	36	249	125	748	48	783	219	326	299	47
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		0.99	1.00		1.00	1.00		1.00	1.00		0.98
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1174	1085	1189	1663	1307	1781	1352	1737	1470	1781	1678	1396
Adj Flow Rate, veh/h	49	186	40	274	137	822	53	860	241	358	329	52
Peak Hour Factor	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91
Percent Heavy Veh, %	49	55	48	16	40	8	37	11	29	8	15	34
Cap, veh/h	54	395	83	180	319	567	61	1858	561	433	1310	205
Arrive On Green	0.05	0.23	0.23	0.06	0.24	0.24	0.05	0.39	0.39	0.13	0.48	0.48
Sat Flow, veh/h	1118	1691	355	3072	1307	1510	1287	4742	1245	3291	2752	430
Grp Volume(v), veh/h	49	112	114	274	137	822	53	860	241	358	189	192
Grp Sat Flow(s),veh/h/ln	1118	1031	1015	1536	1307	1510	1287	1581	1245	1646	1594	1588
Q Serve(g_s), s	4.8	10.2	10.6	6.4	9.7	26.7	4.5	14.7	14.4	11.6	7.7	7.9
Cycle Q Clear(g_c), s	4.8	10.2	10.6	6.4	9.7	26.7	4.5	14.7	14.4	11.6	7.7	7.9
Prop In Lane	1.00		0.35	1.00		1.00	1.00		1.00	1.00		0.27
Lane Grp Cap(c), veh/h	54	241	237	180	319	567	61	1858	561	433	759	756
V/C Ratio(X)	0.91	0.46	0.48	1.53	0.43	1.45	0.87	0.46	0.43	0.83	0.25	0.25
Avail Cap(c_a), veh/h	150	330	325	180	319	567	74	1858	561	643	759	756
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	51.9	36.0	36.2	51.5	35.0	34.2	51.8	24.7	20.5	46.3	17.1	17.1
Incr Delay (d2), s/veh	37.4	1.4	1.5	262.6	0.9	212.5	55.8	0.8	2.4	5.7	0.8	0.8
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	1.9	2.6	2.7	9.0	3.1	47.9	2.3	5.4	4.4	5.0	2.9	2.9
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	89.3	37.4	37.7	314.2	35.9	246.7	107.6	25.6	22.9	52.0	17.8	17.9
LnGrp LOS	F	D	D	F	D	F	F	C	C	D	B	B
Approach Vol, veh/h		275			1233			1154			739	
Approach Delay, s/veh		46.8			238.3			28.8			34.4	
Approach LOS		D			F			C			C	

Timer - Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	19.0	48.7	11.0	30.8	9.8	57.9	9.9	31.9
Change Period (Y+Rc), s	4.6	* 5.8	4.6	5.2	4.6	5.8	4.6	5.2
Max Green Setting (Gmax), s	21.4	* 37	6.4	35.0	6.3	52.1	14.7	26.7
Max Q Clear Time (g_c+I1), s	13.6	16.7	8.4	12.6	6.5	9.9	6.8	28.7
Green Ext Time (p_c), s	0.8	6.5	0.0	1.3	0.0	2.3	0.0	0.0

Intersection Summary	
HCM 6th Ctrl Delay	107.4
HCM 6th LOS	F

Notes

User approved pedestrian interval to be less than phase max green.

* HCM 6th computational engine requires equal clearance times for the phases crossing the barrier.

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	0	851	510	0	1167	408	0	0	0	212	0	601
Future Volume (vph)	0	851	510	0	1167	408	0	0	0	212	0	601
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		5.0	5.0		5.0	5.0				5.8	5.8	5.8
Lane Util. Factor		0.91	1.00		0.95	1.00				0.95	0.91	0.95
Frpb, ped/bikes		1.00	0.97		1.00	0.98				1.00	1.00	1.00
Flpb, ped/bikes		1.00	1.00		1.00	1.00				1.00	1.00	1.00
Frt		1.00	0.85		1.00	0.85				1.00	0.86	0.85
Flt Protected		1.00	1.00		1.00	1.00				0.95	1.00	1.00
Satd. Flow (prot)		4803	1355		3312	1488				1618	1386	1434
Flt Permitted		1.00	1.00		1.00	1.00				0.95	1.00	1.00
Satd. Flow (perm)		4803	1355		3312	1488				1618	1386	1434
Peak-hour factor, PHF	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97
Adj. Flow (vph)	0	877	526	0	1203	421	0	0	0	219	0	620
RTOR Reduction (vph)	0	0	267	0	0	214	0	0	0	0	32	32
Lane Group Flow (vph)	0	877	259	0	1203	207	0	0	0	197	288	290
Confl. Peds. (#/hr)	2		7	7		2						
Confl. Bikes (#/hr)						1						
Heavy Vehicles (%)	0%	8%	16%	0%	9%	6%	0%	0%	0%	6%	0%	7%
Turn Type		NA	Perm		NA	Perm				Split	NA	Perm
Protected Phases		2			6					4	4	
Permitted Phases			2			6						4
Actuated Green, G (s)		28.2	28.2		28.2	28.2				18.3	18.3	18.3
Effective Green, g (s)		28.2	28.2		28.2	28.2				18.3	18.3	18.3
Actuated g/C Ratio		0.49	0.49		0.49	0.49				0.32	0.32	0.32
Clearance Time (s)		5.0	5.0		5.0	5.0				5.8	5.8	5.8
Vehicle Extension (s)		3.0	3.0		3.0	3.0				3.0	3.0	3.0
Lane Grp Cap (vph)		2363	666		1629	732				516	442	457
v/s Ratio Prot		0.18			c0.36					0.12	c0.21	
v/s Ratio Perm			0.19			0.14						0.20
v/c Ratio		0.37	0.39		0.74	0.28				0.38	0.65	0.63
Uniform Delay, d1		9.0	9.1		11.6	8.6				15.1	16.8	16.6
Progression Factor		1.00	1.00		1.00	1.00				1.00	1.00	1.00
Incremental Delay, d2		0.1	0.4		1.8	0.2				2.1	7.3	6.6
Delay (s)		9.1	9.5		13.4	8.8				17.3	24.0	23.2
Level of Service		A	A		B	A				B	C	C
Approach Delay (s)		9.3			12.2			0.0			22.1	
Approach LOS		A			B			A			C	

Intersection Summary			
HCM 2000 Control Delay	13.3	HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio	0.70		
Actuated Cycle Length (s)	57.3	Sum of lost time (s)	10.8
Intersection Capacity Utilization	66.1%	ICU Level of Service	C
Analysis Period (min)	15		
c Critical Lane Group			

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	0	569	495	0	1116	539	452	0	240	0	0	0
Future Volume (vph)	0	569	495	0	1116	539	452	0	240	0	0	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		5.0	4.0		5.0	5.0	5.8	5.8	5.8			
Lane Util. Factor		0.95	1.00		0.95	1.00	0.95	0.91	0.95			
Frpb, ped/bikes		1.00	0.98		1.00	0.98	1.00	1.00	1.00			
Flpb, ped/bikes		1.00	1.00		1.00	1.00	1.00	1.00	1.00			
Frt		1.00	0.85		1.00	0.85	1.00	0.98	0.85			
Flt Protected		1.00	1.00		1.00	1.00	0.95	0.96	1.00			
Satd. Flow (prot)		3471	1420		3438	1533	1504	1440	1447			
Flt Permitted		1.00	1.00		1.00	1.00	0.95	0.96	1.00			
Satd. Flow (perm)		3471	1420		3438	1533	1504	1440	1447			
Peak-hour factor, PHF	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97
Adj. Flow (vph)	0	587	510	0	1151	556	466	0	247	0	0	0
RTOR Reduction (vph)	0	0	0	0	0	290	0	24	148	0	0	0
Lane Group Flow (vph)	0	587	510	0	1151	266	247	220	74	0	0	0
Confl. Peds. (#/hr)	2		7	7		2						
Confl. Bikes (#/hr)			1									
Heavy Vehicles (%)	0%	4%	11%	0%	5%	3%	14%	0%	6%	0%	0%	0%
Turn Type		NA	Free		NA	Perm	Perm	NA	Perm			
Protected Phases		2			6			8				
Permitted Phases			Free			6	8		8			
Actuated Green, G (s)		27.6	57.7		27.6	27.6	19.3	19.3	19.3			
Effective Green, g (s)		27.6	57.7		27.6	27.6	19.3	19.3	19.3			
Actuated g/C Ratio		0.48	1.00		0.48	0.48	0.33	0.33	0.33			
Clearance Time (s)		5.0			5.0	5.0	5.8	5.8	5.8			
Vehicle Extension (s)		3.0			3.0	3.0	3.0	3.0	3.0			
Lane Grp Cap (vph)		1660	1420		1644	733	503	481	484			
v/s Ratio Prot		0.17			c0.33							
v/s Ratio Perm			0.36			0.17	c0.16	0.15	0.05			
v/c Ratio		0.35	0.36		0.70	0.36	0.49	0.46	0.15			
Uniform Delay, d1		9.4	0.0		11.8	9.5	15.3	15.1	13.5			
Progression Factor		1.00	1.00		1.00	1.00	1.00	1.00	1.00			
Incremental Delay, d2		0.1	0.7		1.4	0.3	3.4	3.1	0.7			
Delay (s)		9.6	0.7		13.2	9.8	18.7	18.2	14.1			
Level of Service		A	A		B	A	B	B	B			
Approach Delay (s)		5.5			12.1			17.1			0.0	
Approach LOS		A			B			B			A	

Intersection Summary			
HCM 2000 Control Delay	11.0	HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio	0.61		
Actuated Cycle Length (s)	57.7	Sum of lost time (s)	10.8
Intersection Capacity Utilization	57.6%	ICU Level of Service	B
Analysis Period (min)	15		
c Critical Lane Group			

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	93	639	1	57	754	368	11	29	76	53	6	8
Future Volume (vph)	93	639	1	57	754	368	11	29	76	53	6	8
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		5.8		4.6	5.0	4.6	4.6	5.0	5.0	4.6	5.0	5.0
Lane Util. Factor		0.91		1.00	0.91	1.00	1.00	0.86	0.86	1.00	0.95	1.00
Frpb, ped/bikes		1.00		1.00	1.00	1.00	1.00	0.99	0.99	1.00	1.00	1.00
Flpb, ped/bikes		1.00		1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Frt		1.00		1.00	1.00	0.85	1.00	0.91	0.85	1.00	1.00	0.85
Flt Protected		0.99		0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (prot)		4800		1656	4940	1495	1081	4224	1280	1719	3610	1214
Flt Permitted		0.72		0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (perm)		3499		1656	4940	1495	1081	4224	1280	1719	3610	1214
Peak-hour factor, PHF	0.87	0.87	0.87	0.87	0.87	0.87	0.87	0.87	0.87	0.87	0.87	0.87
Adj. Flow (vph)	107	734	1	66	867	423	13	33	87	61	7	9
RTOR Reduction (vph)	0	0	0	0	0	240	0	26	25	0	0	5
Lane Group Flow (vph)	0	842	0	66	867	183	13	51	18	61	7	4
Confl. Peds. (#/hr)									2	2		
Heavy Vehicles (%)	3%	8%	0%	9%	5%	8%	67%	3%	7%	5%	0%	33%
Turn Type	pm+pt	NA		Prot	NA	pm+ov	Prot	NA	Perm	Prot	NA	Perm
Protected Phases	7	4		3	8	1	5	2		1	6	
Permitted Phases	4					8			2			6
Actuated Green, G (s)		27.8		4.1	37.3	42.4	0.9	41.1	41.1	5.1	45.3	45.3
Effective Green, g (s)		27.8		4.1	37.3	42.4	0.9	41.1	41.1	5.1	45.3	45.3
Actuated g/C Ratio		0.28		0.04	0.38	0.43	0.01	0.42	0.42	0.05	0.46	0.46
Clearance Time (s)		5.8		4.6	5.0	4.6	4.6	5.0	5.0	4.6	5.0	5.0
Vehicle Extension (s)		3.0		3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0
Lane Grp Cap (vph)		991		69	1878	646	9	1769	536	89	1667	560
v/s Ratio Prot				c0.04	0.18	0.01	0.01	0.01		c0.04	0.00	
v/s Ratio Perm		c0.24				0.11			c0.01			c0.00
v/c Ratio		0.85		0.96	0.46	0.28	1.44	0.03	0.03	0.69	0.00	0.01
Uniform Delay, d1		33.2		46.9	22.9	18.0	48.6	16.8	16.8	45.7	14.2	14.3
Progression Factor		1.00		1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Incremental Delay, d2		6.9		92.3	0.2	0.2	474.2	0.0	0.1	19.7	0.0	0.0
Delay (s)		40.1		139.2	23.0	18.3	522.8	16.8	16.9	65.4	14.2	14.3
Level of Service		D		F	C	B	F	B	B	E	B	B
Approach Delay (s)		40.1			27.2			66.3			54.7	
Approach LOS		D			C			E			D	

Intersection Summary			
HCM 2000 Control Delay	34.8	HCM 2000 Level of Service	C
HCM 2000 Volume to Capacity ratio	0.40		
Actuated Cycle Length (s)	98.1	Sum of lost time (s)	20.0
Intersection Capacity Utilization	80.7%	ICU Level of Service	D
Analysis Period (min)	15		

c Critical Lane Group

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (veh/h)	4	10	858	12	6	991
Future Volume (Veh/h)	4	10	858	12	6	991
Sign Control	Stop		Free			Free
Grade	0%		0%			0%
Peak Hour Factor	0.93	0.93	0.93	0.93	0.93	0.93
Hourly flow rate (vph)	4	11	923	13	6	1066
Pedestrians	4					
Lane Width (ft)	12.0					
Walking Speed (ft/s)	3.5					
Percent Blockage	0					
Right turn flare (veh)						
Median type			TWLTL			TWLTL
Median storage veh)			2			2
Upstream signal (ft)			750			512
pX, platoon unblocked	0.88	0.93			0.93	
vC, conflicting volume	1478	472			940	
vC1, stage 1 conf vol	934					
vC2, stage 2 conf vol	545					
vCu, unblocked vol	905	280			783	
tC, single (s)	6.8	6.9			4.1	
tC, 2 stage (s)	5.8					
tF (s)	3.5	3.3			2.2	
p0 queue free %	99	98			99	
cM capacity (veh/h)	371	670			781	

Direction, Lane #	WB 1	NB 1	NB 2	SB 1	SB 2	SB 3
Volume Total	15	615	321	6	533	533
Volume Left	4	0	0	6	0	0
Volume Right	11	0	13	0	0	0
cSH	551	1700	1700	781	1700	1700
Volume to Capacity	0.03	0.36	0.19	0.01	0.31	0.31
Queue Length 95th (ft)	2	0	0	1	0	0
Control Delay (s)	11.7	0.0	0.0	9.6	0.0	0.0
Lane LOS	B			A		
Approach Delay (s)	11.7	0.0		0.1		
Approach LOS	B					

Intersection Summary			
Average Delay	0.1		
Intersection Capacity Utilization	37.4%	ICU Level of Service	A
Analysis Period (min)	15		

Intersection	
Int Delay, s/veh	0.2

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Vol, veh/h	4	10	858	12	6	991
Future Vol, veh/h	4	10	858	12	6	991
Conflicting Peds, #/hr	0	0	0	4	4	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	-	50	-
Veh in Median Storage, #	2	-	0	-	-	0
Grade, %	0	-	0	-	-	0
Peak Hour Factor	93	93	93	93	93	93
Heavy Vehicles, %	0	0	7	8	0	6
Mvmt Flow	4	11	923	13	6	1066

Major/Minor	Minor1		Major1		Major2	
Conflicting Flow All	1479	472	0	0	940	0
Stage 1	934	-	-	-	-	-
Stage 2	545	-	-	-	-	-
Critical Hdwy	6.8	6.9	-	-	4.1	-
Critical Hdwy Stg 1	5.8	-	-	-	-	-
Critical Hdwy Stg 2	5.8	-	-	-	-	-
Follow-up Hdwy	3.5	3.3	-	-	2.2	-
Pot Cap-1 Maneuver	119	544	-	-	737	-
Stage 1	348	-	-	-	-	-
Stage 2	551	-	-	-	-	-
Platoon blocked, %			-	-		-
Mov Cap-1 Maneuver	118	542	-	-	734	-
Mov Cap-2 Maneuver	295	-	-	-	-	-
Stage 1	347	-	-	-	-	-
Stage 2	547	-	-	-	-	-

Approach	WB	NB	SB
HCM Control Delay, s	13.5	0	0.1
HCM LOS	B		

Minor Lane/Major Mvmt	NBT	NBR	WBLn1	SBL	SBT
Capacity (veh/h)	-	-	437	734	-
HCM Lane V/C Ratio	-	-	0.034	0.009	-
HCM Control Delay (s)	-	-	13.5	9.9	-
HCM Lane LOS	-	-	B	A	-
HCM 95th %tile Q(veh)	-	-	0.1	0	-

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Volume (veh/h)	38	0	0	37	14	3
Future Volume (Veh/h)	38	0	0	37	14	3
Sign Control		Stop	Stop		Free	
Grade		0%	0%		0%	
Peak Hour Factor	0.89	0.89	0.89	0.89	0.89	0.89
Hourly flow rate (vph)	43	0	0	42	16	3
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type					None	
Median storage veh)						
Upstream signal (ft)						
pX, platoon unblocked						
vC, conflicting volume	76	34	35	0	0	
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	76	34	35	0	0	
tC, single (s)	7.1	6.5	6.5	6.2	4.1	
tC, 2 stage (s)						
tF (s)	3.5	4.0	4.0	3.3	2.2	
p0 queue free %	95	100	100	96	99	
cM capacity (veh/h)	870	849	847	1082	1617	

Direction, Lane #	EB 1	WB 1	SB 1
Volume Total	43	42	19
Volume Left	43	0	16
Volume Right	0	42	3
cSH	870	1082	1617
Volume to Capacity	0.05	0.04	0.01
Queue Length 95th (ft)	4	3	1
Control Delay (s)	9.4	8.5	6.1
Lane LOS	A	A	A
Approach Delay (s)	9.4	8.5	6.1
Approach LOS	A	A	

Intersection Summary			
Average Delay	8.4		
Intersection Capacity Utilization	18.8%	ICU Level of Service	A
Analysis Period (min)	15		

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Volume (veh/h)	138	1	16	153	39	34
Future Volume (Veh/h)	138	1	16	153	39	34
Sign Control	Free			Free	Stop	
Grade	0%			0%	0%	
Peak Hour Factor	0.89	0.89	0.89	0.89	0.89	0.89
Hourly flow rate (vph)	155	1	18	172	44	38
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type	None			None		
Median storage veh)						
Upstream signal (ft)	426					
pX, platoon unblocked						
vC, conflicting volume			156		364	156
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol			156		364	156
tC, single (s)			4.1		6.4	6.2
tC, 2 stage (s)						
tF (s)			2.2		3.5	3.3
p0 queue free %			99		93	96
cM capacity (veh/h)			1412		624	890

Direction, Lane #	EB 1	WB 1	NB 1
Volume Total	156	190	82
Volume Left	0	18	44
Volume Right	1	0	38
cSH	1700	1412	724
Volume to Capacity	0.09	0.01	0.11
Queue Length 95th (ft)	0	1	10
Control Delay (s)	0.0	0.8	10.6
Lane LOS		A	B
Approach Delay (s)	0.0	0.8	10.6
Approach LOS			B

Intersection Summary			
Average Delay	2.4		
Intersection Capacity Utilization	30.5%	ICU Level of Service	A
Analysis Period (min)	15		

Intersection	
Int Delay, s/veh	2.3

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Vol, veh/h	138	1	16	153	39	34
Future Vol, veh/h	138	1	16	153	39	34
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	0	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	89	89	89	89	89	89
Heavy Vehicles, %	26	24	4	6	4	2
Mvmt Flow	155	1	18	172	44	38

Major/Minor	Major1		Major2		Minor1	
Conflicting Flow All	0	0	156	0	364	156
Stage 1	-	-	-	-	156	-
Stage 2	-	-	-	-	208	-
Critical Hdwy	-	-	4.14	-	6.44	6.22
Critical Hdwy Stg 1	-	-	-	-	5.44	-
Critical Hdwy Stg 2	-	-	-	-	5.44	-
Follow-up Hdwy	-	-	2.236	-	3.536	3.318
Pot Cap-1 Maneuver	-	-	1412	-	631	890
Stage 1	-	-	-	-	867	-
Stage 2	-	-	-	-	822	-
Platoon blocked, %	-	-		-		
Mov Cap-1 Maneuver	-	-	1412	-	622	890
Mov Cap-2 Maneuver	-	-	-	-	622	-
Stage 1	-	-	-	-	867	-
Stage 2	-	-	-	-	810	-

Approach	EB	WB	NB
HCM Control Delay, s	0	0.7	10.6
HCM LOS			B

Minor Lane/Major Mvmt	NBLn1	EBT	EBR	WBL	WBT
Capacity (veh/h)	723	-	-	1412	-
HCM Lane V/C Ratio	0.113	-	-	0.013	-
HCM Control Delay (s)	10.6	-	-	7.6	0
HCM Lane LOS	B	-	-	A	A
HCM 95th %tile Q(veh)	0.4	-	-	0	-

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (vph)	154	80	830	142	15	1111
Future Volume (vph)	154	80	830	142	15	1111
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost time (s)	5.2	5.2	5.8	5.8	4.6	5.8
Lane Util. Factor	1.00	1.00	0.95	1.00	1.00	0.95
Frpb, ped/bikes	1.00	1.00	1.00	0.98	1.00	1.00
Flpb, ped/bikes	1.00	1.00	1.00	1.00	1.00	1.00
Frt	1.00	0.85	1.00	0.85	1.00	1.00
Flt Protected	0.95	1.00	1.00	1.00	0.95	1.00
Satd. Flow (prot)	1641	1538	3505	1260	1504	3374
Flt Permitted	0.95	1.00	1.00	1.00	0.95	1.00
Satd. Flow (perm)	1641	1538	3505	1260	1504	3374
Peak-hour factor, PHF	0.84	0.84	0.84	0.84	0.84	0.84
Adj. Flow (vph)	183	95	988	169	18	1323
RTOR Reduction (vph)	0	79	0	75	0	0
Lane Group Flow (vph)	183	16	988	94	18	1323
Confl. Peds. (#/hr)				1	1	
Confl. Bikes (#/hr)				5		
Heavy Vehicles (%)	10%	5%	3%	25%	20%	7%
Turn Type	Perm	Perm	NA	Perm	Prot	NA
Protected Phases			2		1	6
Permitted Phases	8	8		2		
Actuated Green, G (s)	9.9	9.9	33.0	33.0	0.9	38.5
Effective Green, g (s)	9.9	9.9	33.0	33.0	0.9	38.5
Actuated g/C Ratio	0.17	0.17	0.56	0.56	0.02	0.65
Clearance Time (s)	5.2	5.2	5.8	5.8	4.6	5.8
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0	3.0
Lane Grp Cap (vph)	273	256	1947	700	22	2186
v/s Ratio Prot			0.28		0.01	c0.39
v/s Ratio Perm	c0.11	0.01		0.07		
v/c Ratio	0.67	0.06	0.51	0.13	0.82	0.61
Uniform Delay, d1	23.2	20.8	8.2	6.3	29.2	6.1
Progression Factor	1.00	1.00	1.00	1.00	1.00	1.00
Incremental Delay, d2	6.3	0.1	0.9	0.4	109.6	1.3
Delay (s)	29.5	20.9	9.1	6.7	138.7	7.3
Level of Service	C	C	A	A	F	A
Approach Delay (s)	26.6		8.8			9.1
Approach LOS	C		A			A

Intersection Summary			
HCM 2000 Control Delay	10.7	HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio	0.68		
Actuated Cycle Length (s)	59.4	Sum of lost time (s)	15.6
Intersection Capacity Utilization	48.4%	ICU Level of Service	A
Analysis Period (min)	15		
c Critical Lane Group			

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	61	116	44	180	76	458	18	422	230	606	772	40
Future Volume (vph)	61	116	44	180	76	458	18	422	230	606	772	40
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.6	5.2		4.6	5.2	4.6	4.6	5.4	4.6	4.6	5.8	
Lane Util. Factor	1.00	0.95		0.97	1.00	1.00	1.00	0.91	1.00	0.97	0.95	
Frpb, ped/bikes	1.00	1.00		1.00	1.00	1.00	1.00	1.00	0.99	1.00	1.00	
Flpb, ped/bikes	1.00	1.00		1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	
Frt	1.00	0.96		1.00	1.00	0.85	1.00	1.00	0.85	1.00	0.99	
Flt Protected	0.95	1.00		0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	
Satd. Flow (prot)	1188	2886		3045	1226	1568	1543	5036	1474	3335	3274	
Flt Permitted	0.95	1.00		0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	
Satd. Flow (perm)	1188	2886		3045	1226	1568	1543	5036	1474	3335	3274	
Peak-hour factor, PHF	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88
Adj. Flow (vph)	69	132	50	205	86	520	20	480	261	689	877	45
RTOR Reduction (vph)	0	37	0	0	0	145	0	0	146	0	2	0
Lane Group Flow (vph)	69	145	0	205	86	375	20	480	115	689	920	0
Confl. Peds. (#/hr)			5	5					2	2		
Confl. Bikes (#/hr)			1						5			1
Heavy Vehicles (%)	52%	18%	23%	15%	55%	3%	17%	3%	8%	5%	7%	55%
Turn Type	Prot	NA		Prot	NA	pm+ov	Prot	NA	pm+ov	Prot	NA	
Protected Phases	7	4		3	8	1	5	2	3	1	6	
Permitted Phases						8			2			
Actuated Green, G (s)	9.5	20.6		6.5	17.6	39.2	2.3	42.3	48.8	21.6	61.2	
Effective Green, g (s)	9.5	20.6		6.5	17.6	39.2	2.3	42.3	48.8	21.6	61.2	
Actuated g/C Ratio	0.09	0.19		0.06	0.16	0.35	0.02	0.38	0.44	0.19	0.55	
Clearance Time (s)	4.6	5.2		4.6	5.2	4.6	4.6	5.4	4.6	4.6	5.8	
Vehicle Extension (s)	3.0	3.0		3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	
Lane Grp Cap (vph)	101	536		178	194	554	32	1922	649	650	1808	
v/s Ratio Prot	0.06	c0.05		c0.07	0.07	c0.13	0.01	0.10	0.01	c0.21	c0.28	
v/s Ratio Perm						0.11			0.07			
v/c Ratio	0.68	0.27		1.15	0.44	0.68	0.62	0.25	0.18	1.06	0.51	
Uniform Delay, d1	49.2	38.7		52.1	42.2	30.4	53.8	23.4	18.8	44.6	15.4	
Progression Factor	1.00	1.00		1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	
Incremental Delay, d2	17.4	0.3		114.2	1.6	3.3	32.4	0.3	0.1	52.3	1.0	
Delay (s)	66.6	38.9		166.3	43.8	33.7	86.2	23.7	18.9	96.9	16.5	
Level of Service	E	D		F	D	C	F	C	B	F	B	
Approach Delay (s)		46.5			68.3			23.7			50.9	
Approach LOS		D			E			C			D	

Intersection Summary			
HCM 2000 Control Delay	48.6	HCM 2000 Level of Service	D
HCM 2000 Volume to Capacity ratio	0.72		
Actuated Cycle Length (s)	110.8	Sum of lost time (s)	20.2
Intersection Capacity Utilization	83.5%	ICU Level of Service	E
Analysis Period (min)	15		
c Critical Lane Group			

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	61	116	44	180	76	458	18	422	230	606	772	40
Future Volume (veh/h)	61	116	44	180	76	458	18	422	230	606	772	40
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		0.98	1.00		0.99	1.00		0.98	1.00		0.98
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1129	1633	1559	1678	1085	1856	1648	1856	1781	1826	1796	1085
Adj Flow Rate, veh/h	69	132	50	205	86	520	20	480	261	689	877	45
Peak Hour Factor	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88
Percent Heavy Veh, %	52	18	23	15	55	3	17	3	8	5	7	55
Cap, veh/h	78	556	201	174	254	661	32	1663	572	634	1634	84
Arrive On Green	0.07	0.25	0.25	0.06	0.23	0.23	0.02	0.33	0.33	0.19	0.50	0.50
Sat Flow, veh/h	1076	2220	802	3100	1085	1562	1570	5066	1484	3374	3298	169
Grp Volume(v), veh/h	69	90	92	205	86	520	20	480	261	689	454	468
Grp Sat Flow(s),veh/h/ln	1076	1552	1471	1550	1085	1562	1570	1689	1484	1687	1706	1761
Q Serve(g_s), s	7.2	5.3	5.7	6.4	7.5	26.7	1.4	8.0	15.0	21.4	20.8	20.8
Cycle Q Clear(g_c), s	7.2	5.3	5.7	6.4	7.5	26.7	1.4	8.0	15.0	21.4	20.8	20.8
Prop In Lane	1.00		0.55	1.00		1.00	1.00		1.00	1.00		0.10
Lane Grp Cap(c), veh/h	78	389	369	174	254	661	32	1663	572	634	845	872
V/C Ratio(X)	0.89	0.23	0.25	1.18	0.34	0.79	0.62	0.29	0.46	1.09	0.54	0.54
Avail Cap(c_a), veh/h	139	477	452	174	254	661	87	1663	572	634	845	872
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	52.4	34.0	34.1	53.8	36.3	28.5	55.4	28.4	26.2	46.3	19.8	19.8
Incr Delay (d2), s/veh	25.8	0.3	0.3	124.1	0.8	6.2	17.7	0.4	2.6	61.9	2.4	2.4
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	2.5	2.0	2.1	5.5	2.0	13.0	0.7	3.2	5.6	14.2	8.4	8.6
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	78.1	34.3	34.5	177.8	37.1	34.8	73.1	28.8	28.8	108.1	22.2	22.1
LnGrp LOS	E	C	C	F	D	C	E	C	C	F	C	C
Approach Vol, veh/h		251			811			761			1611	
Approach Delay, s/veh		46.4			71.2			30.0			58.9	
Approach LOS		D			E			C			E	

Timer - Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	26.0	43.2	11.0	33.8	6.9	62.3	12.9	31.9
Change Period (Y+Rc), s	4.6	* 5.8	4.6	5.2	4.6	5.8	4.6	5.2
Max Green Setting (Gmax), s	21.4	* 37	6.4	35.0	6.3	52.1	14.7	26.7
Max Q Clear Time (g_c+I1), s	23.4	17.0	8.4	7.7	3.4	22.8	9.2	28.7
Green Ext Time (p_c), s	0.0	3.8	0.0	1.1	0.0	6.2	0.1	0.0

Intersection Summary	
HCM 6th Ctrl Delay	54.5
HCM 6th LOS	D

Notes

User approved pedestrian interval to be less than phase max green.

* HCM 6th computational engine requires equal clearance times for the phases crossing the barrier.

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	0	1284	666	0	916	433	0	0	0	414	0	595
Future Volume (vph)	0	1284	666	0	916	433	0	0	0	414	0	595
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		5.0	5.0		5.0	5.0				5.8	5.8	5.8
Lane Util. Factor		0.91	1.00		0.95	1.00				0.95	0.91	0.95
Frpb, ped/bikes		1.00	0.98		1.00	0.98				1.00	1.00	1.00
Flpb, ped/bikes		1.00	1.00		1.00	1.00				1.00	1.00	1.00
Frt		1.00	0.85		1.00	0.85				1.00	0.88	0.85
Flt Protected		1.00	1.00		1.00	1.00				0.95	0.99	1.00
Satd. Flow (prot)		5085	1515		3505	1563				1698	1432	1447
Flt Permitted		1.00	1.00		1.00	1.00				0.95	0.99	1.00
Satd. Flow (perm)		5085	1515		3505	1563				1698	1432	1447
Peak-hour factor, PHF	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97
Adj. Flow (vph)	0	1324	687	0	944	446	0	0	0	427	0	613
RTOR Reduction (vph)	0	0	395	0	0	256	0	0	0	0	36	36
Lane Group Flow (vph)	0	1324	292	0	944	190	0	0	0	363	304	301
Confl. Peds. (#/hr)	1		4	4		1						
Confl. Bikes (#/hr)						1						
Heavy Vehicles (%)	0%	2%	4%	0%	3%	1%	0%	0%	0%	1%	0%	6%
Turn Type		NA	Perm		NA	Perm				Split	NA	Perm
Protected Phases		2			6					4	4	
Permitted Phases			2			6						4
Actuated Green, G (s)		25.2	25.2		25.2	25.2				23.2	23.2	23.2
Effective Green, g (s)		25.2	25.2		25.2	25.2				23.2	23.2	23.2
Actuated g/C Ratio		0.43	0.43		0.43	0.43				0.39	0.39	0.39
Clearance Time (s)		5.0	5.0		5.0	5.0				5.8	5.8	5.8
Vehicle Extension (s)		3.0	3.0		3.0	3.0				3.0	3.0	3.0
Lane Grp Cap (vph)		2164	644		1491	665				665	561	567
v/s Ratio Prot		0.26			c0.27					c0.21	0.21	
v/s Ratio Perm			0.19			0.12						0.21
v/c Ratio		0.61	0.45		0.63	0.29				0.55	0.54	0.53
Uniform Delay, d1		13.2	12.1		13.4	11.1				13.9	13.9	13.8
Progression Factor		1.00	1.00		1.00	1.00				1.00	1.00	1.00
Incremental Delay, d2		0.5	0.5		0.9	0.2				3.2	3.7	3.5
Delay (s)		13.7	12.6		14.3	11.4				17.1	17.6	17.4
Level of Service		B	B		B	B				B	B	B
Approach Delay (s)		13.3			13.3			0.0			17.4	
Approach LOS		B			B			A			B	

Intersection Summary			
HCM 2000 Control Delay	14.3	HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio	0.59		
Actuated Cycle Length (s)	59.2	Sum of lost time (s)	10.8
Intersection Capacity Utilization	68.2%	ICU Level of Service	C
Analysis Period (min)	15		
c Critical Lane Group			

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	0	1128	570	0	931	361	417	0	486	0	0	0
Future Volume (vph)	0	1128	570	0	931	361	417	0	486	0	0	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		5.0	4.0		5.0	5.0	5.8	5.8	5.8			
Lane Util. Factor		0.95	1.00		0.95	1.00	0.95	0.91	0.95			
Frpb, ped/bikes		1.00	0.98		1.00	0.98	1.00	1.00	1.00			
Flpb, ped/bikes		1.00	1.00		1.00	1.00	1.00	1.00	1.00			
Frt		1.00	0.85		1.00	0.85	1.00	0.90	0.85			
Flt Protected		1.00	1.00		1.00	1.00	0.95	0.98	1.00			
Satd. Flow (prot)		3539	1547		3574	1550	1618	1493	1519			
Flt Permitted		1.00	1.00		1.00	1.00	0.95	0.98	1.00			
Satd. Flow (perm)		3539	1547		3574	1550	1618	1493	1519			
Peak-hour factor, PHF	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98
Adj. Flow (vph)	0	1151	582	0	950	368	426	0	496	0	0	0
RTOR Reduction (vph)	0	0	0	0	0	218	0	21	21	0	0	0
Lane Group Flow (vph)	0	1151	582	0	950	150	319	284	277	0	0	0
Confl. Peds. (#/hr)	1		5	5		1						
Confl. Bikes (#/hr)			1									
Heavy Vehicles (%)	0%	2%	2%	0%	1%	2%	6%	0%	1%	0%	0%	0%
Turn Type		NA	Free		NA	Perm	Perm	NA	Perm			
Protected Phases		2			6			8				
Permitted Phases			Free			6	8		8			
Actuated Green, G (s)		24.2	59.3		24.2	24.2	24.3	24.3	24.3			
Effective Green, g (s)		24.2	59.3		24.2	24.2	24.3	24.3	24.3			
Actuated g/C Ratio		0.41	1.00		0.41	0.41	0.41	0.41	0.41			
Clearance Time (s)		5.0			5.0	5.0	5.8	5.8	5.8			
Vehicle Extension (s)		3.0			3.0	3.0	3.0	3.0	3.0			
Lane Grp Cap (vph)		1444	1547		1458	632	663	611	622			
v/s Ratio Prot		c0.33			0.27							
v/s Ratio Perm			0.38			0.10	c0.20	0.19	0.18			
v/c Ratio		0.80	0.38		0.65	0.24	0.48	0.46	0.44			
Uniform Delay, d1		15.4	0.0		14.2	11.5	12.9	12.8	12.6			
Progression Factor		1.00	1.00		1.00	1.00	1.00	1.00	1.00			
Incremental Delay, d2		3.2	0.7		1.1	0.2	2.5	2.5	2.3			
Delay (s)		18.5	0.7		15.2	11.7	15.4	15.3	14.9			
Level of Service		B	A		B	B	B	B	B			
Approach Delay (s)		12.6			14.2			15.2			0.0	
Approach LOS		B			B			B			A	

Intersection Summary			
HCM 2000 Control Delay	13.7	HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio	0.64		
Actuated Cycle Length (s)	59.3	Sum of lost time (s)	10.8
Intersection Capacity Utilization	60.2%	ICU Level of Service	B
Analysis Period (min)	15		
c Critical Lane Group			

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	71	911	7	74	512	267	10	74	146	68	24	4
Future Volume (vph)	71	911	7	74	512	267	10	74	146	68	24	4
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		5.8		4.6	5.0	4.6	4.6	5.0	5.0	4.6	5.0	5.0
Lane Util. Factor		0.91		1.00	0.91	1.00	1.00	0.86	0.86	1.00	0.95	1.00
Frpb, ped/bikes		1.00		1.00	1.00	1.00	1.00	0.99	0.99	1.00	1.00	0.99
Flpb, ped/bikes		1.00		1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Frt		1.00		1.00	1.00	0.85	1.00	0.93	0.85	1.00	1.00	0.85
Flt Protected		1.00		0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (prot)		4837		1752	4715	1482	1253	4232	1318	1770	3505	1274
Flt Permitted		0.82		0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (perm)		3969		1752	4715	1482	1253	4232	1318	1770	3505	1274
Peak-hour factor, PHF	0.86	0.86	0.86	0.86	0.86	0.86	0.86	0.86	0.86	0.86	0.86	0.86
Adj. Flow (vph)	83	1059	8	86	595	310	12	86	170	79	28	5
RTOR Reduction (vph)	0	1	0	0	0	166	0	52	52	0	0	3
Lane Group Flow (vph)	0	1149	0	86	595	144	12	119	33	79	28	2
Confl. Peds. (#/hr)							2		1	1		2
Heavy Vehicles (%)	4%	7%	0%	3%	10%	9%	44%	9%	4%	2%	3%	25%
Turn Type	pm+pt	NA		Prot	NA	pm+ov	Prot	NA	Perm	Prot	NA	Perm
Protected Phases	7	4		3	8	1	5	2		1	6	
Permitted Phases	4					8			2			6
Actuated Green, G (s)		31.8		5.6	42.8	48.0	1.0	40.7	40.7	5.2	44.9	44.9
Effective Green, g (s)		31.8		5.6	42.8	48.0	1.0	40.7	40.7	5.2	44.9	44.9
Actuated g/C Ratio		0.31		0.05	0.41	0.46	0.01	0.39	0.39	0.05	0.43	0.43
Clearance Time (s)		5.8		4.6	5.0	4.6	4.6	5.0	5.0	4.6	5.0	5.0
Vehicle Extension (s)		3.0		3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0
Lane Grp Cap (vph)		1221		94	1953	688	12	1667	519	89	1523	553
v/s Ratio Prot				c0.05	0.13	0.01	0.01	c0.03		c0.04	c0.01	
v/s Ratio Perm		c0.29				0.09			0.03			0.00
v/c Ratio		0.94		0.91	0.30	0.21	1.00	0.07	0.06	0.89	0.02	0.00
Uniform Delay, d1		34.8		48.6	20.3	16.4	51.1	19.5	19.5	48.8	16.6	16.5
Progression Factor		1.00		1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Incremental Delay, d2		14.0		65.2	0.1	0.2	259.8	0.1	0.2	59.4	0.0	0.0
Delay (s)		48.8		113.8	20.4	16.5	311.0	19.6	19.7	108.1	16.7	16.5
Level of Service		D		F	C	B	F	B	B	F	B	B
Approach Delay (s)		48.8			27.3			32.7			81.2	
Approach LOS		D			C			C			F	

Intersection Summary			
HCM 2000 Control Delay	40.1	HCM 2000 Level of Service	D
HCM 2000 Volume to Capacity ratio	0.49		
Actuated Cycle Length (s)	103.3	Sum of lost time (s)	20.0
Intersection Capacity Utilization	81.1%	ICU Level of Service	D
Analysis Period (min)	15		

c Critical Lane Group

HCM Unsignalized Intersection Capacity Analysis
1: Doolittle Dr & West Project Dwy

12/04/2023

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (veh/h)	14	2	890	11	18	1147
Future Volume (Veh/h)	14	2	890	11	18	1147
Sign Control	Stop		Free			Free
Grade	0%		0%			0%
Peak Hour Factor	0.88	0.88	0.88	0.88	0.88	0.88
Hourly flow rate (vph)	16	2	1011	12	20	1303
Pedestrians	1					
Lane Width (ft)	12.0					
Walking Speed (ft/s)	3.5					
Percent Blockage	0					
Right turn flare (veh)						
Median type			TWLTL			TWLTL
Median storage veh)			2			2
Upstream signal (ft)			750			512
pX, platoon unblocked	0.93	0.88			0.88	
vC, conflicting volume	1710	512			1024	
vC1, stage 1 conf vol	1018					
vC2, stage 2 conf vol	692					
vCu, unblocked vol	1154	175			756	
tC, single (s)	6.8	6.9			4.1	
tC, 2 stage (s)	5.8					
tF (s)	3.5	3.3			2.2	
p0 queue free %	95	100			97	
cM capacity (veh/h)	338	743			760	

Direction, Lane #	WB 1	NB 1	NB 2	SB 1	SB 2	SB 3
Volume Total	18	674	349	20	652	652
Volume Left	16	0	0	20	0	0
Volume Right	2	0	12	0	0	0
cSH	360	1700	1700	760	1700	1700
Volume to Capacity	0.05	0.40	0.21	0.03	0.38	0.38
Queue Length 95th (ft)	4	0	0	2	0	0
Control Delay (s)	15.5	0.0	0.0	9.9	0.0	0.0
Lane LOS	C			A		
Approach Delay (s)	15.5	0.0		0.1		
Approach LOS	C					

Intersection Summary			
Average Delay	0.2		
Intersection Capacity Utilization	41.7%	ICU Level of Service	A
Analysis Period (min)	15		

Intersection	
Int Delay, s/veh	0.3

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Vol, veh/h	14	2	890	11	18	1147
Future Vol, veh/h	14	2	890	11	18	1147
Conflicting Peds, #/hr	0	0	0	1	1	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	-	50	-
Veh in Median Storage, #	2	-	0	-	-	0
Grade, %	0	-	0	-	-	0
Peak Hour Factor	88	88	88	88	88	88
Heavy Vehicles, %	0	0	14	9	0	17
Mvmt Flow	16	2	1011	13	20	1303

Major/Minor	Minor1		Major1		Major2	
Conflicting Flow All	1711	513	0	0	1025	0
Stage 1	1019	-	-	-	-	-
Stage 2	692	-	-	-	-	-
Critical Hdwy	6.8	6.9	-	-	4.1	-
Critical Hdwy Stg 1	5.8	-	-	-	-	-
Critical Hdwy Stg 2	5.8	-	-	-	-	-
Follow-up Hdwy	3.5	3.3	-	-	2.2	-
Pot Cap-1 Maneuver	83	512	-	-	685	-
Stage 1	314	-	-	-	-	-
Stage 2	463	-	-	-	-	-
Platoon blocked, %			-	-		-
Mov Cap-1 Maneuver	81	512	-	-	684	-
Mov Cap-2 Maneuver	255	-	-	-	-	-
Stage 1	314	-	-	-	-	-
Stage 2	450	-	-	-	-	-

Approach	WB	NB	SB
HCM Control Delay, s	19.2	0	0.2
HCM LOS	C		

Minor Lane/Major Mvmt	NBT	NBR	WBLn1	SBL	SBT
Capacity (veh/h)	-	-	272	684	-
HCM Lane V/C Ratio	-	-	0.067	0.03	-
HCM Control Delay (s)	-	-	19.2	10.4	-
HCM Lane LOS	-	-	C	B	-
HCM 95th %tile Q(veh)	-	-	0.2	0.1	-

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Volume (veh/h)	10	0	0	10	46	12
Future Volume (Veh/h)	10	0	0	10	46	12
Sign Control		Stop	Stop		Free	
Grade		0%	0%		0%	
Peak Hour Factor	0.86	0.86	0.86	0.86	0.86	0.86
Hourly flow rate (vph)	12	0	0	12	53	14
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type					None	
Median storage veh)						
Upstream signal (ft)						
pX, platoon unblocked						
vC, conflicting volume	125	113	120	0	0	
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	125	113	120	0	0	
tC, single (s)	7.2	6.7	6.7	6.4	4.2	
tC, 2 stage (s)						
tF (s)	3.6	4.1	4.1	3.4	2.3	
p0 queue free %	98	100	100	99	97	
cM capacity (veh/h)	789	728	721	1048	1542	

Direction, Lane #	EB 1	WB 1	SB 1
Volume Total	12	12	67
Volume Left	12	0	53
Volume Right	0	12	14
cSH	789	1048	1542
Volume to Capacity	0.02	0.01	0.03
Queue Length 95th (ft)	1	1	3
Control Delay (s)	9.6	8.5	5.9
Lane LOS	A	A	A
Approach Delay (s)	9.6	8.5	5.9
Approach LOS	A	A	

Intersection Summary			
Average Delay	6.7		
Intersection Capacity Utilization	17.2%	ICU Level of Service	A
Analysis Period (min)	15		

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Volume (veh/h)	247	52	15	102	6	14
Future Volume (Veh/h)	247	52	15	102	6	14
Sign Control	Free			Free	Stop	
Grade	0%			0%	0%	
Peak Hour Factor	0.86	0.86	0.86	0.86	0.86	0.86
Hourly flow rate (vph)	287	60	17	119	7	16
Pedestrians				1		
Lane Width (ft)				12.0		
Walking Speed (ft/s)				3.5		
Percent Blockage				0		
Right turn flare (veh)						
Median type	None			None		
Median storage veh)						
Upstream signal (ft)	426					
pX, platoon unblocked						
vC, conflicting volume			347		470	318
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol			347		470	318
tC, single (s)			4.1		6.5	6.4
tC, 2 stage (s)						
tF (s)			2.2		3.6	3.5
p0 queue free %			99		99	98
cM capacity (veh/h)			1201		530	682

Direction, Lane #	EB 1	WB 1	NB 1
Volume Total	347	136	23
Volume Left	0	17	7
Volume Right	60	0	16
cSH	1700	1201	627
Volume to Capacity	0.20	0.01	0.04
Queue Length 95th (ft)	0	1	3
Control Delay (s)	0.0	1.1	11.0
Lane LOS		A	B
Approach Delay (s)	0.0	1.1	11.0
Approach LOS			B

Intersection Summary			
Average Delay	0.8		
Intersection Capacity Utilization	28.4%	ICU Level of Service	A
Analysis Period (min)	15		

Intersection	
Int Delay, s/veh	0.8

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Vol, veh/h	247	52	15	102	6	14
Future Vol, veh/h	247	52	15	102	6	14
Conflicting Peds, #/hr	0	0	0	0	0	1
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	0	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	86	86	86	86	86	86
Heavy Vehicles, %	8	2	4	14	10	20
Mvmt Flow	287	60	17	119	7	16

Major/Minor	Major1		Major2		Minor1	
Conflicting Flow All	0	0	347	0	470	318
Stage 1	-	-	-	-	317	-
Stage 2	-	-	-	-	153	-
Critical Hdwy	-	-	4.14	-	6.5	6.4
Critical Hdwy Stg 1	-	-	-	-	5.5	-
Critical Hdwy Stg 2	-	-	-	-	5.5	-
Follow-up Hdwy	-	-	2.236	-	3.59	3.48
Pot Cap-1 Maneuver	-	-	1201	-	538	683
Stage 1	-	-	-	-	721	-
Stage 2	-	-	-	-	856	-
Platoon blocked, %	-	-		-		
Mov Cap-1 Maneuver	-	-	1201	-	530	682
Mov Cap-2 Maneuver	-	-	-	-	530	-
Stage 1	-	-	-	-	721	-
Stage 2	-	-	-	-	843	-

Approach	EB	WB	NB
HCM Control Delay, s	0	1	11
HCM LOS			B

Minor Lane/Major Mvmt	NBLn1	EBT	EBR	WBL	WBT
Capacity (veh/h)	628	-	-	1201	-
HCM Lane V/C Ratio	0.037	-	-	0.015	-
HCM Control Delay (s)	11	-	-	8	0
HCM Lane LOS	B	-	-	A	A
HCM 95th %tile Q(veh)	0.1	-	-	0	-

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (vph)	88	57	791	195	41	712
Future Volume (vph)	88	57	791	195	41	712
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost time (s)	5.2	5.2	5.8	5.8	4.6	5.8
Lane Util. Factor	1.00	1.00	0.95	1.00	1.00	0.95
Frpb, ped/bikes	1.00	1.00	1.00	0.98	1.00	1.00
Flpb, ped/bikes	1.00	1.00	1.00	1.00	1.00	1.00
Frt	1.00	0.85	1.00	0.85	1.00	1.00
Flt Protected	0.95	1.00	1.00	1.00	0.95	1.00
Satd. Flow (prot)	1467	1282	3312	1346	1687	3223
Flt Permitted	0.95	1.00	1.00	1.00	0.95	1.00
Satd. Flow (perm)	1467	1282	3312	1346	1687	3223
Peak-hour factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95
Adj. Flow (vph)	93	60	833	205	43	749
RTOR Reduction (vph)	0	49	0	97	0	0
Lane Group Flow (vph)	93	11	833	108	43	749
Confl. Peds. (#/hr)	1			2		
Confl. Bikes (#/hr)				3		
Heavy Vehicles (%)	23%	26%	9%	17%	7%	12%
Turn Type	Perm	Perm	NA	Perm	Prot	NA
Protected Phases			2		1	6
Permitted Phases	8	8		2		
Actuated Green, G (s)	11.5	11.5	32.6	32.6	1.9	39.1
Effective Green, g (s)	11.5	11.5	32.6	32.6	1.9	39.1
Actuated g/C Ratio	0.19	0.19	0.53	0.53	0.03	0.63
Clearance Time (s)	5.2	5.2	5.8	5.8	4.6	5.8
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0	3.0
Lane Grp Cap (vph)	273	239	1752	712	52	2045
v/s Ratio Prot			c0.25		c0.03	0.23
v/s Ratio Perm	c0.06	0.01		0.08		
v/c Ratio	0.34	0.05	0.48	0.15	0.83	0.37
Uniform Delay, d1	21.8	20.6	9.1	7.4	29.7	5.4
Progression Factor	1.00	1.00	1.00	1.00	1.00	1.00
Incremental Delay, d2	0.7	0.1	0.9	0.5	64.4	0.5
Delay (s)	22.5	20.6	10.0	7.9	94.1	5.9
Level of Service	C	C	B	A	F	A
Approach Delay (s)	21.8		9.6			10.7
Approach LOS	C		A			B

Intersection Summary			
HCM 2000 Control Delay	11.0	HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio	0.46		
Actuated Cycle Length (s)	61.6	Sum of lost time (s)	15.6
Intersection Capacity Utilization	47.4%	ICU Level of Service	A
Analysis Period (min)	15		
c Critical Lane Group			

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	49	169	36	275	125	760	48	825	246	367	326	58
Future Volume (vph)	49	169	36	275	125	760	48	825	246	367	326	58
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.6	5.2		4.6	5.2	4.6	4.6	5.4	4.6	4.6	5.8	
Lane Util. Factor	1.00	0.95		0.97	1.00	1.00	1.00	0.91	1.00	0.97	0.95	
Frpb, ped/bikes	1.00	1.00		1.00	1.00	1.00	1.00	1.00	0.99	1.00	1.00	
Flpb, ped/bikes	1.00	1.00		1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	
Frt	1.00	0.97		1.00	1.00	0.85	1.00	1.00	0.85	1.00	0.98	
Flt Protected	0.95	1.00		0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	
Satd. Flow (prot)	1211	2280		3019	1357	1495	1318	4673	1238	3242	2983	
Flt Permitted	0.95	1.00		0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	
Satd. Flow (perm)	1211	2280		3019	1357	1495	1318	4673	1238	3242	2983	
Peak-hour factor, PHF	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91
Adj. Flow (vph)	54	186	40	302	137	835	53	907	270	403	358	64
RTOR Reduction (vph)	0	17	0	0	0	94	0	0	154	0	10	0
Lane Group Flow (vph)	54	209	0	302	137	741	53	907	116	403	412	0
Confl. Peds. (#/hr)									1	1		
Confl. Bikes (#/hr)			1									3
Heavy Vehicles (%)	49%	55%	48%	16%	40%	8%	37%	11%	29%	8%	15%	34%
Turn Type	Prot	NA		Prot	NA	pm+ov	Prot	NA	pm+ov	Prot	NA	
Protected Phases	7	4		3	8	1	5	2	3	1	6	
Permitted Phases						8			2			
Actuated Green, G (s)	8.7	20.9		6.4	18.6	40.1	4.9	40.2	46.6	21.5	56.4	
Effective Green, g (s)	8.7	20.9		6.4	18.6	40.1	4.9	40.2	46.6	21.5	56.4	
Actuated g/C Ratio	0.08	0.19		0.06	0.17	0.37	0.05	0.37	0.43	0.20	0.52	
Clearance Time (s)	4.6	5.2		4.6	5.2	4.6	4.6	5.4	4.6	4.6	5.8	
Vehicle Extension (s)	3.0	3.0		3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	
Lane Grp Cap (vph)	96	437		177	231	551	59	1726	530	640	1546	
v/s Ratio Prot	0.04	0.09		c0.10	0.10	c0.27	0.04	c0.19	0.01	0.12	0.14	
v/s Ratio Perm						0.23			0.08			
v/c Ratio	0.56	0.48		1.71	0.59	1.34	0.90	0.53	0.22	0.63	0.27	
Uniform Delay, d1	48.2	39.1		51.2	41.6	34.3	51.7	26.8	19.6	40.0	14.6	
Progression Factor	1.00	1.00		1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	
Incremental Delay, d2	7.3	0.8		340.7	4.0	166.9	80.5	1.1	0.2	1.9	0.4	
Delay (s)	55.6	39.9		391.9	45.7	201.3	132.2	28.0	19.8	41.9	15.1	
Level of Service	E	D		F	D	F	F	C	B	D	B	
Approach Delay (s)		42.9			229.7			30.7			28.2	
Approach LOS		D			F			C			C	

Intersection Summary			
HCM 2000 Control Delay	101.3	HCM 2000 Level of Service	F
HCM 2000 Volume to Capacity ratio	0.97		
Actuated Cycle Length (s)	108.8	Sum of lost time (s)	20.2
Intersection Capacity Utilization	95.9%	ICU Level of Service	F
Analysis Period (min)	15		
c Critical Lane Group			

HCM 6th Signalized Intersection Summary
5: Doolittle Dr & Davis St

12/04/2023

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	49	169	36	275	125	760	48	825	246	367	326	58
Future Volume (veh/h)	49	169	36	275	125	760	48	825	246	367	326	58
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		0.99	1.00		1.00	1.00		1.00	1.00		0.98
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1174	1085	1189	1663	1307	1781	1352	1737	1470	1781	1678	1396
Adj Flow Rate, veh/h	54	186	40	302	137	835	53	907	270	403	358	64
Peak Hour Factor	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91
Percent Heavy Veh, %	49	55	48	16	40	8	37	11	29	8	15	34
Cap, veh/h	60	403	85	179	317	584	61	1781	540	476	1275	225
Arrive On Green	0.05	0.24	0.24	0.06	0.24	0.24	0.05	0.38	0.38	0.14	0.47	0.47
Sat Flow, veh/h	1118	1691	355	3072	1307	1510	1287	4742	1245	3291	2696	477
Grp Volume(v), veh/h	54	112	114	302	137	835	53	907	270	403	210	212
Grp Sat Flow(s),veh/h/ln	1118	1031	1015	1536	1307	1510	1287	1581	1245	1646	1594	1578
Q Serve(g_s), s	5.3	10.2	10.6	6.4	9.8	26.7	4.5	16.3	17.3	13.1	8.8	9.0
Cycle Q Clear(g_c), s	5.3	10.2	10.6	6.4	9.8	26.7	4.5	16.3	17.3	13.1	8.8	9.0
Prop In Lane	1.00		0.35	1.00		1.00	1.00		1.00	1.00		0.30
Lane Grp Cap(c), veh/h	60	245	242	179	317	584	61	1781	540	476	754	747
V/C Ratio(X)	0.90	0.45	0.47	1.69	0.43	1.43	0.87	0.51	0.50	0.85	0.28	0.28
Avail Cap(c_a), veh/h	149	327	323	179	317	584	74	1781	540	639	754	747
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	51.8	35.9	36.0	51.9	35.3	33.8	52.1	26.5	22.5	45.9	17.6	17.7
Incr Delay (d2), s/veh	32.9	1.3	1.4	334.3	0.9	202.8	56.1	1.0	3.3	7.9	0.9	1.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	2.0	2.6	2.7	10.7	3.2	47.8	2.4	6.0	5.4	5.8	3.3	3.3
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	84.7	37.2	37.5	386.2	36.2	236.5	108.3	27.6	25.8	53.8	18.5	18.6
LnGrp LOS	F	D	D	F	D	F	F	C	C	D	B	B
Approach Vol, veh/h		280			1274			1230			825	
Approach Delay, s/veh		46.4			250.5			30.7			35.8	
Approach LOS		D			F			C			D	

Timer - Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	20.5	47.2	11.0	31.4	9.8	57.9	10.5	31.9
Change Period (Y+Rc), s	4.6	* 5.8	4.6	5.2	4.6	5.8	4.6	5.2
Max Green Setting (Gmax), s	21.4	* 37	6.4	35.0	6.3	52.1	14.7	26.7
Max Q Clear Time (g_c+I1), s	15.1	19.3	8.4	12.6	6.5	11.0	7.3	28.7
Green Ext Time (p_c), s	0.8	6.6	0.0	1.3	0.0	2.6	0.0	0.0

Intersection Summary	
HCM 6th Ctrl Delay	110.7
HCM 6th LOS	F

Notes

User approved pedestrian interval to be less than phase max green.

* HCM 6th computational engine requires equal clearance times for the phases crossing the barrier.

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	0	899	526	9	1192	429	0	0	0	263	0	614
Future Volume (vph)	0	899	526	9	1192	429	0	0	0	263	0	614
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		5.0	5.0		5.0	5.0				5.8	5.8	5.8
Lane Util. Factor		0.91	1.00		0.95	1.00				0.95	0.91	0.95
Frpb, ped/bikes		1.00	0.97		1.00	0.98				1.00	1.00	1.00
Flpb, ped/bikes		1.00	1.00		1.00	1.00				1.00	1.00	1.00
Frt		1.00	0.85		1.00	0.85				1.00	0.86	0.85
Flt Protected		1.00	1.00		1.00	1.00				0.95	1.00	1.00
Satd. Flow (prot)		4803	1355		3313	1488				1618	1389	1434
Flt Permitted		1.00	1.00		0.95	1.00				0.95	1.00	1.00
Satd. Flow (perm)		4803	1355		3139	1488				1618	1389	1434
Peak-hour factor, PHF	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97
Adj. Flow (vph)	0	927	542	9	1229	442	0	0	0	271	0	633
RTOR Reduction (vph)	0	0	270	0	0	220	0	0	0	0	30	30
Lane Group Flow (vph)	0	927	272	0	1238	222	0	0	0	244	301	299
Confl. Peds. (#/hr)	2		7	7		2						
Confl. Bikes (#/hr)						1						
Heavy Vehicles (%)	0%	8%	16%	0%	9%	6%	0%	0%	0%	6%	0%	7%
Turn Type		NA	Perm	Perm	NA	Perm				Split	NA	Perm
Protected Phases		2			6					4	4	
Permitted Phases			2	6		6						4
Actuated Green, G (s)		29.3	29.3		29.3	29.3				18.3	18.3	18.3
Effective Green, g (s)		29.3	29.3		29.3	29.3				18.3	18.3	18.3
Actuated g/C Ratio		0.50	0.50		0.50	0.50				0.31	0.31	0.31
Clearance Time (s)		5.0	5.0		5.0	5.0				5.8	5.8	5.8
Vehicle Extension (s)		3.0	3.0		3.0	3.0				3.0	3.0	3.0
Lane Grp Cap (vph)		2409	679		1574	746				507	435	449
v/s Ratio Prot		0.19								0.15	c0.22	
v/s Ratio Perm			0.20		c0.39	0.15						0.21
v/c Ratio		0.38	0.40		0.79	0.30				0.48	0.69	0.67
Uniform Delay, d1		9.0	9.1		12.0	8.5				16.2	17.6	17.4
Progression Factor		1.00	1.00		1.00	1.00				1.00	1.00	1.00
Incremental Delay, d2		0.1	0.4		2.7	0.2				3.2	8.7	7.6
Delay (s)		9.1	9.5		14.6	8.7				19.5	26.3	25.0
Level of Service		A	A		B	A				B	C	C
Approach Delay (s)		9.2			13.1			0.0			24.0	
Approach LOS		A			B			A			C	

Intersection Summary			
HCM 2000 Control Delay	14.1	HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio	0.75		
Actuated Cycle Length (s)	58.4	Sum of lost time (s)	10.8
Intersection Capacity Utilization	93.2%	ICU Level of Service	F
Analysis Period (min)	15		
c Critical Lane Group			

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	0	650	509	3	1155	560	480	0	291	0	0	0
Future Volume (vph)	0	650	509	3	1155	560	480	0	291	0	0	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		5.0	4.0		5.0	5.0	5.8	5.8	5.8			
Lane Util. Factor		0.95	1.00		0.95	1.00	0.95	0.91	0.95			
Frpb, ped/bikes		1.00	0.98		1.00	0.98	1.00	1.00	1.00			
Flpb, ped/bikes		1.00	1.00		1.00	1.00	1.00	1.00	1.00			
Frt		1.00	0.85		1.00	0.85	1.00	0.97	0.85			
Flt Protected		1.00	1.00		1.00	1.00	0.95	0.96	1.00			
Satd. Flow (prot)		3471	1420		3438	1533	1504	1435	1447			
Flt Permitted		1.00	1.00		0.95	1.00	0.95	0.96	1.00			
Satd. Flow (perm)		3471	1420		3279	1533	1504	1435	1447			
Peak-hour factor, PHF	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97
Adj. Flow (vph)	0	670	525	3	1191	577	495	0	300	0	0	0
RTOR Reduction (vph)	0	0	0	0	0	296	0	24	121	0	0	0
Lane Group Flow (vph)	0	670	525	0	1194	281	272	250	128	0	0	0
Confl. Peds. (#/hr)	2		7	7		2						
Confl. Bikes (#/hr)			1									
Heavy Vehicles (%)	0%	4%	11%	0%	5%	3%	14%	0%	6%	0%	0%	0%
Turn Type		NA	Free	Perm	NA	Perm	Perm	NA	Perm			
Protected Phases		2			6			8				
Permitted Phases			Free	6		6	8		8			
Actuated Green, G (s)		28.5	58.6		28.5	28.5	19.3	19.3	19.3			
Effective Green, g (s)		28.5	58.6		28.5	28.5	19.3	19.3	19.3			
Actuated g/C Ratio		0.49	1.00		0.49	0.49	0.33	0.33	0.33			
Clearance Time (s)		5.0			5.0	5.0	5.8	5.8	5.8			
Vehicle Extension (s)		3.0			3.0	3.0	3.0	3.0	3.0			
Lane Grp Cap (vph)		1688	1420		1594	745	495	472	476			
v/s Ratio Prot		0.19										
v/s Ratio Perm			0.37		c0.36	0.18	c0.18	0.17	0.09			
v/c Ratio		0.40	0.37		0.75	0.38	0.55	0.53	0.27			
Uniform Delay, d1		9.6	0.0		12.2	9.5	16.1	16.0	14.5			
Progression Factor		1.00	1.00		1.00	1.00	1.00	1.00	1.00			
Incremental Delay, d2		0.2	0.7		2.0	0.3	4.3	4.2	1.4			
Delay (s)		9.7	0.7		14.1	9.8	20.4	20.2	15.8			
Level of Service		A	A		B	A	C	C	B			
Approach Delay (s)		5.8			12.7			18.9			0.0	
Approach LOS		A			B			B			A	

Intersection Summary			
HCM 2000 Control Delay	11.8	HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio	0.67		
Actuated Cycle Length (s)	58.6	Sum of lost time (s)	10.8
Intersection Capacity Utilization	60.1%	ICU Level of Service	B
Analysis Period (min)	15		
c Critical Lane Group			

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	99	639	1	57	754	374	11	33	79	53	13	8
Future Volume (vph)	99	639	1	57	754	374	11	33	79	53	13	8
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		5.8		4.6	5.0	4.6	4.6	5.0	5.0	4.6	5.0	5.0
Lane Util. Factor		0.91		1.00	0.91	1.00	1.00	0.86	0.86	1.00	0.95	1.00
Frpb, ped/bikes		1.00		1.00	1.00	1.00	1.00	0.99	0.99	1.00	1.00	1.00
Flpb, ped/bikes		1.00		1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Frt		1.00		1.00	1.00	0.85	1.00	0.92	0.85	1.00	1.00	0.85
Flt Protected		0.99		0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (prot)		4800		1656	4940	1495	1081	4246	1280	1719	3610	1214
Flt Permitted		0.72		0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (perm)		3479		1656	4940	1495	1081	4246	1280	1719	3610	1214
Peak-hour factor, PHF	0.87	0.87	0.87	0.87	0.87	0.87	0.87	0.87	0.87	0.87	0.87	0.87
Adj. Flow (vph)	114	734	1	66	867	430	13	38	91	61	15	9
RTOR Reduction (vph)	0	0	0	0	0	243	0	27	26	0	0	5
Lane Group Flow (vph)	0	849	0	66	867	187	13	57	19	61	15	4
Confl. Peds. (#/hr)									2	2		
Heavy Vehicles (%)	3%	8%	0%	9%	5%	8%	67%	3%	7%	5%	0%	33%
Turn Type	pm+pt	NA		Prot	NA	pm+ov	Prot	NA	Perm	Prot	NA	Perm
Protected Phases	7	4		3	8	1	5	2		1	6	
Permitted Phases	4					8			2			6
Actuated Green, G (s)		28.2		4.1	37.7	42.8	0.9	41.1	41.1	5.1	45.3	45.3
Effective Green, g (s)		28.2		4.1	37.7	42.8	0.9	41.1	41.1	5.1	45.3	45.3
Actuated g/C Ratio		0.29		0.04	0.38	0.43	0.01	0.42	0.42	0.05	0.46	0.46
Clearance Time (s)		5.8		4.6	5.0	4.6	4.6	5.0	5.0	4.6	5.0	5.0
Vehicle Extension (s)		3.0		3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0
Lane Grp Cap (vph)		996		68	1890	649	9	1771	534	89	1660	558
v/s Ratio Prot				c0.04	0.18	0.01	0.01	0.01		c0.04	c0.00	
v/s Ratio Perm		c0.24				0.11			c0.01			0.00
v/c Ratio		0.85		0.97	0.46	0.29	1.44	0.03	0.04	0.69	0.01	0.01
Uniform Delay, d1		33.2		47.1	22.8	18.0	48.8	17.0	17.0	45.9	14.4	14.4
Progression Factor		1.00		1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Incremental Delay, d2		7.2		98.5	0.2	0.2	474.2	0.0	0.1	19.7	0.0	0.0
Delay (s)		40.3		145.6	22.9	18.2	523.0	17.0	17.1	65.6	14.4	14.4
Level of Service		D		F	C	B	F	B	B	E	B	B
Approach Delay (s)		40.3			27.4			63.3			51.1	
Approach LOS		D			C			E			D	

Intersection Summary			
HCM 2000 Control Delay	34.8	HCM 2000 Level of Service	C
HCM 2000 Volume to Capacity ratio	0.40		
Actuated Cycle Length (s)	98.5	Sum of lost time (s)	20.0
Intersection Capacity Utilization	81.2%	ICU Level of Service	D
Analysis Period (min)	15		

c Critical Lane Group

HCM Unsignalized Intersection Capacity Analysis
1: Doolittle Dr & West Project Dwy

12/04/2023

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (veh/h)	4	10	920	12	6	1075
Future Volume (Veh/h)	4	10	920	12	6	1075
Sign Control	Stop		Free			Free
Grade	0%		0%			0%
Peak Hour Factor	0.93	0.93	0.93	0.93	0.93	0.93
Hourly flow rate (vph)	4	11	989	13	6	1156
Pedestrians	4					
Lane Width (ft)	12.0					
Walking Speed (ft/s)	3.5					
Percent Blockage	0					
Right turn flare (veh)						
Median type			TWLTL			TWLTL
Median storage veh)			2			2
Upstream signal (ft)			750			512
pX, platoon unblocked	0.82	0.92			0.92	
vC, conflicting volume	1590	505			1006	
vC1, stage 1 conf vol	1000					
vC2, stage 2 conf vol	590					
vCu, unblocked vol	858	295			838	
tC, single (s)	6.8	6.9			4.1	
tC, 2 stage (s)	5.8					
tF (s)	3.5	3.3			2.2	
p0 queue free %	99	98			99	
cM capacity (veh/h)	349	650			740	

Direction, Lane #	WB 1	NB 1	NB 2	SB 1	SB 2	SB 3
Volume Total	15	659	343	6	578	578
Volume Left	4	0	0	6	0	0
Volume Right	11	0	13	0	0	0
cSH	528	1700	1700	740	1700	1700
Volume to Capacity	0.03	0.39	0.20	0.01	0.34	0.34
Queue Length 95th (ft)	2	0	0	1	0	0
Control Delay (s)	12.0	0.0	0.0	9.9	0.0	0.0
Lane LOS	B			A		
Approach Delay (s)	12.0	0.0		0.1		
Approach LOS	B					

Intersection Summary			
Average Delay	0.1		
Intersection Capacity Utilization	39.7%	ICU Level of Service	A
Analysis Period (min)	15		

Intersection	
Int Delay, s/veh	0.2

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Vol, veh/h	4	10	920	12	6	1075
Future Vol, veh/h	4	10	920	12	6	1075
Conflicting Peds, #/hr	0	0	0	4	4	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	-	50	-
Veh in Median Storage, #	2	-	0	-	-	0
Grade, %	0	-	0	-	-	0
Peak Hour Factor	93	93	93	93	93	93
Heavy Vehicles, %	0	0	7	8	0	6
Mvmt Flow	4	11	989	13	6	1156

Major/Minor	Minor1		Major1		Major2	
Conflicting Flow All	1590	505	0	0	1006	0
Stage 1	1000	-	-	-	-	-
Stage 2	590	-	-	-	-	-
Critical Hdwy	6.8	6.9	-	-	4.1	-
Critical Hdwy Stg 1	5.8	-	-	-	-	-
Critical Hdwy Stg 2	5.8	-	-	-	-	-
Follow-up Hdwy	3.5	3.3	-	-	2.2	-
Pot Cap-1 Maneuver	100	518	-	-	697	-
Stage 1	321	-	-	-	-	-
Stage 2	522	-	-	-	-	-
Platoon blocked, %			-	-		-
Mov Cap-1 Maneuver	99	516	-	-	694	-
Mov Cap-2 Maneuver	271	-	-	-	-	-
Stage 1	320	-	-	-	-	-
Stage 2	517	-	-	-	-	-

Approach	WB	NB	SB
HCM Control Delay, s	14.1	0	0.1
HCM LOS	B		

Minor Lane/Major Mvmt	NBT	NBR	WBLn1	SBL	SBT
Capacity (veh/h)	-	-	410	694	-
HCM Lane V/C Ratio	-	-	0.037	0.009	-
HCM Control Delay (s)	-	-	14.1	10.2	-
HCM Lane LOS	-	-	B	B	-
HCM 95th %tile Q(veh)	-	-	0.1	0	-

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Volume (veh/h)	38	0	0	37	14	3
Future Volume (Veh/h)	38	0	0	37	14	3
Sign Control		Stop	Stop		Free	
Grade		0%	0%		0%	
Peak Hour Factor	0.89	0.89	0.89	0.89	0.89	0.89
Hourly flow rate (vph)	43	0	0	42	16	3
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type					None	
Median storage veh)						
Upstream signal (ft)						
pX, platoon unblocked						
vC, conflicting volume	76	34	35	0	0	
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	76	34	35	0	0	
tC, single (s)	7.1	6.5	6.5	6.2	4.1	
tC, 2 stage (s)						
tF (s)	3.5	4.0	4.0	3.3	2.2	
p0 queue free %	95	100	100	96	99	
cM capacity (veh/h)	870	849	847	1082	1617	

Direction, Lane #	EB 1	WB 1	SB 1
Volume Total	43	42	19
Volume Left	43	0	16
Volume Right	0	42	3
cSH	870	1082	1617
Volume to Capacity	0.05	0.04	0.01
Queue Length 95th (ft)	4	3	1
Control Delay (s)	9.4	8.5	6.1
Lane LOS	A	A	A
Approach Delay (s)	9.4	8.5	6.1
Approach LOS	A	A	

Intersection Summary			
Average Delay	8.4		
Intersection Capacity Utilization	18.8%	ICU Level of Service	A
Analysis Period (min)	15		

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Volume (veh/h)	138	1	23	153	39	34
Future Volume (Veh/h)	138	1	23	153	39	34
Sign Control	Free			Free	Stop	
Grade	0%			0%	0%	
Peak Hour Factor	0.89	0.89	0.89	0.89	0.89	0.89
Hourly flow rate (vph)	155	1	26	172	44	38
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type	None			None		
Median storage veh)						
Upstream signal (ft)	426					
pX, platoon unblocked						
vC, conflicting volume			156		380	156
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol			156		380	156
tC, single (s)			4.1		6.4	6.2
tC, 2 stage (s)						
tF (s)			2.2		3.5	3.3
p0 queue free %			98		93	96
cM capacity (veh/h)			1412		607	890

Direction, Lane #	EB 1	WB 1	NB 1
Volume Total	156	198	82
Volume Left	0	26	44
Volume Right	1	0	38
cSH	1700	1412	712
Volume to Capacity	0.09	0.02	0.12
Queue Length 95th (ft)	0	1	10
Control Delay (s)	0.0	1.1	10.7
Lane LOS		A	B
Approach Delay (s)	0.0	1.1	10.7
Approach LOS			B

Intersection Summary			
Average Delay	2.5		
Intersection Capacity Utilization	30.9%	ICU Level of Service	A
Analysis Period (min)	15		

Intersection	
Int Delay, s/veh	2.5

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Vol, veh/h	138	1	23	153	39	34
Future Vol, veh/h	138	1	23	153	39	34
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	0	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	89	89	89	89	89	89
Heavy Vehicles, %	26	24	4	6	4	2
Mvmt Flow	155	1	26	172	44	38

Major/Minor	Major1		Major2		Minor1	
Conflicting Flow All	0	0	156	0	380	156
Stage 1	-	-	-	-	156	-
Stage 2	-	-	-	-	224	-
Critical Hdwy	-	-	4.14	-	6.44	6.22
Critical Hdwy Stg 1	-	-	-	-	5.44	-
Critical Hdwy Stg 2	-	-	-	-	5.44	-
Follow-up Hdwy	-	-	2.236	-	3.536	3.318
Pot Cap-1 Maneuver	-	-	1412	-	618	890
Stage 1	-	-	-	-	867	-
Stage 2	-	-	-	-	809	-
Platoon blocked, %	-	-		-		
Mov Cap-1 Maneuver	-	-	1412	-	606	890
Mov Cap-2 Maneuver	-	-	-	-	606	-
Stage 1	-	-	-	-	867	-
Stage 2	-	-	-	-	793	-

Approach	EB	WB	NB
HCM Control Delay, s	0	1	10.7
HCM LOS			B

Minor Lane/Major Mvmt	NBLn1	EBT	EBR	WBL	WBT
Capacity (veh/h)	712	-	-	1412	-
HCM Lane V/C Ratio	0.115	-	-	0.018	-
HCM Control Delay (s)	10.7	-	-	7.6	0
HCM Lane LOS	B	-	-	A	A
HCM 95th %tile Q(veh)	0.4	-	-	0.1	-

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (vph)	154	101	885	149	15	1176
Future Volume (vph)	154	101	885	149	15	1176
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost time (s)	5.2	5.2	5.8	5.8	4.6	5.8
Lane Util. Factor	1.00	1.00	0.95	1.00	1.00	0.95
Frpb, ped/bikes	1.00	1.00	1.00	0.98	1.00	1.00
Flpb, ped/bikes	1.00	1.00	1.00	1.00	1.00	1.00
Frt	1.00	0.85	1.00	0.85	1.00	1.00
Flt Protected	0.95	1.00	1.00	1.00	0.95	1.00
Satd. Flow (prot)	1641	1538	3505	1260	1504	3374
Flt Permitted	0.95	1.00	1.00	1.00	0.95	1.00
Satd. Flow (perm)	1641	1538	3505	1260	1504	3374
Peak-hour factor, PHF	0.84	0.84	0.84	0.84	0.84	0.84
Adj. Flow (vph)	183	120	1054	177	18	1400
RTOR Reduction (vph)	0	96	0	85	0	0
Lane Group Flow (vph)	183	24	1054	92	18	1400
Confl. Peds. (#/hr)				1	1	
Confl. Bikes (#/hr)				5		
Heavy Vehicles (%)	10%	5%	3%	25%	20%	7%
Turn Type	Perm	Perm	NA	Perm	Prot	NA
Protected Phases			2		1	6
Permitted Phases	8	8		2		
Actuated Green, G (s)	12.1	12.1	30.8	30.8	0.9	36.3
Effective Green, g (s)	12.1	12.1	30.8	30.8	0.9	36.3
Actuated g/C Ratio	0.20	0.20	0.52	0.52	0.02	0.61
Clearance Time (s)	5.2	5.2	5.8	5.8	4.6	5.8
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0	3.0
Lane Grp Cap (vph)	334	313	1817	653	22	2061
v/s Ratio Prot			0.30		0.01	c0.41
v/s Ratio Perm	c0.11	0.02		0.07		
v/c Ratio	0.55	0.08	0.58	0.14	0.82	0.68
Uniform Delay, d1	21.2	19.1	9.8	7.4	29.2	7.7
Progression Factor	1.00	1.00	1.00	1.00	1.00	1.00
Incremental Delay, d2	1.8	0.1	1.4	0.5	109.6	1.8
Delay (s)	23.0	19.2	11.2	7.9	138.7	9.5
Level of Service	C	B	B	A	F	A
Approach Delay (s)	21.5		10.7			11.1
Approach LOS	C		B			B

Intersection Summary			
HCM 2000 Control Delay	12.0	HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio	0.71		
Actuated Cycle Length (s)	59.4	Sum of lost time (s)	15.6
Intersection Capacity Utilization	50.2%	ICU Level of Service	A
Analysis Period (min)	15		
c Critical Lane Group			

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	63	116	44	206	76	478	18	451	252	625	806	47
Future Volume (vph)	63	116	44	206	76	478	18	451	252	625	806	47
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.6	5.2		4.6	5.2	4.6	4.6	5.4	4.6	4.6	5.8	
Lane Util. Factor	1.00	0.95		0.97	1.00	1.00	1.00	0.91	1.00	0.97	0.95	
Frpb, ped/bikes	1.00	1.00		1.00	1.00	1.00	1.00	1.00	0.99	1.00	1.00	
Flpb, ped/bikes	1.00	1.00		1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	
Frt	1.00	0.96		1.00	1.00	0.85	1.00	1.00	0.85	1.00	0.99	
Flt Protected	0.95	1.00		0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	
Satd. Flow (prot)	1188	2886		3045	1226	1568	1543	5036	1474	3335	3262	
Flt Permitted	0.95	1.00		0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	
Satd. Flow (perm)	1188	2886		3045	1226	1568	1543	5036	1474	3335	3262	
Peak-hour factor, PHF	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88
Adj. Flow (vph)	72	132	50	234	86	543	20	512	286	710	916	53
RTOR Reduction (vph)	0	37	0	0	0	132	0	0	160	0	3	0
Lane Group Flow (vph)	72	145	0	234	86	411	20	513	126	710	966	0
Confl. Peds. (#/hr)			5	5					2	2		
Confl. Bikes (#/hr)			1						5			1
Heavy Vehicles (%)	52%	18%	23%	15%	55%	3%	17%	3%	8%	5%	7%	55%
Turn Type	Prot	NA		Prot	NA	pm+ov	Prot	NA	pm+ov	Prot	NA	
Protected Phases	7	4		3	8	1	5	2	3	1	6	
Permitted Phases						8			2			
Actuated Green, G (s)	9.7	20.9		6.5	17.7	39.3	2.3	42.3	48.8	21.6	61.2	
Effective Green, g (s)	9.7	20.9		6.5	17.7	39.3	2.3	42.3	48.8	21.6	61.2	
Actuated g/C Ratio	0.09	0.19		0.06	0.16	0.35	0.02	0.38	0.44	0.19	0.55	
Clearance Time (s)	4.6	5.2		4.6	5.2	4.6	4.6	5.4	4.6	4.6	5.8	
Vehicle Extension (s)	3.0	3.0		3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	
Lane Grp Cap (vph)	103	542		178	195	554	31	1917	647	648	1796	
v/s Ratio Prot	0.06	c0.05		c0.08	0.07	c0.14	0.01	0.10	0.01	c0.21	c0.30	
v/s Ratio Perm						0.12			0.07			
v/c Ratio	0.70	0.27		1.31	0.44	0.74	0.65	0.27	0.19	1.10	0.54	
Uniform Delay, d1	49.3	38.6		52.3	42.2	31.4	54.0	23.7	19.1	44.8	15.9	
Progression Factor	1.00	1.00		1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	
Incremental Delay, d2	18.7	0.3		175.6	1.6	5.3	37.9	0.3	0.1	64.3	1.2	
Delay (s)	68.0	38.8		227.9	43.8	36.7	91.9	24.1	19.2	109.1	17.1	
Level of Service	E	D		F	D	D	F	C	B	F	B	
Approach Delay (s)		47.1			89.3			24.0			56.0	
Approach LOS		D			F			C			E	

Intersection Summary			
HCM 2000 Control Delay	56.1	HCM 2000 Level of Service	E
HCM 2000 Volume to Capacity ratio	0.76		
Actuated Cycle Length (s)	111.1	Sum of lost time (s)	20.2
Intersection Capacity Utilization	84.8%	ICU Level of Service	E
Analysis Period (min)	15		
c Critical Lane Group			

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	63	116	44	206	76	478	18	451	252	625	806	47
Future Volume (veh/h)	63	116	44	206	76	478	18	451	252	625	806	47
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		0.98	1.00		0.99	1.00		0.98	1.00		0.98
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1129	1633	1559	1678	1085	1856	1648	1856	1781	1826	1796	1085
Adj Flow Rate, veh/h	72	132	50	234	86	543	20	512	286	710	916	53
Peak Hour Factor	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88
Percent Heavy Veh, %	52	18	23	15	55	3	17	3	8	5	7	55
Cap, veh/h	81	562	203	173	253	659	32	1657	570	631	1616	94
Arrive On Green	0.08	0.25	0.25	0.06	0.23	0.23	0.02	0.33	0.33	0.19	0.49	0.49
Sat Flow, veh/h	1076	2220	802	3100	1085	1562	1570	5066	1484	3374	3274	189
Grp Volume(v), veh/h	72	90	92	234	86	543	20	512	286	710	477	492
Grp Sat Flow(s),veh/h/ln	1076	1552	1471	1550	1085	1562	1570	1689	1484	1687	1706	1757
Q Serve(g_s), s	7.6	5.3	5.7	6.4	7.5	26.7	1.4	8.7	16.8	21.4	22.5	22.5
Cycle Q Clear(g_c), s	7.6	5.3	5.7	6.4	7.5	26.7	1.4	8.7	16.8	21.4	22.5	22.5
Prop In Lane	1.00		0.55	1.00		1.00	1.00		1.00	1.00		0.11
Lane Grp Cap(c), veh/h	81	393	372	173	253	659	32	1657	570	631	842	867
V/C Ratio(X)	0.88	0.23	0.25	1.35	0.34	0.82	0.62	0.31	0.50	1.12	0.57	0.57
Avail Cap(c_a), veh/h	138	475	450	173	253	659	86	1657	570	631	842	867
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	52.4	33.9	34.0	54.0	36.5	29.4	55.6	28.8	27.0	46.5	20.4	20.4
Incr Delay (d2), s/veh	27.4	0.3	0.3	190.1	0.8	8.4	17.8	0.5	3.1	75.3	2.8	2.7
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	2.7	2.0	2.1	7.1	2.0	14.3	0.7	3.5	6.3	15.3	9.1	9.4
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	79.8	34.2	34.3	244.1	37.3	37.8	73.4	29.3	30.1	121.8	23.1	23.0
LnGrp LOS	E	C	C	F	D	D	E	C	C	F	C	C
Approach Vol, veh/h		254			863			818			1679	
Approach Delay, s/veh		47.2			93.7			30.7			64.8	
Approach LOS		D			F			C			E	

Timer - Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	26.0	43.2	11.0	34.2	7.0	62.2	13.3	31.9
Change Period (Y+Rc), s	4.6	* 5.8	4.6	5.2	4.6	5.8	4.6	5.2
Max Green Setting (Gmax), s	21.4	* 37	6.4	35.0	6.3	52.1	14.7	26.7
Max Q Clear Time (g_c+I1), s	23.4	18.8	8.4	7.7	3.4	24.5	9.6	28.7
Green Ext Time (p_c), s	0.0	4.0	0.0	1.1	0.0	6.5	0.1	0.0

Intersection Summary	
HCM 6th Ctrl Delay	62.7
HCM 6th LOS	E

Notes

User approved pedestrian interval to be less than phase max green.

* HCM 6th computational engine requires equal clearance times for the phases crossing the barrier.

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	0	1310	678	6	949	468	0	0	0	435	0	608
Future Volume (vph)	0	1310	678	6	949	468	0	0	0	435	0	608
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		5.0	5.0		5.0	5.0				5.8	5.8	5.8
Lane Util. Factor		0.91	1.00		0.95	1.00				0.95	0.91	0.95
Frpb, ped/bikes		1.00	0.98		1.00	0.98				1.00	1.00	1.00
Flpb, ped/bikes		1.00	1.00		1.00	1.00				1.00	1.00	1.00
Frt		1.00	0.85		1.00	0.85				1.00	0.88	0.85
Flt Protected		1.00	1.00		1.00	1.00				0.95	0.99	1.00
Satd. Flow (prot)		5085	1515		3504	1563				1698	1436	1447
Flt Permitted		1.00	1.00		0.94	1.00				0.95	0.99	1.00
Satd. Flow (perm)		5085	1515		3310	1563				1698	1436	1447
Peak-hour factor, PHF	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97
Adj. Flow (vph)	0	1351	699	6	978	482	0	0	0	448	0	627
RTOR Reduction (vph)	0	0	401	0	0	277	0	0	0	0	32	32
Lane Group Flow (vph)	0	1351	298	0	984	205	0	0	0	376	322	313
Confl. Peds. (#/hr)	1		4	4		1						
Confl. Bikes (#/hr)						1						
Heavy Vehicles (%)	0%	2%	4%	0%	3%	1%	0%	0%	0%	1%	0%	6%
Turn Type		NA	Perm	Perm	NA	Perm				Split	NA	Perm
Protected Phases		2			6					4	4	
Permitted Phases			2	6		6						4
Actuated Green, G (s)		25.2	25.2		25.2	25.2				23.2	23.2	23.2
Effective Green, g (s)		25.2	25.2		25.2	25.2				23.2	23.2	23.2
Actuated g/C Ratio		0.43	0.43		0.43	0.43				0.39	0.39	0.39
Clearance Time (s)		5.0	5.0		5.0	5.0				5.8	5.8	5.8
Vehicle Extension (s)		3.0	3.0		3.0	3.0				3.0	3.0	3.0
Lane Grp Cap (vph)		2164	644		1408	665				665	562	567
v/s Ratio Prot		0.27								0.22	c0.22	
v/s Ratio Perm			0.20		c0.30	0.13						0.22
v/c Ratio		0.62	0.46		0.70	0.31				0.57	0.57	0.55
Uniform Delay, d1		13.3	12.2		13.9	11.2				14.1	14.1	14.0
Progression Factor		1.00	1.00		1.00	1.00				1.00	1.00	1.00
Incremental Delay, d2		0.6	0.5		1.5	0.3				3.5	4.2	3.8
Delay (s)		13.9	12.7		15.4	11.5				17.5	18.3	17.8
Level of Service		B	B		B	B				B	B	B
Approach Delay (s)		13.5			14.1			0.0			17.9	
Approach LOS		B			B			A			B	

Intersection Summary			
HCM 2000 Control Delay	14.7	HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio	0.64		
Actuated Cycle Length (s)	59.2	Sum of lost time (s)	10.8
Intersection Capacity Utilization	100.2%	ICU Level of Service	G
Analysis Period (min)	15		
c Critical Lane Group			

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	0	1161	581	2	990	396	443	0	507	0	0	0
Future Volume (vph)	0	1161	581	2	990	396	443	0	507	0	0	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		5.0	4.0		5.0	5.0	5.8	5.8	5.8			
Lane Util. Factor		0.95	1.00		0.95	1.00	0.95	0.91	0.95			
Frpb, ped/bikes		1.00	0.98		1.00	0.98	1.00	1.00	1.00			
Flpb, ped/bikes		1.00	1.00		1.00	1.00	1.00	1.00	1.00			
Frt		1.00	0.85		1.00	0.85	1.00	0.90	0.85			
Flt Protected		1.00	1.00		1.00	1.00	0.95	0.98	1.00			
Satd. Flow (prot)		3539	1547		3574	1550	1618	1494	1519			
Flt Permitted		1.00	1.00		0.95	1.00	0.95	0.98	1.00			
Satd. Flow (perm)		3539	1547		3406	1550	1618	1494	1519			
Peak-hour factor, PHF	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98
Adj. Flow (vph)	0	1185	593	2	1010	404	452	0	517	0	0	0
RTOR Reduction (vph)	0	0	0	0	0	237	0	21	21	0	0	0
Lane Group Flow (vph)	0	1185	593	0	1012	167	334	304	289	0	0	0
Confl. Peds. (#/hr)	1		5	5		1						
Confl. Bikes (#/hr)			1									
Heavy Vehicles (%)	0%	2%	2%	0%	1%	2%	6%	0%	1%	0%	0%	0%
Turn Type		NA	Free	Perm	NA	Perm	Perm	NA	Perm			
Protected Phases		2			6			8				
Permitted Phases			Free	6		6	8		8			
Actuated Green, G (s)		24.6	59.6		24.6	24.6	24.2	24.2	24.2			
Effective Green, g (s)		24.6	59.6		24.6	24.6	24.2	24.2	24.2			
Actuated g/C Ratio		0.41	1.00		0.41	0.41	0.41	0.41	0.41			
Clearance Time (s)		5.0			5.0	5.0	5.8	5.8	5.8			
Vehicle Extension (s)		3.0			3.0	3.0	3.0	3.0	3.0			
Lane Grp Cap (vph)		1460	1547		1405	639	656	606	616			
v/s Ratio Prot		c0.33										
v/s Ratio Perm			0.38		0.30	0.11	c0.21	0.20	0.19			
v/c Ratio		0.81	0.38		0.72	0.26	0.51	0.50	0.47			
Uniform Delay, d1		15.5	0.0		14.6	11.5	13.3	13.2	13.0			
Progression Factor		1.00	1.00		1.00	1.00	1.00	1.00	1.00			
Incremental Delay, d2		3.5	0.7		1.8	0.2	2.8	2.9	2.5			
Delay (s)		19.0	0.7		16.5	11.7	16.1	16.1	15.5			
Level of Service		B	A		B	B	B	B	B			
Approach Delay (s)		12.9			15.1			15.9			0.0	
Approach LOS		B			B			B			A	

Intersection Summary			
HCM 2000 Control Delay	14.4	HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio	0.66		
Actuated Cycle Length (s)	59.6	Sum of lost time (s)	10.8
Intersection Capacity Utilization	62.0%	ICU Level of Service	B
Analysis Period (min)	15		
c Critical Lane Group			

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	77	911	7	74	512	273	10	80	146	68	31	4
Future Volume (vph)	77	911	7	74	512	273	10	80	146	68	31	4
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		5.8		4.6	5.0	4.6	4.6	5.0	5.0	4.6	5.0	5.0
Lane Util. Factor		0.91		1.00	0.91	1.00	1.00	0.86	0.86	1.00	0.95	1.00
Frpb, ped/bikes		1.00		1.00	1.00	1.00	1.00	0.99	0.99	1.00	1.00	0.99
Flpb, ped/bikes		1.00		1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Frt		1.00		1.00	1.00	0.85	1.00	0.93	0.85	1.00	1.00	0.85
Flt Protected		1.00		0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (prot)		4837		1752	4715	1482	1253	4242	1318	1770	3505	1274
Flt Permitted		0.81		0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (perm)		3930		1752	4715	1482	1253	4242	1318	1770	3505	1274
Peak-hour factor, PHF	0.86	0.86	0.86	0.86	0.86	0.86	0.86	0.86	0.86	0.86	0.86	0.86
Adj. Flow (vph)	90	1059	8	86	595	317	12	93	170	79	36	5
RTOR Reduction (vph)	0	1	0	0	0	170	0	52	52	0	0	3
Lane Group Flow (vph)	0	1156	0	86	595	147	12	126	33	79	36	2
Confl. Peds. (#/hr)							2		1	1		2
Heavy Vehicles (%)	4%	7%	0%	3%	10%	9%	44%	9%	4%	2%	3%	25%
Turn Type	pm+pt	NA		Prot	NA	pm+ov	Prot	NA	Perm	Prot	NA	Perm
Protected Phases	7	4		3	8	1	5	2		1	6	
Permitted Phases	4					8			2			6
Actuated Green, G (s)		31.9		5.6	42.9	48.1	1.0	40.7	40.7	5.2	44.9	44.9
Effective Green, g (s)		31.9		5.6	42.9	48.1	1.0	40.7	40.7	5.2	44.9	44.9
Actuated g/C Ratio		0.31		0.05	0.41	0.47	0.01	0.39	0.39	0.05	0.43	0.43
Clearance Time (s)		5.8		4.6	5.0	4.6	4.6	5.0	5.0	4.6	5.0	5.0
Vehicle Extension (s)		3.0		3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0
Lane Grp Cap (vph)		1212		94	1956	689	12	1669	518	89	1521	553
v/s Ratio Prot				c0.05	0.13	0.01	0.01	c0.03		c0.04	c0.01	
v/s Ratio Perm		c0.29				0.09			0.03			0.00
v/c Ratio		0.95		0.91	0.30	0.21	1.00	0.08	0.06	0.89	0.02	0.00
Uniform Delay, d1		35.0		48.7	20.3	16.4	51.2	19.6	19.5	48.8	16.7	16.6
Progression Factor		1.00		1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Incremental Delay, d2		16.0		65.2	0.1	0.2	259.8	0.1	0.2	59.4	0.0	0.0
Delay (s)		51.0		113.9	20.3	16.6	311.0	19.7	19.7	108.2	16.7	16.6
Level of Service		D		F	C	B	F	B	B	F	B	B
Approach Delay (s)		51.0			27.2			32.4			76.9	
Approach LOS		D			C			C			E	

Intersection Summary			
HCM 2000 Control Delay	40.9	HCM 2000 Level of Service	D
HCM 2000 Volume to Capacity ratio	0.50		
Actuated Cycle Length (s)	103.4	Sum of lost time (s)	20.0
Intersection Capacity Utilization	81.2%	ICU Level of Service	D
Analysis Period (min)	15		

c Critical Lane Group

HCM Signalized Intersection Capacity Analysis
5: Doolittle Dr & Davis St

12/04/2023

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	49	169	36	275	125	835	48	835	246	372	328	58
Future Volume (vph)	49	169	36	275	125	835	48	835	246	372	328	58
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.6	5.2		4.6	5.2	4.6	4.6	5.4	4.6	4.6	5.8	
Lane Util. Factor	1.00	0.95		0.97	1.00	1.00	1.00	0.91	1.00	0.97	0.95	
Frpb, ped/bikes	1.00	1.00		1.00	1.00	1.00	1.00	1.00	0.99	1.00	1.00	
Flpb, ped/bikes	1.00	1.00		1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	
Frt	1.00	0.97		1.00	1.00	0.85	1.00	1.00	0.85	1.00	0.98	
Flt Protected	0.95	1.00		0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	
Satd. Flow (prot)	1211	2280		3019	1357	1495	1318	4673	1239	3242	2983	
Flt Permitted	0.95	1.00		0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	
Satd. Flow (perm)	1211	2280		3019	1357	1495	1318	4673	1239	3242	2983	
Peak-hour factor, PHF	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91
Adj. Flow (vph)	54	186	40	302	137	918	53	918	270	409	360	64
RTOR Reduction (vph)	0	15	0	0	0	78	0	0	145	0	8	0
Lane Group Flow (vph)	54	211	0	302	137	840	53	918	125	409	416	0
Confl. Peds. (#/hr)									1	1		
Confl. Bikes (#/hr)			1									3
Heavy Vehicles (%)	49%	55%	48%	16%	40%	8%	37%	11%	29%	8%	15%	34%
Turn Type	Prot	NA		Prot	NA	pm+ov	Prot	NA	pm+ov	Prot	NA	
Protected Phases	7	4		3	8	1	5	2	3	1	6	
Permitted Phases						8			2			
Actuated Green, G (s)	9.1	18.7		12.4	22.0	51.5	8.6	43.5	55.9	29.5	64.0	
Effective Green, g (s)	9.1	18.7		12.4	22.0	51.5	8.6	43.5	55.9	29.5	64.0	
Actuated g/C Ratio	0.07	0.15		0.10	0.18	0.42	0.07	0.35	0.45	0.24	0.52	
Clearance Time (s)	4.6	5.2		4.6	5.2	4.6	4.6	5.4	4.6	4.6	5.8	
Vehicle Extension (s)	3.0	3.0		3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	
Lane Grp Cap (vph)	88	344		302	240	621	91	1640	559	771	1540	
v/s Ratio Prot	0.04	0.09		c0.10	0.10	c0.32	0.04	c0.20	0.02	0.13	0.14	
v/s Ratio Perm						0.24			0.08			
v/c Ratio	0.61	0.61		1.00	0.57	1.35	0.58	0.56	0.22	0.53	0.27	
Uniform Delay, d1	55.7	49.2		55.8	46.6	36.2	55.9	32.5	20.7	41.2	16.8	
Progression Factor	1.00	1.00		1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	
Incremental Delay, d2	12.0	3.2		51.8	3.3	168.9	9.2	1.4	0.2	0.7	0.4	
Delay (s)	67.7	52.4		107.5	49.9	205.1	65.1	33.9	20.9	41.9	17.3	
Level of Service	E	D		F	D	F	E	C	C	D	B	
Approach Delay (s)		55.4			167.7			32.4			29.3	
Approach LOS		E			F			C			C	

Intersection Summary			
HCM 2000 Control Delay	82.9	HCM 2000 Level of Service	F
HCM 2000 Volume to Capacity ratio	1.01		
Actuated Cycle Length (s)	123.9	Sum of lost time (s)	20.2
Intersection Capacity Utilization	100.5%	ICU Level of Service	G
Analysis Period (min)	15		
c Critical Lane Group			

HCM 6th Signalized Intersection Summary
5: Doolittle Dr & Davis St

12/04/2023

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	49	169	36	275	125	835	48	835	246	372	328	58
Future Volume (veh/h)	49	169	36	275	125	835	48	835	246	372	328	58
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		0.99	1.00		1.00	1.00		1.00	1.00		0.98
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1174	1085	1189	1663	1307	1781	1352	1737	1470	1781	1678	1396
Adj Flow Rate, veh/h	54	186	40	302	137	918	53	918	270	409	360	64
Peak Hour Factor	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91
Percent Heavy Veh, %	49	55	48	16	40	8	37	11	29	8	15	34
Cap, veh/h	61	438	92	290	390	670	62	1649	551	478	1200	211
Arrive On Green	0.05	0.26	0.26	0.09	0.30	0.30	0.05	0.35	0.35	0.15	0.44	0.44
Sat Flow, veh/h	1118	1691	355	3072	1307	1510	1287	4742	1245	3291	2698	474
Grp Volume(v), veh/h	54	112	114	302	137	918	53	918	270	409	211	213
Grp Sat Flow(s),veh/h/ln	1118	1031	1015	1536	1307	1510	1287	1581	1245	1646	1594	1579
Q Serve(g_s), s	6.3	11.8	12.3	12.4	10.8	39.2	5.4	20.6	20.3	15.9	11.1	11.4
Cycle Q Clear(g_c), s	6.3	11.8	12.3	12.4	10.8	39.2	5.4	20.6	20.3	15.9	11.1	11.4
Prop In Lane	1.00		0.35	1.00		1.00	1.00		1.00	1.00		0.30
Lane Grp Cap(c), veh/h	61	267	263	290	390	670	62	1649	551	478	709	702
V/C Ratio(X)	0.88	0.42	0.44	1.04	0.35	1.37	0.85	0.56	0.49	0.86	0.30	0.30
Avail Cap(c_a), veh/h	121	322	317	290	390	670	127	1649	551	737	709	702
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	61.7	40.5	40.6	59.5	36.1	36.5	62.0	34.6	26.1	54.8	23.3	23.4
Incr Delay (d2), s/veh	30.5	1.0	1.1	63.9	0.5	176.1	26.2	1.4	3.1	6.2	1.1	1.1
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	2.3	3.1	3.2	7.4	3.5	53.4	2.2	7.9	6.4	6.9	4.3	4.4
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	92.2	41.5	41.8	123.3	36.6	212.6	88.2	36.0	29.2	61.0	24.4	24.5
LnGrp LOS	F	D	D	F	D	F	F	D	C	E	C	C
Approach Vol, veh/h		280			1357			1241			833	
Approach Delay, s/veh		51.4			175.0			36.7			42.4	
Approach LOS		D			F			D			D	

Timer - Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	23.7	51.5	17.0	39.2	10.9	64.2	11.8	44.4
Change Period (Y+Rc), s	4.6	* 5.8	4.6	5.2	4.6	5.8	4.6	5.2
Max Green Setting (Gmax), s	29.4	* 42	12.4	41.0	13.0	58.4	14.2	39.2
Max Q Clear Time (g_c+I1), s	17.9	22.6	14.4	14.3	7.4	13.4	8.3	41.2
Green Ext Time (p_c), s	1.1	6.9	0.0	1.4	0.0	2.6	0.0	0.0

Intersection Summary	
HCM 6th Ctrl Delay	89.7
HCM 6th LOS	F

Notes

User approved pedestrian interval to be less than phase max green.

* HCM 6th computational engine requires equal clearance times for the phases crossing the barrier.

HCM Unsignalized Intersection Capacity Analysis
1: Doolittle Dr & West Project Dwy

12/04/2023

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (veh/h)	21	7	890	96	25	1147
Future Volume (Veh/h)	21	7	890	96	25	1147
Sign Control	Stop		Free			Free
Grade	0%		0%			0%
Peak Hour Factor	0.88	0.88	0.88	0.88	0.88	0.88
Hourly flow rate (vph)	24	8	1011	109	28	1303
Pedestrians	1					
Lane Width (ft)	12.0					
Walking Speed (ft/s)	3.5					
Percent Blockage	0					
Right turn flare (veh)						
Median type			TWLTL			TWLTL
Median storage veh)			2			2
Upstream signal (ft)			750			512
pX, platoon unblocked	0.92	0.87			0.87	
vC, conflicting volume	1774	561			1121	
vC1, stage 1 conf vol	1066					
vC2, stage 2 conf vol	708					
vCu, unblocked vol	1202	203			845	
tC, single (s)	6.8	6.9			4.1	
tC, 2 stage (s)	5.8					
tF (s)	3.5	3.3			2.2	
p0 queue free %	93	99			96	
cM capacity (veh/h)	321	706			697	

Direction, Lane #	WB 1	NB 1	NB 2	SB 1	SB 2	SB 3
Volume Total	32	674	446	28	652	652
Volume Left	24	0	0	28	0	0
Volume Right	8	0	109	0	0	0
cSH	372	1700	1700	697	1700	1700
Volume to Capacity	0.09	0.40	0.26	0.04	0.38	0.38
Queue Length 95th (ft)	7	0	0	3	0	0
Control Delay (s)	15.6	0.0	0.0	10.4	0.0	0.0
Lane LOS	C			B		
Approach Delay (s)	15.6	0.0		0.2		
Approach LOS	C					

Intersection Summary			
Average Delay	0.3		
Intersection Capacity Utilization	41.7%	ICU Level of Service	A
Analysis Period (min)	15		

Intersection	
Int Delay, s/veh	0.4

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Vol, veh/h	21	7	890	96	25	1147
Future Vol, veh/h	21	7	890	96	25	1147
Conflicting Peds, #/hr	0	0	0	1	1	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	-	50	-
Veh in Median Storage, #	2	-	0	-	-	0
Grade, %	0	-	0	-	-	0
Peak Hour Factor	88	88	88	88	88	88
Heavy Vehicles, %	0	0	14	9	0	17
Mvmt Flow	24	8	1011	109	28	1303

Major/Minor	Minor1		Major1		Major2	
Conflicting Flow All	1775	561	0	0	1121	0
Stage 1	1067	-	-	-	-	-
Stage 2	708	-	-	-	-	-
Critical Hdwy	6.8	6.9	-	-	4.1	-
Critical Hdwy Stg 1	5.8	-	-	-	-	-
Critical Hdwy Stg 2	5.8	-	-	-	-	-
Follow-up Hdwy	3.5	3.3	-	-	2.2	-
Pot Cap-1 Maneuver	76	476	-	-	631	-
Stage 1	296	-	-	-	-	-
Stage 2	455	-	-	-	-	-
Platoon blocked, %			-	-		-
Mov Cap-1 Maneuver	73	476	-	-	630	-
Mov Cap-2 Maneuver	241	-	-	-	-	-
Stage 1	296	-	-	-	-	-
Stage 2	435	-	-	-	-	-

Approach	WB	NB	SB
HCM Control Delay, s	19.8	0	0.2
HCM LOS	C		

Minor Lane/Major Mvmt	NBT	NBR	WBLn1	SBL	SBT
Capacity (veh/h)	-	-	275	630	-
HCM Lane V/C Ratio	-	-	0.116	0.045	-
HCM Control Delay (s)	-	-	19.8	11	-
HCM Lane LOS	-	-	C	B	-
HCM 95th %tile Q(veh)	-	-	0.4	0.1	-

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Volume (veh/h)	35	0	0	13	54	81
Future Volume (Veh/h)	35	0	0	13	54	81
Sign Control		Stop	Stop		Free	
Grade		0%	0%		0%	
Peak Hour Factor	0.86	0.86	0.86	0.86	0.86	0.86
Hourly flow rate (vph)	41	0	0	15	63	94
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type					None	
Median storage veh)						
Upstream signal (ft)						
pX, platoon unblocked						
vC, conflicting volume	188	173	220	0	0	
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	188	173	220	0	0	
tC, single (s)	7.2	6.7	6.7	6.4	4.2	
tC, 2 stage (s)						
tF (s)	3.6	4.1	4.1	3.4	2.3	
p0 queue free %	94	100	100	99	96	
cM capacity (veh/h)	711	669	629	1048	1542	

Direction, Lane #	EB 1	WB 1	SB 1
Volume Total	41	15	157
Volume Left	41	0	63
Volume Right	0	15	94
cSH	711	1048	1542
Volume to Capacity	0.06	0.01	0.04
Queue Length 95th (ft)	5	1	3
Control Delay (s)	10.4	8.5	3.2
Lane LOS	B	A	A
Approach Delay (s)	10.4	8.5	3.2
Approach LOS	B	A	

Intersection Summary			
Average Delay	4.9		
Intersection Capacity Utilization	23.2%	ICU Level of Service	A
Analysis Period (min)	15		

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Volume (veh/h)	247	87	57	102	11	37
Future Volume (Veh/h)	247	87	57	102	11	37
Sign Control	Free			Free	Stop	
Grade	0%			0%	0%	
Peak Hour Factor	0.86	0.86	0.86	0.86	0.86	0.86
Hourly flow rate (vph)	287	101	66	119	13	43
Pedestrians				1		
Lane Width (ft)				12.0		
Walking Speed (ft/s)				3.5		
Percent Blockage				0		
Right turn flare (veh)						
Median type	None			None		
Median storage veh)						
Upstream signal (ft)	426					
pX, platoon unblocked						
vC, conflicting volume			388		588	338
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol			388		588	338
tC, single (s)			4.1		6.5	6.4
tC, 2 stage (s)						
tF (s)			2.2		3.6	3.5
p0 queue free %			94		97	94
cM capacity (veh/h)			1160		432	664

Direction, Lane #	EB 1	WB 1	NB 1
Volume Total	388	185	56
Volume Left	0	66	13
Volume Right	101	0	43
cSH	1700	1160	590
Volume to Capacity	0.23	0.06	0.09
Queue Length 95th (ft)	0	5	8
Control Delay (s)	0.0	3.3	11.7
Lane LOS		A	B
Approach Delay (s)	0.0	3.3	11.7
Approach LOS			B

Intersection Summary			
Average Delay	2.0		
Intersection Capacity Utilization	40.5%	ICU Level of Service	A
Analysis Period (min)	15		

Intersection	
Int Delay, s/veh	1.9

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Vol, veh/h	247	87	57	102	11	37
Future Vol, veh/h	247	87	57	102	11	37
Conflicting Peds, #/hr	0	0	0	0	0	1
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	0	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	86	86	86	86	86	86
Heavy Vehicles, %	8	2	4	14	10	20
Mvmt Flow	287	101	66	119	13	43

Major/Minor	Major1		Major2		Minor1	
Conflicting Flow All	0	0	388	0	589	339
Stage 1	-	-	-	-	338	-
Stage 2	-	-	-	-	251	-
Critical Hdwy	-	-	4.14	-	6.5	6.4
Critical Hdwy Stg 1	-	-	-	-	5.5	-
Critical Hdwy Stg 2	-	-	-	-	5.5	-
Follow-up Hdwy	-	-	2.236	-	3.59	3.48
Pot Cap-1 Maneuver	-	-	1160	-	458	664
Stage 1	-	-	-	-	705	-
Stage 2	-	-	-	-	772	-
Platoon blocked, %	-	-		-		
Mov Cap-1 Maneuver	-	-	1160	-	430	663
Mov Cap-2 Maneuver	-	-	-	-	430	-
Stage 1	-	-	-	-	705	-
Stage 2	-	-	-	-	725	-

Approach	EB	WB	NB
HCM Control Delay, s	0	3	11.7
HCM LOS			B

Minor Lane/Major Mvmt	NBLn1	EBT	EBR	WBL	WBT
Capacity (veh/h)	590	-	-	1160	-
HCM Lane V/C Ratio	0.095	-	-	0.057	-
HCM Control Delay (s)	11.7	-	-	8.3	0
HCM Lane LOS	B	-	-	A	A
HCM 95th %tile Q(veh)	0.3	-	-	0.2	-

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (vph)	88	62	796	195	76	719
Future Volume (vph)	88	62	796	195	76	719
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost time (s)	5.2	5.2	5.8	5.8	4.6	5.8
Lane Util. Factor	1.00	1.00	0.95	1.00	1.00	0.95
Frpb, ped/bikes	1.00	1.00	1.00	0.98	1.00	1.00
Flpb, ped/bikes	1.00	1.00	1.00	1.00	1.00	1.00
Frt	1.00	0.85	1.00	0.85	1.00	1.00
Flt Protected	0.95	1.00	1.00	1.00	0.95	1.00
Satd. Flow (prot)	1467	1282	3312	1346	1687	3223
Flt Permitted	0.95	1.00	1.00	1.00	0.95	1.00
Satd. Flow (perm)	1467	1282	3312	1346	1687	3223
Peak-hour factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95
Adj. Flow (vph)	93	65	838	205	80	757
RTOR Reduction (vph)	0	53	0	101	0	0
Lane Group Flow (vph)	93	12	838	104	80	757
Confl. Peds. (#/hr)	1			2		
Confl. Bikes (#/hr)				3		
Heavy Vehicles (%)	23%	26%	9%	17%	7%	12%
Turn Type	Perm	Perm	NA	Perm	Prot	NA
Protected Phases			2		1	6
Permitted Phases	8	8		2		
Actuated Green, G (s)	11.4	11.4	31.1	31.1	3.1	38.8
Effective Green, g (s)	11.4	11.4	31.1	31.1	3.1	38.8
Actuated g/C Ratio	0.19	0.19	0.51	0.51	0.05	0.63
Clearance Time (s)	5.2	5.2	5.8	5.8	4.6	5.8
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0	3.0
Lane Grp Cap (vph)	273	238	1683	683	85	2043
v/s Ratio Prot			c0.25		c0.05	0.23
v/s Ratio Perm	c0.06	0.01		0.08		
v/c Ratio	0.34	0.05	0.50	0.15	0.94	0.37
Uniform Delay, d1	21.6	20.5	9.9	8.0	29.0	5.4
Progression Factor	1.00	1.00	1.00	1.00	1.00	1.00
Incremental Delay, d2	0.7	0.1	1.1	0.5	77.8	0.5
Delay (s)	22.4	20.5	11.0	8.5	106.7	5.9
Level of Service	C	C	B	A	F	A
Approach Delay (s)	21.6		10.5			15.5
Approach LOS	C		B			B

Intersection Summary			
HCM 2000 Control Delay	13.4	HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio	0.49		
Actuated Cycle Length (s)	61.2	Sum of lost time (s)	15.6
Intersection Capacity Utilization	47.5%	ICU Level of Service	A
Analysis Period (min)	15		
c Critical Lane Group			

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	49	169	36	275	125	835	48	835	246	372	328	58
Future Volume (vph)	49	169	36	275	125	835	48	835	246	372	328	58
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.6	5.2		4.6	5.2	4.6	4.6	5.4	4.6	4.6	5.8	
Lane Util. Factor	1.00	0.95		0.97	1.00	1.00	1.00	0.91	1.00	0.97	0.95	
Frpb, ped/bikes	1.00	1.00		1.00	1.00	1.00	1.00	1.00	0.99	1.00	1.00	
Flpb, ped/bikes	1.00	1.00		1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	
Frt	1.00	0.97		1.00	1.00	0.85	1.00	1.00	0.85	1.00	0.98	
Flt Protected	0.95	1.00		0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	
Satd. Flow (prot)	1211	2280		3019	1357	1495	1318	4673	1238	3242	2983	
Flt Permitted	0.95	1.00		0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	
Satd. Flow (perm)	1211	2280		3019	1357	1495	1318	4673	1238	3242	2983	
Peak-hour factor, PHF	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91
Adj. Flow (vph)	54	186	40	302	137	918	53	918	270	409	360	64
RTOR Reduction (vph)	0	17	0	0	0	93	0	0	156	0	10	0
Lane Group Flow (vph)	54	209	0	302	137	825	53	918	114	409	414	0
Confl. Peds. (#/hr)									1	1		
Confl. Bikes (#/hr)			1									3
Heavy Vehicles (%)	49%	55%	48%	16%	40%	8%	37%	11%	29%	8%	15%	34%
Turn Type	Prot	NA		Prot	NA	pm+ov	Prot	NA	pm+ov	Prot	NA	
Protected Phases	7	4		3	8	1	5	2	3	1	6	
Permitted Phases						8			2			
Actuated Green, G (s)	8.8	21.1		6.4	18.7	41.2	4.9	40.2	46.6	22.5	57.4	
Effective Green, g (s)	8.8	21.1		6.4	18.7	41.2	4.9	40.2	46.6	22.5	57.4	
Actuated g/C Ratio	0.08	0.19		0.06	0.17	0.37	0.04	0.37	0.42	0.20	0.52	
Clearance Time (s)	4.6	5.2		4.6	5.2	4.6	4.6	5.4	4.6	4.6	5.8	
Vehicle Extension (s)	3.0	3.0		3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	
Lane Grp Cap (vph)	96	437		175	230	559	58	1707	524	663	1556	
v/s Ratio Prot	0.04	0.09		c0.10	0.10	c0.30	0.04	c0.20	0.01	0.13	0.14	
v/s Ratio Perm						0.25			0.08			
v/c Ratio	0.56	0.48		1.73	0.60	1.48	0.91	0.54	0.22	0.62	0.27	
Uniform Delay, d1	48.7	39.6		51.8	42.2	34.4	52.3	27.6	20.1	39.8	14.6	
Progression Factor	1.00	1.00		1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	
Incremental Delay, d2	7.3	0.8		349.4	4.1	223.5	86.9	1.2	0.2	1.7	0.4	
Delay (s)	56.1	40.4		401.2	46.3	257.9	139.2	28.8	20.3	41.5	15.0	
Level of Service	E	D		F	D	F	F	C	C	D	B	
Approach Delay (s)		43.4			268.5			31.7			28.0	
Approach LOS		D			F			C			C	

Intersection Summary			
HCM 2000 Control Delay	118.3	HCM 2000 Level of Service	F
HCM 2000 Volume to Capacity ratio	1.04		
Actuated Cycle Length (s)	110.0	Sum of lost time (s)	20.2
Intersection Capacity Utilization	100.5%	ICU Level of Service	G
Analysis Period (min)	15		
c Critical Lane Group			

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	49	169	36	275	125	835	48	835	246	372	328	58
Future Volume (veh/h)	49	169	36	275	125	835	48	835	246	372	328	58
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		0.99	1.00		1.00	1.00		1.00	1.00		0.98
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1174	1085	1189	1663	1307	1781	1352	1737	1470	1781	1678	1396
Adj Flow Rate, veh/h	54	186	40	302	137	918	53	918	270	409	360	64
Peak Hour Factor	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91
Percent Heavy Veh, %	49	55	48	16	40	8	37	11	29	8	15	34
Cap, veh/h	60	403	85	179	317	588	61	1770	537	484	1276	224
Arrive On Green	0.05	0.24	0.24	0.06	0.24	0.24	0.05	0.37	0.37	0.15	0.47	0.47
Sat Flow, veh/h	1118	1691	355	3072	1307	1510	1287	4742	1245	3291	2698	474
Grp Volume(v), veh/h	54	112	114	302	137	918	53	918	270	409	211	213
Grp Sat Flow(s),veh/h/ln	1118	1031	1015	1536	1307	1510	1287	1581	1245	1646	1594	1579
Q Serve(g_s), s	5.3	10.2	10.6	6.4	9.8	26.7	4.5	16.6	17.3	13.3	8.9	9.1
Cycle Q Clear(g_c), s	5.3	10.2	10.6	6.4	9.8	26.7	4.5	16.6	17.3	13.3	8.9	9.1
Prop In Lane	1.00		0.35	1.00		1.00	1.00		1.00	1.00		0.30
Lane Grp Cap(c), veh/h	60	245	242	179	317	588	61	1770	537	484	754	747
V/C Ratio(X)	0.90	0.45	0.47	1.69	0.43	1.56	0.87	0.52	0.50	0.84	0.28	0.29
Avail Cap(c_a), veh/h	149	327	323	179	317	588	74	1770	537	669	754	747
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	51.8	35.9	36.0	51.9	35.3	33.6	52.1	26.8	22.7	45.7	17.6	17.7
Incr Delay (d2), s/veh	32.9	1.3	1.4	334.3	0.9	260.8	56.1	1.1	3.3	7.2	0.9	1.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	2.0	2.6	2.7	10.7	3.2	57.6	2.4	6.1	5.4	5.8	3.3	3.3
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	84.7	37.2	37.5	386.2	36.2	294.4	108.3	27.9	26.1	52.9	18.6	18.6
LnGrp LOS	F	D	D	F	D	F	F	C	C	D	B	B
Approach Vol, veh/h		280			1357			1241			833	
Approach Delay, s/veh		46.4			288.8			30.9			35.4	
Approach LOS		D			F			C			D	

Timer - Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	20.8	46.9	11.0	31.4	9.8	57.9	10.5	31.9
Change Period (Y+Rc), s	4.6	* 5.8	4.6	5.2	4.6	5.8	4.6	5.2
Max Green Setting (Gmax), s	22.4	* 36	6.4	35.0	6.3	52.1	14.7	26.7
Max Q Clear Time (g_c+I1), s	15.3	19.3	8.4	12.6	6.5	11.1	7.3	28.7
Green Ext Time (p_c), s	0.9	6.5	0.0	1.3	0.0	2.6	0.0	0.0

Intersection Summary	
HCM 6th Ctrl Delay	127.4
HCM 6th LOS	F

Notes

User approved pedestrian interval to be less than phase max green.

* HCM 6th computational engine requires equal clearance times for the phases crossing the barrier.

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	0	901	529	9	1265	429	0	0	0	263	0	614
Future Volume (vph)	0	901	529	9	1265	429	0	0	0	263	0	614
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		5.0	5.0		5.0	5.0				5.8	5.8	5.8
Lane Util. Factor		0.91	1.00		0.95	1.00				0.95	0.91	0.95
Frpb, ped/bikes		1.00	0.97		1.00	0.98				1.00	1.00	1.00
Flpb, ped/bikes		1.00	1.00		1.00	1.00				1.00	1.00	1.00
Frt		1.00	0.85		1.00	0.85				1.00	0.86	0.85
Flt Protected		1.00	1.00		1.00	1.00				0.95	1.00	1.00
Satd. Flow (prot)		4803	1355		3313	1488				1618	1389	1434
Flt Permitted		1.00	1.00		0.95	1.00				0.95	1.00	1.00
Satd. Flow (perm)		4803	1355		3140	1488				1618	1389	1434
Peak-hour factor, PHF	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97
Adj. Flow (vph)	0	929	545	9	1304	442	0	0	0	271	0	633
RTOR Reduction (vph)	0	0	268	0	0	218	0	0	0	0	25	25
Lane Group Flow (vph)	0	929	277	0	1313	224	0	0	0	244	306	304
Confl. Peds. (#/hr)	2		7	7		2						
Confl. Bikes (#/hr)						1						
Heavy Vehicles (%)	0%	8%	16%	0%	9%	6%	0%	0%	0%	6%	0%	7%
Turn Type		NA	Perm	Perm	NA	Perm				Split	NA	Perm
Protected Phases		2			6					4	4	
Permitted Phases			2	6		6						4
Actuated Green, G (s)		29.9	29.9		29.9	29.9				18.2	18.2	18.2
Effective Green, g (s)		29.9	29.9		29.9	29.9				18.2	18.2	18.2
Actuated g/C Ratio		0.51	0.51		0.51	0.51				0.31	0.31	0.31
Clearance Time (s)		5.0	5.0		5.0	5.0				5.8	5.8	5.8
Vehicle Extension (s)		3.0	3.0		3.0	3.0				3.0	3.0	3.0
Lane Grp Cap (vph)		2438	687		1593	755				499	429	443
v/s Ratio Prot		0.19								0.15	c0.22	
v/s Ratio Perm			0.20		c0.42	0.15						0.21
v/c Ratio		0.38	0.40		0.82	0.30				0.49	0.71	0.69
Uniform Delay, d1		8.9	9.0		12.3	8.4				16.6	18.0	17.8
Progression Factor		1.00	1.00		1.00	1.00				1.00	1.00	1.00
Incremental Delay, d2		0.1	0.4		3.6	0.2				3.4	9.7	8.4
Delay (s)		9.0	9.4		15.9	8.6				20.0	27.8	26.2
Level of Service		A	A		B	A				B	C	C
Approach Delay (s)		9.1			14.1			0.0			25.1	
Approach LOS		A			B			A			C	

Intersection Summary			
HCM 2000 Control Delay	14.7	HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio	0.78		
Actuated Cycle Length (s)	58.9	Sum of lost time (s)	10.8
Intersection Capacity Utilization	95.4%	ICU Level of Service	F
Analysis Period (min)	15		
c Critical Lane Group			

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	0	652	509	3	1165	560	543	0	291	0	0	0
Future Volume (vph)	0	652	509	3	1165	560	543	0	291	0	0	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		5.0	4.0		5.0	5.0	5.8	5.8	5.8			
Lane Util. Factor		0.95	1.00		0.95	1.00	0.95	0.91	0.95			
Frpb, ped/bikes		1.00	0.98		1.00	0.98	1.00	1.00	1.00			
Flpb, ped/bikes		1.00	1.00		1.00	1.00	1.00	1.00	1.00			
Frt		1.00	0.85		1.00	0.85	1.00	0.98	0.85			
Flt Protected		1.00	1.00		1.00	1.00	0.95	0.96	1.00			
Satd. Flow (prot)		3471	1420		3438	1533	1504	1439	1447			
Flt Permitted		1.00	1.00		0.95	1.00	0.95	0.96	1.00			
Satd. Flow (perm)		3471	1420		3279	1533	1504	1439	1447			
Peak-hour factor, PHF	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97
Adj. Flow (vph)	0	672	525	3	1201	577	560	0	300	0	0	0
RTOR Reduction (vph)	0	0	0	0	0	296	0	24	121	0	0	0
Lane Group Flow (vph)	0	672	525	0	1204	281	297	272	146	0	0	0
Confl. Peds. (#/hr)	2		7	7		2						
Confl. Bikes (#/hr)			1									
Heavy Vehicles (%)	0%	4%	11%	0%	5%	3%	14%	0%	6%	0%	0%	0%
Turn Type		NA	Free	Perm	NA	Perm	Perm	NA	Perm			
Protected Phases		2			6			8				
Permitted Phases			Free	6		6	8		8			
Actuated Green, G (s)		28.5	58.5		28.5	28.5	19.2	19.2	19.2			
Effective Green, g (s)		28.5	58.5		28.5	28.5	19.2	19.2	19.2			
Actuated g/C Ratio		0.49	1.00		0.49	0.49	0.33	0.33	0.33			
Clearance Time (s)		5.0			5.0	5.0	5.8	5.8	5.8			
Vehicle Extension (s)		3.0			3.0	3.0	3.0	3.0	3.0			
Lane Grp Cap (vph)		1691	1420		1597	746	493	472	474			
v/s Ratio Prot		0.19										
v/s Ratio Perm			0.37		c0.37	0.18	c0.20	0.19	0.10			
v/c Ratio		0.40	0.37		0.75	0.38	0.60	0.58	0.31			
Uniform Delay, d1		9.5	0.0		12.2	9.4	16.5	16.3	14.7			
Progression Factor		1.00	1.00		1.00	1.00	1.00	1.00	1.00			
Incremental Delay, d2		0.2	0.7		2.1	0.3	5.4	5.0	1.7			
Delay (s)		9.7	0.7		14.2	9.7	21.8	21.3	16.4			
Level of Service		A	A		B	A	C	C	B			
Approach Delay (s)		5.8			12.8			20.0			0.0	
Approach LOS		A			B			B			A	

Intersection Summary			
HCM 2000 Control Delay	12.2	HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio	0.69		
Actuated Cycle Length (s)	58.5	Sum of lost time (s)	10.8
Intersection Capacity Utilization	61.9%	ICU Level of Service	B
Analysis Period (min)	15		
c Critical Lane Group			

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	99	639	1	57	754	374	11	40	79	53	43	8
Future Volume (vph)	99	639	1	57	754	374	11	40	79	53	43	8
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		5.8		4.6	5.0	4.6	4.6	5.0	5.0	4.6	5.0	5.0
Lane Util. Factor		0.91		1.00	0.91	1.00	1.00	0.86	0.86	1.00	0.95	1.00
Frpb, ped/bikes		1.00		1.00	1.00	1.00	1.00	0.99	0.99	1.00	1.00	1.00
Flpb, ped/bikes		1.00		1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Frt		1.00		1.00	1.00	0.85	1.00	0.93	0.85	1.00	1.00	0.85
Flt Protected		0.99		0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (prot)		4800		1656	4940	1495	1081	4289	1280	1719	3610	1214
Flt Permitted		0.72		0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (perm)		3479		1656	4940	1495	1081	4289	1280	1719	3610	1214
Peak-hour factor, PHF	0.87	0.87	0.87	0.87	0.87	0.87	0.87	0.87	0.87	0.87	0.87	0.87
Adj. Flow (vph)	114	734	1	66	867	430	13	46	91	61	49	9
RTOR Reduction (vph)	0	0	0	0	0	243	0	27	26	0	0	5
Lane Group Flow (vph)	0	849	0	66	867	187	13	65	19	61	49	4
Confl. Peds. (#/hr)									2	2		
Heavy Vehicles (%)	3%	8%	0%	9%	5%	8%	67%	3%	7%	5%	0%	33%
Turn Type	pm+pt	NA		Prot	NA	pm+ov	Prot	NA	Perm	Prot	NA	Perm
Protected Phases	7	4		3	8	1	5	2		1	6	
Permitted Phases	4					8			2			6
Actuated Green, G (s)		28.2		4.1	37.7	42.8	0.9	41.1	41.1	5.1	45.3	45.3
Effective Green, g (s)		28.2		4.1	37.7	42.8	0.9	41.1	41.1	5.1	45.3	45.3
Actuated g/C Ratio		0.29		0.04	0.38	0.43	0.01	0.42	0.42	0.05	0.46	0.46
Clearance Time (s)		5.8		4.6	5.0	4.6	4.6	5.0	5.0	4.6	5.0	5.0
Vehicle Extension (s)		3.0		3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0
Lane Grp Cap (vph)		996		68	1890	649	9	1789	534	89	1660	558
v/s Ratio Prot				c0.04	0.18	0.01	0.01	c0.02		c0.04	c0.01	
v/s Ratio Perm		c0.24				0.11			0.01			0.00
v/c Ratio		0.85		0.97	0.46	0.29	1.44	0.04	0.04	0.69	0.03	0.01
Uniform Delay, d1		33.2		47.1	22.8	18.0	48.8	17.0	17.0	45.9	14.6	14.4
Progression Factor		1.00		1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Incremental Delay, d2		7.2		98.5	0.2	0.2	474.2	0.0	0.1	19.7	0.0	0.0
Delay (s)		40.3		145.6	22.9	18.2	523.0	17.0	17.1	65.6	14.6	14.4
Level of Service		D		F	C	B	F	B	B	E	B	B
Approach Delay (s)		40.3			27.4			60.9			40.7	
Approach LOS		D			C			E			D	

Intersection Summary			
HCM 2000 Control Delay	34.5	HCM 2000 Level of Service	C
HCM 2000 Volume to Capacity ratio	0.40		
Actuated Cycle Length (s)	98.5	Sum of lost time (s)	20.0
Intersection Capacity Utilization	81.2%	ICU Level of Service	D
Analysis Period (min)	15		

c Critical Lane Group

HCM Unsignalized Intersection Capacity Analysis
1: Doolittle Dr & West Project Dwy

12/04/2023

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (veh/h)	36	32	920	68	11	1075
Future Volume (Veh/h)	36	32	920	68	11	1075
Sign Control	Stop		Free			Free
Grade	0%		0%			0%
Peak Hour Factor	0.93	0.93	0.93	0.93	0.93	0.93
Hourly flow rate (vph)	39	34	989	73	12	1156
Pedestrians	4					
Lane Width (ft)	12.0					
Walking Speed (ft/s)	3.5					
Percent Blockage	0					
Right turn flare (veh)						
Median type			TWLTL			TWLTL
Median storage veh)			2			2
Upstream signal (ft)			750			512
pX, platoon unblocked	0.82	0.92			0.92	
vC, conflicting volume	1632	535			1066	
vC1, stage 1 conf vol	1030					
vC2, stage 2 conf vol	602					
vCu, unblocked vol	886	323			900	
tC, single (s)	6.8	6.9			4.1	
tC, 2 stage (s)	5.8					
tF (s)	3.5	3.3			2.2	
p0 queue free %	88	95			98	
cM capacity (veh/h)	336	623			700	

Direction, Lane #	WB 1	NB 1	NB 2	SB 1	SB 2	SB 3
Volume Total	73	659	403	12	578	578
Volume Left	39	0	0	12	0	0
Volume Right	34	0	73	0	0	0
cSH	428	1700	1700	700	1700	1700
Volume to Capacity	0.17	0.39	0.24	0.02	0.34	0.34
Queue Length 95th (ft)	15	0	0	1	0	0
Control Delay (s)	15.1	0.0	0.0	10.2	0.0	0.0
Lane LOS	C			B		
Approach Delay (s)	15.1	0.0		0.1		
Approach LOS	C					

Intersection Summary			
Average Delay	0.5		
Intersection Capacity Utilization	40.3%	ICU Level of Service	A
Analysis Period (min)	15		

Intersection	
Int Delay, s/veh	0.6

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Vol, veh/h	36	32	920	68	11	1075
Future Vol, veh/h	36	32	920	68	11	1075
Conflicting Peds, #/hr	0	0	0	4	4	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	-	50	-
Veh in Median Storage, #	2	-	0	-	-	0
Grade, %	0	-	0	-	-	0
Peak Hour Factor	93	93	93	93	93	93
Heavy Vehicles, %	0	0	7	8	0	6
Mvmt Flow	39	34	989	73	12	1156

Major/Minor	Minor1		Major1		Major2	
Conflicting Flow All	1632	535	0	0	1066	0
Stage 1	1030	-	-	-	-	-
Stage 2	602	-	-	-	-	-
Critical Hdwy	6.8	6.9	-	-	4.1	-
Critical Hdwy Stg 1	5.8	-	-	-	-	-
Critical Hdwy Stg 2	5.8	-	-	-	-	-
Follow-up Hdwy	3.5	3.3	-	-	2.2	-
Pot Cap-1 Maneuver	94	495	-	-	661	-
Stage 1	310	-	-	-	-	-
Stage 2	515	-	-	-	-	-
Platoon blocked, %			-	-		-
Mov Cap-1 Maneuver	92	493	-	-	658	-
Mov Cap-2 Maneuver	262	-	-	-	-	-
Stage 1	309	-	-	-	-	-
Stage 2	506	-	-	-	-	-

Approach	WB	NB	SB
HCM Control Delay, s	18.7	0	0.1
HCM LOS	C		

Minor Lane/Major Mvmt	NBT	NBR	WBLn1	SBL	SBT
Capacity (veh/h)	-	-	336	658	-
HCM Lane V/C Ratio	-	-	0.218	0.018	-
HCM Control Delay (s)	-	-	18.7	10.6	-
HCM Lane LOS	-	-	C	B	-
HCM 95th %tile Q(veh)	-	-	0.8	0.1	-

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Volume (veh/h)	148	0	0	48	19	50
Future Volume (Veh/h)	148	0	0	48	19	50
Sign Control		Stop	Stop		Free	
Grade		0%	0%		0%	
Peak Hour Factor	0.89	0.89	0.89	0.89	0.89	0.89
Hourly flow rate (vph)	166	0	0	54	21	56
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type					None	
Median storage veh)						
Upstream signal (ft)						
pX, platoon unblocked						
vC, conflicting volume	124	70	98	0	0	
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	124	70	98	0	0	
tC, single (s)	7.1	6.5	6.5	6.2	4.1	
tC, 2 stage (s)						
tF (s)	3.5	4.0	4.0	3.3	2.2	
p0 queue free %	79	100	100	95	99	
cM capacity (veh/h)	798	808	780	1082	1617	

Direction, Lane #	EB 1	WB 1	SB 1
Volume Total	166	54	77
Volume Left	166	0	21
Volume Right	0	54	56
cSH	798	1082	1617
Volume to Capacity	0.21	0.05	0.01
Queue Length 95th (ft)	20	4	1
Control Delay (s)	10.7	8.5	2.0
Lane LOS	B	A	A
Approach Delay (s)	10.7	8.5	2.0
Approach LOS	B	A	

Intersection Summary			
Average Delay	8.1		
Intersection Capacity Utilization	25.7%	ICU Level of Service	A
Analysis Period (min)	15		

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Volume (veh/h)	138	24	52	153	62	133
Future Volume (Veh/h)	138	24	52	153	62	133
Sign Control	Free			Free	Stop	
Grade	0%			0%	0%	
Peak Hour Factor	0.89	0.89	0.89	0.89	0.89	0.89
Hourly flow rate (vph)	155	27	58	172	70	149
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type	None			None		
Median storage veh)						
Upstream signal (ft)	426					
pX, platoon unblocked						
vC, conflicting volume			182		456	168
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol			182		456	168
tC, single (s)			4.1		6.4	6.2
tC, 2 stage (s)						
tF (s)			2.2		3.5	3.3
p0 queue free %			96		87	83
cM capacity (veh/h)			1381		535	876

Direction, Lane #	EB 1	WB 1	NB 1
Volume Total	182	230	219
Volume Left	0	58	70
Volume Right	27	0	149
cSH	1700	1381	727
Volume to Capacity	0.11	0.04	0.30
Queue Length 95th (ft)	0	3	32
Control Delay (s)	0.0	2.2	12.1
Lane LOS		A	B
Approach Delay (s)	0.0	2.2	12.1
Approach LOS			B

Intersection Summary			
Average Delay	5.0		
Intersection Capacity Utilization	41.3%	ICU Level of Service	A
Analysis Period (min)	15		

Intersection	
Int Delay, s/veh	4.9

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Vol, veh/h	138	24	52	153	62	133
Future Vol, veh/h	138	24	52	153	62	133
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	0	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	89	89	89	89	89	89
Heavy Vehicles, %	26	24	4	6	4	2
Mvmt Flow	155	27	58	172	70	149

Major/Minor	Major1		Major2		Minor1	
Conflicting Flow All	0	0	182	0	457	169
Stage 1	-	-	-	-	169	-
Stage 2	-	-	-	-	288	-
Critical Hdwy	-	-	4.14	-	6.44	6.22
Critical Hdwy Stg 1	-	-	-	-	5.44	-
Critical Hdwy Stg 2	-	-	-	-	5.44	-
Follow-up Hdwy	-	-	2.236	-	3.536	3.318
Pot Cap-1 Maneuver	-	-	1381	-	558	875
Stage 1	-	-	-	-	856	-
Stage 2	-	-	-	-	756	-
Platoon blocked, %	-	-		-		
Mov Cap-1 Maneuver	-	-	1381	-	532	875
Mov Cap-2 Maneuver	-	-	-	-	532	-
Stage 1	-	-	-	-	856	-
Stage 2	-	-	-	-	721	-

Approach	EB	WB	NB
HCM Control Delay, s	0	2	12.1
HCM LOS			B

Minor Lane/Major Mvmt	NBLn1	EBT	EBR	WBL	WBT
Capacity (veh/h)	726	-	-	1381	-
HCM Lane V/C Ratio	0.302	-	-	0.042	-
HCM Control Delay (s)	12.1	-	-	7.7	0
HCM Lane LOS	B	-	-	A	A
HCM 95th %tile Q(veh)	1.3	-	-	0.1	-

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (vph)	154	124	907	149	38	1181
Future Volume (vph)	154	124	907	149	38	1181
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost time (s)	5.2	5.2	5.8	5.8	4.6	5.8
Lane Util. Factor	1.00	1.00	0.95	1.00	1.00	0.95
Frpb, ped/bikes	1.00	1.00	1.00	0.98	1.00	1.00
Flpb, ped/bikes	1.00	1.00	1.00	1.00	1.00	1.00
Frt	1.00	0.85	1.00	0.85	1.00	1.00
Flt Protected	0.95	1.00	1.00	1.00	0.95	1.00
Satd. Flow (prot)	1641	1538	3505	1260	1504	3374
Flt Permitted	0.95	1.00	1.00	1.00	0.95	1.00
Satd. Flow (perm)	1641	1538	3505	1260	1504	3374
Peak-hour factor, PHF	0.84	0.84	0.84	0.84	0.84	0.84
Adj. Flow (vph)	183	148	1080	177	45	1406
RTOR Reduction (vph)	0	117	0	90	0	0
Lane Group Flow (vph)	183	31	1080	87	45	1406
Confl. Peds. (#/hr)				1	1	
Confl. Bikes (#/hr)				5		
Heavy Vehicles (%)	10%	5%	3%	25%	20%	7%
Turn Type	Perm	Perm	NA	Perm	Prot	NA
Protected Phases			2		1	6
Permitted Phases	8	8		2		
Actuated Green, G (s)	12.2	12.2	28.5	28.5	1.9	35.0
Effective Green, g (s)	12.2	12.2	28.5	28.5	1.9	35.0
Actuated g/C Ratio	0.21	0.21	0.49	0.49	0.03	0.60
Clearance Time (s)	5.2	5.2	5.8	5.8	4.6	5.8
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0	3.0
Lane Grp Cap (vph)	343	322	1716	617	49	2029
v/s Ratio Prot			0.31		0.03	c0.42
v/s Ratio Perm	c0.11	0.02		0.07		
v/c Ratio	0.53	0.10	0.63	0.14	0.92	0.69
Uniform Delay, d1	20.5	18.6	11.0	8.1	28.1	7.9
Progression Factor	1.00	1.00	1.00	1.00	1.00	1.00
Incremental Delay, d2	1.6	0.1	1.8	0.5	97.1	2.0
Delay (s)	22.1	18.7	12.7	8.6	125.2	9.9
Level of Service	C	B	B	A	F	A
Approach Delay (s)	20.6		12.1			13.5
Approach LOS	C		B			B

Intersection Summary			
HCM 2000 Control Delay	13.7	HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio	0.72		
Actuated Cycle Length (s)	58.2	Sum of lost time (s)	15.6
Intersection Capacity Utilization	50.3%	ICU Level of Service	A
Analysis Period (min)	15		
c Critical Lane Group			

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	63	116	44	206	76	527	18	458	252	648	815	47
Future Volume (vph)	63	116	44	206	76	527	18	458	252	648	815	47
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.6	5.2		4.6	5.2	4.6	4.6	5.4	4.6	4.6	5.8	
Lane Util. Factor	1.00	0.95		0.97	1.00	1.00	1.00	0.91	1.00	0.97	0.95	
Frpb, ped/bikes	1.00	1.00		1.00	1.00	1.00	1.00	1.00	0.99	1.00	1.00	
Flpb, ped/bikes	1.00	1.00		1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	
Frt	1.00	0.96		1.00	1.00	0.85	1.00	1.00	0.85	1.00	0.99	
Flt Protected	0.95	1.00		0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	
Satd. Flow (prot)	1188	2886		3045	1226	1568	1543	5036	1474	3335	3263	
Flt Permitted	0.95	1.00		0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	
Satd. Flow (perm)	1188	2886		3045	1226	1568	1543	5036	1474	3335	3263	
Peak-hour factor, PHF	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88
Adj. Flow (vph)	72	132	50	234	86	599	20	520	286	736	926	53
RTOR Reduction (vph)	0	37	0	0	0	131	0	0	160	0	3	0
Lane Group Flow (vph)	72	145	0	234	86	468	20	520	126	736	976	0
Confl. Peds. (#/hr)			5	5					2	2		
Confl. Bikes (#/hr)			1						5			1
Heavy Vehicles (%)	52%	18%	23%	15%	55%	3%	17%	3%	8%	5%	7%	55%
Turn Type	Prot	NA		Prot	NA	pm+ov	Prot	NA	pm+ov	Prot	NA	
Protected Phases	7	4		3	8	1	5	2	3	1	6	
Permitted Phases						8			2			
Actuated Green, G (s)	9.7	20.9		6.5	17.7	39.3	2.3	42.3	48.8	21.6	61.2	
Effective Green, g (s)	9.7	20.9		6.5	17.7	39.3	2.3	42.3	48.8	21.6	61.2	
Actuated g/C Ratio	0.09	0.19		0.06	0.16	0.35	0.02	0.38	0.44	0.19	0.55	
Clearance Time (s)	4.6	5.2		4.6	5.2	4.6	4.6	5.4	4.6	4.6	5.8	
Vehicle Extension (s)	3.0	3.0		3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	
Lane Grp Cap (vph)	103	542		178	195	554	31	1917	647	648	1797	
v/s Ratio Prot	0.06	c0.05		c0.08	0.07	c0.16	0.01	0.10	0.01	c0.22	c0.30	
v/s Ratio Perm						0.13			0.07			
v/c Ratio	0.70	0.27		1.31	0.44	0.84	0.65	0.27	0.19	1.14	0.54	
Uniform Delay, d1	49.3	38.6		52.3	42.2	33.1	54.0	23.8	19.1	44.8	16.0	
Progression Factor	1.00	1.00		1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	
Incremental Delay, d2	18.7	0.3		175.6	1.6	11.3	37.9	0.3	0.1	79.1	1.2	
Delay (s)	68.0	38.8		227.9	43.8	44.4	91.9	24.1	19.2	123.8	17.2	
Level of Service	E	D		F	D	D	F	C	B	F	B	
Approach Delay (s)		47.1			91.1			24.1			62.9	
Approach LOS		D			F			C			E	

Intersection Summary			
HCM 2000 Control Delay	60.2	HCM 2000 Level of Service	E
HCM 2000 Volume to Capacity ratio	0.80		
Actuated Cycle Length (s)	111.1	Sum of lost time (s)	20.2
Intersection Capacity Utilization	85.4%	ICU Level of Service	E
Analysis Period (min)	15		
c Critical Lane Group			

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	63	116	44	206	76	527	18	458	252	648	815	47
Future Volume (veh/h)	63	116	44	206	76	527	18	458	252	648	815	47
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		0.98	1.00		0.99	1.00		0.98	1.00		0.98
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1129	1633	1559	1678	1085	1856	1648	1856	1781	1826	1796	1085
Adj Flow Rate, veh/h	72	132	50	234	86	599	20	520	286	736	926	53
Peak Hour Factor	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88
Percent Heavy Veh, %	52	18	23	15	55	3	17	3	8	5	7	55
Cap, veh/h	81	562	203	173	253	659	32	1657	570	631	1617	93
Arrive On Green	0.08	0.25	0.25	0.06	0.23	0.23	0.02	0.33	0.33	0.19	0.49	0.49
Sat Flow, veh/h	1076	2220	802	3100	1085	1562	1570	5066	1484	3374	3276	188
Grp Volume(v), veh/h	72	90	92	234	86	599	20	520	286	736	482	497
Grp Sat Flow(s),veh/h/ln	1076	1552	1471	1550	1085	1562	1570	1689	1484	1687	1706	1757
Q Serve(g_s), s	7.6	5.3	5.7	6.4	7.5	26.7	1.4	8.8	16.8	21.4	22.8	22.8
Cycle Q Clear(g_c), s	7.6	5.3	5.7	6.4	7.5	26.7	1.4	8.8	16.8	21.4	22.8	22.8
Prop In Lane	1.00		0.55	1.00		1.00	1.00		1.00	1.00		0.11
Lane Grp Cap(c), veh/h	81	393	372	173	253	659	32	1657	570	631	842	867
V/C Ratio(X)	0.88	0.23	0.25	1.35	0.34	0.91	0.62	0.31	0.50	1.17	0.57	0.57
Avail Cap(c_a), veh/h	138	475	450	173	253	659	86	1657	570	631	842	867
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	52.4	33.9	34.0	54.0	36.5	31.1	55.6	28.9	27.0	46.5	20.4	20.4
Incr Delay (d2), s/veh	27.4	0.3	0.3	190.1	0.8	16.6	17.8	0.5	3.1	91.1	2.8	2.7
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	2.7	2.0	2.1	7.1	2.0	17.9	0.7	3.5	6.3	16.7	9.2	9.5
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	79.8	34.2	34.3	244.1	37.3	47.7	73.4	29.4	30.1	137.6	23.3	23.2
LnGrp LOS	E	C	C	F	D	D	E	C	C	F	C	C
Approach Vol, veh/h		254			919			826			1715	
Approach Delay, s/veh		47.2			96.8			30.7			72.3	
Approach LOS		D			F			C			E	

Timer - Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	26.0	43.2	11.0	34.2	7.0	62.2	13.3	31.9
Change Period (Y+Rc), s	4.6	* 5.8	4.6	5.2	4.6	5.8	4.6	5.2
Max Green Setting (Gmax), s	21.4	* 37	6.4	35.0	6.3	52.1	14.7	26.7
Max Q Clear Time (g_c+I1), s	23.4	18.8	8.4	7.7	3.4	24.8	9.6	28.7
Green Ext Time (p_c), s	0.0	4.0	0.0	1.1	0.0	6.6	0.1	0.0

Intersection Summary	
HCM 6th Ctrl Delay	67.4
HCM 6th LOS	E

Notes

User approved pedestrian interval to be less than phase max green.

* HCM 6th computational engine requires equal clearance times for the phases crossing the barrier.

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	0	1320	689	6	997	468	0	0	0	435	0	608
Future Volume (vph)	0	1320	689	6	997	468	0	0	0	435	0	608
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		5.0	5.0		5.0	5.0				5.8	5.8	5.8
Lane Util. Factor		0.91	1.00		0.95	1.00				0.95	0.91	0.95
Frpb, ped/bikes		1.00	0.98		1.00	0.98				1.00	1.00	1.00
Flpb, ped/bikes		1.00	1.00		1.00	1.00				1.00	1.00	1.00
Frt		1.00	0.85		1.00	0.85				1.00	0.88	0.85
Flt Protected		1.00	1.00		1.00	1.00				0.95	0.99	1.00
Satd. Flow (prot)		5085	1515		3504	1563				1698	1436	1447
Flt Permitted		1.00	1.00		0.94	1.00				0.95	0.99	1.00
Satd. Flow (perm)		5085	1515		3312	1563				1698	1436	1447
Peak-hour factor, PHF	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97
Adj. Flow (vph)	0	1361	710	6	1028	482	0	0	0	448	0	627
RTOR Reduction (vph)	0	0	406	0	0	276	0	0	0	0	27	27
Lane Group Flow (vph)	0	1361	304	0	1034	206	0	0	0	376	327	318
Confl. Peds. (#/hr)	1		4	4		1						
Confl. Bikes (#/hr)						1						
Heavy Vehicles (%)	0%	2%	4%	0%	3%	1%	0%	0%	0%	1%	0%	6%
Turn Type		NA	Perm	Perm	NA	Perm				Split	NA	Perm
Protected Phases		2			6					4	4	
Permitted Phases			2	6		6						4
Actuated Green, G (s)		25.4	25.4		25.4	25.4				23.2	23.2	23.2
Effective Green, g (s)		25.4	25.4		25.4	25.4				23.2	23.2	23.2
Actuated g/C Ratio		0.43	0.43		0.43	0.43				0.39	0.39	0.39
Clearance Time (s)		5.0	5.0		5.0	5.0				5.8	5.8	5.8
Vehicle Extension (s)		3.0	3.0		3.0	3.0				3.0	3.0	3.0
Lane Grp Cap (vph)		2174	647		1416	668				663	560	565
v/s Ratio Prot		0.27								0.22	c0.23	
v/s Ratio Perm			0.20		c0.31	0.13						0.22
v/c Ratio		0.63	0.47		0.73	0.31				0.57	0.58	0.56
Uniform Delay, d1		13.3	12.2		14.1	11.2				14.2	14.3	14.1
Progression Factor		1.00	1.00		1.00	1.00				1.00	1.00	1.00
Incremental Delay, d2		0.6	0.5		2.0	0.3				3.5	4.4	4.0
Delay (s)		13.9	12.7		16.1	11.5				17.7	18.7	18.1
Level of Service		B	B		B	B				B	B	B
Approach Delay (s)		13.5			14.6			0.0			18.2	
Approach LOS		B			B			A			B	

Intersection Summary			
HCM 2000 Control Delay	14.9	HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio	0.66		
Actuated Cycle Length (s)	59.4	Sum of lost time (s)	10.8
Intersection Capacity Utilization	102.2%	ICU Level of Service	G
Analysis Period (min)	15		
c Critical Lane Group			

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	0	1171	581	2	997	396	484	0	507	0	0	0
Future Volume (vph)	0	1171	581	2	997	396	484	0	507	0	0	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		5.0	4.0		5.0	5.0	5.8	5.8	5.8			
Lane Util. Factor		0.95	1.00		0.95	1.00	0.95	0.91	0.95			
Frpb, ped/bikes		1.00	0.98		1.00	0.98	1.00	1.00	1.00			
Flpb, ped/bikes		1.00	1.00		1.00	1.00	1.00	1.00	1.00			
Frt		1.00	0.85		1.00	0.85	1.00	0.91	0.85			
Flt Protected		1.00	1.00		1.00	1.00	0.95	0.98	1.00			
Satd. Flow (prot)		3539	1547		3574	1550	1618	1500	1519			
Flt Permitted		1.00	1.00		0.95	1.00	0.95	0.98	1.00			
Satd. Flow (perm)		3539	1547		3406	1550	1618	1500	1519			
Peak-hour factor, PHF	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98
Adj. Flow (vph)	0	1195	593	2	1017	404	494	0	517	0	0	0
RTOR Reduction (vph)	0	0	0	0	0	237	0	21	21	0	0	0
Lane Group Flow (vph)	0	1195	593	0	1019	167	351	318	300	0	0	0
Confl. Peds. (#/hr)	1		5	5		1						
Confl. Bikes (#/hr)			1									
Heavy Vehicles (%)	0%	2%	2%	0%	1%	2%	6%	0%	1%	0%	0%	0%
Turn Type		NA	Free	Perm	NA	Perm	Perm	NA	Perm			
Protected Phases		2			6			8				
Permitted Phases			Free	6		6	8		8			
Actuated Green, G (s)		24.7	59.7		24.7	24.7	24.2	24.2	24.2			
Effective Green, g (s)		24.7	59.7		24.7	24.7	24.2	24.2	24.2			
Actuated g/C Ratio		0.41	1.00		0.41	0.41	0.41	0.41	0.41			
Clearance Time (s)		5.0			5.0	5.0	5.8	5.8	5.8			
Vehicle Extension (s)		3.0			3.0	3.0	3.0	3.0	3.0			
Lane Grp Cap (vph)		1464	1547		1409	641	655	608	615			
v/s Ratio Prot		c0.34										
v/s Ratio Perm			0.38		0.30	0.11	c0.22	0.21	0.20			
v/c Ratio		0.82	0.38		0.72	0.26	0.54	0.52	0.49			
Uniform Delay, d1		15.5	0.0		14.6	11.5	13.5	13.4	13.2			
Progression Factor		1.00	1.00		1.00	1.00	1.00	1.00	1.00			
Incremental Delay, d2		3.6	0.7		1.9	0.2	3.1	3.2	2.7			
Delay (s)		19.1	0.7		16.5	11.7	16.6	16.6	15.9			
Level of Service		B	A		B	B	B	B	B			
Approach Delay (s)		13.0			15.1			16.4			0.0	
Approach LOS		B			B			B			A	

Intersection Summary			
HCM 2000 Control Delay	14.5	HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio	0.68		
Actuated Cycle Length (s)	59.7	Sum of lost time (s)	10.8
Intersection Capacity Utilization	62.3%	ICU Level of Service	B
Analysis Period (min)	15		
c Critical Lane Group			

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	77	911	7	74	512	273	10	112	146	68	51	4
Future Volume (vph)	77	911	7	74	512	273	10	112	146	68	51	4
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		5.8		4.6	5.0	4.6	4.6	5.0	5.0	4.6	5.0	5.0
Lane Util. Factor		0.91		1.00	0.91	1.00	1.00	0.86	0.86	1.00	0.95	1.00
Frpb, ped/bikes		1.00		1.00	1.00	1.00	1.00	0.99	0.99	1.00	1.00	0.99
Flpb, ped/bikes		1.00		1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Frt		1.00		1.00	1.00	0.85	1.00	0.94	0.85	1.00	1.00	0.85
Flt Protected		1.00		0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (prot)		4837		1752	4715	1482	1253	4287	1318	1770	3505	1274
Flt Permitted		0.81		0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (perm)		3930		1752	4715	1482	1253	4287	1318	1770	3505	1274
Peak-hour factor, PHF	0.86	0.86	0.86	0.86	0.86	0.86	0.86	0.86	0.86	0.86	0.86	0.86
Adj. Flow (vph)	90	1059	8	86	595	317	12	130	170	79	59	5
RTOR Reduction (vph)	0	1	0	0	0	170	0	52	52	0	0	3
Lane Group Flow (vph)	0	1156	0	86	595	147	12	163	33	79	59	2
Confl. Peds. (#/hr)							2		1	1		2
Heavy Vehicles (%)	4%	7%	0%	3%	10%	9%	44%	9%	4%	2%	3%	25%
Turn Type	pm+pt	NA		Prot	NA	pm+ov	Prot	NA	Perm	Prot	NA	Perm
Protected Phases	7	4		3	8	1	5	2		1	6	
Permitted Phases	4					8			2			6
Actuated Green, G (s)		31.9		5.6	42.9	48.1	1.0	40.7	40.7	5.2	44.9	44.9
Effective Green, g (s)		31.9		5.6	42.9	48.1	1.0	40.7	40.7	5.2	44.9	44.9
Actuated g/C Ratio		0.31		0.05	0.41	0.47	0.01	0.39	0.39	0.05	0.43	0.43
Clearance Time (s)		5.8		4.6	5.0	4.6	4.6	5.0	5.0	4.6	5.0	5.0
Vehicle Extension (s)		3.0		3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0
Lane Grp Cap (vph)		1212		94	1956	689	12	1687	518	89	1521	553
v/s Ratio Prot				c0.05	0.13	0.01	0.01	c0.04		c0.04	c0.02	
v/s Ratio Perm		c0.29				0.09			0.03			0.00
v/c Ratio		0.95		0.91	0.30	0.21	1.00	0.10	0.06	0.89	0.04	0.00
Uniform Delay, d1		35.0		48.7	20.3	16.4	51.2	19.8	19.5	48.8	16.8	16.6
Progression Factor		1.00		1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Incremental Delay, d2		16.0		65.2	0.1	0.2	259.8	0.1	0.2	59.4	0.0	0.0
Delay (s)		51.0		113.9	20.3	16.6	311.0	19.9	19.7	108.2	16.9	16.6
Level of Service		D		F	C	B	F	B	B	F	B	B
Approach Delay (s)		51.0			27.2			31.0			67.3	
Approach LOS		D			C			C			E	

Intersection Summary			
HCM 2000 Control Delay	40.4	HCM 2000 Level of Service	D
HCM 2000 Volume to Capacity ratio	0.51		
Actuated Cycle Length (s)	103.4	Sum of lost time (s)	20.0
Intersection Capacity Utilization	81.2%	ICU Level of Service	D
Analysis Period (min)	15		

c Critical Lane Group

HCM Unsignalized Intersection Capacity Analysis
1: Doolittle Dr & West Project Dwy

12/01/2023

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (veh/h)	19	6	1124	16	22	1513
Future Volume (Veh/h)	19	6	1124	16	22	1513
Sign Control	Stop		Free			Free
Grade	0%		0%			0%
Peak Hour Factor	0.88	0.88	0.88	0.88	0.88	0.88
Hourly flow rate (vph)	22	7	1277	18	25	1719
Pedestrians	1					
Lane Width (ft)	12.0					
Walking Speed (ft/s)	3.5					
Percent Blockage	0					
Right turn flare (veh)						
Median type			TWLTL			TWLTL
Median storage veh)			2			2
Upstream signal (ft)			750			512
pX, platoon unblocked	0.88	0.84			0.84	
vC, conflicting volume	2196	648			1296	
vC1, stage 1 conf vol	1287					
vC2, stage 2 conf vol	910					
vCu, unblocked vol	1292	215			982	
tC, single (s)	6.8	6.9			4.1	
tC, 2 stage (s)	5.8					
tF (s)	3.5	3.3			2.2	
p0 queue free %	92	99			96	
cM capacity (veh/h)	259	671			600	

Direction, Lane #	WB 1	NB 1	NB 2	SB 1	SB 2	SB 3
Volume Total	29	851	444	25	860	860
Volume Left	22	0	0	25	0	0
Volume Right	7	0	18	0	0	0
cSH	304	1700	1700	600	1700	1700
Volume to Capacity	0.10	0.50	0.26	0.04	0.51	0.51
Queue Length 95th (ft)	8	0	0	3	0	0
Control Delay (s)	18.1	0.0	0.0	11.3	0.0	0.0
Lane LOS	C			B		
Approach Delay (s)	18.1	0.0		0.2		
Approach LOS	C					

Intersection Summary			
Average Delay	0.3		
Intersection Capacity Utilization	51.8%	ICU Level of Service	A
Analysis Period (min)	15		

Intersection	
Int Delay, s/veh	0.3

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Vol, veh/h	19	6	1124	16	22	1513
Future Vol, veh/h	19	6	1124	16	22	1513
Conflicting Peds, #/hr	0	0	0	1	1	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	-	50	-
Veh in Median Storage, #	2	-	0	-	-	0
Grade, %	0	-	0	-	-	0
Peak Hour Factor	88	88	88	88	88	88
Heavy Vehicles, %	0	0	14	9	0	17
Mvmt Flow	22	7	1277	18	25	1719

Major/Minor	Minor1		Major1		Major2	
Conflicting Flow All	2197	649	0	0	1296	0
Stage 1	1287	-	-	-	-	-
Stage 2	910	-	-	-	-	-
Critical Hdwy	6.8	6.9	-	-	4.1	-
Critical Hdwy Stg 1	5.8	-	-	-	-	-
Critical Hdwy Stg 2	5.8	-	-	-	-	-
Follow-up Hdwy	3.5	3.3	-	-	2.2	-
Pot Cap-1 Maneuver	39	417	-	-	541	-
Stage 1	227	-	-	-	-	-
Stage 2	358	-	-	-	-	-
Platoon blocked, %			-	-		-
Mov Cap-1 Maneuver	37	417	-	-	540	-
Mov Cap-2 Maneuver	181	-	-	-	-	-
Stage 1	227	-	-	-	-	-
Stage 2	342	-	-	-	-	-

Approach	WB	NB	SB
HCM Control Delay, s	24.9	0	0.2
HCM LOS	C		

Minor Lane/Major Mvmt	NBT	NBR	WBLn1	SBL	SBT
Capacity (veh/h)	-	-	209	540	-
HCM Lane V/C Ratio	-	-	0.136	0.046	-
HCM Control Delay (s)	-	-	24.9	12	-
HCM Lane LOS	-	-	C	B	-
HCM 95th %tile Q(veh)	-	-	0.5	0.1	-

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Volume (veh/h)	15	0	0	15	56	22
Future Volume (Veh/h)	15	0	0	15	56	22
Sign Control		Stop	Stop		Free	
Grade		0%	0%		0%	
Peak Hour Factor	0.86	0.86	0.86	0.86	0.86	0.86
Hourly flow rate (vph)	17	0	0	17	65	26
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type					None	
Median storage veh)						
Upstream signal (ft)						
pX, platoon unblocked						
vC, conflicting volume	160	143	156	0	0	
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	160	143	156	0	0	
tC, single (s)	7.2	6.7	6.7	6.4	4.2	
tC, 2 stage (s)						
tF (s)	3.6	4.1	4.1	3.4	2.3	
p0 queue free %	98	100	100	98	96	
cM capacity (veh/h)	740	694	683	1048	1542	

Direction, Lane #	EB 1	WB 1	SB 1
Volume Total	17	17	91
Volume Left	17	0	65
Volume Right	0	17	26
cSH	740	1048	1542
Volume to Capacity	0.02	0.02	0.04
Queue Length 95th (ft)	2	1	3
Control Delay (s)	10.0	8.5	5.4
Lane LOS	A	A	A
Approach Delay (s)	10.0	8.5	5.4
Approach LOS	A	A	

Intersection Summary			
Average Delay	6.4		
Intersection Capacity Utilization	18.6%	ICU Level of Service	A
Analysis Period (min)	15		

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Volume (veh/h)	315	66	5	238	49	14
Future Volume (Veh/h)	315	66	5	238	49	14
Sign Control	Free			Free	Stop	
Grade	0%			0%	0%	
Peak Hour Factor	0.86	0.86	0.86	0.86	0.86	0.86
Hourly flow rate (vph)	366	77	6	277	57	16
Pedestrians				1		
Lane Width (ft)				12.0		
Walking Speed (ft/s)				3.5		
Percent Blockage				0		
Right turn flare (veh)						
Median type	None			None		
Median storage veh)						
Upstream signal (ft)	426					
pX, platoon unblocked						
vC, conflicting volume			443		694	406
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol			443		694	406
tC, single (s)			4.1		6.5	6.4
tC, 2 stage (s)						
tF (s)			2.2		3.6	3.5
p0 queue free %			99		86	97
cM capacity (veh/h)			1107		395	608

Direction, Lane #	EB 1	WB 1	NB 1
Volume Total	443	283	73
Volume Left	0	6	57
Volume Right	77	0	16
cSH	1700	1107	428
Volume to Capacity	0.26	0.01	0.17
Queue Length 95th (ft)	0	0	15
Control Delay (s)	0.0	0.2	15.1
Lane LOS		A	C
Approach Delay (s)	0.0	0.2	15.1
Approach LOS			C

Intersection Summary			
Average Delay	1.5		
Intersection Capacity Utilization	31.2%	ICU Level of Service	A
Analysis Period (min)	15		

Intersection	
Int Delay, s/veh	1.5

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Vol, veh/h	315	66	5	238	49	14
Future Vol, veh/h	315	66	5	238	49	14
Conflicting Peds, #/hr	0	0	0	0	0	1
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	0	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	86	86	86	86	86	86
Heavy Vehicles, %	8	2	4	14	10	20
Mvmt Flow	366	77	6	277	57	16

Major/Minor	Major1		Major2		Minor1	
Conflicting Flow All	0	0	443	0	694	406
Stage 1	-	-	-	-	405	-
Stage 2	-	-	-	-	289	-
Critical Hdwy	-	-	4.14	-	6.5	6.4
Critical Hdwy Stg 1	-	-	-	-	5.5	-
Critical Hdwy Stg 2	-	-	-	-	5.5	-
Follow-up Hdwy	-	-	2.236	-	3.59	3.48
Pot Cap-1 Maneuver	-	-	1107	-	397	608
Stage 1	-	-	-	-	657	-
Stage 2	-	-	-	-	742	-
Platoon blocked, %	-	-		-		
Mov Cap-1 Maneuver	-	-	1107	-	395	607
Mov Cap-2 Maneuver	-	-	-	-	395	-
Stage 1	-	-	-	-	657	-
Stage 2	-	-	-	-	738	-

Approach	EB	WB	NB
HCM Control Delay, s	0	0.2	15.1
HCM LOS			C

Minor Lane/Major Mvmt	NBLn1	EBT	EBR	WBL	WBT
Capacity (veh/h)	428	-	-	1107	-
HCM Lane V/C Ratio	0.171	-	-	0.005	-
HCM Control Delay (s)	15.1	-	-	8.3	0
HCM Lane LOS	C	-	-	A	A
HCM 95th %tile Q(veh)	0.6	-	-	0	-

Lane Group	WBL	WBR	NBT	NBR	SBL	SBT
Lane Group Flow (vph)	132	34	1039	246	60	1142
v/c Ratio	0.37	0.10	0.57	0.29	0.38	0.55
Control Delay	21.1	6.7	17.2	3.9	36.6	11.0
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	21.1	6.7	17.2	3.9	36.6	11.0
Queue Length 50th (ft)	39	0	138	0	19	97
Queue Length 95th (ft)	76	16	#405	49	#76	330
Internal Link Dist (ft)	346		48			437
Turn Bay Length (ft)		85		230	275	
Base Capacity (vph)	515	473	1828	852	158	2091
Starvation Cap Reductn	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0
Reduced v/c Ratio	0.26	0.07	0.57	0.29	0.38	0.55

Intersection Summary

95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (vph)	125	32	987	234	57	1085
Future Volume (vph)	125	32	987	234	57	1085
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost time (s)	5.2	5.2	5.8	5.8	4.6	5.8
Lane Util. Factor	1.00	1.00	0.95	1.00	1.00	0.95
Frpb, ped/bikes	1.00	1.00	1.00	0.98	1.00	1.00
Flpb, ped/bikes	1.00	1.00	1.00	1.00	1.00	1.00
Frt	1.00	0.85	1.00	0.85	1.00	1.00
Flt Protected	0.95	1.00	1.00	1.00	0.95	1.00
Satd. Flow (prot)	1467	1282	3312	1346	1687	3223
Flt Permitted	0.95	1.00	1.00	1.00	0.95	1.00
Satd. Flow (perm)	1467	1282	3312	1346	1687	3223
Peak-hour factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95
Adj. Flow (vph)	132	34	1039	246	60	1142
RTOR Reduction (vph)	0	27	0	122	0	0
Lane Group Flow (vph)	132	7	1039	124	60	1142
Confl. Peds. (#/hr)	1			2		
Confl. Bikes (#/hr)				3		
Heavy Vehicles (%)	23%	26%	9%	17%	7%	12%
Turn Type	Perm	Perm	NA	Perm	Prot	NA
Protected Phases			2		1	6
Permitted Phases	8	8		2		
Actuated Green, G (s)	11.9	11.9	31.1	31.1	3.1	38.8
Effective Green, g (s)	11.9	11.9	31.1	31.1	3.1	38.8
Actuated g/C Ratio	0.19	0.19	0.50	0.50	0.05	0.63
Clearance Time (s)	5.2	5.2	5.8	5.8	4.6	5.8
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0	3.0
Lane Grp Cap (vph)	282	247	1669	678	84	2026
v/s Ratio Prot			c0.31		0.04	c0.35
v/s Ratio Perm	c0.09	0.01		0.09		
v/c Ratio	0.47	0.03	0.62	0.18	0.71	0.56
Uniform Delay, d1	22.1	20.2	11.1	8.4	28.9	6.6
Progression Factor	1.00	1.00	1.00	1.00	1.00	1.00
Incremental Delay, d2	1.2	0.0	1.8	0.6	24.9	1.1
Delay (s)	23.3	20.2	12.8	9.0	53.7	7.7
Level of Service	C	C	B	A	D	A
Approach Delay (s)	22.7		12.1			10.0
Approach LOS	C		B			B

Intersection Summary			
HCM 2000 Control Delay	11.8	HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio	0.60		
Actuated Cycle Length (s)	61.7	Sum of lost time (s)	15.6
Intersection Capacity Utilization	52.8%	ICU Level of Service	A
Analysis Period (min)	15		
c Critical Lane Group			

Lane Group	EBL	EBT	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT
Lane Group Flow (vph)	60	280	308	170	1042	62	1007	492	826	441
v/c Ratio	0.53	0.57	1.75	0.65	1.43	0.83	0.60	0.73	1.30	0.30
Control Delay	65.4	39.9	390.6	55.0	226.8	117.0	32.0	19.4	184.2	17.8
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	65.4	39.9	390.6	55.0	226.8	117.0	32.0	19.4	184.2	17.8
Queue Length 50th (ft)	41	86	~167	115	~969	44	212	126	~387	90
Queue Length 95th (ft)	90	128	#286	197	#1309	#139	301	306	#580	152
Internal Link Dist (ft)		486		661			407			302
Turn Bay Length (ft)	300		240		120	130		180	260	
Base Capacity (vph)	162	745	176	331	728	75	1667	671	634	1478
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.37	0.38	1.75	0.51	1.43	0.83	0.60	0.73	1.30	0.30

Intersection Summary

~ Volume exceeds capacity, queue is theoretically infinite.
Queue shown is maximum after two cycles.

95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	55	208	46	280	155	948	56	916	448	752	343	58
Future Volume (vph)	55	208	46	280	155	948	56	916	448	752	343	58
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.6	5.2		4.6	5.2	4.6	4.6	5.4	4.6	4.6	5.8	
Lane Util. Factor	1.00	0.95		0.97	1.00	1.00	1.00	0.91	1.00	0.97	0.95	
Frpb, ped/bikes	1.00	1.00		1.00	1.00	1.00	1.00	1.00	0.99	1.00	1.00	
Flpb, ped/bikes	1.00	1.00		1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	
Frt	1.00	0.97		1.00	1.00	0.85	1.00	1.00	0.85	1.00	0.98	
Flt Protected	0.95	1.00		0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	
Satd. Flow (prot)	1211	2279		3019	1357	1495	1318	4673	1238	3242	2989	
Flt Permitted	0.95	1.00		0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	
Satd. Flow (perm)	1211	2279		3019	1357	1495	1318	4673	1238	3242	2989	
Peak-hour factor, PHF	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91
Adj. Flow (vph)	60	229	51	308	170	1042	62	1007	492	826	377	64
RTOR Reduction (vph)	0	17	0	0	0	83	0	0	151	0	10	0
Lane Group Flow (vph)	60	263	0	308	170	959	62	1007	341	826	431	0
Confl. Peds. (#/hr)									1	1		
Confl. Bikes (#/hr)			1									3
Heavy Vehicles (%)	49%	55%	48%	16%	40%	8%	37%	11%	29%	8%	15%	34%
Turn Type	Prot	NA		Prot	NA	pm+ov	Prot	NA	pm+ov	Prot	NA	
Protected Phases	7	4		3	8	1	5	2	3	1	6	
Permitted Phases						8			2			
Actuated Green, G (s)	9.1	23.9		6.4	21.2	42.7	6.3	39.2	45.6	21.5	54.0	
Effective Green, g (s)	9.1	23.9		6.4	21.2	42.7	6.3	39.2	45.6	21.5	54.0	
Actuated g/C Ratio	0.08	0.22		0.06	0.19	0.39	0.06	0.35	0.41	0.19	0.49	
Clearance Time (s)	4.6	5.2		4.6	5.2	4.6	4.6	5.4	4.6	4.6	5.8	
Vehicle Extension (s)	3.0	3.0		3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	
Lane Grp Cap (vph)	99	491		174	259	576	74	1653	509	629	1456	
v/s Ratio Prot	0.05	c0.12		c0.10	0.13	c0.32	0.05	0.22	c0.04	0.25	0.14	
v/s Ratio Perm						0.32			0.24			
v/c Ratio	0.61	0.54		1.77	0.66	1.66	0.84	0.61	0.67	1.31	0.30	
Uniform Delay, d1	49.1	38.5		52.2	41.4	34.0	51.7	29.5	26.5	44.6	17.0	
Progression Factor	1.00	1.00		1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	
Incremental Delay, d2	10.1	1.1		368.9	5.9	306.9	53.0	1.7	3.5	152.1	0.5	
Delay (s)	59.2	39.6		421.1	47.3	340.9	104.7	31.2	30.0	196.7	17.5	
Level of Service	E	D		F	D	F	F	C	C	F	B	
Approach Delay (s)		43.1			324.3			33.7			134.3	
Approach LOS		D			F			C			F	

Intersection Summary			
HCM 2000 Control Delay	155.8	HCM 2000 Level of Service	F
HCM 2000 Volume to Capacity ratio	1.20		
Actuated Cycle Length (s)	110.8	Sum of lost time (s)	20.2
Intersection Capacity Utilization	107.5%	ICU Level of Service	G
Analysis Period (min)	15		
c Critical Lane Group			

HCM 6th Signalized Intersection Summary
5: Doolittle Dr & Davis St

12/01/2023

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	55	208	46	280	155	948	56	916	448	752	343	58
Future Volume (veh/h)	55	208	46	280	155	948	56	916	448	752	343	58
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		0.99	1.00		1.00	1.00		1.00	1.00		0.98
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1174	1085	1189	1663	1307	1781	1352	1737	1470	1781	1678	1396
Adj Flow Rate, veh/h	60	229	51	308	170	1042	62	1007	492	826	377	64
Peak Hour Factor	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91
Percent Heavy Veh, %	49	55	48	16	40	8	37	11	29	8	15	34
Cap, veh/h	68	404	88	175	310	645	72	1576	485	626	1269	213
Arrive On Green	0.06	0.24	0.24	0.06	0.24	0.24	0.06	0.33	0.33	0.19	0.47	0.47
Sat Flow, veh/h	1118	1678	366	3072	1307	1510	1287	4742	1245	3291	2719	457
Grp Volume(v), veh/h	60	139	141	308	170	1042	62	1007	492	826	219	222
Grp Sat Flow(s),veh/h/ln	1118	1031	1013	1536	1307	1510	1287	1581	1245	1646	1594	1582
Q Serve(g_s), s	6.0	13.3	13.8	6.4	12.8	26.7	5.4	20.3	37.4	21.4	9.6	9.8
Cycle Q Clear(g_c), s	6.0	13.3	13.8	6.4	12.8	26.7	5.4	20.3	37.4	21.4	9.6	9.8
Prop In Lane	1.00		0.36	1.00		1.00	1.00		1.00	1.00		0.29
Lane Grp Cap(c), veh/h	68	248	244	175	310	645	72	1576	485	626	744	738
V/C Ratio(X)	0.89	0.56	0.58	1.76	0.55	1.61	0.86	0.64	1.02	1.32	0.30	0.30
Avail Cap(c_a), veh/h	146	321	315	175	310	645	72	1576	485	626	744	738
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	52.5	37.5	37.7	53.1	37.6	32.2	52.7	31.8	34.4	45.6	18.6	18.6
Incr Delay (d2), s/veh	28.7	2.0	2.2	365.4	2.0	283.7	60.9	2.0	44.7	154.8	1.0	1.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	2.2	3.5	3.6	11.3	4.2	67.5	2.9	7.7	18.7	22.0	3.6	3.6
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	81.1	39.4	39.8	418.5	39.6	315.9	113.6	33.8	79.1	200.3	19.6	19.7
LnGrp LOS	F	D	D	F	D	F	F	C	F	F	B	B
Approach Vol, veh/h		340			1520			1561			1267	
Approach Delay, s/veh		46.9			305.8			51.3			137.4	
Approach LOS		D			F			D			F	

Timer - Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	26.0	43.2	11.0	32.3	10.9	58.3	11.4	31.9
Change Period (Y+Rc), s	4.6	* 5.8	4.6	5.2	4.6	5.8	4.6	5.2
Max Green Setting (Gmax), s	21.4	* 37	6.4	35.0	6.3	52.1	14.7	26.7
Max Q Clear Time (g_c+I1), s	23.4	39.4	8.4	15.8	7.4	11.8	8.0	28.7
Green Ext Time (p_c), s	0.0	0.0	0.0	1.6	0.0	2.7	0.1	0.0

Intersection Summary	
HCM 6th Ctrl Delay	156.8
HCM 6th LOS	F

Notes

User approved pedestrian interval to be less than phase max green.

* HCM 6th computational engine requires equal clearance times for the phases crossing the barrier.

Lane Group	EBT	EBR	WBT	WBR	SBL	SBT	SBR
Lane Group Flow (vph)	1278	551	1305	757	253	338	336
v/c Ratio	0.56	0.57	0.77	0.67	0.51	0.75	0.72
Control Delay	11.0	3.6	15.6	4.2	21.5	29.7	27.7
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	11.0	3.6	15.6	4.2	21.5	29.7	27.7
Queue Length 50th (ft)	104	0	181	0	78	106	101
Queue Length 95th (ft)	139	41	257	46	144	#240	#222
Internal Link Dist (ft)	661		674			105	
Turn Bay Length (ft)		400		560	65		350
Base Capacity (vph)	2361	972	1735	1139	497	452	466
Starvation Cap Reductn	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0
Reduced v/c Ratio	0.54	0.57	0.75	0.66	0.51	0.75	0.72

Intersection Summary

95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	2	1238	534	0	1266	734	0	0	0	273	0	627
Future Volume (vph)	2	1238	534	0	1266	734	0	0	0	273	0	627
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		5.0	5.0		5.0	5.0				5.8	5.8	5.8
Lane Util. Factor		0.91	1.00		0.95	1.00				0.95	0.91	0.95
Frpb, ped/bikes		1.00	0.97		1.00	0.98				1.00	1.00	1.00
Flpb, ped/bikes		1.00	1.00		1.00	1.00				1.00	1.00	1.00
Frt		1.00	0.85		1.00	0.85				1.00	0.86	0.85
Flt Protected		1.00	1.00		1.00	1.00				0.95	1.00	1.00
Satd. Flow (prot)		4803	1355		3312	1488				1618	1389	1434
Flt Permitted		0.94	1.00		1.00	1.00				0.95	1.00	1.00
Satd. Flow (perm)		4507	1355		3312	1488				1618	1389	1434
Peak-hour factor, PHF	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97
Adj. Flow (vph)	2	1276	551	0	1305	757	0	0	0	281	0	646
RTOR Reduction (vph)	0	0	270	0	0	371	0	0	0	0	25	25
Lane Group Flow (vph)	0	1278	281	0	1305	386	0	0	0	253	313	311
Confl. Peds. (#/hr)	2		7	7		2						
Confl. Bikes (#/hr)						1						
Heavy Vehicles (%)	0%	8%	16%	0%	9%	6%	0%	0%	0%	6%	0%	7%
Turn Type	Perm	NA	Perm		NA	Perm				Split	NA	Perm
Protected Phases		2			6					4	4	
Permitted Phases	2		2			6						4
Actuated Green, G (s)		30.2	30.2		30.2	30.2				18.2	18.2	18.2
Effective Green, g (s)		30.2	30.2		30.2	30.2				18.2	18.2	18.2
Actuated g/C Ratio		0.51	0.51		0.51	0.51				0.31	0.31	0.31
Clearance Time (s)		5.0	5.0		5.0	5.0				5.8	5.8	5.8
Vehicle Extension (s)		3.0	3.0		3.0	3.0				3.0	3.0	3.0
Lane Grp Cap (vph)		2299	691		1689	759				497	427	440
v/s Ratio Prot					c0.39					0.16	c0.23	
v/s Ratio Perm		0.28	0.21			0.26						0.22
v/c Ratio		0.56	0.41		0.77	0.51				0.51	0.73	0.71
Uniform Delay, d1		9.9	9.0		11.7	9.6				16.8	18.3	18.1
Progression Factor		1.00	1.00		1.00	1.00				1.00	1.00	1.00
Incremental Delay, d2		0.3	0.4		2.3	0.5				3.7	10.6	9.2
Delay (s)		10.2	9.4		14.0	10.1				20.5	29.0	27.4
Level of Service		B	A		B	B				C	C	C
Approach Delay (s)		10.0			12.6			0.0			26.1	
Approach LOS		A			B			A			C	

Intersection Summary			
HCM 2000 Control Delay	14.2	HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio	0.76		
Actuated Cycle Length (s)	59.2	Sum of lost time (s)	10.8
Intersection Capacity Utilization	78.0%	ICU Level of Service	D
Analysis Period (min)	15		
c Critical Lane Group			

Lane Group	EBT	EBR	WBT	WBR	NBL	NBT	NBR
Lane Group Flow (vph)	754	812	1322	610	288	282	261
v/c Ratio	0.44	0.57	0.78	0.57	0.59	0.57	0.46
Control Delay	10.7	1.7	16.4	3.3	22.9	20.2	10.6
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	10.7	1.7	16.4	3.3	22.9	20.2	10.6
Queue Length 50th (ft)	84	0	188	0	90	79	32
Queue Length 95th (ft)	122	0	265	44	165	156	90
Internal Link Dist (ft)	674		169			405	
Turn Bay Length (ft)				1000	260		160
Base Capacity (vph)	1766	1420	1749	1080	490	491	568
Starvation Cap Reductn	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0
Reduced v/c Ratio	0.43	0.57	0.76	0.56	0.59	0.57	0.46

Intersection Summary

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	0	731	788	0	1282	592	490	0	316	0	0	0
Future Volume (vph)	0	731	788	0	1282	592	490	0	316	0	0	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		5.0	4.0		5.0	5.0	5.8	5.8	5.8			
Lane Util. Factor		0.95	1.00		0.95	1.00	0.95	0.91	0.95			
Frpb, ped/bikes		1.00	0.98		1.00	0.98	1.00	1.00	1.00			
Flpb, ped/bikes		1.00	1.00		1.00	1.00	1.00	1.00	1.00			
Frt		1.00	0.85		1.00	0.85	1.00	0.97	0.85			
Flt Protected		1.00	1.00		1.00	1.00	0.95	0.96	1.00			
Satd. Flow (prot)		3471	1420		3438	1533	1504	1433	1447			
Flt Permitted		1.00	1.00		1.00	1.00	0.95	0.96	1.00			
Satd. Flow (perm)		3471	1420		3438	1533	1504	1433	1447			
Peak-hour factor, PHF	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97
Adj. Flow (vph)	0	754	812	0	1322	610	505	0	326	0	0	0
RTOR Reduction (vph)	0	0	0	0	0	310	0	24	97	0	0	0
Lane Group Flow (vph)	0	754	812	0	1322	300	288	258	164	0	0	0
Confl. Peds. (#/hr)	2		7	7		2						
Confl. Bikes (#/hr)			1									
Heavy Vehicles (%)	0%	4%	11%	0%	5%	3%	14%	0%	6%	0%	0%	0%
Turn Type		NA	Free		NA	Perm	Perm	NA	Perm			
Protected Phases		2			6			8				
Permitted Phases			Free			6	8		8			
Actuated Green, G (s)		29.0	59.0		29.0	29.0	19.2	19.2	19.2			
Effective Green, g (s)		29.0	59.0		29.0	29.0	19.2	19.2	19.2			
Actuated g/C Ratio		0.49	1.00		0.49	0.49	0.33	0.33	0.33			
Clearance Time (s)		5.0			5.0	5.0	5.8	5.8	5.8			
Vehicle Extension (s)		3.0			3.0	3.0	3.0	3.0	3.0			
Lane Grp Cap (vph)		1706	1420		1689	753	489	466	470			
v/s Ratio Prot		0.22			c0.38							
v/s Ratio Perm			c0.57			0.20	0.19	0.18	0.11			
v/c Ratio		0.44	0.57		0.78	0.40	0.59	0.55	0.35			
Uniform Delay, d1		9.7	0.0		12.4	9.5	16.6	16.4	15.1			
Progression Factor		1.00	1.00		1.00	1.00	1.00	1.00	1.00			
Incremental Delay, d2		0.2	1.7		2.4	0.3	5.1	4.7	2.0			
Delay (s)		9.9	1.7		14.8	9.8	21.7	21.0	17.2			
Level of Service		A	A		B	A	C	C	B			
Approach Delay (s)		5.7			13.3			20.1			0.0	
Approach LOS		A			B			C			A	

Intersection Summary			
HCM 2000 Control Delay	11.8	HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio	0.77		
Actuated Cycle Length (s)	59.0	Sum of lost time (s)	10.8
Intersection Capacity Utilization	62.7%	ICU Level of Service	B
Analysis Period (min)	15		
c Critical Lane Group			

Lane Group	EBT	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Group Flow (vph)	1086	83	2228	500	20	83	45	61	14	13
v/c Ratio	1.47dl	0.93	1.03	0.52	0.38	0.05	0.08	0.72	0.01	0.02
Control Delay	72.3	128.1	57.5	6.7	66.4	10.8	0.3	89.6	19.2	0.1
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	72.3	128.1	57.5	6.7	66.4	10.8	0.3	89.6	19.2	0.1
Queue Length 50th (ft)	~276	54	~564	53	13	5	0	39	2	0
Queue Length 95th (ft)	#345	#143	#620	119	#39	16	0	#103	9	0
Internal Link Dist (ft)	250		280			220			326	
Turn Bay Length (ft)		90		185	50		140	100		185
Base Capacity (vph)	1046	89	2155	955	53	1591	595	85	1537	628
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	1.04	0.93	1.03	0.52	0.38	0.05	0.08	0.72	0.01	0.02

Intersection Summary

~ Volume exceeds capacity, queue is theoretically infinite.
Queue shown is maximum after two cycles.

95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.

dl Defacto Left Lane. Recode with 1 though lane as a left lane.

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	93	851	1	72	1938	435	17	32	79	53	12	11
Future Volume (vph)	93	851	1	72	1938	435	17	32	79	53	12	11
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		5.8		4.6	5.0	4.6	4.6	5.0	5.0	4.6	5.0	5.0
Lane Util. Factor		0.91		1.00	0.91	1.00	1.00	0.86	0.86	1.00	0.95	1.00
Frpb, ped/bikes		1.00		1.00	1.00	1.00	1.00	0.99	0.99	1.00	1.00	1.00
Flpb, ped/bikes		1.00		1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Frt		1.00		1.00	1.00	0.85	1.00	0.92	0.85	1.00	1.00	0.85
Flt Protected		1.00		0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (prot)		4801		1656	4940	1495	1081	4239	1280	1719	3610	1214
Flt Permitted		0.66		0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (perm)		3183		1656	4940	1495	1081	4239	1280	1719	3610	1214
Peak-hour factor, PHF	0.87	0.87	0.87	0.87	0.87	0.87	0.87	0.87	0.87	0.87	0.87	0.87
Adj. Flow (vph)	107	978	1	83	2228	500	20	37	91	61	14	13
RTOR Reduction (vph)	0	0	0	0	0	175	0	28	28	0	0	8
Lane Group Flow (vph)	0	1086	0	83	2228	325	20	55	17	61	14	5
Confl. Peds. (#/hr)									2	2		
Heavy Vehicles (%)	3%	8%	0%	9%	5%	8%	67%	3%	7%	5%	0%	33%
Turn Type	pm+pt	NA		Prot	NA	pm+ov	Prot	NA	Perm	Prot	NA	Perm
Protected Phases	7	4		3	8	1	5	2		1	6	
Permitted Phases	4					8			2			6
Actuated Green, G (s)		33.0		5.4	43.8	48.8	2.0	39.8	39.8	5.0	42.8	42.8
Effective Green, g (s)		33.0		5.4	43.8	48.8	2.0	39.8	39.8	5.0	42.8	42.8
Actuated g/C Ratio		0.32		0.05	0.42	0.47	0.02	0.39	0.39	0.05	0.41	0.41
Clearance Time (s)		5.8		4.6	5.0	4.6	4.6	5.0	5.0	4.6	5.0	5.0
Vehicle Extension (s)		3.0		3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0
Lane Grp Cap (vph)		1017		86	2096	706	20	1634	493	83	1497	503
v/s Ratio Prot				0.05	c0.45	0.02	0.02	0.01		c0.04	0.00	
v/s Ratio Perm		0.34				0.20			c0.01			c0.00
v/c Ratio		1.47dl		0.97	1.06	0.46	1.00	0.03	0.04	0.73	0.01	0.01
Uniform Delay, d1		35.1		48.8	29.7	18.3	50.6	19.7	19.7	48.4	17.7	17.8
Progression Factor		1.00		1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Incremental Delay, d2		48.2		84.7	38.9	0.5	201.2	0.0	0.1	28.3	0.0	0.0
Delay (s)		83.3		133.5	68.6	18.8	251.8	19.8	19.9	76.7	17.8	17.8
Level of Service		F		F	E	B	F	B	B	E	B	B
Approach Delay (s)		83.3			61.7			51.2			58.6	
Approach LOS		F			E			D			E	

Intersection Summary			
HCM 2000 Control Delay	66.9	HCM 2000 Level of Service	E
HCM 2000 Volume to Capacity ratio	0.61		
Actuated Cycle Length (s)	103.2	Sum of lost time (s)	20.0
Intersection Capacity Utilization	99.8%	ICU Level of Service	F
Analysis Period (min)	15		

dl Defacto Left Lane. Recode with 1 though lane as a left lane.
c Critical Lane Group

HCM Unsignalized Intersection Capacity Analysis
1: Doolittle Dr & West Project Dwy

12/04/2023

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (veh/h)	13	10	1158	17	10	1622
Future Volume (Veh/h)	13	10	1158	17	10	1622
Sign Control	Stop		Free			Free
Grade	0%		0%			0%
Peak Hour Factor	0.93	0.93	0.93	0.93	0.93	0.93
Hourly flow rate (vph)	14	11	1245	18	11	1744
Pedestrians	4					
Lane Width (ft)	12.0					
Walking Speed (ft/s)	3.5					
Percent Blockage	0					
Right turn flare (veh)						
Median type			TWLTL			TWLTL
Median storage veh)			2			2
Upstream signal (ft)			750			512
pX, platoon unblocked	0.50	0.92			0.92	
vC, conflicting volume	2152	636			1267	
vC1, stage 1 conf vol	1258					
vC2, stage 2 conf vol	894					
vCu, unblocked vol	635	438			1123	
tC, single (s)	6.8	6.9			4.1	
tC, 2 stage (s)	5.8					
tF (s)	3.5	3.3			2.2	
p0 queue free %	94	98			98	
cM capacity (veh/h)	250	526			579	

Direction, Lane #	WB 1	NB 1	NB 2	SB 1	SB 2	SB 3
Volume Total	25	830	433	11	872	872
Volume Left	14	0	0	11	0	0
Volume Right	11	0	18	0	0	0
cSH	325	1700	1700	579	1700	1700
Volume to Capacity	0.08	0.49	0.25	0.02	0.51	0.51
Queue Length 95th (ft)	6	0	0	1	0	0
Control Delay (s)	17.0	0.0	0.0	11.3	0.0	0.0
Lane LOS	C			B		
Approach Delay (s)	17.0	0.0		0.1		
Approach LOS	C					

Intersection Summary			
Average Delay	0.2		
Intersection Capacity Utilization	54.8%	ICU Level of Service	A
Analysis Period (min)	15		

Intersection	
Int Delay, s/veh	0.2

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Vol, veh/h	13	10	1158	17	10	1622
Future Vol, veh/h	13	10	1158	17	10	1622
Conflicting Peds, #/hr	0	0	0	4	4	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	-	50	-
Veh in Median Storage, #	2	-	0	-	-	0
Grade, %	0	-	0	-	-	0
Peak Hour Factor	93	93	93	93	93	93
Heavy Vehicles, %	0	0	7	8	0	6
Mvmt Flow	14	11	1245	18	11	1744

Major/Minor	Minor1		Major1		Major2	
Conflicting Flow All	2152	636	0	0	1267	0
Stage 1	1258	-	-	-	-	-
Stage 2	894	-	-	-	-	-
Critical Hdwy	6.8	6.9	-	-	4.1	-
Critical Hdwy Stg 1	5.8	-	-	-	-	-
Critical Hdwy Stg 2	5.8	-	-	-	-	-
Follow-up Hdwy	3.5	3.3	-	-	2.2	-
Pot Cap-1 Maneuver	42	425	-	-	555	-
Stage 1	235	-	-	-	-	-
Stage 2	365	-	-	-	-	-
Platoon blocked, %			-	-		-
Mov Cap-1 Maneuver	41	423	-	-	553	-
Mov Cap-2 Maneuver	188	-	-	-	-	-
Stage 1	234	-	-	-	-	-
Stage 2	358	-	-	-	-	-

Approach	WB	NB	SB
HCM Control Delay, s	21.1	0	0.1
HCM LOS	C		

Minor Lane/Major Mvmt	NBT	NBR	WBLn1	SBL	SBT
Capacity (veh/h)	-	-	248	553	-
HCM Lane V/C Ratio	-	-	0.1	0.019	-
HCM Control Delay (s)	-	-	21.1	11.6	-
HCM Lane LOS	-	-	C	B	-
HCM 95th %tile Q(veh)	-	-	0.3	0.1	-

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Volume (veh/h)	42	0	0	42	24	13
Future Volume (Veh/h)	42	0	0	42	24	13
Sign Control		Stop	Stop		Free	
Grade		0%	0%		0%	
Peak Hour Factor	0.89	0.89	0.89	0.89	0.89	0.89
Hourly flow rate (vph)	47	0	0	47	27	15
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type					None	
Median storage veh)						
Upstream signal (ft)						
pX, platoon unblocked						
vC, conflicting volume	108	62	69	0	0	
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	108	62	69	0	0	
tC, single (s)	7.1	6.5	6.5	6.2	4.1	
tC, 2 stage (s)						
tF (s)	3.5	4.0	4.0	3.3	2.2	
p0 queue free %	94	100	100	96	98	
cM capacity (veh/h)	820	814	806	1082	1617	

Direction, Lane #	EB 1	WB 1	SB 1
Volume Total	47	47	42
Volume Left	47	0	27
Volume Right	0	47	15
cSH	820	1082	1617
Volume to Capacity	0.06	0.04	0.02
Queue Length 95th (ft)	5	3	1
Control Delay (s)	9.7	8.5	4.7
Lane LOS	A	A	A
Approach Delay (s)	9.7	8.5	4.7
Approach LOS	A	A	

Intersection Summary			
Average Delay	7.7		
Intersection Capacity Utilization	19.0%	ICU Level of Service	A
Analysis Period (min)	15		

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Volume (veh/h)	152	3	23	225	46	36
Future Volume (Veh/h)	152	3	23	225	46	36
Sign Control	Free			Free	Stop	
Grade	0%			0%	0%	
Peak Hour Factor	0.89	0.89	0.89	0.89	0.89	0.89
Hourly flow rate (vph)	171	3	26	253	52	40
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type	None			None		
Median storage veh)						
Upstream signal (ft)	426					
pX, platoon unblocked						
vC, conflicting volume			174		478	172
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol			174		478	172
tC, single (s)			4.1		6.4	6.2
tC, 2 stage (s)						
tF (s)			2.2		3.5	3.3
p0 queue free %			98		90	95
cM capacity (veh/h)			1391		533	871

Direction, Lane #	EB 1	WB 1	NB 1
Volume Total	174	279	92
Volume Left	0	26	52
Volume Right	3	0	40
cSH	1700	1391	641
Volume to Capacity	0.10	0.02	0.14
Queue Length 95th (ft)	0	1	12
Control Delay (s)	0.0	0.9	11.6
Lane LOS		A	B
Approach Delay (s)	0.0	0.9	11.6
Approach LOS			B

Intersection Summary			
Average Delay	2.4		
Intersection Capacity Utilization	36.0%	ICU Level of Service	A
Analysis Period (min)	15		

Intersection	
Int Delay, s/veh	2.3

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Vol, veh/h	152	3	23	225	46	36
Future Vol, veh/h	152	3	23	225	46	36
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	0	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	89	89	89	89	89	89
Heavy Vehicles, %	26	24	4	6	4	2
Mvmt Flow	171	3	26	253	52	40

Major/Minor	Major1		Major2		Minor1	
Conflicting Flow All	0	0	174	0	478	173
Stage 1	-	-	-	-	173	-
Stage 2	-	-	-	-	305	-
Critical Hdwy	-	-	4.14	-	6.44	6.22
Critical Hdwy Stg 1	-	-	-	-	5.44	-
Critical Hdwy Stg 2	-	-	-	-	5.44	-
Follow-up Hdwy	-	-	2.236	-	3.536	3.318
Pot Cap-1 Maneuver	-	-	1391	-	542	871
Stage 1	-	-	-	-	852	-
Stage 2	-	-	-	-	743	-
Platoon blocked, %	-	-		-		
Mov Cap-1 Maneuver	-	-	1391	-	530	871
Mov Cap-2 Maneuver	-	-	-	-	530	-
Stage 1	-	-	-	-	852	-
Stage 2	-	-	-	-	727	-

Approach	EB	WB	NB
HCM Control Delay, s	0	0.7	11.6
HCM LOS			B

Minor Lane/Major Mvmt	NBLn1	EBT	EBR	WBL	WBT
Capacity (veh/h)	640	-	-	1391	-
HCM Lane V/C Ratio	0.144	-	-	0.019	-
HCM Control Delay (s)	11.6	-	-	7.6	0
HCM Lane LOS	B	-	-	A	A
HCM 95th %tile Q(veh)	0.5	-	-	0.1	-

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (vph)	224	90	1115	157	16	1681
Future Volume (vph)	224	90	1115	157	16	1681
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost time (s)	5.2	5.2	5.8	5.8	4.6	5.8
Lane Util. Factor	1.00	1.00	0.95	1.00	1.00	0.95
Frpb, ped/bikes	1.00	1.00	1.00	0.98	1.00	1.00
Flpb, ped/bikes	1.00	1.00	1.00	1.00	1.00	1.00
Frt	1.00	0.85	1.00	0.85	1.00	1.00
Flt Protected	0.95	1.00	1.00	1.00	0.95	1.00
Satd. Flow (prot)	1641	1538	3505	1260	1504	3374
Flt Permitted	0.95	1.00	1.00	1.00	0.95	1.00
Satd. Flow (perm)	1641	1538	3505	1260	1504	3374
Peak-hour factor, PHF	0.84	0.84	0.84	0.84	0.84	0.84
Adj. Flow (vph)	267	107	1327	187	19	2001
RTOR Reduction (vph)	0	82	0	94	0	0
Lane Group Flow (vph)	267	25	1327	93	19	2001
Confl. Peds. (#/hr)				1	1	
Confl. Bikes (#/hr)				5		
Heavy Vehicles (%)	10%	5%	3%	25%	20%	7%
Turn Type	Perm	Perm	NA	Perm	Prot	NA
Protected Phases			2		1	6
Permitted Phases	8	8		2		
Actuated Green, G (s)	14.0	14.0	29.9	29.9	0.9	35.4
Effective Green, g (s)	14.0	14.0	29.9	29.9	0.9	35.4
Actuated g/C Ratio	0.23	0.23	0.50	0.50	0.01	0.59
Clearance Time (s)	5.2	5.2	5.8	5.8	4.6	5.8
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0	3.0
Lane Grp Cap (vph)	380	356	1735	623	22	1977
v/s Ratio Prot			0.38		0.01	c0.59
v/s Ratio Perm	c0.16	0.02		0.07		
v/c Ratio	0.70	0.07	0.76	0.15	0.86	1.01
Uniform Delay, d1	21.3	18.1	12.4	8.3	29.7	12.5
Progression Factor	1.00	1.00	1.00	1.00	1.00	1.00
Incremental Delay, d2	5.8	0.1	3.3	0.5	129.4	23.3
Delay (s)	27.1	18.2	15.7	8.8	159.1	35.8
Level of Service	C	B	B	A	F	D
Approach Delay (s)	24.5		14.8			36.9
Approach LOS	C		B			D

Intersection Summary			
HCM 2000 Control Delay	27.2	HCM 2000 Level of Service	C
HCM 2000 Volume to Capacity ratio	1.02		
Actuated Cycle Length (s)	60.4	Sum of lost time (s)	15.6
Intersection Capacity Utilization	68.0%	ICU Level of Service	C
Analysis Period (min)	15		
c Critical Lane Group			

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	66	144	51	327	125	812	18	461	270	913	1072	49
Future Volume (vph)	66	144	51	327	125	812	18	461	270	913	1072	49
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.6	5.2		4.6	5.2	4.6	4.6	5.4	4.6	4.6	5.8	
Lane Util. Factor	1.00	0.95		0.97	1.00	1.00	1.00	0.91	1.00	0.97	0.95	
Frpb, ped/bikes	1.00	1.00		1.00	1.00	1.00	1.00	1.00	0.99	1.00	1.00	
Flpb, ped/bikes	1.00	1.00		1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	
Frt	1.00	0.96		1.00	1.00	0.85	1.00	1.00	0.85	1.00	0.99	
Flt Protected	0.95	1.00		0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	
Satd. Flow (prot)	1188	2894		3045	1226	1568	1543	5036	1474	3335	3284	
Flt Permitted	0.95	1.00		0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	
Satd. Flow (perm)	1188	2894		3045	1226	1568	1543	5036	1474	3335	3284	
Peak-hour factor, PHF	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88
Adj. Flow (vph)	75	164	58	372	142	923	20	524	307	1038	1218	56
RTOR Reduction (vph)	0	33	0	0	0	124	0	0	176	0	2	0
Lane Group Flow (vph)	75	189	0	372	142	799	20	524	131	1038	1272	0
Confl. Peds. (#/hr)			5	5					2	2		
Confl. Bikes (#/hr)			1						5			1
Heavy Vehicles (%)	52%	18%	23%	15%	55%	3%	17%	3%	8%	5%	7%	55%
Turn Type	Prot	NA		Prot	NA	pm+ov	Prot	NA	pm+ov	Prot	NA	
Protected Phases	7	4		3	8	1	5	2	3	1	6	
Permitted Phases						8			2			
Actuated Green, G (s)	9.9	24.4		6.5	21.0	42.6	2.3	42.2	48.7	21.6	61.1	
Effective Green, g (s)	9.9	24.4		6.5	21.0	42.6	2.3	42.2	48.7	21.6	61.1	
Actuated g/C Ratio	0.09	0.21		0.06	0.18	0.37	0.02	0.37	0.43	0.19	0.53	
Clearance Time (s)	4.6	5.2		4.6	5.2	4.6	4.6	5.4	4.6	4.6	5.8	
Vehicle Extension (s)	3.0	3.0		3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	
Lane Grp Cap (vph)	102	616		172	224	583	30	1856	626	629	1752	
v/s Ratio Prot	0.06	c0.07		c0.12	0.12	c0.26	0.01	0.10	0.01	c0.31	c0.39	
v/s Ratio Perm						0.25			0.08			
v/c Ratio	0.74	0.31		2.16	0.63	1.37	0.67	0.28	0.21	1.65	0.73	
Uniform Delay, d1	51.0	37.9		54.0	43.2	36.0	55.7	25.5	20.7	46.5	20.3	
Progression Factor	1.00	1.00		1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	
Incremental Delay, d2	23.8	0.3		542.0	5.8	177.2	44.1	0.4	0.2	299.7	2.7	
Delay (s)	74.8	38.2		596.0	49.0	213.2	99.9	25.9	20.9	346.1	23.0	
Level of Service	E	D		F	D	F	F	C	C	F	C	
Approach Delay (s)		47.5			296.1			25.8			168.1	
Approach LOS		D			F			C			F	

Intersection Summary			
HCM 2000 Control Delay	173.6	HCM 2000 Level of Service	F
HCM 2000 Volume to Capacity ratio	1.17		
Actuated Cycle Length (s)	114.5	Sum of lost time (s)	20.2
Intersection Capacity Utilization	99.1%	ICU Level of Service	F
Analysis Period (min)	15		
c Critical Lane Group			

HCM 6th Signalized Intersection Summary
5: Doolittle Dr & Davis St

12/04/2023

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	66	144	51	327	125	812	18	461	270	913	1072	49
Future Volume (veh/h)	66	144	51	327	125	812	18	461	270	913	1072	49
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		0.98	1.00		0.99	1.00		0.98	1.00		0.98
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1129	1633	1559	1678	1085	1856	1648	1856	1781	1826	1796	1085
Adj Flow Rate, veh/h	75	164	58	372	142	923	20	524	307	1038	1218	56
Peak Hour Factor	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88
Percent Heavy Veh, %	52	18	23	15	55	3	17	3	8	5	7	55
Cap, veh/h	85	579	197	173	252	657	32	1651	568	629	1632	75
Arrive On Green	0.08	0.26	0.26	0.06	0.23	0.23	0.02	0.33	0.33	0.19	0.49	0.49
Sat Flow, veh/h	1076	2261	768	3100	1085	1562	1570	5066	1484	3374	3319	152
Grp Volume(v), veh/h	75	110	112	372	142	923	20	524	307	1038	626	648
Grp Sat Flow(s),veh/h/ln	1076	1552	1478	1550	1085	1562	1570	1689	1484	1687	1706	1765
Q Serve(g_s), s	7.9	6.5	7.0	6.4	13.3	26.7	1.5	8.9	18.5	21.4	33.8	33.9
Cycle Q Clear(g_c), s	7.9	6.5	7.0	6.4	13.3	26.7	1.5	8.9	18.5	21.4	33.8	33.9
Prop In Lane	1.00		0.52	1.00		1.00	1.00		1.00	1.00		0.09
Lane Grp Cap(c), veh/h	85	397	378	173	252	657	32	1651	568	629	839	868
V/C Ratio(X)	0.88	0.28	0.29	2.15	0.56	1.41	0.62	0.32	0.54	1.65	0.75	0.75
Avail Cap(c_a), veh/h	138	473	451	173	252	657	86	1651	568	629	839	868
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	52.3	34.2	34.4	54.2	38.9	33.4	55.8	29.1	27.7	46.7	23.4	23.4
Incr Delay (d2), s/veh	29.3	0.4	0.4	537.2	2.8	191.5	17.9	0.5	3.7	299.6	6.0	5.8
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	2.8	2.5	2.6	15.4	3.7	52.4	0.7	3.6	7.0	34.9	14.1	14.6
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	81.6	34.6	34.8	591.4	41.7	224.9	73.6	29.6	31.3	346.3	29.4	29.2
LnGrp LOS	F	C	C	F	D	F	E	C	C	F	C	C
Approach Vol, veh/h		297			1437			851			2312	
Approach Delay, s/veh		46.5			301.7			31.3			171.6	
Approach LOS		D			F			C			F	

Timer - Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	26.0	43.2	11.0	34.6	7.0	62.2	13.7	31.9
Change Period (Y+Rc), s	4.6	* 5.8	4.6	5.2	4.6	5.8	4.6	5.2
Max Green Setting (Gmax), s	21.4	* 37	6.4	35.0	6.3	52.1	14.7	26.7
Max Q Clear Time (g_c+I1), s	23.4	20.5	8.4	9.0	3.5	35.9	9.9	28.7
Green Ext Time (p_c), s	0.0	4.0	0.0	1.3	0.0	7.5	0.1	0.0

Intersection Summary	
HCM 6th Ctrl Delay	177.8
HCM 6th LOS	F

Notes

User approved pedestrian interval to be less than phase max green.

* HCM 6th computational engine requires equal clearance times for the phases crossing the barrier.

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	1	1554	687	0	1425	478	0	0	0	667	0	621
Future Volume (vph)	1	1554	687	0	1425	478	0	0	0	667	0	621
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		5.0	5.0		5.0	5.0				5.8	5.8	5.8
Lane Util. Factor		0.91	1.00		0.95	1.00				0.95	0.91	0.95
Frpb, ped/bikes		1.00	0.98		1.00	0.98				1.00	1.00	1.00
Flpb, ped/bikes		1.00	1.00		1.00	1.00				1.00	1.00	1.00
Frt		1.00	0.85		1.00	0.85				1.00	0.93	0.85
Flt Protected		1.00	1.00		1.00	1.00				0.95	0.98	1.00
Satd. Flow (prot)		5085	1515		3505	1563				1698	1510	1447
Flt Permitted		0.93	1.00		1.00	1.00				0.95	0.98	1.00
Satd. Flow (perm)		4725	1515		3505	1563				1698	1510	1447
Peak-hour factor, PHF	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97
Adj. Flow (vph)	1	1602	708	0	1469	493	0	0	0	688	0	640
RTOR Reduction (vph)	0	0	401	0	0	279	0	0	0	0	22	22
Lane Group Flow (vph)	0	1603	307	0	1469	214	0	0	0	461	423	400
Confl. Peds. (#/hr)	1		4	4		1						
Confl. Bikes (#/hr)						1						
Heavy Vehicles (%)	0%	2%	4%	0%	3%	1%	0%	0%	0%	1%	0%	6%
Turn Type	Perm	NA	Perm		NA	Perm				Split	NA	Perm
Protected Phases		2			6					4	4	
Permitted Phases	2		2			6						4
Actuated Green, G (s)		26.0	26.0		26.0	26.0				23.2	23.2	23.2
Effective Green, g (s)		26.0	26.0		26.0	26.0				23.2	23.2	23.2
Actuated g/C Ratio		0.43	0.43		0.43	0.43				0.39	0.39	0.39
Clearance Time (s)		5.0	5.0		5.0	5.0				5.8	5.8	5.8
Vehicle Extension (s)		3.0	3.0		3.0	3.0				3.0	3.0	3.0
Lane Grp Cap (vph)		2047	656		1518	677				656	583	559
v/s Ratio Prot					c0.42					0.27	c0.28	
v/s Ratio Perm		0.34	0.20			0.14						0.28
v/c Ratio		0.78	0.47		0.97	0.32				0.70	0.73	0.72
Uniform Delay, d1		14.6	12.1		16.6	11.2				15.5	15.7	15.6
Progression Factor		1.00	1.00		1.00	1.00				1.00	1.00	1.00
Incremental Delay, d2		2.0	0.5		15.9	0.3				6.2	7.7	7.6
Delay (s)		16.6	12.6		32.5	11.4				21.7	23.4	23.2
Level of Service		B	B		C	B				C	C	C
Approach Delay (s)		15.4			27.2			0.0			22.7	
Approach LOS		B			C			A			C	

Intersection Summary			
HCM 2000 Control Delay	21.3	HCM 2000 Level of Service	C
HCM 2000 Volume to Capacity ratio	0.85		
Actuated Cycle Length (s)	60.0	Sum of lost time (s)	10.8
Intersection Capacity Utilization	76.8%	ICU Level of Service	D
Analysis Period (min)	15		
c Critical Lane Group			

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	0	1555	664	0	1062	406	777	0	517	0	0	0
Future Volume (vph)	0	1555	664	0	1062	406	777	0	517	0	0	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		5.0	4.0		5.0	5.0	5.8	5.8	5.8			
Lane Util. Factor		0.95	1.00		0.95	1.00	0.95	0.91	0.95			
Frpb, ped/bikes		1.00	0.98		1.00	0.98	1.00	1.00	1.00			
Flpb, ped/bikes		1.00	1.00		1.00	1.00	1.00	1.00	1.00			
Frt		1.00	0.85		1.00	0.85	1.00	0.96	0.85			
Flt Protected		1.00	1.00		1.00	1.00	0.95	0.96	1.00			
Satd. Flow (prot)		3539	1547		3574	1550	1618	1531	1519			
Flt Permitted		1.00	1.00		1.00	1.00	0.95	0.96	1.00			
Satd. Flow (perm)		3539	1547		3574	1550	1618	1531	1519			
Peak-hour factor, PHF	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98
Adj. Flow (vph)	0	1587	678	0	1084	414	793	0	528	0	0	0
RTOR Reduction (vph)	0	0	0	0	0	239	0	22	22	0	0	0
Lane Group Flow (vph)	0	1587	678	0	1084	175	460	427	390	0	0	0
Confl. Peds. (#/hr)	1		5	5		1						
Confl. Bikes (#/hr)			1									
Heavy Vehicles (%)	0%	2%	2%	0%	1%	2%	6%	0%	1%	0%	0%	0%
Turn Type		NA	Free		NA	Perm	Perm	NA	Perm			
Protected Phases		2			6			8				
Permitted Phases			Free			6	8		8			
Actuated Green, G (s)		25.6	60.6		25.6	25.6	24.2	24.2	24.2			
Effective Green, g (s)		25.6	60.6		25.6	25.6	24.2	24.2	24.2			
Actuated g/C Ratio		0.42	1.00		0.42	0.42	0.40	0.40	0.40			
Clearance Time (s)		5.0			5.0	5.0	5.8	5.8	5.8			
Vehicle Extension (s)		3.0			3.0	3.0	3.0	3.0	3.0			
Lane Grp Cap (vph)		1495	1547		1509	654	646	611	606			
v/s Ratio Prot		c0.45			0.30							
v/s Ratio Perm			0.44			0.11	c0.28	0.28	0.26			
v/c Ratio		1.06	0.44		0.72	0.27	0.71	0.70	0.64			
Uniform Delay, d1		17.5	0.0		14.5	11.4	15.3	15.2	14.7			
Progression Factor		1.00	1.00		1.00	1.00	1.00	1.00	1.00			
Incremental Delay, d2		41.5	0.9		1.7	0.2	6.6	6.5	5.2			
Delay (s)		59.0	0.9		16.2	11.6	21.8	21.7	19.9			
Level of Service		E	A		B	B	C	C	B			
Approach Delay (s)		41.6			14.9			21.2			0.0	
Approach LOS		D			B			C			A	

Intersection Summary			
HCM 2000 Control Delay	28.5	HCM 2000 Level of Service	C
HCM 2000 Volume to Capacity ratio	0.89		
Actuated Cycle Length (s)	60.6	Sum of lost time (s)	10.8
Intersection Capacity Utilization	78.8%	ICU Level of Service	D
Analysis Period (min)	15		
c Critical Lane Group			

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	81	2250	8	86	1581	282	14	78	151	115	30	9
Future Volume (vph)	81	2250	8	86	1581	282	14	78	151	115	30	9
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		5.8		4.6	5.0	4.6	4.6	5.0	5.0	4.6	5.0	5.0
Lane Util. Factor		0.91		1.00	0.91	1.00	1.00	0.86	0.86	1.00	0.95	1.00
Frpb, ped/bikes		1.00		1.00	1.00	1.00	1.00	0.99	0.99	1.00	1.00	0.99
Flpb, ped/bikes		1.00		1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Frt		1.00		1.00	1.00	0.85	1.00	0.93	0.85	1.00	1.00	0.85
Flt Protected		1.00		0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (prot)		4843		1752	4715	1482	1253	4235	1318	1770	3505	1274
Flt Permitted		0.64		0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (perm)		3085		1752	4715	1482	1253	4235	1318	1770	3505	1274
Peak-hour factor, PHF	0.86	0.86	0.86	0.86	0.86	0.86	0.86	0.86	0.86	0.86	0.86	0.86
Adj. Flow (vph)	94	2616	9	100	1838	328	16	91	176	134	35	10
RTOR Reduction (vph)	0	1	0	0	0	139	0	54	54	0	0	6
Lane Group Flow (vph)	0	2718	0	100	1838	189	16	125	34	134	35	4
Confl. Peds. (#/hr)							2		1	1		2
Heavy Vehicles (%)	4%	7%	0%	3%	10%	9%	44%	9%	4%	2%	3%	25%
Turn Type	pm+pt	NA		Prot	NA	pm+ov	Prot	NA	Perm	Prot	NA	Perm
Protected Phases	7	4		3	8	1	5	2		1	6	
Permitted Phases	4					8			2			6
Actuated Green, G (s)		33.0		5.6	44.0	49.2	2.0	39.8	39.8	5.2	43.0	43.0
Effective Green, g (s)		33.0		5.6	44.0	49.2	2.0	39.8	39.8	5.2	43.0	43.0
Actuated g/C Ratio		0.32		0.05	0.42	0.47	0.02	0.38	0.38	0.05	0.42	0.42
Clearance Time (s)		5.8		4.6	5.0	4.6	4.6	5.0	5.0	4.6	5.0	5.0
Vehicle Extension (s)		3.0		3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0
Lane Grp Cap (vph)		982		94	2002	703	24	1626	506	88	1454	528
v/s Ratio Prot				0.06	c0.39	0.01	0.01	c0.03		c0.08	c0.01	
v/s Ratio Perm		c0.88				0.11			0.03			0.00
v/c Ratio		2.77		1.06	0.92	0.27	0.67	0.08	0.07	1.52	0.02	0.01
Uniform Delay, d1		35.3		49.0	28.1	16.4	50.5	20.2	20.2	49.2	17.9	17.8
Progression Factor		1.00		1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Incremental Delay, d2		798.5		111.2	7.2	0.2	52.8	0.1	0.3	284.5	0.0	0.0
Delay (s)		833.8		160.2	35.3	16.6	103.3	20.3	20.4	333.7	17.9	17.8
Level of Service		F		F	D	B	F	C	C	F	B	B
Approach Delay (s)		833.8			38.1			25.0			254.3	
Approach LOS		F			D			C			F	

Intersection Summary			
HCM 2000 Control Delay	441.7	HCM 2000 Level of Service	F
HCM 2000 Volume to Capacity ratio	1.29		
Actuated Cycle Length (s)	103.6	Sum of lost time (s)	20.0
Intersection Capacity Utilization	130.0%	ICU Level of Service	H
Analysis Period (min)	15		

c Critical Lane Group

HCM Signalized Intersection Capacity Analysis
5: Doolittle Dr & Davis St

12/04/2023

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	55	208	46	280	155	1023	56	926	448	757	345	58
Future Volume (vph)	55	208	46	280	155	1023	56	926	448	757	345	58
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.6	5.2		4.6	5.2	4.6	4.6	5.4	4.6	4.6	5.8	
Lane Util. Factor	1.00	0.95		0.97	1.00	1.00	1.00	0.91	1.00	0.97	0.95	
Frpb, ped/bikes	1.00	1.00		1.00	1.00	1.00	1.00	1.00	0.99	1.00	1.00	
Flpb, ped/bikes	1.00	1.00		1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	
Frt	1.00	0.97		1.00	1.00	0.85	1.00	1.00	0.85	1.00	0.98	
Flt Protected	0.95	1.00		0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	
Satd. Flow (prot)	1211	2279		3019	1357	1495	1318	4673	1239	3242	2990	
Flt Permitted	0.95	1.00		0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	
Satd. Flow (perm)	1211	2279		3019	1357	1495	1318	4673	1239	3242	2990	
Peak-hour factor, PHF	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91
Adj. Flow (vph)	60	229	51	308	170	1124	62	1018	492	832	379	64
RTOR Reduction (vph)	0	15	0	0	0	71	0	0	132	0	8	0
Lane Group Flow (vph)	60	265	0	308	170	1053	62	1018	360	832	435	0
Confl. Peds. (#/hr)									1	1		
Confl. Bikes (#/hr)			1									3
Heavy Vehicles (%)	49%	55%	48%	16%	40%	8%	37%	11%	29%	8%	15%	34%
Turn Type	Prot	NA		Prot	NA	pm+ov	Prot	NA	pm+ov	Prot	NA	
Protected Phases	7	4		3	8	1	5	2	3	1	6	
Permitted Phases						8			2			
Actuated Green, G (s)	9.7	22.5		12.4	25.2	54.7	9.4	43.5	55.9	29.5	63.2	
Effective Green, g (s)	9.7	22.5		12.4	25.2	54.7	9.4	43.5	55.9	29.5	63.2	
Actuated g/C Ratio	0.08	0.18		0.10	0.20	0.43	0.07	0.34	0.44	0.23	0.49	
Clearance Time (s)	4.6	5.2		4.6	5.2	4.6	4.6	5.4	4.6	4.6	5.8	
Vehicle Extension (s)	3.0	3.0		3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	
Lane Grp Cap (vph)	91	401		293	267	640	97	1591	542	748	1479	
v/s Ratio Prot	0.05	0.12		c0.10	0.13	c0.38	0.05	0.22	c0.06	0.26	0.15	
v/s Ratio Perm						0.32			0.23			
v/c Ratio	0.66	0.66		1.05	0.64	1.65	0.64	0.64	0.67	1.11	0.29	
Uniform Delay, d1	57.4	49.0		57.6	47.0	36.5	57.5	35.5	28.5	49.1	19.1	
Progression Factor	1.00	1.00		1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	
Incremental Delay, d2	16.0	4.1		66.6	4.9	297.5	13.0	2.0	3.1	68.2	0.5	
Delay (s)	73.3	53.1		124.3	52.0	334.0	70.5	37.5	31.5	117.3	19.6	
Level of Service	E	D		F	D	F	E	D	C	F	B	
Approach Delay (s)		56.7			263.7			36.9			83.3	
Approach LOS		E			F			D			F	

Intersection Summary			
HCM 2000 Control Delay	126.6	HCM 2000 Level of Service	F
HCM 2000 Volume to Capacity ratio	1.22		
Actuated Cycle Length (s)	127.7	Sum of lost time (s)	20.2
Intersection Capacity Utilization	112.2%	ICU Level of Service	H
Analysis Period (min)	15		
c Critical Lane Group			

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	55	208	46	280	155	1023	56	926	448	757	345	58
Future Volume (veh/h)	55	208	46	280	155	1023	56	926	448	757	345	58
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		0.99	1.00		1.00	1.00		1.00	1.00		0.98
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1174	1085	1189	1663	1307	1781	1352	1737	1470	1781	1678	1396
Adj Flow Rate, veh/h	60	229	51	308	170	1124	62	1018	492	832	379	64
Peak Hour Factor	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91
Percent Heavy Veh, %	49	55	48	16	40	8	37	11	29	8	15	34
Cap, veh/h	68	418	91	274	362	737	73	1446	491	696	1251	209
Arrive On Green	0.06	0.25	0.25	0.09	0.28	0.28	0.06	0.31	0.31	0.21	0.46	0.46
Sat Flow, veh/h	1118	1678	366	3072	1307	1510	1287	4742	1245	3291	2722	455
Grp Volume(v), veh/h	60	139	141	308	170	1124	62	1018	492	832	220	223
Grp Sat Flow(s),veh/h/ln	1118	1031	1013	1536	1307	1510	1287	1581	1245	1646	1594	1583
Q Serve(g_s), s	7.4	16.2	16.9	12.4	15.0	38.5	6.6	26.4	42.4	29.4	12.1	12.3
Cycle Q Clear(g_c), s	7.4	16.2	16.9	12.4	15.0	38.5	6.6	26.4	42.4	29.4	12.1	12.3
Prop In Lane	1.00		0.36	1.00		1.00	1.00		1.00	1.00		0.29
Lane Grp Cap(c), veh/h	68	257	252	274	362	737	73	1446	491	696	733	728
V/C Ratio(X)	0.88	0.54	0.56	1.12	0.47	1.52	0.85	0.70	1.00	1.20	0.30	0.31
Avail Cap(c_a), veh/h	120	304	299	274	362	737	130	1446	491	696	733	728
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	64.7	45.3	45.5	63.3	41.8	35.6	65.0	42.8	42.1	54.8	23.5	23.6
Incr Delay (d2), s/veh	27.2	1.8	1.9	91.9	0.9	242.8	22.5	2.9	41.2	101.6	1.1	1.1
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	2.6	4.3	4.4	8.3	4.9	73.7	2.6	10.4	22.1	21.8	4.7	4.8
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	91.9	47.1	47.5	155.2	42.7	278.4	87.5	45.6	83.4	156.4	24.6	24.7
LnGrp LOS	F	D	D	F	D	F	F	D	F	F	C	C
Approach Vol, veh/h		340			1602			1572			1275	
Approach Delay, s/veh		55.2			229.7			59.1			110.6	
Approach LOS		E			F			E			F	

Timer - Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	34.0	48.2	17.0	39.8	12.5	69.7	13.1	43.7
Change Period (Y+Rc), s	4.6	* 5.8	4.6	5.2	4.6	5.8	4.6	5.2
Max Green Setting (Gmax), s	29.4	* 42	12.4	41.0	14.0	57.4	14.9	38.5
Max Q Clear Time (g_c+I1), s	31.4	44.4	14.4	18.9	8.6	14.3	9.4	40.5
Green Ext Time (p_c), s	0.0	0.0	0.0	1.7	0.0	2.7	0.0	0.0

Intersection Summary	
HCM 6th Ctrl Delay	129.6
HCM 6th LOS	F

Notes

User approved pedestrian interval to be less than phase max green.

* HCM 6th computational engine requires equal clearance times for the phases crossing the barrier.

HCM Unsignalized Intersection Capacity Analysis
1: Doolittle Dr & West Project Dwy

12/04/2023

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (veh/h)	26	11	1124	101	29	1513
Future Volume (Veh/h)	26	11	1124	101	29	1513
Sign Control	Stop		Free			Free
Grade	0%		0%			0%
Peak Hour Factor	0.88	0.88	0.88	0.88	0.88	0.88
Hourly flow rate (vph)	30	12	1277	115	33	1719
Pedestrians	1					
Lane Width (ft)	12.0					
Walking Speed (ft/s)	3.5					
Percent Blockage	0					
Right turn flare (veh)						
Median type			TWLTL			TWLTL
Median storage veh)			2			2
Upstream signal (ft)			750			512
pX, platoon unblocked	0.88	0.84			0.84	
vC, conflicting volume	2261	697			1393	
vC1, stage 1 conf vol	1336					
vC2, stage 2 conf vol	926					
vCu, unblocked vol	1336	254			1084	
tC, single (s)	6.8	6.9			4.1	
tC, 2 stage (s)	5.8					
tF (s)	3.5	3.3			2.2	
p0 queue free %	88	98			94	
cM capacity (veh/h)	244	630			546	

Direction, Lane #	WB 1	NB 1	NB 2	SB 1	SB 2	SB 3
Volume Total	42	851	541	33	860	860
Volume Left	30	0	0	33	0	0
Volume Right	12	0	115	0	0	0
cSH	296	1700	1700	546	1700	1700
Volume to Capacity	0.14	0.50	0.32	0.06	0.51	0.51
Queue Length 95th (ft)	12	0	0	5	0	0
Control Delay (s)	19.2	0.0	0.0	12.0	0.0	0.0
Lane LOS	C			B		
Approach Delay (s)	19.2	0.0		0.2		
Approach LOS	C					

Intersection Summary			
Average Delay	0.4		
Intersection Capacity Utilization	51.8%	ICU Level of Service	A
Analysis Period (min)	15		

Intersection	
Int Delay, s/veh	0.5

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Vol, veh/h	26	11	1124	101	29	1513
Future Vol, veh/h	26	11	1124	101	29	1513
Conflicting Peds, #/hr	0	0	0	1	1	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	-	50	-
Veh in Median Storage, #	2	-	0	-	-	0
Grade, %	0	-	0	-	-	0
Peak Hour Factor	88	88	88	88	88	88
Heavy Vehicles, %	0	0	14	9	0	17
Mvmt Flow	30	13	1277	115	33	1719

Major/Minor	Minor1		Major1		Major2	
Conflicting Flow All	2262	697	0	0	1393	0
Stage 1	1336	-	-	-	-	-
Stage 2	926	-	-	-	-	-
Critical Hdwy	6.8	6.9	-	-	4.1	-
Critical Hdwy Stg 1	5.8	-	-	-	-	-
Critical Hdwy Stg 2	5.8	-	-	-	-	-
Follow-up Hdwy	3.5	3.3	-	-	2.2	-
Pot Cap-1 Maneuver	35	388	-	-	497	-
Stage 1	213	-	-	-	-	-
Stage 2	351	-	-	-	-	-
Platoon blocked, %			-	-		-
Mov Cap-1 Maneuver	33	388	-	-	497	-
Mov Cap-2 Maneuver	170	-	-	-	-	-
Stage 1	213	-	-	-	-	-
Stage 2	328	-	-	-	-	-

Approach	WB	NB	SB
HCM Control Delay, s	27.2	0	0.2
HCM LOS	D		

Minor Lane/Major Mvmt	NBT	NBR	WBLn1	SBL	SBT
Capacity (veh/h)	-	-	204	497	-
HCM Lane V/C Ratio	-	-	0.206	0.066	-
HCM Control Delay (s)	-	-	27.2	12.8	-
HCM Lane LOS	-	-	D	B	-
HCM 95th %tile Q(veh)	-	-	0.8	0.2	-

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Volume (veh/h)	40	0	0	18	64	91
Future Volume (Veh/h)	40	0	0	18	64	91
Sign Control		Stop	Stop		Free	
Grade		0%	0%		0%	
Peak Hour Factor	0.86	0.86	0.86	0.86	0.86	0.86
Hourly flow rate (vph)	47	0	0	21	74	106
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type					None	
Median storage veh)						
Upstream signal (ft)						
pX, platoon unblocked						
vC, conflicting volume	222	201	254	0	0	
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	222	201	254	0	0	
tC, single (s)	7.2	6.7	6.7	6.4	4.2	
tC, 2 stage (s)						
tF (s)	3.6	4.1	4.1	3.4	2.3	
p0 queue free %	93	100	100	98	95	
cM capacity (veh/h)	667	640	598	1048	1542	

Direction, Lane #	EB 1	WB 1	SB 1
Volume Total	47	21	180
Volume Left	47	0	74
Volume Right	0	21	106
cSH	667	1048	1542
Volume to Capacity	0.07	0.02	0.05
Queue Length 95th (ft)	6	2	4
Control Delay (s)	10.8	8.5	3.3
Lane LOS	B	A	A
Approach Delay (s)	10.8	8.5	3.3
Approach LOS	B	A	

Intersection Summary			
Average Delay	5.2		
Intersection Capacity Utilization	24.7%	ICU Level of Service	A
Analysis Period (min)	15		

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Volume (veh/h)	315	101	47	238	54	37
Future Volume (Veh/h)	315	101	47	238	54	37
Sign Control	Free			Free	Stop	
Grade	0%			0%	0%	
Peak Hour Factor	0.86	0.86	0.86	0.86	0.86	0.86
Hourly flow rate (vph)	366	117	55	277	63	43
Pedestrians				1		
Lane Width (ft)				12.0		
Walking Speed (ft/s)				3.5		
Percent Blockage				0		
Right turn flare (veh)						
Median type	None			None		
Median storage veh)						
Upstream signal (ft)	426					
pX, platoon unblocked						
vC, conflicting volume			483		812	426
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol			483		812	426
tC, single (s)			4.1		6.5	6.4
tC, 2 stage (s)						
tF (s)			2.2		3.6	3.5
p0 queue free %			95		80	93
cM capacity (veh/h)			1069		321	592

Direction, Lane #	EB 1	WB 1	NB 1
Volume Total	483	332	106
Volume Left	0	55	63
Volume Right	117	0	43
cSH	1700	1069	394
Volume to Capacity	0.28	0.05	0.27
Queue Length 95th (ft)	0	4	27
Control Delay (s)	0.0	1.9	17.5
Lane LOS		A	C
Approach Delay (s)	0.0	1.9	17.5
Approach LOS			C

Intersection Summary			
Average Delay	2.7		
Intersection Capacity Utilization	53.4%	ICU Level of Service	A
Analysis Period (min)	15		

Intersection	
Int Delay, s/veh	2.5

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Vol, veh/h	315	101	47	238	54	37
Future Vol, veh/h	315	101	47	238	54	37
Conflicting Peds, #/hr	0	0	0	0	0	1
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	0	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	86	86	86	86	86	86
Heavy Vehicles, %	8	2	4	14	10	20
Mvmt Flow	366	117	55	277	63	43

Major/Minor	Major1		Major2		Minor1	
Conflicting Flow All	0	0	483	0	812	426
Stage 1	-	-	-	-	425	-
Stage 2	-	-	-	-	387	-
Critical Hdwy	-	-	4.14	-	6.5	6.4
Critical Hdwy Stg 1	-	-	-	-	5.5	-
Critical Hdwy Stg 2	-	-	-	-	5.5	-
Follow-up Hdwy	-	-	2.236	-	3.59	3.48
Pot Cap-1 Maneuver	-	-	1069	-	338	592
Stage 1	-	-	-	-	643	-
Stage 2	-	-	-	-	669	-
Platoon blocked, %	-	-		-		
Mov Cap-1 Maneuver	-	-	1069	-	317	591
Mov Cap-2 Maneuver	-	-	-	-	317	-
Stage 1	-	-	-	-	643	-
Stage 2	-	-	-	-	628	-

Approach	EB	WB	NB
HCM Control Delay, s	0	1.4	17.6
HCM LOS			C

Minor Lane/Major Mvmt	NBLn1	EBT	EBR	WBL	WBT
Capacity (veh/h)	391	-	-	1069	-
HCM Lane V/C Ratio	0.271	-	-	0.051	-
HCM Control Delay (s)	17.6	-	-	8.5	0
HCM Lane LOS	C	-	-	A	A
HCM 95th %tile Q(veh)	1.1	-	-	0.2	-

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (vph)	125	37	992	234	92	1092
Future Volume (vph)	125	37	992	234	92	1092
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost time (s)	5.2	5.2	5.8	5.8	4.6	5.8
Lane Util. Factor	1.00	1.00	0.95	1.00	1.00	0.95
Frpb, ped/bikes	1.00	1.00	1.00	0.98	1.00	1.00
Flpb, ped/bikes	1.00	1.00	1.00	1.00	1.00	1.00
Frt	1.00	0.85	1.00	0.85	1.00	1.00
Flt Protected	0.95	1.00	1.00	1.00	0.95	1.00
Satd. Flow (prot)	1467	1282	3312	1346	1687	3223
Flt Permitted	0.95	1.00	1.00	1.00	0.95	1.00
Satd. Flow (perm)	1467	1282	3312	1346	1687	3223
Peak-hour factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95
Adj. Flow (vph)	132	39	1044	246	97	1149
RTOR Reduction (vph)	0	31	0	127	0	0
Lane Group Flow (vph)	132	8	1044	119	97	1149
Confl. Peds. (#/hr)	1			2		
Confl. Bikes (#/hr)				3		
Heavy Vehicles (%)	23%	26%	9%	17%	7%	12%
Turn Type	Perm	Perm	NA	Perm	Prot	NA
Protected Phases			2		1	6
Permitted Phases	8	8		2		
Actuated Green, G (s)	11.9	11.9	29.6	29.6	4.3	38.5
Effective Green, g (s)	11.9	11.9	29.6	29.6	4.3	38.5
Actuated g/C Ratio	0.19	0.19	0.48	0.48	0.07	0.63
Clearance Time (s)	5.2	5.2	5.8	5.8	4.6	5.8
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0	3.0
Lane Grp Cap (vph)	284	248	1596	648	118	2020
v/s Ratio Prot			c0.32		0.06	c0.36
v/s Ratio Perm	c0.09	0.01		0.09		
v/c Ratio	0.46	0.03	0.65	0.18	0.82	0.57
Uniform Delay, d1	21.9	20.1	12.0	9.0	28.2	6.6
Progression Factor	1.00	1.00	1.00	1.00	1.00	1.00
Incremental Delay, d2	1.2	0.1	2.1	0.6	34.9	1.2
Delay (s)	23.1	20.1	14.1	9.7	63.1	7.8
Level of Service	C	C	B	A	E	A
Approach Delay (s)	22.4		13.3			12.1
Approach LOS	C		B			B

Intersection Summary			
HCM 2000 Control Delay	13.3	HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio	0.62		
Actuated Cycle Length (s)	61.4	Sum of lost time (s)	15.6
Intersection Capacity Utilization	53.9%	ICU Level of Service	A
Analysis Period (min)	15		
c Critical Lane Group			

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	55	208	46	280	155	1023	56	926	448	757	345	58
Future Volume (vph)	55	208	46	280	155	1023	56	926	448	757	345	58
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.6	5.2		4.6	5.2	4.6	4.6	5.4	4.6	4.6	5.8	
Lane Util. Factor	1.00	0.95		0.97	1.00	1.00	1.00	0.91	1.00	0.97	0.95	
Frpb, ped/bikes	1.00	1.00		1.00	1.00	1.00	1.00	1.00	0.99	1.00	1.00	
Flpb, ped/bikes	1.00	1.00		1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	
Frt	1.00	0.97		1.00	1.00	0.85	1.00	1.00	0.85	1.00	0.98	
Flt Protected	0.95	1.00		0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	
Satd. Flow (prot)	1211	2279		3019	1357	1495	1318	4673	1238	3242	2990	
Flt Permitted	0.95	1.00		0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	
Satd. Flow (perm)	1211	2279		3019	1357	1495	1318	4673	1238	3242	2990	
Peak-hour factor, PHF	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91
Adj. Flow (vph)	60	229	51	308	170	1124	62	1018	492	832	379	64
RTOR Reduction (vph)	0	17	0	0	0	82	0	0	151	0	10	0
Lane Group Flow (vph)	60	263	0	308	170	1042	62	1018	341	832	433	0
Confl. Peds. (#/hr)									1	1		
Confl. Bikes (#/hr)			1									3
Heavy Vehicles (%)	49%	55%	48%	16%	40%	8%	37%	11%	29%	8%	15%	34%
Turn Type	Prot	NA		Prot	NA	pm+ov	Prot	NA	pm+ov	Prot	NA	
Protected Phases	7	4		3	8	1	5	2	3	1	6	
Permitted Phases						8			2			
Actuated Green, G (s)	9.1	23.9		6.4	21.2	42.7	6.3	39.2	45.6	21.5	54.0	
Effective Green, g (s)	9.1	23.9		6.4	21.2	42.7	6.3	39.2	45.6	21.5	54.0	
Actuated g/C Ratio	0.08	0.22		0.06	0.19	0.39	0.06	0.35	0.41	0.19	0.49	
Clearance Time (s)	4.6	5.2		4.6	5.2	4.6	4.6	5.4	4.6	4.6	5.8	
Vehicle Extension (s)	3.0	3.0		3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	
Lane Grp Cap (vph)	99	491		174	259	576	74	1653	509	629	1457	
v/s Ratio Prot	0.05	c0.12		c0.10	0.13	c0.35	0.05	0.22	c0.04	0.26	0.14	
v/s Ratio Perm						0.35			0.24			
v/c Ratio	0.61	0.54		1.77	0.66	1.81	0.84	0.62	0.67	1.32	0.30	
Uniform Delay, d1	49.1	38.5		52.2	41.4	34.0	51.7	29.6	26.5	44.6	17.0	
Progression Factor	1.00	1.00		1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	
Incremental Delay, d2	10.1	1.1		368.9	5.9	370.6	53.0	1.7	3.5	156.1	0.5	
Delay (s)	59.2	39.6		421.1	47.3	404.7	104.7	31.3	30.0	200.8	17.5	
Level of Service	E	D		F	D	F	F	C	C	F	B	
Approach Delay (s)		43.1			369.9			33.8			137.1	
Approach LOS		D			F			C			F	

Intersection Summary			
HCM 2000 Control Delay	174.4	HCM 2000 Level of Service	F
HCM 2000 Volume to Capacity ratio	1.27		
Actuated Cycle Length (s)	110.8	Sum of lost time (s)	20.2
Intersection Capacity Utilization	112.2%	ICU Level of Service	H
Analysis Period (min)	15		
c Critical Lane Group			

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	55	208	46	280	155	1023	56	926	448	757	345	58
Future Volume (veh/h)	55	208	46	280	155	1023	56	926	448	757	345	58
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		0.99	1.00		1.00	1.00		1.00	1.00		0.98
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1174	1085	1189	1663	1307	1781	1352	1737	1470	1781	1678	1396
Adj Flow Rate, veh/h	60	229	51	308	170	1124	62	1018	492	832	379	64
Peak Hour Factor	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91
Percent Heavy Veh, %	49	55	48	16	40	8	37	11	29	8	15	34
Cap, veh/h	68	404	88	175	310	645	72	1576	485	626	1270	212
Arrive On Green	0.06	0.24	0.24	0.06	0.24	0.24	0.06	0.33	0.33	0.19	0.47	0.47
Sat Flow, veh/h	1118	1678	366	3072	1307	1510	1287	4742	1245	3291	2722	455
Grp Volume(v), veh/h	60	139	141	308	170	1124	62	1018	492	832	220	223
Grp Sat Flow(s),veh/h/ln	1118	1031	1013	1536	1307	1510	1287	1581	1245	1646	1594	1583
Q Serve(g_s), s	6.0	13.3	13.8	6.4	12.8	26.7	5.4	20.5	37.4	21.4	9.6	9.8
Cycle Q Clear(g_c), s	6.0	13.3	13.8	6.4	12.8	26.7	5.4	20.5	37.4	21.4	9.6	9.8
Prop In Lane	1.00		0.36	1.00		1.00	1.00		1.00	1.00		0.29
Lane Grp Cap(c), veh/h	68	248	244	175	310	645	72	1576	485	626	744	739
V/C Ratio(X)	0.89	0.56	0.58	1.76	0.55	1.74	0.86	0.65	1.02	1.33	0.30	0.30
Avail Cap(c_a), veh/h	146	321	315	175	310	645	72	1576	485	626	744	739
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	52.5	37.5	37.7	53.1	37.6	32.2	52.7	31.9	34.4	45.6	18.6	18.6
Incr Delay (d2), s/veh	28.7	2.0	2.2	365.4	2.0	340.1	60.9	2.1	44.7	158.9	1.0	1.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	2.2	3.5	3.6	11.3	4.2	77.6	2.9	7.8	18.7	22.3	3.6	3.7
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	81.1	39.4	39.8	418.5	39.6	372.3	113.6	34.0	79.1	204.4	19.6	19.7
LnGrp LOS	F	D	D	F	D	F	F	C	F	F	B	B
Approach Vol, veh/h		340			1602			1572			1275	
Approach Delay, s/veh		46.9			345.9			51.2			140.2	
Approach LOS		D			F			D			F	

Timer - Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	26.0	43.2	11.0	32.3	10.9	58.3	11.4	31.9
Change Period (Y+Rc), s	4.6	* 5.8	4.6	5.2	4.6	5.8	4.6	5.2
Max Green Setting (Gmax), s	21.4	* 37	6.4	35.0	6.3	52.1	14.7	26.7
Max Q Clear Time (g_c+I1), s	23.4	39.4	8.4	15.8	7.4	11.8	8.0	28.7
Green Ext Time (p_c), s	0.0	0.0	0.0	1.6	0.0	2.7	0.1	0.0

Intersection Summary	
HCM 6th Ctrl Delay	173.2
HCM 6th LOS	F

Notes

User approved pedestrian interval to be less than phase max green.

* HCM 6th computational engine requires equal clearance times for the phases crossing the barrier.

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	2	1240	537	0	1339	734	0	0	0	273	0	627
Future Volume (vph)	2	1240	537	0	1339	734	0	0	0	273	0	627
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		5.0	5.0		5.0	5.0				5.8	5.8	5.8
Lane Util. Factor		0.91	1.00		0.95	1.00				0.95	0.91	0.95
Frpb, ped/bikes		1.00	0.97		1.00	0.98				1.00	1.00	1.00
Flpb, ped/bikes		1.00	1.00		1.00	1.00				1.00	1.00	1.00
Frt		1.00	0.85		1.00	0.85				1.00	0.86	0.85
Flt Protected		1.00	1.00		1.00	1.00				0.95	1.00	1.00
Satd. Flow (prot)		4803	1355		3312	1488				1618	1389	1434
Flt Permitted		0.94	1.00		1.00	1.00				0.95	1.00	1.00
Satd. Flow (perm)		4507	1355		3312	1488				1618	1389	1434
Peak-hour factor, PHF	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97
Adj. Flow (vph)	2	1278	554	0	1380	757	0	0	0	281	0	646
RTOR Reduction (vph)	0	0	269	0	0	368	0	0	0	0	25	25
Lane Group Flow (vph)	0	1280	285	0	1380	389	0	0	0	253	313	311
Confl. Peds. (#/hr)	2		7	7		2						
Confl. Bikes (#/hr)						1						
Heavy Vehicles (%)	0%	8%	16%	0%	9%	6%	0%	0%	0%	6%	0%	7%
Turn Type	Perm	NA	Perm		NA	Perm				Split	NA	Perm
Protected Phases		2			6					4	4	
Permitted Phases	2		2			6						4
Actuated Green, G (s)		30.7	30.7		30.7	30.7				18.2	18.2	18.2
Effective Green, g (s)		30.7	30.7		30.7	30.7				18.2	18.2	18.2
Actuated g/C Ratio		0.51	0.51		0.51	0.51				0.30	0.30	0.30
Clearance Time (s)		5.0	5.0		5.0	5.0				5.8	5.8	5.8
Vehicle Extension (s)		3.0	3.0		3.0	3.0				3.0	3.0	3.0
Lane Grp Cap (vph)		2317	696		1703	765				493	423	437
v/s Ratio Prot					c0.42					0.16	c0.23	
v/s Ratio Perm		0.28	0.21			0.26						0.22
v/c Ratio		0.55	0.41		0.81	0.51				0.51	0.74	0.71
Uniform Delay, d1		9.8	8.9		12.1	9.5				17.1	18.6	18.4
Progression Factor		1.00	1.00		1.00	1.00				1.00	1.00	1.00
Incremental Delay, d2		0.3	0.4		3.0	0.5				3.8	11.1	9.5
Delay (s)		10.1	9.3		15.1	10.1				20.9	29.7	27.9
Level of Service		B	A		B	B				C	C	C
Approach Delay (s)		9.9			13.3			0.0			26.6	
Approach LOS		A			B			A			C	

Intersection Summary			
HCM 2000 Control Delay	14.6	HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio	0.78		
Actuated Cycle Length (s)	59.7	Sum of lost time (s)	10.8
Intersection Capacity Utilization	78.0%	ICU Level of Service	D
Analysis Period (min)	15		
c Critical Lane Group			

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	0	733	788	0	1292	592	553	0	316	0	0	0
Future Volume (vph)	0	733	788	0	1292	592	553	0	316	0	0	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		5.0	4.0		5.0	5.0	5.8	5.8	5.8			
Lane Util. Factor		0.95	1.00		0.95	1.00	0.95	0.91	0.95			
Frpb, ped/bikes		1.00	0.98		1.00	0.98	1.00	1.00	1.00			
Flpb, ped/bikes		1.00	1.00		1.00	1.00	1.00	1.00	1.00			
Frt		1.00	0.85		1.00	0.85	1.00	0.98	0.85			
Flt Protected		1.00	1.00		1.00	1.00	0.95	0.96	1.00			
Satd. Flow (prot)		3471	1420		3438	1533	1504	1437	1447			
Flt Permitted		1.00	1.00		1.00	1.00	0.95	0.96	1.00			
Satd. Flow (perm)		3471	1420		3438	1533	1504	1437	1447			
Peak-hour factor, PHF	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97
Adj. Flow (vph)	0	756	812	0	1332	610	570	0	326	0	0	0
RTOR Reduction (vph)	0	0	0	0	0	310	0	24	97	0	0	0
Lane Group Flow (vph)	0	756	812	0	1332	300	313	282	180	0	0	0
Confl. Peds. (#/hr)	2		7	7		2						
Confl. Bikes (#/hr)			1									
Heavy Vehicles (%)	0%	4%	11%	0%	5%	3%	14%	0%	6%	0%	0%	0%
Turn Type		NA	Free		NA	Perm	Perm	NA	Perm			
Protected Phases		2			6			8				
Permitted Phases			Free			6	8		8			
Actuated Green, G (s)		29.0	59.0		29.0	29.0	19.2	19.2	19.2			
Effective Green, g (s)		29.0	59.0		29.0	29.0	19.2	19.2	19.2			
Actuated g/C Ratio		0.49	1.00		0.49	0.49	0.33	0.33	0.33			
Clearance Time (s)		5.0			5.0	5.0	5.8	5.8	5.8			
Vehicle Extension (s)		3.0			3.0	3.0	3.0	3.0	3.0			
Lane Grp Cap (vph)		1706	1420		1689	753	489	467	470			
v/s Ratio Prot		0.22			c0.39							
v/s Ratio Perm			c0.57			0.20	0.21	0.20	0.12			
v/c Ratio		0.44	0.57		0.79	0.40	0.64	0.60	0.38			
Uniform Delay, d1		9.8	0.0		12.5	9.5	17.0	16.7	15.3			
Progression Factor		1.00	1.00		1.00	1.00	1.00	1.00	1.00			
Incremental Delay, d2		0.2	1.7		2.5	0.3	6.3	5.7	2.4			
Delay (s)		9.9	1.7		15.0	9.8	23.3	22.4	17.7			
Level of Service		A	A		B	A	C	C	B			
Approach Delay (s)		5.7			13.4			21.2			0.0	
Approach LOS		A			B			C			A	

Intersection Summary			
HCM 2000 Control Delay	12.2	HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio	0.77		
Actuated Cycle Length (s)	59.0	Sum of lost time (s)	10.8
Intersection Capacity Utilization	64.4%	ICU Level of Service	C
Analysis Period (min)	15		
c Critical Lane Group			

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	93	851	1	72	1938	435	17	39	79	53	42	11
Future Volume (vph)	93	851	1	72	1938	435	17	39	79	53	42	11
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		5.8		4.6	5.0	4.6	4.6	5.0	5.0	4.6	5.0	5.0
Lane Util. Factor		0.91		1.00	0.91	1.00	1.00	0.86	0.86	1.00	0.95	1.00
Frpb, ped/bikes		1.00		1.00	1.00	1.00	1.00	0.99	0.99	1.00	1.00	1.00
Flpb, ped/bikes		1.00		1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Frt		1.00		1.00	1.00	0.85	1.00	0.92	0.85	1.00	1.00	0.85
Flt Protected		1.00		0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (prot)		4801		1656	4940	1495	1081	4284	1280	1719	3610	1214
Flt Permitted		0.66		0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (perm)		3183		1656	4940	1495	1081	4284	1280	1719	3610	1214
Peak-hour factor, PHF	0.87	0.87	0.87	0.87	0.87	0.87	0.87	0.87	0.87	0.87	0.87	0.87
Adj. Flow (vph)	107	978	1	83	2228	500	20	45	91	61	48	13
RTOR Reduction (vph)	0	0	0	0	0	175	0	28	28	0	0	8
Lane Group Flow (vph)	0	1086	0	83	2228	325	20	63	17	61	48	5
Confl. Peds. (#/hr)									2	2		
Heavy Vehicles (%)	3%	8%	0%	9%	5%	8%	67%	3%	7%	5%	0%	33%
Turn Type	pm+pt	NA		Prot	NA	pm+ov	Prot	NA	Perm	Prot	NA	Perm
Protected Phases	7	4		3	8	1	5	2		1	6	
Permitted Phases	4					8			2			6
Actuated Green, G (s)		33.0		5.4	43.8	48.8	2.0	39.8	39.8	5.0	42.8	42.8
Effective Green, g (s)		33.0		5.4	43.8	48.8	2.0	39.8	39.8	5.0	42.8	42.8
Actuated g/C Ratio		0.32		0.05	0.42	0.47	0.02	0.39	0.39	0.05	0.41	0.41
Clearance Time (s)		5.8		4.6	5.0	4.6	4.6	5.0	5.0	4.6	5.0	5.0
Vehicle Extension (s)		3.0		3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0
Lane Grp Cap (vph)		1017		86	2096	706	20	1652	493	83	1497	503
v/s Ratio Prot				0.05	c0.45	0.02	0.02	c0.01		c0.04	c0.01	
v/s Ratio Perm		0.34				0.20			0.01			0.00
v/c Ratio		1.47dl		0.97	1.06	0.46	1.00	0.04	0.04	0.73	0.03	0.01
Uniform Delay, d1		35.1		48.8	29.7	18.3	50.6	19.8	19.7	48.4	17.9	17.8
Progression Factor		1.00		1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Incremental Delay, d2		48.2		84.7	38.9	0.5	201.2	0.0	0.1	28.3	0.0	0.0
Delay (s)		83.3		133.5	68.6	18.8	251.8	19.8	19.9	76.7	18.0	17.8
Level of Service		F		F	E	B	F	B	B	E	B	B
Approach Delay (s)		83.3			61.7			49.6			47.3	
Approach LOS		F			E			D			D	

Intersection Summary			
HCM 2000 Control Delay	66.4	HCM 2000 Level of Service	E
HCM 2000 Volume to Capacity ratio	0.61		
Actuated Cycle Length (s)	103.2	Sum of lost time (s)	20.0
Intersection Capacity Utilization	99.8%	ICU Level of Service	F
Analysis Period (min)	15		

dl Defacto Left Lane. Recode with 1 though lane as a left lane.
c Critical Lane Group

HCM Unsignalized Intersection Capacity Analysis
1: Doolittle Dr & West Project Dwy

12/04/2023

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (veh/h)	45	32	1158	73	15	1622
Future Volume (Veh/h)	45	32	1158	73	15	1622
Sign Control	Stop		Free			Free
Grade	0%		0%			0%
Peak Hour Factor	0.93	0.93	0.93	0.93	0.93	0.93
Hourly flow rate (vph)	48	34	1245	78	16	1744
Pedestrians	4					
Lane Width (ft)	12.0					
Walking Speed (ft/s)	3.5					
Percent Blockage	0					
Right turn flare (veh)						
Median type			TWLTL			TWLTL
Median storage veh)			2			2
Upstream signal (ft)			750			512
pX, platoon unblocked	0.51	0.92			0.92	
vC, conflicting volume	2192	666			1327	
vC1, stage 1 conf vol	1288					
vC2, stage 2 conf vol	904					
vCu, unblocked vol	727	466			1184	
tC, single (s)	6.8	6.9			4.1	
tC, 2 stage (s)	5.8					
tF (s)	3.5	3.3			2.2	
p0 queue free %	80	93			97	
cM capacity (veh/h)	240	504			548	

Direction, Lane #	WB 1	NB 1	NB 2	SB 1	SB 2	SB 3
Volume Total	82	830	493	16	872	872
Volume Left	48	0	0	16	0	0
Volume Right	34	0	78	0	0	0
cSH	306	1700	1700	548	1700	1700
Volume to Capacity	0.27	0.49	0.29	0.03	0.51	0.51
Queue Length 95th (ft)	26	0	0	2	0	0
Control Delay (s)	21.0	0.0	0.0	11.8	0.0	0.0
Lane LOS	C			B		
Approach Delay (s)	21.0	0.0		0.1		
Approach LOS	C					

Intersection Summary			
Average Delay	0.6		
Intersection Capacity Utilization	56.0%	ICU Level of Service	B
Analysis Period (min)	15		

Lane Group	WBL	WBR	NBT	NBR	SBL	SBT
Lane Group Flow (vph)	93	34	779	195	43	671
v/c Ratio	0.27	0.10	0.40	0.22	0.27	0.32
Control Delay	19.2	6.8	12.7	3.9	32.4	8.3
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	19.2	6.8	12.7	3.9	32.4	8.3
Queue Length 50th (ft)	25	0	55	0	12	46
Queue Length 95th (ft)	56	16	244	44	51	164
Internal Link Dist (ft)	346		48			437
Turn Bay Length (ft)		85		230	275	
Base Capacity (vph)	524	480	1944	870	161	2091
Starvation Cap Reductn	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0
Reduced v/c Ratio	0.18	0.07	0.40	0.22	0.27	0.32

Intersection Summary

Lane Group	EBL	EBT	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT
Lane Group Flow (vph)	49	226	274	137	822	53	860	241	358	381
v/c Ratio	0.45	0.52	1.51	0.58	1.13	0.68	0.50	0.36	0.55	0.24
Control Delay	60.3	39.0	290.2	52.6	101.3	92.1	28.4	4.2	43.2	15.3
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	60.3	39.0	290.2	52.6	101.3	92.1	28.4	4.2	43.2	15.3
Queue Length 50th (ft)	32	66	~132	89	~603	36	163	0	112	68
Queue Length 95th (ft)	75	104	#247	161	#904	#115	243	48	183	125
Internal Link Dist (ft)		486		661			407			302
Turn Bay Length (ft)	300		240		120	130		180	260	
Base Capacity (vph)	167	766	182	341	727	78	1718	675	654	1594
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.29	0.30	1.51	0.40	1.13	0.68	0.50	0.36	0.55	0.24

Intersection Summary

~ Volume exceeds capacity, queue is theoretically infinite.
Queue shown is maximum after two cycles.

95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.

Lane Group	EBT	EBR	WBT	WBR	SBL	SBT	SBR
Lane Group Flow (vph)	877	526	1203	421	197	320	322
v/c Ratio	0.37	0.56	0.74	0.45	0.38	0.68	0.66
Control Delay	9.4	3.6	14.8	2.7	18.9	24.5	23.4
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	9.4	3.6	14.8	2.7	18.9	24.5	23.4
Queue Length 50th (ft)	62	0	158	0	58	94	90
Queue Length 95th (ft)	86	40	225	35	111	#214	#201
Internal Link Dist (ft)	661		674			105	
Turn Bay Length (ft)		400		560	65		350
Base Capacity (vph)	2610	976	1800	1001	515	474	489
Starvation Cap Reductn	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0
Reduced v/c Ratio	0.34	0.54	0.67	0.42	0.38	0.68	0.66

Intersection Summary

95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.

Lane Group	EBT	EBR	WBT	WBR	NBL	NBT	NBR
Lane Group Flow (vph)	587	510	1151	556	247	244	222
v/c Ratio	0.35	0.36	0.70	0.54	0.49	0.48	0.35
Control Delay	10.0	0.7	14.4	3.2	20.3	17.6	4.5
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	10.0	0.7	14.4	3.2	20.3	17.6	4.5
Queue Length 50th (ft)	62	0	151	0	74	64	0
Queue Length 95th (ft)	92	0	213	42	138	130	42
Internal Link Dist (ft)	674		169			405	
Turn Bay Length (ft)				1000	260		160
Base Capacity (vph)	1812	1420	1795	1066	502	505	631
Starvation Cap Reductn	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0
Reduced v/c Ratio	0.32	0.36	0.64	0.52	0.49	0.48	0.35

Intersection Summary

Lane Group	EBT	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Group Flow (vph)	842	66	867	423	13	77	43	61	7	9
v/c Ratio	0.81	0.69	0.45	0.44	0.22	0.04	0.07	0.66	0.00	0.01
Control Delay	37.4	80.9	21.5	2.8	55.1	10.7	0.2	79.5	17.3	0.0
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	37.4	80.9	21.5	2.8	55.1	10.7	0.2	79.5	17.3	0.0
Queue Length 50th (ft)	173	41	135	0	8	4	0	38	1	0
Queue Length 95th (ft)	212	#110	162	38	28	15	0	#103	6	0
Internal Link Dist (ft)	250		280			220			326	
Turn Bay Length (ft)		90		185	50		140	100		185
Base Capacity (vph)	1247	96	2095	954	58	1715	629	92	1749	688
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.68	0.69	0.41	0.44	0.22	0.04	0.07	0.66	0.00	0.01

Intersection Summary

95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.

Lane Group	WBL	WBR	NBT	NBR	SBL	SBT
Lane Group Flow (vph)	183	95	988	169	18	1323
v/c Ratio	0.51	0.23	0.45	0.20	0.13	0.60
Control Delay	24.1	6.2	9.4	2.9	26.9	9.1
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	24.1	6.2	9.4	2.9	26.9	9.1
Queue Length 50th (ft)	52	0	80	0	5	127
Queue Length 95th (ft)	97	25	198	26	22	213
Internal Link Dist (ft)	346		48			437
Turn Bay Length (ft)		85		230	275	
Base Capacity (vph)	543	572	2198	852	138	2222
Starvation Cap Reductn	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0
Reduced v/c Ratio	0.34	0.17	0.45	0.20	0.13	0.60

Intersection Summary

Lane Group	EBL	EBT	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT
Lane Group Flow (vph)	69	182	205	86	520	20	480	261	689	922
v/c Ratio	0.57	0.32	1.12	0.43	0.66	0.23	0.26	0.33	1.03	0.49
Control Delay	66.6	28.1	148.6	48.6	19.1	58.9	25.6	3.9	84.4	17.7
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	66.6	28.1	148.6	48.6	19.1	58.9	25.6	3.9	84.4	17.7
Queue Length 50th (ft)	44	42	~79	55	167	13	79	0	~240	156
Queue Length 95th (ft)	102	70	#186	104	282	42	137	48	#458	368
Internal Link Dist (ft)		486		661			407			302
Turn Bay Length (ft)	300		240		120	130		180	260	
Base Capacity (vph)	164	1000	183	316	782	91	1851	788	672	1874
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.42	0.18	1.12	0.27	0.66	0.22	0.26	0.33	1.03	0.49

Intersection Summary

~ Volume exceeds capacity, queue is theoretically infinite.
Queue shown is maximum after two cycles.

95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.

Lane Group	EBT	EBR	WBT	WBR	SBL	SBT	SBR
Lane Group Flow (vph)	1324	687	944	446	363	340	337
v/c Ratio	0.61	0.66	0.63	0.48	0.55	0.57	0.56
Control Delay	14.7	4.7	15.7	3.3	18.0	16.3	16.0
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	14.7	4.7	15.7	3.3	18.0	16.3	16.0
Queue Length 50th (ft)	127	0	132	0	104	83	77
Queue Length 95th (ft)	168	53	187	44	181	164	154
Internal Link Dist (ft)	661		674			105	
Turn Bay Length (ft)		400		560	65		350
Base Capacity (vph)	2234	1050	1540	937	665	597	603
Starvation Cap Reductn	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0
Reduced v/c Ratio	0.59	0.65	0.61	0.48	0.55	0.57	0.56

Intersection Summary

Lane Group	EBT	EBR	WBT	WBR	NBL	NBT	NBR
Lane Group Flow (vph)	1151	582	950	368	319	305	298
v/c Ratio	0.80	0.38	0.65	0.43	0.48	0.48	0.46
Control Delay	20.2	0.7	16.5	3.3	16.7	15.1	14.7
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	20.2	0.7	16.5	3.3	16.7	15.1	14.7
Queue Length 50th (ft)	181	0	137	0	86	74	69
Queue Length 95th (ft)	250	0	191	41	167	156	144
Internal Link Dist (ft)	674		169			405	
Turn Bay Length (ft)				1000	260		160
Base Capacity (vph)	1530	1547	1546	879	662	633	643
Starvation Cap Reductn	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0
Reduced v/c Ratio	0.75	0.38	0.61	0.42	0.48	0.48	0.46

Intersection Summary

Lane Group	EBT	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Group Flow (vph)	1150	86	595	310	12	171	85	79	28	5
v/c Ratio	0.91	0.88	0.29	0.33	0.19	0.11	0.14	0.86	0.02	0.01
Control Delay	43.9	111.0	19.0	2.4	53.3	11.0	0.5	110.5	17.2	0.0
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	43.9	111.0	19.0	2.4	53.3	11.0	0.5	110.5	17.2	0.0
Queue Length 50th (ft)	254	56	87	0	8	13	0	51	4	0
Queue Length 95th (ft)	295	#139	109	32	26	27	0	#131	14	0
Internal Link Dist (ft)	250		280			220			326	
Turn Bay Length (ft)		90		185	50		140	100		185
Base Capacity (vph)	1316	98	2025	933	63	1625	612	92	1580	681
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.87	0.88	0.29	0.33	0.19	0.11	0.14	0.86	0.02	0.01

Intersection Summary

95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.

Queues
4: Doolittle Dr & Adams Ave

12/04/2023

Lane Group	WBL	WBR	NBT	NBR	SBL	SBT
Lane Group Flow (vph)	93	60	833	205	43	749
v/c Ratio	0.27	0.17	0.43	0.23	0.27	0.36
Control Delay	19.2	6.1	13.3	3.8	32.4	8.6
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	19.2	6.1	13.3	3.8	32.4	8.6
Queue Length 50th (ft)	25	0	61	0	12	53
Queue Length 95th (ft)	56	21	#274	46	51	186
Internal Link Dist (ft)	346		48			437
Turn Bay Length (ft)		85		230	275	
Base Capacity (vph)	524	497	1944	874	161	2091
Starvation Cap Reductn	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0
Reduced v/c Ratio	0.18	0.12	0.43	0.23	0.27	0.36

Intersection Summary

95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.

Lane Group	EBL	EBT	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT
Lane Group Flow (vph)	54	226	302	137	835	53	907	270	403	422
v/c Ratio	0.48	0.51	1.67	0.58	1.16	0.68	0.53	0.39	0.62	0.27
Control Delay	61.6	38.8	355.6	52.8	113.2	92.2	29.1	4.3	45.0	15.7
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	61.6	38.8	355.6	52.8	113.2	92.2	29.1	4.3	45.0	15.7
Queue Length 50th (ft)	35	66	~154	89	~636	36	175	0	129	78
Queue Length 95th (ft)	81	104	#273	161	#935	#115	258	51	206	139
Internal Link Dist (ft)		486		661			407			302
Turn Bay Length (ft)	300		240		120	130		180	260	
Base Capacity (vph)	167	764	181	340	719	78	1713	690	652	1582
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.32	0.30	1.67	0.40	1.16	0.68	0.53	0.39	0.62	0.27

Intersection Summary

~ Volume exceeds capacity, queue is theoretically infinite.
Queue shown is maximum after two cycles.

95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.

Lane Group	EBT	EBR	WBT	WBR	SBL	SBT	SBR
Lane Group Flow (vph)	927	542	1238	442	244	331	329
v/c Ratio	0.38	0.57	0.79	0.46	0.48	0.71	0.69
Control Delay	9.4	3.6	16.3	2.7	20.9	27.0	25.2
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	9.4	3.6	16.3	2.7	20.9	27.0	25.2
Queue Length 50th (ft)	67	0	172	0	75	101	94
Queue Length 95th (ft)	91	40	247	36	138	#228	#209
Internal Link Dist (ft)	661		674			105	
Turn Bay Length (ft)		400		560	65		350
Base Capacity (vph)	2558	975	1672	999	505	464	478
Starvation Cap Reductn	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0
Reduced v/c Ratio	0.36	0.56	0.74	0.44	0.48	0.71	0.69

Intersection Summary

95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.

Lane Group	EBT	EBR	WBT	WBR	NBL	NBT	NBR
Lane Group Flow (vph)	670	525	1194	577	272	274	249
v/c Ratio	0.40	0.37	0.75	0.55	0.55	0.55	0.42
Control Delay	10.3	0.7	15.6	3.2	21.8	19.6	7.7
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	10.3	0.7	15.6	3.2	21.8	19.6	7.7
Queue Length 50th (ft)	72	0	164	0	84	75	17
Queue Length 95th (ft)	106	0	234	42	155	150	68
Internal Link Dist (ft)	674		169			405	
Turn Bay Length (ft)				1000	260		160
Base Capacity (vph)	1782	1420	1685	1068	494	495	597
Starvation Cap Reductn	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0
Reduced v/c Ratio	0.38	0.37	0.71	0.54	0.55	0.55	0.42

Intersection Summary

Lane Group	EBT	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Group Flow (vph)	849	66	867	430	13	84	45	61	15	9
v/c Ratio	0.81	0.69	0.45	0.45	0.22	0.05	0.07	0.66	0.01	0.01
Control Delay	37.5	81.6	21.4	2.8	55.2	10.9	0.2	80.0	17.2	0.0
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	37.5	81.6	21.4	2.8	55.2	10.9	0.2	80.0	17.2	0.0
Queue Length 50th (ft)	175	41	135	0	8	5	0	38	2	0
Queue Length 95th (ft)	215	#110	162	38	28	16	0	#103	10	0
Internal Link Dist (ft)	250		280			220			326	
Turn Bay Length (ft)		90		185	50		140	100		185
Base Capacity (vph)	1235	96	2105	960	58	1718	627	92	1741	686
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.69	0.69	0.41	0.45	0.22	0.05	0.07	0.66	0.01	0.01

Intersection Summary

95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.

Queues
4: Doolittle Dr & Adams Ave

12/04/2023

Lane Group	WBL	WBR	NBT	NBR	SBL	SBT
Lane Group Flow (vph)	183	120	1054	177	18	1400
v/c Ratio	0.52	0.28	0.54	0.23	0.13	0.71
Control Delay	24.4	6.1	10.7	3.0	27.0	11.3
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	24.4	6.1	10.7	3.0	27.0	11.3
Queue Length 50th (ft)	52	0	87	0	5	140
Queue Length 95th (ft)	97	28	216	27	22	234
Internal Link Dist (ft)	346		48			437
Turn Bay Length (ft)		85		230	275	
Base Capacity (vph)	533	580	1939	775	135	1972
Starvation Cap Reductn	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0
Reduced v/c Ratio	0.34	0.21	0.54	0.23	0.13	0.71

Intersection Summary

Lane Group	EBL	EBT	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT
Lane Group Flow (vph)	72	182	234	86	543	20	513	286	710	969
v/c Ratio	0.59	0.32	1.28	0.43	0.71	0.23	0.28	0.36	1.06	0.52
Control Delay	67.1	28.1	202.7	48.8	22.0	59.0	25.9	3.9	93.3	18.2
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	67.1	28.1	202.7	48.8	22.0	59.0	25.9	3.9	93.3	18.2
Queue Length 50th (ft)	46	42	~101	55	200	13	86	0	~264	169
Queue Length 95th (ft)	106	70	#215	104	323	42	146	50	#477	394
Internal Link Dist (ft)		486		661			407			302
Turn Bay Length (ft)	300		240		120	130		180	260	
Base Capacity (vph)	164	999	183	315	770	91	1848	802	671	1864
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.44	0.18	1.28	0.27	0.71	0.22	0.28	0.36	1.06	0.52

Intersection Summary

~ Volume exceeds capacity, queue is theoretically infinite.
Queue shown is maximum after two cycles.

95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.

Lane Group	EBT	EBR	WBT	WBR	SBL	SBT	SBR
Lane Group Flow (vph)	1351	699	984	482	376	354	345
v/c Ratio	0.62	0.67	0.70	0.51	0.57	0.60	0.58
Control Delay	14.8	4.8	17.1	3.5	18.4	17.3	16.7
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	14.8	4.8	17.1	3.5	18.4	17.3	16.7
Queue Length 50th (ft)	131	0	143	0	108	91	83
Queue Length 95th (ft)	172	54	204	46	188	176	163
Internal Link Dist (ft)	661		674			105	
Turn Bay Length (ft)		400		560	65		350
Base Capacity (vph)	2233	1057	1452	956	665	594	599
Starvation Cap Reductn	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0
Reduced v/c Ratio	0.61	0.66	0.68	0.50	0.57	0.60	0.58

Intersection Summary

Lane Group	EBT	EBR	WBT	WBR	NBL	NBT	NBR
Lane Group Flow (vph)	1185	593	1012	404	334	325	310
v/c Ratio	0.81	0.38	0.72	0.46	0.51	0.52	0.49
Control Delay	20.7	0.7	18.0	3.3	17.2	15.9	15.2
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	20.7	0.7	18.0	3.3	17.2	15.9	15.2
Queue Length 50th (ft)	188	0	152	0	91	82	73
Queue Length 95th (ft)	261	0	214	42	176	169	151
Internal Link Dist (ft)	674		169			405	
Turn Bay Length (ft)				1000	260		160
Base Capacity (vph)	1518	1547	1461	895	656	627	638
Starvation Cap Reductn	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0
Reduced v/c Ratio	0.78	0.38	0.69	0.45	0.51	0.52	0.49

Intersection Summary

Lane Group	EBT	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Group Flow (vph)	1157	86	595	317	12	178	85	79	36	5
v/c Ratio	0.92	0.88	0.29	0.34	0.19	0.11	0.14	0.86	0.02	0.01
Control Delay	45.4	111.4	18.9	2.4	53.3	11.3	0.5	110.5	17.2	0.0
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	45.4	111.4	18.9	2.4	53.3	11.3	0.5	110.5	17.2	0.0
Queue Length 50th (ft)	257	56	87	0	8	14	0	51	6	0
Queue Length 95th (ft)	298	#139	109	32	26	29	0	#131	17	0
Internal Link Dist (ft)	250		280			220			326	
Turn Bay Length (ft)		90		185	50		140	100		185
Base Capacity (vph)	1300	98	2029	937	63	1627	611	92	1578	680
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.89	0.88	0.29	0.34	0.19	0.11	0.14	0.86	0.02	0.01

Intersection Summary

95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.

Queues
4: Doolittle Dr & Adams Ave

12/04/2023

Lane Group	WBL	WBR	NBT	NBR	SBL	SBT
Lane Group Flow (vph)	93	65	838	205	80	757
v/c Ratio	0.27	0.19	0.46	0.24	0.50	0.36
Control Delay	19.6	6.0	14.7	3.9	41.9	8.5
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	19.6	6.0	14.7	3.9	41.9	8.5
Queue Length 50th (ft)	27	0	102	0	25	54
Queue Length 95th (ft)	56	22	#278	46	#107	189
Internal Link Dist (ft)	346		48			437
Turn Bay Length (ft)		85		230	275	
Base Capacity (vph)	519	495	1838	837	159	2106
Starvation Cap Reductn	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0
Reduced v/c Ratio	0.18	0.13	0.46	0.24	0.50	0.36

Intersection Summary

95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.

Lane Group	EBL	EBT	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT
Lane Group Flow (vph)	54	226	302	137	918	53	918	270	409	424
v/c Ratio	0.49	0.51	1.69	0.59	1.26	0.69	0.54	0.39	0.61	0.27
Control Delay	62.6	39.3	363.7	53.5	154.7	93.7	29.8	4.3	44.5	15.6
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	62.6	39.3	363.7	53.5	154.7	93.7	29.8	4.3	44.5	15.6
Queue Length 50th (ft)	36	67	~156	90	~758	36	180	0	131	79
Queue Length 95th (ft)	82	105	#276	162	#1081	#117	266	51	209	140
Internal Link Dist (ft)		486		661			407			302
Turn Bay Length (ft)	300		240		120	130		180	260	
Base Capacity (vph)	165	755	179	337	727	77	1695	685	675	1593
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.33	0.30	1.69	0.41	1.26	0.69	0.54	0.39	0.61	0.27

Intersection Summary

~ Volume exceeds capacity, queue is theoretically infinite.
Queue shown is maximum after two cycles.

95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.

Lane Group	EBT	EBR	WBT	WBR	SBL	SBT	SBR
Lane Group Flow (vph)	929	545	1313	442	244	331	329
v/c Ratio	0.38	0.57	0.83	0.45	0.49	0.73	0.70
Control Delay	9.4	3.6	17.9	2.7	21.0	28.4	26.6
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	9.4	3.6	17.9	2.7	21.0	28.4	26.6
Queue Length 50th (ft)	67	0	190	0	75	104	97
Queue Length 95th (ft)	91	41	273	36	138	#232	#214
Internal Link Dist (ft)	661		674			105	
Turn Bay Length (ft)		400		560	65		350
Base Capacity (vph)	2531	971	1655	993	500	454	468
Starvation Cap Reductn	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0
Reduced v/c Ratio	0.37	0.56	0.79	0.45	0.49	0.73	0.70

Intersection Summary

95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.

Lane Group	EBT	EBR	WBT	WBR	NBL	NBT	NBR
Lane Group Flow (vph)	672	525	1204	577	297	296	267
v/c Ratio	0.40	0.37	0.75	0.55	0.60	0.60	0.45
Control Delay	10.3	0.7	15.8	3.2	23.2	20.9	8.7
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	10.3	0.7	15.8	3.2	23.2	20.9	8.7
Queue Length 50th (ft)	73	0	166	0	93	84	23
Queue Length 95th (ft)	106	0	236	42	171	165	78
Internal Link Dist (ft)	674		169			405	
Turn Bay Length (ft)				1000	260		160
Base Capacity (vph)	1781	1420	1683	1068	494	496	596
Starvation Cap Reductn	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0
Reduced v/c Ratio	0.38	0.37	0.72	0.54	0.60	0.60	0.45

Intersection Summary

Lane Group	EBT	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Group Flow (vph)	849	66	867	430	13	92	45	61	49	9
v/c Ratio	0.81	0.69	0.45	0.45	0.22	0.05	0.07	0.66	0.03	0.01
Control Delay	37.5	81.6	21.4	2.8	55.2	11.5	0.2	80.0	16.6	0.0
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	37.5	81.6	21.4	2.8	55.2	11.5	0.2	80.0	16.6	0.0
Queue Length 50th (ft)	175	41	135	0	8	6	0	38	7	0
Queue Length 95th (ft)	215	#110	162	38	28	18	0	#103	22	0
Internal Link Dist (ft)	250		280			220			326	
Turn Bay Length (ft)		90		185	50		140	100		185
Base Capacity (vph)	1235	96	2105	960	58	1735	627	92	1741	686
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.69	0.69	0.41	0.45	0.22	0.05	0.07	0.66	0.03	0.01

Intersection Summary

95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.

Queues
4: Doolittle Dr & Adams Ave

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Lane Group	WBL	WBR	NBT	NBR	SBL	SBT
Lane Group Flow (vph)	183	148	1080	177	45	1406
v/c Ratio	0.51	0.33	0.60	0.24	0.33	0.72
Control Delay	24.4	6.1	13.1	3.4	32.2	11.5
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	24.4	6.1	13.1	3.4	32.2	11.5
Queue Length 50th (ft)	52	0	93	0	14	144
Queue Length 95th (ft)	97	30	224	27	41	235
Internal Link Dist (ft)	346		48			437
Turn Bay Length (ft)		85		230	275	
Base Capacity (vph)	536	602	1807	734	136	1957
Starvation Cap Reductn	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0
Reduced v/c Ratio	0.34	0.25	0.60	0.24	0.33	0.72

Intersection Summary

Lane Group	EBL	EBT	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT
Lane Group Flow (vph)	72	182	234	86	599	20	520	286	736	979
v/c Ratio	0.59	0.32	1.28	0.43	0.78	0.23	0.28	0.36	1.10	0.53
Control Delay	67.1	28.1	202.7	48.8	26.3	59.0	25.9	3.9	105.2	18.3
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	67.1	28.1	202.7	48.8	26.3	59.0	25.9	3.9	105.2	18.3
Queue Length 50th (ft)	46	42	~101	55	250	13	87	0	~283	171
Queue Length 95th (ft)	106	70	#215	104	394	42	148	50	#500	399
Internal Link Dist (ft)		486		661			407			302
Turn Bay Length (ft)	300		240		120	130		180	260	
Base Capacity (vph)	164	999	183	315	769	91	1848	802	671	1864
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.44	0.18	1.28	0.27	0.78	0.22	0.28	0.36	1.10	0.53

Intersection Summary

~ Volume exceeds capacity, queue is theoretically infinite.
Queue shown is maximum after two cycles.

95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.

Lane Group	EBT	EBR	WBT	WBR	SBL	SBT	SBR
Lane Group Flow (vph)	1361	710	1034	482	376	354	345
v/c Ratio	0.63	0.67	0.73	0.51	0.57	0.60	0.58
Control Delay	14.8	4.9	17.8	3.5	18.5	17.9	17.3
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	14.8	4.9	17.8	3.5	18.5	17.9	17.3
Queue Length 50th (ft)	132	0	154	0	108	94	86
Queue Length 95th (ft)	174	54	218	46	188	180	166
Internal Link Dist (ft)	661		674			105	
Turn Bay Length (ft)		400		560	65		350
Base Capacity (vph)	2224	1061	1449	954	662	587	592
Starvation Cap Reductn	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0
Reduced v/c Ratio	0.61	0.67	0.71	0.51	0.57	0.60	0.58

Intersection Summary

Lane Group	EBT	EBR	WBT	WBR	NBL	NBT	NBR
Lane Group Flow (vph)	1195	593	1019	404	351	339	321
v/c Ratio	0.82	0.38	0.72	0.46	0.54	0.54	0.50
Control Delay	21.0	0.7	18.1	3.3	17.8	16.4	15.6
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	21.0	0.7	18.1	3.3	17.8	16.4	15.6
Queue Length 50th (ft)	191	0	154	0	97	86	76
Queue Length 95th (ft)	264	0	216	42	186	178	158
Internal Link Dist (ft)	674		169			405	
Turn Bay Length (ft)				1000	260		160
Base Capacity (vph)	1516	1547	1460	895	656	629	637
Starvation Cap Reductn	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0
Reduced v/c Ratio	0.79	0.38	0.70	0.45	0.54	0.54	0.50

Intersection Summary

Lane Group	EBT	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Group Flow (vph)	1157	86	595	317	12	215	85	79	59	5
v/c Ratio	0.92	0.88	0.29	0.34	0.19	0.13	0.14	0.86	0.04	0.01
Control Delay	45.4	111.4	18.9	2.4	53.3	12.8	0.5	110.5	17.2	0.0
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	45.4	111.4	18.9	2.4	53.3	12.8	0.5	110.5	17.2	0.0
Queue Length 50th (ft)	257	56	87	0	8	20	0	51	10	0
Queue Length 95th (ft)	298	#139	109	32	26	36	0	#131	25	0
Internal Link Dist (ft)	250		280			220			326	
Turn Bay Length (ft)		90		185	50		140	100		185
Base Capacity (vph)	1300	98	2029	937	63	1644	611	92	1578	680
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.89	0.88	0.29	0.34	0.19	0.13	0.14	0.86	0.04	0.01

Intersection Summary

95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.

Queues
4: Doolittle Dr & Adams Ave

12/04/2023

Lane Group	WBL	WBR	NBT	NBR	SBL	SBT
Lane Group Flow (vph)	132	34	1039	246	60	1142
v/c Ratio	0.37	0.10	0.57	0.29	0.38	0.55
Control Delay	21.1	6.7	17.2	3.9	36.6	11.0
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	21.1	6.7	17.2	3.9	36.6	11.0
Queue Length 50th (ft)	39	0	138	0	19	97
Queue Length 95th (ft)	76	16	#405	49	#76	330
Internal Link Dist (ft)	346		48			437
Turn Bay Length (ft)		85		230	275	
Base Capacity (vph)	515	473	1828	852	158	2091
Starvation Cap Reductn	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0
Reduced v/c Ratio	0.26	0.07	0.57	0.29	0.38	0.55

Intersection Summary

95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.

Lane Group	EBL	EBT	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT
Lane Group Flow (vph)	60	280	308	170	1042	62	1007	492	826	441
v/c Ratio	0.53	0.57	1.75	0.65	1.43	0.83	0.60	0.73	1.30	0.30
Control Delay	65.4	39.9	390.6	55.0	226.8	117.0	32.0	19.4	184.2	17.8
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	65.4	39.9	390.6	55.0	226.8	117.0	32.0	19.4	184.2	17.8
Queue Length 50th (ft)	41	86	~167	115	~969	44	212	126	~387	90
Queue Length 95th (ft)	90	128	#286	197	#1309	#139	301	306	#580	152
Internal Link Dist (ft)		486		661			407			302
Turn Bay Length (ft)	300		240		120	130		180	260	
Base Capacity (vph)	162	745	176	331	728	75	1667	671	634	1478
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.37	0.38	1.75	0.51	1.43	0.83	0.60	0.73	1.30	0.30

Intersection Summary

~ Volume exceeds capacity, queue is theoretically infinite.
Queue shown is maximum after two cycles.

95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.

Lane Group	EBT	EBR	WBT	WBR	SBL	SBT	SBR
Lane Group Flow (vph)	1278	551	1305	757	253	338	336
v/c Ratio	0.56	0.57	0.77	0.67	0.51	0.75	0.72
Control Delay	11.0	3.6	15.6	4.2	21.5	29.7	27.7
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	11.0	3.6	15.6	4.2	21.5	29.7	27.7
Queue Length 50th (ft)	104	0	181	0	78	106	101
Queue Length 95th (ft)	139	41	257	46	144	#240	#222
Internal Link Dist (ft)	661		674			105	
Turn Bay Length (ft)		400		560	65		350
Base Capacity (vph)	2361	972	1735	1139	497	452	466
Starvation Cap Reductn	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0
Reduced v/c Ratio	0.54	0.57	0.75	0.66	0.51	0.75	0.72

Intersection Summary

95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.

Lane Group	EBT	EBR	WBT	WBR	NBL	NBT	NBR
Lane Group Flow (vph)	754	812	1322	610	288	282	261
v/c Ratio	0.44	0.57	0.78	0.57	0.59	0.57	0.46
Control Delay	10.7	1.7	16.4	3.3	22.9	20.2	10.6
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	10.7	1.7	16.4	3.3	22.9	20.2	10.6
Queue Length 50th (ft)	84	0	188	0	90	79	32
Queue Length 95th (ft)	122	0	265	44	165	156	90
Internal Link Dist (ft)	674		169			405	
Turn Bay Length (ft)				1000	260		160
Base Capacity (vph)	1766	1420	1749	1080	490	491	568
Starvation Cap Reductn	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0
Reduced v/c Ratio	0.43	0.57	0.76	0.56	0.59	0.57	0.46

Intersection Summary

Lane Group	EBT	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Group Flow (vph)	1086	83	2228	500	20	83	45	61	14	13
v/c Ratio	1.47dl	0.93	1.03	0.52	0.38	0.05	0.08	0.72	0.01	0.02
Control Delay	72.3	128.1	57.5	6.7	66.4	10.8	0.3	89.6	19.2	0.1
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	72.3	128.1	57.5	6.7	66.4	10.8	0.3	89.6	19.2	0.1
Queue Length 50th (ft)	~276	54	~564	53	13	5	0	39	2	0
Queue Length 95th (ft)	#345	#143	#620	119	#39	16	0	#103	9	0
Internal Link Dist (ft)	250		280			220			326	
Turn Bay Length (ft)		90		185	50		140	100		185
Base Capacity (vph)	1046	89	2155	955	53	1591	595	85	1537	628
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	1.04	0.93	1.03	0.52	0.38	0.05	0.08	0.72	0.01	0.02

Intersection Summary

~ Volume exceeds capacity, queue is theoretically infinite.
Queue shown is maximum after two cycles.

95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.

dl Defacto Left Lane. Recode with 1 though lane as a left lane.

Queues
4: Doolittle Dr & Adams Ave

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Lane Group	WBL	WBR	NBT	NBR	SBL	SBT
Lane Group Flow (vph)	267	107	1327	187	19	2001
v/c Ratio	0.66	0.23	0.72	0.25	0.14	1.06
Control Delay	27.8	5.7	15.9	3.2	28.4	56.4
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	27.8	5.7	15.9	3.2	28.4	56.4
Queue Length 50th (ft)	80	0	148	0	6	~407
Queue Length 95th (ft)	140	26	#353	28	23	#533
Internal Link Dist (ft)	346		48			437
Turn Bay Length (ft)		85		230	275	
Base Capacity (vph)	523	563	1848	751	133	1882
Starvation Cap Reductn	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0
Reduced v/c Ratio	0.51	0.19	0.72	0.25	0.14	1.06

Intersection Summary

~ Volume exceeds capacity, queue is theoretically infinite.
Queue shown is maximum after two cycles.

95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.

Lane Group	EBL	EBT	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT
Lane Group Flow (vph)	75	222	372	142	923	20	524	307	1038	1274
v/c Ratio	0.61	0.34	2.10	0.61	1.17	0.24	0.29	0.39	1.60	0.70
Control Delay	71.0	30.0	542.1	54.5	114.6	61.2	27.7	4.0	307.6	24.1
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	71.0	30.0	542.1	54.5	114.6	61.2	27.7	4.0	307.6	24.1
Queue Length 50th (ft)	51	56	~215	96	~723	14	97	0	~543	300
Queue Length 95th (ft)	109	87	#347	163	#988	42	149	51	#765	583
Internal Link Dist (ft)		486		661			407			302
Turn Bay Length (ft)	300		240		120	130		180	260	
Base Capacity (vph)	159	969	177	305	790	88	1788	797	650	1814
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.47	0.23	2.10	0.47	1.17	0.23	0.29	0.39	1.60	0.70

Intersection Summary

~ Volume exceeds capacity, queue is theoretically infinite.
Queue shown is maximum after two cycles.

95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.

Lane Group	EBT	EBR	WBT	WBR	SBL	SBT	SBR
Lane Group Flow (vph)	1603	708	1469	493	461	445	422
v/c Ratio	0.78	0.67	0.97	0.52	0.70	0.73	0.73
Control Delay	18.0	4.8	35.3	3.5	22.7	23.6	23.5
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	18.0	4.8	35.3	3.5	22.7	23.6	23.5
Queue Length 50th (ft)	173	0	258	0	143	134	121
Queue Length 95th (ft)	227	54	#410	46	#248	#281	#257
Internal Link Dist (ft)	661		674			105	
Turn Bay Length (ft)		400		560	65		350
Base Capacity (vph)	2047	1057	1518	956	656	606	581
Starvation Cap Reductn	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0
Reduced v/c Ratio	0.78	0.67	0.97	0.52	0.70	0.73	0.73

Intersection Summary

95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.

Lane Group	EBT	EBR	WBT	WBR	NBL	NBT	NBR
Lane Group Flow (vph)	1587	678	1084	414	460	449	412
v/c Ratio	1.06	0.44	0.72	0.46	0.71	0.71	0.66
Control Delay	62.0	0.9	17.8	3.3	23.5	22.2	19.7
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	62.0	0.9	17.8	3.3	23.5	22.2	19.7
Queue Length 50th (ft)	~347	0	165	0	140	130	110
Queue Length 95th (ft)	#469	0	228	43	#296	#293	220
Internal Link Dist (ft)	674		169			405	
Turn Bay Length (ft)				1000	260		160
Base Capacity (vph)	1494	1547	1509	893	646	632	628
Starvation Cap Reductn	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0
Reduced v/c Ratio	1.06	0.44	0.72	0.46	0.71	0.71	0.66

Intersection Summary

~ Volume exceeds capacity, queue is theoretically infinite.
Queue shown is maximum after two cycles.

95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.

Lane Group	EBT	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Group Flow (vph)	2719	100	1838	328	16	179	88	134	35	10
v/c Ratio	2.69	1.03	0.89	0.36	0.26	0.11	0.14	1.47	0.02	0.02
Control Delay	781.8	148.8	33.2	4.0	56.6	11.0	0.5	298.2	18.9	0.0
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	781.8	148.8	33.2	4.0	56.6	11.0	0.5	298.2	18.9	0.0
Queue Length 50th (ft)	~1107	~68	389	19	10	14	0	~119	6	0
Queue Length 95th (ft)	#1138	#163	427	54	31	29	0	#225	17	0
Internal Link Dist (ft)	250		280			220			326	
Turn Bay Length (ft)		90		185	50		140	100		185
Base Capacity (vph)	1011	97	2058	919	62	1609	607	91	1493	654
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	2.69	1.03	0.89	0.36	0.26	0.11	0.14	1.47	0.02	0.02

Intersection Summary

~ Volume exceeds capacity, queue is theoretically infinite.
Queue shown is maximum after two cycles.

95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.

Queues
4: Doolittle Dr & Adams Ave

12/04/2023

Lane Group	WBL	WBR	NBT	NBR	SBL	SBT
Lane Group Flow (vph)	132	39	1044	246	97	1149
v/c Ratio	0.38	0.12	0.61	0.30	0.62	0.55
Control Delay	21.4	6.5	18.6	3.9	49.6	10.9
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	21.4	6.5	18.6	3.9	49.6	10.9
Queue Length 50th (ft)	39	0	140	0	31	98
Queue Length 95th (ft)	76	17	#408	49	#131	333
Internal Link Dist (ft)	346		48			437
Turn Bay Length (ft)		85		230	275	
Base Capacity (vph)	510	471	1722	817	156	2105
Starvation Cap Reductn	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0
Reduced v/c Ratio	0.26	0.08	0.61	0.30	0.62	0.55

Intersection Summary

95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.

Lane Group	EBL	EBT	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT
Lane Group Flow (vph)	60	280	308	170	1124	62	1018	492	832	443
v/c Ratio	0.53	0.57	1.75	0.65	1.55	0.83	0.61	0.73	1.31	0.30
Control Delay	65.4	39.9	390.6	55.0	276.7	117.0	32.1	19.4	188.0	17.8
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	65.4	39.9	390.6	55.0	276.7	117.0	32.1	19.4	188.0	17.8
Queue Length 50th (ft)	41	86	~167	115	~1093	44	215	126	~391	90
Queue Length 95th (ft)	90	128	#286	197	#1450	#139	305	306	#586	152
Internal Link Dist (ft)		486		661			407			302
Turn Bay Length (ft)	300		240		120	130		180	260	
Base Capacity (vph)	162	745	176	331	727	75	1667	671	634	1478
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.37	0.38	1.75	0.51	1.55	0.83	0.61	0.73	1.31	0.30

Intersection Summary

~ Volume exceeds capacity, queue is theoretically infinite.
Queue shown is maximum after two cycles.

95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.

Lane Group	EBT	EBR	WBT	WBR	SBL	SBT	SBR
Lane Group Flow (vph)	1280	554	1380	757	253	338	336
v/c Ratio	0.55	0.57	0.81	0.67	0.51	0.75	0.73
Control Delay	11.0	3.6	17.0	4.2	21.7	30.2	28.1
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	11.0	3.6	17.0	4.2	21.7	30.2	28.1
Queue Length 50th (ft)	104	0	199	0	78	106	101
Queue Length 95th (ft)	139	41	283	46	144	#240	#222
Internal Link Dist (ft)	661		674			105	
Turn Bay Length (ft)		400		560	65		350
Base Capacity (vph)	2340	969	1720	1136	493	448	462
Starvation Cap Reductn	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0
Reduced v/c Ratio	0.55	0.57	0.80	0.67	0.51	0.75	0.73

Intersection Summary

95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.

Lane Group	EBT	EBR	WBT	WBR	NBL	NBT	NBR
Lane Group Flow (vph)	756	812	1332	610	313	306	277
v/c Ratio	0.44	0.57	0.79	0.57	0.64	0.62	0.49
Control Delay	10.7	1.7	16.6	3.3	24.6	21.7	11.4
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	10.7	1.7	16.6	3.3	24.6	21.7	11.4
Queue Length 50th (ft)	84	0	191	0	101	89	36
Queue Length 95th (ft)	122	0	268	44	#183	172	98
Internal Link Dist (ft)	674		169			405	
Turn Bay Length (ft)				1000	260		160
Base Capacity (vph)	1765	1420	1749	1080	489	492	567
Starvation Cap Reductn	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0
Reduced v/c Ratio	0.43	0.57	0.76	0.56	0.64	0.62	0.49

Intersection Summary

95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.

Lane Group	EBT	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Group Flow (vph)	1086	83	2228	500	20	91	45	61	48	13
v/c Ratio	1.47dl	0.93	1.03	0.52	0.38	0.06	0.08	0.72	0.03	0.02
Control Delay	72.3	128.1	57.5	6.7	66.4	11.4	0.3	89.6	18.8	0.1
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	72.3	128.1	57.5	6.7	66.4	11.4	0.3	89.6	18.8	0.1
Queue Length 50th (ft)	~276	54	~564	53	13	6	0	39	8	0
Queue Length 95th (ft)	#345	#143	#620	119	#39	18	0	#103	21	0
Internal Link Dist (ft)	250		280			220			326	
Turn Bay Length (ft)		90		185	50		140	100		185
Base Capacity (vph)	1046	89	2155	955	53	1607	595	85	1537	628
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	1.04	0.93	1.03	0.52	0.38	0.06	0.08	0.72	0.03	0.02

Intersection Summary

~ Volume exceeds capacity, queue is theoretically infinite.
Queue shown is maximum after two cycles.

95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.

dl Defacto Left Lane. Recode with 1 though lane as a left lane.

Queues
4: Doolittle Dr & Adams Ave

12/04/2023

Lane Group	WBL	WBR	NBT	NBR	SBL	SBT
Lane Group Flow (vph)	267	135	1354	187	46	2007
v/c Ratio	0.67	0.28	0.82	0.27	0.35	1.06
Control Delay	28.6	5.6	22.6	3.7	34.6	53.3
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	28.6	5.6	22.6	3.7	34.6	53.3
Queue Length 50th (ft)	85	0	235	0	16	~423
Queue Length 95th (ft)	140	29	#364	28	43	#535
Internal Link Dist (ft)	346		48			437
Turn Bay Length (ft)		85		230	275	
Base Capacity (vph)	513	573	1646	690	130	1902
Starvation Cap Reductn	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0
Reduced v/c Ratio	0.52	0.24	0.82	0.27	0.35	1.06

Intersection Summary

~ Volume exceeds capacity, queue is theoretically infinite.
Queue shown is maximum after two cycles.

95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.

Lane Group	EBL	EBT	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT
Lane Group Flow (vph)	75	222	372	142	978	20	532	307	1064	1284
v/c Ratio	0.61	0.34	2.10	0.61	1.24	0.24	0.30	0.39	1.64	0.71
Control Delay	71.0	30.0	542.1	54.5	144.7	61.2	27.8	4.0	324.7	24.2
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	71.0	30.0	542.1	54.5	144.7	61.2	27.8	4.0	324.7	24.2
Queue Length 50th (ft)	51	56	~215	96	~810	14	98	0	~563	304
Queue Length 95th (ft)	109	87	#347	163	#1086	42	152	51	#788	#593
Internal Link Dist (ft)		486		661			407			302
Turn Bay Length (ft)	300		240		120	130		180	260	
Base Capacity (vph)	159	969	177	305	787	88	1788	797	650	1815
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.47	0.23	2.10	0.47	1.24	0.23	0.30	0.39	1.64	0.71

Intersection Summary

~ Volume exceeds capacity, queue is theoretically infinite.
Queue shown is maximum after two cycles.

95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.

Lane Group	EBT	EBR	WBT	WBR	SBL	SBT	SBR
Lane Group Flow (vph)	1613	720	1519	493	461	445	422
v/c Ratio	0.81	0.68	1.00	0.52	0.70	0.73	0.73
Control Delay	18.7	4.9	42.7	3.5	22.7	23.6	23.5
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	18.7	4.9	42.7	3.5	22.7	23.6	23.5
Queue Length 50th (ft)	176	0	~274	0	143	134	121
Queue Length 95th (ft)	232	55	#432	46	#248	#281	#257
Internal Link Dist (ft)	661		674			105	
Turn Bay Length (ft)		400		560	65		350
Base Capacity (vph)	2003	1064	1518	956	656	606	581
Starvation Cap Reductn	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0
Reduced v/c Ratio	0.81	0.68	1.00	0.52	0.70	0.73	0.73

Intersection Summary

~ Volume exceeds capacity, queue is theoretically infinite.
Queue shown is maximum after two cycles.

95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.

Lane Group	EBT	EBR	WBT	WBR	NBL	NBT	NBR
Lane Group Flow (vph)	1597	678	1091	414	468	467	428
v/c Ratio	1.07	0.44	0.72	0.46	0.72	0.74	0.68
Control Delay	64.3	0.9	17.9	3.3	24.1	23.5	20.9
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	64.3	0.9	17.9	3.3	24.1	23.5	20.9
Queue Length 50th (ft)	~352	0	166	0	143	138	116
Queue Length 95th (ft)	#474	0	230	43	#304	#312	#241
Internal Link Dist (ft)	674		169			405	
Turn Bay Length (ft)				1000	260		160
Base Capacity (vph)	1494	1547	1509	893	646	634	628
Starvation Cap Reductn	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0
Reduced v/c Ratio	1.07	0.44	0.72	0.46	0.72	0.74	0.68

Intersection Summary

~ Volume exceeds capacity, queue is theoretically infinite.
Queue shown is maximum after two cycles.

95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.

Lane Group	EBT	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Group Flow (vph)	2719	100	1838	328	16	216	88	134	58	10
v/c Ratio	2.69	1.03	0.89	0.36	0.26	0.13	0.14	1.47	0.04	0.02
Control Delay	781.8	148.8	33.2	4.0	56.6	12.6	0.5	298.2	18.8	0.0
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	781.8	148.8	33.2	4.0	56.6	12.6	0.5	298.2	18.8	0.0
Queue Length 50th (ft)	~1107	~68	389	19	10	20	0	~119	10	0
Queue Length 95th (ft)	#1138	#163	427	54	31	36	0	#225	24	0
Internal Link Dist (ft)	250		280			220			326	
Turn Bay Length (ft)		90		185	50		140	100		185
Base Capacity (vph)	1011	97	2058	919	62	1627	607	91	1493	654
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	2.69	1.03	0.89	0.36	0.26	0.13	0.14	1.47	0.04	0.02

Intersection Summary

~ Volume exceeds capacity, queue is theoretically infinite.
Queue shown is maximum after two cycles.

95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.

Intersection	
Int Delay, s/veh	0.8

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Vol, veh/h	45	32	1158	73	15	1622
Future Vol, veh/h	45	32	1158	73	15	1622
Conflicting Peds, #/hr	0	0	0	4	4	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	-	50	-
Veh in Median Storage, #	2	-	0	-	-	0
Grade, %	0	-	0	-	-	0
Peak Hour Factor	93	93	93	93	93	93
Heavy Vehicles, %	0	0	7	8	0	6
Mvmt Flow	48	34	1245	78	16	1744

Major/Minor	Minor1		Major1		Major2	
Conflicting Flow All	2192	666	0	0	1327	0
Stage 1	1288	-	-	-	-	-
Stage 2	904	-	-	-	-	-
Critical Hdwy	6.8	6.9	-	-	4.1	-
Critical Hdwy Stg 1	5.8	-	-	-	-	-
Critical Hdwy Stg 2	5.8	-	-	-	-	-
Follow-up Hdwy	3.5	3.3	-	-	2.2	-
Pot Cap-1 Maneuver	~ 40	407	-	-	527	-
Stage 1	226	-	-	-	-	-
Stage 2	360	-	-	-	-	-
Platoon blocked, %			-	-		-
Mov Cap-1 Maneuver	~ 39	405	-	-	525	-
Mov Cap-2 Maneuver	181	-	-	-	-	-
Stage 1	225	-	-	-	-	-
Stage 2	349	-	-	-	-	-

Approach	WB	NB	SB
HCM Control Delay, s	28.4	0	0.1
HCM LOS	D		

Minor Lane/Major Mvmt	NBT	NBR	WBLn1	SBL	SBT
Capacity (veh/h)	-	-	235	525	-
HCM Lane V/C Ratio	-	-	0.352	0.031	-
HCM Control Delay (s)	-	-	28.4	12.1	-
HCM Lane LOS	-	-	D	B	-
HCM 95th %tile Q(veh)	-	-	1.5	0.1	-

Notes

~: Volume exceeds capacity $: Delay exceeds 300s +: Computation Not Defined *: All major volume in platoon

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Volume (veh/h)	152	0	0	53	29	60
Future Volume (Veh/h)	152	0	0	53	29	60
Sign Control		Stop	Stop		Free	
Grade		0%	0%		0%	
Peak Hour Factor	0.89	0.89	0.89	0.89	0.89	0.89
Hourly flow rate (vph)	171	0	0	60	33	67
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type					None	
Median storage veh)						
Upstream signal (ft)						
pX, platoon unblocked						
vC, conflicting volume	160	100	133	0	0	
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	160	100	133	0	0	
tC, single (s)	7.1	6.5	6.5	6.2	4.1	
tC, 2 stage (s)						
tF (s)	3.5	4.0	4.0	3.3	2.2	
p0 queue free %	77	100	100	94	98	
cM capacity (veh/h)	747	773	740	1082	1617	

Direction, Lane #	EB 1	WB 1	SB 1
Volume Total	171	60	100
Volume Left	171	0	33
Volume Right	0	60	67
cSH	747	1082	1617
Volume to Capacity	0.23	0.06	0.02
Queue Length 95th (ft)	22	4	2
Control Delay (s)	11.2	8.5	2.5
Lane LOS	B	A	A
Approach Delay (s)	11.2	8.5	2.5
Approach LOS	B	A	

Intersection Summary			
Average Delay	8.1		
Intersection Capacity Utilization	27.1%	ICU Level of Service	A
Analysis Period (min)	15		

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Volume (veh/h)	152	26	52	225	69	135
Future Volume (Veh/h)	152	26	52	225	69	135
Sign Control	Free			Free	Stop	
Grade	0%			0%	0%	
Peak Hour Factor	0.89	0.89	0.89	0.89	0.89	0.89
Hourly flow rate (vph)	171	29	58	253	78	152
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type	None			None		
Median storage veh)						
Upstream signal (ft)	426					
pX, platoon unblocked						
vC, conflicting volume			200		554	186
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol			200		554	186
tC, single (s)			4.1		6.4	6.2
tC, 2 stage (s)						
tF (s)			2.2		3.5	3.3
p0 queue free %			96		83	82
cM capacity (veh/h)			1360		469	857

Direction, Lane #	EB 1	WB 1	NB 1
Volume Total	200	311	230
Volume Left	0	58	78
Volume Right	29	0	152
cSH	1700	1360	669
Volume to Capacity	0.12	0.04	0.34
Queue Length 95th (ft)	0	3	38
Control Delay (s)	0.0	1.8	13.2
Lane LOS		A	B
Approach Delay (s)	0.0	1.8	13.2
Approach LOS			B

Intersection Summary			
Average Delay	4.8		
Intersection Capacity Utilization	46.4%	ICU Level of Service	A
Analysis Period (min)	15		

Intersection	
Int Delay, s/veh	4.7

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Vol, veh/h	152	26	52	225	69	135
Future Vol, veh/h	152	26	52	225	69	135
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	0	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	89	89	89	89	89	89
Heavy Vehicles, %	26	24	4	6	4	2
Mvmt Flow	171	29	58	253	78	152

Major/Minor	Major1		Major2		Minor1	
Conflicting Flow All	0	0	200	0	555	186
Stage 1	-	-	-	-	186	-
Stage 2	-	-	-	-	369	-
Critical Hdwy	-	-	4.14	-	6.44	6.22
Critical Hdwy Stg 1	-	-	-	-	5.44	-
Critical Hdwy Stg 2	-	-	-	-	5.44	-
Follow-up Hdwy	-	-	2.236	-	3.536	3.318
Pot Cap-1 Maneuver	-	-	1360	-	489	856
Stage 1	-	-	-	-	841	-
Stage 2	-	-	-	-	695	-
Platoon blocked, %	-	-		-		
Mov Cap-1 Maneuver	-	-	1360	-	465	856
Mov Cap-2 Maneuver	-	-	-	-	465	-
Stage 1	-	-	-	-	841	-
Stage 2	-	-	-	-	660	-

Approach	EB	WB	NB
HCM Control Delay, s	0	1.5	13.2
HCM LOS			B

Minor Lane/Major Mvmt	NBLn1	EBT	EBR	WBL	WBT
Capacity (veh/h)	666	-	-	1360	-
HCM Lane V/C Ratio	0.344	-	-	0.043	-
HCM Control Delay (s)	13.2	-	-	7.8	0
HCM Lane LOS	B	-	-	A	A
HCM 95th %tile Q(veh)	1.5	-	-	0.1	-

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (vph)	224	113	1137	157	39	1686
Future Volume (vph)	224	113	1137	157	39	1686
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost time (s)	5.2	5.2	5.8	5.8	4.6	5.8
Lane Util. Factor	1.00	1.00	0.95	1.00	1.00	0.95
Frpb, ped/bikes	1.00	1.00	1.00	0.97	1.00	1.00
Flpb, ped/bikes	1.00	1.00	1.00	1.00	1.00	1.00
Frt	1.00	0.85	1.00	0.85	1.00	1.00
Flt Protected	0.95	1.00	1.00	1.00	0.95	1.00
Satd. Flow (prot)	1641	1538	3505	1259	1504	3374
Flt Permitted	0.95	1.00	1.00	1.00	0.95	1.00
Satd. Flow (perm)	1641	1538	3505	1259	1504	3374
Peak-hour factor, PHF	0.84	0.84	0.84	0.84	0.84	0.84
Adj. Flow (vph)	267	135	1354	187	46	2007
RTOR Reduction (vph)	0	103	0	102	0	0
Lane Group Flow (vph)	267	32	1354	85	46	2007
Confl. Peds. (#/hr)				1	1	
Confl. Bikes (#/hr)				5		
Heavy Vehicles (%)	10%	5%	3%	25%	20%	7%
Turn Type	Perm	Perm	NA	Perm	Prot	NA
Protected Phases			2		1	6
Permitted Phases	8	8		2		
Actuated Green, G (s)	14.2	14.2	27.2	27.2	2.8	34.6
Effective Green, g (s)	14.2	14.2	27.2	27.2	2.8	34.6
Actuated g/C Ratio	0.24	0.24	0.45	0.45	0.05	0.58
Clearance Time (s)	5.2	5.2	5.8	5.8	4.6	5.8
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0	3.0
Lane Grp Cap (vph)	389	365	1594	572	70	1952
v/s Ratio Prot			0.39		0.03	c0.59
v/s Ratio Perm	c0.16	0.02		0.07		
v/c Ratio	0.69	0.09	0.85	0.15	0.66	1.03
Uniform Delay, d1	20.8	17.8	14.5	9.5	28.0	12.6
Progression Factor	1.00	1.00	1.00	1.00	1.00	1.00
Incremental Delay, d2	5.0	0.1	5.9	0.5	20.1	27.9
Delay (s)	25.7	17.9	20.3	10.1	48.1	40.5
Level of Service	C	B	C	B	D	D
Approach Delay (s)	23.1		19.1			40.7
Approach LOS	C		B			D

Intersection Summary			
HCM 2000 Control Delay	30.6	HCM 2000 Level of Service	C
HCM 2000 Volume to Capacity ratio	1.02		
Actuated Cycle Length (s)	59.8	Sum of lost time (s)	15.6
Intersection Capacity Utilization	68.2%	ICU Level of Service	C
Analysis Period (min)	15		
c Critical Lane Group			

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	66	144	51	327	125	861	18	468	270	936	1081	49
Future Volume (vph)	66	144	51	327	125	861	18	468	270	936	1081	49
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.6	5.2		4.6	5.2	4.6	4.6	5.4	4.6	4.6	5.8	
Lane Util. Factor	1.00	0.95		0.97	1.00	1.00	1.00	0.91	1.00	0.97	0.95	
Frpb, ped/bikes	1.00	1.00		1.00	1.00	1.00	1.00	1.00	0.99	1.00	1.00	
Flpb, ped/bikes	1.00	1.00		1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	
Frt	1.00	0.96		1.00	1.00	0.85	1.00	1.00	0.85	1.00	0.99	
Flt Protected	0.95	1.00		0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	
Satd. Flow (prot)	1188	2894		3045	1226	1568	1543	5036	1474	3335	3284	
Flt Permitted	0.95	1.00		0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	
Satd. Flow (perm)	1188	2894		3045	1226	1568	1543	5036	1474	3335	3284	
Peak-hour factor, PHF	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88
Adj. Flow (vph)	75	164	58	372	142	978	20	532	307	1064	1228	56
RTOR Reduction (vph)	0	33	0	0	0	122	0	0	176	0	2	0
Lane Group Flow (vph)	75	189	0	372	142	856	20	532	131	1064	1282	0
Confl. Peds. (#/hr)			5	5					2	2		
Confl. Bikes (#/hr)			1						5			1
Heavy Vehicles (%)	52%	18%	23%	15%	55%	3%	17%	3%	8%	5%	7%	55%
Turn Type	Prot	NA		Prot	NA	pm+ov	Prot	NA	pm+ov	Prot	NA	
Protected Phases	7	4		3	8	1	5	2	3	1	6	
Permitted Phases						8			2			
Actuated Green, G (s)	9.9	24.4		6.5	21.0	42.6	2.3	42.2	48.7	21.6	61.1	
Effective Green, g (s)	9.9	24.4		6.5	21.0	42.6	2.3	42.2	48.7	21.6	61.1	
Actuated g/C Ratio	0.09	0.21		0.06	0.18	0.37	0.02	0.37	0.43	0.19	0.53	
Clearance Time (s)	4.6	5.2		4.6	5.2	4.6	4.6	5.4	4.6	4.6	5.8	
Vehicle Extension (s)	3.0	3.0		3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	
Lane Grp Cap (vph)	102	616		172	224	583	30	1856	626	629	1752	
v/s Ratio Prot	0.06	c0.07		c0.12	0.12	c0.28	0.01	0.11	0.01	c0.32	c0.39	
v/s Ratio Perm						0.27			0.08			
v/c Ratio	0.74	0.31		2.16	0.63	1.47	0.67	0.29	0.21	1.69	0.73	
Uniform Delay, d1	51.0	37.9		54.0	43.2	36.0	55.7	25.5	20.7	46.5	20.4	
Progression Factor	1.00	1.00		1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	
Incremental Delay, d2	23.8	0.3		542.0	5.8	220.1	44.1	0.4	0.2	318.1	2.7	
Delay (s)	74.8	38.2		596.0	49.0	256.1	99.9	25.9	20.9	364.5	23.2	
Level of Service	E	D		F	D	F	F	C	C	F	C	
Approach Delay (s)		47.5			321.1			25.8			177.8	
Approach LOS		D			F			C			F	

Intersection Summary			
HCM 2000 Control Delay	186.7	HCM 2000 Level of Service	F
HCM 2000 Volume to Capacity ratio	1.21		
Actuated Cycle Length (s)	114.5	Sum of lost time (s)	20.2
Intersection Capacity Utilization	102.1%	ICU Level of Service	G
Analysis Period (min)	15		
c Critical Lane Group			

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	66	144	51	327	125	861	18	468	270	936	1081	49
Future Volume (veh/h)	66	144	51	327	125	861	18	468	270	936	1081	49
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		0.98	1.00		0.99	1.00		0.98	1.00		0.98
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1129	1633	1559	1678	1085	1856	1648	1856	1781	1826	1796	1085
Adj Flow Rate, veh/h	75	164	58	372	142	978	20	532	307	1064	1228	56
Peak Hour Factor	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88
Percent Heavy Veh, %	52	18	23	15	55	3	17	3	8	5	7	55
Cap, veh/h	85	579	197	173	252	657	32	1651	568	629	1633	74
Arrive On Green	0.08	0.26	0.26	0.06	0.23	0.23	0.02	0.33	0.33	0.19	0.49	0.49
Sat Flow, veh/h	1076	2261	768	3100	1085	1562	1570	5066	1484	3374	3320	151
Grp Volume(v), veh/h	75	110	112	372	142	978	20	532	307	1064	631	653
Grp Sat Flow(s),veh/h/ln	1076	1552	1478	1550	1085	1562	1570	1689	1484	1687	1706	1765
Q Serve(g_s), s	7.9	6.5	7.0	6.4	13.3	26.7	1.5	9.1	18.5	21.4	34.2	34.3
Cycle Q Clear(g_c), s	7.9	6.5	7.0	6.4	13.3	26.7	1.5	9.1	18.5	21.4	34.2	34.3
Prop In Lane	1.00		0.52	1.00		1.00	1.00		1.00	1.00		0.09
Lane Grp Cap(c), veh/h	85	397	378	173	252	657	32	1651	568	629	839	868
V/C Ratio(X)	0.88	0.28	0.29	2.15	0.56	1.49	0.62	0.32	0.54	1.69	0.75	0.75
Avail Cap(c_a), veh/h	138	473	451	173	252	657	86	1651	568	629	839	868
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	52.3	34.2	34.4	54.2	38.9	33.4	55.8	29.1	27.7	46.7	23.5	23.5
Incr Delay (d2), s/veh	29.3	0.4	0.4	537.2	2.8	228.2	17.9	0.5	3.7	318.0	6.1	6.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	2.8	2.5	2.6	15.4	3.7	59.0	0.7	3.6	7.0	36.5	14.3	14.8
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	81.6	34.6	34.8	591.4	41.7	261.6	73.6	29.7	31.3	364.7	29.7	29.5
LnGrp LOS	F	C	C	F	D	F	E	C	C	F	C	C
Approach Vol, veh/h		297			1492			859			2348	
Approach Delay, s/veh		46.5			322.9			31.3			181.4	
Approach LOS		D			F			C			F	

Timer - Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	26.0	43.2	11.0	34.6	7.0	62.2	13.7	31.9
Change Period (Y+Rc), s	4.6	* 5.8	4.6	5.2	4.6	5.8	4.6	5.2
Max Green Setting (Gmax), s	21.4	* 37	6.4	35.0	6.3	52.1	14.7	26.7
Max Q Clear Time (g_c+I1), s	23.4	20.5	8.4	9.0	3.5	36.3	9.9	28.7
Green Ext Time (p_c), s	0.0	4.1	0.0	1.3	0.0	7.5	0.1	0.0

Intersection Summary	
HCM 6th Ctrl Delay	189.8
HCM 6th LOS	F

Notes

User approved pedestrian interval to be less than phase max green.

* HCM 6th computational engine requires equal clearance times for the phases crossing the barrier.

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	1	1564	698	0	1473	478	0	0	0	667	0	621
Future Volume (vph)	1	1564	698	0	1473	478	0	0	0	667	0	621
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		5.0	5.0		5.0	5.0				5.8	5.8	5.8
Lane Util. Factor		0.91	1.00		0.95	1.00				0.95	0.91	0.95
Frpb, ped/bikes		1.00	0.98		1.00	0.98				1.00	1.00	1.00
Flpb, ped/bikes		1.00	1.00		1.00	1.00				1.00	1.00	1.00
Frt		1.00	0.85		1.00	0.85				1.00	0.93	0.85
Flt Protected		1.00	1.00		1.00	1.00				0.95	0.98	1.00
Satd. Flow (prot)		5085	1515		3505	1563				1698	1510	1447
Flt Permitted		0.91	1.00		1.00	1.00				0.95	0.98	1.00
Satd. Flow (perm)		4624	1515		3505	1563				1698	1510	1447
Peak-hour factor, PHF	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97
Adj. Flow (vph)	1	1612	720	0	1519	493	0	0	0	688	0	640
RTOR Reduction (vph)	0	0	408	0	0	279	0	0	0	0	22	22
Lane Group Flow (vph)	0	1613	312	0	1519	214	0	0	0	461	423	400
Confl. Peds. (#/hr)	1		4	4		1						
Confl. Bikes (#/hr)						1						
Heavy Vehicles (%)	0%	2%	4%	0%	3%	1%	0%	0%	0%	1%	0%	6%
Turn Type	Perm	NA	Perm		NA	Perm				Split	NA	Perm
Protected Phases		2			6					4	4	
Permitted Phases	2		2			6						4
Actuated Green, G (s)		26.0	26.0		26.0	26.0				23.2	23.2	23.2
Effective Green, g (s)		26.0	26.0		26.0	26.0				23.2	23.2	23.2
Actuated g/C Ratio		0.43	0.43		0.43	0.43				0.39	0.39	0.39
Clearance Time (s)		5.0	5.0		5.0	5.0				5.8	5.8	5.8
Vehicle Extension (s)		3.0	3.0		3.0	3.0				3.0	3.0	3.0
Lane Grp Cap (vph)		2003	656		1518	677				656	583	559
v/s Ratio Prot					c0.43					0.27	c0.28	
v/s Ratio Perm		0.35	0.21			0.14						0.28
v/c Ratio		0.81	0.48		1.00	0.32				0.70	0.73	0.72
Uniform Delay, d1		14.8	12.1		17.0	11.2				15.5	15.7	15.6
Progression Factor		1.00	1.00		1.00	1.00				1.00	1.00	1.00
Incremental Delay, d2		2.5	0.5		23.3	0.3				6.2	7.7	7.6
Delay (s)		17.3	12.7		40.3	11.4				21.7	23.4	23.2
Level of Service		B	B		D	B				C	C	C
Approach Delay (s)		15.8			33.2			0.0			22.7	
Approach LOS		B			C			A			C	

Intersection Summary			
HCM 2000 Control Delay	23.6	HCM 2000 Level of Service	C
HCM 2000 Volume to Capacity ratio	0.87		
Actuated Cycle Length (s)	60.0	Sum of lost time (s)	10.8
Intersection Capacity Utilization	77.4%	ICU Level of Service	D
Analysis Period (min)	15		
c Critical Lane Group			

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	0	1565	664	0	1069	406	818	0	517	0	0	0
Future Volume (vph)	0	1565	664	0	1069	406	818	0	517	0	0	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		5.0	4.0		5.0	5.0	5.8	5.8	5.8			
Lane Util. Factor		0.95	1.00		0.95	1.00	0.95	0.91	0.95			
Frpb, ped/bikes		1.00	0.98		1.00	0.98	1.00	1.00	1.00			
Flpb, ped/bikes		1.00	1.00		1.00	1.00	1.00	1.00	1.00			
Frt		1.00	0.85		1.00	0.85	1.00	0.97	0.85			
Flt Protected		1.00	1.00		1.00	1.00	0.95	0.96	1.00			
Satd. Flow (prot)		3539	1547		3574	1550	1618	1535	1519			
Flt Permitted		1.00	1.00		1.00	1.00	0.95	0.96	1.00			
Satd. Flow (perm)		3539	1547		3574	1550	1618	1535	1519			
Peak-hour factor, PHF	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98
Adj. Flow (vph)	0	1597	678	0	1091	414	835	0	528	0	0	0
RTOR Reduction (vph)	0	0	0	0	0	239	0	22	22	0	0	0
Lane Group Flow (vph)	0	1597	678	0	1091	175	468	445	406	0	0	0
Confl. Peds. (#/hr)	1		5	5		1						
Confl. Bikes (#/hr)			1									
Heavy Vehicles (%)	0%	2%	2%	0%	1%	2%	6%	0%	1%	0%	0%	0%
Turn Type		NA	Free		NA	Perm	Perm	NA	Perm			
Protected Phases		2			6			8				
Permitted Phases			Free			6	8		8			
Actuated Green, G (s)		25.6	60.6		25.6	25.6	24.2	24.2	24.2			
Effective Green, g (s)		25.6	60.6		25.6	25.6	24.2	24.2	24.2			
Actuated g/C Ratio		0.42	1.00		0.42	0.42	0.40	0.40	0.40			
Clearance Time (s)		5.0			5.0	5.0	5.8	5.8	5.8			
Vehicle Extension (s)		3.0			3.0	3.0	3.0	3.0	3.0			
Lane Grp Cap (vph)		1495	1547		1509	654	646	612	606			
v/s Ratio Prot		c0.45			0.31							
v/s Ratio Perm			0.44			0.11	0.29	0.29	0.27			
v/c Ratio		1.07	0.44		0.72	0.27	0.72	0.73	0.67			
Uniform Delay, d1		17.5	0.0		14.6	11.4	15.4	15.4	14.9			
Progression Factor		1.00	1.00		1.00	1.00	1.00	1.00	1.00			
Incremental Delay, d2		43.9	0.9		1.7	0.2	6.9	7.4	5.8			
Delay (s)		61.4	0.9		16.3	11.6	22.3	22.8	20.7			
Level of Service		E	A		B	B	C	C	C			
Approach Delay (s)		43.4			15.0			22.0			0.0	
Approach LOS		D			B			C			A	

Intersection Summary			
HCM 2000 Control Delay	29.4	HCM 2000 Level of Service	C
HCM 2000 Volume to Capacity ratio	0.90		
Actuated Cycle Length (s)	60.6	Sum of lost time (s)	10.8
Intersection Capacity Utilization	80.2%	ICU Level of Service	D
Analysis Period (min)	15		
c Critical Lane Group			

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	81	2250	8	86	1581	282	14	110	151	115	50	9
Future Volume (vph)	81	2250	8	86	1581	282	14	110	151	115	50	9
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		5.8		4.6	5.0	4.6	4.6	5.0	5.0	4.6	5.0	5.0
Lane Util. Factor		0.91		1.00	0.91	1.00	1.00	0.86	0.86	1.00	0.95	1.00
Frpb, ped/bikes		1.00		1.00	1.00	1.00	1.00	0.99	0.99	1.00	1.00	0.99
Flpb, ped/bikes		1.00		1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Frt		1.00		1.00	1.00	0.85	1.00	0.94	0.85	1.00	1.00	0.85
Flt Protected		1.00		0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (prot)		4843		1752	4715	1482	1253	4280	1318	1770	3505	1274
Flt Permitted		0.64		0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (perm)		3085		1752	4715	1482	1253	4280	1318	1770	3505	1274
Peak-hour factor, PHF	0.86	0.86	0.86	0.86	0.86	0.86	0.86	0.86	0.86	0.86	0.86	0.86
Adj. Flow (vph)	94	2616	9	100	1838	328	16	128	176	134	58	10
RTOR Reduction (vph)	0	1	0	0	0	139	0	54	54	0	0	6
Lane Group Flow (vph)	0	2718	0	100	1838	189	16	162	34	134	58	4
Confl. Peds. (#/hr)							2		1	1		2
Heavy Vehicles (%)	4%	7%	0%	3%	10%	9%	44%	9%	4%	2%	3%	25%
Turn Type	pm+pt	NA		Prot	NA	pm+ov	Prot	NA	Perm	Prot	NA	Perm
Protected Phases	7	4		3	8	1	5	2		1	6	
Permitted Phases	4					8			2			6
Actuated Green, G (s)		33.0		5.6	44.0	49.2	2.0	39.8	39.8	5.2	43.0	43.0
Effective Green, g (s)		33.0		5.6	44.0	49.2	2.0	39.8	39.8	5.2	43.0	43.0
Actuated g/C Ratio		0.32		0.05	0.42	0.47	0.02	0.38	0.38	0.05	0.42	0.42
Clearance Time (s)		5.8		4.6	5.0	4.6	4.6	5.0	5.0	4.6	5.0	5.0
Vehicle Extension (s)		3.0		3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0
Lane Grp Cap (vph)		982		94	2002	703	24	1644	506	88	1454	528
v/s Ratio Prot				0.06	c0.39	0.01	0.01	c0.04		c0.08	c0.02	
v/s Ratio Perm		c0.88				0.11			0.03			0.00
v/c Ratio		2.77		1.06	0.92	0.27	0.67	0.10	0.07	1.52	0.04	0.01
Uniform Delay, d1		35.3		49.0	28.1	16.4	50.5	20.4	20.2	49.2	18.0	17.8
Progression Factor		1.00		1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Incremental Delay, d2		798.5		111.2	7.2	0.2	52.8	0.1	0.3	284.5	0.1	0.0
Delay (s)		833.8		160.2	35.3	16.6	103.3	20.5	20.4	333.7	18.1	17.8
Level of Service		F		F	D	B	F	C	C	F	B	B
Approach Delay (s)		833.8			38.1			24.6			227.4	
Approach LOS		F			D			C			F	

Intersection Summary			
HCM 2000 Control Delay	437.1	HCM 2000 Level of Service	F
HCM 2000 Volume to Capacity ratio	1.30		
Actuated Cycle Length (s)	103.6	Sum of lost time (s)	20.0
Intersection Capacity Utilization	130.0%	ICU Level of Service	H
Analysis Period (min)	15		

c Critical Lane Group

Appendix B

Notice of Preparation (NOP) and NOP Comment Letters

City of San Leandro
Civic Center, 835 E. 14th Street
San Leandro, California 94577
www.sanleandro.org

NOTICE OF PREPARATION FOR A DRAFT ENVIRONMENTAL IMPACT REPORT FOR PLN22-0039, A NEW WAREHOUSE PROJECT AT 880 DOOLITTLE DRIVE, SAN LEANDRO, CALIFORNIA 94577

Date: November 22, 2023

To: State Clearinghouse and Interested Parties and Organizations

Project Title: 880 Doolittle Drive Industrial Project

Lead Agency: City of San Leandro
Community Development Department
835 East 14th Street
San Leandro, California 94577

Contact: Cindy Lemaire, AICP, CNU-A, Senior Planner, Community Development Department

Public Review Period: November 22, 2023 through December 22, 2023, 2023 (30 days) in accordance with CEQA Guidelines Section 15082

Purpose of the Notice

The intent of this Notice of Preparation (NOP) is to inform agencies and interested parties that the City of San Leandro (City) is preparing a Draft Environmental Impact Report (EIR) for the proposed 880 Doolittle Drive Industrial Project in accordance with California Environmental Quality Act (CEQA) Guidelines Section 15082. This NOP provides information about the project and its potential environmental effects and requests that comments be provided on the scope and content of the Draft EIR.

Project Location

The project site is located at 880 Doolittle Drive, which is on the east side of Doolittle Drive just east of adjacent properties with frontage on Doolittle Drive, approximately 0.2 mile north of its intersection with Davis Street, in San Leandro, California. The intersection of Davis Street and Doolittle Drive is the nearest roadway intersection to the project. The project site is approximately 14.14 acres and consists of two Assessor's parcels: APN 77A-0741-004-02 and 77A-0741-005-00. Existing access to the project site is from a driveway on Doolittle Drive (State Route 61) and from a driveway at the southern terminus of Hester Street, north of the project site. The project site is included on a list of hazardous material sites compiled pursuant to Government Code Section 65962.5. Figure 1 shows the site location in a regional context. Figure 2 shows an aerial view of the location of the site relative to the surrounding area.

Project Description

The project involves the demolition of existing warehouse buildings on the site, which are currently vacant, and associated surface parking. Following demolition of existing structures and a lot merger, the proposed project would include construction of a new warehouse with supporting office space, site improvements, and landscaping. The proposed warehouse would be approximately 244,573 square feet, comprised of a 229,573 square-foot of warehouse and 15,000 square feet of associated office space. Approximately 10,000 square feet of office space would be provided on the ground floor alongside the warehouse use. The remaining 5,000 square feet of office space would be on a mezzanine level of the warehouse. The maximum building height as proposed is 50 feet with an interior clear height of 40 feet. The warehouse would be served by 64 dock-high loading doors and surface parking. Surface parking as proposed includes 116 standard parking stalls, 57 compact parking stalls, 3 accessible standard stalls, 3 accessible van stalls, 21 electric vehicle charging stations, and 4 clean air/vanpool stalls.

A Conditional Use Permit, Site Plan Review, Height Exception, Building Permit, Grading Permit, a Tree Removal Permit, and a lot merger would be required to implement the project. Figure 3 shows a project concept schematic of the proposed project.

Potential Environmental Effects

An Initial Study will be prepared for the project. The City preliminarily anticipates that the project would have no impact, a less than significant impact, or a less than significant impact with mitigation incorporated for all environmental issue areas evaluated under CEQA except for greenhouse gas emissions, hazards and hazardous materials, noise, and transportation, as well as mandatory findings of significance associated with these issue areas. The Draft EIR will further evaluate the potential project impacts related to these environmental issue areas.

The Draft EIR will describe the reasonably foreseeable and potentially significant adverse effects of the proposed project (both direct and indirect). The Draft EIR will also evaluate the cumulative impacts of the project when considered in conjunction with other related past, present, and reasonably foreseeable future projects. The Draft EIR will identify mitigation to avoid and/or reduce impacts deemed potentially significant, identify a reasonable range of alternatives, and compare the environmental impacts of the alternatives to the impacts of the proposed project. Comments provided in response to the NOP and the results of the ensuing analyses may identify additional environmental topics to be evaluated.

When the Draft EIR is completed, it will be available for review at the City's Community Development Department located at 835 East 14th Street, San Leandro, California.

Providing Comments

At this time, the City is soliciting comments on the scope of the Draft EIR, including potential environmental impacts of the project and alternatives to be considered. This information will be considered when preparing the Draft EIR's discussion of environmental impacts, mitigation measures, and alternatives. Because of time limits mandated by State law, comments must be received no later than 5**:00 p.m. on December 22, 2023**, which ends the 30-day scoping period.

Comments may be submitted by U.S. mail or by email prior to the close of the NOP scoping period.

Mail comments to:

Cindy Lemaire
Community Development Department
City of San Leandro
835 East 14th Street
San Leandro, California 94577

Email comments to Cindy Lemaire at: clemaire@sanleandro.org

For comments submitted via email, please include "NOP Comments: 880 Doolittle Drive Industrial Project" in the subject line and the name and physical address of the commenter in the body of the email.

All comments on environmental issues received during the public scoping period will be considered and addressed in the Draft EIR. This NOP, the Initial Study, and other public review documents for this project will be available for viewing online. These documents will also be available for review at the Community Development Department office at 835 East 14th Street during regular business hours.

For questions regarding this notice, please contact Cindy Lemaire at clemaire@sanleandro.org.

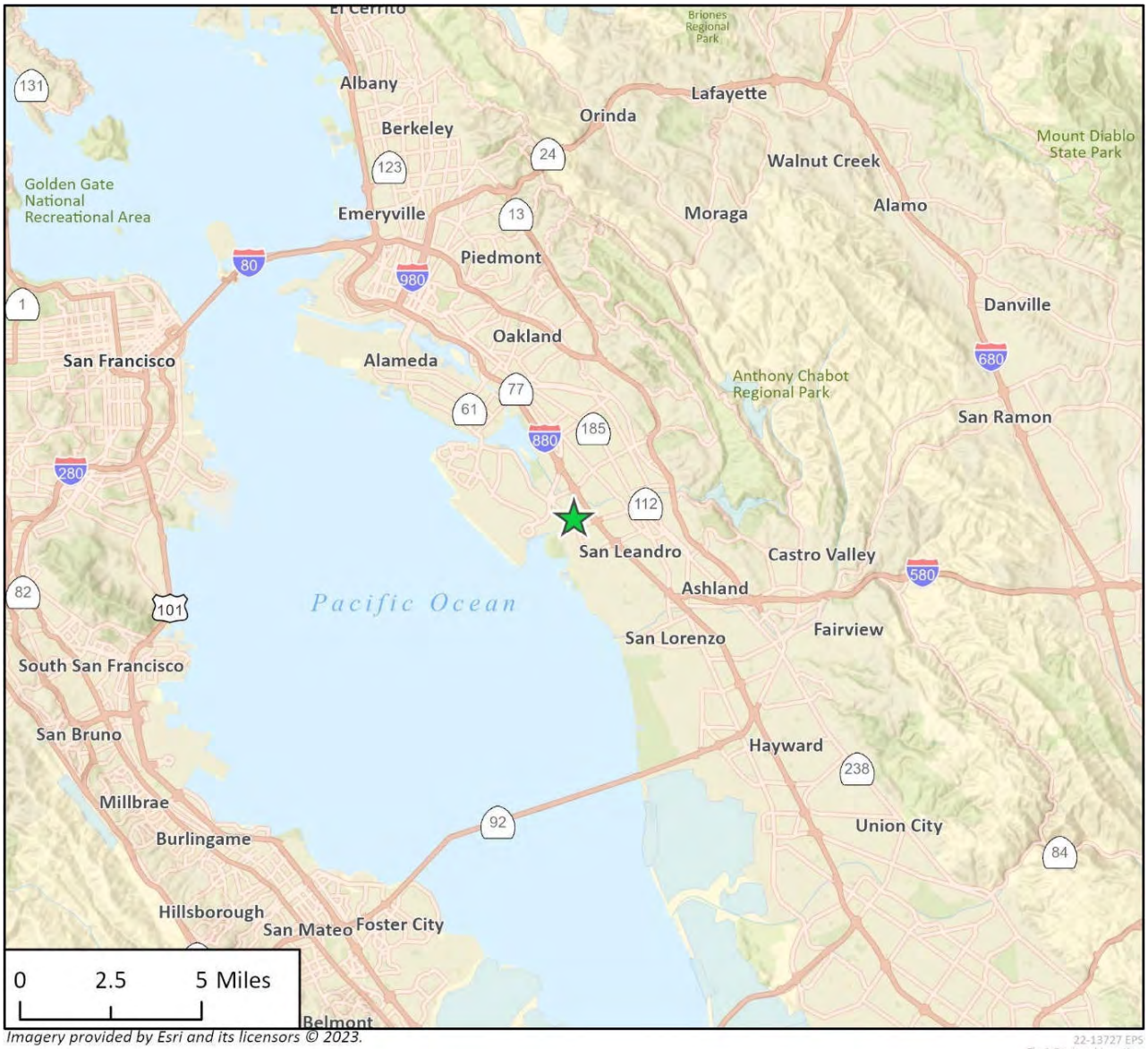
Attachments

Figure 1 Project Location

Figure 2 Project Site

Figure 3 Project Concept Schematic

Figure 1 Regional Location



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22-13727 EPS
Fig 1 Regional Location

Project Location

N

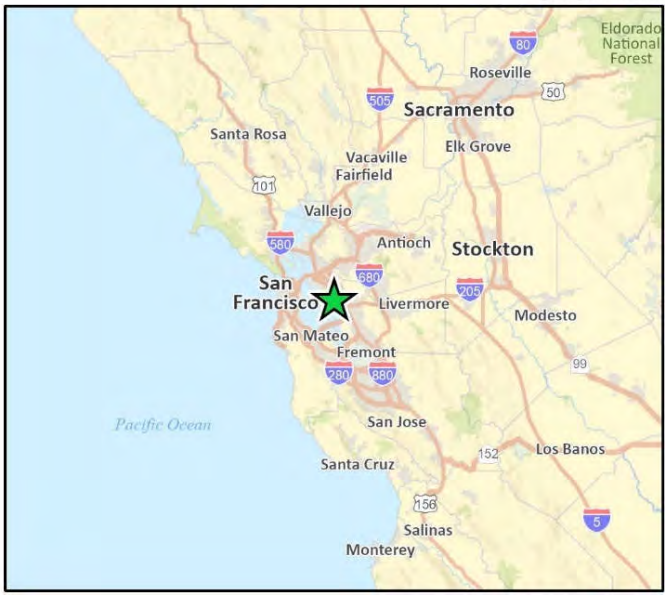

Figure 2 Project Site

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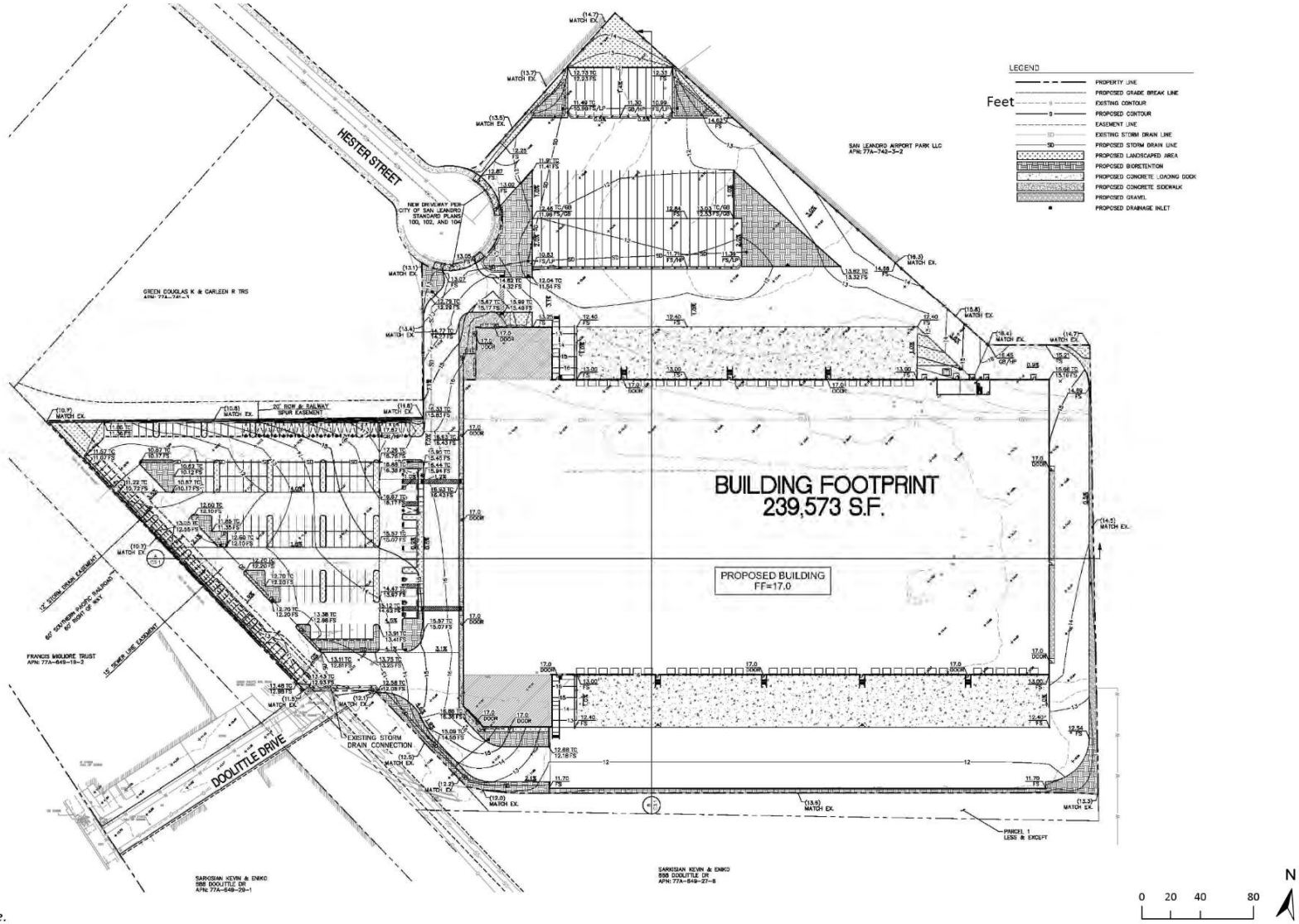
22-13727 EPS
Fig 2 Project Location

Figure 3 Project Concept Schematic



Source: HPA Architecture.

George Dix

From: Lemaire, Cindy <CLemaire@sanleandro.org>
Sent: Tuesday, November 28, 2023 9:08 AM
To: Ortiz, Olivia, CDA
Cc: Adam Petersen; George Dix
Subject: [EXT] RE: NOP Comments: 880 Doolittle Drive Industrial Project -- Alameda County ALUC

CAUTION: This email originated from outside of Rincon Consultants. Be cautious before clicking on any links, or opening any attachments, until you are confident that the content is safe .

Good morning, Olivia,

Thank you very much for your comments, these will be helpful in preparing the environmental document and the conditions of approval.

Regards,

Cindy Lemaire, AICP, CNU-A
Senior Planner
(she/her/hers)
510.577.3348

From: Ortiz, Olivia, CDA <Olivia.Ortiz@acgov.org>
Sent: Monday, November 27, 2023 3:05 PM
To: Lemaire, Cindy <CLemaire@sanleandro.org>
Subject: NOP Comments: 880 Doolittle Drive Industrial Project -- Alameda County ALUC

You don't often get email from olivia.ortiz@acgov.org. Learn why this is important

ATTENTION: This email is from an external source, outside of the City. While attachments and links are scanned by our Advanced Threat Protection service, we still recommend you use caution when opening or clicking them. Unless you recognize the sender and have an expectation that the content is safe, it is best to ignore this email and report it to the Helpdesk. Sincerely, Your IT Team

Hi Cindy,

Thank you for sending us the Notice of Preparation for 880 Doolittle Drive. I don't believe the ALUC has anything to say regarding the scoping of the analysis, but I did want to share the following with regards to the Oakland Airport Land Use Compatibility Plan:

- The project site is located primarily in the Outer Approach Zone (Zone 4), where warehouses and distribution facilities are a compatible use. This assumes that there will be at most 100 employees per acre and that at least 20% of the parcel will be vacant land (this includes parking areas).
- Commercial and industrial uses are compatible with the 60 dB CNEL contour, in which 880 Doolittle is located
- With the stated height of 50 feet, the new warehouse should be under the Part 77 surface maximum for the area

- The site is located in the plan's avigation easement zone; a sample avigation easement is located here

Thank you,

olivia ortiz (they/them)

🌻 Planner 3, Policy Planning Team
🦋 Alameda County • Community Development Agency • Planning Department
🏢 224 W. Winton Avenue, Room 111, Hayward, CA 94544
✨ 510.670.6523 • olivia.ortiz@acgov.org • https://www.acgov.org/cda/planning/

George Dix

Subject: San Leandro: PLN22-0039 NOP BAAQMD Comments for 880 Doolittle Drive Industrial Project Notice of Preparation (NOP)

From: Mark Tang <mtang@baaqmd.gov>
Sent: Thursday, December 21, 2023 11:42 AM
To: Lemaire, Cindy <CLemaire@sanleandro.org>
Cc: Wendy Goodfriend <wgoodfriend@baaqmd.gov>; Alison Kirk <AKirk@baaqmd.gov>
Subject: BAAQMD Comments for 880 Doolittle Drive Industrial Project Notice of Preparation (NOP)

> You don't often get email from mtang@baaqmd.gov. Learn why this is important

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Dear Cindy Lemaire,

We received notice of the **880 Doolittle Drive Industrial Project (Project) Notice of Preparation (NOP)** and wanted to send you relevant recommendations and resources for the development of the Project. As a reminder, the Air District recently updated the California Environmental Quality Act (CEQA) Guidelines (2023), which provides updated screening methodologies, as well as updates to climate impact thresholds to address greenhouse gas (GHG) emissions. The updated Guidelines can be found here: https://www.baaqmd.gov/plans-and-climate/california-environmental-quality-act-ceqa/updated-ceqa-guidelines.

While the Project's impacts have yet to be evaluated, we wanted to provide you resources for reducing air pollutants and minimizing climate impacts, including the most up to date best practices for warehouse projects, especially for projects located in disadvantaged communities (as defined by SB 1000) and within Air District Overburdened Communities (as defined by Air District Regulation 2, Rule 1: General Requirements, Section 2-1-243).

The Air District recommends the Project incorporate all feasible measures to reduce impacts, including the installation of on-site solar arrays, procurement of 100% renewable energy, electrification of all operations to the extent feasible including 'make-ready' electrification infrastructure, and consideration of truck route management to reduce community impacts. Additionally, the Project should incorporate construction mitigation measures, especially for demolition and site preparation that may elevate fugitive dust. More information and examples are available under the 'Resources' section of this email, as well as the Air District's CEQA Guidelines (2023).

Certain aspects of the Project may require a permit from the Air District (for example, backup diesel generators and asbestos demolition). Please ensure the Air District is adequately recognized as a permitting agency in future environmental documents. Permit requirements may be discussed with Barry Young, Senior Advanced Projects Advisor, at (415) 749-4721 or byoung@baaqmd.gov.

Resources:
The first two documents are similar logistics center/warehouse comment letters that describe Air District recommendations. We are also including additional resource links from other agencies and the Attorney General's office that could be useful in the development of this Project.

- BAAQMD CEQA Comment Letter: CenterPoint North Richmond Warehouse Project EIR
- BAAQMD CEQA Comment Letter: Scannell Properties, LLC North Richmond Warehouse Project NOP
- CARB's Concept Paper for the Freight Handbook: Provides practices to minimize community health impacts from warehouses and freight facilities.
- CA Attorney General's Warehouse Projects: Best Practices and Mitigation Measures to Comply with the California Environmental Quality Act: References good neighbor policies, best practices for community engagement, and other requirements such as fully analyzing impacts from truck trips.

Air District staff are available to assist or respond to any queries associated with this Project, and look forward to reviewing the environmental report. Thank you for your time.

Best,

Mark Tang
ACTING ASSISTANT MANAGER
BAY AREA AIR QUALITY MANAGEMENT DISTRICT

p: 415-749-4778
e: mtang@baaqmd.gov
w: www.baaqmd.gov

ROB BONTA
Attorney General

State of California
DEPARTMENT OF JUSTICE

1300 I STREET, SUITE 125
P.O. BOX 944255
SACRAMENTO, CA 94244-2550

E-Mail: EJ@doj.ca.gov

December 7, 2023

Cindy Lemaire, Senior Planner
City of San Leandro
835 East 14th Street
San Leandro, CA 94577

RE: 880 Doolittle Drive Industrial Project, SCH #2023110597

Dear Ms. Lemaire:

Thank you for the opportunity to provide comments on the Notice of Preparation for the 880 Doolittle Drive Industrial project. While the logistics industry is an important component of our modern economy, warehouses can bring various environmental impacts to the communities where they are located. For example, diesel trucks visiting warehouses emit nitrogen oxide (NO_x)—a primary precursor to smog formation and a significant factor in the development of respiratory problems like asthma, bronchitis, and lung irritation—and diesel particulate matter (a subset of fine particular matter that is smaller than 2.5 micrometers)—a contributor to cancer, heart disease, respiratory illnesses, and premature death.[1] Trucks and on-site loading activities can also be loud, bringing disruptive noise levels during 24/7 operation that can cause hearing damage after prolonged exposure.[2] The hundreds, and sometimes thousands, of daily truck and passenger car trips that warehouses generate can contribute to traffic jams, deterioration of road surfaces, traffic accidents, and unsafe conditions for pedestrians and bicyclists. Depending on the circumstances of an individual project, warehouses may also have other environmental impacts.

To help lead agencies avoid, analyze, and mitigate warehouses' environmental impacts, the Attorney General Office's Bureau of Environmental Justice has published a document containing best practices and mitigation measures for warehouse projects. We have attached a

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[1] California Air Resources Board, Nitrogen Dioxide & Health, https://ww2.arb.ca.gov/resources/nitrogen-dioxide-and-health (NOx); California Air Resources Board, Summary: Diesel Particular Matter Health Impacts, https://ww2.arb.ca.gov/resources/summary-diesel-particulate-matter-health-impacts; Office of Environmental Health Hazard Assessment and American Lung Association of California, Health Effects of Diesel Exhaust, https://oehha.ca.gov/media/downloads/calenviroscreen/indicators/diesel4-02.pdf (DPM).

[2] Noise Sources and Their Effects, https://www.chem.purdue.edu/chemsafety/Training/PPETrain/dblevels.htm (a diesel truck moving 40 miles per hour, 50 feet away, produces 84 decibels of sound).

copy of this document to this letter, and it is also available online.[3] We encourage you to consider the information in this document as you prepare the draft environmental impact report for this project.

Priority should be placed on avoiding land use conflicts between warehouses and sensitive receptors and on mitigating the impacts of any unavoidable land use conflicts. However, even projects located far from sensitive receptors may contribute to harmful regional air pollution, so you should consider measures to reduce emissions associated with the project to help the State meet its air quality goals. A distant warehouse may also impact sensitive receptors if trucks must pass near sensitive receptors to visit the warehouse.

The Bureau will continue to monitor proposed warehouse projects for compliance with the California Environmental Quality Act and other laws. We are available to discuss as you prepare the draft environmental impact report and consider how to guide warehouse development in your jurisdiction. Please do not hesitate to contact the Environmental Justice Bureau at ej@doj.ca.gov if you have any questions.

Sincerely,

CHRISTIE VOSBURG
Supervising Deputy Attorney General

For ROB BONTA
Attorney General

[3] https://oag.ca.gov/system/files/media/warehouse-best-practices.pdf.

ROB BONTA
Attorney General

State of California
DEPARTMENT OF JUSTICE

1300 I STREET, SUITE 125
P.O. BOX 944255
SACRAMENTO, CA 94244-2550

E-Mail: EJ@doj.ca.gov

February 23, 2023

[Name], [Title]
[Agency Name]
[Address]
[City], CA [Zip]

RE: [Project Name], SCH #[State Clearinghouse Number]

Dear [Mr./Ms.] [Last Name]:

Thank you for the opportunity to provide comments on the Notice of Preparation for the [Project Name]. While the logistics industry is an important component of our modern economy, warehouses can bring various environmental impacts to the communities where they are located. For example, diesel trucks visiting warehouses emit nitrogen oxide (NO_x)—a primary precursor to smog formation and a significant factor in the development of respiratory problems like asthma, bronchitis, and lung irritation—and diesel particulate matter (a subset of fine particular matter that is smaller than 2.5 micrometers)—a contributor to cancer, heart disease, respiratory illnesses, and premature death.[1] Trucks and on-site loading activities can also be loud, bringing disruptive noise levels during 24/7 operation that can cause hearing damage after prolonged exposure.[2] The hundreds, and sometimes thousands, of daily truck and passenger car trips that warehouses generate can contribute to traffic jams, deterioration of road surfaces, traffic accidents, and unsafe conditions for pedestrians and bicyclists. Depending on the circumstances of an individual project, warehouses may also have other environmental impacts.

To help lead agencies avoid, analyze, and mitigate warehouses' environmental impacts, the Attorney General Office's Bureau of Environmental Justice has published a document containing best practices and mitigation measures for warehouse projects. We have attached a copy of this document to this letter, and it is also available online.[3] We encourage you to

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[1] California Air Resources Board, Nitrogen Dioxide & Health, https://ww2.arb.ca.gov/resources/nitrogen-dioxide-and-health (NOx); California Air Resources Board, Summary: Diesel Particular Matter Health Impacts, https://ww2.arb.ca.gov/resources/summary-diesel-particulate-matter-health-impacts; Office of Environmental Health Hazard Assessment and American Lung Association of California, Health Effects of Diesel Exhaust, https://oehha.ca.gov/media/downloads/calenviroscreen/indicators/diesel4-02.pdf (DPM).
[2] Noise Sources and Their Effects, https://www.chem.purdue.edu/chemsafety/Training/PPETrain/dblevels.htm (a diesel truck moving 40 miles per hour, 50 feet away, produces 84 decibels of sound).
[3] https://oag.ca.gov/system/files/media/warehouse-best-practices.pdf.

consider the information in this document as you prepare the draft environmental impact report for this project.

Priority should be placed on avoiding land use conflicts between warehouses and sensitive receptors and on mitigating the impacts of any unavoidable land use conflicts. However, even projects located far from sensitive receptors may contribute to harmful regional air pollution, so you should consider measures to reduce emissions associated with the project to help the State meet its air quality goals. A distant warehouse may also impact sensitive receptors if trucks must pass near sensitive receptors to visit the warehouse.

The Bureau will continue to monitor proposed warehouse projects for compliance with the California Environmental Quality Act and other laws. We are available to discuss as you prepare the draft environmental impact report and consider how to guide warehouse development in your jurisdiction. Please do not hesitate to contact the Environmental Justice Bureau at ej@doj.ca.gov if you have any questions.

Sincerely,

CHRISTIE VOSBURG
Supervising Deputy Attorney General

For ROB BONTA
Attorney General

Yana Garcia
Secretary for
Environmental Protection

Department of Toxic Substances Control

Meredith Williams, Ph.D., Director
8800 Cal Center Drive
Sacramento, California 95826-3200

Gavin Newsom
Governor

SENT VIA ELECTRONIC MAIL

December 20, 2023

Cindy Lemaire
Senior Planner
City of San Leandro
835 East 14th Street
San Leandro, CA 94577
clemaire@sanleandro.org

RE: NOTICE OF PREPARATION (NOP) OF A DRAFT ENVIRONMENTAL IMPACT REPORT (DEIR) FOR THE 880 DOOLITTLE DRIVE INDUSTRIAL PROJECT DATED NOVEMBER 22, 2023 STATE CLEARINGHOUSE # 2023110597

Dear Cindy Lemaire,

The Department of Toxic Substances Control (DTSC) received a NOP of a DEIR for the 880 Doolittle Drive Industrial Project. The Project involves the demolition of existing warehouse buildings on the site, which are currently vacant, and associated surface parking. Following demolition of existing structures and a lot merger, the proposed Project would include construction of a new warehouse with supporting office space, site improvements, and landscaping. The proposed warehouse would be approximately 244,573 square feet, comprised of 229,573 square-feet of warehouse and 15,000 square feet of associated office space. Approximately 10,000 square feet of office space would be provided on the ground floor alongside the warehouse use. The remaining 5,000 square feet of office space would be on the mezzanine level of the warehouse. The warehouse would be served by 64 dock-high loading doors and

surface parking. Surface parking as proposed includes 116 standard parking stalls, 57 compact parking stalls, 3 accessible standard stalls, 3 accessible van stalls, 21 electric vehicle charging stations, and 4 clean air/vanpool stalls.

Following our review of the Project, DTSC recommends consideration of the following comments:

1. If buildings or other structures are to be demolished on any project sites included in the proposed Project, surveys should be conducted for the presence of lead-based paints or products, mercury, asbestos containing materials, and polychlorinated biphenyl caulk. Removal, demolition, and disposal of any of the above-mentioned chemicals should be conducted in compliance with California environmental regulations and policies. In addition, sampling near current and/or former buildings should be conducted in accordance with DTSC's 2006 Interim Guidance Evaluation of School Sites with Potential Contamination from Lead Based Paint, Termiticides, and Electrical Transformers.
2. DTSC recommends that all imported soil and fill material should be tested to ensure any contaminants of concern are within approved screening levels for the intended land use. To minimize the possibility of introducing contaminated soil and fill material there should be documentation of the origins of the soil or fill material and, if applicable, sampling be conducted to ensure that the imported soil and fill material meets screening levels for the intended land use. The soil sampling should include analysis based on the source of the fill and knowledge of the prior land use.
3. Prior to any new buildings being constructed on site, a Remedial Action Plan (RAP) amendment will be required to evaluate the soil vapor impacts and vapor intrusion risk. While a vapor mitigation system has been discussed for the site, the system cannot be installed before the completion of the RAP amendment.

DTSC believes the City of San Leandro must address these comments to determine if

any significant impacts under the California Environmental Quality Act (CEQA) will occur and, if necessary, avoid significant impacts under CEQA.

DTSC appreciates the opportunity to comment on the 880 Doolittle Drive Industrial Project. Thank you for your assistance in protecting California's people and environment from the harmful effects of toxic substances. If you have any questions or would like any clarification on DTSC's comments, please respond to this letter or via email for additional guidance.

Sincerely,

Dave Kereazis

Dave Kereazis
Associate Environmental Planner
HWMP - Permitting Division – CEQA Unit
Department of Toxic Substances Control
Dave.Kereazis@dtsc.ca.gov

cc: (via email)

Governor's Office of Planning and
Research State Clearinghouse
State.Clearinghouse@opr.ca.gov

Tamara Purvis
Associate Environmental Planner
HWMP – Permitting Division - CEQA Unit
Department of Toxic Substances Control
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Scott Wiley
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Yongsheng Sun
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Marikka Hughes, PG
Branch Chief, Berkeley
SMRP – Cleanup Program
Department of Toxic Substances Control
Marikka.Hughes@dtsc.ca.gov

California Department of Transportation

AERONAUTICS PROGRAM
DIVISION OF TRANSPORTATION PLANNING
P.O. BOX 942873, MS–40 | SACRAMENTO, CA 94273–0001
(916) 654-4959
www.dot.ca.gov

December 22nd, 2023

Cindy Lemaire
Senior Planner
City of San Leandro
835 East 14th Street
San Leandro, CA 94577

Electronically Sent <clemaire@sanleandro.org>

Re: SCH #2023110597 - 880 Doolittle Drive Industrial Project

Dear Ms. Lemaire:

The California Department of Transportation, Aeronautics Program has reviewed the Notice of Preparation of a Draft EIR for the project 880 Doolittle Drive Industrial Project. One of the goals of the California Department of Transportation (Caltrans), Aeronautics Program, is to assist cities, counties, and Airport Land Use Commissions or their equivalent (ALUC), to understand and comply with the State Aeronautics Act pursuant to the California Public Utilities Code (PUC), Section 21001 et seq. Caltrans encourages collaboration with our partners in the planning process and thanks you for including the Aeronautics Program in the review of the Notice of Preparation.

The proposed Project site is primarily in Safety Zone 4 (Outer Approach/Departure Zone), with a portion in Zone 6 (Traffic Pattern Zone) of the Oakland International Airport and therefore must adhere to the safety criteria and restrictions defined in the Airport Land Use Compatibility Plan (ALUCP) formed by the ALUC pursuant to the PUC, Section 21674. Warehouse and office space square footage per person should be further reviewed to adhere to consistency with the ALUCP and Table 3-2 of the ALUCP. Section 3.3.2.7. should also be reviewed to ensure compatibility with development criteria.

In addition, as the project site is included on a list of hazardous material sites compiled pursuant to Government Code Section 65962.5, compatibility restrictions should be reviewed per the ALUCPs Table 3-2 and Section 3.3.2.8(e).

The proposed project may also be subject to 14 CFR Part 77 Conical Surface standards and CNEL Contours noise compatibility in applicable areas.

Caltrans advises the City of San Leandro to submit its plans to the ALUC to determine if the plans or projects are consistent or not with the ALUCP according to the State

Aeronautics Act's statutory procedure. An ALUCP is crucial in minimizing noise nuisance and safety hazards around airports while promoting the orderly development of airports, as declared by the California Legislature. A responsibility of the ALUC is to assess potential risk to aircraft and persons in airspace and people occupying areas within the vicinity of the airport.

If you have any questions or need additional information, please contact me at my email address: tiffany.martinez@dot.ca.gov.

Sincerely,

Tiffany Martinez

Tiffany Martinez
Transportation Planner, Aeronautics Program

c: State Clearinghouse

California Department of Transportation

DDISTRICT 4
OFFICE OF REGIONAL AND COMMUNITY PLANNING
P.O. BOX 23660, MS–10D | OAKLAND, CA 94623-0660
www.dot.ca.gov

December 20, 2023

SCH #: 2023110597
GTS #: 04-ALA-2023-00777
GTS ID: 31377
Co/Rt/Pm: ALA/61/R15.2

Cindy Lemaire, Senior Planner
City of San Leandro
835 East 14th Street
San Leandro, CA 94577

Re: 880 Doolittle Drive Industrial Project – Notice of Preparation (NOP) for a Draft Environmental Impact Report (DEIR)

Dear Cindy Lemaire:

Thank you for including the California Department of Transportation (Caltrans) in the environmental review process for the 880 Doolittle Drive Industrial Project. We are committed to ensuring that impacts to the State's multimodal transportation system and to our natural environment are identified and mitigated to support a safe, sustainable, integrated and efficient transportation system.

The Local Development Review (LDR) Program reviews land use projects and plans to ensure consistency with our mission and state planning priorities. The following comments are based on our review of the November 2023 NOP.

Project Understanding
The proposed project is in the vicinity of State Route (SR)-61 and SR-112 in San Leandro. The project would demolish currently vacant warehouse buildings on the site and construct a new 229,573-square-foot warehouse with supporting office space, site improvements, and landscaping.

Freight
Please consider the following freight issues when drafting the DEIR: the number of parking spaces should be based on peak operating time of the activity generator; site entrance and exit points should accommodate the design of vehicle movements; the DEIR should identify pedestrian and bicycle conflict points to and from the proposed facility as well as bus stops that may conflict with truck parking zones; and the project

should consider the number of legal truck parking spots available in the area and the potential areas that may be utilized as unauthorized parking.

In addition, the City may consider implementing the following improvements to the project: providing peak operating time parking to ensure an adequate number of spaces; and implementing appropriate lighting at loading docks and parking spots to improve safety.

Construction-Related Impacts
Potential impacts to the State Right-of-Way (ROW) from project-related temporary access points should be analyzed. Mitigation for significant impacts due to construction and noise should be identified. Project work that requires movement of oversized or excessive load vehicles on State roadways requires a transportation permit that is issued by Caltrans. To apply, please visit Caltrans Transportation Permits *(link)*. Prior to construction, coordination may be required with Caltrans to develop a Transportation Management Plan (TMP) to reduce construction traffic impacts to the State Transportation Network (STN).

Lead Agency
As the Lead Agency, the City of San Leandro is responsible for all project mitigation, including any needed improvements to the STN. The project's fair share contribution, financing, scheduling, implementation responsibilities and lead agency monitoring should be fully discussed for all proposed mitigation measures.

Thank you again for including Caltrans in the environmental review process. Should you have any questions regarding this letter, please contact Llisel Ayon, Associate Transportation Planner, via LDR-D4@dot.ca.gov. For future early coordination opportunities or project referrals, please contact LDR-D4@dot.ca.gov.

Sincerely,

YUNSHENG LUO
Branch Chief, Local Development Review
Office of Regional and Community Planning

c: State Clearinghouse

EAST BAY
MUNICIPAL UTILITY DISTRICT

December 18, 2023

Cindy Lemaire, AICP, CNU-A, Senior Planner
Community Development Department
City of San Leandro
835 East 14th Street
San Leandro, CA 94577

Re: Notice of Preparation for a Draft Environmental Impact Report for the 880 Doolittle Drive Industrial Project (PLN22-0039), San Leandro

Dear Ms. Lemaire:

East Bay Municipal Utility District (EBMUD) appreciates the opportunity to comment on the Notice of Preparation (NOP) of a Draft Environmental Impact Report (EIR) for the 880 Doolittle Drive Industrial Project located in the City of San Leandro (City). EBMUD has the following comments.

WATER SERVICE

EBMUD's Central Pressure Zone, with a service elevation range between 0 and 100 feet, will serve the proposed development. Individual units in a newly built multi-occupancy commercial/industrial premises shall be individually metered. A main extension, at the project sponsor's expense, may be required to serve the proposed development depending on water and private fire service metering locations and fire flow requirements set by the local fire agency. Please see the attached EBMUD documents for California (Waterworks Standards) Code of Regulations, Title 22, Section 64572 (Water Main Separation) and EBMUD requirements for placement of water mains. When the development plans are finalized, the project sponsor should contact EBMUD's New Business Office and request a water service estimate to determine costs and conditions for providing water service to the project. Engineering and installation of water mains and services require substantial lead time, which should be provided for in the project sponsor's development schedule.

EBMUD's Standard Site Assessment indicates the potential for contaminated soils or groundwater to be present within the project site boundaries. The project sponsor should be aware that EBMUD will not install piping or services in contaminated soil or groundwater (if groundwater is present at any time during the year at the depth piping is to be installed) that must be handled as a hazardous waste or that may be hazardous to the health and safety of construction and maintenance personnel wearing Level D personal protective equipment. Nor will EBMUD install piping or services in areas where groundwater contaminant concentrations exceed specified limits for discharge to the sanitary sewer system and sewage treatment plants. The project sponsor must submit copies to EBMUD of all known information regarding soil and groundwater quality within or adjacent to the

project boundary and a legally sufficient, complete, and specific written remediation plan establishing the methodology, planning and design of all necessary systems for the removal, treatment, and disposal of contaminated soil and groundwater.

EBMUD will not design piping or services until soil and groundwater quality data and remediation plans have been received and reviewed and will not start underground work until remediation has been carried out and documentation of the effectiveness of the remediation has been received and reviewed. If no soil or groundwater quality data exists, or the information supplied by the project sponsor is insufficient, EBMUD may require the project sponsor to perform sampling and analysis to characterize the soil and groundwater that may be encountered during excavation. Alternatively, EBMUD may perform such sampling and analysis at the project sponsor's expense. If evidence of contamination is discovered during EBMUD's work on the project site, work may be suspended until such contamination is adequately characterized and remediated to EBMUD's standards.

WATER CONSERVATION

The project presents an opportunity to incorporate water conservation measures. EBMUD requests that the City include in its conditions of approval a requirement that the project sponsor comply with Assembly Bill 325, "Model Water Efficient Landscape Ordinance," (Division 2, Title 23, California Code of Regulations, Chapter 2.7, Sections 490 through 495). The project sponsor should be aware that Section 31 of EBMUD's Water Service Regulations requires that water service shall not be furnished for new or expanded service unless all the applicable water-efficiency measures described in the regulation are installed at the project sponsor's expense.

If you have any questions concerning this response, please contact Timothy R. McGowan, Senior Civil Engineer, Major Facilities Planning Section at (510) 287-1981.

Sincerely,

David J. Rehnstrom
Manager of Water Distribution Planning

DJR:EZ:kn
wdpd23_241 880 Doolittle Drive Industrial Project

Attachment Applicant Pipeline Design Criteria

EAST BAY
MUNICIPAL UTILITY DISTRICT

Applicant Pipeline Design Criteria

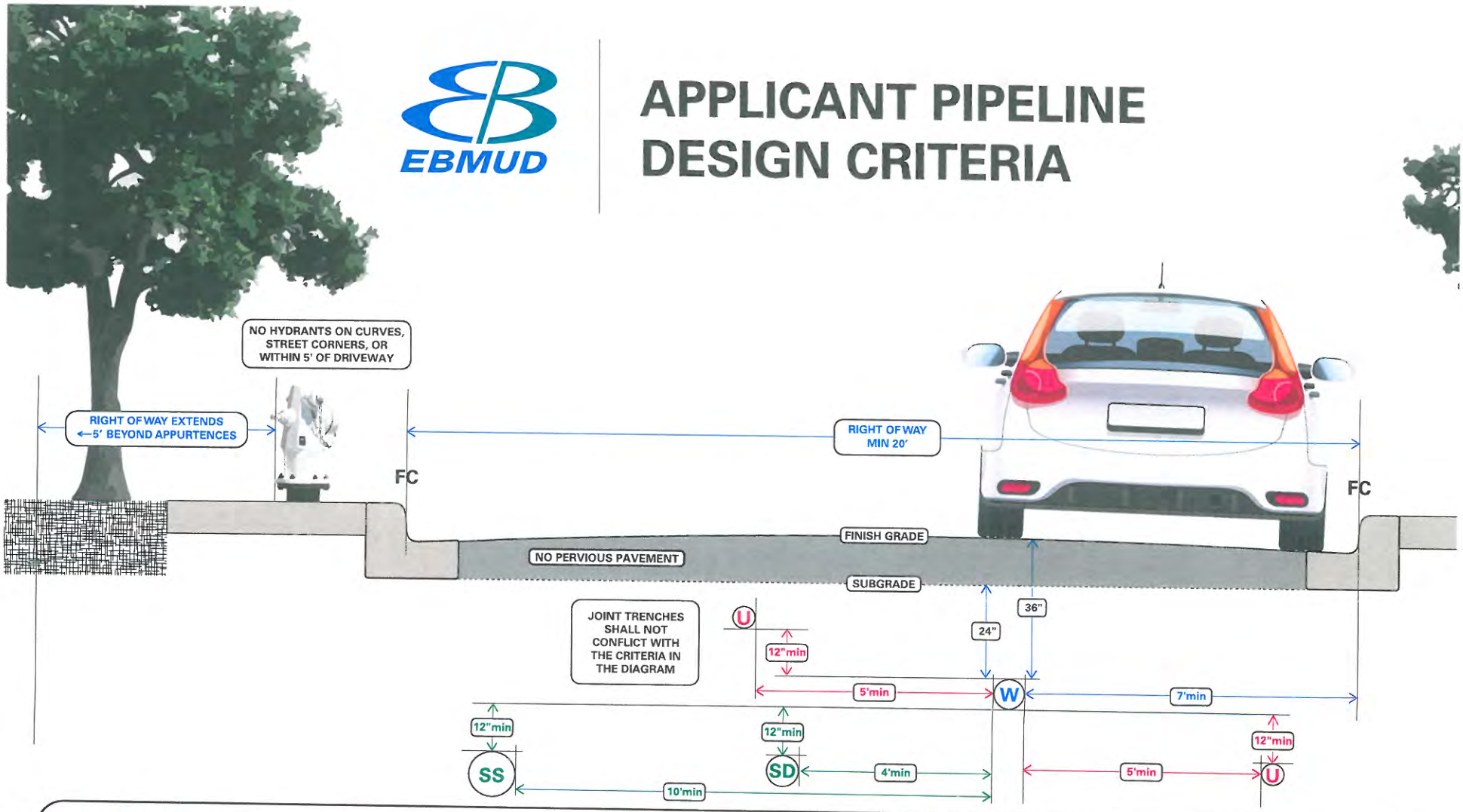
EBMUD values applicant pipeline projects and is committed to providing a thorough and efficient design. To ensure an efficient design process and to avoid significant delays the design criteria below should be adhered to when submitting improvement plans.

Design Criteria

- Water mains shall be seven (7) feet from face of curb.
- Water mains shall maintain a minimum one (1) foot vertical and five (5) foot horizontal clearance from other utilities.
- Gas mains shall meet the one (1) foot vertical separation requirement by installing the gas main below the water main only.
- Water mains shall maintain a minimum ten (10) foot horizontal clearance (O.D. to O.D.) and be located a minimum one (1) foot above any sewer main. Title 22 CCR
- Water mains shall maintain a minimum four (4) feet horizontal clearance (O.D. to O.D.) and be located a minimum one (1) foot above any storm drain. Title 22 CCR
- Water mains shall have a 36-inch cover to final grade and 24-inch cover to pavement subgrade.
- Joint trenches that are in conflict with the criteria above may delay the project. Submit to EBMUD final joint trench plans (no intent plans) which include the size of the joint trench and the utilities located inside.
- Water mains shall not be installed under pervious pavement.
- Water mains installed under decorative pavement, pavers, or stamped concrete will require an additional paving agreement.
- Hydrants shall not be located on curved sections of street, street corners, or within five feet of a driveway.
- Right of ways for 6-inch and 8-inch water mains shall be a minimum of 20 feet wide and extend five (5) feet past the water main centerline.
- Right of ways for 12-inch to 24-inch water mains shall be a minimum of 20 feet wide and extend eight (8) feet past the water main centerline.

Please contact the New Business Office representative assigned to your project if there are any questions regarding the requirements listed above. Meeting this criteria will enable the most efficient design possible.

APPLICANT PIPELINE DESIGN CRITERIA



W = WATER
24" cover to subgrade
36" cover to final grade
7' inset from face of curb

U = UTILITY
min 12" vertical clearance
min 5' horizontal clearance

SS = SANITARY SEWER
min 12" below water
min 10' horizontal clearance

SD = STORM DRAIN
min 12" below water
min 4' horizontal clearance

FC= FACE OF CURB

4203 • 5/21

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December 1, 2023

Cindy Lemaire
City of San Leandro
835 East 14th Street
San Leandro, CA 94577

Re: 2023110597, 880 Doolittle Drive Industrial Project, Alameda County

Dear Ms. Lemaire:

The Native American Heritage Commission (NAHC) has received the Notice of Preparation (NOP), Draft Environmental Impact Report (DEIR) or Early Consultation for the project referenced above. The California Environmental Quality Act (CEQA) (Pub. Resources Code §21000 et seq.), specifically Public Resources Code §21084.1, states that a project that may cause a substantial adverse change in the significance of a historical resource, is a project that may have a significant effect on the environment. (Pub. Resources Code § 21084.1; Cal. Code Regs., tit.14, §15064.5 (b) (CEQA Guidelines §15064.5 (b)). If there is substantial evidence, in light of the whole record before a lead agency, that a project may have a significant effect on the environment, an Environmental Impact Report (EIR) shall be prepared. (Pub. Resources Code §21080 (d); Cal. Code Regs., tit. 14, § 5064 subd.(a)(1) (CEQA Guidelines §15064 (a)(1)). In order to determine whether a project will cause a substantial adverse change in the significance of a historical resource, a lead agency will need to determine whether there are historical resources within the area of potential effect (APE).

CEQA was amended significantly in 2014. Assembly Bill 52 (Gatto, Chapter 532, Statutes of 2014) (AB 52) amended CEQA to create a separate category of cultural resources, "tribal cultural resources" (Pub. Resources Code §21074) and provides that a project with an effect that may cause a substantial adverse change in the significance of a tribal cultural resource is a project that may have a significant effect on the environment. (Pub. Resources Code §21084.2). Public agencies shall, when feasible, avoid damaging effects to any tribal cultural resource. (Pub. Resources Code §21084.3 (a)). **AB 52 applies to any project for which a notice of preparation, a notice of negative declaration, or a mitigated negative declaration is filed on or after July 1, 2015.** If your project involves the adoption of or amendment to a general plan or a specific plan, or the designation or proposed designation of open space, on or after March 1, 2005, it may also be subject to Senate Bill 18 (Burton, Chapter 905, Statutes of 2004) (SB 18). **Both SB 18 and AB 52 have tribal consultation requirements.** If your project is also subject to the federal National Environmental Policy Act (42 U.S.C. § 4321 et seq.) (NEPA), the tribal consultation requirements of Section 106 of the National Historic Preservation Act of 1966 (154 U.S.C. 300101, 36 C.F.R. §800 et seq.) may also apply.

The NAHC recommends consultation with California Native American tribes that are traditionally and culturally affiliated with the geographic area of your proposed project as early as possible in order to avoid inadvertent discoveries of Native American human remains and best protect tribal cultural resources. Below is a brief summary of portions of AB 52 and SB 18 as well as the NAHC's recommendations for conducting cultural resources assessments.

Consult your legal counsel about compliance with AB 52 and SB 18 as well as compliance with any other applicable laws.

AB 52

AB 52 has added to CEQA the additional requirements listed below, along with many other requirements:

1. Fourteen Day Period to Provide Notice of Completion of an Application/Decision to Undertake a Project: Within fourteen (14) days of determining that an application for a project is complete or of a decision by a public agency to undertake a project, a lead agency shall provide formal notification to a designated contact of, or tribal representative of, traditionally and culturally affiliated California Native American tribes that have requested notice, to be accomplished by at least one written notice that includes:

- **a.** A brief description of the project.
- **b.** The lead agency contact information.
- **c.** Notification that the California Native American tribe has 30 days to request consultation. (Pub. Resources Code §21080.3.1 (d)).
- **d.** A "California Native American tribe" is defined as a Native American tribe located in California that is on the contact list maintained by the NAHC for the purposes of Chapter 905 of Statutes of 2004 (SB 18). (Pub. Resources Code §21073).

2. Begin Consultation Within 30 Days of Receiving a Tribe's Request for Consultation and Before Releasing a Negative Declaration, Mitigated Negative Declaration, or Environmental Impact Report: A lead agency shall begin the consultation process within 30 days of receiving a request for consultation from a California Native American tribe that is traditionally and culturally affiliated with the geographic area of the proposed project. (Pub. Resources Code §21080.3.1, subds. (d) and (e)) and prior to the release of a negative declaration, mitigated negative declaration or Environmental Impact Report. (Pub. Resources Code §21080.3.1(b)).

- **a.** For purposes of AB 52, "consultation shall have the same meaning as provided in Gov. Code §65352.4 (SB 18). (Pub. Resources Code §21080.3.1 (b)).

3. Mandatory Topics of Consultation If Requested by a Tribe: The following topics of consultation, if a tribe requests to discuss them, are mandatory topics of consultation:

- **a.** Alternatives to the project.
- **b.** Recommended mitigation measures.
- **c.** Significant effects. (Pub. Resources Code §21080.3.2 (a)).

4. Discretionary Topics of Consultation: The following topics are discretionary topics of consultation:

- **a.** Type of environmental review necessary.
- **b.** Significance of the tribal cultural resources.
- **c.** Significance of the project's impacts on tribal cultural resources.
- **d.** If necessary, project alternatives or appropriate measures for preservation or mitigation that the tribe may recommend to the lead agency. (Pub. Resources Code §21080.3.2 (a)).

5. Confidentiality of Information Submitted by a Tribe During the Environmental Review Process: With some exceptions, any information, including but not limited to, the location, description, and use of tribal cultural resources submitted by a California Native American tribe during the environmental review process shall not be included in the environmental document or otherwise disclosed by the lead agency or any other public agency to the public, consistent with Government Code §6254 (r) and §6254.10. Any information submitted by a California Native American tribe during the consultation or environmental review process shall be published in a confidential appendix to the environmental document unless the tribe that provided the information consents, in writing, to the disclosure of some or all of the information to the public. (Pub. Resources Code §21082.3 (c)(1)).

6. Discussion of Impacts to Tribal Cultural Resources in the Environmental Document: If a project may have a significant impact on a tribal cultural resource, the lead agency's environmental document shall discuss both of the following:

- **a.** Whether the proposed project has a significant impact on an identified tribal cultural resource.
- **b.** Whether feasible alternatives or mitigation measures, including those measures that may be agreed to pursuant to Public Resources Code §21082.3, subdivision (a), avoid or substantially lessen the impact on the identified tribal cultural resource. (Pub. Resources Code §21082.3 (b)).

7. Conclusion of Consultation: Consultation with a tribe shall be considered concluded when either of the following occurs:

a. The parties agree to measures to mitigate or avoid a significant effect, if a significant effect exists, on a tribal cultural resource; or

b. A party, acting in good faith and after reasonable effort, concludes that mutual agreement cannot be reached. (Pub. Resources Code §21080.3.2 (b)).

8. Recommending Mitigation Measures Agreed Upon in Consultation in the Environmental Document: Any mitigation measures agreed upon in the consultation conducted pursuant to Public Resources Code §21080.3.2 shall be recommended for inclusion in the environmental document and in an adopted mitigation monitoring and reporting program, if determined to avoid or lessen the impact pursuant to Public Resources Code §21082.3, subdivision (b), paragraph 2, and shall be fully enforceable. (Pub. Resources Code §21082.3 (a)).

9. Required Consideration of Feasible Mitigation: If mitigation measures recommended by the staff of the lead agency as a result of the consultation process are not included in the environmental document or if there are no agreed upon mitigation measures at the conclusion of consultation, or if consultation does not occur, and if substantial evidence demonstrates that a project will cause a significant effect to a tribal cultural resource, the lead agency shall consider feasible mitigation pursuant to Public Resources Code §21084.3 (b). (Pub. Resources Code §21082.3 (e)).

10. Examples of Mitigation Measures That, If Feasible, May Be Considered to Avoid or Minimize Significant Adverse Impacts to Tribal Cultural Resources:

a. Avoidance and preservation of the resources in place, including, but not limited to:

i. Planning and construction to avoid the resources and protect the cultural and natural context.

ii. Planning greenspace, parks, or other open space, to incorporate the resources with culturally appropriate protection and management criteria.

b. Treating the resource with culturally appropriate dignity, taking into account the tribal cultural values and meaning of the resource, including, but not limited to, the following:

i. Protecting the cultural character and integrity of the resource.

ii. Protecting the traditional use of the resource.

iii. Protecting the confidentiality of the resource.

c. Permanent conservation easements or other interests in real property, with culturally appropriate management criteria for the purposes of preserving or utilizing the resources or places.

d. Protecting the resource. (Pub. Resource Code §21084.3 (b)).

e. Please note that a federally recognized California Native American tribe or a non-federally recognized California Native American tribe that is on the contact list maintained by the NAHC to protect a California prehistoric, archaeological, cultural, spiritual, or ceremonial place may acquire and hold conservation easements if the conservation easement is voluntarily conveyed. (Civ. Code §815.3 (c)).

f. Please note that it is the policy of the state that Native American remains and associated grave artifacts shall be repatriated. (Pub. Resources Code §5097.991).

11. Prerequisites for Certifying an Environmental Impact Report or Adopting a Mitigated Negative Declaration or Negative Declaration with a Significant Impact on an Identified Tribal Cultural Resource: An Environmental Impact Report may not be certified, nor may a mitigated negative declaration or a negative declaration be adopted unless one of the following occurs:

a. The consultation process between the tribes and the lead agency has occurred as provided in Public Resources Code §21080.3.1 and §21080.3.2 and concluded pursuant to Public Resources Code §21080.3.2.

b. The tribe that requested consultation failed to provide comments to the lead agency or otherwise failed to engage in the consultation process.

c. The lead agency provided notice of the project to the tribe in compliance with Public Resources Code §21080.3.1 (d) and the tribe failed to request consultation within 30 days. (Pub. Resources Code §21082.3 (d)).

The NAHC's PowerPoint presentation titled, "Tribal Consultation Under AB 52: Requirements and Best Practices" may be found online at: http://nahc.ca.gov/wp-content/uploads/2015/10/AB52TribalConsultation_CalEPAPDF.pdf

SB 18

SB 18 applies to local governments and requires local governments to contact, provide notice to, refer plans to, and consult with tribes prior to the adoption or amendment of a general plan or a specific plan, or the designation of open space. (Gov. Code §65352.3). Local governments should consult the Governor's Office of Planning and Research's "Tribal Consultation Guidelines," which can be found online at: https://www.opr.ca.gov/docs/09_14_05_Updated_Guidelines_922.pdf.

Some of SB 18's provisions include:

1. Tribal Consultation: If a local government considers a proposal to adopt or amend a general plan or a specific plan, or to designate open space it is required to contact the appropriate tribes identified by the NAHC by requesting a "Tribal Consultation List." If a tribe, once contacted, requests consultation the local government must consult with the tribe on the plan proposal. **A tribe has 90 days from the date of receipt of notification to request consultation unless a shorter timeframe has been agreed to by the tribe.** (Gov. Code §65352.3 (a)(2)).

2. No Statutory Time Limit on SB 18 Tribal Consultation. There is no statutory time limit on SB 18 tribal consultation.

3. Confidentiality: Consistent with the guidelines developed and adopted by the Office of Planning and Research pursuant to Gov. Code §65040.2, the city or county shall protect the confidentiality of the information concerning the specific identity, location, character, and use of places, features and objects described in Public Resources Code §5097.9 and §5097.993 that are within the city's or county's jurisdiction. (Gov. Code §65352.3 (b)).

4. Conclusion of SB 18 Tribal Consultation: Consultation should be concluded at the point in which:

- **a.** The parties to the consultation come to a mutual agreement concerning the appropriate measures for preservation or mitigation; or
- **b.** Either the local government or the tribe, acting in good faith and after reasonable effort, concludes that mutual agreement cannot be reached concerning the appropriate measures of preservation or mitigation. (Tribal Consultation Guidelines, Governor's Office of Planning and Research (2005) at p. 18).

Agencies should be aware that neither AB 52 nor SB 18 precludes agencies from initiating tribal consultation with tribes that are traditionally and culturally affiliated with their jurisdictions before the timeframes provided in AB 52 and SB 18. For that reason, we urge you to continue to request Native American Tribal Contact Lists and "Sacred Lands File" searches from the NAHC. The request forms can be found online at: http://nahc.ca.gov/resources/forms/.

NAHC Recommendations for Cultural Resources Assessments

To adequately assess the existence and significance of tribal cultural resources and plan for avoidance, preservation in place, or barring both, mitigation of project-related impacts to tribal cultural resources, the NAHC recommends the following actions:

1. Contact the appropriate regional California Historical Research Information System (CHRIS) Center (https://ohp.parks.ca.gov/?page_id=30331) for an archaeological records search. The records search will determine:

- **a.** If part or all of the APE has been previously surveyed for cultural resources.
- **b.** If any known cultural resources have already been recorded on or adjacent to the APE.
- **c.** If the probability is low, moderate, or high that cultural resources are located in the APE.
- **d.** If a survey is required to determine whether previously unrecorded cultural resources are present.

2. If an archaeological inventory survey is required, the final stage is the preparation of a professional report detailing the findings and recommendations of the records search and field survey.

- **a.** The final report containing site forms, site significance, and mitigation measures should be submitted immediately to the planning department. All information regarding site locations, Native American human remains, and associated funerary objects should be in a separate confidential addendum and not be made available for public disclosure.
- **b.** The final written report should be submitted within 3 months after work has been completed to the appropriate regional CHRIS center.

3. Contact the NAHC for:

a. A Sacred Lands File search. Remember that tribes do not always record their sacred sites in the Sacred Lands File, nor are they required to do so. A Sacred Lands File search is not a substitute for consultation with tribes that are traditionally and culturally affiliated with the geographic area of the project's APE.

b. A Native American Tribal Consultation List of appropriate tribes for consultation concerning the project site and to assist in planning for avoidance, preservation in place, or, failing both, mitigation measures.

4. Remember that the lack of surface evidence of archaeological resources (including tribal cultural resources) does not preclude their subsurface existence.

a. Lead agencies should include in their mitigation and monitoring reporting program plan provisions for the identification and evaluation of inadvertently discovered archaeological resources per Cal. Code Regs., tit. 14, §15064.5(f) (CEQA Guidelines §15064.5(f)). In areas of identified archaeological sensitivity, a certified archaeologist and a culturally affiliated Native American with knowledge of cultural resources should monitor all ground-disturbing activities.

b. Lead agencies should include in their mitigation and monitoring reporting program plans provisions for the disposition of recovered cultural items that are not burial associated in consultation with culturally affiliated Native Americans.

c. Lead agencies should include in their mitigation and monitoring reporting program plans provisions for the treatment and disposition of inadvertently discovered Native American human remains. Health and Safety Code §7050.5, Public Resources Code §5097.98, and Cal. Code Regs., tit. 14, §15064.5, subdivisions (d) and (e) (CEQA Guidelines §15064.5, subds. (d) and (e)) address the processes to be followed in the event of an inadvertent discovery of any Native American human remains and associated grave goods in a location other than a dedicated cemetery.

If you have any questions or need additional information, please contact me at my email address: Cody.Campagne@nahc.ca.gov.

Sincerely,

Cody Campagne

Cody Campagne
Cultural Resources Analyst

cc: State Clearinghouse

Appendix C

Transportation Impact Analysis

TRANSPORTATION IMPACT ANALYSIS

880 Doolittle Drive

PREPARED FOR:

PROLOGIS

JANUARY 2024 | DRAFT

Prepared By:

Kimley»Horn

WARNING!

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Figure 15 – Intersection #1 Intersection Sight Distance 40

1. INTRODUCTION

The following transportation impact analysis (TIA) has been prepared to determine potential Vehicle Miles Traveled (VMT) impacts and/or Level of Service (LOS) deficiencies associated with the proposed 880 Doolittle Drive project ("Project") in the City of San Leandro, CA. The project proposes to redevelop the existing building to become a warehousing and distribution spec building totaling 239,573 square feet.

Figure 1 illustrates the location of the project site in relation to the adjacent roadway network. The site would be accessed by an unsignalized full access driveway along Doolittle Drive and an unsignalized full access driveway along Hester Street. The Project site plan is presented in **Figure 2**.

This TIS was prepared to address the Project's VMT and LOS effects in order to assist the City of San Leandro ("City") with planning and the identification of conditions of approval and to mitigate the Project's VMT impacts or improve identified LOS deficiencies, if necessary. The following discusses the methodology, analysis, and results of the traffic assessment.

STUDY METHODOLOGY

VEHICLE MILES TRAVELED (VMT)

With the passage of SB 743, Vehicle Miles Traveled (VMT) has become an important indicator for determining if a new development will result in a "significant transportation impact" under the California Environmental Quality Act (CEQA). This report summarizes the VMT analysis and resultant findings for the proposed development.

The Alameda County Transportation Commission (ACTC) was developed to implement transportation programs and project across Alameda County. One of its responsibilities is to develop and manage the Countywide travel demand model, which is used for estimating future volumes and VMT based on future land uses and the future roadway network. ACTC has developed maps displaying estimates of VMT per employee based on traffic analysis zone (TAZ) estimates from the Alameda Countywide Travel Demand Model that were used to determine if the project would cause a significant impact.

The City does not have a specified VMT criteria, and therefore per guidance provided by the Governor's Office of Planning and Research (OPR) *Technical Advisory on Evaluating Transportation Impacts in CEQA*, the threshold for employment-based VMT uses is set at 15 percent below the regional average.

TRAFFIC OPERATIONS ANALYSIS

A transportation impact analysis was conducted to evaluate the Project's effect on LOS operations at eight (8) intersections within the project site and adjacent to the project site.

Study Area

The proposed project will generate new vehicular trips that may increase traffic volumes on the nearby street network. To assess changes in traffic conditions associated with the proposed project, the following intersections listed below were evaluated and are shown in **Figure 1**. The study intersections were selected based on the estimated vehicle trips generated by the project and the distribution of the trips to the roadway network.

1. Doolittle Drive and West Project Driveway – Unsignalized
2. Hester Street and North Project Driveway – Unsignalized
3. Hester Street and Adams Avenue – Unsignalized
4. Doolittle Drive and Adams Avenue – Signalized
5. Doolittle Drive and Davis Street – Signalized
6. Davis Street and SB I-880 Ramps – Signalized
7. Davis Street and NB I-880 Ramps – Signalized
8. Airport Access Road and 98th Avenue – Signalized

Analysis Scenarios

This traffic analysis evaluated the following five (5) scenarios:

- Existing Conditions – Based on Existing (2020) traffic counts from the *880 Doolittle Traffic Analysis* prepared by Urban Crossroads in October 2021 shown in **Appendix A**, and existing roadway geometry and traffic control in 2022. Existing (2020) counts were adjusted to the current Existing year (2022) by increasing the volumes by 0.772 percent per year (compounded annually). Trips from the existing site were removed to reflect the vacancy in 2023 conditions. This annual growth rate used in the Urban Crossroads study is based on the average Association of Bay Area Governments (ABAG) projected growth for employment, population, and households for San Leandro.
- Near Term Conditions – Based on adjusted existing traffic volumes, ambient growth along major roadways, and traffic generated by approved developments in the study area. This scenario is based on the roadway geometry and traffic control assumed for year 2024.
- Near Term Plus Project Conditions – Based on traffic generated by the proposed project added to Near Term traffic volumes. This scenario is based on the roadway geometry and traffic control assumed for year 2024.
- Cumulative Conditions – Based on future year traffic forecasts from the Alameda County Transportation Commission (ACTC) travel demand model. This scenario is based on the roadway geometry and traffic control assumed for year 2040.
- Cumulative Plus Project Conditions – Based on traffic generated by the proposed project added to Cumulative traffic volumes. This scenario is based on the roadway geometry and traffic control assumed for year 2040.

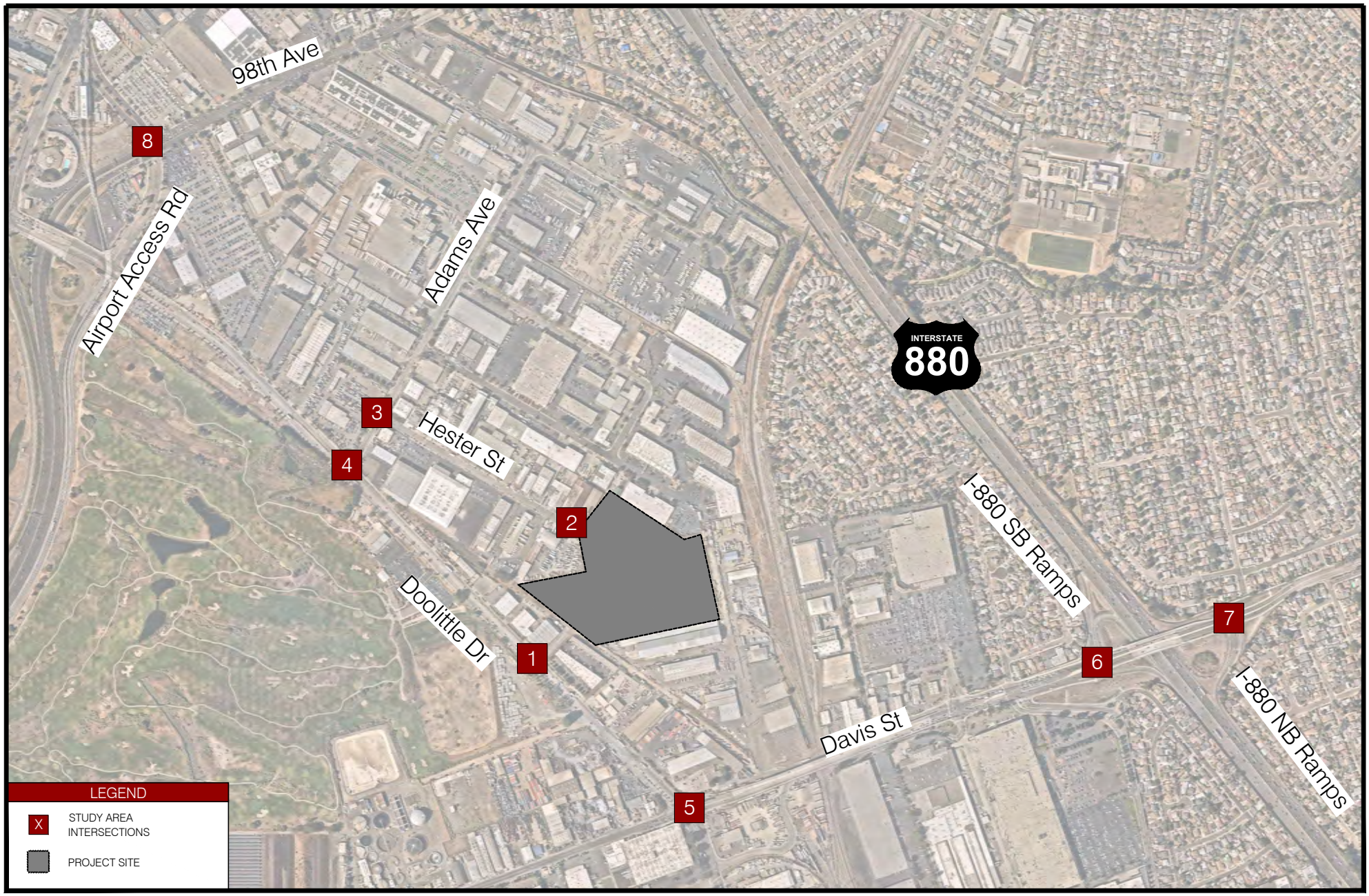

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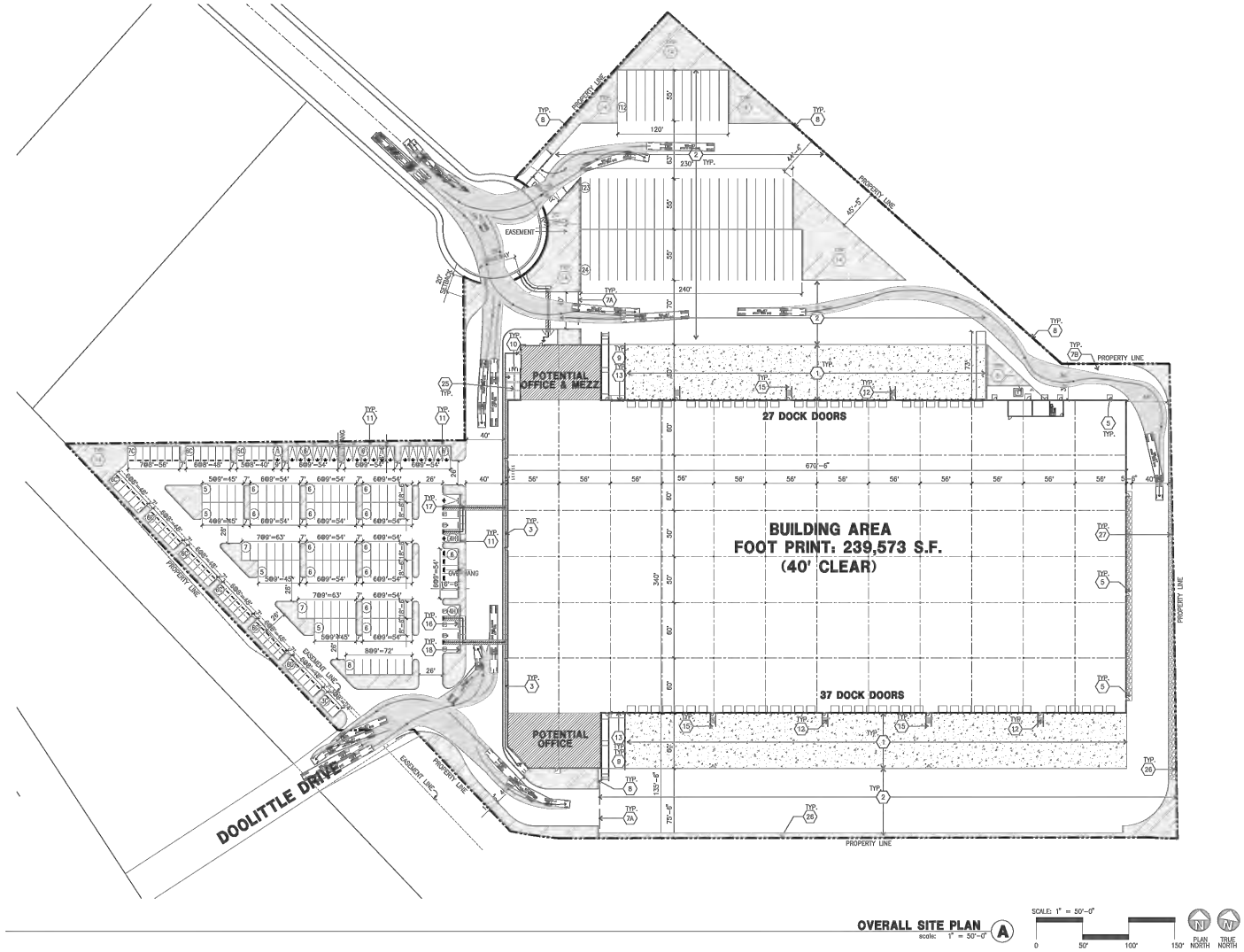
FIGURE 1
STUDY AREA AND INTERSECTIONS



Source: HPA Architecture

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FIGURE 2
SITE PLAN

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880 Doolittle Drive

Level of Service Standards

Analysis of the study intersections were based on the concept of Level of Service (LOS) and is a qualitative measure used to describe operational conditions. LOS ranges from A (best), which represents minimal delay, to F (worst), which represents heavy delay and a facility that is operating at or near its functional capacity. Levels of service for this study were determined using methods defined in the *Highway Capacity Manual, 6th Edition* (HCM 6) and *Highway Capacity Manual, 2000* (HCM 2000) within Synchro analysis software. Intersections with standard signal phasing were analyzed with HCM 6. Intersections with non-standard signal phasing or non-standard intersection control were analyzed using HCM 2000 methodologies due to HCM 6 methodology limitations within Synchro. This analysis was prepared based on the standards and methodologies set forth by the City of San Leandro (City).

It should be noted that recent changes to the California Environmental Quality Act (CEQA) now recognizes vehicle miles traveled (VMT) as the primary standard of review for project impacts and is no longer based on intersection delay and LOS. Therefore, the LOS evaluation is provided for informational purposes only and to document the operational changes as a result of the project. The VMT evaluation has been provided in Chapter 4.

The HCM includes procedures for analyzing side street stop controlled (SSSC) and signalized intersections. The SSSC procedure defines LOS as a function of average control delay for the worst approach. Conversely, the signalized intersection procedures define LOS as a function of average control delay for the intersection as a whole. **Table 1** relates the operational characteristics associated with each LOS category for signalized and unsignalized intersections.

Table 1 – Intersection Level of Service Definitions

Level of Service	Description	Signalized (Avg. control delay per vehicle sec/veh.)	Unsignalized (Avg. control delay per vehicle sec/veh.)
A	Free flow with no delays. Users are virtually unaffected by others in the traffic stream	≤ 10	≤ 10
B	Stable traffic. Traffic flows smoothly with few delays.	> 10 – 20	> 10 – 15
C	Stable flow but the operation of individual users becomes affected by other vehicles. Modest delays.	> 20 – 35	> 15 – 25
D	Approaching unstable flow. Operation of individual users becomes significantly affected by other vehicles. Delays may be more than one cycle during peak hours.	> 35 – 55	> 25 – 35
E	Unstable flow with operating conditions at or near the capacity level. Long delays and vehicle queuing.	> 55 – 80	> 35 – 50
F	Forced or breakdown flow that causes reduced capacity. Stop and go traffic conditions. Excessive long delays and vehicle queuing.	> 80	> 50

Sources: Transportation Research Board, Highway Capacity Manual 6th Edition, National Research Council, 2016.

The LOS standards as outlined in the City of San Leandro General Plan[1] is LOS D. The City does not have a written significant impact criteria. Based on the *880 Doolittle Traffic Analysis* by Urban Crossroads, dated October 2021, a project would create a deficiency under the following conditions:

- When a study intersection operates at an acceptable LOS for without project conditions and the addition of project trips causes the intersection to operate at an unacceptable LOS.
- When a study intersection operates at an unacceptable LOS for without project conditions and the addition of project trips causes the intersection volume-over-capacity ratio (v/c) to increase by 0.05 or more.

Queuing

The effects of vehicle queuing were analyzed and the 95th percentile queue is reported for all study intersections. The 95th percentile queue length represents a condition where 95 percent of the time during the peak hour, traffic queues will be less than or equal to the queue length determined by the analysis. This is referred to as the "95th percentile queue." Average queuing is generally less.

Queues that exceed the turn pocket length can create potentially hazardous conditions by blocking through traffic in adjacent travel lanes. The City does not have standards for queuing. For the purpose of this analysis, queuing deficiencies would be considered as operational issues and were considered to occur under conditions where project traffic causes the queue to extend beyond the turn pocket by 25 feet or more (i.e., the length of one vehicle) into adjacent traffic lanes that operate separately from the left or right turn lane. Where the vehicle queue already exceeds that turn pocket length under pre-project conditions, a queuing deficiency would occur if project traffic lengthened the queue by 25 feet or more.

REPORT ORGANIZATION

The remainder of the report is divided into the following chapters:

- Chapter 2: Existing Conditions – describes existing conditions on the roadway network.
- Chapter 3: Project Description – describes the project including project trip generation, distribution, and assignment.
- Chapter 4: Vehicles Miles Traveled – describes the Project's Vehicle Miles Traveled (VMT) methodology, analysis, and results.
- Chapter 5: Traffic Operations Analysis – describes intersection level of service analysis, roadway level of service, and intersection queuing.
- Chapter 6: Alameda County Transportation Commission Land Use Analysis Program – describes results of the Alameda CTC Land Use analysis under Year 2020 and Year 2040 Conditions.
- Chapter 7: Site Access and Circulation – describes site access and circulation and parking for the site. This chapters also includes potential effects the proposed project may have on the transit system, pedestrian facilities, and bicycle facilities.
- Chapter 8: Parking – describes the vehicle and bicycle parking for the proposed project, as well as required parking.
- Chapter 9: Conclusion – summarizes potential deficiencies and improvements of the proposed project, if necessary.

[1] *City of San Leandro General Plan, Transportation Element*, City of San Leandro, September 2016

2. EXISTING CONDITIONS

This chapter describes the existing conditions of the roadway network within the vicinity of the project site. The chapter also presents existing turning movement volumes and intersection levels of service.

EXISTING ROADWAY NETWORK

INTERSTATE 880 (I-880)

Interstate 880 (I-880) is a north-south freeway that connects to Interstate 280 and State Route 17 to the south to Interstate 80 and Interstate 580 to the north. Within the study area, the roadway consists of six southbound lanes (including one HOV lane) and four northbound lanes. I-880 serves as regional access to the project site. The posted speed limit on I-880 within the study area is 65 mph.

DOOLITTLE DRIVE

Doolittle Drive is a north-south arterial. It connects to Otis Drive and Fernside Boulevard to the north and Belvedere Avenue to the south. The roadway within the study area is two lanes in each direction and has a center two-way left-turn lane (TWLTL). It serves mainly industrial uses along the corridor. Within the study area, the speed limit on Doolittle Drive is 45 miles per hour.

DAVIS STREET

Davis Street is a four-lane, east-west arterial which runs between Business Center Drive and E 14th Street. The roadway serves residential and commercial uses. Within the study area, the speed limit on Davis Street is 35 miles per hour.

ADAMS AVENUE

Adams Avenue is a two-lane, east-west collector between Doolittle Drive and Bigge Street. The roadway includes Class II bike lanes and on-street parking and serves industrial uses. Within the study area, the speed limit on Adams Avenue is 35 miles per hour.

HESTER STREET

Hester Street is a two-lane, north-south local road connecting to Adams Avenue. The roadway includes on-street parking and serves industrial uses. Within the study area, there is no posted speed limit but given the classification of the road, it is assumed that the speed limit is 25 miles per hour.

AIRPORT ACCESS ROAD

Airport Access Road is a five-lane, minor collector that connects to Bessie Coleman Drive and Hegenberger Road. The roadway provides access to the Oakland International Airport. Within the study area, there is no posted speed limit but given the classification of the road, it is assumed that the speed limit is 35 miles per hour.

98TH AVENUE

98th Avenue is a minor arterial which connects to Bessie Coleman Drive to the west and Golf Links Road to the east. The roadway within the study area consists of six-lanes and serves multiple uses. Within the study area, the posted speed limit is 30 miles per hour.

EXISTING LANE CONFIGURATION AND TRAFFIC CONTROL

Existing intersection lane configuration and traffic controls are illustrated in **Figure 3**.

EXISTING PEAK-HOUR TURNING MOVEMENT VOLUMES

Volumes are based on Existing (2020) traffic counts from the *880 Doolittle Traffic Analysis*[2] prepared by Urban Crossroads in October 2021, and existing roadway geometry and traffic control in 2022. Existing (2020) counts were adjusted to the current Existing year (2022) by growing the volumes by 0.772 percent per year (compounded annually). Trips from the existing site were removed to reflect the vacancy in 2023 conditions. This annual growth rate used in the Urban Crossroads study is based on the average ABAG projected growth for employment, population, and households for San Leandro. Existing peak hour turning movement volumes are shown in **Figure 4.**

[2] *880 Doolittle Traffic Analysis,* Urban Crossroads, Inc., October 2021

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FIGURE 3
EXISTING LANE GEOMETRY AND TRAFFIC CONTROL

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880 Doolittle Drive

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FIGURE 4
EXISTING PEAK HOUR TURNING MOVEMENT VOLUMES

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880 Doolittle Drive

3. PROJECT DESCRIPTION

This chapter presents a description of the proposed site use, trip generation, trip distribution, and trip assignment for the proposed project on the transportation system.

PROPOSED SITE USE

The project proposes to redevelop the existing building to become a warehousing and distribution spec building totaling 239,573 square feet. The existing building has been vacant since 2020 (after the counts were taken) and was not occupied during Existing (2023) conditions. Therefore, no existing trip credits were taken.

Figure 1 illustrates the location of the project site in relation to the adjacent roadway network. The site would be accessed by an unsignalized full access driveway along Doolittle Drive and an unsignalized full access driveway along Hester Street. The Project site plan is presented in **Figure 2**.

TRIP GENERATION

Trip generation for projects are typically calculated based on information contained in the Institute of Transportation Engineer's (ITE) publication, *Trip Generation Manual, 11th Edition*[3]. The manual is a standard reference used by jurisdictions throughout the country for the estimation of trip generation of proposed projects. A trip is defined in the *Trip Generation Manual* as a single or one-directional vehicle movement with either the origin or destination at the project site. In other words, a trip can be either "to" or "from" the site and therefore, a single visitor to a site is counted as two.

For purposes of determining the worst-case deficiencies of traffic on the surrounding street network, the trips generated by a proposed project are estimated for the AM peak hour (between the hours of 7:00 AM and 9:00 AM), and for the PM peak hour (between 4:00 PM and 6:00 PM) on a typical weekday. Trips generated by the proposed project were based on the rates for ITE Land Use 155 (High-Cube Fulfillment Center – Sort).

Table 2 presents the trip generation for the proposed project. The project would generate 208 trips in the AM peak hour and 287 trips in the PM peak hour.

[3] *Trip Generation Manual, 11th Edition*, Institute of Transportation Engineers, 2021.

Table 2 – Project Trip Generation

Vehicle Type	Daily	AM Peak Hour (7:00-9:00)			PM Peak Hour (4:00-6:00)		
		In	Out	Total	In	Out	Total
100% ITE (LU 155 Sort) High-Cube Fulfillment Center[2]							
Rates							
Passenger Car	6.25	0.69	0.16	0.85	0.46	0.72	1.18
Truck	0.19	0.01	0.01	0.02	0.01	0.01	0.02
Trips							
Passenger Car	1,497	167	36	203	110	172	282
Truck	46	2	3	5	2	3	5
Total	1,543	169	39	208	112	175	287

[1] Existing trip generation is based on the 880 Doolittle Traffic Analysis prepared by Urban Crossroads in October 2021.
[2] Proposed trip generation based on ITE *Trip Generation Manual, 11th Edition*.

PROJECT TRIP DISTRIBUTION AND ASSIGNMENT

The Project's trip distribution was estimated based on the project access locations, freeway access, and roadway network within the study area. **Figure 5** presents the trip distribution assumed for the Near Term Plus Project and Cumulative Plus Project analysis.

Based on the assumed trip distribution, the volumes generated by the project were assigned to the roadway network. Trip assignment to the project driveways was based on the on-site circulation and available movements for each driveway. **Figure 6** presents the project's AM and PM peak hour trip assignment.

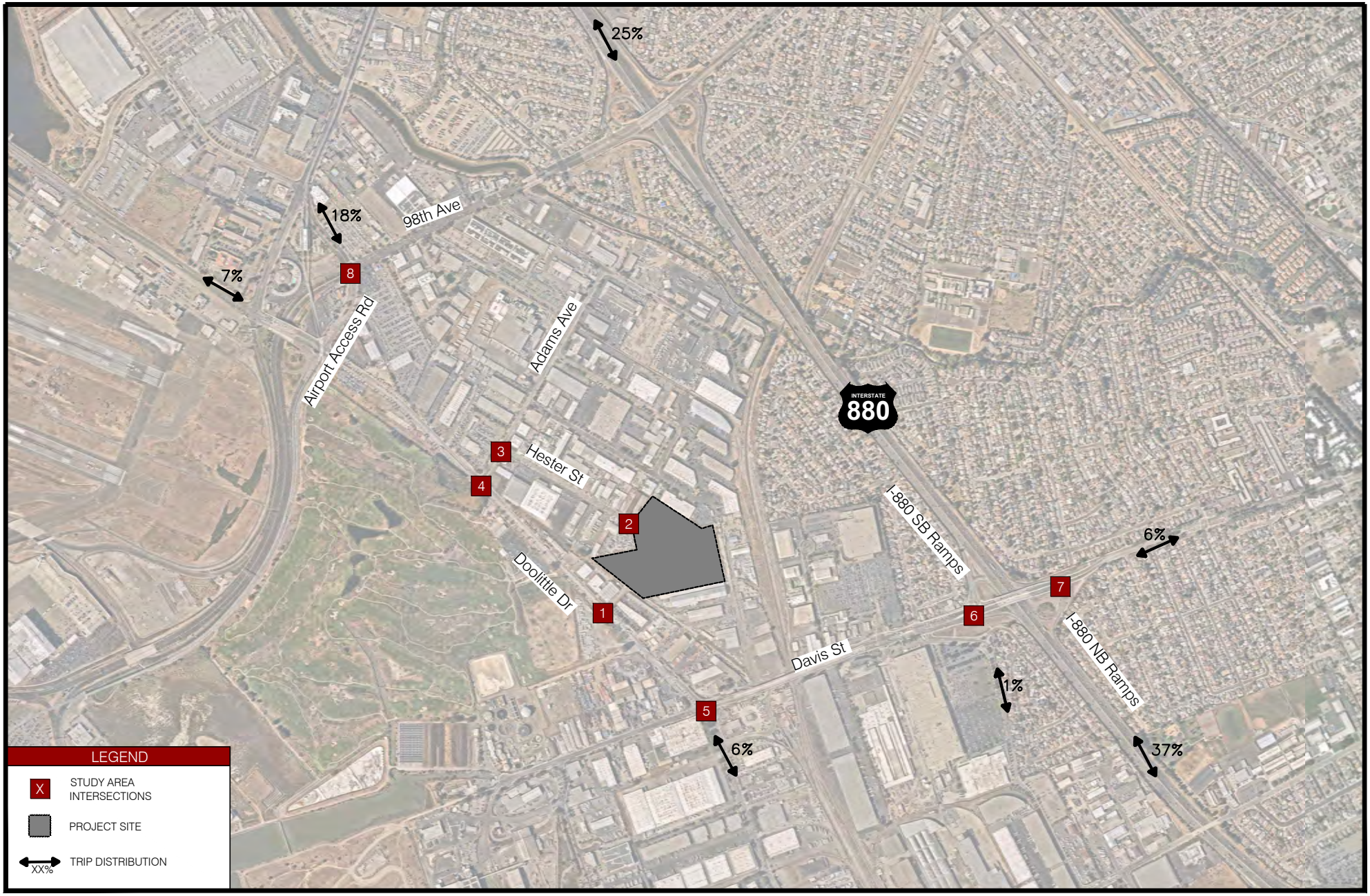

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FIGURE 5
PROJECT TRIP DISTRIBUTION

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FIGURE 6
PROJECT PEAK HOUR TURNING MOVEMENT VOLUMES

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880 Doolittle Drive

4. VEHICLE MILES TRAVELED (VMT)

This chapter summarizes the Project's Vehicle Miles Traveled (VMT) methodology, analysis, and results.

VMT METHODOLOGY

The City has not yet adopted VMT guidelines or a methodology for determining VMT impacts. Therefore, the Project's VMT evaluation relied on guidance provided by the Governor's Office of Planning and Research (OPR) Technical Advisory on Evaluating Transportation Impacts in CEQA[4] to determine potential impacts under Senate Bill (SB) 743. It should be noted that the ACTC VMT tools and maps are consistent with OPR methodology and the recommended 15 percent below regional average threshold. The approach outlined by the OPR Technical Advisory does not specifically address industrial facilities. However, for the purposes of this analysis, it is assumed that the employee VMT for this Project would have a similar VMT as an employee for an office use. Therefore, the Project was analyzed as an office project, which is evaluated based on VMT per employee since the predominant driver of VMT for the proposed Project would be commute trips and other employee-based trips. This approach is consistent with OPR guidelines which states, "where methodologies exist that can estimate the full extent of vehicle miles traveled from a project, the lead agency should apply them to do so".

VMT ANALYSIS

The ACTC has developed maps displaying estimates of VMT per employee based on traffic analysis zone (TAZ) estimates from the Alameda Countywide Travel Demand Model. Based on the VMT per Employee map for the Central Planning Area shown in **Appendix B**, the project is located in an area with a VMT equal to 15.34 in 2020 and 16.08 in 2040.

Based on the VMT per Employee map for the Central Planning Area in year 2020 provided by the ACTC, the project is located in an area with a VMT equal to 15.34. The target VMT, which is 15 percent below the average, for Central Planning Area is 16.3. Since the proposed project VMT does not exceeds the Central Planning Area threshold, the project will result in a less than significant VMT impact.

Based on the VMT per Employee table for the Central Planning Area in year 2040 provided by the ACTC, the project is located in an area with a VMT equal to 16.08. The target VMT, which is 15 percent below the average, for Central Planning Area is 16.2. Since the proposed project VMT does not exceeds the Central Planning Area threshold, the project will result in a less than significant VMT impact.

Table 3 summarizes the VMT analysis.

[4] Technical Advisory on Evaluating Transportation Impacts in CEQA, Governor's Office of Planning and Research, December 2018.

Table 3 – VMT Analysis Summary

Category	2020	2040
	Central Planning Area	Central Planning Area
Average VMT per Employee	19.2	19.1
Threshold VMT per Employee (85% of Average)	16.3	16.2
Project TAZ Average VMT per Employee	15.34	16.08
VMT Reduction Percentage Needed	0%	0%

5. TRAFFIC OPERATIONS ANALYSIS

This chapter will discuss the traffic operations analysis that was conducted to determine the effect of the proposed project on the transportation system. The operations analysis includes intersection level of service and intersection queuing.

EXISTING CONDITIONS

Existing conditions represent operations based on the existing roadway configuration (**Figure 3**) and existing volumes (**Figure 4**).

INTERSECTION LEVEL OF SERVICE

Traffic operations were evaluated at the study intersections under existing traffic conditions. Results of the analysis are presented in **Table 4**. All study intersections function within acceptable LOS standards under this analysis scenario except for Intersection #5 – Doolittle Drive and Davis Street in the AM peak hour.

Table 4 – Existing Peak Hour LOS Summary

#	Intersection	LOS Criteria	Jurisdiction	Control[1]	Existing					
					AM Peak			PM Peak		
					LOS	Delay[2] (sec)	v/c	LOS	Delay[2] (sec)	v/c
1	Doolittle Drive/West Project Driveway	D	City	SSSC	A	0.3	-	A	0.2	-
	Worst Approach				C	17.9	0.37	B	13.5	0.36
2	Hester Street/North Project Driveway[4]	D	City	SSSC	A	6.7	-	A	8.4	-
	Worst Approach				A	9.6	0.03	A	9.4	0.05
3	Hester Street/Adams Avenue	D	City	SSSC	A	0.6	-	A	2.3	-
	Worst Approach				B	10.9	0.20	B	10.6	0.11
4	Doolittle Drive/Adams Avenue[3]	D	City	Signal	B	10.9	0.43	B	10.7	0.68
5	Doolittle Drive/Davis Street	D	City	Signal	**F**	**107.4**	**0.93**	D	54.5	0.72
6	Davis Street/SB I-880 Ramps[3]	D	City	Signal	B	13.3	0.70	B	14.3	0.59
7	Davis Street/NB I-880 Ramps[3]	D	City	Signal	B	11	0.61	B	13.7	0.64
8	Airport Access Road/98th Avenue[3]	D	City	Signal	C	34.8	0.40	D	40.1	0.49

Note: Intersections that are operating below acceptable levels are shown in **BOLD**.
1 SSSC = Side Street Stop Control
2 The average control delay is reported for signalized intersections. The average control delay and the delay for the worst approach are reported for SSSC intersections.
3 Analyzed using HCM 2000 due to non-NEMA phasing.
4 Analyzed using HCM 2000 due to errors with HCM 6 within Synchro 11.

Analysis sheets are provided in **Appendix C**.

NEAR TERM TRAFFIC CONDITIONS

LANE GEOMETRY

Under Near Term conditions, no roadway improvements were assumed, therefore existing lane geometry was assumed as shown in **Figure 3**.

TRAFFIC VOLUMES

At the time of the analysis (November 2022), the San Leandro Developments map and table was downloaded from the City's website and used to determine which projects would be included in the Near Term Conditions. Projects within the vicinity of the project site that were proposed or approved were assumed to be generating vehicle traffic under Near Term Conditions. All pending and approved projects were considered; however, only the projects that would generate a substantial number of trips and were located close enough to affect the study area were included in the analysis. **Figure 7** lists the projects that were included in the Near Term traffic and shows the location of all approved and pending projects. Locations shown in red were included in the analysis and locations shown in blue were considered but not included in the analysis. Specifically, the Oakland Airport Golf Course Parking Lot project was included. Volumes along major arterials such as Doolittle Drive and 98th Avenue were also grown by 0.772 percent per year (compounded annually) to account for trips generated by future developments outside of San Leandro. Pending and approved project volumes are shown in **Figure 8**.

INTERSECTION LEVEL OF SERVICE

Near Term volumes were evaluated at the study intersections and are presented in **Figure 9**. Results are presented in **Table 5**. All study intersections function within acceptable LOS standards under this analysis scenario except for Intersection #5 – Doolittle Drive and Davis Street.

Analysis sheets are provided in **Appendix C**.

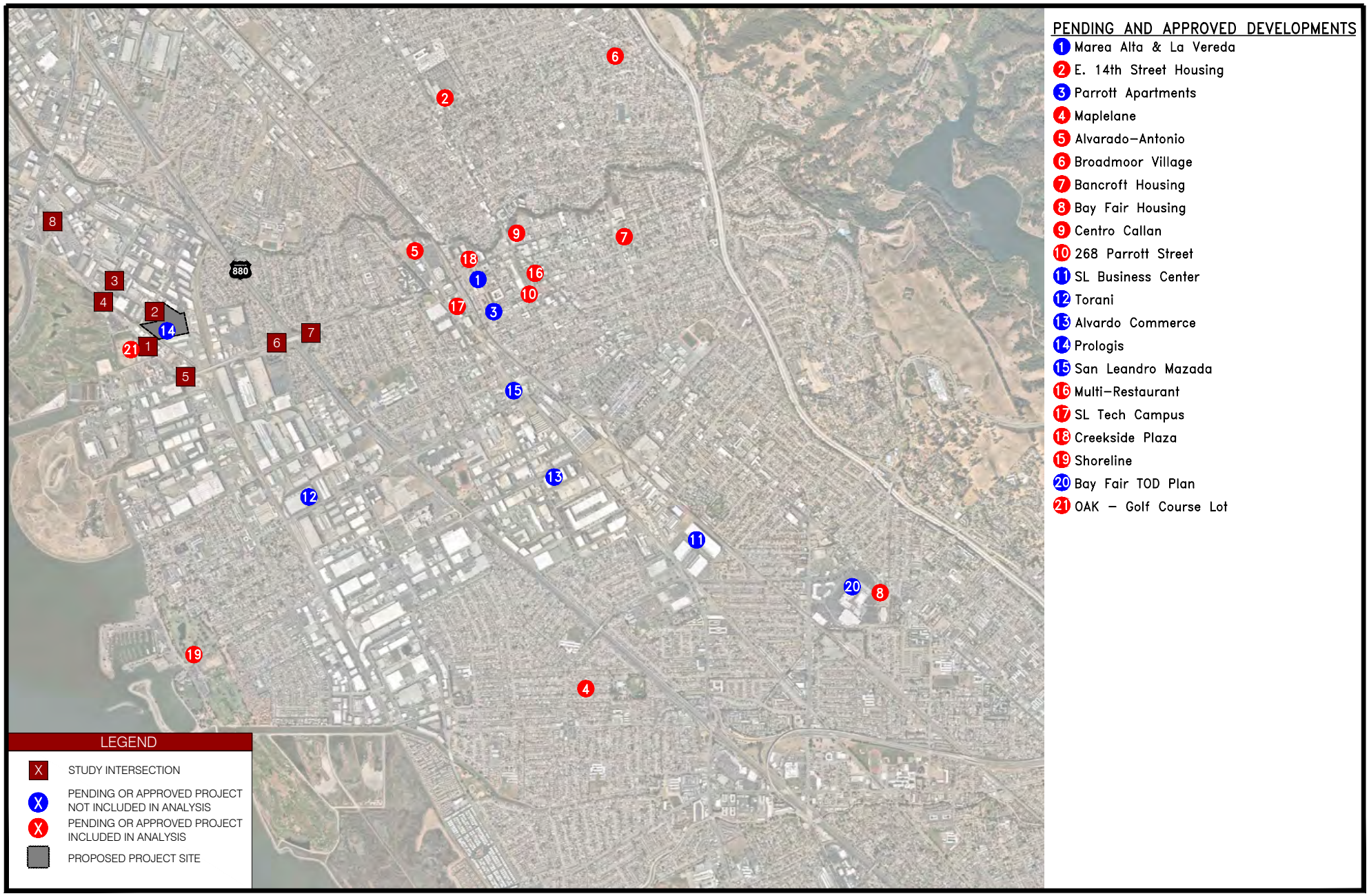

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FIGURE 7

PENDING AND APPROVED PROJECT LOCATIONS

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FIGURE 8
PENDING AND APPROVED PROJECT PEAK HOUR TURNING MOVEMENT VOLUMES

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FIGURE 9
NEAR TERM PEAK HOUR TURNING MOVEMENT VOLUMES

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880 Doolittle Drive

Table 5 – Near Term and Near Term Plus Project Peak Hour LOS Summary

#	Intersection	LOS Criteria	Jurisdiction	Control[1]	Near Term						Near Term Plus Project									
					AM Peak			PM Peak			AM Peak					PM Peak				
					LOS	Delay[2] (sec)	v/c	LOS	Delay[2] (sec)	v/c	LOS	Delay[2] (sec)	Delay Var (sec)	v/c	v/c Var	LOS	Delay[2] (sec)	Delay Var (sec)	v/c	v/c Var
1	Doolittle Drive/West Project Driveway	D	City	SSSC	A	0.3	-	A	0.2	-	A	0.4	0.1	-	-	A	0.6	0.4	-	-
	Worst Approach				C	19.2	0.4	B	14.1	0.39	C	19.8	0.6	0.40	0.00	C	18.7	4.6	0.39	0.00
2	Hester Street/North Project Driveway[4]	D	City	SSSC	A	6.7	-	A	8.4	-	A	4.9	-1.8	-	-	A	8.1	-0.3	-	-
	Worst Approach				A	9.6	0.03	A	9.4	0.05	B	10.4	0.8	0.06	0.03	B	10.7	1.3	0.21	0.16
3	Hester Street/Adams Avenue	D	City	SSSC	A	0.8	-	A	2.5	-	A	1.9	1.1	-	-	A	4.9	2.4	-	-
	Worst Approach				B	11.0	0.20	B	10.7	0.12	B	11.7	0.7	0.23	0.03	B	12.1	1.4	0.30	0.18
4	Doolittle Drive/Adams Avenue[3]	D	City	Signal	B	11.0	0.46	B	12.0	0.71	B	13.4	2.4	0.49	0.03	B	13.7	1.7	0.72	0.01
5	Doolittle Drive/Davis Street	D	City	Signal	**F**	**110.7**	**0.97**	**E**	**62.7**	**0.76**	**F**	**127.4**	**16.7**	**1.04**	**0.07**	**E**	**67.4**	**4.7**	**0.80**	**0.04**
6	Davis Street/SB I-880 Ramps[3]	D	City	Signal	B	14.1	0.75	B	14.7	0.64	B	14.7	0.6	0.78	0.03	B	14.9	0.2	0.66	0.02
7	Davis Street/NB I-880 Ramps[3]	D	City	Signal	B	11.8	0.67	B	14.4	0.66	B	12.2	0.4	0.69	0.02	B	14.5	0.1	0.68	0.02
8	Airport Access Road/98th Avenue[3]	D	City	Signal	C	34.8	0.40	D	40.9	0.50	C	34.5	-0.3	0.40	0.00	D	40.4	-0.5	0.51	0.01

Note: Intersections that are operating below acceptable levels are shown in **BOLD**. Project caused deficiencies are shaded.
1 SSSC = Side Street Stop Control
2 The average control delay is reported for signalized intersections. The average control delay and the delay for the worst approach is reported for SSSC intersections.
3 Analyzed using HCM 2000 due to non-NEMA phasing.
4 Analyzed using HCM 2000 due to errors with HCM 6 within Synchro 11.

NEAR TERM PLUS PROJECT

LANE GEOMETRY AND CONTROL

The project is not proposing any roadway improvements at any study intersection and therefore Near Term Plus Project conditions assumed existing lane geometry as illustrated in **Figure 3**.

TRAFFIC VOLUMES

The Project is estimated to generate a net 497 daily trips, a total of 49 AM peak hour trips (89 inbound and -40 outbound), and 152 PM peak hour trips (55 inbound and 97 outbound). Near Term Plus Project volumes were determined by adding the total project traffic, **Figure 6**, to the Near Term conditions volume, **Figure 9**. Near Term Plus Project peak hour volumes are shown in **Figure 10**.

INTERSECTION LEVEL OF SERVICE

Near Term Plus Project traffic conditions were evaluated at the study intersections. Results are presented in **Table 5**. All study intersections function within acceptable LOS standards under this analysis scenario during the AM and PM peak hours except for Intersection #5 – Doolittle Drive and Davis Street. In the AM peak hour, this intersection deficiency is considered a project deficiency because it operates at an unacceptable LOS for without project conditions and the addition of project trips causes the intersection v/c to increase by 0.05 or more.

Analysis sheets are provided in **Appendix C**.

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FIGURE 10
NEAR TERM PLUS PROJECT PEAK HOUR TURNING MOVEMENT VOLUMES

197546001 January 2024

880 Doolittle Drive

CUMULATIVE TRAFFIC CONDITIONS

LANE GEOMETRY

Under Cumulative conditions, no roadway improvements were assumed, therefore existing lane geometry was assumed as shown in **Figure 3**.

TRAFFIC VOLUMES

To account for future development and growth within the County, the Cumulative traffic volumes were developed by determining a growth rate from the ACTC Model. Existing and future year model outputs were acquired for the roadway links in the study area. These link volumes were then used to determine an annual growth rate that was applied to the Existing volumes. The volumes were reviewed to ensure that there would be no decrease in volumes from Existing or Near Term to the Cumulative year. For locations where the volumes would decrease, they were conservatively assumed to equal the Near Term volume and rounded up to the nearest 10 vehicles. Cumulative peak hour volumes are presented in **Figure 11.**

INTERSECTION LEVEL OF SERVICE

Cumulative volumes were evaluated at the study intersections. Results are presented in **Table 6**. All study intersections function within acceptable LOS standards under this analysis scenario except for Intersection #5 – Doolittle Drive and Davis Street and Intersection #8 – Airport Access Road and 98th Avenue.

Analysis sheets are provided in **Appendix C.**

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FIGURE 11
CUMULATIVE PEAK HOUR TURNING MOVEMENT VOLUMES

197546001 January 2024

880 Doolittle Drive

Table 6 – Cumulative and Cumulative Plus Project Peak Hour LOS Summary

#	Intersection	LOS Criteria	Jurisdiction	Control[1]	Cumulative						Cumulative Plus Project									
					AM Peak			PM Peak			AM Peak					PM Peak				
					LOS	Delay[2] (sec)	v/c	LOS	Delay[2] (sec)	v/c	LOS	Delay[2] (sec)	Delay Var (sec)	v/c	v/c Var	LOS	Delay[2] (sec)	Delay Var (sec)	v/c	v/c Var
1	Doolittle Drive/West Project Driveway	D	City	SSSC	A	0.3	-	A	0.2	-	A	0.5	0.2	-	-	A	0.8	0.6	-	-
	Worst Approach				C	24.9	0.51	C	21.1	0.51	D	27.2	2.3	0.51	0.00	D	28.4	7.3	0.51	0.00
2	Hester Street/North Project Driveway[4]	D	City	SSSC	A	6.4	-	A	7.7	-	A	5.2	-1.2	-	-	A	8.1	0.4	-	-
	Worst Approach				A	10.0	0.04	A	9.7	0.06	B	10.8	0.8	0.07	0.03	B	11.2	1.5	0.23	0.17
3	Hester Street/Adams Avenue	D	City	SSSC	A	1.5	-	A	2.3	-	A	2.5	1.0	-	-	A	4.7	2.4	-	-
	Worst Approach				C	15.1	0.26	B	11.6	0.14	C	17.6	2.5	0.28	0.02	B	13.2	1.6	0.34	0.20
4	Doolittle Drive/Adams Avenue[3]	D	City	Signal	B	11.8	0.6	C	27.2	1.02	B	13.3	1.5	0.62	0.02	C	30.6	3.4	1.02	0.00
5	Doolittle Drive/Davis Street	D	City	Signal	**F**	**156.8**	**1.20**	**F**	**177.8**	**1.17**	**F**	**173.2**	16.4	**1.27**	**0.07**	**F**	**189.8**	12.0	**1.21**	0.04
6	Davis Street/SB I-880 Ramps[3]	D	City	Signal	B	14.2	0.76	C	21.3	0.85	B	14.6	0.4	0.78	0.02	C	23.6	2.3	0.87	0.02
7	Davis Street/NB I-880 Ramps[3]	D	City	Signal	B	11.8	0.77	C	28.5	0.89	B	12.2	0.4	0.78	0.01	C	29.4	0.9	0.90	0.01
8	Airport Access Road/98th Avenue[3]	D	City	Signal	**E**	**66.9**	**0.61**	**F**	**441.7**	**1.29**	**E**	**66.4**	-0.5	**0.61**	0.00	**F**	**437.1**	-4.6	**1.30**	0.01

Note: Intersections that are operating below acceptable levels are shown in **BOLD**. Project caused deficiencies are shaded.

1 SSSC = Side Street Stop Control
2 The average control delay is reported for signalized intersections. The average control delay and the delay for the worst approach is reported for SSSC intersections.
3 Analyzed using HCM 2000 due to non-NEMA phasing.
4 Analyzed using HCM 2000 due to errors with HCM 6 within Synchro 11.

CUMULATIVE PLUS PROJECT

LANE GEOMETRY AND CONTROL

The project is not proposing any roadway improvements at any study intersection and therefore Cumulative Plus Project conditions assumed existing lane geometry as illustrated in **Figure 3**.

TRAFFIC VOLUMES

The Project is estimated to generate a net 497 daily trips, a total of 49 AM peak hour trips (89 inbound and -40 outbound), and 152 PM peak hour trips (55 inbound and 97 outbound). Cumulative Plus Project volumes were determined by adding the total project traffic, **Figure 6**, to the Cumulative conditions volume, **Figure 11**. Cumulative Plus Project peak hour volumes are shown in **Figure 12**.

INTERSECTION LEVEL OF SERVICE

Cumulative Plus Project traffic conditions were evaluated at the study intersections. Results are presented in **Table 6**. Intersections operate unacceptably but are not considered a project deficiency if the intersection is operating unacceptably without the project and the increase in v/c is less than 0.05. Intersection #8 – Airport Access Road and 98th Avenue operates unacceptably in the AM and PM peak hours, but is not considered a project deficiency because the project increases the v/c by less than 0.05. Intersection #5 – Doolittle Drive and Davis Street operates unacceptably in the AM and PM peak hours and is considered a project deficiency in the AM peak hour because the project increases the v/c by more than 0.05.

Analysis sheets are provided in **Appendix C**.

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FIGURE 12
CUMULATIVE PLUS PROJECT PEAK HOUR TURNING MOVEMENT VOLUMES

197546001 January 2024

880 Doolittle Drive

VEHICLE QUEUING

As congestion increases, it is common for traffic at intersections to form lines of stopped (or queued) vehicles. Queue lengths were determined for turn lanes in which significant project trips are being added, and the distance that vehicles will back up approaching an intersection were estimated. Synchro software calculates the 95th percentile queues based on Synchro software methodology. The 95th percentile queue is used to account for fluctuations in traffic and represents a condition where 95 percent of the time during the peak period, traffic volumes will be less than or equal to the queue determined by the analysis. It is used as a benchmark for determining deficiencies as a standard transportation engineering practice. A typical vehicle length of 25 feet was used in the queuing analysis. The effect of vehicle queuing was analyzed by reporting the 95th percentile queues for turning movements where the project would add trips to existing or proposed turn pockets. Left-turn lane vehicle queuing that exceeds a turn pocket length can create potentially hazardous conditions by blocking or disrupting through traffic in adjacent travel lanes. An operational deficiency, and not a significant impact, was assumed to occur if the left turn queue increases by one or more vehicles and the vehicle queue exceeds the left turn pocket length.

All queue lengths are contained within the available storage and the project does not increase the queue by one or more vehicles, except for the following movements:

- Intersection #5 – Doolittle Drive and Davis Street
    - Westbound right-turn (AM peak hour in Near Term plus Project and Cumulative plus Project scenarios)

The analysis showed that the westbound right-turn queue at Doolittle Drive and Davis Street exceeds the storage bay length of 120 feet. In the Near Term plus Project scenario and Cumulative plus Project scenario, the project trips increased the westbound right-turn queue by 146 feet and 141 feet in the AM peak hour, respectively. However, since the westbound right-turn vehicles will go during the same signal phase as the westbound through vehicles, this is not considered a queuing deficiency. Therefore, although the westbound right-turn queue extends beyond the storage length, it is not expected to cause any safety issues and no improvement is necessary.

The vehicle queuing summary is shown in **Table 7**.

Table 7 – Vehicle Queuing Summary

#	Intersection	Control	Movement	Storage Length (ft)	Existing		Near Term		Near Term Plus Project		Cumulative		Cumulative Plus Project	
					AM Peak	PM Peak	AM Peak	PM Peak	AM Peak	PM Peak	AM Peak	PM Peak	AM Peak	PM Peak
4	Doolittle Dr/Adams Ave	Signal	WBR	85	<25	25	<25	25	<25	30	<25	26	<25	29
			NBR	230	44	26	46	27	46	27	49	28	49	28
			SBL	275	51	<25	51	<25	107	41	76	<25	131	43
5	Doolittle Dr/Davis St	Signal	WBR	120	**904**	**282**	**935**	**323**	**1,081**	**394**	**1,309**	**988**	**1,450**	**1,086**
			SBL	260	183	**458**	206	**477**	209	**500**	**580**	**765**	**586**	**788**
6	Davis St/SB I-880	Signal	EBR	400	40	53	40	54	41	54	41	54	41	55
			SBR	350	201	154	209	163	214	166	222	257	222	257

Note: NBR=northbound right, SBL=southbound left, SBR=southbound right, EBR=eastbound right, WBL=westbound left, WBR=westbound right
Queues exceeding available storage by greater than 25 feet are shown in bold.
Deficient queues that increase by more than 25 feet under project conditions are shaded.

6. ALAMEDA COUNTY TRANSPORTATION COMMISSION LAND USE ANALYSIS PROGRAM

This chapter presents the results of the Alameda CTC Land Use analysis under Year 2020 and Year 2040 Conditions, with and without the Project, in the PM peak hour.

YEAR 2020 AND YEAR 2040 NO PROJECT CONDITIONS

The Alameda CTC Land Use analysis was performed to comply with its congestion management plan (CMP) Land Use Analysis Program. In the CMP, development projects generating more than 100 PM net new peak hour trips are analyzed to determine its impact on Metropolitan Transportation System (MTS) roadways. Since the ACTC Land Use Analysis Program's 100-trip criteria is in the PM peak hour and the project generates greater project trips in the PM peak hour than the AM peak hour, the analysis was evaluated in the PM peak hour only.

The Alameda CTC travel demand model for Year 2020 and Year 2040 was used to determine 2020 and 2040 traffic volumes in the PM peak hour along the MTS roadways of Doolittle Drive and Davis Street. Traffic volumes and the number of lanes in each direction were used to determine the segment v/c ratio. It is assumed that the capacity of the roadway segment is 800 vehicles per hour per lane (vphpl).

Based on the analysis, the following MTS roadway segments operate at an unacceptable LOS F in Year 2020 and 2040 Conditions during the PM peak hour:

Year 2020 Conditions

- Northbound Doolittle Drive from Davis Street to Adams Avenue
- Eastbound Davis Street from Doolittle Drive to I-880 SB Ramps

Year 2040 Conditions

- Northbound Doolittle Drive from Davis Street to Adams Avenue
- Southbound Doolittle Drive from Adams Avenue to Davis Street
- Eastbound Davis Street from Doolittle Drive to I-880 SB Ramps
- Westbound Davis Street from I-880 SB Ramps to Doolittle Drive

YEAR 2020 AND YEAR 2040 PLUS PROJECT CONDITIONS

Project trips during the PM peak hour were added to the roadway segments under Year 2020 and Year 2040 Conditions to determine the v/c ratio under Plus Project Conditions. Based on the analysis, the following roadway segments continue to operate at an unacceptable LOS F in Plus Project Conditions:

Year 2020 Plus Project Conditions

- Northbound Doolittle Drive from Davis Street to West Project Driveway
    - With the addition of the project trips, this results in an increase in v/c of more than 0.02 – **Project Deficiency**
- Northbound Doolittle Drive from Adams Avenue to West Project Driveway
    - With the addition of the project trips, this results in an increase in v/c of less than 0.02 – **Not a Deficiency**
- Eastbound Davis Street from Doolittle Drive to I-880 SB Ramps
    - With the addition of the project trips, this results in an increase in v/c of less than 0.02 – **Not a Deficiency**

Year 2040 Plus Project Conditions

- Northbound Doolittle Drive from Davis Street to West Project Driveway
  - With the addition of the project trips, this results in an increase in v/c of more than 0.02 – **Project Deficiency**
- Northbound Doolittle Drive from Adams Avenue to West Project Driveway
  - With the addition of the project trips, this results in an increase in v/c of less than 0.02 – **Not a Deficiency**
- Southbound Doolittle Drive from Adams Avenue to West Project Driveway
  - With the addition of the project trips, this results in an increase in v/c of less than 0.02 – **Not a Deficiency**
- Southbound Doolittle Drive from West Project Driveway to Davis Street
  - With the addition of the project trips, this results in an increase in v/c of more than 0.02 – **Project Deficiency**
- Eastbound Davis Street from Doolittle Drive to I-880 SB Ramps
  - With the addition of the project trips, this results in an increase in v/c of less than 0.02 – **Not a Deficiency**
- Westbound Davis Street from I-880 SB Ramps to Doolittle Drive
  - With the addition of the project trips, this results in an increase in v/c of more than 0.02 – **Project Deficiency**

Table 8 and **Table 9** summarize the roadway segment capacity analysis for Year 2020 and Year 2040, respectively.

Table 8 – Year 2020 ACTC Roadway Segment Analysis

Location	Limits	# of Lanes	Capacity (vphpl)	No Project - Year 2020 (PM)			With Project - Year 2020 (PM)				
				Volume (vph)	LOS	V/C	Project Generated Trips	Volume (vph)	LOS	V/C	Δ V/C
Arterial Segment											
NB Doolittle Dr	Davis St (Int #5) to Project Dwy (Int #1)	2	800	1,764	**F**	**1.103**	56	1,791	**F**	**1.119**	**0.035**
	Project Dwy (Int #1) to Adams Ave (Int #4)	2	800	1,764	**F**	**1.103**	22	1,756	**F**	**1.098**	**0.014**
SB Doolittle Dr	Adams Ave (Int #4) to Project Dwy (Int #1)	2	800	1,599	E	0.999	5	1,589	E	0.993	0.003
	Project Dwy (Int #1) to Davis St (Int #5)	2	800	1,599	E	0.999	32	1,591	E	0.994	0.020
EB Davis St	Doolittle Dr (Int #5) to I-880 SB Ramps (Int #6)	2	800	2,095	**F**	**1.309**	23	2,088	**F**	**1.305**	**0.014**
	I-880 SB Ramps (Int #6) to I-880 NB Ramps (Int #7)	3	800	1,497	C	0.624	10	1,495	C	0.623	0.004
WB Davis St	I-880 NB Ramps (Int #7) to I-880 SB Ramps (Int #6)	3	800	1,362	B	0.568	48	1,392	B	0.580	0.020
	I-880 SB Ramps (Int #6) to Doolittle Dr (Int #5)	2	800	1,532	E	0.958	49	1,559	E	0.974	0.031

Note: Segments that are operating below acceptable levels are shown in **BOLD**. Project caused deficiencies are shaded.

Table 9 – Year 2040 ACTC Roadway Segment Analysis

Location	Limits	# of Lanes	Capacity (vphpl)	No Project - Year 2040 (PM)			With Project - Year 2040 (PM)				
				Volume (vph)	LOS	V/C	Project Generated Trips	Volume (vph)	LOS	V/C	Δ V/C
Arterial Segment											
NB Doolittle Dr	Davis St (Int #5) to Project Dwy (Int #1)	2	800	2,084	**F**	**1.303**	56	2,111	**F**	**1.319**	**0.035**
	Project Dwy (Int #1) to Adams Ave (Int #4)	2	800	2,084	**F**	**1.303**	22	2,076	**F**	**1.298**	**0.014**
SB Doolittle Dr	Adams Ave (Int #4) to Project Dwy (Int #1)	2	800	2,270	**F**	**1.419**	5	2,260	**F**	**1.413**	**0.003**
	Project Dwy (Int #1) to Davis St (Int #5)	2	800	2,270	**F**	**1.419**	32	2,262	**F**	**1.414**	**0.020**
EB Davis St	Doolittle Dr (Int #5) to I-880 SB Ramps (Int #6)	2	800	2,314	**F**	**1.446**	23	2,307	**F**	**1.442**	**0.014**
	I-880 SB Ramps (Int #6) to I-880 NB Ramps (Int #7)	3	800	2,073	D	0.864	10	2,071	D	0.863	0.004
WB Davis St	I-880 NB Ramps (Int #7) to I-880 SB Ramps (Int #6)	3	800	1,887	D	0.786	48	1,917	D	0.799	0.020
	I-880 SB Ramps (Int #6) to Doolittle Dr (Int #5)	2	800	2,087	**F**	**1.304**	49	2,114	**F**	**1.321**	**0.031**

Note: Segments that are operating below acceptable levels are shown in **BOLD**. Project caused deficiencies are shaded.

7. SITE ACCESS AND CIRCULATION

This section discusses site access, site circulation, pedestrian facilities, bicycle facilities, transit recommendations, and sight distance analysis for the project.

The following summarizes the project access locations:

- Doolittle Drive and West Project Driveway
  - Stop-controlled westbound movement for project driveway
  - Full access
- Hester Street and North Project Driveway
  - Stop-controlled eastbound and westbound movement for project driveway
  - Full access

Appendix C contains the queuing worksheets for the Project's driveways. These AM/PM peak hour worksheets are the results of the Cumulative Plus Project Conditions and show that the west and north project driveway throat depths are sufficient to accommodate the project outbound queues during the peak hours. For the west project driveway, the throat depth was measured as approximately 50 feet, which is the distance from Doolittle Drive to the internal drive aisle at 900 Doolittle Drive. As shown, the estimated outbound vehicle queue is less than 25 feet, which does not exceed the throat depth of 50 feet. However, it is possible that a truck with a vehicle length of more than 50 feet may temporarily block the drive aisle at 900 Doolittle Drive. In this case, vehicles may queue within the drive aisle; however, this should not result in vehicles queuing onto Doolittle Drive and therefore does not require any improvements. For the north project driveway, the throat depths were measured as approximately 50 feet for both the eastbound and westbound approach, which is the distance from Hester Street to the first parking space. As shown, the estimated outbound vehicle queue is less than 25 feet, which does not exceed the throat depth of 50 feet. Therefore, there are no anticipated conflicts or excessive queuing.

VEHICLE SITE CIRCULATION

Passenger cars and trucks may use the West Project Driveway and North Project Driveway to enter the site. All truck parking is located on the north side of the site and the passenger car parking spaces are located to the west of the site. 24 dock doors are located on the north site of the building and 37 dock doors are located on the south side. Vehicles may use the drive aisles proposed on all sides of the building to access these parking spaces and docks.

PEDESTRIAN FACILITIES

There are existing continuous sidewalks on both sides of Doolittle Drive adjacent to the project site where pedestrians can access the site, as well as existing continuous sidewalks on both sides of Adams Avenue and on the east side of Hester Street. There are also existing crosswalks along the east, south, and west legs at the signalized intersection of Doolittle Drive and Davis Street, and existing crosswalks on the east and south legs at the signalized intersection of Doolittle Drive and Adams Street.

Within the project site, there are marked pedestrian crosswalks connecting the accessible parking spaces to the sidewalks along the west side of the building. These sidewalks along the west side of the building provide access to the office spaces. There are sufficient pedestrian facilities adjacent to the project and to nearby complimentary uses.

BICYCLE FACILITIES

Bicycles will have access to the project site using the Class II bicycle lanes along Doolittle Drive and Adams Avenue. Existing bicycle facilities are shown in **Figure 13**.

Within the project site, bicycle parking will be provided on the ground level. The project provides 12 short-term and 12 long-term bicycle parking spaces, which meets the City's requirements. Since there are sufficient bicycle facilities adjacent to the project, to nearby complimentary uses, and within the project site, no additional bicycle facilities are recommended to be constructed by the project.

TRANSIT

For those taking transit, Alameda-Contra Costa Transit District (AC Transit) bus routes 34, 35, 73, 98, 805 operate within the study area. The nearest bus stop is located at the intersection of Westgate Parkway and Davis Street, which is approximately 0.9 miles southeast of the project site. The San Leandro BART station, which serves the Blue, Green, and Orange BART lines, is located within 2.1 miles east of the project site. The San Leandro LINKS shuttle is a free shuttle to and from the San Leandro BART station that operates a North Loop and South Loop. The North Loop runs along Davis Street from the BART station to Marina Boulevard, Merced Street, Williams Street, Doolittle Drive, and Davis Street. There is an existing stop located at Doolittle Drive and Davis Street. Pedestrians can travel between the LINKS bus stop and the project site using the existing sidewalks located along both sides of Davis Street. Existing transit facilities are shown in **Figure 14**.

Since the LINKS route serves as a sufficient transit facility in proximity to the project along Davis Street to nearby complimentary uses, no additional transit facilities are recommended to be constructed by the project.

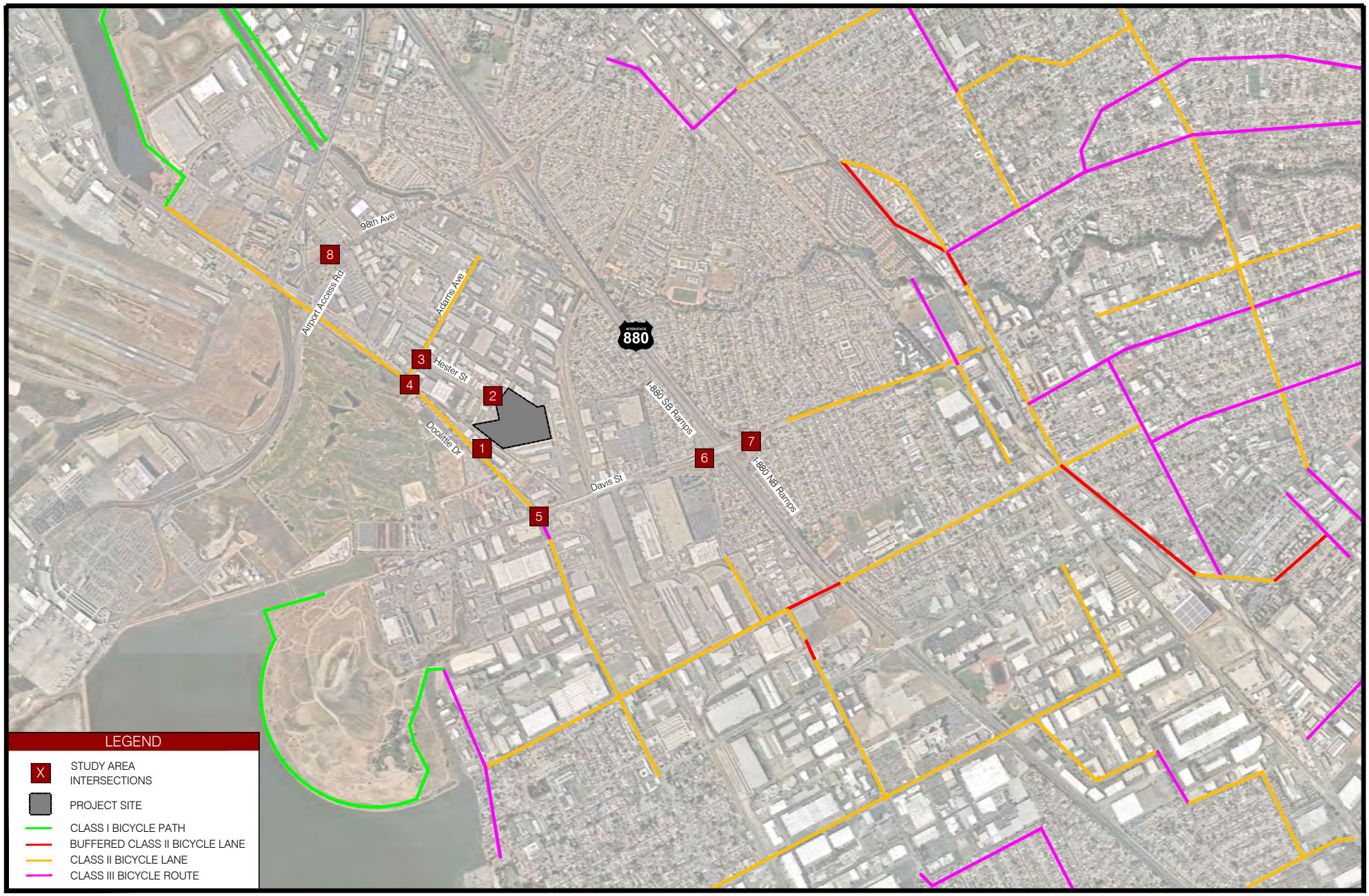

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FIGURE 13
BICYCLE FACILITIES

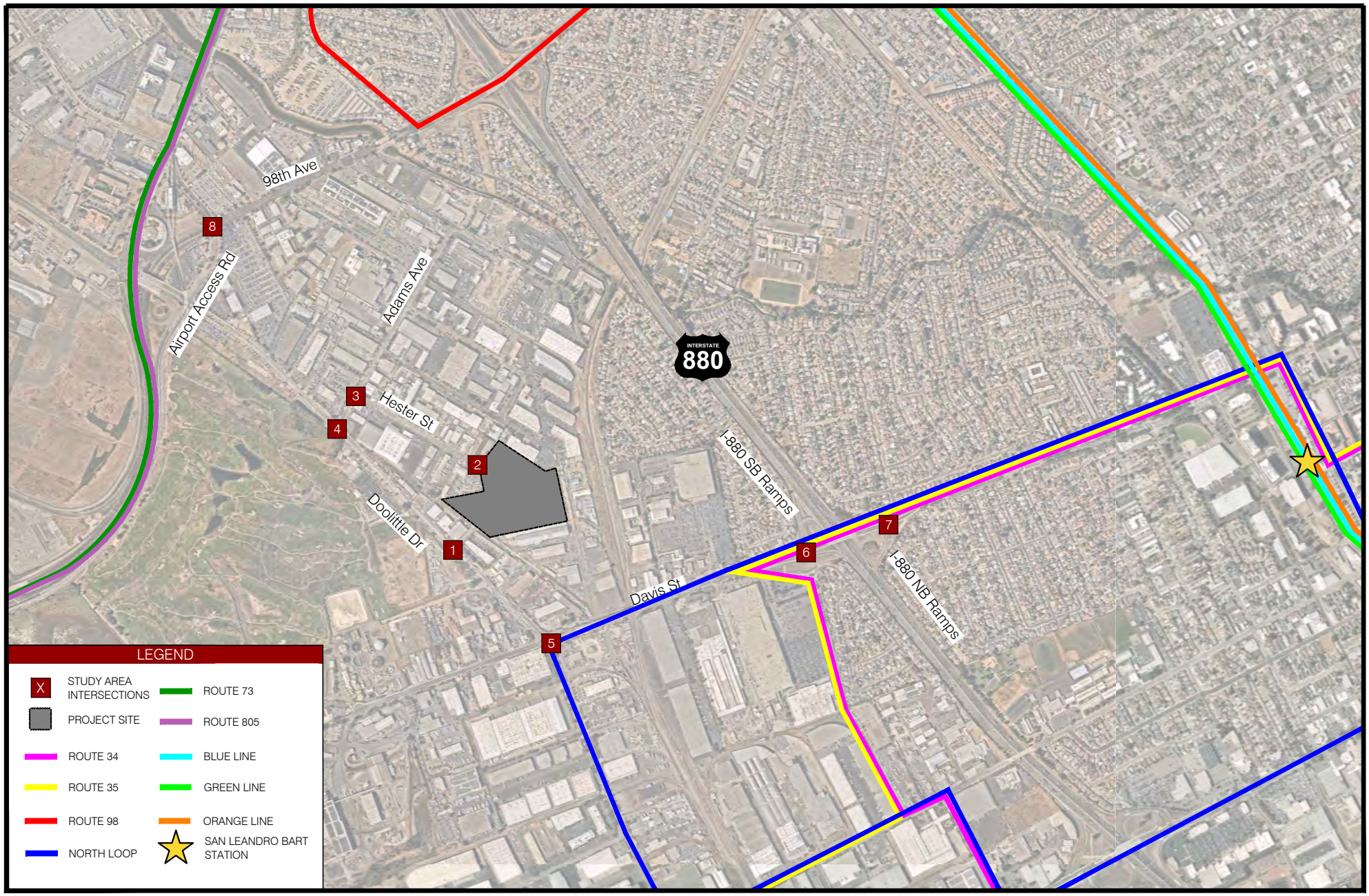

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FIGURE 14
TRANSIT FACILITIES

SIGHT DISTANCE

A sight distance analysis for the project driveways was conducted to determine if vehicles exiting the driveway would have adequate sight distance to observe conflicting traffic along the major roadway adjacent to the project site. Intersection sight distance for the project driveway was evaluated following methodology from the American Association of State Highway and Transportation Officials (AASHTO), *A Policy on Geometric Design of Highway and Street, 7th Edition*[5]. Sight distance for each project driveway was determined based on the proposed project site plan and the following AASHTO intersection sight distance criteria formula:

$$\text{Intersection Sight Distance} = 1.47 \times V_{major} \times t_g$$

Where V_{major} is the design speed of the major road and t_g is the time gap for the vehicle to exit the project driveway and enter the major road. No spot speed study was conducted; design speeds were used to determine sight distance.

Intersection #1 – Doolittle Drive and West Project Driveway

Using the time gap for passenger cars, the time gap is 8.5 seconds for a truck to make a right-turn movement onto Doolittle Drive and 10.2 seconds to make a left-turn movement. With a 50-mph design speed along Doolittle Drive, the sight distance criteria for trucks making a right-turn is 625 feet and the sight distance criteria for trucks making a left-turn is 750 feet. As shown in the **Figure 15**, the sight triangles at the West Project Driveway should be clear of obstructions for a vehicle exiting the driveway to observe oncoming northbound and southbound vehicles along Doolittle Drive.

[5] *A Policy on Geometric Design of Highway and Street, 7th Edition,* American Association of State Highway and Transportation Officials (AASHTO), 2018.

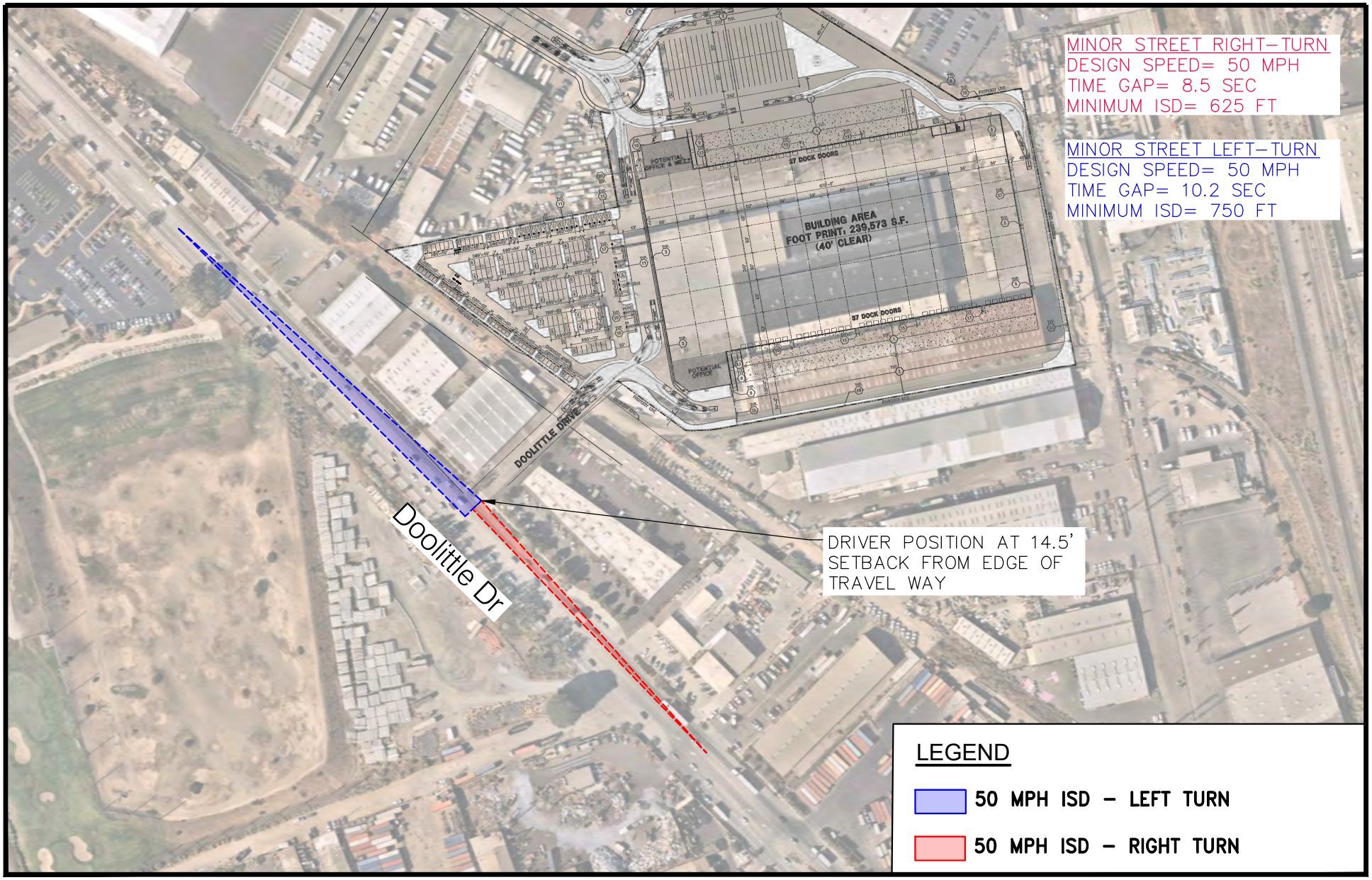

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FIGURE 15

INTERSECTION #1 INTERSECTION SIGHT DISTANCE

8. PARKING

This chapter summarizes the Project's parking requirements.

SAN LEANDRO PARKING REQUIREMENTS

Parking requirements for land uses within the City of San Leandro are provided in Chapter 4.08.108 of the San Leandro Municipal Code. This section includes parking requirements for vehicles and bicycles.

VEHICLE PARKING REQUIRED

Required parking for vehicles is based on land use. In accordance with the San Leandro Municipal Code, parking for office, warehousing, distributions, and storage facilities shall be provided at the following rates:

- Office: 1 space per 300 square feet
- Warehousing, Distributions and Storage Facilities: 1 space per 1,500 square feet

Assuming the project site has a 10,000-square foot office and a 229,573-square foot warehouse, the City requires 203 spaces. The project provides a total of 204 parking spaces and 59 trailer parking stalls, which provides adequate parking as required by the City.

The California Green Building Standard Code requires at least 10 percent of the total parking spaces to be Electric Vehicle (EV) Ready parking spaces. With the proposed 204 parking spaces, the project would be required to designate at least 21 EV Ready parking spaces. 21 EV spaces are proposed, which meets the requirement.

The 2010 Americans with Disabilities Act (ADA) Standards for Accessible Design requires at least seven accessible parking spaces for a parking facility with 201 to 300 parking spaces. With the proposed 204 parking spaces, the project would be required to designate at least seven accessible parking spaces. The project is proposing eight accessible parking spaces, which meets the requirement.

BICYCLE PARKING REQUIRED

Required parking for bicycles is based on type of land use. Bicycle parking for office, warehousing, distribution, and storage facilities is to be provided at the following rates:

- Short-term: 5% of the requirement for automobile parking spaces
- Long-term: 5% of the requirement for automobile parking spaces

With 204 parking spaces proposed, this results in 11 required long-term and 11 short-term bicycle parking spaces.

The site provides 12 long-term and 12 short-term bicycle parking spaces, which meets the City's requirement.

9. CONCLUSION

This section summarizes the results and recommendations of this TIA.

PROJECT RECOMMENDATIONS

OFF-SITE ROADWAY IMPROVEMENTS

The project does not propose any off-site roadway improvements associated with the project design.

PEDESTRIAN FACILITIES

Continuous sidewalks exist on both sides of Doolittle Drive, both sides of Adams Avenue, and on the east side of Hester Street. There are also existing signalized crossings in the north, east, and south directions at the intersection of Doolittle Drive and Davis Street, and existing signalized crossings in the north and east directions at the intersection of Doolittle Drive and Davis Street.

Within the project site, there are marked pedestrian crosswalks connecting the accessible parking spaces to the west side building sidewalk. There are sidewalks along the west side of the building which provide access to the office spaces.

BICYCLE FACILITIES

Bicycles will have access to the project site using the Class II bicycle lanes along Doolittle Drive and Adams Avenue. Therefore, no additional bicycle facilities are proposed. The project is proposing to include 12 short-term and 12 long-term bicycle parking spaces on-site, which satisfy the City's requirements.

TRANSIT FACILITIES

Alameda-Contra Costa Transit District (AC Transit) bus routes 34, 35, 73, 98, 805 operate within the study area, with the nearest bus stop located at the intersection of Westgate Parkway and Davis Street, which is approximately 0.9 miles southeast of the project site. The San Leandro LINKS shuttle is a free shuttle to and from the San Leandro BART station, which is 2.1 miles east of the project site, that operates a North Loop and South Loop. The North Loop has an existing stop located at Doolittle Drive and Davis Street. Pedestrians can travel between the LINKS bus stop and the project site using the existing sidewalks located along both sides of Davis Street. Since the LINKS route serves as a sufficient transit facility in proximity to the project along Davis Street to nearby complimentary uses, no additional transit facilities are recommended to be constructed by the project.

PARKING REQUIREMENTS

The project is proposing to provide 204 parking spaces and 59 trailer parking stalls. The City requires a minimum of 204 spaces. Therefore, the project does provide enough parking to satisfy the City's requirements.

The California Green Building Standard Code requires at least 10 percent of the total parking spaces to be Electric Vehicle (EV) Ready parking spaces. With the proposed 204 parking spaces, the project would be required to designate 21 EV Ready parking spaces. 21 EV spaces are proposed, which meets the requirement.

The 2010 Americans with Disabilities Act (ADA) Standards for Accessible Design requires at least seven accessible parking spaces for a parking facility with 201 to 300 parking spaces. With the proposed 204 parking spaces, the project would be required to designate at least seven accessible parking spaces. The project is proposing eight accessible parking spaces, which meets the requirement.

PROJECT DRIVEWAYS

The development of the proposed Project will access the following existing driveways:

- Doolittle Drive and West Project Driveway
  - Stop-controlled westbound movement for project driveway
  - Full access
- Hester Street and North Project Driveway
  - Stop-controlled eastbound and westbound movement for project driveway
  - Full access

PROJECT IMPACTS AND MITIGATIONS

As discussed previously in the Chapter 6, the project VMT/employee (i.e. 15.34 in 2020 and 16.08 in 2040) is not expected to exceed the threshold of significance for VMT/employee for Central Planning Area (i.e. 16.3 in 2020 and 16.2 in 2040) and the project will result in a less than significant transportation impact. No mitigation needed.

PROJECT DEFICIENCIES

LOS DEFICIENCIES

In cases when the project traffic worsens an intersection from an acceptable LOS to an unacceptable LOS or if the project traffic increases the intersection v/c by 0.05 for an intersection that is already operating unacceptably without the project, this is considered a project deficiency. Based on the results of the traffic analysis, the following intersection project deficiencies are noted:

- Intersection #5 – Doolittle Drive and Davis Street
  - Near Term Plus Project (AM peak hour)
  - Cumulative Plus Project (AM peak hour)

Project LOS Deficiency: Doolittle Drive and Davis Street (Intersection #5)

The intersection of Doolittle Drive and Davis Street will have an LOS deficiency in the Near Term Plus Project and Cumulative Plus Project for the AM peak hour.

Near Term Plus Project

In the Near Term Plus Project conditions, the intersection of Doolittle Drive and Davis Street will operate at an unacceptable LOS F with a delay of 127.4 seconds and a v/c ratio of 1.04 in the AM peak hour. The intersection operates at an unacceptable LOS F without the project with a delay of 110.7 seconds and a v/c ratio of 0.97 in the AM peak hour. Since the intersection operates at an unacceptable LOS for without project conditions and the addition of project trips causes the v/c ratio to increase by more than 0.04, this is a project deficiency.

Deficiency Improvement. Optimizing signal timings for this intersection would improve the delay to 89.7 seconds and the v/c ratio to 1.01 in the AM peak hour in the Near Term Plus Project condition. Since the v/c ratio would increase by less than 0.05, this would no longer be a deficiency with the proposed improvement. Traffic signal control analysis sheets can be found in **Appendix C**.

Cumulative Plus Project

In the Cumulative Plus Project conditions, the intersection of Doolittle Drive and Davis Street will operate at an unacceptable LOS F with a delay of 173.2 seconds and a v/c ratio of 1.27 in the AM peak hour. The intersection operates at an unacceptable LOS F without the project with a delay of 156.8 seconds and a v/c ratio of 1.20 in the AM peak hour. Since the intersection operates at an unacceptable LOS for without project conditions and the addition of project trips causes the v/c ratio to increase by more than 0.04, this is a project deficiency.

Deficiency Improvement. Optimizing signal timings for this intersection would improve the delay to 129.6 seconds and the v/c ratio to 1.22 in the AM peak hour in the Cumulative Plus Project condition. Since the v/c ratio would increase by less than 0.05, this would no longer be a deficiency with the proposed improvement. Traffic signal control analysis sheets can be found in **Appendix C**.

QUEUING DEFICIENCIES

In cases when the addition of project trips causes a queue to exceed the turn pocket length or increase by one or more vehicles for vehicle queues that already exceed the turn pocket length, an intersection project queuing deficiency was identified. Based on the results of the traffic analysis, no intersection project queuing deficiencies are noted.

ROADWAY SEGMENT DEFICIENCIES

In cases when the addition of project trips causes an acceptably operating roadway segment to operate at an unacceptable LOS F or increases the v/c of an unacceptably operating roadway segment by more than 0.02, a roadway segment project deficiency was identified. Based on the results of the traffic analysis, the following roadway segment project deficiencies are noted:

- Year 2020 Plus Project
    - Northbound Doolittle Drive from Davis Street to West Project Driveway
- Year 2040 Plus Project
    - Northbound Doolittle Drive from Davis Street to West Project Driveway
    - Southbound Doolittle Drive from West Project Driveway to Davis Street
    - Westbound Davis Street from I-880 SB Ramps to Doolittle Drive

Based on the Alameda CTC methodology, each roadway segment would need to be widened to add additional through lanes on Doolittle Drive and Davis Street. Since each roadway segment has adjacent land uses and is built out, it is infeasible to add additional travel lanes on Doolittle Drive and Davis Street. In addition, Davis Street between the I-880 SB Ramps and Doolittle Drive includes a bridge section that would make widening infeasible.

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B - ACTC CENTRAL PLANNING AREA VMT MAPS

C - SYNCHRO OUTPUTS

A- URBAN CROSSROADS STUDY

880 Doolittle

TRAFFIC ANALYSIS
CITY OF SAN LEANDRO

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OCTOBER 21, 2021

13698-05 TA Report REV

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LIST OF ABBREVIATED TERMS

(1)	Reference
ABAG	Association of Bay Area Governments
AC Transit	Alameda-Contra Costa Transit District
ADT	Average Daily Traffic
BART	Bay Area Rapid Transit
CA MUTCD	California Manual on Uniform Traffic Control Devices
Caltrans	California Department of Transportation
CMP	Congestion Management Program
E+P	Existing Plus Project
HCM	Highway Capacity Manual
ITE	Institute of Transportation Engineers
LOS	Level of Service
N/A	Not Applicable
NCHRP	National Cooperative Highway Research Program
NP	No Project (or Without Project)
PHF	Peak Hour Factor
Project	880 Doolittle
RTA	Riverside Transit Authority
sf	Square Feet
TA	Traffic Analysis
TSF	Thousand Square Feet
UPRR	Union Pacific Railroad
WP	With Project
v/c	Volume to Capacity
VMT	Vehicle Miles Traveled

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1 INTRODUCTION

This report presents the results of the traffic analysis (TA) for the proposed 880 Doolittle development (Project), which is located at 880 Doolittle Drive within the City of San Leandro as shown on Exhibit 1-1.

The purpose of this TA is to evaluate the potential deficiencies related to traffic and circulation system operations that may result from the development of the proposed Project, and to recommend improvements to mitigate potential deficiencies in order to achieve acceptable circulation system operations. This report has been prepared through consultation with City of San Leandro staff and their consultants.

1.1 SUMMARY OF FINDINGS

The following improvement has been identified as a cumulative traffic deficiency under Horizon Year (2040) traffic conditions:

- The intersection of Doolittle Drive and Project Driveway was found to operate at an acceptable LOS for Existing, E+P, and Horizon Year (2040) Without Project traffic conditions, however the intersection was found to operate at an unacceptable LOS during the peak hours under Horizon Year (2040) With Project traffic conditions. As such, a traffic signal has been recommended at this location and the Project should contribute fair share payment towards this improvement.

Additional details and intersection lane geometrics are provided in Section 1.7 *Site Access Improvements* of this report. The proposed Project will contribute to both existing and future year deficiencies, however, the net change in the proposed Project traffic is not anticipated to have a measurable effect with the exception of the intersection of the intersection of Doolittle Drive and Project Driveway.

1.2 PROJECT OVERVIEW

The Project is proposed to consist of a 106,190 square foot distribution warehouse use (square footage includes mezzanine space). Vehicular and truck traffic access will be provided via Hester Street and Doolittle Drive (see Exhibit 1-2). Specifically, all truck access to the site will occur off Hester Street, employee access is provided via both Hester Street and Doolittle Drive (via Project Driveway), and all van access is to occur off of Doolittle Drive (via Project Driveway). Regional access to the Project site is provided via the I-880 Freeway via 98th Avenue and Davis Street interchanges.

EXHIBIT 1-1: LOCATION MAP

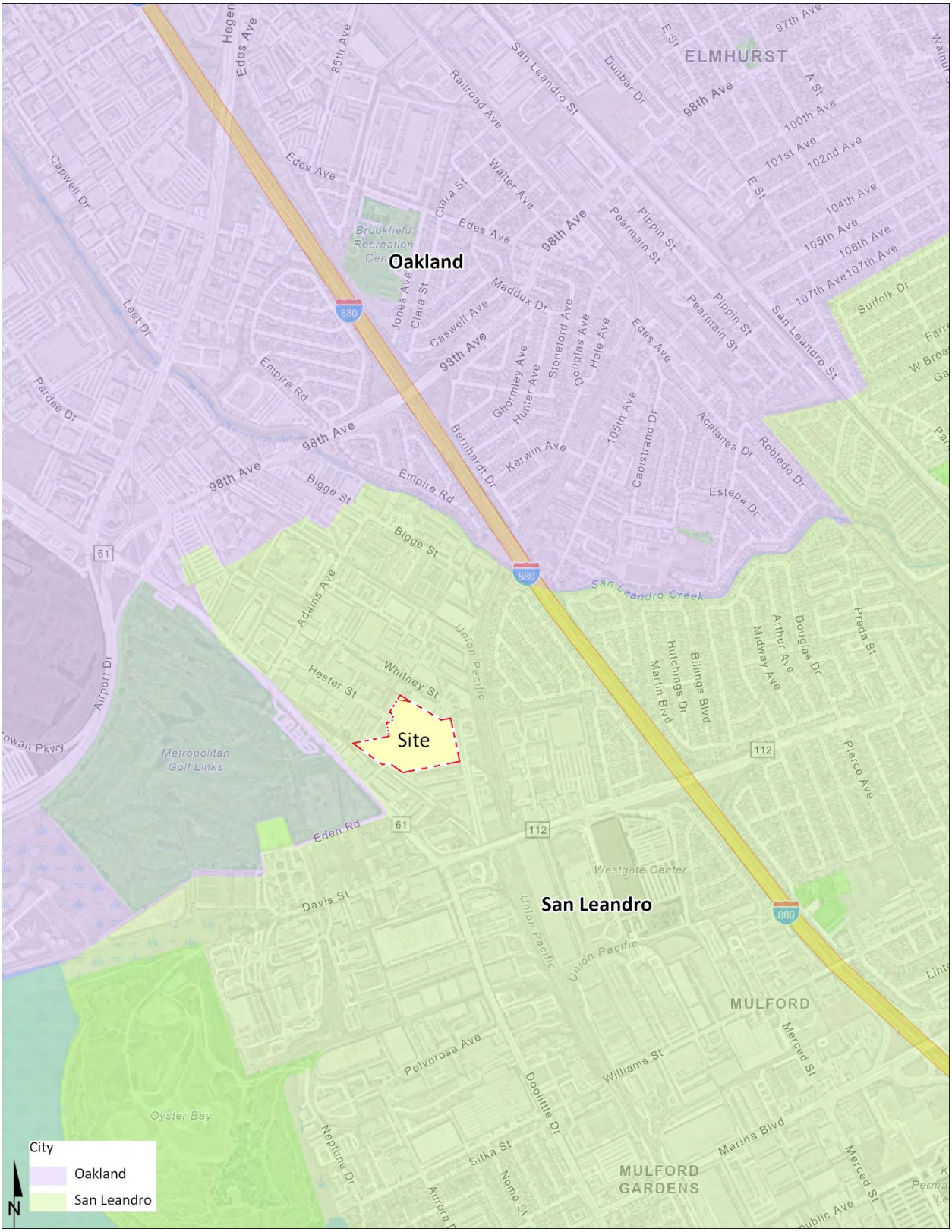


EXHIBIT 1-2: PRELIMINARY SITE PLAN

The trip generation estimates for the proposed Project have been developed using data provided by the future tenant. The Project is estimated to generate 1,136 two-way trips per day on a typical weekday with approximately 196 AM peak hour trips and 83 PM peak hour trips. The site is currently occupied by an existing use, as such, the Project is anticipated to generate 409 fewer two-way trips per day, with 32 net new AM peak hour trips and 58 fewer net PM peak hour trips. The assumptions and methods used to estimate the Project's trip generation characteristics are discussed in greater detail in Section 4.1 *Project Trip Generation* of this report.

1.3 ANALYSIS SCENARIOS

For the purposes of this traffic study, potential deficiencies to traffic and circulation have been assessed for each of the following conditions:

- Existing (2020)
- Existing Plus Project (E+P)
- Horizon Year (2040) Without and With Project

1.3.1 EXISTING (2020) CONDITIONS

Information for Existing (2020) conditions is disclosed to represent the baseline traffic conditions as they existed at the time this report was prepared. Due to the currently ongoing COVID-19 pandemic, 2015 traffic counts were adjusted by 0.772% per year (compounded annually) over 5 years to reflect 2020 baseline traffic conditions. This annual growth rate is based on the average Association of Bay Area Governments (ABAG) projected growth for employment, population, and households for San Leandro. The 2015 counts (adjusted to 2020) were then compared to the recently collected 2020 counts in order to determine the net changes and to develop an adjustment factor. The average of all applicable locations was calculated to be 127% for AM and 106% for the PM. As such, the locations where historic count data were not available, the 2020 counts that were recently collected were increased by 127% in the AM peak hour and 106% in the PM peak hour. For the locations where both historic and actual 2020 data is available, the final adjusted 2020 traffic volumes were developed by taking the higher of the 2 volumes (between either the adjusted 2015 or the actual 2020).

1.3.2 EXISTING PLUS PROJECT CONDITIONS

The Existing Plus Project (E+P) analysis determines any traffic operation and circulation system deficiencies that would occur on the existing roadway system in the scenario of the Project being placed upon Existing conditions. The net new traffic proposed to be generated by the Project has been utilized for the purposes of this TA (delta of the proposed Project and existing use).

1.3.3 HORIZON YEAR (2040) CONDITIONS

The City's traffic consultant has provided future long-range Horizon Year (2040) Without Project traffic forecasts based on the Alameda Countywide Travel Demand Model. Net new Project traffic has been added to develop the Horizon Year (2040) With Project traffic forecasts. A

comparison of Horizon Year (2040) Without and With Project traffic conditions will be used to identify long-range peak hour cumulative intersection operational deficiencies.

1.4 STUDY AREA

To ensure that this TA satisfies the City of San Leandro traffic study requirements, Urban Crossroads, Inc. has coordinated with City staff to determine the proposed study area for this TA. The 14 study area intersections shown on Exhibit 1-3 and listed in Table 1-1 were selected for this TA. It should be noted, the Project contributes fewer than 50 net new peak hour trips at all study area intersections.

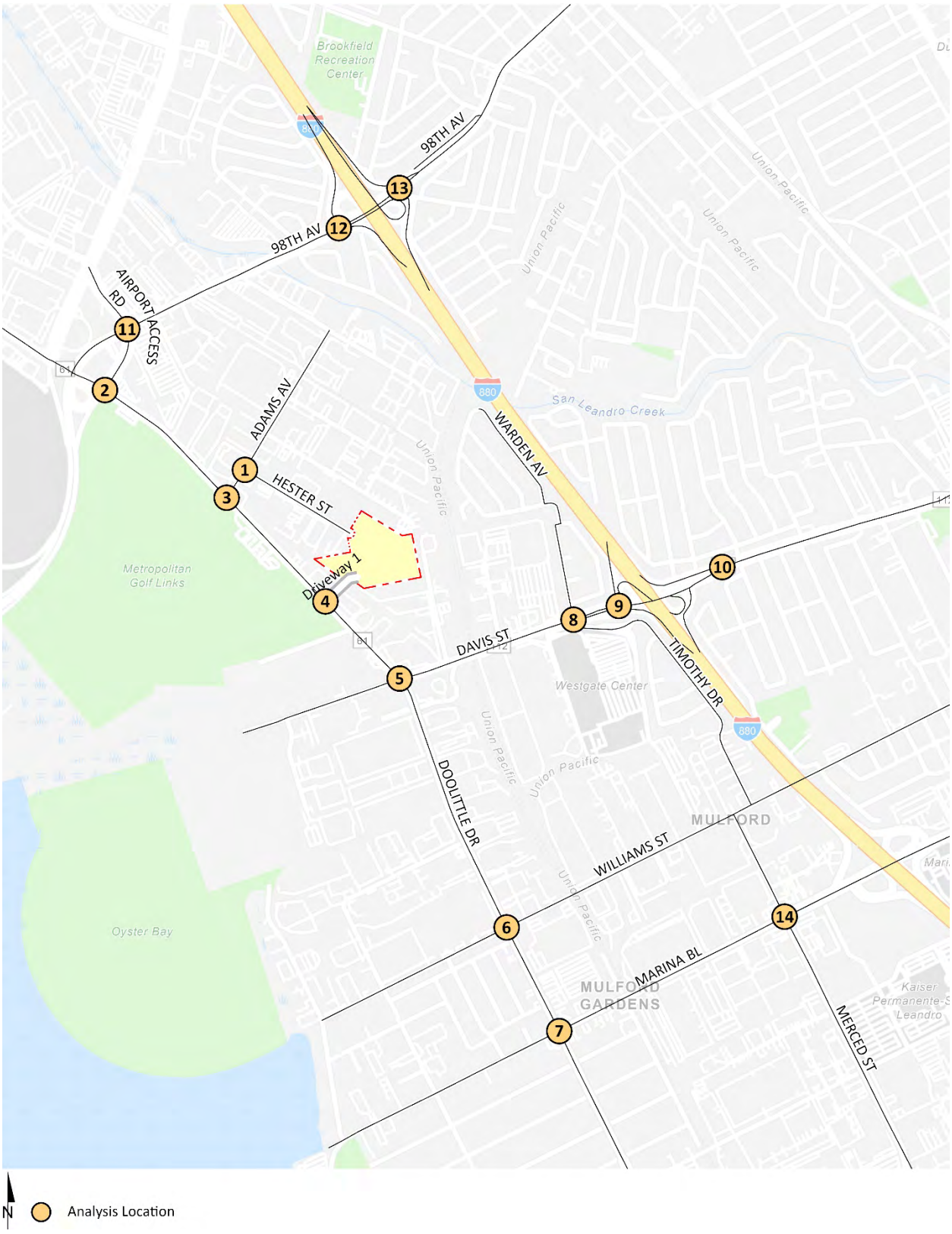
TABLE 1-1: INTERSECTION ANALYSIS LOCATIONS

ID	Intersection	Jurisdiction	CMP?
1	Hester St. & Adams Av.	City of San Leandro	No
2	Doolittle Dr. & Airport Access Rd.	City of Oakland	Yes
3	Doolittle Dr. & Adams Av.	City of San Leandro, City of Oakland	No
4	Doolittle Dr. & Project Dwy.	City of San Leandro, City of Oakland	No
5	Doolittle Dr. & Davis St.	City of San Leandro	Yes
6	Doolittle Dr. & Williams St.	City of San Leandro	No
7	Doolittle Dr. & Marina Bl.	City of San Leandro	Yes
8	Warden Av. & Davis St.	City of San Leandro	No
9	I-880 SB Ramps & Davis St.	City of San Leandro	Yes
10	I-880 NB Ramps & Davis St.	City of San Leandro	Yes
11	Airport Access Rd. & 98th Av.	City of Oakland	Yes
12	I-880 SB Ramps & 98th Av.	City of Oakland	Yes
13	I-880 NB Ramps & 98th Av.	City of Oakland	Yes
14	Merced St. & Marina Bl.	City of San Leandro	Yes

Note: A CMP intersection has been identified for any two CMP roadways that intersect one another.

The intent of a Congestion Management Program (CMP) is to more directly link land use, transportation, and air quality, thereby prompting reasonable growth management programs that will effectively utilize new transportation funds, alleviate traffic congestion and related deficiencies, and improve air quality. Counties within California have developed CMPs with varying methods and strategies to meet the intent of the CMP legislation. (1)

EXHIBIT 1-3: STUDY AREA



1.5 DEFICIENCIES

This section provides a summary of deficiencies by analysis scenario. Section 2 *Methodologies* provides information on the methodologies used in the analysis and Section 6 *Horizon Year (2040) Traffic Conditions* includes the detailed analysis. A summary of level of service (LOS) results for all analysis scenarios is presented on Table 1-2, which indicates that the following intersections will experience deficiencies under Existing and E+P traffic conditions:

- Doolittle Dr. & David St. (#5) – LOS E AM peak hour only
- Merced St. & Marina Bl. (#14) – LOS E PM peak hour only

As shown in Table 1-2, the following additional intersections are anticipated to operate at an unacceptable LOS during one or more peak hours under Horizon Year (2040) Without and With Project traffic conditions:

- Doolittle Dr. & Project Driveway (#4) – LOS E AM peak hour only (With Project only)
- Doolittle Dr. & Marina Bl. (#7) – LOS E PM peak hour only
- Airport Access Rd. & 98th Av. (#11) – LOS F PM peak hour only
- Merced St. & Marina Bl. (#14) – LOS E AM and PM peak hours

TABLE 1-2: SUMMARY OF LOS BY ANALYSIS SCENARIO

		Existing		E+P		2040 Without Project		2040 With Project	
#	Intersection	AM	PM	AM	PM	AM	PM	AM	PM
1	Hester St. & Adams Av.	A-D	A-D	A-D	A-D	A-D	A-D	A-D	A-D
2	Doolittle Dr. & Airport Access Rd.	A-D	A-D	A-D	A-D	A-D	A-D	A-D	A-D
3	Doolittle Dr. & Adams Av.	A-D	A-D	A-D	A-D	A-D	A-D	A-D	A-D
4	Doolittle Dr. & Project Dwy.	A-D	A-D	A-D	A-D	A-D	A-D	E	A-D
5	Doolittle Dr. & Davis St.	E	A-D	E	A-D	F	F	E	F
6	Doolittle Dr. & Williams St.	A-D	A-D	A-D	A-D	A-D	A-D	A-D	A-D
7	Doolittle Dr. & Marina Bl.	A-D	A-D	A-D	A-D	A-D	E	A-D	E
8	Warden Av. & Davis St.	A-D	A-D	A-D	A-D	A-D	A-D	A-D	A-D
9	I-880 SB Ramps & Davis St.	A-D	A-D	A-D	A-D	A-D	A-D	A-D	A-D
10	I-880 NB Ramps & Davis St.	A-D	A-D	A-D	A-D	A-D	A-D	A-D	A-D
11	Airport Access Rd. & 98th Av.	A-D	A-D	A-D	A-D	A-D	F	A-D	F
12	I-880 SB Ramps & 98th Av.	A-D	A-D	A-D	A-D	A-D	A-D	A-D	A-D
13	I-880 NB Ramps & 98th Av.	A-D	A-D	A-D	A-D	A-D	A-D	A-D	A-D
14	Merced St. & Marina Bl.	A-D	E	A-D	E	E	E	E	E

A-D = LOS=A-D E = LOS=E F = LOS=F

1.6 RECOMMENDATIONS

This section provides a summary of deficiencies by analysis scenario. Section 2 *Methodologies* provides information on the methodologies used in the analysis and Section 5 *E+P Traffic Conditions* and Section 6 *Horizon Year (2040) Traffic Conditions* includes the detailed analysis.

1.6.1 E+P CONDITIONS

The following study area intersections are anticipated to operate at an unacceptable LOS under E+P traffic conditions:

- Doolittle Dr. & Davis St. (#5) – LOS E AM peak hour only (consistent with Existing conditions)
- Merced St. & Marina Bl. (#14) – LOS E PM peak hour only (consistent with Existing conditions)

The addition of Project traffic at these two locations is anticipated to result in a change to the volume-to-capacity (v/c) ratio of less than 0.05. As such, no improvements have been recommended at these locations for E+P traffic conditions.

The following turning movements are anticipated to experience queuing issues for E+P traffic conditions and are consistent with existing deficient turning movements, however, the addition of Project traffic to these existing deficiencies result in nominal changes:

- Doolittle Dr. & Davis St. (#5) – Southbound left PM peak hour only
- Doolittle Dr. & Davis St. (#5) – Westbound right turn lane AM and PM peak hours
- Doolittle Dr. & Williams St. (#6) – Southbound left PM peak hour only
- Doolittle Dr. & Marina Bl. (#7) – Southbound left AM and PM peak hours
- Doolittle Dr. & Marina Bl. (#7) – Westbound left AM and PM peak hours
- Warden Av. & Davis St. (#8) – Southbound left AM peak hour only
- Airport Access Rd. & 98th Av. (#11) – Westbound left PM peak hour only

1.6.2 HORIZON YEAR (2040) CONDITIONS

The following study area intersections are anticipated to operate at a deficient LOS during one or both peak hours under Horizon Year (2040) Without Project traffic conditions:

- Doolittle Dr. & Davis St. (#5) – LOS F AM and PM peak hours
- Doolittle Dr. & Marina Bl. (#7) – LOS E PM peak hour only
- Airport Access Rd. & 98th Av. (#11) – LOS F PM peak hour only
- Merced St. & Marina Bl. (#14) – LOS E AM and PM peak hours

The addition of Project traffic is anticipated to have a significant effect on the intersection of Doolittle Drive and the Project Driveway only. The addition of Project traffic at the other two locations is anticipated to result in a change to the v/c ratio of less than 0.05. As such, no improvements have been recommended at those locations for Horizon Year (2040) With Project traffic conditions. Additional details and intersection lane geometrics are provided in Section 1.7 *Recommendations* of this report.

The following additional turning movements are anticipated to experience queuing issues for Horizon Year (2040) Without Project traffic conditions in addition to the existing deficient turning movements, however, the addition of Project traffic to these pre-project deficiencies result in nominal changes:

- Airport Access Rd. & 98th Av. (#11) – Southbound left PM peak hour only
- Merced St. & Marina Bl. (#14) – Westbound left AM peak hour only

1.7 SITE ACCESS IMPROVEMENTS

The recommended site access driveway improvements for the Project are described below. Exhibit 1-4 illustrates the site access improvements. Construction of on-site and site adjacent improvements shall occur in conjunction with adjacent Project development activity or as needed for Project access purposes.

Hester St. & Adams Av. (#1) – Maintain existing traffic control and lane geometrics at this intersection.

Hester St. & Project Driveway – This is a new Project driveway/access at the southern terminus of Hester Street. The southbound approach on Hester Street approaching the Project is an existing lane. There is also a new driveway proposed to the southeast corner of the cul-de-sac that will lead into the truck court. There is also a new driveway proposed to the southwest corner of the cul-de-sac that will lead to the passenger car parking lot. Both the Project access points at the southern terminus should be signed with stop controls for the exiting Project traffic.

Doolittle Dr. & Project Driveway (#4) – It is recommended the Project will install a traffic signal at Driveway 1 on Doolittle Drive but would defer the installation of the traffic signal to a future date when the intersection meets the appropriate California Manual on Uniform Traffic Control Devices (CA MUTCD) warrants. The intersection should be monitored, and a traffic signal installed when the appropriate warrants are met. No other lane improvements are recommended.

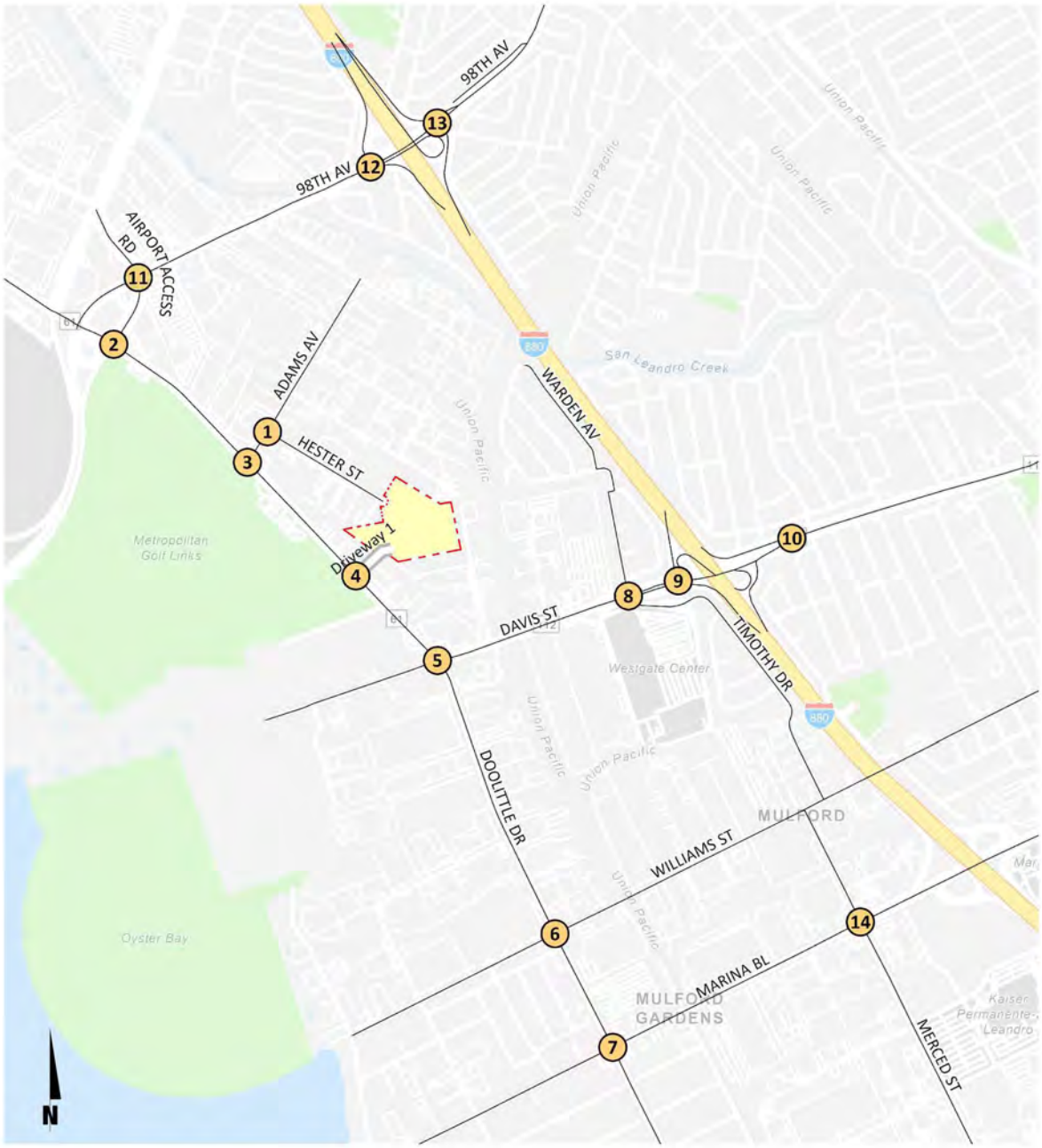
Site access improvements for the driveways at the southern terminus of Hester Street are also shown on Exhibit 1-4.

Wherever necessary, roadways adjacent to the Project, site access points and site-adjacent intersections will be constructed to be consistent with the identified roadway classifications and respective cross-sections in the City of San Leandro General Plan Circulation Element.

On-site traffic signing and striping should be implemented agreeable with the provisions of the California Manual on Uniform Traffic Control Devices (CA MUTCD) and in conjunction with detailed construction plans for the Project site.

Sight distance at each project access point should be reviewed with respect to standard City of San Leandro sight distance standards at the time of preparation of final grading, landscape, and street improvement plans.

EXHIBIT 1-4: SITE ACCESS RECOMMENDATIONS



= New Traffic Signal
= Stop Sign
= Stop Sign Improvement
= Existing Lane
= Lane Improvement

Note: The Project will install a traffic signal at Driveway 1 on Doolittle Drive but would defer the installation of the traffic signal to a future date when the intersection meets the appropriate CA MUTCD warrants. The intersection should be monitored and a traffic signal installed when the appropriate warrants are met.

1.8 QUEUING ANALYSIS AT THE PROJECT DRIVEWAYS

A queuing analysis was conducted for the Project Driveway on Doolittle Drive in addition to the intersection of Hester Street at Adams Avenue for Horizon Year (2040) With Project traffic conditions to determine the 95th percentile queues. The analysis was conducted for the weekday AM and weekday PM peak hours. The traffic modeling and signal timing optimization software package Synchro/SimTraffic (Version 10) has been utilized to assess queues at the aforementioned intersections.

Synchro is a macroscopic traffic software program that is based on the signalized and unsignalized intersection capacity analyses as specified in the Highway Capacity Manual (HCM). SimTraffic is designed to model networks of signalized and unsignalized intersections, with the primary purpose of checking and fine-tuning signal operations. SimTraffic uses the input parameters from Synchro to generate random simulations. The 95th percentile queue is not necessarily ever observed; it is simply based on statistical calculations (or Average Queue plus 1.65 standard deviations). Many jurisdictions utilize the 95th percentile queues for design purposes. SimTraffic simulations have been recorded 5 times, during the weekday AM and weekday PM peak hours, and have been seeded for 15-minute periods with 60-minute recording intervals. Queuing results are provided in Appendix 1.1. Analysis results are summarized in Table 1-3.

TABLE 1-3: SITE ACCESS PEAK HOUR QUEUING SUMMARY

#	Intersection	Movement	Available Stacking Distance (Feet)	2040 With Project 95th % Queue (ft)		2040 With Project Acceptable? [1]	
				AM	PM	AM	PM
1	Hester St. & Adams Av.	NBL/R	100	68	60	Yes	Yes
		EBT/R	135	4	0	Yes	Yes
		WBL/T	150	34	21	Yes	Yes
4	Doolittle Dr. & Project Driveway	NBT/R	300	168	169	Yes	Yes
		SBL	100	47	32	Yes	Yes
		SBT/R	300	186	160	Yes	Yes
		WBL/R	265	150	86	Yes	Yes

[1] Stacking Distance is acceptable if the required stacking distance is less than or equal to the stacking distance provided. An additional 25 feet (1 car length) of stacking which is assumed to be provided in the transition for turn pockets is reflected in the stacking distance shown on this table, where applicable.

As shown in Table 1-3, there are no queuing issues anticipated at the site access locations for Horizon Year (2040) With Project traffic conditions. Note there is an existing at-grade rail spur located approximately 265-feet east of Doolittle Drive along the Project Driveway. However, the 95th peak hour queues demonstrate that queues are not anticipated to extend back to the existing rail spur.

1.9 TRUCK ACCESS

Due to the typical wide turning radius of large trucks, a truck turning template has been overlaid on the site plan at the applicable driveway at the southern terminus of Hester Street in conjunction with the intersection of Hester Street at Adams Avenue in order to determine appropriate curb radii and to verify that trucks will have sufficient space to execute turning maneuvers. As shown on Exhibit 1-5, the existing and proposed curb radii are anticipated to accommodate the wide turning radius of heavy trucks (WB-67, which has a 53-foot trailer). As such, no modifications have been recommended.

1.10 VEHICLE PARKING

Based on the City's Municipal Code (Section 4.08.108) the Project's minimum parking is as follows:

- Office = 1 space / 300 square feet (sf) = 12,605 sf / 300 = 42 spaces
- Warehouse = 1 space / 1,000 sf = 93,585 sf / 1,500 = 94 spaces
- **Total of 136 spaces**

However, the Project is anticipated to provide the following parking spaces:

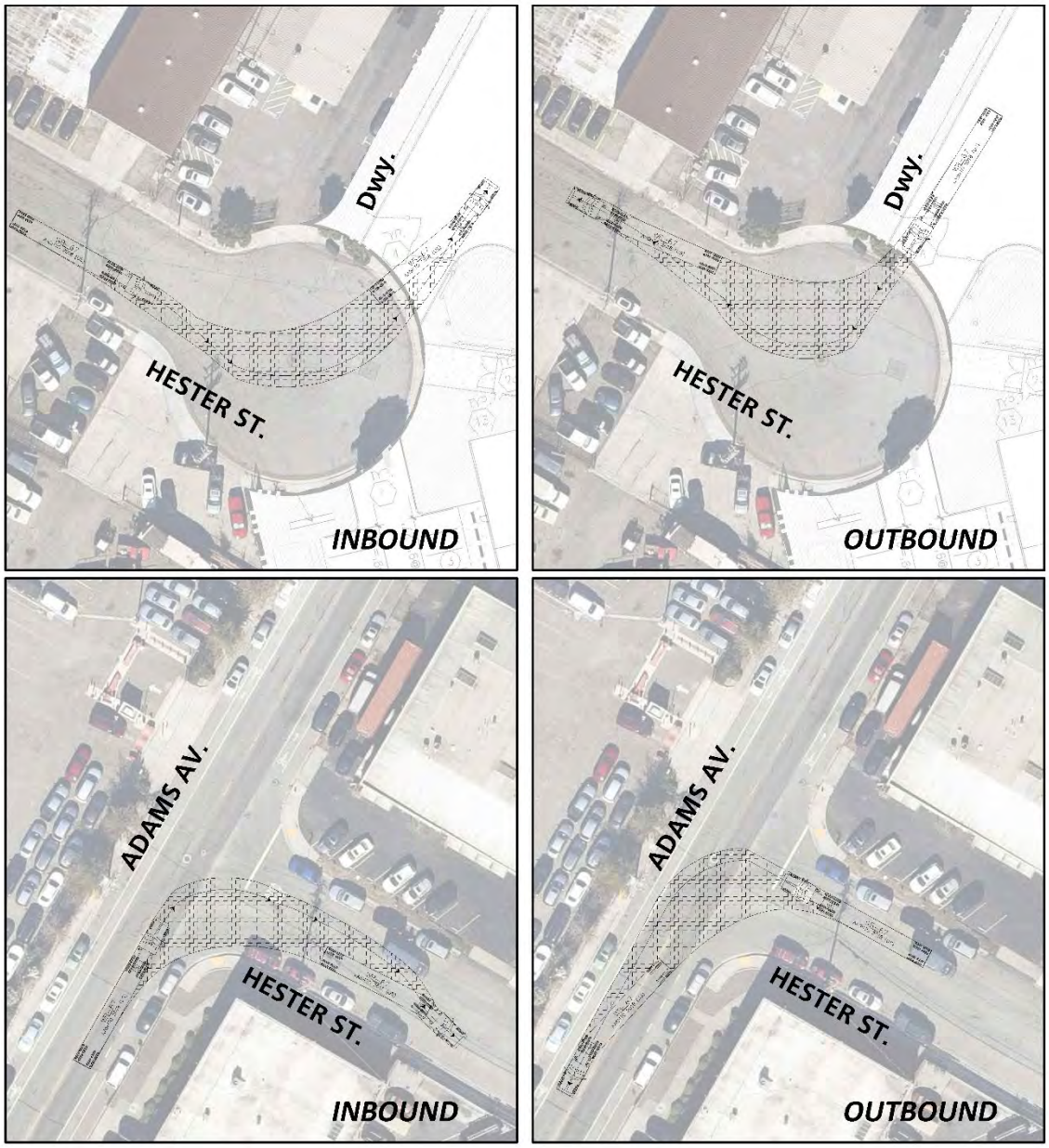
- Standard Stalls = 197 spaces
- Americans with Disabilities Act (ADA) Standard Stalls = 8 spaces
- ADA Van Stalls = 2 spaces
- Van Stalls = 434 spaces
- Van Staging = 40 spaces
- Van Loading = 36 spaces
- Trailer Stalls = 18 spaces
- **Total of 735 spaces**

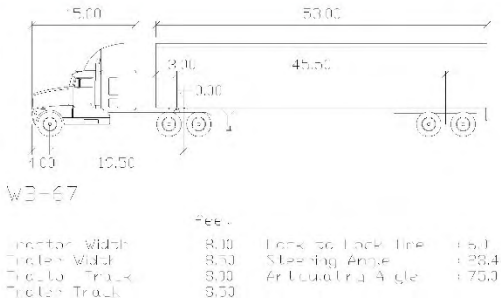
Although the City's Municipal Code does not account for the proposed van parking spaces, it has been verified that the proposed number of van stalls can accommodate the anticipated number of vans (434 stalls plus 2 ADA stalls). The Project is anticipated to generate 250 van trips per day which equates to 125 vans. The proposed number of van stalls (436) can adequately park the proposed 125 vans per day and the 125 van drivers that would park their personal vehicles near their vans. As such, the proposed Project exceeds the City's standard parking requirements based on both the standard stall spaces and total parking spaces.

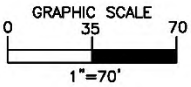
1.11 BICYCLE PARKING

Based on the City's Municipal Code (Section 4.08.128), the minimum bicycle parking is determined based on 5 percent of the vehicle parking, or 10 bicycle parking spaces (based on 207 standard vehicle parking spaces). The Project intends to accommodate 1 bike rack for every 2 spaces, or 104 bicycle racks based on a total of 207 standard vehicle parking spaces.

EXHIBIT 1-5: TRUCK TEMPLATES







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2 METHODOLOGIES

This section of the report presents the methodologies used to perform the traffic analyses summarized in this report. The methodologies described are generally consistent with City of San Leandro traffic study guidelines.

2.1 LEVEL OF SERVICE

Traffic operations of roadway facilities are described using the term "Level of Service" (LOS). LOS is a qualitative description of traffic flow based on several factors such as speed, travel time, delay, and freedom to maneuver. Six levels are typically defined ranging from LOS A, representing completely free-flow conditions, to LOS F, representing breakdown in flow resulting in stop-and-go conditions. LOS E represents operations at or near capacity, an unstable level where vehicles are operating with the minimum spacing for maintaining uniform flow.

2.2 INTERSECTION CAPACITY ANALYSIS

The definitions of LOS for interrupted traffic flow (flow restrained by the existence of traffic signals and other traffic control devices) differ slightly depending on the type of traffic control. The LOS is typically dependent on the quality of traffic flow at the intersections along a roadway. The Highway Capacity Manual (HCM) methodology expresses the LOS at an intersection in terms of delay time for the various intersection approaches. (2) The HCM uses different procedures depending on the type of intersection control.

2.2.1 SIGNALIZED INTERSECTIONS

The City of San Leandro and City of Oakland require signalized intersection operations analysis based on the methodology described in the HCM. (2) Intersection LOS operations are based on an intersection's average control delay. Control delay includes initial deceleration delay, queue move-up time, stopped delay, and final acceleration delay. For signalized intersections, LOS is directly related to the average control delay per vehicle and is correlated to a LOS designation as described in Table 2-1. Study area intersections have been evaluated using the Synchro (Version 10) analysis software package.

Synchro is a macroscopic traffic software program that is based on the signalized intersection capacity analysis as specified in the HCM. Macroscopic level models represent traffic in terms of aggregate measures for each movement at the study intersections. Equations are used to determine measures of effectiveness such as delay and queue length. The level of service and capacity analysis performed by Synchro takes into consideration optimization and coordination of signalized intersections within a network.

TABLE 2-1: SIGNALIZED INTERSECTION LOS THRESHOLDS

Description	Average Control Delay (Seconds), V/C ≤ 1.0	Level of Service, V/C ≤ 1.0	Level of Service, V/C > 1.0
Operations with very low delay occurring with favorable progression and/or short cycle length.	0 to 10.00	A	F
Operations with low delay occurring with good progression and/or short cycle lengths.	10.01 to 20.00	B	F
Operations with average delays resulting from fair progression and/or longer cycle lengths. Individual cycle failures begin to appear.	20.01 to 35.00	C	F
Operations with longer delays due to a combination of unfavorable progression, long cycle lengths, or high V/C ratios. Many vehicles stop and individual cycle failures are noticeable.	35.01 to 55.00	D	F
Operations with high delay values indicating poor progression, long cycle lengths, and high V/C ratios. Individual cycle failures are frequent occurrences. This is considered to be the limit of acceptable delay.	55.01 to 80.00	E	F
Operation with delays unacceptable to most drivers occurring due to over saturation, poor progression, or very long cycle lengths	80.01 and up	F	F

Source: HCM 2000

The peak hour traffic volumes have been adjusted using a peak hour factor (PHF) to reflect peak 15-minute volumes. Common practice for LOS analysis is to use a peak 15-minute rate of flow. However, flow rates are typically expressed in vehicles per hour. The PHF is the relationship between the peak 15-minute flow rate and the full hourly volume (e.g., PHF = [Hourly Volume] / [4 x Peak 15-minute Flow Rate]). The use of a 15-minute PHF produces a more detailed analysis as compared to analyzing vehicles per hour. Existing PHFs have been used for Existing (2020) baseline, E+P, and Horizon Year (2040) traffic conditions.

2.2.2 UNSIGNALIZED INTERSECTIONS

The City of San Leandro and City of Oakland require the operations of unsignalized intersections be evaluated using the methodology described the HCM. (2) The LOS rating is based on the weighted average control delay expressed in seconds per vehicle (see Table 2-2).

TABLE 2-2: UNSIGNALIZED INTERSECTION LOS THRESHOLDS

Description	Average Control Delay Per Vehicle (Seconds)	Level of Service, V/C ≤ 1.0	Level of Service, V/C > 1.0
Little or no delays.	0 to 10.00	A	F
Short traffic delays.	10.01 to 15.00	B	F
Average traffic delays.	15.01 to 25.00	C	F
Long traffic delays.	25.01 to 35.00	D	F
Very long traffic delays.	35.01 to 50.00	E	F
Extreme traffic delays with intersection capacity exceeded.	> 50.00	F	F

Source: HCM 2000

At two-way or side-street stop-controlled intersections, LOS is calculated for each controlled movement and for the left turn movement from the major street, as well as for the intersection as a whole. For approaches composed of a single lane, the delay is computed as the average of all movements in that lane. The "worst case" movement delay and LOS is reported for the intersection. For all-way stop controlled intersections, LOS is computed for the intersection as a whole.

2.3 TRAFFIC SIGNAL WARRANT ANALYSIS METHODOLOGY

The term "signal warrants" refers to the list of established criteria used by the Caltrans and other public agencies to quantitatively justify or ascertain the potential need for installation of a traffic signal at an otherwise unsignalized intersection. This TA uses the signal warrant criteria presented in the latest edition of the California Department of Transportation (Caltrans) California Manual on Uniform Traffic Control Devices *(CA MUTCD)* for all study area intersections. (3)

The signal warrant criteria for Existing conditions are based upon several factors, including volume of vehicular and pedestrian traffic, frequency of accidents, and location of school areas. The Caltrans CA MUTCD indicates that the installation of a traffic signal should be considered if one or more of the signal warrants are met. (3) Specifically, this TA utilizes the Peak Hour Volume-based Warrant 3 as the appropriate representative traffic signal warrant analysis for existing study area intersections for all analysis scenarios. Warrant 3 is appropriate to use for this TA because it provides specialized warrant criteria for intersections with rural characteristics (e.g., located in communities with populations of less than 10,000 persons or with adjacent major streets operating above 40 miles per hour). For the purposes of this study, the speed limit was the basis for determining whether Urban or Rural warrants were used for a given intersection.

Future intersections that do not currently exist have been assessed regarding the potential need for new traffic signals based on future average daily traffic (ADT) volumes, using the Caltrans planning level ADT-based signal warrant analysis worksheets. Traffic signal warrant analyses were performed for the following study area intersection shown in Table 2-3:

TABLE 2-3: TRAFFIC SIGNAL WARRANT ANALYSIS LOCATIONS

ID	Intersection	Jurisdiction
1	Hester St. & Adams Av.	City of San Leandro
4	Doolittle Dr. & Project Dwy.	City of San Leandro, City of Oakland

Traffic signal warrant analyses were performed for all of the full access unsignalized study area intersections. The traffic signal warrant analyses for future conditions are presented in Section 5 *E+P Traffic Analysis* and Section 6 *Horizon Year (2040) Traffic Analysis* of this report.

It is important to note that a signal warrant defines the minimum condition under which the installation of a traffic signal might be warranted. Meeting this threshold condition does not require that a traffic control signal be installed at a particular location, but rather, that other traffic factors and conditions be evaluated in order to determine whether the signal is truly justified. It should also be noted that signal warrants do not necessarily correlate with LOS. An

intersection may satisfy a signal warrant condition and operate at or above acceptable LOS or operate below acceptable LOS and not meet a signal warrant.

2.4 QUEUING ANALYSIS

The 95th percentile queuing of vehicles has been assessed at the signalized study area intersections to determine potential queuing deficiencies for turn pockets (note the queuing at unsignalized intersections were addressed as part of the site access evaluation in Chapter 1). Specifically, the queuing analysis is utilized to identify any potential queuing and "spill back" into the adjacent through lanes.

The traffic progression analysis tool and HCM intersection analysis program, Synchro, has been used to assess the potential deficiencies/needs of the intersections with traffic added from the proposed Project. Storage (turn-pocket) length recommendations at the ramps have been based upon the 95th percentile queue resulting from the Synchro progression analysis. The footnote from the Synchro output sheets indicates if the 95th percentile cycle exceeds capacity. Traffic is simulated for two complete cycles of the 95th percentile traffic in Synchro in order to account for the effects of spillover between cycles. In practice, the 95th percentile queue shown will rarely be exceeded and the queues shown with the footnote are acceptable for the design of storage bays.

Although only the 95th percentile queue has been reported in the tables, the 50th percentile queue can be found in the appendix alongside the 95th percentile queue for each study area intersection. The queue length reported is for the lane with the highest queue in the lane group. The 50th percentile or average queue represents the typical queue length for peak hour traffic conditions, while the 95th percentile queue is derived from the average queue plus 1.65 standard deviations. The 95th percentile queue is not necessarily ever observed it is simply based on statistical calculations.

Similar to the peak hour operations analysis, turn pocket storage recommendations have only been recommended if the intersection operations analysis indicates a deficiency during the peak hours.

2.5 MINIMUM LEVEL OF SERVICE (LOS)

2.5.1 CITY OF SAN LEANDRO

The definition of an intersection deficiency has been obtained from the City of San Leandro' 2035 General Plan. LOS D or better is to be maintained at all City-controlled intersections. (4)

2.5.2 CITY OF OAKLAND

The definition of an intersection deficiency has been obtained from the City of Oakland's General Plan. LOS D or better is to be maintained at all City-controlled intersections outside of the Downtown Area and LOS E or better for intersections located within the Downtown Area. (5)

2.5.3 ALAMEDA CMP

The definition of an intersection deficiency has been obtained from the Alameda County 2018 Level of Service Monitoring Report. LOS E or better is to be maintained at CMP intersections, with the exception of the locations that were found to operate at LOS F in the base monitoring years of 1991 and 1992. (1)

2.5.4 CALTRANS

Although Caltrans has gone away from LOS and has focused their determination of traffic impacts and mitigation on vehicle miles traveled (VMT), a minimum LOS D has been utilized for Caltrans controlled ramp-to-arterial intersections for the purposes of this TA.

2.6 SIGNIFICANCE CRITERIA

This section outlines the methodology used in this analysis related to identifying circulation system deficiencies. The following deficiency criteria has been utilized for the study area intersections. To determine whether the addition of project-related traffic at a study intersection would result in a deficiency, the following will be utilized:

- A project-related deficiency is considered significant when a study intersection operates at an acceptable LOS for existing conditions (or pre-project conditions) and the addition of project trips causes the intersection to operate at an unacceptable LOS for existing plus project (E+P) traffic conditions.
- A project-related deficiency is considered significant when a study intersection operates at an unacceptable LOS for existing conditions (or pre-project conditions) and the addition of project trips causes the intersection v/c to increase by 0.05 or more.

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3 AREA CONDITIONS

This section provides a summary of the existing circulation network, the City of San Leandro General Plan Circulation Network, and a review of existing peak hour intersection operations, traffic signal warrant, and queuing analyses.

3.1 EXISTING CIRCULATION NETWORK

Pursuant to discussions with the City of San Leandro staff, the study area includes a total of 14 existing intersections as shown previously on Exhibit 1-3. Exhibit 3-1 illustrates the study area intersections located near the proposed Project and identifies the number of through traffic lanes for existing roadways and intersection traffic controls.

3.2 GENERAL PLAN CIRCULATION ELEMENTS

As noted previously, the Project site is located within the City of San Leandro however portions of the study area are lie within the City of Oakland. Exhibit 3-2 shows the City of San Leandro and City of Oakland General Plan Street Classifications.

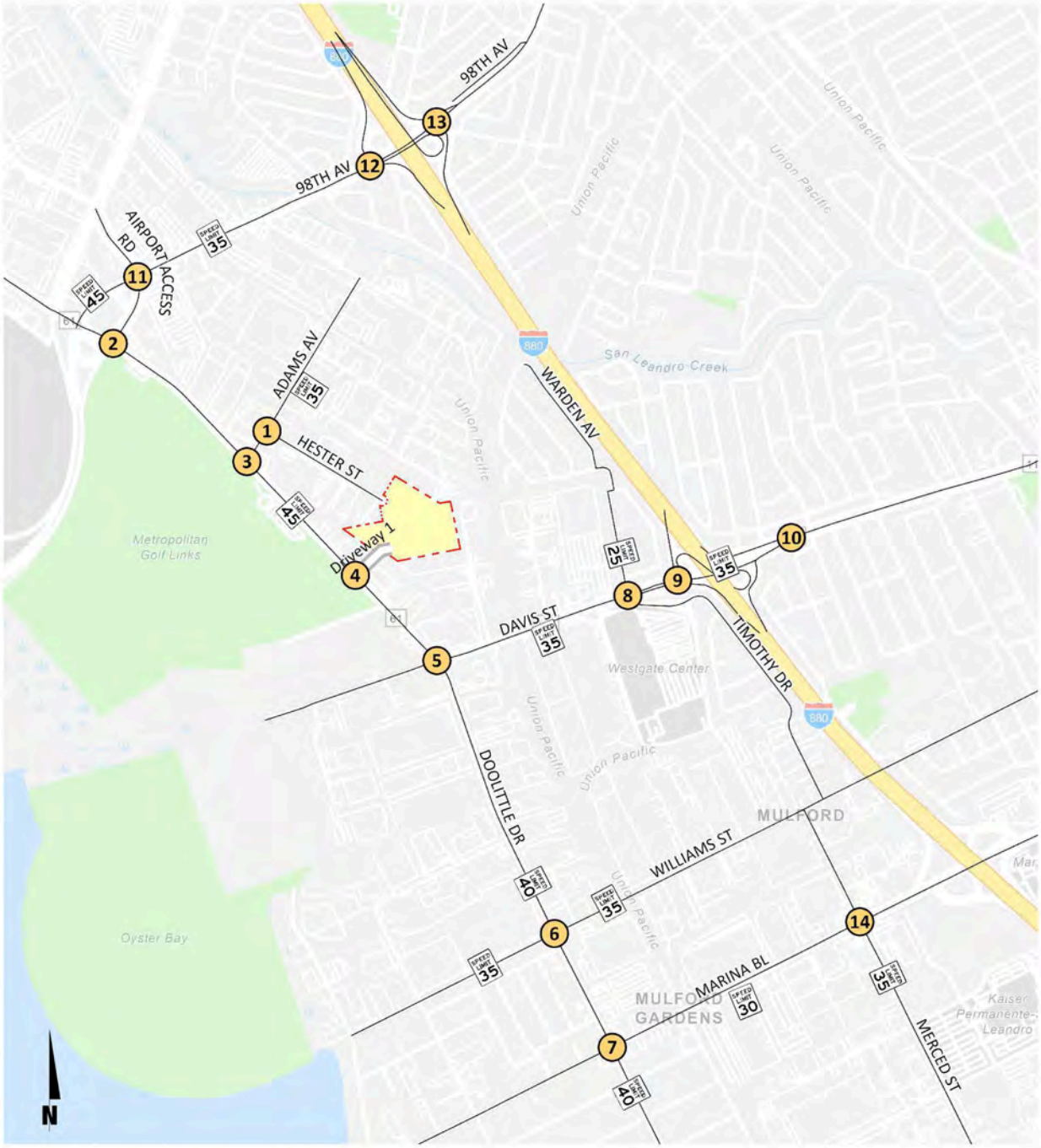
Arterials can accommodate two to six travel lanes. These facilities serve regional through traffic and connect the major destinations within the City to the freeway system. Access from abutting property is generally restricted. The following roadways are classified as an Arterial within the study area:

- Doolittle Dr.
- Davis St., east of Doolittle Dr.
- Marina Bl.
- Merced St.
- 98th Avenue

Collectors can accommodate two travel lanes with on-street parking and signalized intersections at major intersections. These facilities carry low volumes (less than 10,000 vehicles per day) and connect residential areas to arterials. The following roadways are classified as a Collector within the study area:

- Davis St., west of Doolittle Dr.
- Williams St.
- Timothy Dr./W. Gate Pkwy.
- Adams Av.

EXHIBIT 3-1: EXISTING NUMBER OF THROUGH LANES AND INTERSECTION CONTROLS



SPEED LIMIT 25 = Speed Limit (MPH)

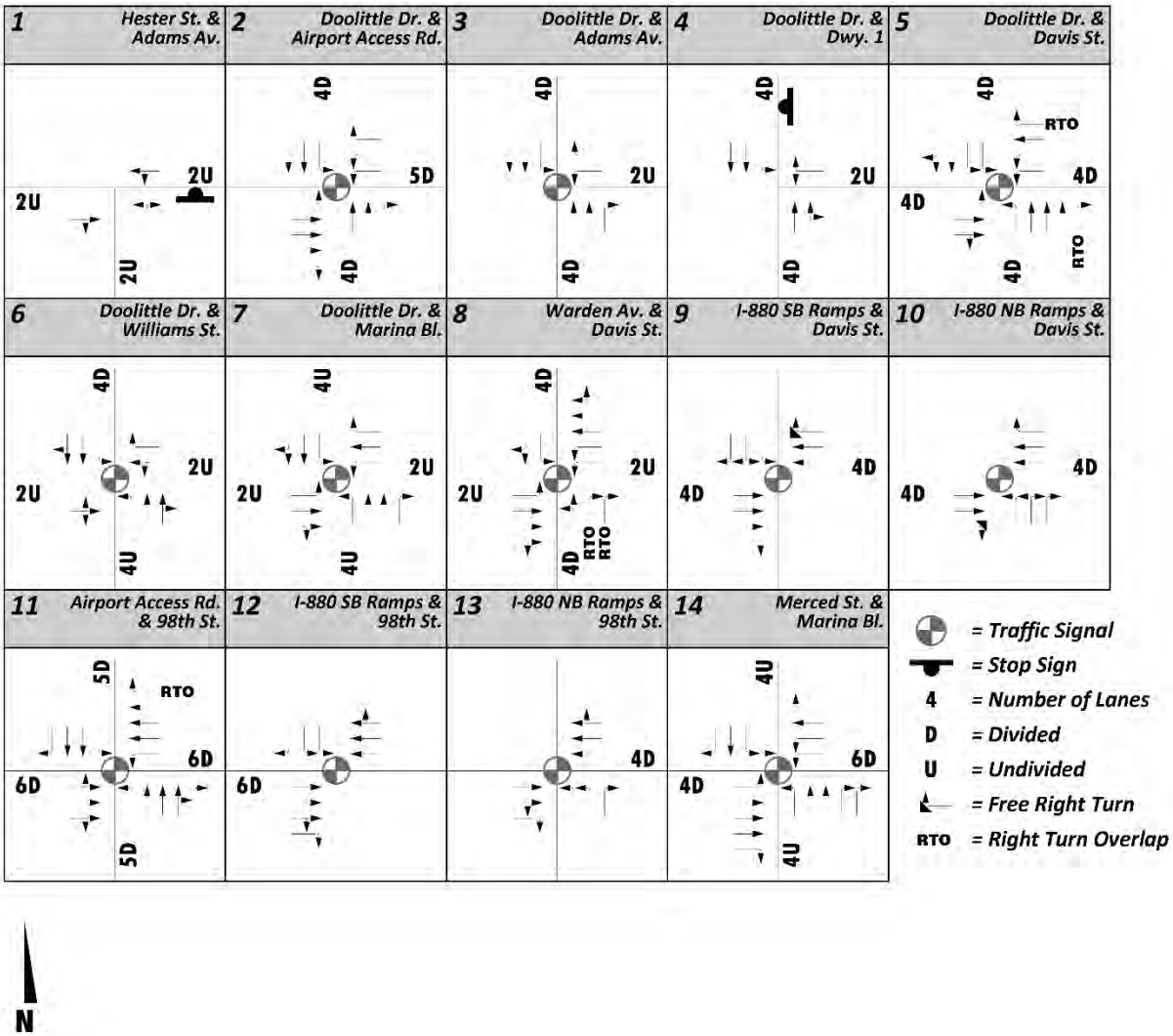
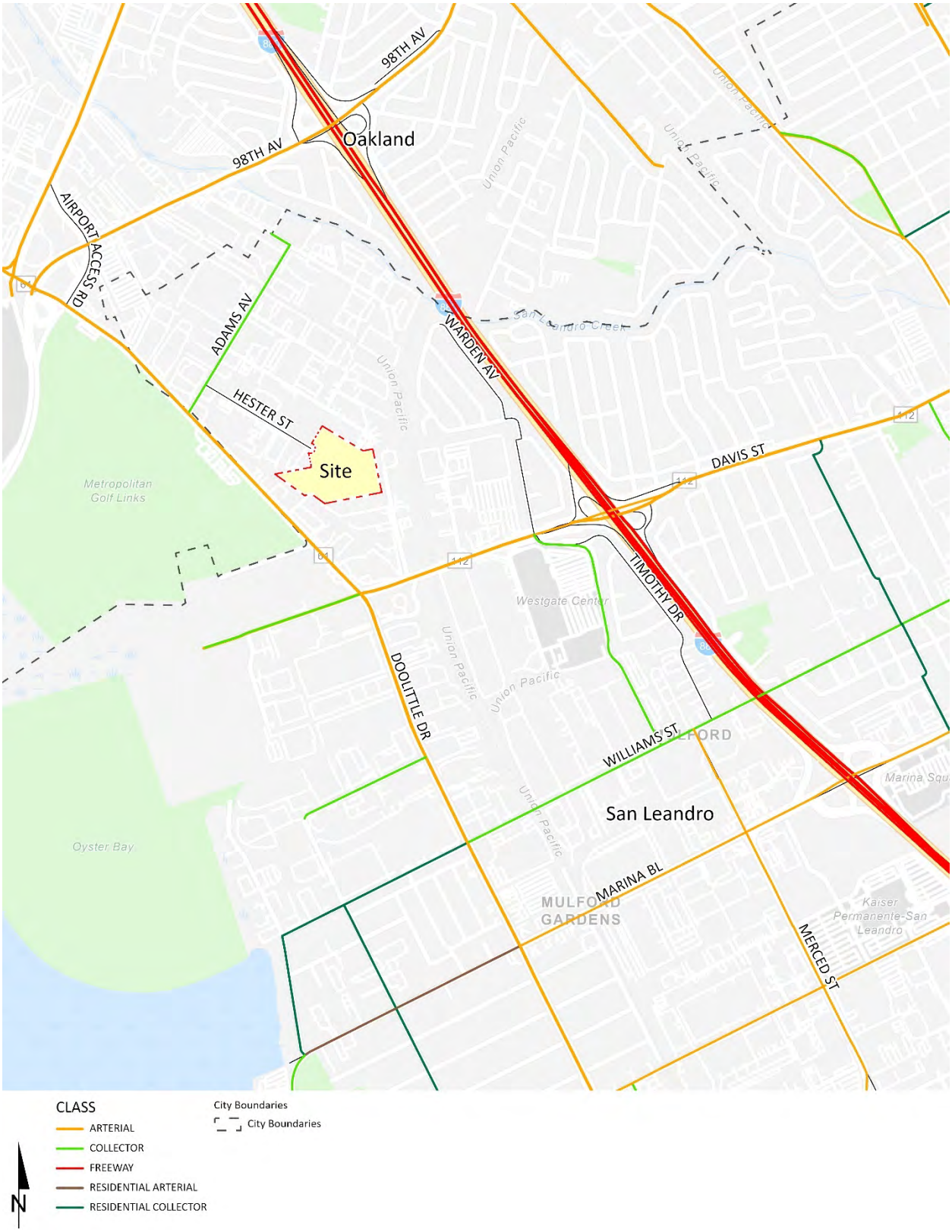

1 Hester St. & Adams Av.
2 Doolittle Dr. & Airport Access Rd.
3 Doolittle Dr. & Adams Av.
4 Doolittle Dr. & Dwy. 1
5 Doolittle Dr. & Davis St.
6 Doolittle Dr. & Williams St.
7 Doolittle Dr. & Marina Bl.
8 Warden Av. & Davis St.
9 I-880 SB Ramps & Davis St.
10 I-880 NB Ramps & Davis St.
11 Airport Access Rd. & 98th St.
12 I-880 SB Ramps & 98th St.
13 I-880 NB Ramps & 98th St.
14 Merced St. & Marina Bl.
= Traffic Signal
= Stop Sign
4 = Number of Lanes
D = Divided
U = Undivided
= Free Right Turn
RTO = Right Turn Overlap
N

EXHIBIT 3-2: CITY OF SAN LEANDRO & CITY OF OAKLAND GENERAL PLAN STREET CLASSIFICATION



Local Streets/Residential Collector can accommodate two travel lanes with on-street parking typically provided on one side only. These facilities are low-volume and low-speed roadways that connect individual parcels to either Collectors or Arterials. The following roadways are classified as a Local Street within the study area:

- Hester St.
- Warden Av.

3.3 TRUCK ROUTES

The City of San Leandro designated truck route map is shown on Exhibit 3-3. Doolittle Drive, Davis Street, Williams Street, Marina Boulevard, and Merced Street are identified as designated truck routes within the City. These designated truck route maps have been utilized to route truck traffic from the Project throughout the study area.

3.4 TRANSIT SERVICE

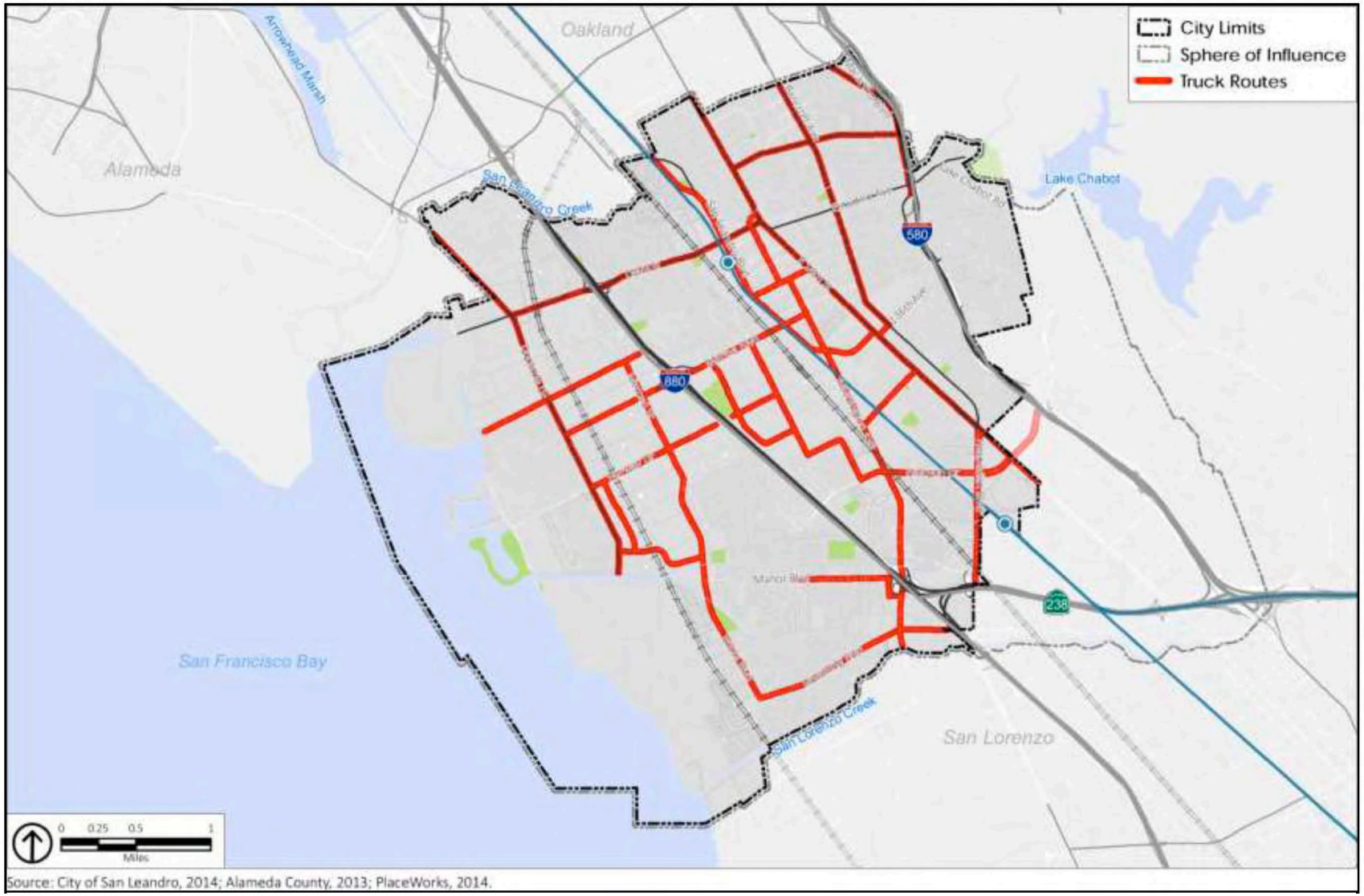
Mass transit routes within the study area are shown on Exhibit 3-4. The study area is currently served by Alameda-Contra Costa Transit District (AC Transit), the 3rd largest public bus system in California which serves 13 cities and unincorporated areas of Alameda and Contra Costa counties (364-square mile service area). AC Transit currently has 175,000 riders daily served by their 158 bus lines with approximately 5,400 bus stop locations. AC Transit Routes 34 and 35 runs along Davis Street from east of the I-880 Freeway to Timothy Drive/W. Gate Parkway to Williams Street and Merced Street within the City of San Leandro. AC Transit Route 98 runs along 98th Avenue from Empire Road to east of the I-880 Freeway within the City of Oakland.

The study area is also served by the San Francisco Bay Area Rapid Transit (BART). BART is a public rail transit system that connects the San Francisco Peninsula with communities located in East and South Bays. BART operates 131 miles of track with 50 stations and carry approximately 405,000 trips on an average weekday. The San Leandro BART station is located approximately 1-mile to the east of the I-880 Freeway south of Davis Street on San Leandro Boulevard. The station has connecting transit routes served by AC Transit, LINKS, and the FLEX shuttle. The lines served by the San Leandro BART station include:

- Dublin/Pleasanton to/from Daly City
- Richmond to/from Berryessa/North San Jose Station
- Daly City to/from Berryessa/North San Jose station
- MacArthur to/from Dublin/Pleasanton

The San Leandro LINKS shuttle is a free shuttle to and from BART. There is a North Loop and South Loop. The North Loop runs along Davis Street from the BART station to Marina Boulevard, Merced Street, Williams Street, Doolittle Drive, and Davis Street. There is an existing stop located at Doolittle Drive and Davis Street.

EXHIBIT 3-3: CITY OF SAN LEANDRO TRUCK ROUTES



Source: City of San Leandro, 2014; Alameda County, 2013; PlaceWorks, 2014.

EXHIBIT 3-4: EXISTING TRANSIT ROUTES – AC TRANSIT AND BART

The FLEX Shuttle is a fixed route service similar to LINKS. There is a North Route and South Route through the City of San Leandro. The FLEX Shuttle serves seniors ages 50+ and persons with disabilities (aged 18+) who reside within the City. The North Route runs along portions of Williams Street, Doolittle Drive, Timothy Drive/W. Gate Parkway, and Davis Street (east of Timothy Drive).

There are no existing transit routes along Doolittle Drive near the project site although the San Leandro LINKS shuttle has a stop located at the intersection of Doolittle Drive and Davis Street. Transit service is reviewed and updated periodically to address ridership, budget, and community demand needs. Changes in land use can affect these periodic adjustments which may lead to either enhanced or reduced service where appropriate.

3.5 Bicycle & Pedestrian Facilities

In an effort to promote alternative modes of transportation, the City of San Leandro also includes the existing and proposed bicycle network (see Exhibit 3-5). As shown on Exhibit 3-5, the study area includes existing Class II bike lanes along Adams Street, Doolittle Drive, Williams Street and Merced Street. Class II bike lanes are proposed along Davis Street. Doolittle Drive is proposed as a Class IV bikeway (on-street bike lanes, separated from vehicular traffic via a physical separation). There is also a 5.2-mile shared-use path (Class I) located in the San Leandro Marina Park, which is part of the Bay Trail. The Class I path is an off-street facility that can be used by both bicyclists and pedestrians.

Exhibit 3-6 illustrates the existing pedestrian facilities, which includes sidewalks and crosswalk locations. Sidewalks exist throughout most of the study area with crosswalks provided at all signalized study area intersections.

3.6 Existing Rail Crossings

There are 3 major rail lines within the City of San Leandro (Oakland Subdivision, Niles Subdivision, Coastal Subdivision) and these lines connect industrial areas within the City to the Port of Oakland, other markets along the West Coast, and the other areas throughout the State/Nation. All rail lines are under the ownership of Union Pacific Railroad (UPRR). Amtrak also runs along the UPRR within the study area, however, there are no stops within the study area. There are 2 grade-separated railroad crossings within the study area: the overpass on Davis Street and the overpass at the intersection of Doolittle Drive and Airport Access Road. There are also a number of at-grade crossings from various spurs or the UPRR line within the study area:

- Project Driveway, approximately 265-feet east of Doolittle Drive
- Doolittle Drive, approximately 380-feet south of Davis Street
- Williams Street, approximately 840-feet east of Doolittle Drive
- Marina Boulevard, approximately 840-feet east of Doolittle Drive

A queuing analysis will also be prepared to determine whether there are queuing issues at each of the aforementioned at-grade railroad crossings with respect to the adjacent study area intersections. This analysis has been conducted for Horizon Year traffic conditions only.

EXHIBIT 3-5: CITY OF SAN LEANDRO BICYCLE & PEDESTRIAN PLAN

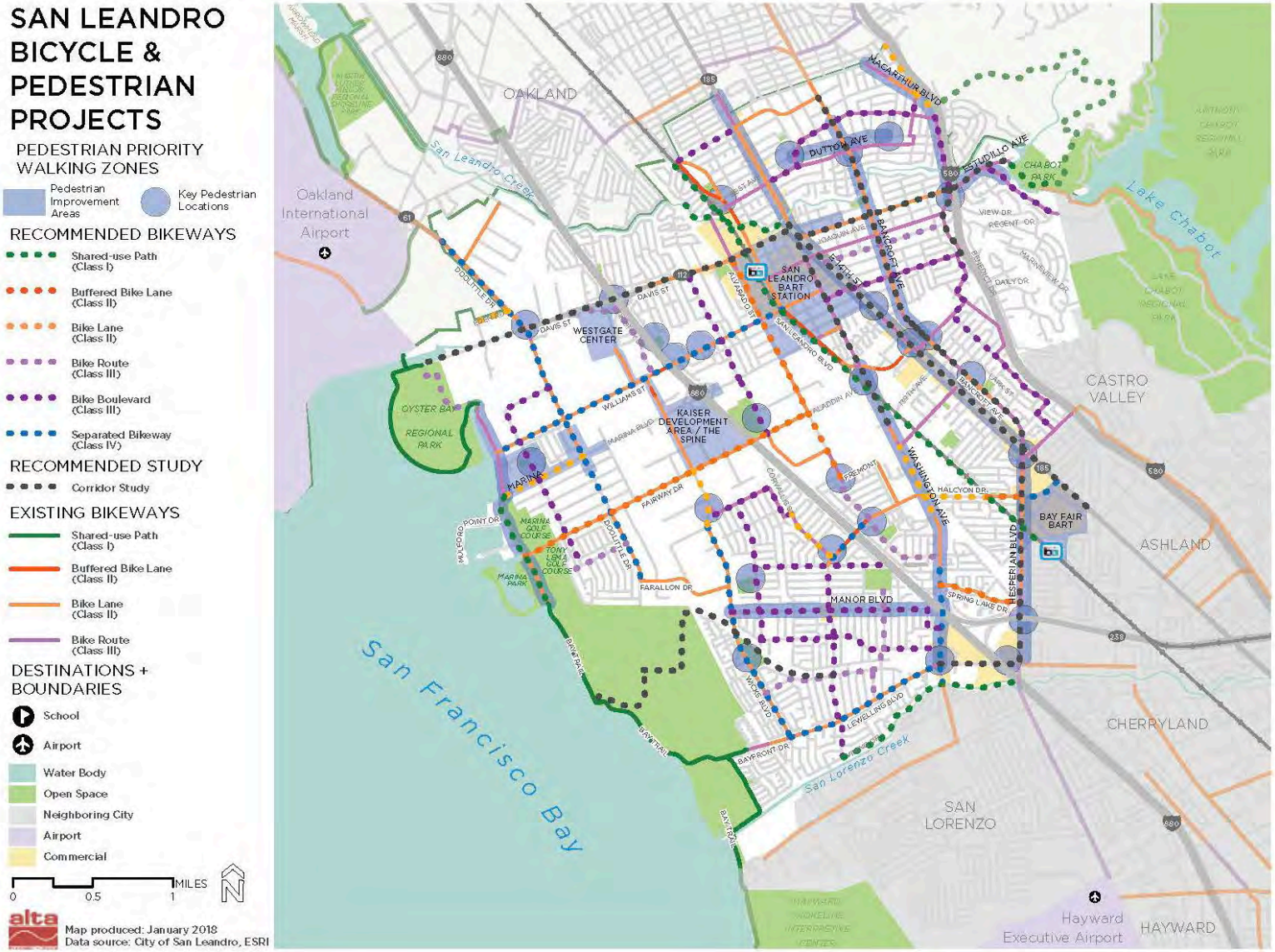
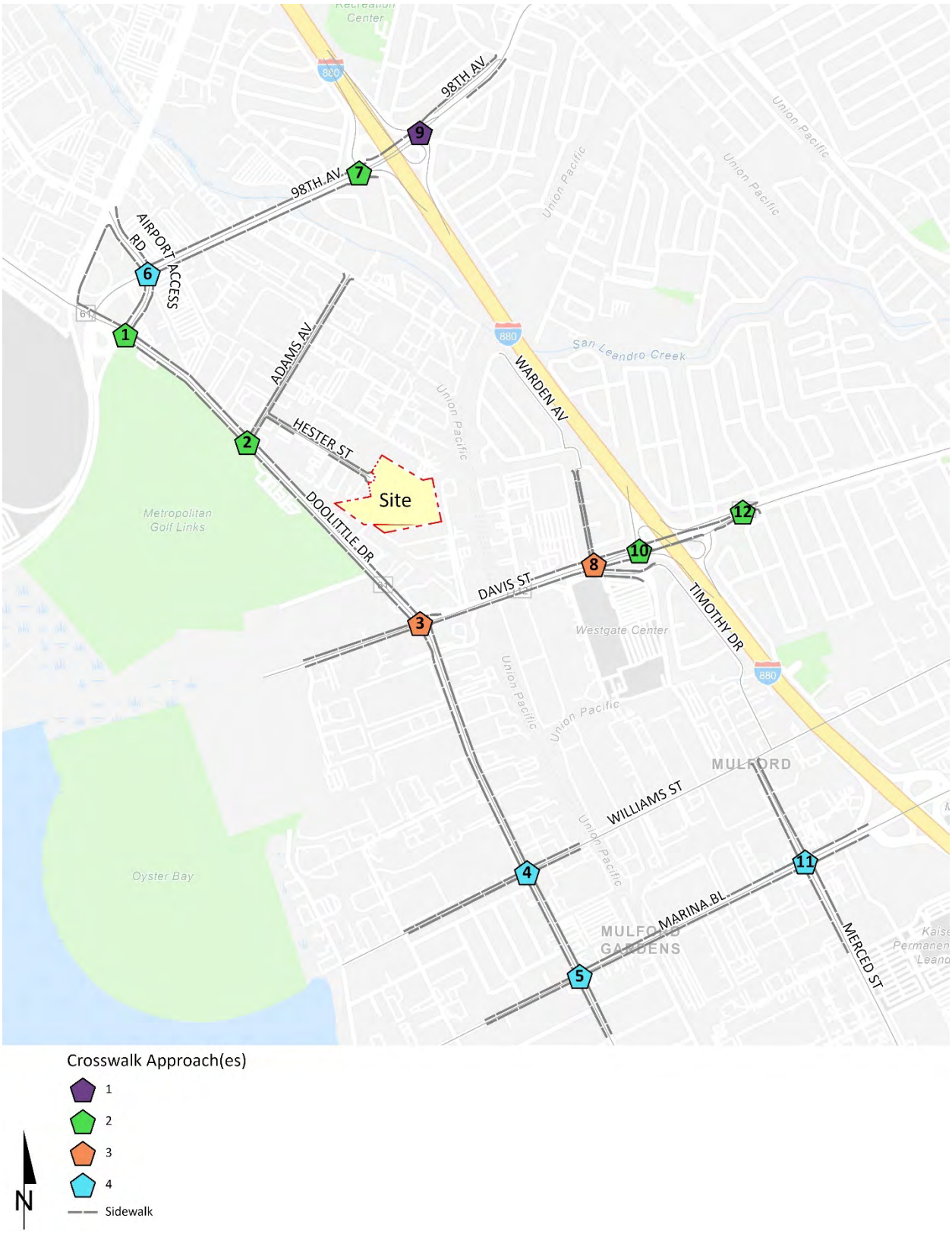


EXHIBIT 3-6: EXISTING PEDESTRIAN FACILITIES



3.7 EXISTING TRAFFIC COUNTS

Due to the currently ongoing COVID-19 pandemic, historic 2015 traffic counts were adjusted by 0.772% per year (compounded annually) over 5 years to reflect 2020 baseline traffic conditions. This annual growth rate is based on the average ABAG projected growth for employment, population, and households for San Leandro. The 2015 counts (adjusted to 2020) were then compared to the recently collected November 2020 counts in order to determine the net changes and to develop an adjustment factor. The average of all applicable locations was calculated to be 127% for AM and 106% for the PM. As such, the locations where historic count data were not available, the 2020 counts that were recently collected were increased by 127% in the AM peak hour and 106% in the PM peak hour. For the locations where both historic and actual 2020 data is available, the final adjusted 2020 traffic volumes used for the purposes of this TA were developed by taking the higher of the 2 volumes (between either the adjusted 2015 or the actual 2020). The following peak hours were selected for analysis for the November 2020 traffic counts:

- Weekday AM Peak Hour (peak hour between 7:00 AM and 11:00 AM)
- Weekday PM Peak Hour (peak hour between 4:00 PM and 7:00 PM)

The raw manual peak hour turning movement traffic count data sheets are included in Appendix 3.1. These raw turning volumes have been flow conserved between intersections with limited access, no access, and where there are currently no uses generating traffic. The traffic counts collected in November 2020 include the vehicle classifications as shown below:

- Passenger Cars
- 2-Axle Trucks
- 3-Axle Trucks
- 4 or More Axle Trucks

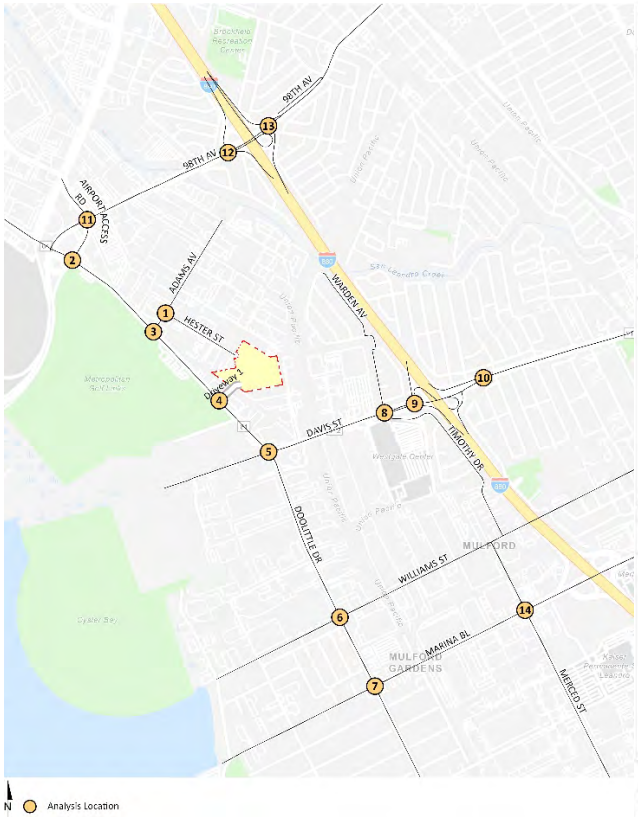
Truck traffic has been accounted for in the peak hour operations analysis by entering the percentage of heavy vehicles in the analysis software. The methodology used to derive the existing traffic counts have been reviewed and approved by City staff.

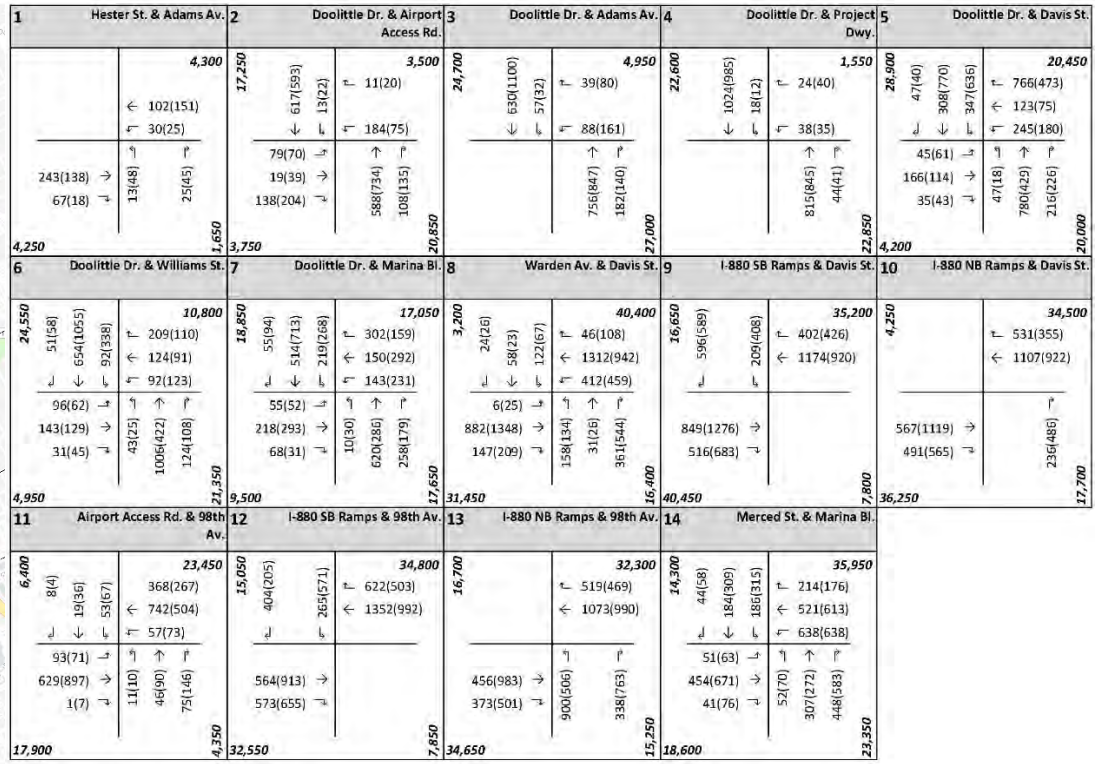
Existing weekday ADT volumes on arterial highways throughout the study area are shown on Exhibit 3-7. Existing ADT volumes were based upon factored intersection peak hour counts collected by Urban Crossroads, Inc. using the following formula for each intersection leg:

Weekday PM Peak Hour (Approach Volume + Exit Volume) x 12 = Leg Volume

Existing weekday AM and weekday PM peak hour intersection volumes are also shown on Exhibit 3-7.

EXHIBIT 3-7: EXISTING (2020) TRAFFIC VOLUMES





##(##) AM(PM) Peak Hour Intersection Volumes

Average Daily Trips

3.8 INTERSECTION OPERATIONS ANALYSIS

Existing peak hour traffic operations have been evaluated for the study area intersections based on the analysis methodologies presented in Section 2.2 *Intersection Capacity Analysis* of this report. The intersection operations analysis results are summarized in Table 3-1 which indicates that the study area intersections are currently operating at an acceptable LOS during the peak hours (i.e., LOS D or better), with the exception of the following locations:

- Doolittle Dr. & Davis St. (#5) – LOS E AM peak hour only
- Merced St. & Marina Bl. (#14) – LOS E PM peak hour only

The intersection operations analysis worksheets are included in Appendix 3.2 of this TA.

TABLE 3-1: INTERSECTION ANALYSIS FOR EXISTING (2020) CONDITIONS

#	Intersection	Traffic Control[1]	Delay[2] (secs.)		Volume-to-Capacity (v/c)		Level of Service	
			AM	PM	AM	PM	AM	PM
1	Hester St. & Adams Av.	CSS	11.5	11.0	0.07	0.15	B	B
2	Doolittle Dr. & Airport Access Rd.	TS	20.4	18.3	0.54	0.47	C	B
3	Doolittle Dr. & Adams Av.	TS	9.7	11.0	0.46	0.67	A	B
4	Doolittle Dr. & Project Dwy.	CSS	16.0	15.0	0.18	0.18	C	C
5	Doolittle Dr. & Davis St.	TS	**74.4**	45.4	**0.96**	0.72	**E**	D
6	Doolittle Dr. & Williams St.	TS	25.2	30.7	0.85	0.83	C	C
7	Doolittle Dr. & Marina Bl.	TS	36.2	35.4	0.64	0.71	D	D
8	Warden Av. & Davis St.	TS	41.3	32.8	0.74	0.72	D	C
9	I-880 SB Ramps & Davis St.	TS	13.4	14.5	0.71	0.63	B	B
10	I-880 NB Ramps & Davis St.	TS	11.1	14.6	0.61	0.76	B	B
11	Airport Access Rd. & 98th Av.	TS	30.9	33.4	0.41	0.49	C	C
12	I-880 SB Ramps & 98th Av.	TS	17.9	12.4	0.84	0.58	B	B
13	I-880 NB Ramps & 98th Av.	TS	18.8	34.0	0.80	0.96	B	C
14	Merced St. & Marina Bl.	TS	43.2	**57.9**	0.81	**0.93**	D	**E**

* **BOLD** = LOS does not meet the applicable jurisdictional requirements (i.e., unacceptable LOS).

1 CSS = Cross-street Stop; TS = Traffic Signal

2 Per the Highway Capacity Manual (HCM 2000), overall average intersection delay and level of service are shown for intersections with a traffic signal or all way stop control. For intersections with cross street stop control, the delay and level of service for the worst individual movement (or movements sharing a single lane) are shown.

3.9 TRAFFIC SIGNAL WARRANTS ANALYSIS

Traffic signal warrants for Existing traffic conditions are based on existing peak hour intersection turning volumes. The following unsignalized study area intersection currently warrants a traffic signal for Existing (2020) traffic conditions based on PM peak hour volumes:

- Doolittle Dr. & Project Driveway (#4)

However, this intersection is currently operating at an acceptable LOS as a cross-street stop-controlled intersection. As such, installation of a traffic signal does not appear necessary from an operational perspective. Existing conditions traffic signal warrant analysis worksheets are provided in Appendix 3.3.

3.10 QUEUING ANALYSIS

A queuing analysis was performed for the signalized study area intersections to assess vehicle queues for the turn pockets that may potentially "spill back" into the adjacent through lanes. Queuing analysis findings are presented in Table 3-2 for Existing traffic conditions. As shown in Table 3-2, the following movements are currently experiencing queuing issues during the weekday AM or weekday PM peak 95th percentile traffic flows:

- Doolittle Dr. & Davis St. (#5) – Southbound left PM peak hour only currently spills out of the dual turn pockets and spills back into the adjacent southbound through lane. Due to existing driveways located to the north does not appear feasible as there are existing driveways where access would get affected by an extension of the turn pocket.
- Doolittle Dr. & Davis St. (#5) – Westbound right turn lane AM and PM peak hours currently spills out of the right turn pocket and spills back into the adjacent westbound through lane. The right turn pocket lies within the downgrade of the grade separation over the UPRR rail line and may not be feasible to accommodate additional storage.
- Doolittle Dr. & Williams St. (#6) – Southbound left PM peak hour only is accommodated within the existing two-way left turn lane (striped median) and does not conflict with southbound through traffic.
- Doolittle Dr. & Marina Bl. (#7) – Southbound left AM and PM peak hours currently spills out of the left turn pocket and into the adjacent southbound through lane. The left turn pocket storage cannot be extended due to the existing back-to-back left turn at Barrow Street.
- Doolittle Dr. & Marina Bl. (#7) – Westbound left AM and PM peak hours currently spills out of the left turn pocket and into the adjacent westbound through lane. The left turn pocket storage cannot be extended due to the proximity of the existing driveways to the east and potentially blocking driveway access.
- Warden Av. & Davis St. (#8) – Southbound left AM peak hour only currently spills out of the left turn pocket and into the adjacent southbound through lane. The left turn pocket storage cannot be extended due to the existing intersection of Laura Avenue to the north.
- Airport Access Rd. & 98th Av. (#11) – Westbound left PM peak hour only is accommodated within the existing two-way left turn lane (striped median) and does not conflict with westbound through traffic.

TABLE 3-2: PEAK HOUR TURN LANE QUEUING SUMMARY FOR EXISTING (2020) CONDITIONS

#	Intersection	Movement	Available Stacking Distance (Feet)	95th % Queue (ft)		Acceptable? [1]	
				AM	PM	AM	PM
2	Doolittle Dr. & Airport Access Rd.	NBR	385	9	21	Yes	Yes
		SBL	150	24	32	Yes	Yes
		EBL	200	83	71	Yes	Yes
		EBR	200	31	58	Yes	Yes
		WBL	135	72	32	Yes	Yes
3	Doolittle Dr. & Adams Av.	NBR	270	35	27	Yes	Yes
		SBL	230	52	35	Yes	Yes
		WBR	85	19	24	Yes	Yes
5	Doolittle Dr. & Davis St.	NBL	130	81	41	Yes	Yes
		NBR	180	48	46	Yes	Yes
		SBL	265	200	**458** [2]	Yes	**No**
		EBL	300	78	98	Yes	Yes
		WBL	235	213 [2]	168 [2]	Yes	Yes
		WBR	100	**916** [2]	**304**	**No**	**No**
6	Doolittle Dr. & Williams St.	NBL	90	48	39	Yes	Yes
		SBL	100	117 [2]	**354** [2]	Yes	**No**
		WBR	100	43	23	Yes	Yes
7	Doolittle Dr. & Marina Bl.	NBL	50	23	52	Yes	Yes
		NBR	100	95	39	Yes	Yes
		SBL	100	**305** [2]	**359** [2]	**No**	**No**
		EBL	120	73	76	Yes	Yes
		WBL	120	**223** [2]	**320** [2]	**No**	**No**
		WBR	850	64	47	Yes	Yes
8	Warden Av. & Davis St.	NBR	600	37	70	Yes	Yes
		SBL	50	**104**	70	**No**	Yes
		EBL	85	15	40	Yes	Yes
		WBL	250	225 [2]	225 [2]	Yes	Yes
9	I-880 SB Ramps & Davis St.	SBR	350	152	125	Yes	Yes
		WBR	550	35	44	Yes	Yes
10	I-880 NB Ramps & Davis St.	NBL	300	110	82	Yes	Yes
		EBR	800	91	0	Yes	Yes

#	Intersection	Movement	Available Stacking Distance (Feet)	95th % Queue (ft)		Acceptable? [1]	
				AM	PM	AM	PM
11	Airport Access Rd. & 98th Av.	NBL	60	27	24	Yes	Yes
		NBR	150	0	6	Yes	Yes
		SBL	100	97 [2]	121 [2]	Yes	Yes
		SBR	190	0	0	Yes	Yes
		WBL	100	104 [2]	**128** [2]	Yes	**No**
		WBR	260	43	37	Yes	Yes
12	I-880 SB Ramps & 98th Av.	SBR	400	225 [2]	85	Yes	Yes
		EBR	290	40	41	Yes	Yes
13	I-880 NB Ramps & 98th Av.	NBL	675	208	79	Yes	Yes
14	Merced Av. & Marina Bl.	NBL	150	71	87	Yes	Yes
		NBR	415	206	293 [2]	Yes	Yes
		SBL	300	131 [2]	198 [2]	Yes	Yes
		SBR	150	0	0	Yes	Yes
		EBL	80	70	95 [2]	Yes	Yes
		EBR	50	0	0	Yes	Yes
		WBL	365	336 [2]	359 [2]	Yes	Yes

BOLD = 95th percentile queue exceeds the available storage.

[1] Stacking Distance is acceptable if the required stacking distance is less than or equal to the stacking distance provided. An additional 25 feet (1 car length) of stacking which is assumed to be provided in the transition for turn pockets is reflected in the stacking distance shown on this table, where applicable.

[2] 95th percentile volume exceeds capacity, queue may be longer. Queue shown is maximum after two cycles.

Worksheets for Existing (2020) traffic conditions queuing analysis worksheets are provided in Appendix 3.4.

4 PROJECTED FUTURE TRAFFIC

The Project is proposed to consist of a 106,190 square foot distribution warehouse use (square footage includes mezzanine space). Vehicular and truck traffic access will be provided via Hester Street and Doolittle Drive (see Exhibit 1-2). Specifically, all truck access to the site will occur off Hester Street, employee access is provided via both Hester Street and Doolittle Drive (via Project Driveway), and all van access is to occur off of Doolittle Drive (via Project Driveway). Regional access to the Project site is provided via the I-880 Freeway via 98th Avenue and Davis Street interchanges.

4.1 PROJECT TRIP GENERATION

4.1.1 EXISTING TRIP GENERATION

Existing traffic counts were collected at 880 Doolittle Drive in order to determine the existing trips currently being generated on the site that would be replaced by the Project. Table 4-1 summarizes the counts collected at each driveway and the total for the site. Trip generation has been derived for passenger cars, vans (passenger cars), and trucks. An expanded summary of the existing driveway counts is provided in Appendix 4.1 of this TA.

TABLE 4-1: EXISTING EMPIRICAL DATA

	AM Peak Hour			PM Peak Hour			
Land Use	**In**	**Out**	**Total**	**In**	**Out**	**Total**	**Daily**
Doolittle Access							
Passenger Cars:	61	30	91	17	61	78	792
Vans:	7	45	52	35	1	36	414
Truck Trips:	3	4	7	1	1	2	43
Total Trips[1]	**71**	**79**	**150**	**53**	**63**	**116**	**1,249**
Hester Access							
Passenger Cars:	12	1	13	4	19	23	245
Vans:	0	1	1	3	0	3	51
Truck Trips:	0	0	0	0	0	0	2
Total Trips[1]	**12**	**2**	**14**	**7**	**19**	**26**	**297**
Total							
Passenger Cars:	73	31	104	21	80	101	1,037
Vans:	7	46	53	38	1	39	465
Truck Trips:	3	4	7	1	1	2	45
Total Trips[1]	**83**	**80**	**164**	**60**	**82**	**142**	**1,546**

[1] Total Trips = Passenger Cars + Truck Trips.

4.1.2 PROPOSED PROJECT TRIP GENERATION

Trip generation represents the amount of traffic that is attracted and produced by a development and is based upon the specific land uses planned for a given project. Trip generation estimates for the proposed Project have been developed using tenant supplied data for the proposed facility. Since the trip generation is based on tenant supplied data, trip generation rates from the Institute of Transportation Engineers (ITE) Trip Generation Manual, 10th Edition, 2017, have not been utilized. Table 4-2 summarizes the Project's trip generation. The proposed Project is anticipated to generate 1,136 two-way trips per day with 196 AM peak hour trips and 83 PM peak hour trips.

TABLE 4-2: PROPOSED PROJECT TRIP GENERATION SUMMARY

	AM Peak Hour			PM Peak Hour			
Land Use	**In**	**Out**	**Total**	**In**	**Out**	**Total**	**Daily**
Proposed Project							
Associates/Drivers:	59	0	59	0	0	0	506
Vans:	0	120	120	0	0	0	250
Flex Vehicles:	0	0	0	40	20	60	80
Self Service Kiosk:[1]	8	8	16	11	11	22	272
4+-axle Trucks:	0	1	1	1	0	1	28
Proposed Project Total	**67**	**129**	**196**	**52**	**31**	**83**	**1,136**

[1] Self service kiosk estimate shown is a maximum projection to conduct a conservative analysis. There is no point of sale associated with these trips.

4.1.3 NET NEW TRIP GENERATION

A comparison between the proposed Project trip generation estimates and the existing use is summarized on Table 4-3. For the purposes of this TA, the net new traffic generated by the proposed Project (less the traffic currently being generated by the site) will be evaluated. As shown in Table 4-3, the Project is anticipated to generate 409 fewer two-way trips per day than the existing use with 32 more AM peak hour trips and 58 fewer PM peak hour trips.

TABLE 4-3: TRIP GENERATION COMPARISON

	AM Peak Hour			PM Peak Hour			
Land Use	**In**	**Out**	**Total**	**In**	**Out**	**Total**	**Daily**
Proposed Project							
Passenger Cars:	67	8	75	11	11	22	778
Vans/Flex Vehicles:	0	120	120	40	20	60	330
Total Truck Trips:	0	1	1	1	0	1	28
Proposed Project Total	**67**	**129**	**196**	**52**	**31**	**83**	**1,136**
Existing Passenger Cars:	73	31	104	21	80	101	1,037
Existing Vans:	7	46	53	38	1	39	465
Existing Trucks:	3	4	7	1	1	2	45
Existing Total:	**83**	**80**	**164**	**60**	**82**	**142**	**1,546**
Variance Passenger Cars:	-6	-23	-29	-10	-69	-79	-259
Variance Vans:	-7	74	67	2	19	21	-134
Variance Trucks:	-3	-3	-6	0	0	0	-17
Variance Total (Net New Traffic)	**-16**	**48**	**32**	**-8**	**-50**	**-58**	**-409**

4.2 PROJECT TRIP DISTRIBUTION

Trip distribution is the process of identifying the probable destinations, directions, or traffic routes that will be utilized by Project traffic. The potential interaction between the planned land uses and surrounding regional access routes are considered to identify the route where the Project traffic would distribute. The passenger car trip distribution patterns shown on Exhibit 4-1 are based on the select zone run distribution that was prepared by the City's traffic consultant. However, adjustments have been made to account for the Project access onto Doolittle in addition to other minor changes to routes based on ultimate destination and considerations to the surrounding roadway network. Exhibit 4-2 shows the delivery van/truck distributions and are consistent with the service area zip code data provided by the Project Applicant for the VMT analysis. Each of these distribution patterns was reviewed and approved by the City of San Leandro as part of the traffic study scoping process.

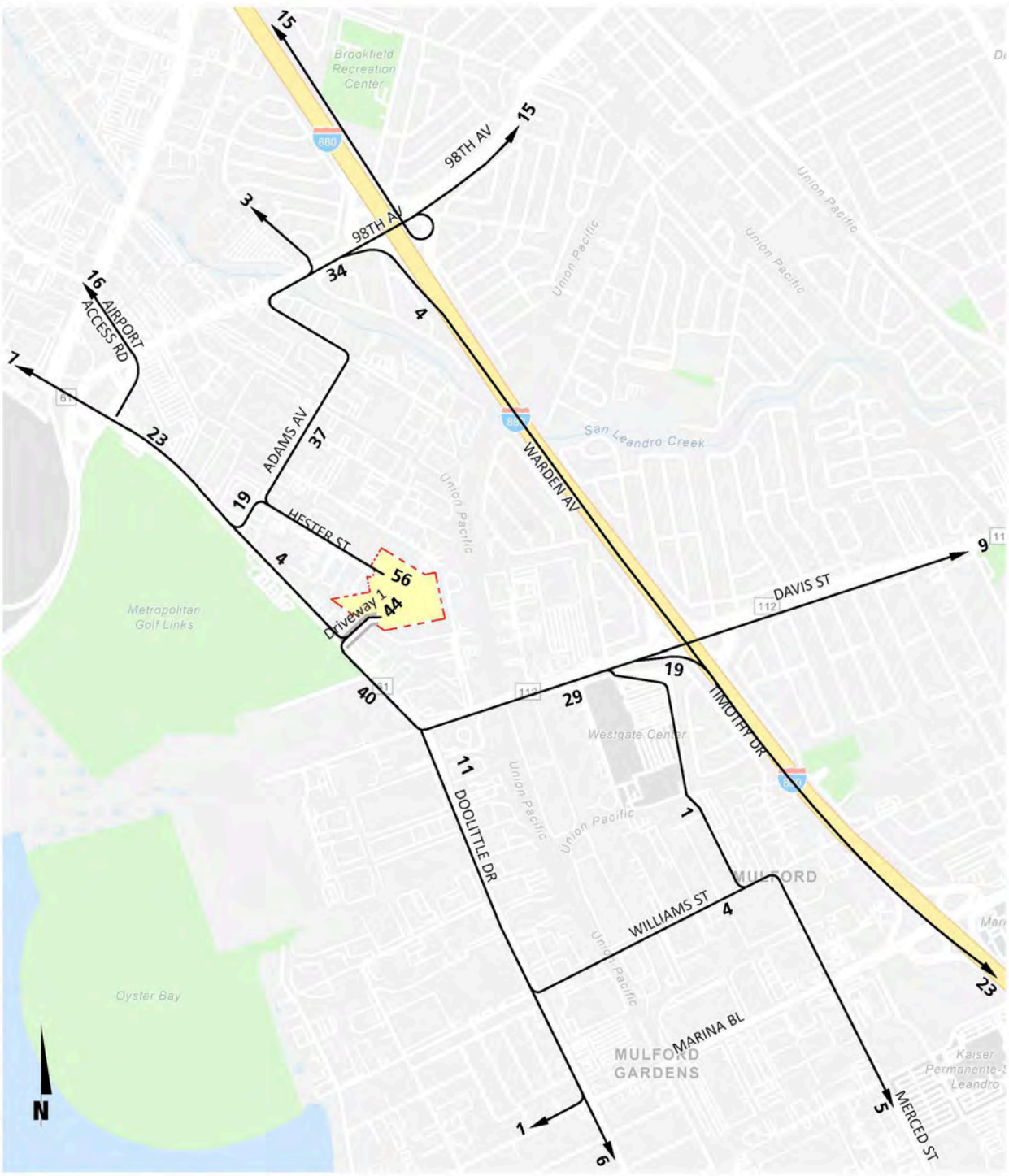
4.3 MODAL SPLIT

The traffic reducing potential of public transit, walking, or bicycling have not been considered in this TA. Essentially, the traffic projections are "conservative" in that these alternative travel modes might be able to reduce the forecasted traffic volumes (employee trips only).

4.4 PROJECT TRIP ASSIGNMENT

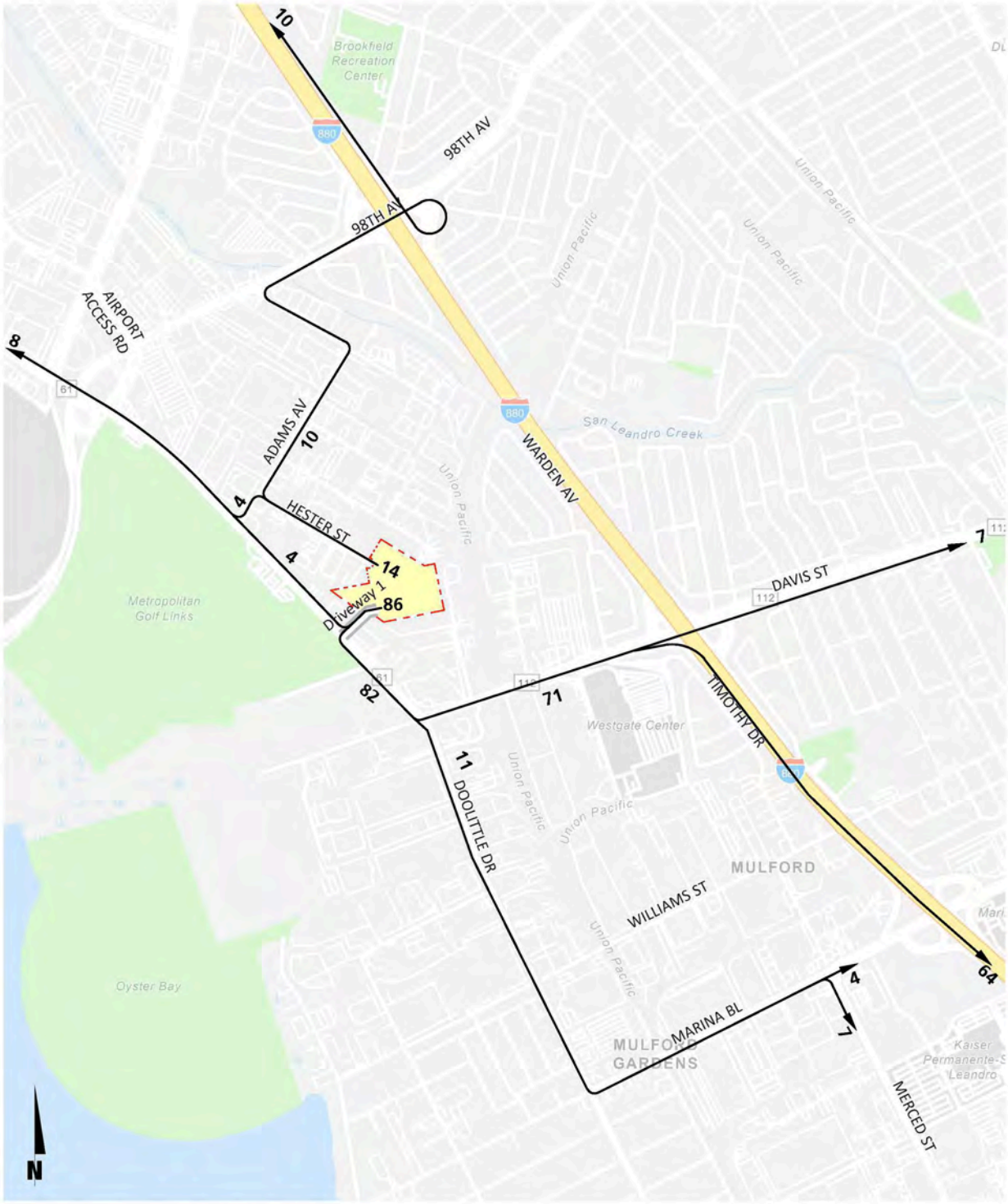
The assignment of traffic from the Project area to the adjoining roadway system is based upon the Project trip generation, trip distribution, and the arterial highway and local street system improvements that would be in place by the time of initial occupancy of the Project. Based on the identified Project traffic generation and trip distribution patterns, Project ADT and peak hour intersection turning movement volumes are shown on Exhibit 4-3.

EXHIBIT 4-1: PROJECT (PASSENGER CAR) TRIP DISTRIBUTION



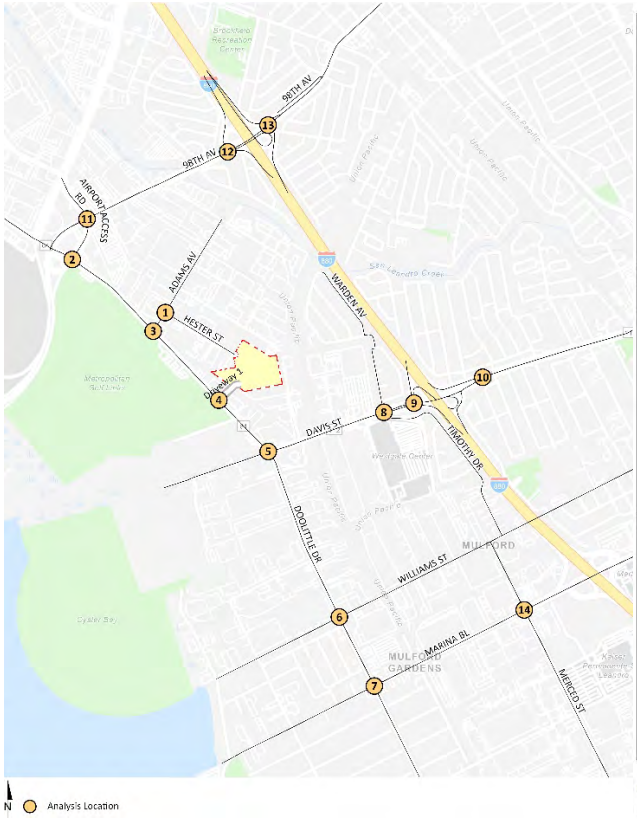
10 = *Percent To/From Project*

EXHIBIT 4-2: PROJECT (DELIVERY VAN/TRUCK) TRIP DISTRIBUTION



10 = *Percent To/From Project*

EXHIBIT 4-3: PROJECT ONLY TRAFFIC VOLUMES



1 Hester St. & Adams Av.	2 Doolittle Dr. & Airport Access Rd.	3 Doolittle Dr. & Adams Av.	4 Doolittle Dr. & Project Dwy.	5 Doolittle Dr. & Davis St.
-110 -3(-3) ↰ -2(-12) ↑ ↱ -1(-24) ↱ -2(-2) ↳ -60 / -170	-30 / -40 -1(-1) ← -1(-2) ↰ 4(-3) → ↱ -4(-11) ↱ -70	-70 / -60 -1(0) ← ↲ -2(-2) ↲ -2(-12) ↱ 2(-2) → -20	-20 / -240 -1(0) ↲ 2(-2) ↰ 49(-12) ↰ -11(-2) ↱ -230	-230 / -180 5(-6) ← ↲ 44(-7) ↲ -9(-1) ↱ -2(-1) → -40
6 Doolittle Dr. & Williams St.	**7 Doolittle Dr. & Marina Bl.**	**8 Warden Av. & Davis St.**	**9 I-880 SB Ramps & Davis St.**	**10 I-880 NB Ramps & Davis St.**
-40 / -10 6(-3) ← ↲ -1(-3) ↲ -2(0) → -34	-30 / -20 0(-1) ↳ -1(-4) ← 8(2) ↲ -1(0) ↱ 0(-1) → -20	-180 -9(-1) ← 44(-6) → 0(-1) ↳ -180	-180 / -110 -9(-1) ← 3(-5) → 41(-1) ↳ -70	-110 / -30 -1(-1) ← 3(-5) → -70
11 Airport Access Rd. & 98th Av.	**12 I-880 SB Ramps & 98th Av.**	**13 I-880 NB Ramps & 98th Av.**	**14 Merced St. & Marina Bl.**	
-40 -1(-2) ← -4(-11) → -40	-30 / -70 -2(-1) ↳ -1(-2) ← 0(-19) → -1(-3) ↳ -100	-40 -1(-2) ← -3(-10) → 4(-8) ↳ -70 / -30	-10 -1(-3) ← 3(1) → 5(1) ↳ -1(0) ↳ 0(-1) → -20	

##(##) AM(PM) Peak Hour Intersection Volumes

Average Daily Trips

4.5 HORIZON YEAR (2040) TRAFFIC FORECASTS

The City's traffic consultant has provided future long-range Horizon Year (2040) Without Project traffic forecasts based on the Alameda Countywide Travel Demand Model using accepted procedures for model forecast refinement and smoothing for study area intersections located within the City of San Leandro. Traffic Counts

The traffic forecasts reflect the area-wide growth anticipated between Existing (2020) conditions and Horizon Year (2040) traffic conditions. In most instances the traffic model zone structure is not designed to provide accurate turning movements along arterial roadways unless refinement and reasonableness checking is performed. Therefore, the Horizon Year peak hour forecasts were refined using the model derived long range forecasts, base (validation) year model forecasts, along with existing baseline traffic (adjusted baseline).

The refined future peak hour approach and departure volumes obtained from the model output data are then entered into a spreadsheet program consistent with the National Cooperative Highway Research Program (NCHRP Report 255), along with initial estimates of turning movement proportions. A linear programming algorithm is used to calculate individual turning movements which match the known directional roadway segment forecast volumes computed in the previous step. This program computes a likely set of intersection turning movements from intersection approach counts and the initial turning proportions from each approach leg.

The future Horizon Year (2040) Without Project traffic forecasts provided by the City's traffic consultant are included in Appendix 4.2. The future Horizon Year (2040) Without Project peak hour turning movements were then reviewed by Urban Crossroads, Inc. for reasonableness, and in some cases, were adjusted to achieve flow conservation. Flow conservation checks ensure that traffic flow between two closely spaced intersections, such as two adjacent driveway locations, is verified in order to make certain that vehicles leaving one intersection are entering the adjacent intersection and that there is no unexplained loss of vehicles. The result of this traffic forecasting procedure is a series of traffic volumes which are suitable for traffic operations analysis. Lastly, net new Project traffic was then added to develop Horizon Year (2040) With Project traffic forecasts.

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5 E+P TRAFFIC ANALYSIS

This section discusses the traffic forecasts for Existing Plus Project (E+P) conditions and the resulting intersection operations, traffic signal warrant, and queuing analyses.

5.1 ROADWAY IMPROVEMENTS

The lane configurations and traffic controls assumed to be in place for E+P conditions are consistent with those shown previously on Exhibit 3-1.

5.2 E+P TRAFFIC VOLUME FORECASTS

This scenario includes Existing (adjusted) traffic volumes plus net new Project traffic. The ADT and peak hour intersection turning movement volumes, which can be expected for E+P traffic conditions are shown on Exhibit 5-1.

5.3 INTERSECTION OPERATIONS ANALYSIS

E+P peak hour traffic operations have been evaluated for the study area intersections based on the analysis methodologies presented in Section 2 *Methodologies* of this TA. The intersection analysis results are summarized in Table 5-1, which indicates that there are no additional study area intersections anticipated to operate at an unacceptable LOS, in addition to the locations identified previously under Existing (2020) traffic conditions. The intersection operations analysis worksheets are included in Appendix 5.1 of this TA.

TABLE 5-1: INTERSECTION ANALYSIS FOR E+P CONDITIONS

			Existing (2020)						E+P							
			Delay[1] (secs.)		Volume-to-Capacity (v/c)		Level of Service		Delay[1] (secs.)		Volume-to-Capacity (v/c)		Level of Service		Change in v/c[3]	
#	Intersection	Traffic Control[2]	AM	PM	AM	PM	AM	PM	AM	PM	AM	PM	AM	PM	AM	PM
1	Hester St. & Adams Av.	CSS	11.5	11.0	0.07	0.15	B	B	12.0	10.9	0.07	0.10	B	B	--	--
2	Doolittle Dr. & Airport Access Rd.	TS	20.4	18.3	0.54	0.47	C	B	20.5	18.3	0.48	0.51	C	B	--	--
3	Doolittle Dr. & Adams St.	TS	9.7	11.0	0.46	0.67	A	B	9.6	10.8	0.46	0.67	A	B	--	--
4	Doolittle Dr. & Project Dwy.	CSS	16.0	15.0	0.18	0.18	C	C	33.8	17.1	0.41	0.18	D	C	--	--
5	Doolittle Dr. & Davis St.	TS	**74.4**	45.4	**0.96**	0.72	**E**	D	**71.5**	45.7	**0.92**	0.72	**E**	D	-0.04	--
6	Doolittle Dr. & Williams St.	TS	25.2	30.7	0.85	0.83	C	C	24.9	30.4	0.80	0.83	C	C	--	--
7	Doolittle Dr. & Marina Bl.	TS	36.2	35.4	0.64	0.71	D	D	37.9	36.4	0.65	0.75	D	D	--	--
8	Warden Av. & Davis St.	TS	41.3	32.8	0.74	0.72	D	C	42.3	32.9	0.74	0.72	D	C	--	--
9	I-880 SB Ramps & Davis St.	TS	13.4	14.5	0.71	0.63	B	B	13.3	14.5	0.71	0.63	B	B	--	--
10	I-880 NB Ramps & Davis St.	TS	11.1	14.6	0.61	0.76	B	B	11.1	14.6	0.61	0.76	B	B	--	--
11	Airport Access Rd. & 98th Av.	TS	30.9	33.4	0.41	0.49	C	C	30.9	33.5	0.41	0.49	C	C	--	--
12	I-880 SB Ramps & 98th Av.	TS	17.9	12.4	0.84	0.58	B	B	17.8	12.4	0.83	0.58	B	B	--	--
13	I-880 NB Ramps & 98th Av.	TS	18.8	34.0	0.80	0.96	B	C	18.8	34.7	0.80	0.96	B	C	--	--
14	Merced St. & Marina Bl.	TS	43.2	**57.9**	0.81	**0.93**	D	**E**	43.2	**58.0**	0.81	**0.93**	D	**E**	--	0.00

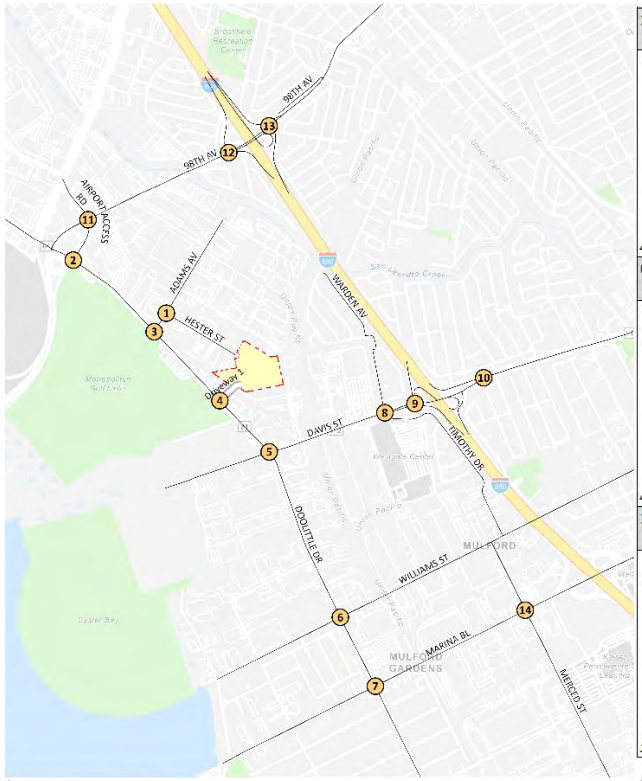
* **BOLD** = Level of Service (LOS) does not meet the applicable jurisdictional requirements (i.e., unacceptable LOS).

1 Per the Highway Capacity Manual (HCM 2000), overall average intersection delay and level of service are shown for intersections with a traffic signal or all way stop control. For intersections with cross street stop control, the delay and level of service for the worst individual movement (or movements sharing a single lane) are shown.

2 CSS = Cross-street Stop; TS = Traffic Signal

3 For intersections operating below LOS D, an impact would occur if new trips added by the project causes the v/c to increase by 0.05 or more.

EXHIBIT 5-1: E+P TRAFFIC VOLUMES



1 Hester St. & Adams Av.

					4,200
			← 102(151)		
			↰ 27(22)		
			↰	↱	
243(138) →		11(36)		24(21)	
65(16) ↳					
4,200					1,450

2 Doolittle Dr. & Airport Access Rd.

17,250					3,450
	616(592)	13(22)	↰ 11(20)		
	↓	↳	↰ 183(73)		
79(70) ↳			↑	↱	
19(39) →					
138(204) ↳			592(731)	104(124)	
3,750					20,800

3 Doolittle Dr. & Adams Av.

24,650					4,900
	629(1100)	55(30)	↱ 37(68)		
	↓	↳	↰ 88(161)		
			↑	↱	
			758(845)	182(140)	
					26,950

4 Doolittle Dr. & Project Dwy.

22,550					1,300
	1024(985)	17(12)	↱ 26(38)		
	↓	↳	↰ 87(23)		
			↑	↱	
			815(845)	33(39)	
					22,650

5 Doolittle Dr. & Davis St.

28,700					20,250
	47(40)	313(764)	391(629)	↱ 757(472)	
				← 123(75)	
	↲	↓	↳	↰ 245(180)	
45(61) ↳			↰	↑	↱
166(114) →					
35(43) ↳			47(18)	778(428)	216(226)
4,200					19,950

6 Doolittle Dr. & Williams St.

24,500					10,800
	51(58)	660(1052)	91(335)	← 209(110)	
				← 124(91)	
	↲	↓	↳	↰ 92(123)	
96(62) ↳			↰	↑	↱
143(129) →					
31(45) ↳			43(25)	1004(422)	124(108)
4,950					21,300

7 Doolittle Dr. & Marina Bl.

18,800					17,050
	55(93)	513(709)	227(270)	← 301(159)	
				← 150(292)	
	↲	↓	↳	↰ 143(231)	
55(52) ↳			↰	↑	↱
218(293) →					
68(31) ↳			10(30)	620(285)	258(179)
9,500					17,600

8 Warden Av. & Davis St.

3,300					41,450
	24(26)	58(23)	122(67)	← 46(108)	
				← 1303(941)	
	↲	↓	↳	↰ 412(459)	
6(25) ↳			↰	↑	↱
926(1342) →					
147(208) ↳			158(134)	31(26)	361(544)
32,050					16,750

9 I-880 SB Ramps & Davis St.

17,100					36,250
	596(589)	209(408)	← 402(426)		
			← 1165(919)		
	↲	↳			
852(1271) →					
557(682) ↳					
41,400					8,100

10 I-880 NB Ramps & Davis St.

4,250					34,550
			← 531(355)		
			← 1106(921)		
				↱	
570(1114) →					
491(565) ↳				236(486)	
36,250					17,600

11 Airport Access Rd. & 98th Av.

6,400					23,450
	8(4)	18(34)	53(67)	368(267)	
				← 742(504)	
	↲	↓	↳	↰ 57(73)	
93(71) ↳			↰	↑	↱
629(897) →					
1(7) ↳			11(10)	42(79)	75(146)
17,900					4,300

12 I-880 SB Ramps & 98th Av.

15,300					35,700
	402(204)	265(571)	← 622(503)		
			← 1351(990)		
	↲	↳			
564(894) →					
572(652) ↳					
33,050					7,850

13 I-880 NB Ramps & 98th Av.

5,600					38,400
			← 519(469)		
			← 1072(988)		
			↰	↱	
453(973) →			900(506)	338(763)	
377(493) ↳					
35,700					21,200

14 Merced St. & Marina Bl.

14,300					35,950
	44(58)	183(306)	186(315)	← 214(176)	
				← 521(613)	
	↲	↓	↳	↰ 638(638)	
51(63) ↳			↰	↑	↱
457(672) →					
46(77) ↳			51(70)	307(271)	448(583)
18,600					23,350

##(##) AM(PM) Peak Hour Intersection Volumes

Average Daily Trips

5.4 TRAFFIC SIGNAL WARRANTS ANALYSIS

There are no other unsignalized study area intersections anticipated to meet peak hour volume-based traffic signal warrants under E+P traffic conditions in addition to the location previously warranted under Existing traffic conditions (see Appendix 5.2).

5.5 QUEUING ANALYSIS

A queuing analysis was performed for the signalized study area intersections to assess vehicle queues for the turn pockets that may potentially "spill back" into the adjacent through lanes. Queuing analysis findings are presented in Table 5-2 for E+P traffic conditions. As shown in Table 5-2, the following turning movements are anticipated to experience queuing issues for E+P traffic conditions and are consistent with existing deficient turning movements, however, the addition of Project traffic to these existing deficiencies result in nominal changes:

- Doolittle Dr. & Davis St. (#5) – Southbound left PM peak hour only
- Doolittle Dr. & Davis St. (#5) – Westbound right turn lane AM and PM peak hours
- Doolittle Dr. & Williams St. (#6) – Southbound left PM peak hour only
- Doolittle Dr. & Marina Bl. (#7) – Southbound left AM and PM peak hours
- Doolittle Dr. & Marina Bl. (#7) – Westbound left AM and PM peak hours
- Warden Av. & Davis St. (#8) – Southbound left AM peak hour only
- Airport Access Rd. & 98th Av. (#11) – Westbound left PM peak hour only

Worksheets for E+P traffic conditions queuing analysis worksheets are provided in Appendix 5.3.

5.6 RECOMMENDED IMPROVEMENTS

Improvement strategies have been recommended at intersections that have been identified as deficient under E+P traffic conditions and where the addition of Project traffic would have a significant effect. Improvements have been identified in an effort to achieve an acceptable LOS (i.e., LOS D or better).

TABLE 5-2: PEAK HOUR TURN LANE QUEUING SUMMARY FOR E+P CONDITIONS

#	Intersection	Movement	Available Stacking Distance (Feet)	Existing (2021) 95th % Queue (ft) AM	Existing (2021) 95th % Queue (ft) PM	Existing (2021) Acceptable? [1] AM	Existing (2021) Acceptable? [1] PM	E+P 95th % Queue (ft) AM	E+P 95th % Queue (ft) PM	E+P Acceptable? [1] AM	E+P Acceptable? [1] PM
2	Doolittle Dr. & Airport Access Rd.	NBR	385	9	21	Yes	Yes	8	16	Yes	Yes
		SBL	150	24	32	Yes	Yes	24	32	Yes	Yes
		EBL	200	83	71	Yes	Yes	83	71	Yes	Yes
		EBR	200	31	58	Yes	Yes	31	58	Yes	Yes
		WBL	135	72	32	Yes	Yes	72	31	Yes	Yes
3	Doolittle Dr. & Adams Av.	NBR	270	35	27	Yes	Yes	35	27	Yes	Yes
		SBL	230	52	35	Yes	Yes	51	34	Yes	Yes
		WBR	85	19	24	Yes	Yes	19	22	Yes	Yes
5	Doolittle Dr. & Davis St.	NBL	130	81	41	Yes	Yes	81	41	Yes	Yes
		NBR	180	48	46	Yes	Yes	48	46	Yes	Yes
		SBL	265	200	**458** [2]	Yes	**No**	264 [2]	**456** [2]	Yes	**No**
		EBL	300	78	98	Yes	Yes	78	98	Yes	Yes
		WBL	235	213 [2]	168 [2]	Yes	Yes	213 [2]	168 [2]	Yes	Yes
		WBR	100	**916** [2]	**304**	**No**	**No**	**894** [2]	**293**	**No**	**No**
6	Doolittle Dr. & Williams St.	NBL	90	48	39	Yes	Yes	48	39	Yes	Yes
		SBL	100	117 [2]	**354** [2]	Yes	**No**	116 [2]	**352** [2]	Yes	**No**
		WBR	100	43	23	Yes	Yes	43	23	Yes	Yes
7	Doolittle Dr. & Marina Bl.	NBL	50	23	52	Yes	Yes	23	52	Yes	Yes
		NBR	100	95	39	Yes	Yes	95	39	Yes	Yes
		SBL	100	**305** [2]	**359** [2]	**No**	**No**	**320** [2]	**363** [2]	**No**	**No**
		EBL	120	73	76	Yes	Yes	73	76	Yes	Yes
		WBL	120	**223** [2]	**320** [2]	**No**	**No**	**223** [2]	**320** [2]	**No**	**No**
		WBR	850	64	47	Yes	Yes	63	47	Yes	Yes
8	Warden Av. & Davis St.	NBR	600	37	70	Yes	Yes	38	70	Yes	Yes
		SBL	50	**104**	70	**No**	Yes	**104**	70	**No**	Yes
		EBL	85	15	40	Yes	Yes	15	40	Yes	Yes
		WBL	250	225 [2]	225 [2]	Yes	Yes	225 [2]	225 [2]	Yes	Yes

#	Intersection	Movement	Available Stacking Distance (Feet)	Existing (2021) 95th % Queue (ft) AM	Existing (2021) 95th % Queue (ft) PM	Existing (2021) Acceptable? [1] AM	Existing (2021) Acceptable? [1] PM	E+P 95th % Queue (ft) AM	E+P 95th % Queue (ft) PM	E+P Acceptable? [1] AM	E+P Acceptable? [1] PM
9	I-880 SB Ramps & Davis St.	SBR	350	152	125	Yes	Yes	152	125	Yes	Yes
		WBR	550	35	44	Yes	Yes	35	44	Yes	Yes
10	I-880 NB Ramps & Davis St.	NBL	300	110	82	Yes	Yes	108	82	Yes	Yes
		EBR	800	91	0	Yes	Yes	0	0	Yes	Yes
11	Airport Access Rd. & 98th Av.	NBL	60	27	24	Yes	Yes	27	24	Yes	Yes
		NBR	150	0	6	Yes	Yes	0	6	Yes	Yes
		SBL	100	97 [2]	121 [2]	Yes	Yes	97 [2]	121 [2]	Yes	Yes
		SBR	190	0	0	Yes	Yes	0	0	Yes	Yes
		WBL	100	104 [2]	**128 [2]**	Yes	**No**	104 [2]	**128 [2]**	Yes	**No**
		WBR	260	43	37	Yes	Yes	43	37	Yes	Yes
12	I-880 SB Ramps & 98th Av.	SBR	400	225 [2]	85	Yes	Yes	254 [2]	88	Yes	Yes
		EBR	290	40	41	Yes	Yes	40	40	Yes	Yes
13	I-880 NB Ramps & 98th Av.	NBL	675	208	79	Yes	Yes	208	79	Yes	Yes
14	Merced Av. & Marina Bl.	NBL	150	71	87	Yes	Yes	70	88	Yes	Yes
		NBR	415	206	293 [2]	Yes	Yes	206	293 [2]	Yes	Yes
		SBL	300	131 [2]	198 [2]	Yes	Yes	131 [2]	198 [2]	Yes	Yes
		SBR	150	0	0	Yes	Yes	0	0	Yes	Yes
		EBL	80	70	95 [2]	Yes	Yes	70	95 [2]	Yes	Yes
		EBR	50	0	0	Yes	Yes	0	0	Yes	Yes
		WBL	365	336 [2]	359 [2]	Yes	Yes	336 [2]	359 [2]	Yes	Yes

BOLD = 95th percentile queue exceeds the available storage.

[1] Stacking Distance is acceptable if the required stacking distance is less than or equal to the stacking distance provided. An additional 25 feet (1 car length) of stacking which is assumed to be provided in the transition for turn pockets is reflected in the stacking distance shown on this table, where applicable.

[2] 95th percentile volume exceeds capacity, queue may be longer. Queue shown is maximum after two cycles.

5.6.1 Recommended Improvements To Address Deficiencies At Intersections

As shown previously in Table 5-1, the addition of Project traffic at the two deficient locations is anticipated to result in a change to the v/c ratio of less than 0.05. As such, no improvements have been recommended at these locations for E+P traffic conditions.

5.6.2 Recommended Improvements To Address Deficiencies On Queues

As shown previously in Table 5-2, there are movements anticipated to experience queuing issues during the weekday AM or weekday PM peak 95th percentile traffic flows under E+P traffic conditions. However, these are existing queuing issues, and the addition of Project traffic is anticipated to have a nominal effect on the peak hour queues. As discussed previously in Section 3.10 *Queuing Analysis*, improvements at some of the turn lanes would not be feasible given the physical surroundings. The peak hour intersection operations analyses for these study area intersections show that the addition of Project traffic is not anticipated to have a significant effect (v/c increase of less than 0.05). As such, consistent with the peak hour intersection operations analyses, no improvements have been recommended to address the peak hour queuing deficiencies.

6 HORIZON YEAR (2040) TRAFFIC ANALYSIS

This section discusses the methods used to develop Horizon Year (2040) traffic forecasts and the resulting intersection operations, traffic signal warrant, and queuing analyses.

6.1 ROADWAY IMPROVEMENTS

The lane configurations and traffic controls assumed to be in place for Horizon Year (2040) conditions are consistent with those shown previously on Exhibit 3-1.

6.2 HORIZON YEAR (2040) WITHOUT PROJECT TRAFFIC VOLUME FORECASTS

This scenario includes the refined post-processed volumes obtained from the Alameda Countywide Travel Demand Model (see Section 4.5 *Horizon Year (2040) Traffic Forecasts* of this TA for a detailed discussion on the post-processing methodology). The weekday ADT and weekday AM and PM peak hour volumes which can be expected for Horizon Year (2040) Without Project traffic conditions are shown on Exhibit 6-1.

6.3 HORIZON YEAR (2040) WITH PROJECT TRAFFIC VOLUME FORECASTS

This scenario includes the refined post-processed volumes obtained from the Alameda Countywide Travel Demand Model plus net new Project traffic. The weekday ADT and weekday AM and PM peak hour volumes which can be expected for Horizon Year (2040) With Project traffic conditions are shown on Exhibit 6-2.

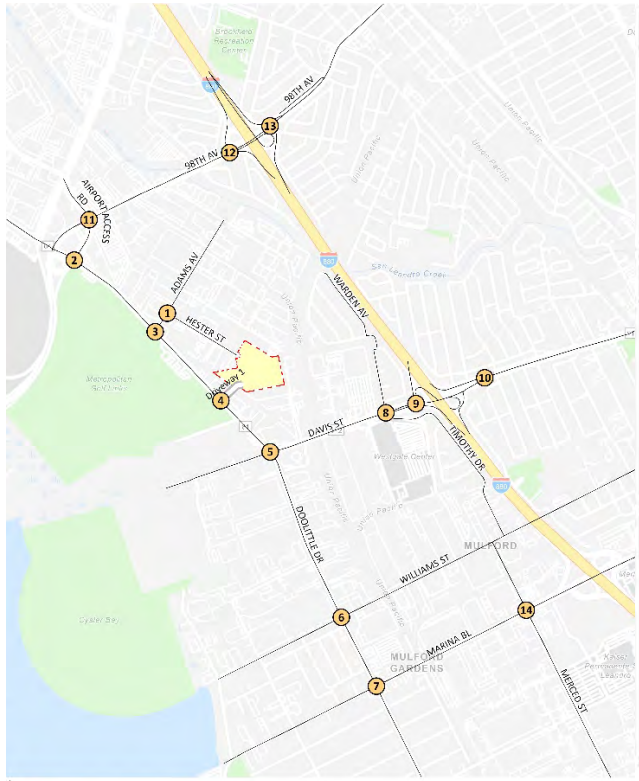
6.4 INTERSECTION OPERATIONS ANALYSIS

LOS calculations were conducted for the study intersections to evaluate their operations under Horizon Year (2040) Without Project conditions with roadway and intersection geometrics consistent with Section 6.1 *Roadway Improvements*. As shown in Table 6-1, the following study area intersections are anticipated to operate at an unacceptable LOS during the peak hours under Horizon Year (2040) Without Project traffic conditions:

- Doolittle Dr. & Davis St. (#5) – LOS F AM and PM peak hours
- Doolittle Dr. & Marina Bl. (#7) – LOS E PM peak hour only
- Airport Access Rd. & 98th Av. (#11) – LOS F PM peak hour only
- Merced St. & Marina Bl. (#14) – LOS E AM and PM peak hours

The addition of Project traffic is anticipated to have a significant effect on the intersection of Doolittle Drive and the Project Driveway only. The intersection operations analysis worksheets for Horizon Year (2040) Without and With Project traffic conditions are included in Appendix 6.1 and Appendix 6.2 of this TA, respectively.

EXHIBIT 6-1: HORIZON YEAR (2040) WITHOUT PROJECT TRAFFIC VOLUMES



1 Hester St. & Adams Av.

				4,400
			← 102(153)	
			↖ 37(27)	
		↰	↱	
255(138) →		13(64)	28(45)	
75(20) ↳				
4,400				1,800

2 Doolittle Dr. & Airport Access Rd.

17,250				3,950
	624(593)	32(22)	↱ 11(20)	
	↓	↳	← 184(104)	
			↰ ↑ ↱	
	79(70) ↲		651(1070)	108(135)
	19(39) →			
	195(350) ↲			
4,650				24,050

3 Doolittle Dr. & Adams Av.

24,800				5,150
	691(1115)	57(32)	↱ 39(82)	
	↓	↳	↖ 88(178)	
			↑ ↱	
			810(1166)	202(141)
30,450				

4 Doolittle Dr. & Project Dwy.

22,800				1,550
	1086(1016)	18(12)	↱ 24(40)	
	↓	↳	↖ 38(35)	
			↑ ↱	
			891(1166)	44(41)
25,750				

5 Doolittle Dr. & Davis St.

30,850				26,600
	47(40)	308(926)	454(636)	↱ 790(816)
	↲	↓	↳	← 132(88)
				↖ 266(180)
				↰ ↑ ↱
	45(61) ↲			71(19)
	179(144) →			834(429)
	36(46) ↳			310(291)
4,700				22,300

6 Doolittle Dr. & Williams St.

26,000				11,550
	51(58)	654(1244)	94(338)	↱ 303(127)
	↲	↓	↳	← 126(97)
				↖ 92(124)
				↰ ↑ ↱
	96(80) ↲			43(25)
	148(129) →			1103(455)
	31(45) ↳			124(108)
5,400				21,900

7 Doolittle Dr. & Marina Bl.

22,750				20,100
	57(103)	514(782)	220(380)	↱ 315(161)
	↲	↓	↳	← 261(444)
				↖ 143(231)
				↰ ↑ ↱
	92(58) ↲			10(31)
	327(297) →			669(310)
	68(36) ↳			258(179)
10,350				18,350

8 Warden Av. & Davis St.

3,550				48,000
	24(26)	66(31)	142(73)	↱ 46(126)
	↲	↓	↳	← 1414(1276)
				↖ 432(451)
				↰ ↑ ↱
	6(25) ↲			158(165)
	1069(1486) →			31(29)
	169(232) ↳			363(635)
32,600				18,750

9 I-880 SB Ramps & Davis St.

17,850				39,550
	651(601)	225(524)	↱ 407(430)	
	↲	↳	← 1240(1252)	
1008(1544) →				
567(650) ↳				
43,900				7,800

10 I-880 NB Ramps & Davis St.

4,250				37,750
			↱ 572(392)	
			← 1178(1088)	
			↱	
644(1395) →			248(486)	
589(672) ↳				
41,500				20,100

11 Airport Access Rd. & 98th Av.

6,650				27,400
	20(4)	19(36)	53(74)	368(267)
	↲	↓	↳	← 1183(666)
				↖ 57(86)
				↰ ↑ ↱
	93(71) ↲			11(10)
	680(1315) →			46(90)
	1(7) ↳			104(146)
20,700				4,350

12 I-880 SB Ramps & 98th Av.

18,050				35,550
	587(327)	265(571)	↱ 627(497)	
	↲	↳	← 1359(1041)	
564(1127) →				
621(655) ↳				
35,100				7,850

13 I-880 NB Ramps & 98th Av.

16,700				32,400
			↱ 519(469)	
			← 1086(999)	
			↰ ↑ ↱	
455(985) →			900(539)	363(763)
374(713) ↳				
39,500				15,550

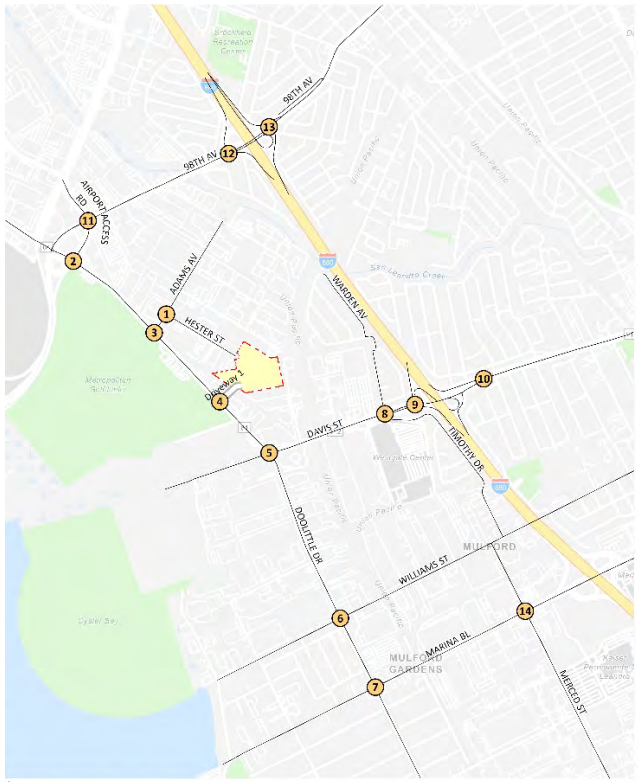
14 Merced St. & Marina Bl.

15,250				40,150
	45(60)	209(358)	186(315)	↱ 278(191)
	↲	↓	↳	← 683(774)
				↖ 781(638)
				↰ ↑ ↱
	52(66) ↲			60(81)
	560(774) →			307(315)
	47(98) ↳			448(641)
21,600				26,600

##(##) AM(PM) Peak Hour Intersection Volumes

Average Daily Trips

EXHIBIT 6-2: HORIZON YEAR (2040) WITH PROJECT TRAFFIC VOLUMES



Location	Volume	Average Daily Trips
1 Hester St. & Adams Av.	4,250	1,650
2 Doolittle Dr. & Airport Access Rd.	3,900	24,000
3 Doolittle Dr. & Adams Av.	5,100	30,400
4 Doolittle Dr. & Project Dwy.	1,300	25,550
5 Doolittle Dr. & Davis St.	26,400	22,250
6 Doolittle Dr. & Williams St.	11,550	21,850
7 Doolittle Dr. & Marina Bl.	20,100	18,350
8 Warden Av. & Davis St.	49,250	19,150
9 I-880 SB Ramps & Davis St.	40,750	8,100
10 I-880 NB Ramps & Davis St.	37,850	20,000
11 Airport Access Rd. & 98th Av.	27,400	4,300
12 I-880 SB Ramps & 98th Av.	36,400	7,850
13 I-880 NB Ramps & 98th Av.	38,550	21,650
14 Merced St. & Marina Bl.	40,150	26,600

##(##) AM(PM) Peak Hour Intersection Volumes

Average Daily Trips

TABLE 6-1: INTERSECTION ANALYSIS FOR HORIZON YEAR (2040) CONDITIONS

			2040 Without Project						2040 With Project							
			Delay[1] (secs.)		Volume-to-Capacity (v/c)		Level of Service		Delay[1] (secs.)		Volume-to-Capacity (v/c)		Level of Service		Change in v/c[3]	
#	Intersection	Traffic Control[2]	AM	PM	AM	PM	AM	PM	AM	PM	AM	PM	AM	PM	AM	PM
1	Hester St. & Adams Av.	CSS	11.7	11.4	0.08	0.18	B	B	12.2	11.3	0.08	0.13	B	B	--	--
2	Doolittle Dr. & Airport Access Rd.	TS	22.0	22.3	0.59	0.66	C	C	22.1	22.4	0.59	0.66	C	C	--	--
3	Doolittle Dr. & Adams St.	TS	9.8	14.6	0.48	0.77	A	B	9.7	14.4	0.48	0.76	A	B	--	--
4	Doolittle Dr. & Project Dwy.	CSS	16.8	20.4	0.19	0.26	C	C	**38.5**	25.6	**0.56**	0.27	**E**	D	**0.37**	--
5	Doolittle Dr. & Davis St.[4]	TS	**79.3**	**88.5**	**1.01**	**0.99**	**F**	**F**	**79.6**	**84.9**	**0.99**	**0.97**	**E**	**F**	-0.02	-0.02
6	Doolittle Dr. & Williams St.	TS	28.0	33.4	0.89	0.90	C	C	27.7	33.1	0.89	0.90	C	C	--	--
7	Doolittle Dr. & Marina Bl.	TS	38.5	**61.0**	0.77	**0.94**	D	**E**	40.3	**62.4**	0.78	**0.94**	D	**E**	--	0.00
8	Warden Av. & Davis St.	TS	46.4	37.2	0.79	0.79	D	D	47.1	37.5	0.81	0.79	D	D	--	--
9	I-880 SB Ramps & Davis St.	TS	14.2	17.8	0.76	0.82	B	B	14.2	17.9	0.76	0.83	B	B	--	--
10	I-880 NB Ramps & Davis St.	TS	11.3	20.1	0.67	0.86	B	C	11.2	19.9	0.67	0.86	B	B	--	--
11	Airport Access Rd. & 98th Av.	TS	31.7	**86.9**	0.48	**0.66**	C	**F**	31.1	**87.2**	0.47	**0.66**	C	**F**	--	0.00
12	I-880 SB Ramps & 98th Av.	TS	28.1	13.3	0.99	0.62	C	B	27.9	13.3	0.99	0.62	C	B	--	--
13	I-880 NB Ramps & 98th Av.	TS	19.1	37.2	0.80	0.97	B	D	19.1	36.4	0.80	0.97	B	D	--	--
14	Merced St. & Marina Bl.	TS	**66.9**	**62.7**	**0.94**	**1.00**	**E**	**E**	**67.1**	**62.8**	0.94	**1.00**	**E**	**E**	0.00	0.00

* **BOLD** = Level of Service (LOS) does not meet the applicable jurisdictional requirements (i.e., unacceptable LOS).

1 Per the Highway Capacity Manual (HCM 2000), overall average intersection delay and level of service are shown for intersections with a traffic signal or all way stop control. For intersections with cross street stop control, the delay and level of service for the worst individual movement (or movements sharing a single lane) are shown.

2 CSS = Cross-street Stop; TS = Traffic Signal

3 For intersections operating below LOS D, an impact would occur if new trips added by the project causes the v/c to increase by 0.05 or more.

4 Per the HCM methodology, if volume-to-capacity exceeds 1.00 then the level of service is LOS F.

6.5 TRAFFIC SIGNAL WARRANTS ANALYSIS

There is no other unsignalized study area intersections anticipated to meet peak hour volume-based traffic signal warrants under Horizon Year (2040) Without and With Project traffic conditions in addition to the location previously warranted under Existing traffic conditions (see Appendix 6.3 and Appendix 6.4).

6.6 QUEUING ANALYSIS

A queuing analysis was performed for the signalized study area intersections to assess vehicle queues for the turn pockets that may potentially "spill back" into the adjacent through lanes. Queuing analysis findings are presented in Table 6-2 for Horizon Year (2040) Without and With Project traffic conditions. As shown in Table 6-2, the following turning movements are anticipated to experience queuing issues for Horizon Year (2040) Without Project traffic conditions (see Appendix 6.5):

- Doolittle Dr. & Davis St. (#5) – Southbound left PM peak hour only
- Doolittle Dr. & Davis St. (#5) – Westbound right turn lane AM and PM peak hours
- Doolittle Dr. & Williams St. (#6) – Southbound left PM peak hour only
- Doolittle Dr. & Marina Bl. (#7) – Southbound left AM and PM peak hours
- Doolittle Dr. & Marina Bl. (#7) – Westbound left AM and PM peak hours
- Warden Av. & Davis St. (#8) – Southbound left AM peak hour only

TABLE 6-2: PEAK HOUR TURN LANE QUEUING SUMMARY FOR HORIZON YEAR (2040) CONDITIONS

#	Intersection	Movement	Available Stacking Distance (Feet)	2040 Without Project 95th % Queue (ft) AM	2040 Without Project 95th % Queue (ft) PM	2040 Without Project Acceptable?[1] AM	2040 Without Project Acceptable?[1] PM	2040 With Project 95th % Queue (ft) AM	2040 With Project 95th % Queue (ft) PM	2040 With Project Acceptable?[1] AM	2040 With Project Acceptable?[1] PM
2	Doolittle Dr. & Airport Access Rd.	NBR	385	9	21	Yes	Yes	8	16	Yes	Yes
		SBL	150	44	32	Yes	Yes	44	32	Yes	Yes
		EBL	200	83	71	Yes	Yes	83	71	Yes	Yes
		EBR	200	67	150 [2]	Yes	Yes	66	158 [2]	Yes	Yes
		WBL	135	72	42	Yes	Yes	72	41	Yes	Yes
3	Doolittle Dr. & Adams Av.	NBR	270	37	27	Yes	Yes	37	27	Yes	Yes
		SBL	230	52	35	Yes	Yes	51	34	Yes	Yes
		WBR	85	19	24	Yes	Yes	18	23	Yes	Yes
5	Doolittle Dr. & Davis St.	NBL	130	124 [2]	43	Yes	Yes	124 [2]	43	Yes	Yes
		NBR	180	75	52	Yes	Yes	76	52 [2]	Yes	Yes
		SBL	265	**305 [2]**	**458 [2]**	**No**	**No**	**365 [2]**	**456 [2]**	**No**	**No**
		EBL	300	78	98	Yes	Yes	78	98	Yes	Yes
		WBL	235	235 [2]	168 [2]	Yes	Yes	235 [2]	168 [2]	Yes	Yes
		WBR	100	**964 [2]**	**954 [2]**	**No**	**No**	**942 [2]**	**934 [2]**	**No**	**No**
6	Doolittle Dr. & Williams St.	NBL	90	48	39	Yes	Yes	48	39	Yes	Yes
		SBL	100	121 [2]	**354 [2]**	Yes	**No**	119 [2]	**352 [2]**	Yes	**No**
		WBR	100	96	32	Yes	Yes	96	32	Yes	Yes
7	Doolittle Dr. & Marina Bl.	NBL	50	23	52	Yes	No	23	52	Yes	Yes
		NBR	100	105	39	Yes	Yes	105	39	Yes	Yes
		SBL	100	**306 [2]**	**545 [2]**	**No**	**No**	**322 [2]**	**550 [2]**	**No**	**No**
		EBL	120	139 [2]	82	Yes	Yes	139 [2]	82	Yes	Yes
		WBL	120	**223 [2]**	**320 [2]**	**No**	**No**	**223 [2]**	**320 [2]**	**No**	**No**
		WBR	850	96	48	Yes	Yes	96	48	Yes	Yes
8	Warden Av. & Davis St.	NBR	600	51	112	Yes	Yes	52	112	Yes	Yes
		SBL	50	**119**	75	**No**	Yes	**119**	75	**No**	Yes
		EBL	85	15	40	Yes	Yes	15	40	Yes	Yes
		WBL	250	237 [2]	220 [2]	Yes	Yes	237 [2]	220 [2]	Yes	Yes

#	Intersection	Movement	Available Stacking Distance (Feet)	2040 Without Project 95th % Queue (ft) AM	2040 Without Project 95th % Queue (ft) PM	2040 Without Project Acceptable? [1] AM	2040 Without Project Acceptable? [1] PM	2040 With Project 95th % Queue (ft) AM	2040 With Project 95th % Queue (ft) PM	2040 With Project Acceptable? [1] AM	2040 With Project Acceptable? [1] PM
9	I-880 SB Ramps & Davis St.	SBR	350	199 [2]	142	Yes	Yes	198 [2]	142	Yes	Yes
		WBR	550	35	44	Yes	Yes	35	44	Yes	Yes
10	I-880 NB Ramps & Davis St.	NBL	300	110	118	Yes	Yes	108	118	Yes	Yes
		EBR	800	0	0	Yes	Yes	0	0	Yes	Yes
11	Airport Access Rd. & 98th Av.	NBL	60	27	24	Yes	Yes	27	24	Yes	Yes
		NBR	150	0	6	Yes	Yes	0	6	Yes	Yes
		SBL	100	97 [2]	**135** [2]	Yes	**No**	97 [2]	**135** [2]	Yes	**No**
		SBR	190	0	0	Yes	Yes	0	0	Yes	Yes
		WBL	100	104 [2]	**154** [2]	Yes	**No**	104 [2]	**492** [2]	Yes	**No**
		WBR	260	43	37	Yes	Yes	43	37	Yes	Yes
12	I-880 SB Ramps & 98th Av.	SBR	400	432 [2]	131	Yes[3]	Yes	430 [2]	159	Yes[3]	Yes
		EBR	290	41	44	Yes	Yes	41	43	Yes	Yes
13	I-880 NB Ramps & 98th Av.	NBL	675	208	84	Yes	Yes	208	84	Yes	Yes
14	Merced Av. & Marina Bl.	NBL	150	80	98	Yes	Yes	79	99	Yes	Yes
		NBR	415	206	340 [2]	Yes	Yes	206	340 [2]	Yes	Yes
		SBL	300	131 [2]	198 [2]	Yes	Yes	131 [2]	198 [2]	Yes	Yes
		SBR	150	0	0	Yes	Yes	0	0	Yes	Yes
		EBL	80	71	102 [2]	Yes	Yes	71	102 [2]	Yes	Yes
		EBR	50	0	3	Yes	Yes	0	3	Yes	Yes
		WBL	365	**442** [2]	359 [2]	**No**	Yes	**442** [2]	359 [2]	**No**	Yes

BOLD = 95th percentile queue exceeds the available storage.

[1] Stacking Distance is acceptable if the required stacking distance is less than or equal to the stacking distance provided. An additional 25 feet (1 car length) of stacking which is assumed to be provided in the transition for turn pockets is reflected in the stacking distance shown on this table, where applicable.

[2] 95th percentile volume exceeds capacity, queue may be longer. Queue shown is maximum after two cycles.

[3] Although 95th percentile queue is anticipated to exceed the available storage for the turn lane, the adjacent through lane has sufficient storage to accommodate any spillover without spilling back and affecting the I-880 Freeway mainline.

- Airport Access Rd. & 98th Av. (#11) – Southbound left PM peak hour only
- Airport Access Rd. & 98th Av. (#11) – Westbound left PM peak hour only
- Merced St. & Marina Bl. (#14) – Westbound left AM peak hour only

The addition of Project traffic to these pre-project deficiencies is anticipated to result in nominal changes (see Appendix 6.6). There are no new queuing deficiencies anticipated as a result of Project traffic.

6.7 RAILROAD QUEUING ANALYSIS

The queuing analysis results for the at-grade railroad crossings have also been summarized on Table 6-3 for Horizon Year (2040) With Project traffic conditions only. As shown in Table 6-3, only the westbound through movement at Doolittle Drive and Marina Boulevard may potentially extend back to the at-grade railroad crossing. It should be noted that while the 95th percentile queue indicates a queuing issue in the PM peak hour only, the average (50th percentile) peak hour queue does not. The 95th percentile queue, while typically used for design purposes, in reality occurs approximately 5 percent of the time. The existing railroad crossing has striping and signing for advance notification of the crossing in both directions of travel on Marina Boulevard. In addition, the crossing itself is equipped with mast arms and warning lights. A potential recommendation for the City to improve peak hour queues in the westbound approach would be to modify the signal timing at Doolittle Drive and Marina Boulevard to clear any queues in advance of approaching trains. Worksheets for Horizon Year (2040) traffic conditions queuing analysis worksheets are provided in Appendix 6.7.

TABLE 6-3: AT-GRADE RAILROAD CROSSING PEAK HOUR QUEUING SUMMARY

#	Intersection	Movement	Available Stacking Distance (Feet)	2040 With Project 95th % Queue (ft)		2040 With Project Acceptable? [1]	
				AM	PM	AM	PM
4	Doolittle Dr. & Project Driveway	WBL/R	265	150	86	Yes	Yes
5	Doolittle Dr. & Davis St. (SR-112)	NBT	380	265	103	Yes	Yes
6	Doolittle Dr. & Williams St.	WBT	840	222	346	Yes	Yes
7	Doolittle Dr. & Marina Bl.	WBT	840	419	**932**	Yes	**No**

BOLD = 95th percentile queue exceeds the available storage.

[1] Stacking Distance is acceptable if the required stacking distance is less than or equal to the stacking distance provided. An additional 25 feet (1 car length) of stacking which is assumed to be provided in the transition for turn pockets is reflected in the stacking distance shown on this table, where applicable.

6.8 RECOMMENDED IMPROVEMENTS

Improvement strategies have been recommended at intersections that have been identified as deficient under Horizon Year (2040) Without and With Project traffic conditions and where the addition of Project traffic would have a significant effect. Improvements have been identified in an effort to achieve an acceptable LOS (i.e., LOS D or better).

6.8.1 RECOMMENDED IMPROVEMENTS TO ADDRESS DEFICIENCIES AT INTERSECTIONS

The effectiveness of the recommended improvement strategies to address Horizon Year (2040) With Project traffic deficiencies are presented in Table 6-4. As noted previously, the addition of Project traffic is anticipated to have a significant effect on the intersection of Doolittle Drive and the Project Driveway only. The addition of Project traffic at the other four deficient locations is anticipated to result in a change to the v/c ratio of less than 0.05. As such, no improvements have been recommended at those locations for Horizon Year (2040) With Project traffic conditions. It is recommended that the Project contribute fair share payment towards the recommended improvement (signalization). Worksheets for Horizon Year (2040) With Project conditions, with improvements, HCM calculation worksheets are provided in Appendix 6.8.

TABLE 6-4: INTERSECTION ANALYSIS FOR HORIZON YEAR (2040) CONDITIONS WITH IMPROVEMENTS

			Intersection Approach Lanes[1]												Delay[2] (secs.)		Level of Service	
		Traffic	Northbound			Southbound			Eastbound			Westbound						
#	Intersection	Control[3]	L	T	R	L	T	R	L	T	R	L	T	R	AM	PM	AM	PM
4	Doolittle Dr. & Project Dwy.																	
	Without Improvements	CSS	0	2	0	1	2	0	0	0	0	0	1	0	**38.5**	25.6	**E**	D
	With Improvements	**TS**	0	2	0	1	2	0	0	0	0	0	1	0	9.4	7.4	A	A

* **BOLD** = Level of Service (LOS) does not meet the applicable jurisdictional requirements (i.e., unacceptable LOS).

1 When a right turn is designated, the lane can either be striped or unstriped. To function as a right turn lane there must be sufficient width for right turning vehicles to travel outside the through lanes.

L = Left; T = Through; R = Right

2 Per the Highway Capacity Manual (HCM 2000), overall average intersection delay and level of service are shown for intersections with a traffic signal or all way stop control. For intersections with cross street stop control, the delay and level of service for the worst individual movement (or movements sharing a single lane) are shown.

3 CSS = Cross-Street Stop; TS = Traffic Signal; **TS** = Improvement

Table 6-5 provides the fair share calculation for the intersection of Doolittle Drive and Project Driveway. As stated above, the Project should contribute fair share payment towards the identified improvement at this location.

TABLE 6-5: PROJECT FAIR SHARE CALCULATIONS

#	Intersection		Existing	Project	Horizon Year (2040) With Project	Total New Traffic	Project % of New Traffic
4	Doolittle Dr. & Project Dwy.						
		AM:	1,963	39	2,140	177	**22.0%**
		PM:	1,958	-16	2,294	336	0.0%

BOLD = Denotes highest fair share percentage.

6.8.2 RECOMMENDED IMPROVEMENTS TO ADDRESS DEFICIENCIES ON QUEUES

As shown previously in Table 6-2, there are movements anticipated to experience queuing issues during the weekday AM or weekday PM peak 95th percentile traffic flows under Horizon Year (2040) traffic conditions. However, these are pre-project queuing issues, and the addition of Project traffic is anticipated to have a nominal effect on the peak hour queues. The peak hour intersection operations analysis for these study area intersections show that the addition of Project traffic is not anticipated to have a significant effect (v/c increase of less than 0.05). Similarly, the addition of Project traffic is also not anticipated to have a significant effect to the PM peak hour queue identified at the intersection of Doolittle Drive and Marina Boulevard on Table 6-3. As such, consistent with the peak hour intersection operations analyses, no improvements have been recommended to address the peak hour queuing deficiencies.

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7 REFERENCES

1. **Alameda County Transportation Commission.** *2018 Level of Service Monitoring Report.* Alameda County : Iteris, Inc., December 2018.
2. **Transportation Research Board.** *Highway Capacity Manual (HCM).* s.l. : National Academy of Sciences, 2000.
3. **Caltrans.** California Manual on Uniform Traffic Control Devices (MUTCD). [book auth.] California Department of Transportation. *California Manual on Uniform Traffic Control Devices (CAMUTCD).* 2017.
4. **City of San Leandro.** *San Leandro 2035 General Plan.* City of San Leandro : s.n., Adopted September 19, 2016.
5. **City of Oakland.** *Envision Oakland: City of Oakland General Plan.* City of Oakland : s.n., March 1998.

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B- ACTC CENTRAL PLANNING AREA VMT MAP

Vehicle Miles Traveled Per Employee
Central Planning Area

Central Planning Area Average (Target -15%): 19.2 (16.3)
Alameda County Average (Target -15%): 15.9 (13.5)

Data Source: Alameda Countywide Travel Model, Plan Bay Area 2040 version, May 2019

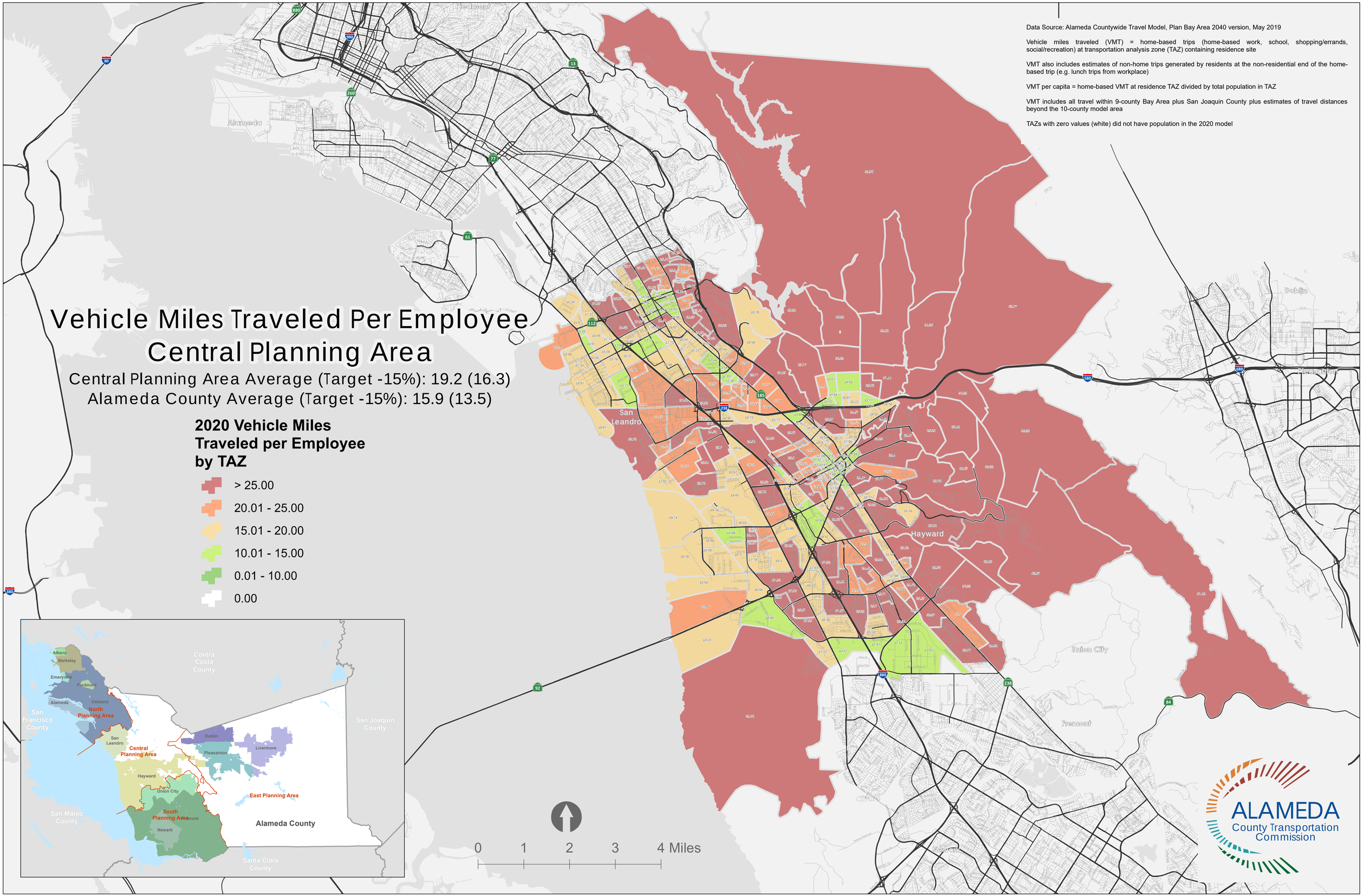
Vehicle miles traveled (VMT) = home-based trips (home-based work, school, shopping/errands, social/recreation) at transportation analysis zone (TAZ) containing residence site

VMT also includes estimates of non-home trips generated by residents at the non-residential end of the home-based trip (e.g. lunch trips from workplace)

VMT per capita = home-based VMT at residence TAZ divided by total population in TAZ

VMT includes all travel within 9-county Bay Area plus San Joaquin County plus estimates of travel distances beyond the 10-county model area

TAZs with zero values (white) did not have population in the 2020 model



Alameda County Vehicle Miles of Travel (VMT) from Alameda Countywide Model
Year 2040

2040 VMT by City

City	Population	Household VMT	VMT/Capita	Employment	Employee VMT	VMT/Employee
Alameda	95,451	1,481,856	15.5	42,793	784,739	18.3
Alameda County	14,951	607,768	40.7	3,356	106,172	31.6
Albany	20,684	296,838	14.4	5,313	128,467	24.2
Ashland	31,245	495,916	15.9	3,381	76,696	22.7
Berkeley	141,229	1,617,236	11.5	121,710	1,566,754	12.9
Castro Valley	63,012	1,594,380	25.3	13,641	309,278	22.7
Cherryland	13,530	214,462	15.9	1,702	39,848	23.4
Dublin	80,567	1,928,070	23.9	28,752	390,985	13.6
Emeryville	34,640	279,816	8.1	19,818	297,394	15.0
Fremont	279,534	5,696,285	20.4	118,617	2,093,184	17.6
Hayward	188,515	3,556,157	18.9	75,880	1,423,579	18.8
Livermore	111,523	3,606,029	32.3	53,083	861,662	16.2
Newark	51,768	1,055,939	20.4	22,871	412,749	18.0
Oakland	632,032	7,608,601	12.0	273,838	4,113,381	15.0
Piedmont	11,222	201,917	18.0	1,905	50,586	26.6
Pleasanton	91,844	2,424,144	26.4	74,589	1,209,697	16.2
San Leandro	108,465	1,822,008	16.8	53,925	938,059	17.4
San Lorenzo	31,412	582,257	18.5	5,038	119,863	23.8
Union City	81,258	1,682,360	20.7	28,575	419,408	14.7
Total	**2,082,882**	**36,752,038**	**17.6**	**948,787**	**15,342,500**	**16.2**

2040 VMT by County Planning Area

Planning Area	Population	VMT_HH	VMT/Capita	Employment	VMT_EMP	VMT/Employee
Central	449,474	8,688,886	19.3	155,296	2,965,019	19.1
East	286,842	8,172,267	28.5	158,268	2,516,869	15.9
North	935,258	11,486,264	12.3	465,377	6,941,322	14.9
South	411,308	8,404,621	20.4	169,846	2,919,290	17.2
Total	**2,082,882**	**36,752,038**	**17.6**	**948,787**	**15,342,500**	**16.2**

2040 VMT by County

County	Population	Household VMT	VMT/Capita	Employment	Employee VMT	VMT/Employee
San Francisco	1,167,689	11,650,405	10.0	872,499	10,136,949	11.6
San Mateo	915,365	12,471,097	13.6	472,056	10,593,123	22.4
Santa Clara	2,532,772	36,180,473	14.3	1,289,874	26,377,230	20.4
Alameda	2,082,882	36,752,038	17.6	948,787	15,342,500	16.2
Contra Costa	1,385,902	33,135,623	23.9	497,765	9,229,910	18.5
Solano	509,796	15,238,660	29.9	150,981	3,150,727	20.9
Napa	158,040	4,787,877	30.3	83,364	2,121,900	25.5
Sonoma	596,627	25,597,907	42.9	243,588	5,252,439	21.6
Marin	277,254	7,730,790	27.9	134,960	3,326,875	24.7
Total	**9,626,327**	**183,544,870**	**19.1**	**4,693,874**	**85,531,653**	**18.2**

Household VMT = All home-based productions plus proportional share of Non-Home-Based trips at destinations
Employee VMT = Home-Based Work attractions

TAZ	COUNTY	VMT_EMP	JURIS	REGION
597.00	4.00	16.08	San Leandro	Central

C- SYNCHRO OUTPUT

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (veh/h)	14	2	828	11	18	1040
Future Volume (Veh/h)	14	2	828	11	18	1040
Sign Control	Stop		Free			Free
Grade	0%		0%			0%
Peak Hour Factor	0.88	0.88	0.88	0.88	0.88	0.88
Hourly flow rate (vph)	16	2	941	12	20	1182
Pedestrians	1					
Lane Width (ft)	12.0					
Walking Speed (ft/s)	3.5					
Percent Blockage	0					
Right turn flare (veh)						
Median type			TWLTL			TWLTL
Median storage veh)			2			2
Upstream signal (ft)			750			512
pX, platoon unblocked	0.93	0.90			0.90	
vC, conflicting volume	1579	478			954	
vC1, stage 1 conf vol	948					
vC2, stage 2 conf vol	631					
vCu, unblocked vol	1110	184			716	
tC, single (s)	6.8	6.9			4.1	
tC, 2 stage (s)	5.8					
tF (s)	3.5	3.3			2.2	
p0 queue free %	96	100			98	
cM capacity (veh/h)	359	746			800	

Direction, Lane #	WB 1	NB 1	NB 2	SB 1	SB 2	SB 3
Volume Total	18	627	326	20	591	591
Volume Left	16	0	0	20	0	0
Volume Right	2	0	12	0	0	0
cSH	381	1700	1700	800	1700	1700
Volume to Capacity	0.05	0.37	0.19	0.02	0.35	0.35
Queue Length 95th (ft)	4	0	0	2	0	0
Control Delay (s)	14.9	0.0	0.0	9.6	0.0	0.0
Lane LOS	B			A		
Approach Delay (s)	14.9	0.0		0.2		
Approach LOS	B					

Intersection Summary			
Average Delay	0.2		
Intersection Capacity Utilization	38.7%	ICU Level of Service	A
Analysis Period (min)	15		

Intersection	
Int Delay, s/veh	0.3

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Vol, veh/h	14	2	828	11	18	1040
Future Vol, veh/h	14	2	828	11	18	1040
Conflicting Peds, #/hr	0	0	0	1	1	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	-	50	-
Veh in Median Storage, #	2	-	0	-	-	0
Grade, %	0	-	0	-	-	0
Peak Hour Factor	88	88	88	88	88	88
Heavy Vehicles, %	0	0	14	9	0	17
Mvmt Flow	16	2	941	13	20	1182

Major/Minor	Minor1		Major1		Major2	
Conflicting Flow All	1580	478	0	0	955	0
Stage 1	949	-	-	-	-	-
Stage 2	631	-	-	-	-	-
Critical Hdwy	6.8	6.9	-	-	4.1	-
Critical Hdwy Stg 1	5.8	-	-	-	-	-
Critical Hdwy Stg 2	5.8	-	-	-	-	-
Follow-up Hdwy	3.5	3.3	-	-	2.2	-
Pot Cap-1 Maneuver	102	539	-	-	728	-
Stage 1	341	-	-	-	-	-
Stage 2	498	-	-	-	-	-
Platoon blocked, %			-	-		-
Mov Cap-1 Maneuver	99	538	-	-	727	-
Mov Cap-2 Maneuver	279	-	-	-	-	-
Stage 1	341	-	-	-	-	-
Stage 2	484	-	-	-	-	-

Approach	WB	NB	SB
HCM Control Delay, s	17.9	0	0.2
HCM LOS	C		

Minor Lane/Major Mvmt	NBT	NBR	WBLn1	SBL	SBT
Capacity (veh/h)	-	-	297	727	-
HCM Lane V/C Ratio	-	-	0.061	0.028	-
HCM Control Delay (s)	-	-	17.9	10.1	-
HCM Lane LOS	-	-	C	B	-
HCM 95th %tile Q(veh)	-	-	0.2	0.1	-

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Volume (veh/h)	10	0	0	10	46	12
Future Volume (Veh/h)	10	0	0	10	46	12
Sign Control		Stop	Stop		Free	
Grade		0%	0%		0%	
Peak Hour Factor	0.86	0.86	0.86	0.86	0.86	0.86
Hourly flow rate (vph)	12	0	0	12	53	14
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type					None	
Median storage veh)						
Upstream signal (ft)						
pX, platoon unblocked						
vC, conflicting volume	125	113	120	0	0	
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	125	113	120	0	0	
tC, single (s)	7.2	6.7	6.7	6.4	4.2	
tC, 2 stage (s)						
tF (s)	3.6	4.1	4.1	3.4	2.3	
p0 queue free %	98	100	100	99	97	
cM capacity (veh/h)	789	728	721	1048	1542	

Direction, Lane #	EB 1	WB 1	SB 1
Volume Total	12	12	67
Volume Left	12	0	53
Volume Right	0	12	14
cSH	789	1048	1542
Volume to Capacity	0.02	0.01	0.03
Queue Length 95th (ft)	1	1	3
Control Delay (s)	9.6	8.5	5.9
Lane LOS	A	A	A
Approach Delay (s)	9.6	8.5	5.9
Approach LOS	A	A	

Intersection Summary			
Average Delay	6.7		
Intersection Capacity Utilization	17.2%	ICU Level of Service	A
Analysis Period (min)	15		

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Volume (veh/h)	247	52	5	102	6	14
Future Volume (Veh/h)	247	52	5	102	6	14
Sign Control	Free			Free	Stop	
Grade	0%			0%	0%	
Peak Hour Factor	0.86	0.86	0.86	0.86	0.86	0.86
Hourly flow rate (vph)	287	60	6	119	7	16
Pedestrians				1		
Lane Width (ft)				12.0		
Walking Speed (ft/s)				3.5		
Percent Blockage				0		
Right turn flare (veh)						
Median type	None			None		
Median storage veh)						
Upstream signal (ft)	426					
pX, platoon unblocked						
vC, conflicting volume			347		448	318
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol			347		448	318
tC, single (s)			4.1		6.5	6.4
tC, 2 stage (s)						
tF (s)			2.2		3.6	3.5
p0 queue free %			100		99	98
cM capacity (veh/h)			1201		551	682

Direction, Lane #	EB 1	WB 1	NB 1
Volume Total	347	125	23
Volume Left	0	6	7
Volume Right	60	0	16
cSH	1700	1201	636
Volume to Capacity	0.20	0.00	0.04
Queue Length 95th (ft)	0	0	3
Control Delay (s)	0.0	0.4	10.9
Lane LOS		A	B
Approach Delay (s)	0.0	0.4	10.9
Approach LOS			B

Intersection Summary			
Average Delay	0.6		
Intersection Capacity Utilization	26.5%	ICU Level of Service	A
Analysis Period (min)	15		

Intersection	
Int Delay, s/veh	0.6

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Vol, veh/h	247	52	5	102	6	14
Future Vol, veh/h	247	52	5	102	6	14
Conflicting Peds, #/hr	0	0	0	0	0	1
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	0	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	86	86	86	86	86	86
Heavy Vehicles, %	8	2	4	14	10	20
Mvmt Flow	287	60	6	119	7	16

Major/Minor	Major1		Major2		Minor1	
Conflicting Flow All	0	0	347	0	448	318
Stage 1	-	-	-	-	317	-
Stage 2	-	-	-	-	131	-
Critical Hdwy	-	-	4.14	-	6.5	6.4
Critical Hdwy Stg 1	-	-	-	-	5.5	-
Critical Hdwy Stg 2	-	-	-	-	5.5	-
Follow-up Hdwy	-	-	2.236	-	3.59	3.48
Pot Cap-1 Maneuver	-	-	1201	-	554	683
Stage 1	-	-	-	-	721	-
Stage 2	-	-	-	-	876	-
Platoon blocked, %	-	-		-		
Mov Cap-1 Maneuver	-	-	1201	-	551	682
Mov Cap-2 Maneuver	-	-	-	-	551	-
Stage 1	-	-	-	-	721	-
Stage 2	-	-	-	-	872	-

Approach	EB	WB	NB
HCM Control Delay, s	0	0.4	10.9
HCM LOS			B

Minor Lane/Major Mvmt	NBLn1	EBT	EBR	WBL	WBT
Capacity (veh/h)	637	-	-	1201	-
HCM Lane V/C Ratio	0.037	-	-	0.005	-
HCM Control Delay (s)	10.9	-	-	8	0
HCM Lane LOS	B	-	-	A	A
HCM 95th %tile Q(veh)	0.1	-	-	0	-

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (vph)	88	32	740	185	41	637
Future Volume (vph)	88	32	740	185	41	637
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost time (s)	5.2	5.2	5.8	5.8	4.6	5.8
Lane Util. Factor	1.00	1.00	0.95	1.00	1.00	0.95
Frpb, ped/bikes	1.00	1.00	1.00	0.98	1.00	1.00
Flpb, ped/bikes	1.00	1.00	1.00	1.00	1.00	1.00
Frt	1.00	0.85	1.00	0.85	1.00	1.00
Flt Protected	0.95	1.00	1.00	1.00	0.95	1.00
Satd. Flow (prot)	1467	1282	3312	1346	1687	3223
Flt Permitted	0.95	1.00	1.00	1.00	0.95	1.00
Satd. Flow (perm)	1467	1282	3312	1346	1687	3223
Peak-hour factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95
Adj. Flow (vph)	93	34	779	195	43	671
RTOR Reduction (vph)	0	28	0	92	0	0
Lane Group Flow (vph)	93	6	779	103	43	671
Confl. Peds. (#/hr)	1			2		
Confl. Bikes (#/hr)				3		
Heavy Vehicles (%)	23%	26%	9%	17%	7%	12%
Turn Type	Perm	Perm	NA	Perm	Prot	NA
Protected Phases			2		1	6
Permitted Phases	8	8		2		
Actuated Green, G (s)	11.5	11.5	32.6	32.6	1.9	39.1
Effective Green, g (s)	11.5	11.5	32.6	32.6	1.9	39.1
Actuated g/C Ratio	0.19	0.19	0.53	0.53	0.03	0.63
Clearance Time (s)	5.2	5.2	5.8	5.8	4.6	5.8
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0	3.0
Lane Grp Cap (vph)	273	239	1752	712	52	2045
v/s Ratio Prot			c0.24		c0.03	0.21
v/s Ratio Perm	c0.06	0.00		0.08		
v/c Ratio	0.34	0.03	0.44	0.14	0.83	0.33
Uniform Delay, d1	21.8	20.5	8.9	7.4	29.7	5.2
Progression Factor	1.00	1.00	1.00	1.00	1.00	1.00
Incremental Delay, d2	0.7	0.0	0.8	0.4	64.4	0.4
Delay (s)	22.5	20.5	9.7	7.8	94.1	5.6
Level of Service	C	C	A	A	F	A
Approach Delay (s)	22.0		9.4			10.9
Approach LOS	C		A			B

Intersection Summary			
HCM 2000 Control Delay	10.9	HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio	0.43		
Actuated Cycle Length (s)	61.6	Sum of lost time (s)	15.6
Intersection Capacity Utilization	46.0%	ICU Level of Service	A
Analysis Period (min)	15		
c Critical Lane Group			

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	45	169	36	249	125	748	48	783	219	326	299	47
Future Volume (vph)	45	169	36	249	125	748	48	783	219	326	299	47
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.6	5.2		4.6	5.2	4.6	4.6	5.4	4.6	4.6	5.8	
Lane Util. Factor	1.00	0.95		0.97	1.00	1.00	1.00	0.91	1.00	0.97	0.95	
Frpb, ped/bikes	1.00	1.00		1.00	1.00	1.00	1.00	1.00	0.99	1.00	1.00	
Flpb, ped/bikes	1.00	1.00		1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	
Frt	1.00	0.97		1.00	1.00	0.85	1.00	1.00	0.85	1.00	0.98	
Flt Protected	0.95	1.00		0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	
Satd. Flow (prot)	1211	2280		3019	1357	1495	1318	4673	1238	3242	2998	
Flt Permitted	0.95	1.00		0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	
Satd. Flow (perm)	1211	2280		3019	1357	1495	1318	4673	1238	3242	2998	
Peak-hour factor, PHF	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91
Adj. Flow (vph)	49	186	40	274	137	822	53	860	241	358	329	52
RTOR Reduction (vph)	0	17	0	0	0	101	0	0	137	0	9	0
Lane Group Flow (vph)	49	209	0	274	137	721	53	860	104	358	372	0
Confl. Peds. (#/hr)									1	1		
Confl. Bikes (#/hr)			1									3
Heavy Vehicles (%)	49%	55%	48%	16%	40%	8%	37%	11%	29%	8%	15%	34%
Turn Type	Prot	NA		Prot	NA	pm+ov	Prot	NA	pm+ov	Prot	NA	
Protected Phases	7	4		3	8	1	5	2	3	1	6	
Permitted Phases						8			2			
Actuated Green, G (s)	8.4	20.6		6.4	18.6	40.1	4.9	40.2	46.6	21.5	56.4	
Effective Green, g (s)	8.4	20.6		6.4	18.6	40.1	4.9	40.2	46.6	21.5	56.4	
Actuated g/C Ratio	0.08	0.19		0.06	0.17	0.37	0.05	0.37	0.43	0.20	0.52	
Clearance Time (s)	4.6	5.2		4.6	5.2	4.6	4.6	5.4	4.6	4.6	5.8	
Vehicle Extension (s)	3.0	3.0		3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	
Lane Grp Cap (vph)	93	432		178	232	552	59	1731	531	642	1558	
v/s Ratio Prot	0.04	0.09		c0.09	0.10	c0.26	0.04	c0.18	0.01	0.11	0.12	
v/s Ratio Perm						0.22			0.07			
v/c Ratio	0.53	0.48		1.54	0.59	1.31	0.90	0.50	0.19	0.56	0.24	
Uniform Delay, d1	48.1	39.2		51.0	41.4	34.2	51.6	26.3	19.3	39.2	14.3	
Progression Factor	1.00	1.00		1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	
Incremental Delay, d2	5.3	0.9		268.8	4.0	150.6	80.5	1.0	0.2	1.1	0.4	
Delay (s)	53.4	40.1		319.8	45.4	184.8	132.0	27.4	19.5	40.3	14.6	
Level of Service	D	D		F	D	F	F	C	B	D	B	
Approach Delay (s)		42.4			199.3			30.5			27.1	
Approach LOS		D			F			C			C	

Intersection Summary			
HCM 2000 Control Delay	91.9	HCM 2000 Level of Service	F
HCM 2000 Volume to Capacity ratio	0.93		
Actuated Cycle Length (s)	108.5	Sum of lost time (s)	20.2
Intersection Capacity Utilization	95.1%	ICU Level of Service	F
Analysis Period (min)	15		
c Critical Lane Group			

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	45	169	36	249	125	748	48	783	219	326	299	47
Future Volume (veh/h)	45	169	36	249	125	748	48	783	219	326	299	47
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		0.99	1.00		1.00	1.00		1.00	1.00		0.98
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1174	1085	1189	1663	1307	1781	1352	1737	1470	1781	1678	1396
Adj Flow Rate, veh/h	49	186	40	274	137	822	53	860	241	358	329	52
Peak Hour Factor	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91
Percent Heavy Veh, %	49	55	48	16	40	8	37	11	29	8	15	34
Cap, veh/h	54	395	83	180	319	567	61	1858	561	433	1310	205
Arrive On Green	0.05	0.23	0.23	0.06	0.24	0.24	0.05	0.39	0.39	0.13	0.48	0.48
Sat Flow, veh/h	1118	1691	355	3072	1307	1510	1287	4742	1245	3291	2752	430
Grp Volume(v), veh/h	49	112	114	274	137	822	53	860	241	358	189	192
Grp Sat Flow(s),veh/h/ln	1118	1031	1015	1536	1307	1510	1287	1581	1245	1646	1594	1588
Q Serve(g_s), s	4.8	10.2	10.6	6.4	9.7	26.7	4.5	14.7	14.4	11.6	7.7	7.9
Cycle Q Clear(g_c), s	4.8	10.2	10.6	6.4	9.7	26.7	4.5	14.7	14.4	11.6	7.7	7.9
Prop In Lane	1.00		0.35	1.00		1.00	1.00		1.00	1.00		0.27
Lane Grp Cap(c), veh/h	54	241	237	180	319	567	61	1858	561	433	759	756
V/C Ratio(X)	0.91	0.46	0.48	1.53	0.43	1.45	0.87	0.46	0.43	0.83	0.25	0.25
Avail Cap(c_a), veh/h	150	330	325	180	319	567	74	1858	561	643	759	756
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	51.9	36.0	36.2	51.5	35.0	34.2	51.8	24.7	20.5	46.3	17.1	17.1
Incr Delay (d2), s/veh	37.4	1.4	1.5	262.6	0.9	212.5	55.8	0.8	2.4	5.7	0.8	0.8
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	1.9	2.6	2.7	9.0	3.1	47.9	2.3	5.4	4.4	5.0	2.9	2.9
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	89.3	37.4	37.7	314.2	35.9	246.7	107.6	25.6	22.9	52.0	17.8	17.9
LnGrp LOS	F	D	D	F	D	F	F	C	C	D	B	B
Approach Vol, veh/h		275			1233			1154			739	
Approach Delay, s/veh		46.8			238.3			28.8			34.4	
Approach LOS		D			F			C			C	

Timer - Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	19.0	48.7	11.0	30.8	9.8	57.9	9.9	31.9
Change Period (Y+Rc), s	4.6	* 5.8	4.6	5.2	4.6	5.8	4.6	5.2
Max Green Setting (Gmax), s	21.4	* 37	6.4	35.0	6.3	52.1	14.7	26.7
Max Q Clear Time (g_c+I1), s	13.6	16.7	8.4	12.6	6.5	9.9	6.8	28.7
Green Ext Time (p_c), s	0.8	6.5	0.0	1.3	0.0	2.3	0.0	0.0

Intersection Summary	
HCM 6th Ctrl Delay	107.4
HCM 6th LOS	F

Notes

User approved pedestrian interval to be less than phase max green.

* HCM 6th computational engine requires equal clearance times for the phases crossing the barrier.

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	0	851	510	0	1167	408	0	0	0	212	0	601
Future Volume (vph)	0	851	510	0	1167	408	0	0	0	212	0	601
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		5.0	5.0		5.0	5.0				5.8	5.8	5.8
Lane Util. Factor		0.91	1.00		0.95	1.00				0.95	0.91	0.95
Frpb, ped/bikes		1.00	0.97		1.00	0.98				1.00	1.00	1.00
Flpb, ped/bikes		1.00	1.00		1.00	1.00				1.00	1.00	1.00
Frt		1.00	0.85		1.00	0.85				1.00	0.86	0.85
Flt Protected		1.00	1.00		1.00	1.00				0.95	1.00	1.00
Satd. Flow (prot)		4803	1355		3312	1488				1618	1386	1434
Flt Permitted		1.00	1.00		1.00	1.00				0.95	1.00	1.00
Satd. Flow (perm)		4803	1355		3312	1488				1618	1386	1434
Peak-hour factor, PHF	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97
Adj. Flow (vph)	0	877	526	0	1203	421	0	0	0	219	0	620
RTOR Reduction (vph)	0	0	267	0	0	214	0	0	0	0	32	32
Lane Group Flow (vph)	0	877	259	0	1203	207	0	0	0	197	288	290
Confl. Peds. (#/hr)	2		7	7		2						
Confl. Bikes (#/hr)						1						
Heavy Vehicles (%)	0%	8%	16%	0%	9%	6%	0%	0%	0%	6%	0%	7%
Turn Type		NA	Perm		NA	Perm				Split	NA	Perm
Protected Phases		2			6					4	4	
Permitted Phases			2			6						4
Actuated Green, G (s)		28.2	28.2		28.2	28.2				18.3	18.3	18.3
Effective Green, g (s)		28.2	28.2		28.2	28.2				18.3	18.3	18.3
Actuated g/C Ratio		0.49	0.49		0.49	0.49				0.32	0.32	0.32
Clearance Time (s)		5.0	5.0		5.0	5.0				5.8	5.8	5.8
Vehicle Extension (s)		3.0	3.0		3.0	3.0				3.0	3.0	3.0
Lane Grp Cap (vph)		2363	666		1629	732				516	442	457
v/s Ratio Prot		0.18			c0.36					0.12	c0.21	
v/s Ratio Perm			0.19			0.14						0.20
v/c Ratio		0.37	0.39		0.74	0.28				0.38	0.65	0.63
Uniform Delay, d1		9.0	9.1		11.6	8.6				15.1	16.8	16.6
Progression Factor		1.00	1.00		1.00	1.00				1.00	1.00	1.00
Incremental Delay, d2		0.1	0.4		1.8	0.2				2.1	7.3	6.6
Delay (s)		9.1	9.5		13.4	8.8				17.3	24.0	23.2
Level of Service		A	A		B	A				B	C	C
Approach Delay (s)		9.3			12.2			0.0			22.1	
Approach LOS		A			B			A			C	

Intersection Summary			
HCM 2000 Control Delay	13.3	HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio	0.70		
Actuated Cycle Length (s)	57.3	Sum of lost time (s)	10.8
Intersection Capacity Utilization	66.1%	ICU Level of Service	C
Analysis Period (min)	15		
c Critical Lane Group			

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	0	569	495	0	1116	539	452	0	240	0	0	0
Future Volume (vph)	0	569	495	0	1116	539	452	0	240	0	0	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		5.0	4.0		5.0	5.0	5.8	5.8	5.8			
Lane Util. Factor		0.95	1.00		0.95	1.00	0.95	0.91	0.95			
Frpb, ped/bikes		1.00	0.98		1.00	0.98	1.00	1.00	1.00			
Flpb, ped/bikes		1.00	1.00		1.00	1.00	1.00	1.00	1.00			
Frt		1.00	0.85		1.00	0.85	1.00	0.98	0.85			
Flt Protected		1.00	1.00		1.00	1.00	0.95	0.96	1.00			
Satd. Flow (prot)		3471	1420		3438	1533	1504	1440	1447			
Flt Permitted		1.00	1.00		1.00	1.00	0.95	0.96	1.00			
Satd. Flow (perm)		3471	1420		3438	1533	1504	1440	1447			
Peak-hour factor, PHF	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97
Adj. Flow (vph)	0	587	510	0	1151	556	466	0	247	0	0	0
RTOR Reduction (vph)	0	0	0	0	0	290	0	24	148	0	0	0
Lane Group Flow (vph)	0	587	510	0	1151	266	247	220	74	0	0	0
Confl. Peds. (#/hr)	2		7	7		2						
Confl. Bikes (#/hr)			1									
Heavy Vehicles (%)	0%	4%	11%	0%	5%	3%	14%	0%	6%	0%	0%	0%
Turn Type		NA	Free		NA	Perm	Perm	NA	Perm			
Protected Phases		2			6			8				
Permitted Phases			Free			6	8		8			
Actuated Green, G (s)		27.6	57.7		27.6	27.6	19.3	19.3	19.3			
Effective Green, g (s)		27.6	57.7		27.6	27.6	19.3	19.3	19.3			
Actuated g/C Ratio		0.48	1.00		0.48	0.48	0.33	0.33	0.33			
Clearance Time (s)		5.0			5.0	5.0	5.8	5.8	5.8			
Vehicle Extension (s)		3.0			3.0	3.0	3.0	3.0	3.0			
Lane Grp Cap (vph)		1660	1420		1644	733	503	481	484			
v/s Ratio Prot		0.17			c0.33							
v/s Ratio Perm			0.36			0.17	c0.16	0.15	0.05			
v/c Ratio		0.35	0.36		0.70	0.36	0.49	0.46	0.15			
Uniform Delay, d1		9.4	0.0		11.8	9.5	15.3	15.1	13.5			
Progression Factor		1.00	1.00		1.00	1.00	1.00	1.00	1.00			
Incremental Delay, d2		0.1	0.7		1.4	0.3	3.4	3.1	0.7			
Delay (s)		9.6	0.7		13.2	9.8	18.7	18.2	14.1			
Level of Service		A	A		B	A	B	B	B			
Approach Delay (s)		5.5			12.1			17.1			0.0	
Approach LOS		A			B			B			A	

Intersection Summary			
HCM 2000 Control Delay	11.0	HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio	0.61		
Actuated Cycle Length (s)	57.7	Sum of lost time (s)	10.8
Intersection Capacity Utilization	57.6%	ICU Level of Service	B
Analysis Period (min)	15		
c Critical Lane Group			

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	93	639	1	57	754	368	11	29	76	53	6	8
Future Volume (vph)	93	639	1	57	754	368	11	29	76	53	6	8
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		5.8		4.6	5.0	4.6	4.6	5.0	5.0	4.6	5.0	5.0
Lane Util. Factor		0.91		1.00	0.91	1.00	1.00	0.86	0.86	1.00	0.95	1.00
Frpb, ped/bikes		1.00		1.00	1.00	1.00	1.00	0.99	0.99	1.00	1.00	1.00
Flpb, ped/bikes		1.00		1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Frt		1.00		1.00	1.00	0.85	1.00	0.91	0.85	1.00	1.00	0.85
Flt Protected		0.99		0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (prot)		4800		1656	4940	1495	1081	4224	1280	1719	3610	1214
Flt Permitted		0.72		0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (perm)		3499		1656	4940	1495	1081	4224	1280	1719	3610	1214
Peak-hour factor, PHF	0.87	0.87	0.87	0.87	0.87	0.87	0.87	0.87	0.87	0.87	0.87	0.87
Adj. Flow (vph)	107	734	1	66	867	423	13	33	87	61	7	9
RTOR Reduction (vph)	0	0	0	0	0	240	0	26	25	0	0	5
Lane Group Flow (vph)	0	842	0	66	867	183	13	51	18	61	7	4
Confl. Peds. (#/hr)									2	2		
Heavy Vehicles (%)	3%	8%	0%	9%	5%	8%	67%	3%	7%	5%	0%	33%
Turn Type	pm+pt	NA		Prot	NA	pm+ov	Prot	NA	Perm	Prot	NA	Perm
Protected Phases	7	4		3	8	1	5	2		1	6	
Permitted Phases	4					8			2			6
Actuated Green, G (s)		27.8		4.1	37.3	42.4	0.9	41.1	41.1	5.1	45.3	45.3
Effective Green, g (s)		27.8		4.1	37.3	42.4	0.9	41.1	41.1	5.1	45.3	45.3
Actuated g/C Ratio		0.28		0.04	0.38	0.43	0.01	0.42	0.42	0.05	0.46	0.46
Clearance Time (s)		5.8		4.6	5.0	4.6	4.6	5.0	5.0	4.6	5.0	5.0
Vehicle Extension (s)		3.0		3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0
Lane Grp Cap (vph)		991		69	1878	646	9	1769	536	89	1667	560
v/s Ratio Prot				c0.04	0.18	0.01	0.01	0.01		c0.04	0.00	
v/s Ratio Perm		c0.24				0.11			c0.01			c0.00
v/c Ratio		0.85		0.96	0.46	0.28	1.44	0.03	0.03	0.69	0.00	0.01
Uniform Delay, d1		33.2		46.9	22.9	18.0	48.6	16.8	16.8	45.7	14.2	14.3
Progression Factor		1.00		1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Incremental Delay, d2		6.9		92.3	0.2	0.2	474.2	0.0	0.1	19.7	0.0	0.0
Delay (s)		40.1		139.2	23.0	18.3	522.8	16.8	16.9	65.4	14.2	14.3
Level of Service		D		F	C	B	F	B	B	E	B	B
Approach Delay (s)		40.1			27.2			66.3			54.7	
Approach LOS		D			C			E			D	

Intersection Summary			
HCM 2000 Control Delay	34.8	HCM 2000 Level of Service	C
HCM 2000 Volume to Capacity ratio	0.40		
Actuated Cycle Length (s)	98.1	Sum of lost time (s)	20.0
Intersection Capacity Utilization	80.7%	ICU Level of Service	D
Analysis Period (min)	15		

c Critical Lane Group

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (veh/h)	4	10	858	12	6	991
Future Volume (Veh/h)	4	10	858	12	6	991
Sign Control	Stop		Free			Free
Grade	0%		0%			0%
Peak Hour Factor	0.93	0.93	0.93	0.93	0.93	0.93
Hourly flow rate (vph)	4	11	923	13	6	1066
Pedestrians	4					
Lane Width (ft)	12.0					
Walking Speed (ft/s)	3.5					
Percent Blockage	0					
Right turn flare (veh)						
Median type			TWLTL			TWLTL
Median storage veh)			2			2
Upstream signal (ft)			750			512
pX, platoon unblocked	0.88	0.93			0.93	
vC, conflicting volume	1478	472			940	
vC1, stage 1 conf vol	934					
vC2, stage 2 conf vol	545					
vCu, unblocked vol	905	280			783	
tC, single (s)	6.8	6.9			4.1	
tC, 2 stage (s)	5.8					
tF (s)	3.5	3.3			2.2	
p0 queue free %	99	98			99	
cM capacity (veh/h)	371	670			781	

Direction, Lane #	WB 1	NB 1	NB 2	SB 1	SB 2	SB 3
Volume Total	15	615	321	6	533	533
Volume Left	4	0	0	6	0	0
Volume Right	11	0	13	0	0	0
cSH	551	1700	1700	781	1700	1700
Volume to Capacity	0.03	0.36	0.19	0.01	0.31	0.31
Queue Length 95th (ft)	2	0	0	1	0	0
Control Delay (s)	11.7	0.0	0.0	9.6	0.0	0.0
Lane LOS	B			A		
Approach Delay (s)	11.7	0.0		0.1		
Approach LOS	B					

Intersection Summary			
Average Delay	0.1		
Intersection Capacity Utilization	37.4%	ICU Level of Service	A
Analysis Period (min)	15		

Intersection	
Int Delay, s/veh	0.2

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Vol, veh/h	4	10	858	12	6	991
Future Vol, veh/h	4	10	858	12	6	991
Conflicting Peds, #/hr	0	0	0	4	4	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	-	50	-
Veh in Median Storage, #	2	-	0	-	-	0
Grade, %	0	-	0	-	-	0
Peak Hour Factor	93	93	93	93	93	93
Heavy Vehicles, %	0	0	7	8	0	6
Mvmt Flow	4	11	923	13	6	1066

Major/Minor	Minor1		Major1		Major2	
Conflicting Flow All	1479	472	0	0	940	0
Stage 1	934	-	-	-	-	-
Stage 2	545	-	-	-	-	-
Critical Hdwy	6.8	6.9	-	-	4.1	-
Critical Hdwy Stg 1	5.8	-	-	-	-	-
Critical Hdwy Stg 2	5.8	-	-	-	-	-
Follow-up Hdwy	3.5	3.3	-	-	2.2	-
Pot Cap-1 Maneuver	119	544	-	-	737	-
Stage 1	348	-	-	-	-	-
Stage 2	551	-	-	-	-	-
Platoon blocked, %			-	-		-
Mov Cap-1 Maneuver	118	542	-	-	734	-
Mov Cap-2 Maneuver	295	-	-	-	-	-
Stage 1	347	-	-	-	-	-
Stage 2	547	-	-	-	-	-

Approach	WB	NB	SB
HCM Control Delay, s	13.5	0	0.1
HCM LOS	B		

Minor Lane/Major Mvmt	NBT	NBR	WBLn1	SBL	SBT
Capacity (veh/h)	-	-	437	734	-
HCM Lane V/C Ratio	-	-	0.034	0.009	-
HCM Control Delay (s)	-	-	13.5	9.9	-
HCM Lane LOS	-	-	B	A	-
HCM 95th %tile Q(veh)	-	-	0.1	0	-

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Volume (veh/h)	38	0	0	37	14	3
Future Volume (Veh/h)	38	0	0	37	14	3
Sign Control		Stop	Stop		Free	
Grade		0%	0%		0%	
Peak Hour Factor	0.89	0.89	0.89	0.89	0.89	0.89
Hourly flow rate (vph)	43	0	0	42	16	3
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type					None	
Median storage veh)						
Upstream signal (ft)						
pX, platoon unblocked						
vC, conflicting volume	76	34	35	0	0	
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	76	34	35	0	0	
tC, single (s)	7.1	6.5	6.5	6.2	4.1	
tC, 2 stage (s)						
tF (s)	3.5	4.0	4.0	3.3	2.2	
p0 queue free %	95	100	100	96	99	
cM capacity (veh/h)	870	849	847	1082	1617	

Direction, Lane #	EB 1	WB 1	SB 1
Volume Total	43	42	19
Volume Left	43	0	16
Volume Right	0	42	3
cSH	870	1082	1617
Volume to Capacity	0.05	0.04	0.01
Queue Length 95th (ft)	4	3	1
Control Delay (s)	9.4	8.5	6.1
Lane LOS	A	A	A
Approach Delay (s)	9.4	8.5	6.1
Approach LOS	A	A	

Intersection Summary			
Average Delay	8.4		
Intersection Capacity Utilization	18.8%	ICU Level of Service	A
Analysis Period (min)	15		

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Volume (veh/h)	138	1	16	153	39	34
Future Volume (Veh/h)	138	1	16	153	39	34
Sign Control	Free			Free	Stop	
Grade	0%			0%	0%	
Peak Hour Factor	0.89	0.89	0.89	0.89	0.89	0.89
Hourly flow rate (vph)	155	1	18	172	44	38
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type	None			None		
Median storage veh)						
Upstream signal (ft)	426					
pX, platoon unblocked						
vC, conflicting volume			156		364	156
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol			156		364	156
tC, single (s)			4.1		6.4	6.2
tC, 2 stage (s)						
tF (s)			2.2		3.5	3.3
p0 queue free %			99		93	96
cM capacity (veh/h)			1412		624	890

Direction, Lane #	EB 1	WB 1	NB 1
Volume Total	156	190	82
Volume Left	0	18	44
Volume Right	1	0	38
cSH	1700	1412	724
Volume to Capacity	0.09	0.01	0.11
Queue Length 95th (ft)	0	1	10
Control Delay (s)	0.0	0.8	10.6
Lane LOS		A	B
Approach Delay (s)	0.0	0.8	10.6
Approach LOS			B

Intersection Summary			
Average Delay	2.4		
Intersection Capacity Utilization	30.5%	ICU Level of Service	A
Analysis Period (min)	15		

Intersection	
Int Delay, s/veh	2.3

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Vol, veh/h	138	1	16	153	39	34
Future Vol, veh/h	138	1	16	153	39	34
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	0	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	89	89	89	89	89	89
Heavy Vehicles, %	26	24	4	6	4	2
Mvmt Flow	155	1	18	172	44	38

Major/Minor	Major1		Major2		Minor1	
Conflicting Flow All	0	0	156	0	364	156
Stage 1	-	-	-	-	156	-
Stage 2	-	-	-	-	208	-
Critical Hdwy	-	-	4.14	-	6.44	6.22
Critical Hdwy Stg 1	-	-	-	-	5.44	-
Critical Hdwy Stg 2	-	-	-	-	5.44	-
Follow-up Hdwy	-	-	2.236	-	3.536	3.318
Pot Cap-1 Maneuver	-	-	1412	-	631	890
Stage 1	-	-	-	-	867	-
Stage 2	-	-	-	-	822	-
Platoon blocked, %	-	-		-		
Mov Cap-1 Maneuver	-	-	1412	-	622	890
Mov Cap-2 Maneuver	-	-	-	-	622	-
Stage 1	-	-	-	-	867	-
Stage 2	-	-	-	-	810	-

Approach	EB	WB	NB
HCM Control Delay, s	0	0.7	10.6
HCM LOS			B

Minor Lane/Major Mvmt	NBLn1	EBT	EBR	WBL	WBT
Capacity (veh/h)	723	-	-	1412	-
HCM Lane V/C Ratio	0.113	-	-	0.013	-
HCM Control Delay (s)	10.6	-	-	7.6	0
HCM Lane LOS	B	-	-	A	A
HCM 95th %tile Q(veh)	0.4	-	-	0	-

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (vph)	154	80	830	142	15	1111
Future Volume (vph)	154	80	830	142	15	1111
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost time (s)	5.2	5.2	5.8	5.8	4.6	5.8
Lane Util. Factor	1.00	1.00	0.95	1.00	1.00	0.95
Frpb, ped/bikes	1.00	1.00	1.00	0.98	1.00	1.00
Flpb, ped/bikes	1.00	1.00	1.00	1.00	1.00	1.00
Frt	1.00	0.85	1.00	0.85	1.00	1.00
Flt Protected	0.95	1.00	1.00	1.00	0.95	1.00
Satd. Flow (prot)	1641	1538	3505	1260	1504	3374
Flt Permitted	0.95	1.00	1.00	1.00	0.95	1.00
Satd. Flow (perm)	1641	1538	3505	1260	1504	3374
Peak-hour factor, PHF	0.84	0.84	0.84	0.84	0.84	0.84
Adj. Flow (vph)	183	95	988	169	18	1323
RTOR Reduction (vph)	0	79	0	75	0	0
Lane Group Flow (vph)	183	16	988	94	18	1323
Confl. Peds. (#/hr)				1	1	
Confl. Bikes (#/hr)				5		
Heavy Vehicles (%)	10%	5%	3%	25%	20%	7%
Turn Type	Perm	Perm	NA	Perm	Prot	NA
Protected Phases			2		1	6
Permitted Phases	8	8		2		
Actuated Green, G (s)	9.9	9.9	33.0	33.0	0.9	38.5
Effective Green, g (s)	9.9	9.9	33.0	33.0	0.9	38.5
Actuated g/C Ratio	0.17	0.17	0.56	0.56	0.02	0.65
Clearance Time (s)	5.2	5.2	5.8	5.8	4.6	5.8
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0	3.0
Lane Grp Cap (vph)	273	256	1947	700	22	2186
v/s Ratio Prot			0.28		0.01	c0.39
v/s Ratio Perm	c0.11	0.01		0.07		
v/c Ratio	0.67	0.06	0.51	0.13	0.82	0.61
Uniform Delay, d1	23.2	20.8	8.2	6.3	29.2	6.1
Progression Factor	1.00	1.00	1.00	1.00	1.00	1.00
Incremental Delay, d2	6.3	0.1	0.9	0.4	109.6	1.3
Delay (s)	29.5	20.9	9.1	6.7	138.7	7.3
Level of Service	C	C	A	A	F	A
Approach Delay (s)	26.6		8.8			9.1
Approach LOS	C		A			A

Intersection Summary			
HCM 2000 Control Delay	10.7	HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio	0.68		
Actuated Cycle Length (s)	59.4	Sum of lost time (s)	15.6
Intersection Capacity Utilization	48.4%	ICU Level of Service	A
Analysis Period (min)	15		
c Critical Lane Group			

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	61	116	44	180	76	458	18	422	230	606	772	40
Future Volume (vph)	61	116	44	180	76	458	18	422	230	606	772	40
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.6	5.2		4.6	5.2	4.6	4.6	5.4	4.6	4.6	5.8	
Lane Util. Factor	1.00	0.95		0.97	1.00	1.00	1.00	0.91	1.00	0.97	0.95	
Frpb, ped/bikes	1.00	1.00		1.00	1.00	1.00	1.00	1.00	0.99	1.00	1.00	
Flpb, ped/bikes	1.00	1.00		1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	
Frt	1.00	0.96		1.00	1.00	0.85	1.00	1.00	0.85	1.00	0.99	
Flt Protected	0.95	1.00		0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	
Satd. Flow (prot)	1188	2886		3045	1226	1568	1543	5036	1474	3335	3274	
Flt Permitted	0.95	1.00		0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	
Satd. Flow (perm)	1188	2886		3045	1226	1568	1543	5036	1474	3335	3274	
Peak-hour factor, PHF	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88
Adj. Flow (vph)	69	132	50	205	86	520	20	480	261	689	877	45
RTOR Reduction (vph)	0	37	0	0	0	145	0	0	146	0	2	0
Lane Group Flow (vph)	69	145	0	205	86	375	20	480	115	689	920	0
Confl. Peds. (#/hr)			5	5					2	2		
Confl. Bikes (#/hr)			1						5			1
Heavy Vehicles (%)	52%	18%	23%	15%	55%	3%	17%	3%	8%	5%	7%	55%
Turn Type	Prot	NA		Prot	NA	pm+ov	Prot	NA	pm+ov	Prot	NA	
Protected Phases	7	4		3	8	1	5	2	3	1	6	
Permitted Phases						8			2			
Actuated Green, G (s)	9.5	20.6		6.5	17.6	39.2	2.3	42.3	48.8	21.6	61.2	
Effective Green, g (s)	9.5	20.6		6.5	17.6	39.2	2.3	42.3	48.8	21.6	61.2	
Actuated g/C Ratio	0.09	0.19		0.06	0.16	0.35	0.02	0.38	0.44	0.19	0.55	
Clearance Time (s)	4.6	5.2		4.6	5.2	4.6	4.6	5.4	4.6	4.6	5.8	
Vehicle Extension (s)	3.0	3.0		3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	
Lane Grp Cap (vph)	101	536		178	194	554	32	1922	649	650	1808	
v/s Ratio Prot	0.06	c0.05		c0.07	0.07	c0.13	0.01	0.10	0.01	c0.21	c0.28	
v/s Ratio Perm						0.11			0.07			
v/c Ratio	0.68	0.27		1.15	0.44	0.68	0.62	0.25	0.18	1.06	0.51	
Uniform Delay, d1	49.2	38.7		52.1	42.2	30.4	53.8	23.4	18.8	44.6	15.4	
Progression Factor	1.00	1.00		1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	
Incremental Delay, d2	17.4	0.3		114.2	1.6	3.3	32.4	0.3	0.1	52.3	1.0	
Delay (s)	66.6	38.9		166.3	43.8	33.7	86.2	23.7	18.9	96.9	16.5	
Level of Service	E	D		F	D	C	F	C	B	F	B	
Approach Delay (s)		46.5			68.3			23.7			50.9	
Approach LOS		D			E			C			D	

Intersection Summary			
HCM 2000 Control Delay	48.6	HCM 2000 Level of Service	D
HCM 2000 Volume to Capacity ratio	0.72		
Actuated Cycle Length (s)	110.8	Sum of lost time (s)	20.2
Intersection Capacity Utilization	83.5%	ICU Level of Service	E
Analysis Period (min)	15		
c Critical Lane Group			

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	61	116	44	180	76	458	18	422	230	606	772	40
Future Volume (veh/h)	61	116	44	180	76	458	18	422	230	606	772	40
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		0.98	1.00		0.99	1.00		0.98	1.00		0.98
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1129	1633	1559	1678	1085	1856	1648	1856	1781	1826	1796	1085
Adj Flow Rate, veh/h	69	132	50	205	86	520	20	480	261	689	877	45
Peak Hour Factor	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88
Percent Heavy Veh, %	52	18	23	15	55	3	17	3	8	5	7	55
Cap, veh/h	78	556	201	174	254	661	32	1663	572	634	1634	84
Arrive On Green	0.07	0.25	0.25	0.06	0.23	0.23	0.02	0.33	0.33	0.19	0.50	0.50
Sat Flow, veh/h	1076	2220	802	3100	1085	1562	1570	5066	1484	3374	3298	169
Grp Volume(v), veh/h	69	90	92	205	86	520	20	480	261	689	454	468
Grp Sat Flow(s),veh/h/ln	1076	1552	1471	1550	1085	1562	1570	1689	1484	1687	1706	1761
Q Serve(g_s), s	7.2	5.3	5.7	6.4	7.5	26.7	1.4	8.0	15.0	21.4	20.8	20.8
Cycle Q Clear(g_c), s	7.2	5.3	5.7	6.4	7.5	26.7	1.4	8.0	15.0	21.4	20.8	20.8
Prop In Lane	1.00		0.55	1.00		1.00	1.00		1.00	1.00		0.10
Lane Grp Cap(c), veh/h	78	389	369	174	254	661	32	1663	572	634	845	872
V/C Ratio(X)	0.89	0.23	0.25	1.18	0.34	0.79	0.62	0.29	0.46	1.09	0.54	0.54
Avail Cap(c_a), veh/h	139	477	452	174	254	661	87	1663	572	634	845	872
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	52.4	34.0	34.1	53.8	36.3	28.5	55.4	28.4	26.2	46.3	19.8	19.8
Incr Delay (d2), s/veh	25.8	0.3	0.3	124.1	0.8	6.2	17.7	0.4	2.6	61.9	2.4	2.4
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	2.5	2.0	2.1	5.5	2.0	13.0	0.7	3.2	5.6	14.2	8.4	8.6
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	78.1	34.3	34.5	177.8	37.1	34.8	73.1	28.8	28.8	108.1	22.2	22.1
LnGrp LOS	E	C	C	F	D	C	E	C	C	F	C	C
Approach Vol, veh/h		251			811			761			1611	
Approach Delay, s/veh		46.4			71.2			30.0			58.9	
Approach LOS		D			E			C			E	

Timer - Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	26.0	43.2	11.0	33.8	6.9	62.3	12.9	31.9
Change Period (Y+Rc), s	4.6	* 5.8	4.6	5.2	4.6	5.8	4.6	5.2
Max Green Setting (Gmax), s	21.4	* 37	6.4	35.0	6.3	52.1	14.7	26.7
Max Q Clear Time (g_c+I1), s	23.4	17.0	8.4	7.7	3.4	22.8	9.2	28.7
Green Ext Time (p_c), s	0.0	3.8	0.0	1.1	0.0	6.2	0.1	0.0

Intersection Summary	
HCM 6th Ctrl Delay	54.5
HCM 6th LOS	D

Notes

User approved pedestrian interval to be less than phase max green.

* HCM 6th computational engine requires equal clearance times for the phases crossing the barrier.

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	0	1284	666	0	916	433	0	0	0	414	0	595
Future Volume (vph)	0	1284	666	0	916	433	0	0	0	414	0	595
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		5.0	5.0		5.0	5.0				5.8	5.8	5.8
Lane Util. Factor		0.91	1.00		0.95	1.00				0.95	0.91	0.95
Frpb, ped/bikes		1.00	0.98		1.00	0.98				1.00	1.00	1.00
Flpb, ped/bikes		1.00	1.00		1.00	1.00				1.00	1.00	1.00
Frt		1.00	0.85		1.00	0.85				1.00	0.88	0.85
Flt Protected		1.00	1.00		1.00	1.00				0.95	0.99	1.00
Satd. Flow (prot)		5085	1515		3505	1563				1698	1432	1447
Flt Permitted		1.00	1.00		1.00	1.00				0.95	0.99	1.00
Satd. Flow (perm)		5085	1515		3505	1563				1698	1432	1447
Peak-hour factor, PHF	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97
Adj. Flow (vph)	0	1324	687	0	944	446	0	0	0	427	0	613
RTOR Reduction (vph)	0	0	395	0	0	256	0	0	0	0	36	36
Lane Group Flow (vph)	0	1324	292	0	944	190	0	0	0	363	304	301
Confl. Peds. (#/hr)	1		4	4		1						
Confl. Bikes (#/hr)						1						
Heavy Vehicles (%)	0%	2%	4%	0%	3%	1%	0%	0%	0%	1%	0%	6%
Turn Type		NA	Perm		NA	Perm				Split	NA	Perm
Protected Phases		2			6					4	4	
Permitted Phases			2			6						4
Actuated Green, G (s)		25.2	25.2		25.2	25.2				23.2	23.2	23.2
Effective Green, g (s)		25.2	25.2		25.2	25.2				23.2	23.2	23.2
Actuated g/C Ratio		0.43	0.43		0.43	0.43				0.39	0.39	0.39
Clearance Time (s)		5.0	5.0		5.0	5.0				5.8	5.8	5.8
Vehicle Extension (s)		3.0	3.0		3.0	3.0				3.0	3.0	3.0
Lane Grp Cap (vph)		2164	644		1491	665				665	561	567
v/s Ratio Prot		0.26			c0.27					c0.21	0.21	
v/s Ratio Perm			0.19			0.12						0.21
v/c Ratio		0.61	0.45		0.63	0.29				0.55	0.54	0.53
Uniform Delay, d1		13.2	12.1		13.4	11.1				13.9	13.9	13.8
Progression Factor		1.00	1.00		1.00	1.00				1.00	1.00	1.00
Incremental Delay, d2		0.5	0.5		0.9	0.2				3.2	3.7	3.5
Delay (s)		13.7	12.6		14.3	11.4				17.1	17.6	17.4
Level of Service		B	B		B	B				B	B	B
Approach Delay (s)		13.3			13.3			0.0			17.4	
Approach LOS		B			B			A			B	

Intersection Summary			
HCM 2000 Control Delay	14.3	HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio	0.59		
Actuated Cycle Length (s)	59.2	Sum of lost time (s)	10.8
Intersection Capacity Utilization	68.2%	ICU Level of Service	C
Analysis Period (min)	15		
c Critical Lane Group			

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	0	1128	570	0	931	361	417	0	486	0	0	0
Future Volume (vph)	0	1128	570	0	931	361	417	0	486	0	0	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		5.0	4.0		5.0	5.0	5.8	5.8	5.8			
Lane Util. Factor		0.95	1.00		0.95	1.00	0.95	0.91	0.95			
Frpb, ped/bikes		1.00	0.98		1.00	0.98	1.00	1.00	1.00			
Flpb, ped/bikes		1.00	1.00		1.00	1.00	1.00	1.00	1.00			
Frt		1.00	0.85		1.00	0.85	1.00	0.90	0.85			
Flt Protected		1.00	1.00		1.00	1.00	0.95	0.98	1.00			
Satd. Flow (prot)		3539	1547		3574	1550	1618	1493	1519			
Flt Permitted		1.00	1.00		1.00	1.00	0.95	0.98	1.00			
Satd. Flow (perm)		3539	1547		3574	1550	1618	1493	1519			
Peak-hour factor, PHF	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98
Adj. Flow (vph)	0	1151	582	0	950	368	426	0	496	0	0	0
RTOR Reduction (vph)	0	0	0	0	0	218	0	21	21	0	0	0
Lane Group Flow (vph)	0	1151	582	0	950	150	319	284	277	0	0	0
Confl. Peds. (#/hr)	1		5	5		1						
Confl. Bikes (#/hr)			1									
Heavy Vehicles (%)	0%	2%	2%	0%	1%	2%	6%	0%	1%	0%	0%	0%
Turn Type		NA	Free		NA	Perm	Perm	NA	Perm			
Protected Phases		2			6			8				
Permitted Phases			Free			6	8		8			
Actuated Green, G (s)		24.2	59.3		24.2	24.2	24.3	24.3	24.3			
Effective Green, g (s)		24.2	59.3		24.2	24.2	24.3	24.3	24.3			
Actuated g/C Ratio		0.41	1.00		0.41	0.41	0.41	0.41	0.41			
Clearance Time (s)		5.0			5.0	5.0	5.8	5.8	5.8			
Vehicle Extension (s)		3.0			3.0	3.0	3.0	3.0	3.0			
Lane Grp Cap (vph)		1444	1547		1458	632	663	611	622			
v/s Ratio Prot		c0.33			0.27							
v/s Ratio Perm			0.38			0.10	c0.20	0.19	0.18			
v/c Ratio		0.80	0.38		0.65	0.24	0.48	0.46	0.44			
Uniform Delay, d1		15.4	0.0		14.2	11.5	12.9	12.8	12.6			
Progression Factor		1.00	1.00		1.00	1.00	1.00	1.00	1.00			
Incremental Delay, d2		3.2	0.7		1.1	0.2	2.5	2.5	2.3			
Delay (s)		18.5	0.7		15.2	11.7	15.4	15.3	14.9			
Level of Service		B	A		B	B	B	B	B			
Approach Delay (s)		12.6			14.2			15.2			0.0	
Approach LOS		B			B			B			A	

Intersection Summary			
HCM 2000 Control Delay	13.7	HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio	0.64		
Actuated Cycle Length (s)	59.3	Sum of lost time (s)	10.8
Intersection Capacity Utilization	60.2%	ICU Level of Service	B
Analysis Period (min)	15		
c Critical Lane Group			

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	71	911	7	74	512	267	10	74	146	68	24	4
Future Volume (vph)	71	911	7	74	512	267	10	74	146	68	24	4
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		5.8		4.6	5.0	4.6	4.6	5.0	5.0	4.6	5.0	5.0
Lane Util. Factor		0.91		1.00	0.91	1.00	1.00	0.86	0.86	1.00	0.95	1.00
Frpb, ped/bikes		1.00		1.00	1.00	1.00	1.00	0.99	0.99	1.00	1.00	0.99
Flpb, ped/bikes		1.00		1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Frt		1.00		1.00	1.00	0.85	1.00	0.93	0.85	1.00	1.00	0.85
Flt Protected		1.00		0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (prot)		4837		1752	4715	1482	1253	4232	1318	1770	3505	1274
Flt Permitted		0.82		0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (perm)		3969		1752	4715	1482	1253	4232	1318	1770	3505	1274
Peak-hour factor, PHF	0.86	0.86	0.86	0.86	0.86	0.86	0.86	0.86	0.86	0.86	0.86	0.86
Adj. Flow (vph)	83	1059	8	86	595	310	12	86	170	79	28	5
RTOR Reduction (vph)	0	1	0	0	0	166	0	52	52	0	0	3
Lane Group Flow (vph)	0	1149	0	86	595	144	12	119	33	79	28	2
Confl. Peds. (#/hr)							2		1	1		2
Heavy Vehicles (%)	4%	7%	0%	3%	10%	9%	44%	9%	4%	2%	3%	25%
Turn Type	pm+pt	NA		Prot	NA	pm+ov	Prot	NA	Perm	Prot	NA	Perm
Protected Phases	7	4		3	8	1	5	2		1	6	
Permitted Phases	4					8			2			6
Actuated Green, G (s)		31.8		5.6	42.8	48.0	1.0	40.7	40.7	5.2	44.9	44.9
Effective Green, g (s)		31.8		5.6	42.8	48.0	1.0	40.7	40.7	5.2	44.9	44.9
Actuated g/C Ratio		0.31		0.05	0.41	0.46	0.01	0.39	0.39	0.05	0.43	0.43
Clearance Time (s)		5.8		4.6	5.0	4.6	4.6	5.0	5.0	4.6	5.0	5.0
Vehicle Extension (s)		3.0		3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0
Lane Grp Cap (vph)		1221		94	1953	688	12	1667	519	89	1523	553
v/s Ratio Prot				c0.05	0.13	0.01	0.01	c0.03		c0.04	c0.01	
v/s Ratio Perm		c0.29				0.09			0.03			0.00
v/c Ratio		0.94		0.91	0.30	0.21	1.00	0.07	0.06	0.89	0.02	0.00
Uniform Delay, d1		34.8		48.6	20.3	16.4	51.1	19.5	19.5	48.8	16.6	16.5
Progression Factor		1.00		1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Incremental Delay, d2		14.0		65.2	0.1	0.2	259.8	0.1	0.2	59.4	0.0	0.0
Delay (s)		48.8		113.8	20.4	16.5	311.0	19.6	19.7	108.1	16.7	16.5
Level of Service		D		F	C	B	F	B	B	F	B	B
Approach Delay (s)		48.8			27.3			32.7			81.2	
Approach LOS		D			C			C			F	

Intersection Summary			
HCM 2000 Control Delay	40.1	HCM 2000 Level of Service	D
HCM 2000 Volume to Capacity ratio	0.49		
Actuated Cycle Length (s)	103.3	Sum of lost time (s)	20.0
Intersection Capacity Utilization	81.1%	ICU Level of Service	D
Analysis Period (min)	15		

c Critical Lane Group

HCM Unsignalized Intersection Capacity Analysis
1: Doolittle Dr & West Project Dwy

12/04/2023

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (veh/h)	14	2	890	11	18	1147
Future Volume (Veh/h)	14	2	890	11	18	1147
Sign Control	Stop		Free			Free
Grade	0%		0%			0%
Peak Hour Factor	0.88	0.88	0.88	0.88	0.88	0.88
Hourly flow rate (vph)	16	2	1011	12	20	1303
Pedestrians	1					
Lane Width (ft)	12.0					
Walking Speed (ft/s)	3.5					
Percent Blockage	0					
Right turn flare (veh)						
Median type			TWLTL			TWLTL
Median storage veh)			2			2
Upstream signal (ft)			750			512
pX, platoon unblocked	0.93	0.88			0.88	
vC, conflicting volume	1710	512			1024	
vC1, stage 1 conf vol	1018					
vC2, stage 2 conf vol	692					
vCu, unblocked vol	1154	175			756	
tC, single (s)	6.8	6.9			4.1	
tC, 2 stage (s)	5.8					
tF (s)	3.5	3.3			2.2	
p0 queue free %	95	100			97	
cM capacity (veh/h)	338	743			760	

Direction, Lane #	WB 1	NB 1	NB 2	SB 1	SB 2	SB 3
Volume Total	18	674	349	20	652	652
Volume Left	16	0	0	20	0	0
Volume Right	2	0	12	0	0	0
cSH	360	1700	1700	760	1700	1700
Volume to Capacity	0.05	0.40	0.21	0.03	0.38	0.38
Queue Length 95th (ft)	4	0	0	2	0	0
Control Delay (s)	15.5	0.0	0.0	9.9	0.0	0.0
Lane LOS	C			A		
Approach Delay (s)	15.5	0.0		0.1		
Approach LOS	C					

Intersection Summary			
Average Delay	0.2		
Intersection Capacity Utilization	41.7%	ICU Level of Service	A
Analysis Period (min)	15		

Intersection	
Int Delay, s/veh	0.3

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Vol, veh/h	14	2	890	11	18	1147
Future Vol, veh/h	14	2	890	11	18	1147
Conflicting Peds, #/hr	0	0	0	1	1	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	-	50	-
Veh in Median Storage, #	2	-	0	-	-	0
Grade, %	0	-	0	-	-	0
Peak Hour Factor	88	88	88	88	88	88
Heavy Vehicles, %	0	0	14	9	0	17
Mvmt Flow	16	2	1011	13	20	1303

Major/Minor	Minor1		Major1		Major2	
Conflicting Flow All	1711	513	0	0	1025	0
Stage 1	1019	-	-	-	-	-
Stage 2	692	-	-	-	-	-
Critical Hdwy	6.8	6.9	-	-	4.1	-
Critical Hdwy Stg 1	5.8	-	-	-	-	-
Critical Hdwy Stg 2	5.8	-	-	-	-	-
Follow-up Hdwy	3.5	3.3	-	-	2.2	-
Pot Cap-1 Maneuver	83	512	-	-	685	-
Stage 1	314	-	-	-	-	-
Stage 2	463	-	-	-	-	-
Platoon blocked, %			-	-		-
Mov Cap-1 Maneuver	81	512	-	-	684	-
Mov Cap-2 Maneuver	255	-	-	-	-	-
Stage 1	314	-	-	-	-	-
Stage 2	450	-	-	-	-	-

Approach	WB	NB	SB
HCM Control Delay, s	19.2	0	0.2
HCM LOS	C		

Minor Lane/Major Mvmt	NBT	NBR	WBLn1	SBL	SBT
Capacity (veh/h)	-	-	272	684	-
HCM Lane V/C Ratio	-	-	0.067	0.03	-
HCM Control Delay (s)	-	-	19.2	10.4	-
HCM Lane LOS	-	-	C	B	-
HCM 95th %tile Q(veh)	-	-	0.2	0.1	-

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Volume (veh/h)	10	0	0	10	46	12
Future Volume (Veh/h)	10	0	0	10	46	12
Sign Control		Stop	Stop		Free	
Grade		0%	0%		0%	
Peak Hour Factor	0.86	0.86	0.86	0.86	0.86	0.86
Hourly flow rate (vph)	12	0	0	12	53	14
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type					None	
Median storage veh)						
Upstream signal (ft)						
pX, platoon unblocked						
vC, conflicting volume	125	113	120	0	0	
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	125	113	120	0	0	
tC, single (s)	7.2	6.7	6.7	6.4	4.2	
tC, 2 stage (s)						
tF (s)	3.6	4.1	4.1	3.4	2.3	
p0 queue free %	98	100	100	99	97	
cM capacity (veh/h)	789	728	721	1048	1542	

Direction, Lane #	EB 1	WB 1	SB 1
Volume Total	12	12	67
Volume Left	12	0	53
Volume Right	0	12	14
cSH	789	1048	1542
Volume to Capacity	0.02	0.01	0.03
Queue Length 95th (ft)	1	1	3
Control Delay (s)	9.6	8.5	5.9
Lane LOS	A	A	A
Approach Delay (s)	9.6	8.5	5.9
Approach LOS	A	A	

Intersection Summary			
Average Delay	6.7		
Intersection Capacity Utilization	17.2%	ICU Level of Service	A
Analysis Period (min)	15		

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Volume (veh/h)	247	52	15	102	6	14
Future Volume (Veh/h)	247	52	15	102	6	14
Sign Control	Free			Free	Stop	
Grade	0%			0%	0%	
Peak Hour Factor	0.86	0.86	0.86	0.86	0.86	0.86
Hourly flow rate (vph)	287	60	17	119	7	16
Pedestrians				1		
Lane Width (ft)				12.0		
Walking Speed (ft/s)				3.5		
Percent Blockage				0		
Right turn flare (veh)						
Median type	None			None		
Median storage veh)						
Upstream signal (ft)	426					
pX, platoon unblocked						
vC, conflicting volume			347		470	318
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol			347		470	318
tC, single (s)			4.1		6.5	6.4
tC, 2 stage (s)						
tF (s)			2.2		3.6	3.5
p0 queue free %			99		99	98
cM capacity (veh/h)			1201		530	682

Direction, Lane #	EB 1	WB 1	NB 1
Volume Total	347	136	23
Volume Left	0	17	7
Volume Right	60	0	16
cSH	1700	1201	627
Volume to Capacity	0.20	0.01	0.04
Queue Length 95th (ft)	0	1	3
Control Delay (s)	0.0	1.1	11.0
Lane LOS		A	B
Approach Delay (s)	0.0	1.1	11.0
Approach LOS			B

Intersection Summary			
Average Delay	0.8		
Intersection Capacity Utilization	28.4%	ICU Level of Service	A
Analysis Period (min)	15		

Intersection	
Int Delay, s/veh	0.8

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Vol, veh/h	247	52	15	102	6	14
Future Vol, veh/h	247	52	15	102	6	14
Conflicting Peds, #/hr	0	0	0	0	0	1
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	0	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	86	86	86	86	86	86
Heavy Vehicles, %	8	2	4	14	10	20
Mvmt Flow	287	60	17	119	7	16

Major/Minor	Major1		Major2		Minor1	
Conflicting Flow All	0	0	347	0	470	318
Stage 1	-	-	-	-	317	-
Stage 2	-	-	-	-	153	-
Critical Hdwy	-	-	4.14	-	6.5	6.4
Critical Hdwy Stg 1	-	-	-	-	5.5	-
Critical Hdwy Stg 2	-	-	-	-	5.5	-
Follow-up Hdwy	-	-	2.236	-	3.59	3.48
Pot Cap-1 Maneuver	-	-	1201	-	538	683
Stage 1	-	-	-	-	721	-
Stage 2	-	-	-	-	856	-
Platoon blocked, %	-	-		-		
Mov Cap-1 Maneuver	-	-	1201	-	530	682
Mov Cap-2 Maneuver	-	-	-	-	530	-
Stage 1	-	-	-	-	721	-
Stage 2	-	-	-	-	843	-

Approach	EB	WB	NB
HCM Control Delay, s	0	1	11
HCM LOS			B

Minor Lane/Major Mvmt	NBLn1	EBT	EBR	WBL	WBT
Capacity (veh/h)	628	-	-	1201	-
HCM Lane V/C Ratio	0.037	-	-	0.015	-
HCM Control Delay (s)	11	-	-	8	0
HCM Lane LOS	B	-	-	A	A
HCM 95th %tile Q(veh)	0.1	-	-	0	-

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (vph)	88	57	791	195	41	712
Future Volume (vph)	88	57	791	195	41	712
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost time (s)	5.2	5.2	5.8	5.8	4.6	5.8
Lane Util. Factor	1.00	1.00	0.95	1.00	1.00	0.95
Frpb, ped/bikes	1.00	1.00	1.00	0.98	1.00	1.00
Flpb, ped/bikes	1.00	1.00	1.00	1.00	1.00	1.00
Frt	1.00	0.85	1.00	0.85	1.00	1.00
Flt Protected	0.95	1.00	1.00	1.00	0.95	1.00
Satd. Flow (prot)	1467	1282	3312	1346	1687	3223
Flt Permitted	0.95	1.00	1.00	1.00	0.95	1.00
Satd. Flow (perm)	1467	1282	3312	1346	1687	3223
Peak-hour factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95
Adj. Flow (vph)	93	60	833	205	43	749
RTOR Reduction (vph)	0	49	0	97	0	0
Lane Group Flow (vph)	93	11	833	108	43	749
Confl. Peds. (#/hr)	1			2		
Confl. Bikes (#/hr)				3		
Heavy Vehicles (%)	23%	26%	9%	17%	7%	12%
Turn Type	Perm	Perm	NA	Perm	Prot	NA
Protected Phases			2		1	6
Permitted Phases	8	8		2		
Actuated Green, G (s)	11.5	11.5	32.6	32.6	1.9	39.1
Effective Green, g (s)	11.5	11.5	32.6	32.6	1.9	39.1
Actuated g/C Ratio	0.19	0.19	0.53	0.53	0.03	0.63
Clearance Time (s)	5.2	5.2	5.8	5.8	4.6	5.8
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0	3.0
Lane Grp Cap (vph)	273	239	1752	712	52	2045
v/s Ratio Prot			c0.25		c0.03	0.23
v/s Ratio Perm	c0.06	0.01		0.08		
v/c Ratio	0.34	0.05	0.48	0.15	0.83	0.37
Uniform Delay, d1	21.8	20.6	9.1	7.4	29.7	5.4
Progression Factor	1.00	1.00	1.00	1.00	1.00	1.00
Incremental Delay, d2	0.7	0.1	0.9	0.5	64.4	0.5
Delay (s)	22.5	20.6	10.0	7.9	94.1	5.9
Level of Service	C	C	B	A	F	A
Approach Delay (s)	21.8		9.6			10.7
Approach LOS	C		A			B

Intersection Summary			
HCM 2000 Control Delay	11.0	HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio	0.46		
Actuated Cycle Length (s)	61.6	Sum of lost time (s)	15.6
Intersection Capacity Utilization	47.4%	ICU Level of Service	A
Analysis Period (min)	15		
c Critical Lane Group			

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	49	169	36	275	125	760	48	825	246	367	326	58
Future Volume (vph)	49	169	36	275	125	760	48	825	246	367	326	58
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.6	5.2		4.6	5.2	4.6	4.6	5.4	4.6	4.6	5.8	
Lane Util. Factor	1.00	0.95		0.97	1.00	1.00	1.00	0.91	1.00	0.97	0.95	
Frpb, ped/bikes	1.00	1.00		1.00	1.00	1.00	1.00	1.00	0.99	1.00	1.00	
Flpb, ped/bikes	1.00	1.00		1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	
Frt	1.00	0.97		1.00	1.00	0.85	1.00	1.00	0.85	1.00	0.98	
Flt Protected	0.95	1.00		0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	
Satd. Flow (prot)	1211	2280		3019	1357	1495	1318	4673	1238	3242	2983	
Flt Permitted	0.95	1.00		0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	
Satd. Flow (perm)	1211	2280		3019	1357	1495	1318	4673	1238	3242	2983	
Peak-hour factor, PHF	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91
Adj. Flow (vph)	54	186	40	302	137	835	53	907	270	403	358	64
RTOR Reduction (vph)	0	17	0	0	0	94	0	0	154	0	10	0
Lane Group Flow (vph)	54	209	0	302	137	741	53	907	116	403	412	0
Confl. Peds. (#/hr)									1	1		
Confl. Bikes (#/hr)			1									3
Heavy Vehicles (%)	49%	55%	48%	16%	40%	8%	37%	11%	29%	8%	15%	34%
Turn Type	Prot	NA		Prot	NA	pm+ov	Prot	NA	pm+ov	Prot	NA	
Protected Phases	7	4		3	8	1	5	2	3	1	6	
Permitted Phases						8			2			
Actuated Green, G (s)	8.7	20.9		6.4	18.6	40.1	4.9	40.2	46.6	21.5	56.4	
Effective Green, g (s)	8.7	20.9		6.4	18.6	40.1	4.9	40.2	46.6	21.5	56.4	
Actuated g/C Ratio	0.08	0.19		0.06	0.17	0.37	0.05	0.37	0.43	0.20	0.52	
Clearance Time (s)	4.6	5.2		4.6	5.2	4.6	4.6	5.4	4.6	4.6	5.8	
Vehicle Extension (s)	3.0	3.0		3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	
Lane Grp Cap (vph)	96	437		177	231	551	59	1726	530	640	1546	
v/s Ratio Prot	0.04	0.09		c0.10	0.10	c0.27	0.04	c0.19	0.01	0.12	0.14	
v/s Ratio Perm						0.23			0.08			
v/c Ratio	0.56	0.48		1.71	0.59	1.34	0.90	0.53	0.22	0.63	0.27	
Uniform Delay, d1	48.2	39.1		51.2	41.6	34.3	51.7	26.8	19.6	40.0	14.6	
Progression Factor	1.00	1.00		1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	
Incremental Delay, d2	7.3	0.8		340.7	4.0	166.9	80.5	1.1	0.2	1.9	0.4	
Delay (s)	55.6	39.9		391.9	45.7	201.3	132.2	28.0	19.8	41.9	15.1	
Level of Service	E	D		F	D	F	F	C	B	D	B	
Approach Delay (s)		42.9			229.7			30.7			28.2	
Approach LOS		D			F			C			C	

Intersection Summary			
HCM 2000 Control Delay	101.3	HCM 2000 Level of Service	F
HCM 2000 Volume to Capacity ratio	0.97		
Actuated Cycle Length (s)	108.8	Sum of lost time (s)	20.2
Intersection Capacity Utilization	95.9%	ICU Level of Service	F
Analysis Period (min)	15		
c Critical Lane Group			

HCM 6th Signalized Intersection Summary
5: Doolittle Dr & Davis St

12/04/2023

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	49	169	36	275	125	760	48	825	246	367	326	58
Future Volume (veh/h)	49	169	36	275	125	760	48	825	246	367	326	58
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		0.99	1.00		1.00	1.00		1.00	1.00		0.98
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1174	1085	1189	1663	1307	1781	1352	1737	1470	1781	1678	1396
Adj Flow Rate, veh/h	54	186	40	302	137	835	53	907	270	403	358	64
Peak Hour Factor	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91
Percent Heavy Veh, %	49	55	48	16	40	8	37	11	29	8	15	34
Cap, veh/h	60	403	85	179	317	584	61	1781	540	476	1275	225
Arrive On Green	0.05	0.24	0.24	0.06	0.24	0.24	0.05	0.38	0.38	0.14	0.47	0.47
Sat Flow, veh/h	1118	1691	355	3072	1307	1510	1287	4742	1245	3291	2696	477
Grp Volume(v), veh/h	54	112	114	302	137	835	53	907	270	403	210	212
Grp Sat Flow(s),veh/h/ln	1118	1031	1015	1536	1307	1510	1287	1581	1245	1646	1594	1578
Q Serve(g_s), s	5.3	10.2	10.6	6.4	9.8	26.7	4.5	16.3	17.3	13.1	8.8	9.0
Cycle Q Clear(g_c), s	5.3	10.2	10.6	6.4	9.8	26.7	4.5	16.3	17.3	13.1	8.8	9.0
Prop In Lane	1.00		0.35	1.00		1.00	1.00		1.00	1.00		0.30
Lane Grp Cap(c), veh/h	60	245	242	179	317	584	61	1781	540	476	754	747
V/C Ratio(X)	0.90	0.45	0.47	1.69	0.43	1.43	0.87	0.51	0.50	0.85	0.28	0.28
Avail Cap(c_a), veh/h	149	327	323	179	317	584	74	1781	540	639	754	747
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	51.8	35.9	36.0	51.9	35.3	33.8	52.1	26.5	22.5	45.9	17.6	17.7
Incr Delay (d2), s/veh	32.9	1.3	1.4	334.3	0.9	202.8	56.1	1.0	3.3	7.9	0.9	1.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	2.0	2.6	2.7	10.7	3.2	47.8	2.4	6.0	5.4	5.8	3.3	3.3
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	84.7	37.2	37.5	386.2	36.2	236.5	108.3	27.6	25.8	53.8	18.5	18.6
LnGrp LOS	F	D	D	F	D	F	F	C	C	D	B	B
Approach Vol, veh/h		280			1274			1230			825	
Approach Delay, s/veh		46.4			250.5			30.7			35.8	
Approach LOS		D			F			C			D	

Timer - Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	20.5	47.2	11.0	31.4	9.8	57.9	10.5	31.9
Change Period (Y+Rc), s	4.6	* 5.8	4.6	5.2	4.6	5.8	4.6	5.2
Max Green Setting (Gmax), s	21.4	* 37	6.4	35.0	6.3	52.1	14.7	26.7
Max Q Clear Time (g_c+I1), s	15.1	19.3	8.4	12.6	6.5	11.0	7.3	28.7
Green Ext Time (p_c), s	0.8	6.6	0.0	1.3	0.0	2.6	0.0	0.0

Intersection Summary	
HCM 6th Ctrl Delay	110.7
HCM 6th LOS	F

Notes

User approved pedestrian interval to be less than phase max green.

* HCM 6th computational engine requires equal clearance times for the phases crossing the barrier.

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	0	899	526	9	1192	429	0	0	0	263	0	614
Future Volume (vph)	0	899	526	9	1192	429	0	0	0	263	0	614
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		5.0	5.0		5.0	5.0				5.8	5.8	5.8
Lane Util. Factor		0.91	1.00		0.95	1.00				0.95	0.91	0.95
Frpb, ped/bikes		1.00	0.97		1.00	0.98				1.00	1.00	1.00
Flpb, ped/bikes		1.00	1.00		1.00	1.00				1.00	1.00	1.00
Frt		1.00	0.85		1.00	0.85				1.00	0.86	0.85
Flt Protected		1.00	1.00		1.00	1.00				0.95	1.00	1.00
Satd. Flow (prot)		4803	1355		3313	1488				1618	1389	1434
Flt Permitted		1.00	1.00		0.95	1.00				0.95	1.00	1.00
Satd. Flow (perm)		4803	1355		3139	1488				1618	1389	1434
Peak-hour factor, PHF	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97
Adj. Flow (vph)	0	927	542	9	1229	442	0	0	0	271	0	633
RTOR Reduction (vph)	0	0	270	0	0	220	0	0	0	0	30	30
Lane Group Flow (vph)	0	927	272	0	1238	222	0	0	0	244	301	299
Confl. Peds. (#/hr)	2		7	7		2						
Confl. Bikes (#/hr)						1						
Heavy Vehicles (%)	0%	8%	16%	0%	9%	6%	0%	0%	0%	6%	0%	7%
Turn Type		NA	Perm	Perm	NA	Perm				Split	NA	Perm
Protected Phases		2			6					4	4	
Permitted Phases			2	6		6						4
Actuated Green, G (s)		29.3	29.3		29.3	29.3				18.3	18.3	18.3
Effective Green, g (s)		29.3	29.3		29.3	29.3				18.3	18.3	18.3
Actuated g/C Ratio		0.50	0.50		0.50	0.50				0.31	0.31	0.31
Clearance Time (s)		5.0	5.0		5.0	5.0				5.8	5.8	5.8
Vehicle Extension (s)		3.0	3.0		3.0	3.0				3.0	3.0	3.0
Lane Grp Cap (vph)		2409	679		1574	746				507	435	449
v/s Ratio Prot		0.19								0.15	c0.22	
v/s Ratio Perm			0.20		c0.39	0.15						0.21
v/c Ratio		0.38	0.40		0.79	0.30				0.48	0.69	0.67
Uniform Delay, d1		9.0	9.1		12.0	8.5				16.2	17.6	17.4
Progression Factor		1.00	1.00		1.00	1.00				1.00	1.00	1.00
Incremental Delay, d2		0.1	0.4		2.7	0.2				3.2	8.7	7.6
Delay (s)		9.1	9.5		14.6	8.7				19.5	26.3	25.0
Level of Service		A	A		B	A				B	C	C
Approach Delay (s)		9.2			13.1			0.0			24.0	
Approach LOS		A			B			A			C	

Intersection Summary			
HCM 2000 Control Delay	14.1	HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio	0.75		
Actuated Cycle Length (s)	58.4	Sum of lost time (s)	10.8
Intersection Capacity Utilization	93.2%	ICU Level of Service	F
Analysis Period (min)	15		
c Critical Lane Group			

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	0	650	509	3	1155	560	480	0	291	0	0	0
Future Volume (vph)	0	650	509	3	1155	560	480	0	291	0	0	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		5.0	4.0		5.0	5.0	5.8	5.8	5.8			
Lane Util. Factor		0.95	1.00		0.95	1.00	0.95	0.91	0.95			
Frpb, ped/bikes		1.00	0.98		1.00	0.98	1.00	1.00	1.00			
Flpb, ped/bikes		1.00	1.00		1.00	1.00	1.00	1.00	1.00			
Frt		1.00	0.85		1.00	0.85	1.00	0.97	0.85			
Flt Protected		1.00	1.00		1.00	1.00	0.95	0.96	1.00			
Satd. Flow (prot)		3471	1420		3438	1533	1504	1435	1447			
Flt Permitted		1.00	1.00		0.95	1.00	0.95	0.96	1.00			
Satd. Flow (perm)		3471	1420		3279	1533	1504	1435	1447			
Peak-hour factor, PHF	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97
Adj. Flow (vph)	0	670	525	3	1191	577	495	0	300	0	0	0
RTOR Reduction (vph)	0	0	0	0	0	296	0	24	121	0	0	0
Lane Group Flow (vph)	0	670	525	0	1194	281	272	250	128	0	0	0
Confl. Peds. (#/hr)	2		7	7		2						
Confl. Bikes (#/hr)			1									
Heavy Vehicles (%)	0%	4%	11%	0%	5%	3%	14%	0%	6%	0%	0%	0%
Turn Type		NA	Free	Perm	NA	Perm	Perm	NA	Perm			
Protected Phases		2			6			8				
Permitted Phases			Free	6		6	8		8			
Actuated Green, G (s)		28.5	58.6		28.5	28.5	19.3	19.3	19.3			
Effective Green, g (s)		28.5	58.6		28.5	28.5	19.3	19.3	19.3			
Actuated g/C Ratio		0.49	1.00		0.49	0.49	0.33	0.33	0.33			
Clearance Time (s)		5.0			5.0	5.0	5.8	5.8	5.8			
Vehicle Extension (s)		3.0			3.0	3.0	3.0	3.0	3.0			
Lane Grp Cap (vph)		1688	1420		1594	745	495	472	476			
v/s Ratio Prot		0.19										
v/s Ratio Perm			0.37		c0.36	0.18	c0.18	0.17	0.09			
v/c Ratio		0.40	0.37		0.75	0.38	0.55	0.53	0.27			
Uniform Delay, d1		9.6	0.0		12.2	9.5	16.1	16.0	14.5			
Progression Factor		1.00	1.00		1.00	1.00	1.00	1.00	1.00			
Incremental Delay, d2		0.2	0.7		2.0	0.3	4.3	4.2	1.4			
Delay (s)		9.7	0.7		14.1	9.8	20.4	20.2	15.8			
Level of Service		A	A		B	A	C	C	B			
Approach Delay (s)		5.8			12.7			18.9			0.0	
Approach LOS		A			B			B			A	

Intersection Summary			
HCM 2000 Control Delay	11.8	HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio	0.67		
Actuated Cycle Length (s)	58.6	Sum of lost time (s)	10.8
Intersection Capacity Utilization	60.1%	ICU Level of Service	B
Analysis Period (min)	15		
c Critical Lane Group			

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	99	639	1	57	754	374	11	33	79	53	13	8
Future Volume (vph)	99	639	1	57	754	374	11	33	79	53	13	8
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		5.8		4.6	5.0	4.6	4.6	5.0	5.0	4.6	5.0	5.0
Lane Util. Factor		0.91		1.00	0.91	1.00	1.00	0.86	0.86	1.00	0.95	1.00
Frpb, ped/bikes		1.00		1.00	1.00	1.00	1.00	0.99	0.99	1.00	1.00	1.00
Flpb, ped/bikes		1.00		1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Frt		1.00		1.00	1.00	0.85	1.00	0.92	0.85	1.00	1.00	0.85
Flt Protected		0.99		0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (prot)		4800		1656	4940	1495	1081	4246	1280	1719	3610	1214
Flt Permitted		0.72		0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (perm)		3479		1656	4940	1495	1081	4246	1280	1719	3610	1214
Peak-hour factor, PHF	0.87	0.87	0.87	0.87	0.87	0.87	0.87	0.87	0.87	0.87	0.87	0.87
Adj. Flow (vph)	114	734	1	66	867	430	13	38	91	61	15	9
RTOR Reduction (vph)	0	0	0	0	0	243	0	27	26	0	0	5
Lane Group Flow (vph)	0	849	0	66	867	187	13	57	19	61	15	4
Confl. Peds. (#/hr)									2	2		
Heavy Vehicles (%)	3%	8%	0%	9%	5%	8%	67%	3%	7%	5%	0%	33%
Turn Type	pm+pt	NA		Prot	NA	pm+ov	Prot	NA	Perm	Prot	NA	Perm
Protected Phases	7	4		3	8	1	5	2		1	6	
Permitted Phases	4					8			2			6
Actuated Green, G (s)		28.2		4.1	37.7	42.8	0.9	41.1	41.1	5.1	45.3	45.3
Effective Green, g (s)		28.2		4.1	37.7	42.8	0.9	41.1	41.1	5.1	45.3	45.3
Actuated g/C Ratio		0.29		0.04	0.38	0.43	0.01	0.42	0.42	0.05	0.46	0.46
Clearance Time (s)		5.8		4.6	5.0	4.6	4.6	5.0	5.0	4.6	5.0	5.0
Vehicle Extension (s)		3.0		3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0
Lane Grp Cap (vph)		996		68	1890	649	9	1771	534	89	1660	558
v/s Ratio Prot				c0.04	0.18	0.01	0.01	0.01		c0.04	c0.00	
v/s Ratio Perm		c0.24				0.11			c0.01			0.00
v/c Ratio		0.85		0.97	0.46	0.29	1.44	0.03	0.04	0.69	0.01	0.01
Uniform Delay, d1		33.2		47.1	22.8	18.0	48.8	17.0	17.0	45.9	14.4	14.4
Progression Factor		1.00		1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Incremental Delay, d2		7.2		98.5	0.2	0.2	474.2	0.0	0.1	19.7	0.0	0.0
Delay (s)		40.3		145.6	22.9	18.2	523.0	17.0	17.1	65.6	14.4	14.4
Level of Service		D		F	C	B	F	B	B	E	B	B
Approach Delay (s)		40.3			27.4			63.3			51.1	
Approach LOS		D			C			E			D	

Intersection Summary			
HCM 2000 Control Delay	34.8	HCM 2000 Level of Service	C
HCM 2000 Volume to Capacity ratio	0.40		
Actuated Cycle Length (s)	98.5	Sum of lost time (s)	20.0
Intersection Capacity Utilization	81.2%	ICU Level of Service	D
Analysis Period (min)	15		

c Critical Lane Group

HCM Unsignalized Intersection Capacity Analysis
1: Doolittle Dr & West Project Dwy

12/04/2023

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (veh/h)	4	10	920	12	6	1075
Future Volume (Veh/h)	4	10	920	12	6	1075
Sign Control	Stop		Free			Free
Grade	0%		0%			0%
Peak Hour Factor	0.93	0.93	0.93	0.93	0.93	0.93
Hourly flow rate (vph)	4	11	989	13	6	1156
Pedestrians	4					
Lane Width (ft)	12.0					
Walking Speed (ft/s)	3.5					
Percent Blockage	0					
Right turn flare (veh)						
Median type			TWLTL			TWLTL
Median storage veh)			2			2
Upstream signal (ft)			750			512
pX, platoon unblocked	0.82	0.92			0.92	
vC, conflicting volume	1590	505			1006	
vC1, stage 1 conf vol	1000					
vC2, stage 2 conf vol	590					
vCu, unblocked vol	858	295			838	
tC, single (s)	6.8	6.9			4.1	
tC, 2 stage (s)	5.8					
tF (s)	3.5	3.3			2.2	
p0 queue free %	99	98			99	
cM capacity (veh/h)	349	650			740	

Direction, Lane #	WB 1	NB 1	NB 2	SB 1	SB 2	SB 3
Volume Total	15	659	343	6	578	578
Volume Left	4	0	0	6	0	0
Volume Right	11	0	13	0	0	0
cSH	528	1700	1700	740	1700	1700
Volume to Capacity	0.03	0.39	0.20	0.01	0.34	0.34
Queue Length 95th (ft)	2	0	0	1	0	0
Control Delay (s)	12.0	0.0	0.0	9.9	0.0	0.0
Lane LOS	B			A		
Approach Delay (s)	12.0	0.0		0.1		
Approach LOS	B					

Intersection Summary			
Average Delay	0.1		
Intersection Capacity Utilization	39.7%	ICU Level of Service	A
Analysis Period (min)	15		

Intersection	
Int Delay, s/veh	0.2

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Vol, veh/h	4	10	920	12	6	1075
Future Vol, veh/h	4	10	920	12	6	1075
Conflicting Peds, #/hr	0	0	0	4	4	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	-	50	-
Veh in Median Storage, #	2	-	0	-	-	0
Grade, %	0	-	0	-	-	0
Peak Hour Factor	93	93	93	93	93	93
Heavy Vehicles, %	0	0	7	8	0	6
Mvmt Flow	4	11	989	13	6	1156

Major/Minor	Minor1		Major1		Major2	
Conflicting Flow All	1590	505	0	0	1006	0
Stage 1	1000	-	-	-	-	-
Stage 2	590	-	-	-	-	-
Critical Hdwy	6.8	6.9	-	-	4.1	-
Critical Hdwy Stg 1	5.8	-	-	-	-	-
Critical Hdwy Stg 2	5.8	-	-	-	-	-
Follow-up Hdwy	3.5	3.3	-	-	2.2	-
Pot Cap-1 Maneuver	100	518	-	-	697	-
Stage 1	321	-	-	-	-	-
Stage 2	522	-	-	-	-	-
Platoon blocked, %			-	-		-
Mov Cap-1 Maneuver	99	516	-	-	694	-
Mov Cap-2 Maneuver	271	-	-	-	-	-
Stage 1	320	-	-	-	-	-
Stage 2	517	-	-	-	-	-

Approach	WB	NB	SB
HCM Control Delay, s	14.1	0	0.1
HCM LOS	B		

Minor Lane/Major Mvmt	NBT	NBR	WBLn1	SBL	SBT
Capacity (veh/h)	-	-	410	694	-
HCM Lane V/C Ratio	-	-	0.037	0.009	-
HCM Control Delay (s)	-	-	14.1	10.2	-
HCM Lane LOS	-	-	B	B	-
HCM 95th %tile Q(veh)	-	-	0.1	0	-

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Volume (veh/h)	38	0	0	37	14	3
Future Volume (Veh/h)	38	0	0	37	14	3
Sign Control		Stop	Stop		Free	
Grade		0%	0%		0%	
Peak Hour Factor	0.89	0.89	0.89	0.89	0.89	0.89
Hourly flow rate (vph)	43	0	0	42	16	3
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type					None	
Median storage veh)						
Upstream signal (ft)						
pX, platoon unblocked						
vC, conflicting volume	76	34	35	0	0	
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	76	34	35	0	0	
tC, single (s)	7.1	6.5	6.5	6.2	4.1	
tC, 2 stage (s)						
tF (s)	3.5	4.0	4.0	3.3	2.2	
p0 queue free %	95	100	100	96	99	
cM capacity (veh/h)	870	849	847	1082	1617	

Direction, Lane #	EB 1	WB 1	SB 1
Volume Total	43	42	19
Volume Left	43	0	16
Volume Right	0	42	3
cSH	870	1082	1617
Volume to Capacity	0.05	0.04	0.01
Queue Length 95th (ft)	4	3	1
Control Delay (s)	9.4	8.5	6.1
Lane LOS	A	A	A
Approach Delay (s)	9.4	8.5	6.1
Approach LOS	A	A	

Intersection Summary			
Average Delay	8.4		
Intersection Capacity Utilization	18.8%	ICU Level of Service	A
Analysis Period (min)	15		

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Volume (veh/h)	138	1	23	153	39	34
Future Volume (Veh/h)	138	1	23	153	39	34
Sign Control	Free			Free	Stop	
Grade	0%			0%	0%	
Peak Hour Factor	0.89	0.89	0.89	0.89	0.89	0.89
Hourly flow rate (vph)	155	1	26	172	44	38
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type	None			None		
Median storage veh)						
Upstream signal (ft)	426					
pX, platoon unblocked						
vC, conflicting volume			156		380	156
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol			156		380	156
tC, single (s)			4.1		6.4	6.2
tC, 2 stage (s)						
tF (s)			2.2		3.5	3.3
p0 queue free %			98		93	96
cM capacity (veh/h)			1412		607	890

Direction, Lane #	EB 1	WB 1	NB 1
Volume Total	156	198	82
Volume Left	0	26	44
Volume Right	1	0	38
cSH	1700	1412	712
Volume to Capacity	0.09	0.02	0.12
Queue Length 95th (ft)	0	1	10
Control Delay (s)	0.0	1.1	10.7
Lane LOS		A	B
Approach Delay (s)	0.0	1.1	10.7
Approach LOS			B

Intersection Summary			
Average Delay	2.5		
Intersection Capacity Utilization	30.9%	ICU Level of Service	A
Analysis Period (min)	15		

Intersection	
Int Delay, s/veh	2.5

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Vol, veh/h	138	1	23	153	39	34
Future Vol, veh/h	138	1	23	153	39	34
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	0	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	89	89	89	89	89	89
Heavy Vehicles, %	26	24	4	6	4	2
Mvmt Flow	155	1	26	172	44	38

Major/Minor	Major1		Major2		Minor1	
Conflicting Flow All	0	0	156	0	380	156
Stage 1	-	-	-	-	156	-
Stage 2	-	-	-	-	224	-
Critical Hdwy	-	-	4.14	-	6.44	6.22
Critical Hdwy Stg 1	-	-	-	-	5.44	-
Critical Hdwy Stg 2	-	-	-	-	5.44	-
Follow-up Hdwy	-	-	2.236	-	3.536	3.318
Pot Cap-1 Maneuver	-	-	1412	-	618	890
Stage 1	-	-	-	-	867	-
Stage 2	-	-	-	-	809	-
Platoon blocked, %	-	-		-		
Mov Cap-1 Maneuver	-	-	1412	-	606	890
Mov Cap-2 Maneuver	-	-	-	-	606	-
Stage 1	-	-	-	-	867	-
Stage 2	-	-	-	-	793	-

Approach	EB	WB	NB
HCM Control Delay, s	0	1	10.7
HCM LOS			B

Minor Lane/Major Mvmt	NBLn1	EBT	EBR	WBL	WBT
Capacity (veh/h)	712	-	-	1412	-
HCM Lane V/C Ratio	0.115	-	-	0.018	-
HCM Control Delay (s)	10.7	-	-	7.6	0
HCM Lane LOS	B	-	-	A	A
HCM 95th %tile Q(veh)	0.4	-	-	0.1	-

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (vph)	154	101	885	149	15	1176
Future Volume (vph)	154	101	885	149	15	1176
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost time (s)	5.2	5.2	5.8	5.8	4.6	5.8
Lane Util. Factor	1.00	1.00	0.95	1.00	1.00	0.95
Frpb, ped/bikes	1.00	1.00	1.00	0.98	1.00	1.00
Flpb, ped/bikes	1.00	1.00	1.00	1.00	1.00	1.00
Frt	1.00	0.85	1.00	0.85	1.00	1.00
Flt Protected	0.95	1.00	1.00	1.00	0.95	1.00
Satd. Flow (prot)	1641	1538	3505	1260	1504	3374
Flt Permitted	0.95	1.00	1.00	1.00	0.95	1.00
Satd. Flow (perm)	1641	1538	3505	1260	1504	3374
Peak-hour factor, PHF	0.84	0.84	0.84	0.84	0.84	0.84
Adj. Flow (vph)	183	120	1054	177	18	1400
RTOR Reduction (vph)	0	96	0	85	0	0
Lane Group Flow (vph)	183	24	1054	92	18	1400
Confl. Peds. (#/hr)				1	1	
Confl. Bikes (#/hr)				5		
Heavy Vehicles (%)	10%	5%	3%	25%	20%	7%
Turn Type	Perm	Perm	NA	Perm	Prot	NA
Protected Phases			2		1	6
Permitted Phases	8	8		2		
Actuated Green, G (s)	12.1	12.1	30.8	30.8	0.9	36.3
Effective Green, g (s)	12.1	12.1	30.8	30.8	0.9	36.3
Actuated g/C Ratio	0.20	0.20	0.52	0.52	0.02	0.61
Clearance Time (s)	5.2	5.2	5.8	5.8	4.6	5.8
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0	3.0
Lane Grp Cap (vph)	334	313	1817	653	22	2061
v/s Ratio Prot			0.30		0.01	c0.41
v/s Ratio Perm	c0.11	0.02		0.07		
v/c Ratio	0.55	0.08	0.58	0.14	0.82	0.68
Uniform Delay, d1	21.2	19.1	9.8	7.4	29.2	7.7
Progression Factor	1.00	1.00	1.00	1.00	1.00	1.00
Incremental Delay, d2	1.8	0.1	1.4	0.5	109.6	1.8
Delay (s)	23.0	19.2	11.2	7.9	138.7	9.5
Level of Service	C	B	B	A	F	A
Approach Delay (s)	21.5		10.7			11.1
Approach LOS	C		B			B

Intersection Summary			
HCM 2000 Control Delay	12.0	HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio	0.71		
Actuated Cycle Length (s)	59.4	Sum of lost time (s)	15.6
Intersection Capacity Utilization	50.2%	ICU Level of Service	A
Analysis Period (min)	15		
c Critical Lane Group			

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	63	116	44	206	76	478	18	451	252	625	806	47
Future Volume (vph)	63	116	44	206	76	478	18	451	252	625	806	47
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.6	5.2		4.6	5.2	4.6	4.6	5.4	4.6	4.6	5.8	
Lane Util. Factor	1.00	0.95		0.97	1.00	1.00	1.00	0.91	1.00	0.97	0.95	
Frpb, ped/bikes	1.00	1.00		1.00	1.00	1.00	1.00	1.00	0.99	1.00	1.00	
Flpb, ped/bikes	1.00	1.00		1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	
Frt	1.00	0.96		1.00	1.00	0.85	1.00	1.00	0.85	1.00	0.99	
Flt Protected	0.95	1.00		0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	
Satd. Flow (prot)	1188	2886		3045	1226	1568	1543	5036	1474	3335	3262	
Flt Permitted	0.95	1.00		0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	
Satd. Flow (perm)	1188	2886		3045	1226	1568	1543	5036	1474	3335	3262	
Peak-hour factor, PHF	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88
Adj. Flow (vph)	72	132	50	234	86	543	20	512	286	710	916	53
RTOR Reduction (vph)	0	37	0	0	0	132	0	0	160	0	3	0
Lane Group Flow (vph)	72	145	0	234	86	411	20	513	126	710	966	0
Confl. Peds. (#/hr)			5	5					2	2		
Confl. Bikes (#/hr)			1						5			1
Heavy Vehicles (%)	52%	18%	23%	15%	55%	3%	17%	3%	8%	5%	7%	55%
Turn Type	Prot	NA		Prot	NA	pm+ov	Prot	NA	pm+ov	Prot	NA	
Protected Phases	7	4		3	8	1	5	2	3	1	6	
Permitted Phases						8			2			
Actuated Green, G (s)	9.7	20.9		6.5	17.7	39.3	2.3	42.3	48.8	21.6	61.2	
Effective Green, g (s)	9.7	20.9		6.5	17.7	39.3	2.3	42.3	48.8	21.6	61.2	
Actuated g/C Ratio	0.09	0.19		0.06	0.16	0.35	0.02	0.38	0.44	0.19	0.55	
Clearance Time (s)	4.6	5.2		4.6	5.2	4.6	4.6	5.4	4.6	4.6	5.8	
Vehicle Extension (s)	3.0	3.0		3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	
Lane Grp Cap (vph)	103	542		178	195	554	31	1917	647	648	1796	
v/s Ratio Prot	0.06	c0.05		c0.08	0.07	c0.14	0.01	0.10	0.01	c0.21	c0.30	
v/s Ratio Perm						0.12			0.07			
v/c Ratio	0.70	0.27		1.31	0.44	0.74	0.65	0.27	0.19	1.10	0.54	
Uniform Delay, d1	49.3	38.6		52.3	42.2	31.4	54.0	23.7	19.1	44.8	15.9	
Progression Factor	1.00	1.00		1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	
Incremental Delay, d2	18.7	0.3		175.6	1.6	5.3	37.9	0.3	0.1	64.3	1.2	
Delay (s)	68.0	38.8		227.9	43.8	36.7	91.9	24.1	19.2	109.1	17.1	
Level of Service	E	D		F	D	D	F	C	B	F	B	
Approach Delay (s)		47.1			89.3			24.0			56.0	
Approach LOS		D			F			C			E	

Intersection Summary			
HCM 2000 Control Delay	56.1	HCM 2000 Level of Service	E
HCM 2000 Volume to Capacity ratio	0.76		
Actuated Cycle Length (s)	111.1	Sum of lost time (s)	20.2
Intersection Capacity Utilization	84.8%	ICU Level of Service	E
Analysis Period (min)	15		
c Critical Lane Group			

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	63	116	44	206	76	478	18	451	252	625	806	47
Future Volume (veh/h)	63	116	44	206	76	478	18	451	252	625	806	47
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		0.98	1.00		0.99	1.00		0.98	1.00		0.98
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1129	1633	1559	1678	1085	1856	1648	1856	1781	1826	1796	1085
Adj Flow Rate, veh/h	72	132	50	234	86	543	20	512	286	710	916	53
Peak Hour Factor	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88
Percent Heavy Veh, %	52	18	23	15	55	3	17	3	8	5	7	55
Cap, veh/h	81	562	203	173	253	659	32	1657	570	631	1616	94
Arrive On Green	0.08	0.25	0.25	0.06	0.23	0.23	0.02	0.33	0.33	0.19	0.49	0.49
Sat Flow, veh/h	1076	2220	802	3100	1085	1562	1570	5066	1484	3374	3274	189
Grp Volume(v), veh/h	72	90	92	234	86	543	20	512	286	710	477	492
Grp Sat Flow(s),veh/h/ln	1076	1552	1471	1550	1085	1562	1570	1689	1484	1687	1706	1757
Q Serve(g_s), s	7.6	5.3	5.7	6.4	7.5	26.7	1.4	8.7	16.8	21.4	22.5	22.5
Cycle Q Clear(g_c), s	7.6	5.3	5.7	6.4	7.5	26.7	1.4	8.7	16.8	21.4	22.5	22.5
Prop In Lane	1.00		0.55	1.00		1.00	1.00		1.00	1.00		0.11
Lane Grp Cap(c), veh/h	81	393	372	173	253	659	32	1657	570	631	842	867
V/C Ratio(X)	0.88	0.23	0.25	1.35	0.34	0.82	0.62	0.31	0.50	1.12	0.57	0.57
Avail Cap(c_a), veh/h	138	475	450	173	253	659	86	1657	570	631	842	867
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	52.4	33.9	34.0	54.0	36.5	29.4	55.6	28.8	27.0	46.5	20.4	20.4
Incr Delay (d2), s/veh	27.4	0.3	0.3	190.1	0.8	8.4	17.8	0.5	3.1	75.3	2.8	2.7
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	2.7	2.0	2.1	7.1	2.0	14.3	0.7	3.5	6.3	15.3	9.1	9.4
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	79.8	34.2	34.3	244.1	37.3	37.8	73.4	29.3	30.1	121.8	23.1	23.0
LnGrp LOS	E	C	C	F	D	D	E	C	C	F	C	C
Approach Vol, veh/h		254			863			818			1679	
Approach Delay, s/veh		47.2			93.7			30.7			64.8	
Approach LOS		D			F			C			E	

Timer - Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	26.0	43.2	11.0	34.2	7.0	62.2	13.3	31.9
Change Period (Y+Rc), s	4.6	* 5.8	4.6	5.2	4.6	5.8	4.6	5.2
Max Green Setting (Gmax), s	21.4	* 37	6.4	35.0	6.3	52.1	14.7	26.7
Max Q Clear Time (g_c+I1), s	23.4	18.8	8.4	7.7	3.4	24.5	9.6	28.7
Green Ext Time (p_c), s	0.0	4.0	0.0	1.1	0.0	6.5	0.1	0.0

Intersection Summary	
HCM 6th Ctrl Delay	62.7
HCM 6th LOS	E

Notes

User approved pedestrian interval to be less than phase max green.

* HCM 6th computational engine requires equal clearance times for the phases crossing the barrier.

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	0	1310	678	6	949	468	0	0	0	435	0	608
Future Volume (vph)	0	1310	678	6	949	468	0	0	0	435	0	608
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		5.0	5.0		5.0	5.0				5.8	5.8	5.8
Lane Util. Factor		0.91	1.00		0.95	1.00				0.95	0.91	0.95
Frpb, ped/bikes		1.00	0.98		1.00	0.98				1.00	1.00	1.00
Flpb, ped/bikes		1.00	1.00		1.00	1.00				1.00	1.00	1.00
Frt		1.00	0.85		1.00	0.85				1.00	0.88	0.85
Flt Protected		1.00	1.00		1.00	1.00				0.95	0.99	1.00
Satd. Flow (prot)		5085	1515		3504	1563				1698	1436	1447
Flt Permitted		1.00	1.00		0.94	1.00				0.95	0.99	1.00
Satd. Flow (perm)		5085	1515		3310	1563				1698	1436	1447
Peak-hour factor, PHF	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97
Adj. Flow (vph)	0	1351	699	6	978	482	0	0	0	448	0	627
RTOR Reduction (vph)	0	0	401	0	0	277	0	0	0	0	32	32
Lane Group Flow (vph)	0	1351	298	0	984	205	0	0	0	376	322	313
Confl. Peds. (#/hr)	1		4	4		1						
Confl. Bikes (#/hr)						1						
Heavy Vehicles (%)	0%	2%	4%	0%	3%	1%	0%	0%	0%	1%	0%	6%
Turn Type		NA	Perm	Perm	NA	Perm				Split	NA	Perm
Protected Phases		2			6					4	4	
Permitted Phases			2	6		6						4
Actuated Green, G (s)		25.2	25.2		25.2	25.2				23.2	23.2	23.2
Effective Green, g (s)		25.2	25.2		25.2	25.2				23.2	23.2	23.2
Actuated g/C Ratio		0.43	0.43		0.43	0.43				0.39	0.39	0.39
Clearance Time (s)		5.0	5.0		5.0	5.0				5.8	5.8	5.8
Vehicle Extension (s)		3.0	3.0		3.0	3.0				3.0	3.0	3.0
Lane Grp Cap (vph)		2164	644		1408	665				665	562	567
v/s Ratio Prot		0.27								0.22	c0.22	
v/s Ratio Perm			0.20		c0.30	0.13						0.22
v/c Ratio		0.62	0.46		0.70	0.31				0.57	0.57	0.55
Uniform Delay, d1		13.3	12.2		13.9	11.2				14.1	14.1	14.0
Progression Factor		1.00	1.00		1.00	1.00				1.00	1.00	1.00
Incremental Delay, d2		0.6	0.5		1.5	0.3				3.5	4.2	3.8
Delay (s)		13.9	12.7		15.4	11.5				17.5	18.3	17.8
Level of Service		B	B		B	B				B	B	B
Approach Delay (s)		13.5			14.1			0.0			17.9	
Approach LOS		B			B			A			B	

Intersection Summary			
HCM 2000 Control Delay	14.7	HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio	0.64		
Actuated Cycle Length (s)	59.2	Sum of lost time (s)	10.8
Intersection Capacity Utilization	100.2%	ICU Level of Service	G
Analysis Period (min)	15		
c Critical Lane Group			

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	0	1161	581	2	990	396	443	0	507	0	0	0
Future Volume (vph)	0	1161	581	2	990	396	443	0	507	0	0	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		5.0	4.0		5.0	5.0	5.8	5.8	5.8			
Lane Util. Factor		0.95	1.00		0.95	1.00	0.95	0.91	0.95			
Frpb, ped/bikes		1.00	0.98		1.00	0.98	1.00	1.00	1.00			
Flpb, ped/bikes		1.00	1.00		1.00	1.00	1.00	1.00	1.00			
Frt		1.00	0.85		1.00	0.85	1.00	0.90	0.85			
Flt Protected		1.00	1.00		1.00	1.00	0.95	0.98	1.00			
Satd. Flow (prot)		3539	1547		3574	1550	1618	1494	1519			
Flt Permitted		1.00	1.00		0.95	1.00	0.95	0.98	1.00			
Satd. Flow (perm)		3539	1547		3406	1550	1618	1494	1519			
Peak-hour factor, PHF	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98
Adj. Flow (vph)	0	1185	593	2	1010	404	452	0	517	0	0	0
RTOR Reduction (vph)	0	0	0	0	0	237	0	21	21	0	0	0
Lane Group Flow (vph)	0	1185	593	0	1012	167	334	304	289	0	0	0
Confl. Peds. (#/hr)	1		5	5		1						
Confl. Bikes (#/hr)			1									
Heavy Vehicles (%)	0%	2%	2%	0%	1%	2%	6%	0%	1%	0%	0%	0%
Turn Type		NA	Free	Perm	NA	Perm	Perm	NA	Perm			
Protected Phases		2			6			8				
Permitted Phases			Free	6		6	8		8			
Actuated Green, G (s)		24.6	59.6		24.6	24.6	24.2	24.2	24.2			
Effective Green, g (s)		24.6	59.6		24.6	24.6	24.2	24.2	24.2			
Actuated g/C Ratio		0.41	1.00		0.41	0.41	0.41	0.41	0.41			
Clearance Time (s)		5.0			5.0	5.0	5.8	5.8	5.8			
Vehicle Extension (s)		3.0			3.0	3.0	3.0	3.0	3.0			
Lane Grp Cap (vph)		1460	1547		1405	639	656	606	616			
v/s Ratio Prot		c0.33										
v/s Ratio Perm			0.38		0.30	0.11	c0.21	0.20	0.19			
v/c Ratio		0.81	0.38		0.72	0.26	0.51	0.50	0.47			
Uniform Delay, d1		15.5	0.0		14.6	11.5	13.3	13.2	13.0			
Progression Factor		1.00	1.00		1.00	1.00	1.00	1.00	1.00			
Incremental Delay, d2		3.5	0.7		1.8	0.2	2.8	2.9	2.5			
Delay (s)		19.0	0.7		16.5	11.7	16.1	16.1	15.5			
Level of Service		B	A		B	B	B	B	B			
Approach Delay (s)		12.9			15.1			15.9			0.0	
Approach LOS		B			B			B			A	

Intersection Summary			
HCM 2000 Control Delay	14.4	HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio	0.66		
Actuated Cycle Length (s)	59.6	Sum of lost time (s)	10.8
Intersection Capacity Utilization	62.0%	ICU Level of Service	B
Analysis Period (min)	15		
c Critical Lane Group			

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	77	911	7	74	512	273	10	80	146	68	31	4
Future Volume (vph)	77	911	7	74	512	273	10	80	146	68	31	4
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		5.8		4.6	5.0	4.6	4.6	5.0	5.0	4.6	5.0	5.0
Lane Util. Factor		0.91		1.00	0.91	1.00	1.00	0.86	0.86	1.00	0.95	1.00
Frpb, ped/bikes		1.00		1.00	1.00	1.00	1.00	0.99	0.99	1.00	1.00	0.99
Flpb, ped/bikes		1.00		1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Frt		1.00		1.00	1.00	0.85	1.00	0.93	0.85	1.00	1.00	0.85
Flt Protected		1.00		0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (prot)		4837		1752	4715	1482	1253	4242	1318	1770	3505	1274
Flt Permitted		0.81		0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (perm)		3930		1752	4715	1482	1253	4242	1318	1770	3505	1274
Peak-hour factor, PHF	0.86	0.86	0.86	0.86	0.86	0.86	0.86	0.86	0.86	0.86	0.86	0.86
Adj. Flow (vph)	90	1059	8	86	595	317	12	93	170	79	36	5
RTOR Reduction (vph)	0	1	0	0	0	170	0	52	52	0	0	3
Lane Group Flow (vph)	0	1156	0	86	595	147	12	126	33	79	36	2
Confl. Peds. (#/hr)							2		1	1		2
Heavy Vehicles (%)	4%	7%	0%	3%	10%	9%	44%	9%	4%	2%	3%	25%
Turn Type	pm+pt	NA		Prot	NA	pm+ov	Prot	NA	Perm	Prot	NA	Perm
Protected Phases	7	4		3	8	1	5	2		1	6	
Permitted Phases	4					8			2			6
Actuated Green, G (s)		31.9		5.6	42.9	48.1	1.0	40.7	40.7	5.2	44.9	44.9
Effective Green, g (s)		31.9		5.6	42.9	48.1	1.0	40.7	40.7	5.2	44.9	44.9
Actuated g/C Ratio		0.31		0.05	0.41	0.47	0.01	0.39	0.39	0.05	0.43	0.43
Clearance Time (s)		5.8		4.6	5.0	4.6	4.6	5.0	5.0	4.6	5.0	5.0
Vehicle Extension (s)		3.0		3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0
Lane Grp Cap (vph)		1212		94	1956	689	12	1669	518	89	1521	553
v/s Ratio Prot				c0.05	0.13	0.01	0.01	c0.03		c0.04	c0.01	
v/s Ratio Perm		c0.29				0.09			0.03			0.00
v/c Ratio		0.95		0.91	0.30	0.21	1.00	0.08	0.06	0.89	0.02	0.00
Uniform Delay, d1		35.0		48.7	20.3	16.4	51.2	19.6	19.5	48.8	16.7	16.6
Progression Factor		1.00		1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Incremental Delay, d2		16.0		65.2	0.1	0.2	259.8	0.1	0.2	59.4	0.0	0.0
Delay (s)		51.0		113.9	20.3	16.6	311.0	19.7	19.7	108.2	16.7	16.6
Level of Service		D		F	C	B	F	B	B	F	B	B
Approach Delay (s)		51.0			27.2			32.4			76.9	
Approach LOS		D			C			C			E	

Intersection Summary			
HCM 2000 Control Delay	40.9	HCM 2000 Level of Service	D
HCM 2000 Volume to Capacity ratio	0.50		
Actuated Cycle Length (s)	103.4	Sum of lost time (s)	20.0
Intersection Capacity Utilization	81.2%	ICU Level of Service	D
Analysis Period (min)	15		

c Critical Lane Group

HCM Signalized Intersection Capacity Analysis
5: Doolittle Dr & Davis St

12/04/2023

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	49	169	36	275	125	835	48	835	246	372	328	58
Future Volume (vph)	49	169	36	275	125	835	48	835	246	372	328	58
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.6	5.2		4.6	5.2	4.6	4.6	5.4	4.6	4.6	5.8	
Lane Util. Factor	1.00	0.95		0.97	1.00	1.00	1.00	0.91	1.00	0.97	0.95	
Frpb, ped/bikes	1.00	1.00		1.00	1.00	1.00	1.00	1.00	0.99	1.00	1.00	
Flpb, ped/bikes	1.00	1.00		1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	
Frt	1.00	0.97		1.00	1.00	0.85	1.00	1.00	0.85	1.00	0.98	
Flt Protected	0.95	1.00		0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	
Satd. Flow (prot)	1211	2280		3019	1357	1495	1318	4673	1239	3242	2983	
Flt Permitted	0.95	1.00		0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	
Satd. Flow (perm)	1211	2280		3019	1357	1495	1318	4673	1239	3242	2983	
Peak-hour factor, PHF	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91
Adj. Flow (vph)	54	186	40	302	137	918	53	918	270	409	360	64
RTOR Reduction (vph)	0	15	0	0	0	78	0	0	145	0	8	0
Lane Group Flow (vph)	54	211	0	302	137	840	53	918	125	409	416	0
Confl. Peds. (#/hr)									1	1		
Confl. Bikes (#/hr)			1									3
Heavy Vehicles (%)	49%	55%	48%	16%	40%	8%	37%	11%	29%	8%	15%	34%
Turn Type	Prot	NA		Prot	NA	pm+ov	Prot	NA	pm+ov	Prot	NA	
Protected Phases	7	4		3	8	1	5	2	3	1	6	
Permitted Phases						8			2			
Actuated Green, G (s)	9.1	18.7		12.4	22.0	51.5	8.6	43.5	55.9	29.5	64.0	
Effective Green, g (s)	9.1	18.7		12.4	22.0	51.5	8.6	43.5	55.9	29.5	64.0	
Actuated g/C Ratio	0.07	0.15		0.10	0.18	0.42	0.07	0.35	0.45	0.24	0.52	
Clearance Time (s)	4.6	5.2		4.6	5.2	4.6	4.6	5.4	4.6	4.6	5.8	
Vehicle Extension (s)	3.0	3.0		3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	
Lane Grp Cap (vph)	88	344		302	240	621	91	1640	559	771	1540	
v/s Ratio Prot	0.04	0.09		c0.10	0.10	c0.32	0.04	c0.20	0.02	0.13	0.14	
v/s Ratio Perm						0.24			0.08			
v/c Ratio	0.61	0.61		1.00	0.57	1.35	0.58	0.56	0.22	0.53	0.27	
Uniform Delay, d1	55.7	49.2		55.8	46.6	36.2	55.9	32.5	20.7	41.2	16.8	
Progression Factor	1.00	1.00		1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	
Incremental Delay, d2	12.0	3.2		51.8	3.3	168.9	9.2	1.4	0.2	0.7	0.4	
Delay (s)	67.7	52.4		107.5	49.9	205.1	65.1	33.9	20.9	41.9	17.3	
Level of Service	E	D		F	D	F	E	C	C	D	B	
Approach Delay (s)		55.4			167.7			32.4			29.3	
Approach LOS		E			F			C			C	

Intersection Summary			
HCM 2000 Control Delay	82.9	HCM 2000 Level of Service	F
HCM 2000 Volume to Capacity ratio	1.01		
Actuated Cycle Length (s)	123.9	Sum of lost time (s)	20.2
Intersection Capacity Utilization	100.5%	ICU Level of Service	G
Analysis Period (min)	15		
c Critical Lane Group			

HCM 6th Signalized Intersection Summary
5: Doolittle Dr & Davis St

12/04/2023

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	49	169	36	275	125	835	48	835	246	372	328	58
Future Volume (veh/h)	49	169	36	275	125	835	48	835	246	372	328	58
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		0.99	1.00		1.00	1.00		1.00	1.00		0.98
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1174	1085	1189	1663	1307	1781	1352	1737	1470	1781	1678	1396
Adj Flow Rate, veh/h	54	186	40	302	137	918	53	918	270	409	360	64
Peak Hour Factor	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91
Percent Heavy Veh, %	49	55	48	16	40	8	37	11	29	8	15	34
Cap, veh/h	61	438	92	290	390	670	62	1649	551	478	1200	211
Arrive On Green	0.05	0.26	0.26	0.09	0.30	0.30	0.05	0.35	0.35	0.15	0.44	0.44
Sat Flow, veh/h	1118	1691	355	3072	1307	1510	1287	4742	1245	3291	2698	474
Grp Volume(v), veh/h	54	112	114	302	137	918	53	918	270	409	211	213
Grp Sat Flow(s),veh/h/ln	1118	1031	1015	1536	1307	1510	1287	1581	1245	1646	1594	1579
Q Serve(g_s), s	6.3	11.8	12.3	12.4	10.8	39.2	5.4	20.6	20.3	15.9	11.1	11.4
Cycle Q Clear(g_c), s	6.3	11.8	12.3	12.4	10.8	39.2	5.4	20.6	20.3	15.9	11.1	11.4
Prop In Lane	1.00		0.35	1.00		1.00	1.00		1.00	1.00		0.30
Lane Grp Cap(c), veh/h	61	267	263	290	390	670	62	1649	551	478	709	702
V/C Ratio(X)	0.88	0.42	0.44	1.04	0.35	1.37	0.85	0.56	0.49	0.86	0.30	0.30
Avail Cap(c_a), veh/h	121	322	317	290	390	670	127	1649	551	737	709	702
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	61.7	40.5	40.6	59.5	36.1	36.5	62.0	34.6	26.1	54.8	23.3	23.4
Incr Delay (d2), s/veh	30.5	1.0	1.1	63.9	0.5	176.1	26.2	1.4	3.1	6.2	1.1	1.1
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	2.3	3.1	3.2	7.4	3.5	53.4	2.2	7.9	6.4	6.9	4.3	4.4
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	92.2	41.5	41.8	123.3	36.6	212.6	88.2	36.0	29.2	61.0	24.4	24.5
LnGrp LOS	F	D	D	F	D	F	F	D	C	E	C	C
Approach Vol, veh/h		280			1357			1241			833	
Approach Delay, s/veh		51.4			175.0			36.7			42.4	
Approach LOS		D			F			D			D	

Timer - Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	23.7	51.5	17.0	39.2	10.9	64.2	11.8	44.4
Change Period (Y+Rc), s	4.6	* 5.8	4.6	5.2	4.6	5.8	4.6	5.2
Max Green Setting (Gmax), s	29.4	* 42	12.4	41.0	13.0	58.4	14.2	39.2
Max Q Clear Time (g_c+I1), s	17.9	22.6	14.4	14.3	7.4	13.4	8.3	41.2
Green Ext Time (p_c), s	1.1	6.9	0.0	1.4	0.0	2.6	0.0	0.0

Intersection Summary	
HCM 6th Ctrl Delay	89.7
HCM 6th LOS	F

Notes

User approved pedestrian interval to be less than phase max green.

* HCM 6th computational engine requires equal clearance times for the phases crossing the barrier.

HCM Unsignalized Intersection Capacity Analysis
1: Doolittle Dr & West Project Dwy

12/04/2023

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (veh/h)	21	7	890	96	25	1147
Future Volume (Veh/h)	21	7	890	96	25	1147
Sign Control	Stop		Free			Free
Grade	0%		0%			0%
Peak Hour Factor	0.88	0.88	0.88	0.88	0.88	0.88
Hourly flow rate (vph)	24	8	1011	109	28	1303
Pedestrians	1					
Lane Width (ft)	12.0					
Walking Speed (ft/s)	3.5					
Percent Blockage	0					
Right turn flare (veh)						
Median type			TWLTL			TWLTL
Median storage veh)			2			2
Upstream signal (ft)			750			512
pX, platoon unblocked	0.92	0.87			0.87	
vC, conflicting volume	1774	561			1121	
vC1, stage 1 conf vol	1066					
vC2, stage 2 conf vol	708					
vCu, unblocked vol	1202	203			845	
tC, single (s)	6.8	6.9			4.1	
tC, 2 stage (s)	5.8					
tF (s)	3.5	3.3			2.2	
p0 queue free %	93	99			96	
cM capacity (veh/h)	321	706			697	

Direction, Lane #	WB 1	NB 1	NB 2	SB 1	SB 2	SB 3
Volume Total	32	674	446	28	652	652
Volume Left	24	0	0	28	0	0
Volume Right	8	0	109	0	0	0
cSH	372	1700	1700	697	1700	1700
Volume to Capacity	0.09	0.40	0.26	0.04	0.38	0.38
Queue Length 95th (ft)	7	0	0	3	0	0
Control Delay (s)	15.6	0.0	0.0	10.4	0.0	0.0
Lane LOS	C			B		
Approach Delay (s)	15.6	0.0		0.2		
Approach LOS	C					

Intersection Summary			
Average Delay	0.3		
Intersection Capacity Utilization	41.7%	ICU Level of Service	A
Analysis Period (min)	15		

Intersection	
Int Delay, s/veh	0.4

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Vol, veh/h	21	7	890	96	25	1147
Future Vol, veh/h	21	7	890	96	25	1147
Conflicting Peds, #/hr	0	0	0	1	1	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	-	50	-
Veh in Median Storage, #	2	-	0	-	-	0
Grade, %	0	-	0	-	-	0
Peak Hour Factor	88	88	88	88	88	88
Heavy Vehicles, %	0	0	14	9	0	17
Mvmt Flow	24	8	1011	109	28	1303

Major/Minor	Minor1		Major1		Major2	
Conflicting Flow All	1775	561	0	0	1121	0
Stage 1	1067	-	-	-	-	-
Stage 2	708	-	-	-	-	-
Critical Hdwy	6.8	6.9	-	-	4.1	-
Critical Hdwy Stg 1	5.8	-	-	-	-	-
Critical Hdwy Stg 2	5.8	-	-	-	-	-
Follow-up Hdwy	3.5	3.3	-	-	2.2	-
Pot Cap-1 Maneuver	76	476	-	-	631	-
Stage 1	296	-	-	-	-	-
Stage 2	455	-	-	-	-	-
Platoon blocked, %			-	-		-
Mov Cap-1 Maneuver	73	476	-	-	630	-
Mov Cap-2 Maneuver	241	-	-	-	-	-
Stage 1	296	-	-	-	-	-
Stage 2	435	-	-	-	-	-

Approach	WB	NB	SB
HCM Control Delay, s	19.8	0	0.2
HCM LOS	C		

Minor Lane/Major Mvmt	NBT	NBR	WBLn1	SBL	SBT
Capacity (veh/h)	-	-	275	630	-
HCM Lane V/C Ratio	-	-	0.116	0.045	-
HCM Control Delay (s)	-	-	19.8	11	-
HCM Lane LOS	-	-	C	B	-
HCM 95th %tile Q(veh)	-	-	0.4	0.1	-

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Volume (veh/h)	35	0	0	13	54	81
Future Volume (Veh/h)	35	0	0	13	54	81
Sign Control		Stop	Stop		Free	
Grade		0%	0%		0%	
Peak Hour Factor	0.86	0.86	0.86	0.86	0.86	0.86
Hourly flow rate (vph)	41	0	0	15	63	94
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type					None	
Median storage veh)						
Upstream signal (ft)						
pX, platoon unblocked						
vC, conflicting volume	188	173	220	0	0	
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	188	173	220	0	0	
tC, single (s)	7.2	6.7	6.7	6.4	4.2	
tC, 2 stage (s)						
tF (s)	3.6	4.1	4.1	3.4	2.3	
p0 queue free %	94	100	100	99	96	
cM capacity (veh/h)	711	669	629	1048	1542	

Direction, Lane #	EB 1	WB 1	SB 1
Volume Total	41	15	157
Volume Left	41	0	63
Volume Right	0	15	94
cSH	711	1048	1542
Volume to Capacity	0.06	0.01	0.04
Queue Length 95th (ft)	5	1	3
Control Delay (s)	10.4	8.5	3.2
Lane LOS	B	A	A
Approach Delay (s)	10.4	8.5	3.2
Approach LOS	B	A	

Intersection Summary			
Average Delay	4.9		
Intersection Capacity Utilization	23.2%	ICU Level of Service	A
Analysis Period (min)	15		

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Volume (veh/h)	247	87	57	102	11	37
Future Volume (Veh/h)	247	87	57	102	11	37
Sign Control	Free			Free	Stop	
Grade	0%			0%	0%	
Peak Hour Factor	0.86	0.86	0.86	0.86	0.86	0.86
Hourly flow rate (vph)	287	101	66	119	13	43
Pedestrians				1		
Lane Width (ft)				12.0		
Walking Speed (ft/s)				3.5		
Percent Blockage				0		
Right turn flare (veh)						
Median type	None			None		
Median storage veh)						
Upstream signal (ft)	426					
pX, platoon unblocked						
vC, conflicting volume			388		588	338
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol			388		588	338
tC, single (s)			4.1		6.5	6.4
tC, 2 stage (s)						
tF (s)			2.2		3.6	3.5
p0 queue free %			94		97	94
cM capacity (veh/h)			1160		432	664

Direction, Lane #	EB 1	WB 1	NB 1
Volume Total	388	185	56
Volume Left	0	66	13
Volume Right	101	0	43
cSH	1700	1160	590
Volume to Capacity	0.23	0.06	0.09
Queue Length 95th (ft)	0	5	8
Control Delay (s)	0.0	3.3	11.7
Lane LOS		A	B
Approach Delay (s)	0.0	3.3	11.7
Approach LOS			B

Intersection Summary			
Average Delay	2.0		
Intersection Capacity Utilization	40.5%	ICU Level of Service	A
Analysis Period (min)	15		

Intersection	
Int Delay, s/veh	1.9

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Vol, veh/h	247	87	57	102	11	37
Future Vol, veh/h	247	87	57	102	11	37
Conflicting Peds, #/hr	0	0	0	0	0	1
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	0	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	86	86	86	86	86	86
Heavy Vehicles, %	8	2	4	14	10	20
Mvmt Flow	287	101	66	119	13	43

Major/Minor	Major1		Major2		Minor1	
Conflicting Flow All	0	0	388	0	589	339
Stage 1	-	-	-	-	338	-
Stage 2	-	-	-	-	251	-
Critical Hdwy	-	-	4.14	-	6.5	6.4
Critical Hdwy Stg 1	-	-	-	-	5.5	-
Critical Hdwy Stg 2	-	-	-	-	5.5	-
Follow-up Hdwy	-	-	2.236	-	3.59	3.48
Pot Cap-1 Maneuver	-	-	1160	-	458	664
Stage 1	-	-	-	-	705	-
Stage 2	-	-	-	-	772	-
Platoon blocked, %	-	-		-		
Mov Cap-1 Maneuver	-	-	1160	-	430	663
Mov Cap-2 Maneuver	-	-	-	-	430	-
Stage 1	-	-	-	-	705	-
Stage 2	-	-	-	-	725	-

Approach	EB	WB	NB
HCM Control Delay, s	0	3	11.7
HCM LOS			B

Minor Lane/Major Mvmt	NBLn1	EBT	EBR	WBL	WBT
Capacity (veh/h)	590	-	-	1160	-
HCM Lane V/C Ratio	0.095	-	-	0.057	-
HCM Control Delay (s)	11.7	-	-	8.3	0
HCM Lane LOS	B	-	-	A	A
HCM 95th %tile Q(veh)	0.3	-	-	0.2	-

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (vph)	88	62	796	195	76	719
Future Volume (vph)	88	62	796	195	76	719
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost time (s)	5.2	5.2	5.8	5.8	4.6	5.8
Lane Util. Factor	1.00	1.00	0.95	1.00	1.00	0.95
Frpb, ped/bikes	1.00	1.00	1.00	0.98	1.00	1.00
Flpb, ped/bikes	1.00	1.00	1.00	1.00	1.00	1.00
Frt	1.00	0.85	1.00	0.85	1.00	1.00
Flt Protected	0.95	1.00	1.00	1.00	0.95	1.00
Satd. Flow (prot)	1467	1282	3312	1346	1687	3223
Flt Permitted	0.95	1.00	1.00	1.00	0.95	1.00
Satd. Flow (perm)	1467	1282	3312	1346	1687	3223
Peak-hour factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95
Adj. Flow (vph)	93	65	838	205	80	757
RTOR Reduction (vph)	0	53	0	101	0	0
Lane Group Flow (vph)	93	12	838	104	80	757
Confl. Peds. (#/hr)	1			2		
Confl. Bikes (#/hr)				3		
Heavy Vehicles (%)	23%	26%	9%	17%	7%	12%
Turn Type	Perm	Perm	NA	Perm	Prot	NA
Protected Phases			2		1	6
Permitted Phases	8	8		2		
Actuated Green, G (s)	11.4	11.4	31.1	31.1	3.1	38.8
Effective Green, g (s)	11.4	11.4	31.1	31.1	3.1	38.8
Actuated g/C Ratio	0.19	0.19	0.51	0.51	0.05	0.63
Clearance Time (s)	5.2	5.2	5.8	5.8	4.6	5.8
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0	3.0
Lane Grp Cap (vph)	273	238	1683	683	85	2043
v/s Ratio Prot			c0.25		c0.05	0.23
v/s Ratio Perm	c0.06	0.01		0.08		
v/c Ratio	0.34	0.05	0.50	0.15	0.94	0.37
Uniform Delay, d1	21.6	20.5	9.9	8.0	29.0	5.4
Progression Factor	1.00	1.00	1.00	1.00	1.00	1.00
Incremental Delay, d2	0.7	0.1	1.1	0.5	77.8	0.5
Delay (s)	22.4	20.5	11.0	8.5	106.7	5.9
Level of Service	C	C	B	A	F	A
Approach Delay (s)	21.6		10.5			15.5
Approach LOS	C		B			B

Intersection Summary			
HCM 2000 Control Delay	13.4	HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio	0.49		
Actuated Cycle Length (s)	61.2	Sum of lost time (s)	15.6
Intersection Capacity Utilization	47.5%	ICU Level of Service	A
Analysis Period (min)	15		
c Critical Lane Group			

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	49	169	36	275	125	835	48	835	246	372	328	58
Future Volume (vph)	49	169	36	275	125	835	48	835	246	372	328	58
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.6	5.2		4.6	5.2	4.6	4.6	5.4	4.6	4.6	5.8	
Lane Util. Factor	1.00	0.95		0.97	1.00	1.00	1.00	0.91	1.00	0.97	0.95	
Frpb, ped/bikes	1.00	1.00		1.00	1.00	1.00	1.00	1.00	0.99	1.00	1.00	
Flpb, ped/bikes	1.00	1.00		1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	
Frt	1.00	0.97		1.00	1.00	0.85	1.00	1.00	0.85	1.00	0.98	
Flt Protected	0.95	1.00		0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	
Satd. Flow (prot)	1211	2280		3019	1357	1495	1318	4673	1238	3242	2983	
Flt Permitted	0.95	1.00		0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	
Satd. Flow (perm)	1211	2280		3019	1357	1495	1318	4673	1238	3242	2983	
Peak-hour factor, PHF	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91
Adj. Flow (vph)	54	186	40	302	137	918	53	918	270	409	360	64
RTOR Reduction (vph)	0	17	0	0	0	93	0	0	156	0	10	0
Lane Group Flow (vph)	54	209	0	302	137	825	53	918	114	409	414	0
Confl. Peds. (#/hr)									1	1		
Confl. Bikes (#/hr)			1									3
Heavy Vehicles (%)	49%	55%	48%	16%	40%	8%	37%	11%	29%	8%	15%	34%
Turn Type	Prot	NA		Prot	NA	pm+ov	Prot	NA	pm+ov	Prot	NA	
Protected Phases	7	4		3	8	1	5	2	3	1	6	
Permitted Phases						8			2			
Actuated Green, G (s)	8.8	21.1		6.4	18.7	41.2	4.9	40.2	46.6	22.5	57.4	
Effective Green, g (s)	8.8	21.1		6.4	18.7	41.2	4.9	40.2	46.6	22.5	57.4	
Actuated g/C Ratio	0.08	0.19		0.06	0.17	0.37	0.04	0.37	0.42	0.20	0.52	
Clearance Time (s)	4.6	5.2		4.6	5.2	4.6	4.6	5.4	4.6	4.6	5.8	
Vehicle Extension (s)	3.0	3.0		3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	
Lane Grp Cap (vph)	96	437		175	230	559	58	1707	524	663	1556	
v/s Ratio Prot	0.04	0.09		c0.10	0.10	c0.30	0.04	c0.20	0.01	0.13	0.14	
v/s Ratio Perm						0.25			0.08			
v/c Ratio	0.56	0.48		1.73	0.60	1.48	0.91	0.54	0.22	0.62	0.27	
Uniform Delay, d1	48.7	39.6		51.8	42.2	34.4	52.3	27.6	20.1	39.8	14.6	
Progression Factor	1.00	1.00		1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	
Incremental Delay, d2	7.3	0.8		349.4	4.1	223.5	86.9	1.2	0.2	1.7	0.4	
Delay (s)	56.1	40.4		401.2	46.3	257.9	139.2	28.8	20.3	41.5	15.0	
Level of Service	E	D		F	D	F	F	C	C	D	B	
Approach Delay (s)		43.4			268.5			31.7			28.0	
Approach LOS		D			F			C			C	

Intersection Summary			
HCM 2000 Control Delay	118.3	HCM 2000 Level of Service	F
HCM 2000 Volume to Capacity ratio	1.04		
Actuated Cycle Length (s)	110.0	Sum of lost time (s)	20.2
Intersection Capacity Utilization	100.5%	ICU Level of Service	G
Analysis Period (min)	15		
c Critical Lane Group			

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	49	169	36	275	125	835	48	835	246	372	328	58
Future Volume (veh/h)	49	169	36	275	125	835	48	835	246	372	328	58
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		0.99	1.00		1.00	1.00		1.00	1.00		0.98
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1174	1085	1189	1663	1307	1781	1352	1737	1470	1781	1678	1396
Adj Flow Rate, veh/h	54	186	40	302	137	918	53	918	270	409	360	64
Peak Hour Factor	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91
Percent Heavy Veh, %	49	55	48	16	40	8	37	11	29	8	15	34
Cap, veh/h	60	403	85	179	317	588	61	1770	537	484	1276	224
Arrive On Green	0.05	0.24	0.24	0.06	0.24	0.24	0.05	0.37	0.37	0.15	0.47	0.47
Sat Flow, veh/h	1118	1691	355	3072	1307	1510	1287	4742	1245	3291	2698	474
Grp Volume(v), veh/h	54	112	114	302	137	918	53	918	270	409	211	213
Grp Sat Flow(s),veh/h/ln	1118	1031	1015	1536	1307	1510	1287	1581	1245	1646	1594	1579
Q Serve(g_s), s	5.3	10.2	10.6	6.4	9.8	26.7	4.5	16.6	17.3	13.3	8.9	9.1
Cycle Q Clear(g_c), s	5.3	10.2	10.6	6.4	9.8	26.7	4.5	16.6	17.3	13.3	8.9	9.1
Prop In Lane	1.00		0.35	1.00		1.00	1.00		1.00	1.00		0.30
Lane Grp Cap(c), veh/h	60	245	242	179	317	588	61	1770	537	484	754	747
V/C Ratio(X)	0.90	0.45	0.47	1.69	0.43	1.56	0.87	0.52	0.50	0.84	0.28	0.29
Avail Cap(c_a), veh/h	149	327	323	179	317	588	74	1770	537	669	754	747
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	51.8	35.9	36.0	51.9	35.3	33.6	52.1	26.8	22.7	45.7	17.6	17.7
Incr Delay (d2), s/veh	32.9	1.3	1.4	334.3	0.9	260.8	56.1	1.1	3.3	7.2	0.9	1.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	2.0	2.6	2.7	10.7	3.2	57.6	2.4	6.1	5.4	5.8	3.3	3.3
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	84.7	37.2	37.5	386.2	36.2	294.4	108.3	27.9	26.1	52.9	18.6	18.6
LnGrp LOS	F	D	D	F	D	F	F	C	C	D	B	B
Approach Vol, veh/h		280			1357			1241			833	
Approach Delay, s/veh		46.4			288.8			30.9			35.4	
Approach LOS		D			F			C			D	

Timer - Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	20.8	46.9	11.0	31.4	9.8	57.9	10.5	31.9
Change Period (Y+Rc), s	4.6	* 5.8	4.6	5.2	4.6	5.8	4.6	5.2
Max Green Setting (Gmax), s	22.4	* 36	6.4	35.0	6.3	52.1	14.7	26.7
Max Q Clear Time (g_c+I1), s	15.3	19.3	8.4	12.6	6.5	11.1	7.3	28.7
Green Ext Time (p_c), s	0.9	6.5	0.0	1.3	0.0	2.6	0.0	0.0

Intersection Summary	
HCM 6th Ctrl Delay	127.4
HCM 6th LOS	F

Notes

User approved pedestrian interval to be less than phase max green.

* HCM 6th computational engine requires equal clearance times for the phases crossing the barrier.

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	0	901	529	9	1265	429	0	0	0	263	0	614
Future Volume (vph)	0	901	529	9	1265	429	0	0	0	263	0	614
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		5.0	5.0		5.0	5.0				5.8	5.8	5.8
Lane Util. Factor		0.91	1.00		0.95	1.00				0.95	0.91	0.95
Frpb, ped/bikes		1.00	0.97		1.00	0.98				1.00	1.00	1.00
Flpb, ped/bikes		1.00	1.00		1.00	1.00				1.00	1.00	1.00
Frt		1.00	0.85		1.00	0.85				1.00	0.86	0.85
Flt Protected		1.00	1.00		1.00	1.00				0.95	1.00	1.00
Satd. Flow (prot)		4803	1355		3313	1488				1618	1389	1434
Flt Permitted		1.00	1.00		0.95	1.00				0.95	1.00	1.00
Satd. Flow (perm)		4803	1355		3140	1488				1618	1389	1434
Peak-hour factor, PHF	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97
Adj. Flow (vph)	0	929	545	9	1304	442	0	0	0	271	0	633
RTOR Reduction (vph)	0	0	268	0	0	218	0	0	0	0	25	25
Lane Group Flow (vph)	0	929	277	0	1313	224	0	0	0	244	306	304
Confl. Peds. (#/hr)	2		7	7		2						
Confl. Bikes (#/hr)						1						
Heavy Vehicles (%)	0%	8%	16%	0%	9%	6%	0%	0%	0%	6%	0%	7%
Turn Type		NA	Perm	Perm	NA	Perm				Split	NA	Perm
Protected Phases		2			6					4	4	
Permitted Phases			2	6		6						4
Actuated Green, G (s)		29.9	29.9		29.9	29.9				18.2	18.2	18.2
Effective Green, g (s)		29.9	29.9		29.9	29.9				18.2	18.2	18.2
Actuated g/C Ratio		0.51	0.51		0.51	0.51				0.31	0.31	0.31
Clearance Time (s)		5.0	5.0		5.0	5.0				5.8	5.8	5.8
Vehicle Extension (s)		3.0	3.0		3.0	3.0				3.0	3.0	3.0
Lane Grp Cap (vph)		2438	687		1593	755				499	429	443
v/s Ratio Prot		0.19								0.15	c0.22	
v/s Ratio Perm			0.20		c0.42	0.15						0.21
v/c Ratio		0.38	0.40		0.82	0.30				0.49	0.71	0.69
Uniform Delay, d1		8.9	9.0		12.3	8.4				16.6	18.0	17.8
Progression Factor		1.00	1.00		1.00	1.00				1.00	1.00	1.00
Incremental Delay, d2		0.1	0.4		3.6	0.2				3.4	9.7	8.4
Delay (s)		9.0	9.4		15.9	8.6				20.0	27.8	26.2
Level of Service		A	A		B	A				B	C	C
Approach Delay (s)		9.1			14.1			0.0			25.1	
Approach LOS		A			B			A			C	

Intersection Summary			
HCM 2000 Control Delay	14.7	HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio	0.78		
Actuated Cycle Length (s)	58.9	Sum of lost time (s)	10.8
Intersection Capacity Utilization	95.4%	ICU Level of Service	F
Analysis Period (min)	15		
c Critical Lane Group			

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	0	652	509	3	1165	560	543	0	291	0	0	0
Future Volume (vph)	0	652	509	3	1165	560	543	0	291	0	0	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		5.0	4.0		5.0	5.0	5.8	5.8	5.8			
Lane Util. Factor		0.95	1.00		0.95	1.00	0.95	0.91	0.95			
Frpb, ped/bikes		1.00	0.98		1.00	0.98	1.00	1.00	1.00			
Flpb, ped/bikes		1.00	1.00		1.00	1.00	1.00	1.00	1.00			
Frt		1.00	0.85		1.00	0.85	1.00	0.98	0.85			
Flt Protected		1.00	1.00		1.00	1.00	0.95	0.96	1.00			
Satd. Flow (prot)		3471	1420		3438	1533	1504	1439	1447			
Flt Permitted		1.00	1.00		0.95	1.00	0.95	0.96	1.00			
Satd. Flow (perm)		3471	1420		3279	1533	1504	1439	1447			
Peak-hour factor, PHF	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97
Adj. Flow (vph)	0	672	525	3	1201	577	560	0	300	0	0	0
RTOR Reduction (vph)	0	0	0	0	0	296	0	24	121	0	0	0
Lane Group Flow (vph)	0	672	525	0	1204	281	297	272	146	0	0	0
Confl. Peds. (#/hr)	2		7	7		2						
Confl. Bikes (#/hr)			1									
Heavy Vehicles (%)	0%	4%	11%	0%	5%	3%	14%	0%	6%	0%	0%	0%
Turn Type		NA	Free	Perm	NA	Perm	Perm	NA	Perm			
Protected Phases		2			6			8				
Permitted Phases			Free	6		6	8		8			
Actuated Green, G (s)		28.5	58.5		28.5	28.5	19.2	19.2	19.2			
Effective Green, g (s)		28.5	58.5		28.5	28.5	19.2	19.2	19.2			
Actuated g/C Ratio		0.49	1.00		0.49	0.49	0.33	0.33	0.33			
Clearance Time (s)		5.0			5.0	5.0	5.8	5.8	5.8			
Vehicle Extension (s)		3.0			3.0	3.0	3.0	3.0	3.0			
Lane Grp Cap (vph)		1691	1420		1597	746	493	472	474			
v/s Ratio Prot		0.19										
v/s Ratio Perm			0.37		c0.37	0.18	c0.20	0.19	0.10			
v/c Ratio		0.40	0.37		0.75	0.38	0.60	0.58	0.31			
Uniform Delay, d1		9.5	0.0		12.2	9.4	16.5	16.3	14.7			
Progression Factor		1.00	1.00		1.00	1.00	1.00	1.00	1.00			
Incremental Delay, d2		0.2	0.7		2.1	0.3	5.4	5.0	1.7			
Delay (s)		9.7	0.7		14.2	9.7	21.8	21.3	16.4			
Level of Service		A	A		B	A	C	C	B			
Approach Delay (s)		5.8			12.8			20.0			0.0	
Approach LOS		A			B			B			A	

Intersection Summary			
HCM 2000 Control Delay	12.2	HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio	0.69		
Actuated Cycle Length (s)	58.5	Sum of lost time (s)	10.8
Intersection Capacity Utilization	61.9%	ICU Level of Service	B
Analysis Period (min)	15		
c Critical Lane Group			

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	99	639	1	57	754	374	11	40	79	53	43	8
Future Volume (vph)	99	639	1	57	754	374	11	40	79	53	43	8
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		5.8		4.6	5.0	4.6	4.6	5.0	5.0	4.6	5.0	5.0
Lane Util. Factor		0.91		1.00	0.91	1.00	1.00	0.86	0.86	1.00	0.95	1.00
Frpb, ped/bikes		1.00		1.00	1.00	1.00	1.00	0.99	0.99	1.00	1.00	1.00
Flpb, ped/bikes		1.00		1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Frt		1.00		1.00	1.00	0.85	1.00	0.93	0.85	1.00	1.00	0.85
Flt Protected		0.99		0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (prot)		4800		1656	4940	1495	1081	4289	1280	1719	3610	1214
Flt Permitted		0.72		0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (perm)		3479		1656	4940	1495	1081	4289	1280	1719	3610	1214
Peak-hour factor, PHF	0.87	0.87	0.87	0.87	0.87	0.87	0.87	0.87	0.87	0.87	0.87	0.87
Adj. Flow (vph)	114	734	1	66	867	430	13	46	91	61	49	9
RTOR Reduction (vph)	0	0	0	0	0	243	0	27	26	0	0	5
Lane Group Flow (vph)	0	849	0	66	867	187	13	65	19	61	49	4
Confl. Peds. (#/hr)									2	2		
Heavy Vehicles (%)	3%	8%	0%	9%	5%	8%	67%	3%	7%	5%	0%	33%
Turn Type	pm+pt	NA		Prot	NA	pm+ov	Prot	NA	Perm	Prot	NA	Perm
Protected Phases	7	4		3	8	1	5	2		1	6	
Permitted Phases	4					8			2			6
Actuated Green, G (s)		28.2		4.1	37.7	42.8	0.9	41.1	41.1	5.1	45.3	45.3
Effective Green, g (s)		28.2		4.1	37.7	42.8	0.9	41.1	41.1	5.1	45.3	45.3
Actuated g/C Ratio		0.29		0.04	0.38	0.43	0.01	0.42	0.42	0.05	0.46	0.46
Clearance Time (s)		5.8		4.6	5.0	4.6	4.6	5.0	5.0	4.6	5.0	5.0
Vehicle Extension (s)		3.0		3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0
Lane Grp Cap (vph)		996		68	1890	649	9	1789	534	89	1660	558
v/s Ratio Prot				c0.04	0.18	0.01	0.01	c0.02		c0.04	c0.01	
v/s Ratio Perm		c0.24				0.11			0.01			0.00
v/c Ratio		0.85		0.97	0.46	0.29	1.44	0.04	0.04	0.69	0.03	0.01
Uniform Delay, d1		33.2		47.1	22.8	18.0	48.8	17.0	17.0	45.9	14.6	14.4
Progression Factor		1.00		1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Incremental Delay, d2		7.2		98.5	0.2	0.2	474.2	0.0	0.1	19.7	0.0	0.0
Delay (s)		40.3		145.6	22.9	18.2	523.0	17.0	17.1	65.6	14.6	14.4
Level of Service		D		F	C	B	F	B	B	E	B	B
Approach Delay (s)		40.3			27.4			60.9			40.7	
Approach LOS		D			C			E			D	

Intersection Summary			
HCM 2000 Control Delay	34.5	HCM 2000 Level of Service	C
HCM 2000 Volume to Capacity ratio	0.40		
Actuated Cycle Length (s)	98.5	Sum of lost time (s)	20.0
Intersection Capacity Utilization	81.2%	ICU Level of Service	D
Analysis Period (min)	15		

c Critical Lane Group

HCM Unsignalized Intersection Capacity Analysis
1: Doolittle Dr & West Project Dwy

12/04/2023

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (veh/h)	36	32	920	68	11	1075
Future Volume (Veh/h)	36	32	920	68	11	1075
Sign Control	Stop		Free			Free
Grade	0%		0%			0%
Peak Hour Factor	0.93	0.93	0.93	0.93	0.93	0.93
Hourly flow rate (vph)	39	34	989	73	12	1156
Pedestrians	4					
Lane Width (ft)	12.0					
Walking Speed (ft/s)	3.5					
Percent Blockage	0					
Right turn flare (veh)						
Median type			TWLTL			TWLTL
Median storage veh)			2			2
Upstream signal (ft)			750			512
pX, platoon unblocked	0.82	0.92			0.92	
vC, conflicting volume	1632	535			1066	
vC1, stage 1 conf vol	1030					
vC2, stage 2 conf vol	602					
vCu, unblocked vol	886	323			900	
tC, single (s)	6.8	6.9			4.1	
tC, 2 stage (s)	5.8					
tF (s)	3.5	3.3			2.2	
p0 queue free %	88	95			98	
cM capacity (veh/h)	336	623			700	

Direction, Lane #	WB 1	NB 1	NB 2	SB 1	SB 2	SB 3
Volume Total	73	659	403	12	578	578
Volume Left	39	0	0	12	0	0
Volume Right	34	0	73	0	0	0
cSH	428	1700	1700	700	1700	1700
Volume to Capacity	0.17	0.39	0.24	0.02	0.34	0.34
Queue Length 95th (ft)	15	0	0	1	0	0
Control Delay (s)	15.1	0.0	0.0	10.2	0.0	0.0
Lane LOS	C			B		
Approach Delay (s)	15.1	0.0		0.1		
Approach LOS	C					

Intersection Summary			
Average Delay	0.5		
Intersection Capacity Utilization	40.3%	ICU Level of Service	A
Analysis Period (min)	15		

Intersection	
Int Delay, s/veh	0.6

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Vol, veh/h	36	32	920	68	11	1075
Future Vol, veh/h	36	32	920	68	11	1075
Conflicting Peds, #/hr	0	0	0	4	4	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	-	50	-
Veh in Median Storage, #	2	-	0	-	-	0
Grade, %	0	-	0	-	-	0
Peak Hour Factor	93	93	93	93	93	93
Heavy Vehicles, %	0	0	7	8	0	6
Mvmt Flow	39	34	989	73	12	1156

Major/Minor	Minor1		Major1		Major2	
Conflicting Flow All	1632	535	0	0	1066	0
Stage 1	1030	-	-	-	-	-
Stage 2	602	-	-	-	-	-
Critical Hdwy	6.8	6.9	-	-	4.1	-
Critical Hdwy Stg 1	5.8	-	-	-	-	-
Critical Hdwy Stg 2	5.8	-	-	-	-	-
Follow-up Hdwy	3.5	3.3	-	-	2.2	-
Pot Cap-1 Maneuver	94	495	-	-	661	-
Stage 1	310	-	-	-	-	-
Stage 2	515	-	-	-	-	-
Platoon blocked, %			-	-		-
Mov Cap-1 Maneuver	92	493	-	-	658	-
Mov Cap-2 Maneuver	262	-	-	-	-	-
Stage 1	309	-	-	-	-	-
Stage 2	506	-	-	-	-	-

Approach	WB	NB	SB
HCM Control Delay, s	18.7	0	0.1
HCM LOS	C		

Minor Lane/Major Mvmt	NBT	NBR	WBLn1	SBL	SBT
Capacity (veh/h)	-	-	336	658	-
HCM Lane V/C Ratio	-	-	0.218	0.018	-
HCM Control Delay (s)	-	-	18.7	10.6	-
HCM Lane LOS	-	-	C	B	-
HCM 95th %tile Q(veh)	-	-	0.8	0.1	-

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Volume (veh/h)	148	0	0	48	19	50
Future Volume (Veh/h)	148	0	0	48	19	50
Sign Control		Stop	Stop		Free	
Grade		0%	0%		0%	
Peak Hour Factor	0.89	0.89	0.89	0.89	0.89	0.89
Hourly flow rate (vph)	166	0	0	54	21	56
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type					None	
Median storage veh)						
Upstream signal (ft)						
pX, platoon unblocked						
vC, conflicting volume	124	70	98	0	0	
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	124	70	98	0	0	
tC, single (s)	7.1	6.5	6.5	6.2	4.1	
tC, 2 stage (s)						
tF (s)	3.5	4.0	4.0	3.3	2.2	
p0 queue free %	79	100	100	95	99	
cM capacity (veh/h)	798	808	780	1082	1617	

Direction, Lane #	EB 1	WB 1	SB 1
Volume Total	166	54	77
Volume Left	166	0	21
Volume Right	0	54	56
cSH	798	1082	1617
Volume to Capacity	0.21	0.05	0.01
Queue Length 95th (ft)	20	4	1
Control Delay (s)	10.7	8.5	2.0
Lane LOS	B	A	A
Approach Delay (s)	10.7	8.5	2.0
Approach LOS	B	A	

Intersection Summary			
Average Delay	8.1		
Intersection Capacity Utilization	25.7%	ICU Level of Service	A
Analysis Period (min)	15		

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Volume (veh/h)	138	24	52	153	62	133
Future Volume (Veh/h)	138	24	52	153	62	133
Sign Control	Free			Free	Stop	
Grade	0%			0%	0%	
Peak Hour Factor	0.89	0.89	0.89	0.89	0.89	0.89
Hourly flow rate (vph)	155	27	58	172	70	149
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type	None			None		
Median storage veh)						
Upstream signal (ft)	426					
pX, platoon unblocked						
vC, conflicting volume			182		456	168
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol			182		456	168
tC, single (s)			4.1		6.4	6.2
tC, 2 stage (s)						
tF (s)			2.2		3.5	3.3
p0 queue free %			96		87	83
cM capacity (veh/h)			1381		535	876

Direction, Lane #	EB 1	WB 1	NB 1
Volume Total	182	230	219
Volume Left	0	58	70
Volume Right	27	0	149
cSH	1700	1381	727
Volume to Capacity	0.11	0.04	0.30
Queue Length 95th (ft)	0	3	32
Control Delay (s)	0.0	2.2	12.1
Lane LOS		A	B
Approach Delay (s)	0.0	2.2	12.1
Approach LOS			B

Intersection Summary			
Average Delay	5.0		
Intersection Capacity Utilization	41.3%	ICU Level of Service	A
Analysis Period (min)	15		

Intersection	
Int Delay, s/veh	4.9

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Vol, veh/h	138	24	52	153	62	133
Future Vol, veh/h	138	24	52	153	62	133
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	0	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	89	89	89	89	89	89
Heavy Vehicles, %	26	24	4	6	4	2
Mvmt Flow	155	27	58	172	70	149

Major/Minor	Major1		Major2		Minor1	
Conflicting Flow All	0	0	182	0	457	169
Stage 1	-	-	-	-	169	-
Stage 2	-	-	-	-	288	-
Critical Hdwy	-	-	4.14	-	6.44	6.22
Critical Hdwy Stg 1	-	-	-	-	5.44	-
Critical Hdwy Stg 2	-	-	-	-	5.44	-
Follow-up Hdwy	-	-	2.236	-	3.536	3.318
Pot Cap-1 Maneuver	-	-	1381	-	558	875
Stage 1	-	-	-	-	856	-
Stage 2	-	-	-	-	756	-
Platoon blocked, %	-	-		-		
Mov Cap-1 Maneuver	-	-	1381	-	532	875
Mov Cap-2 Maneuver	-	-	-	-	532	-
Stage 1	-	-	-	-	856	-
Stage 2	-	-	-	-	721	-

Approach	EB	WB	NB
HCM Control Delay, s	0	2	12.1
HCM LOS			B

Minor Lane/Major Mvmt	NBLn1	EBT	EBR	WBL	WBT
Capacity (veh/h)	726	-	-	1381	-
HCM Lane V/C Ratio	0.302	-	-	0.042	-
HCM Control Delay (s)	12.1	-	-	7.7	0
HCM Lane LOS	B	-	-	A	A
HCM 95th %tile Q(veh)	1.3	-	-	0.1	-

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (vph)	154	124	907	149	38	1181
Future Volume (vph)	154	124	907	149	38	1181
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost time (s)	5.2	5.2	5.8	5.8	4.6	5.8
Lane Util. Factor	1.00	1.00	0.95	1.00	1.00	0.95
Frpb, ped/bikes	1.00	1.00	1.00	0.98	1.00	1.00
Flpb, ped/bikes	1.00	1.00	1.00	1.00	1.00	1.00
Frt	1.00	0.85	1.00	0.85	1.00	1.00
Flt Protected	0.95	1.00	1.00	1.00	0.95	1.00
Satd. Flow (prot)	1641	1538	3505	1260	1504	3374
Flt Permitted	0.95	1.00	1.00	1.00	0.95	1.00
Satd. Flow (perm)	1641	1538	3505	1260	1504	3374
Peak-hour factor, PHF	0.84	0.84	0.84	0.84	0.84	0.84
Adj. Flow (vph)	183	148	1080	177	45	1406
RTOR Reduction (vph)	0	117	0	90	0	0
Lane Group Flow (vph)	183	31	1080	87	45	1406
Confl. Peds. (#/hr)				1	1	
Confl. Bikes (#/hr)				5		
Heavy Vehicles (%)	10%	5%	3%	25%	20%	7%
Turn Type	Perm	Perm	NA	Perm	Prot	NA
Protected Phases			2		1	6
Permitted Phases	8	8		2		
Actuated Green, G (s)	12.2	12.2	28.5	28.5	1.9	35.0
Effective Green, g (s)	12.2	12.2	28.5	28.5	1.9	35.0
Actuated g/C Ratio	0.21	0.21	0.49	0.49	0.03	0.60
Clearance Time (s)	5.2	5.2	5.8	5.8	4.6	5.8
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0	3.0
Lane Grp Cap (vph)	343	322	1716	617	49	2029
v/s Ratio Prot			0.31		0.03	c0.42
v/s Ratio Perm	c0.11	0.02		0.07		
v/c Ratio	0.53	0.10	0.63	0.14	0.92	0.69
Uniform Delay, d1	20.5	18.6	11.0	8.1	28.1	7.9
Progression Factor	1.00	1.00	1.00	1.00	1.00	1.00
Incremental Delay, d2	1.6	0.1	1.8	0.5	97.1	2.0
Delay (s)	22.1	18.7	12.7	8.6	125.2	9.9
Level of Service	C	B	B	A	F	A
Approach Delay (s)	20.6		12.1			13.5
Approach LOS	C		B			B

Intersection Summary			
HCM 2000 Control Delay	13.7	HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio	0.72		
Actuated Cycle Length (s)	58.2	Sum of lost time (s)	15.6
Intersection Capacity Utilization	50.3%	ICU Level of Service	A
Analysis Period (min)	15		
c Critical Lane Group			

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	63	116	44	206	76	527	18	458	252	648	815	47
Future Volume (vph)	63	116	44	206	76	527	18	458	252	648	815	47
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.6	5.2		4.6	5.2	4.6	4.6	5.4	4.6	4.6	5.8	
Lane Util. Factor	1.00	0.95		0.97	1.00	1.00	1.00	0.91	1.00	0.97	0.95	
Frpb, ped/bikes	1.00	1.00		1.00	1.00	1.00	1.00	1.00	0.99	1.00	1.00	
Flpb, ped/bikes	1.00	1.00		1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	
Frt	1.00	0.96		1.00	1.00	0.85	1.00	1.00	0.85	1.00	0.99	
Flt Protected	0.95	1.00		0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	
Satd. Flow (prot)	1188	2886		3045	1226	1568	1543	5036	1474	3335	3263	
Flt Permitted	0.95	1.00		0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	
Satd. Flow (perm)	1188	2886		3045	1226	1568	1543	5036	1474	3335	3263	
Peak-hour factor, PHF	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88
Adj. Flow (vph)	72	132	50	234	86	599	20	520	286	736	926	53
RTOR Reduction (vph)	0	37	0	0	0	131	0	0	160	0	3	0
Lane Group Flow (vph)	72	145	0	234	86	468	20	520	126	736	976	0
Confl. Peds. (#/hr)			5	5					2	2		
Confl. Bikes (#/hr)			1						5			1
Heavy Vehicles (%)	52%	18%	23%	15%	55%	3%	17%	3%	8%	5%	7%	55%
Turn Type	Prot	NA		Prot	NA	pm+ov	Prot	NA	pm+ov	Prot	NA	
Protected Phases	7	4		3	8	1	5	2	3	1	6	
Permitted Phases						8			2			
Actuated Green, G (s)	9.7	20.9		6.5	17.7	39.3	2.3	42.3	48.8	21.6	61.2	
Effective Green, g (s)	9.7	20.9		6.5	17.7	39.3	2.3	42.3	48.8	21.6	61.2	
Actuated g/C Ratio	0.09	0.19		0.06	0.16	0.35	0.02	0.38	0.44	0.19	0.55	
Clearance Time (s)	4.6	5.2		4.6	5.2	4.6	4.6	5.4	4.6	4.6	5.8	
Vehicle Extension (s)	3.0	3.0		3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	
Lane Grp Cap (vph)	103	542		178	195	554	31	1917	647	648	1797	
v/s Ratio Prot	0.06	c0.05		c0.08	0.07	c0.16	0.01	0.10	0.01	c0.22	c0.30	
v/s Ratio Perm						0.13			0.07			
v/c Ratio	0.70	0.27		1.31	0.44	0.84	0.65	0.27	0.19	1.14	0.54	
Uniform Delay, d1	49.3	38.6		52.3	42.2	33.1	54.0	23.8	19.1	44.8	16.0	
Progression Factor	1.00	1.00		1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	
Incremental Delay, d2	18.7	0.3		175.6	1.6	11.3	37.9	0.3	0.1	79.1	1.2	
Delay (s)	68.0	38.8		227.9	43.8	44.4	91.9	24.1	19.2	123.8	17.2	
Level of Service	E	D		F	D	D	F	C	B	F	B	
Approach Delay (s)		47.1			91.1			24.1			62.9	
Approach LOS		D			F			C			E	

Intersection Summary			
HCM 2000 Control Delay	60.2	HCM 2000 Level of Service	E
HCM 2000 Volume to Capacity ratio	0.80		
Actuated Cycle Length (s)	111.1	Sum of lost time (s)	20.2
Intersection Capacity Utilization	85.4%	ICU Level of Service	E
Analysis Period (min)	15		
c Critical Lane Group			

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	63	116	44	206	76	527	18	458	252	648	815	47
Future Volume (veh/h)	63	116	44	206	76	527	18	458	252	648	815	47
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		0.98	1.00		0.99	1.00		0.98	1.00		0.98
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1129	1633	1559	1678	1085	1856	1648	1856	1781	1826	1796	1085
Adj Flow Rate, veh/h	72	132	50	234	86	599	20	520	286	736	926	53
Peak Hour Factor	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88
Percent Heavy Veh, %	52	18	23	15	55	3	17	3	8	5	7	55
Cap, veh/h	81	562	203	173	253	659	32	1657	570	631	1617	93
Arrive On Green	0.08	0.25	0.25	0.06	0.23	0.23	0.02	0.33	0.33	0.19	0.49	0.49
Sat Flow, veh/h	1076	2220	802	3100	1085	1562	1570	5066	1484	3374	3276	188
Grp Volume(v), veh/h	72	90	92	234	86	599	20	520	286	736	482	497
Grp Sat Flow(s),veh/h/ln	1076	1552	1471	1550	1085	1562	1570	1689	1484	1687	1706	1757
Q Serve(g_s), s	7.6	5.3	5.7	6.4	7.5	26.7	1.4	8.8	16.8	21.4	22.8	22.8
Cycle Q Clear(g_c), s	7.6	5.3	5.7	6.4	7.5	26.7	1.4	8.8	16.8	21.4	22.8	22.8
Prop In Lane	1.00		0.55	1.00		1.00	1.00		1.00	1.00		0.11
Lane Grp Cap(c), veh/h	81	393	372	173	253	659	32	1657	570	631	842	867
V/C Ratio(X)	0.88	0.23	0.25	1.35	0.34	0.91	0.62	0.31	0.50	1.17	0.57	0.57
Avail Cap(c_a), veh/h	138	475	450	173	253	659	86	1657	570	631	842	867
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	52.4	33.9	34.0	54.0	36.5	31.1	55.6	28.9	27.0	46.5	20.4	20.4
Incr Delay (d2), s/veh	27.4	0.3	0.3	190.1	0.8	16.6	17.8	0.5	3.1	91.1	2.8	2.7
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	2.7	2.0	2.1	7.1	2.0	17.9	0.7	3.5	6.3	16.7	9.2	9.5
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	79.8	34.2	34.3	244.1	37.3	47.7	73.4	29.4	30.1	137.6	23.3	23.2
LnGrp LOS	E	C	C	F	D	D	E	C	C	F	C	C
Approach Vol, veh/h		254			919			826			1715	
Approach Delay, s/veh		47.2			96.8			30.7			72.3	
Approach LOS		D			F			C			E	

Timer - Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	26.0	43.2	11.0	34.2	7.0	62.2	13.3	31.9
Change Period (Y+Rc), s	4.6	* 5.8	4.6	5.2	4.6	5.8	4.6	5.2
Max Green Setting (Gmax), s	21.4	* 37	6.4	35.0	6.3	52.1	14.7	26.7
Max Q Clear Time (g_c+I1), s	23.4	18.8	8.4	7.7	3.4	24.8	9.6	28.7
Green Ext Time (p_c), s	0.0	4.0	0.0	1.1	0.0	6.6	0.1	0.0

Intersection Summary	
HCM 6th Ctrl Delay	67.4
HCM 6th LOS	E

Notes

User approved pedestrian interval to be less than phase max green.

* HCM 6th computational engine requires equal clearance times for the phases crossing the barrier.

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	0	1320	689	6	997	468	0	0	0	435	0	608
Future Volume (vph)	0	1320	689	6	997	468	0	0	0	435	0	608
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		5.0	5.0		5.0	5.0				5.8	5.8	5.8
Lane Util. Factor		0.91	1.00		0.95	1.00				0.95	0.91	0.95
Frpb, ped/bikes		1.00	0.98		1.00	0.98				1.00	1.00	1.00
Flpb, ped/bikes		1.00	1.00		1.00	1.00				1.00	1.00	1.00
Frt		1.00	0.85		1.00	0.85				1.00	0.88	0.85
Flt Protected		1.00	1.00		1.00	1.00				0.95	0.99	1.00
Satd. Flow (prot)		5085	1515		3504	1563				1698	1436	1447
Flt Permitted		1.00	1.00		0.94	1.00				0.95	0.99	1.00
Satd. Flow (perm)		5085	1515		3312	1563				1698	1436	1447
Peak-hour factor, PHF	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97
Adj. Flow (vph)	0	1361	710	6	1028	482	0	0	0	448	0	627
RTOR Reduction (vph)	0	0	406	0	0	276	0	0	0	0	27	27
Lane Group Flow (vph)	0	1361	304	0	1034	206	0	0	0	376	327	318
Confl. Peds. (#/hr)	1		4	4		1						
Confl. Bikes (#/hr)						1						
Heavy Vehicles (%)	0%	2%	4%	0%	3%	1%	0%	0%	0%	1%	0%	6%
Turn Type		NA	Perm	Perm	NA	Perm				Split	NA	Perm
Protected Phases		2			6					4	4	
Permitted Phases			2	6		6						4
Actuated Green, G (s)		25.4	25.4		25.4	25.4				23.2	23.2	23.2
Effective Green, g (s)		25.4	25.4		25.4	25.4				23.2	23.2	23.2
Actuated g/C Ratio		0.43	0.43		0.43	0.43				0.39	0.39	0.39
Clearance Time (s)		5.0	5.0		5.0	5.0				5.8	5.8	5.8
Vehicle Extension (s)		3.0	3.0		3.0	3.0				3.0	3.0	3.0
Lane Grp Cap (vph)		2174	647		1416	668				663	560	565
v/s Ratio Prot		0.27								0.22	c0.23	
v/s Ratio Perm			0.20		c0.31	0.13						0.22
v/c Ratio		0.63	0.47		0.73	0.31				0.57	0.58	0.56
Uniform Delay, d1		13.3	12.2		14.1	11.2				14.2	14.3	14.1
Progression Factor		1.00	1.00		1.00	1.00				1.00	1.00	1.00
Incremental Delay, d2		0.6	0.5		2.0	0.3				3.5	4.4	4.0
Delay (s)		13.9	12.7		16.1	11.5				17.7	18.7	18.1
Level of Service		B	B		B	B				B	B	B
Approach Delay (s)		13.5			14.6			0.0			18.2	
Approach LOS		B			B			A			B	

Intersection Summary			
HCM 2000 Control Delay	14.9	HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio	0.66		
Actuated Cycle Length (s)	59.4	Sum of lost time (s)	10.8
Intersection Capacity Utilization	102.2%	ICU Level of Service	G
Analysis Period (min)	15		
c Critical Lane Group			

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	0	1171	581	2	997	396	484	0	507	0	0	0
Future Volume (vph)	0	1171	581	2	997	396	484	0	507	0	0	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		5.0	4.0		5.0	5.0	5.8	5.8	5.8			
Lane Util. Factor		0.95	1.00		0.95	1.00	0.95	0.91	0.95			
Frpb, ped/bikes		1.00	0.98		1.00	0.98	1.00	1.00	1.00			
Flpb, ped/bikes		1.00	1.00		1.00	1.00	1.00	1.00	1.00			
Frt		1.00	0.85		1.00	0.85	1.00	0.91	0.85			
Flt Protected		1.00	1.00		1.00	1.00	0.95	0.98	1.00			
Satd. Flow (prot)		3539	1547		3574	1550	1618	1500	1519			
Flt Permitted		1.00	1.00		0.95	1.00	0.95	0.98	1.00			
Satd. Flow (perm)		3539	1547		3406	1550	1618	1500	1519			
Peak-hour factor, PHF	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98
Adj. Flow (vph)	0	1195	593	2	1017	404	494	0	517	0	0	0
RTOR Reduction (vph)	0	0	0	0	0	237	0	21	21	0	0	0
Lane Group Flow (vph)	0	1195	593	0	1019	167	351	318	300	0	0	0
Confl. Peds. (#/hr)	1		5	5		1						
Confl. Bikes (#/hr)			1									
Heavy Vehicles (%)	0%	2%	2%	0%	1%	2%	6%	0%	1%	0%	0%	0%
Turn Type		NA	Free	Perm	NA	Perm	Perm	NA	Perm			
Protected Phases		2			6			8				
Permitted Phases			Free	6		6	8		8			
Actuated Green, G (s)		24.7	59.7		24.7	24.7	24.2	24.2	24.2			
Effective Green, g (s)		24.7	59.7		24.7	24.7	24.2	24.2	24.2			
Actuated g/C Ratio		0.41	1.00		0.41	0.41	0.41	0.41	0.41			
Clearance Time (s)		5.0			5.0	5.0	5.8	5.8	5.8			
Vehicle Extension (s)		3.0			3.0	3.0	3.0	3.0	3.0			
Lane Grp Cap (vph)		1464	1547		1409	641	655	608	615			
v/s Ratio Prot		c0.34										
v/s Ratio Perm			0.38		0.30	0.11	c0.22	0.21	0.20			
v/c Ratio		0.82	0.38		0.72	0.26	0.54	0.52	0.49			
Uniform Delay, d1		15.5	0.0		14.6	11.5	13.5	13.4	13.2			
Progression Factor		1.00	1.00		1.00	1.00	1.00	1.00	1.00			
Incremental Delay, d2		3.6	0.7		1.9	0.2	3.1	3.2	2.7			
Delay (s)		19.1	0.7		16.5	11.7	16.6	16.6	15.9			
Level of Service		B	A		B	B	B	B	B			
Approach Delay (s)		13.0			15.1			16.4			0.0	
Approach LOS		B			B			B			A	

Intersection Summary			
HCM 2000 Control Delay	14.5	HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio	0.68		
Actuated Cycle Length (s)	59.7	Sum of lost time (s)	10.8
Intersection Capacity Utilization	62.3%	ICU Level of Service	B
Analysis Period (min)	15		
c Critical Lane Group			

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	77	911	7	74	512	273	10	112	146	68	51	4
Future Volume (vph)	77	911	7	74	512	273	10	112	146	68	51	4
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		5.8		4.6	5.0	4.6	4.6	5.0	5.0	4.6	5.0	5.0
Lane Util. Factor		0.91		1.00	0.91	1.00	1.00	0.86	0.86	1.00	0.95	1.00
Frpb, ped/bikes		1.00		1.00	1.00	1.00	1.00	0.99	0.99	1.00	1.00	0.99
Flpb, ped/bikes		1.00		1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Frt		1.00		1.00	1.00	0.85	1.00	0.94	0.85	1.00	1.00	0.85
Flt Protected		1.00		0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (prot)		4837		1752	4715	1482	1253	4287	1318	1770	3505	1274
Flt Permitted		0.81		0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (perm)		3930		1752	4715	1482	1253	4287	1318	1770	3505	1274
Peak-hour factor, PHF	0.86	0.86	0.86	0.86	0.86	0.86	0.86	0.86	0.86	0.86	0.86	0.86
Adj. Flow (vph)	90	1059	8	86	595	317	12	130	170	79	59	5
RTOR Reduction (vph)	0	1	0	0	0	170	0	52	52	0	0	3
Lane Group Flow (vph)	0	1156	0	86	595	147	12	163	33	79	59	2
Confl. Peds. (#/hr)							2		1	1		2
Heavy Vehicles (%)	4%	7%	0%	3%	10%	9%	44%	9%	4%	2%	3%	25%
Turn Type	pm+pt	NA		Prot	NA	pm+ov	Prot	NA	Perm	Prot	NA	Perm
Protected Phases	7	4		3	8	1	5	2		1	6	
Permitted Phases	4					8			2			6
Actuated Green, G (s)		31.9		5.6	42.9	48.1	1.0	40.7	40.7	5.2	44.9	44.9
Effective Green, g (s)		31.9		5.6	42.9	48.1	1.0	40.7	40.7	5.2	44.9	44.9
Actuated g/C Ratio		0.31		0.05	0.41	0.47	0.01	0.39	0.39	0.05	0.43	0.43
Clearance Time (s)		5.8		4.6	5.0	4.6	4.6	5.0	5.0	4.6	5.0	5.0
Vehicle Extension (s)		3.0		3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0
Lane Grp Cap (vph)		1212		94	1956	689	12	1687	518	89	1521	553
v/s Ratio Prot				c0.05	0.13	0.01	0.01	c0.04		c0.04	c0.02	
v/s Ratio Perm		c0.29				0.09			0.03			0.00
v/c Ratio		0.95		0.91	0.30	0.21	1.00	0.10	0.06	0.89	0.04	0.00
Uniform Delay, d1		35.0		48.7	20.3	16.4	51.2	19.8	19.5	48.8	16.8	16.6
Progression Factor		1.00		1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Incremental Delay, d2		16.0		65.2	0.1	0.2	259.8	0.1	0.2	59.4	0.0	0.0
Delay (s)		51.0		113.9	20.3	16.6	311.0	19.9	19.7	108.2	16.9	16.6
Level of Service		D		F	C	B	F	B	B	F	B	B
Approach Delay (s)		51.0			27.2			31.0			67.3	
Approach LOS		D			C			C			E	

Intersection Summary			
HCM 2000 Control Delay	40.4	HCM 2000 Level of Service	D
HCM 2000 Volume to Capacity ratio	0.51		
Actuated Cycle Length (s)	103.4	Sum of lost time (s)	20.0
Intersection Capacity Utilization	81.2%	ICU Level of Service	D
Analysis Period (min)	15		

c Critical Lane Group

HCM Unsignalized Intersection Capacity Analysis
1: Doolittle Dr & West Project Dwy

12/01/2023

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (veh/h)	19	6	1124	16	22	1513
Future Volume (Veh/h)	19	6	1124	16	22	1513
Sign Control	Stop		Free			Free
Grade	0%		0%			0%
Peak Hour Factor	0.88	0.88	0.88	0.88	0.88	0.88
Hourly flow rate (vph)	22	7	1277	18	25	1719
Pedestrians	1					
Lane Width (ft)	12.0					
Walking Speed (ft/s)	3.5					
Percent Blockage	0					
Right turn flare (veh)						
Median type			TWLTL			TWLTL
Median storage veh)			2			2
Upstream signal (ft)			750			512
pX, platoon unblocked	0.88	0.84			0.84	
vC, conflicting volume	2196	648			1296	
vC1, stage 1 conf vol	1287					
vC2, stage 2 conf vol	910					
vCu, unblocked vol	1292	215			982	
tC, single (s)	6.8	6.9			4.1	
tC, 2 stage (s)	5.8					
tF (s)	3.5	3.3			2.2	
p0 queue free %	92	99			96	
cM capacity (veh/h)	259	671			600	

Direction, Lane #	WB 1	NB 1	NB 2	SB 1	SB 2	SB 3
Volume Total	29	851	444	25	860	860
Volume Left	22	0	0	25	0	0
Volume Right	7	0	18	0	0	0
cSH	304	1700	1700	600	1700	1700
Volume to Capacity	0.10	0.50	0.26	0.04	0.51	0.51
Queue Length 95th (ft)	8	0	0	3	0	0
Control Delay (s)	18.1	0.0	0.0	11.3	0.0	0.0
Lane LOS	C			B		
Approach Delay (s)	18.1	0.0		0.2		
Approach LOS	C					

Intersection Summary			
Average Delay	0.3		
Intersection Capacity Utilization	51.8%	ICU Level of Service	A
Analysis Period (min)	15		

Intersection	
Int Delay, s/veh	0.3

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Vol, veh/h	19	6	1124	16	22	1513
Future Vol, veh/h	19	6	1124	16	22	1513
Conflicting Peds, #/hr	0	0	0	1	1	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	-	50	-
Veh in Median Storage, #	2	-	0	-	-	0
Grade, %	0	-	0	-	-	0
Peak Hour Factor	88	88	88	88	88	88
Heavy Vehicles, %	0	0	14	9	0	17
Mvmt Flow	22	7	1277	18	25	1719

Major/Minor	Minor1		Major1		Major2	
Conflicting Flow All	2197	649	0	0	1296	0
Stage 1	1287	-	-	-	-	-
Stage 2	910	-	-	-	-	-
Critical Hdwy	6.8	6.9	-	-	4.1	-
Critical Hdwy Stg 1	5.8	-	-	-	-	-
Critical Hdwy Stg 2	5.8	-	-	-	-	-
Follow-up Hdwy	3.5	3.3	-	-	2.2	-
Pot Cap-1 Maneuver	39	417	-	-	541	-
Stage 1	227	-	-	-	-	-
Stage 2	358	-	-	-	-	-
Platoon blocked, %			-	-		-
Mov Cap-1 Maneuver	37	417	-	-	540	-
Mov Cap-2 Maneuver	181	-	-	-	-	-
Stage 1	227	-	-	-	-	-
Stage 2	342	-	-	-	-	-

Approach	WB	NB	SB
HCM Control Delay, s	24.9	0	0.2
HCM LOS	C		

Minor Lane/Major Mvmt	NBT	NBR	WBLn1	SBL	SBT
Capacity (veh/h)	-	-	209	540	-
HCM Lane V/C Ratio	-	-	0.136	0.046	-
HCM Control Delay (s)	-	-	24.9	12	-
HCM Lane LOS	-	-	C	B	-
HCM 95th %tile Q(veh)	-	-	0.5	0.1	-

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Volume (veh/h)	15	0	0	15	56	22
Future Volume (Veh/h)	15	0	0	15	56	22
Sign Control		Stop	Stop		Free	
Grade		0%	0%		0%	
Peak Hour Factor	0.86	0.86	0.86	0.86	0.86	0.86
Hourly flow rate (vph)	17	0	0	17	65	26
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type					None	
Median storage veh)						
Upstream signal (ft)						
pX, platoon unblocked						
vC, conflicting volume	160	143	156	0	0	
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	160	143	156	0	0	
tC, single (s)	7.2	6.7	6.7	6.4	4.2	
tC, 2 stage (s)						
tF (s)	3.6	4.1	4.1	3.4	2.3	
p0 queue free %	98	100	100	98	96	
cM capacity (veh/h)	740	694	683	1048	1542	

Direction, Lane #	EB 1	WB 1	SB 1
Volume Total	17	17	91
Volume Left	17	0	65
Volume Right	0	17	26
cSH	740	1048	1542
Volume to Capacity	0.02	0.02	0.04
Queue Length 95th (ft)	2	1	3
Control Delay (s)	10.0	8.5	5.4
Lane LOS	A	A	A
Approach Delay (s)	10.0	8.5	5.4
Approach LOS	A	A	

Intersection Summary			
Average Delay	6.4		
Intersection Capacity Utilization	18.6%	ICU Level of Service	A
Analysis Period (min)	15		

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Volume (veh/h)	315	66	5	238	49	14
Future Volume (Veh/h)	315	66	5	238	49	14
Sign Control	Free			Free	Stop	
Grade	0%			0%	0%	
Peak Hour Factor	0.86	0.86	0.86	0.86	0.86	0.86
Hourly flow rate (vph)	366	77	6	277	57	16
Pedestrians				1		
Lane Width (ft)				12.0		
Walking Speed (ft/s)				3.5		
Percent Blockage				0		
Right turn flare (veh)						
Median type	None			None		
Median storage veh)						
Upstream signal (ft)	426					
pX, platoon unblocked						
vC, conflicting volume			443		694	406
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol			443		694	406
tC, single (s)			4.1		6.5	6.4
tC, 2 stage (s)						
tF (s)			2.2		3.6	3.5
p0 queue free %			99		86	97
cM capacity (veh/h)			1107		395	608

Direction, Lane #	EB 1	WB 1	NB 1
Volume Total	443	283	73
Volume Left	0	6	57
Volume Right	77	0	16
cSH	1700	1107	428
Volume to Capacity	0.26	0.01	0.17
Queue Length 95th (ft)	0	0	15
Control Delay (s)	0.0	0.2	15.1
Lane LOS		A	C
Approach Delay (s)	0.0	0.2	15.1
Approach LOS			C

Intersection Summary			
Average Delay	1.5		
Intersection Capacity Utilization	31.2%	ICU Level of Service	A
Analysis Period (min)	15		

Intersection	
Int Delay, s/veh	1.5

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Vol, veh/h	315	66	5	238	49	14
Future Vol, veh/h	315	66	5	238	49	14
Conflicting Peds, #/hr	0	0	0	0	0	1
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	0	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	86	86	86	86	86	86
Heavy Vehicles, %	8	2	4	14	10	20
Mvmt Flow	366	77	6	277	57	16

Major/Minor	Major1		Major2		Minor1	
Conflicting Flow All	0	0	443	0	694	406
Stage 1	-	-	-	-	405	-
Stage 2	-	-	-	-	289	-
Critical Hdwy	-	-	4.14	-	6.5	6.4
Critical Hdwy Stg 1	-	-	-	-	5.5	-
Critical Hdwy Stg 2	-	-	-	-	5.5	-
Follow-up Hdwy	-	-	2.236	-	3.59	3.48
Pot Cap-1 Maneuver	-	-	1107	-	397	608
Stage 1	-	-	-	-	657	-
Stage 2	-	-	-	-	742	-
Platoon blocked, %	-	-		-		
Mov Cap-1 Maneuver	-	-	1107	-	395	607
Mov Cap-2 Maneuver	-	-	-	-	395	-
Stage 1	-	-	-	-	657	-
Stage 2	-	-	-	-	738	-

Approach	EB	WB	NB
HCM Control Delay, s	0	0.2	15.1
HCM LOS			C

Minor Lane/Major Mvmt	NBLn1	EBT	EBR	WBL	WBT
Capacity (veh/h)	428	-	-	1107	-
HCM Lane V/C Ratio	0.171	-	-	0.005	-
HCM Control Delay (s)	15.1	-	-	8.3	0
HCM Lane LOS	C	-	-	A	A
HCM 95th %tile Q(veh)	0.6	-	-	0	-

Lane Group	WBL	WBR	NBT	NBR	SBL	SBT
Lane Group Flow (vph)	132	34	1039	246	60	1142
v/c Ratio	0.37	0.10	0.57	0.29	0.38	0.55
Control Delay	21.1	6.7	17.2	3.9	36.6	11.0
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	21.1	6.7	17.2	3.9	36.6	11.0
Queue Length 50th (ft)	39	0	138	0	19	97
Queue Length 95th (ft)	76	16	#405	49	#76	330
Internal Link Dist (ft)	346		48			437
Turn Bay Length (ft)		85		230	275	
Base Capacity (vph)	515	473	1828	852	158	2091
Starvation Cap Reductn	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0
Reduced v/c Ratio	0.26	0.07	0.57	0.29	0.38	0.55

Intersection Summary

95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (vph)	125	32	987	234	57	1085
Future Volume (vph)	125	32	987	234	57	1085
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost time (s)	5.2	5.2	5.8	5.8	4.6	5.8
Lane Util. Factor	1.00	1.00	0.95	1.00	1.00	0.95
Frpb, ped/bikes	1.00	1.00	1.00	0.98	1.00	1.00
Flpb, ped/bikes	1.00	1.00	1.00	1.00	1.00	1.00
Frt	1.00	0.85	1.00	0.85	1.00	1.00
Flt Protected	0.95	1.00	1.00	1.00	0.95	1.00
Satd. Flow (prot)	1467	1282	3312	1346	1687	3223
Flt Permitted	0.95	1.00	1.00	1.00	0.95	1.00
Satd. Flow (perm)	1467	1282	3312	1346	1687	3223
Peak-hour factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95
Adj. Flow (vph)	132	34	1039	246	60	1142
RTOR Reduction (vph)	0	27	0	122	0	0
Lane Group Flow (vph)	132	7	1039	124	60	1142
Confl. Peds. (#/hr)	1			2		
Confl. Bikes (#/hr)				3		
Heavy Vehicles (%)	23%	26%	9%	17%	7%	12%
Turn Type	Perm	Perm	NA	Perm	Prot	NA
Protected Phases			2		1	6
Permitted Phases	8	8		2		
Actuated Green, G (s)	11.9	11.9	31.1	31.1	3.1	38.8
Effective Green, g (s)	11.9	11.9	31.1	31.1	3.1	38.8
Actuated g/C Ratio	0.19	0.19	0.50	0.50	0.05	0.63
Clearance Time (s)	5.2	5.2	5.8	5.8	4.6	5.8
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0	3.0
Lane Grp Cap (vph)	282	247	1669	678	84	2026
v/s Ratio Prot			c0.31		0.04	c0.35
v/s Ratio Perm	c0.09	0.01		0.09		
v/c Ratio	0.47	0.03	0.62	0.18	0.71	0.56
Uniform Delay, d1	22.1	20.2	11.1	8.4	28.9	6.6
Progression Factor	1.00	1.00	1.00	1.00	1.00	1.00
Incremental Delay, d2	1.2	0.0	1.8	0.6	24.9	1.1
Delay (s)	23.3	20.2	12.8	9.0	53.7	7.7
Level of Service	C	C	B	A	D	A
Approach Delay (s)	22.7		12.1			10.0
Approach LOS	C		B			B

Intersection Summary			
HCM 2000 Control Delay	11.8	HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio	0.60		
Actuated Cycle Length (s)	61.7	Sum of lost time (s)	15.6
Intersection Capacity Utilization	52.8%	ICU Level of Service	A
Analysis Period (min)	15		
c Critical Lane Group			

Lane Group	EBL	EBT	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT
Lane Group Flow (vph)	60	280	308	170	1042	62	1007	492	826	441
v/c Ratio	0.53	0.57	1.75	0.65	1.43	0.83	0.60	0.73	1.30	0.30
Control Delay	65.4	39.9	390.6	55.0	226.8	117.0	32.0	19.4	184.2	17.8
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	65.4	39.9	390.6	55.0	226.8	117.0	32.0	19.4	184.2	17.8
Queue Length 50th (ft)	41	86	~167	115	~969	44	212	126	~387	90
Queue Length 95th (ft)	90	128	#286	197	#1309	#139	301	306	#580	152
Internal Link Dist (ft)		486		661			407			302
Turn Bay Length (ft)	300		240		120	130		180	260	
Base Capacity (vph)	162	745	176	331	728	75	1667	671	634	1478
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.37	0.38	1.75	0.51	1.43	0.83	0.60	0.73	1.30	0.30

Intersection Summary

~ Volume exceeds capacity, queue is theoretically infinite.
Queue shown is maximum after two cycles.

95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	55	208	46	280	155	948	56	916	448	752	343	58
Future Volume (vph)	55	208	46	280	155	948	56	916	448	752	343	58
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.6	5.2		4.6	5.2	4.6	4.6	5.4	4.6	4.6	5.8	
Lane Util. Factor	1.00	0.95		0.97	1.00	1.00	1.00	0.91	1.00	0.97	0.95	
Frpb, ped/bikes	1.00	1.00		1.00	1.00	1.00	1.00	1.00	0.99	1.00	1.00	
Flpb, ped/bikes	1.00	1.00		1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	
Frt	1.00	0.97		1.00	1.00	0.85	1.00	1.00	0.85	1.00	0.98	
Flt Protected	0.95	1.00		0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	
Satd. Flow (prot)	1211	2279		3019	1357	1495	1318	4673	1238	3242	2989	
Flt Permitted	0.95	1.00		0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	
Satd. Flow (perm)	1211	2279		3019	1357	1495	1318	4673	1238	3242	2989	
Peak-hour factor, PHF	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91
Adj. Flow (vph)	60	229	51	308	170	1042	62	1007	492	826	377	64
RTOR Reduction (vph)	0	17	0	0	0	83	0	0	151	0	10	0
Lane Group Flow (vph)	60	263	0	308	170	959	62	1007	341	826	431	0
Confl. Peds. (#/hr)									1	1		
Confl. Bikes (#/hr)			1									3
Heavy Vehicles (%)	49%	55%	48%	16%	40%	8%	37%	11%	29%	8%	15%	34%
Turn Type	Prot	NA		Prot	NA	pm+ov	Prot	NA	pm+ov	Prot	NA	
Protected Phases	7	4		3	8	1	5	2	3	1	6	
Permitted Phases						8			2			
Actuated Green, G (s)	9.1	23.9		6.4	21.2	42.7	6.3	39.2	45.6	21.5	54.0	
Effective Green, g (s)	9.1	23.9		6.4	21.2	42.7	6.3	39.2	45.6	21.5	54.0	
Actuated g/C Ratio	0.08	0.22		0.06	0.19	0.39	0.06	0.35	0.41	0.19	0.49	
Clearance Time (s)	4.6	5.2		4.6	5.2	4.6	4.6	5.4	4.6	4.6	5.8	
Vehicle Extension (s)	3.0	3.0		3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	
Lane Grp Cap (vph)	99	491		174	259	576	74	1653	509	629	1456	
v/s Ratio Prot	0.05	c0.12		c0.10	0.13	c0.32	0.05	0.22	c0.04	0.25	0.14	
v/s Ratio Perm						0.32			0.24			
v/c Ratio	0.61	0.54		1.77	0.66	1.66	0.84	0.61	0.67	1.31	0.30	
Uniform Delay, d1	49.1	38.5		52.2	41.4	34.0	51.7	29.5	26.5	44.6	17.0	
Progression Factor	1.00	1.00		1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	
Incremental Delay, d2	10.1	1.1		368.9	5.9	306.9	53.0	1.7	3.5	152.1	0.5	
Delay (s)	59.2	39.6		421.1	47.3	340.9	104.7	31.2	30.0	196.7	17.5	
Level of Service	E	D		F	D	F	F	C	C	F	B	
Approach Delay (s)		43.1			324.3			33.7			134.3	
Approach LOS		D			F			C			F	

Intersection Summary			
HCM 2000 Control Delay	155.8	HCM 2000 Level of Service	F
HCM 2000 Volume to Capacity ratio	1.20		
Actuated Cycle Length (s)	110.8	Sum of lost time (s)	20.2
Intersection Capacity Utilization	107.5%	ICU Level of Service	G
Analysis Period (min)	15		
c Critical Lane Group			

HCM 6th Signalized Intersection Summary
5: Doolittle Dr & Davis St

12/01/2023

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	55	208	46	280	155	948	56	916	448	752	343	58
Future Volume (veh/h)	55	208	46	280	155	948	56	916	448	752	343	58
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		0.99	1.00		1.00	1.00		1.00	1.00		0.98
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1174	1085	1189	1663	1307	1781	1352	1737	1470	1781	1678	1396
Adj Flow Rate, veh/h	60	229	51	308	170	1042	62	1007	492	826	377	64
Peak Hour Factor	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91
Percent Heavy Veh, %	49	55	48	16	40	8	37	11	29	8	15	34
Cap, veh/h	68	404	88	175	310	645	72	1576	485	626	1269	213
Arrive On Green	0.06	0.24	0.24	0.06	0.24	0.24	0.06	0.33	0.33	0.19	0.47	0.47
Sat Flow, veh/h	1118	1678	366	3072	1307	1510	1287	4742	1245	3291	2719	457
Grp Volume(v), veh/h	60	139	141	308	170	1042	62	1007	492	826	219	222
Grp Sat Flow(s),veh/h/ln	1118	1031	1013	1536	1307	1510	1287	1581	1245	1646	1594	1582
Q Serve(g_s), s	6.0	13.3	13.8	6.4	12.8	26.7	5.4	20.3	37.4	21.4	9.6	9.8
Cycle Q Clear(g_c), s	6.0	13.3	13.8	6.4	12.8	26.7	5.4	20.3	37.4	21.4	9.6	9.8
Prop In Lane	1.00		0.36	1.00		1.00	1.00		1.00	1.00		0.29
Lane Grp Cap(c), veh/h	68	248	244	175	310	645	72	1576	485	626	744	738
V/C Ratio(X)	0.89	0.56	0.58	1.76	0.55	1.61	0.86	0.64	1.02	1.32	0.30	0.30
Avail Cap(c_a), veh/h	146	321	315	175	310	645	72	1576	485	626	744	738
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	52.5	37.5	37.7	53.1	37.6	32.2	52.7	31.8	34.4	45.6	18.6	18.6
Incr Delay (d2), s/veh	28.7	2.0	2.2	365.4	2.0	283.7	60.9	2.0	44.7	154.8	1.0	1.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	2.2	3.5	3.6	11.3	4.2	67.5	2.9	7.7	18.7	22.0	3.6	3.6
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	81.1	39.4	39.8	418.5	39.6	315.9	113.6	33.8	79.1	200.3	19.6	19.7
LnGrp LOS	F	D	D	F	D	F	F	C	F	F	B	B
Approach Vol, veh/h		340			1520			1561			1267	
Approach Delay, s/veh		46.9			305.8			51.3			137.4	
Approach LOS		D			F			D			F	

Timer - Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	26.0	43.2	11.0	32.3	10.9	58.3	11.4	31.9
Change Period (Y+Rc), s	4.6	* 5.8	4.6	5.2	4.6	5.8	4.6	5.2
Max Green Setting (Gmax), s	21.4	* 37	6.4	35.0	6.3	52.1	14.7	26.7
Max Q Clear Time (g_c+I1), s	23.4	39.4	8.4	15.8	7.4	11.8	8.0	28.7
Green Ext Time (p_c), s	0.0	0.0	0.0	1.6	0.0	2.7	0.1	0.0

Intersection Summary	
HCM 6th Ctrl Delay	156.8
HCM 6th LOS	F

Notes

User approved pedestrian interval to be less than phase max green.

* HCM 6th computational engine requires equal clearance times for the phases crossing the barrier.

Lane Group	EBT	EBR	WBT	WBR	SBL	SBT	SBR
Lane Group Flow (vph)	1278	551	1305	757	253	338	336
v/c Ratio	0.56	0.57	0.77	0.67	0.51	0.75	0.72
Control Delay	11.0	3.6	15.6	4.2	21.5	29.7	27.7
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	11.0	3.6	15.6	4.2	21.5	29.7	27.7
Queue Length 50th (ft)	104	0	181	0	78	106	101
Queue Length 95th (ft)	139	41	257	46	144	#240	#222
Internal Link Dist (ft)	661		674			105	
Turn Bay Length (ft)		400		560	65		350
Base Capacity (vph)	2361	972	1735	1139	497	452	466
Starvation Cap Reductn	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0
Reduced v/c Ratio	0.54	0.57	0.75	0.66	0.51	0.75	0.72

Intersection Summary

95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	2	1238	534	0	1266	734	0	0	0	273	0	627
Future Volume (vph)	2	1238	534	0	1266	734	0	0	0	273	0	627
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		5.0	5.0		5.0	5.0				5.8	5.8	5.8
Lane Util. Factor		0.91	1.00		0.95	1.00				0.95	0.91	0.95
Frpb, ped/bikes		1.00	0.97		1.00	0.98				1.00	1.00	1.00
Flpb, ped/bikes		1.00	1.00		1.00	1.00				1.00	1.00	1.00
Frt		1.00	0.85		1.00	0.85				1.00	0.86	0.85
Flt Protected		1.00	1.00		1.00	1.00				0.95	1.00	1.00
Satd. Flow (prot)		4803	1355		3312	1488				1618	1389	1434
Flt Permitted		0.94	1.00		1.00	1.00				0.95	1.00	1.00
Satd. Flow (perm)		4507	1355		3312	1488				1618	1389	1434
Peak-hour factor, PHF	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97
Adj. Flow (vph)	2	1276	551	0	1305	757	0	0	0	281	0	646
RTOR Reduction (vph)	0	0	270	0	0	371	0	0	0	0	25	25
Lane Group Flow (vph)	0	1278	281	0	1305	386	0	0	0	253	313	311
Confl. Peds. (#/hr)	2		7	7		2						
Confl. Bikes (#/hr)						1						
Heavy Vehicles (%)	0%	8%	16%	0%	9%	6%	0%	0%	0%	6%	0%	7%
Turn Type	Perm	NA	Perm		NA	Perm				Split	NA	Perm
Protected Phases		2			6					4	4	
Permitted Phases	2		2			6						4
Actuated Green, G (s)		30.2	30.2		30.2	30.2				18.2	18.2	18.2
Effective Green, g (s)		30.2	30.2		30.2	30.2				18.2	18.2	18.2
Actuated g/C Ratio		0.51	0.51		0.51	0.51				0.31	0.31	0.31
Clearance Time (s)		5.0	5.0		5.0	5.0				5.8	5.8	5.8
Vehicle Extension (s)		3.0	3.0		3.0	3.0				3.0	3.0	3.0
Lane Grp Cap (vph)		2299	691		1689	759				497	427	440
v/s Ratio Prot					c0.39					0.16	c0.23	
v/s Ratio Perm		0.28	0.21			0.26						0.22
v/c Ratio		0.56	0.41		0.77	0.51				0.51	0.73	0.71
Uniform Delay, d1		9.9	9.0		11.7	9.6				16.8	18.3	18.1
Progression Factor		1.00	1.00		1.00	1.00				1.00	1.00	1.00
Incremental Delay, d2		0.3	0.4		2.3	0.5				3.7	10.6	9.2
Delay (s)		10.2	9.4		14.0	10.1				20.5	29.0	27.4
Level of Service		B	A		B	B				C	C	C
Approach Delay (s)		10.0			12.6			0.0			26.1	
Approach LOS		A			B			A			C	

Intersection Summary			
HCM 2000 Control Delay	14.2	HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio	0.76		
Actuated Cycle Length (s)	59.2	Sum of lost time (s)	10.8
Intersection Capacity Utilization	78.0%	ICU Level of Service	D
Analysis Period (min)	15		
c Critical Lane Group			

Lane Group	EBT	EBR	WBT	WBR	NBL	NBT	NBR
Lane Group Flow (vph)	754	812	1322	610	288	282	261
v/c Ratio	0.44	0.57	0.78	0.57	0.59	0.57	0.46
Control Delay	10.7	1.7	16.4	3.3	22.9	20.2	10.6
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	10.7	1.7	16.4	3.3	22.9	20.2	10.6
Queue Length 50th (ft)	84	0	188	0	90	79	32
Queue Length 95th (ft)	122	0	265	44	165	156	90
Internal Link Dist (ft)	674		169			405	
Turn Bay Length (ft)				1000	260		160
Base Capacity (vph)	1766	1420	1749	1080	490	491	568
Starvation Cap Reductn	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0
Reduced v/c Ratio	0.43	0.57	0.76	0.56	0.59	0.57	0.46

Intersection Summary

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	0	731	788	0	1282	592	490	0	316	0	0	0
Future Volume (vph)	0	731	788	0	1282	592	490	0	316	0	0	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		5.0	4.0		5.0	5.0	5.8	5.8	5.8			
Lane Util. Factor		0.95	1.00		0.95	1.00	0.95	0.91	0.95			
Frpb, ped/bikes		1.00	0.98		1.00	0.98	1.00	1.00	1.00			
Flpb, ped/bikes		1.00	1.00		1.00	1.00	1.00	1.00	1.00			
Frt		1.00	0.85		1.00	0.85	1.00	0.97	0.85			
Flt Protected		1.00	1.00		1.00	1.00	0.95	0.96	1.00			
Satd. Flow (prot)		3471	1420		3438	1533	1504	1433	1447			
Flt Permitted		1.00	1.00		1.00	1.00	0.95	0.96	1.00			
Satd. Flow (perm)		3471	1420		3438	1533	1504	1433	1447			
Peak-hour factor, PHF	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97
Adj. Flow (vph)	0	754	812	0	1322	610	505	0	326	0	0	0
RTOR Reduction (vph)	0	0	0	0	0	310	0	24	97	0	0	0
Lane Group Flow (vph)	0	754	812	0	1322	300	288	258	164	0	0	0
Confl. Peds. (#/hr)	2		7	7		2						
Confl. Bikes (#/hr)			1									
Heavy Vehicles (%)	0%	4%	11%	0%	5%	3%	14%	0%	6%	0%	0%	0%
Turn Type		NA	Free		NA	Perm	Perm	NA	Perm			
Protected Phases		2			6			8				
Permitted Phases			Free			6	8		8			
Actuated Green, G (s)		29.0	59.0		29.0	29.0	19.2	19.2	19.2			
Effective Green, g (s)		29.0	59.0		29.0	29.0	19.2	19.2	19.2			
Actuated g/C Ratio		0.49	1.00		0.49	0.49	0.33	0.33	0.33			
Clearance Time (s)		5.0			5.0	5.0	5.8	5.8	5.8			
Vehicle Extension (s)		3.0			3.0	3.0	3.0	3.0	3.0			
Lane Grp Cap (vph)		1706	1420		1689	753	489	466	470			
v/s Ratio Prot		0.22			c0.38							
v/s Ratio Perm			c0.57			0.20	0.19	0.18	0.11			
v/c Ratio		0.44	0.57		0.78	0.40	0.59	0.55	0.35			
Uniform Delay, d1		9.7	0.0		12.4	9.5	16.6	16.4	15.1			
Progression Factor		1.00	1.00		1.00	1.00	1.00	1.00	1.00			
Incremental Delay, d2		0.2	1.7		2.4	0.3	5.1	4.7	2.0			
Delay (s)		9.9	1.7		14.8	9.8	21.7	21.0	17.2			
Level of Service		A	A		B	A	C	C	B			
Approach Delay (s)		5.7			13.3			20.1			0.0	
Approach LOS		A			B			C			A	

Intersection Summary			
HCM 2000 Control Delay	11.8	HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio	0.77		
Actuated Cycle Length (s)	59.0	Sum of lost time (s)	10.8
Intersection Capacity Utilization	62.7%	ICU Level of Service	B
Analysis Period (min)	15		
c Critical Lane Group			

Lane Group	EBT	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Group Flow (vph)	1086	83	2228	500	20	83	45	61	14	13
v/c Ratio	1.47dl	0.93	1.03	0.52	0.38	0.05	0.08	0.72	0.01	0.02
Control Delay	72.3	128.1	57.5	6.7	66.4	10.8	0.3	89.6	19.2	0.1
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	72.3	128.1	57.5	6.7	66.4	10.8	0.3	89.6	19.2	0.1
Queue Length 50th (ft)	~276	54	~564	53	13	5	0	39	2	0
Queue Length 95th (ft)	#345	#143	#620	119	#39	16	0	#103	9	0
Internal Link Dist (ft)	250		280			220			326	
Turn Bay Length (ft)		90		185	50		140	100		185
Base Capacity (vph)	1046	89	2155	955	53	1591	595	85	1537	628
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	1.04	0.93	1.03	0.52	0.38	0.05	0.08	0.72	0.01	0.02

Intersection Summary

~ Volume exceeds capacity, queue is theoretically infinite.
Queue shown is maximum after two cycles.

95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.

dl Defacto Left Lane. Recode with 1 though lane as a left lane.

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	93	851	1	72	1938	435	17	32	79	53	12	11
Future Volume (vph)	93	851	1	72	1938	435	17	32	79	53	12	11
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		5.8		4.6	5.0	4.6	4.6	5.0	5.0	4.6	5.0	5.0
Lane Util. Factor		0.91		1.00	0.91	1.00	1.00	0.86	0.86	1.00	0.95	1.00
Frpb, ped/bikes		1.00		1.00	1.00	1.00	1.00	0.99	0.99	1.00	1.00	1.00
Flpb, ped/bikes		1.00		1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Frt		1.00		1.00	1.00	0.85	1.00	0.92	0.85	1.00	1.00	0.85
Flt Protected		1.00		0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (prot)		4801		1656	4940	1495	1081	4239	1280	1719	3610	1214
Flt Permitted		0.66		0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (perm)		3183		1656	4940	1495	1081	4239	1280	1719	3610	1214
Peak-hour factor, PHF	0.87	0.87	0.87	0.87	0.87	0.87	0.87	0.87	0.87	0.87	0.87	0.87
Adj. Flow (vph)	107	978	1	83	2228	500	20	37	91	61	14	13
RTOR Reduction (vph)	0	0	0	0	0	175	0	28	28	0	0	8
Lane Group Flow (vph)	0	1086	0	83	2228	325	20	55	17	61	14	5
Confl. Peds. (#/hr)									2	2		
Heavy Vehicles (%)	3%	8%	0%	9%	5%	8%	67%	3%	7%	5%	0%	33%
Turn Type	pm+pt	NA		Prot	NA	pm+ov	Prot	NA	Perm	Prot	NA	Perm
Protected Phases	7	4		3	8	1	5	2		1	6	
Permitted Phases	4					8			2			6
Actuated Green, G (s)		33.0		5.4	43.8	48.8	2.0	39.8	39.8	5.0	42.8	42.8
Effective Green, g (s)		33.0		5.4	43.8	48.8	2.0	39.8	39.8	5.0	42.8	42.8
Actuated g/C Ratio		0.32		0.05	0.42	0.47	0.02	0.39	0.39	0.05	0.41	0.41
Clearance Time (s)		5.8		4.6	5.0	4.6	4.6	5.0	5.0	4.6	5.0	5.0
Vehicle Extension (s)		3.0		3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0
Lane Grp Cap (vph)		1017		86	2096	706	20	1634	493	83	1497	503
v/s Ratio Prot				0.05	c0.45	0.02	0.02	0.01		c0.04	0.00	
v/s Ratio Perm		0.34				0.20			c0.01			c0.00
v/c Ratio		1.47dl		0.97	1.06	0.46	1.00	0.03	0.04	0.73	0.01	0.01
Uniform Delay, d1		35.1		48.8	29.7	18.3	50.6	19.7	19.7	48.4	17.7	17.8
Progression Factor		1.00		1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Incremental Delay, d2		48.2		84.7	38.9	0.5	201.2	0.0	0.1	28.3	0.0	0.0
Delay (s)		83.3		133.5	68.6	18.8	251.8	19.8	19.9	76.7	17.8	17.8
Level of Service		F		F	E	B	F	B	B	E	B	B
Approach Delay (s)		83.3			61.7			51.2			58.6	
Approach LOS		F			E			D			E	

Intersection Summary			
HCM 2000 Control Delay	66.9	HCM 2000 Level of Service	E
HCM 2000 Volume to Capacity ratio	0.61		
Actuated Cycle Length (s)	103.2	Sum of lost time (s)	20.0
Intersection Capacity Utilization	99.8%	ICU Level of Service	F
Analysis Period (min)	15		

dl Defacto Left Lane. Recode with 1 though lane as a left lane.
c Critical Lane Group

HCM Unsignalized Intersection Capacity Analysis
1: Doolittle Dr & West Project Dwy

12/04/2023

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (veh/h)	13	10	1158	17	10	1622
Future Volume (Veh/h)	13	10	1158	17	10	1622
Sign Control	Stop		Free			Free
Grade	0%		0%			0%
Peak Hour Factor	0.93	0.93	0.93	0.93	0.93	0.93
Hourly flow rate (vph)	14	11	1245	18	11	1744
Pedestrians	4					
Lane Width (ft)	12.0					
Walking Speed (ft/s)	3.5					
Percent Blockage	0					
Right turn flare (veh)						
Median type			TWLTL			TWLTL
Median storage veh)			2			2
Upstream signal (ft)			750			512
pX, platoon unblocked	0.50	0.92			0.92	
vC, conflicting volume	2152	636			1267	
vC1, stage 1 conf vol	1258					
vC2, stage 2 conf vol	894					
vCu, unblocked vol	635	438			1123	
tC, single (s)	6.8	6.9			4.1	
tC, 2 stage (s)	5.8					
tF (s)	3.5	3.3			2.2	
p0 queue free %	94	98			98	
cM capacity (veh/h)	250	526			579	

Direction, Lane #	WB 1	NB 1	NB 2	SB 1	SB 2	SB 3
Volume Total	25	830	433	11	872	872
Volume Left	14	0	0	11	0	0
Volume Right	11	0	18	0	0	0
cSH	325	1700	1700	579	1700	1700
Volume to Capacity	0.08	0.49	0.25	0.02	0.51	0.51
Queue Length 95th (ft)	6	0	0	1	0	0
Control Delay (s)	17.0	0.0	0.0	11.3	0.0	0.0
Lane LOS	C			B		
Approach Delay (s)	17.0	0.0		0.1		
Approach LOS	C					

Intersection Summary			
Average Delay	0.2		
Intersection Capacity Utilization	54.8%	ICU Level of Service	A
Analysis Period (min)	15		

Intersection	
Int Delay, s/veh	0.2

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Vol, veh/h	13	10	1158	17	10	1622
Future Vol, veh/h	13	10	1158	17	10	1622
Conflicting Peds, #/hr	0	0	0	4	4	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	-	50	-
Veh in Median Storage, #	2	-	0	-	-	0
Grade, %	0	-	0	-	-	0
Peak Hour Factor	93	93	93	93	93	93
Heavy Vehicles, %	0	0	7	8	0	6
Mvmt Flow	14	11	1245	18	11	1744

Major/Minor	Minor1		Major1		Major2	
Conflicting Flow All	2152	636	0	0	1267	0
Stage 1	1258	-	-	-	-	-
Stage 2	894	-	-	-	-	-
Critical Hdwy	6.8	6.9	-	-	4.1	-
Critical Hdwy Stg 1	5.8	-	-	-	-	-
Critical Hdwy Stg 2	5.8	-	-	-	-	-
Follow-up Hdwy	3.5	3.3	-	-	2.2	-
Pot Cap-1 Maneuver	42	425	-	-	555	-
Stage 1	235	-	-	-	-	-
Stage 2	365	-	-	-	-	-
Platoon blocked, %			-	-		-
Mov Cap-1 Maneuver	41	423	-	-	553	-
Mov Cap-2 Maneuver	188	-	-	-	-	-
Stage 1	234	-	-	-	-	-
Stage 2	358	-	-	-	-	-

Approach	WB	NB	SB
HCM Control Delay, s	21.1	0	0.1
HCM LOS	C		

Minor Lane/Major Mvmt	NBT	NBR	WBLn1	SBL	SBT
Capacity (veh/h)	-	-	248	553	-
HCM Lane V/C Ratio	-	-	0.1	0.019	-
HCM Control Delay (s)	-	-	21.1	11.6	-
HCM Lane LOS	-	-	C	B	-
HCM 95th %tile Q(veh)	-	-	0.3	0.1	-

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Volume (veh/h)	42	0	0	42	24	13
Future Volume (Veh/h)	42	0	0	42	24	13
Sign Control		Stop	Stop		Free	
Grade		0%	0%		0%	
Peak Hour Factor	0.89	0.89	0.89	0.89	0.89	0.89
Hourly flow rate (vph)	47	0	0	47	27	15
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type					None	
Median storage veh)						
Upstream signal (ft)						
pX, platoon unblocked						
vC, conflicting volume	108	62	69	0	0	
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	108	62	69	0	0	
tC, single (s)	7.1	6.5	6.5	6.2	4.1	
tC, 2 stage (s)						
tF (s)	3.5	4.0	4.0	3.3	2.2	
p0 queue free %	94	100	100	96	98	
cM capacity (veh/h)	820	814	806	1082	1617	

Direction, Lane #	EB 1	WB 1	SB 1
Volume Total	47	47	42
Volume Left	47	0	27
Volume Right	0	47	15
cSH	820	1082	1617
Volume to Capacity	0.06	0.04	0.02
Queue Length 95th (ft)	5	3	1
Control Delay (s)	9.7	8.5	4.7
Lane LOS	A	A	A
Approach Delay (s)	9.7	8.5	4.7
Approach LOS	A	A	

Intersection Summary			
Average Delay	7.7		
Intersection Capacity Utilization	19.0%	ICU Level of Service	A
Analysis Period (min)	15		

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Volume (veh/h)	152	3	23	225	46	36
Future Volume (Veh/h)	152	3	23	225	46	36
Sign Control	Free			Free	Stop	
Grade	0%			0%	0%	
Peak Hour Factor	0.89	0.89	0.89	0.89	0.89	0.89
Hourly flow rate (vph)	171	3	26	253	52	40
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type	None			None		
Median storage veh)						
Upstream signal (ft)	426					
pX, platoon unblocked						
vC, conflicting volume			174		478	172
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol			174		478	172
tC, single (s)			4.1		6.4	6.2
tC, 2 stage (s)						
tF (s)			2.2		3.5	3.3
p0 queue free %			98		90	95
cM capacity (veh/h)			1391		533	871

Direction, Lane #	EB 1	WB 1	NB 1
Volume Total	174	279	92
Volume Left	0	26	52
Volume Right	3	0	40
cSH	1700	1391	641
Volume to Capacity	0.10	0.02	0.14
Queue Length 95th (ft)	0	1	12
Control Delay (s)	0.0	0.9	11.6
Lane LOS		A	B
Approach Delay (s)	0.0	0.9	11.6
Approach LOS			B

Intersection Summary			
Average Delay	2.4		
Intersection Capacity Utilization	36.0%	ICU Level of Service	A
Analysis Period (min)	15		

Intersection	
Int Delay, s/veh	2.3

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Vol, veh/h	152	3	23	225	46	36
Future Vol, veh/h	152	3	23	225	46	36
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	0	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	89	89	89	89	89	89
Heavy Vehicles, %	26	24	4	6	4	2
Mvmt Flow	171	3	26	253	52	40

Major/Minor	Major1		Major2		Minor1	
Conflicting Flow All	0	0	174	0	478	173
Stage 1	-	-	-	-	173	-
Stage 2	-	-	-	-	305	-
Critical Hdwy	-	-	4.14	-	6.44	6.22
Critical Hdwy Stg 1	-	-	-	-	5.44	-
Critical Hdwy Stg 2	-	-	-	-	5.44	-
Follow-up Hdwy	-	-	2.236	-	3.536	3.318
Pot Cap-1 Maneuver	-	-	1391	-	542	871
Stage 1	-	-	-	-	852	-
Stage 2	-	-	-	-	743	-
Platoon blocked, %	-	-		-		
Mov Cap-1 Maneuver	-	-	1391	-	530	871
Mov Cap-2 Maneuver	-	-	-	-	530	-
Stage 1	-	-	-	-	852	-
Stage 2	-	-	-	-	727	-

Approach	EB	WB	NB
HCM Control Delay, s	0	0.7	11.6
HCM LOS			B

Minor Lane/Major Mvmt	NBLn1	EBT	EBR	WBL	WBT
Capacity (veh/h)	640	-	-	1391	-
HCM Lane V/C Ratio	0.144	-	-	0.019	-
HCM Control Delay (s)	11.6	-	-	7.6	0
HCM Lane LOS	B	-	-	A	A
HCM 95th %tile Q(veh)	0.5	-	-	0.1	-

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (vph)	224	90	1115	157	16	1681
Future Volume (vph)	224	90	1115	157	16	1681
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost time (s)	5.2	5.2	5.8	5.8	4.6	5.8
Lane Util. Factor	1.00	1.00	0.95	1.00	1.00	0.95
Frpb, ped/bikes	1.00	1.00	1.00	0.98	1.00	1.00
Flpb, ped/bikes	1.00	1.00	1.00	1.00	1.00	1.00
Frt	1.00	0.85	1.00	0.85	1.00	1.00
Flt Protected	0.95	1.00	1.00	1.00	0.95	1.00
Satd. Flow (prot)	1641	1538	3505	1260	1504	3374
Flt Permitted	0.95	1.00	1.00	1.00	0.95	1.00
Satd. Flow (perm)	1641	1538	3505	1260	1504	3374
Peak-hour factor, PHF	0.84	0.84	0.84	0.84	0.84	0.84
Adj. Flow (vph)	267	107	1327	187	19	2001
RTOR Reduction (vph)	0	82	0	94	0	0
Lane Group Flow (vph)	267	25	1327	93	19	2001
Confl. Peds. (#/hr)				1	1	
Confl. Bikes (#/hr)				5		
Heavy Vehicles (%)	10%	5%	3%	25%	20%	7%
Turn Type	Perm	Perm	NA	Perm	Prot	NA
Protected Phases			2		1	6
Permitted Phases	8	8		2		
Actuated Green, G (s)	14.0	14.0	29.9	29.9	0.9	35.4
Effective Green, g (s)	14.0	14.0	29.9	29.9	0.9	35.4
Actuated g/C Ratio	0.23	0.23	0.50	0.50	0.01	0.59
Clearance Time (s)	5.2	5.2	5.8	5.8	4.6	5.8
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0	3.0
Lane Grp Cap (vph)	380	356	1735	623	22	1977
v/s Ratio Prot			0.38		0.01	c0.59
v/s Ratio Perm	c0.16	0.02		0.07		
v/c Ratio	0.70	0.07	0.76	0.15	0.86	1.01
Uniform Delay, d1	21.3	18.1	12.4	8.3	29.7	12.5
Progression Factor	1.00	1.00	1.00	1.00	1.00	1.00
Incremental Delay, d2	5.8	0.1	3.3	0.5	129.4	23.3
Delay (s)	27.1	18.2	15.7	8.8	159.1	35.8
Level of Service	C	B	B	A	F	D
Approach Delay (s)	24.5		14.8			36.9
Approach LOS	C		B			D

Intersection Summary			
HCM 2000 Control Delay	27.2	HCM 2000 Level of Service	C
HCM 2000 Volume to Capacity ratio	1.02		
Actuated Cycle Length (s)	60.4	Sum of lost time (s)	15.6
Intersection Capacity Utilization	68.0%	ICU Level of Service	C
Analysis Period (min)	15		
c Critical Lane Group			

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	66	144	51	327	125	812	18	461	270	913	1072	49
Future Volume (vph)	66	144	51	327	125	812	18	461	270	913	1072	49
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.6	5.2		4.6	5.2	4.6	4.6	5.4	4.6	4.6	5.8	
Lane Util. Factor	1.00	0.95		0.97	1.00	1.00	1.00	0.91	1.00	0.97	0.95	
Frpb, ped/bikes	1.00	1.00		1.00	1.00	1.00	1.00	1.00	0.99	1.00	1.00	
Flpb, ped/bikes	1.00	1.00		1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	
Frt	1.00	0.96		1.00	1.00	0.85	1.00	1.00	0.85	1.00	0.99	
Flt Protected	0.95	1.00		0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	
Satd. Flow (prot)	1188	2894		3045	1226	1568	1543	5036	1474	3335	3284	
Flt Permitted	0.95	1.00		0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	
Satd. Flow (perm)	1188	2894		3045	1226	1568	1543	5036	1474	3335	3284	
Peak-hour factor, PHF	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88
Adj. Flow (vph)	75	164	58	372	142	923	20	524	307	1038	1218	56
RTOR Reduction (vph)	0	33	0	0	0	124	0	0	176	0	2	0
Lane Group Flow (vph)	75	189	0	372	142	799	20	524	131	1038	1272	0
Confl. Peds. (#/hr)			5	5					2	2		
Confl. Bikes (#/hr)			1						5			1
Heavy Vehicles (%)	52%	18%	23%	15%	55%	3%	17%	3%	8%	5%	7%	55%
Turn Type	Prot	NA		Prot	NA	pm+ov	Prot	NA	pm+ov	Prot	NA	
Protected Phases	7	4		3	8	1	5	2	3	1	6	
Permitted Phases						8			2			
Actuated Green, G (s)	9.9	24.4		6.5	21.0	42.6	2.3	42.2	48.7	21.6	61.1	
Effective Green, g (s)	9.9	24.4		6.5	21.0	42.6	2.3	42.2	48.7	21.6	61.1	
Actuated g/C Ratio	0.09	0.21		0.06	0.18	0.37	0.02	0.37	0.43	0.19	0.53	
Clearance Time (s)	4.6	5.2		4.6	5.2	4.6	4.6	5.4	4.6	4.6	5.8	
Vehicle Extension (s)	3.0	3.0		3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	
Lane Grp Cap (vph)	102	616		172	224	583	30	1856	626	629	1752	
v/s Ratio Prot	0.06	c0.07		c0.12	0.12	c0.26	0.01	0.10	0.01	c0.31	c0.39	
v/s Ratio Perm						0.25			0.08			
v/c Ratio	0.74	0.31		2.16	0.63	1.37	0.67	0.28	0.21	1.65	0.73	
Uniform Delay, d1	51.0	37.9		54.0	43.2	36.0	55.7	25.5	20.7	46.5	20.3	
Progression Factor	1.00	1.00		1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	
Incremental Delay, d2	23.8	0.3		542.0	5.8	177.2	44.1	0.4	0.2	299.7	2.7	
Delay (s)	74.8	38.2		596.0	49.0	213.2	99.9	25.9	20.9	346.1	23.0	
Level of Service	E	D		F	D	F	F	C	C	F	C	
Approach Delay (s)		47.5			296.1			25.8			168.1	
Approach LOS		D			F			C			F	

Intersection Summary			
HCM 2000 Control Delay	173.6	HCM 2000 Level of Service	F
HCM 2000 Volume to Capacity ratio	1.17		
Actuated Cycle Length (s)	114.5	Sum of lost time (s)	20.2
Intersection Capacity Utilization	99.1%	ICU Level of Service	F
Analysis Period (min)	15		
c Critical Lane Group			

HCM 6th Signalized Intersection Summary
5: Doolittle Dr & Davis St

12/04/2023

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	66	144	51	327	125	812	18	461	270	913	1072	49
Future Volume (veh/h)	66	144	51	327	125	812	18	461	270	913	1072	49
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		0.98	1.00		0.99	1.00		0.98	1.00		0.98
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1129	1633	1559	1678	1085	1856	1648	1856	1781	1826	1796	1085
Adj Flow Rate, veh/h	75	164	58	372	142	923	20	524	307	1038	1218	56
Peak Hour Factor	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88
Percent Heavy Veh, %	52	18	23	15	55	3	17	3	8	5	7	55
Cap, veh/h	85	579	197	173	252	657	32	1651	568	629	1632	75
Arrive On Green	0.08	0.26	0.26	0.06	0.23	0.23	0.02	0.33	0.33	0.19	0.49	0.49
Sat Flow, veh/h	1076	2261	768	3100	1085	1562	1570	5066	1484	3374	3319	152
Grp Volume(v), veh/h	75	110	112	372	142	923	20	524	307	1038	626	648
Grp Sat Flow(s),veh/h/ln	1076	1552	1478	1550	1085	1562	1570	1689	1484	1687	1706	1765
Q Serve(g_s), s	7.9	6.5	7.0	6.4	13.3	26.7	1.5	8.9	18.5	21.4	33.8	33.9
Cycle Q Clear(g_c), s	7.9	6.5	7.0	6.4	13.3	26.7	1.5	8.9	18.5	21.4	33.8	33.9
Prop In Lane	1.00		0.52	1.00		1.00	1.00		1.00	1.00		0.09
Lane Grp Cap(c), veh/h	85	397	378	173	252	657	32	1651	568	629	839	868
V/C Ratio(X)	0.88	0.28	0.29	2.15	0.56	1.41	0.62	0.32	0.54	1.65	0.75	0.75
Avail Cap(c_a), veh/h	138	473	451	173	252	657	86	1651	568	629	839	868
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	52.3	34.2	34.4	54.2	38.9	33.4	55.8	29.1	27.7	46.7	23.4	23.4
Incr Delay (d2), s/veh	29.3	0.4	0.4	537.2	2.8	191.5	17.9	0.5	3.7	299.6	6.0	5.8
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	2.8	2.5	2.6	15.4	3.7	52.4	0.7	3.6	7.0	34.9	14.1	14.6
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	81.6	34.6	34.8	591.4	41.7	224.9	73.6	29.6	31.3	346.3	29.4	29.2
LnGrp LOS	F	C	C	F	D	F	E	C	C	F	C	C
Approach Vol, veh/h		297			1437			851			2312	
Approach Delay, s/veh		46.5			301.7			31.3			171.6	
Approach LOS		D			F			C			F	

Timer - Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	26.0	43.2	11.0	34.6	7.0	62.2	13.7	31.9
Change Period (Y+Rc), s	4.6	* 5.8	4.6	5.2	4.6	5.8	4.6	5.2
Max Green Setting (Gmax), s	21.4	* 37	6.4	35.0	6.3	52.1	14.7	26.7
Max Q Clear Time (g_c+I1), s	23.4	20.5	8.4	9.0	3.5	35.9	9.9	28.7
Green Ext Time (p_c), s	0.0	4.0	0.0	1.3	0.0	7.5	0.1	0.0

Intersection Summary	
HCM 6th Ctrl Delay	177.8
HCM 6th LOS	F

Notes

User approved pedestrian interval to be less than phase max green.

* HCM 6th computational engine requires equal clearance times for the phases crossing the barrier.

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	1	1554	687	0	1425	478	0	0	0	667	0	621
Future Volume (vph)	1	1554	687	0	1425	478	0	0	0	667	0	621
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		5.0	5.0		5.0	5.0				5.8	5.8	5.8
Lane Util. Factor		0.91	1.00		0.95	1.00				0.95	0.91	0.95
Frpb, ped/bikes		1.00	0.98		1.00	0.98				1.00	1.00	1.00
Flpb, ped/bikes		1.00	1.00		1.00	1.00				1.00	1.00	1.00
Frt		1.00	0.85		1.00	0.85				1.00	0.93	0.85
Flt Protected		1.00	1.00		1.00	1.00				0.95	0.98	1.00
Satd. Flow (prot)		5085	1515		3505	1563				1698	1510	1447
Flt Permitted		0.93	1.00		1.00	1.00				0.95	0.98	1.00
Satd. Flow (perm)		4725	1515		3505	1563				1698	1510	1447
Peak-hour factor, PHF	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97
Adj. Flow (vph)	1	1602	708	0	1469	493	0	0	0	688	0	640
RTOR Reduction (vph)	0	0	401	0	0	279	0	0	0	0	22	22
Lane Group Flow (vph)	0	1603	307	0	1469	214	0	0	0	461	423	400
Confl. Peds. (#/hr)	1		4	4		1						
Confl. Bikes (#/hr)						1						
Heavy Vehicles (%)	0%	2%	4%	0%	3%	1%	0%	0%	0%	1%	0%	6%
Turn Type	Perm	NA	Perm		NA	Perm				Split	NA	Perm
Protected Phases		2			6					4	4	
Permitted Phases	2		2			6						4
Actuated Green, G (s)		26.0	26.0		26.0	26.0				23.2	23.2	23.2
Effective Green, g (s)		26.0	26.0		26.0	26.0				23.2	23.2	23.2
Actuated g/C Ratio		0.43	0.43		0.43	0.43				0.39	0.39	0.39
Clearance Time (s)		5.0	5.0		5.0	5.0				5.8	5.8	5.8
Vehicle Extension (s)		3.0	3.0		3.0	3.0				3.0	3.0	3.0
Lane Grp Cap (vph)		2047	656		1518	677				656	583	559
v/s Ratio Prot					c0.42					0.27	c0.28	
v/s Ratio Perm		0.34	0.20			0.14						0.28
v/c Ratio		0.78	0.47		0.97	0.32				0.70	0.73	0.72
Uniform Delay, d1		14.6	12.1		16.6	11.2				15.5	15.7	15.6
Progression Factor		1.00	1.00		1.00	1.00				1.00	1.00	1.00
Incremental Delay, d2		2.0	0.5		15.9	0.3				6.2	7.7	7.6
Delay (s)		16.6	12.6		32.5	11.4				21.7	23.4	23.2
Level of Service		B	B		C	B				C	C	C
Approach Delay (s)		15.4			27.2			0.0			22.7	
Approach LOS		B			C			A			C	

Intersection Summary			
HCM 2000 Control Delay	21.3	HCM 2000 Level of Service	C
HCM 2000 Volume to Capacity ratio	0.85		
Actuated Cycle Length (s)	60.0	Sum of lost time (s)	10.8
Intersection Capacity Utilization	76.8%	ICU Level of Service	D
Analysis Period (min)	15		
c Critical Lane Group			

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	0	1555	664	0	1062	406	777	0	517	0	0	0
Future Volume (vph)	0	1555	664	0	1062	406	777	0	517	0	0	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		5.0	4.0		5.0	5.0	5.8	5.8	5.8			
Lane Util. Factor		0.95	1.00		0.95	1.00	0.95	0.91	0.95			
Frpb, ped/bikes		1.00	0.98		1.00	0.98	1.00	1.00	1.00			
Flpb, ped/bikes		1.00	1.00		1.00	1.00	1.00	1.00	1.00			
Frt		1.00	0.85		1.00	0.85	1.00	0.96	0.85			
Flt Protected		1.00	1.00		1.00	1.00	0.95	0.96	1.00			
Satd. Flow (prot)		3539	1547		3574	1550	1618	1531	1519			
Flt Permitted		1.00	1.00		1.00	1.00	0.95	0.96	1.00			
Satd. Flow (perm)		3539	1547		3574	1550	1618	1531	1519			
Peak-hour factor, PHF	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98
Adj. Flow (vph)	0	1587	678	0	1084	414	793	0	528	0	0	0
RTOR Reduction (vph)	0	0	0	0	0	239	0	22	22	0	0	0
Lane Group Flow (vph)	0	1587	678	0	1084	175	460	427	390	0	0	0
Confl. Peds. (#/hr)	1		5	5		1						
Confl. Bikes (#/hr)			1									
Heavy Vehicles (%)	0%	2%	2%	0%	1%	2%	6%	0%	1%	0%	0%	0%
Turn Type		NA	Free		NA	Perm	Perm	NA	Perm			
Protected Phases		2			6			8				
Permitted Phases			Free			6	8		8			
Actuated Green, G (s)		25.6	60.6		25.6	25.6	24.2	24.2	24.2			
Effective Green, g (s)		25.6	60.6		25.6	25.6	24.2	24.2	24.2			
Actuated g/C Ratio		0.42	1.00		0.42	0.42	0.40	0.40	0.40			
Clearance Time (s)		5.0			5.0	5.0	5.8	5.8	5.8			
Vehicle Extension (s)		3.0			3.0	3.0	3.0	3.0	3.0			
Lane Grp Cap (vph)		1495	1547		1509	654	646	611	606			
v/s Ratio Prot		c0.45			0.30							
v/s Ratio Perm			0.44			0.11	c0.28	0.28	0.26			
v/c Ratio		1.06	0.44		0.72	0.27	0.71	0.70	0.64			
Uniform Delay, d1		17.5	0.0		14.5	11.4	15.3	15.2	14.7			
Progression Factor		1.00	1.00		1.00	1.00	1.00	1.00	1.00			
Incremental Delay, d2		41.5	0.9		1.7	0.2	6.6	6.5	5.2			
Delay (s)		59.0	0.9		16.2	11.6	21.8	21.7	19.9			
Level of Service		E	A		B	B	C	C	B			
Approach Delay (s)		41.6			14.9			21.2			0.0	
Approach LOS		D			B			C			A	

Intersection Summary			
HCM 2000 Control Delay	28.5	HCM 2000 Level of Service	C
HCM 2000 Volume to Capacity ratio	0.89		
Actuated Cycle Length (s)	60.6	Sum of lost time (s)	10.8
Intersection Capacity Utilization	78.8%	ICU Level of Service	D
Analysis Period (min)	15		
c Critical Lane Group			

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	81	2250	8	86	1581	282	14	78	151	115	30	9
Future Volume (vph)	81	2250	8	86	1581	282	14	78	151	115	30	9
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		5.8		4.6	5.0	4.6	4.6	5.0	5.0	4.6	5.0	5.0
Lane Util. Factor		0.91		1.00	0.91	1.00	1.00	0.86	0.86	1.00	0.95	1.00
Frpb, ped/bikes		1.00		1.00	1.00	1.00	1.00	0.99	0.99	1.00	1.00	0.99
Flpb, ped/bikes		1.00		1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Frt		1.00		1.00	1.00	0.85	1.00	0.93	0.85	1.00	1.00	0.85
Flt Protected		1.00		0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (prot)		4843		1752	4715	1482	1253	4235	1318	1770	3505	1274
Flt Permitted		0.64		0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (perm)		3085		1752	4715	1482	1253	4235	1318	1770	3505	1274
Peak-hour factor, PHF	0.86	0.86	0.86	0.86	0.86	0.86	0.86	0.86	0.86	0.86	0.86	0.86
Adj. Flow (vph)	94	2616	9	100	1838	328	16	91	176	134	35	10
RTOR Reduction (vph)	0	1	0	0	0	139	0	54	54	0	0	6
Lane Group Flow (vph)	0	2718	0	100	1838	189	16	125	34	134	35	4
Confl. Peds. (#/hr)							2		1	1		2
Heavy Vehicles (%)	4%	7%	0%	3%	10%	9%	44%	9%	4%	2%	3%	25%
Turn Type	pm+pt	NA		Prot	NA	pm+ov	Prot	NA	Perm	Prot	NA	Perm
Protected Phases	7	4		3	8	1	5	2		1	6	
Permitted Phases	4					8			2			6
Actuated Green, G (s)		33.0		5.6	44.0	49.2	2.0	39.8	39.8	5.2	43.0	43.0
Effective Green, g (s)		33.0		5.6	44.0	49.2	2.0	39.8	39.8	5.2	43.0	43.0
Actuated g/C Ratio		0.32		0.05	0.42	0.47	0.02	0.38	0.38	0.05	0.42	0.42
Clearance Time (s)		5.8		4.6	5.0	4.6	4.6	5.0	5.0	4.6	5.0	5.0
Vehicle Extension (s)		3.0		3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0
Lane Grp Cap (vph)		982		94	2002	703	24	1626	506	88	1454	528
v/s Ratio Prot				0.06	c0.39	0.01	0.01	c0.03		c0.08	c0.01	
v/s Ratio Perm		c0.88				0.11			0.03			0.00
v/c Ratio		2.77		1.06	0.92	0.27	0.67	0.08	0.07	1.52	0.02	0.01
Uniform Delay, d1		35.3		49.0	28.1	16.4	50.5	20.2	20.2	49.2	17.9	17.8
Progression Factor		1.00		1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Incremental Delay, d2		798.5		111.2	7.2	0.2	52.8	0.1	0.3	284.5	0.0	0.0
Delay (s)		833.8		160.2	35.3	16.6	103.3	20.3	20.4	333.7	17.9	17.8
Level of Service		F		F	D	B	F	C	C	F	B	B
Approach Delay (s)		833.8			38.1			25.0			254.3	
Approach LOS		F			D			C			F	

Intersection Summary			
HCM 2000 Control Delay	441.7	HCM 2000 Level of Service	F
HCM 2000 Volume to Capacity ratio	1.29		
Actuated Cycle Length (s)	103.6	Sum of lost time (s)	20.0
Intersection Capacity Utilization	130.0%	ICU Level of Service	H
Analysis Period (min)	15		

c Critical Lane Group

HCM Signalized Intersection Capacity Analysis
5: Doolittle Dr & Davis St

12/04/2023

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	55	208	46	280	155	1023	56	926	448	757	345	58
Future Volume (vph)	55	208	46	280	155	1023	56	926	448	757	345	58
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.6	5.2		4.6	5.2	4.6	4.6	5.4	4.6	4.6	5.8	
Lane Util. Factor	1.00	0.95		0.97	1.00	1.00	1.00	0.91	1.00	0.97	0.95	
Frpb, ped/bikes	1.00	1.00		1.00	1.00	1.00	1.00	1.00	0.99	1.00	1.00	
Flpb, ped/bikes	1.00	1.00		1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	
Frt	1.00	0.97		1.00	1.00	0.85	1.00	1.00	0.85	1.00	0.98	
Flt Protected	0.95	1.00		0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	
Satd. Flow (prot)	1211	2279		3019	1357	1495	1318	4673	1239	3242	2990	
Flt Permitted	0.95	1.00		0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	
Satd. Flow (perm)	1211	2279		3019	1357	1495	1318	4673	1239	3242	2990	
Peak-hour factor, PHF	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91
Adj. Flow (vph)	60	229	51	308	170	1124	62	1018	492	832	379	64
RTOR Reduction (vph)	0	15	0	0	0	71	0	0	132	0	8	0
Lane Group Flow (vph)	60	265	0	308	170	1053	62	1018	360	832	435	0
Confl. Peds. (#/hr)									1	1		
Confl. Bikes (#/hr)			1									3
Heavy Vehicles (%)	49%	55%	48%	16%	40%	8%	37%	11%	29%	8%	15%	34%
Turn Type	Prot	NA		Prot	NA	pm+ov	Prot	NA	pm+ov	Prot	NA	
Protected Phases	7	4		3	8	1	5	2	3	1	6	
Permitted Phases						8			2			
Actuated Green, G (s)	9.7	22.5		12.4	25.2	54.7	9.4	43.5	55.9	29.5	63.2	
Effective Green, g (s)	9.7	22.5		12.4	25.2	54.7	9.4	43.5	55.9	29.5	63.2	
Actuated g/C Ratio	0.08	0.18		0.10	0.20	0.43	0.07	0.34	0.44	0.23	0.49	
Clearance Time (s)	4.6	5.2		4.6	5.2	4.6	4.6	5.4	4.6	4.6	5.8	
Vehicle Extension (s)	3.0	3.0		3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	
Lane Grp Cap (vph)	91	401		293	267	640	97	1591	542	748	1479	
v/s Ratio Prot	0.05	0.12		c0.10	0.13	c0.38	0.05	0.22	c0.06	0.26	0.15	
v/s Ratio Perm						0.32			0.23			
v/c Ratio	0.66	0.66		1.05	0.64	1.65	0.64	0.64	0.67	1.11	0.29	
Uniform Delay, d1	57.4	49.0		57.6	47.0	36.5	57.5	35.5	28.5	49.1	19.1	
Progression Factor	1.00	1.00		1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	
Incremental Delay, d2	16.0	4.1		66.6	4.9	297.5	13.0	2.0	3.1	68.2	0.5	
Delay (s)	73.3	53.1		124.3	52.0	334.0	70.5	37.5	31.5	117.3	19.6	
Level of Service	E	D		F	D	F	E	D	C	F	B	
Approach Delay (s)		56.7			263.7			36.9			83.3	
Approach LOS		E			F			D			F	

Intersection Summary			
HCM 2000 Control Delay	126.6	HCM 2000 Level of Service	F
HCM 2000 Volume to Capacity ratio	1.22		
Actuated Cycle Length (s)	127.7	Sum of lost time (s)	20.2
Intersection Capacity Utilization	112.2%	ICU Level of Service	H
Analysis Period (min)	15		
c Critical Lane Group			

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	55	208	46	280	155	1023	56	926	448	757	345	58
Future Volume (veh/h)	55	208	46	280	155	1023	56	926	448	757	345	58
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		0.99	1.00		1.00	1.00		1.00	1.00		0.98
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1174	1085	1189	1663	1307	1781	1352	1737	1470	1781	1678	1396
Adj Flow Rate, veh/h	60	229	51	308	170	1124	62	1018	492	832	379	64
Peak Hour Factor	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91
Percent Heavy Veh, %	49	55	48	16	40	8	37	11	29	8	15	34
Cap, veh/h	68	418	91	274	362	737	73	1446	491	696	1251	209
Arrive On Green	0.06	0.25	0.25	0.09	0.28	0.28	0.06	0.31	0.31	0.21	0.46	0.46
Sat Flow, veh/h	1118	1678	366	3072	1307	1510	1287	4742	1245	3291	2722	455
Grp Volume(v), veh/h	60	139	141	308	170	1124	62	1018	492	832	220	223
Grp Sat Flow(s),veh/h/ln	1118	1031	1013	1536	1307	1510	1287	1581	1245	1646	1594	1583
Q Serve(g_s), s	7.4	16.2	16.9	12.4	15.0	38.5	6.6	26.4	42.4	29.4	12.1	12.3
Cycle Q Clear(g_c), s	7.4	16.2	16.9	12.4	15.0	38.5	6.6	26.4	42.4	29.4	12.1	12.3
Prop In Lane	1.00		0.36	1.00		1.00	1.00		1.00	1.00		0.29
Lane Grp Cap(c), veh/h	68	257	252	274	362	737	73	1446	491	696	733	728
V/C Ratio(X)	0.88	0.54	0.56	1.12	0.47	1.52	0.85	0.70	1.00	1.20	0.30	0.31
Avail Cap(c_a), veh/h	120	304	299	274	362	737	130	1446	491	696	733	728
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	64.7	45.3	45.5	63.3	41.8	35.6	65.0	42.8	42.1	54.8	23.5	23.6
Incr Delay (d2), s/veh	27.2	1.8	1.9	91.9	0.9	242.8	22.5	2.9	41.2	101.6	1.1	1.1
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	2.6	4.3	4.4	8.3	4.9	73.7	2.6	10.4	22.1	21.8	4.7	4.8
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	91.9	47.1	47.5	155.2	42.7	278.4	87.5	45.6	83.4	156.4	24.6	24.7
LnGrp LOS	F	D	D	F	D	F	F	D	F	F	C	C
Approach Vol, veh/h		340			1602			1572			1275	
Approach Delay, s/veh		55.2			229.7			59.1			110.6	
Approach LOS		E			F			E			F	

Timer - Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	34.0	48.2	17.0	39.8	12.5	69.7	13.1	43.7
Change Period (Y+Rc), s	4.6	* 5.8	4.6	5.2	4.6	5.8	4.6	5.2
Max Green Setting (Gmax), s	29.4	* 42	12.4	41.0	14.0	57.4	14.9	38.5
Max Q Clear Time (g_c+I1), s	31.4	44.4	14.4	18.9	8.6	14.3	9.4	40.5
Green Ext Time (p_c), s	0.0	0.0	0.0	1.7	0.0	2.7	0.0	0.0

Intersection Summary	
HCM 6th Ctrl Delay	129.6
HCM 6th LOS	F

Notes

User approved pedestrian interval to be less than phase max green.

* HCM 6th computational engine requires equal clearance times for the phases crossing the barrier.

HCM Unsignalized Intersection Capacity Analysis
1: Doolittle Dr & West Project Dwy

12/04/2023

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (veh/h)	26	11	1124	101	29	1513
Future Volume (Veh/h)	26	11	1124	101	29	1513
Sign Control	Stop		Free			Free
Grade	0%		0%			0%
Peak Hour Factor	0.88	0.88	0.88	0.88	0.88	0.88
Hourly flow rate (vph)	30	12	1277	115	33	1719
Pedestrians	1					
Lane Width (ft)	12.0					
Walking Speed (ft/s)	3.5					
Percent Blockage	0					
Right turn flare (veh)						
Median type			TWLTL			TWLTL
Median storage veh)			2			2
Upstream signal (ft)			750			512
pX, platoon unblocked	0.88	0.84			0.84	
vC, conflicting volume	2261	697			1393	
vC1, stage 1 conf vol	1336					
vC2, stage 2 conf vol	926					
vCu, unblocked vol	1336	254			1084	
tC, single (s)	6.8	6.9			4.1	
tC, 2 stage (s)	5.8					
tF (s)	3.5	3.3			2.2	
p0 queue free %	88	98			94	
cM capacity (veh/h)	244	630			546	

Direction, Lane #	WB 1	NB 1	NB 2	SB 1	SB 2	SB 3
Volume Total	42	851	541	33	860	860
Volume Left	30	0	0	33	0	0
Volume Right	12	0	115	0	0	0
cSH	296	1700	1700	546	1700	1700
Volume to Capacity	0.14	0.50	0.32	0.06	0.51	0.51
Queue Length 95th (ft)	12	0	0	5	0	0
Control Delay (s)	19.2	0.0	0.0	12.0	0.0	0.0
Lane LOS	C			B		
Approach Delay (s)	19.2	0.0		0.2		
Approach LOS	C					

Intersection Summary			
Average Delay	0.4		
Intersection Capacity Utilization	51.8%	ICU Level of Service	A
Analysis Period (min)	15		

Intersection	
Int Delay, s/veh	0.5

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Vol, veh/h	26	11	1124	101	29	1513
Future Vol, veh/h	26	11	1124	101	29	1513
Conflicting Peds, #/hr	0	0	0	1	1	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	-	50	-
Veh in Median Storage, #	2	-	0	-	-	0
Grade, %	0	-	0	-	-	0
Peak Hour Factor	88	88	88	88	88	88
Heavy Vehicles, %	0	0	14	9	0	17
Mvmt Flow	30	13	1277	115	33	1719

Major/Minor	Minor1		Major1		Major2	
Conflicting Flow All	2262	697	0	0	1393	0
Stage 1	1336	-	-	-	-	-
Stage 2	926	-	-	-	-	-
Critical Hdwy	6.8	6.9	-	-	4.1	-
Critical Hdwy Stg 1	5.8	-	-	-	-	-
Critical Hdwy Stg 2	5.8	-	-	-	-	-
Follow-up Hdwy	3.5	3.3	-	-	2.2	-
Pot Cap-1 Maneuver	35	388	-	-	497	-
Stage 1	213	-	-	-	-	-
Stage 2	351	-	-	-	-	-
Platoon blocked, %			-	-		-
Mov Cap-1 Maneuver	33	388	-	-	497	-
Mov Cap-2 Maneuver	170	-	-	-	-	-
Stage 1	213	-	-	-	-	-
Stage 2	328	-	-	-	-	-

Approach	WB	NB	SB
HCM Control Delay, s	27.2	0	0.2
HCM LOS	D		

Minor Lane/Major Mvmt	NBT	NBR	WBLn1	SBL	SBT
Capacity (veh/h)	-	-	204	497	-
HCM Lane V/C Ratio	-	-	0.206	0.066	-
HCM Control Delay (s)	-	-	27.2	12.8	-
HCM Lane LOS	-	-	D	B	-
HCM 95th %tile Q(veh)	-	-	0.8	0.2	-

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Volume (veh/h)	40	0	0	18	64	91
Future Volume (Veh/h)	40	0	0	18	64	91
Sign Control		Stop	Stop		Free	
Grade		0%	0%		0%	
Peak Hour Factor	0.86	0.86	0.86	0.86	0.86	0.86
Hourly flow rate (vph)	47	0	0	21	74	106
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type					None	
Median storage veh)						
Upstream signal (ft)						
pX, platoon unblocked						
vC, conflicting volume	222	201	254	0	0	
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	222	201	254	0	0	
tC, single (s)	7.2	6.7	6.7	6.4	4.2	
tC, 2 stage (s)						
tF (s)	3.6	4.1	4.1	3.4	2.3	
p0 queue free %	93	100	100	98	95	
cM capacity (veh/h)	667	640	598	1048	1542	

Direction, Lane #	EB 1	WB 1	SB 1
Volume Total	47	21	180
Volume Left	47	0	74
Volume Right	0	21	106
cSH	667	1048	1542
Volume to Capacity	0.07	0.02	0.05
Queue Length 95th (ft)	6	2	4
Control Delay (s)	10.8	8.5	3.3
Lane LOS	B	A	A
Approach Delay (s)	10.8	8.5	3.3
Approach LOS	B	A	

Intersection Summary			
Average Delay	5.2		
Intersection Capacity Utilization	24.7%	ICU Level of Service	A
Analysis Period (min)	15		

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Volume (veh/h)	315	101	47	238	54	37
Future Volume (Veh/h)	315	101	47	238	54	37
Sign Control	Free			Free	Stop	
Grade	0%			0%	0%	
Peak Hour Factor	0.86	0.86	0.86	0.86	0.86	0.86
Hourly flow rate (vph)	366	117	55	277	63	43
Pedestrians				1		
Lane Width (ft)				12.0		
Walking Speed (ft/s)				3.5		
Percent Blockage				0		
Right turn flare (veh)						
Median type	None			None		
Median storage veh)						
Upstream signal (ft)	426					
pX, platoon unblocked						
vC, conflicting volume			483		812	426
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol			483		812	426
tC, single (s)			4.1		6.5	6.4
tC, 2 stage (s)						
tF (s)			2.2		3.6	3.5
p0 queue free %			95		80	93
cM capacity (veh/h)			1069		321	592

Direction, Lane #	EB 1	WB 1	NB 1
Volume Total	483	332	106
Volume Left	0	55	63
Volume Right	117	0	43
cSH	1700	1069	394
Volume to Capacity	0.28	0.05	0.27
Queue Length 95th (ft)	0	4	27
Control Delay (s)	0.0	1.9	17.5
Lane LOS		A	C
Approach Delay (s)	0.0	1.9	17.5
Approach LOS			C

Intersection Summary			
Average Delay	2.7		
Intersection Capacity Utilization	53.4%	ICU Level of Service	A
Analysis Period (min)	15		

Intersection	
Int Delay, s/veh	2.5

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Vol, veh/h	315	101	47	238	54	37
Future Vol, veh/h	315	101	47	238	54	37
Conflicting Peds, #/hr	0	0	0	0	0	1
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	0	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	86	86	86	86	86	86
Heavy Vehicles, %	8	2	4	14	10	20
Mvmt Flow	366	117	55	277	63	43

Major/Minor	Major1		Major2		Minor1	
Conflicting Flow All	0	0	483	0	812	426
Stage 1	-	-	-	-	425	-
Stage 2	-	-	-	-	387	-
Critical Hdwy	-	-	4.14	-	6.5	6.4
Critical Hdwy Stg 1	-	-	-	-	5.5	-
Critical Hdwy Stg 2	-	-	-	-	5.5	-
Follow-up Hdwy	-	-	2.236	-	3.59	3.48
Pot Cap-1 Maneuver	-	-	1069	-	338	592
Stage 1	-	-	-	-	643	-
Stage 2	-	-	-	-	669	-
Platoon blocked, %	-	-		-		
Mov Cap-1 Maneuver	-	-	1069	-	317	591
Mov Cap-2 Maneuver	-	-	-	-	317	-
Stage 1	-	-	-	-	643	-
Stage 2	-	-	-	-	628	-

Approach	EB	WB	NB
HCM Control Delay, s	0	1.4	17.6
HCM LOS			C

Minor Lane/Major Mvmt	NBLn1	EBT	EBR	WBL	WBT
Capacity (veh/h)	391	-	-	1069	-
HCM Lane V/C Ratio	0.271	-	-	0.051	-
HCM Control Delay (s)	17.6	-	-	8.5	0
HCM Lane LOS	C	-	-	A	A
HCM 95th %tile Q(veh)	1.1	-	-	0.2	-

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (vph)	125	37	992	234	92	1092
Future Volume (vph)	125	37	992	234	92	1092
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost time (s)	5.2	5.2	5.8	5.8	4.6	5.8
Lane Util. Factor	1.00	1.00	0.95	1.00	1.00	0.95
Frpb, ped/bikes	1.00	1.00	1.00	0.98	1.00	1.00
Flpb, ped/bikes	1.00	1.00	1.00	1.00	1.00	1.00
Frt	1.00	0.85	1.00	0.85	1.00	1.00
Flt Protected	0.95	1.00	1.00	1.00	0.95	1.00
Satd. Flow (prot)	1467	1282	3312	1346	1687	3223
Flt Permitted	0.95	1.00	1.00	1.00	0.95	1.00
Satd. Flow (perm)	1467	1282	3312	1346	1687	3223
Peak-hour factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95
Adj. Flow (vph)	132	39	1044	246	97	1149
RTOR Reduction (vph)	0	31	0	127	0	0
Lane Group Flow (vph)	132	8	1044	119	97	1149
Confl. Peds. (#/hr)	1			2		
Confl. Bikes (#/hr)				3		
Heavy Vehicles (%)	23%	26%	9%	17%	7%	12%
Turn Type	Perm	Perm	NA	Perm	Prot	NA
Protected Phases			2		1	6
Permitted Phases	8	8		2		
Actuated Green, G (s)	11.9	11.9	29.6	29.6	4.3	38.5
Effective Green, g (s)	11.9	11.9	29.6	29.6	4.3	38.5
Actuated g/C Ratio	0.19	0.19	0.48	0.48	0.07	0.63
Clearance Time (s)	5.2	5.2	5.8	5.8	4.6	5.8
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0	3.0
Lane Grp Cap (vph)	284	248	1596	648	118	2020
v/s Ratio Prot			c0.32		0.06	c0.36
v/s Ratio Perm	c0.09	0.01		0.09		
v/c Ratio	0.46	0.03	0.65	0.18	0.82	0.57
Uniform Delay, d1	21.9	20.1	12.0	9.0	28.2	6.6
Progression Factor	1.00	1.00	1.00	1.00	1.00	1.00
Incremental Delay, d2	1.2	0.1	2.1	0.6	34.9	1.2
Delay (s)	23.1	20.1	14.1	9.7	63.1	7.8
Level of Service	C	C	B	A	E	A
Approach Delay (s)	22.4		13.3			12.1
Approach LOS	C		B			B

Intersection Summary			
HCM 2000 Control Delay	13.3	HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio	0.62		
Actuated Cycle Length (s)	61.4	Sum of lost time (s)	15.6
Intersection Capacity Utilization	53.9%	ICU Level of Service	A
Analysis Period (min)	15		
c Critical Lane Group			

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	55	208	46	280	155	1023	56	926	448	757	345	58
Future Volume (vph)	55	208	46	280	155	1023	56	926	448	757	345	58
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.6	5.2		4.6	5.2	4.6	4.6	5.4	4.6	4.6	5.8	
Lane Util. Factor	1.00	0.95		0.97	1.00	1.00	1.00	0.91	1.00	0.97	0.95	
Frpb, ped/bikes	1.00	1.00		1.00	1.00	1.00	1.00	1.00	0.99	1.00	1.00	
Flpb, ped/bikes	1.00	1.00		1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	
Frt	1.00	0.97		1.00	1.00	0.85	1.00	1.00	0.85	1.00	0.98	
Flt Protected	0.95	1.00		0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	
Satd. Flow (prot)	1211	2279		3019	1357	1495	1318	4673	1238	3242	2990	
Flt Permitted	0.95	1.00		0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	
Satd. Flow (perm)	1211	2279		3019	1357	1495	1318	4673	1238	3242	2990	
Peak-hour factor, PHF	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91
Adj. Flow (vph)	60	229	51	308	170	1124	62	1018	492	832	379	64
RTOR Reduction (vph)	0	17	0	0	0	82	0	0	151	0	10	0
Lane Group Flow (vph)	60	263	0	308	170	1042	62	1018	341	832	433	0
Confl. Peds. (#/hr)									1	1		
Confl. Bikes (#/hr)			1									3
Heavy Vehicles (%)	49%	55%	48%	16%	40%	8%	37%	11%	29%	8%	15%	34%
Turn Type	Prot	NA		Prot	NA	pm+ov	Prot	NA	pm+ov	Prot	NA	
Protected Phases	7	4		3	8	1	5	2	3	1	6	
Permitted Phases						8			2			
Actuated Green, G (s)	9.1	23.9		6.4	21.2	42.7	6.3	39.2	45.6	21.5	54.0	
Effective Green, g (s)	9.1	23.9		6.4	21.2	42.7	6.3	39.2	45.6	21.5	54.0	
Actuated g/C Ratio	0.08	0.22		0.06	0.19	0.39	0.06	0.35	0.41	0.19	0.49	
Clearance Time (s)	4.6	5.2		4.6	5.2	4.6	4.6	5.4	4.6	4.6	5.8	
Vehicle Extension (s)	3.0	3.0		3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	
Lane Grp Cap (vph)	99	491		174	259	576	74	1653	509	629	1457	
v/s Ratio Prot	0.05	c0.12		c0.10	0.13	c0.35	0.05	0.22	c0.04	0.26	0.14	
v/s Ratio Perm						0.35			0.24			
v/c Ratio	0.61	0.54		1.77	0.66	1.81	0.84	0.62	0.67	1.32	0.30	
Uniform Delay, d1	49.1	38.5		52.2	41.4	34.0	51.7	29.6	26.5	44.6	17.0	
Progression Factor	1.00	1.00		1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	
Incremental Delay, d2	10.1	1.1		368.9	5.9	370.6	53.0	1.7	3.5	156.1	0.5	
Delay (s)	59.2	39.6		421.1	47.3	404.7	104.7	31.3	30.0	200.8	17.5	
Level of Service	E	D		F	D	F	F	C	C	F	B	
Approach Delay (s)		43.1			369.9			33.8			137.1	
Approach LOS		D			F			C			F	

Intersection Summary			
HCM 2000 Control Delay	174.4	HCM 2000 Level of Service	F
HCM 2000 Volume to Capacity ratio	1.27		
Actuated Cycle Length (s)	110.8	Sum of lost time (s)	20.2
Intersection Capacity Utilization	112.2%	ICU Level of Service	H
Analysis Period (min)	15		
c Critical Lane Group			

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	55	208	46	280	155	1023	56	926	448	757	345	58
Future Volume (veh/h)	55	208	46	280	155	1023	56	926	448	757	345	58
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		0.99	1.00		1.00	1.00		1.00	1.00		0.98
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1174	1085	1189	1663	1307	1781	1352	1737	1470	1781	1678	1396
Adj Flow Rate, veh/h	60	229	51	308	170	1124	62	1018	492	832	379	64
Peak Hour Factor	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91
Percent Heavy Veh, %	49	55	48	16	40	8	37	11	29	8	15	34
Cap, veh/h	68	404	88	175	310	645	72	1576	485	626	1270	212
Arrive On Green	0.06	0.24	0.24	0.06	0.24	0.24	0.06	0.33	0.33	0.19	0.47	0.47
Sat Flow, veh/h	1118	1678	366	3072	1307	1510	1287	4742	1245	3291	2722	455
Grp Volume(v), veh/h	60	139	141	308	170	1124	62	1018	492	832	220	223
Grp Sat Flow(s),veh/h/ln	1118	1031	1013	1536	1307	1510	1287	1581	1245	1646	1594	1583
Q Serve(g_s), s	6.0	13.3	13.8	6.4	12.8	26.7	5.4	20.5	37.4	21.4	9.6	9.8
Cycle Q Clear(g_c), s	6.0	13.3	13.8	6.4	12.8	26.7	5.4	20.5	37.4	21.4	9.6	9.8
Prop In Lane	1.00		0.36	1.00		1.00	1.00		1.00	1.00		0.29
Lane Grp Cap(c), veh/h	68	248	244	175	310	645	72	1576	485	626	744	739
V/C Ratio(X)	0.89	0.56	0.58	1.76	0.55	1.74	0.86	0.65	1.02	1.33	0.30	0.30
Avail Cap(c_a), veh/h	146	321	315	175	310	645	72	1576	485	626	744	739
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	52.5	37.5	37.7	53.1	37.6	32.2	52.7	31.9	34.4	45.6	18.6	18.6
Incr Delay (d2), s/veh	28.7	2.0	2.2	365.4	2.0	340.1	60.9	2.1	44.7	158.9	1.0	1.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	2.2	3.5	3.6	11.3	4.2	77.6	2.9	7.8	18.7	22.3	3.6	3.7
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	81.1	39.4	39.8	418.5	39.6	372.3	113.6	34.0	79.1	204.4	19.6	19.7
LnGrp LOS	F	D	D	F	D	F	F	C	F	F	B	B
Approach Vol, veh/h		340			1602			1572			1275	
Approach Delay, s/veh		46.9			345.9			51.2			140.2	
Approach LOS		D			F			D			F	

Timer - Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	26.0	43.2	11.0	32.3	10.9	58.3	11.4	31.9
Change Period (Y+Rc), s	4.6	* 5.8	4.6	5.2	4.6	5.8	4.6	5.2
Max Green Setting (Gmax), s	21.4	* 37	6.4	35.0	6.3	52.1	14.7	26.7
Max Q Clear Time (g_c+I1), s	23.4	39.4	8.4	15.8	7.4	11.8	8.0	28.7
Green Ext Time (p_c), s	0.0	0.0	0.0	1.6	0.0	2.7	0.1	0.0

Intersection Summary	
HCM 6th Ctrl Delay	173.2
HCM 6th LOS	F

Notes

User approved pedestrian interval to be less than phase max green.

* HCM 6th computational engine requires equal clearance times for the phases crossing the barrier.

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	2	1240	537	0	1339	734	0	0	0	273	0	627
Future Volume (vph)	2	1240	537	0	1339	734	0	0	0	273	0	627
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		5.0	5.0		5.0	5.0				5.8	5.8	5.8
Lane Util. Factor		0.91	1.00		0.95	1.00				0.95	0.91	0.95
Frpb, ped/bikes		1.00	0.97		1.00	0.98				1.00	1.00	1.00
Flpb, ped/bikes		1.00	1.00		1.00	1.00				1.00	1.00	1.00
Frt		1.00	0.85		1.00	0.85				1.00	0.86	0.85
Flt Protected		1.00	1.00		1.00	1.00				0.95	1.00	1.00
Satd. Flow (prot)		4803	1355		3312	1488				1618	1389	1434
Flt Permitted		0.94	1.00		1.00	1.00				0.95	1.00	1.00
Satd. Flow (perm)		4507	1355		3312	1488				1618	1389	1434
Peak-hour factor, PHF	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97
Adj. Flow (vph)	2	1278	554	0	1380	757	0	0	0	281	0	646
RTOR Reduction (vph)	0	0	269	0	0	368	0	0	0	0	25	25
Lane Group Flow (vph)	0	1280	285	0	1380	389	0	0	0	253	313	311
Confl. Peds. (#/hr)	2		7	7		2						
Confl. Bikes (#/hr)						1						
Heavy Vehicles (%)	0%	8%	16%	0%	9%	6%	0%	0%	0%	6%	0%	7%
Turn Type	Perm	NA	Perm		NA	Perm				Split	NA	Perm
Protected Phases		2			6					4	4	
Permitted Phases	2		2			6						4
Actuated Green, G (s)		30.7	30.7		30.7	30.7				18.2	18.2	18.2
Effective Green, g (s)		30.7	30.7		30.7	30.7				18.2	18.2	18.2
Actuated g/C Ratio		0.51	0.51		0.51	0.51				0.30	0.30	0.30
Clearance Time (s)		5.0	5.0		5.0	5.0				5.8	5.8	5.8
Vehicle Extension (s)		3.0	3.0		3.0	3.0				3.0	3.0	3.0
Lane Grp Cap (vph)		2317	696		1703	765				493	423	437
v/s Ratio Prot					c0.42					0.16	c0.23	
v/s Ratio Perm		0.28	0.21			0.26						0.22
v/c Ratio		0.55	0.41		0.81	0.51				0.51	0.74	0.71
Uniform Delay, d1		9.8	8.9		12.1	9.5				17.1	18.6	18.4
Progression Factor		1.00	1.00		1.00	1.00				1.00	1.00	1.00
Incremental Delay, d2		0.3	0.4		3.0	0.5				3.8	11.1	9.5
Delay (s)		10.1	9.3		15.1	10.1				20.9	29.7	27.9
Level of Service		B	A		B	B				C	C	C
Approach Delay (s)		9.9			13.3			0.0			26.6	
Approach LOS		A			B			A			C	

Intersection Summary			
HCM 2000 Control Delay	14.6	HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio	0.78		
Actuated Cycle Length (s)	59.7	Sum of lost time (s)	10.8
Intersection Capacity Utilization	78.0%	ICU Level of Service	D
Analysis Period (min)	15		
c Critical Lane Group			

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	0	733	788	0	1292	592	553	0	316	0	0	0
Future Volume (vph)	0	733	788	0	1292	592	553	0	316	0	0	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		5.0	4.0		5.0	5.0	5.8	5.8	5.8			
Lane Util. Factor		0.95	1.00		0.95	1.00	0.95	0.91	0.95			
Frpb, ped/bikes		1.00	0.98		1.00	0.98	1.00	1.00	1.00			
Flpb, ped/bikes		1.00	1.00		1.00	1.00	1.00	1.00	1.00			
Frt		1.00	0.85		1.00	0.85	1.00	0.98	0.85			
Flt Protected		1.00	1.00		1.00	1.00	0.95	0.96	1.00			
Satd. Flow (prot)		3471	1420		3438	1533	1504	1437	1447			
Flt Permitted		1.00	1.00		1.00	1.00	0.95	0.96	1.00			
Satd. Flow (perm)		3471	1420		3438	1533	1504	1437	1447			
Peak-hour factor, PHF	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97
Adj. Flow (vph)	0	756	812	0	1332	610	570	0	326	0	0	0
RTOR Reduction (vph)	0	0	0	0	0	310	0	24	97	0	0	0
Lane Group Flow (vph)	0	756	812	0	1332	300	313	282	180	0	0	0
Confl. Peds. (#/hr)	2		7	7		2						
Confl. Bikes (#/hr)			1									
Heavy Vehicles (%)	0%	4%	11%	0%	5%	3%	14%	0%	6%	0%	0%	0%
Turn Type		NA	Free		NA	Perm	Perm	NA	Perm			
Protected Phases		2			6			8				
Permitted Phases			Free			6	8		8			
Actuated Green, G (s)		29.0	59.0		29.0	29.0	19.2	19.2	19.2			
Effective Green, g (s)		29.0	59.0		29.0	29.0	19.2	19.2	19.2			
Actuated g/C Ratio		0.49	1.00		0.49	0.49	0.33	0.33	0.33			
Clearance Time (s)		5.0			5.0	5.0	5.8	5.8	5.8			
Vehicle Extension (s)		3.0			3.0	3.0	3.0	3.0	3.0			
Lane Grp Cap (vph)		1706	1420		1689	753	489	467	470			
v/s Ratio Prot		0.22			c0.39							
v/s Ratio Perm			c0.57			0.20	0.21	0.20	0.12			
v/c Ratio		0.44	0.57		0.79	0.40	0.64	0.60	0.38			
Uniform Delay, d1		9.8	0.0		12.5	9.5	17.0	16.7	15.3			
Progression Factor		1.00	1.00		1.00	1.00	1.00	1.00	1.00			
Incremental Delay, d2		0.2	1.7		2.5	0.3	6.3	5.7	2.4			
Delay (s)		9.9	1.7		15.0	9.8	23.3	22.4	17.7			
Level of Service		A	A		B	A	C	C	B			
Approach Delay (s)		5.7			13.4			21.2			0.0	
Approach LOS		A			B			C			A	

Intersection Summary			
HCM 2000 Control Delay	12.2	HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio	0.77		
Actuated Cycle Length (s)	59.0	Sum of lost time (s)	10.8
Intersection Capacity Utilization	64.4%	ICU Level of Service	C
Analysis Period (min)	15		
c Critical Lane Group			

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	93	851	1	72	1938	435	17	39	79	53	42	11
Future Volume (vph)	93	851	1	72	1938	435	17	39	79	53	42	11
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		5.8		4.6	5.0	4.6	4.6	5.0	5.0	4.6	5.0	5.0
Lane Util. Factor		0.91		1.00	0.91	1.00	1.00	0.86	0.86	1.00	0.95	1.00
Frpb, ped/bikes		1.00		1.00	1.00	1.00	1.00	0.99	0.99	1.00	1.00	1.00
Flpb, ped/bikes		1.00		1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Frt		1.00		1.00	1.00	0.85	1.00	0.92	0.85	1.00	1.00	0.85
Flt Protected		1.00		0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (prot)		4801		1656	4940	1495	1081	4284	1280	1719	3610	1214
Flt Permitted		0.66		0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (perm)		3183		1656	4940	1495	1081	4284	1280	1719	3610	1214
Peak-hour factor, PHF	0.87	0.87	0.87	0.87	0.87	0.87	0.87	0.87	0.87	0.87	0.87	0.87
Adj. Flow (vph)	107	978	1	83	2228	500	20	45	91	61	48	13
RTOR Reduction (vph)	0	0	0	0	0	175	0	28	28	0	0	8
Lane Group Flow (vph)	0	1086	0	83	2228	325	20	63	17	61	48	5
Confl. Peds. (#/hr)									2	2		
Heavy Vehicles (%)	3%	8%	0%	9%	5%	8%	67%	3%	7%	5%	0%	33%
Turn Type	pm+pt	NA		Prot	NA	pm+ov	Prot	NA	Perm	Prot	NA	Perm
Protected Phases	7	4		3	8	1	5	2		1	6	
Permitted Phases	4					8			2			6
Actuated Green, G (s)		33.0		5.4	43.8	48.8	2.0	39.8	39.8	5.0	42.8	42.8
Effective Green, g (s)		33.0		5.4	43.8	48.8	2.0	39.8	39.8	5.0	42.8	42.8
Actuated g/C Ratio		0.32		0.05	0.42	0.47	0.02	0.39	0.39	0.05	0.41	0.41
Clearance Time (s)		5.8		4.6	5.0	4.6	4.6	5.0	5.0	4.6	5.0	5.0
Vehicle Extension (s)		3.0		3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0
Lane Grp Cap (vph)		1017		86	2096	706	20	1652	493	83	1497	503
v/s Ratio Prot				0.05	c0.45	0.02	0.02	c0.01		c0.04	c0.01	
v/s Ratio Perm		0.34				0.20			0.01			0.00
v/c Ratio		1.47dl		0.97	1.06	0.46	1.00	0.04	0.04	0.73	0.03	0.01
Uniform Delay, d1		35.1		48.8	29.7	18.3	50.6	19.8	19.7	48.4	17.9	17.8
Progression Factor		1.00		1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Incremental Delay, d2		48.2		84.7	38.9	0.5	201.2	0.0	0.1	28.3	0.0	0.0
Delay (s)		83.3		133.5	68.6	18.8	251.8	19.8	19.9	76.7	18.0	17.8
Level of Service		F		F	E	B	F	B	B	E	B	B
Approach Delay (s)		83.3			61.7			49.6			47.3	
Approach LOS		F			E			D			D	

Intersection Summary			
HCM 2000 Control Delay	66.4	HCM 2000 Level of Service	E
HCM 2000 Volume to Capacity ratio	0.61		
Actuated Cycle Length (s)	103.2	Sum of lost time (s)	20.0
Intersection Capacity Utilization	99.8%	ICU Level of Service	F
Analysis Period (min)	15		

dl Defacto Left Lane. Recode with 1 though lane as a left lane.
c Critical Lane Group

HCM Unsignalized Intersection Capacity Analysis
1: Doolittle Dr & West Project Dwy

12/04/2023

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (veh/h)	45	32	1158	73	15	1622
Future Volume (Veh/h)	45	32	1158	73	15	1622
Sign Control	Stop		Free			Free
Grade	0%		0%			0%
Peak Hour Factor	0.93	0.93	0.93	0.93	0.93	0.93
Hourly flow rate (vph)	48	34	1245	78	16	1744
Pedestrians	4					
Lane Width (ft)	12.0					
Walking Speed (ft/s)	3.5					
Percent Blockage	0					
Right turn flare (veh)						
Median type			TWLTL			TWLTL
Median storage veh)			2			2
Upstream signal (ft)			750			512
pX, platoon unblocked	0.51	0.92			0.92	
vC, conflicting volume	2192	666			1327	
vC1, stage 1 conf vol	1288					
vC2, stage 2 conf vol	904					
vCu, unblocked vol	727	466			1184	
tC, single (s)	6.8	6.9			4.1	
tC, 2 stage (s)	5.8					
tF (s)	3.5	3.3			2.2	
p0 queue free %	80	93			97	
cM capacity (veh/h)	240	504			548	

Direction, Lane #	WB 1	NB 1	NB 2	SB 1	SB 2	SB 3
Volume Total	82	830	493	16	872	872
Volume Left	48	0	0	16	0	0
Volume Right	34	0	78	0	0	0
cSH	306	1700	1700	548	1700	1700
Volume to Capacity	0.27	0.49	0.29	0.03	0.51	0.51
Queue Length 95th (ft)	26	0	0	2	0	0
Control Delay (s)	21.0	0.0	0.0	11.8	0.0	0.0
Lane LOS	C			B		
Approach Delay (s)	21.0	0.0		0.1		
Approach LOS	C					

Intersection Summary			
Average Delay	0.6		
Intersection Capacity Utilization	56.0%	ICU Level of Service	B
Analysis Period (min)	15		

Lane Group	WBL	WBR	NBT	NBR	SBL	SBT
Lane Group Flow (vph)	93	34	779	195	43	671
v/c Ratio	0.27	0.10	0.40	0.22	0.27	0.32
Control Delay	19.2	6.8	12.7	3.9	32.4	8.3
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	19.2	6.8	12.7	3.9	32.4	8.3
Queue Length 50th (ft)	25	0	55	0	12	46
Queue Length 95th (ft)	56	16	244	44	51	164
Internal Link Dist (ft)	346		48			437
Turn Bay Length (ft)		85		230	275	
Base Capacity (vph)	524	480	1944	870	161	2091
Starvation Cap Reductn	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0
Reduced v/c Ratio	0.18	0.07	0.40	0.22	0.27	0.32

Intersection Summary

Lane Group	EBL	EBT	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT
Lane Group Flow (vph)	49	226	274	137	822	53	860	241	358	381
v/c Ratio	0.45	0.52	1.51	0.58	1.13	0.68	0.50	0.36	0.55	0.24
Control Delay	60.3	39.0	290.2	52.6	101.3	92.1	28.4	4.2	43.2	15.3
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	60.3	39.0	290.2	52.6	101.3	92.1	28.4	4.2	43.2	15.3
Queue Length 50th (ft)	32	66	~132	89	~603	36	163	0	112	68
Queue Length 95th (ft)	75	104	#247	161	#904	#115	243	48	183	125
Internal Link Dist (ft)		486		661			407			302
Turn Bay Length (ft)	300		240		120	130		180	260	
Base Capacity (vph)	167	766	182	341	727	78	1718	675	654	1594
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.29	0.30	1.51	0.40	1.13	0.68	0.50	0.36	0.55	0.24

Intersection Summary

~ Volume exceeds capacity, queue is theoretically infinite.
Queue shown is maximum after two cycles.

95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.

Lane Group	EBT	EBR	WBT	WBR	SBL	SBT	SBR
Lane Group Flow (vph)	877	526	1203	421	197	320	322
v/c Ratio	0.37	0.56	0.74	0.45	0.38	0.68	0.66
Control Delay	9.4	3.6	14.8	2.7	18.9	24.5	23.4
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	9.4	3.6	14.8	2.7	18.9	24.5	23.4
Queue Length 50th (ft)	62	0	158	0	58	94	90
Queue Length 95th (ft)	86	40	225	35	111	#214	#201
Internal Link Dist (ft)	661		674			105	
Turn Bay Length (ft)		400		560	65		350
Base Capacity (vph)	2610	976	1800	1001	515	474	489
Starvation Cap Reductn	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0
Reduced v/c Ratio	0.34	0.54	0.67	0.42	0.38	0.68	0.66

Intersection Summary

95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.

Lane Group	EBT	EBR	WBT	WBR	NBL	NBT	NBR
Lane Group Flow (vph)	587	510	1151	556	247	244	222
v/c Ratio	0.35	0.36	0.70	0.54	0.49	0.48	0.35
Control Delay	10.0	0.7	14.4	3.2	20.3	17.6	4.5
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	10.0	0.7	14.4	3.2	20.3	17.6	4.5
Queue Length 50th (ft)	62	0	151	0	74	64	0
Queue Length 95th (ft)	92	0	213	42	138	130	42
Internal Link Dist (ft)	674		169			405	
Turn Bay Length (ft)				1000	260		160
Base Capacity (vph)	1812	1420	1795	1066	502	505	631
Starvation Cap Reductn	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0
Reduced v/c Ratio	0.32	0.36	0.64	0.52	0.49	0.48	0.35

Intersection Summary

Lane Group	EBT	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Group Flow (vph)	842	66	867	423	13	77	43	61	7	9
v/c Ratio	0.81	0.69	0.45	0.44	0.22	0.04	0.07	0.66	0.00	0.01
Control Delay	37.4	80.9	21.5	2.8	55.1	10.7	0.2	79.5	17.3	0.0
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	37.4	80.9	21.5	2.8	55.1	10.7	0.2	79.5	17.3	0.0
Queue Length 50th (ft)	173	41	135	0	8	4	0	38	1	0
Queue Length 95th (ft)	212	#110	162	38	28	15	0	#103	6	0
Internal Link Dist (ft)	250		280			220			326	
Turn Bay Length (ft)		90		185	50		140	100		185
Base Capacity (vph)	1247	96	2095	954	58	1715	629	92	1749	688
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.68	0.69	0.41	0.44	0.22	0.04	0.07	0.66	0.00	0.01

Intersection Summary

95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.

Lane Group	WBL	WBR	NBT	NBR	SBL	SBT
Lane Group Flow (vph)	183	95	988	169	18	1323
v/c Ratio	0.51	0.23	0.45	0.20	0.13	0.60
Control Delay	24.1	6.2	9.4	2.9	26.9	9.1
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	24.1	6.2	9.4	2.9	26.9	9.1
Queue Length 50th (ft)	52	0	80	0	5	127
Queue Length 95th (ft)	97	25	198	26	22	213
Internal Link Dist (ft)	346		48			437
Turn Bay Length (ft)		85		230	275	
Base Capacity (vph)	543	572	2198	852	138	2222
Starvation Cap Reductn	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0
Reduced v/c Ratio	0.34	0.17	0.45	0.20	0.13	0.60

Intersection Summary

Lane Group	EBL	EBT	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT
Lane Group Flow (vph)	69	182	205	86	520	20	480	261	689	922
v/c Ratio	0.57	0.32	1.12	0.43	0.66	0.23	0.26	0.33	1.03	0.49
Control Delay	66.6	28.1	148.6	48.6	19.1	58.9	25.6	3.9	84.4	17.7
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	66.6	28.1	148.6	48.6	19.1	58.9	25.6	3.9	84.4	17.7
Queue Length 50th (ft)	44	42	~79	55	167	13	79	0	~240	156
Queue Length 95th (ft)	102	70	#186	104	282	42	137	48	#458	368
Internal Link Dist (ft)		486		661			407			302
Turn Bay Length (ft)	300		240		120	130		180	260	
Base Capacity (vph)	164	1000	183	316	782	91	1851	788	672	1874
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.42	0.18	1.12	0.27	0.66	0.22	0.26	0.33	1.03	0.49

Intersection Summary

~ Volume exceeds capacity, queue is theoretically infinite.
Queue shown is maximum after two cycles.

95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.

Lane Group	EBT	EBR	WBT	WBR	SBL	SBT	SBR
Lane Group Flow (vph)	1324	687	944	446	363	340	337
v/c Ratio	0.61	0.66	0.63	0.48	0.55	0.57	0.56
Control Delay	14.7	4.7	15.7	3.3	18.0	16.3	16.0
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	14.7	4.7	15.7	3.3	18.0	16.3	16.0
Queue Length 50th (ft)	127	0	132	0	104	83	77
Queue Length 95th (ft)	168	53	187	44	181	164	154
Internal Link Dist (ft)	661		674			105	
Turn Bay Length (ft)		400		560	65		350
Base Capacity (vph)	2234	1050	1540	937	665	597	603
Starvation Cap Reductn	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0
Reduced v/c Ratio	0.59	0.65	0.61	0.48	0.55	0.57	0.56

Intersection Summary

Lane Group	EBT	EBR	WBT	WBR	NBL	NBT	NBR
Lane Group Flow (vph)	1151	582	950	368	319	305	298
v/c Ratio	0.80	0.38	0.65	0.43	0.48	0.48	0.46
Control Delay	20.2	0.7	16.5	3.3	16.7	15.1	14.7
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	20.2	0.7	16.5	3.3	16.7	15.1	14.7
Queue Length 50th (ft)	181	0	137	0	86	74	69
Queue Length 95th (ft)	250	0	191	41	167	156	144
Internal Link Dist (ft)	674		169			405	
Turn Bay Length (ft)				1000	260		160
Base Capacity (vph)	1530	1547	1546	879	662	633	643
Starvation Cap Reductn	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0
Reduced v/c Ratio	0.75	0.38	0.61	0.42	0.48	0.48	0.46

Intersection Summary

Lane Group	EBT	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Group Flow (vph)	1150	86	595	310	12	171	85	79	28	5
v/c Ratio	0.91	0.88	0.29	0.33	0.19	0.11	0.14	0.86	0.02	0.01
Control Delay	43.9	111.0	19.0	2.4	53.3	11.0	0.5	110.5	17.2	0.0
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	43.9	111.0	19.0	2.4	53.3	11.0	0.5	110.5	17.2	0.0
Queue Length 50th (ft)	254	56	87	0	8	13	0	51	4	0
Queue Length 95th (ft)	295	#139	109	32	26	27	0	#131	14	0
Internal Link Dist (ft)	250		280			220			326	
Turn Bay Length (ft)		90		185	50		140	100		185
Base Capacity (vph)	1316	98	2025	933	63	1625	612	92	1580	681
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.87	0.88	0.29	0.33	0.19	0.11	0.14	0.86	0.02	0.01

Intersection Summary

95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.

Queues
4: Doolittle Dr & Adams Ave

12/04/2023

Lane Group	WBL	WBR	NBT	NBR	SBL	SBT
Lane Group Flow (vph)	93	60	833	205	43	749
v/c Ratio	0.27	0.17	0.43	0.23	0.27	0.36
Control Delay	19.2	6.1	13.3	3.8	32.4	8.6
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	19.2	6.1	13.3	3.8	32.4	8.6
Queue Length 50th (ft)	25	0	61	0	12	53
Queue Length 95th (ft)	56	21	#274	46	51	186
Internal Link Dist (ft)	346		48			437
Turn Bay Length (ft)		85		230	275	
Base Capacity (vph)	524	497	1944	874	161	2091
Starvation Cap Reductn	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0
Reduced v/c Ratio	0.18	0.12	0.43	0.23	0.27	0.36

Intersection Summary

95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.

Lane Group	EBL	EBT	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT
Lane Group Flow (vph)	54	226	302	137	835	53	907	270	403	422
v/c Ratio	0.48	0.51	1.67	0.58	1.16	0.68	0.53	0.39	0.62	0.27
Control Delay	61.6	38.8	355.6	52.8	113.2	92.2	29.1	4.3	45.0	15.7
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	61.6	38.8	355.6	52.8	113.2	92.2	29.1	4.3	45.0	15.7
Queue Length 50th (ft)	35	66	~154	89	~636	36	175	0	129	78
Queue Length 95th (ft)	81	104	#273	161	#935	#115	258	51	206	139
Internal Link Dist (ft)		486		661			407			302
Turn Bay Length (ft)	300		240		120	130		180	260	
Base Capacity (vph)	167	764	181	340	719	78	1713	690	652	1582
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.32	0.30	1.67	0.40	1.16	0.68	0.53	0.39	0.62	0.27

Intersection Summary

~ Volume exceeds capacity, queue is theoretically infinite.
Queue shown is maximum after two cycles.

95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.

Lane Group	EBT	EBR	WBT	WBR	SBL	SBT	SBR
Lane Group Flow (vph)	927	542	1238	442	244	331	329
v/c Ratio	0.38	0.57	0.79	0.46	0.48	0.71	0.69
Control Delay	9.4	3.6	16.3	2.7	20.9	27.0	25.2
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	9.4	3.6	16.3	2.7	20.9	27.0	25.2
Queue Length 50th (ft)	67	0	172	0	75	101	94
Queue Length 95th (ft)	91	40	247	36	138	#228	#209
Internal Link Dist (ft)	661		674			105	
Turn Bay Length (ft)		400		560	65		350
Base Capacity (vph)	2558	975	1672	999	505	464	478
Starvation Cap Reductn	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0
Reduced v/c Ratio	0.36	0.56	0.74	0.44	0.48	0.71	0.69

Intersection Summary

95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.

Lane Group	EBT	EBR	WBT	WBR	NBL	NBT	NBR
Lane Group Flow (vph)	670	525	1194	577	272	274	249
v/c Ratio	0.40	0.37	0.75	0.55	0.55	0.55	0.42
Control Delay	10.3	0.7	15.6	3.2	21.8	19.6	7.7
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	10.3	0.7	15.6	3.2	21.8	19.6	7.7
Queue Length 50th (ft)	72	0	164	0	84	75	17
Queue Length 95th (ft)	106	0	234	42	155	150	68
Internal Link Dist (ft)	674		169			405	
Turn Bay Length (ft)				1000	260		160
Base Capacity (vph)	1782	1420	1685	1068	494	495	597
Starvation Cap Reductn	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0
Reduced v/c Ratio	0.38	0.37	0.71	0.54	0.55	0.55	0.42

Intersection Summary

Lane Group	EBT	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Group Flow (vph)	849	66	867	430	13	84	45	61	15	9
v/c Ratio	0.81	0.69	0.45	0.45	0.22	0.05	0.07	0.66	0.01	0.01
Control Delay	37.5	81.6	21.4	2.8	55.2	10.9	0.2	80.0	17.2	0.0
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	37.5	81.6	21.4	2.8	55.2	10.9	0.2	80.0	17.2	0.0
Queue Length 50th (ft)	175	41	135	0	8	5	0	38	2	0
Queue Length 95th (ft)	215	#110	162	38	28	16	0	#103	10	0
Internal Link Dist (ft)	250		280			220			326	
Turn Bay Length (ft)		90		185	50		140	100		185
Base Capacity (vph)	1235	96	2105	960	58	1718	627	92	1741	686
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.69	0.69	0.41	0.45	0.22	0.05	0.07	0.66	0.01	0.01

Intersection Summary

95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.

Queues
4: Doolittle Dr & Adams Ave

12/04/2023

Lane Group	WBL	WBR	NBT	NBR	SBL	SBT
Lane Group Flow (vph)	183	120	1054	177	18	1400
v/c Ratio	0.52	0.28	0.54	0.23	0.13	0.71
Control Delay	24.4	6.1	10.7	3.0	27.0	11.3
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	24.4	6.1	10.7	3.0	27.0	11.3
Queue Length 50th (ft)	52	0	87	0	5	140
Queue Length 95th (ft)	97	28	216	27	22	234
Internal Link Dist (ft)	346		48			437
Turn Bay Length (ft)		85		230	275	
Base Capacity (vph)	533	580	1939	775	135	1972
Starvation Cap Reductn	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0
Reduced v/c Ratio	0.34	0.21	0.54	0.23	0.13	0.71

Intersection Summary

Lane Group	EBL	EBT	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT
Lane Group Flow (vph)	72	182	234	86	543	20	513	286	710	969
v/c Ratio	0.59	0.32	1.28	0.43	0.71	0.23	0.28	0.36	1.06	0.52
Control Delay	67.1	28.1	202.7	48.8	22.0	59.0	25.9	3.9	93.3	18.2
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	67.1	28.1	202.7	48.8	22.0	59.0	25.9	3.9	93.3	18.2
Queue Length 50th (ft)	46	42	~101	55	200	13	86	0	~264	169
Queue Length 95th (ft)	106	70	#215	104	323	42	146	50	#477	394
Internal Link Dist (ft)		486		661			407			302
Turn Bay Length (ft)	300		240		120	130		180	260	
Base Capacity (vph)	164	999	183	315	770	91	1848	802	671	1864
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.44	0.18	1.28	0.27	0.71	0.22	0.28	0.36	1.06	0.52

Intersection Summary

~ Volume exceeds capacity, queue is theoretically infinite.
Queue shown is maximum after two cycles.

95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.

Lane Group	EBT	EBR	WBT	WBR	SBL	SBT	SBR
Lane Group Flow (vph)	1351	699	984	482	376	354	345
v/c Ratio	0.62	0.67	0.70	0.51	0.57	0.60	0.58
Control Delay	14.8	4.8	17.1	3.5	18.4	17.3	16.7
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	14.8	4.8	17.1	3.5	18.4	17.3	16.7
Queue Length 50th (ft)	131	0	143	0	108	91	83
Queue Length 95th (ft)	172	54	204	46	188	176	163
Internal Link Dist (ft)	661		674			105	
Turn Bay Length (ft)		400		560	65		350
Base Capacity (vph)	2233	1057	1452	956	665	594	599
Starvation Cap Reductn	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0
Reduced v/c Ratio	0.61	0.66	0.68	0.50	0.57	0.60	0.58

Intersection Summary

Lane Group	EBT	EBR	WBT	WBR	NBL	NBT	NBR
Lane Group Flow (vph)	1185	593	1012	404	334	325	310
v/c Ratio	0.81	0.38	0.72	0.46	0.51	0.52	0.49
Control Delay	20.7	0.7	18.0	3.3	17.2	15.9	15.2
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	20.7	0.7	18.0	3.3	17.2	15.9	15.2
Queue Length 50th (ft)	188	0	152	0	91	82	73
Queue Length 95th (ft)	261	0	214	42	176	169	151
Internal Link Dist (ft)	674		169			405	
Turn Bay Length (ft)				1000	260		160
Base Capacity (vph)	1518	1547	1461	895	656	627	638
Starvation Cap Reductn	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0
Reduced v/c Ratio	0.78	0.38	0.69	0.45	0.51	0.52	0.49

Intersection Summary

Lane Group	EBT	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Group Flow (vph)	1157	86	595	317	12	178	85	79	36	5
v/c Ratio	0.92	0.88	0.29	0.34	0.19	0.11	0.14	0.86	0.02	0.01
Control Delay	45.4	111.4	18.9	2.4	53.3	11.3	0.5	110.5	17.2	0.0
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	45.4	111.4	18.9	2.4	53.3	11.3	0.5	110.5	17.2	0.0
Queue Length 50th (ft)	257	56	87	0	8	14	0	51	6	0
Queue Length 95th (ft)	298	#139	109	32	26	29	0	#131	17	0
Internal Link Dist (ft)	250		280			220			326	
Turn Bay Length (ft)		90		185	50		140	100		185
Base Capacity (vph)	1300	98	2029	937	63	1627	611	92	1578	680
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.89	0.88	0.29	0.34	0.19	0.11	0.14	0.86	0.02	0.01

Intersection Summary

95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.

Queues
4: Doolittle Dr & Adams Ave

12/04/2023

Lane Group	WBL	WBR	NBT	NBR	SBL	SBT
Lane Group Flow (vph)	93	65	838	205	80	757
v/c Ratio	0.27	0.19	0.46	0.24	0.50	0.36
Control Delay	19.6	6.0	14.7	3.9	41.9	8.5
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	19.6	6.0	14.7	3.9	41.9	8.5
Queue Length 50th (ft)	27	0	102	0	25	54
Queue Length 95th (ft)	56	22	#278	46	#107	189
Internal Link Dist (ft)	346		48			437
Turn Bay Length (ft)		85		230	275	
Base Capacity (vph)	519	495	1838	837	159	2106
Starvation Cap Reductn	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0
Reduced v/c Ratio	0.18	0.13	0.46	0.24	0.50	0.36

Intersection Summary

95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.

Lane Group	EBL	EBT	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT
Lane Group Flow (vph)	54	226	302	137	918	53	918	270	409	424
v/c Ratio	0.49	0.51	1.69	0.59	1.26	0.69	0.54	0.39	0.61	0.27
Control Delay	62.6	39.3	363.7	53.5	154.7	93.7	29.8	4.3	44.5	15.6
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	62.6	39.3	363.7	53.5	154.7	93.7	29.8	4.3	44.5	15.6
Queue Length 50th (ft)	36	67	~156	90	~758	36	180	0	131	79
Queue Length 95th (ft)	82	105	#276	162	#1081	#117	266	51	209	140
Internal Link Dist (ft)		486		661			407			302
Turn Bay Length (ft)	300		240		120	130		180	260	
Base Capacity (vph)	165	755	179	337	727	77	1695	685	675	1593
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.33	0.30	1.69	0.41	1.26	0.69	0.54	0.39	0.61	0.27

Intersection Summary

~ Volume exceeds capacity, queue is theoretically infinite.
Queue shown is maximum after two cycles.

95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.

Lane Group	EBT	EBR	WBT	WBR	SBL	SBT	SBR
Lane Group Flow (vph)	929	545	1313	442	244	331	329
v/c Ratio	0.38	0.57	0.83	0.45	0.49	0.73	0.70
Control Delay	9.4	3.6	17.9	2.7	21.0	28.4	26.6
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	9.4	3.6	17.9	2.7	21.0	28.4	26.6
Queue Length 50th (ft)	67	0	190	0	75	104	97
Queue Length 95th (ft)	91	41	273	36	138	#232	#214
Internal Link Dist (ft)	661		674			105	
Turn Bay Length (ft)		400		560	65		350
Base Capacity (vph)	2531	971	1655	993	500	454	468
Starvation Cap Reductn	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0
Reduced v/c Ratio	0.37	0.56	0.79	0.45	0.49	0.73	0.70

Intersection Summary

95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.

Lane Group	EBT	EBR	WBT	WBR	NBL	NBT	NBR
Lane Group Flow (vph)	672	525	1204	577	297	296	267
v/c Ratio	0.40	0.37	0.75	0.55	0.60	0.60	0.45
Control Delay	10.3	0.7	15.8	3.2	23.2	20.9	8.7
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	10.3	0.7	15.8	3.2	23.2	20.9	8.7
Queue Length 50th (ft)	73	0	166	0	93	84	23
Queue Length 95th (ft)	106	0	236	42	171	165	78
Internal Link Dist (ft)	674		169			405	
Turn Bay Length (ft)				1000	260		160
Base Capacity (vph)	1781	1420	1683	1068	494	496	596
Starvation Cap Reductn	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0
Reduced v/c Ratio	0.38	0.37	0.72	0.54	0.60	0.60	0.45

Intersection Summary

Lane Group	EBT	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Group Flow (vph)	849	66	867	430	13	92	45	61	49	9
v/c Ratio	0.81	0.69	0.45	0.45	0.22	0.05	0.07	0.66	0.03	0.01
Control Delay	37.5	81.6	21.4	2.8	55.2	11.5	0.2	80.0	16.6	0.0
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	37.5	81.6	21.4	2.8	55.2	11.5	0.2	80.0	16.6	0.0
Queue Length 50th (ft)	175	41	135	0	8	6	0	38	7	0
Queue Length 95th (ft)	215	#110	162	38	28	18	0	#103	22	0
Internal Link Dist (ft)	250		280			220			326	
Turn Bay Length (ft)		90		185	50		140	100		185
Base Capacity (vph)	1235	96	2105	960	58	1735	627	92	1741	686
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.69	0.69	0.41	0.45	0.22	0.05	0.07	0.66	0.03	0.01

Intersection Summary

95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.

Queues
4: Doolittle Dr & Adams Ave

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Lane Group	WBL	WBR	NBT	NBR	SBL	SBT
Lane Group Flow (vph)	183	148	1080	177	45	1406
v/c Ratio	0.51	0.33	0.60	0.24	0.33	0.72
Control Delay	24.4	6.1	13.1	3.4	32.2	11.5
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	24.4	6.1	13.1	3.4	32.2	11.5
Queue Length 50th (ft)	52	0	93	0	14	144
Queue Length 95th (ft)	97	30	224	27	41	235
Internal Link Dist (ft)	346		48			437
Turn Bay Length (ft)		85		230	275	
Base Capacity (vph)	536	602	1807	734	136	1957
Starvation Cap Reductn	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0
Reduced v/c Ratio	0.34	0.25	0.60	0.24	0.33	0.72

Intersection Summary

Lane Group	EBL	EBT	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT
Lane Group Flow (vph)	72	182	234	86	599	20	520	286	736	979
v/c Ratio	0.59	0.32	1.28	0.43	0.78	0.23	0.28	0.36	1.10	0.53
Control Delay	67.1	28.1	202.7	48.8	26.3	59.0	25.9	3.9	105.2	18.3
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	67.1	28.1	202.7	48.8	26.3	59.0	25.9	3.9	105.2	18.3
Queue Length 50th (ft)	46	42	~101	55	250	13	87	0	~283	171
Queue Length 95th (ft)	106	70	#215	104	394	42	148	50	#500	399
Internal Link Dist (ft)		486		661			407			302
Turn Bay Length (ft)	300		240		120	130		180	260	
Base Capacity (vph)	164	999	183	315	769	91	1848	802	671	1864
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.44	0.18	1.28	0.27	0.78	0.22	0.28	0.36	1.10	0.53

Intersection Summary

~ Volume exceeds capacity, queue is theoretically infinite.
Queue shown is maximum after two cycles.

95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.

Lane Group	EBT	EBR	WBT	WBR	SBL	SBT	SBR
Lane Group Flow (vph)	1361	710	1034	482	376	354	345
v/c Ratio	0.63	0.67	0.73	0.51	0.57	0.60	0.58
Control Delay	14.8	4.9	17.8	3.5	18.5	17.9	17.3
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	14.8	4.9	17.8	3.5	18.5	17.9	17.3
Queue Length 50th (ft)	132	0	154	0	108	94	86
Queue Length 95th (ft)	174	54	218	46	188	180	166
Internal Link Dist (ft)	661		674			105	
Turn Bay Length (ft)		400		560	65		350
Base Capacity (vph)	2224	1061	1449	954	662	587	592
Starvation Cap Reductn	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0
Reduced v/c Ratio	0.61	0.67	0.71	0.51	0.57	0.60	0.58

Intersection Summary

Lane Group	EBT	EBR	WBT	WBR	NBL	NBT	NBR
Lane Group Flow (vph)	1195	593	1019	404	351	339	321
v/c Ratio	0.82	0.38	0.72	0.46	0.54	0.54	0.50
Control Delay	21.0	0.7	18.1	3.3	17.8	16.4	15.6
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	21.0	0.7	18.1	3.3	17.8	16.4	15.6
Queue Length 50th (ft)	191	0	154	0	97	86	76
Queue Length 95th (ft)	264	0	216	42	186	178	158
Internal Link Dist (ft)	674		169			405	
Turn Bay Length (ft)				1000	260		160
Base Capacity (vph)	1516	1547	1460	895	656	629	637
Starvation Cap Reductn	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0
Reduced v/c Ratio	0.79	0.38	0.70	0.45	0.54	0.54	0.50

Intersection Summary

Lane Group	EBT	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Group Flow (vph)	1157	86	595	317	12	215	85	79	59	5
v/c Ratio	0.92	0.88	0.29	0.34	0.19	0.13	0.14	0.86	0.04	0.01
Control Delay	45.4	111.4	18.9	2.4	53.3	12.8	0.5	110.5	17.2	0.0
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	45.4	111.4	18.9	2.4	53.3	12.8	0.5	110.5	17.2	0.0
Queue Length 50th (ft)	257	56	87	0	8	20	0	51	10	0
Queue Length 95th (ft)	298	#139	109	32	26	36	0	#131	25	0
Internal Link Dist (ft)	250		280			220			326	
Turn Bay Length (ft)		90		185	50		140	100		185
Base Capacity (vph)	1300	98	2029	937	63	1644	611	92	1578	680
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.89	0.88	0.29	0.34	0.19	0.13	0.14	0.86	0.04	0.01

Intersection Summary

95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.

Queues
4: Doolittle Dr & Adams Ave

12/04/2023

Lane Group	WBL	WBR	NBT	NBR	SBL	SBT
Lane Group Flow (vph)	132	34	1039	246	60	1142
v/c Ratio	0.37	0.10	0.57	0.29	0.38	0.55
Control Delay	21.1	6.7	17.2	3.9	36.6	11.0
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	21.1	6.7	17.2	3.9	36.6	11.0
Queue Length 50th (ft)	39	0	138	0	19	97
Queue Length 95th (ft)	76	16	#405	49	#76	330
Internal Link Dist (ft)	346		48			437
Turn Bay Length (ft)		85		230	275	
Base Capacity (vph)	515	473	1828	852	158	2091
Starvation Cap Reductn	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0
Reduced v/c Ratio	0.26	0.07	0.57	0.29	0.38	0.55

Intersection Summary

95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.

Lane Group	EBL	EBT	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT
Lane Group Flow (vph)	60	280	308	170	1042	62	1007	492	826	441
v/c Ratio	0.53	0.57	1.75	0.65	1.43	0.83	0.60	0.73	1.30	0.30
Control Delay	65.4	39.9	390.6	55.0	226.8	117.0	32.0	19.4	184.2	17.8
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	65.4	39.9	390.6	55.0	226.8	117.0	32.0	19.4	184.2	17.8
Queue Length 50th (ft)	41	86	~167	115	~969	44	212	126	~387	90
Queue Length 95th (ft)	90	128	#286	197	#1309	#139	301	306	#580	152
Internal Link Dist (ft)		486		661			407			302
Turn Bay Length (ft)	300		240		120	130		180	260	
Base Capacity (vph)	162	745	176	331	728	75	1667	671	634	1478
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.37	0.38	1.75	0.51	1.43	0.83	0.60	0.73	1.30	0.30

Intersection Summary

~ Volume exceeds capacity, queue is theoretically infinite.
Queue shown is maximum after two cycles.

95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.

Lane Group	EBT	EBR	WBT	WBR	SBL	SBT	SBR
Lane Group Flow (vph)	1278	551	1305	757	253	338	336
v/c Ratio	0.56	0.57	0.77	0.67	0.51	0.75	0.72
Control Delay	11.0	3.6	15.6	4.2	21.5	29.7	27.7
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	11.0	3.6	15.6	4.2	21.5	29.7	27.7
Queue Length 50th (ft)	104	0	181	0	78	106	101
Queue Length 95th (ft)	139	41	257	46	144	#240	#222
Internal Link Dist (ft)	661		674			105	
Turn Bay Length (ft)		400		560	65		350
Base Capacity (vph)	2361	972	1735	1139	497	452	466
Starvation Cap Reductn	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0
Reduced v/c Ratio	0.54	0.57	0.75	0.66	0.51	0.75	0.72

Intersection Summary

95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.

Lane Group	EBT	EBR	WBT	WBR	NBL	NBT	NBR
Lane Group Flow (vph)	754	812	1322	610	288	282	261
v/c Ratio	0.44	0.57	0.78	0.57	0.59	0.57	0.46
Control Delay	10.7	1.7	16.4	3.3	22.9	20.2	10.6
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	10.7	1.7	16.4	3.3	22.9	20.2	10.6
Queue Length 50th (ft)	84	0	188	0	90	79	32
Queue Length 95th (ft)	122	0	265	44	165	156	90
Internal Link Dist (ft)	674		169			405	
Turn Bay Length (ft)				1000	260		160
Base Capacity (vph)	1766	1420	1749	1080	490	491	568
Starvation Cap Reductn	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0
Reduced v/c Ratio	0.43	0.57	0.76	0.56	0.59	0.57	0.46

Intersection Summary

Lane Group	EBT	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Group Flow (vph)	1086	83	2228	500	20	83	45	61	14	13
v/c Ratio	1.47dl	0.93	1.03	0.52	0.38	0.05	0.08	0.72	0.01	0.02
Control Delay	72.3	128.1	57.5	6.7	66.4	10.8	0.3	89.6	19.2	0.1
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	72.3	128.1	57.5	6.7	66.4	10.8	0.3	89.6	19.2	0.1
Queue Length 50th (ft)	~276	54	~564	53	13	5	0	39	2	0
Queue Length 95th (ft)	#345	#143	#620	119	#39	16	0	#103	9	0
Internal Link Dist (ft)	250		280			220			326	
Turn Bay Length (ft)		90		185	50		140	100		185
Base Capacity (vph)	1046	89	2155	955	53	1591	595	85	1537	628
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	1.04	0.93	1.03	0.52	0.38	0.05	0.08	0.72	0.01	0.02

Intersection Summary

~ Volume exceeds capacity, queue is theoretically infinite.
Queue shown is maximum after two cycles.

95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.

dl Defacto Left Lane. Recode with 1 though lane as a left lane.

Queues
4: Doolittle Dr & Adams Ave

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Lane Group	WBL	WBR	NBT	NBR	SBL	SBT
Lane Group Flow (vph)	267	107	1327	187	19	2001
v/c Ratio	0.66	0.23	0.72	0.25	0.14	1.06
Control Delay	27.8	5.7	15.9	3.2	28.4	56.4
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	27.8	5.7	15.9	3.2	28.4	56.4
Queue Length 50th (ft)	80	0	148	0	6	~407
Queue Length 95th (ft)	140	26	#353	28	23	#533
Internal Link Dist (ft)	346		48			437
Turn Bay Length (ft)		85		230	275	
Base Capacity (vph)	523	563	1848	751	133	1882
Starvation Cap Reductn	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0
Reduced v/c Ratio	0.51	0.19	0.72	0.25	0.14	1.06

Intersection Summary

~ Volume exceeds capacity, queue is theoretically infinite.
Queue shown is maximum after two cycles.

95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.

Lane Group	EBL	EBT	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT
Lane Group Flow (vph)	75	222	372	142	923	20	524	307	1038	1274
v/c Ratio	0.61	0.34	2.10	0.61	1.17	0.24	0.29	0.39	1.60	0.70
Control Delay	71.0	30.0	542.1	54.5	114.6	61.2	27.7	4.0	307.6	24.1
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	71.0	30.0	542.1	54.5	114.6	61.2	27.7	4.0	307.6	24.1
Queue Length 50th (ft)	51	56	~215	96	~723	14	97	0	~543	300
Queue Length 95th (ft)	109	87	#347	163	#988	42	149	51	#765	583
Internal Link Dist (ft)		486		661			407			302
Turn Bay Length (ft)	300		240		120	130		180	260	
Base Capacity (vph)	159	969	177	305	790	88	1788	797	650	1814
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.47	0.23	2.10	0.47	1.17	0.23	0.29	0.39	1.60	0.70

Intersection Summary

~ Volume exceeds capacity, queue is theoretically infinite.
Queue shown is maximum after two cycles.

95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.

Lane Group	EBT	EBR	WBT	WBR	SBL	SBT	SBR
Lane Group Flow (vph)	1603	708	1469	493	461	445	422
v/c Ratio	0.78	0.67	0.97	0.52	0.70	0.73	0.73
Control Delay	18.0	4.8	35.3	3.5	22.7	23.6	23.5
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	18.0	4.8	35.3	3.5	22.7	23.6	23.5
Queue Length 50th (ft)	173	0	258	0	143	134	121
Queue Length 95th (ft)	227	54	#410	46	#248	#281	#257
Internal Link Dist (ft)	661		674			105	
Turn Bay Length (ft)		400		560	65		350
Base Capacity (vph)	2047	1057	1518	956	656	606	581
Starvation Cap Reductn	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0
Reduced v/c Ratio	0.78	0.67	0.97	0.52	0.70	0.73	0.73

Intersection Summary

95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.

Lane Group	EBT	EBR	WBT	WBR	NBL	NBT	NBR
Lane Group Flow (vph)	1587	678	1084	414	460	449	412
v/c Ratio	1.06	0.44	0.72	0.46	0.71	0.71	0.66
Control Delay	62.0	0.9	17.8	3.3	23.5	22.2	19.7
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	62.0	0.9	17.8	3.3	23.5	22.2	19.7
Queue Length 50th (ft)	~347	0	165	0	140	130	110
Queue Length 95th (ft)	#469	0	228	43	#296	#293	220
Internal Link Dist (ft)	674		169			405	
Turn Bay Length (ft)				1000	260		160
Base Capacity (vph)	1494	1547	1509	893	646	632	628
Starvation Cap Reductn	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0
Reduced v/c Ratio	1.06	0.44	0.72	0.46	0.71	0.71	0.66

Intersection Summary

~ Volume exceeds capacity, queue is theoretically infinite.
Queue shown is maximum after two cycles.

95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.

Lane Group	EBT	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Group Flow (vph)	2719	100	1838	328	16	179	88	134	35	10
v/c Ratio	2.69	1.03	0.89	0.36	0.26	0.11	0.14	1.47	0.02	0.02
Control Delay	781.8	148.8	33.2	4.0	56.6	11.0	0.5	298.2	18.9	0.0
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	781.8	148.8	33.2	4.0	56.6	11.0	0.5	298.2	18.9	0.0
Queue Length 50th (ft)	~1107	~68	389	19	10	14	0	~119	6	0
Queue Length 95th (ft)	#1138	#163	427	54	31	29	0	#225	17	0
Internal Link Dist (ft)	250		280			220			326	
Turn Bay Length (ft)		90		185	50		140	100		185
Base Capacity (vph)	1011	97	2058	919	62	1609	607	91	1493	654
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	2.69	1.03	0.89	0.36	0.26	0.11	0.14	1.47	0.02	0.02

Intersection Summary

~ Volume exceeds capacity, queue is theoretically infinite.
Queue shown is maximum after two cycles.

95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.

Queues
4: Doolittle Dr & Adams Ave

12/04/2023

Lane Group	WBL	WBR	NBT	NBR	SBL	SBT
Lane Group Flow (vph)	132	39	1044	246	97	1149
v/c Ratio	0.38	0.12	0.61	0.30	0.62	0.55
Control Delay	21.4	6.5	18.6	3.9	49.6	10.9
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	21.4	6.5	18.6	3.9	49.6	10.9
Queue Length 50th (ft)	39	0	140	0	31	98
Queue Length 95th (ft)	76	17	#408	49	#131	333
Internal Link Dist (ft)	346		48			437
Turn Bay Length (ft)		85		230	275	
Base Capacity (vph)	510	471	1722	817	156	2105
Starvation Cap Reductn	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0
Reduced v/c Ratio	0.26	0.08	0.61	0.30	0.62	0.55

Intersection Summary

95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.

Lane Group	EBL	EBT	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT
Lane Group Flow (vph)	60	280	308	170	1124	62	1018	492	832	443
v/c Ratio	0.53	0.57	1.75	0.65	1.55	0.83	0.61	0.73	1.31	0.30
Control Delay	65.4	39.9	390.6	55.0	276.7	117.0	32.1	19.4	188.0	17.8
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	65.4	39.9	390.6	55.0	276.7	117.0	32.1	19.4	188.0	17.8
Queue Length 50th (ft)	41	86	~167	115	~1093	44	215	126	~391	90
Queue Length 95th (ft)	90	128	#286	197	#1450	#139	305	306	#586	152
Internal Link Dist (ft)		486		661			407			302
Turn Bay Length (ft)	300		240		120	130		180	260	
Base Capacity (vph)	162	745	176	331	727	75	1667	671	634	1478
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.37	0.38	1.75	0.51	1.55	0.83	0.61	0.73	1.31	0.30

Intersection Summary

~ Volume exceeds capacity, queue is theoretically infinite.
Queue shown is maximum after two cycles.

95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.

Lane Group	EBT	EBR	WBT	WBR	SBL	SBT	SBR
Lane Group Flow (vph)	1280	554	1380	757	253	338	336
v/c Ratio	0.55	0.57	0.81	0.67	0.51	0.75	0.73
Control Delay	11.0	3.6	17.0	4.2	21.7	30.2	28.1
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	11.0	3.6	17.0	4.2	21.7	30.2	28.1
Queue Length 50th (ft)	104	0	199	0	78	106	101
Queue Length 95th (ft)	139	41	283	46	144	#240	#222
Internal Link Dist (ft)	661		674			105	
Turn Bay Length (ft)		400		560	65		350
Base Capacity (vph)	2340	969	1720	1136	493	448	462
Starvation Cap Reductn	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0
Reduced v/c Ratio	0.55	0.57	0.80	0.67	0.51	0.75	0.73

Intersection Summary

95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.

Lane Group	EBT	EBR	WBT	WBR	NBL	NBT	NBR
Lane Group Flow (vph)	756	812	1332	610	313	306	277
v/c Ratio	0.44	0.57	0.79	0.57	0.64	0.62	0.49
Control Delay	10.7	1.7	16.6	3.3	24.6	21.7	11.4
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	10.7	1.7	16.6	3.3	24.6	21.7	11.4
Queue Length 50th (ft)	84	0	191	0	101	89	36
Queue Length 95th (ft)	122	0	268	44	#183	172	98
Internal Link Dist (ft)	674		169			405	
Turn Bay Length (ft)				1000	260		160
Base Capacity (vph)	1765	1420	1749	1080	489	492	567
Starvation Cap Reductn	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0
Reduced v/c Ratio	0.43	0.57	0.76	0.56	0.64	0.62	0.49

Intersection Summary

95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.

Lane Group	EBT	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Group Flow (vph)	1086	83	2228	500	20	91	45	61	48	13
v/c Ratio	1.47dl	0.93	1.03	0.52	0.38	0.06	0.08	0.72	0.03	0.02
Control Delay	72.3	128.1	57.5	6.7	66.4	11.4	0.3	89.6	18.8	0.1
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	72.3	128.1	57.5	6.7	66.4	11.4	0.3	89.6	18.8	0.1
Queue Length 50th (ft)	~276	54	~564	53	13	6	0	39	8	0
Queue Length 95th (ft)	#345	#143	#620	119	#39	18	0	#103	21	0
Internal Link Dist (ft)	250		280			220			326	
Turn Bay Length (ft)		90		185	50		140	100		185
Base Capacity (vph)	1046	89	2155	955	53	1607	595	85	1537	628
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	1.04	0.93	1.03	0.52	0.38	0.06	0.08	0.72	0.03	0.02

Intersection Summary

~ Volume exceeds capacity, queue is theoretically infinite.
Queue shown is maximum after two cycles.

95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.

dl Defacto Left Lane. Recode with 1 though lane as a left lane.

Queues
4: Doolittle Dr & Adams Ave

12/04/2023

Lane Group	WBL	WBR	NBT	NBR	SBL	SBT
Lane Group Flow (vph)	267	135	1354	187	46	2007
v/c Ratio	0.67	0.28	0.82	0.27	0.35	1.06
Control Delay	28.6	5.6	22.6	3.7	34.6	53.3
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	28.6	5.6	22.6	3.7	34.6	53.3
Queue Length 50th (ft)	85	0	235	0	16	~423
Queue Length 95th (ft)	140	29	#364	28	43	#535
Internal Link Dist (ft)	346		48			437
Turn Bay Length (ft)		85		230	275	
Base Capacity (vph)	513	573	1646	690	130	1902
Starvation Cap Reductn	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0
Reduced v/c Ratio	0.52	0.24	0.82	0.27	0.35	1.06

Intersection Summary

~ Volume exceeds capacity, queue is theoretically infinite.
Queue shown is maximum after two cycles.

95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.

Lane Group	EBL	EBT	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT
Lane Group Flow (vph)	75	222	372	142	978	20	532	307	1064	1284
v/c Ratio	0.61	0.34	2.10	0.61	1.24	0.24	0.30	0.39	1.64	0.71
Control Delay	71.0	30.0	542.1	54.5	144.7	61.2	27.8	4.0	324.7	24.2
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	71.0	30.0	542.1	54.5	144.7	61.2	27.8	4.0	324.7	24.2
Queue Length 50th (ft)	51	56	~215	96	~810	14	98	0	~563	304
Queue Length 95th (ft)	109	87	#347	163	#1086	42	152	51	#788	#593
Internal Link Dist (ft)		486		661			407			302
Turn Bay Length (ft)	300		240		120	130		180	260	
Base Capacity (vph)	159	969	177	305	787	88	1788	797	650	1815
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.47	0.23	2.10	0.47	1.24	0.23	0.30	0.39	1.64	0.71

Intersection Summary

~ Volume exceeds capacity, queue is theoretically infinite.
Queue shown is maximum after two cycles.

95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.

Lane Group	EBT	EBR	WBT	WBR	SBL	SBT	SBR
Lane Group Flow (vph)	1613	720	1519	493	461	445	422
v/c Ratio	0.81	0.68	1.00	0.52	0.70	0.73	0.73
Control Delay	18.7	4.9	42.7	3.5	22.7	23.6	23.5
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	18.7	4.9	42.7	3.5	22.7	23.6	23.5
Queue Length 50th (ft)	176	0	~274	0	143	134	121
Queue Length 95th (ft)	232	55	#432	46	#248	#281	#257
Internal Link Dist (ft)	661		674			105	
Turn Bay Length (ft)		400		560	65		350
Base Capacity (vph)	2003	1064	1518	956	656	606	581
Starvation Cap Reductn	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0
Reduced v/c Ratio	0.81	0.68	1.00	0.52	0.70	0.73	0.73

Intersection Summary

~ Volume exceeds capacity, queue is theoretically infinite.
Queue shown is maximum after two cycles.

95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.

Lane Group	EBT	EBR	WBT	WBR	NBL	NBT	NBR
Lane Group Flow (vph)	1597	678	1091	414	468	467	428
v/c Ratio	1.07	0.44	0.72	0.46	0.72	0.74	0.68
Control Delay	64.3	0.9	17.9	3.3	24.1	23.5	20.9
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	64.3	0.9	17.9	3.3	24.1	23.5	20.9
Queue Length 50th (ft)	~352	0	166	0	143	138	116
Queue Length 95th (ft)	#474	0	230	43	#304	#312	#241
Internal Link Dist (ft)	674		169			405	
Turn Bay Length (ft)				1000	260		160
Base Capacity (vph)	1494	1547	1509	893	646	634	628
Starvation Cap Reductn	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0
Reduced v/c Ratio	1.07	0.44	0.72	0.46	0.72	0.74	0.68

Intersection Summary

~ Volume exceeds capacity, queue is theoretically infinite.
Queue shown is maximum after two cycles.

95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.

Lane Group	EBT	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Group Flow (vph)	2719	100	1838	328	16	216	88	134	58	10
v/c Ratio	2.69	1.03	0.89	0.36	0.26	0.13	0.14	1.47	0.04	0.02
Control Delay	781.8	148.8	33.2	4.0	56.6	12.6	0.5	298.2	18.8	0.0
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	781.8	148.8	33.2	4.0	56.6	12.6	0.5	298.2	18.8	0.0
Queue Length 50th (ft)	~1107	~68	389	19	10	20	0	~119	10	0
Queue Length 95th (ft)	#1138	#163	427	54	31	36	0	#225	24	0
Internal Link Dist (ft)	250		280			220			326	
Turn Bay Length (ft)		90		185	50		140	100		185
Base Capacity (vph)	1011	97	2058	919	62	1627	607	91	1493	654
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	2.69	1.03	0.89	0.36	0.26	0.13	0.14	1.47	0.04	0.02

Intersection Summary

~ Volume exceeds capacity, queue is theoretically infinite.
Queue shown is maximum after two cycles.

95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.

Intersection	
Int Delay, s/veh	0.8

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Vol, veh/h	45	32	1158	73	15	1622
Future Vol, veh/h	45	32	1158	73	15	1622
Conflicting Peds, #/hr	0	0	0	4	4	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	-	50	-
Veh in Median Storage, #	2	-	0	-	-	0
Grade, %	0	-	0	-	-	0
Peak Hour Factor	93	93	93	93	93	93
Heavy Vehicles, %	0	0	7	8	0	6
Mvmt Flow	48	34	1245	78	16	1744

Major/Minor	Minor1		Major1		Major2	
Conflicting Flow All	2192	666	0	0	1327	0
Stage 1	1288	-	-	-	-	-
Stage 2	904	-	-	-	-	-
Critical Hdwy	6.8	6.9	-	-	4.1	-
Critical Hdwy Stg 1	5.8	-	-	-	-	-
Critical Hdwy Stg 2	5.8	-	-	-	-	-
Follow-up Hdwy	3.5	3.3	-	-	2.2	-
Pot Cap-1 Maneuver	~ 40	407	-	-	527	-
Stage 1	226	-	-	-	-	-
Stage 2	360	-	-	-	-	-
Platoon blocked, %			-	-		-
Mov Cap-1 Maneuver	~ 39	405	-	-	525	-
Mov Cap-2 Maneuver	181	-	-	-	-	-
Stage 1	225	-	-	-	-	-
Stage 2	349	-	-	-	-	-

Approach	WB	NB	SB
HCM Control Delay, s	28.4	0	0.1
HCM LOS	D		

Minor Lane/Major Mvmt	NBT	NBR	WBLn1	SBL	SBT
Capacity (veh/h)	-	-	235	525	-
HCM Lane V/C Ratio	-	-	0.352	0.031	-
HCM Control Delay (s)	-	-	28.4	12.1	-
HCM Lane LOS	-	-	D	B	-
HCM 95th %tile Q(veh)	-	-	1.5	0.1	-

Notes

~: Volume exceeds capacity $: Delay exceeds 300s +: Computation Not Defined *: All major volume in platoon

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Volume (veh/h)	152	0	0	53	29	60
Future Volume (Veh/h)	152	0	0	53	29	60
Sign Control		Stop	Stop		Free	
Grade		0%	0%		0%	
Peak Hour Factor	0.89	0.89	0.89	0.89	0.89	0.89
Hourly flow rate (vph)	171	0	0	60	33	67
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type					None	
Median storage veh)						
Upstream signal (ft)						
pX, platoon unblocked						
vC, conflicting volume	160	100	133	0	0	
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	160	100	133	0	0	
tC, single (s)	7.1	6.5	6.5	6.2	4.1	
tC, 2 stage (s)						
tF (s)	3.5	4.0	4.0	3.3	2.2	
p0 queue free %	77	100	100	94	98	
cM capacity (veh/h)	747	773	740	1082	1617	

Direction, Lane #	EB 1	WB 1	SB 1
Volume Total	171	60	100
Volume Left	171	0	33
Volume Right	0	60	67
cSH	747	1082	1617
Volume to Capacity	0.23	0.06	0.02
Queue Length 95th (ft)	22	4	2
Control Delay (s)	11.2	8.5	2.5
Lane LOS	B	A	A
Approach Delay (s)	11.2	8.5	2.5
Approach LOS	B	A	

Intersection Summary			
Average Delay	8.1		
Intersection Capacity Utilization	27.1%	ICU Level of Service	A
Analysis Period (min)	15		

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Volume (veh/h)	152	26	52	225	69	135
Future Volume (Veh/h)	152	26	52	225	69	135
Sign Control	Free			Free	Stop	
Grade	0%			0%	0%	
Peak Hour Factor	0.89	0.89	0.89	0.89	0.89	0.89
Hourly flow rate (vph)	171	29	58	253	78	152
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type	None			None		
Median storage veh)						
Upstream signal (ft)	426					
pX, platoon unblocked						
vC, conflicting volume			200		554	186
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol			200		554	186
tC, single (s)			4.1		6.4	6.2
tC, 2 stage (s)						
tF (s)			2.2		3.5	3.3
p0 queue free %			96		83	82
cM capacity (veh/h)			1360		469	857

Direction, Lane #	EB 1	WB 1	NB 1
Volume Total	200	311	230
Volume Left	0	58	78
Volume Right	29	0	152
cSH	1700	1360	669
Volume to Capacity	0.12	0.04	0.34
Queue Length 95th (ft)	0	3	38
Control Delay (s)	0.0	1.8	13.2
Lane LOS		A	B
Approach Delay (s)	0.0	1.8	13.2
Approach LOS			B

Intersection Summary			
Average Delay	4.8		
Intersection Capacity Utilization	46.4%	ICU Level of Service	A
Analysis Period (min)	15		

Intersection	
Int Delay, s/veh	4.7

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Vol, veh/h	152	26	52	225	69	135
Future Vol, veh/h	152	26	52	225	69	135
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	0	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	89	89	89	89	89	89
Heavy Vehicles, %	26	24	4	6	4	2
Mvmt Flow	171	29	58	253	78	152

Major/Minor	Major1		Major2		Minor1	
Conflicting Flow All	0	0	200	0	555	186
Stage 1	-	-	-	-	186	-
Stage 2	-	-	-	-	369	-
Critical Hdwy	-	-	4.14	-	6.44	6.22
Critical Hdwy Stg 1	-	-	-	-	5.44	-
Critical Hdwy Stg 2	-	-	-	-	5.44	-
Follow-up Hdwy	-	-	2.236	-	3.536	3.318
Pot Cap-1 Maneuver	-	-	1360	-	489	856
Stage 1	-	-	-	-	841	-
Stage 2	-	-	-	-	695	-
Platoon blocked, %	-	-		-		
Mov Cap-1 Maneuver	-	-	1360	-	465	856
Mov Cap-2 Maneuver	-	-	-	-	465	-
Stage 1	-	-	-	-	841	-
Stage 2	-	-	-	-	660	-

Approach	EB	WB	NB
HCM Control Delay, s	0	1.5	13.2
HCM LOS			B

Minor Lane/Major Mvmt	NBLn1	EBT	EBR	WBL	WBT
Capacity (veh/h)	666	-	-	1360	-
HCM Lane V/C Ratio	0.344	-	-	0.043	-
HCM Control Delay (s)	13.2	-	-	7.8	0
HCM Lane LOS	B	-	-	A	A
HCM 95th %tile Q(veh)	1.5	-	-	0.1	-

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (vph)	224	113	1137	157	39	1686
Future Volume (vph)	224	113	1137	157	39	1686
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost time (s)	5.2	5.2	5.8	5.8	4.6	5.8
Lane Util. Factor	1.00	1.00	0.95	1.00	1.00	0.95
Frpb, ped/bikes	1.00	1.00	1.00	0.97	1.00	1.00
Flpb, ped/bikes	1.00	1.00	1.00	1.00	1.00	1.00
Frt	1.00	0.85	1.00	0.85	1.00	1.00
Flt Protected	0.95	1.00	1.00	1.00	0.95	1.00
Satd. Flow (prot)	1641	1538	3505	1259	1504	3374
Flt Permitted	0.95	1.00	1.00	1.00	0.95	1.00
Satd. Flow (perm)	1641	1538	3505	1259	1504	3374
Peak-hour factor, PHF	0.84	0.84	0.84	0.84	0.84	0.84
Adj. Flow (vph)	267	135	1354	187	46	2007
RTOR Reduction (vph)	0	103	0	102	0	0
Lane Group Flow (vph)	267	32	1354	85	46	2007
Confl. Peds. (#/hr)				1	1	
Confl. Bikes (#/hr)				5		
Heavy Vehicles (%)	10%	5%	3%	25%	20%	7%
Turn Type	Perm	Perm	NA	Perm	Prot	NA
Protected Phases			2		1	6
Permitted Phases	8	8		2		
Actuated Green, G (s)	14.2	14.2	27.2	27.2	2.8	34.6
Effective Green, g (s)	14.2	14.2	27.2	27.2	2.8	34.6
Actuated g/C Ratio	0.24	0.24	0.45	0.45	0.05	0.58
Clearance Time (s)	5.2	5.2	5.8	5.8	4.6	5.8
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0	3.0
Lane Grp Cap (vph)	389	365	1594	572	70	1952
v/s Ratio Prot			0.39		0.03	c0.59
v/s Ratio Perm	c0.16	0.02		0.07		
v/c Ratio	0.69	0.09	0.85	0.15	0.66	1.03
Uniform Delay, d1	20.8	17.8	14.5	9.5	28.0	12.6
Progression Factor	1.00	1.00	1.00	1.00	1.00	1.00
Incremental Delay, d2	5.0	0.1	5.9	0.5	20.1	27.9
Delay (s)	25.7	17.9	20.3	10.1	48.1	40.5
Level of Service	C	B	C	B	D	D
Approach Delay (s)	23.1		19.1			40.7
Approach LOS	C		B			D

Intersection Summary			
HCM 2000 Control Delay	30.6	HCM 2000 Level of Service	C
HCM 2000 Volume to Capacity ratio	1.02		
Actuated Cycle Length (s)	59.8	Sum of lost time (s)	15.6
Intersection Capacity Utilization	68.2%	ICU Level of Service	C
Analysis Period (min)	15		
c Critical Lane Group			

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	66	144	51	327	125	861	18	468	270	936	1081	49
Future Volume (vph)	66	144	51	327	125	861	18	468	270	936	1081	49
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.6	5.2		4.6	5.2	4.6	4.6	5.4	4.6	4.6	5.8	
Lane Util. Factor	1.00	0.95		0.97	1.00	1.00	1.00	0.91	1.00	0.97	0.95	
Frpb, ped/bikes	1.00	1.00		1.00	1.00	1.00	1.00	1.00	0.99	1.00	1.00	
Flpb, ped/bikes	1.00	1.00		1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	
Frt	1.00	0.96		1.00	1.00	0.85	1.00	1.00	0.85	1.00	0.99	
Flt Protected	0.95	1.00		0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	
Satd. Flow (prot)	1188	2894		3045	1226	1568	1543	5036	1474	3335	3284	
Flt Permitted	0.95	1.00		0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	
Satd. Flow (perm)	1188	2894		3045	1226	1568	1543	5036	1474	3335	3284	
Peak-hour factor, PHF	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88
Adj. Flow (vph)	75	164	58	372	142	978	20	532	307	1064	1228	56
RTOR Reduction (vph)	0	33	0	0	0	122	0	0	176	0	2	0
Lane Group Flow (vph)	75	189	0	372	142	856	20	532	131	1064	1282	0
Confl. Peds. (#/hr)			5	5					2	2		
Confl. Bikes (#/hr)			1						5			1
Heavy Vehicles (%)	52%	18%	23%	15%	55%	3%	17%	3%	8%	5%	7%	55%
Turn Type	Prot	NA		Prot	NA	pm+ov	Prot	NA	pm+ov	Prot	NA	
Protected Phases	7	4		3	8	1	5	2	3	1	6	
Permitted Phases						8			2			
Actuated Green, G (s)	9.9	24.4		6.5	21.0	42.6	2.3	42.2	48.7	21.6	61.1	
Effective Green, g (s)	9.9	24.4		6.5	21.0	42.6	2.3	42.2	48.7	21.6	61.1	
Actuated g/C Ratio	0.09	0.21		0.06	0.18	0.37	0.02	0.37	0.43	0.19	0.53	
Clearance Time (s)	4.6	5.2		4.6	5.2	4.6	4.6	5.4	4.6	4.6	5.8	
Vehicle Extension (s)	3.0	3.0		3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	
Lane Grp Cap (vph)	102	616		172	224	583	30	1856	626	629	1752	
v/s Ratio Prot	0.06	c0.07		c0.12	0.12	c0.28	0.01	0.11	0.01	c0.32	c0.39	
v/s Ratio Perm						0.27			0.08			
v/c Ratio	0.74	0.31		2.16	0.63	1.47	0.67	0.29	0.21	1.69	0.73	
Uniform Delay, d1	51.0	37.9		54.0	43.2	36.0	55.7	25.5	20.7	46.5	20.4	
Progression Factor	1.00	1.00		1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	
Incremental Delay, d2	23.8	0.3		542.0	5.8	220.1	44.1	0.4	0.2	318.1	2.7	
Delay (s)	74.8	38.2		596.0	49.0	256.1	99.9	25.9	20.9	364.5	23.2	
Level of Service	E	D		F	D	F	F	C	C	F	C	
Approach Delay (s)		47.5			321.1			25.8			177.8	
Approach LOS		D			F			C			F	

Intersection Summary			
HCM 2000 Control Delay	186.7	HCM 2000 Level of Service	F
HCM 2000 Volume to Capacity ratio	1.21		
Actuated Cycle Length (s)	114.5	Sum of lost time (s)	20.2
Intersection Capacity Utilization	102.1%	ICU Level of Service	G
Analysis Period (min)	15		
c Critical Lane Group			

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	66	144	51	327	125	861	18	468	270	936	1081	49
Future Volume (veh/h)	66	144	51	327	125	861	18	468	270	936	1081	49
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		0.98	1.00		0.99	1.00		0.98	1.00		0.98
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1129	1633	1559	1678	1085	1856	1648	1856	1781	1826	1796	1085
Adj Flow Rate, veh/h	75	164	58	372	142	978	20	532	307	1064	1228	56
Peak Hour Factor	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88
Percent Heavy Veh, %	52	18	23	15	55	3	17	3	8	5	7	55
Cap, veh/h	85	579	197	173	252	657	32	1651	568	629	1633	74
Arrive On Green	0.08	0.26	0.26	0.06	0.23	0.23	0.02	0.33	0.33	0.19	0.49	0.49
Sat Flow, veh/h	1076	2261	768	3100	1085	1562	1570	5066	1484	3374	3320	151
Grp Volume(v), veh/h	75	110	112	372	142	978	20	532	307	1064	631	653
Grp Sat Flow(s),veh/h/ln	1076	1552	1478	1550	1085	1562	1570	1689	1484	1687	1706	1765
Q Serve(g_s), s	7.9	6.5	7.0	6.4	13.3	26.7	1.5	9.1	18.5	21.4	34.2	34.3
Cycle Q Clear(g_c), s	7.9	6.5	7.0	6.4	13.3	26.7	1.5	9.1	18.5	21.4	34.2	34.3
Prop In Lane	1.00		0.52	1.00		1.00	1.00		1.00	1.00		0.09
Lane Grp Cap(c), veh/h	85	397	378	173	252	657	32	1651	568	629	839	868
V/C Ratio(X)	0.88	0.28	0.29	2.15	0.56	1.49	0.62	0.32	0.54	1.69	0.75	0.75
Avail Cap(c_a), veh/h	138	473	451	173	252	657	86	1651	568	629	839	868
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	52.3	34.2	34.4	54.2	38.9	33.4	55.8	29.1	27.7	46.7	23.5	23.5
Incr Delay (d2), s/veh	29.3	0.4	0.4	537.2	2.8	228.2	17.9	0.5	3.7	318.0	6.1	6.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	2.8	2.5	2.6	15.4	3.7	59.0	0.7	3.6	7.0	36.5	14.3	14.8
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	81.6	34.6	34.8	591.4	41.7	261.6	73.6	29.7	31.3	364.7	29.7	29.5
LnGrp LOS	F	C	C	F	D	F	E	C	C	F	C	C
Approach Vol, veh/h		297			1492			859			2348	
Approach Delay, s/veh		46.5			322.9			31.3			181.4	
Approach LOS		D			F			C			F	

Timer - Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	26.0	43.2	11.0	34.6	7.0	62.2	13.7	31.9
Change Period (Y+Rc), s	4.6	* 5.8	4.6	5.2	4.6	5.8	4.6	5.2
Max Green Setting (Gmax), s	21.4	* 37	6.4	35.0	6.3	52.1	14.7	26.7
Max Q Clear Time (g_c+I1), s	23.4	20.5	8.4	9.0	3.5	36.3	9.9	28.7
Green Ext Time (p_c), s	0.0	4.1	0.0	1.3	0.0	7.5	0.1	0.0

Intersection Summary	
HCM 6th Ctrl Delay	189.8
HCM 6th LOS	F

Notes

User approved pedestrian interval to be less than phase max green.

* HCM 6th computational engine requires equal clearance times for the phases crossing the barrier.

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	1	1564	698	0	1473	478	0	0	0	667	0	621
Future Volume (vph)	1	1564	698	0	1473	478	0	0	0	667	0	621
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		5.0	5.0		5.0	5.0				5.8	5.8	5.8
Lane Util. Factor		0.91	1.00		0.95	1.00				0.95	0.91	0.95
Frpb, ped/bikes		1.00	0.98		1.00	0.98				1.00	1.00	1.00
Flpb, ped/bikes		1.00	1.00		1.00	1.00				1.00	1.00	1.00
Frt		1.00	0.85		1.00	0.85				1.00	0.93	0.85
Flt Protected		1.00	1.00		1.00	1.00				0.95	0.98	1.00
Satd. Flow (prot)		5085	1515		3505	1563				1698	1510	1447
Flt Permitted		0.91	1.00		1.00	1.00				0.95	0.98	1.00
Satd. Flow (perm)		4624	1515		3505	1563				1698	1510	1447
Peak-hour factor, PHF	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97
Adj. Flow (vph)	1	1612	720	0	1519	493	0	0	0	688	0	640
RTOR Reduction (vph)	0	0	408	0	0	279	0	0	0	0	22	22
Lane Group Flow (vph)	0	1613	312	0	1519	214	0	0	0	461	423	400
Confl. Peds. (#/hr)	1		4	4		1						
Confl. Bikes (#/hr)						1						
Heavy Vehicles (%)	0%	2%	4%	0%	3%	1%	0%	0%	0%	1%	0%	6%
Turn Type	Perm	NA	Perm		NA	Perm				Split	NA	Perm
Protected Phases		2			6					4	4	
Permitted Phases	2		2			6						4
Actuated Green, G (s)		26.0	26.0		26.0	26.0				23.2	23.2	23.2
Effective Green, g (s)		26.0	26.0		26.0	26.0				23.2	23.2	23.2
Actuated g/C Ratio		0.43	0.43		0.43	0.43				0.39	0.39	0.39
Clearance Time (s)		5.0	5.0		5.0	5.0				5.8	5.8	5.8
Vehicle Extension (s)		3.0	3.0		3.0	3.0				3.0	3.0	3.0
Lane Grp Cap (vph)		2003	656		1518	677				656	583	559
v/s Ratio Prot					c0.43					0.27	c0.28	
v/s Ratio Perm		0.35	0.21			0.14						0.28
v/c Ratio		0.81	0.48		1.00	0.32				0.70	0.73	0.72
Uniform Delay, d1		14.8	12.1		17.0	11.2				15.5	15.7	15.6
Progression Factor		1.00	1.00		1.00	1.00				1.00	1.00	1.00
Incremental Delay, d2		2.5	0.5		23.3	0.3				6.2	7.7	7.6
Delay (s)		17.3	12.7		40.3	11.4				21.7	23.4	23.2
Level of Service		B	B		D	B				C	C	C
Approach Delay (s)		15.8			33.2			0.0			22.7	
Approach LOS		B			C			A			C	

Intersection Summary			
HCM 2000 Control Delay	23.6	HCM 2000 Level of Service	C
HCM 2000 Volume to Capacity ratio	0.87		
Actuated Cycle Length (s)	60.0	Sum of lost time (s)	10.8
Intersection Capacity Utilization	77.4%	ICU Level of Service	D
Analysis Period (min)	15		
c Critical Lane Group			

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	0	1565	664	0	1069	406	818	0	517	0	0	0
Future Volume (vph)	0	1565	664	0	1069	406	818	0	517	0	0	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		5.0	4.0		5.0	5.0	5.8	5.8	5.8			
Lane Util. Factor		0.95	1.00		0.95	1.00	0.95	0.91	0.95			
Frpb, ped/bikes		1.00	0.98		1.00	0.98	1.00	1.00	1.00			
Flpb, ped/bikes		1.00	1.00		1.00	1.00	1.00	1.00	1.00			
Frt		1.00	0.85		1.00	0.85	1.00	0.97	0.85			
Flt Protected		1.00	1.00		1.00	1.00	0.95	0.96	1.00			
Satd. Flow (prot)		3539	1547		3574	1550	1618	1535	1519			
Flt Permitted		1.00	1.00		1.00	1.00	0.95	0.96	1.00			
Satd. Flow (perm)		3539	1547		3574	1550	1618	1535	1519			
Peak-hour factor, PHF	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98
Adj. Flow (vph)	0	1597	678	0	1091	414	835	0	528	0	0	0
RTOR Reduction (vph)	0	0	0	0	0	239	0	22	22	0	0	0
Lane Group Flow (vph)	0	1597	678	0	1091	175	468	445	406	0	0	0
Confl. Peds. (#/hr)	1		5	5		1						
Confl. Bikes (#/hr)			1									
Heavy Vehicles (%)	0%	2%	2%	0%	1%	2%	6%	0%	1%	0%	0%	0%
Turn Type		NA	Free		NA	Perm	Perm	NA	Perm			
Protected Phases		2			6			8				
Permitted Phases			Free			6	8		8			
Actuated Green, G (s)		25.6	60.6		25.6	25.6	24.2	24.2	24.2			
Effective Green, g (s)		25.6	60.6		25.6	25.6	24.2	24.2	24.2			
Actuated g/C Ratio		0.42	1.00		0.42	0.42	0.40	0.40	0.40			
Clearance Time (s)		5.0			5.0	5.0	5.8	5.8	5.8			
Vehicle Extension (s)		3.0			3.0	3.0	3.0	3.0	3.0			
Lane Grp Cap (vph)		1495	1547		1509	654	646	612	606			
v/s Ratio Prot		c0.45			0.31							
v/s Ratio Perm			0.44			0.11	0.29	0.29	0.27			
v/c Ratio		1.07	0.44		0.72	0.27	0.72	0.73	0.67			
Uniform Delay, d1		17.5	0.0		14.6	11.4	15.4	15.4	14.9			
Progression Factor		1.00	1.00		1.00	1.00	1.00	1.00	1.00			
Incremental Delay, d2		43.9	0.9		1.7	0.2	6.9	7.4	5.8			
Delay (s)		61.4	0.9		16.3	11.6	22.3	22.8	20.7			
Level of Service		E	A		B	B	C	C	C			
Approach Delay (s)		43.4			15.0			22.0			0.0	
Approach LOS		D			B			C			A	

Intersection Summary			
HCM 2000 Control Delay	29.4	HCM 2000 Level of Service	C
HCM 2000 Volume to Capacity ratio	0.90		
Actuated Cycle Length (s)	60.6	Sum of lost time (s)	10.8
Intersection Capacity Utilization	80.2%	ICU Level of Service	D
Analysis Period (min)	15		
c Critical Lane Group			

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	81	2250	8	86	1581	282	14	110	151	115	50	9
Future Volume (vph)	81	2250	8	86	1581	282	14	110	151	115	50	9
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		5.8		4.6	5.0	4.6	4.6	5.0	5.0	4.6	5.0	5.0
Lane Util. Factor		0.91		1.00	0.91	1.00	1.00	0.86	0.86	1.00	0.95	1.00
Frpb, ped/bikes		1.00		1.00	1.00	1.00	1.00	0.99	0.99	1.00	1.00	0.99
Flpb, ped/bikes		1.00		1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Frt		1.00		1.00	1.00	0.85	1.00	0.94	0.85	1.00	1.00	0.85
Flt Protected		1.00		0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (prot)		4843		1752	4715	1482	1253	4280	1318	1770	3505	1274
Flt Permitted		0.64		0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (perm)		3085		1752	4715	1482	1253	4280	1318	1770	3505	1274
Peak-hour factor, PHF	0.86	0.86	0.86	0.86	0.86	0.86	0.86	0.86	0.86	0.86	0.86	0.86
Adj. Flow (vph)	94	2616	9	100	1838	328	16	128	176	134	58	10
RTOR Reduction (vph)	0	1	0	0	0	139	0	54	54	0	0	6
Lane Group Flow (vph)	0	2718	0	100	1838	189	16	162	34	134	58	4
Confl. Peds. (#/hr)							2		1	1		2
Heavy Vehicles (%)	4%	7%	0%	3%	10%	9%	44%	9%	4%	2%	3%	25%
Turn Type	pm+pt	NA		Prot	NA	pm+ov	Prot	NA	Perm	Prot	NA	Perm
Protected Phases	7	4		3	8	1	5	2		1	6	
Permitted Phases	4					8			2			6
Actuated Green, G (s)		33.0		5.6	44.0	49.2	2.0	39.8	39.8	5.2	43.0	43.0
Effective Green, g (s)		33.0		5.6	44.0	49.2	2.0	39.8	39.8	5.2	43.0	43.0
Actuated g/C Ratio		0.32		0.05	0.42	0.47	0.02	0.38	0.38	0.05	0.42	0.42
Clearance Time (s)		5.8		4.6	5.0	4.6	4.6	5.0	5.0	4.6	5.0	5.0
Vehicle Extension (s)		3.0		3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0
Lane Grp Cap (vph)		982		94	2002	703	24	1644	506	88	1454	528
v/s Ratio Prot				0.06	c0.39	0.01	0.01	c0.04		c0.08	c0.02	
v/s Ratio Perm		c0.88				0.11			0.03			0.00
v/c Ratio		2.77		1.06	0.92	0.27	0.67	0.10	0.07	1.52	0.04	0.01
Uniform Delay, d1		35.3		49.0	28.1	16.4	50.5	20.4	20.2	49.2	18.0	17.8
Progression Factor		1.00		1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Incremental Delay, d2		798.5		111.2	7.2	0.2	52.8	0.1	0.3	284.5	0.1	0.0
Delay (s)		833.8		160.2	35.3	16.6	103.3	20.5	20.4	333.7	18.1	17.8
Level of Service		F		F	D	B	F	C	C	F	B	B
Approach Delay (s)		833.8			38.1			24.6			227.4	
Approach LOS		F			D			C			F	

Intersection Summary			
HCM 2000 Control Delay	437.1	HCM 2000 Level of Service	F
HCM 2000 Volume to Capacity ratio	1.30		
Actuated Cycle Length (s)	103.6	Sum of lost time (s)	20.0
Intersection Capacity Utilization	130.0%	ICU Level of Service	H
Analysis Period (min)	15		

c Critical Lane Group

Appendix D

Revised Soil and Groundwater Management Plan

REVISED SOIL AND GROUNDWATER MANAGEMENT PLAN

Former Kaiser Aerotech Facilities
880 Doolittle Drive and 498 Hester Street
San Leandro, California
EnviroStor ID No. 01990015

01-KAF-009

Prepared For:

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LIST OF ACRONYMS

µg/L	microgram per liter
µg/m^3	microgram per cubic meter
ACPWA	Alameda County Public Works Agency
APN	Assessor's Parcel Number
ARAL	accelerated response action level
BAAQMD	Bay Area Air Quality Management District
bgs	below ground surface
BMP	best management practice
CCR	California Code of Regulations
CFR	Code of Federal Regulations
CHP	California Highway Patrol
COPC	constituents of potential concern
CUPA	Certified Unified Program Agency
CVOC	chlorinated volatile organic compound
DCE	dichloroethene
DOT	Department of Transportation
DTSC	Department of Toxic Substances Control
ERD	enhanced reductive dechlorination
ESCP	Emergency Spill Contingency Plan
ETIC	ETIC Engineering, Inc.
HASP	Health and Safety Plan
Leandro Brookshire	Leandro Brookshire LLC
LUC	land use covenant
MCL	maximum contaminant level
MNA	monitored natural attenuation
mph	miles per hour
NPDES	National Pollutant Discharge Elimination System

LIST OF ACRONYMS

O&M	operation and maintenance
OCP	organochlorine pesticide
Order	Imminent and Substantial Endangerment Determination and Order and Remedial Action Order
OSHA	Occupational Safety and Health Administration
PCB	polychlorinated biphenyl
PCE	tetrachloroethene
PID	photoionization detector
PPE	personal protective equipment
ppmv	part per million by volume
ppmw	part per million by weight
QSD	Qualified SWPPP [Stormwater Pollution Prevention Plan] Developer
RL	reporting limit
RMD	RMD Environmental Solutions, Inc.
SL	screening level
SLESS	City of San Leandro Environmental Services Section
SGMP	Soil and Groundwater Management Plan
SVOC	semi-volatile organic compound
SWPPP	Stormwater Pollution Prevention Plan
TCE	trichloroethene
TCLP	toxicity characteristic leaching procedure
TPHg	total petroleum hydrocarbons as gasoline
TPHd	total petroleum hydrocarbons as diesel
TPHmo	total petroleum hydrocarbons as motor oil
UN	United Nations
URAL	urgent response action level
USA	Underground Services Alert of Northern California
USEPA	U.S. Environmental Protection Agency
UST	underground storage tank
VC	vinyl chloride
VOC	volatile organic compound
WET	waste characterization test

1.0 INTRODUCTION

On behalf of Leandro Brookshire LLC, (Leandro Brookshire; Property Owner), RMD Environmental Solutions, Inc. (RMD; Environmental Consultant) has prepared this *Soil and Groundwater Management Plan* (SGMP) for the former Kaiser Aerotech facilities located at 880 Doolittle Drive and 498 Hester Street in San Leandro, California (the Site; Figure 1). This SGMP has been revised to incorporate responses to May 7, 2021 California Department of Toxic Substances Control (DTSC) comments.

Environmental response activities are conducted pursuant to an *Imminent and Substantial Endangerment Determination and Order and Remedial Action Order* (Order), which was issued by the DTSC in June 2004. Environmental response activities, including remedial actions, have been implemented to address chlorinated volatile organic compounds (CVOCs) observed in the Site subsurface. DTSC certified the Site in a January 23, 2013 correspondence and indicated that all response actions, except for long-term operation and maintenance (O&M) activities, have been completed. In conjunction with environmental response activities, a *Land Use Covenant* (LUC) was filed with Alameda County in 2012 to ensure that the Site is not used for sensitive land uses (Appendix A). O&M activities and annual LUC inspections are routinely conducted to evaluate groundwater conditions and remedial progress at the Site.

1.1 Anticipated Redevelopment Project Description

The Site is planned for commercial redevelopment, which is expected to include demolition of the existing buildings and construction of a new approximately 97,240 square-foot commercial building in the north-central portion of the property with associated on-grade parking, loading, and staging areas, and an above-grade parking area on a canopy structure (Figure 2). This SGMP is intended to address potential subsurface issues that may be encountered during redevelopment of the Site. The redevelopment activities may include, but are not limited, to the following:

- Demolishing existing buildings, foundations, and pavement;
- Constructing new buildings for commercial/industrial use, including Site grading and installing foundations and pavement;
- Repairing, replacing, removing, and/or installing underground utilities; and
- Excavating and backfilling small areas or potholes for installation of signs, traffic bollards, or similar.

1.2 Purpose and Objectives

The purpose of this SGMP is to provide guidance for proper handling, management, and disposal of impacted soil and groundwater that may be encountered during the activities described above. The objectives of the SGMP include:

- Communicating information to onsite workers about environmental conditions at the Site;
- Presenting protocols for management of known impacted soil or groundwater encountered during redevelopment activities; and
- Presenting measures to evaluate and mitigate potential risks to the environment, onsite workers, and other nearby offsite receptors from potential exposure to hazardous substances that may be associated with unknown conditions or unexpected underground structures (as defined in Section 5.0).

1.3 SGMP Organization

The remainder of this SGMP is organized into the following sections:

- **Section 2.0 - Background and Physical Setting:** Provides a description of the Site, hydrogeologic conditions, constituents of potential concern (COPCs), remediation activities, and current Site conditions;
- **Section 3.0 – Project Contacts, Responsibilities, and Notifications:** Provides a list of construction team contacts and their responsibilities, agency notifications, and a summary of notification procedures related to regulatory oversight agency, underground utility clearance, permitting, health and safety, and existing groundwater well network;
- **Section 4.0 – Soil Management:** Provides procedures for field screening and assessment of potentially impacted soil, soil stockpile handling, decontamination, and soil importation;
- **Section 5.0 – Contingency Measures for Discovery of Unexpected Underground Structures:** Provides procedures to respond to the discovery of previously unidentified or unknown underground structures;
- **Section 6.0 – Erosion, Dust, and Odor Management:** Provides procedures to control erosion, dust, and fugitive emissions, which may produce odor and vapor emissions;
- **Section 7.0 – Groundwater Management:** Provides procedures to manage any accumulated groundwater encountered during redevelopment activities;
- **Section 8.0 – Waste Management:** Provides procedures for proper storage, handling, reuse, and disposal of contaminated soil, wastewater, and groundwater;

- **Section 9.0 – Stormwater Management:** Provides procedures to manage stormwater runoff;
- **Section 10.0 – Written Records and Reporting:** Provides a list of field documentation and reporting requirements;
- **Section 11.0 – References:** Provides list of references cited in this SGMP; and
- **Section 12.0 – Limitations:** Provides limitations associated with data, conclusions, and recommendations presented in this SGMP.

1.4 Agreement and Acknowledgement Statement

Prior to commencement of redevelopment activities that disturb the ground surface, the General Contractor and subcontractors of the Property Owner will be required to read this plan and sign the Agreement and Acknowledgement Statement (Appendix B) to certify that they have read, understood, and agree to abide by its provisions.

2.0 BACKGROUND AND PHYSICAL SETTING

This section summarizes the Site background and physical setting.

2.1 General Site Information

Site name:	Former Kaiser Aerotech Facilities (Kaiser Aerotech)
Site address:	880 Doolittle Drive and 498 Hester Street, San Leandro, California (Figures 1 and 3)
Current property owner:	Leandro Brookshire LLC
Current phase of project:	Operation and Maintenance and Monitoring
Number of wells:	55 (52 onsite, 3 offsite; Figure 3 and Table 1)

2.2 Site Location and Description

The Site is located east of Doolittle Drive between 98th Avenue and Davis Street in a commercial/industrial area of San Leandro, California (Figure 1).

The Site consists of two parcels:

- The 880 Doolittle Drive parcel, Alameda County Assessor's Parcel Number (APN) 77A-741-4-2, is approximately 10-acres in size and consists of several buildings including a 5,000 square-foot administration building, a 175,000 square-foot northern building and an 87,500 square-foot southern building, which are connected by a breezeway (Figure 3). The remainder of this parcel is asphalt-paved with limited landscaped areas. Kaiser Aerotech manufactured aerospace and/or aircraft equipment at the 880 Doolittle parcel from approximately 1955 to 1996, when these operations ceased and the manufacturing equipment was dismantled.
- The 498 Hester Street parcel, APN 77A-741-5, is approximately 4-acres in size and is asphalt-paved (Figure 3). Kaiser Aerotech used the 498 Hester Street parcel for employee parking, light manufacturing, and storage between 1963 and 1976. Between 1976 and 2002, most of the 498 Hester Street parcel was leased to other businesses including a cargo container repair and storage company and a light manufacturing company. The area was paved in December 2003.

From the early 2000s to May 2020, Expresso Airport Parking operated at the Site to provide off-airport parking and the former manufacturing buildings were repurposed as indoor parking. Currently, the Site is leased for outdoor parking.

2.3 Hydrogeologic Setting

The Site subsurface consists of the following hydrogeologic zones:

- **Vadose zone:** Ground surface to the top of the water table at approximately 5 feet below ground surface (bgs);
- **A-zone:** Approximately 5-15 feet bgs; thin, discontinuous sand lenses;
- **B-zone:** Approximately 15-35 feet bgs; thicker sand channels enveloped by fine-grained soil;
- **Fine-grained soil:** Approximately 35-45 feet bgs; interpreted aquitard; and
- **C-zone:** Below approximately 45 feet bgs; thicker, more laterally continuous sand intervals.

In general, horizontal hydraulic gradients are toward the west in each of the three water-bearing zones. Groundwater is typically observed at approximately 5 to 7 feet bgs in the A-zone. Groundwater elevations in A-zone wells are typically similar to those in adjacent B-zone wells and are below those in adjacent C-zone wells. Groundwater well locations are shown on Figure 3 and well construction details are summarized in Table 1.

2.4 Constituents of Potential Concern

The primary COPCs at the Site are trichloroethene (TCE) and its associated degradation products, cis-1,2-dichloroethene (DCE), trans-1,2-DCE, and vinyl chloride (VC). TCE is considered the primary indicator COPC based on historical Site operations (ETIC Engineering, Inc. [ETIC], 2002). TCE and its degradation products were distributed throughout the A-zone and B-zone, but were not widely reported in C-zone samples. Tetrachloroethene (PCE) is largely limited to the A-zone and upper portion of the B-zone near the railroad/western boundary and is considered to be the result of an offsite source.

2.4.1 Pre-Remediation Distribution of TCE

In general, the maximum pre-remediation TCE concentrations were:

- Less than 5,000 micrograms per liter (µg/L) in a limited portion of the A-zone;
- More than 100,000 µg/L in the B-zone immediately beneath and adjacent to suspected former release areas (see below); and
- Less than maximum contaminant levels (MCLs) in the C-zone.

Based on the site conceptual hydrogeologic model (ETIC, 2002), the isolated, discontinuous, and thin sands of the A-zone limit the migration of COPCs, while the relatively thick, east-west running B-zone sand channels may act as preferential pathways for COPC migration. The pre-remediation distribution of TCE in soil and groundwater is illustrated in figures included in Appendix C1.

2.4.2 Source Evaluation

During Kaiser Aerotech operations in 1991, a 1,000-gallon gasoline underground storage tank (UST) was removed from near well MW-6 on the 880 Doolittle Drive parcel. When Kaiser Aerotech ceased its operations in 1996, other storage tanks were decommissioned and residual solvents were removed from the Site. Possible additional sources were removed when a container repair tenant relocated from the 498 Hester Street parcel in 2002. Correspondingly, no primary sources (e.g., storage or former degreasing tanks) of COPCs are known to remain at the Site.

Although there are no known primary sources, secondary sources, indicated by TCE concentrations exceeding 100,000 µg/L, were identified in the B-zone. Based on this information and the observed distribution of COPCs in the subsurface, secondary source areas that were associated with suspected former release areas included:

- Former degreasing tank no. 1, which was located east of the northern building;
- Former degreasing tank no. 4, which was located inside the northern building;
- Former breezeway sump, which was located at the western end of the breezeway between the northern and southern buildings;
- Former oil/solvent storage area, which was located northeast of the northern building; and
- Former receiving dock for a railroad spur, which was located at the property boundary east of the breezeway (Figure 3).

Other source areas that were identified based on COPC distribution, but not associated with known manufacturing Site activities (e.g., tanks, sumps) include:

- Isolated A-zone TCE hotspots; and
- The parking lot near the railroad/western boundary. This area is believed to result from an offsite source as PCE is reported at elevated concentrations in this area, but not the former release areas at the Site.

2.5 Remediation Activities

As described in the *Final Remedial Action Plan* (RAP; The Source Group, Inc. [SGI], 2008a) and *Remedial Design and Implementation Plan* (RDIP; SGI, 2008b), the remediation scope of work included enhanced reductive dechlorination (ERD) of onsite areas with TCE concentrations of more than 1,000 µg/L through the injection of electron-donor substrate, and monitored natural attenuation (MNA) in lower concentration areas (see below). Since June 2008, injections were completed through 41 existing wells in higher concentration areas where more substrate and potentially recurring injections were anticipated, with supplemental injections using 183 direct-push borings to further distribute substrate in the subsurface. Routine groundwater monitoring results are used to evaluate Site conditions and remedial progress. Tables summarizing ERD injection activities and a figure illustrating injection locations are included in Appendix C2.

2.6 Land Use Covenant

In 2012, a *Land Use Covenant* (LUC; Appendix A) was filed with Alameda County to ensure that the Site is not used for the following: residences, hospitals for humans, public or private school for persons under 21 years of age, and day care center for children. The LUC requires DTSC approval of any planned future use of groundwater at the Site and a *Soil Management Plan* prior to any planned disturbance of subsurface soil in two limited areas of the Site. These soil management areas are near well MW-3 and boring CB-28 (Figure 3).

2.7 Overview of Current Site Conditions

The following summarizes the general findings of the groundwater monitoring event conducted in March 2020 (RMD, 2020a) and subslab vapor and indoor air monitoring events conducted in April 2020 (RMD, 2020b) and the soil vapor sampling events conducted in October 2020 (RMD, 2020d) and January 2021 (RMD, 2021a). Due to the generally low concentration and limited extent of COPCs in vadose zone soil prior to remediation (e.g., only two areas warranted consideration in the LUC), shallow depth to water, and use of groundwater monitoring results as the primary

indicator of remedial progress, soil samples have not been recently collected. The historical soil, groundwater, and subslab vapor, indoor air, and soil vapor data are summarized in Appendices C3, C4, and C5, respectively.

2.7.1 Groundwater

Based on the site conceptual hydrogeologic model, groundwater elevation contours in the A-zone indicate an aggregate westward horizontal hydraulic gradient with water levels largely controlled by the variable saturation of isolated, discontinuous, and thin sand lenses (Figure 4). Westward horizontal hydraulic gradients are also indicated by groundwater elevations for B-zone wells (Figure 5). Note that an eastward hydraulic gradient is locally present in the railroad/western boundary area, perhaps due to seasonal recharge/discharge associated with storm drain trench fill material located east of the fence line (Figure 4).

Groundwater levels fluctuate seasonally, with similar elevations in the A-zone and B-zone, and higher elevations in the C-zone. These data indicate a consistently upward vertical hydraulic gradient between the C-zone and B-zone, and a muted vertical hydraulic gradient between the B-zone and A-zone. Groundwater level measurements collected during the March 2020 event are generally consistent with historical data and patterns presented in previous monitoring reports.

General findings for Site COPCs in groundwater are briefly described below.

- TCE concentrations between 10-100 µg/L were reported in A-zone wells MW-3, MW-5, MW-11, MW-17 and MW-26 and B-zone wells LB-3, LB-5, LMW-3, LMW-5, and PZ-1. The distribution of TCE in the A-zone and B-zone are presented in Appendix C4;
- cis-1,2-DCE concentrations of 10,000 µg/L or more were reported in B-zone wells LB-5 and PZ-1. Concentrations between 1,000-10,000 µg/L were reported in A-zone well MW-21 and B-zone wells LB-3, LB-4, and LPZ-5. Supplemental electron-donor substrate injections were conducted near these wells in July 2020;
- trans-1,2-DCE concentrations of 100 µg/L or more were reported in A-zone well MW-21 and B-zone wells LMW-3 and LMW-7;
- Vinyl chloride concentrations of more than 10,000 µg/L were reported in B-zone wells LB-5, LPZ-5, and PZ-1. Concentrations between 1,000–10,000 µg/L were reported in B-zone wells LB-3, LB-4, and LPZ-3; and
- PCE was not detected in the onsite well samples at concentrations above laboratory reporting limits.

Elevated concentrations of PCE and TCE were reported in offsite A-zone well FA-1 and B-zone well FUB-1.

In summary, the groundwater monitoring data indicate that ERD has successfully reduced TCE concentrations in the onsite wells to near or below its MCL (5.0 µg/L) in most of the treatment areas. In several areas, the return toward ambient conditions and more limited ERD have not resulted in TCE concentration rebound above 100 µg/L. In the A-zone and B-zone MNA wells, the generally stable-to-decreasing concentrations of TCE and its degradation products (e.g., cis-1,2-DCE, vinyl chloride) observed during routine groundwater monitoring are consistent with ongoing natural attenuation in lower concentration areas. The need for further electron-donor substrate injections and continued natural attenuation will be evaluated through routine groundwater monitoring.

2.7.2 Subslab Vapor, Indoor Air, and Soil Vapor

In anticipation of potential redevelopment activities at the Site, subslab vapor, indoor air, and soil vapor sampling events were conducted. In April 2020, 12 subslab vapor points were installed and sampled and three ambient air samples, 13 indoor air samples, and one duplicate indoor air sample were collected at the Site. In October 2020, eight soil vapor probes were installed and sampled at approximate depths of 4.75-5 feet bgs. In January 2021, three soil vapor probes were installed and sampled at approximate depth of 4.25 feet bgs. During these investigations, for the purpose of evaluating potential vapor intrusion impacts to future commercial worker receptors, three subslab vapor sample locations (VP-2, VP-4, and VP-6) and 11 soil vapor sample locations (SVP-1 through SVP-11) were located immediately adjacent to or within the proposed building footprint (Appendix C5).

In the 2020 and 2021 vapor samples, TCE, PCE, cis-1,2-DCE, vinyl chloride, benzene, and ethylbenzene were detected at concentrations exceeding the commercial/industrial screening levels (SLs) in subslab vapor and soil vapor sample samples (using a conservative USEPA [2015] soil vapor to indoor air attenuation factor [AF] of 0.03). PCE, cis-1,2-DCE, and ethylbenzene concentrations above the commercial/industrial SLs were only observed in one or two vapor samples. TCE, vinyl chloride, and benzene concentrations above the commercial/industrial SLs were more widely observed and are discussed as follows:

- TCE was detected above the commercial/industrial SL of 100 micrograms per cubic meter (µg/m^3) in 10 subslab vapor samples and a duplicate sample and two soil vapor samples and a duplicate sample at concentrations ranging from 196 µg/m^3 in subslab vapor point VP-11 to 17,500 µg/m^3 in subslab vapor point VP-7.

- Vinyl chloride was detected above the commercial/industrial SL of 5.3 µg/m^3 in eight soil vapor samples and one duplicate sample at concentrations ranging from 13.6 µg/m^3 in soil vapor probe SVP-8 Dup to 1,300 µg/m^3 in soil vapor probe SVP-9. Vinyl chloride was not detected above laboratory RLs in the subslab vapor samples.
- Benzene was detected above the commercial/industrial SL of 14 µg/m^3 in nine soil vapor samples and one duplicate sample at concentrations ranging from 24.9 µg/m^3 in soil vapor probe SVP-7 to 217 µg/m^3 in soil vapor probe SVP-3. Benzene was not detected above the commercial/industrial SL in the subslab vapor samples.

In general, indoor air concentrations were consistent with background, ambient concentrations and benzene was the only volatile organic compound (VOC) detected at concentrations exceeding the commercial/industrial SLs, as follows:

- Benzene was detected above the commercial/industrial SL of 0.42 µg/m^3 in the 13 indoor air samples and one duplicate sample at concentrations ranging from 0.498 µg/m^3 to 0.971 µg/m^3 (Appendix C5). Similarly, benzene was detected in the three ambient air samples at concentrations ranging from 0.396 µg/m^3 to 0.668 µg/m^3. At the time of sampling, the buildings were used for off-airport parking. As such, vehicles were operating within and outside the building. Vehicular exhaust likely contributed to the benzene concentrations detected in both indoor and ambient air samples.

No other VOCs were detected in the ambient or indoor air samples at concentrations above commercial/industrial SLs. In addition, the TCE concentrations in the ambient or indoor air samples were well below the DTSC indoor air accelerated response action level (ARAL) of 8.0 µg/m^3 and urgent response action level (URAL) of 24 µg/m^3 for commercial/industrial exposures for an 8-hour workday (DTSC, 2014).

2.7.3 Vapor Intrusion Human Health Risk Assessment

Three subslab vapor sample locations (VP-2, VP-4, and VP-6) and 11 soil vapor sample locations (SVP-1 through SVP-11) were located immediately adjacent to or within the proposed building footprint. The soil vapor sample results from these probes were used to evaluate potential vapor mitigation measures for the proposed commercial building in the *Vapor Intrusion Human Health Risk Assessment for Future Commercial Worker Receptors* (HHRA; RMD, 2021b). In the HHRA for exposure to soil vapor volatilizing into indoor air in an onsite commercial exposure scenario, using an AF of 0.03, the resulting hazard index (HI) of 3 is above the acceptable target level of 1 and the cumulative excess cancer risk estimate of 1 x 10^{-4} is at the upper end of the California Environmental

Protection Agency's (CalEPA's) risk management range. Using an AF of 0.0005 for a future commercial building (DTSC, 2011), the resulting HI of 0.05 is below the acceptable target level and the cumulative excess cancer risk estimate of 2×10^{-6} is slightly above the most stringent end of the CalEPA's risk management range which is generally acceptable for occupational-related exposures. Considering the planned redevelopment of the Site includes a new large commercial building, a lower attenuation factor than the conservative AF of 0.03 would be expected. The soil vapor to indoor air AF for a future commercial building of 0.0005 is a less conservative, while protective, bound for risk-based decisions for the Site. The HHRA indicates that vinyl chloride accounts for approximately 90-percent of the total excess cancer risk. Based on the results of the 2020 and 2021 subslab vapor, indoor air, and soil vapor sampling events, vinyl chloride was detected in soil vapor samples collected at 5 feet bgs but was not detected in subslab vapor or indoor air samples. The absence of vinyl chloride in the subslab vapor samples indicates that vinyl chloride attenuates in the shallow subsurface due to processes such as aerobic degradation. As a result, the estimated vinyl chloride concentrations in indoor air assuming an AF of 0.03 or 0.0005 are conservative and the associated estimated risks are likely overestimated.

A vapor intrusion mitigation system for the new commercial building is planned to reduce the potential for unacceptable exposures. Design plans for the system were included with the HHRA for DTSC review (RMD, 2021b).

3.0 PROJECT CONTACTS, RESPONSIBILITIES, AND NOTIFICATIONS

3.1 Project Contacts and Responsibilities

Prior to the initiation of activities that are covered by this SGMP, the Property Owner will confirm the contact information for the representatives for the Regulatory Oversight Agency, Environmental Consultant, and General Contractor listed below. The General Contractor will be determined on a project-specific basis. It is the responsibility of the Property Owner's representatives to adhere to this SGMP, which includes notification procedures related to regulatory oversight agency, underground utility clearance, permitting, health and safety, and existing monitoring well network as described in Sections 3.2 through 3.6. The following table lists the Property Owner's representatives at the time of publication of this SGMP:

Project Role	Company Name	Representative Name	Contact Information
Property Owner	Leandro Brookshire	Brett Richer Environmental	415-733-9574 bricher@prologis.com
		Cory Chung Construction	510-661-4002 cchung@prologis.com
Regulatory Oversight Agency	DTSC	Yongsheng (Johnny) Sun	510-540-3872 yongsheng.sun@dtsc.ca.gov
Environmental Consultant	RMD	Khaled Rahman	510-561-8810 krahman@rmdes.net
General Contractor	Project-Specific To Be Determined	Project-Specific To Be Determined	Project-Specific To Be Determined

The responsibilities of the Property Owner's representatives listed above are described in the following sections.

3.1.1 Property Owner

The Property Owner means Leandro Brookshire and/or its successors and assigns in interest, who hold title to all or any portion of the Site. The Property Owner or its designee is responsible for

ensuring that the General Contractor, Environmental Consultant, and other subcontractors adhere to the requirements of the SGMP. The Property Owner will provide an electronic copy and access to a hard copy of the SGMP to contractors that are performing redevelopment activities at the Site.

3.1.2 Regulatory Oversight Agency

The regulatory oversight agency provides review of environmental investigations and cleanup actions at the Site. A record of environmental conditions at the Site (i.e., regulatory directives and correspondence, Site documents, and analytical data) may be obtained through a review of the case files at the DTSC EnviroStor website https://www.envirostor.dtsc.ca.gov/public/ (EnviroStor ID No. 01990015).

3.1.3 Environmental Consultant

As needed, the Environmental Consultant or its designee will be available to assist the Property Owner, General Contractor, and subcontractors with the implementation of this SGMP and proper handling and storage of impacted and potentially impacted soil and groundwater, which may be encountered during redevelopment activities.

3.1.4 General Contractor

The General Contractor or its designee is responsible for providing the material, labor, equipment and services necessary for the construction of the project. A general contractor often hires specialized subcontractors to perform all or portions of the construction work. When using subcontractors, the General Contractor is responsible for ensuring that subcontractors adhere to the requirements of the SGMP.

3.2 Agency Notifications

The notification of outside agencies may be required during redevelopment activities. Prior to the initiation of redevelopment activities that are covered under this SGMP, the Property Owner will confirm the contact information provided below and update as necessary.

Conditions Posing an Immediate Threat. For life-threatening or serious hazardous materials incidents, the following number will be contacted immediately upon discovery.	
Local police, fire and rescue services	911
Certified Unified Program Agency (CUPA). For administrative requirements, permits, inspections, and enforcement activities associated with the regulation of hazardous materials and hazardous wastes in the City of San Leandro, the following number will be contacted.	
San Leandro Environmental Services Section (SLESS)	(510) 577-3401 (non-emergency)

Releases to Water. For spills or releases of hazardous substances or petroleum hydrocarbons to surface water, the following agencies will be contacted immediately upon discovery.	
National Spill Response Center	(800) 424-8802
United States Coast Guard – San Francisco Sector (if spill is going to reach navigable waters)	(415) 399-3547
California Office of Emergency Services	(800) 852-7550; (916) 845-8911
San Francisco Bay Regional Water Quality Control Board	(510) 622-2300
Local Emergency Response Agency	911
VOC-Impacted Soil. If VOC-impacted soil is discovered during redevelopment activities, the following agencies will be notified.*	
Bay Area Air Quality Management District (BAAQMD)	(415) 749-4990
* BAAQMD Regulation 8, Rule 40, Section 301 exempts from control the aeration of soil containing less than 50 parts per million by weight (ppmw) of organic compounds, but Section 403 still requires reporting of any soil aeration[1]. Notification form (Appendix D) postmarked or faxed at least five days prior to commencement of any removal or excavation activity of VOC-impacted soil.	
Department of Toxic Substances Control	(510) 540-3872
Dust Complaints. For dust complaints during redevelopment activities, the following agencies will be notified.	
BAAQMD	(415) 749-4990

3.3 Utility Clearance

To survey for potential underground utilities, the General Contractor, Environmental Consultant, or their designee will mark the locations where ground is to be disturbed and contact Underground Service Alert (USA) at least 48 hours (2 work days) prior to commencing any excavation work. USA will contact utility partners to locate and mark their conduits.

3.4 Permitting

If necessary, permits will be obtained prior to conducting redevelopment activities covered by this SGMP. The permits will be kept onsite and made available for inspection during work hours.

3.5 Health and Safety Plan

Redevelopment activities will be completed with safety as the foremost concern to minimize the potential for accidents, injuries, contaminant exposures, and or illnesses. A Site HASP will be prepared by the General Contractor for the redevelopment project in accordance with Federal and

[1] As defined by BAAQMD Regulation 8, Rule 40, Section 202, aeration is the exposure of excavated soil containing volatile organic compounds to the air.

State Occupational Safety and Health Administration (OSHA) standards for hazardous waste operations (29 Code of Federal Regulations [CFR] 1910.1208 and 8 California Code of Regulations [CCR] 5192, respectively). Subcontractors may either adopt the General Contractor's HASP or prepare their own HASP. The General Contractor is responsible for verifying that onsite workers and visitors have read and will adhere to the procedures established in the HASP. A copy of the HASP will be kept onsite during redevelopment activities. In the event that unanticipated conditions occur at the Site, the General Contractor is responsible for modifying the HASP accordingly.

Onsite workers handling or conducting intrusive work that may encounter impacted soil or groundwater will be trained in accordance with OSHA regulations for hazardous waste operations (29 CFR 1910.120(e) and 8 CCR 5192), which state that "general site workers" shall receive a minimum of 40 hours of classroom training and a minimum of three days of field training. This training provides precautions and protective measures to reduce or eliminate hazardous materials/waste hazards at the work place.

3.6 Groundwater Well Network Protection

The onsite groundwater well network consists of approximately 23 A-zone wells and 29 B-zone wells that are part of the groundwater monitoring program (Figure 3). Well construction details are summarized in Table 1.

A November 19, 2020 *Redevelopment-Related Groundwater Monitoring Well Network Modification Work Plan* (RMD, 2020c), which was approved in a June 2, 2021 DTSC letter, was prepared to reduce the potential for damaged or lost wells during redevelopment. Based on available redevelopment plans, the monitoring wells were designated for either:

- Protection in areas where minimal grade changes are anticipated. These monitoring wells will be marked with paint and/or installation of delineators/snow fencing/bollards. The General Contractor will protect these groundwater monitoring wells and maintain access to the wells for routine monitoring to the extent practicable; or
- Destruction in areas within the building footprint and areas with significant grade changes. Although the need for replacement will be evaluated, we anticipated that most of these wells will be reinstalled following completion of redevelopment activities.

DTSC will be notified of changes to these designations based on modifications to the redevelopment plans and/or input from the General Contractor with rationale for wells that do not warrant replacement. Prior to removal or installation of any wells, permits will be acquired from the Alameda County Public Works Agency (ACPWA).

4.0 SOIL MANAGEMENT

This section outlines the general soil management procedures that shall be implemented by parties involved in redevelopment activities at the Site, including the areas identified in the LUC (i.e., near well MW-3 and boring CB-28, Figure 3). Soil management and handling activities will be conducted in accordance with applicable federal, state, and local regulations. Contingency measures for discovery of unexpected underground structures including tanks, vaults, sumps, containment structures, separators, or piping are presented in Section 5.0.

4.1 Field Screening and Soil Categorization

4.1.1 Field Screening

Soil will be excavated in accordance with the grading plan for the Site. Although remediation activities have reduced the TCE concentrations in the subsurface, residual CVOC concentrations may be encountered during ground disturbing activities, particularly near the suspected former release areas. The General Contractor will be instructed to report indicators of potentially impacted soil. The primary physical indicators of soil impacted with volatile organics include the following:

- Staining: Organic contaminants may cause staining.
- Odor: Soil impacted with volatile organics and other types of contamination may release vapors when exposed to the atmosphere, which can be interpreted as an odor.

The General Contractor will also be instructed to report indicators of petroleum-related contamination, which include the following:

- Staining: Gray, black or green staining.
- Sheen: Shiny and reflective sheen. Sheens from heavily impacted soil may appear iridescent with rainbow-like colors.
- Odor: Petroleum-like odor.

Odor can be subjective, and inhalation of vapors from impacted soil may be harmful to human health. Therefore, odor is considered an unreliable field indicator and should not be used for continuous screening of soil. Field screening of soil will be conducted continuously during ground disturbing activities using a calibrated handheld photoionization detector (PID) or other organic vapor meter. Field screening using a PID will be conducted by properly trained General Contractor and/or Environmental Consultant personnel.

4.1.2 Soil Categorization

Based on the field screening, excavated soil will be segregated into stockpiles in three categories:

- Background Soil: No visual and odor indicators, and PID measurements that are consistent with background levels. PID readings of up to 5 parts per million by volume (ppmv) will be considered background levels. These soils will be characterized for onsite reuse.
- Interim Soil: No visual and odor indicators, and PID measurements between 5 ppmv and 50 ppmv. These soils will be characterized for onsite reuse. If initial findings indicate that this category does not meet onsite soil reuse criteria (see Section 4.2), these soils may be characterized for offsite disposal.
- Contaminated Soil: Staining and odor indicators present, and/or PID measurements of more than 50 ppmv[2]. These soils will be further evaluated and are likely to be characterized for offsite disposal (see Section 4.3).

General stockpile management is described in Section 8.

4.1.3 De Minimis Soil

Soil produced during the following activities are considered de minimis:

- Trenching during utility line installation, and similar projects; and
- Small excavations during landscaping, fence/sign post installation, and similar projects.

These soils will be field screened and reused to backfill the excavation from which they originated without sampling and laboratory analysis unless categorized as Contaminated Soil. Contaminated Soil and excess soil, if any, will be segregated and stockpiled based on field screening results.

4.2 Onsite Soil Reuse

As mentioned above, a vapor intrusion mitigation system is planned for installation beneath the new commercial building footprint. Other areas of the Site will be used for outdoor parking and loading. These conditions indicate that exposure pathways to COPCs in the subsurface will be managed or incomplete.

[2] As defined by BAAQMD Regulation 8, Rule 40, Section 205, contaminated soil has an organic content exceeding 50 parts per million by weight (ppmw) as measured using an appropriate laboratory analysis or registers an organic concentration greater than 50 ppmv as measured at a distance of three inches from the surface of the soil with an organic vapor analyzer.

Based on field screening, de minimis soil may be reused to backfill the excavation of origination. Background and interim soil stockpiles will be sampled to evaluate onsite reuse in general accordance with the DTSC *Information Advisory Clean Imported Fill Material*, dated October 2001 (Appendix E).

For onsite soil reuse, a limited set of laboratory analyses are planned:

- VOCs by USEPA Method 8260B (with collection by USEPA Method 5035).

For excavated and stockpiled import material, the following sampling frequency will be used:

- Up to 1,000 cubic yards – one sample per 250 cubic yards.
- 1,000 to 5,000 cubic yards – 4 samples for the first 1,000 cubic yards plus one sample per each additional 500 cubic yards.
- Greater than 5,000 cubic yards – 12 samples for the first 5,000 cubic yards plus 1 sample per each additional 1,000 cubic yards.

The analytical results of the import soil samples will be compared to applicable screening criteria to evaluate whether the material is suitable for reuse at the Site. Applicable screening criteria will include DTSC soil SLs[3] for direct exposure for commercial/industrial land use.

4.3 Response Measures for Discovery of Potentially Impacted Soil

If soil exhibiting evidence of contamination (e.g., visual and odor indicators, and PID measurements of more than 50 ppmv), is encountered during ground disturbing activities, the General Contractor will cease ground disturbing activities in the area and delineate the area with barricades or fencing, stakes and plastic sheeting as appropriate, and signage to notify onsite workers and visitors of access restrictions. The General Contractor will notify the Property Owner and Environmental Consultant. Upon notification, the Environmental Consultant will implement and/or provide oversight for the response measures described in the following sections.

4.3.1 Preliminary Assessment of Potentially Impacted Soil

Preliminary assessment of the potentially impacted soil will include confirmation that access control measures installed by the General Contractor are adequate to provide necessary protection to onsite workers and visitors. Air monitoring will be conducted by the Environmental Consultant around the perimeter of the delineated area using a PID to measure organic vapors in the breathing zone. The air monitoring results will be used to adjust the delineated area to provide necessary

[3] In order of priority, the SLs are currently available DTSC-modified SLs followed by USEPA RSLs.

protection to onsite workers and visitors. Additional engineering controls (i.e., dust and vapor mitigation and working upwind of the area) and personal protective equipment (PPE) may be required in order to work within the delineated area.

The Environmental Consultant will conduct this preliminary assessment using PID measurements to determine if field observations suggest that the potentially impacted soil are de minimis (i.e., consistent with background levels) or may be a significant risk to human health or the environment (e.g., consistent with the BAAQMD contaminated soil definition).

If field observations (e.g., visual and odor indicators) and PID measurements are consistent with background levels, the suspect conditions will be considered de minimis and the Environmental Consultant will release the delineated area to the General Contractor. If field observations indicate additional evaluation is warranted, ground-disturbing activities will not resume in the area until the procedures discussed in the following section are implemented.

4.3.2 Evaluation of Potentially Impacted Soil

If conditions in the delineated area are not considered de minimis, the Environmental Consultant will evaluate the potentially impacted soil in accordance with the protocols below.

- Soil Segregation: Soil samples will be collected using a pre-cleaned hand trowel or drive sampler, transferred into plastic Ziploc bag and observed for evidence of odors and staining and screened for volatile organics using a PID. PID measurements will be used to further segregate soil into de minimis, interim, and contaminated stockpiles.
- Stockpiled Soil Samples: For the contaminated stockpile, four discrete samples will be collected and composited by the laboratory for every 250 cubic yards of material or in accordance with the requirements of the disposal/accepting facility requirements.
- Sample Handling and Laboratory Analysis: Soil samples will be analyzed for VOCs by USEPA Method 8260B, and may be analyzed for TPHg, TPHd, and TPHmo by modified USEPA Method 8015, Title 22 metals by USEPA Method 6010B/7470 and other constituents as determined by the Environmental Consultant or as part of waste characterization testing for offsite disposal. If necessary, waste extraction test [WET] and/or toxicity characteristic leaching procedure [TCLP] will be conducted to determine if the soil exhibits hazardous characteristics.

Based on the evaluation, options for onsite reuse, or offsite disposal of the affected soil will be developed. After the evaluation is completed, the Environmental Consultant will provide the

Property Owner, General Contractor, and DTSC with a summary of findings in the *Construction Completion Report* (Section 10.0).

4.4 Soil Sampling

Discrete samples will be collected using EnCore or Terra Core samplers[4] for samples to be analyzed for VOCs. In addition, composite samples will be collected using a pre-cleaned hand trowel and transferred into laboratory-supplied glass containers or drive sampler equipped with stainless steel or brass liners that will be sealed with Teflon tape and capped.

Following soil sample collection, the containers will be labeled for identification and immediately placed in a chilled, thermally-insulated cooler containing bagged ice or blue ice. The cooler containing the samples will then be delivered under chain of-custody protocol to a state-certified laboratory.

4.5 Stockpile Management

Stockpile handling procedures and control measures are discussed in Section 8.1.

4.6 Dust Control Measures

As necessary, dust control measures shall be used during excavation, soil segregation, soil stockpiling, transport, and compaction activities to prevent or control surface and air movement of dust from disturbed soil surfaces. Dust control measures are discussed in Section 6.0.

4.7 Decontamination

Decontamination procedures for construction equipment and personnel shall be developed and followed to minimize residual contamination from leaving the Site during redevelopment activities. Decontamination procedures are discussed in Section 8.4.

4.8 Soil Importation

If additional fill is imported, the following procedures will be followed for use at the Site. Unless from a documented clean source, soil samples will be collected from the import source for characterization to ensure that soil imported onto the Site is not contaminated. Import fill material will be sampled in accordance with the DTSC *Information Advisory Clean Imported Fill Material*,

[4] U.S. Environmental Protection Agency (USEPA) Method 5035 will be used to minimize VOC loss.

dated October 2001 (Appendix E) for specific laboratory analyses based on the fill source characteristics, as follows:

- TPHg, TPHd, and TPHmo by modified USEPA Method 8015;
- VOCs by USEPA Method 8260B (with collection by USEPA Method 5035);
- Semi-Volatile Organic Compounds (SVOCs) by USEPA Method 8270C;
- Title 22 Metals by USEPA Method 6010B and 7471A;
- Polychlorinated Biphenyls (PCBs) by USEPA Method 8082;
- Asbestos by California Air Resources Board Method 435 (CARB); and
- Organochlorine Pesticides (OCPs) by USEPA Method 8081 and chlorinated herbicides by USEPA Method 8151 (for fill source areas formerly used as agricultural land);

For in-place import material, the following sampling frequency is required:

- Two acres or less – a minimum of four samples.
- Two to four acres – a minimum of one sample per 1/2 acre.
- Four to 10 acres - a minimum of eight samples.
- Greater than 10 acres- a minimum of eight locations with four subsamples per location.

For excavated and stockpiled import material, the following sampling frequency is required:

- Up to 1,000 cubic yards – one sample per 250 cubic yards.
- 1,000 to 5,000 cubic yards – 4 samples for the first 1,000 cubic yards plus one sample per each additional 500 cubic yards.
- Greater than 5,000 cubic yards – 12 samples for the first 5,000 cubic yards plus 1 sample per each additional 1,000 cubic yards.

If the chemical properties of an import fill source are verified through documentation, sampling may not be required. Depending on the former land use of the import fill source, additional sampling and analyses than described above may be necessary to properly characterize import fill. The analytical results of the import soil samples will be compared to applicable screening criteria to evaluate whether the material is suitable for import to the Site. Applicable screening criteria will include DTSC soil SLs for direct exposure for commercial/industrial land use and acceptable background levels for metals. Import soil with visual or olfactory evidence of petroleum hydrocarbons is prohibited.

4.9 Concrete Reuse

In an effort to reduce impacts to the neighboring community and minimize carbon emissions from trucking, onsite reuse of concrete and asphalt produced during demolition of the current buildings and pavement is planned. Concrete will be crushed onsite and reused as fill material. Asphalt will be incorporated into new pavement surfaces.

4.10 Backfilling

Portions of the Site will be backfilled in accordance with the grading plan for the Site. A plastic liner will be placed to demarcate the contact between fill material and native soil.

5.0 CONTINGENCY MEASURES FOR DISCOVERY OF UNEXPECTED UNDERGROUND STRUCTURES

In the event USTs or other buried structures are unexpectedly encountered during redevelopment activities, the following procedures will be followed. USTs may be identified during redevelopment activities by the presence of vent pipes that extend above the ground surface, product distribution piping that leads to the UST, fill pipes, backfill materials, or the underground structure itself. Other buried structures may not have features that extend above ground surface and could be discovered only after exposed by construction equipment. Discovered structures will be assessed as follows:

5.1 Initial Response

If unexpected underground structures, including tanks, vaults, sumps, containment structures, separators, or piping, that has previously contained or has the potential to contain hazardous materials are encountered during redevelopment activities, the General Contractor will notify the Property Owner and the Environmental Consultant within 24 hours of initial discovery. Upon notification, the Environmental Consultant will notify the DTSC and the SLESS, which is designated as the Certified Unified Program Agency (CUPA). The CUPA consolidates, coordinates, and makes consistent the administrative requirements, permits, inspections, and enforcement activities associated with the regulation of hazardous materials and hazardous wastes in the City of San Leandro through various programs. The DTSC and the SLESS will be consulted regarding appropriate next steps.

In accordance with the Site HASP, appropriate measures will be implemented to ensure worker safety in areas where unexpected conditions are encountered. The General Contractor or designated Health and Safety Officer will be responsible for evaluating any change in Site conditions and may stop work to determine if the level of Site security and PPE is adequate. If warranted, the area where the unexpected condition is encountered will be secured with barricades or fencing, and plastic sheeting as appropriate, and signage will be installed to prevent unauthorized access to the area.

5.2 Assessment of Discovered Underground Structures

Discovered underground structures will be assessed as follows:

- The structure will be inspected to assess whether it contains any indication of chemical residuals or free-phase liquids other than water. This assessment will be conducted by the Environmental Consultant and will be based on visual evidence and the results of vapor

monitoring using a PID. Under no circumstances will any personnel enter an unknown subsurface structure at any time;

- If chemicals are not indicated within the structure by the above-referenced means, and with DTSC and SLESS approval, the structure may be removed or abandoned in place in a safe manner by an experienced and licensed contractor. If warranted, permits will be obtained from the SLESS prior to removing the underground structure;
- If liquids or solids are present within the structure, measures will be taken to contain the liquids to avoid spills to the subsurface. Liquids will be contained either in the structure or, if leaking, via spill control methods such as absorbent material and pumping to a storage tank. Samples of the liquid will be collected and submitted to a state-certified laboratory for analysis as determined by the Environmental Consultant or as part of waste characterization testing for offsite disposal. Based on analytical results, the liquids or solids will be disposed of in accordance with applicable environmental laws and disposal requirements;
- If contaminated liquid or solids are present in the structure, the structure will be inspected for physical integrity following removal of the contaminated media. The Environmental Consultant will document the results of this inspection, including an estimation of the volume and former use of the structure;
- If the physical inspection of the structure suggests that chemicals may have been released to the underlying soil, additional environmental sampling will be conducted to assess whether over-excavation is warranted;
    - If, based on the opinion of the Environmental Consultant, DTSC, and SLESS, it is assessed that the structure is intact, that subsurface releases of the chemicals to the underlying soils likely did not occur, and no free-phase liquids or chemical residues remain inside, removal of the structure may not be required for environmental reasons.
    - Otherwise, with DTSC and SLESS approval, the structure will be removed and disposed of in accordance with applicable environmental laws and disposal requirements. Once the structure is removed, soil adjacent to and beneath the structure will be assessed for contamination through visual observation and PID response and the results documented. If soil is considered "contaminated soil" as defined by the BAAQMD, the appropriate response will be determined in consultation with the DTSC and SLESS.

6.0 EROSION, DUST, AND ODOR MANAGEMENT

Once the pre-construction ground surface is stripped from the Site, the exposed soil will become susceptible to erosion by wind and water. Depending on soil and weather conditions, airborne dust and fugitive emissions may be produced. Therefore, erosion control measures and dust control measures will be established before construction begins. Emission (dust) control measures will, at a minimum, comply with those established by OSHA and the BAAQMD for construction-related activities. Dust control measures will be based on "Best Management Practices" (BMPs) and will be used throughout the phases of redevelopment. Standard dust and fugitive emissions control measures will be followed during the redevelopment activities to accomplish the following goals:

- Reduce the potential for health impacts to onsite workers and visitors;
- Reduce the potential for health impacts to offsite receptors;
- Prevent violations of ambient air quality standards;
- Minimize nuisance dust complaints from offsite receptors; and
- Minimize the migration of contaminants adhered to fugitive dust particles outside the Site.

6.1 Construction Mitigation Measures

The following basic construction mitigation measures will be implemented in accordance with recommendations in the BAAQMD *California Environmental Quality Act Air Quality Guidelines* (BAAQMD, 2017):

- Exposed surfaces (e.g., parking areas, staging areas, graded areas, and unpaved access roads) will be watered two times per day, weather dependent. Alternately, soil binders can be applied in areas that will remain unused;
- Haul trucks transporting soil or other loose material offsite will be covered;
- Prior to entering public roads, visible loose soil will be removed from the vehicle exterior using dry methods (e.g., shovels and stiff-bristled brooms or brushes). If visible mud or dirt is tracked-out onto adjacent public roads, a wet power vacuum street sweeper will be used. The use of dry power sweeping is prohibited;
- Vehicle speeds on unpaved roads will be limited to 15 miles per hour (mph);
- Roadways, driveways, and sidewalks to be paved will be completed as soon as possible. Building pads will be laid as soon as possible after grading unless seeding or soil binders are used;

- Idling times will be minimized either by shutting equipment off when not in use or reducing the maximum idling time to 5 minutes (as required by the California airborne toxics control measure 13 CCR 2485). Clear signage will be provided for construction workers at all access points;
- Construction equipment will be maintained and properly tuned in accordance with manufacturer's specifications. Equipment will be checked by a certified mechanic and determined to be running in proper condition prior to operation; and
- A publicly visible sign that includes the General Contractors name and telephone number to contact regarding dust complaints will be posted. When contacted, the General Contractor will respond and take corrective action within 48 hours. The BAAQMD's phone number will also be visible to ensure compliance with applicable regulations.

6.2 Dust Suppression Measures

If dust is excessive, one or more of the following mitigation measures may be implemented:

- Apply water or (non-toxic) soil stabilizers to unpaved access roads, parking areas, and staging areas;
- Sweep (with wet power sweepers) paved access roads, parking areas, and staging areas;
- Cover or otherwise stabilize exposed soil stockpiles; and
- Suspend redevelopment activities that cause visible dust plumes and odors to extend beyond the limits of the Site.

6.3 Contingency Measures for Odor and Vapor Suppression

By controlling the dust as described above, the emission of odor and vapors will be reduced to levels that likely will not pose a risk to the health of the onsite workers and visitors. The water spray used to control dust will also significantly reduce the emissions of any potential volatiles that may be present in the soil. The selective loading and transportation of impacted soils could minimize the use of soil stockpiling, further reducing potential emissions of volatiles. Any active stockpile of contaminated soil will be properly covered with plastic so emissions of volatiles will be minimized.

If odor is excessive and vapor emissions are detected, one or more of the following contingency measures may be implemented:

- Apply water or water containing a non-toxic biodegradable deodorizer, odor suppressing foam, or other odor mitigation agents to exposed soil using various applications such as spray or mist;

- Alternative work sequencing, such that excavation of soil with potential odor during mid-day or afternoon (during hot weather) is avoided;
- Any highly odorous soil could be segregated and placed inside a roll-off bin equipped with a lid. This will minimize the amount of highly odorous soil handling; and
- Balancing the excavation with transportation so that the need for large stockpiles is reduced.

The equipment proposed for the Site redevelopment will be maintained properly so that exhaust emissions will be within acceptable standards. The General Contractor will notify the Property Owner of complaints, if any, and record any corrective actions implemented to control odors or vapors in a daily field log.

7.0 GROUNDWATER MANAGEMENT

The depth to groundwater at the Site is typically encountered at depths of approximately 5 to 7 feet bgs. In general, construction worker receptors will be performing activities consistent with this SGMP and a Site HASP. The HASP will require the use of proper PPE and the BMPs will require dewatering to preclude any direct contact with groundwater for workers at the Site.

Construction dewatering effluent, if produced, shall be pumped into holding tanks or United Nations (UN)-rated 55-gallon drums with appropriate labeling and secondary containment. If dewatering effluent is to be discharged to the storm drain, a National Pollutant Discharge Elimination System (NPDES) permit will be obtained from the Regional Water Quality Control Board. If dewatering effluent is to be discharged to the San Leandro Water Pollution Control Plant, an industrial pre-treatment permit will be obtained from the SLESS.

Chemical analysis will be performed in accordance with the receiving facility's requirements prior to discharge. If concentrations exceed the limits established for the discharge point, the dewatering effluent will either be (1) transferred into a vacuum truck or properly labeled UN-rated 55-gallon drums and transported offsite for disposal at an appropriately-licensed disposal facility or (2) treated and discharged following sampling and analysis to confirm compliance with permit requirements.

The treatment system of the dewatering effluent would include a holding tank, sediment filters, and two carbon vessels to treat the effluent prior to storm drain or sanitary sewer discharge. The sizing of components will depend on the water volumes produced and Site logistics. A typical treatment system schematic is shown in Figure 6.

8.0 WASTE MANAGEMENT

8.1 Soil Stockpile Management

Soil that is placed in temporary stockpiles will be maintained to prevent runon/runoff and fugitive dust emissions. The soil stockpile will be covered with plastic sheeting and bermed to prevent (1) erosion or leaching of contaminants to underlying soil, (2) exposure to precipitation and wind, and (3) the runoff of potential contaminants to surrounding areas. Plastic sheeting that covers the soil stockpile will be secured using sand bags or equivalent. The perimeter berm will be constructed with hay bales, dimensional lumber, or other equivalent methods. Following removal, the soil stockpile area will be restored to a pre-stockpile condition. Residual plastic or debris will also be disposed of following stockpile removal.

If soil stockpiling of potentially impacted soil is to be performed, an appropriate stockpile location will be established and stockpiled soil will be placed on plastic sheeting. Stockpiled soil will be secured with a berm (bottom plastic sheeting will be lapped over the berm materials), covered to control dust, profiled, and appropriately managed as described in the following sections.

8.2 Offsite Disposal

Soil that is not suitable for reuse will be transported offsite for disposal at a facility that possesses a current permit to accept the produced soil. The following website can be consulted to determine permitted facilities:

- https://www2.calrecycle.ca.gov/SolidWaste/Site/Search

Prior to disposing soil at an appropriately-licensed disposal facility, soil samples will be collected from the potential excavation area or stockpiled for characterization based on the source characteristics and disposal facility requirements. These requirements will be confirmed by the General Contractor and coordinated with the proposed receiving facilities prior to initiating soil sampling.

8.3 Soil Handling, Loading, and Transporting Procedures

Following acceptance of the soil by an appropriately-licensed disposal facility, the soil will be loaded in licensed haul trucks (end-dumps or transfers) and transported offsite following appropriate California and Federal waste manifesting procedures. The General Contractor, on behalf of the Property Owner, will be responsible for tracking final soil dispositions. Shipments of waste will be

tracked with the appropriate bill of lading or waste manifests, which will be provided to the Property Owner following completion of the redevelopment activities.

Transportation equipment will be chosen to safely transport the expected volumes of soil, taking into consideration the types of roads to be traveled and their loading capacity. The appropriate bill of lading or waste manifest documentation will be provided by the General Contractor to truck drivers hauling the soil offsite. As each truck is filled, an inspection will be made to verify that the load is securely covered, to the extent practicable, and that the tires of the haul trucks are reasonably free of accumulated soil prior to leaving the Site. During loading, dust and odor emissions will be monitored and mitigated as necessary. During transportation, the hauling trucks will be equipped to fully cover soil and debris, such as with a heavy tarpaulin. A street sweeper will be made available, as needed, to keep the loading area clean. The soil will be wetted, as necessary, to reduce the potential for dust generation during loading and transportation activities.

Transportation activities will be performed in strict compliance with Federal, State, and County regulations and ordinances. Hauling contractor(s) used to transport soil will be fully licensed and permitted by the State of California. For hazardous waste haulers, the selected transportation company will be certified by the State of California as a hazardous waste hauler, and appropriately permitted to haul contaminated waste material. Department of Transportation (DOT) and California Highway Patrol (CHP) safety regulations will be strictly followed by both hazardous and non-hazardous waste haulers.

Transportation routes will be developed to minimize transporting the affected soil through residential areas. The affected soil will be transported via surface streets to the closest suitable freeway, which is Interstate 880. The proposed routes for transportation to Interstate 880 are as follows:

- To Interstate 880 North and South: Leaving the Site along Doolittle Drive, travel southeast approximately 0.25-miles to Davis Street. At Davis Street, make a left-hand turn. Travel east along Davis Street approximately 0.6 miles to the I-880 north and south ramps. Use the appropriate ramp to enter I-880.

The remainder of the freeway route(s) will be established upon selection of the appropriate offsite destination.

8.4 Decontamination Procedures

In order to prevent residual contamination from leaving the Site by construction equipment and personnel during redevelopment activities, the following decontamination procedures will be followed:

- Trucks used to transport soil will be loaded in a manner to minimize soil spillage and fugitive dust.
- To minimize the spread of contaminated soil, equipment will be cleaned prior to movement out of active work zones in impacted areas. The equipment wheels/tires will be cleaned by means of shovels and stiff-bristled brooms or brushes until they are fully cleaned. Upon completion of cleaning, any debris will be placed in the appropriate transportation vessel and the plastic sheeting will be disposed. Equipment exiting the Site will be inspected and logged for compliance with the Site decontamination requirements.
- Disposable PPE will be removed and properly discarded. The Site HASP will address decontamination of reusable PPE.

8.5 Wastewater and Groundwater Management

Wastewater produced during redevelopment activities, such as decontamination liquids, will be temporarily stored onsite. Decontamination water will be profiled and transported to an appropriate disposal or recycling facility.

If a saturated zone that produces accumulated water is encountered during redevelopment activities, groundwater management protocols as discussed in Section 7.0 will be followed.

8.6 Spill Response Plan

In the event of a spill, the General Contractor will be responsible and prepared to respond in a safe and efficient manner, specific to the particular spill situation. Consistent procedures will be used for handling of spills, whether they are onsite spills or spills occurring during transportation. Haulers will have an Emergency Spill Contingency Plan (ESCP) to ensure that drivers and dispatchers know their responsibilities in the unlikely event that an accidental spill occurs while transporting contaminated material offsite. The drivers and dispatchers will be required to know the procedures for emergency spill response. The ESCP will meet or exceed Federal, State, and County regulations currently in effect. The provisions of the ESCP will be strictly adhered to, in order to ensure continued protection of the public safety and the environment. The HASP will address the handling of onsite spills.

9.0 STORMWATER MANAGEMENT

Stormwater pollution controls shall be implemented by the General Contractor to minimize sediment runoff in stormwater. BMPs including grading the Site and installing stormwater control devices such as temporary earth berms or erecting silt fences around the perimeter of exposed soil at the Site, shall be implemented to prevent erosion and sediment runoff from the Site. Straw bale barriers or sediment traps are required to protect any existing catch basins or drainage channels. A separate stormwater pollution prevention plan (SWPPP) shall be provided by a Qualified SWPPP Developer (QSD) prior to beginning redevelopment activities.

10.0 WRITTEN RECORDS AND REPORTING

During redevelopment activities, soil and/or groundwater sampling, removal and management of discovered underground structures, chemical analysis and proper disposal of contaminated materials, and soil import activities will be documented in a daily field log by the General Contractor and/or Environmental Consultant. At the completion of the redevelopment activities, a *Construction Completion Report* will be prepared by the Environmental Consultant for submittal to DTSC that summarizes the soil and groundwater handling activities. The report will include at a minimum the following, as applicable:

- Impacted Soil – origin, volume, characterization, and destination (disposed of offsite);
- Discovered Underground Structures – type, contents, characterization, and destination (abandoned in place or disposed of offsite);
- Dust Complaint Logs – time, name and contact information, complaint description, and measures taken to mitigate dust;
- Groundwater – volume of groundwater that is removed, characterization, treatment, and destination (used as dust suppression or disposed of offsite);
- Offsite Disposal Records – date, time, vehicles used for the trip, volume/weight, copies of bills-of-lading, and waste manifests;
- Imported Soil – origin, volume, and characterization; and
- Analytical Reports – copies of laboratory analytical results.

11.0 REFERENCES

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RMD, 2020c. Redevelopment-Related Groundwater Monitoring Well Network Modification Work Plan, Former Kaiser Aerotech Facilities, 880 Doolittle Drive and 498 Hester Street, San Leandro, California. November 19.

RMD, 2020d. Soil Vapor Sampling Report, Former Kaiser Aerotech Facilities, 880 Doolittle Drive and 498 Hester Street, San Leandro, California. November 30.

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U.S. Environmental Protection Agency (USEPA), 2015. OSWER Technical Guide for Assessing and Mitigating the Vapor Intrusion Pathway from Subsurface Vapor Sources to Indoor Air. Office of Solid Waste and Emergency Response. June.

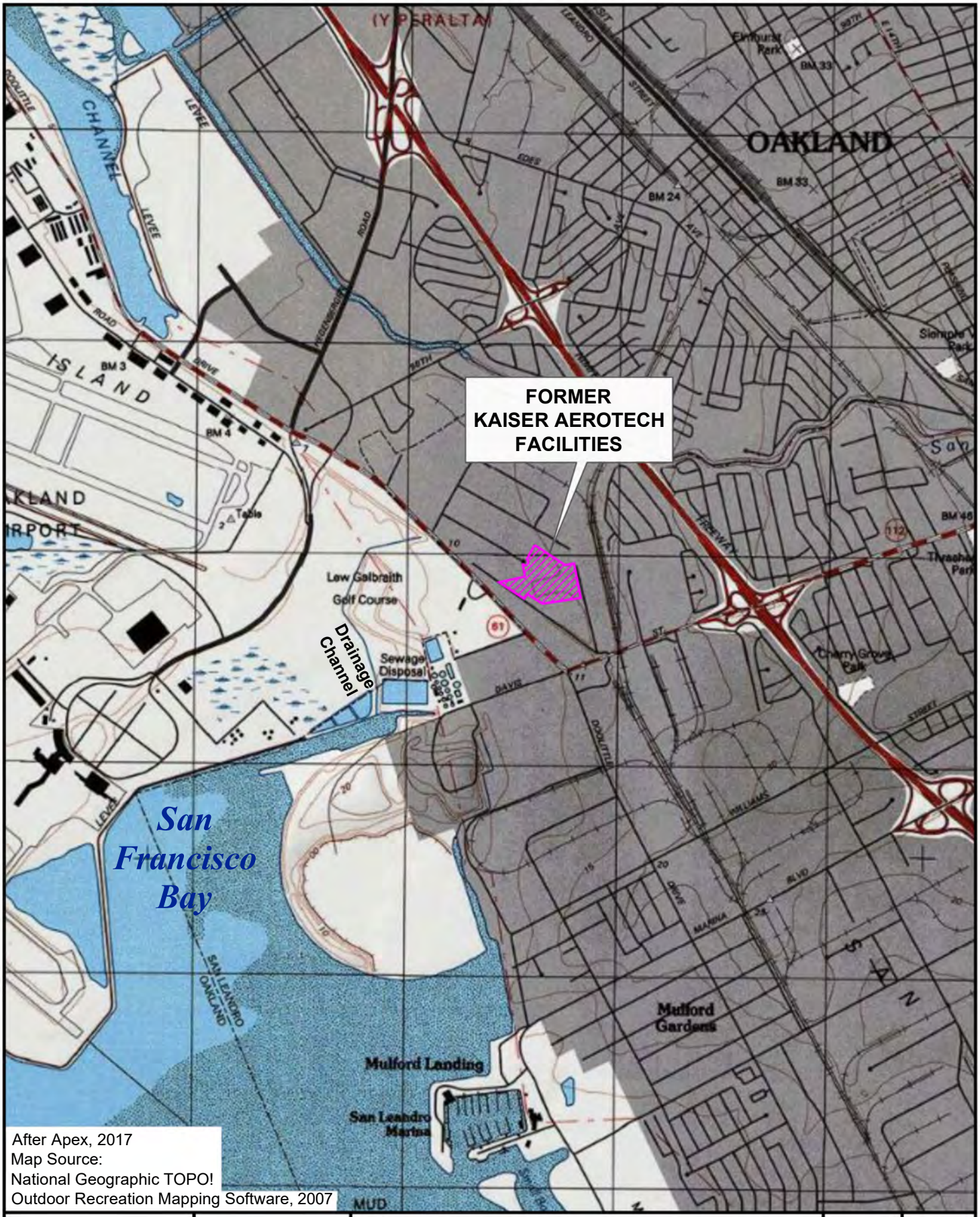
USEPA, 2021. Regional Screening Levels (TR=1E-06, HQ=1). May.

12.0 LIMITATIONS

This document was prepared for the exclusive use of Leandro Brookshire LLC and DTSC for the express purpose of complying with DTSC requirements. This SGMP does not address issues related to other chemicals or media that may be encountered during construction or other activities including, but not limited to, demolition and construction debris, asphalt, concrete, asbestos-containing building materials, lead-based paint, or any chemicals brought onsite by workers. If such materials are encountered during a project, each Contractor is responsible for complying with all applicable laws pertaining to the handling and disposal of these materials.

This SGMP is based on current known Site conditions and current laws, policies, and regulations as of publication. RMD has used professional judgment to present the findings and opinions of a scientific and technical nature. The opinions expressed are based on the conditions of the Site existing at the time of the field investigation, current regulatory requirements, and any specified assumptions. The presented findings and recommendations in this report are intended to be taken in their entirety to assist Leandro Brookshire LLC and DTSC personnel in applying their own professional judgment in making decisions related to the Site. No warranty or guarantee, whether expressed or implied, is made with respect to the data or the reported findings, observations, conclusions, and recommendations.

FIGURES



After Apex, 2017
Map Source:
National Geographic TOPO!
Outdoor Recreation Mapping Software, 2007

RMD ENVIRONMENTAL SOLUTIONS

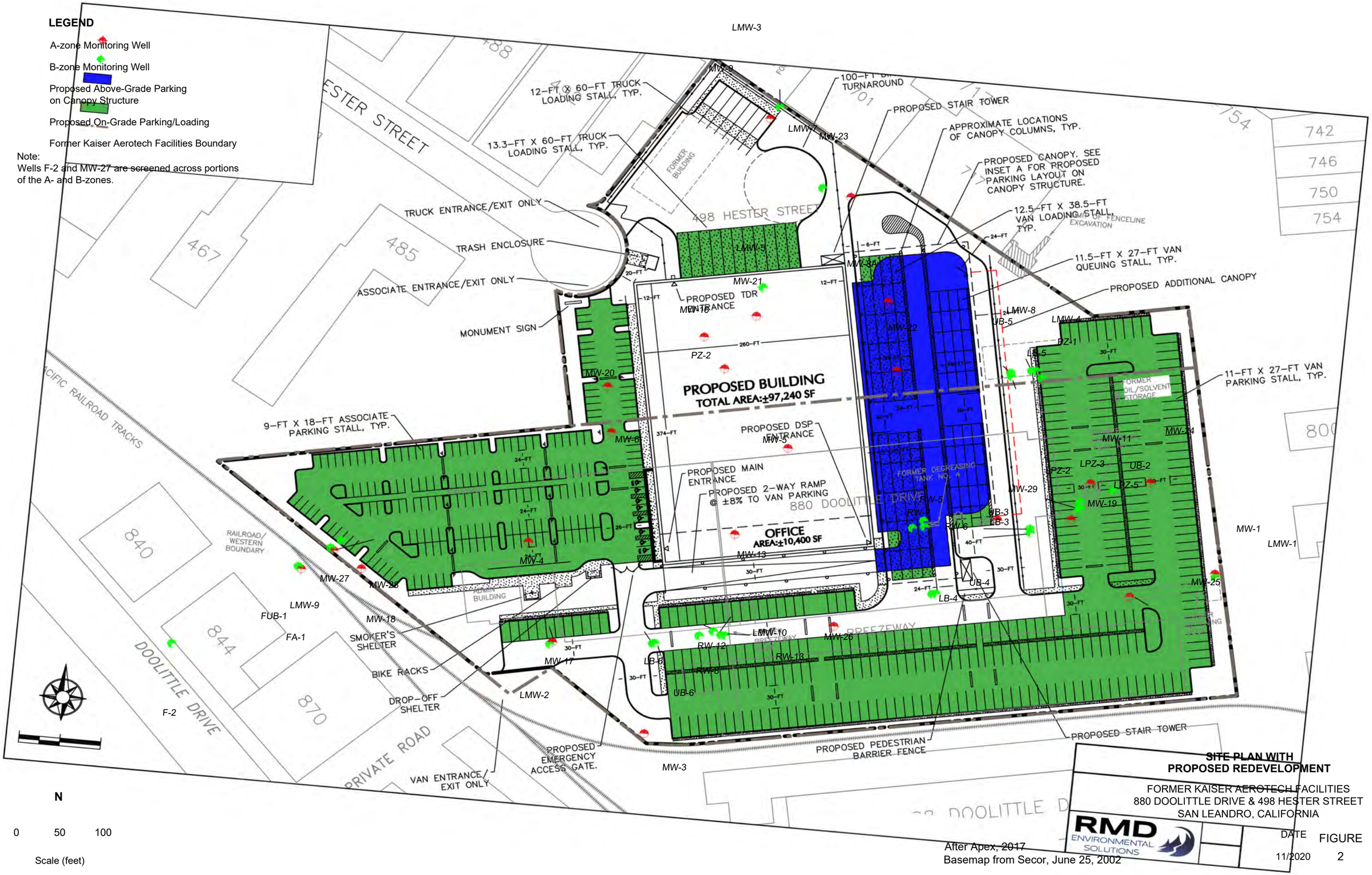
Project:	01-KAF-001
Date:	10/12/18
Drawn:	ZA
Approved:	KR

0 2,000
SCALE IN FEET

SITE VICINITY MAP
FORMER KAISER AEROTECH
FACILITIES
SAN LEANDRO, CALIFORNIA

N

FIGURE
1



SITE PLAN WITH PROPOSED REDEVELOPMENT

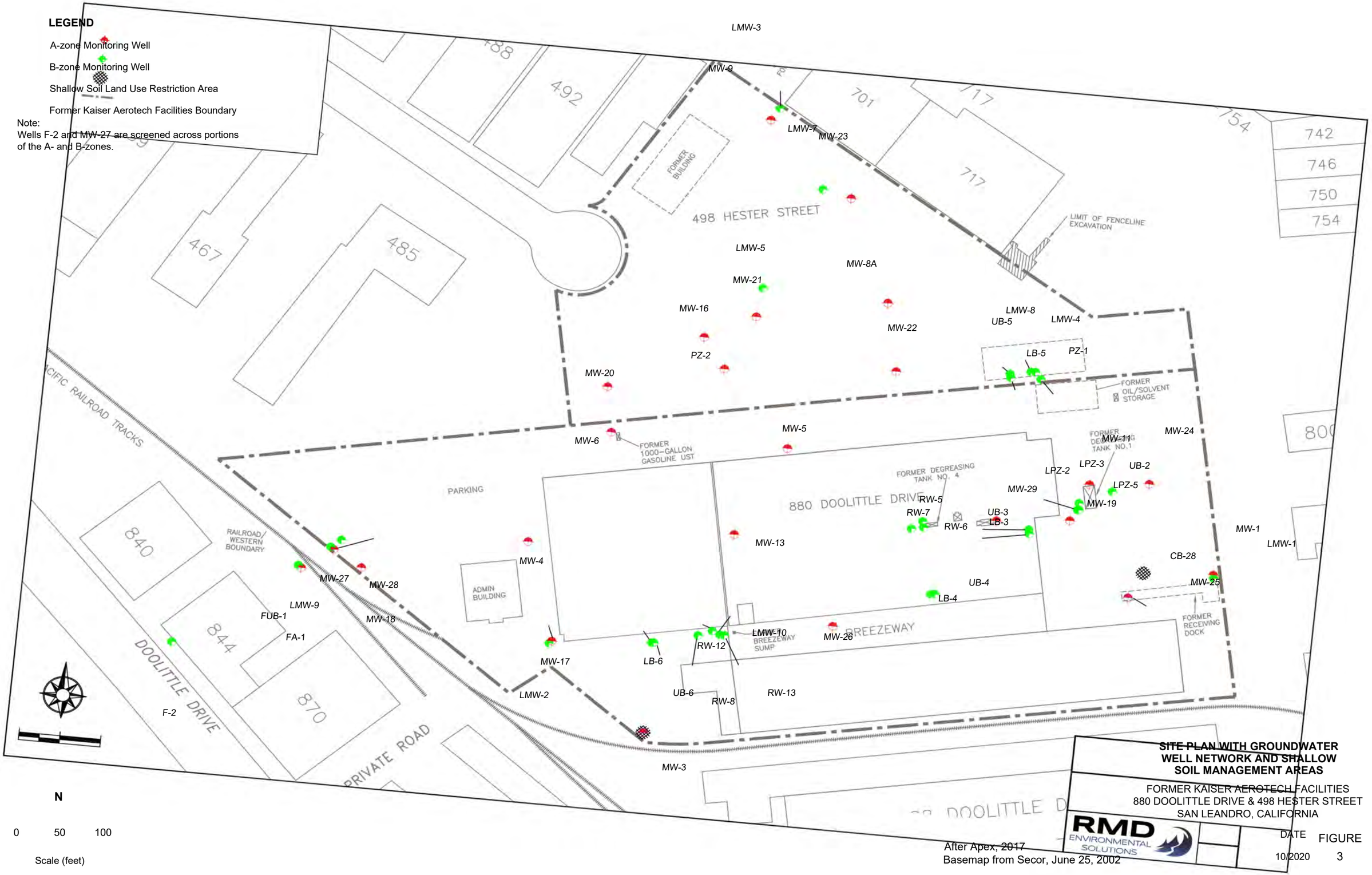
FORMER KAISER AEROTECH FACILITIES
880 DOOLITTLE DRIVE & 498 HESTER STREET
SAN LEANDRO, CALIFORNIA

RMD ENVIRONMENTAL SOLUTIONS

DATE 11/2020

FIGURE 2

After Apex, 2017
Basemap from Secor, June 25, 2002



SITE PLAN WITH GROUNDWATER WELL NETWORK AND SHALLOW SOIL MANAGEMENT AREAS

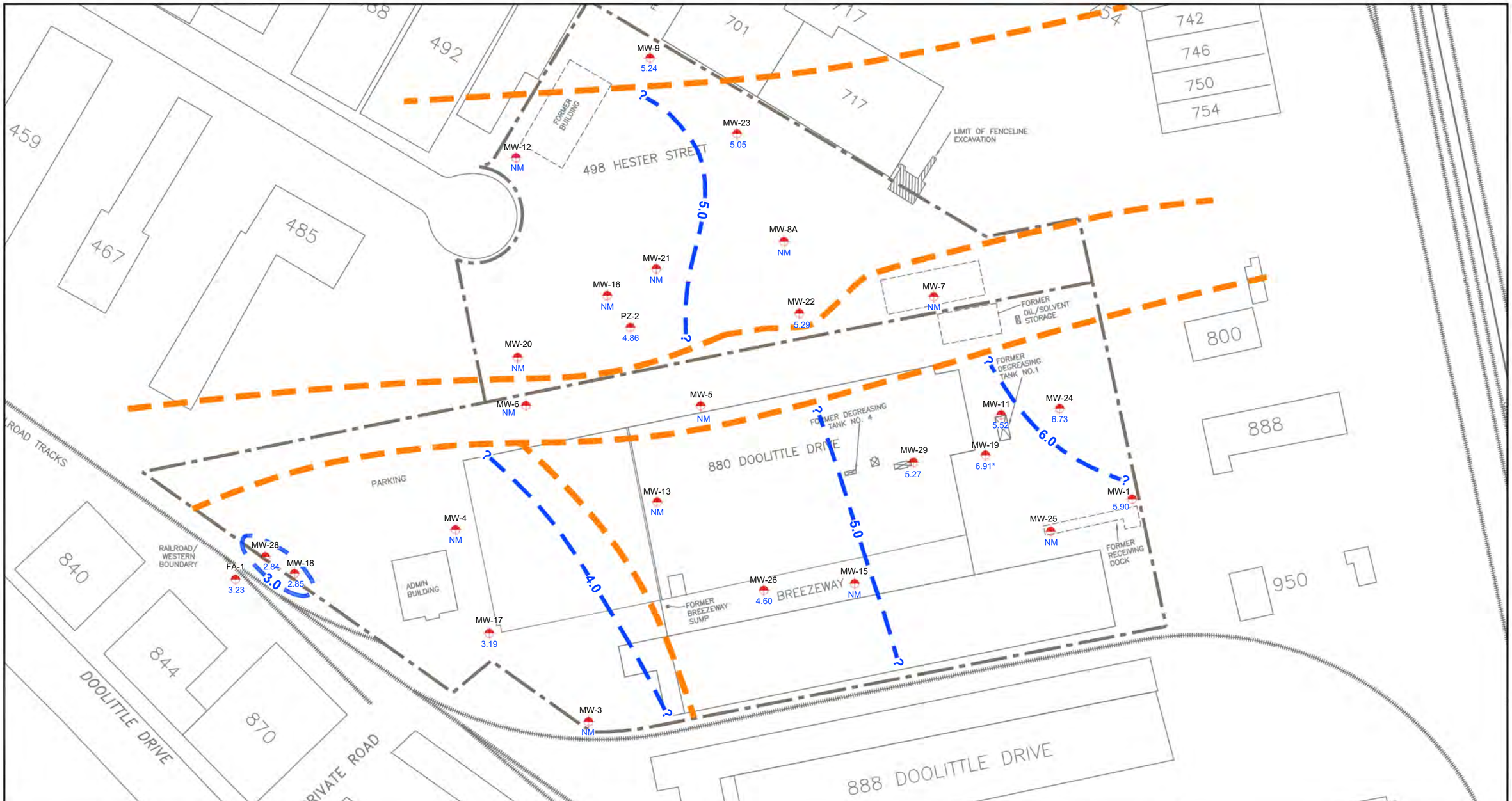
FORMER KAISER AEROTECH FACILITIES
880 DOOLITTLE DRIVE & 498 HESTER STREET
SAN LEANDRO, CALIFORNIA

RMD ENVIRONMENTAL SOLUTIONS

DATE 10/2020

FIGURE 3

After Apex, 2017
Basemap from Secor, June 25, 2002



LEGEND

- A-zone monitor well
- 3.23 Groundwater elevation (feet) relative to mean sea level (msl)
- 5.0 Approximate groundwater elevation contour (feet msl)
- Approximate sand lens boundary between 5 and 10 feet below ground surface (ETIC, December 27, 2002)
- Former Kaiser Aerotech Facilities boundary
- NM Not Measured
- Not used in contouring

After Apex, 2017
Basemap from Secor, June 25, 2002

FORMER KAISER AEROTECH FACILITIES
880 DOOLITTLE DRIVE & 498 HESTER STREET
SAN LEANDRO, CALIFORNIA

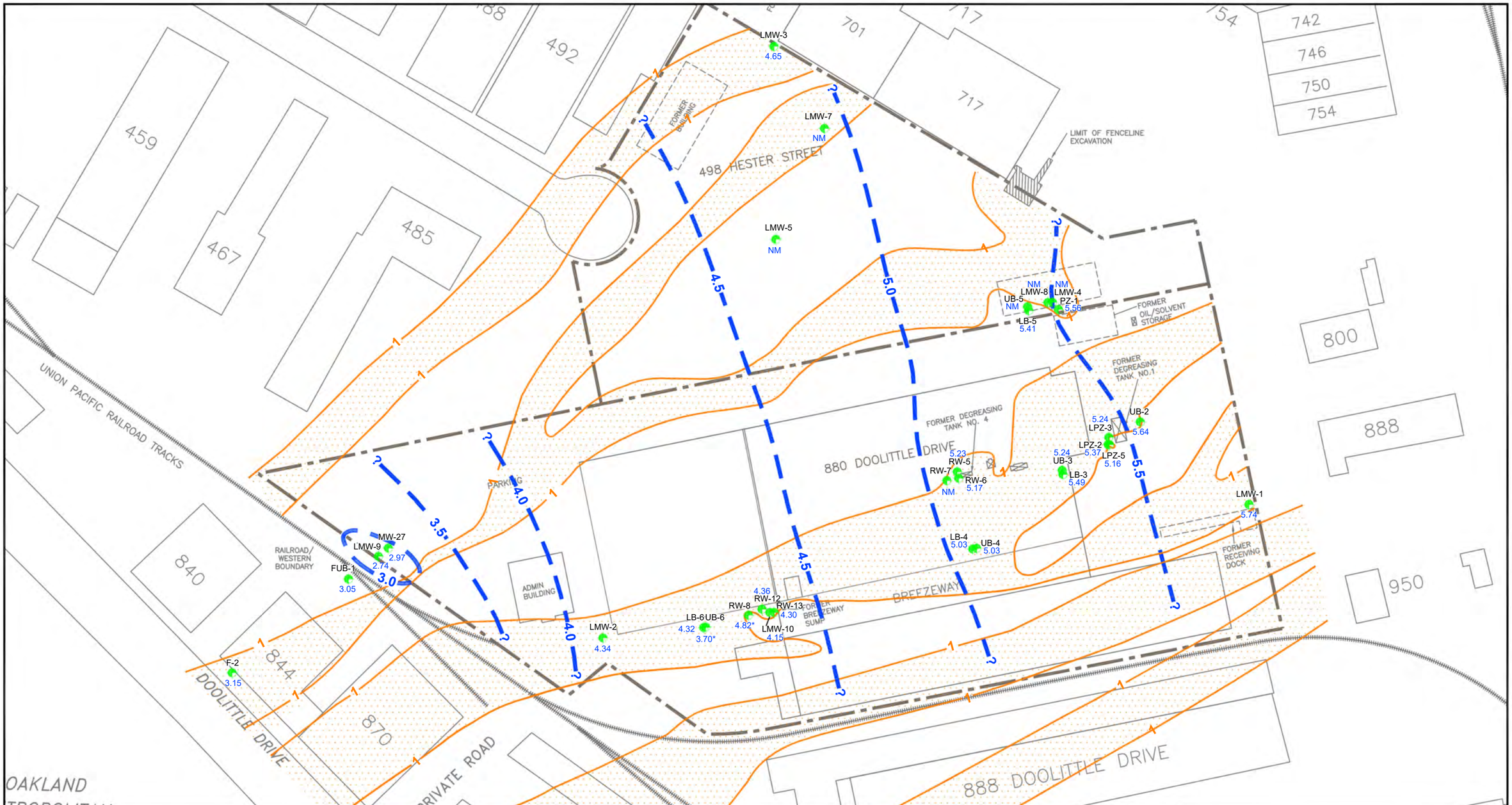
PROJECT NO.	DATE	DRAWN BY:	APP. BY:
01-KAF-004	05/08/20	DCB	KR

0 120 240
HORIZONTAL SCALE IN FEET

A-ZONE GROUNDWATER ELEVATION MAP- MARCH 2020

RMD ENVIRONMENTAL SOLUTIONS

FIGURE 4



LEGEND

- B-zone Monitoring Well
- 5.19 Groundwater Elevation in Feet Above Mean Sea Level (feet msl)
- * Not Used in Contouring
- NM Not Measured
- 5.0 Approximate Groundwater Elevation Contour (feet msl)
- Total B-zone Coarse-Grained Soil Thickness Greater Than 1 Foot
- Former Kaiser Aerotech Facilities Boundary

Note: Wells F-2 and MW-27 screen portions of A- and B-zones

After Apex, 2017
Basemap from Secor, June 25, 2002

FORMER KAISER AEROTECH FACILITIES
880 DOOLITTLE DRIVE & 498 HESTER STREET
SAN LEANDRO, CALIFORNIA

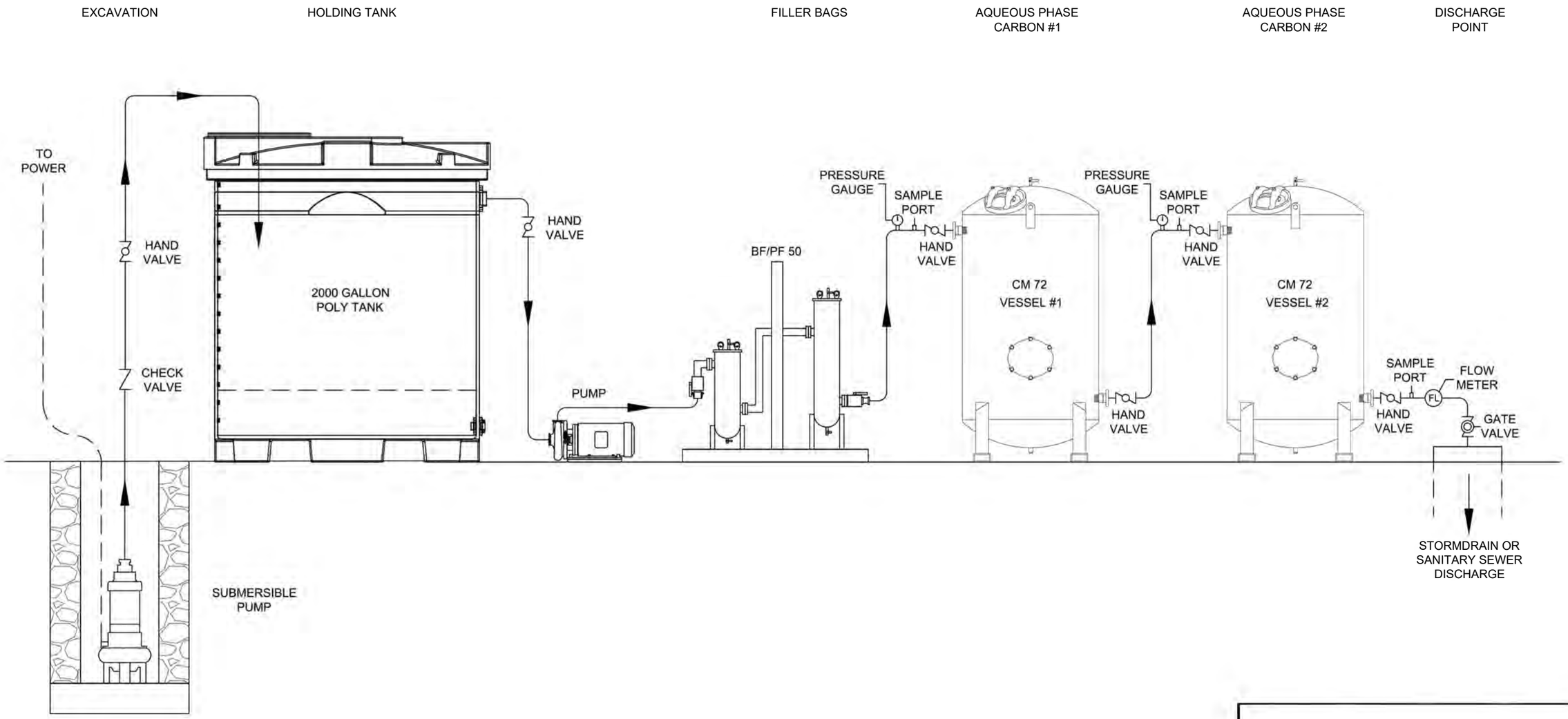
PROJECT NO.	DATE	DRAWN BY:	APP. BY:
01-KAF-004	05/08/20	DCB	KR

0 120 240
HORIZONTAL SCALE IN FEET

B-ZONE GROUNDWATER ELEVATION MAP - MARCH 2020

RMD ENVIRONMENTAL SOLUTIONS

FIGURE 5



PROCESS FLOW DIAGRAM – DEWATERING EFFLUENT TREATMENT

FORMER KAISER AEROTECH FACILITIES
880 DOOLITTLE DRIVE & 498 HESTER STREET
SAN LEANDRO, CALIFORNIA

PROJECT NO.:	DATE:	DRAWN BY:	APP. BY:
01-KAF-009	05/2021	EC	PGB

NOT TO SCALE

RMD ENVIRONMENTAL SOLUTIONS

FIGURE 6

Initial Source: Clear Creek Systems, Inc. 2020. Process Flow Diagram- Sales Draft for Discussion. June 18.

TABLE

Table 1
Well Construction Details
Former Kaiser Aerotech Facilities
San Leandro, California

Well Number	Notes	GW Zone	Area	Well Installation Date	Top of Casing Elevation (ft msl)	Casing Material	Total Depth of Boring (ft bgs)	Soil Sampling Frequency	Casing Diameter (inches)	Screened Interval (ft bgs)	Slot Size (inches)	Filter Pack Interval (ft bgs)	Filter Pack Material	Northing	Easting	Well Head Completion
MW-1	3,6	A	Receiving Dock	10/30/96	11.50	PVC	10	Continuous	2	3-10	0.020	2.5-10	#3 Lonestar	2089071.2	6073935.8	Traffic Box
MW-3	3,6	A	MNA	10/29/96	9.20	PVC	10	Continuous	2	3-10	0.020	2.5-10	#3 Lonestar	2088795.5	6073263.3	Traffic Box
MW-4		A	MNA	10/29/96	9.13	PVC	10	Continuous	2	3-10	0.020	2.5-10	#3 Lonestar	2089032.9	6073098.8	Traffic Box
MW-5	3,6	A	MNA	10/29/96	9.90	PVC	12	Continuous	2	3-10	0.020	2.5-10	#3 Lonestar	2089186.5	6073401.9	Traffic Box
MW-6		A	MNA	10/29/96	9.40	PVC	10	Continuous	2	3-10	0.020	2.5-10	#3 Lonestar	2089186.5	6073185.7	Traffic Box
MW-8A	5,6	A	MNA	3/6/97	13.97	PVC	11.5	Continuous	2	4-10	0.020	3.5-10	#3 Lonestar	2089389.9	6073505.2	Traffic Box
MW-9	5,6	A	MNA	10/28/96	13.02	PVC	10.5	Continuous	2	4-10	0.020	3.5-10	#3 Lonestar	2089616.9	6073339.3	Traffic Box
MW-11	9	A	DT No. 1	10/28/96	10.90	PVC	10	Continuous	2	3-10	0.020	2.5-10	#3 Lonestar	2089173.0	6073770.1	Traffic Box
MW-13		A	MNA	3/6/97	9.78	PVC	10	Continuous	1	5-10	0.020	4.5-10	#3 Lonestar	2089067.1	6073348.2	Traffic Box
MW-16	6	A	MNA	8/24/98	11.96	PVC	10	Continuous	2	3-10	0.020	2-10	#3 Lonestar	2089323.0	6073286.4	Traffic Box
MW-17		A	Breezeway Sump	8/20/98	9.41	PVC	10	Continuous	2	3.5-10	0.020	3-10	#3 Lonestar	2088904.8	6073140.5	Traffic Box
MW-18		A	Railroad/Western	8/20/98	8.18	PVC	10.5	Continuous	2	3.5-10	0.020	3-10	#3 Lonestar	2088973.5	6072906.5	Traffic Box
MW-19	6	A	DT No. 1	5/20/05	10.56	PVC	13	every 5 feet	2	5-13	0.010	4-13	#2/16 Sand	2089126.7	6073752.9	Traffic Box
MW-20	9	A	MNA	3/17/06	10.35	PVC	15	Continuous	2	5-15	0.010	3-15	#2/16 Sand	2089246.4	6073175.5	Traffic Box
MW-21	9	A	MNA	3/17/06	13.24	PVC	15	Continuous	2	5-15	0.010	4-15	#2/16 Sand	2089356.2	6073347.1	Traffic Box
MW-22	9	A	A-zone Hotspot	3/17/06	12.35	PVC	15	Continuous	2	5-15	0.010	4-15	#2/16 Sand	2089300.8	6073524.1	Traffic Box
MW-23	9	A	A-zone Hotspot	3/17/06	14.46	PVC	15	Continuous	2	5-15	0.010	4-15	#2/16 Sand	2089523.2	6073446.9	Traffic Box
MW-24	9	A	MNA	3/15/06	11.76	PVC	15	Continuous	2	5-15	0.010	4-15	#2/16 Sand	2089183.2	6073846.2	Traffic Box
MW-25	9	A	MNA	3/15/06	11.46	PVC	15	Continuous	2	5-15	0.010	4-15	#2/16 Sand	2089031.2	6073835.0	Traffic Box
MW-26	9	A	A-zone Hotspot	3/15/06	10.35	PVC	15	Continuous	2	5-15	0.010	4-15	#2/16 Sand	2088958.3	6073480.1	Traffic Box
MW-28	11	A	Railroad/Western	9/14/07	8.04	PVC	15	Continuous	2	5-15	0.010	4-15	#2/16 Sand	2088999.8	6072863.0	Traffic Box
MW-29	11	A	DT No. 1	9/11/07	10.32	PVC	15	Continuous	2	5-15	0.010	4-15	#2/12 Sand	2089116.8	6073665.2	Traffic Box
PZ-2	5,6	A	A-zone Hotspot	6/23/03	11.59	PVC	12	Continuous	2	5-12	0.010	4.2-12	#2/12 Sand	2089282.1	6073307.5	Traffic Box
FA-1	12	A	Railroad/Western	7/11/08	8.07	PVC	15	Continuous	2	5-15	0.010	4-15	#2/16 Sand	2088971.8	6072826.6	Traffic Box
LMW-1	15	UB	Receiving Dock	8/21/98	11.19	PVC	28.5	Continuous	2	21-25	0.020	20-25	#3 Lonestar	2089067.6	6073936.1	Traffic Box
LMW-2		UB	Breezeway Sump	8/24/98	9.08	PVC	31	Continuous	2	21-31	0.020	19-31	#3 Lonestar	2088901.9	6073137.5	Traffic Box
LMW-3	5,6	UB	MNA	8/25/98	12.88	PVC	22.5	Continuous	2	17.5-22.5	0.020	15-22.5	#3 Lonestar	2089633.3	6073349.0	Traffic Box
LMW-4	5,6	B	Oil/Solvent Storage	8/24/98	12.13	PVC	28	Continuous	4	18-28	0.020	16-28	#3 Lonestar	2089316.7	6073693.4	Traffic Box
LMW-5	3,6	B	MNA	6/23/03	12.93	PVC	35	Continuous	2	20-30	0.010	19-30	#2/12 Sand	2089394.6	6073351.4	Traffic Box
LMW-7	9	UB	MNA	3/16/06	14.12	PVC	25	Continuous	2	15-25	0.010	13-25	#2/12 Sand	2089531.8	6073411.5	Traffic Box
LMW-8	11	LB	Oil/Solvent Storage	9/12/07	12.22	PVC	32	Continuous	2	25-30	0.010	24-30	#2/16 Sand	2089316.3	6073688.5	Traffic Box
LMW-9	11	UB	Railroad/Western	9/13/07	7.97	PVC	20	Continuous	2	15-20	0.010	14-20	#2/16 Sand	2089002.7	6072859.7	Traffic Box
LMW-10	11	LB	Breezeway Sump	9/12/07	10.08	PVC	35	Continuous	2	25-35	0.010	24-35	#2/16 Sand	2088933.3	6073344.0	Traffic Box
MW-27	10	A/UB	Railroad/Western	8/1/06	8.14	PVC	20	Continuous	2	10-20	0.010	9-20	#2/16 Sand	2089013.1	6072871.9	Traffic Box
PZ-1		B	Oil/Solvent Storage	8/24/98	11.37	PVC	28	Continuous	1	18-28	0.020	16-28	#3 Lonestar	2089307.8	6073701.0	Traffic Box
LPZ-2	3,6	UB	DT No. 1	7/22/03	10.60	PVC	24	Continuous	2	14-24	0.010	13-24	#2/16 Sand	2089140.7	6073762.3	Traffic Box
LPZ-3	3,6	B	DT No. 1	7/23/03	10.65	PVC	32	Continuous	2	22-32	0.010	21-32	#2/16 Sand	2089149.6	6073763.4	Traffic Box
LPZ-5	3,6	LB	DT No. 1	7/25/03	10.57	PVC	35	Continuous	2	25-35	0.010	24-35	#2/16 Sand	2089140.7	6073764.1	Traffic Box
RW-5	3,6	B	DT No. 4	7/23/03	9.97	PVC	32	Continuous	4	22-32	0.010	20.5-32	#2/16 Sand	2089107.0	6073575.8	Traffic Box
RW-6	3,6	B	DT No. 4	7/21/03	9.99	PVC	33	Continuous	4	23-33	0.010	22-33	#2/16 Sand	2089099.1	6073577.6	Traffic Box
RW-7	3,6	B	DT No. 4	7/21/03	10.11	PVC	34	Continuous	4	22-32	0.01	20.5-32	#2/16 Sand	2089096.2	6073563.0	Traffic Box
RW-8	3,6, 15	B	Breezeway Sump	7/25/03	10.25	PVC	30	Continuous	2	15-30	0.010	13.5-30	#2/16 Sand	2088931.0	6073317.4	Traffic Box
RW-12	6	B	Breezeway Sump	5/18/05	9.75	PVC	31.5	every 5 feet	2	15-30	0.010	14-30	#2/16 Sand	2088937.6	6073334.3	Traffic Box
RW-13	6	UB	Breezeway Sump	5/20/05	9.58	PVC	26.5	every 5 feet	4	16-26	0.010	15-26	#2/16 Sand	2088933.5	6073349.3	Traffic Box

Table 1
Well Construction Details
Former Kaiser Aerotech Facilities
San Leandro, California

Well Number	Notes	GW Zone	Area	Well Installation Date	Top of Casing Elevation (ft msl)	Casing Material	Total Depth of Boring (ft bgs)	Soil Sampling Frequency	Casing Diameter (inches)	Screened Interval (ft bgs)	Slot Size (inches)	Filter Pack Interval (ft bgs)	Filter Pack Material	Northing	Easting	Well Head Completion
UB-2	9	UB	DT No. 1	3/16/06	10.97	PVC	25	Continuous	2	15-25	0.010	13-25	#2/16 Sand	2089168.8	6073802.2	Traffic Box
UB-3	11	UB	DT No. 1	9/11/07	10.51	PVC	25	Continuous	2	15-25	0.010	13-25	#2/12 Sand	2089108.9	6073705.6	Traffic Box
LB-3	11	LB	DT No. 1	9/13/07	10.49	PVC	35	Continuous	2	25-35	0.010	24-35	#2/16 Sand	2089103.9	6073706.3	Traffic Box
UB-4	11	UB	DT No. 1	9/13/07	10.18	PVC	25	Continuous	2	15-25	0.010	14-25	#2/16 Sand	2089012.8	6073599.7	Traffic Box
LB-4	11	LB	DT No. 1	9/13/07	10.14	PVC	35	Continuous	2	25-35	0.010	24-35	#2/16 Sand	2089012.0	6073594.9	Traffic Box
UB-5	11	UB	Oil/Solvent Storage	9/12/07	12.29	PVC	30	Continuous	2	15-25	0.010	14-25	#2/16 Sand	2089311.2	6073662.9	Traffic Box
LB-5	11	LB	Oil/Solvent Storage	9/12/07	12.15	PVC	32	Continuous	2	25-30	0.010	24-30	#2/16 Sand	2089306.4	6073664.3	Traffic Box
UB-6	11	UB	Breezeway Sump	9/12/07	9.51	PVC	23	Continuous	2	14-23	0.010	13-23	#2/16 Sand	2088915.2	6073264.6	Traffic Box
LB-6	11	LB	Breezeway Sump	9/12/07	9.68	PVC	35	Continuous	2	25-35	0.010	24-35	#2/16 Sand	2088914.8	6073262.0	Traffic Box
FUB-1	12	UB	Railroad/Western	7/11/08	8.13	PVC	20	Continuous	2	15-20	0.010	13-20	#2/16 Sand	2088974.8	6072822.7	Traffic Box
F-2	13, 15	A/UB	Railroad/Western	1/27/09	8.32	PVC	20	Continuous	2	10-20	0.010	9-20	#2/16 Sand	2088858.0	6072680.7	Traffic Box
DW-1	6, 17	A/B	DT No. 1	5/24/05	10.50	STEEL	35.5	Continuous	8	5.5-35.5	0.010	4-35.4	#2/16 Sand	2089126.8	6073759.4	Destroyed
DW-2	6, 17	A/B	DT No. 1	6/23/05	10.57	STEEL	35.5	Continuous	8	5.5-35.5	0.010	4-35.5	#2/16 Sand	2089134.0	6073757.1	Destroyed
DW-3	6, 17	A/B	DT No. 1	6/23/05	10.62	STEEL	35.5	Continuous	8	5.5-35.5	0.010	4-35.5	#2/16 Sand	2089128.8	6073750.0	Destroyed
IW-1	1	A/B	Oil/Solvent Storage	11/5/99	11.12	PVC	30	Not Sampled	2	5-30	0.020	4-30	#3 Lonestar	NM	NM	Destroyed
IW-2	2	B	Oil/Solvent Storage	12/18/00	NM	PVC	30	Not Sampled	2	17-28	0.020	15-28	#3 Lonestar	NM	NM	Destroyed
LB-1	9, 16	LB	DT No. 1	3/14/06	11.05	PVC	35	Continuous	2	25-35	0.010	23-35	#2/16 Sand	2089168.4	6073786.3	Destroyed
LB-2	9, 16	LB	DT No. 1	3/14/06	11.16	PVC	35	Continuous	2	25-35	0.010	23-35	#2/16 Sand	2089171.5	6073799.6	Destroyed
LMW-6	3, 6, 16	UB	Breezeway Sump	6/24/03	9.70	PVC	25	Continuous	2	15-25	0.010	13.5-25	#2/12 Sand	2088932.3	6073338.0	Destroyed
LPZ-4	3, 6, 16	UB	DT No. 1	7/23/03	10.63	PVC	24	Continuous	2	14-24	0.010	13-24	#2/16 Sand	2089130.5	6073760.1	Destroyed
MC-1A	7, 14	A	Oil/Solvent Storage	11/5/99	NM	PVC	30	Not Sampled	<0.5	6.5-8	0.020	6.5-8	#3 Lonestar	NM	NM	Destroyed
MC-1B	7, 14	A	Oil/Solvent Storage	11/5/99	NM	PVC	30	Not Sampled	<0.5	10.75-12.25	0.020	10.75-12.25	#3 Lonestar	NM	NM	Destroyed
MC-1C	7, 14	A	Oil/Solvent Storage	11/5/99	NM	PVC	30	Not Sampled	<0.5	14.25-15.75	0.020	14.25-15.75	#3 Lonestar	NM	NM	Destroyed
MC-1D	7, 14	B	Oil/Solvent Storage	11/5/99	NM	PVC	30	Not Sampled	<0.5	17.72-19.25	0.020	17.72-19.25	#3 Lonestar	NM	NM	Destroyed
MC-1E	7, 14	B	Oil/Solvent Storage	11/5/99	NM	PVC	30	Not Sampled	<0.5	23.5-25	0.020	23.5-25	#3 Lonestar	NM	NM	Destroyed
MC-1F	7, 14	B	Oil/Solvent Storage	11/5/99	NM	PVC	30	Not Sampled	<0.5	28.5-30	0.020	28.5-30	#3 Lonestar	NM	NM	Destroyed
MW-2	14	A	MNA	10/30/96	10.61	PVC	12	Continuous	2	2.5-9.5	0.020	2-10	#3 Lonestar	2088878.7	6073713.1	Destroyed
MW-7	17.00	A	Oil/Solvent Storage	10/28/96	12.05	PVC	10	Continuous	2	4-10	0.020	3.5-10	#3 Lonestar	2089321.4	6073690.2	Destroyed
MW-8	4, 5, 6, 14	A	MNA	10/28/96	13.98	PVC	10.5	Continuous	2	4-10	0.020	3.5-10	#3 Lonestar	2089386.2	6073512.9	Destroyed
MW-10	14	A	MNA	10/28/96	7.87	PVC	10	Continuous	2	3-10	0.020	2.5-10	#3 Lonestar	2089094.4	6072759.3	Destroyed
MW-12	5,6,17	A	MNA	3/6/97	11.63	PVC	11.5	Continuous	2	4-10	0.020	3.5-10	#3 Lonestar	2089493.6	6073173.5	Destroyed
MW-14	14	A	MNA	3/6/97	10.57	PVC	11	Continuous	1	4-11	0.020	3.5-10	#3 Lonestar	2088871.8	6073740.4	Destroyed
MW-15	17	A	MNA	8/20/98	10.78	PVC	10	Continuous	2	2.5-10	0.020	3-10	#3 Lonestar	2088966.4	6073592.5	Destroyed
RW-1	8, 16	UB	DT No. 1	7/25/03	10.59	PVC	25	Continuous	2	14-24	0.010	13-24	#2/16 Sand	2089152.1	6073768.0	Destroyed
RW-2	8, 16	LB	DT No. 1	7/31/03	10.80	PVC	35	Continuous	2	25-35	0.010	24-35	#2/16 Sand	2089156.2	6073767.3	Destroyed
RW-3	3, 6, 16	UB	DT No. 1	7/24/03	10.56	PVC	24	Continuous	2	14-24	0.010	13-24	#2/16 Sand	2089125.0	6073755.9	Destroyed
RW-4	3, 6, 16	LB	DT No. 1	7/24/03	10.56	PVC	38	Continuous	2	25-35	0.010	24-35	#2/16 Sand	2089128.8	6073750.0	Destroyed
RW-9	3, 6, 16	B	Breezeway Sump	7/31/03	9.58	PVC	30	Continuous	2	13.5-28.5	0.010	13-30	#2/16 Sand	2088932.5	6073306.9	Destroyed
RW-10	6, 16	B	DT No. 4	5/20/05	10.14	PVC	30	every 5 feet	4	20-30	0.010	19-30	#2/16 Sand	2089101.8	6073570.7	Destroyed
RW-11	9, 16	B	Breezeway Sump	5/18/05	9.45	PVC	31.5	every 5 feet	2	15-30	0.010	14-30	#2/16 Sand	2088949.0	6073334.4	Destroyed
SAZ-1	17	C	MNA	8/26/98	11.50	PVC	58	Not Sampled	2	45-55	0.020	44-55.5	#3 Lonestar	2089068.0	6073926.0	Destroyed
SAZ-2	17	C	MNA	8/27/98	9.45	PVC	59	Not Sampled	2	50.5-55.5	0.020	48.5-56	#3 Lonestar	2088907.7	6073135.8	Destroyed

Table 1
Well Construction Details
Former Kaiser Aerotech Facilities
San Leandro, California

Well Number	Notes	GW Zone	Area	Well Installation Date	Top of Casing Elevation (ft msl)	Casing Material	Total Depth of Boring (ft bgs)	Soil Sampling Frequency	Casing Diameter (inches)	Screened Interval (ft bgs)	Slot Size (inches)	Filter Pack Interval (ft bgs)	Filter Pack Material	Northing	Easting	Well Head Completion
SAZ-3	5,6,17	C	MNA	8/28/98	12.91	PVC	46	Not Sampled	2	39-44	0.020	37-44.5	#3 Lonestar	2089626.1	6073344.9	Destroyed
TP-1	2	A/B	Oil/Solvent Storage	3/10/00	NM	PVC	28	Continuous	1	12.5-28	0.020	12-28	#3 Lonestar	NM	NM	Destroyed
UB-1	9, 16	UB	DT No. 1	3/16/06	11.16	PVC	25	Continuous	2	15-25	0.010	13-25	#2/16 Sand	2089164.7	6073786.9	Destroyed

Notes:

ft msl	feet above mean sea level
ft bgs	feet below ground surface
NM	Not measured
NR	Not recorded
UNK	Unknown
PVC	Poly vinyl chloride
A	A-zone - approximately 5-15 feet below ground surface
UB	Upper B-zone - approximately 15-25 feet below ground surface
LB	Lower B-zone - approximately 25-35 feet below ground surface
C	C-zone - below approximately 35-40 feet below ground surface
DT No. 1	Degreasing tank no. 1
DT No. 4	Degreasing tank no. 4
MNA	Monitored natural attenuation

1 Replaced by well IW-2
2 Wells destroyed in June 2003
3 Groundwater monitoring wells surveyed in September 2003
4 Groundwater monitoring well MW-8 was reported abandoned in March 1997. Relocated in October 2003.
5 Groundwater monitoring wells resurveyed in March 2004
6 Groundwater monitoring wells resurveyed in June 2005
7 MC-1 is multi-chambered well screened at six depths (A-F)
8 Well casing modified and resurveyed in April 2006
9 Wells surveyed in April 2006
10 Wells surveyed in February 2007
11 Wells surveyed in September 2007
12 Wells surveyed in July 2008
13 Well surveyed in February 2009
14 Wells destroyed in May 2009
15 Wells surveyed in September 2009
16 Wells destroyed July 2015
17 Wells destroyed October 2020

APPENDIX A

LAND-USE COVENANT

2012293798 09/07/2012 01:44 PM
OFFICIAL RECORDS OF ALAMEDA COUNTY
PATRICK O'CONNELL
RECORDING FEE: 0.00

20 PGS

RECORDING REQUESTED BY:

Redemco, L.L.C.
395 Mill Creek Circle
Vail, CO 81657
Attention: Ann Becher-Smead

WHEN RECORDED, MAIL TO:

Department of Toxic Substances Control
700 Heinz Avenue
Berkeley, California 94710
Attention: Karen Toth, Unit Chief

D23
20
cd

SPACE ABOVE THIS LINE RESERVED FOR RECORDER'S USE

COVENANT TO RESTRICT USE OF PROPERTY

ENVIRONMENTAL RESTRICTION

County of Alameda APNs 77A-741-4-2 and 77A-741-5, Former Kaiser Aerotech Site, DTSC site code number 200559

This Covenant and Agreement ("Covenant") is made by and between Redemco, L.L.C. (the "Covenantor"), the current owner of property situated in San Leandro, County of Alameda, State of California, described in Exhibit "A" and depicted in Exhibit "B," attached, (the "Property"), and the Department of Toxic Substances Control (the "Department"). Pursuant to Civil Code section 1471, the Department has determined that this Covenant is reasonably necessary to protect present or future human health or safety or the environment as a result of the presence on the land of hazardous materials as defined in Health and Safety Code section 25260. The Covenantor and Department, collectively referred to as the "Parties," hereby agree, pursuant to Civil Code section 1471, and Health and Safety Code section 25355.5 that the use of the Property be restricted as set forth in this Covenant; and the Parties further agree that the Covenant shall conform with the requirements of California Code of Regulations, title 22, section 67391.1.

* Recording fee waived per Gov't Code §27387

ARTICLE I
STATEMENT OF FACTS

1.01. The Property, totaling approximately 14 acres, is more particularly described as 880 Doolittle Drive and 498 Hester Street in the City of San Leandro, County of Alameda, California, and is depicted in the attached Exhibits "A" and "B". The Property is located in the area now generally bounded by Doolittle Drive on the west, Hester Street on the north and Davis Street on the south. The Property is also described as Alameda County Assessor's Parcel Numbers 77A-741-4-2 and 77A-741-5.

1.02. A limited portion of the Property is more particularly described in Exhibit "C," and referred to as the Ground Water Monitoring System. The Ground Water Monitoring System consists of groundwater monitoring wells located throughout the entire Property.

1.03. Covenantor is remediating the Property under the supervision and authority of the Department. The Property is being remediated pursuant to a Remedial Action Plan developed in accordance with Health and Safety Code, division 20, chapter 6.8 under the oversight of the Department. The Remedial Action Plan (RAP) and notice of exemption, pursuant to the California Environmental Quality Act, Public Resources Code section 21000 et seq. were released for public review and comment and subsequently approved by the Department on February 26, 2008. A Covenant is required as part of the site remediation, because volatile organic compounds (VOCs), which are hazardous substances, as defined in Health and Safety Code section 25316, and hazardous materials as defined in Health and Safety Code section 25260, remain above unrestricted cleanup goals in groundwater and shallow soil below the surface of the property.

Remediation includes maintaining groundwater monitoring wells ("Monitoring Wells").

The locations of the Monitoring Wells are shown on Exhibit C. The operation and maintenance of the Monitoring Wells is being conducted pursuant to an Operation and Maintenance Plan approved by the Department on June 27, 2012.

1.04. Soil investigations identified contaminants at concentrations exceeding residential screening levels in limited areas of the Property. As detailed in the RAP, a limited portion of the subsurface soils within six feet of the surface of the Property, as more particularly described in Exhibit D, contain a hazardous substance (trichloroethene; TCE), as defined in Health and Safety Code section 25316. The maximum TCE concentration detected in soil within six feet of the surface was 1,100 µg/kg. This exceeds the Environmental Protection Agency Regional Screening Level for TCE in soil for residential use (910 µg/kg).

As detailed in the RAP, groundwater at the Property is found 5 to 7 feet below ground surface (bgs) and extends beyond 40 feet bgs. As of June, 2012, contaminants in the groundwater above their associated California Maximum Contaminant Levels (drinking water standards) are: TCE; cis-1,2-DCE; trans 1,2-DCE; 1,1-DCE; 1,1-DCA; 1,2-DCA; and vinyl chloride (VC).

The Department concluded that use of the Property as a residence, hospital, school for persons under the age of 21 or day care center would entail an unacceptable human health risk and exposure to and use of the groundwater presents an unacceptable threat to human health and safety. The Department further concluded that the Property, as remediated, and subject to the restrictions of this Covenant, does not present an unacceptable threat to human health or safety or the environment, if limited to commercial and industrial use and limited by the other Environmental Restrictions herein.

ARTICLE II
DEFINITIONS

2.01. Department. "Department" means the California Department of Toxic Substances Control and includes its successor agencies, if any.

2.02. Environmental Restrictions. "Environmental Restrictions" means all protective provisions, covenants, restrictions, prohibitions, and terms and conditions as set forth in any section of this Covenant.

2.03. Improvements. "Improvements" includes, but is not limited to: buildings, structures, roads, driveways, improved parking areas, wells, pipelines, or other utilities.

2.04. Lease. "Lease" means lease, rental agreement, or any other document that creates a right to use or occupy any portion of the Property.

2.05. Occupant. "Occupant" means Owners and any person or entity entitled by ownership, leasehold, or other legal relationship to the right to occupy any portion of the Property.

2.06. Owner. "Owner" means the Covenantor, and all successors in interest including heirs and assigns, who at any time hold title to all or any portion of the Property.

ARTICLE III
GENERAL PROVISIONS

3.01. Runs with the Land. This Covenant sets forth Environmental Restrictions that apply to and encumber the Property and every portion thereof no matter how it is improved, held, used, occupied, leased, sold, hypothecated, encumbered, or conveyed. This Covenant: (a) runs with the land pursuant to Health and Safety Code section

25355.5 and Civil Code section 1471; (b) inures to the benefit of and passes with each and every portion of the Property, (c) is for the benefit of, and is enforceable by the Department, and (d) is imposed upon the entire Property unless expressly stated as applicable only to a specific portion thereof.

3.02. Binding upon Owners/Occupants. Pursuant to the Health and Safety Code, this Covenant binds all owners of the Property, their heirs, successors, and assignees, and the agents, employees, and lessees of the owners, heirs, successors, and assignees. Pursuant to Civil Code section 1471, all successive owners of the Property are expressly bound hereby for the benefit of the Department.

3.03. Incorporation into Deeds and Leases. This Covenant shall be incorporated by reference in each and every deed and Lease for any portion of the Property.

3.04. Conveyance of Property. The Owner shall provide written notice to the Department not later than thirty (30) days after any conveyance of any ownership interest in the Property (excluding Leases, and mortgages, liens, and other non-possessory encumbrances). The written notice shall include the name and mailing address of the new owner of the Property and shall reference the site name and site code as listed on page one of this Covenant. The notice shall also include the Assessor's Parcel Number (APN) noted on page one. If the new owner's property has been assigned a different APN, each such APN that covers the Property must be provided. The Department shall not, by reason of this Covenant, have authority to approve, disapprove, or otherwise affect proposed conveyance, except as otherwise provided by law or by administrative order.

3.05. Costs of Administering the Covenant to be paid by Owner. The Department has already incurred and will in the future incur costs associated with the administration of this Covenant. Therefore, the Covenantor hereby covenants for the Covenantor and for all subsequent Owners that, pursuant to California Code of

Regulations, title 22, section 67391.1(h), the Owner agrees to pay the Department's reasonable administrative oversight costs in administering the Covenant.

ARTICLE IV
RESTRICTIONS AND REQUIREMENTS

4.01. Prohibited Uses. The Property shall not be used for any of the following purposes without advance written approval from the Department under Sections 6.01 and 6.02:

(a) A residence, including any mobile home or factory built housing, constructed or installed for use as residential human habitation.

(b) A hospital for humans.

(c) A public or private school for persons under 21 years of age.

(d) A day care center for children.

4.02. Soil Management.

(a) No activities that will disturb the soil at or below 2.5 feet below grade (e.g., excavation, grading, removal, trenching, filling, earth movement, mining, or drilling) shall be allowed in areas with identified exceedances of residential screening levels, as depicted by the shaded areas in Exhibit D on the Property without a Soil Management Plan approved by the Department in advance.

(b) Any contaminated soils, in areas with identified exceedances of residential screening levels as depicted by the shaded areas in Exhibit D, brought to the surface by grading, excavation, trenching or backfilling shall be managed in accordance with an approved Soil Management Plan and all other applicable provisions of state and federal law.

4.03. Prohibited Activities. The following activities shall not be conducted at the Property:

(a) Drilling for any water, oil, or gas without prior written approval by the Department.

(b) Extraction of groundwater except as approved by the Department.

4.04. Non-Interference with groundwater monitoring wells.

(a) The groundwater monitoring wells shall not be altered without prior written approval by the Department.

(b) All uses and development of the Property shall preserve the physical accessibility to and integrity of the groundwater monitoring wells unless otherwise approved in writing by the Department.

4.05. Access for Department. The Department shall have reasonable right of entry and access to the Property for inspection, monitoring, and other activities consistent with the purposes of this Covenant as deemed necessary by the Department in order to protect the public health or safety, or the environment.

4.06. Access for Implementing Operation and Maintenance. The entity or person responsible for implementing the Operation and Maintenance Plan shall have reasonable right of entry and access to the Property for the purpose of implementing the Operation and Maintenance Plan until the Department determines that no further Operation and Maintenance is required.

4.07. Inspection and Reporting Requirements. The Owner shall conduct an annual inspection of the Property verifying compliance with this Covenant, and shall submit an annual inspection report to the Department for its approval by January 31st of each year. The annual inspection report must include the dates, times, and names of those who conducted the inspection and reviewed the annual inspection report. It also shall describe how the observations were performed that were the basis for the

statements and conclusions in the annual inspection report (e.g., drive by, fly over, walk in, etc.). If violations are noted, the annual inspection report must detail the steps taken to return to compliance. If the Owner identifies any violations of this Covenant during the annual inspections or at any other time, the Owner must within 10 days of identifying the violation: determine the identity of the party in violation, send a letter advising the party of the violation of the Covenant, and demand that the violation ceases immediately. Additionally, copies of any correspondence related to the violation of this Covenant shall be sent to the Department within 10 days of its original transmission.

ARTICLE V
ENFORCEMENT

5.01. Enforcement. Failure of the Owner or Occupant to comply with this Covenant shall be grounds for the Department to require modification or removal of any Improvements constructed or placed upon any portion of the Property in violation of this Covenant. Violation of this Covenant, including but not limited to, failure to submit, or the submission of any false statement, record or report to the Department, shall be grounds for the Department to pursue administrative, civil, or criminal actions, as provided by law.

ARTICLE VI
VARIANCE, TERMINATION, AND TERM

6.01. Variance from Restriction. Any person may apply to the Department for a written variance from a restriction imposed by this Covenant. Such application shall be made in accordance with Health and Safety Code section 25223.

6.02 Removal of Restriction. Any person may apply to the Department to remove a restriction imposed by this Covenant. Such application shall be made in accordance with Health and Safety Code section 25224.

6.03 Term. Unless ended in accordance with paragraph 6.02, by law, or by the Department in the exercise of its discretion, this Covenant shall continue in effect in perpetuity.

ARTICLE VII
MISCELLANEOUS

7.01. No Dedication Intended. Nothing set forth in this Covenant shall be construed to be a gift or dedication, or offer of a gift or dedication, of the Property, or any portion thereof to the general public or anyone else for any purpose whatsoever.

7.02. Recordation. The Covenantor shall record this Covenant, with all referenced Exhibits, in the County of Alameda within thirty (30) days of the Covenantor's receipt of a fully executed original.

7.03. Notices. Whenever any person gives or serves any Notice ("Notice" as used herein includes any demand or other communication with respect to this Covenant), each such Notice shall be in writing and shall be deemed effective: (1) when delivered, if personally delivered to the person being served or to an officer of a corporate party being served, or (2) three (3) business days after deposit in the mail, if mailed by United States mail, postage paid, certified, return receipt requested:

To Owner: Redemco LLC
395 Mill Creek Circle
Vail, Colorado 81657
Attention: Ann Becher-Smead

and

To Department: Department of Toxic Substances Control
700 Heinz Avenue
Berkeley, California 94710
Attention: Nina Bacey, Project Manager

Any party may change its address or the individual to whose attention a Notice is to be

sent by giving written Notice in compliance with this paragraph.

7.04. Partial Invalidity. If this Covenant or any of its terms are determined by a court of competent jurisdiction to be invalid for any reason, the surviving portions of this Covenant shall remain in full force and effect as if such portion found invalid had not been included herein.

7.05. Statutory References. All statutory references include successor provisions.

7.06. Incorporation of Attachments. All attachments and exhibits to this Covenant are incorporated herein by reference.

IN WITNESS WHEREOF, the Parties execute this Covenant.

Covenantor: Redemco, L.L.C.

By: Ann Becher Smead

Title: Ann Becher Smead
Vice President, Redemco, L.L.C.

Date: August 27, 2012

Department of Toxic Substances Control:

By: K. M. Toth

Title: Karen M. Toth, Unit Chief

Date: 8/31/2012

a.k.a. Karen Marie Toth

State of ~~California~~ Colorado
County of Eagle

On August 27 before me, FRANK R McNEILL
(Name of Notary Public and Title)

personally appeared Ann Becher Smead, who proved to me on the basis of satisfactory evidence to be the person(s) whose name(s) is/are subscribed to the within instrument and acknowledged to me that he/she/they executed the same in his/her/their authorized capacity(ies), and that by his/her/their signature(s) on the instrument the person(s), or the entity upon behalf of which the person(s) acted, executed the instrument.

I certify under PENALTY OF PERJURY under the laws of the State of California that the foregoing paragraph is true and correct.

WITNESS my hand and official seal,

Frank R McNeill (seal)
Signature of Notary Public

FRANK R. McNEILL
NOTARY PUBLIC
STATE OF COLORADO
My Commission Expires 03/24/2018

State of California

County of ALAMEDA

On 8/31/12 before me, FRANK Piscitelli, Notary Public
(Name of Notary Public and Title)

personally appeared KAREN MARIA Toth, who proved to me on the basis of satisfactory evidence to be the person(s) whose name(s) is/are subscribed to the within instrument and acknowledged to me that he/she/they executed the same in his/her/their authorized capacity(ies), and that by his/her/their signature(s) on the instrument the person(s), or the entity upon behalf of which the person(s) acted, executed the instrument.

I certify under PENALTY OF PERJURY under the laws of the State of California that the foregoing paragraph is true and correct.

WITNESS my hand and official seal,

(seal)
Signature of Notary Public

FRANK PISCITELLI
COMM. # 1910496
NOTARY PUBLIC - CALIFORNIA
ALAMEDA COUNTY
MY COMM. EXP. NOV. 22, 2014

EXHIBIT "A"

Description

REAL PROPERTY in the City of San Leandro, County of Alameda, State of California, described as follows:

PARCEL 1:

A PORTION of that certain 28.866 acre tract of land described in the deed from C. R. Adams, et ux, to McGuire and Hester, a California corporation, dated December 22, 1954, recorded December 24, 1954 in book 7619 of Official Records of Alameda County, page 420, (AJ/117215) described as follows:

BEGIN at the eastern extremity of that certain curve having a radius of 20 feet, which connects the southeastern line of Adams Avenue, with the southwestern line of Hester Street; as said curve, avenue and street are shown on the map of "Tract 1606", filed October 11, 1955 in book 36 of Maps, page 63, in the office of the County Recorder of Alameda County; run then along said line of Hester Street and its direct production, southeasterly, as described in Parcel 1 of deed by McGuire and Hester, a corporation, to City of San Leandro, a municipal corporation, dated July 2, 1956, recorded July 5, 1956 in book 8080 of Official Records of Alameda County, page 11, (AL/70905), south 60° 14' 20" east 1356 feet; then continue along said line of Hester Street, southeasterly on the arc of a curve to the right, with a radius of 20 feet, tangent to the last mentioned course, 17.91 feet and southerly and southeasterly on the arc of a reverse curve to the left, with a radius of 60 feet, tangent to the last mentioned arc, 64.68 feet to the actual point of commencement; then continue on the arc of said curve to the left, having a radius of 60 feet, easterly, northeasterly and westerly, tangent to the last mentioned arc, a distance of 204.23 feet to a point on the exterior boundary line of the parcel of land described in the deed from McGuire and Hester, a California corporation, to Tara Development Company, a corporation, dated April 6, 1959, recorded April 13, 1959 in book 8992 of Official Records of Alameda County, page 317, (AQ/42551), said point being the western extremity of that certain course having a radius of 20 feet and an arc distance of 22.52 feet; then along the exterior boundary line of said last mentioned parcel of land, the two

following courses and distances: easterly and northeasterly along the arc of said curve having a radius of 20 feet to the left from a tangent which bears south 85° 43' 26" east, a distance of 22.52 feet; and then north 29° 45' 40" east, tangent to said last mentioned arc, 230.05 feet to a point on the northeastern line of said 28.866 acre tract of land; then along the exterior boundary line of said 28.866 acre tract of land, the five following courses and distances: south 60° 14' 20" east 572.97 feet to an angle point thereon, north 78° east 116.65 feet, then south 13° 07' 08" east 80 feet, south 78° west 421.78 feet and south 77° 33' west 344.14 feet until intersected by a line drawn south 12° 27' east from the actual point of commencement; and then along said line, so drawn, north 12° 27' west 177.96 feet to the actual point of commencement.

PARCEL 2:

A NON-EXCLUSIVE PERPETUAL EASEMENT AND RIGHT OF WAY for railway spur tracks and all reasonable uses connected therewith, including maintenance and operation of freight cars together with the right to grant said easement to the Southern Pacific Company, a corporation, and also a non-exclusive easement and right of way for drainage purposes, together with the right to grant said drainage easement to the City of San Leandro, a municipal corporation, appurtenant to and for the use of the owner or owners of Parcel 1 above described, and any subsequent subdivision or subdivisions thereof, described as follows:

A PORTION of that certain 28.866 acre tract of land described in the deed from C. R. Adams, et ux, to McGuire and Hester, a California corporation, dated December 22, 1954, recorded December 24, 1954 in book 7519 of Official Records of Alameda County, page 420, described as follows:

BEGIN at the southeastern corner of the parcel of land designated as Parcel 1 in the deed from Joseph P. Hester, a widower, to Utility Trailer Sales Company of San Francisco, Inc., a corporation, dated February 10, 1961, recorded February 14, 1961 on Reel 264, Image 854, (AS/18624) Alameda County Records; run then along the eastern boundary line thereof, north 12° 27' west 20 feet; then south 77° 33' west 348.68 feet; then westerly along the arc of a curve to the right, with a radius of 291.90 feet, tangent to the last mentioned course, 118.37 feet to a point on the northwestern boundary line of said Parcel 1 (AS/18624); then along said last mentioned line, south 29° 45' 40" west 7.26 feet to a point on the southwestern boundary line of said 28.866 acre

tract of land; then along the last mentioned line, south 55° 31' east 52.42 feet to a point on the southern boundary line of said 28.866 acre tract of land; and then along the last mentioned line, north 77° 33' east 432.92 feet to the point of beginning.

Parcel 3:

BEGINNING at the northeastern corner of the parcel of land conveyed by Gertrude A. McNamara, et al, to Robert L. Osborne by deed dated August 27, 1945, recorded September 12, 1945, in book 4773 of Official Records of Alameda County, page 365, and running thence along the northern line of said parcel of land south 78° west, 421.78 feet to an angle point therein; thence continuing along said northern line south 77° 33' west 777.06 feet to the northeastern line of the right of way, 60 feet wide of the Southern Pacific Company; thence along the last named line south 55° 31' east, 428.91 feet; thence north 77° 33' east, 82.13 feet; thence south 55° 31' east, 190.20 feet; thence north 77° 33' east, 698.582 feet to the eastern line of said parcel of land; and thence along the last named line north 13° 02' west, 449.01 feet to the point of beginning, containing 10 acres, more or less;

Parcel 4:

a non-exclusive, irrevocable easement for roadway and incidental purposes (including the installation, maintenance and removal of water lines) in favor of Kaiser Aerospace & Electronics Corporation, its tenants, servants, visitors and licensees, assignees and successors in interest, for all purposes connected with the use of the above described premises, and as appurtenant to the above described premises, over and upon the following described properties situate in the Township of Eden, County of Alameda, California, more particularly described as follows, to-wit:

PORTION of the tract of land conveyed by Gertrude A. McNamara, et al, to Robert L. Osborne by deed dated August 27, 1945, recorded September 12, 1945, in book 4773 of Official Records of Alameda County, California, page 365, described as follows:

Parcel A.

BEGINNING at a point on the northeastern line of Bay Shore Boulevard, or County Road No. 1434, distant thereon north 45° 04' west 1247.30 feet from the northwestern line of Davis Street, or County Road No. 1434; and running thence along

said line of Bay Shore Boulevard north 45° 04' west 40 feet to the northern line of said tract of land described in said deed; thence along the last named line north 44° 56' east 218.25 feet to the southwestern line of the right-of-way, 60 feet wide, of the Southern Pacific Company; thence along the last named line south 55° 31' east 40.67 feet to a line drawn north 44° 56' east from the point of beginning; and thence south 44° 56' west 225.63 feet to the point of beginning.

CONTAINING 0.203 of an acre, more or less.

Parcel B.

BEGINNING at a point on the northeastern line of the right-of-way 60 feet wide of Southern Pacific Company which is south 55° 31' east 428.91 feet from the intersection of the north line of the parcel of land conveyed by Gertrude A. McNamara et al, to Robert L. Osborne by deed dated August 27, 1945, recorded September 12, 1945, in Book 4773 of Official Records, Alameda County, at page 365, with the northeastern line of said right-of-way 60 feet wide of the Southern Pacific Company; running thence from said point of beginning north 77° 33' east 82.13 feet; running thence in a southwesterly direction to a point on the northeastern line of the said right-of-way 60 feet wide of the Southern Pacific Company, which point bears north 44° 56' east from a point on the northeastern line of Bay Shore Boulevard or County Road No. 1434, distant thereon north 45° 04' west 1,247.30 feet from the northwestern line of Davis Street or County Road No. 1434; running thence north 55° 31' west along the northeastern line of the said right-of-way 60 feet wide of the Southern Pacific Company to the point of beginning.

TOGETHER with a non-exclusive perpetual easement (subject to abandonment by Kaiser Aerospace & Electronics Corporation, or its assigns at its or their option) appurtenant to Parcel 3 over and upon the following described property situate in the Township of Eden, County of Alameda, California, which easement is described as follows:

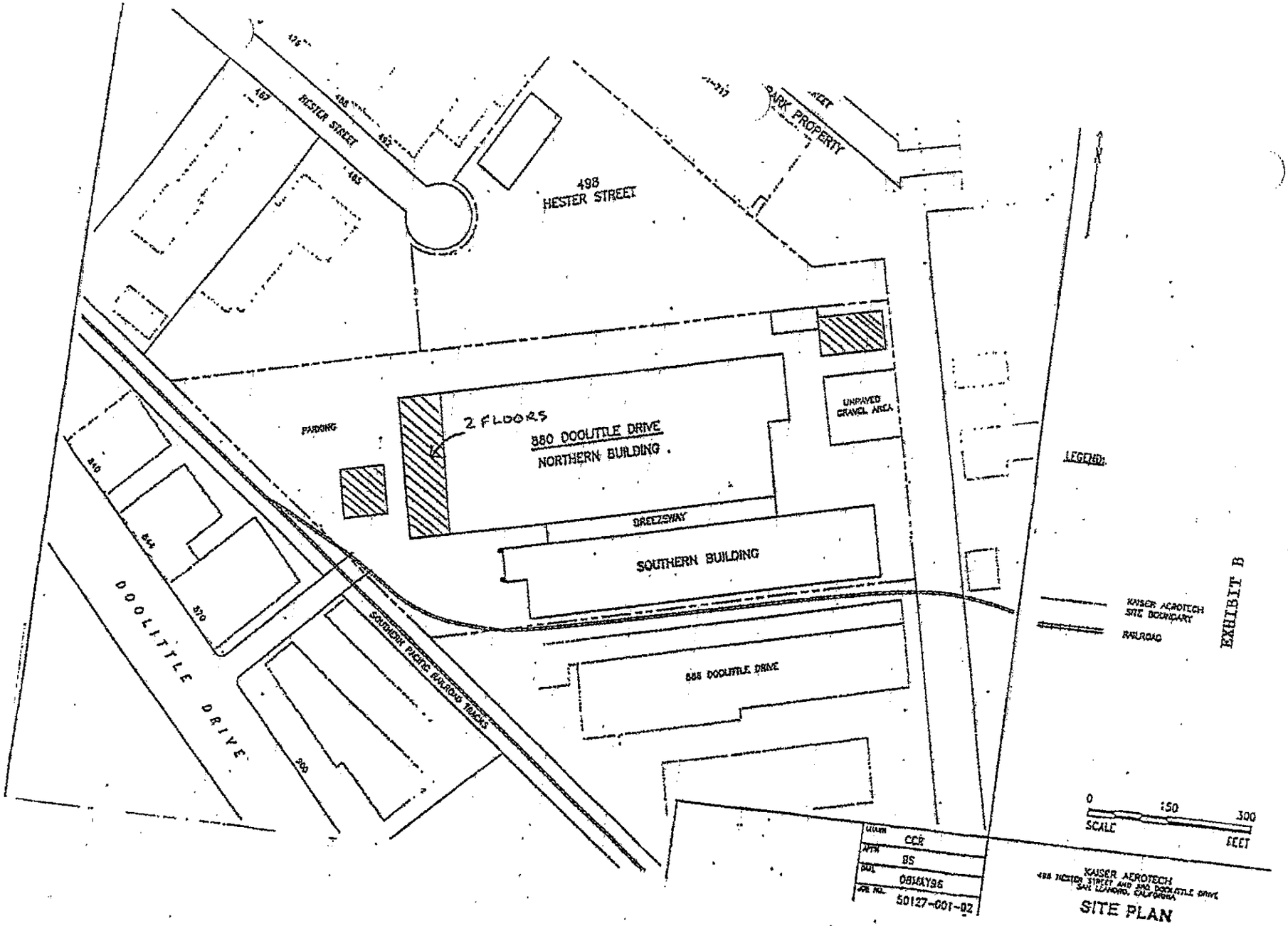
AN EASEMENT lying seven and one-half feet each side of the following described center-line:

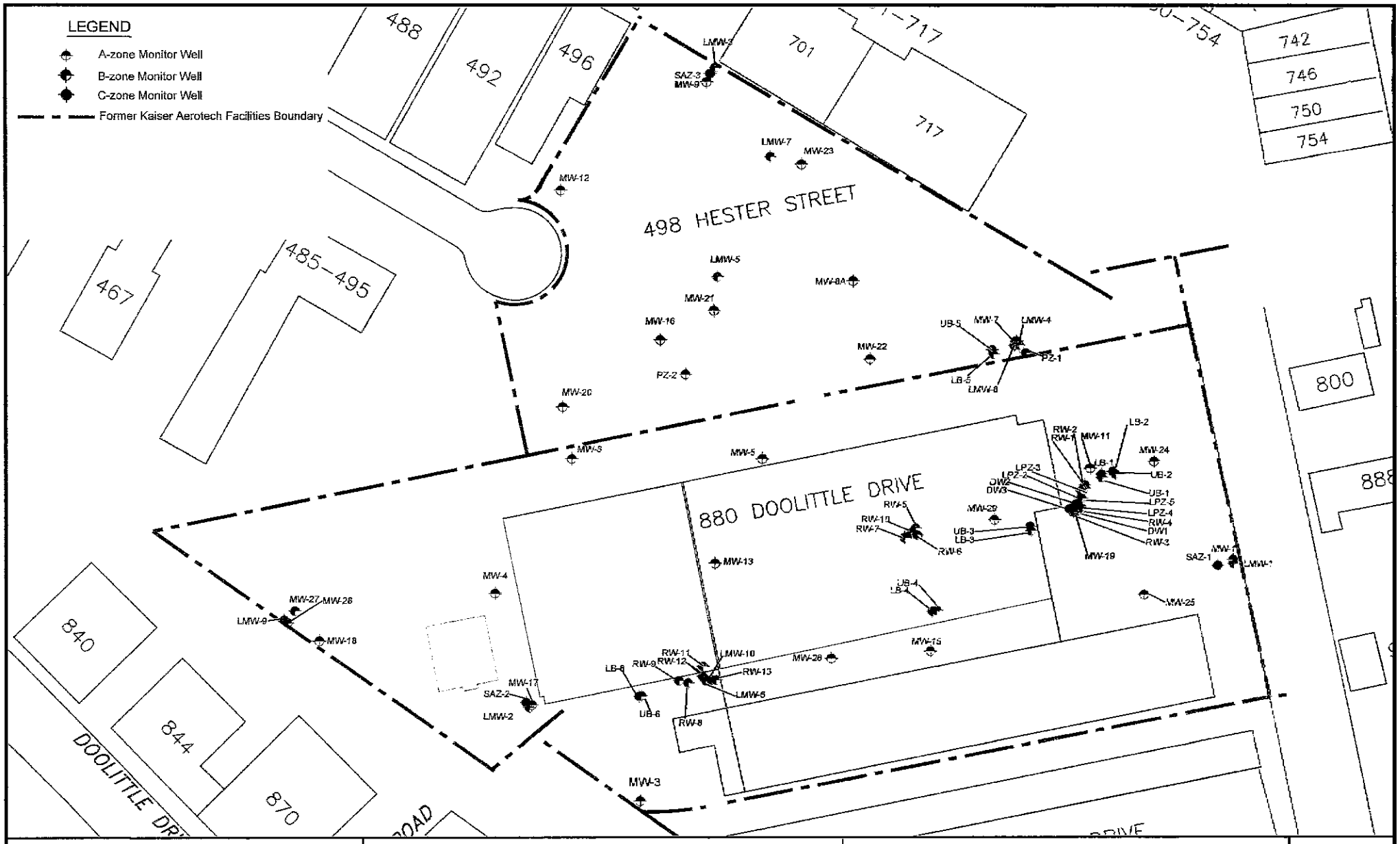
COMMENCING at a point on the northeastern line of Doolittle Drive (formerly known as County Road No. 1434 or Andrews Landing Road) distant thereon north 45° 04' west 1287.30 feet from the intersection thereof with the northwestern line of Davis Street as said street now exists; thence north 44° 56' east 279.26 feet to the northeastern line of the right-of-way of the Southern Pacific Company, 60 feet wide; thence north 77° 33' east 21.97 feet to the actual point of beginning for this description; running thence parallel to said

northeastern line of the right-of-way of the Southern Pacific Company south 55° 31' east 1090.99 feet to an angle point; thence south 47° 15' 15" east 176.90 feet to the said northwestern line of the Southern Pacific right-of-way;

for the construction, installation and maintenance of a 10" sewer line for the joint use of Kaiser Aerospace & Electronics Corporation and the owners, users and occupants of the said premises over which said easement traverses; provided, however, that Kaiser Aerospace & Electronics Corporation shall at all times be entitled to the priority use of the capacity of said sewer line comparable to the capacity of an 8" sewer line; the cost and maintenance of said sewer line to be borne jointly in the same proportion by Kaiser Aerospace & Electronics Corporation, and the owners, users or occupants of the said premises over which said easement traverses.

Parcel 5: The following easement (i) the easements described in a Deed dated January 18, 1954, executed by Robert L. Osborne and Katherine A. Osborne, recorded January 27, 1954, in Book 7236 of Official Records of Alameda County, California, page 165, et seq., and (ii) in that certain easement dated August 16, 1951, executed by Robert L. Osborne and Katherine A. Osborne, recorded September 14, 1951, in Book 6535 of Official Records of Alameda County, California, page 277, which last mentioned easement was made perpetual and appurtenant to Parcel 3 by said Deed dated January 18, 1954; which easements were transferred from Wilco Properties, Inc. to Kaiser Industries Corporation by a Grant Deed dated October 31, 1957, recorded November 6, 1957, in Book 8514, page 511, et seq., of Official Records of Alameda County, California.


HESTER STREET
PARK PROPERTY
498
HESTER STREET
PARKING
2 FLOORS
880 DOOLITTLE DRIVE
NORTHERN BUILDING
UNPAVED GRAVEL AREA
BREEZEWAY
SOUTHERN BUILDING
888 DOOLITTLE DRIVE
DOOLITTLE DRIVE
SOUTHERN PACIFIC RAILROAD TRACKS
LEGEND:
KAISER AEROTECH SITE BOUNDARY
RAILROAD
EXHIBIT B
0
150
300
SCALE
FEET
DRAWN CCR
APPR BS
DATE 08MAY96
JOB NO. 50127-001-02
KAISER AEROTECH
498 HESTER STREET AND 880 DOOLITTLE DRIVE
SAN LEANDRO, CALIFORNIA
SITE PLAN



SGI environmental — THE SOURCE GROUP, INC.
3478 BUSKIRK AVENUE, SUITE 100
PLEASANT HILL, CA 94523

FORMER KAISER AEROTECH FACILITIES
880 DOOLITTLE DRIVE & 498 HESTER ST
SAN LEANDRO, CALIFORNIA

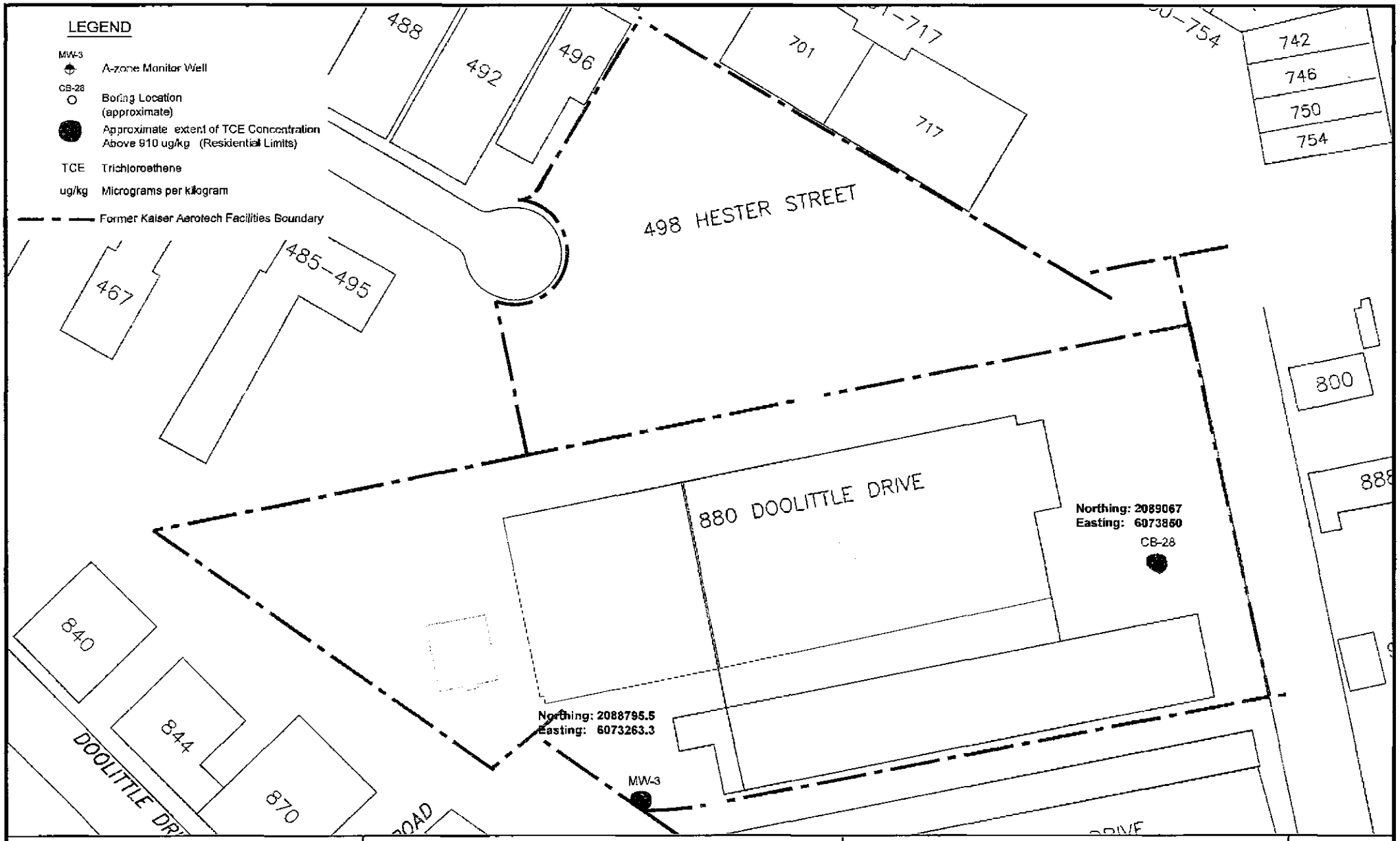
Site Plan

PROJECT NO.	DATE	DR.BY:	APP. BY:
01.KAEC.001.19	07/26/2012	GT	KR

0 150 300
HORIZONTAL SCALE IN FEET

N

FIGURE C



THE SOURCE GROUP, INC.
SGI environmental
3478 BUSKIRK AVENUE, SUITE 100
PLEASANT HILL, CA 94523

FORMER KAISER AEROTECH FACILITIES
880 DOOLITTLE DRIVE & 498 HESTER ST
SAN LEANDRO, CALIFORNIA

PROJECT NO.	DATE	DR.BY:	APP. BY:
01.KAEC.001.19	06/27/2012	GT	KR

SHALLOW SOIL (<6 FEET DEPTH) LAND USE RESTRICTION AREA

0 150 300
HORIZONTAL SCALE IN FEET

N

FIGURE D

APPENDIX B

AGREEMENT AND ACKNOWLEDGEMENT STATEMENT

APPENDIX A
SOIL AND GROUNDWATER MANAGEMENT PLAN
AGREEMENT AND ACKNOWLEDGMENT STATEMENT
Leandro Brookshire LLC
880 Doolittle Drive and 498 Hester Street
San Leandro, California

All project personnel and subcontractors are required to sign the following agreement prior to conducting work at the site.

1. I have read and fully understand the *Soil and Groundwater Management Plan* and my individual responsibilities.
2. I agree to abide by the provisions of the *Soil and Groundwater Management Plan*.

Name	Company	Date	Signature

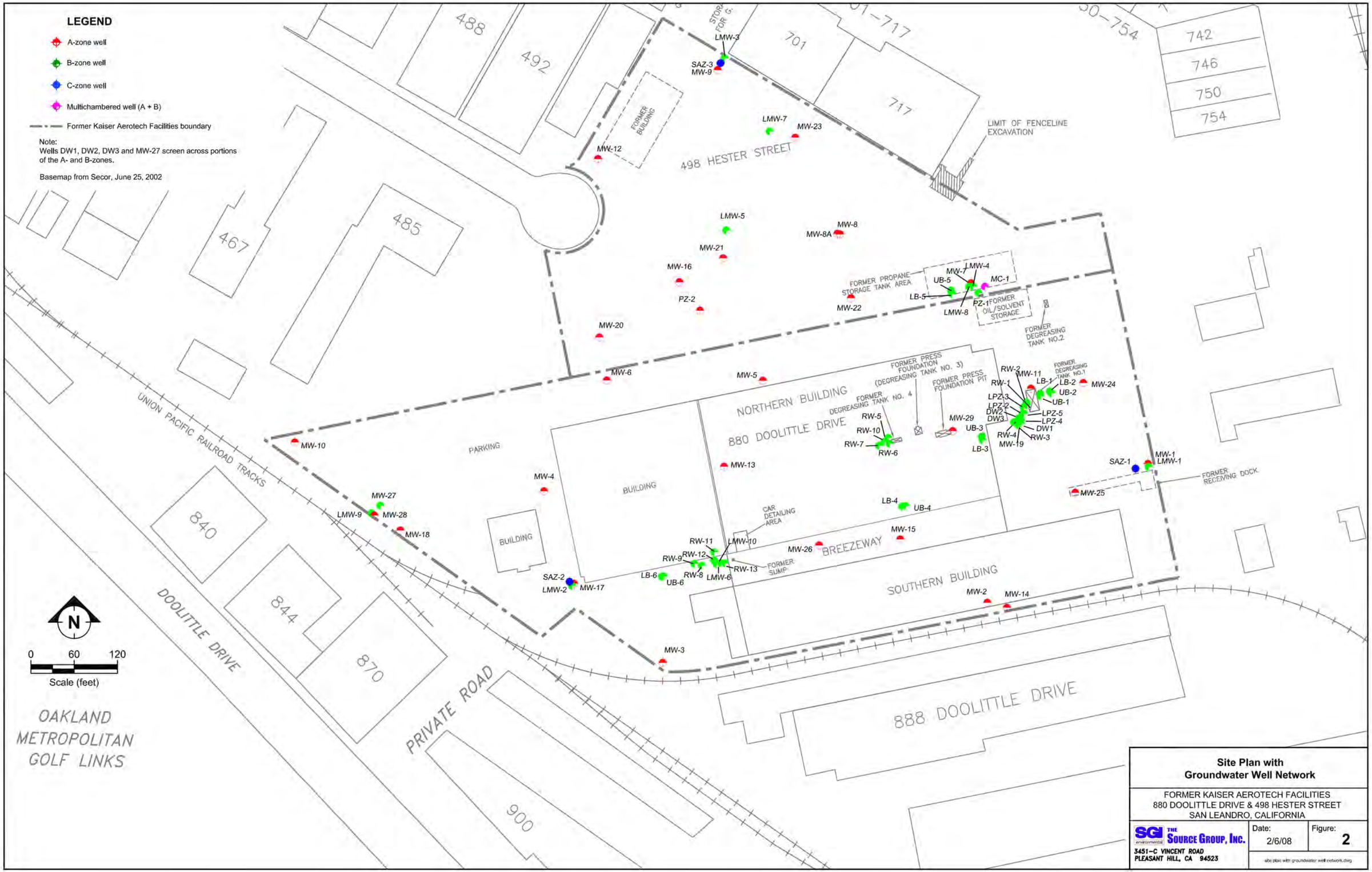
(Add additional sheets if necessary)

APPENDIX C

HISTORICAL SOIL, GROUNDWATER, SUBSLAB VAPOR, INDOOR AIR, AND SOIL VAPOR DATA

APPENDIX C1

PRE-REMEDIATION TCE DISTRIBUTION



Site Plan with Groundwater Well Network

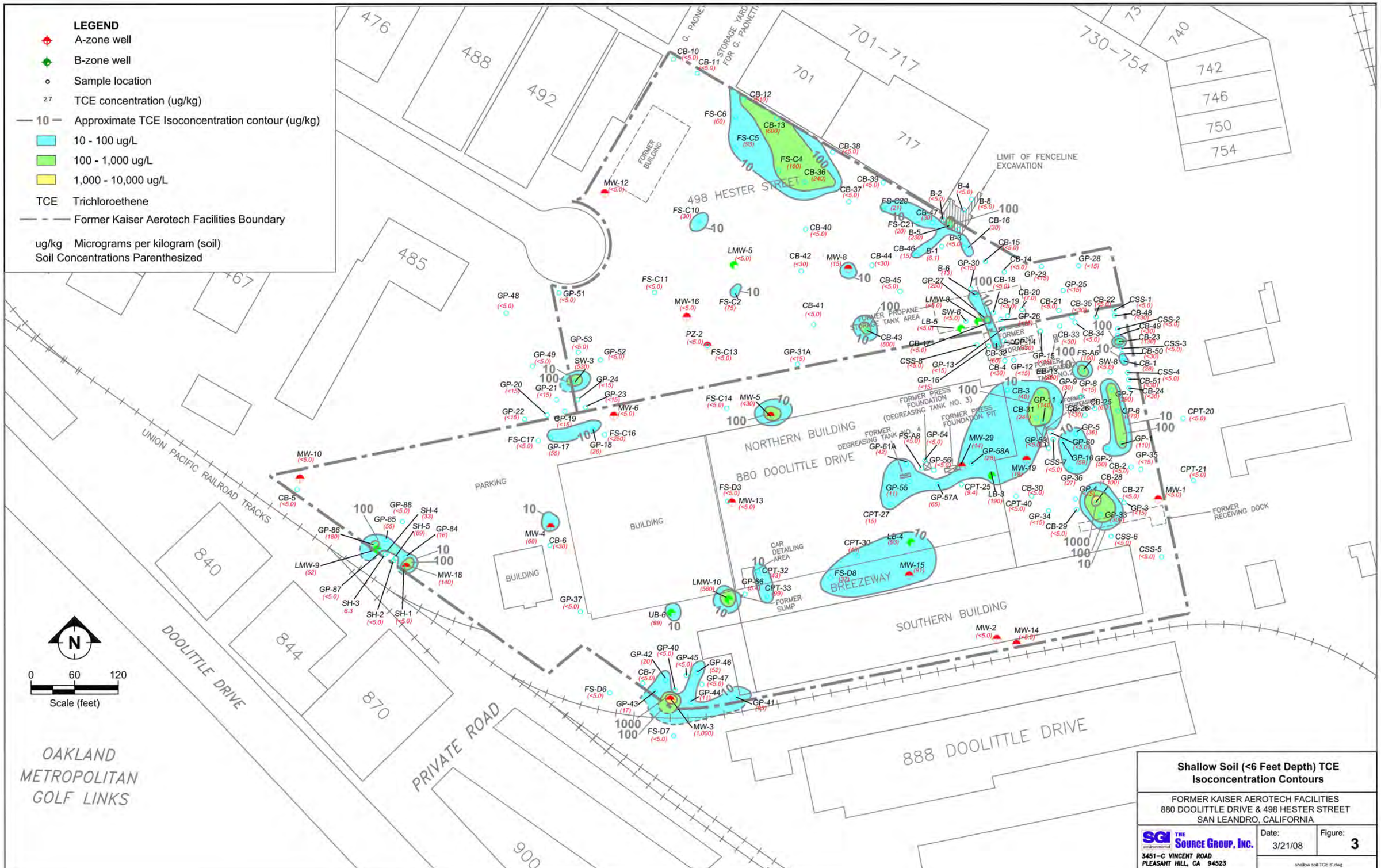
FORMER KAISER AEROTECH FACILITIES
880 DOOLITTLE DRIVE & 498 HESTER STREET
SAN LEANDRO, CALIFORNIA

THE SOURCE GROUP, INC.
3451-C VINCENT ROAD
PLEASANT HILL, CA 94523

Date: 2/6/08

Figure: 2

site plan with groundwater well network.dwg



Shallow Soil (<6 Feet Depth) TCE Isoconcentration Contours

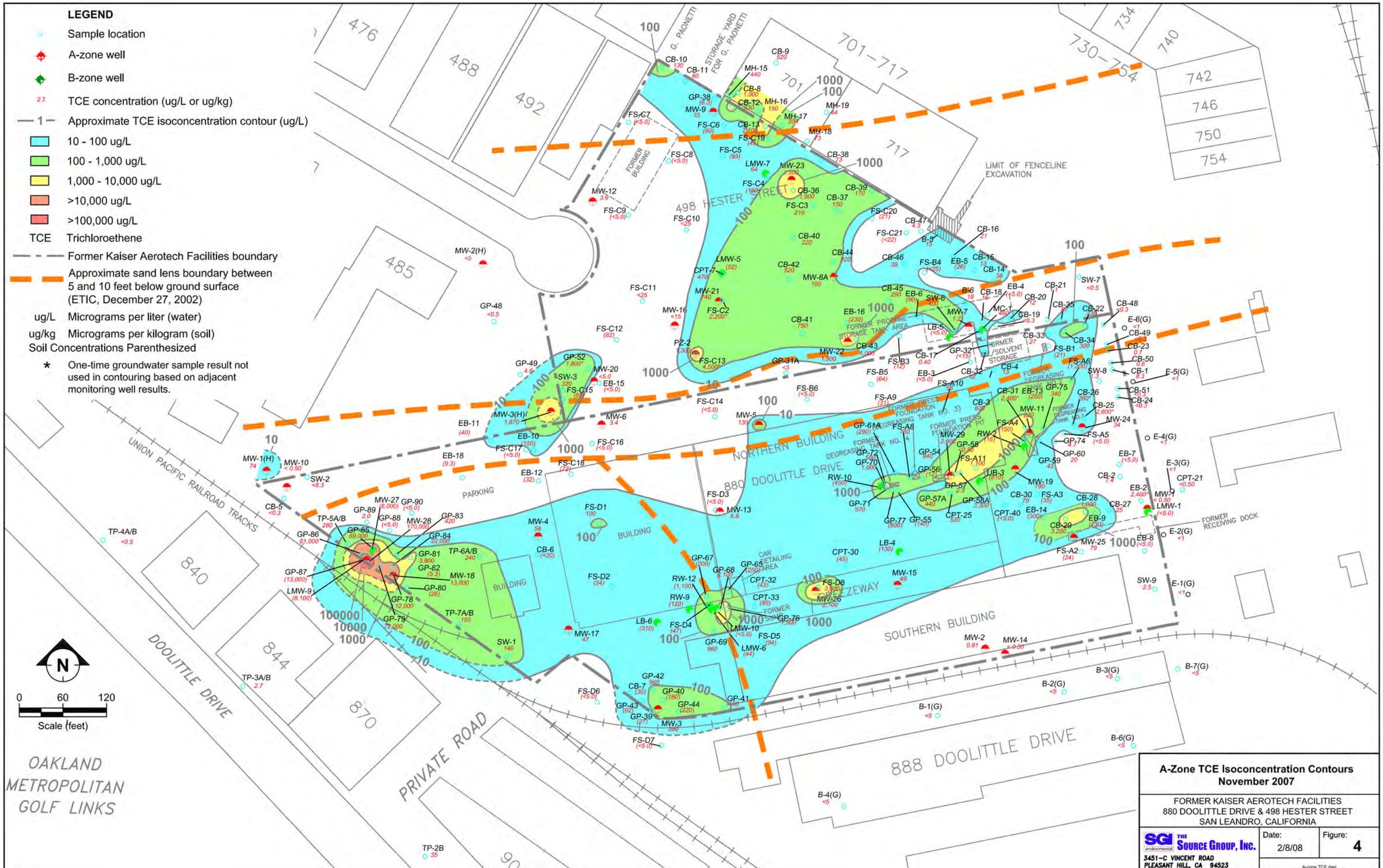
FORMER KAISER AEROTECH FACILITIES
880 DOOLITTLE DRIVE & 498 HESTER STREET
SAN LEANDRO, CALIFORNIA

THE SOURCE GROUP, INC.
3451-C VINCENT ROAD
PLEASANT HILL, CA 94523

Date: 3/21/08

Figure: 3

shallow soil TCE 6'.dwg



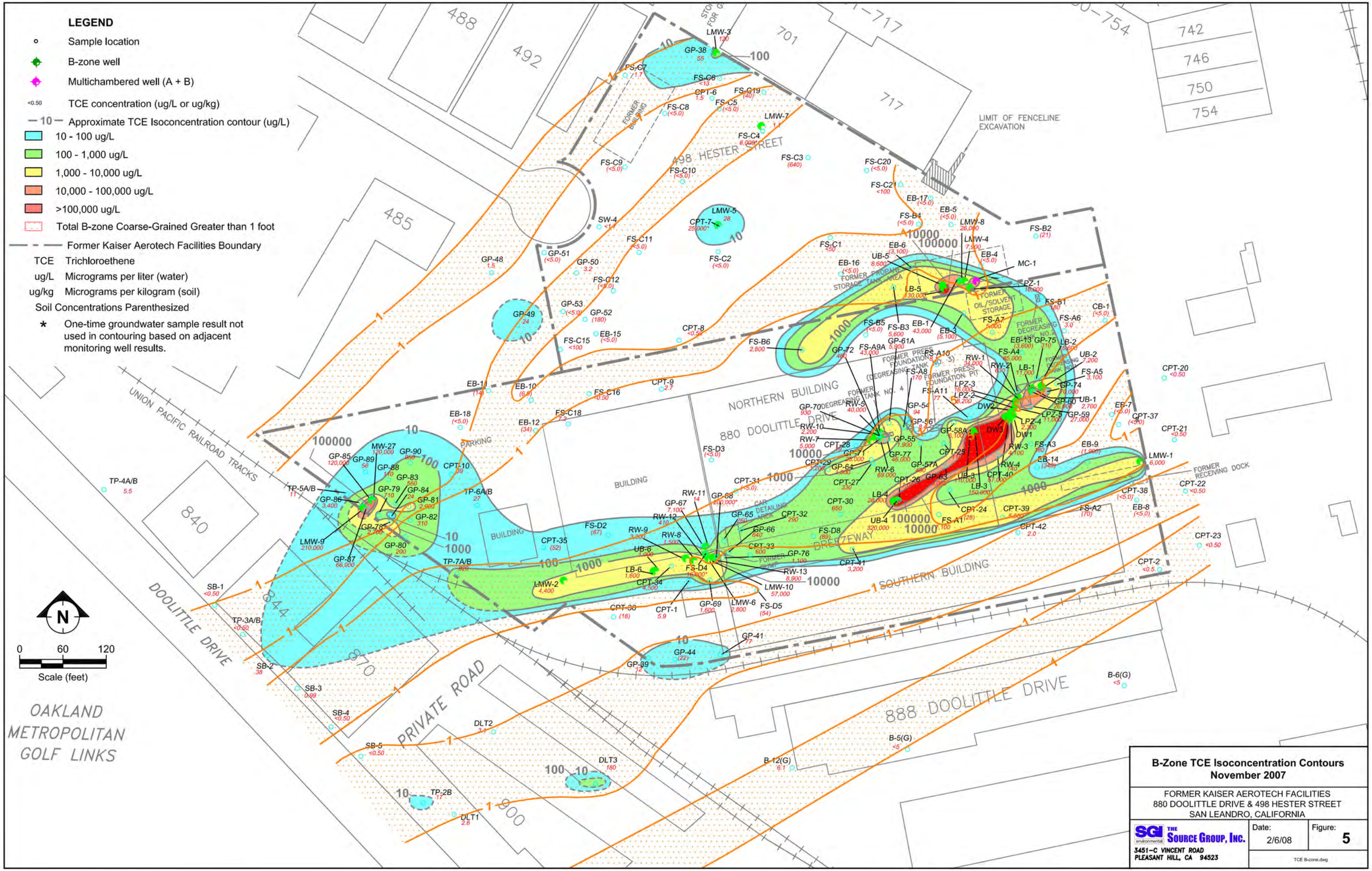
A-Zone TCE Isoconcentration Contours
November 2007

FORMER KAISER AEROTECH FACILITIES
880 DOOLITTLE DRIVE & 498 HESTER STREET
SAN LEANDRO, CALIFORNIA

SGI environmental THE SOURCE GROUP, INC.
3451-C VINCENT ROAD
PLEASANT HILL, CA 94523

Date:	Figure:
2/8/08	4

A-zone TCE.dwg



B-Zone TCE Isoconcentration Contours
November 2007

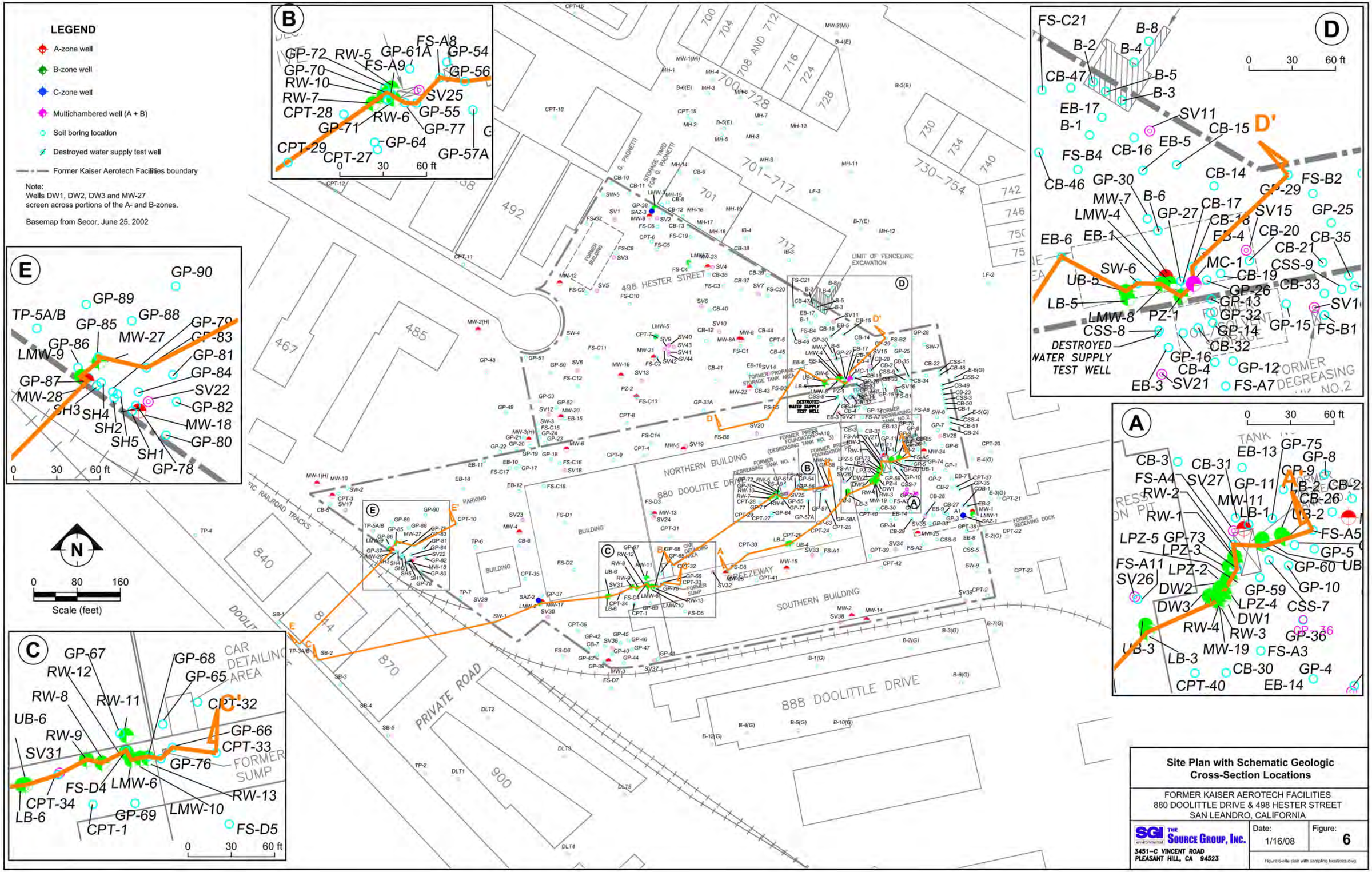
FORMER KAISER AEROTECH FACILITIES
880 DOOLITTLE DRIVE & 498 HESTER STREET
SAN LEANDRO, CALIFORNIA

SGI environmental THE SOURCE GROUP, INC.
3451-C VINCENT ROAD
PLEASANT HILL, CA 94523

Date: 2/6/08

Figure: 5

TCE B-zone.dwg



Site Plan with Schematic Geologic Cross-Section Locations

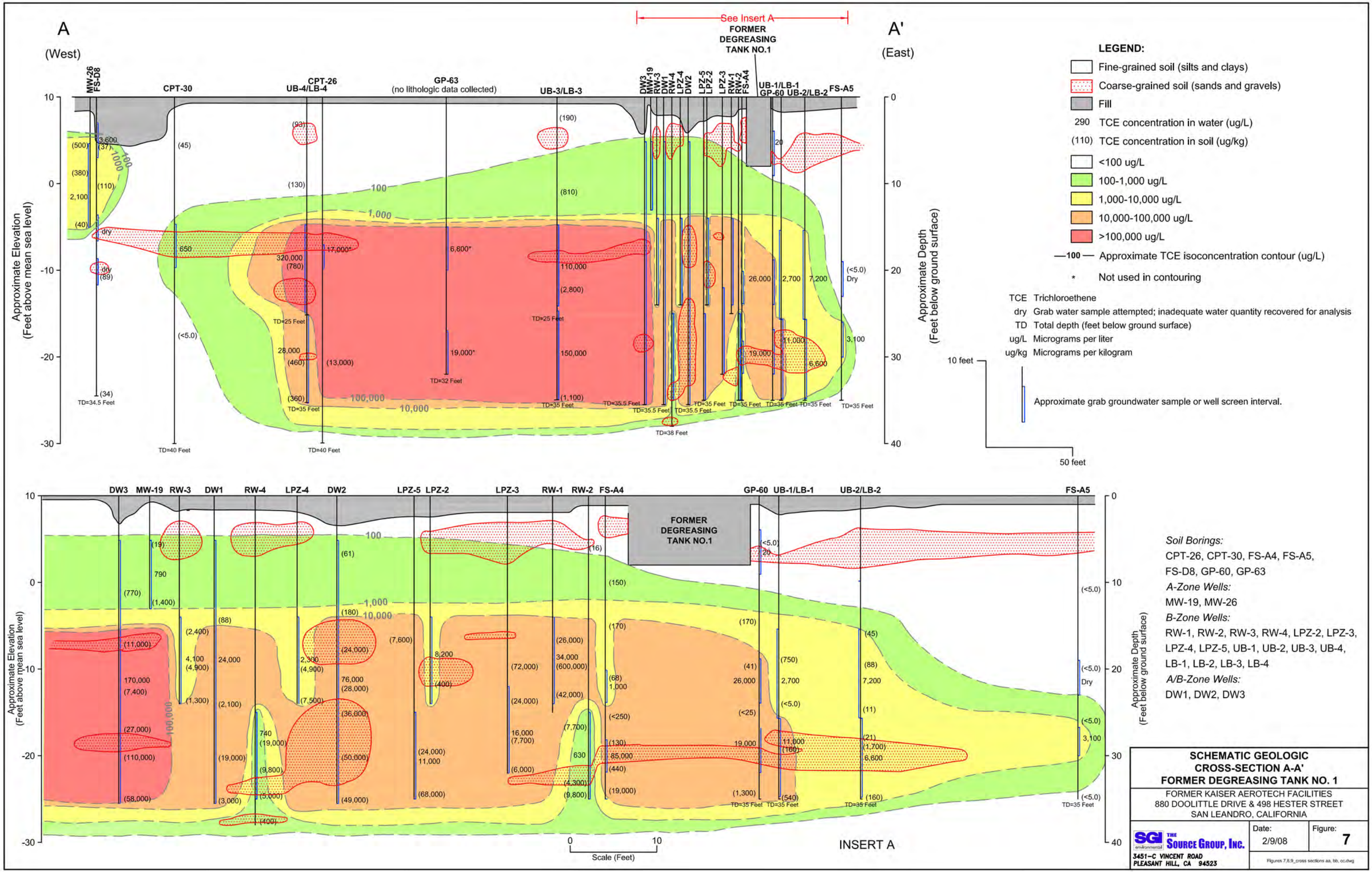
FORMER KAISER AEROTECH FACILITIES
880 DOOLITTLE DRIVE & 498 HESTER STREET
SAN LEANDRO, CALIFORNIA

SGI environmental THE SOURCE GROUP, INC.
3451-C VINCENT ROAD
PLEASANT HILL, CA 94523

Date: 1/16/08

Figure: 6

Figure 6-site plan with sampling locations.dwg



SCHEMATIC GEOLOGIC CROSS-SECTION A-A'
FORMER DEGREASING TANK NO. 1

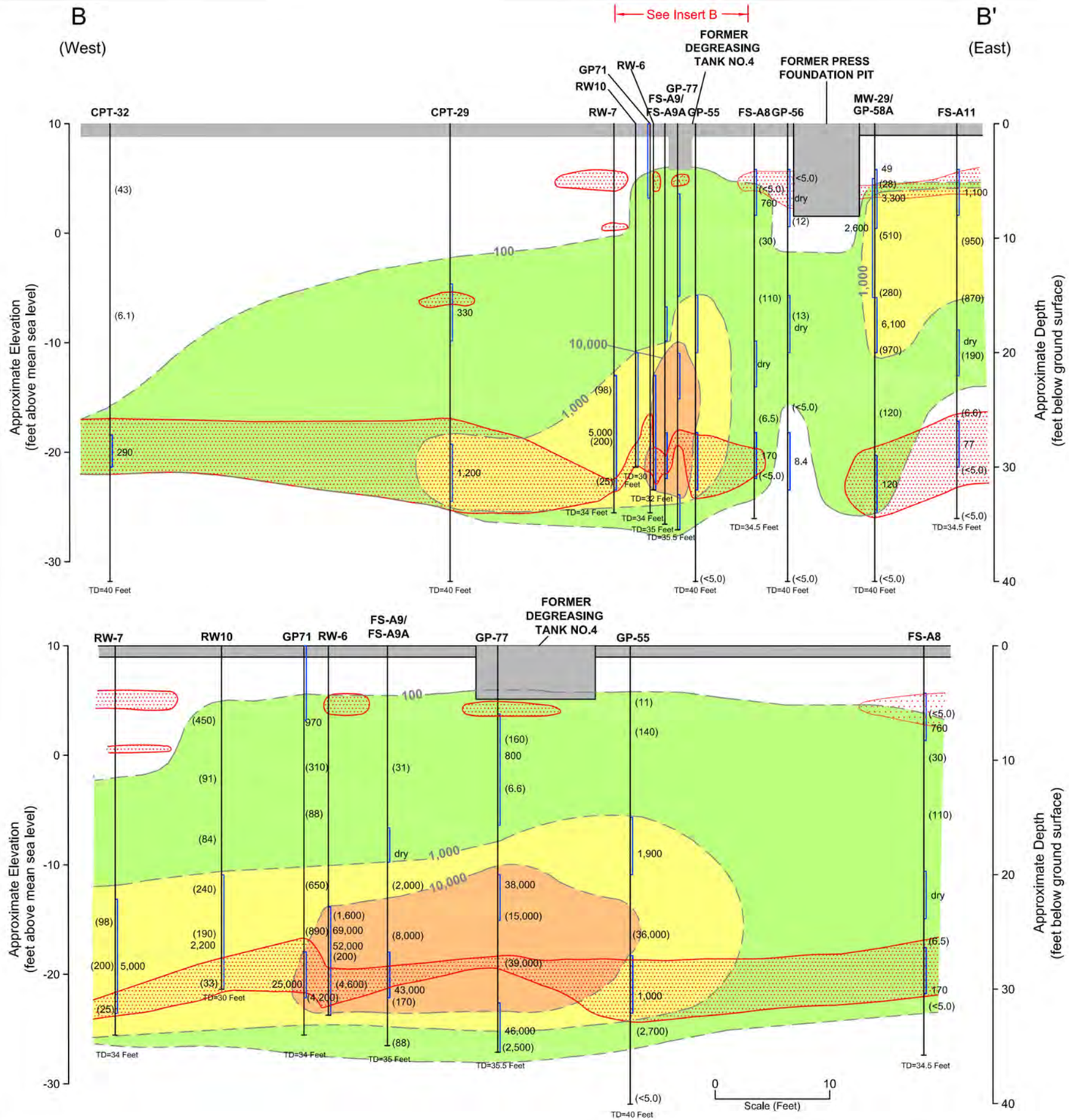
FORMER KAISER AEROTECH FACILITIES
880 DOOLITTLE DRIVE & 498 HESTER STREET
SAN LEANDRO, CALIFORNIA

SGI THE SOURCE GROUP, INC.
3451-C VINCENT ROAD
PLEASANT HILL, CA 94523

Date: 2/9/08

Figure: 7

Figures 7,8,9_cross sections aa, bb, cc.dwg



LEGEND:

- Fine-grained soil (silts and clays)
- Coarse-grained soil (sands and gravels)
- Fill
- 290 TCE concentration in water (ug/L)
- (110) TCE concentration in soil (ug/kg)
- <100 ug/L
- 100-1,000 ug/L
- 1,000-10,000 ug/L
- 10,000-100,000 ug/L

TCE Trichloroethene
dry Grab water sample attempted; inadequate water quantity recovered for analysis
TD Total depth (feet below ground surface)
ug/L Micrograms per liter
ug/kg Micrograms per kilogram

— — 100 — Approximate TCE isoconcentration contour (ug/L)

Soil Borings: CPT-29, CPT-32, FS-A8, FS-A9, FS-A11, GP-55, GP-56, GP-58A, GP-71,GP-77
Wells: RW-7, RW-10, RW-6, MW-29

Approximate grab groundwater sample or well screen interval.

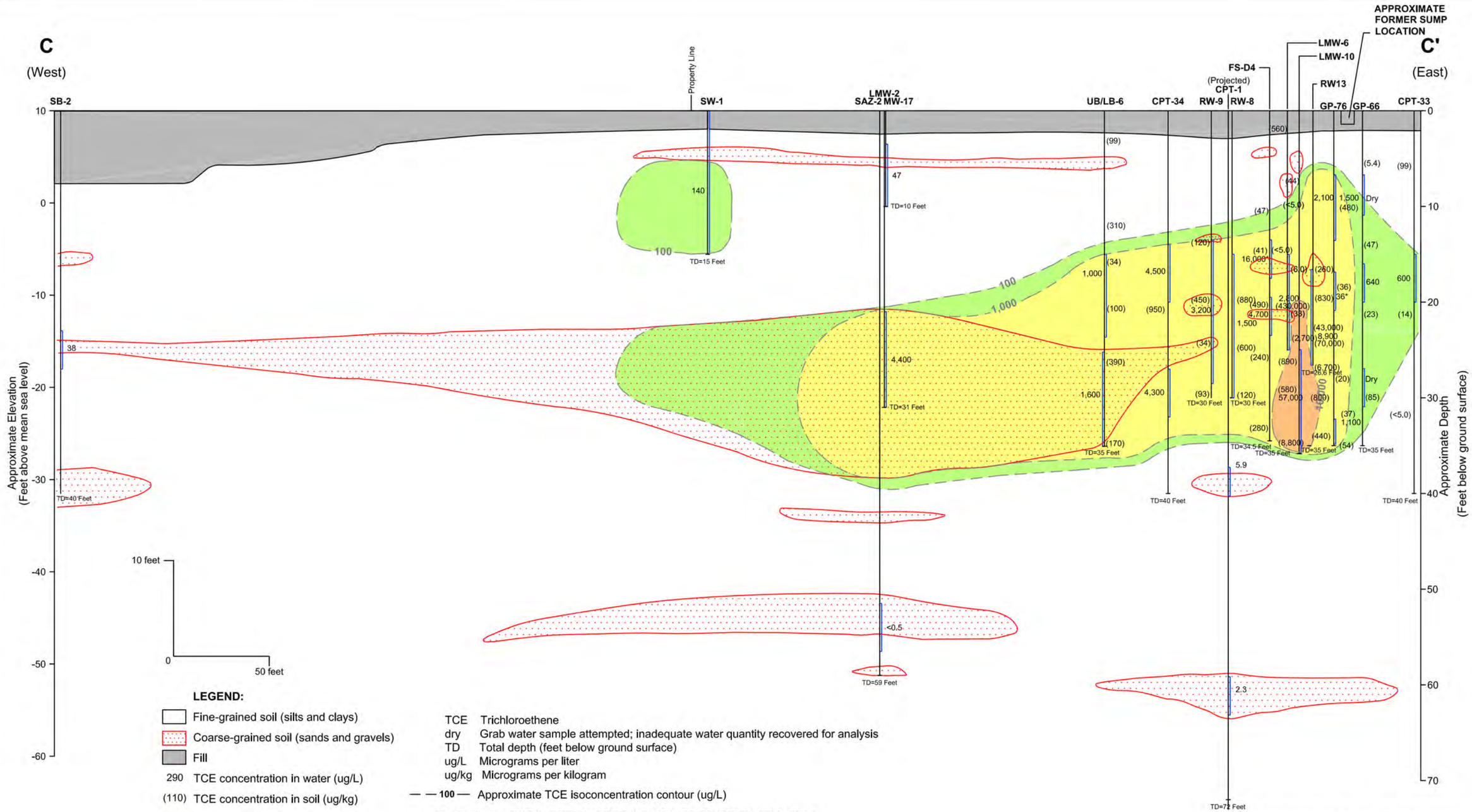
SCHEMATIC GEOLOGIC CROSS SECTION B-B'
FORMER DEGREASING TANK NO. 4

FORMER KAISER AEROTECH FACILITIES
880 DOOLITTLE DRIVE & 498 HESTER STREET
SAN LEANDRO, CALIFORNIA

THE SOURCE GROUP, INC.
3451-C VINCENT ROAD
PLEASANT HILL, CA 94523

Date: 3/21/08
Figure: 8

Figures 7,8,9_section AA,BB,CC.dwg



SCHEMATIC GEOLOGIC CROSS-SECTION C-C'
FORMER BREEZEWAY SUMP

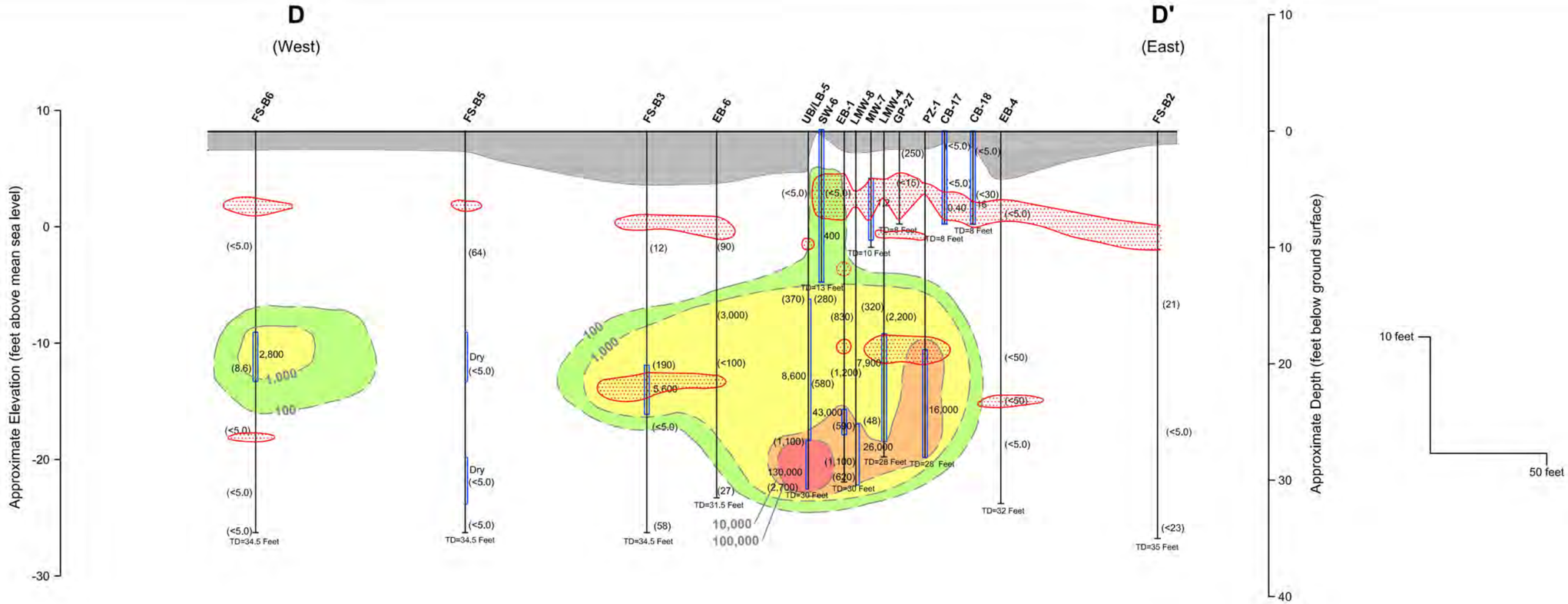
FORMER KAISER AEROTECH FACILITIES
880 DOOLITTLE DRIVE & 498 HESTER STREET
SAN LEANDRO, CALIFORNIA

THE SOURCE GROUP, INC.
3451-C VINCENT ROAD
PLEASANT HILL, CA 94523

Date: 3/21/08

Figure: 9

figures 7,8,9_cross sections AA, BB,CC.dwg



LEGEND:

- Fine-grained soil (silts and clays)
- Coarse-grained soil (sands and gravels)
- Fill
- 290 TCE concentration in water (ug/L)
- (110) TCE concentration in soil (ug/kg)
- <100 ug/L
- 100-1,000 ug/L
- 1,000-10,000 ug/L
- 10,000-100,000 ug/L

TCE Trichloroethene
dry Grab water sample attempted; inadequate water quantity recovered for analysis
TD Total depth (feet below ground surface)
ug/L Micrograms per liter
ug/kg Micrograms per kilogram

— — 100 — Approximate TCE isoconcentration contour (ug/L)

Soil Borings: CB-17, CB-18, EB-1, EB-4, EB-6, FS-B2, FS-B3, FS-B5, FS-B6, GP-27, SW-6
Wells: MW-7, LMW-4, PZ-1, LMW-8, UB-5, LB-5

Approximate grab groundwater sample or well screen interval.

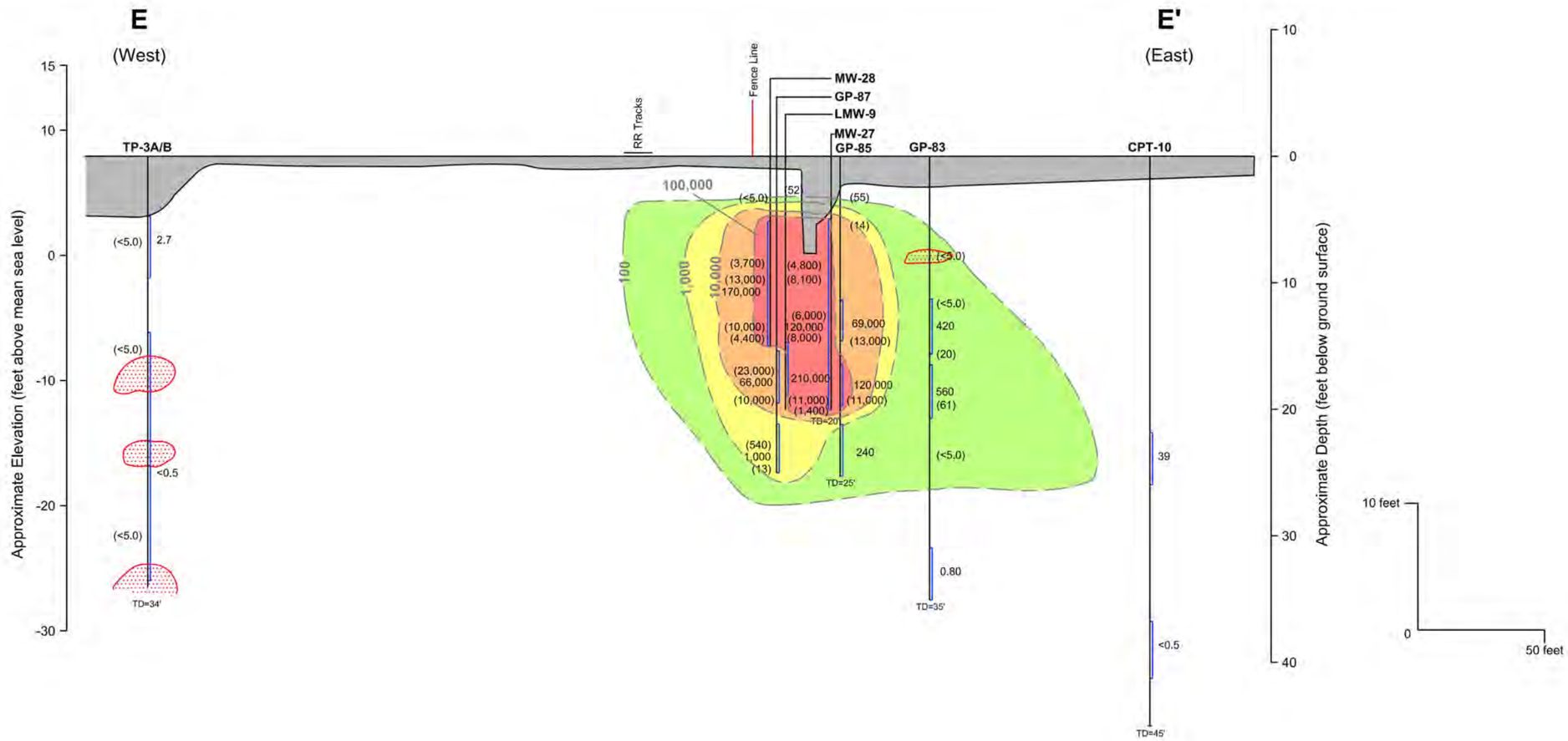
SCHEMATIC GEOLOGIC CROSS-SECTION D-D'
FORMER OIL/SOLVENT STORAGE AREA

FORMER KAISER AEROTECH FACILITIES
880 DOOLITTLE DRIVE & 498 HESTER STREET
SAN LEANDRO, CALIFORNIA

SGI environmental THE SOURCE GROUP, INC.
3451-C VINCENT ROAD
PLEASANT HILL, CA 94523

Date: 3/21/08

Figure: 10



LEGEND:

- Fine-grained soil (silts and clays)
- Coarse-grained soil (sands and gravels)
- Fill
- 290 TCE concentration in water (ug/L)
- (110) TCE concentration in soil (ug/kg)
- <100 ug/L
- 100-1,000 ug/L
- 1,000-10,000 ug/L
- 10,000-100,000 ug/L
- >100,000 ug/L

TCE Trichloroethene
dry Grab water sample attempted; inadequate water quantity recovered for analysis
TD Total depth (feet below ground surface)
ug/L Micrograms per liter
ug/kg Micrograms per kilogram

— — 100 — Approximate TCE isoconcentration contour (ug/L)

Soil Borings: CPT-10, GP-83, GP-85, GP-87, TP-3
A/B-Zone Wells: MW-27, MW-28, LMW-9

Approximate grab groundwater sample or well screen interval.

SCHEMATIC GEOLOGIC CROSS SECTION E-E' WESTERN PROPERTY BOUNDARY

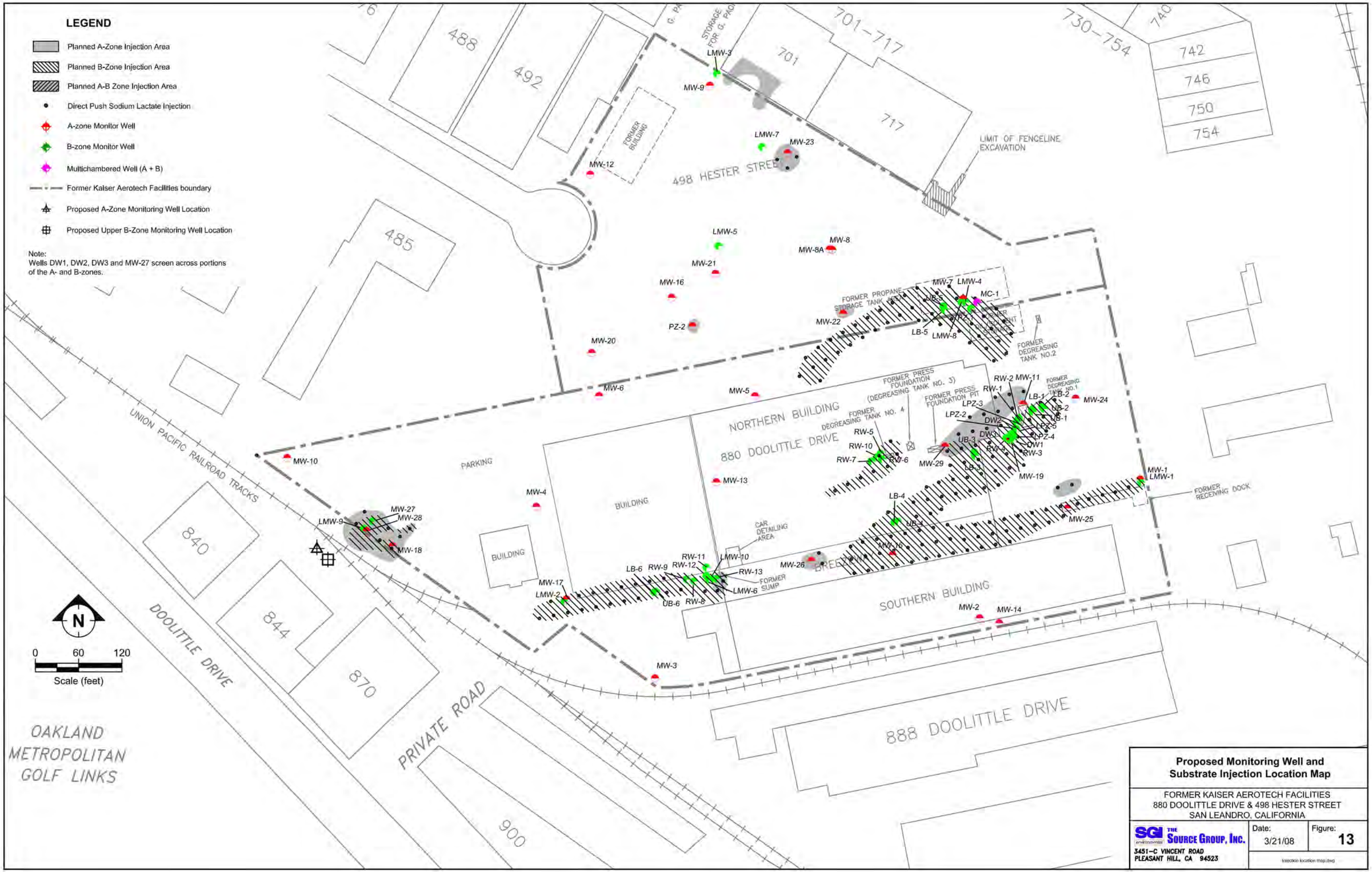
FORMER KAISER AEROTECH FACILITIES
880 DOOLITTLE DRIVE & 498 HESTER STREET
SAN LEANDRO, CALIFORNIA

SGI environmental THE SOURCE GROUP, INC.
3451-C VINCENT ROAD
PLEASANT HILL, CA 94523

Date: 3/21/08

Figure: 11

Figures 10,11,12_cross-sections DD,EE,FF.dwg



Proposed Monitoring Well and Substrate Injection Location Map

FORMER KAISER AEROTECH FACILITIES
880 DOOLITTLE DRIVE & 498 HESTER STREET
SAN LEANDRO, CALIFORNIA

SGI THE SOURCE GROUP, INC.
3451-C VINCENT ROAD
PLEASANT HILL, CA 94523

Date: 3/21/08

Figure: 13

Injection location map.dwg

APPENDIX C2

REMEDIATION ACTIVITIES

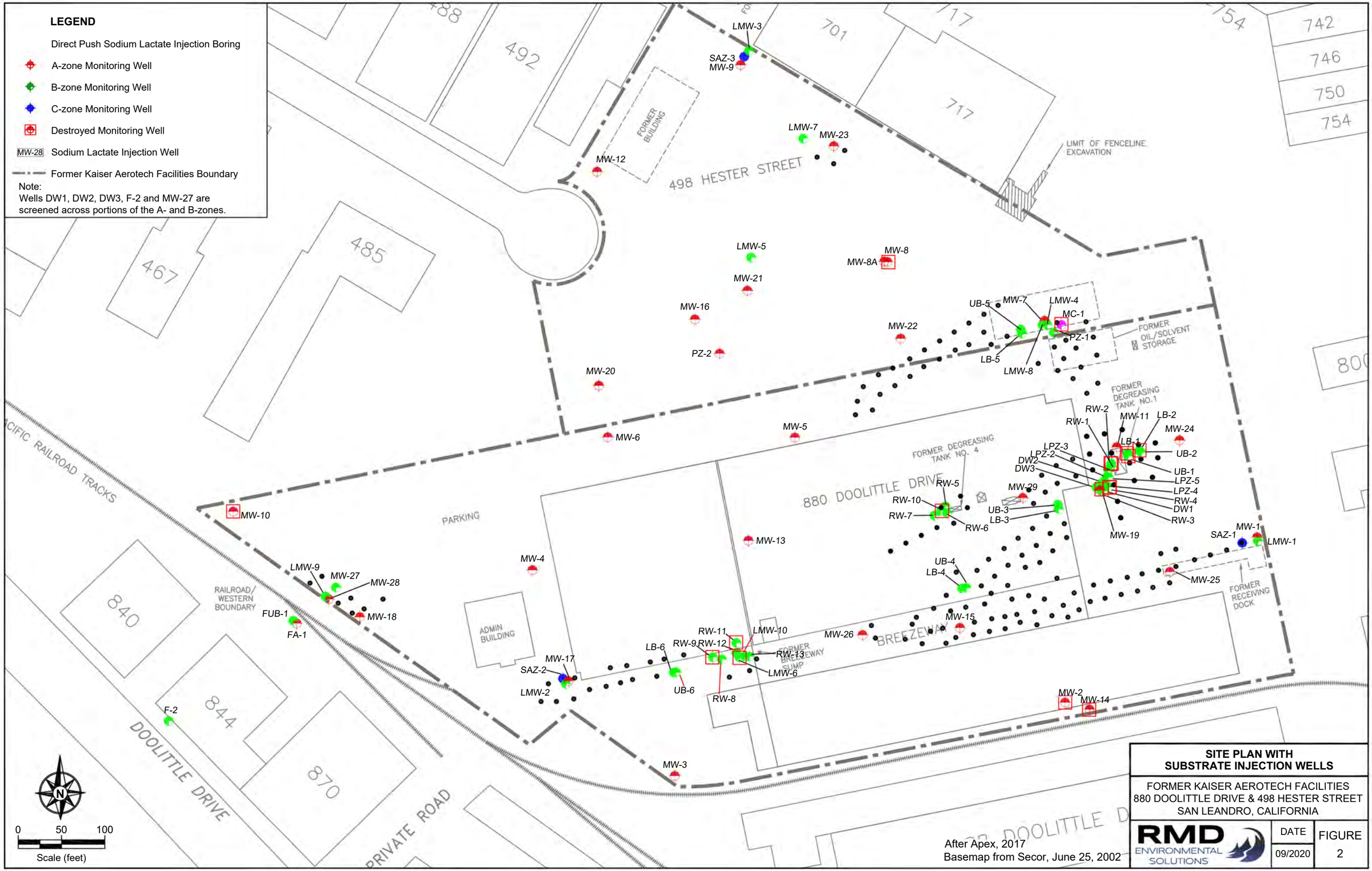

LEGEND
Direct Push Sodium Lactate Injection Boring
A-zone Monitoring Well
B-zone Monitoring Well
C-zone Monitoring Well
Destroyed Monitoring Well
MW-28 Sodium Lactate Injection Well
Former Kaiser Aerotech Facilities Boundary
Note:
Wells DW1, DW2, DW3, F-2 and MW-27 are screened across portions of the A- and B-zones.
498 HESTER STREET
880 DOOLITTLE DRIVE
DOOLITTLE DRIVE
PRIVATE ROAD
PACIFIC RAILROAD TRACKS
RAILROAD/ WESTERN BOUNDARY
PARKING
ADMIN BUILDING
FORMER BUILDING
LIMIT OF FENCELINE EXCAVATION
FORMER OIL/SOLVENT STORAGE
FORMER DEGREASING TANK NO.1
FORMER DEGREASING TANK NO. 4
FORMER RECEIVING DOCK
FORMER BREEZEWAY SUMP
BREEZEWAY
LMW-3
SAZ-3
MW-9
LMW-7
MW-23
MW-12
LMW-5
MW-8
MW-8A
MW-21
MW-16
MW-22
PZ-2
MW-20
UB-5
MW-7
LMW-4
MC-1
PZ-1
LB-5
LMW-8
MW-6
MW-5
RW-2
MW-11
LB-2
RW-1
MW-24
LB-1
UB-2
LPZ-3
LPZ-2
DW2
DW3
UB-1
LPZ-5
LPZ-4
RW-4
DW1
RW-3
RW-5
MW-29
RW-10
RW-7
RW-6
UB-3
LB-3
MW-19
MW-10
MW-13
SAZ-1
MW-1
LMW-1
MW-4
UB-4
LB-4
MW-25
LMW-9
MW-27
MW-28
MW-18
FUB-1
FA-1
MW-15
MW-26
RW-11
LMW-10
LB-6
RW-9
RW-12
RW-13
MW-17
SAZ-2
LMW-6
LMW-2
UB-6
RW-8
MW-2
MW-14
F-2
MW-3
840
844
870
467
485
492
488
701
717
742
746
750
754
800
N
0
50
100
Scale (feet)
After Apex, 2017
Basemap from Secor, June 25, 2002
SITE PLAN WITH SUBSTRATE INJECTION WELLS
FORMER KAISER AEROTECH FACILITIES
880 DOOLITTLE DRIVE & 498 HESTER STREET
SAN LEANDRO, CALIFORNIA
RMD ENVIRONMENTAL SOLUTIONS
DATE
09/2020
FIGURE
2

Table 2A
Sodium Lactate Injection Summary - Wells
Former Kaiser Aerotech Facilities
San Leandro, California

Well ID	Injection Date(s)	PILOT INJECTION ACTIVITIES Estimated Injection Rate (gpm)	PILOT INJECTION ACTIVITIES ~20% Sodium Lactate Estimated Volume Injected (gallons)	RDIP INJECTION ACTIVITIES Estimated Injection Rate (gpm)	RDIP INJECTION ACTIVITIES ~20% Sodium Lactate Estimated Volume Injected (gallons)	O&M INJECTION ACTIVITIES Estimated Injection Rate (gpm)	O&M INJECTION ACTIVITIES ~10% Sodium Lactate Estimated Volume Injected (gallons)	Total Fluid Volume Injected To Date (gallons)
				A-zone Hotspots				
PZ-2	6/4/08, 6/6/08	--	--	0.5*	90	--	--	90
MW-22	6/9/08	--	--	0.6*	50	--	--	50
MW-23	6/4/08	--	--	0.5*	55	--	--	55
MW-26	6/10/08	--	--	1.0*	50	--	--	50
				Degreasing Tank No. 1				
MW-29	9/12/18	-	-	-	-	4.5	650	650
UB-1	6/12/08	--	--	5.0	455	--	--	455
LB-1	6/11/08-6/12/08	--	--	4.0	454	--	--	454
UB-2	6/2/08-6/3/08	--	--	3.0	468	--	--	468
LB-2	6/2/08-6/3/08	--	--	4.0	518	--	--	518
RW-1	4/3/06-4/5/06	2.0-5.0	900	--	--	--	--	1,695
	6/2/08	--	--	4.0	445	--	--	
	5/17/10	--	--	4.5	350	--	--	
RW-2	4/3/06-4/5/06	3.0-4.0	900	--	--	--	--	1,690
	6/2/08, 6/4/08	--	--	5.0	440	--	--	
	5/17/10-5/18/10	--	--	3.5-4.5	350	--	--	
	6/11/08-6/12/08	--	--	3.0	454	--	--	
LPZ-3	5/17/10	--	--	4.75-5.0	350	--	--	2,437
	7/29/13	--	--	--	--	3.8-4.7	543	
	9/11/18-9/12/18	--	--	--	--	3.6	1,090	
LPZ-4	6/11/08	--	--	6.0	440	--	--	972
	7/29/13	--	--	--	--	2.8-4.3	532	
RW-3	6/4/08	--	--	4.0	457	--	--	1,533
	7/30/13	--	--	--	--	3.25-4.2	1,076	
RW-4	6/4/08	--	--	4.0	456	--	--	1,665
	7/30/13	--	--	--	--	3.8-4.0	1,209	
UB-3	10/18/11-10/19/11	--	--	3-4.25	400	--	--	964
	7/30/13	--	--	--	--	3.8-3.9	564	
LB-3	10/21/11	--	--	1.5-3.0	435	--	--	678
	7/31/13	--	--	--	--	3.1-3.2	243	
UB-4	10/19/11	--	--	3.0-5.0	400	--	--	708
	7/31/13	--	--	--	--	4.0-4.2	308	
LB-4	10/19/11-10/20/11	--	--	1.5-3.25	400	--	--	714
	7/31/13	--	--	--	--	4.8-5.0	314	
				Degreasing Tank No. 4				
RW-5	6/5/08-6/13/08	--	--	0.5	620	--	--	
	9/26/18	--	--	--	--	5.0	80	
	9/26/18	--	--	--	--	0.7*	68	768
						Gravity fed 48 gallons 60% sodium lactate and 20 gallons chase water		
RW-6	6/5/08-6/6/08	--	--	2.0	949	--	--	
	9/11/2018 - 9/26/18	--	--	--	--	4.0-4.5	440	
	9/11/2018 - 9/26/18	--	--	--	--	0.3*	55	1,444
						Gravity fed 35 gallons 60% sodium lactate and 20 gallons chase water		
		--	--	--	--			
RW-7	5/19/09-5/20/09	--	--	2.5-3.0	967	--	--	967
RW-10	5/21/09	--	--	3.0-3.5	552	--	--	552
				Breezeway Sump				
RW-11	8/23/05	2.0-5.0	400	--	--	--	--	600
	6/11/08	--	--	4.0	200	--	--	
RW-13	6/13/05-6/15/05	1.0-1.5*	400	--	--	--	--	2,880
	7/26/05	2.5-5.0	400	--	--	--	--	
	6/6/08	--	--	5.0	200	--	--	
	7/31/13	--	--	--	--	4.7-4.8	570	
	9/12/18	--	--	--	--	4.8-5.0	1,310	

Table 2A
Sodium Lactate Injection Summary - Wells
Former Kaiser Aerotech Facilities
San Leandro, California

		PILOT INJECTION ACTIVITIES		RDIP INJECTION ACTIVITIES		O&M INJECTION ACTIVITIES		
Well ID	Injection Date(s)	Estimated Injection Rate (gpm)	~20% Sodium Lactate Estimated Volume Injected (gallons)	Estimated Injection Rate (gpm)	~20% Sodium Lactate Estimated Volume Injected (gallons)	Estimated Injection Rate (gpm)	~10% Sodium Lactate Estimated Volume Injected (gallons)	Total Fluid Volume Injected To Date (gallons)
LMW-6	6/13/05-6/15/05	1.75-4.0*	600	--	--	--	--	1,600
	7/26/05	3.0-5.0	400	--	--	--	--	
	8/23/05	5.0	400	--	--	--	--	
LMW-10	6/6/08	--	--	4.5	200	--	--	2,310
	6/11/08	--	--	5.0	207	--	--	
	7/30/13	--	--	--	--	3.9-4.9	1,223	
	9/10/18-9/12/18	--	--	--	--	3.6-4.2	880	
RW-8	5/20/09	--	--	2.5-3.0	283	--	--	788
	7/31/13	--	--	--	--	3.8-4.3	505	
RW-9	10/21/09	--	--	0.5-4.0	280	--	--	280
UB-6	10/20/11	--	--	3.5-4.25	200	--	--	1,194
	9/10/18	--	--	--	--	3.0-4.0	994	
						Includes 34 gallons water		
LB-6	10/20/11	--	--	4.0-5.0	200	--	--	675
	7/31/13	--	--	--	--	3.8-4.6	475	
LMW-2	10/20/11	--	--	5.5	200	--	--	2,444
	7/31/13	--	--	--	--	4.8-5.4	764	
	9/10/18-9/11/18	--	--	--	--	3.0-4.6	1,480	
				Oil/Solvent Storage Area				
LMW-4	6/9/08-6/10/08	--	--	3.5	874	--	--	874
LMW-8	6/10/08-6/11/08	--	--	4.0	851	--	--	851
UB-5	10/22/09-10/23/09	--	--	4.5-5.0	855	--	--	855
LB-5	10/22/09	--	--	4.5	856	--	--	856
				Receiving Dock				
LMW-1	5/20/09	--	--	2.5-3.0	153	--	--	153
				Railroad/Western Boundary				
MW-27	6/13/08	--	--	2.0	200	--	--	1,356
	9/30/08-10/1/08	--	--	5.0	1,156	--	--	
LMW-9	11/17/09-11/18/09	--	--	4.5-7.9	1,107	--	--	1,787
	9/11/18	--	--	--	--	3.6-4.0	680	
MW-18	5/18/10	--	--	5.0	54	--	--	344
	9/11/18	--	--	--	--	4.0	290	
MW-28	5/18/10	--	--	4.5-5.0	200	--	--	660
	9/11/18	--	--	--	--	3.8-4.0	460	
		Totals	4,400		18,881		16,802	**40,083**

Notes:
gpm = gallons per minute
* Gravity Feed

Table 2B
Sodium Lactate Injection Summary - Direct-Push Borings
Former Kaiser Aerotech Facilities
San Leandro, California

Boring ID	Injection Date(s)	Injection Interval (feet bgs)	RDIP INJECTION ACTIVITIES Estimated Injection Rate (gpm)	Total ~20% Sodium Lactate Estimated Volume Injected (gallons)	Notes
			A-zone Hotspots		
HS-1	3/18/09	11-15	1.8	30	near well MW-26
HS-2	3/18/09	11-15	1.6	50	near well MW-26
HS-3	11/14/08	5-15	3.7	48	near well MW-23
HS-4	11/14/08	5-15	3.9-4.3	48	near well MW-23
HS-5	11/14/08	5-15	4	48	near well MW-23
			Degreasing Tank No. 1		
DT1-1	10/23/08	7-15	3.4	29	
DT1-2	10/23/08	8-15	3.8	29	
DT1-3	10/23/08	5-35	5.4-5.5	229	
DT1-4	10/23/08	6-15	3.2	29	
DT1-5	10/22/08	8-35	3.3-4.6	229	
DT1-6	10/22/08	15-35	5.2-5.3	200	
DT1-7	10/23/08	15-35	5.2	200	
DT1-8	10/23/08	6-15	2.4	29	
DT1-9	10/22/08	15-35	4.9-5.1	200	
DT1-10	10/21/08	15-35	4.8-5.4	200	
DT1-11	10/21/08	15-35	5.2-5.6	200	
DT1-12	10/21/08	15-35	4.8-5.0	200	
DT1-13	10/20/08	15-35	8.4-8.9	200	
DT1-14	10/20/08	15-35	1.7-8.9	200	
DT1-15	10/21/08	15-35	5.3-5.5	200	
DT1-16	10/20/08	15-35	5.0-9.0	200	
DT1-17	10/20/09	15-35	3.5-8.3	200	
DT1-18	10/20/09	15-35	4.1-10.1	200	
DT1-19	10/21/09	15-35	3.0-7.2	400	
DT1-20	10/20/09	15-35	4.0-7.1	400	
DT1-21	10/20/09	15-35	2.5-8.5	200	
DT1-22	10/20/09	15-35	3.9-10.7	200	
DT1-23	4/1/10	5-15	3.4-3.5	30	
DT1-24	4/1/10	5-15	3.5	30	
DT1-25	4/1/10	5-15	3.3-3.8	30	
DT1-26	4/1/10	5-15	4.2-4.7	30	
DT1-27	3/26/10	15-35	9.3-9.4	440	
DT1-28	3/26/10	15-35	9.2-9.3	440	
DT1-29	4/1/10	5-15	3.8-4.1	30	
DT1-30	3/29/10	6-35	4.2-9.4	469	
DT1-31	3/26/10	15-35	8.9-9.1	440	
DT1-32	3/26/10	15-35	9.0-9.2	440	
DT1-33	3/29/10	15-35	9.2-9.3	300	
DT1-34	4/1/10	5-15	4.1	30	

Table 2B
Sodium Lactate Injection Summary - Direct-Push Borings
Former Kaiser Aerotech Facilities
San Leandro, California

Boring ID	Injection Date(s)	Injection Interval (feet bgs)	RDIP INJECTION ACTIVITIES Estimated Injection Rate (gpm)	Total ~20% Sodium Lactate Estimated Volume Injected (gallons)	Notes
DT1-35	3/29/10	6-35	4.1-9.3	468	
DT1-36	3/29/10	15-35	9.3	300	
DT1-37	3/30/10	15-35	9.4-9.5	440	
DT1-38	3/30/10	15-35	9.3	300	
DT1-39	3/30/10	15-35	9.3	300	
DT1-40	3/30/10	15-35	9.2-9.3	440	
DT1-41	3/30/10	15-35	9.2-9.3	300	
DT1-42	3/31/10	15-35	7.8-8.3	300	
DT1-43	3/31/10	15-35	9.4-9.5	440	
DT1-44	3/31/10	15-35	8.6-9.2	300	
DT1-45	3/31/10	15-35	9.2-9.3	300	
DT1-46	3/31/10	15-35	9.1-9.3	440	
DT1-47	4/2/10	15-35	8.4-9.2	300	
DT1-48	4/1/10	15-35	9.2-9.3	300	
DT1-49	4/1/10	15-35	9.4-9.5	300	
DT1-50	4/2/10	15-35	7.8-9.0	300	
DT1-51	4/1/10	15-35	9.2-9.3	300	
DT1-52	4/2/10	15-35	6.3-7.5	300	
DT1-53	4/2/10	15-35	6.9-9.1	300	
DT1-54	4/1/10	15-35	9.0-9.3	300	
DT1-55	5/3/10	15-35	9.1-9.2	300	
DT1-56	5/3/10	15-35	2.9-3.1	300	
DT1-57	5/4/10	15-35	9.3-9.5	300	
DT1-58	5/3/10	15-35	9.0-9.3	300	
DT1-59	5/3/10	15-35	1.3-2.6	300	
DT1-60	5/10/10	15-35	7.1-9.4	300	
DT1-61	5/10/10	15-35	9.2-9.4	200	
DT1-62	5/10/10	15-35	9.5	200	
DT1-63	5/10/10	15-35	9.2-9.4	200	
DT1-64	5/10/10	15-35	9.3-9.5	200	
			Degreasing Tank No. 4		
DT4-1	11/13/08	15-35	6.0-7.5	200	
DT4-2	11/13/08	15-35	2.7-4.7	200	
DT4-3	11/13/08	15-35	3.9-4.5	200	
DT4-4	11/13/08	5-15	1.4	11	
DT4-5	6/4/09	15-35	0.9-2.4	263	surfacing observed
DT4-6A	6/4/09	33-35	--	30	surfacing observed
DT4-6B	6/5/09	30-32	<2.5	5	surfacing observed
DT4-6	6/5/09	15-28	0.2-5.8	220	
DT4-7A	6/4/09	30-35	--	35	surfacing observed
DT4-7	6/5/09	15-32	0.8-5.7	295	
DT4-8	6/5/09	15-35	1.0-3.9	295	

Table 2B
Sodium Lactate Injection Summary - Direct-Push Borings
Former Kaiser Aerotech Facilities
San Leandro, California

Boring ID	Injection Date(s)	Injection Interval (feet bgs)	RDIP INJECTION ACTIVITIES Estimated Injection Rate (gpm)	Total ~20% Sodium Lactate Estimated Volume Injected (gallons)	Notes
			Breezeway Sump		
BS-1	11/10/08	12-35	2.9-4.6	230	surfacing due to fill material
BS-2	10/24/08	10-35	2.4-4.8	230	surfacing due to fill material
BS-3	11/10/08	15-35	4.2-4.9	200	
BS-4	10/21/09	15-35	3.7-7.2	183	
BS-5	10/21/09	15-35	5.1-7.9	200	
BS-6	5/4/10	15-35	9.3-9.4	200	
BS-7	5/4/10	15-35	9.2-9.4	200	
BS-8	5/4/10	15-35	9.3-9.4	200	
BS-9	5/4/10	15-35	9.2-9.4	200	
BS-10	5/4/10	15-35	9.3-9.4	200	
BS-11	5/5/10	15-35	9.4-9.5	200	
BS-12	5/10/10	15-35	9.4	200	
BS-13	5/5/10	15-35	9.3-9.4	200	
BS-14	5/10/10	15-35	9.3-9.4	300	
BS-15	5/5/10	15-35	4.1-9.4	300	
BS-17	5/5/10	15-35	8.8-9.4	200	
BS-18	5/6/10	15-35	9.4-9.5	200	
BS-19	5/5/10	15-35	9.2-9.3	200	
BS-20	5/5/10	15-35	9.2-9.3	200	
BS-21	5/5/10	15-35	9.3-9.4	200	
			Oil/Solvent Storage Area		
OSS-1	11/12/08	15-30	6.4-7.9	150	
OSS-2	11/11/08	15-30	7.7-7.9	150	
OSS-3	11/11/08	15-30	7.3-8.1	150	
OSS-4	11/10/08	15-30	9.4-9.6	150	
OSS-5	11/11/08	15-30	6.5-7.8	150	
OSS-6	11/12/08	15-30	6.6-6.7	150	
OSS-7	11/11/08	15-30	9.7	150	
OSS-8	11/11/08	15-30	7.4-8.2	150	
OSS-9	11/11/08	15-30	7.5-7.7	150	
OSS-10	11/12/08	15-30	7.0	150	
OSS-11	11/12/08	15-30	8.1	150	
OSS-12	11/12/08	15-30	7.0-8.0	150	
OSS-13	11/12/08	15-30	8.2-8.7	150	
OSS-14	11/12/08	15-30	7.0	150	
OSS-15	10/19/09	15-30	2.0-6.9	150	
OSS-16	10/20/09	15-30	3.3-7.6	150	
OSS-17	10/19/09	15-30	2.2-7.6	150	
OSS-18	10/19/09	15-30	3.3-6.9	150	
OSS-19	10/19/09	15-30	5.5-7.2	150	

Table 2B
Sodium Lactate Injection Summary - Direct-Push Borings
Former Kaiser Aerotech Facilities
San Leandro, California

Boring ID	Injection Date(s)	Injection Interval (feet bgs)	RDIP INJECTION ACTIVITIES Estimated Injection Rate (gpm)	Total ~20% Sodium Lactate Estimated Volume Injected (gallons)	Notes
OSS-20	5/7/10	15-30	9.3	300	
OSS-21	10/19/09	15-30	2.3-5.6	150	
OSS-22	5/12/10	15-30	9.3-9.4	300	
OSS-23	5/12/10	15-30	9.4	300	
OSS-24	5/7/10	15-30	9.3-9.4	300	
OSS-25	5/7/10	15-30	9.3	300	
OSS-26	5/12/10	15-30	9.4	150	
OSS-27	5/7/10	15-30	9.3-9.5	150	
OSS-28	5/12/10	15-30	9.3-9.5	150	
OSS-29	5/6/10	15-30	9.3-9.4	150	
OSS-30	5/6/10	15-30	9.2-9.4	150	
OSS-31	5/11/10	15-30	9.4	150	
OSS-32	5/11/10	15-30	9.5	150	
OSS-33	5/6/10	15-30	9.2-9.4	150	
OSS-34	5/11/10	15-30	9.4-9.5	150	
OSS-35	5/6/10	15-30	9.3	150	
OSS-36	5/11/10	15-30	9.4	150	
OSS-37	5/11/10	15-30	9.3-9.4	150	
OSS-38	5/11/10	15-30	9.4-9.5	150	
OSS-39	5/11/10	15-30	9.3-9.4	150	
OSS-40	5/12/10	15-30	9.4	150	
OSS-41	5/7/10	15-30	6.5-9.4	150	
OSS-42	5/11/10	15-30	7.2-9.4	150	
OSS-43	5/7/10	15-30	9.3-9.5	150	
			Receiving Dock		
RD-1	6/4/09	5-15	2.2-3.5	43	
RD-2	6/4/09	5-15	3.7-5.3	43	
RD-3	6/3/09	15-35	5.0-8.8	155	
RD-4	6/3/09	15-35	2.5-7.0	155	
RD-5	6/3/09	15-35	2.7-8.8	155	
RD-6	6/3/09	15-35	4.0-5.0	155	
RD-7	6/3/09	15-35	4.4-5.7	155	
RD-8	6/4/09	15-35	3.6-7.0	155	
RD-9	6/3/09	15-35	2.1-4.4	155	
RD-10	6/4/09	15-35	4.4-5.7	155	
RD-11	6/2/09	15-35	2.1-4.4	155	
RD-12	6/4/09	15-35	3.6-5.0	155	
RD-13	6/2/09	15-35	2.4-4.4	155	
RD-14	6/1/09	15-35	0.6-1.1	155	
RD-15	6/2/09	15-35	1.4-1.8	155	
RD-16	6/1/09	15-35	1.1-1.7	155	

Table 2B
Sodium Lactate Injection Summary - Direct-Push Borings
Former Kaiser Aerotech Facilities
San Leandro, California

Boring ID	Injection Date(s)	Injection Interval (feet bgs)	RDIP INJECTION ACTIVITIES Estimated Injection Rate (gpm)	Total ~20% Sodium Lactate Estimated Volume Injected (gallons)	Notes
RD-17	6/2/09	15-35	2.3-2.7	155	
RD-18	6/2/09	15-35	0.9-1.8	112	surfacing 23 feet bgs
RD-19	3/22/10-3/23/10	15-35	4.1-5.4	157	
RD-20	3/23/10	15-35	5.5-5.8	157	
RD-21	3/26/10	15-35	7.6-8.0	157	
RD-22	3/23/10	15-35	5.4-5.7	157	
RD-23	3/23/10	15-35	5.5-5.8	157	
RD-24	3/23/10	15-35	1.5	3	surfacing 32 feet bgs
RD-24A	3/24/10	15-35	4.1-7.1	157	
RD-25	3/24/10	15-35	6.0-6.9	157	
RD-26	3/23/10	15-35	5.3-5.9	157	
RD-27	3/24/10	15-35	5.8-7.0	157	
RD-28	3/24/10	15-35	6.4-7.5	157	
RD-29	3/25/10	15-35	6.3-7.6	157	
RD-30	3/24/10	15-35	6.9-7.8	157	
RD-31	3/24/10	15-35	6.3-7.4	157	
RD-32	3/25/10	15-35	4.4-7.6	157	
RD-33	3/25/10	15-35	6.9-7.6	157	
RD-34	3/25/10	15-35	6.2-7.6	157	
RD-35	3/25/10	15-35	7.4-7.6	157	
RD-36	3/25/10	15-35	6.9-7.4	157	
			Railroad/Western Boundary		
WPB-1	3/18/09	8-20	0.5-5.5	89	surfacing due to fill material
WPB-2	11/14/08	8-15	3.1	58	
WPB-3	11/14/08	8-20	4.4-5.1	100	
WPB-4	3/18/09	5-15	7.0	52	
WPB-5	5/6/10	5-20	9.4-9.6	150	
WPB-6	5/6/10	5-20	9.4	150	
WPB-7	5/6/10	5-20	9.3-9.4	150	
			Total	35,733	

Notes:
RDIP = Remedial Design and Implementation Plan
bgs = below ground surface
gpm = gallons per minute

APPENDIX C3

HISTORICAL SOIL DATA

Table 6
Soil Analytical Results - 1995 to 2009
Former Kaiser Aerotech Facilities
880 Doolittle Drive and 498 Hester Street
San Leandro, California

Sample No.	Notes	GW Zone	Sample Date	1,2-DCB	1,3-DCB	1,4-DCB	Chloro-benzene	Chloro-form	Methylene Chloride	Chloro-methane	1,1,1-TCA	1,1-DCA	Chloro-ethane	PCE	TCE	cis-1,2-DCE	trans-1,2-DCE	1,1-DCE	Vinyl Chloride
				(ug/kg)	(ug/kg)	(ug/kg)	(ug/kg)	(ug/kg)	(ug/kg)	(ug/kg)	(ug/kg)	(ug/kg)	(ug/kg)	(ug/kg)	(ug/kg)	(ug/kg)	(ug/kg)	(ug/kg)	(ug/kg)
B-1, 0.5'		VZ	6/15/95	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0
B-1, 2'		VZ	6/15/95	<5.0	<5.0	<5.0	<5.0	<5.0	**5.1**	<5.0	<5.0	<5.0	<5.0	<5.0	**6.1**	<5.0	<5.0	<5.0	<5.0
B-2, 0.5'		VZ	6/15/95	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0
B-2, 2.5'		VZ	6/15/95	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0
B-3, 0.5'		VZ	6/15/95	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0
B-3, 2'		VZ	6/15/95	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0
B-4, 0.5'		VZ	6/15/95	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	**200**	<5.0	<5.0	<5.0
B-4, 2'		VZ	6/15/95	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	**120**	<5.0	<5.0	<5.0
B-5, 0.5'		VZ	6/15/95	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	**12**	<5.0	<5.0	<5.0	<5.0
B-5, 2'		VZ	6/15/95	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	**230**	<5.0	<5.0	<5.0	<5.0
B-5, 5'		VZ	6/15/95	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0
B-6, 0.5'		VZ	6/15/95	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0
B-6, 2.5'		VZ	6/15/95	<5.0	<5.0	<5.0	<5.0	<5.0	**6.1**	<5.0	<5.0	<5.0	<5.0	<5.0	**13**	<5.0	<5.0	<5.0	<5.0
B-8, 0.5'		VZ	6/15/95	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	**300**	<5.0	<5.0	<5.0
B-8, 2'		VZ	6/15/95	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0
SW-3, 5.5'		VZ	11/1/95	<50	<50	<50	<50	<50	<50	<50	<50	<50	<50	<50	**530**	**1,400**	**380**	<50	<50
SW-6, 5.5'		VZ	11/1/95	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0
SW-8, 4.0'		VZ	11/2/95	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0
GP-1, 2.5'		VZ	10/8/96	<15	<15	<15	<15	<15	<50	<50	<15	<15	<50	<15	**110**	<15	<15	<15	<50
GP-1, 4'		VZ	10/8/96	<15	<15	<15	<15	<15	<50	<50	<15	<15	<50	<15	<15	<15	<15	<15	<50
GP-2, 2'		VZ	10/8/96	<15	<15	<15	<15	<15	<50	<50	<15	<15	<50	<15	**50**	<15	<15	<15	<50
GP-2, 4'		VZ	10/8/96	<15	<15	<15	<15	<15	<50	<50	<15	<15	<50	<15	<15	<15	<15	<15	<50
GP-3, 2.5'		VZ	10/8/96	<15	<15	<15	<15	<15	<50	<50	<15	<15	<50	<15	<15	<15	<15	<15	<50
GP-3, 4'		VZ	10/8/96	<15	<15	<15	<15	<15	<50	<50	<15	<15	<50	<15	<15	<15	<15	<15	<50
GP-4, 1.5'		VZ	10/8/96	<15	<15	<15	<15	<15	<50	<50	<15	<15	<50	<15	<15	<15	<15	<15	<50
GP-4, 4'		VZ	10/8/96	**21**	<15	<15	<15	<15	<50	<50	<15	<15	<50	<15	<15	<15	<15	<15	<50
GP-5, 1.5'		VZ	10/8/96	<15	<15	<15	<15	<15	<50	<50	<15	<15	<50	<15	**36**	<15	<15	<15	<50
GP-5, 3'		VZ	10/8/96	<15	<15	<15	<15	<15	<50	<50	<15	<15	<50	<15	<15	<15	<15	<15	<50
GP-6, 1.5'		VZ	10/8/96	<15	<15	<15	<15	<15	<50	<50	<15	<15	<50	<15	**270**	<15	<15	<15	<50
GP-6, 3.5'		VZ	10/8/96	<15	<15	<15	<15	<15	<50	<50	<15	<15	<50	<15	<15	<15	<15	<15	<50
GP-7, 1'		VZ	10/8/96	<15	<15	<15	<15	<15	<50	<50	<15	<15	<50	<15	**290**	<15	<15	<15	<50
GP-7, 4'		VZ	10/8/96	<15	<15	<15	<15	<15	<50	<50	<15	<15	<50	<15	<15	<15	<15	<15	<50
GP-8, 2.5'		VZ	10/8/96	<15	<15	<15	<15	<15	<50	<50	<15	<15	<50	<15	<15	<15	<15	<15	<50
GP-8, 4'		VZ	10/8/96	<15	<15	<15	<15	<15	<50	<50	<15	<15	<50	<15	<15	<15	<15	<15	<50
GP-9, 1'		VZ	10/8/96	<15	<15	<15	<15	<15	<50	<50	<15	<15	<50	<15	**30**	**69**	<15	<15	<50

Table 6
Soil Analytical Results - 1995 to 2009
Former Kaiser Aerotech Facilities
880 Doolittle Drive and 498 Hester Street
San Leandro, California

Sample No.	Notes	GW Zone	Sample Date	1,2-DCB	1,3-DCB	1,4-DCB	Chloro-benzene	Chloro-form	Methylene Chloride	Chloro-methane	1,1,1-TCA	1,1-DCA	Chloro-ethane	PCE	TCE	cis-1,2-DCE	trans-1,2-DCE	1,1-DCE	Vinyl Chloride
				(ug/kg)	(ug/kg)	(ug/kg)	(ug/kg)	(ug/kg)	(ug/kg)	(ug/kg)	(ug/kg)	(ug/kg)	(ug/kg)	(ug/kg)	(ug/kg)	(ug/kg)	(ug/kg)	(ug/kg)	(ug/kg)
GP-9, 4'		VZ	10/8/96	<15	<15	<15	<15	<15	<50	<50	<15	<15	<50	<15	<15	<15	<15	<15	<50
GP-10, 1'		VZ	10/8/96	<15	<15	<15	<15	<15	<50	<50	<15	<15	<50	<15	**59**	**31**	<15	<15	<50
GP-10, 3.5'		VZ	10/8/96	<15	<15	<15	<15	<15	<50	<50	<15	<15	<50	<15	<15	<15	<15	<15	<50
GP-11, 2'		VZ	10/8/96	<15	<15	<15	<15	<15	<50	<50	<15	<15	<50	<15	**140**	<15	<15	<15	<50
GP-11, 3.5'		VZ	10/8/96	<15	<15	<15	<15	<15	<50	<50	<15	<15	<50	<15	**31**	<15	<15	<15	<50
GP-12, 1'		VZ	10/8/96	<15	<15	<15	<15	<15	<50	<50	<15	<15	<50	<15	<15	<15	<15	<15	<50
GP-12, 3.5'		VZ	10/8/96	<15	<15	<15	<15	<15	<50	<50	<15	<15	<50	<15	<15	<15	<15	<15	<50
GP-13, 3'		VZ	10/8/96	<15	<15	<15	<15	<15	<50	<50	<15	<15	<50	<15	<15	<15	<15	<15	<50
GP-14, 1.5'		VZ	10/8/96	<30	<30	<30	<30	<30	<100	<100	**1,400**	**560**	<100	<30	<30	<30	<30	<30	<100
GP-14, 3'		VZ	10/8/96	<30	<30	<30	<30	<30	<100	<100	**2,200**	**34**	<100	<30	<30	**30**	<30	<30	<100
GP-15, 2'		VZ	10/8/96	<15	<15	<15	<15	<15	<50	<50	<15	<15	<50	<15	<15	<15	<15	<15	<50
GP-15, 3'		VZ	10/8/96	<750	<750	<750	<750	<750	<2,500	<2,500	<750	<750	<2,500	<750	<750	<750	<750	<750	<2,500
GP-16, 2'		VZ	10/8/96	<15	<15	<15	<15	<15	<50	<50	<15	<15	<50	<15	<15	<15	<15	<15	<50
GP-16, 3'		VZ	10/8/96	<15	<15	<15	<15	<15	<50	<50	<15	<15	<50	<15	<15	<15	<15	<15	<50
GP-17, 2'		VZ	10/8/96	<15	<15	<15	<15	<15	<50	<50	<15	<15	<50	<15	**55**	**150**	**26**	<15	<50
GP-17, 4'		VZ	10/8/96	<15	<15	<15	<15	<15	<50	<50	<15	<15	<50	<15	<15	**170**	<15	<15	<50
GP-18, 2'		VZ	10/8/96	<15	<15	<15	<15	<15	<50	<50	<15	<15	<50	<15	**22**	<15	<15	<15	<50
GP-18, 4'		VZ	10/8/96	<15	<15	<15	<15	<15	<50	<50	<15	<15	<50	<15	**26**	**20**	<15	<15	<50
GP-19, 1'		VZ	10/9/96	<15	<15	<15	<15	<15	<50	<50	<15	<15	<50	<15	<15	<15	<15	<15	<50
GP-19, 3.5'		VZ	10/9/96	<15	<15	<15	<15	<15	<50	<50	<15	<15	<50	<15	<15	<15	<15	<15	<50
GP-20, 0.5'		VZ	10/9/96	<15	<15	<15	<15	<15	<50	<50	<15	<15	<50	<15	<15	<15	<15	<15	<50
GP-20, 3.5'		VZ	10/9/96	<15	<15	<15	<15	<15	<50	<50	<15	<15	<50	<15	<15	<15	<15	<15	<50
GP-21, 1.5'		VZ	10/9/96	<15	<15	<15	<15	<15	<50	<50	<15	<15	<50	<15	<15	<15	<15	<15	<50
GP-21, 3.5'		VZ	10/9/96	<15	<15	<15	<15	<15	<50	<50	<15	<15	<50	<15	<15	<15	<15	<15	<50
GP-22, 2'		VZ	10/9/96	<15	<15	<15	<15	<15	<50	<50	<15	<15	<50	<15	<15	<15	<15	<15	<50
GP-22, 3.5'		VZ	10/9/96	<15	<15	<15	<15	<15	<50	<50	<15	<15	<50	<15	<15	**53**	<15	<15	<50
GP-23, 1'		VZ	10/9/96	<15	<15	<15	<15	<15	<50	<50	<15	<15	<50	<15	<15	<15	<15	<15	<50
GP-23, 3.5'		VZ	10/9/96	<15	<15	<15	<15	<15	<50	<50	<15	<15	<50	<15	<15	**17**	<15	<15	<50
GP-24, 1'		VZ	10/9/96	<15	<15	<15	<15	<15	<50	<50	<15	<15	<50	<15	<15	<15	<15	<15	<50
GP-24, 3.5'		VZ	10/9/96	<15	<15	<15	<15	<15	<50	<50	<15	<15	<50	<15	<15	<15	<15	<15	<50
GP-25, 2'		VZ	10/9/96	<15	<15	<15	<15	<15	<50	<50	<15	<15	<50	<15	<15	<15	<15	<15	<50
GP-25, 4'		VZ	10/9/96	<15	<15	<15	<15	<15	<50	<50	**230**	<15	<50	<15	<15	<15	<15	<15	<50
GP-26, 2'		VZ	10/9/96	<15	<15	<15	<15	<15	<50	<50	<15	<15	<50	<15	<15	<15	<15	<15	<50
GP-26, 4'		VZ	10/9/96	<15	<15	<15	<15	<15	<50	<50	<15	<15	<50	<15	<15	<15	<15	<15	<50
GP-27, 2'		VZ	10/9/96	<15	<15	<15	<15	<15	<50	<50	<15	<15	<50	<15	**250**	<15	<15	<15	<50

Table 6
Soil Analytical Results - 1995 to 2009
Former Kaiser Aerotech Facilities
880 Doolittle Drive and 498 Hester Street
San Leandro, California

Sample No.	Notes	GW Zone	Sample Date	1,2-DCB	1,3-DCB	1,4-DCB	Chloro-benzene	Chloro-form	Methylene Chloride	Chloro-methane	1,1,1-TCA	1,1-DCA	Chloro-ethane	PCE	TCE	cis-1,2-DCE	trans-1,2-DCE	1,1-DCE	Vinyl Chloride
				(ug/kg)	(ug/kg)	(ug/kg)	(ug/kg)	(ug/kg)	(ug/kg)	(ug/kg)	(ug/kg)	(ug/kg)	(ug/kg)	(ug/kg)	(ug/kg)	(ug/kg)	(ug/kg)	(ug/kg)	(ug/kg)
GP-27, 4'		VZ	10/9/96	<15	<15	<15	<15	<15	<50	<50	<15	<15	<50	<15	<15	<15	<15	<15	<50
GP-28, 3'		VZ	10/9/96	<15	<15	<15	<15	<15	<50	<50	<15	<15	<50	<15	<15	<15	<15	<15	<50
GP-28, 4.5'		VZ	10/9/96	<15	<15	<15	<15	<15	<50	<50	<15	<15	<50	<15	<15	<15	<15	<15	<50
GP-29, 3'		VZ	10/9/96	<15	<15	<15	<15	<15	<50	<50	<15	<15	<50	<15	<15	<15	<15	<15	<50
GP-29, 4.5'		VZ	10/9/96	<15	<15	<15	<15	<15	<50	<50	<15	<15	<50	<15	<15	<15	<15	<15	<50
GP-30, 2.5'		VZ	10/9/96	<15	<15	<15	<15	<15	<50	<50	<15	<15	<50	<15	<15	<15	<15	<15	<50
GP-30, 4.5'		VZ	10/9/96	<15	<15	<15	<15	<15	<50	<50	<15	<15	<50	<15	<15	<15	<15	<15	<50
GP-31A, 4'		VZ	10/9/96	<15	<15	<15	<15	<15	<50	<50	<15	<15	<50	<15	<15	<15	<15	<15	<50
GP-32, 8'		A	10/9/96	<15	<15	<15	<15	<15	<50	<50	<15	<15	<50	<15	<15	<15	<15	<15	<50
GP-33, 2'		VZ	10/9/96	<15	<15	<15	<15	<15	<50	<50	<15	<15	<50	<15	**300**	**17**	<15	<15	<50
GP-33, 3.5'		VZ	10/9/96	<15	<15	<15	<15	<15	<50	<50	<15	<15	<50	<15	**19**	<15	<15	<15	<50
GP-34, 1.5'		VZ	10/9/96	<15	<15	<15	<15	<15	<50	<50	<15	<15	<50	<15	<15	<15	<15	<15	<50
GP-34, 3.5'		VZ	10/9/96	<15	<15	<15	<15	<15	<50	<50	<15	<15	<50	<15	<15	<15	<15	<15	<50
GP-35, 1.5'		VZ	10/9/96	<15	<15	<15	<15	<15	<50	<50	<15	<15	<50	<15	<15	<15	<15	<15	<50
GP-35, 3.5'		VZ	10/9/96	<15	<15	<15	<15	<15	<50	<50	<15	<15	<50	<15	<15	<15	<15	<15	<50
GP-36, 1.5'		VZ	10/9/96	<15	<15	<15	**16**	<15	<50	<50	<15	<15	<50	<15	**27**	<15	<15	<15	<50
GP-36, 3.5'		VZ	10/9/96	<15	<15	<15	<15	<15	<50	<50	<15	<15	<50	<15	<15	<15	<15	<15	<50
MW-1, 2.5'		VZ	10/30/96	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0
MW-1, 9'		A	10/30/96	<850	**1,500**	**3,900**	**9,300**	<850	<850	<850	<850	<850	<850	<850	<850	<850	<850	<850	<850
MW-2, 2.5'		VZ	10/30/96	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0
MW-3, 3'		VZ	10/29/96	<25	<25	<25	<25	<25	<25	<25	<25	<25	<25	<25	**1,000**	<25	<25	<25	<25
MW-4, 3'		VZ	10/29/96	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	**68**	**37**	**10**	<5.0	<5.0
MW-5, 2.5'		VZ	10/29/96	<25	<25	<25	<25	<25	<25	<25	<25	<25	<25	<25	**430**	**24**	<25	<25	<25
MW-6, 3'		VZ	10/29/96	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0
MW-8, 3.5'		VZ	10/28/96	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	**15**	<5.0	<5.0	<5.0	<5.0
MW-10, 2.5'		VZ	10/29/96	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0
EB-1, 15.5'		B	10/28/96	<30	<30	<30	<30	<30	<100	<100	<30	<30	<100	<30	**830**	**200**	<30	<30	<100
EB-1, 28'		B	10/28/96	<150	<150	<150	<150	<150	<500	<500	<150	<150	<500	<150	**1,100**	<150	<150	<150	<500
EB-2, 11'		A	10/30/96	<5,000	<5,000	<5,000	<5,000	<5,000	<5,000	<5,000	<5,000	<5,000	<5,000	<5,000	**100,000**	<5,000	<5,000	<5,000	<5,000
EB-3, 6'		A	3/3/97	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0
EB-3, 12.5'		A	3/3/97	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	**12**	<5.0	<5.0	<5.0
EB-3, 20.0'		B	3/3/97	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	**360**	**71**	<10	<10	<10
EB-3, 31.0'		B	3/3/97	<50	<50	<50	<50	<50	<50	<50	<50	<50	<50	<50	**5,100**	<50	<50	<50	<50

Table 6
Soil Analytical Results - 1995 to 2009
Former Kaiser Aerotech Facilities
880 Doolittle Drive and 498 Hester Street
San Leandro, California

Sample No.	Notes	GW Zone	Sample Date	1,2-DCB (ug/kg)	1,3-DCB (ug/kg)	1,4-DCB (ug/kg)	Chloro-benzene (ug/kg)	Chloro-form (ug/kg)	Methylene Chloride (ug/kg)	Chloro-methane (ug/kg)	1,1,1-TCA (ug/kg)	1,1-DCA (ug/kg)	Chloro-ethane (ug/kg)	PCE (ug/kg)	TCE (ug/kg)	cis-1,2-DCE (ug/kg)	trans-1,2-DCE (ug/kg)	1,1-DCE (ug/kg)	Vinyl Chloride (ug/kg)
EB-4, 7.5'		A	3/3/97	**11**	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	**7.8**	<5.0
EB-4, 19.5'		B	3/3/97	<50	<50	<50	<50	<50	<50	<50	<50	<50	<50	<50	<50	**530**	<50	<50	<50
EB-4, 22.5'		B	3/3/97	<50	<50	<50	<50	<50	<50	<50	<50	<50	<50	<50	<50	**420**	<50	<50	<50
EB-4, 27.0'		B	3/3/97	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0
EB-5, 9.5'		A	3/4/97	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	**14**	<5.0	<5.0	<5.0	**26**	**42**	<5.0	<5.0	<5.0
EB-5, 16.5'		B	3/4/97	<10	<11	<12	<10	<10	<10	<10	<10	<10	<10	<10	<10	**200**	<10	<10	<10
EB-5, 20.0'		B	3/4/97	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	**78**	<5.0	<5.0	<5.0
EB-5, 29.0'		B	3/4/97	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0
EB-6, 9.5'		A	3/4/97	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	**90**	**210**	<10	<10	<10
EB-6, 15.5'		B	3/4/97	<100	<100	<100	<100	<100	<100	<100	<100	<100	<100	<100	**3,000**	**1,000**	<100	<100	<100
EB-6, 20.0'		B	3/4/97	<100	<100	<100	<100	<100	<100	<100	<100	<100	<100	<100	<100	**3,100**	<100	<100	**160**
EB-6, 31'		B	3/4/97	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	**27**	<5.0	<5.0	<5.0	<5.0
EB-7, 11'		A	3/4/97	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0
EB-7, 14'		A	3/4/97	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0
EB-7, 20'		B	3/4/97	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0
EB-7, 31'		B	3/4/97	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0
EB-8, 11'		A	3/5/97	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0
EB-8, 15'		A	3/5/97	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0
EB-8, 21.5'		B	3/5/97	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0
EB-8, 33'		B	3/5/97	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0
EB-9, 8.0'		A	3/5/97	**140**	<50	<50	<50	<50	<50	<50	<50	<50	<50	<50	**730**	**88**	<50	<50	<50
EB-9, 11.0'		A	3/5/97	**85**	<50	<50	<50	<50	<50	<50	<50	<50	<50	<50	**690**	**120**	<50	<50	<50
EB-9, 20'		B	3/5/97	<50	<50	<50	<50	<50	<50	<50	<50	<50	<50	<50	**1,900**	<50	<50	<50	<50
EB-9, 23.5'		B	3/5/97	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	**26**	<5.0	<5.0	<5.0	<5.0
EB-9, 33'		B	3/5/97	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0
EB-10, 10'		A	3/5/97	<50	<50	<50	<50	<50	<50	<50	<50	<50	<50	<50	**150**	**470**	**71**	<50	<50
EB-10, 16.0'		B	3/5/97	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	**6.9**	**9.2**	<5.0	<5.0	<5.0
EB-10, 20.0'		B	3/5/97	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0
EB-10, 23.5'		B	3/5/97	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0
EB-10, 30'		B	3/5/97	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0
EB-11, 10.0'		A	4/2/97	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	**40**	**86**	**8.3**	<5.0	<5.0
EB-11, 16.0'		B	4/2/97	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	**14**	**15**	<5.0	<5.0	<5.0
EB-11, 24.0'		B	4/2/97	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0
EB-12, 10.0'		A	4/2/97	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	**32**	**99**	**12**	<5.0	<5.0
EB-12, 18.5'		B	4/2/97	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	**34**	**130**	**17**	<5.0	**5.6**
EB-13, 5.5'		VZ	4/2/97	<50	<50	<50	<50	<50	<50	<50	<50	<50	<50	<50	**250**	<50	<50	<50	<50
EB-13, 17.0'		B	4/2/97	<100	<100	<100	<100	<100	<100	<100	<100	<100	<100	<100	**3,600**	<100	<100	<100	<100
EB-13, 26.0'		B	4/2/97	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0
EB-13, 29.5'		B	4/2/97	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	**8.5**	<5.0	<5.0	<5.0	<5.0
EB-14, 9.0'		A	4/2/97	<50	<50	<50	<50	<50	<50	<50	<50	<50	<50	<50	**300**	<50	<50	<50	<50
EB-14, 19.5'		B	4/2/97	<50	<50	<50	<50	<50	<50	<50	<50	<50	<50	<50	**340**	<50	<50	<50	<50
EB-14, 29.5'		B	4/2/97	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0

Table 6
Soil Analytical Results - 1995 to 2009
Former Kaiser Aerotech Facilities
880 Doolittle Drive and 498 Hester Street
San Leandro, California

Sample No.	Notes	GW Zone	Sample Date	1,2-DCB (ug/kg)	1,3-DCB (ug/kg)	1,4-DCB (ug/kg)	Chloro-benzene (ug/kg)	Chloro-form (ug/kg)	Methylene Chloride (ug/kg)	Chloro-methane (ug/kg)	1,1,1-TCA (ug/kg)	1,1-DCA (ug/kg)	Chloro-ethane (ug/kg)	PCE (ug/kg)	TCE (ug/kg)	cis-1,2-DCE (ug/kg)	trans-1,2-DCE (ug/kg)	1,1-DCE (ug/kg)	Vinyl Chloride (ug/kg)
EB-15, 7.0'		A	4/3/97	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	**120**	**9.2**	<5.0	<5.0
EB-15, 10.5'		A	4/3/97	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	**110**	**13**	<5.0	<5.0
EB-15, 14.5'		A	4/3/97	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	**26**	<5.0	<5.0	<5.0
EB-16, 8.5'		A	4/3/97	<50	<50	<50	<50	<50	<50	<50	<50	<50	<50	<50	**230**	<50	<50	<50	<50
EB-16, 12.5'		A	4/3/97	<50	<50	<50	<50	<50	<50	<50	<50	<50	<50	<50	**210**	<50	<50	<50	<50
EB-16, 29.5'		B	4/3/97	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0
EB-17, 15.0'		A	4/3/97	<50	<51	<52	<50	<50	<50	<50	<50	<50	<50	<50	<50	**190**	<50	<50	<50
EB-17, 29.5'		B	4/3/97	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0
EB-18, 9.5'		A	4/3/97	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	**9.3**	**53**	**15**	<5.0	<5.0
EB-18, 14.0'		A	4/3/97	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0
CB-1, 2'		VZ	5/8/97	<400	<200	<400	<70	<50	<200	<60	<70	<40	<50	<50	<30	<40	<40	<30	<50
CB-1s, 2'		VZ	5/8/97	<5.0	<5.0	<5.0	<5.0	<5.0	**12**	<5.0	<5.0	<5.0	<5.0	<5.0	**28**	**100**	<5.0	<5.0	<5.0
CB-1, 7'		A	5/8/97	<400	<200	<400	<70	<50	<200	<60	<70	<40	<50	<50	<30	<40	<40	<30	<50
CB-1s, 11.5'		A	5/8/97	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0
CB-1s, 13.5'		A	5/8/97	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0
CB-1s, 17.5'		B	5/8/97	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0
CB-2, 2'		VZ	5/8/97	<400	<200	<400	<70	<50	<200	<60	<50	<40	<50	<50	<30	<40	<40	<30	<50
CB-2s, 2'		VZ	5/8/97	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0
CB-2, 5.5'		VZ	5/8/97	<400	<200	<400	<70	<50	<200	<60	<50	<40	<50	<50	<30	<40	<40	<30	<50
CB-2s, 5.5'		VZ	5/8/97	<5.0	<5.0	<5.0	<5.0	<5.0	**6.8**	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0
CB-3, 3'		VZ	5/8/97	<400	<200	<400	<70	<50	<200	<60	<50	<40	<50	<50	<30	<40	<40	<30	<50
CB-3s, 3'		VZ	5/8/97	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	**26**	**8.4**	<5.0	<5.0	<5.0
CB-3, 4'		VZ	5/8/97	<400	<200	<400	<70	<50	<200	<60	<50	<40	<50	<50	**40**	<40	<40	<30	<50
CB-4, 2.5'		VZ	5/8/97	<400	<200	<400	<70	<50	**200**	<60	<50	<40	<50	<50	<30	<40	<40	<30	<50
CB-4, 4.5'		VZ	5/8/97	<400	<200	<400	<70	<50	**300**	<60	<50	<40	<50	<50	<30	<40	<40	<30	<50
CB-5, 2.5'		VZ	5/8/97	<400	<200	<400	<70	<50	**200**	<60	<50	<40	<50	<50	<30	<40	<40	<30	<50
CB-5s, 2.5'		VZ	5/8/97	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0
CB-5, 6.5'		A	5/8/97	<400	<200	<400	<70	<50	**300**	<60	<50	<40	<50	<50	<30	<40	<40	<30	<50
CB-5s, 6.5'		A	5/8/97	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0
CB-6, 2.5'		VZ	5/8/97	<400	<200	<400	<70	<50	**200**	<60	<50	<40	<50	<50	<30	<40	<40	<30	<50
CB-6, 6.5'		A	5/8/97	<400	<200	<400	<70	<50	**200**	<60	<50	<40	<50	<50	<30	<40	<40	<30	<50
CB-7, 1.5'		VZ	5/8/97	<400	<200	<400	<70	<50	**200**	<60	<50	<40	<50	<50	<30	**60**	<40	<30	<50
CB-7s, 1.5'		VZ	5/8/97	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0
CB-7, 6'		A	5/8/97	<400	<200	<400	<70	<50	<200	<60	<50	<40	<50	<50	**30**	<40	<40	<30	<50
CB-7s, 11.5'		A	5/8/97	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	**13**	<5.0	<5.0	<5.0	<5.0
CB-10, 2.5'		VZ	5/9/97	<400	<200	<400	<70	<50	<200	<60	<50	<40	<50	<50	<30	<40	<40	<30	<50
CB-10, 5.5'		VZ	5/9/97	<400	<200	<400	<70	<50	<200	<60	<50	<40	<50	<50	<30	<40	<40	<30	<50
CB-10s, 2.5'		VZ	5/9/97	<5.0	<5.0	<5.0	<5.0	<5.0	**7.1**	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0
CB-11, 2.5'		VZ	5/9/97	<400	<200	<400	<70	<50	<200	<60	<50	<40	<50	<50	<30	<40	<40	<30	<50
CB-11, 5.5'		VZ	5/9/97	<400	<200	<400	<70	<50	<200	<60	<50	<40	<50	<50	<30	<40	<40	<30	<50
CB-11s, 2.5'		VZ	5/9/97	<5.0	<5.0	<5.0	<5.0	<5.0	**5.7**	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0

Table 6
Soil Analytical Results - 1995 to 2009
Former Kaiser Aerotech Facilities
880 Doolittle Drive and 498 Hester Street
San Leandro, California

Sample No.	Notes	GW Zone	Sample Date	1,2-DCB	1,3-DCB	1,4-DCB	Chloro-benzene	Chloro-form	Methylene Chloride	Chloro-methane	1,1,1-TCA	1,1-DCA	Chloro-ethane	PCE	TCE	cis-1,2-DCE	trans-1,2-DCE	1,1-DCE	Vinyl Chloride
				(ug/kg)	(ug/kg)	(ug/kg)	(ug/kg)	(ug/kg)	(ug/kg)	(ug/kg)	(ug/kg)	(ug/kg)	(ug/kg)	(ug/kg)	(ug/kg)	(ug/kg)	(ug/kg)	(ug/kg)	(ug/kg)
CB-12, 2.5'		VZ	5/9/97	<400	<200	<400	<70	<50	<200	<60	<50	<40	<50	<50	**510**	<40	<40	<30	<50
CB-12s, 2.5'		VZ	5/9/97	<5.0	<5.0	<5.0	<5.0	<5.0	**6.1**	<5.0	<5.0	<5.0	<5.0	<5.0	**77**	<5.0	<5.0	<5.0	<5.0
CB-12, 4.5'		VZ	5/9/97	<400	<200	<400	<70	<50	<200	<60	<50	<40	<50	<50	<30	<40	<40	<30	<50
CB-13, 2.5'		VZ	5/9/97	<400	<200	<400	<70	<50	<200	<60	<50	<40	<50	<50	**600**	<40	<40	<30	<50
CB-13s, 2.5'		VZ	5/9/97	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	**350**	<10	<10	<10	<10
CB-13, 5.5'		VZ	5/9/97	<400	<200	<400	<70	<50	<200	<60	<50	<40	<50	<50	**80**	<40	<40	<30	<50
CB-13s, 5.5'		VZ	5/9/97	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	**180**	**13**	<5.0	<5.0	<5.0
CB-13s, 10'		A	5/9/97	<50	<50	<50	<50	<50	<50	<5.0	<50	<50	<50	<50	**1,300**	**140**	<50	<50	<50
CB-14, 1.5'		VZ	5/9/97	<400	<200	<400	<70	<50	<200	<60	<50	<40	<50	<50	<30	<40	<40	<30	<50
CB-14s, 1.5'		VZ	5/9/97	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0
CB-15, 2.5'		VZ	5/9/97	<400	<200	<400	<70	<50	<200	<60	<50	<40	<50	<50	<30	<40	<40	<30	<50
CB-15s, 2.5'		VZ	5/9/97	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0
CB-15, 6.5'		VZ	5/9/97	<400	<200	<400	<70	<50	<200	<60	<50	<40	<50	<50	<30	<40	<40	<30	<50
CB-15s, 6.5'		A	5/9/97	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0
CB-16, 2.5'		VZ	5/9/97	<400	<200	<400	<70	<50	<200	<60	<50	<40	<50	<50	**30**	<40	<40	<30	<50
CB-16s, 2.5'		VZ	5/9/97	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0
CB-16, 6.5'		A	5/9/97	<400	<200	<400	<70	<50	<200	<60	<50	<40	<50	<50	**30**	<40	<40	<30	<50
CB-16s, 6.5'		A	5/9/97	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0
CB-17, 1.5'		VZ	5/9/97	<400	<200	<400	<70	<50	<200	<60	<50	<40	<50	<50	<30	<40	<40	<30	<50
CB-17s, 1.5'		VZ	5/9/97	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0
CB-17, 4.5'		VZ	5/9/97	<400	<200	<400	<70	<50	<200	<60	<50	<40	<50	<50	<30	<40	<40	<30	<50
CB-17s, 4.5'		VZ	5/9/97	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0
CB-18, 2.5'		VZ	5/9/97	<400	<200	<400	<70	<50	<200	<60	<50	<40	<50	<50	<30	<40	<40	<30	<50
CB-18s, 2.5'		VZ	5/9/97	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0
CB-18, 6'		A	5/9/97	<400	<200	<400	<70	<50	<200	<60	<50	<40	<50	<50	<30	<40	<40	<30	<50
CB-19, 2.5'		VZ	5/9/97	<400	<200	<400	<70	<50	<200	<60	<50	<40	<50	<50	<30	<40	<40	<30	<50
CB-19s, 2.5'		VZ	5/9/97	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0
CB-19, 4.5'		VZ	5/9/97	<400	<200	<400	<70	<50	<200	<60	<50	<40	<50	<50	<30	<40	<40	<30	<50
CB-19s, 4.5'		VZ	5/9/97	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0
CB-20, 2.5'		VZ	5/9/97	<400	<200	<400	<70	<50	<200	<60	<50	<40	<50	<50	<30	<40	<40	<30	<50
CB-20s, 2.5'		VZ	5/9/97	<5.0	<5.0	<5.0	<5.0	<5.0	**11**	<5.0	<5.0	<5.0	<5.0	<5.0	**7.0**	<5.0	<5.0	<5.0	<5.0
CB-20, 5.5'		VZ	5/9/97	<400	<200	<400	<70	<50	<200	<60	<50	<40	<50	<50	<30	<40	<40	<30	<50
CB-21, 2.5'		VZ	5/9/97	<400	<200	<400	<70	<50	<200	<60	<50	<40	<50	<50	<30	<40	<40	<30	<50
CB-21s, 2.5'		VZ	5/9/97	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0
CB-21, 5.5'		VZ	5/9/97	<400	<200	<400	<70	<50	<200	<60	<50	<40	<50	<50	<30	<40	<40	<30	<50
CB-22, 2.5'		VZ	5/9/97	<400	<200	<400	<70	<50	<200	<60	<50	<40	<50	<50	<30	<40	<40	<30	<50
CB-22s, 3'		VZ	5/9/97	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0
CB-22, 4'		VZ	5/9/97	<400	<200	<400	<70	<50	<200	<60	<50	<40	<50	<50	<30	<40	<40	<30	<50
CB-23, 2.5'		VZ	5/12/97	<400	<200	<400	<70	<50	**200**	<60	<50	<40	<50	<50	**130**	<40	<40	<30	<50
CB-23s, 2.5'		VZ	5/12/97	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0
CB-24, 2.5'		VZ	5/12/97	<400	<200	<400	<70	<50	<200	<60	<50	<40	<50	<50	<30	<40	<40	<30	<50
CB-25, 2.5'		VZ	5/12/97	<400	<200	<400	<70	<50	<200	<60	<50	<40	<50	<50	<30	<40	<40	<30	<50
CB-25s, 2.5'		VZ	5/12/97	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	**6.3**	<5.0	<5.0	<5.0	<5.0

Table 6
Soil Analytical Results - 1995 to 2009
Former Kaiser Aerotech Facilities
880 Doolittle Drive and 498 Hester Street
San Leandro, California

Sample No.	Notes	GW Zone	Sample Date	1,2-DCB	1,3-DCB	1,4-DCB	Chloro-benzene	Chloro-form	Methylene Chloride	Chloro-methane	1,1,1-TCA	1,1-DCA	Chloro-ethane	PCE	TCE	cis-1,2-DCE	trans-1,2-DCE	1,1-DCE	Vinyl Chloride
				(ug/kg)	(ug/kg)	(ug/kg)	(ug/kg)	(ug/kg)	(ug/kg)	(ug/kg)	(ug/kg)	(ug/kg)	(ug/kg)	(ug/kg)	(ug/kg)	(ug/kg)	(ug/kg)	(ug/kg)	(ug/kg)
CB-25, 4.5'		VZ	5/12/97	<400	<200	<400	<70	<50	<200	<60	<50	<40	<50	<50	<30	<40	<40	<30	<50
CB-26, 2.5'		VZ	5/15/97	<400	<200	<400	<70	<50	<200	<60	<50	<40	<50	<50	<30	<40	<40	<30	<50
CB-26, 4.0'		VZ	5/15/97	<400	<200	<400	<70	<50	<200	<60	<50	<40	<50	<50	<30	<40	<40	<30	<50
CB-27, 2.5'		VZ	5/15/97	<400	<200	<400	<70	<50	<200	<60	<50	<40	<50	<50	<30	<40	<40	<30	<50
CB-27s, 2.5'		VZ	5/15/97	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0
CB-27, 5.5'		VZ	5/15/97	<400	<200	<400	<70	<50	<200	<60	<50	<40	<50	<50	<30	<40	<40	<30	<50
CB-28, 2.5'		VZ	5/15/97	<400	<200	<400	<70	<50	<200	<60	<50	<40	<50	<50	**320**	<40	<40	<30	<50
CB-28s, 2.5'		VZ	5/15/97	<50	<50	<50	<50	<50	<50	<50	<50	<50	<50	<50	**1,100**	<50	<50	<50	<50
CB-28, 6.5'		A	5/15/97	<400	<200	<400	<70	<50	<200	<60	<50	<40	<50	<50	**230**	**50**	<40	<30	<50
CB-29, 2'		VZ	5/15/97	<400	<200	<400	<70	<50	<200	<60	<50	<40	<50	<50	<30	<40	<40	<30	<50
CB-29s, 2'		VZ	5/15/97	<5.0	<5.0	<5.0	<5.0	<5.0	**5.6**	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0
CB-30, 3'		VZ	5/15/97	<400	<200	<400	<70	<50	<200	<60	<50	<40	<50	<50	<30	<40	<40	<30	<50
CB-30s, 3'		VZ	5/15/97	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0
CB-31, 2'		VZ	5/12/97	<400	<200	<400	<70	<50	<200	<60	<50	<40	<50	<50	**110**	<40	<40	<30	<50
CB-31s, 2'		VZ	5/16/97	<50	<50	<50	<50	<50	<50	<50	<50	<50	<50	<50	**240**	<50	<50	<50	<50
CB-31, 4.5'		VZ	5/12/97	<400	<200	<400	<70	<50	<200	<60	<50	<40	<50	<50	**110**	<40	<40	<30	<50
CB-32, 0.5'		VZ	5/12/97	<400	<200	<400	<70	<50	<200	<60	**3,000**	**270**	<50	<50	**60**	<40	<40	<30	<50
CB-32, 4.5'		VZ	5/12/97	<400	<200	<400	<70	<50	<200	<60	**1,300**	**350**	<50	<50	<30	**210**	<40	<30	<50
CB-33, 2.5'		VZ	5/12/97	<400	<200	<400	<70	<50	<200	<60	<50	<40	<50	<50	<30	<40	<40	<30	<50
CB-33, 5.5'		VZ	5/12/97	<400	<200	<400	<70	<50	<200	<60	<50	<40	<50	<50	<30	<40	<40	<30	<50
CB-34, 1'		VZ	5/12/97	<400	<200	<400	<70	<50	<200	<60	<50	<40	<50	<50	<30	<40	<40	<30	<50
CB-34s, 1.5'		VZ	5/16/97	<5.0	<5.0	<5.0	<5.0	<5.0	**5.4**	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0
CB-34, 4.5'		VZ	5/12/97	<400	<200	<400	<70	<50	<200	<60	<50	<40	<50	<50	<30	<40	<40	<30	<50
CB-34s, 4.5'		VZ	5/16/97	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0
CB-35, 1.5'		VZ	5/12/97	<400	<200	<400	<70	<50	<200	<60	<50	<40	<50	<50	<30	<40	<40	<30	<50
CB-35, 4.5'		VZ	5/12/97	<400	<200	<400	<70	<50	<200	<60	<50	<40	<50	<50	<30	<40	<40	<30	<50
CB-36, 2.5'		VZ	5/16/97	<400	<200	<400	<70	<50	<200	<60	<50	<40	<50	<50	**240**	<40	<40	<30	<50
CB-36s, 2.5'		VZ	5/16/97	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	**8.7**	<5.0	<5.0	<5.0	<5.0
CB-36, 7'		A	5/16/97	<400	<200	<400	<70	<50	<200	<60	<50	<40	<50	<50	**420**	**70**	<40	<30	<50
CB-37, 2.5'		VZ	5/16/97	<400	<200	<400	<70	<50	<200	<60	<50	<40	<50	<50	<30	<40	<40	<30	<50
CB-37s, 2.5'		VZ	5/16/97	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0
CB-37, 6.5'		A	5/16/97	<400	<200	<400	<70	<50	<200	<60	<50	<40	<50	<50	**90**	<40	<40	<30	<50
CB-38s, 1.5'		VZ	5/16/97	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0
CB-38, 2.5'		VZ	5/16/97	<400	<200	<400	<70	<50	<200	<60	<50	<40	<50	<50	<30	<40	<40	<30	<50
CB-39, 2.5'		VZ	5/16/97	<400	<200	<400	<70	<50	<200	<60	<50	<40	<50	<50	<30	<40	<40	<30	<50
CB-39s, 3.5'		VZ	5/16/97	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0
CB-40, 2'		VZ	5/16/97	<400	<200	<400	<70	<50	<200	<60	<50	<40	<50	<50	<30	<40	<40	<30	<50
CB-40s, 2'		VZ	5/16/97	<5.0	<5.0	<5.0	<5.0	<5.0	**7.9**	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	**5.1**	<5.0	<5.0	<5.0
CB-40, 6.5'		A	5/16/97	<400	<200	<400	<70	<50	<200	<60	<50	<40	<50	<50	<30	<40	<40	<30	<50
CB-40s, 6.5'		A	5/16/97	<5.0	<5.0	<5.0	<5.0	<5.0	**7.3**	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0
CB-40s, 10'		A	5/16/97	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	**100**	**130**	<5.0	<5.0	<5.0

Table 6
Soil Analytical Results - 1995 to 2009
Former Kaiser Aerotech Facilities
880 Doolittle Drive and 498 Hester Street
San Leandro, California

Sample No.	Notes	GW Zone	Sample Date	1,2-DCB	1,3-DCB	1,4-DCB	Chloro-benzene	Chloro-form	Methylene Chloride	Chloro-methane	1,1,1-TCA	1,1-DCA	Chloro-ethane	PCE	TCE	cis-1,2-DCE	trans-1,2-DCE	1,1-DCE	Vinyl Chloride
				(ug/kg)	(ug/kg)	(ug/kg)	(ug/kg)	(ug/kg)	(ug/kg)	(ug/kg)	(ug/kg)	(ug/kg)	(ug/kg)	(ug/kg)	(ug/kg)	(ug/kg)	(ug/kg)	(ug/kg)	(ug/kg)
CB-41, 2.5'		VZ	5/16/97	<400	<200	<400	<70	<50	<200	<60	<50	<40	<50	<50	<30	<40	<40	<30	<50
CB-41s, 2.5'		VZ	5/16/97	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0
CB-41, 6.5'		A	5/16/97	<400	<200	<400	<70	<50	<200	<60	<50	<40	<50	<50	<30	<40	<40	<30	<50
CB-42, 2.5'		VZ	5/16/97	<400	<200	<400	<70	<50	<200	<60	<50	<40	<50	<50	<30	<40	<40	<30	<50
CB-42, 6'		A	5/16/97	<400	<200	<400	<70	<50	<200	<60	<50	<40	<50	<50	<30	<40	<40	<30	<50
CB-43, 3'		VZ	5/16/97	<400	<200	<400	<70	<50	<200	<60	<50	<40	<50	<50	**320**	<40	<40	<30	<50
CB-43s, 3'		VZ	5/16/97	<5.0	<5.0	<5.0	<5.0	<5.0	**9.4**	<5.0	<5.0	<5.0	<5.0	<5.0	**190**	<5.0	<5.0	<5.0	<5.0
CB-43, 5.5'		VZ	5/16/97	<400	<200	<400	<70	<50	<200	<60	<50	<40	<50	<50	**500**	<40	<40	<30	<50
CB-44, 3.5'		VZ	5/16/97	<400	<200	<400	<70	<50	<200	<60	<50	<40	<50	<50	<30	<40	<40	<30	<50
CB-44, 7'		A	5/16/97	<400	<200	<400	<70	<50	<200	<60	<50	<40	<50	<50	<30	<40	<40	<30	<50
CB-45s, 2'		VZ	5/16/97	<5.0	<5.0	<5.0	<5.0	<5.0	**5.7**	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0
CB-45, 3'		VZ	5/16/97	<400	<200	<400	<70	<50	<200	<60	<50	<40	<50	<50	<30	<40	<40	<30	<50
CB-45, 7'		A	5/16/97	<400	<200	<400	<70	<50	<200	<60	<50	<40	<50	<50	<30	<40	<40	<30	<50
CB-46, 3'		VZ	5/16/97	<400	<200	<400	<70	<50	<200	<60	<50	<40	<50	<50	<30	<40	<40	<30	<50
CB-46s, 4'		VZ	5/16/97	<5.0	<5.0	<5.0	<5.0	<5.0	**17**	<5.0	<5.0	<5.0	<5.0	<5.0	**15**	<5.0	<5.0	<5.0	<5.0
CB-46, 6'		A	5/16/97	<400	<200	<400	<70	<50	<200	<60	<50	<40	<50	<50	<30	<40	<40	<30	<50
CB-47s, 2.5'		VZ	5/16/97	<5.0	<5.0	<5.0	<5.0	<5.0	**9.2**	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0
CB-47, 3.5'		VZ	5/16/97	<400	<200	<400	<70	<50	<200	<60	<50	<40	<50	<50	**30**	<40	<40	<30	<50
CB-47s, 5'		VZ	5/16/97	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0
CB-47, 6'		A	5/16/97	<400	<200	<400	<70	<50	<200	<60	<50	<40	<50	<50	<30	<40	<40	<30	<50
CB-48, 3.5'		VZ	5/16/97	<400	<200	<400	<70	<50	<200	<60	<50	<40	<50	<50	<30	<40	<40	<30	<50
CB-48, 5'		VZ	5/16/97	<400	<200	<400	<70	<50	<200	<60	<50	<40	<50	<50	<30	<40	<40	<30	<50
CB-49, 4'		VZ	5/16/97	<400	<200	<400	<70	<50	<200	<60	<50	<40	<50	<50	<30	<40	<40	<30	<50
CB-49, 6'		A	5/16/97	<400	<200	<400	<70	<50	<200	<60	<50	<40	<50	<50	<30	<40	<40	<30	<50
CB-50, 3'		VZ	5/16/97	<400	<200	<400	<70	<50	<200	<60	<50	<40	<50	<50	<30	<40	<40	<30	<50
CB-50, 5.5'		VZ	5/16/97	<400	<200	<400	<70	<50	<200	<60	<50	<40	<50	<50	<30	<40	<40	<30	<50
CB-50, 7'		A	5/16/97	<400	<200	<400	<70	<50	<200	<60	<50	<40	<50	<50	<30	<40	<40	<30	<50
CB-50, 8'		A	5/16/97	<400	<200	<400	<70	<50	<200	<60	<50	<40	<50	<50	<30	<40	<40	<30	<50
CB-51, 3.5'		VZ	5/16/97	<400	<200	<400	<70	<50	<200	<60	<50	<40	<50	<50	<30	<40	<40	<30	<50
CB-51, 6'		A	5/16/97	<400	<200	<400	<70	<50	<200	<60	<50	<40	<50	<50	<30	<40	<40	<30	<50
CSS-1, 1'		VZ	5/12/97	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0
CSS-2, 1'		VZ	5/12/97	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0
CSS-3, 1'		VZ	5/12/97	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0
CSS-4, 1'		VZ	5/12/97	<5.0	<5.0	<5.0	<5.0	<5.0	**22**	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0
CSS-5, 1'		VZ	5/12/97	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0
CSS-6 GS		A	5/12/97	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0
CSS-7, 1'		VZ	5/12/97	**8.3**	<5.0	<5.0	<5.0	<5.0	**18**	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	**42**	<5.0	<5.0	<5.0

Table 6
Soil Analytical Results - 1995 to 2009
Former Kaiser Aerotech Facilities
880 Doolittle Drive and 498 Hester Street
San Leandro, California

Sample No.	Notes	GW Zone	Sample Date	1,2-DCB	1,3-DCB	1,4-DCB	Chloro-benzene	Chloro-form	Methylene Chloride	Chloro-methane	1,1,1-TCA	1,1-DCA	Chloro-ethane	PCE	TCE	cis-1,2-DCE	trans-1,2-DCE	1,1-DCE	Vinyl Chloride
				(ug/kg)	(ug/kg)	(ug/kg)	(ug/kg)	(ug/kg)	(ug/kg)	(ug/kg)	(ug/kg)	(ug/kg)	(ug/kg)	(ug/kg)	(ug/kg)	(ug/kg)	(ug/kg)	(ug/kg)	(ug/kg)
CSS-8, 1'		VZ	5/12/97	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0
MW-12, 5.5'		VZ	3/6/97	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0
MW-12, 9.0'		A	3/6/97	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0
MW-13, 4.0'		VZ	3/6/97	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	**10**	<5.0	<5.0	<5.0
MW-13, 9.5'		A	3/6/97	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	**13**	<5.0	<5.0	<5.0
MW-14, 4.5'		VZ	3/6/97	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0
MW-14, 8.5'		A	3/6/97	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0
GP-37,4'		VZ	8/17/98	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<10	<5.0	<5.0	<10	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0
GP-38, 15'		A	8/17/98	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<10	<5.0	<5.0	<10	<5.0	**6.3**	**61**	**10**	<5.0	<5.0
GP-39, 10'		A	8/17/98	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<10	<5.0	<5.0	<10	<5.0	**27**	<5.0	<5.0	<5.0	<5.0
GP-40, 1'		VZ	8/17/98	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<10	<5.0	<5.0	<10	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0
GP-40, 7'		A	8/17/98	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<10	<5.0	<5.0	<10	<5.0	**180**	**14**	<5.0	<5.0	<5.0
GP-41, 2.5'		VZ	8/18/98	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<10	<5.0	<5.0	<10	<5.0	**93**	<5.0	<5.0	<5.0	<5.0
GP-41,15'		A	8/18/98	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<10	<5.0	<5.0	<10	<5.0	**170**	**14**	<5.0	<5.0	<5.0
GP-42, 2.5'		VZ	8/18/98	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<10	<5.0	<5.0	<10	<5.0	**20**	**36**	**19**	<5.0	<5.0
GP-42, 9.5'		A	8/18/98	<12	<13	<14	<12	<12	<12	<24	<12	<12	<24	<12	**87**	<12	<12	<12	<12
GP-43, 2'		VZ	8/18/98	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<10	<5.0	<5.0	<10	<5.0	**17**	<5.0	<5.0	<5.0	<5.0
GP-43, 10'		A	8/18/98	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<10	<5.0	<5.0	<10	<5.0	**92**	**14**	<5.0	<5.0	<5.0
GP-44, 2'		VZ	8/18/98	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<10	<5.0	<5.0	<10	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0
GP-44, 5'		VZ	8/18/98	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<10	<5.0	<5.0	<10	<5.0	**11**	<5.0	<5.0	<5.0	<5.0
GP-44, 10'		A	8/18/98	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<10	<5.0	<5.0	<10	<5.0	**220**	**42**	<5.0	<5.0	<5.0
GP-44, 15'		A	8/18/98	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<10	<5.0	<5.0	<10	<5.0	**22**	<5.0	<5.0	<5.0	<5.0
GP-45, 1.5'		VZ	8/18/98	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<10	<5.0	<5.0	<10	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0
GP-46, 1.5'		VZ	8/18/98	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<10	<5.0	<5.0	<10	<5.0	**52**	**25**	<5.0	<5.0	<5.0
GP-47, 1.5'		VZ	8/18/98	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<10	<5.0	<5.0	<10	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0
GP-48, 2.5'		VZ	8/19/98	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<10	<5.0	<5.0	<10	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0
GP-48, 20'		B	8/19/98	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<10	<5.0	<5.0	<10	<5.0	<5.0	**18**	<5.0	<5.0	<5.0
GP-49, 1.5'		VZ	8/19/98	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<10	<5.0	<5.0	<10	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0
GP-49, 10'		A	8/19/98	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<10	<5.0	<5.0	<10	<5.0	**10**	**83**	**24**	<5.0	<5.0
GP-50, 18'		B	8/19/98	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<10	<5.0	<5.0	<10	<5.0	<5.0	**37**	<5.0	<5.0	<5.0
GP-51, 2.5'		VZ	8/19/98	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<10	<5.0	<5.0	<10	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0
GP-51, 15'		A	8/19/98	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<10	<5.0	<5.0	<10	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0
GP-52, 2.5'		VZ	8/19/98	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<10	<5.0	<5.0	<10	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0
GP-52, 7.5'		A	8/19/98	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<10	<5.0	<5.0	<10	<5.0	**92**	**110**	**44**	<5.0	**15**

Table 6
Soil Analytical Results - 1995 to 2009
Former Kaiser Aerotech Facilities
880 Doolittle Drive and 498 Hester Street
San Leandro, California

Sample No.	Notes	GW Zone	Sample Date	1,2-DCB	1,3-DCB	1,4-DCB	Chloro-benzene	Chloro-form	Methylene Chloride	Chloro-methane	1,1,1-TCA	1,1-DCA	Chloro-ethane	PCE	TCE	cis-1,2-DCE	trans-1,2-DCE	1,1-DCE	Vinyl Chloride
				(ug/kg)	(ug/kg)	(ug/kg)	(ug/kg)	(ug/kg)	(ug/kg)	(ug/kg)	(ug/kg)	(ug/kg)	(ug/kg)	(ug/kg)	(ug/kg)	(ug/kg)	(ug/kg)	(ug/kg)	(ug/kg)
GP-52, 15'		A	8/19/98	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<10	<5.0	<5.0	<10	<5.0	**180**	**190**	**25**	<5.0	<5.0
GP-53, 2.5'		VZ	8/24/98	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<10	<5.0	<5.0	<10	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0
GP-53, 24.5'		B	8/24/98	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<10	<5.0	<5.0	<10	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0
LMW-1, 6.5'		A	8/21/98	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<10	<5.0	<5.0	<10	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0
LMW-1, 11'		A	8/21/98	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<10	<5.0	<5.0	<10	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0
LMW-1, 28'		B	8/21/98	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<10	<5.0	<5.0	<10	<5.0	**340**	<5.0	<5.0	<5.0	<5.0
LMW-4, 15'		A	8/24/98	<25	<25	<25	<25	<25	<25	<50	<25	<25	<50	<25	**2,200**	**280**	<25	<25	<25
LMW-4, 25'		B	8/24/98	<10	<10	<10	<10	<10	<10	<20	<10	<10	<20	<10	**48**	**160**	<10	<10	<10
MW-15, 2'		VZ	8/20/98	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<10.0	<5.0	<5.0	<10.0	<5.0	**91**	<5.0	<5.0	<5.0	<5.0
MW-16, 2.5'		VZ	8/24/98	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<10	<5.0	<5.0	<10	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0
MW-16, 8'		A	8/24/98	<25	<26	<27	<25	<25	<25	<50	<25	<25	<50	<25	<25	**350**	**49**	<25	<25
MW-18, 3'		VZ	8/20/98	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<10	<5.0	<5.0	<10	**9.0**	**140**	<5.0	<5.0	<5.0	<5.0
MW-18, 9'		A	8/20/98	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<10	<5.0	<5.0	<10	**250**	**4,100**	**320**	<5.0	<5.0	**34**
CPT-20, 4'		VZ	11/12/99	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0
CPT-20, 20'		B	11/12/99	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0
CPT-21, 4'		VZ	11/12/99	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0
CPT-21, 20'		B	11/12/99	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0
TP-2, 3'		VZ	6/18/01	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0
TP-2, 7'		A	6/18/01	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	**15**	<5.0	<5.0	<5.0
TP-2, 24'		B	6/18/01	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0
TP-3, 7'		A	6/19/01	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0
TP-3, 15'		A	6/19/01	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0
TP-3, 30'		LB	6/19/01	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0
TP-4, 7'		A	6/19/01	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0
TP-4, 15'		A	6/19/01	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0
TP-4, 33'		LB	6/19/01	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0
TP-5, 6'		A	6/21/01	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0
TP-5, 15'		A	6/21/01	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0
TP-5, 30'		LB	6/21/01	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	**17**	<5.0	<5.0	<5.0	<5.0
TP-6, 7'		A	6/20/01	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	**36**	**54**	**7.1**	<5.0	<5.0
TP-6, 10'		A	6/20/01	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	**88**	**100**	**14**	<5.0	<5.0
TP-6, 15'		A	6/20/01	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	**18**	**24**	<5.0	<5.0	<5.0
TP-7, 7'		A	6/21/01	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	**8.0**	**54**	<5.0	<5.0	<5.0
TP-7, 10'		A	6/21/01	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	**7.6**	**72**	**11**	<5.0	<5.0
FS-A1, 15'		A	1/29/02	<24	<24	<24	<24	<24	<24	<24	<24	<24	<24	<24	<24	<24	<24	<24	<24
FS-A1, 21'		B	1/29/02	<22	<22	<22	<22	<22	<22	<22	<22	<22	<22	<22	<22	<22	<22	<22	<22
FS-A1, 26'		B	1/29/02	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	**8.8**	<5.0	<5.0	<5.0	<5.0
FS-A1, 30'		B	1/29/02	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0

Table 6
Soil Analytical Results - 1995 to 2009
Former Kaiser Aerotech Facilities
880 Doolittle Drive and 498 Hester Street
San Leandro, California

Sample No.	Notes	GW Zone	Sample Date	1,2-DCB	1,3-DCB	1,4-DCB	Chloro-benzene	Chloro-form	Methylene Chloride	Chloro-methane	1,1,1-TCA	1,1-DCA	Chloro-ethane	PCE	TCE	cis-1,2-DCE	trans-1,2-DCE	1,1-DCE	Vinyl Chloride
				(ug/kg)	(ug/kg)	(ug/kg)	(ug/kg)	(ug/kg)	(ug/kg)	(ug/kg)	(ug/kg)	(ug/kg)	(ug/kg)	(ug/kg)	(ug/kg)	(ug/kg)	(ug/kg)	(ug/kg)	(ug/kg)
FS-A2, 10'		A	1/23/02	**5.1**	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	**24**	**33**	<5.0	<5.0	<5.0
FS-A2, 16.5'		B	1/23/02	<5.0	<5.1	<5.2	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	**57**	**7.2**	<5.0	<5.0	<5.0
FS-A2, 20'		B	1/23/02	<21	<22	<23	<21	<21	<21	<21	<21	<21	<21	<21	**70**	<21	<21	<21	<21
FS-A2, 34'		B	1/23/02	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	**12**	<5.0	<5.0	<5.0	<5.0
FS-A3, 10'		A	1/23/02	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	**35**	<5.0	<5.0	<5.0	<5.0
FS-A3, 15'		A	1/23/02	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	**11**	<5.0	<5.0	<5.0	<5.0
FS-A3, 20'		B	1/23/02	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0
FS-A3, 26'		B	1/23/02	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0
FS-A3, 34'		B	1/23/02	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0
FS-A4, 10'		A	1/23/02	<20	<21	<22	<20	<20	<20	<20	<20	<20	<20	<20	**150**	**27**	<20	<20	<20
FS-A4, 15'		A	1/23/02	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	**170**	<5.0	<5.0	<5.0	<5.0
FS-A4, 21'		B	1/23/02	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	**68**	**46**	<5.0	<5.0	<5.0
FS-A4, 25.5'		B	1/23/02	<250	<251	<252	<250	<250	<2500	<500	<250	<250	<500	<250	<250	**950**	<250	<250	<250
FS-A4, 28.5'		B	1/23/02	<5.0	<5.1	<5.2	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	**130**	**85**	<5.0	<5.0	<5.0
FS-A4, 31.5'		B	1/23/02	<250	<250	<250	<250	<250	<2500	<500	<250	<250	<500	<250	**440**	<250	<250	<250	<250
FS-A4, 34'		B	1/23/02	<250	<250	<250	<250	<250	<2500	<500	<250	<250	<500	<250	**19,000**	<250	<250	<250	<250
FS-A5, 10'		A	1/24/02	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0
FS-A5, 20.5'		B	1/24/02	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0
FS-A5, 25'		B	1/24/02	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0
FS-A5, 34'		B	1/24/02	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0
FS-A6, 5.5'		VZ	1/23/02	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	**100**	**9.1**	<5.0	<5.0	<5.0
FS-A6, 10'		A	1/23/02	<250	<251	<252	<250	<250	<2500	<500	<250	<250	<500	<250	**1,300**	**270**	<250	<250	<250
FS-A6, 15.5'		A	1/23/02	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	**24**	<5.0	<5.0	<5.0	<5.0
FS-A6, 25.5'		B	1/23/02	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0
FS-A6, 34'		B	1/23/02	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0
FS-A7, 15'		A	1/23/02	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	**67**	<5.0	<5.0	<5.0	<5.0
FS-A7, 21'		B	1/23/02	<21	<21	<21	<21	<21	<21	<21	<21	<21	<21	<21	**290**	<21	<21	<21	<21
FS-A7, 30.5		B	1/23/02	<21	<21	<21	<21	<21	<21	<21	<21	<21	<21	<21	**280**	<21	<21	<21	<21
FS-A7, 34'		B	1/23/02	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	**81**	<5.0	<5.0	<5.0	<5.0
FS-A8, 5.5'		VZ	1/25/02	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0
FS-A8, 10'		A	1/25/02	<25	<26	<27	<25	<25	<25	<25	<25	<25	<25	<25	**30**	<25	<25	<25	<25
FS-A8, 15'		A	1/25/02	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	**110**	**12**	<5.0	<5.0	<5.0
FS-A8, 25.5'		B	1/25/02	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	**6.5**	<5.0	<5.0	<5.0	<5.0
FS-A8, 30.5'		B	1/25/02	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0
FS-A9, 10'		A	1/29/02	<23	<23	<23	<23	<23	<23	<23	<23	<23	<23	<23	**31**	<23	<23	<23	<23
FS-A9, 21'		B	1/29/02	<250	<250	<250	<250	<250	<2,500	<500	<250	<250	<500	<250	**2,000**	<250	<250	<250	<250
FS-A9, 25'		B	1/29/02	<250	<250	<250	<250	<250	<2,500	<500	<250	<250	<500	<250	**8,000**	<250	<250	<250	<250
FS-A9, 31'		B	1/29/02	<25	<25	<25	<25	<25	<25	<25	<25	<25	<25	<25	**170**	<25	<25	<25	<25
FS-A9, 34'		B	1/29/02	<21	<21	<21	<21	<21	<21	<21	<21	<21	<21	<21	**88**	<21	<21	<21	<21
FS-A10, 10'		A	1/28/02	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	**58**	**9.2**	<5.0	<5.0	<5.0
FS-A10, 15'		A	1/28/02	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	**62**	**6.6**	<5.0	<5.0	<5.0
FS-A10, 20.5'		B	1/28/02	<24	<25	<26	<24	<24	<24	<24	<24	<24	<24	<24	**330**	**52**	<24	<24	<24
FS-A10, 30.5'		B	1/28/02	<5.0	<5.1	<5.2	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	**9.4**	<5.0	<5.0	<5.0	<5.0
FS-A11, 10'		A	1/29/02	<25	<25	<25	<25	<25	<25	<25	<25	<25	<25	<25	**950**	<25	<25	<25	<25
FS-A11, 15'		A	1/29/02	<250	<250	<250	<250	<250	<2,500	<500	<250	<250	<500	<250	**870**	<250	<250	<250	<250
FS-A11, 20'		B	1/29/02	<23	<23	<23	<23	<23	<23	<23	<23	<23	<23	<23	**190**	<23	<23	<23	<23
FS-A11, 25'		B	1/29/02	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	**6.6**	<5.0	<5.0	<5.0	<5.0

Table 6
Soil Analytical Results - 1995 to 2009
Former Kaiser Aerotech Facilities
880 Doolittle Drive and 498 Hester Street
San Leandro, California

Sample No.	Notes	GW Zone	Sample Date	1,2-DCB	1,3-DCB	1,4-DCB	Chloro-benzene	Chloro-form	Methylene Chloride	Chloro-methane	1,1,1-TCA	1,1-DCA	Chloro-ethane	PCE	TCE	cis-1,2-DCE	trans-1,2-DCE	1,1-DCE	Vinyl Chloride
				(ug/kg)	(ug/kg)	(ug/kg)	(ug/kg)	(ug/kg)	(ug/kg)	(ug/kg)	(ug/kg)	(ug/kg)	(ug/kg)	(ug/kg)	(ug/kg)	(ug/kg)	(ug/kg)	(ug/kg)	(ug/kg)
FS-A11, 30'		B	1/29/02	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0
FS-A11, 34'		B	1/29/02	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0
FS-B1, 10'		A	1/24/02	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	**21**	<5.0	<5.0	<5.0	<5.0
FS-B1, 15'		A	1/24/02	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	**9.4**	<5.0	<5.0	<5.0	<5.0
FS-B1, 20'		B	1/24/02	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0
FS-B1, 25'		B	1/24/02	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0
FS-B1, 31'		B	1/24/02	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0
FS-B2, 15'		A	1/17/02	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	**21**	**13**	<5.0	<5.0	<5.0
FS-B2, 26'		B	1/17/02	<5.0	<5.0	<5.0	<5.0	<5.0	**5.0**	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0
FS-B2, 35'		B	1/17/02	<23	<23	<23	<23	<23	<23	<23	<23	<23	<23	<23	<23	<23	<23	<23	<23
FS-B3, 10'		A	1/18/02	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	**12**	**7.3**	<5.0	<5.0	<5.0
FS-B3, 20'		B	1/18/02	<21	<21	<21	<21	<21	<21	<21	<21	<21	<21	<21	**190**	**58**	<21	<21	<21
FS-B3, 25'		B	1/18/02	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	**34**	<5.0	<5.0	<5.0
FS-B3, 34.5'		B	1/18/02	<11	<11	<11	<11	<11	<11	<11	<11	<11	<11	<11	**58**	<11	<11	<11	<11
FS-B4, 11'		A	1/17/02	<25	<25	<25	<25	<25	<25	<25	<25	<25	<25	<25	<25	**42**	<25	<25	<25
FS-B4, 15'		A	1/17/02	<25	<25	<25	<25	<25	<25	<25	<25	<25	<25	<25	<25	**160**	<25	<25	<25
FS-B4, 20'		B	1/17/02	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	**41**	<5.0	<5.0	<5.0
FS-B5, 10'		A	1/24/02	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	**64**	**13**	<5.0	<5.0	<5.0
FS-B5, 20'		B	1/24/02	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0
FS-B5, 30'		B	1/24/02	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0
FS-B5, 34'		B	1/24/02	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0
FS-B6, 10'		A	1/24/02	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0
FS-B6, 20.5'		B	1/24/02	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	**8.6**	<5.0	<5.0	<5.0	<5.0
FS-B6, 26'		B	1/24/02	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0
FS-B6, 30.5'		B	1/24/02	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0
FS-B6, 34'		B	1/24/02	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0
FS-C1, 15'		A	1/17/02	<24	<24	<24	<24	<24	<24	<24	<24	<24	<24	<24	**170**	**94**	<24	<24	<24
FS-C1, 20'		B	1/17/02	<25	<25	<25	<25	<25	<25	<25	<25	<25	<25	<25	<25	**36**	<25	<25	<25
FS-C1, 25'		B	1/17/02	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	**79**	<5.0	<5.0	<5.0
FS-C1, 30'		B	1/17/02	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0
FS-C2, 5'		VZ	1/21/02	<29	<30	<31	<29	<29	<29	<29	<29	<29	<29	<29	**75**	**63**	**50**	<29	<29
FS-C2, 10'		A	1/21/02	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	**77**	**31**	**6.1**	<5.0	<5.0
FS-C2, 15'		A	1/21/02	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	**8.5**	**5.8**	<5.0	<5.0
FS-C2, 25'		B	1/21/02	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0
FS-C3, 7.5'		A	1/17/02	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0
FS-C3, 10.5'		A	1/17/02	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	**44**	**74**	<5.0	<5.0	<5.0
FS-C3, 20'		B	1/17/02	<19	<19	<19	<19	<19	<19	<19	<19	<19	<19	<19	**460**	**35**	<19	<19	<19
FS-C3, 25'		B	1/17/02	<250	<250	<250	<250	<250	<2,500	<500	<250	<250	<500	<250	**640**	<250	<250	<250	<250
FS-C3, 34.5'		B	1/17/02	<250	<250	<250	<250	<250	<2,500	<500	<250	<250	<500	<250	**550**	<250	<250	<250	<250
FS-C4, 5'		VZ	1/18/02	<24	<24	<24	<24	<24	<24	<24	<24	<24	<24	<24	**160**	**110**	<24	<24	<24
FS-C4, 10'		A	1/18/02	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	**120**	**190**	<5.0	<5.0	**13**
FS-C4, 15'		A	1/18/02	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	**13**	**59**	<5.0	<5.0	<5.0
FS-C4, 20'		B	1/18/02	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	**140**	<5.0	<5.0	<5.0	<5.0
FS-C4, 25'		B	1/18/02	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0
FS-C4, 34'		B	1/18/02	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0

Table 6
Soil Analytical Results - 1995 to 2009
Former Kaiser Aerotech Facilities
880 Doolittle Drive and 498 Hester Street
San Leandro, California

Sample No.	Notes	GW Zone	Sample Date	1,2-DCB	1,3-DCB	1,4-DCB	Chloro-benzene	Chloro-form	Methylene Chloride	Chloro-methane	1,1,1-TCA	1,1-DCA	Chloro-ethane	PCE	TCE	cis-1,2-DCE	trans-1,2-DCE	1,1-DCE	Vinyl Chloride
				(ug/kg)	(ug/kg)	(ug/kg)	(ug/kg)	(ug/kg)	(ug/kg)	(ug/kg)	(ug/kg)	(ug/kg)	(ug/kg)	(ug/kg)	(ug/kg)	(ug/kg)	(ug/kg)	(ug/kg)	(ug/kg)
FS-C5, 5'		VZ	1/18/02	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	**93**	**98**	**12**	<5.0	<5.0
FS-C5, 10'		A	1/18/02	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	**12**	**58**	<5.0	<5.0	<5.0
FS-C5, 15'		A	1/18/02	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	**24**	<5.0	<5.0	<5.0
FS-C5, 20'		B	1/18/02	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0
FS-C6, 5'		VZ	1/18/02	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	**60**	**61**	**7.1**	<5.0	<5.0
FS-C6, 10'		A	1/18/02	<13	<14	<15	<13	<13	<13	<13	<13	<13	<13	<13	**29**	**99**	<13	<13	<13
FS-C6, 20'		B	1/18/02	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	**14**	<5.0	<5.0	<5.0
FS-C7, 8'		A	1/21/02	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	**18**	**5.0**	<5.0	<5.0
FS-C7, 15'		A	1/21/02	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	**5.3**	<5.0	<5.0	<5.0
FS-C7, 20.5'		B	1/21/02	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0
FS-C7, 30'		B	1/21/02	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0
FS-C7, 34'		B	1/21/02	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0
FS-C8, 10'		A	1/18/02	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	**18**	**9.1**	<5.0	<5.0
FS-C8, 15'		A	1/18/02	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	**23**	**16**	<5.0	<5.0
FS-C8, 20'		B	1/18/02	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0
FS-C8, 30'		B	1/18/02	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0
FS-C9, 10'		A	1/22/02	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	**9.0**	**5.1**	<5.0	<5.0
FS-C9, 15'		A	1/22/02	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0
FS-C9, 20'		B	1/22/02	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0
FS-C9, 34'		B	1/22/02	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0
FS-C10, 5'		VZ	1/21/02	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	**30**	**56**	**11**	<5.0	<5.0
FS-C10, 15'		A	1/21/02	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	**13**	<5.0	<5.0
FS-C10, 20'		B	1/21/02	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0
FS-C10, 26'		B	1/21/02	<5.0	<5.0	<5.0	<5.0	<5.0	**6.2**	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0
FS-C10, 30'		B	1/21/02	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0
FS-C11, 5'		VZ	1/21/02	<5.0	<5.0	<5.0	<5.0	<5.0	**15**	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0
FS-C11, 10'		A	1/21/02	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	**120**	**21**	<5.0	<5.0
FS-C11, 15'		A	1/21/02	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0
FS-C11, 25'		B	1/21/02	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0
FS-C12, 9'		A	1/21/02	<23	<23	<23	<23	<23	<23	<23	<23	<23	<23	<23	<23	**82**	<23	<23	<23
FS-C12, 15'		A	1/21/02	<25	<25	<25	<25	<25	<25	<25	<25	<25	<25	<25	<25	**44**	<25	<25	<25
FS-C12, 20'		B	1/21/02	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0
FS-C12, 25'		B	1/21/02	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0
FS-C13, 5'		VZ	1/22/02	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0
FS-C13, 10'		A	1/22/02	<23	<23	<23	<23	<23	<23	<23	<23	<23	<23	<23	**170**	**120**	<23	<23	<23
FS-C14, 5'		VZ	1/24/02	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0
FS-C14, 10'		A	1/24/02	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0
FS-C15, 10'		A	1/22/02	<16	<16	<16	<16	<16	**19**	<16	<16	<16	<16	<16	**85**	**620**	**130**	<16	**21**
FS-C15, 15'		A	1/22/02	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	**120**	**20**	<5.0	**8.8**
FS-C15, 21'		B	1/22/02	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	**7.6**	<5.0	<5.0	<5.0
FS-C15, 26'		B	1/22/02	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0
FS-C16, 5'		VZ	1/25/02	<250	<250	<250	<250	<250	<250	<250	<250	<250	<250	<250	<250	<250	<250	<250	<250
FS-C16, 10'		A	1/25/02	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0
FS-C16, 15'		A	1/25/02	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0
FS-C16, 25.5'		B	1/25/02	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0

Table 6
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880 Doolittle Drive and 498 Hester Street
San Leandro, California

Sample No.	Notes	GW Zone	Sample Date	1,2-DCB (ug/kg)	1,3-DCB (ug/kg)	1,4-DCB (ug/kg)	Chloro-benzene (ug/kg)	Chloro-form (ug/kg)	Methylene Chloride (ug/kg)	Chloro-methane (ug/kg)	1,1,1-TCA (ug/kg)	1,1-DCA (ug/kg)	Chloro-ethane (ug/kg)	PCE (ug/kg)	TCE (ug/kg)	cis-1,2-DCE (ug/kg)	trans-1,2-DCE (ug/kg)	1,1-DCE (ug/kg)	Vinyl Chloride (ug/kg)
FS-C17, 5'		VZ	1/25/02	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	**52**	**7.8**	<5.0	<5.0
FS-C17, 10'		A	1/25/02	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	**19**	<5.0	<5.0	<5.0
FS-C18, 10'		A	1/25/02	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	**72**	**74**	**9.4**	<5.0	<5.0
FS-C18, 18'		B	1/25/02	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	**18**	**98**	**7.3**	<5.0	<5.0
FS-C18, 30.5'		B	1/25/02	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0
FS-C19, 10'		A	1/22/02	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	**45**	**5.1**	<5.0	<5.0	<5.0
FS-C19, 15'		A	1/22/02	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	**40**	**66**	**11**	<5.0	<5.0
FS-C20, 5'		VZ	1/29/02	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	**21**	**12**	<5.0	<5.0	<5.0
FS-C20, 10'		A	1/29/02	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	**14**	<5.0	<5.0	<5.0
FS-C20, 20'		B	1/29/02	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0
FS-C20, 34'		B	1/29/02	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0
FS-C21, 5'		VZ	1/29/02	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	**20**	<5.0	<5.0	<5.0	<5.0
FS-C21, 15'		A	1/29/02	<22	<22	<22	<22	<22	<22	<22	<22	<22	<22	<22	<22	**480**	<22	<22	<22
FS-C21, 20.5'		B	1/29/02	<22	<22	<22	<22	<22	<22	<22	<22	<22	<22	<22	<22	**92**	<22	<22	<22
FS-C21, 25.5'		B	1/29/02	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0
FS-C21, 34'		B	1/29/02	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0
FS-D1, 15.5-16'		B	1/29/02	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	**5.1**	<5.0	<5.0	<5.0
FS-D1, 20.5-21'		B	1/29/02	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0
FS-D1, 25.5-26'		B	1/29/02	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0
FS-D1, 34-34.5'		B	1/29/02	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0
FS-D2, 10'		A	1/29/02	<23	<23	<23	<23	<23	<23	<23	<23	<23	<23	<23	**34**	<23	<23	<23	<23
FS-D2, 15'		A	1/29/02	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0
FS-D2, 29'		B	1/29/02	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	**12**	<5.0	<5.0	<5.0	<5.0
FS-D2, 34'		B	1/29/02	<19	<19	<19	<19	<19	<19	<19	<19	<19	<19	<19	**87**	<19	<19	<19	<19
FS-D3, 5'		VZ	1/25/02	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	**9.5**	<5.0	<5.0	<5.0
FS-D3, 15'		A	1/25/02	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0
FS-D3, 25'		B	1/25/02	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0
FS-D3, 34'		B	1/25/02	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0
FS-D4, 10'		A	1/28/02	<24	<25	<26	<24	<24	<24	<24	<24	<24	<24	<24	**47**	<24	<24	<24	<24
FS-D4-15'		A	1/28/02	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	**41**	<5.0	<5.0	<5.0	<5.0
FS-D4, 20'		B	1/28/02	<23	<23	<23	<23	<23	<23	<23	<23	<23	<23	<23	**490**	<23	<23	<23	<23
FS-D4, 25.5'		B	1/28/02	<24	<24	<24	<24	<24	<24	<24	<24	<24	<24	<24	**240**	<24	<24	<24	<24
FS-D4, 34'		B	1/28/02	<23	<23	<23	<23	<23	<23	<23	<23	<23	<23	<23	**280**	<23	<23	<23	<23
FS-D5, 6.5'		A	1/28/02	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	**94**	**6.0**	<5.0	<5.0	<5.0
FS-D5, 15'		A	1/28/02	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	**28**	<5.0	<5.0	<5.0	<5.0
FS-D5,20.5'		B	1/28/02	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	**54**	<5.0	<5.0	<5.0	<5.0
FS-D5, 25.5'		B	1/28/02	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0
FS-D6, 5'		VZ	1/28/02	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0
FS-D6, 10'		A	1/28/02	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0
FS-D7, 5'		VZ	1/28/02	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0
FS-D7, 10'		A	1/28/02	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0
FS-D8, 5.5'		VZ	1/28/02	<25	<25	<25	<25	<25	<25	<25	<25	<25	<25	<25	**37**	<25	<25	<25	<25
FS-D8, 10'		A	1/28/02	<24	<24	<24	<24	<24	<24	<24	<24	<24	<24	<24	**110**	**25**	<24	<24	<24

Table 6
Soil Analytical Results - 1995 to 2009
Former Kaiser Aerotech Facilities
880 Doolittle Drive and 498 Hester Street
San Leandro, California

Sample No.	Notes	GW Zone	Sample Date	1,2-DCB	1,3-DCB	1,4-DCB	Chloro-benzene	Chloro-form	Methylene Chloride	Chloro-methane	1,1,1-TCA	1,1-DCA	Chloro-ethane	PCE	TCE	cis-1,2-DCE	trans-1,2-DCE	1,1-DCE	Vinyl Chloride
				(ug/kg)	(ug/kg)	(ug/kg)	(ug/kg)	(ug/kg)	(ug/kg)	(ug/kg)	(ug/kg)	(ug/kg)	(ug/kg)	(ug/kg)	(ug/kg)	(ug/kg)	(ug/kg)	(ug/kg)	(ug/kg)
FS-D8, 20.5'		B	1/28/02	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	**89**	**5.0**	<5.0	<5.0	<5.0
FS-D8, 34'		B	1/28/02	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	**34**	<5.0	<5.0	<5.0	<5.0
CPT-24, 16.5-17'		B	5/19/03	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	**18**	<5.0	<5.0	<5.0	<5.0
CPT-24, 26.5-27'		B	5/19/03	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	**28**	<5.0	<5.0	<5.0	<5.0
CPT-25, 4.5-5'		VZ	5/19/03	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	**9.4**	<5.0	<5.0	<5.0	<5.0
CPT-25, 15-15.5'		B	5/19/03	<250	<250	<250	<250	<250	<2,500	<500	<250	<250	<500	<250	**570**	<250	<250	<250	<250
CPT-26, 29-29.5'		B	5/19/03	<2,500	<2,500	<2,500	<2,500	<2,500	<25,000	<5,000	<2,500	<2,500	<5,000	<2,500	**13,000**	<2,500	<2,500	<2,500	<2,500
CPT-27, 5-5.5'		A	5/19/03	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	**15**	<5.0	<5.0	<5.0	<5.0
CPT-27, 16-16.5'		B	5/19/03	<25	<25	<25	<25	<25	<25	<25	<25	<25	<25	<25	**28**	<25	<25	<25	<25
CPT-30, 5-5.5'		VZ	5/19/03	<5.0	<5.0	<5.0	<5.0	<5.0	<10	<5.0	<5.0	<5.0	<5.0	<5.0	**45**	**5.1**	<5.0	<5.0	<5.0
CPT-30, 27.5-28'	1	B	5/19/03	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0
CPT-31, 16-16.5'		B	5/19/03	<5.0	<5.0	<5.0	<5.0	<5.0	<10	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0
CPT-31, 32.5-33'		B	5/19/03	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0
CPT-32, 5.5-6'		VZ	5/19/03	<5.0	<5.0	<5.0	<5.0	<5.0	<10	<5.0	<5.0	<5.0	<5.0	<5.0	**43**	**9.4**	<5.0	<5.0	<5.0
CPT-32, 16.5-17'		B	5/19/03	<5.0	<5.0	<5.0	<5.0	<5.0	<10	<5.0	<5.0	<5.0	<5.0	<5.0	**6.1**	**7.3**	<5.0	<5.0	<5.0
CPT-33, 5.5-6'		VZ	5/16/03	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	**99**	**28**	<5.0	<5.0	<5.0
CPT-33, 21-21.5'		B	5/19/03	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	**14**	<5.0	<5.0	<5.0	<5.0
CPT-33, 31.5-32'		B	5/19/03	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0
CPT-34, 20.5-21'		B	5/20/03	<250	<250	<250	<250	<250	<2,500	<500	<250	<250	<500	<250	**950**	<250	<250	<250	<250
CPT-35, 15-15.5'		B	5/20/03	<5.0	<5.0	<5.0	<5.0	<5.0	<10	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0
CPT-35, 33.5-34'		B	5/20/03	<5.0	<5.0	<5.0	<5.0	<5.0	<10	<5.0	<5.0	<5.0	<5.0	<5.0	**52**	<5.0	<5.0	<5.0	<5.0
CPT-36, 16-16.5'		B	5/20/03	<5.0	<5.0	<5.0	<5.0	<5.0	<10	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0
CPT-36, 30-30.5'		B	5/20/03	<5.0	<5.0	<5.0	<5.0	<5.0	<10	<5.0	<5.0	<5.0	<5.0	<5.0	**18**	<5.0	<5.0	<5.0	<5.0
CPT-37, 15.5-16'		B	5/20/03	<5.0	<5.0	<5.0	<5.0	<5.0	<10	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0
CPT-37, 30.5-31'		B	5/20/03	<5.0	<5.0	<5.0	<5.0	<5.0	<10	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0
CPT-38, 16-16.5'		B	5/20/03	<5.0	<5.0	<5.0	<5.0	<5.0	<10	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0
CPT-38, 29.5-30'		B	5/20/03	<5.0	<5.0	<5.0	<5.0	<5.0	<10	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0
CPT-39, 15-15.5'		B	5/16/03	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	**19**	<5.0	<5.0	<5.0	<5.0
CPT-40, 5-5.5'		VZ	5/20/03	<5.0	<5.0	<5.0	<5.0	<5.0	<10	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0
CPT-40, 24-24.5'		B	5/20/03	<250	<250	<250	<250	<250	<2,500	<500	<250	<250	<500	<250	**2,100**	<250	<250	<250	<250
CPT-40, 30.5-31'	1	B	5/20/03	<250	<250	<250	<250	<250	<2,500	<250	<250	<250	<250	<250	**1,400**	<250	<250	<250	<250
CPT-42, 18.5-19'		B	5/20/03	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0
CPT-42, 29.5-30'		B	5/20/03	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0
GP-54, 5-5.5'		VZ	5/19/03	<5.0	<5.0	<5.0	<5.0	<5.0	<10	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	**25**	<5.0	<5.0	<5.0
GP-54, 9-9.5'		A	5/19/03	<250	<250	<250	<250	<250	<2,500	<500	<250	<250	<500	<250	**1,300**	<250	<250	<250	<250
GP-54, 14.5-15'		B	5/19/03	<5.0	<5.0	<5.0	<5.0	<5.0	<10	<5.0	<5.0	<5.0	<5.0	<5.0	**54**	**9.2**	<5.0	<5.0	<5.0

Table 6
Soil Analytical Results - 1995 to 2009
Former Kaiser Aerotech Facilities
880 Doolittle Drive and 498 Hester Street
San Leandro, California

Sample No.	Notes	GW Zone	Sample Date	1,2-DCB	1,3-DCB	1,4-DCB	Chloro-benzene	Chloro-form	Methylene Chloride	Chloro-methane	1,1,1-TCA	1,1-DCA	Chloro-ethane	PCE	TCE	cis-1,2-DCE	trans-1,2-DCE	1,1-DCE	Vinyl Chloride
				(ug/kg)	(ug/kg)	(ug/kg)	(ug/kg)	(ug/kg)	(ug/kg)	(ug/kg)	(ug/kg)	(ug/kg)	(ug/kg)	(ug/kg)	(ug/kg)	(ug/kg)	(ug/kg)	(ug/kg)	(ug/kg)
GP-54, 24-24.5'		B	5/19/03	<5.0	<5.0	<5.0	<5.0	<5.0	<10	<5.0	<5.0	<5.0	<5.0	<5.0	**6.4**	<5.0	<5.0	<5.0	<5.0
GP-54, 37-37.5'		B	5/19/03	<5.0	<5.0	<5.0	<5.0	<5.0	<10	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0
GP-55, 4.5-5'		VZ	5/19/03	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	**11**	<5.0	<5.0	<5.0	<5.0
GP-55, 7-7.5'	1	A	5/19/03	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	**140**	**17**	<5.0	<5.0	<5.0
GP-55, 24.5-25'		B	5/19/03	<250	<250	<250	<250	<250	<2,500	<500	<250	<250	<500	<250	**36,000**	**520**	<250	<250	<250
GP-55, 33.5-34'		B	5/19/03	<250	<250	<250	<250	<250	<2,500	<500	<250	<250	<500	<250	**2,700**	<250	<250	<250	<250
GP-55, 39.5-40'		B	5/19/03	<5.0	<5.0	<5.0	<5.0	<5.0	<10	<10	<5.0	<5.0	<10	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0
GP-56, 4.5-5'		VZ	5/19/03	<5.0	<5.0	<5.0	<5.0	<5.0	<10	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0
GP-56, 8-8.5'		A	5/19/03	<5.0	<5.0	<5.0	<5.0	<5.0	<10	<5.0	<5.0	<5.0	<5.0	<5.0	**12**	**19**	<5.0	<5.0	<5.0
GP-56, 17-17.5'	1	B	5/19/03	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	**13**	<5.0	<5.0	<5.0	<5.0
GP-56, 24.5-25'		B	5/19/03	<5.0	<5.0	<5.0	<5.0	<5.0	<10	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0
GP-56, 39.5-40'		B	5/19/03	<5.0	<5.0	<5.0	<5.0	<5.0	<10	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0
GP57A, 5.5-6'		VZ	5/22/03	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	**65**	**31**	<5.0	<5.0	<5.0
GP57A, 19.5-20'		B	5/22/03	<250	<250	<250	<250	<250	<2,500	<250	<250	<250	<250	<250	**470**	<250	<250	<250	<250
GP57A, 23.5-24'		B	5/22/03	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	**16**	<5.0	<5.0	<5.0	<5.0
GP57A, 34.5-35'		B	5/22/03	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0
GP-58A, 5-5.5'		VZ	5/23/03	<5.0	<5.0	<5.0	<5.0	<5.0	<10	<5.0	<5.0	<5.0	<5.0	<5.0	**28**	**29**	<5.0	<5.0	<5.0
GP-58A, 9.5-10'		A	5/23/03	<19	<19	<19	<19	<19	<38	<19	<19	<19	<19	<19	**510**	**120**	<19	<19	<19
GP-58A, 14.5-15'		B	5/23/03	<250	<250	<250	<250	<250	<2,500	<250	<250	<250	<250	<250	**280**	<250	<250	<250	<250
GP-58A, 19.5-20'		B	5/23/03	<250	<250	<250	<250	<250	<2,500	<250	<250	<250	<250	<250	**970**	<250	<250	<250	<250
GP-58A, 25-25.5'		B	5/23/03	<5.0	<5.0	<5.0	<5.0	<5.0	<10	<5.0	<5.0	<5.0	<5.0	<5.0	**120**	<5.0	<5.0	<5.0	<5.0
GP-58A, 39.5-40'		B	5/23/03	<5.0	<5.0	<5.0	<5.0	<5.0	<10	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0
GP-59, 4.5-5'		VZ	5/20/03	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0
GP-59, 16.5-17'		B	5/20/03	<250	<250	<250	<250	<250	<2,500	<500	<250	<250	<500	<250	**360**	<250	<250	<250	<250
GP-59, 20-20.5'	1	B	5/20/03	<250	<250	<250	<250	<250	<2,500	<250	<250	<250	<250	<250	**8,200**	<250	<250	<250	<250
GP-59, 25.5-26'		B	5/20/03	<250	<250	<250	<250	<250	<2,500	<500	<250	<250	<500	<250	**1,600**	<250	<250	<250	<250
GP-59, 34-34.5'		B	5/20/03	<250	<250	<250	<250	<250	<2,500	<500	<250	<250	<500	<250	**1,300**	<250	<250	<250	<250
GP-59, 39.5-40'	1	B	5/20/03	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	**8.4**	<5.0	<5.0	<5.0	<5.0
GP-60, 5-5.5'		VZ	5/20/03	<5.0	<5.0	<5.0	<5.0	<5.0	<10	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0
GP-60, 14.5-15'		A	5/20/03	<5.0	<5.0	<5.0	<5.0	<5.0	<10	<5.0	<5.0	<5.0	<5.0	<5.0	**170**	<5.0	<5.0	<5.0	<5.0
GP-60, 19.5-20'	1	B	5/20/03	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	**41**	<5.0	<5.0	<5.0	<5.0
GP-60, 25-25.5'		B	5/20/03	<25	<25	<25	<25	<25	<25	<120	<25	<25	<25	<25	<25	**110**	<25	<25	<25
GP-60, 34.5-35'		B	5/20/03	<250	<250	<250	<250	<250	<2,500	<500	<250	<250	<500	<250	**1,300**	<250	<250	<250	<250
GP-61A, 5-5.5'		VZ	5/23/03	<5.0	<5.0	<5.0	<5.0	<5.0	<10	<5.0	<5.0	<5.0	<5.0	<5.0	**42**	<5.0	<5.0	<5.0	<5.0
GP-61A, 14.5-15'		A	5/23/03	<23	<23	<23	<23	<23	<46	<23	<23	<23	<23	<23	**290**	**32**	<23	<23	<23
GP-61A, 24.5-25'		B	5/23/03	<5.0	<5.0	<5.0	<5.0	<5.0	<10	<5.0	<5.0	<5.0	<5.0	<5.0	**91**	**13**	<5.0	<5.0	<5.0
GP-61A, 34.5-35'		B	5/23/03	<5.0	<5.0	<5.0	<5.0	<5.0	<10	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0
PZ-2, 4.5-5'		VZ	6/23/03	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0
PZ-2, 9-9.5'		A	6/23/03	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	**84**	**98**	**21**	<5.0	**5.8**
LMW-5, 2.5-3'		VZ	6/23/03	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0
LMW-5, 12.5-13'		A	6/23/03	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	**52**	**240**	**33**	<5.0	<5.0
LMW-5, 19.5-20'		B	6/23/03	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	**5.6**	<5.0	<5.0	<5.0
LMW-5, 23.5-24'		B	6/23/03	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0

Table 6
Soil Analytical Results - 1995 to 2009
Former Kaiser Aerotech Facilities
880 Doolittle Drive and 498 Hester Street
San Leandro, California

Sample No.	Notes	GW Zone	Sample Date	1,2-DCB	1,3-DCB	1,4-DCB	Chloro-benzene	Chloro-form	Methylene Chloride	Chloro-methane	1,1,1-TCA	1,1-DCA	Chloro-ethane	PCE	TCE	cis-1,2-DCE	trans-1,2-DCE	1,1-DCE	Vinyl Chloride
				(ug/kg)	(ug/kg)	(ug/kg)	(ug/kg)	(ug/kg)	(ug/kg)	(ug/kg)	(ug/kg)	(ug/kg)	(ug/kg)	(ug/kg)	(ug/kg)	(ug/kg)	(ug/kg)	(ug/kg)	(ug/kg)
LMW-5, 34.5-35'		B	6/23/03	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0
LMW-6, 7-7.5'		A	6/24/03	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	**44**	**10**	<5.0	<5.0	<5.0
LMW-6, 16-16.5'		B	6/24/03	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	**6.0**	<5.0	<5.0	<5.0	<5.0
LMW-6, 21-21.5'		B	6/24/03	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	**33**	**9.0**	<5.0	<5.0	<5.0
LMW-6, 23.5-24'		B	6/24/03	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	**2,700**	<5.0	<5.0	<5.0	<5.0
RW-1, 16.5-17'		B	7/25/03	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	**9.5**	**26,000**	**66**	<5.0	<5.0	<5.0
RW-1, 19.5-20'		B	7/25/03	<1,000	<25	<25	<25	<25	<25	<25	<25	<25	<25	**360**	**600,000**	**140**	<25	<25	<25
RW-1, 23-23.5'		B	7/25/03	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	**21**	**42,000**	**48**	<5.0	<5.0	<5.0
RW-2, 6-6.5'		A	7/31/03	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	**16**	<5.0	<5.0	<5.0	<5.0
RW-2, 26.5-27'		B	7/31/03	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	**7.1**	**7,700**	**12**	<5.0	<5.0	<5.0
RW-2, 33-33.5'		B	7/31/03	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	**6.0**	**4,300**	<5.0	<5.0	<5.0	<5.0
RW-2, 34.5-35'		B	7/31/03	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	**5.4**	**9,800**	<5.0	<5.0	<5.0	<5.0
RW-3, 15.5-16'		B	7/31/03	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	**2,400**	**8.3**	<5.0	<5.0	<5.0
RW-3, 19.5-20'		B	7/31/03	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	**4,900**	**11**	<5.0	<5.0	<5.0
RW-3, 23.5-24'		B	7/31/03	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	**1,300**	**8.9**	<5.0	<5.0	<5.0
RW-4, 27.5-28'		B	7/24/03	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	**15**	**19,000**	**6.9**	<5.0	<5.0	<5.0
RW-4, 31.5-32'		B	7/24/03	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	**25**	**9,800**	**8.5**	<5.0	<5.0	<5.0
RW-4, 34.75-35'		B	7/24/03	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	**5,000**	**28**	<5.0	<5.0	<5.0
RW-4, 37.5-38'		B	7/24/03	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	**400**	<5.0	<5.0	<5.0	<5.0
RW-5, 23.5-24'		B	7/21/03	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	**920**	**120**	<5.0	<5.0	**14**
RW-5, 30.5-31'		B	7/21/03	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	**12**	**1,500**	**12**	<5.0	<5.0	<5.0
RW-6, 23.5-24'		B	7/21/03	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	**1,600**	**180**	<5.0	<5.0	**32**
RW-6, 27.5-28'		B	7/21/03	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	**200**	**14**	<5.0	<5.0	<5.0
RW-6, 29.5-30'		B	7/21/03	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	**24**	**4,600**	**170**	<5.0	<5.0	**10**
RW-7, 23-23.5'		B	7/21/03	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	**98**	**62**	<5.0	<5.0	**12**
RW-7, 27.5-28'		B	7/21/03	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	**200**	**41**	<5.0	<5.0	**14**
RW-7, 31-31.5'		B	7/21/03	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	**25**	<5.0	<5.0	<5.0	<5.0
RW-8, 19.5-20'		B	7/25/03	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	**880**	**68**	<5.0	<5.0	<5.0
RW-8, 24.5-25'		B	7/25/03	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	**600**	**360**	<5.0	<5.0	<5.0
RW-8, 29.5-30'		B	7/25/03	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	**120**	<5.0	<5.0	<5.0	<5.0
RW-9, 13.5-14'		A	7/31/03	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	**120**	**32**	<5.0	<5.0	<5.0
RW-9, 19.5-20'		B	7/31/03	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	**5.6**	**450**	**180**	<5.0	<5.0	<5.0
RW-9, 24-24.5'		B	7/31/03	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	**34**	**130**	<5.0	<5.0	<5.0
RW-9, 29.5-30'		B	7/31/03	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	**93**	**130**	<5.0	<5.0	<5.0
LPZ-2, 21.5-22'		B	7/22/03	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	**400**	<5.0	<5.0	<5.0	<5.0
LPZ-3, 19.5-20'		B	7/23/03	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	**8.2**	**72,000**	**100**	<5.0	<5.0	<5.0
LPZ-3, 23.5-24'		B	7/23/03	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	**24,000**	**110**	<5.0	<5.0	<5.0
LPZ-3, 27.5-28'		B	7/23/03	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	**7,700**	<5.0	<5.0	<5.0	<5.0
LPZ-3, 31.5-32'		B	7/23/03	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	**6,000**	<5.0	<5.0	<5.0	<5.0
LPZ-4, 19.5-20'		B	7/23/03	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	**6.2**	**4,900**	**18**	<5.0	<5.0	<5.0

Table 6
Soil Analytical Results - 1995 to 2009
Former Kaiser Aerotech Facilities
880 Doolittle Drive and 498 Hester Street
San Leandro, California

Sample No.	Notes	GW Zone	Sample Date	1,2-DCB	1,3-DCB	1,4-DCB	Chloro-benzene	Chloro-form	Methylene Chloride	Chloro-methane	1,1,1-TCA	1,1-DCA	Chloro-ethane	PCE	TCE	cis-1,2-DCE	trans-1,2-DCE	1,1-DCE	Vinyl Chloride
				(ug/kg)	(ug/kg)	(ug/kg)	(ug/kg)	(ug/kg)	(ug/kg)	(ug/kg)	(ug/kg)	(ug/kg)	(ug/kg)	(ug/kg)	(ug/kg)	(ug/kg)	(ug/kg)	(ug/kg)	(ug/kg)
LPZ-4, 23.5-24'		B	7/23/03	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	**7,500**	**7.3**	<5.0	<5.0	<5.0
LPZ-5, 16.5-17'		B	7/25/03	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	**8.6**	**7,600**	**140**	<5.0	<5.0	<5.0
LPZ-5, 29.5-30'		B	7/25/03	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	**22**	**24,000**	**26**	<5.0	<5.0	<5.0
LPZ-5, 34.5-35'		B	7/25/03	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	**15**	**68,000**	**5.4**	<5.0	<5.0	<5.0
GP-65, 9.5-10'		A	2/15/05	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	**250**	**47**	<5.0	<5.0	<5.0
GP-65, 19.5-20'		B	2/15/05	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	**24**	**30**	<5.0	<5.0	<5.0
GP-65, 21.5-22'		B	2/15/05	<25	<25	<25	<25	<25	<25	<25	<25	<25	<25	**96**	**9,500**	**180**	<25	<25	<25
GP-65, 33-33.5'		B	2/15/05	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	**11**	**420**	**24**	<5.0	<5.0	<5.0
GP-66, 5-5.5'		VZ	2/15/05	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	**5.4**	<5.0	<5.0	<5.0	<5.0
GP-66, 14-14.5'		A	2/15/05	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	**47**	**42**	<5.0	<5.0	<5.0
GP-66, 21-21.5'		B	2/15/05	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	**23**	**5.0**	<5.0	<5.0	<5.0
GP-66, 29.5-30'		B	2/15/05	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	**85**	<5.0	<5.0	<5.0	<5.0
GP-67, 9.5-10'		A	5/17/05	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	**200**	**46**	<5.0	<5.0	<5.0
GP-67, 17.5-18'		B	5/17/05	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	**11**	**18**	<5.0	<5.0	<5.0
GP-67, 19.5-20'		B	5/17/05	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	**13**	**1,200**	**78**	<5.0	<5.0	<5.0
GP-67, 34.5-35'		B	5/17/05	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	**48**	**24,000**	<5.0	<5.0	<5.0	<5.0
GP-68, 17-17.5'		B	5/17/05	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	**60**	**20**	<5.0	<5.0	<5.0
GP-68, 19.5-20'		B	5/17/05	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	**5.9**	**830**	**140**	**7.9**	<5.0	<5.0
GP-68, 24.5-25'		B	5/17/05	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	**9.4**	**1,600**	**11**	<5.0	<5.0	<5.0
GP-68, 29.5-30'		B	5/17/05	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	**7.9**	**800**	<5.0	<5.0	<5.0	<5.0
GP-68, 34.5-35'		B	5/17/05	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	**440**	<5.0	<5.0	<5.0	<5.0
GP-69, 19.5-20'		B	5/17/05	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	**140**	**15**	<5.0	<5.0	<5.0
GP-69, 22.5-23'		B	5/17/05	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	**33**	<5.0	<5.0	<5.0	<5.0
GP-69, 29.5-30'		B	5/17/05	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0
GP-69, 34.5-35'		B	5/17/05	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0
RW-10, 6-6.5'		A	5/19/05	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	**450**	**56**	<5.0	<5.0	<5.0
RW-10, 11-11.5'		A	5/19/05	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	**91**	**26**	<5.0	<5.0	<5.0
RW-10, 16-16.5'		B	5/19/05	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	**84**	**22**	<5.0	<5.0	<5.0
RW-10, 21-21.5'		B	5/19/05	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	**240**	**19**	<5.0	<5.0	<5.0
RW-10, 26-26.5'		B	5/19/05	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	**190**	**9.8**	<5.0	<5.0	<5.0
RW-10, 29.5-30'		B	5/19/05	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	**33**	<5.0	<5.0	<5.0	<5.0
RW-11, 16-16.5'		B	5/18/05	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	**15**	**6.0**	<5.0	<5.0	<5.0
RW-11, 26-26.5'		B	5/18/05	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	**480**	**58**	<5.0	<5.0	<5.0
RW-11, 31-31.5'		B	5/18/05	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	**6.8**	**180**	**8.9**	<5.0	<5.0	<5.0
RW-12, 11-11.5'		A	5/18/05	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	**5.3**	**1,100**	**74**	**7.9**	<5.0	<5.0
RW-12, 16-16.5'		B	5/18/05	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	**5.1**	**580**	**21**	<5.0	<5.0	<5.0
RW-12, 21-21.5'		B	5/18/05	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	**5.4**	**2,700**	**44**	<5.0	<5.0	<5.0
RW-12, 31-31.5'		B	5/18/05	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	**8.4**	**1,400**	**10**	<5.0	<5.0	<5.0
RW-13, 16-16.5'		B	5/19/05	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	**260**	**88**	**6.5**	<5.0	**5.5**
RW-13, 21-21.5'		B	5/19/05	<25	<25	<25	<25	<25	<25	<25	<25	<25	<25	**52**	**43,000**	**37**	<25	<25	<25
RW-13, 24.5-25'		B	5/19/05	<25	<25	<25	<25	<25	<25	<25	<25	<25	<25	**190**	**70,000**	<25	<25	<25	<25
RW-13, 26-26.5'		B	5/19/05	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	**23**	**6,700**	<5.0	<5.0	<5.0	<5.0

Table 6
Soil Analytical Results - 1995 to 2009
Former Kaiser Aerotech Facilities
880 Doolittle Drive and 498 Hester Street
San Leandro, California

Sample No.	Notes	GW Zone	Sample Date	1,2-DCB	1,3-DCB	1,4-DCB	Chloro-benzene	Chloro-form	Methylene Chloride	Chloro-methane	1,1,1-TCA	1,1-DCA	Chloro-ethane	PCE	TCE	cis-1,2-DCE	trans-1,2-DCE	1,1-DCE	Vinyl Chloride
				(ug/kg)	(ug/kg)	(ug/kg)	(ug/kg)	(ug/kg)	(ug/kg)	(ug/kg)	(ug/kg)	(ug/kg)	(ug/kg)	(ug/kg)	(ug/kg)	(ug/kg)	(ug/kg)	(ug/kg)	(ug/kg)
MW-19, 5.5-6'		VZ	5/20/05	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	**19**	<5.0	<5.0	<5.0	<5.0
MW-19,12.5-13'		A	5/19/05	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	**1,400**	<5.0	<5.0	<5.0	<5.0
DW-1, 14-14.5'		A	5/23/05	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	**88**	<5.0	<5.0	<5.0	<5.0
DW-1, 24-24.5'		B	5/23/05	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	**2,100**	**8.5**	<5.0	<5.0	<5.0
DW-1, 30-30.5'		B	5/23/05	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	**11**	**19,000**	**5.3**	<5.0	<5.0	<5.0
DW-1, 34-34.5'		B	5/23/05	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	**3,000**	<5.0	<5.0	<5.0	<5.0
DW-2, 6.5-7'		A	6/21/05	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	**61**	<5.0	<5.0	<5.0	<5.0
DW-2, 13.5-14'		A	6/21/05	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	**180**	<5.0	<5.0	<5.0	<5.0
DW-2, 18-18.5'		B	6/21/05	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	**8.1**	**24,000**	**140**	<5.0	<5.0	<5.0
DW-2, 22.5-23'		B	6/21/05	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	**28,000**	**13**	<5.0	<5.0	<5.0
DW-2, 25.5-26'		B	6/21/05	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	**12**	**36,000**	**10**	<5.0	<5.0	<5.0
DW-2, 30-30.5'		B	6/21/05	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	**70**	**50,000**	**17**	<5.0	<5.0	<5.0
DW-2, 35-35.5'		B	6/21/05	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	**14**	**49,000**	<5.0	<5.0	<5.0	<5.0
DW-3, 11.5-12'		A	6/21/05	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	**770**	<5.0	<5.0	<5.0	<5.0
DW-3, 16.5-17'		B	6/21/05	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	**11,000**	**22**	<5.0	<5.0	<5.0
DW-3, 23-23.5'		B	6/21/05	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	**7,400**	**11**	<5.0	<5.0	<5.0
DW-3, 27-27.5'		B	6/21/05	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	**27,000**	<5.0	<5.0	<5.0	<5.0
DW-3, 30-30.5'		B	6/21/05	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	**110**	**110,000**	<5.0	<5.0	<5.0	<5.0
DW-3, 35-35.5		B	6/21/05	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	**41**	**58,000**	**10**	<5.0	<5.0	<5.0
GP-70, 10-10.5'		A	9/8/05	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	**700**	**54**	<5.0	<5.0	<5.0
GP-70, 20-20.5'		B	9/8/05	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	**220**	**83**	<5.0	<5.0	<5.0
GP-70, 25-25.5'		B	9/8/05	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	**510**	**22**	<5.0	<5.0	<5.0
GP-70, 29.5-30'		B	9/8/05	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	**1,700**	**7.8**	<5.0	<5.0	<5.0
GP-70, 30-30.5'		B	9/8/05	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	**340**	<5.0	<5.0	<5.0	<5.0
GP-70, 34.5-35'		B	9/8/05	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	**90**	<5.0	<5.0	<5.0	<5.0
GP-71, 10-10.5'		A	9/8/05	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	**310**	**33**	<5.0	<5.0	<5.0
GP-71, 14-14.5'		A	9/8/05	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	**88**	**44**	<5.0	<5.0	<5.0
GP-71, 20-20.5'		B	9/8/05	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	**650**	**60**	<5.0	<5.0	<5.0
GP-71, 25-25.5'		B	9/8/05	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	**890**	**36**	<5.0	<5.0	<5.0
GP-71, 29.5-30'		B	9/8/05	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	**6.1**	**4,200**	**69**	<5.0	<5.0	<5.0
GP-72, 8-8.5'		A	9/9/05	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	**210**	**27**	<5.0	<5.0	<5.0
GP-72, 10-10.5'		A	9/9/05	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	**200**	**46**	<5.0	<5.0	<5.0
GP-72, 14-14.5'		A	9/9/05	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	**42**	**82**	<5.0	<5.0	<5.0
GP-72, 20-20.5'		B	9/9/05	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	**680**	**59**	<5.0	<5.0	<5.0
GP-72, 23.5-24'		B	9/9/05	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	**340**	**82**	<5.0	<5.0	<5.0
GP-72, 25-25.5'		B	9/9/05	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	**200**	**47**	<5.0	<5.0	<5.0
GP-72, 29.5-30'		B	9/9/05	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	**550**	**5.6**	<5.0	<5.0	<5.0
GP-73, 19.5-20'		B	3/7/06	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	**14**	**21,000**	**150**	<5.0	<5.0	<5.0
GP-73, 23.5-24'		B	3/7/06	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	**22**	**51,000**	**69**	<5.0	<5.0	<5.0
GP-73, 27.5-28'		B	3/7/06	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	**32**	**36,000**	**140**	<5.0	<5.0	<5.0
GP-73, 34.5-35'		B	3/7/06	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	**9,500**	**8.1**	<5.0	<5.0	<5.0
GP-74, 7.5-8'		A	3/6/06	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0
GP-74, 23.5-24'		B	3/6/06	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	**93**	<5.0	<5.0	<5.0	<5.0
GP-74, 31.5-32'		B	3/6/06	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	**1,600**	<5.0	<5.0	<5.0	<5.0

Table 6
Soil Analytical Results - 1995 to 2009
Former Kaiser Aerotech Facilities
880 Doolittle Drive and 498 Hester Street
San Leandro, California

Sample No.	Notes	GW Zone	Sample Date	1,2-DCB	1,3-DCB	1,4-DCB	Chloro-benzene	Chloro-form	Methylene Chloride	Chloro-methane	1,1,1-TCA	1,1-DCA	Chloro-ethane	PCE	TCE	cis-1,2-DCE	trans-1,2-DCE	1,1-DCE	Vinyl Chloride
				(ug/kg)	(ug/kg)	(ug/kg)	(ug/kg)	(ug/kg)	(ug/kg)	(ug/kg)	(ug/kg)	(ug/kg)	(ug/kg)	(ug/kg)	(ug/kg)	(ug/kg)	(ug/kg)	(ug/kg)	(ug/kg)
GP-74, 35.5-36'		B	3/6/06	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	**22**	<5.0	<5.0	<5.0	<5.0
GP-75, 7.5-8'		A	3/6/06	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	**42**	<5.0	<5.0	<5.0	<5.0
GP-75, 21.5-22'		B	3/6/06	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0
GP-75, 31.5-32'		B	3/6/06	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	**6.6**	<5.0	<5.0	<5.0	<5.0
GP-75, 34.5-35'		B	3/6/06	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	**11,000**	<5.0	<5.0	<5.0	<5.0
GP-76, 9.5-10'		A	3/15/06	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	**480**	**98**	<5.0	<5.0	<5.0
GP 76, 17.5-18'		B	3/15/06	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	**36**	**99**	<5.0	<5.0	<5.0
GP 76, 27.5-28'		B	3/15/06	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	**20**	<5.0	<5.0	<5.0	<5.0
GP 76, 32-32.5'		B	3/15/06	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	**37**	<5.0	<5.0	<5.0	<5.0
GP 76, 34.5-35'		B	3/15/06	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	**54**	<5.0	<5.0	<5.0	<5.0
GP-77, 7.5-8'		A	3/7/06	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	**160**	**72**	<5.0	<5.0	**11**
GP-77, 11.5-12'		A	3/7/06	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	**6.6**	**24**	<5.0	<5.0	<5.0
GP-77, 23.5-24'	2	B	3/7/06	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	**11**	<5.0	**9.5**	**15,000**	**1,900**	**20**	**21**	**130**
GP-77, 27.5-28'	2	B	3/7/06	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	**16**	**39,000**	**830**	<5.0	**13**	**140**
GP-77, 34.5-35'		B	3/7/06	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	**2,500**	<5.0	<5.0	<5.0	<5.0
GP-78, 7.5-8'		A	3/7/06	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	**11**	<5.0	<5.0	<5.0	<5.0
GP-78, 11.5-12'		A	3/7/06	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	**110**	**1,300**	**100**	<5.0	<5.0	**16**
GP-78, 15.5-16'		UB	3/7/06	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	**66**	**1,400**	**120**	<5.0	<5.0	**10**
GP-78, 19.5-20'		UB	3/7/06	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	**16**	**510**	**120**	<5.0	<5.0	**9.6**
GP-78, 23.5-24'		UB	3/7/06	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	**7.5**	<5.0	<5.0	<5.0	<5.0
GP-78, 27.5-28'		UB	3/7/06	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	**27**	<5.0	<5.0	<5.0	<5.0
GP-78, 34.5-35'		LB	3/7/06	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0
GP-79, 7.5-8'		A	3/9/06	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	**17**	**350**	**10**	<5.0	<5.0	<5.0
GP-79, 15.5-16'		UB	3/9/06	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	**83**	**4,600**	**100**	<5.0	<5.0	**5.7**
GP-79, 19.5-20'		UB	3/9/06	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	**6.9**	**1,600**	**44**	<5.0	<5.0	<5.0
GP-79, 23.5-24'		UB	3/9/06	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0
GP-79, 27.5-28'		LB	3/9/06	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0
GP-80, 9.5-10'		A	3/9/06	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	**26**	<5.0	<5.0	<5.0	<5.0
GP-80, 15.5-16'		UB	3/9/06	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	**43**	**20**	<5.0	<5.0	<5.0
GP-81, 7.5-8'		A	3/8/06	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	**23**	**9.1**	<5.0	<5.0	<5.0
GP-81, 11.5-12'		A	3/8/06	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	**14**	<5.0	<5.0	<5.0	<5.0
GP-81, 15.5-16'		UB	3/8/06	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	**90**	**28**	<5.0	<5.0	<5.0
GP-81, 19.5-20'		UB	3/8/06	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	**260**	**83**	**12**	<5.0	<5.0
GP-82, 7.5-8'		A	3/9/06	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	**5.3**	**62**	**11**	<5.0	<5.0
GP-82, 15.5-16'		UB	3/9/06	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	**5.9**	<5.0	<5.0	<5.0
GP-83, 7.5-8'		A	3/8/06	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0
GP-83, 11.5-12'		A	3/8/06	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0
GP-83, 15.5-16'		UB	3/8/06	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	**20**	**30**	**5.1**	<5.0	<5.0
GP-83, 19.5-20'		UB	3/8/06	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	**61**	**47**	**6.3**	<5.0	<5.0
GP-83, 23.5-24'		UB	3/8/06	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0
GP-84, 3.5-4'		VZ	4/24/06	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	**16**	<5.0	<5.0	<5.0	<5.0
GP-84, 7-7.5'		A	4/25/06	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	**5.6**	**24**	**5.5**	<5.0	<5.0

Table 6
Soil Analytical Results - 1995 to 2009
Former Kaiser Aerotech Facilities
880 Doolittle Drive and 498 Hester Street
San Leandro, California

Sample No.	Notes	GW Zone	Sample Date	1,2-DCB	1,3-DCB	1,4-DCB	Chloro-benzene	Chloro-form	Methylene Chloride	Chloro-methane	1,1,1-TCA	1,1-DCA	Chloro-ethane	PCE	TCE	cis-1,2-DCE	trans-1,2-DCE	1,1-DCE	Vinyl Chloride
				(ug/kg)	(ug/kg)	(ug/kg)	(ug/kg)	(ug/kg)	(ug/kg)	(ug/kg)	(ug/kg)	(ug/kg)	(ug/kg)	(ug/kg)	(ug/kg)	(ug/kg)	(ug/kg)	(ug/kg)	(ug/kg)
GP-84, 12-12.5'		A	4/25/06	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	**200**	**2,800**	**290**	<5.0	<5.0	**22**
GP-84, 19.5-20'		UB	4/25/06	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	**35**	**1,400**	**110**	**6.8**	<5.0	**6.1**
GP-85, 3-3.5'		VZ	4/24/06	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	**55**	<5.0	<5.0	<5.0	<5.0
GP-85, 5-5.5'		VZ	4/25/06	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	**14**	<5.0	<5.0	<5.0	<5.0
GP-85, 14.5-15'		A	4/25/06	**270**	<25	<25	<25	<25	<25	<25	<25	<25	<25	**410**	**13,000**	**160**	<25	<25	<25
GP-85, 19.5-20'		UB	4/25/06	**280**	<25	<25	<25	<25	<25	<25	<25	<25	<25	**340**	**11,000**	**140**	<25	<25	<25
GP-86, 3-3.5'		VZ	4/24/06	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	**5.9**	**180**	<5.0	<5.0	<5.0	<5.0
GP-86, 5-5.5'		VZ	4/25/06	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	**20**	<5.0	<5.0	<5.0	<5.0
GP-86, 14.5-15'		A	4/25/06	**270**	<25	<25	<25	<25	<25	<25	<25	<25	<25	**420**	**11,000**	**250**	<25	<25	<25
GP-86, 19.5-20'		UB	4/25/06	**300**	<25	<25	<25	<25	<25	<25	<25	<25	<25	**240**	**7,100**	**160**	<25	<25	<25
GP-87, 3-3.5'		VZ	7/12/06	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0
GP-87, 9.5-10'		A	7/12/06	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	**1,000**	**13,000**	**300**	<5.0	<5.0	**11**
GP-87, 14.5-15'		A	7/12/06	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	**660**	**10,000**	**240**	<5.0	<5.0	**10**
GP-87, 17-17.5'		UB	7/12/06	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	**610**	**23,000**	**240**	**5.0**	<5.0	<5.0
GP-87, 19.5-20'		UB	7/12/06	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	**280**	**10,000**	**96**	<5.0	<5.0	<5.0
GP-87, 22-22.5'		UB	7/12/06	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	**5.0**	**540**	**19**	<5.0	<5.0	<5.0
GP-87, 24.5-25'		UB	7/12/06	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	**13**	<5.0	<5.0	<5.0	<5.0
GP-88, 3-3.5'		VZ	7/12/06	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0
GP-88, 9.5-10'		A	7/12/06	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	**120**	**21**	<5.0	<5.0
GP-90, 9.5-10'		A	7/12/06	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	**140**	**34**	<5.0	<5.0
GP-90, 19.5-20'		UB	7/12/06	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	**60**	**35**	<5.0	<5.0	<5.0
GP-90, 24.5-25'		UB	7/12/06	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	**38**	**320**	<5.0	<5.0	<5.0
SH-1, 3-3.5'		VZ	4/25/06	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0
SH-2, 3-3.5'		VZ	4/25/06	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0
SH-3, 3-3.5'		VZ	4/25/06	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	**6.3**	<5.0	<5.0	<5.0	<5.0
SH-4, 3-3.5'		VZ	4/25/06	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	**33**	<5.0	<5.0	<5.0	<5.0
SH-5, 3-3.5'		VZ	4/25/06	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	**11**	**69**	<5.0	<5.0	<5.0	<5.0
LB-1, 29.5-30'		B	3/14/06	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	**160**	<5.0	<5.0	<5.0	<5.0
LB-1, 34.5-35'		B	3/14/06	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	**540**	<5.0	<5.0	<5.0	<5.0
LB-2, 27-27.5'		B	3/14/06	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	**21**	<5.0	<5.0	<5.0	<5.0
LB-2, 28-28.5'		B	3/14/06	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	**1,700**	<5.0	<5.0	<5.0	<5.0
LB-2, 34.0-34.5'		B	3/14/06	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	**160**	<5.0	<5.0	<5.0	<5.0
UB-1, 19-19.5'		B	3/16/06	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	**750**	<5.0	<5.0	<5.0	<5.0
UB-1, 24-24.5'		B	3/16/06	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	**200**	<5.0	<5.0	<5.0
UB-2, 16-16.5'		A/B	3/16/06	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	**45**	<5.0	<5.0	<5.0	<5.0
UB-2, 19-19.5'		B	3/16/06	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	**88**	<5.0	<5.0	<5.0	<5.0
UB-2, 24-24.5'		B	3/16/06	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	**11**	**14**	<5.0	<5.0	<5.0
LMW-7, 19-19.5'		B	3/16/06	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	**7.8**	<5.0	<5.0	<5.0

Table 6
Soil Analytical Results - 1995 to 2009
Former Kaiser Aerotech Facilities
880 Doolittle Drive and 498 Hester Street
San Leandro, California

Sample No.	Notes	GW Zone	Sample Date	1,2-DCB	1,3-DCB	1,4-DCB	Chloro-benzene	Chloro-form	Methylene Chloride	Chloro-methane	1,1,1-TCA	1,1-DCA	Chloro-ethane	PCE	TCE	cis-1,2-DCE	trans-1,2-DCE	1,1-DCE	Vinyl Chloride
				(ug/kg)	(ug/kg)	(ug/kg)	(ug/kg)	(ug/kg)	(ug/kg)	(ug/kg)	(ug/kg)	(ug/kg)	(ug/kg)	(ug/kg)	(ug/kg)	(ug/kg)	(ug/kg)	(ug/kg)	(ug/kg)
LMW-7, 21.5-22'		B	3/16/06	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	**6.2**	<5.0	<5.0	<5.0
LMW-7, 24.5-25'		B	3/16/06	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0
MW-20, 9-9.5'		A	3/17/06	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	**100**	**23**	<5.0	<5.0
MW-20, 14.5-15'		A	3/17/06	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	**34**	**5.5**	<5.0	<5.0
MW-21, 7.5-8'		A	3/17/06	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	**2,100**	**28**	<5.0	<5.0
MW-21, 10-10.5'		A	3/17/06	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	**96**	**340**	**19**	<5.0	<5.0
MW-21, 14-14.5'		A	3/17/06	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	**240**	**53**	<5.0	<5.0
MW-22, 6.5-7'		A	3/17/06	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	**15**	**7.4**	<5.0	<5.0	<5.0
MW-22, 11.5-12'		A	3/17/06	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	**300**	**73**	<5.0	<5.0	**15**
MW-22, 14.5-15'		A	3/17/06	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	**3,300**	**510**	**5.4**	<5.0	**8.9**
MW-23, 6.5-7'		A	3/17/06	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	**400**	**94**	<5.0	<5.0	<5.0
MW-23, 8.5-9'		A	3/17/06	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	**10**	**1,800**	**690**	**11**	<5.0	<5.0
MW-23, 14.5-15'		A	3/17/06	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	**1,000**	**140**	<5.0	<5.0	<5.0
MW-24, 8-8.5'		A	3/15/06	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0
MW-24, 9-9.5'		A	3/15/06	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0
MW-24, 14-14.5'		A	3/15/06	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	**6.3**	<5.0	<5.0	<5.0	<5.0
MW-25, 8-8.5'		A	3/15/06	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	**7.0**	<5.0	<5.0	<5.0
MW-25, 14.5-15'		A	3/15/06	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0
MW-26, 6.5-7'		A	3/15/06	<5.0	0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	**500**	**65**	<5.0	<5.0	<5.0
MW-26, 8-8.5'		A	3/15/06	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	**380**	**61**	<5.0	<5.0	<5.0
MW-26, 14.5-15'		A	3/15/06	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	**40**	**7.2**	<5.0	<5.0	<5.0
MW-27, 9.5-10'		A	8/10/06	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	**800**	**4,800**	**200**	**5.3**	<5.0	<5.0
MW-27, 14.5-15'		A	8/10/06	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	**520**	**6,000**	**180**	<5.0	<5.0	<5.0
MW-27, 19.5-20'		UB	8/10/06	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	**53**	**1,400**	**86**	<5.0	<5.0	<5.0
MW-28, 8.5-9		A	9/14/07	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	**350**	**3,700**	**100**	<5.0	<5.0	<5.0
MW-28, 14.5-15		A	9/14/07	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	**230**	**4,400**	**110**	<5.0	<5.0	<5.0
MW-29, 3-3.5		VZ	9/11/07	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	**14**	**18**	<5.0	<5.0	<5.0
MW-29, 10-10.5		A	9/11/07	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	**320**	**43**	<5.0	<5.0	<5.0
UB-3, 10-10.5		A	9/11/07	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	**810**	**92**	<5.0	<5.0	**12**
UB-3, 22-22.5		A	9/11/07	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	**2,800**	**26**	<5.0	<5.0	<5.0
UB-5 @15'		B	9/12/07	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	**370**	**310**	<5.0	<5.0	**8.5**
UB-5 @22'		B	9/12/07	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	**5.3**	<5.0	<5.0	**580**	**440**	<5.0	**9.7**	**9.8**
UB-5 @25'		B	9/12/07	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	**13**	<5.0	<5.0	**1,100**	**780**	**7.7**	**28**	**22**
UB-5 @29.5'		B	9/12/07	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	**2,700**	**300**	<5.0	<5.0	**12**
UB-6 @2.5'		VZ	9/11/07	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	**99**	**34**	<5.0	<5.0	<5.0
LB-3, 3-3.5		VZ	9/13/07	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	**190**	**40**	<5.0	<5.0	<5.0
LB-3, 34.5-35		B	9/13/07	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	**1,100**	**5.1**	<5.0	<5.0	<5.0
LB-4, 3-3.5		VZ	9/13/07	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	**93**	**7.8**	<5.0	<5.0	<5.0

Table 6
Soil Analytical Results - 1995 to 2009
Former Kaiser Aerotech Facilities
880 Doolittle Drive and 498 Hester Street
San Leandro, California

Sample No.	Notes	GW Zone	Sample Date	1,2-DCB	1,3-DCB	1,4-DCB	Chloro-benzene	Chloro-form	Methylene Chloride	Chloro-methane	1,1,1-TCA	1,1-DCA	Chloro-ethane	PCE	TCE	cis-1,2-DCE	trans-1,2-DCE	1,1-DCE	Vinyl Chloride
				(ug/kg)	(ug/kg)	(ug/kg)	(ug/kg)	(ug/kg)	(ug/kg)	(ug/kg)	(ug/kg)	(ug/kg)	(ug/kg)	(ug/kg)	(ug/kg)	(ug/kg)	(ug/kg)	(ug/kg)	(ug/kg)
LB-4, 10-10.5		A	9/13/07	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	**130**	**17**	<5.0	<5.0	<5.0
LB-4, 19.5-20		B	9/13/07	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	**780**	**6.8**	<5.0	<5.0	<5.0
LB-4, 30-30.5		B	9/13/07	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	**460**	**78**	<5.0	<5.0	**18**
LB-4, 34.5-35		B	9/13/07	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	**360**	<5.0	<5.0	<5.0	<5.0
LB-5, 5-5.5		A	9/13/07	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0
LB-5, 15-15.5		B	9/13/07	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	**280**	**190**	<5.0	<5.0	**6.1**
LB-6, 10.5-11		A	9/12/07	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	**310**	**83**	<5.0	<5.0	<5.0
LB-6, 15-15.5		B	9/12/07	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	**34**	**48**	<5.0	<5.0	**5.0**
LB-6, 20.5-21		B	9/12/07	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	**100**	**340**	<5.0	<5.0	<5.0
LB-6, 26-26.5		B	9/12/07	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	**390**	<5.0	<5.0	<5.0	<5.0
LB-6, 34.5-35		B	9/12/07	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	**170**	<5.0	<5.0	<5.0	<5.0
LMW-8 @2.5'		VZ	9/11/07	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0
LMW-8, 15-15.5		B	9/12/07	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	**320**	**200**	<5.0	<5.0	**40**
LMW-8, 20-20.5		B	9/12/07	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	**1,200**	**730**	<5.0	**18**	**50**
LMW-8, 25-25.5		B	9/12/07	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	**590**	**960**	<5.0	<5.0	<5.0
LMW-8, 30-30.5		B	9/12/07	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	**620**	**620**	<5.0	**5.5**	**49**
LMW-9, 2.5-3		VZ	9/14/07	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	**52**	<5.0	<5.0	<5.0	<5.0
LMW-9, 10-10.5		A	9/14/07	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	**390**	**8,100**	**92**	<5.0	<5.0	<5.0
LMW-9, 14-14.5		A	9/14/07	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	**380**	**8,000**	**120**	<5.0	<5.0	**5.0**
LMW-9, 19.5-20		UB	9/14/07	<50	<50	<50	<50	<50	<50	<50	<50	<50	<50	**240**	**11,000**	**160**	<50	<50	<50
LMW-10 @2.5'		VZ	9/11/07	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	**10**	<5.0	**560**	**190**	**7.3**	<5.0	<5.0
LMW-10, 10.5-11		A	9/12/07	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0
LMW-10 15.0-15.5		A	9/12/07	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0
LMW-10, 21-21.5		B	9/12/07	<900	<900	<900	<900	<900	<900	<900	<900	<900	<900	**4,300**	**430,000**	**26,000**	<900	<900	<900
LMW-10, 26-26.5		B	9/12/07	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	**8.2**	**890**	**36**	<5.0	<5.0	<5.0
LMW-10, 30.5-31		B	9/12/07	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	**5.1**	**580**	**58**	<5.0	<5.0	<5.0
LMW-10, 34-34.5		B	9/12/07	<25	<25	<25	<25	<25	<25	<25	<25	<25	<25	**28**	**8,800**	**430**	<25	<25	<25
Degreasing Tank No. 1																			
RP-DT1-1(s) 20'		UB	10/8/09	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	**300**	**230**	<5.0	<5.0	**180**
RP-DT1-1(s) 28'		UB	10/8/09	<25	<25	<25	<25	<25	<25	<25	<25	<25	<25	<25	**27,000**	**880**	<25	<25	<25
Railroad/Western Boundary																			
FA-1, 2.5-3		VZ	7/11/08	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0
FUB-1, 5-5.5		A	7/11/08	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0
FUB-1, 10-10.5		A	7/11/08	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0
FUB-1, 15-15.5		UB	7/11/08	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	**150**	**690**	**120**	<5.0	<5.0	<5.0
FUB-1, 19.5-20		UB	7/11/08	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	**230**	**3,000**	**310**	<5.0	<5.0	<5.0
F-2, 2		VZ	1/26/09	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0
F-2, 9		A	1/27/09	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	**70**	**13**	<5.0	<5.0	<5.0
F-2, 14.5		A	1/27/09	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	**160**	**44**	<5.0	<5.0	<5.0
F-2, 19.5		UB	1/27/09	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0
UP-1-3'		VZ	8/25/09	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0
UP-1-8.5'		A	8/26/09	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	**17**	<5.0	<5.0	<5.0	<5.0

Table 6
Soil Analytical Results - 1995 to 2009
Former Kaiser Aerotech Facilities
880 Doolittle Drive and 498 Hester Street
San Leandro, California

Sample No.	Notes	GW Zone	Sample Date	1,2-DCB	1,3-DCB	1,4-DCB	Chloro-benzene	Chloro-form	Methylene Chloride	Chloro-methane	1,1,1-TCA	1,1-DCA	Chloro-ethane	PCE	TCE	cis-1,2-DCE	trans-1,2-DCE	1,1-DCE	Vinyl Chloride
				(ug/kg)	(ug/kg)	(ug/kg)	(ug/kg)	(ug/kg)	(ug/kg)	(ug/kg)	(ug/kg)	(ug/kg)	(ug/kg)	(ug/kg)	(ug/kg)	(ug/kg)	(ug/kg)	(ug/kg)	(ug/kg)
UP-1-12'		A	8/26/09	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	**120**	**1,500**	**240**	**6.8**	<5.0	**5.3**
UP-1-17'		UB	8/26/09	<25	<25	<25	<25	<25	<25	<25	<25	<25	<25	**100**	**5,100**	**180**	<25	<25	<25
UP-1-22'		UB	8/26/09	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0
UP-2-3'		VZ	8/25/09	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0
UP-2-7.5'		A	8/27/09	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	**44**	<5.0	<5.0	<5.0	<5.0
UP-2-12'		A	8/27/09	<25	<25	<25	<25	<25	<25	<25	<25	<25	<25	**160**	**5,200**	**75**	<25	<25	<25
UP-2-16.5'		UB	8/27/09	<70	<70	<70	<70	<70	<70	<70	<70	<70	<70	**490**	**19,000**	**220**	<70	<70	<70
UP-2-22'		UB	8/27/09	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	**97**	**5.2**	<5.0	<5.0	<5.0
UP-3-3'		VZ	8/25/09	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	**5.2**	<5.0	<5.0	<5.0	<5.0
UP-3-7.5		A	8/26/09	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0
UP-3-12'		A	8/26/09	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	**110**	**3,300**	**120**	<5.0	<5.0	<5.0
UP-3-17'		UB	8/26/09	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<250	**4,800**	**270**	<5.0	<5.0	**7.4**
UP-3-22'		UB	8/26/09	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	**72**	<5.0	<5.0	<5.0	<5.0
UP-4, 3		VZ	8/24/09	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0
UP-4-7.5		A	8/26/09	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0
UP-4-12.5'		A	8/26/09	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	**430**	**82**	<5.0	<5.0	<5.0
UP-4-17.5'		UB	8/26/09	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	**7,500**	<5.0	<5.0	<5.0	**6.1**
UP-4-22'		UB	8/26/09	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	**92**	**5.2**	<5.0	<5.0	<5.0
UP-5, 3'		VZ	8/24/09	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	**15**	<5.0	<5.0	<5.0	<5.0
UP-5, 8'		A	8/25/09	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	**12**	<5.0	<5.0	<5.0	<5.0
UP-5, 12'		A	8/25/09	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	**29**	**9.4**	<5.0	<5.0	<5.0
UP-5, 16.5'		UB	8/25/09	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	**180**	**5,700**	**380**	**8.6**	<5.0	**15**
UP-5, 22'		UB	8/25/09	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	**78**	<5.0	<5.0	<5.0	<5.0
UP-6, 3'		VZ	8/24/09	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	**15**	<5.0	<5.0	<5.0	<5.0
UP-6, 7		A	8/25/09	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	**17**	<5.0	<5.0	<5.0	<5.0
UP-6, 12.5		A	8/25/09	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	**10**	**440**	**34**	<5.0	<5.0	<5.0
UP-6, 17		UB	8/25/09	<25	<25	<25	<25	<25	<25	<25	<25	<25	<25	**590**	**21,000**	**210**	<25	<25	<25
UP-6, 22		UB	8/25/09	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	**59**	<5.0	<5.0	<5.0	<5.0
UP-7, 3'		VZ	8/24/09	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	**20**	<5.0	<5.0	<5.0	<5.0
UP-7-7.5'		A	8/27/09	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	**170**	<5.0	<5.0	<5.0	<5.0
UP-7-12'		A	8/27/09	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	**94**	**16**	<5.0	<5.0	<5.0
UP-7-17'		UB	8/27/09	<25	<25	<25	<25	<25	<25	<25	<25	<25	<25	**74**	**3,200**	**130**	<25	<25	<25
UP-7-22'		UB	8/27/09	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0
UP-8, 3'		VZ	8/24/09	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0
UP-8-7.5'		A	8/27/09	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0
UP-8-12'		A	8/27/09	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	**5.6**	**120**	**53**	**21**	<5.0	<5.0
UP-8-17'		UB	8/27/09	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	**140**	**890**	**360**	**13**	<5.0	**15**
UP-8-22'		UB	8/27/09	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	**66**	**7.9**	<5.0	<5.0	<5.0
RP-DT1-2(s) 20'		UB	10/7/09	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	**47**	<5.0	<5.0	<5.0	<5.0
RP-DT1-2(s) 25'		UB	10/7/09	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	**1,800**	**8.4**	<5.0	<5.0	**14**
RP-DT1-2(s) 30		UB	10/7/09	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	**5.2**	<5.0	**130**	**570**	<5.0	<5.0	**180**
RP-WPB-1(s) 3'		VZ	10/6/09	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	**5.6**	**130**	<5.0	<5.0	<5.0	<5.0
RP-WPB-1(s) 7'		A	10/7/09	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	**7.9**	<5.0	<5.0	<5.0	<5.0

Table 6
Soil Analytical Results - 1995 to 2009
Former Kaiser Aerotech Facilities
880 Doolittle Drive and 498 Hester Street
San Leandro, California

Sample No.	Notes	GW Zone	Sample Date	1,2-DCB	1,3-DCB	1,4-DCB	Chloro-benzene	Chloro-form	Methylene Chloride	Chloro-methane	1,1,1-TCA	1,1-DCA	Chloro-ethane	PCE	TCE	cis-1,2-DCE	trans-1,2-DCE	1,1-DCE	Vinyl Chloride
				(ug/kg)	(ug/kg)	(ug/kg)	(ug/kg)	(ug/kg)	(ug/kg)	(ug/kg)	(ug/kg)	(ug/kg)	(ug/kg)	(ug/kg)	(ug/kg)	(ug/kg)	(ug/kg)	(ug/kg)	(ug/kg)
RP-WPB-1(s) 10'		A	10/7/09	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0
RP-WPB-1(s) 15'		A	10/7/09	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	**27**	<5.0	<5.0	**440**

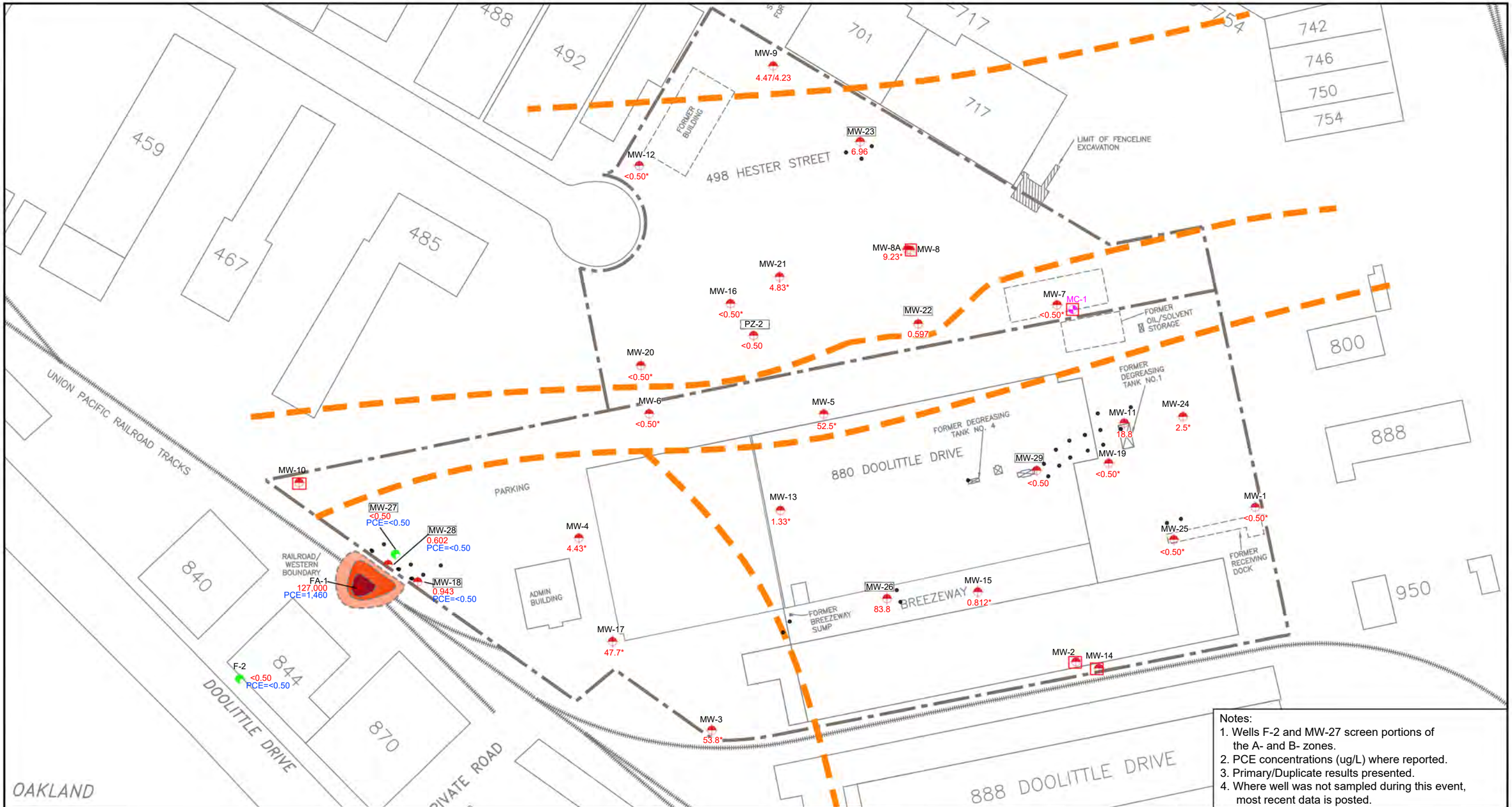
Notes:

GW Zone Groundwater Zone
ug/kg Microgram per kilogram

DCB Dichlorobenzene
TCA Trichloroethane
DCA Dichloroethane
PCE Tetrachloroethene
TCE Trichloroethene
DCE Dichloroethene
< Not detected at or above the specified reporting limit
Volatile organic compound analyses (VOC) conducted after January 2002 by EPA Method 8260B.

APPENDIX C4

HISTORICAL GROUNDWATER DATA



Notes:
1. Wells F-2 and MW-27 screen portions of the A- and B- zones.
2. PCE concentrations (ug/L) where reported.
3. Primary/Duplicate results presented.
4. Where well was not sampled during this event, most recent data is posted.

LEGEND

- RDIP Direct-Push Injection Location
- A-zone Monitoring Well
- A-zone/B-zone Monitoring Well
- Mutichambered Monitoring Well
- Destroyed Well
- 151 TCE Concentration (ug/L)
- MW-28 Sodium Lactate Injection Well
- 1,000 - 10,000 ug/L
- 10,000 - 100,000 ug/L
- >100,000 ug/L
- TCE Trichloroethene
- PCE Tetrachloroethene
- --1000-- Approximate TCE Isoconcentration Contour (ug/L)
- ug/L Microgram per Liter
- Former Kaiser Aerotech Facilities Boundary
- Approximate Sand Lens Boundary Between 5 and 10 Feet Below Ground Surface (ETIC, December 27, 2002)
- * Data Prior to March 2020

After Apex, 2017
Basemap from Secor, June 25, 2002

FORMER KAISER AEROTECH FACILITIES
880 DOOLITTLE DRIVE & 498 HESTER STREET
SAN LEANDRO, CALIFORNIA

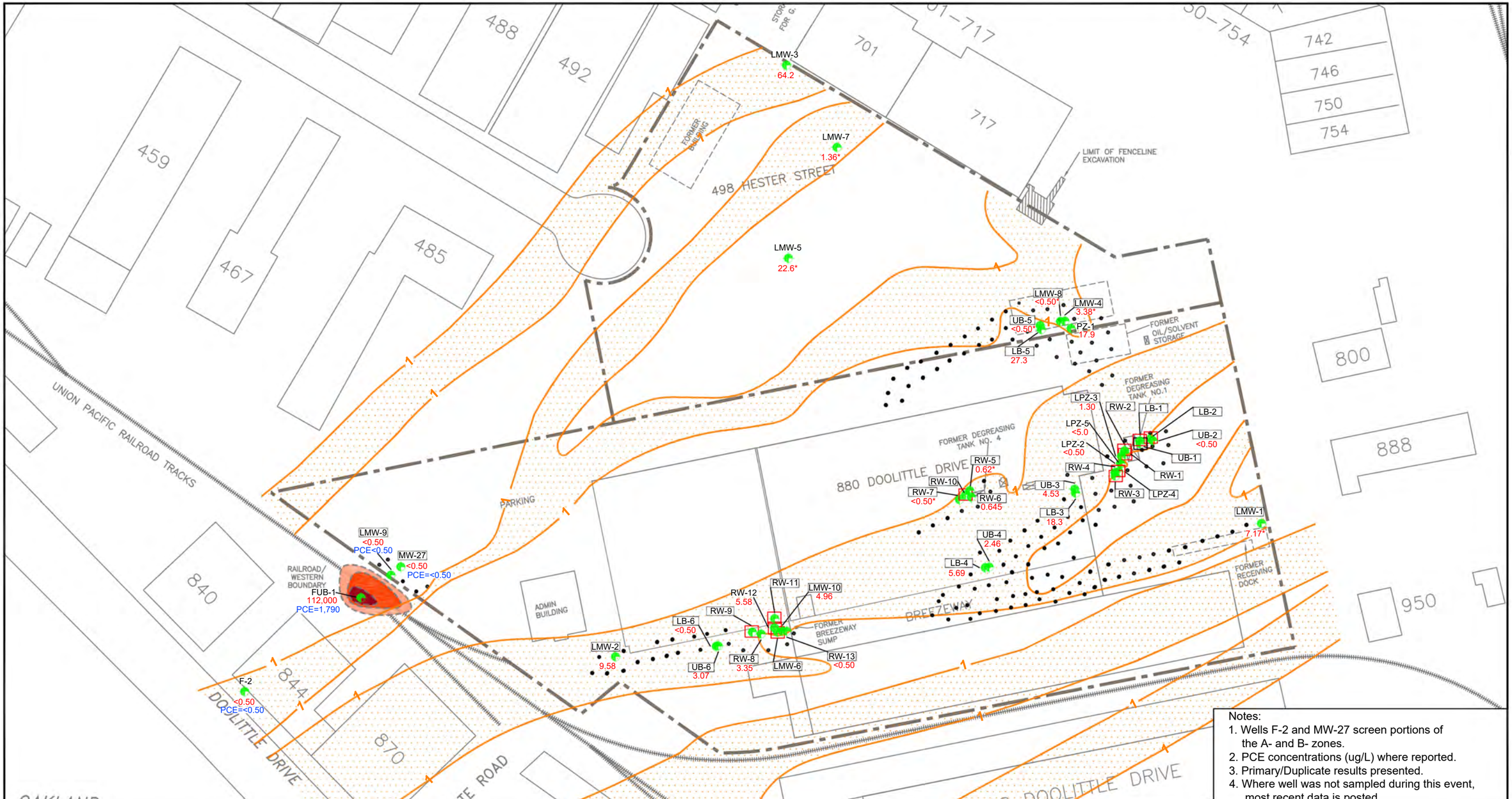
PROJECT NO.	DATE	DRAWN BY:	APP. BY:
01-KAF-004	05/08/20	DCB	KR

0 120 240
HORIZONTAL SCALE IN FEET

A-ZONE TCE ISOCONCENTRATION CONTOURS - MARCH 2020

RMD ENVIRONMENTAL SOLUTIONS

FIGURE 5



Notes:
1. Wells F-2 and MW-27 screen portions of the A- and B- zones.
2. PCE concentrations (ug/L) where reported.
3. Primary/Duplicate results presented.
4. Where well was not sampled during this event, most recent data is posted.

LEGEND

- RDIP Direct-Push Injection Location
- B-zone Monitoring Well
- Destroyed Well
- 28 TCE concentration (ug/L)
- MW-27 Sodium Lactate Injection Well
- 1,000 - 10,000 µg/L
- 10,000 - 100,000 µg/L
- >100,000 ug/L
- TCE Trichloroethene
- PCE Tetrachloroethene
- --10-- Approximate TCE Isoconcentration Contour (ug/L)
- µg/L Micrograms per liter
- Former Kaiser Aerotech Facilities Boundary
- Total B-zone Coarse-Grained Soil Thickness Greater Than 1 Foot
- * Data Prior to March 2020

After Apex, 2017
Basemap from Secor, June 25, 2002

FORMER KAISER AEROTECH FACILITIES
880 DOOLITTLE DRIVE & 498 HESTER STREET
SAN LEANDRO, CALIFORNIA

PROJECT NO.	DATE	DRAWN BY:	APP. BY:
01-KAF-004	05/08/20	DCB	KR

0 120 240
HORIZONTAL SCALE IN FEET

B-ZONE TCE ISOCONCENTRATION CONTOURS - MARCH 2020

RMD ENVIRONMENTAL SOLUTIONS

FIGURE 7

Table 3
Routine Groundwater Monitoring Program
Former Kaiser Aerotech Facilities
880 Doolittle Drive and 498 Hester Street
San Leandro, California

Well Number	Groundwater Zone	HVOC	Field Parameters (ORP, pH, SC)	Water Level
ENHANCED REDUCTIVE DECHLORINATION AREAS				
A-Zone Hotspots				
PZ-2	A	Annual	Annual	Annual
MW-22	A	Annual	Annual	Annual
MW-23	A	Annual	Annual	Annual
MW-26	A	Annual	Annual	Annual
Degreasing Tank No. 1				
MW-11	A	Biennial	Biennial	Biennial
MW-19	A	Biennial	Biennial	Biennial
MW-29	A	Annual	Annual	Annual
UB-2	UB	Annual, Contingency[1]	Semi-Annual	Semi-Annual
LPZ-2	UB	Annual, Contingency[1]	Semi-Annual	Semi-Annual
LPZ-3	LB	Annual, Contingency[1]	Semi-Annual	Semi-Annual
LPZ-5	LB	Annual, Contingency[1]	Semi-Annual	Semi-Annual
UB-3	UB	Annual, Contingency[1]	Semi-Annual	Semi-Annual
LB-3	LB	Annual, Contingency[1]	Semi-Annual	Semi-Annual
UB-4	UB	Annual, Contingency[1]	Semi-Annual	Semi-Annual
LB-4	LB	Annual, Contingency[1]	Semi-Annual	Semi-Annual
Degreasing Tank No. 4				
RW-5	B	Contingency[2]	Annual	Annual
RW-6	B	Annual	Annual	Annual
RW-7	B	Biennial	Biennial	Biennial
Breezeway Sump				
MW-17	A	Biennial	Biennial	Annual
RW-13	B	Annual	Annual	Annual
LMW-10	LB	Annual	Annual	Annual
RW-12	B	Annual	Annual	Annual
RW-8	B	Contingency[2]	Annual	Annual
UB-6	UB	Annual	Annual	Annual
LB-6	LB	Annual	Annual	Annual
LMW-2	UB	Annual	Annual	Annual
Oil/Solvent Storage Area				
MW-7	A	Biennial => Remove	Biennial => Remove	Biennial => Remove
LMW-4	B	Biennial	Biennial	Biennial
LMW-8	LB	Biennial	Biennial	Biennial
PZ-1	B	Annual	Annual	Annual
UB-5	UB	Biennial	Biennial	Biennial
LB-5	LB	Annual	Annual	Annual
Receiving Dock				
MW-1	A	Remove	Remove	Annual
LMW-1	UB	Biennial	Biennial	Annual
Railroad/Western Boundary				
MW-18	A	Annual	Annual	Annual
MW-28	A	Annual	Annual	Annual
MW-27	A/UB	Annual	Annual	Annual
LMW-9	UB	Annual	Annual	Annual

Table 3
Routine Groundwater Monitoring Program
Former Kaiser Aerotech Facilities
880 Doolittle Drive and 498 Hester Street
San Leandro, California

Well Number	Groundwater Zone	HVOC	Field Parameters (ORP, pH, SC)	Water Level
FA-1	A	Annual	Annual	Annual
FUB-1	UB	Annual	Annual	Annual
F-2	A/UB	Annual	Annual	Annual
MONITORED NATURAL ATTENUATION				
MW-3	A	Biennial	Biennial	Biennial
MW-4	A	Biennial	Biennial	Biennial
MW-5	A	Biennial	Biennial	Biennial
MW-6	A	Biennial	Biennial	Biennial
MW-8A	A	Biennial	Biennial	Biennial
MW-9	A	Annual	Annual	Annual
MW-12	A	Biennial => Remove	Biennial => Remove	Biennial => Remove
MW-13	A	Biennial	Biennial	Biennial
MW-15	A	Biennial => Remove	Biennial => Remove	Biennial => Remove
MW-16	A	Biennial	Biennial	Biennial
MW-20	A	Biennial	Biennial	Biennial
MW-21	A	Biennial	Biennial	Biennial
MW-24	A	Remove	Remove	Annual
MW-25	A	Biennial	Biennial	Biennial
LMW-3	UB	Annual	Annual	Annual
LMW-5	B	Biennial	Biennial	Biennial
LMW-7	UB	Biennial	Biennial	Biennial
SAZ-1	C	Contingency[3] => Remove	Contingency[3] => Remove	Annual => Remove
SAZ-2	C	Contingency[3] => Remove	Contingency[3] => Remove	Annual => Remove
SAZ-3	C	Contingency[3] => Remove	Contingency[3] => Remove	Annual => Remove

Notes:

A	A-zone - approximately 5-15 feet below ground surface
B	B-zone
LB	Lower B-zone, generally screening 25-35 feet below ground surface
UB	Upper B-zone, generally screening 15-25 feet below ground surface
C	C-zone - below approximately 35-40 feet below ground surface

HVOC - Halogenated volatile organic compounds using USEPA Method 8260B (8010 list)

ORP - Oxidation-Reduction Potential (reported in millivolts (mV)

SC - Specific conductance (reported in microsiemens per centimeter [µS/cm])

Annual - first quarter

Biennial - first quarter, odd numbered years

Semi-Annual - third quarter

ERD - Enhanced reductive dechlorination

MNA - Monitored natural attenuation

Contingency[1] Samples will be collected at these Degreasing Tank no. 1 wells based on semi-annual (third quarter) field parameter readings. If ORP is above 0 mV, pH is below 5.0/above 9.0, and/or specific conductance is below 1,200 µS/cm, a sample will be collected for HVOC analysis.

Contingency[2] Samples will be collected at wells RW-5 and RW-8 based on annual field parameter readings. If ORP is above 0 mV, pH is below 5.0/above 9.0, and/or specific conductance is below 1,200 µS/cm, a sample will be collected for HVOC analysis.

Contingency[3] Samples will be collected and field parameters will be measured at the C-zone wells if water levels indicate a downward hydraulic gradient between the B-zone and C-zone. Samples will be analyzed for HVOCs.

Discretionary samples from treatment areas may also be analyzed for ethene, ethane and methane using Method RSK 175M and/or total organic carbon using Standard Method 5310D. These supplemental analyses will be evaluated based on field parameters, and findings for nearby monitoring wells.

Table 4
Passive Sampler Target Depth Intervals
Former Kaiser Aerotech Facilities
San Leandro, California

Well Number	GW Zone	Casing Diameter (inches)	Screened Interval (ft bgs)	Filter Pack Interval (ft bgs)	Saturated, More Permeable Soil Intervals within Well Screen (ft bgs)	Passive Sampler Type	Target Depth Interval (ft bgs)
					A-zone Hotspots		
PZ-2	A	2	5-12	4.2-12	9 to 9.5	HydraSleeve	~6.25-11.5
MW-22	A	2	5-15	4-15	5.5 to 8.5; 12 to 13; 13.25 to 14.5	HydraSleeve	~10.75 to 14.5
MW-23	A	2	5-15	4-15	8 to 9.75; 9.75 to 11.5	HydraSleeve	~10.75 to 14.5
MW-26	A	2	5-15	4-15	14 to 15	HydraSleeve	~10.75 to 14.5
					Degreasing Tank No. 1		
MW-11	A	2	3-10	2.5-10	6 to 9.5	HydraSleeve	~5.75 to 9.5
MW-19	A	2	5-13	4-13	12.5 to 13	HydraSleeve	~8.75 to 12.5
MW-29	A	2	5-15	4-15	3 to 8	HydraSleeve	~10.75 to 14.5
UB-2	UB	2	15-25	13-25	17 to 17.5	HydraSleeve	~20.75 to 24.5
LPZ-2	UB	2	14-24	13-24	19 to 22	HydraSleeve	~18.25 to 22
LPZ-3	B	2	22-32	21-32	22 to 31	HydraSleeve	~27.25 to 31
LPZ-5	LB	2	25-35	24-35	29 to 30	HydraSleeve	~30.75 to 34.5
UB-3	UB	2	15-25	13-25	24 to 25	HydraSleeve	~20.75 to 24.5
LB-3	LB	2	25-35	24-35	25 to 27	HydraSleeve	~23.25 to 27
UB-4	UB	2	15-25	14-25	15 to 16; 21 to 24	HydraSleeve	~20.75 to 24.5
LB-4	LB	2	25-35	24-35	25 to 25.5; 30 to 30.5	HydraSleeve	~26.75 to 30.5
					Degreasing Tank No. 4		
RW-5	B	4	22-32	20.5-32	26 to 31	HydraSleeve	~27.75 to 31.5
RW-6	B	4	23-33	22-33	28 to 31	HydraSleeve	~28.75 to 32.5
RW-7	B	4	22-32	20.5-32	31 to 32	HydraSleeve	~27.75 to 31.5
					Breezeway Sump		
MW-17	A	2	3.5-10	3-10	5 to 6.5	HydraSleeve	~5.75 to 9.5
RW-13	B	4	16-26	15-26	15 to 18.5	HydraSleeve	~21.75 to 25.5
LMW-10	LB	2	25-35	24-35	27 to 27.5	HydraSleeve	~30.75 to 34.5
RW-12	B	2	15-30	14-30	15 to 18.5	HydraSleeve	~25.75 to 29.5
RW-8	B	2	15-30	13.5-30	23.5 to 25	HydraSleeve	~25.75 to 29.5
UB-6	UB	2	14-23	13-23	None reported	HydraSleeve	~18.75 to 22.5
LB-6	LB	2	25-35	24-35	25 to 35	HydraSleeve	~30.75 to 34.5
LMW-2	UB	2	21-31	19-31	26.5 to 31	HydraSleeve	~26.75 to 30.5
					Oil/Solvent Storage Area		
MW-7	A	2	4-10	3.5-10	5.5 to 7.5	HydraSleeve	~5.75 to 9.5
PZ-1	B	1	18-28	16-28	18 to 20	PDB	~17 to 20.5
LMW-4	B	4	18-28	16-28	18 to 20	HydraSleeve	~23.75 to 27.5
LMW-8	LB	2	25-30	24-30	26 to 28	HydraSleeve	~24.25 to 28
UB-5	UB	2	15-25	14-25	20 to 24.5	HydraSleeve	~20.75 to 24.5
LB-5	LB	2	25-30	24-30	None reported	HydraSleeve	~25.75 to 29.5
					Receiving Dock		
MW-1	A	2	3-10	2.5-10	6 to 9.5	HydraSleeve	~5.75 to 9.5
LMW-1	UB	2	21-25	20-25	21 to 23.5	HydraSleeve	~20.75 to 24.5
					Railroad/Western Boundary		
MW-18	A	2	3.5-10	3-10	4 to 5.5	HydraSleeve	~5.75 to 9.5
MW-28	A	2	5-15	4-15	14 to 15	HydraSleeve	~10.75 to 14.5
MW-27	A/UB	2	10-20	9-20	15 to 16.5	HydraSleeve	~12.75 to 16.5
LMW-9	UB	2	15-20	14-20	16.5 to 18.5	HydraSleeve	~14.75 to 18.5
FA-1	A	2	5-15	4-15	11 to 11.5	HydraSleeve	~10.75 to 14.5

Table 4
Passive Sampler Target Depth Intervals
Former Kaiser Aerotech Facilities
San Leandro, California

Well Number	GW Zone	Casing Diameter (inches)	Screened Interval (ft bgs)	Filter Pack Interval (ft bgs)	Saturated, More Permeable Soil Intervals within Well Screen (ft bgs)	Passive Sampler Type	Target Depth Interval (ft bgs)
FUB-1	UB	2	15-20	13-20	None reported	HydraSleeve	~15.75 to 19.5
F-2	A/UB	2	10-20	9-20	15 to 19	HydraSleeve	~15.25 to 19
				Monitored Natural Attenuation			
MW-3	A	2	3-10	2.5-10	5 to 7	HydraSleeve	~5.75 to 9.5
MW-4	A	2	3-10	2.5-10	None reported	HydraSleeve	~5.75 to 9.5
MW-5	A	2	3-10	2.5-10	6 to 6.5	HydraSleeve	~5.75 to 9.5
MW-6	A	2	3-10	2.5-10	4.75 to 6	HydraSleeve	~5.75 to 9.5
MW-8A	A	2	4-10	3.5-10	9 to 10	HydraSleeve	~5.75 to 9.5
MW-9	A	2	4-10	3.5-10	7 to 9	HydraSleeve	~5.75 to 9.5
MW-12	A	2	4-10	3.5-10	7.5 to 9	HydraSleeve	~5.75 to 9.5
MW-13	A	1	5-10	4.5-10	6 to 8	PDB	~6.0 to 9.5
MW-15	A	2	2.5-10	3-10	4 to 6	HydraSleeve	~5.75 to 9.5
MW-16	A	2	3-10	2-10	7 to 8	HydraSleeve	~5.75 to 9.5
MW-20	A	2	5-15	3-15	8 to 9; 13 to 15	HydraSleeve	~10.75 to 14.5
MW-21	A	2	5-15	4-15	9 to 10.5	HydraSleeve	~10.75 to 14.5
MW-24	A	2	5-15	4-15	8.75 to 9.5; 10 to 11; 13.75 to 14.5	HydraSleeve	~10.75 to 14.5
MW-25	A	2	5-15	4-15	None reported	HydraSleeve	~10.75 to 14.5
LMW-3	UB	2	17.5-22.5	15-22.5	21 to 22	HydraSleeve	~18.25 to 22
LMW-5	B	2	20-30	19-30	21.5 to 24.5	HydraSleeve	~20.75 to 24.5
LMW-7	UB	2	15-25	13-25	17.5 to 20	HydraSleeve	~16.25 to 20
SAZ-1	C	2	45-55	44-55.5	45.5 to 55	HydraSleeve	~51.5 to 55
SAZ-2	C	2	50.5-55.5	48.5-56	52 to 55	HydraSleeve	~51.5 to 55
SAZ-3	C	2	39-44	37-44.5	39 to 44	HydraSleeve	~40.25 to 44

Notes:

PDB polyethylene diffusion bag
ft bgs feet below ground surface
GW Zone Groundwater Zone
A A-zone - approximately 5-15 feet below ground surface
UB Upper B-zone - approximately 15-25 feet below ground surface
LB Lower B-zone - approximately
C C-zone - below approximately 35-40 feet below ground surface

Table 5A
Groundwater Monitoring Volatile Organic Compounds Data
A-Zone Hotspots
Former Kaiser Aerotech Facilities
San Leandro, California

Well ID	Notes	GW Zone	Sample Date	1,2-DCB	1,3-DCB	1,4-DCB	Chloro-benzene	Chloroform	Methylene Chloride	Chloro-methane	1,1,1-TCA	1,1,2-TCA	1,1-DCA	1,2-DCA	Chloro-ethane	PCE	TCE	cis-1,2-DCE	trans-1,2-DCE	1,1-DCE	Vinyl Chloride
				8260*	8260*	8260*	8260*	8260*	8260*	8260*	8260*	8260*	8260*	8260*	8260*	8260*	8260*	8260*	8260*	8260*	8260*
				(ug/L)	(ug/L)	(ug/L)	(ug/L)	(ug/L)	(ug/L)	(ug/L)	(ug/L)	(ug/L)	(ug/L)	(ug/L)	(ug/L)	(ug/L)	(ug/L)	(ug/L)	(ug/L)	(ug/L)	(ug/L)
			MCLs	600	-	5	70	80	5	-	200	5	5	0.5	-	5	5	6	10	6	0.5
			Regulatory Date	9/8/94	-	4/4/89	9/8/94	6/17/06	2/25/89	-	2/25/89	9/8/94	6/24/90	4/4/89	-	5/89	2/25/89	9/8/94	9/8/94	2/25/89	4/4/89
PZ-2		A	6/26/03	<5.0	<5.0	<5.0	<5.0	<5.0	<50	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	1,900	3,700	650	<5.0	470
PZ-2		A	9/24/03	<5.0	<5.0	<5.0	<5.0	<5.0	<50	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	2,000	3,900	430	6.6	550
PZ-2		A	3/10/04	<3.0	<3.0	4.2	<3.0	<3.0	<50	<3.0	<3.0	<3.0	<3.0	<3.0	<3.0	<3.0	2,800	4,400	470	6.6	600
PZ-2		A	9/29/04	<2.5	<2.5	4.1	<2.5	<2.5	<25	<2.5	<2.5	<2.5	2.6	<2.5	<2.5	<2.5	2,400	4,500	400	5.1	170
PZ-2		A	3/10/05	<9.0	<9.0	<9.0	<9.0	<9.0	<9.0	<9.0	<9.0	<9.0	<9.0	<9.0	<9.0	<9.0	2,000	2,800	380	<9.0	330
PZ-2		A	9/14/05	<20	<20	<20	<20	<20	<20	<20	<20	<20	<20	<20	<20	<20	2,400	4,000	530	<20	290
PZ-2		A	3/15/06	<9.0	<9.0	<9.0	<9.0	<9.0	<9.0	<9.0	<9.0	<9.0	<9.0	<9.0	<9.0	<9.0	1,600	3,100	470	10	260
PZ-2		A	9/20/06	<15	<15	<15	<15	<15	<15	<15	<15	<15	<15	<15	<15	<15	860	3,300	380	<15	140
PZ-2		A	2/2/07	<9.0	<9.0	<9.0	<9.0	<9.0	<9.0	<9.0	<9.0	<9.0	<9.0	<9.0	<9.0	<9.0	870	3,300	530	12	180
PZ-2		A	8/15/07	<15	<15	<15	<15	<15	<15	<15	<15	<15	<15	<15	<15	<15	1,300	3,600	620	16	180
PZ-2		A	2/5/08	<15	<15	<15	<15	<15	<15	<15	<15	<15	<15	<15	<15	<15	670	3,500	610	16	190
PZ-2	RDIP	A	11/6/08	0.50	1.0	1.3	<0.50	<0.50	<5.0	<0.50	<0.50	<0.50	2.0	<0.50	0.77	<0.50	3.8	1.0	57	<0.50	1.9
PZ-2	RDIP	A	2/2/09	0.54	1.3	1.7	<0.50	<0.50	<5.0	<0.50	<0.50	<0.50	<0.50	<0.50	1.5	<0.50	<0.50	<0.50	4.0	<0.50	0.69
PZ-2	RDIP	A	2/1/10	<0.50	0.97	1.1	<0.50	<0.50	<5.0	<0.50	<0.50	<0.50	0.68	<0.50	<0.50	<0.50	<0.50	6.1	1.4	<0.50	7.1
PZ-2	RDIP	A	2/9/11	<0.50	0.94	0.79	<0.50	<0.50	<5.0	<0.50	<0.50	<0.50	2.8	<0.50	<0.50	<0.50	0.85	8.6	1.1	<0.50	16
PZ-2	RDIP	A	2/7/12	<0.50	1.6	0.95	<0.50	<0.50	<5.0	<1.0	<0.50	<0.50	4.1	<0.50	<0.50	<0.50	1.7	130	<0.50	1.0	160
PZ-2	RDIP, DUP	A	2/7/12	<0.50	1.6	1.0	<0.50	<0.50	<5.0	<1.0	<0.50	<0.50	4.2	<0.50	<0.50	<0.50	1.8	130	<0.50	1.1	160
PZ-2	O&M	A	2/13/13	<0.50	2.3	1.1	<0.50	<0.50	<5.0	<1.0	<0.50	<0.50	4.3	<0.50	<0.50	<0.50	<0.50	73	5.2	<0.50	500
PZ-2	O&M, DUP	A	2/13/13	<0.50	2.4	1.2	<0.50	<0.50	<5.0	<1.0	<0.50	<0.50	4.4	<0.50	<0.50	<0.50	<0.50	74	5.2	<0.50	470
PZ-2	O&M	A	2/25/14	<2.5	<2.5	<2.5	<2.5	<2.5	<5.0	<2.5	<2.5	<2.5	2.9	<2.5	<2.5	<2.5	2.8	290	23	<2.5	510
PZ-2	O&M, DUP	A	2/25/14	<2.5	<2.5	<2.5	<2.5	<2.5	<5.0	<2.5	<2.5	<2.5	3.4	<2.5	<2.5	<2.5	2.8	310	25	<2.5	520
PZ-2	O&M	A	6/11/15	<2.5	<2.5	<2.5	<2.5	<2.5	<5.0	<2.5	<2.5	<2.5	<2.5	<2.5	<2.5	<2.5	2.8	460	33.9	<2.5	752
PZ-2	O&M	A	2/23/16	<1.7	2.6	<1.7	<1.7	<1.7	<16.6	<6.7	<1.7	<1.7	2.2	<1.7	<6.7	<1.7	<1.7	273	32.3	<1.7	737
PZ-2	O&M	A	2/14/17	<2.5	<2.5	<2.5	<2.5	<2.5	<25	<10	<2.5	<2.5	<2.5	<2.5	<10	<2.5	<2.5	349	36.7	<2.5	697
PZ-2	O&M	A	2/14/18	<2.5	<2.5	<2.5	<2.5	<2.5	<25	<2.5	<2.5	<2.5	<2.5	<2.5	<10	<2.5	<2.5	16.8	18.7	<2.5	403
PZ-2	O&M, 12	A	2/12/19	<0.50	3.12	1.39	<0.50	<0.50	< 5.0	<0.50	<0.50	<0.50	2.56	<0.50	<2.0	<0.50	0.856	131	67.4	<0.50	528
PZ-2	O&M, 14	A	3/10/20	<0.50	2.97	1.37	<0.50	<0.50	<2.5	<1.25	<0.50	<0.50	2.14	<0.50	<2.5	<0.50	<0.50	<10.0	32.8	<0.50	772
MW-22		A	3/27/06	< 4.0	< 4.0	< 4.0	< 4.0	< 4.0	< 5.0	< 4.0	< 4.0	< 4.0	11	< 4.0	< 4.0	< 4.0	870	310	< 4.0	6.9	98
MW-22		A	6/14/06	<2.0	<2.0	<2.0	<2.0	<2.0	<5.0	<2.0	<2.0	<2.0	12	<2.0	<2.0	<2.0	860	350	3.5	9.1	94
MW-22		A	9/20/06	< 4.0	< 4.0	< 4.0	< 4.0	< 4.0	< 5.0	< 4.0	< 4.0	< 4.0	13	< 4.0	< 4.0	< 4.0	1,700	700	15	12	100
MW-22		A	2/1/07	< 4.0	< 4.0	< 4.0	< 4.0	< 4.0	< 5.0	< 4.0	< 4.0	< 4.0	16	< 4.0	< 4.0	< 4.0	2,300	710	18	13	97
MW-22		A	5/8/07	< 4.0	< 4.0	< 4.0	< 4.0	< 4.0	< 5.0	< 4.0	< 4.0	< 4.0	11	< 4.0	< 4.0	< 4.0	2,300	840	8.6	14	89
MW-22		A	8/15/07	<2.0	<2.0	<2.0	<2.0	<2.0	< 5.0	<2.0	<2.0	<2.0	10	<2.0	<2.0	<2.0	1,200	570	6.7	15	94
MW-22		A	11/14/07	< 4.0	< 4.0	< 4.0	< 4.0	< 4.0	< 5.0	< 4.0	< 4.0	< 4.0	12	< 4.0	< 4.0	< 4.0	1,900	950	14	29	140
MW-22		A	2/5/08	< 4.0	< 4.0	< 4.0	< 4.0	< 4.0	< 5.0	< 4.0	< 4.0	< 4.0	12	< 4.0	< 4.0	< 4.0	1,200	420	6.1	13	110
MW-22	RDIP	A	8/6/08	< 4.0	< 4.0	< 4.0	< 4.0	< 4.0	< 5.0	< 4.0	< 4.0	< 4.0	6.9	< 4.0	< 4.0	< 4.0	1,300	2,000	9.5	20	100
MW-22	RDIP	A	2/4/09	< 1.5	< 1.5	< 1.5	< 1.5	< 1.5	< 5.0	< 1.5	< 1.5	< 1.5	2.1	< 1.5	< 1.5	< 1.5	20	280	7.1	1.9	110
MW-22	RDIP	A	2/1/10	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 5.0	< 0.50	< 0.50	< 0.50	7.2	< 0.50	3.1	<0.50	70	240	4.6	4.0	96
MW-22	RDIP	A	2/9/11	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 5.0	< 0.50	< 0.50	< 0.50	9.1	< 0.50	0.83	<0.50	1.2	130	5.6	<0.50	190
MW-22	RDIP	A	2/7/12	<1.5	<1.5	<1.5	<1.5	<1.5	< 5.0	<2.0	<1.5	<1.5	5.7	<1.5	<1.5	<1.5	22	380	11	3.1	290
MW-22	O&M	A	2/14/13	<0.90	<0.90	<0.90	<0.90	<0.90	< 5.0	<0.90	<0.90	<0.90	4.6	<0.90	<0.90	<0.90	1.3	180	45	<0.90	200
MW-22	O&M	A	2/25/14	<0.90	<0.90	<0.90	<0.90	<0.90	< 5.0	<0.90	<0.90	<0.90	1.6	<0.90	<0.90	<0.90	2.3	180	29	1.2	180

Table 5A
Groundwater Monitoring Volatile Organic Compounds Data
A-Zone Hotspots
Former Kaiser Aerotech Facilities
San Leandro, California

Well ID	Notes	GW Zone	Sample Date	1,2-DCB	1,3-DCB	1,4-DCB	Chloro-benzene	Chloroform	Methylene Chloride	Chloro-methane	1,1,1-TCA	1,1,2-TCA	1,1-DCA	1,2-DCA	Chloro-ethane	PCE	TCE	cis-1,2-DCE	trans-1,2-DCE	1,1-DCE	Vinyl Chloride
				8260*	8260*	8260*	8260*	8260*	8260*	8260*	8260*	8260*	8260*	8260*	8260*	8260*	8260*	8260*	8260*	8260*	8260*
				(ug/L)	(ug/L)	(ug/L)	(ug/L)	(ug/L)	(ug/L)	(ug/L)	(ug/L)	(ug/L)	(ug/L)	(ug/L)	(ug/L)	(ug/L)	(ug/L)	(ug/L)	(ug/L)	(ug/L)	(ug/L)
			MCLs	600	-	5	70	80	5	-	200	5	5	0.5	-	5	5	6	10	6	0.5
			Regulatory Date	9/8/94	-	4/4/89	9/8/94	6/17/06	2/25/89	-	2/25/89	9/8/94	6/24/90	4/4/89	-	5/89	2/25/89	9/8/94	9/8/94	2/25/89	4/4/89
MW-22	O&M	A	6/9/15	<0.50	<0.50	<0.50	<0.50	<0.50	< 5.0	<0.50	<0.50	<0.50	**5.1**	<0.50	<0.50	<0.50	1.4	**195**	**37.8**	0.83	**448**
MW-22	O&M	A	2/23/16	<1.2	<1.2	<1.2	<1.2	<1.2	<12.5	<5.0	<1.2	<1.2	2.6	<1.2	<5.0	<1.2	2.0	**190**	**48.9**	1.4	**267**
MW-22	O&M	A	2/14/17	<1.2	<1.2	<1.2	<1.2	<1.2	<12.5	<5.0	<1.2	<1.2	3.8	<1.2	<5.0	<1.2	**9.1**	**342**	**33.8**	1.8	**445**
MW-22	O&M	A	2/14/18	<1.25	<1.25	<1.25	<1.25	<1.25	<12.5	<1.25	<1.25	<1.25	3.1	<1.25	<5.0	<1.25	1.3	**412**	**39.6**	<1.25	**508**
MW-22	O&M	A	2/12/19	<0.50	<0.50	<0.50	<0.50	<0.50	<5.0	<0.50	<0.50	<0.50	2.26	<0.50	<2.0	<0.50	1.66	**152**	**32.6**	<0.500	**383**
MW-22	O&M	A	3/10/20	<0.50	<0.50	<0.50	<0.50	<0.50	<2.5	<1.25	<0.50	<0.50	1.24	<0.50	<2.5	<0.50	0.597	**93.4**	**18.1**	<0.500	**55.0**
MW-23		A	3/27/06	< 40	< 40	< 40	< 40	< 40	< 40	< 40	< 40	< 40	< 40	< 40	< 40	< 40	**8,100**	**2,000**	**110**	<40	<40
MW-23		A	6/14/06	<40	<40	<40	<40	<40	<40	<40	<40	<40	<40	<40	<40	<40	**7,300**	**2,000**	**100**	<40	<40
MW-23		A	9/21/06	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	**2,800**	**1,000**	**98**	<5.0	**25**
MW-23		A	2/1/07	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	**3,600**	**1,200**	**150**	5.3	**37**
MW-23		A	5/8/07	<4.0	<4.0	<4.0	<4.0	<4.0	<5.0	<4.0	<4.0	<4.0	<4.0	<4.0	<4.0	<4.0	**3,200**	**940**	**96**	<4.0	**20**
MW-23		A	8/15/07	<4.0	<4.0	<4.0	<4.0	<4.0	<5.0	<4.0	<4.0	<4.0	<4.0	<4.0	<4.0	<4.0	**1,500**	**790**	**110**	<4.0	**20**
MW-23		A	2/5/08	<7.0	<7.0	<7.0	<7.0	<7.0	<7.0	<7.0	<7.0	<7.0	<7.0	<7.0	<7.0	<7.0	**2,100**	**950**	**160**	<7.0	**31**
MW-23	RDIP	A	8/6/08	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	**140**	**1,700**	**120**	**9.7**	**27**
MW-23	RDIP	A	2/3/09	<1.5	<1.5	<1.5	<1.5	<1.5	<5.0	<1.5	<1.5	<1.5	<1.5	<1.5	<1.5	<1.5	**11**	**370**	**40**	<1.5	**370**
MW-23	RDIP	A	2/1/10	<1.5	<1.5	<1.5	<1.5	<1.5	<5.0	<1.5	<1.5	<1.5	<1.5	<1.5	23	<1.5	**21**	**310**	**13**	<1.5	**390**
MW-23	RDIP	A	2/8/11	<1.5	<1.5	<1.5	<1.5	<1.5	<5.0	<1.5	<1.5	<1.5	<1.5	<1.5	2.1	<1.5	2.4	**210**	3.4	<1.5	**480**
MW-23	RDIP	A	2/7/12	<0.50	<0.50	<0.50	0.80	<0.50	<5.0	<0.50	<0.50	<0.50	<0.50	**0.98**	<0.50	<0.50	<0.50	**69**	1.6	<0.50	**100**
MW-23	O&M	A	2/14/13	<0.50	<0.50	<0.50	0.82	<0.50	<5.0	<0.50	<0.50	<0.50	1.0	<0.50	<0.50	<0.50	<0.50	**88**	2.3	<0.50	**70**
MW-23	O&M	A	2/25/14	<0.50	<0.50	<0.50	0.98	<0.50	<5.0	<0.50	<0.50	<0.50	0.97	<0.50	<0.50	<0.50	<0.50	**62**	2.1	<0.50	**50**
MW-23	O&M	A	6/10/15	<0.50	<0.50	<0.50	0.98	<0.50	<5.0	<0.50	<0.50	<0.50	0.64	<0.50	<0.50	<0.50	0.87	**128**	3.5	<0.50	**27.1**
MW-23	O&M	A	2/23/16	<0.50	<0.50	<0.50	1.0	<0.50	<5.0	<2.0	<0.50	<0.50	<0.50	<0.50	<2.0	<0.50	<0.50	**32.9**	0.90	<0.50	**21.1**
MW-23	O&M	A	2/13/17	<0.50	<0.50	<0.50	2.8	<0.50	<5.0	<2.0	<0.50	<0.50	<0.50	<0.50	<2.0	<0.50	**390**	**815**	**84.7**	**19.2**	**153**
MW-23	O&M	A	2/14/18	<0.50	<0.50	<0.50	1.36	<0.50	<5.0	<0.50	<0.50	<0.50	<0.50	<0.50	4.05	<0.50	**12.9**	**179**	4.16	1.93	**75**
MW-23	O&M	A	2/14/18	<0.50	<0.50	<0.50	1.36	<0.50	<5.0	<0.50	<0.50	<0.50	<0.50	<0.50	4.05	<0.50	**12.9**	**179**	4.16	1.93	**75**
MW-23	O&M	A	2/11/19	<0.50	<0.50	<0.50	0.932	<0.50	<5.0	<0.50	<0.50	<0.50	<0.50	<0.50	<2.0	<0.50	1.53	**86.3**	5.28	<0.500	**89.3**
MW-23	O&M	A	3/10/20	<0.50	<0.50	<0.50	0.724	<0.50	<2.5	<1.25	<0.50	<0.50	<0.50	<0.50	<2.5	<0.50	**6.96**	**120**	2.98	0.605	**2.05**
MW-26		A	3/27/06	< 7.0	< 7.0	< 7.0	< 7.0	< 7.0	< 7.0	< 7.0	< 7.0	< 7.0	< 7.0	< 7.0	< 7.0	< 7.0	**2,100**	**380**	9.6	< 7.0	< 7.0
MW-26		A	6/14/06	<6.0	<6.0	<6.0	<6.0	<6.0	<6.0	<6.0	<6.0	<6.0	<6.0	<6.0	<6.0	<6.0	**1,300**	**210**	<6.0	<6.0	<6.0
MW-26		A	9/21/06	<4.0	<4.0	<4.0	<4.0	<4.0	<5.0	<4.0	<4.0	<4.0	<4.0	<4.0	<4.0	<4.0	**1,800**	**320**	6.2	<4.0	<4.0
MW-26		A	1/31/07	<4.0	<4.0	<4.0	<4.0	<4.0	<5.0	<4.0	<4.0	<4.0	<4.0	<4.0	<4.0	<4.0	**1,600**	**300**	**26**	<4.0	<4.0
MW-26		A	5/9/07	<4.0	<4.0	<4.0	<4.0	<4.0	<5.0	<4.0	<4.0	<4.0	<4.0	<4.0	<4.0	<4.0	**1,800**	**280**	7.9	<4.0	<4.0
MW-26		A	8/14/07	<4.0	<4.0	<4.0	<4.0	<4.0	<5.0	<4.0	<4.0	<4.0	<4.0	<4.0	<4.0	<4.0	**2,100**	**400**	6.7	<4.0	<4.0
MW-26		A	2/5/08	<4.0	<4.0	<4.0	<4.0	<4.0	<5.0	<4.0	<4.0	<4.0	<4.0	<4.0	<4.0	<4.0	**2,000**	**270**	4.8	<4.0	<4.0
MW-26	RDIP	A	8/5/08	<7.0	<7.0	<7.0	<7.0	<7.0	<7.0	<7.0	<7.0	<7.0	<7.0	<7.0	<7.0	<7.0	**270**	**1,600**	<7.0	<7.0	<7.0
MW-26	RDIP	A	2/3/09	<1.5	<1.5	<1.5	<1.5	<1.5	<5.0	<1.5	<1.5	<1.5	<1.5	<1.5	<1.5	<1.5	**400**	**120**	4.2	<1.5	**3.2**
MW-26	RDIP	A	2/1/10	<1.5	<1.5	<1.5	<1.5	<1.5	<5.0	<1.5	<1.5	<1.5	<1.5	<1.5	<1.5	<1.5	**730**	**380**	3.5	<1.5	**51**
MW-26	RDIP	A	2/8/11	<0.50	<0.50	<0.50	<0.50	<0.50	<5.0	<0.50	<0.50	<0.50	<0.50	<0.50	1.8	<0.50	**24**	**110**	1.9	<0.50	**69**
MW-26	RDIP	A	2/7/12	<0.50	<0.50	<0.50	<0.50	<0.50	<5.0	<1.0	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	**15**	**520**	8.4	1.1	**190**
MW-26	O&M	A	2/14/13	<2.5	<2.5	<2.5	<2.5	<2.5	<5.0	<2.5	<2.5	<2.5	<2.5	<2.5	<2.5	<2.5	**48**	**500**	**12**	<2.5	**150**
MW-26	O&M	A	2/26/14	<2.5	<2.5	<2.5	<2.5	<2.5	<5.0	<2.5	<2.5	<2.5	<2.5	<2.5	<2.5	<2.5	**270**	**930**	**12**	<2.5	**19**

Table 5A
Groundwater Monitoring Volatile Organic Compounds Data
A-Zone Hotspots
Former Kaiser Aerotech Facilities
San Leandro, California

Well ID	Notes	GW Zone	Sample Date	1,2-DCB	1,3-DCB	1,4-DCB	Chloro-benzene	Chloroform	Methylene Chloride	Chloro-methane	1,1,1-TCA	1,1,2-TCA	1,1-DCA	1,2-DCA	Chloro-ethane	PCE	TCE	cis-1,2-DCE	trans-1,2-DCE	1,1-DCE	Vinyl Chloride
				8260*	8260*	8260*	8260*	8260*	8260*	8260*	8260*	8260*	8260*	8260*	8260*	8260*	8260*	8260*	8260*	8260*	8260*
				(ug/L)	(ug/L)	(ug/L)	(ug/L)	(ug/L)	(ug/L)	(ug/L)	(ug/L)	(ug/L)	(ug/L)	(ug/L)	(ug/L)	(ug/L)	(ug/L)	(ug/L)	(ug/L)	(ug/L)	(ug/L)
			MCLs	600	-	5	70	80	5	-	200	5	5	0.5	-	5	5	6	10	6	0.5
			Regulatory Date	9/8/94	-	4/4/89	9/8/94	6/17/06	2/25/89	-	2/25/89	9/8/94	6/24/90	4/4/89	-	5/89	2/25/89	9/8/94	9/8/94	2/25/89	4/4/89
MW-26	O&M	A	6/10/15	<2.5	<2.5	<2.5	<2.5	<2.5	<25	<2.5	<2.5	<2.5	<2.5	<2.5	<2.5	<2.5	**294**	**469**	8.0	<2.5	**5.5**
MW-26	O&M	A	2/24/16	<1.0	<1.0	<1.0	<1.0	<1.0	<10	<4.0	<1.0	<1.0	<1.0	<1.0	<4.0	<1.0	**229**	**360**	5.6	1.2	**12.2**
MW-26	O&M	A	2/15/17	<1.0	<1.0	<1.0	<1.0	<1.0	<10	<4.0	<1.0	<1.0	<1.0	<1.0	<4.0	<1.0	**243**	**303**	4.0	1.1	**1.5**
MW-26	O&M, DUP-5	A	2/15/17	<0.50	<0.50	<0.50	<0.50	<0.50	<5.0	<2.0	<0.50	<0.50	<0.50	<0.50	<2.0	<0.50	**206**	**271**	4.1	1.1	**1.7**
MW-26	O&M	A	2/14/18	<1.0	<1.0	<1.0	<1.0	<1.0	<10	<1.0	<1.0	<1.0	<1.0	<1.0	<4.0	<1.0	**696**	**530**	6.23	2.86	<10
MW-26	O&M	A	2/13/19	<0.50	<0.50	<0.50	<0.50	<0.50	<5.0	<0.50	<0.50	<0.50	<0.50	<0.50	<2.0	<0.50	**308**	**613**	7.97	1.34	**10.3**
MW-26	O&M, DUP	A	2/13/19	<0.50	<0.50	<0.50	<0.50	<0.50	<5.0	<0.50	<0.50	<0.50	<0.50	<0.50	<2.0	<0.50	**316**	**621**	7.92	1.46	**9.87**
MW-26	O&M	A	3/11/20	<0.50	<0.50	<0.50	<0.50	<0.50	<2.5 J4	<1.25 J4	<0.50	<0.50	<0.50	<0.50	<2.5	<0.50	**83.8**	**355**	4.73	1.22	**0.600**

Table 5B
Groundwater Monitoring Volatile Organic Compounds Data
Degreasing Tank No. 1
Former Kaiser Aerotech Facilities
San Leandro, California

Well ID	Notes	GW Zone	Sample Date	1,2-DCB	1,3-DCB	1,4-DCB	Chloro-benzene	Chloroform	Methylene Chloride	Chloro-methane	1,1,1-TCA	1,1,2-TCA	1,1-DCA	1,2-DCA	Chloro-ethane	PCE	TCE	cis-1,2-DCE	trans-1,2-DCE	1,1-DCE	Vinyl Chloride
				8260*	8260*	8260*	8260*	8260*	8260*	8260*	8260*	8260*	8260*	8260*	8260*	8260*	8260*	8260*	8260*	8260*	8260*
				(ug/L)	(ug/L)	(ug/L)	(ug/L)	(ug/L)	(ug/L)	(ug/L)	(ug/L)	(ug/L)	(ug/L)	(ug/L)	(ug/L)	(ug/L)	(ug/L)	(ug/L)	(ug/L)	(ug/L)	(ug/L)
			MCLs	600	-	5	70	80	5	-	200	5	5	0.5	-	5	5	6	10	6	0.5
			Regulatory Date	9/8/94	-	4/4/89	9/8/94	6/17/06	2/25/89	-	2/25/89	9/8/94	6/24/90	4/4/89	-	5/89	2/25/89	9/8/94	9/8/94	2/25/89	4/4/89
MW-11		A	11/1/96	<50	<50	<50	<50	<50	<50	<50	<50	<50	<50	<50	<50	<50	**2,100**	**190**	<50	<50	<50
MW-11		A	3/21/97	<13	<13	<13	<13	<13	<13	<13	<13	<13	<13	<13	<13	<13	**880**	**92**	<13	<13	<13
MW-11		A	6/26/97	<30	<30	<30	<30	<30	<100	<100	<30	<30	<30	<30	<100	<30	**1,300**	**210**	<30	<30	<100
MW-11		A	9/22/97	<50	<50	<50	<50	<50	<50	<50	<50	<50	<50	<50	<50	<50	**1,100**	**220**	<50	<50	<50
MW-11		A	12/18/97	<50	<50	<50	<50	<50	<250	<50	<50	<50	<50	<50	<50	<50	**820**	**150**	<50	<50	<50
MW-11		A	3/23/98	<50	<50	<50	<50	<300	<500	<100	<50	<50	<50	<50	<100	<50	**560**	**100**	<50	<50	<50
MW-11		A	6/17/98	<2.5	<2.5	<2.5	<2.5	<15	<25	<5.0	<2.5	<2.5	<2.5	<2.5	<5.0	<2.5	**720**	**83**	<2.5	<2.5	<2.5
MW-11		A	9/24/98	<5.0	<5.0	<5.0	<5.0	<5.0	<50	<10	<5.0	<5.0	<5.0	<5.0	<10	<5.0	**1,100**	**240**	<5.0	<5.0	**7.1**
MW-11		A	12/9/98	<5.0	<5.0	<5.0	<5.0	<30	<50	<10	<5.0	<5.0	<5.0	<5.0	<10	<5.0	**730**	**140**	<5.0	<5.0	<5.0
MW-11		A	3/23/99	<5.0	<5.0	<5.0	<5.0	<30	<50	<10	<5.0	<5.0	<5.0	<5.0	<10	<5.0	**740**	**48**	<5.0	<5.0	<5.0
MW-11		A	6/23/99	<5.0	<5.0	<5.0	<5.0	<5.0	<50	<10	<5.0	<5.0	<5.0	<5.0	<10	<5.0	**730**	**98**	<5.0	<5.0	**5.1**
MW-11		A	12/18/99	<10	<10	<10	<10	<10	<100	<20	<10	<10	<10	<10	<20	<10	**1,100**	**230**	<10	<10	<10
MW-11		A	3/14/00	<10	<10	<10	<10	<10	<100	<20	<10	<10	<10	<10	<20	<10	**690**	**140**	<10	<10	<10
MW-11		A	9/20/00	<10	<10	<10	<10	<10	<100	<20	<10	<10	<10	<10	<20	<10	**1,100**	**330**	<10	<10	**15**
MW-11		A	3/14/01	<10	<10	<10	<10	<10	<100	<20	<10	<10	<10	<10	<20	<10	**610**	**64**	<10	<10	<10
MW-11		A	9/26/01	<10	<10	<10	<10	<10	<100	<20	<10	<10	<10	<10	<20	<10	**860**	**160**	**25**	<10	<10
MW-11		A	10/3/02	<10	<10	<10	<10	<10	<100	<20	<10	<10	<10	<10	<20	<10	**860**	**180**	<10	<10	<10
MW-11		A	3/26/03	<10	<10	<10	<10	<10	<100	<20	<10	<10	<10	<10	<20	<10	**210**	**30**	<10	<10	<10
MW-11		A	9/23/03	<1.0	<1.0	<1.0	<1.0	<1.0	<10	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	**800**	**110**	1.6	<1.0	**5.0**
MW-11		A	3/9/04	<0.50	<0.50	<0.50	<0.50	<0.50	<5.0	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	**260**	**30**	<0.50	<0.50	**0.59**
MW-11		A	9/29/04	<0.50	<0.50	<0.50	<0.50	<0.50	<5.0	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	0.73	**1,100**	**400**	5.7	1.6	**19**
MW-11		A	3/9/05	<2.5	<2.5	<2.5	<2.5	<2.5	<5.0	<2.5	<2.5	<2.5	<2.5	<2.5	<2.5	<2.5	**490**	**80**	<2.5	<2.5	**2.9**
MW-11		A	9/15/05	<6.0	<6.0	<6.0	<6.0	<6.0	<6.0	<6.0	<6.0	<6.0	<6.0	<6.0	<6.0	<6.0	**1,200**	**370**	7.2	<6.0	**8.4**
MW-11		A	3/15/06	< 1.5	< 1.5	< 1.5	< 1.5	< 1.5	< 5.0	< 1.5	< 1.5	< 1.5	< 1.5	< 1.5	< 1.5	< 1.5	**360**	**40**	< 1.5	< 1.5	**2.0**
MW-11		A	9/20/06	<0.90	<0.90	<0.90	<0.90	<0.90	< 5.0	<0.90	<0.90	<0.90	<0.90	<0.90	<0.90	<0.90	**280**	**56**	<0.90	<0.90	<0.90
MW-11		A	1/31/07	<0.50	<0.50	<0.50	<0.50	<0.50	< 5.0	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	**220**	**38**	0.63	<0.50	**1.3**
MW-11		A	2/6/08	<0.50	<0.50	<0.50	<0.50	<0.50	< 5.0	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	**120**	**7.8**	<0.50	<0.50	<0.50
MW-11	RDIP	A	8/7/08	<1.0	<1.0	<1.0	<1.0	<1.0	<5.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	**250**	**40**	<1.0	<1.0	**1.6**
MW-11	RDIP	A	2/5/09	<0.50	<0.50	<0.50	<0.50	<0.50	<5.0	<0.50	<0.50	<0.50	<0.50	<0.50	2.5	<0.50	**130**	**92**	1.3	0.85	**23**
MW-11	RDIP	A	8/5/09	<0.50	<0.50	<0.50	<0.50	<0.50	<5.0	<0.50	<0.50	<0.50	<0.50	<0.50	0.64	<0.50	**91**	**41**	1.3	<0.50	**29**
MW-11	RDIP	A	2/2/10	<0.50	<0.50	<0.50	<0.50	<0.50	<5.0	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	**66**	**32**	1.0	<0.50	**3.8**
MW-11	RDIP	A	2/8/11	<0.50	<0.50	<0.50	<0.50	<0.50	<5.0	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	4.7	**6.4**	0.83	<0.50	**4.4**
MW-11	O&M	A	2/13/13	<0.50	<0.50	<0.50	<0.50	<0.50	<5.0	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	**32**	**8.0**	<0.50	<0.50	<0.50
MW-11	O&M	A	6/9/15	<0.50	<0.50	<0.50	<0.50	<0.50	<5.0	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	**39.7**	**11.6**	<0.50	<0.50	**1.4**
MW-11	O&M	A	2/13/17	<0.50	<0.50	<0.50	<0.50	<0.50	<5.0	<2.0	<0.50	<0.50	<0.50	<0.50	<2.0	<0.50	2.7	0.84	<0.50	<0.50	<0.50
MW-11	O&M	A	2/12/19	<0.50	<0.50	<0.50	<0.50	<0.50	<5.0	<0.50	<0.50	<0.50	<0.50	<0.50	<2.0	<0.50	4.30	1.06	<0.50	<0.50	<0.50

Table 5B
Groundwater Monitoring Volatile Organic Compounds Data
Degreasing Tank No. 1
Former Kaiser Aerotech Facilities
San Leandro, California

Well ID	Notes	GW Zone	Sample Date	1,2-DCB	1,3-DCB	1,4-DCB	Chloro-benzene	Chloroform	Methylene Chloride	Chloro-methane	1,1,1-TCA	1,1,2-TCA	1,1-DCA	1,2-DCA	Chloro-ethane	PCE	TCE	cis-1,2-DCE	trans-1,2-DCE	1,1-DCE	Vinyl Chloride
				8260*	8260*	8260*	8260*	8260*	8260*	8260*	8260*	8260*	8260*	8260*	8260*	8260*	8260*	8260*	8260*	8260*	8260*
				(ug/L)	(ug/L)	(ug/L)	(ug/L)	(ug/L)	(ug/L)	(ug/L)	(ug/L)	(ug/L)	(ug/L)	(ug/L)	(ug/L)	(ug/L)	(ug/L)	(ug/L)	(ug/L)	(ug/L)	(ug/L)
			MCLs	600	-	5	70	80	5	-	200	5	5	0.5	-	5	5	6	10	6	0.5
			Regulatory Date	9/8/94	-	4/4/89	9/8/94	6/17/06	2/25/89	-	2/25/89	9/8/94	6/24/90	4/4/89	-	5/89	2/25/89	9/8/94	9/8/94	2/25/89	4/4/89
MW-11	O&M	A	3/10/20	<0.50	<0.50	<0.50	<0.50	<0.50	<2.5	<1.25	<0.50	<0.50	<0.50	<0.50	<2.5	<0.50	**18.8**	**9.42**	<0.50	<0.50	<0.50
MW-19		A	6/2/05	<0.50	<0.50	<0.50	<0.50	**1.2**	<5.0	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	1.3	**2,400**	**8.6**	<0.50	<0.50	<0.50
MW-19		A	7/8/05	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	**1,300**	**8.3**	<5.0	<5.0	<5.0
MW-19	PT DPE	A	7/22/05	<10	<10	<10	<10	<10	<100	<10	<10	<10	<10	<10	<10	<10	**1,300**	<10	<10	<10	<10
MW-19		A	8/11/05	<0.70	<0.70	<0.70	<0.70	<0.70	<5.0	<0.70	<0.70	<0.70	<0.70	<0.70	<0.70	0.97	**830**	5.2	<0.70	<0.70	<0.70
MW-19		A	9/15/05	<4.0	<4.0	<4.0	<4.0	<4.0	<5.0	<4.0	<4.0	<4.0	<4.0	<4.0	<4.0	<4.0	**780**	**11**	<4.0	<4.0	<4.0
MW-19		A	12/15/05	<2.5	<2.5	<2.5	<2.5	<2.5	<5.0	<2.5	<2.5	<2.5	<2.5	<2.5	<2.5	<2.5	**680**	**78**	<2.5	<2.5	<2.5
MW-19		A	3/14/06	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 5.0	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	**630**	**82**	< 2.5	< 2.5	<2.5
MW-19		A	9/20/06	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 5.0	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	**640**	**250**	5.3	< 2.5	**15**
MW-19		A	1/31/07	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 5.0	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	2.9	< 2.5	**880**	**660**	**29**	< 2.5	**240**
MW-19		A	5/10/07	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 5.0	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	7.1	< 2.5	**800**	**690**	4.2	< 2.5	**210**
MW-19		A	8/14/07	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 5.0	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	24	< 2.5	**790**	**990**	6.3	< 2.5	**460**
MW-19		A	2/5/08	<4.0	<4.0	<4.0	<4.0	<4.0	<5.0	<4.0	<4.0	<4.0	<4.0	<4.0	<4.0	<4.0	**160**	**960**	5.0	<4.0	**490**
MW-19	RDIP	A	8/6/08	<0.50	<0.50	<0.50	<0.50	<0.50	<5.0	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	3.0	**34**	3.9	<0.50	**26**
MW-19	RDIP	A	2/5/09	<0.50	<0.50	<0.50	<0.50	<0.50	<5.0	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	3.9	1.3	<0.50	**0.78**
MW-19	RDIP	A	8/6/09	<0.50	<0.50	<0.50	<0.50	<0.50	<5.0	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	0.53	3.1	0.95	<0.50	**1.9**
MW-19	RDIP	A	2/2/10	<0.50	<0.50	<0.50	<0.50	<0.50	<5.0	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	1.0	**12**	<0.50	<0.50	**9.6**
MW-19	RDIP	A	2/9/11	<0.50	<0.50	<0.50	<0.50	<0.50	<5.0	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	0.55	4.2	<0.50	<0.50	**3.7**
MW-19	O&M	A	2/13/13	<0.50	<0.50	<0.50	<0.50	<0.50	<5.0	<0.50	<0.50	<0.50	<0.50	<0.50	5.5	<0.50	0.56	1.8	<0.50	<0.50	**79**
MW-19	O&M	A	6/9/15	<0.50	<0.50	<0.50	<0.50	<0.50	<5.0	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	0.66	1.2	<0.50	<0.50	**1.6**
MW-19	O&M	A	2/13/17	<0.50	<0.50	<0.50	<0.50	<0.50	<5.0	<2.0	<0.50	<0.50	<0.50	<0.50	<2.0	<0.50	<0.50	1.3	<0.50	<0.50	**60.1**
MW-19	O&M	A	2/12/19	<0.50	<0.50	<0.50	<0.50	<0.50	<5.0	<0.50	<0.50	<0.50	<0.50	<0.50	<2.0	<0.50	<0.50	<0.50	<0.50	<0.50	**1.29**
MW-29		A	9/18/07	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	**3,800**	**960**	**15**	<5.0	**22**
MW-29		A	11/13/07	<9.0	<9.0	<9.0	<9.0	<9.0	<9.0	<9.0	<9.0	<9.0	<9.0	<9.0	<9.0	<9.0	**2,600**	**1,100**	**18**	<9.0	**16**
MW-29		A	2/5/08	<8.0	<8.0	<8.0	<8.0	<8.0	<8.0	<8.0	<8.0	<8.0	<8.0	<8.0	<8.0	<8.0	**2,700**	**1,600**	**15**	<8.0	**26**
MW-29		A	5/6/08	<9.0	<9.0	<9.0	<9.0	<9.0	<9.0	<9.0	<9.0	<9.0	<9.0	<9.0	<9.0	<9.0	**2,000**	**680**	<9.0	<9.0	**23**
MW-29	RDIP	A	8/5/08	<9.0	<9.0	<9.0	<9.0	<9.0	<9.0	<9.0	<9.0	<9.0	<9.0	<9.0	<9.0	<9.0	**2,200**	**770**	<9.0	<9.0	**25**
MW-29	RDIP	A	2/2/09	<9.0	<9.0	<9.0	<9.0	<9.0	<9.0	<9.0	<9.0	<9.0	<9.0	<9.0	<9.0	<9.0	**2,900**	**1,900**	**17**	<9.0	**38**
MW-29	RDIP	A	8/5/09	<8.0	<8.0	<8.0	<8.0	<8.0	<8.0	<8.0	<8.0	<8.0	<8.0	<8.0	<8.0	<8.0	**1,000**	**1,600**	**11**	<8.0	**69**
MW-29	RDIP	A	2/3/10	<8.0	<8.0	<8.0	<8.0	<8.0	<8.0	<8.0	<8.0	<8.0	<8.0	<8.0	<8.0	<8.0	**1,600**	**1,500**	**11**	<8.0	**67**
MW-29	RDIP	A	8/4/10	<3.0	<3.0	<3.0	<3.0	<3.0	<5.0	<3.0	<3.0	<3.0	<3.0	<3.0	<3.0	<3.0	**1,100**	**1,100**	7.0	**4.7**	**69**
MW-29	RDIP	A	2/8/11	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	**6.2**	<5.0	**590**	**1,700**	**11**	**6.9**	**130**
MW-29	RDIP	A	2/7/12	<9.0	<9.0	<9.0	<9.0	<9.0	<9.0	<9.0	<9.0	<9.0	<9.0	<9.0	<9.0	<9.0	**2,100**	**1,000**	9.6	<9.0	**64**
MW-29	RDIP	A	8/23/12	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	**720**	**990**	**14**	<5.0	**120**

Table 5B
Groundwater Monitoring Volatile Organic Compounds Data
Degreasing Tank No. 1
Former Kaiser Aerotech Facilities
San Leandro, California

Well ID	Notes	GW Zone	Sample Date	1,2-DCB	1,3-DCB	1,4-DCB	Chloro-benzene	Chloroform	Methylene Chloride	Chloro-methane	1,1,1-TCA	1,1,2-TCA	1,1-DCA	1,2-DCA	Chloro-ethane	PCE	TCE	cis-1,2-DCE	trans-1,2-DCE	1,1-DCE	Vinyl Chloride
				8260*	8260*	8260*	8260*	8260*	8260*	8260*	8260*	8260*	8260*	8260*	8260*	8260*	8260*	8260*	8260*	8260*	8260*
				(ug/L)	(ug/L)	(ug/L)	(ug/L)	(ug/L)	(ug/L)	(ug/L)	(ug/L)	(ug/L)	(ug/L)	(ug/L)	(ug/L)	(ug/L)	(ug/L)	(ug/L)	(ug/L)	(ug/L)	(ug/L)
			MCLs	600	-	5	70	80	5	-	200	5	5	0.5	-	5	5	6	10	6	0.5
			Regulatory Date	9/8/94	-	4/4/89	9/8/94	6/17/06	2/25/89	-	2/25/89	9/8/94	6/24/90	4/4/89	-	5/89	2/25/89	9/8/94	9/8/94	2/25/89	4/4/89
MW-29	O&M	A	2/14/13	<3.0	<3.0	<3.0	<3.0	<3.0	<5.0	<3.0	<3.0	<3.0	<3.0	<3.0	<3.0	<3.0	**740**	**550**	5.3	4.6	**46**
MW-29	O&M, DUP	A	2/14/13	<2.5	<2.5	<2.5	<2.5	<2.5	<5.0	<2.5	<2.5	<2.5	<2.5	<2.5	<2.5	<2.5	**730**	**550**	5.5	4.5	**45**
MW-29	O&M	A	2/26/14	<2.5	<2.5	<2.5	<2.5	<2.5	<5.0	<2.5	<2.5	<2.5	<2.5	<2.5	<2.5	<2.5	**2,300**	**930**	9.2	**6.6**	**28**
MW-29	O&M	A	6/10/15	<2.8	<2.8	<2.8	<2.8	<2.8	<27.8	<2.8	<2.8	<2.8	<2.8	<2.8	<2.8	<2.8	**1,340**	**729**	5.4	**14.7**	**44.1**
MW-29	O&M	A	2/24/16	<4.2	<4.2	<4.2	<4.2	<4.2	<41.6	<16.7	<4.2	<4.2	<4.2	<4.2	<16.7	<4.2	**1,340**	**673**	6.8	**7.5**	**25.3**
MW-29	O&M DUP	A	2/24/16	<4.2	<4.2	<4.2	<4.2	<4.2	<41.6	<16.7	<4.2	<4.2	<4.2	<4.2	<16.7	<4.2	**1,330**	**686**	6.6	**7.7**	**25.1**
MW-29	O&M	A	2/15/17	<4.2	<4.2	<4.2	<4.2	<4.2	<41.6	<16.7	<4.2	<4.2	<4.2	<4.2	<16.7	<4.2	**1,020**	**462**	<4.2	5.0	**26.8**
MW-29	O&M, DUP-	A	2/15/17	<0.50	<0.50	<0.50	<0.50	<0.50	<5.0	<2.0	<0.50	<0.50	<0.50	<0.50	<2.0	<0.50	**898**	**419**	3.9	5.5	**26.1**
MW-29	O&M	A	2/14/18	<4.17	<4.17	<4.17	<4.17	<4.17	<41.7	<4.17	<4.17	<4.17	<4.17	<4.17	<16.7	<4.17	**2,760**	**920**	**10.5**	**7.04**	**24.2**
MW-29	O&M, DUP-	A	2/14/18	<0.50	<0.50	<0.50	<0.50	<0.50	<5.0	<0.50	<0.50	<0.50	<0.50	<0.50	<2.0	0.54	**2,780**	**940**	**10.7**	**7.40**	**26.4**
MW-29	O&M	A	2/13/19	<0.50	<0.50	<0.50	<0.50	<0.50	<5.0	<0.50	<0.50	<0.50	<0.50	<0.50	<2.0	<0.50	<0.50	2.95	7.24	<0.50	**1.89**
MW-29	O&M, DUP	A	2/13/19	<0.50	<0.50	<0.50	<0.50	<0.50	<5.0	<0.50	<0.50	<0.50	<0.50	<0.50	<2.0	<0.50	0.658	3.08	6.28	<0.50	**2.11**
MW-29	O&M	A	3/10/20	<0.50	<0.50	<0.50	<0.50	<0.50	<2.5	<1.25	<0.50	<0.50	<0.50	<0.50	<2.5	<0.50	<0.50	1.60	<0.50	<0.50	**0.992**
MW-29	O&M, DUP	A	3/10/20	<0.50	<0.50	<0.50	<0.50	<0.50	<2.5	<1.25	<0.50	<0.50	<0.50	<0.50	<2.5	<0.50	<0.50	3.56	<0.50	<0.50	**0.942**
UB-2		UB	3/27/06	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 5.0	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	**1,000**	**38**	< 2.5	< 2.5	< 2.5
UB-2	PT ERD	UB	1/31/07	<15	<15	<15	<15	<15	<15	<15	<15	<15	<15	<15	<15	<15	**8,000**	**1,100**	<15	<15	<15
UB-2	PT ERD	UB	5/10/07	<15	<15	<15	<15	<15	<15	<15	<15	<15	<15	<15	<15	<15	**7,200**	**1,100**	<15	<15	<15
UB-2	PT ERD	UB	2/6/08	<30	<30	<30	<30	<30	<30	<30	<30	<30	<30	<30	<30	<30	**8,000**	**1,300**	<30	<30	<30
UB-2	RDIP	UB	2/5/09	<0.50	<0.50	<0.50	<0.50	<0.50	<5.0	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	**7.9**	**78**	7.5	<0.50	**81**
UB-2	RDIP	UB	2/1/10	<0.50	<0.50	<0.50	<0.50	<0.50	<5.0	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	0.57	<0.50	0.81	<0.50	**0.90**
UB-2	RDIP	UB	2/8/11	<0.50	<0.50	<0.50	<0.50	<0.50	<5.0	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	0.86	1.8	<0.50	<0.50	**0.70**
UB-2	RDIP	UB	2/7/12	<0.50	<0.50	<0.50	<0.50	<0.50	<5.0	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	1.9	<0.50	<0.50	**1.2**
UB-2	O&M	UB	2/13/13	<0.50	<0.50	<0.50	<0.50	<0.50	<5.0	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	1.1	<0.50	<0.50	**0.59**
UB-2	O&M	UB	6/9/15	<0.50	<0.50	<0.50	<0.50	<0.50	<5.0	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	0.81	1.4	<0.50	<0.50	<0.50
UB-2	O&M	UB	2/23/16	<0.50	<0.50	<0.50	<0.50	<0.50	<5.0	<2.0	<0.50	<0.50	<0.50	<0.50	<2.0	<0.50	0.70	0.54	<0.50	<0.50	<0.50
UB-2	O&M	UB	2/13/17	<0.50	<0.50	<0.50	<0.50	<0.50	<5.0	<2.0	<0.50	<0.50	<0.50	<0.50	<2.0	<0.50	0.59	0.91	<0.50	<0.50	**21.3**
UB-2	O&M	UB	9/20/17	<0.50	<0.50	<0.50	<0.50	<0.50	<5.0	<2.0	<0.50	<0.50	<0.50	<0.50	<2.0	<0.50	0.62	0.73	<0.50	<0.50	<0.50
UB-2	O&M	UB	2/13/18	<0.50	<0.50	<0.50	<0.50	<0.50	<5.0	<0.50	<0.50	<0.50	<0.50	<0.50	<2.0	<0.50	0.67	0.52	<0.50	<0.50	**4.0**
UB-2	O&M	UB	2/12/19	<0.50	<0.50	<0.50	<0.50	<0.50	<5.0	<0.50	<0.50	<0.50	<0.50	<0.50	<2.0	<0.50	0.918	1.14	<0.50	<0.50	**21.8**
UB-2	O&M	UB	3/10/20	<0.50	<0.50	<0.50	<0.50	<0.50	<2.5	<1.25	<0.50	<0.50	<0.50	<0.50	<2.5	<0.50	<0.50	0.555	<0.50	<0.50	**67.8**
LPZ-2		UB	8/12/03	<1,000	<1,000	<1,000	<1,000	<1,000	<10,000	<1,000	<1,000	<1,000	<1,000	<1,000	<1,000	<1,000	**450,000**	<1,000	<1,000	<1,000	<1,000
LPZ-2		UB	9/29/04	<70	<70	<70	<70	<70	<70	<70	<70	<70	<70	<70	<70	**110**	**280,000**	**1,700**	<70	<70	**110**
LPZ-2		UB	12/8/04	<2,000	<2,000	<2,000	<2,000	<2,000	<20,000	<2,000	<2,000	<2,000	<2,000	<2,000	<2,000	<2,000	**360,000**	<2,000	<2,000	<2,000	<2,000
LPZ-2	PT DPE	UB	2/7/05	<400	<400	<400	<400	<400	<400	<400	<400	<400	<400	<400	<400	<400	**120,000**	<400	<400	<400	<400

Table 5B
Groundwater Monitoring Volatile Organic Compounds Data
Degreasing Tank No. 1
Former Kaiser Aerotech Facilities
San Leandro, California

Well ID	Notes	GW Zone	Sample Date	1,2-DCB	1,3-DCB	1,4-DCB	Chloro-benzene	Chloroform	Methylene Chloride	Chloro-methane	1,1,1-TCA	1,1,2-TCA	1,1-DCA	1,2-DCA	Chloro-ethane	PCE	TCE	cis-1,2-DCE	trans-1,2-DCE	1,1-DCE	Vinyl Chloride
				8260*	8260*	8260*	8260*	8260*	8260*	8260*	8260*	8260*	8260*	8260*	8260*	8260*	8260*	8260*	8260*	8260*	8260*
				(ug/L)	(ug/L)	(ug/L)	(ug/L)	(ug/L)	(ug/L)	(ug/L)	(ug/L)	(ug/L)	(ug/L)	(ug/L)	(ug/L)	(ug/L)	(ug/L)	(ug/L)	(ug/L)	(ug/L)	(ug/L)
			MCLs	600	-	5	70	80	5	-	200	5	5	0.5	-	5	5	6	10	6	0.5
			Regulatory Date	9/8/94	-	4/4/89	9/8/94	6/17/06	2/25/89	-	2/25/89	9/8/94	6/24/90	4/4/89	-	5/89	2/25/89	9/8/94	9/8/94	2/25/89	4/4/89
LPZ-2	PT DPE	UB	2/10/05	<15	<15	<15	<15	<15	<15	<15	<15	<15	<15	<15	<15	<15	**17,000**	**64**	<15	<15	<15
LPZ-2	PT DPE	UB	2/14/05	<5.0	<5.0	<5.0	<5.0	<5.0	<50	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	**1,500**	**8.6**	<5.0	<5.0	<5.0
LPZ-2	PT DPE	UB	2/17/05	<2.5	<2.5	<2.5	<2.5	<2.5	<25	<2.5	<2.5	<2.5	<2.5	<2.5	<2.5	<2.5	**940**	**8.2**	<2.5	<2.5	<2.5
LPZ-2		UB	2/24/05	<100	<100	<100	<100	<100	<1,000	<100	<100	<100	<100	<100	<100	<100	**34,000**	<100	<100	<100	<100
LPZ-2		UB	3/9/05	<25	<25	<25	<25	<25	<25	<25	<25	<25	<25	<25	<25	<25	**24,000**	**130**	<25	<25	<25
LPZ-2		UB	6/14/05	<300	<300	<300	<300	<300	<300	<300	<300	<300	<300	<300	<300	<300	**77,000**	**400**	<300	<300	<300
LPZ-2		UB	7/8/05	<50	<50	<50	<50	<50	<50	<50	<50	<50	<50	<50	<50	<50	**28,000**	**610**	<50	<50	<50
LPZ-2	PT DPE	UB	7/22/05	<1.5	<1.5	<1.5	<1.5	<1.5	<5.0	<1.5	<1.5	<1.5	<1.5	<1.5	<1.5	<1.5	**310**	**8.5**	<1.5	<1.5	<1.5
LPZ-2		UB	8/11/05	<15	<15	<15	<15	<15	<15	<15	<15	<15	<15	<15	<15	<15	**19,000**	**140**	<15	<15	<15
LPZ-2		UB	9/15/05	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	**9.1**	**29,000**	**380**	**8.8**	<5.0	<5.0
LPZ-2		UB	12/15/05	<20	<20	<20	<20	<20	<20	<20	<20	<20	<20	<20	<20	<20	**68,000**	**780**	<20	<20	**51**
LPZ-2		UB	3/14/06	< 25	< 25	< 25	< 25	< 25	< 25	< 25	< 25	< 25	< 25	< 25	< 25	< 25	**67,000**	**1,400**	< 25	< 25	**50**
LPZ-2	PT ERD	UB	5/8/06	<200	<200	<200	<200	<200	<200	<200	<200	<200	<200	<200	<200	<200	**14,000**	**65,000**	<200	<200	**330**
LPZ-2	PT ERD	UB	6/13/06	<200	<200	<200	<200	<200	<200	<200	<200	<200	<200	<200	<200	<200	**1,800**	**47,000**	<200	<200	**2,200**
LPZ-2	PT ERD	UB	7/12/06	<200	<200	<200	<200	<200	<200	<200	<200	<200	<200	<200	<200	<200	**5,200**	**53,000**	<200	<200	**17,000**
LPZ-2	PT ERD	UB	8/6/06	<150	<150	<150	<150	<150	<150	<150	<150	<150	<150	<150	<150	<150	**7,200**	**32,000**	<150	<150	**12,000**
LPZ-2	PT ERD	UB	9/21/06	<50	<50	<50	<50	<50	<50	<50	<50	<50	<50	<50	<50	<50	**3,200**	**19,000**	**85**	**54**	**12,000**
LPZ-2	PT ERD	UB	10/24/06	<40	<40	<40	<40	<40	<40	<40	<40	<40	<40	<40	<40	<40	**1,700**	**10,000**	**42**	<40	**13,000**
LPZ-2	PT ERD	UB	1/31/07	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	**18,000**	**15,000**	**55**	**38**	**14,000**
LPZ-2	PT ERD	UB	5/10/07	<50	<50	<50	<50	<50	<50	<50	<50	<50	<50	<50	<50	<50	**2,500**	**15,000**	<50	<50	**18,000**
LPZ-2	PT ERD	UB	8/14/07	<100	<100	<100	<100	<100	<100	<100	<100	<100	<100	<100	<100	<100	**16,000**	**22,000**	<100	<100	**21,000**
LPZ-2	PT ERD	UB	11/13/07	<70	<70	<70	<70	<70	<70	<70	<70	<70	<70	<70	<70	<70	**8,200**	**19,000**	**81**	<70	**16,000**
LPZ-2	PT ERD	UB	2/6/08	<25	<25	<25	<25	<25	<25	<25	<25	<25	<25	<25	<25	<25	**9,100**	**8,400**	**26**	<25	**8,600**
LPZ-2	RDIP	UB	8/6/08	<70	<70	<70	<70	<70	<70	<70	<70	<70	<70	<70	<70	<70	**1,800**	**13,000**	<70	<70	**16,000**
LPZ-2	RDIP	UB	2/4/09	<25	<25	<25	<25	<25	<25	<25	<25	<25	<25	<25	<25	<25	**1,800**	**7,200**	**28**	<70	**3,000**
LPZ-2	RDIP	UB	8/5/09	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	**210**	**3,200**	<10	<10	**2,200**
LPZ-2	RDIP	UB	2/2/10	<1.5	<1.5	<1.5	<1.5	<1.5	<5.0	<5.0	<1.5	<1.5	<1.5	<1.5	<1.5	<1.5	**71**	**420**	1.8	<1.5	**320**
LPZ-2	RDIP	UB	2/8/11	<0.50	<0.50	<0.50	<0.50	<0.50	<5.0	<5.0	<0.50	<0.50	<0.50	<0.50	1.7	<0.50	<0.50	**17**	0.76	<0.50	**9.5**
LPZ-2	RDIP	UB	2/7/12	<0.50	<0.50	<0.50	<0.50	<0.50	<5.0	<5.0	<0.50	<0.50	<0.50	<0.50	1.5	<0.50	<0.50	**60**	0.70	<0.50	**51**
LPZ-2	O&M, 9	UB	2/13/13	<0.50	<0.50	<0.50	<0.50	<0.50	<5.0	<5.0	<0.50	<0.50	<0.50	<0.50	0.64	<0.50	**17**	**400**	2.2	1.2	**500**
LPZ-2	O&M	UB	2/25/14	<0.50	<0.50	<0.50	<0.50	<0.50	<5.0	<0.50	<0.50	<0.50	<0.50	<0.50	0.82	<0.50	<0.50	**5.2**	<0.50	<0.50	**2.5**
LPZ-2	O&M	UB	6/9/15	<0.50	<0.50	<0.50	<0.50	<0.50	<5.0	<0.50	<0.50	<0.50	<0.50	<0.50	0.97	<0.50	3.5	**95.4**	0.90	<0.50	**84.5**
LPZ-2	O&M	UB	2/23/16	<5.0	<5.0	<5.0	<5.0	<5.0	<50	<20	<5.0	<5.0	<5.0	<5.0	<20	<5.0	**7.9**	**594**	<5.0	<5.0	**472**
LPZ-2	O&M	UB	2/13/17	<0.50	<0.50	<0.50	<0.50	<0.50	<5.0	<2.0	<0.50	<0.50	<0.50	<0.50	<2.0	<0.50	**8.2**	**77.7**	<0.50	<0.50	**194**
LPZ-2	O&M	UB	2/13/18	<0.50	<0.50	<0.50	<0.50	<0.50	<5.0	<0.50	<0.50	<0.50	<0.50	<0.50	<2.0	<0.50	**7.78**	**308**	0.909	<0.50	**673**
LPZ-2	O&M	UB	2/12/19	<0.50	<0.50	<0.50	<0.50	<0.50	<5.0	<0.50	<0.50	<0.50	<0.50	<0.50	<2.0	<0.50	<0.50	2.38	<0.50	<0.50	**1.63**

Table 5B
Groundwater Monitoring Volatile Organic Compounds Data
Degreasing Tank No. 1
Former Kaiser Aerotech Facilities
San Leandro, California

Well ID	Notes	GW Zone	Sample Date	1,2-DCB	1,3-DCB	1,4-DCB	Chloro-benzene	Chloroform	Methylene Chloride	Chloro-methane	1,1,1-TCA	1,1,2-TCA	1,1-DCA	1,2-DCA	Chloro-ethane	PCE	TCE	cis-1,2-DCE	trans-1,2-DCE	1,1-DCE	Vinyl Chloride
				8260*	8260*	8260*	8260*	8260*	8260*	8260*	8260*	8260*	8260*	8260*	8260*	8260*	8260*	8260*	8260*	8260*	8260*
				(ug/L)	(ug/L)	(ug/L)	(ug/L)	(ug/L)	(ug/L)	(ug/L)	(ug/L)	(ug/L)	(ug/L)	(ug/L)	(ug/L)	(ug/L)	(ug/L)	(ug/L)	(ug/L)	(ug/L)	(ug/L)
			MCLs	600	-	5	70	80	5	-	200	5	5	0.5	-	5	5	6	10	6	0.5
			Regulatory Date	9/8/94	-	4/4/89	9/8/94	6/17/06	2/25/89	-	2/25/89	9/8/94	6/24/90	4/4/89	-	5/89	2/25/89	9/8/94	9/8/94	2/25/89	4/4/89
LPZ-2	O&M	UB	3/10/20	<0.50	<0.50	<0.50	<0.50	<0.50	<2.5	<1.25	<0.50	<0.50	<0.50	<0.50	<2.5	<0.50	<0.50	2.16	<0.50	<0.50	**7.86**
LPZ-3		B	8/12/03	<2,000	<2,000	<2,000	<2,000	<2,000	<20,000	<2,000	<2,000	<2,000	<2,000	<2,000	<2,000	<2,000	**490,000**	<2,000	<2,000	<2,000	<2,000
LPZ-3	PT DPE	B	2/7/05	<1,500	<1,500	<1,500	<1,500	<1,500	<1,500	<1,500	<1,500	<1,500	<1,500	<1,500	<1,500	<1,500	**300,000**	<1,500	<1,500	<1,500	<1,500
LPZ-3	PT DPE	B	2/10/05	<150	<150	<150	<150	<150	<150	<150	<150	<150	<150	<150	<150	<150	**36,000**	**190**	<150	<150	<150
LPZ-3	PT DPE	B	2/14/05	<200	<200	<200	<200	<200	<2,000	<200	<200	<200	<200	<200	<200	<200	**49,000**	<200	<200	<200	<200
LPZ-3	PT DPE	B	2/17/05	<50	<50	<50	<50	<50	<500	<50	<50	<50	<50	<50	<50	<50	**9,400**	**110**	<50	<50	<50
LPZ-3		B	2/24/05	<500	<500	<500	<500	<500	<5,000	<500	<500	<500	<500	<500	<500	<500	**110,000**	<500	<500	<500	<500
LPZ-3		B	3/9/05	<100	<100	<100	<100	<100	<1,000	<100	<100	<100	<100	<100	<100	<100	**69,000**	**390**	<100	<100	<100
LPZ-3		B	7/8/05	<500	<500	<500	<500	<500	<500	<500	<500	<500	<500	<500	<500	<500	**450,000**	<500	<500	<500	<500
LPZ-3	PT DPE	B	7/22/05	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	**4,300**	**280**	**11**	<10	<10
LPZ-3		B	8/11/05	<150	<150	<150	<150	<150	<150	<150	<150	<150	<150	<150	<150	<150	**110,000**	**1,300**	<150	<150	<150
LPZ-3		B	9/15/05	<400	<400	<400	<400	<400	<400	<400	<400	<400	<400	<400	<400	<400	**140,000**	**1,300**	<400	<400	<400
LPZ-3		B	12/15/05	<250	<250	<250	<250	<250	<250	<250	<250	<250	<250	<250	<250	<250	**120,000**	**1,300**	<250	<250	<250
LPZ-3	PT ERD	B	5/8/06	<200	<200	<200	<200	<200	<200	<200	<200	<200	<200	<200	<200	<200	**56,000**	**4,000**	<200	<200	<200
LPZ-3	PT ERD	B	6/13/06	<70	<70	<70	<70	<70	<70	<70	<70	<70	<70	<70	<70	<70	**29,000**	**24,000**	<70	<70	<70
LPZ-3	PT ERD	B	7/12/06	<15	<15	<15	<15	<15	<15	<15	<15	<15	<15	<15	<15	**17**	**55,000**	**26,000**	**25**	**49**	<15
LPZ-3	PT ERD	B	8/9/06	<15	<15	<15	<15	<15	<15	<15	<15	<15	<15	<15	<15	**19**	**31,000**	**33,000**	**45**	**110**	**120**
LPZ-3	PT ERD	B	9/21/06	<150	<150	<150	<150	<150	<150	<150	<150	<150	<150	<150	<150	<150	**38,000**	**68,000**	<150	<150	**2,000**
LPZ-3	PT ERD	B	10/24/06	<400	<400	<400	<400	<400	<400	<400	<400	<400	<400	<400	<400	<400	**42,000**	**76,000**	<400	<400	**7,500**
LPZ-3	PT ERD	B	1/30/07	<250	<250	<250	<250	<250	<250	<250	<250	<250	<250	<250	<250	<250	**16,000**	**66,000**	<250	<250	**11,000**
LPZ-3	PT ERD	B	2/6/08	<200	<200	<200	<200	<200	<200	<200	<200	<200	<200	<200	<200	<200	**740**	**50,000**	<200	<200	**7,600**
LPZ-3	RDIP	B	2/4/09	<90	<90	<90	<90	<90	<90	<90	<90	<90	<90	<90	<90	<90	**16,000**	**24,000**	<90	<90	**4,000**
LPZ-3	RDIP	B	2/2/10	<50	<50	<50	<50	<50	<50	<200	<50	<50	<50	<50	<50	<50	**100,000**	**160,000**	**68**	**500**	**20,000**
LPZ-3	RDIP	B	2/8/11	<900	<900	<900	<900	<900	<900	<900	<900	<900	<900	<900	<900	<900	**290,000**	**140,000**	<900	<900	**13,000**
LPZ-3	RDIP	B	2/7/12	<900	<900	<900	<900	<900	<900	<900	<900	<900	<900	<900	<900	<900	<900	**390,000**	<900	**1,200**	**65,000**
LPZ-3	O&M, 9	B	2/13/13	<0.50	<0.50	<0.50	<0.50	<0.50	<5.0	<0.50	<0.50	<0.50	<0.50	<0.50	0.74	<0.50	<0.50	**23**	1.4	<0.50	**18**
LPZ-3	O&M, 10	B	2/25/14	<0.50	<0.50	<0.50	<0.50	<0.50	<5.0	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	2.6	3.9	<0.50	**5.5**
LPZ-3	O&M	B	6/9/15	<0.50	<0.50	<0.50	<0.50	<0.50	<5.0	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	1.4	**524**	4.0	1.7	**355**
LPZ-3	O&M	B	2/23/16	<1.0	<1.0	<1.0	<1.0	<1.0	<10	<4.0	<1.0	<1.0	<1.0	<1.0	<4.0	<1.0	<1.0	**176**	<1.0	<1.0	**107**
LPZ-3	O&M	B	2/13/17	<1.0	<1.0	<1.0	<1.0	<1.0	<10	<4.0	<1.0	<1.0	<1.0	<1.0	<4.0	<1.0	<1.0	**158**	<1.0	<1.0	**346**
LPZ-3	O&M	B	2/13/18	<1.0	<1.0	<1.0	<1.0	<1.0	<10	<1.0	<1.0	<1.0	<1.0	<1.0	<4.0	<1.0	<125	**375**	<1.0	**8.39**	**4,130**
LPZ-3	O&M	B	2/12/19	<0.50	<0.50	<0.50	<0.50	<0.50	<5.0	<0.50	<0.50	<0.50	<0.50	<0.50	<2.0	<0.50	1.10	2.67	<0.50	<0.50	**2.56**
LPZ-3	O&M, 15	B	3/10/20	<0.50	<0.50	<0.50	<0.50	<0.50	<2.5	<1.25	<0.50	<0.50	<0.50	<0.50	<2.5	<0.50	1.30	**101**	<0.50	4.81	**4,160**
LPZ-5		LB	8/12/03	<2,000	<2,000	<2,000	<2,000	<2,000	<20,000	<2,000	<2,000	<2,000	<2,000	<2,000	<2,000	<2,000	**600,000**	<2,000	<2,000	<2,000	<2,000

Table 5B
Groundwater Monitoring Volatile Organic Compounds Data
Degreasing Tank No. 1
Former Kaiser Aerotech Facilities
San Leandro, California

Well ID	Notes	GW Zone	Sample Date	1,2-DCB	1,3-DCB	1,4-DCB	Chloro-benzene	Chloroform	Methylene Chloride	Chloro-methane	1,1,1-TCA	1,1,2-TCA	1,1-DCA	1,2-DCA	Chloro-ethane	PCE	TCE	cis-1,2-DCE	trans-1,2-DCE	1,1-DCE	Vinyl Chloride
				8260*	8260*	8260*	8260*	8260*	8260*	8260*	8260*	8260*	8260*	8260*	8260*	8260*	8260*	8260*	8260*	8260*	8260*
				(ug/L)	(ug/L)	(ug/L)	(ug/L)	(ug/L)	(ug/L)	(ug/L)	(ug/L)	(ug/L)	(ug/L)	(ug/L)	(ug/L)	(ug/L)	(ug/L)	(ug/L)	(ug/L)	(ug/L)	(ug/L)
			MCLs	600	-	5	70	80	5	-	200	5	5	0.5	-	5	5	6	10	6	0.5
			Regulatory Date	9/8/94	-	4/4/89	9/8/94	6/17/06	2/25/89	-	2/25/89	9/8/94	6/24/90	4/4/89	-	5/89	2/25/89	9/8/94	9/8/94	2/25/89	4/4/89
LPZ-5		LB	12/16/03	<50	<50	<50	<50	<50	<500	<50	<50	<50	<50	<50	<50	**210**	**500,000**	**82**	<50	<50	<50
LPZ-5		LB	3/9/04	<500	<500	<500	<500	<500	<5,000	<500	<500	<500	<500	<500	<500	<500	**530,000**	<500	<500	<500	<500
LPZ-5		LB	5/20/04	<50	<50	<50	<50	<50	<500	<50	<50	<50	<50	<50	<50	**190**	**530,000**	**140**	<50	<50	<50
LPZ-5	PT DPE	LB	2/7/05	<500	<500	<500	<500	<500	<500	<500	<500	<500	<500	<500	<500	<500	**280,000**	<500	<500	<500	<500
LPZ-5	PT DPE	LB	2/10/05	<150	<150	<150	<150	<150	<150	<150	<150	<150	<150	<150	<150	<150	**30,000**	<150	<150	<150	<150
LPZ-5	PT DPE	LB	2/14/05	<500	<500	<500	<500	<500	<500	<500	<500	<500	<500	<500	<500	<500	**100,000**	<500	<500	<500	<500
LPZ-5	PT DPE	LB	2/17/05	<500	<500	<500	<500	<500	<5,000	<500	<500	<500	<500	<500	<500	<500	**96,000**	<500	<500	<500	<500
LPZ-5		LB	2/24/05	<500	<500	<500	<500	<500	<5,000	<500	<500	<500	<500	<500	<500	<500	**120,000**	<500	<500	<500	<500
LPZ-5		LB	3/9/05	<100	<100	<100	<100	<100	<1,000	<100	<100	<100	<100	<100	<100	<100	**53,000**	**140**	<100	<100	<100
LPZ-5		LB	7/8/05	<500	<500	<500	<500	<500	<500	<500	<500	<500	<500	<500	<500	<500	**450,000**	<500	<500	<500	<500
LPZ-5	PT DPE	LB	7/22/05	<4.0	<4.0	<4.0	<4.0	<4.0	<5.0	<4.0	<4.0	<4.0	<4.0	<4.0	<4.0	**19**	**64,000**	**250**	**12**	<4.0	<4.0
LPZ-5		LB	8/11/05	<25	<25	<25	<25	<25	<25	<25	<25	<25	<25	<25	<25	**44**	**110,000**	**450**	<25	<25	<25
LPZ-5		LB	9/15/05	<500	<500	<500	<500	<500	<5,000	<500	<500	<500	<500	<500	<500	<500	**120,000**	**790**	<500	<500	<500
LPZ-5		LB	12/15/05	<250	<250	<250	<250	<250	<250	<250	<250	<250	<250	<250	<250	<250	**180,000**	**1,500**	<250	<250	<250
LPZ-5	PT ERD	LB	5/8/06	<200	<200	<200	<200	<200	<200	<200	<200	<200	<200	<200	<200	<200	**33,000**	**46,000**	<200	<200	<200
LPZ-5	PT ERD	LB	6/13/06	<200	<200	<200	<200	<200	<200	<200	<200	<200	<200	<200	<200	<200	**28,000**	**62,000**	<200	<200	<200
LPZ-5	PT ERD	LB	7/12/06	<250	<250	<250	<250	<250	<250	<250	<250	<250	<250	<250	<250	<250	**45,000**	**110,000**	<250	**330**	**2,300**
LPZ-5	PT ERD	LB	8/9/06	<400	<400	<400	<400	<400	<400	<400	<400	<400	<400	<400	<400	<400	**48,000**	**110,000**	<400	<400	**3,700**
LPZ-5	PT ERD	LB	9/21/06	<250	<250	<250	<250	<250	<250	<250	<250	<250	<250	<250	<250	<250	**43,000**	**74,000**	<250	<250	**3,900**
LPZ-5	PT ERD	LB	10/24/06	<250	<250	<250	<250	<250	<250	<250	<250	<250	<250	<250	<250	<250	**61,000**	**74,000**	<250	<250	**8,400**
LPZ-5	PT ERD	LB	1/30/07	<250	<250	<250	<250	<250	<250	<250	<250	<250	<250	<250	<250	<250	**62,000**	**66,000**	<250	<250	**15,000**
LPZ-5	PT ERD	LB	8/14/07	<250	<250	<250	<250	<250	<250	<250	<250	<250	<250	<250	<250	<250	**22,000**	**98,000**	<250	**300**	**15,000**
LPZ-5	PT ERD	LB	11/13/07	<500	<500	<500	<500	<500	<500	<500	<500	<500	<500	<500	<500	<500	**11,000**	**150,000**	<250	**510**	**20,000**
LPZ-5	PT ERD	LB	2/6/08	<300	<300	<300	<300	<300	<300	<300	<300	<300	<300	<300	<300	<300	**4,400**	**91,000**	<300	<300	**11,000**
LPZ-5	RDIP	LB	8/6/08	<500	<500	<500	<500	<500	<500	<500	<500	<500	<500	<500	<500	<500	**20,000**	**120,000**	<500	<500	**12,000**
LPZ-5	RDIP	LB	2/4/09	<250	<250	<250	<250	<250	<250	<250	<250	<250	<250	<250	<250	<250	**1,400**	**74,000**	<250	<250	**28,000**
LPZ-5	RDIP	LB	8/5/09	<250	<250	<250	<250	<250	<250	<250	<250	<250	<250	<250	<250	<250	**630**	**66,000**	<250	<250	**27,000**
LPZ-5	RDIP	LB	2/2/10	<250	<250	<250	<250	<250	<250	<300	<250	<250	<250	<250	<250	<250	**440**	**70,000**	<250	<250	**39,000**
LPZ-5	RDIP	LB	2/8/11	<80	<80	<80	<80	<80	<80	<80	<80	<80	<80	<80	<80	<80	<80	**9,800**	**97**	<80	**28,000**
LPZ-5	RDIP, 8	LB	2/7/12	<0.50	<0.50	<0.50	<0.50	<0.50	<5.0	<0.80	<0.50	<0.50	<0.50	<0.50	0.96	<0.50	0.66	**190**	5.3	<0.50	**120**
LPZ-5	O&M, 9	LB	2/13/13	<0.50	<0.50	<0.50	<0.50	<0.50	<5.0	<1.0	<0.50	<0.50	<0.50	<0.50	1.0	<0.50	<0.50	**44**	1.8	<0.50	**190**
LPZ-5	O&M, 10	LB	2/25/14	<0.50	<0.50	<0.50	<0.50	<0.50	<5.0	<200	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	**5.3**	**140,000**	<500	<500	**56,000**
LPZ-5	O&M	LB	6/9/15	<6.2	<6.2	<6.2	<6.2	<6.2	<62.5	<6.2	<6.2	<6.2	<6.2	<6.2	<6.2	<6.2	<6.2	**515**	<6.2	<6.2	**1,780**
LPZ-5	O&M	LB	2/23/16	<50	<50	<50	<50	<50	<500	<200	<50	<50	<50	<50	<200	<50	<50	**8,650**	<50	<50	**8,640**
LPZ-5	O&M	LB	2/13/17	<10	<10	<10	<10	<10	<100	<40	<10	<10	<10	<10	<40	<10	<10	**1,610**	<10	<10	**2,990**
LPZ-5	O&M	LB	2/13/18	<10	<10	<10	<10	<10	<100	<10	<10	<10	<10	<10	<40	<10	<10	**2,950**	**13.8**	**22.9**	**8,700**

Table 5B
Groundwater Monitoring Volatile Organic Compounds Data
Degreasing Tank No. 1
Former Kaiser Aerotech Facilities
San Leandro, California

Well ID	Notes	GW Zone	Sample Date	1,2-DCB	1,3-DCB	1,4-DCB	Chloro-benzene	Chloroform	Methylene Chloride	Chloro-methane	1,1,1-TCA	1,1,2-TCA	1,1-DCA	1,2-DCA	Chloro-ethane	PCE	TCE	cis-1,2-DCE	trans-1,2-DCE	1,1-DCE	Vinyl Chloride
				8260*	8260*	8260*	8260*	8260*	8260*	8260*	8260*	8260*	8260*	8260*	8260*	8260*	8260*	8260*	8260*	8260*	8260*
				(ug/L)	(ug/L)	(ug/L)	(ug/L)	(ug/L)	(ug/L)	(ug/L)	(ug/L)	(ug/L)	(ug/L)	(ug/L)	(ug/L)	(ug/L)	(ug/L)	(ug/L)	(ug/L)	(ug/L)	(ug/L)
			MCLs	600	-	5	70	80	5	-	200	5	5	0.5	-	5	5	6	10	6	0.5
			Regulatory Date	9/8/94	-	4/4/89	9/8/94	6/17/06	2/25/89	-	2/25/89	9/8/94	6/24/90	4/4/89	-	5/89	2/25/89	9/8/94	9/8/94	2/25/89	4/4/89
LPZ-5	O&M	LB	2/12/19	<0.50	<0.50	<0.50	<0.50	<0.50	<5.0	<0.50	<0.50	<0.50	<0.50	<0.50	<2.0	<0.50	**29.1**	**23,900**	**210**	**55.4**	**21,400**
LPZ-5	O&M	LB	3/10/20	<5.0	<5.0	<5.0	<5.0	<5.0	<25.0	<12.5	<5.0	<5.0	<5.0	<5.0	<25.0	<5.0	<5.0	**6,410**	**14.1**	<5.0	**34,300**
UB-3		UB	9/18/07	<70	<70	<70	<70	<70	<70	<70	<70	<70	<70	<70	<70	<70	**65,000**	**1,400**	<70	**190**	<70
UB-3		UB	11/13/07	<150	<150	<150	<150	<150	<150	<150	<150	<150	<150	<150	<150	<150	**110,000**	**1,800**	<150	<150	<150
UB-3		UB	2/4/08	<250	<250	<250	<250	<250	<250	<250	<250	<250	<250	<250	<250	<250	**99,000**	**2,800**	<250	<250	<250
UB-3		UB	5/7/08	<400	<400	<400	<400	<400	<400	<400	<400	<400	<400	<400	<400	<400	**130,000**	**1,800**	<400	<400	<400
UB-3	RDIP	UB	8/5/08	<400	<400	<400	<400	<400	<400	<400	<400	<400	<400	<400	<400	<400	**130,000**	**1,400**	<400	<400	<400
UB-3	RDIP	UB	2/2/09	<400	<400	<400	<400	<400	<400	<400	<400	<400	<400	<400	<400	<400	**120,000**	**980**	<400	<400	<400
UB-3	RDIP	UB	8/4/09	<400	<400	<400	<400	<400	<400	<400	<400	<400	<400	<400	<400	<400	**110,000**	**960**	<400	<400	<400
UB-3	RDIP	UB	2/3/10	<400	<400	<400	<400	<400	<400	<400	<400	<400	<400	<400	<400	<400	**100,000**	**3,400**	<400	<400	**640**
UB-3	RDIP	UB	8/4/10	<250	<250	<250	<250	<250	<250	<250	<250	<250	<250	<250	<250	<250	**8,400**	**72,000**	<250	<250	**4,000**
UB-3	RDIP	UB	2/9/11	<150	<150	<150	<150	<150	<150	<150	<150	<150	<150	<150	<150	<150	**23,000**	**28,000**	<150	<150	**2,000**
UB-3	RDIP	UB	8/10/11	<150	<150	<150	<150	<150	<150	<150	<150	<150	<150	<150	<150	<150	**42,000**	**30,000**	<150	<150	**2,800**
UB-3	RDIP	UB	2/8/12	<90	<90	<90	<90	<90	<90	<90	<90	<90	<90	<90	<90	<90	**360**	**28,000**	<90	<90	**7,100**
UB-3	O&M	UB	2/14/13	<0.50	<0.50	<0.50	<0.50	<0.50	<5.0	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	1.7	<0.50	<0.50	**0.98**
UB-3	O&M	UB	2/26/14	<0.50	<0.50	<0.50	<0.50	<0.50	<5.0	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	0.61	<0.50	<0.50	**0.96**
UB-3	O&M	UB	6/10/15	<0.50	<0.50	<0.50	<0.50	<0.50	<5.0	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	0.58	1.6	<0.50	<0.50	**1.5**
UB-3	O&M	UB	2/24/16	<0.50	<0.50	<0.50	<0.50	<0.50	<5.0	<0.50	<0.50	<0.50	<0.50	<0.50	<2.0	<0.50	<0.50	0.95	<0.50	<0.50	**0.67**
UB-3	O&M	UB	2/15/17	<0.50	<0.50	<0.50	<0.50	<0.50	<5.0	<2.0	<0.50	<0.50	<0.50	<0.50	<2.0	<0.50	**26.5**	**461**	1.8	2.2	**163**
UB-3	O&M	UB	9/20/17	<2.5	<2.5	<2.5	<2.5	<2.5	<25	<10	<2.5	<2.5	<2.5	<2.5	<10	<2.5	5.0	**220**	<2.5	<2.5	**1,760**
UB-3	O&M	UB	2/14/18	<0.50	<0.50	<0.50	<0.50	<0.50	<5.0	<0.50	<0.50	<0.50	<0.50	<0.50	<2.0	<0.50	**5.39**	**8.49**	<0.50	<0.50	**33.5**
UB-3	O&M	UB	2/13/19	<0.50	<0.50	<0.50	<0.50	<0.50	<5.0	<0.50	<0.50	<0.50	<0.50	<0.50	<2.0	<0.50	3.42	4.52	<0.50	<0.50	**4.61**
UB-3	O&M	UB	3/10/20	<0.50	<0.50	<0.50	<0.50	<0.50	<2.5	<1.25	<0.50	<0.50	<0.50	<0.50	<2.5	<0.50	4.53	**8.80**	<0.50	<0.50	**92.7**
LB-3		LB	9/18/07	<150	<150	<150	<150	<150	<150	<150	<150	<150	<150	<150	<150	<150	**220,000**	<150	<150	<150	<150
LB-3		LB	11/13/07	<400	<400	<400	<400	<400	<400	<400	<400	<400	<400	<400	<400	<400	**150,000**	<400	<400	<400	<400
LB-3		LB	2/4/08	<500	<500	<500	<500	<500	<500	<500	<500	<500	<500	<500	<500	<500	**190,000**	<500	<500	<500	<500
LB-3		LB	5/7/08	<400	<400	<400	<400	<400	<400	<400	<400	<400	<400	<400	<400	<400	**210,000**	<400	<400	<400	<400
LB-3	RDIP	LB	8/5/08	<500	<500	<500	<500	<500	<500	<500	<500	<500	<500	<500	<500	<500	**180,000**	**3,600**	<500	<500	<500
LB-3	RDIP	LB	2/2/09	<500	<500	<500	<500	<500	<500	<500	<500	<500	<500	<500	<500	<500	**180,000**	**690**	<500	<500	<500
LB-3	RDIP	LB	8/4/09	<500	<500	<500	<500	<500	<500	<500	<500	<500	<500	<500	<500	<500	**160,000**	**1,200**	<500	<500	<500
LB-3	RDIP	LB	2/3/10	<500	<500	<500	<500	<500	<500	<500	<500	<500	<500	<500	<500	<500	**210,000**	**890**	<500	<500	<500
LB-3	RDIP	LB	8/4/10	<500	<500	<500	<500	<500	<500	<500	<500	<500	<500	<500	<500	<500	**6,100**	**140,000**	<500	<500	**13,000**
LB-3	RDIP	LB	2/9/11	<250	<250	<250	<250	<250	<250	<250	<250	<250	<250	<250	<250	<250	**6,800**	**97,000**	<250	<250	**7,800**
LB-3	RDIP	LB	8/10/11	<250	<250	<250	<250	<250	<250	<250	<250	<250	<250	<250	<250	<250	**31,000**	**88,000**	<250	<250	**5,400**

Table 5B
Groundwater Monitoring Volatile Organic Compounds Data
Degreasing Tank No. 1
Former Kaiser Aerotech Facilities
San Leandro, California

Well ID	Notes	GW Zone	Sample Date	1,2-DCB	1,3-DCB	1,4-DCB	Chloro-benzene	Chloroform	Methylene Chloride	Chloro-methane	1,1,1-TCA	1,1,2-TCA	1,1-DCA	1,2-DCA	Chloro-ethane	PCE	TCE	cis-1,2-DCE	trans-1,2-DCE	1,1-DCE	Vinyl Chloride
				8260*	8260*	8260*	8260*	8260*	8260*	8260*	8260*	8260*	8260*	8260*	8260*	8260*	8260*	8260*	8260*	8260*	8260*
				(ug/L)	(ug/L)	(ug/L)	(ug/L)	(ug/L)	(ug/L)	(ug/L)	(ug/L)	(ug/L)	(ug/L)	(ug/L)	(ug/L)	(ug/L)	(ug/L)	(ug/L)	(ug/L)	(ug/L)	(ug/L)
			MCLs	600	-	5	70	80	5	-	200	5	5	0.5	-	5	5	6	10	6	0.5
			Regulatory Date	9/8/94	-	4/4/89	9/8/94	6/17/06	2/25/89	-	2/25/89	9/8/94	6/24/90	4/4/89	-	5/89	2/25/89	9/8/94	9/8/94	2/25/89	4/4/89
LB-3	RDIP	LB	2/8/12	<250	<250	<250	<250	<250	<250	<250	<250	<250	<250	<250	<250	<250	**3,400**	**67,000**	<250	<250	**4,700**
LB-3	O&M, 9	LB	2/14/13	<0.50	<0.50	<0.50	<0.50	<0.50	<5.0	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	1.1	5.1	9.8	<0.50	**6.6**
LB-3	O&M, 10	LB	2/26/14	<0.50	<0.50	<0.50	<0.50	<0.50	<5.0	<0.50	<0.50	<0.50	<0.50	<0.50	1.0	<0.50	1.5	**8.1**	<0.50	<0.50	<0.50
LB-3	O&M	LB	6/10/15	<0.50	<0.50	<0.50	<0.50	<0.50	<5.0	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	0.71	**73.4**	1.7	<0.50	**905**
LB-3	O&M	LB	2/24/16	<1.0	<1.0	<1.0	<1.0	<1.0	<10	<1.0	<1.0	<1.0	<1.0	<1.0	<4.0	<1.0	1.9	**60.9**	<1.0	<1.0	**229**
LB-3	O&M	LB	2/15/17	<0.50	<0.50	<0.50	<0.50	<0.50	<5.0	<0.50	<0.50	<0.50	<0.50	<0.50	<2.0	<0.50	3.2	**25.9**	<0.50	<0.50	**200**
LB-3	O&M	LB	2/14/18	<0.50	<0.50	<0.50	<0.50	<0.50	<5.0	<0.50	<0.50	<0.50	<0.50	<0.50	<2.0	<0.50	**13.8**	**916**	2.89	5.81	**914**
LB-3	O&M	LB	2/13/19	<0.50	<0.50	<0.50	<0.50	<0.50	<5.0	<0.50	<0.50	<0.50	<0.50	<0.50	<2.0	<0.50	**17.0**	**3,050**	**17.8**	**9.81**	**2,550**
LB-3	O&M	LB	3/10/20	<0.50	<0.50	<0.50	<0.50	<0.50	<2.5	<1.25	<0.50	<0.50	<0.50	<0.50	<2.5	<0.50	**18.3**	**2,440**	3.90	**8.21**	**2,780**
UB-4		UB	9/18/07	<90	<90	<90	<90	<90	<90	<90	<90	<90	<90	<90	<90	<90	**98,000**	**320**	<90	<90	90
UB-4		UB	11/13/07	<250	<250	<250	<250	<250	<250	<250	<250	<250	<250	<250	<250	<250	**320,000**	**250**	<250	<250	<250
UB-4		UB	2/4/08	<150	<150	<150	<150	<150	<150	<150	<150	<150	<150	<150	<150	<150	**48,000**	**440**	<150	<150	<500
UB-4		UB	5/6/08	<150	<150	<150	<150	<150	<150	<150	<150	<150	<150	<150	<150	<150	**340,000**	**1,100**	<150	<150	<150
UB-4		UB	2/2/09	<1,500	<1,500	<1,500	<1,500	<1,500	<1,500	<1,500	<1,500	<1,500	<1,500	<1,500	<1,500	<1,500	**390,000**	<1,500	<1,500	<1,500	<1,500
UB-4		UB	2/4/10	<400	<400	<400	<400	<400	<400	<400	<400	<400	<400	<400	<400	<400	**110,000**	**560**	<400	<400	<400
UB-4	RDIP	UB	8/4/10	<400	<400	<400	<400	<400	<400	<400	<400	<400	<400	<400	<400	<400	**3,700**	**220,000**	<400	**620**	**1,600**
UB-4	RDIP	UB	2/9/11	<90	<90	<90	<90	<90	<90	<90	<90	<90	<90	<90	<90	<90	<90	**23,000**	<90	<90	**26,000**
UB-4	RDIP	UB	2/8/12	<0.50	<0.50	<0.50	<0.50	<0.50	<5.0	<0.50	<0.50	<0.50	<0.50	<0.50	1.2	<0.50	<0.50	2.6	<0.50	<0.50	**1.3**
UB-4	O&M	UB	2/13/13	<0.90	<0.90	<0.90	<0.90	<0.90	<5.0	<0.90	<0.90	<0.90	<0.90	<0.90	0.98	<0.90	**6.2**	**37**	**19**	<0.90	**170**
UB-4	O&M	UB	2/26/14	<0.50	<0.50	<0.50	<0.50	<0.50	<5.0	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	3.8	**6.2**	<0.50	<0.50	**1.2**
UB-4	O&M	UB	6/10/15	<0.50	<0.50	<0.50	<0.50	<0.50	<5.0	<0.50	<0.50	<0.50	<0.50	<0.50	6.0	<0.50	0.88	2.7	<0.50	<0.50	**1.3**
UB-4	O&M	UB	2/24/16	<0.50	<0.50	<0.50	<0.50	<0.50	<5.0	<2.0	<0.50	<0.50	<0.50	<0.50	<2.0	<0.50	**6.1**	**26.9**	<0.50	<0.50	**17.1**
UB-4	O&M	UB	2/15/17	<0.50	<0.50	<0.50	<0.50	<0.50	<5.0	<2.0	<0.50	<0.50	<0.50	<0.50	<2.0	<0.50	2.2	**26.1**	<0.50	<0.50	**160**
UB-4	O&M	UB	2/14/18	<0.50	<0.50	<0.50	<0.50	<0.50	<5.0	<0.50	<0.50	<0.50	<0.50	<0.50	<2.0	<0.50	2.85	5.99	<0.50	<0.50	**13**
UB-4	O&M	UB	2/13/19	<0.50	<0.50	<0.50	<0.50	<0.50	<5.0	<0.50	<0.50	<0.50	<0.50	<0.50	<2.0	<0.50	0.571	2.24	<0.50	<0.50	**4.49**
UB-4	O&M	UB	3/10/20	<0.50	<0.50	<0.50	<0.50	<0.50	<2.5	<1.25	<0.50	<0.50	<0.50	<0.50	<2.5	<0.50	2.46	5.03	<0.50	<0.50	**2.43**
LB-4		LB	9/18/07	<150	<150	<150	<150	<150	<150	<150	<150	<150	<150	<150	<150	<150	**260,000**	<150	<150	<150	<150
LB-4		LB	11/13/07	<50	<50	<50	<50	<50	<50	<50	<50	<50	<50	<50	<50	<50	**28,000**	**3,200**	<50	<50	<50
LB-4		LB	2/4/08	<15	<15	<15	<15	<15	<15	<15	<15	<15	<15	<15	<15	<15	**39,000**	**2,300**	<15	<15	<15
LB-4		LB	5/6/08	<250	<250	<250	<250	<250	<250	<250	<250	<250	<250	<250	<250	<250	**57,000**	**1,800**	<250	<250	<250
LB-4		LB	2/2/09	<50	<50	<50	<50	<50	<50	<50	<50	<50	<50	<50	<50	<50	**46,000**	**760**	<50	<50	**85**
LB-4		LB	2/3/10	<250	<250	<250	<250	<250	<250	<250	<250	<250	<250	<250	<250	<250	**100,000**	**640**	<250	<250	<250
LB-4	RDIP	LB	8/4/10	<250	<250	<250	<250	<250	<250	<250	<250	<250	<250	<250	<250	<250	**9,300**	**69,000**	<250	<250	**6,900**
LB-4	RDIP	LB	2/9/11	<40	<40	<40	<40	<40	<40	<40	<40	<40	<40	<40	<40	<40	<40	**7,600**	<40	<40	**4,200**

Table 5B
Groundwater Monitoring Volatile Organic Compounds Data
Degreasing Tank No. 1
Former Kaiser Aerotech Facilities
San Leandro, California

Well ID	Notes	GW Zone	Sample Date	1,2-DCB	1,3-DCB	1,4-DCB	Chloro-benzene	Chloroform	Methylene Chloride	Chloro-methane	1,1,1-TCA	1,1,2-TCA	1,1-DCA	1,2-DCA	Chloro-ethane	PCE	TCE	cis-1,2-DCE	trans-1,2-DCE	1,1-DCE	Vinyl Chloride
				8260*	8260*	8260*	8260*	8260*	8260*	8260*	8260*	8260*	8260*	8260*	8260*	8260*	8260*	8260*	8260*	8260*	8260*
				(ug/L)	(ug/L)	(ug/L)	(ug/L)	(ug/L)	(ug/L)	(ug/L)	(ug/L)	(ug/L)	(ug/L)	(ug/L)	(ug/L)	(ug/L)	(ug/L)	(ug/L)	(ug/L)	(ug/L)	(ug/L)
			MCLs	600	-	5	70	80	5	-	200	5	5	0.5	-	5	5	6	10	6	0.5
			Regulatory Date	9/8/94	-	4/4/89	9/8/94	6/17/06	2/25/89	-	2/25/89	9/8/94	6/24/90	4/4/89	-	5/89	2/25/89	9/8/94	9/8/94	2/25/89	4/4/89
LB-4	RDIP	LB	2/8/12	<7.0	<7.0	<7.0	<7.0	<7.0	<7.0	<7.0	<7.0	<7.0	<7.0	<7.0	<7.0	<7.0	**37**	**1,900**	**14**	<7.0	**2,200**
LB-4	O&M	LB	2/13/13	<0.50	<0.50	<0.50	<0.50	<0.50	<5.0	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	2.4	3.9	1.4	<0.50	<0.50
LB-4	O&M	LB	2/26/14	<0.50	<0.50	<0.50	<0.50	<0.50	<5.0	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	0.94	<0.50	<0.50	<0.50
LB-4	O&M	LB	6/10/15	<0.50	<0.50	<0.50	<0.50	<0.50	<5.0	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	0.78	<0.50	<0.50	**0.65**
LB-4	O&M	LB	2/24/16	<0.50	<0.50	<0.50	<0.50	<0.50	<5.0	<2.0	<0.50	<0.50	<0.50	<0.50	<2.0	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50
LB-4	O&M	LB	2/15/17	<0.50	<0.50	<0.50	<0.50	<0.50	<5.0	<2.0	<0.50	<0.50	<0.50	<0.50	<2.0	<0.50	<0.50	0.70	<0.50	<0.50	<0.50
LB-4	O&M	LB	2/14/18	<0.50	<0.50	<0.50	<0.50	<0.50	<5.0	<0.50	<0.50	<0.50	<0.50	<0.50	5.01	<0.50	1.55	**281**	0.579	<0.50	**627**
LB-4	O&M	LB	2/13/19	<0.50	<0.50	<0.50	<0.50	<0.50	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	4.68	<0.50	1.94	**1,550**	2.08	1.46	**2,320**
LB-4	O&M	LB	3/10/20	<0.50	<0.50	<0.50	<0.50	<0.50	<2.5	<1.25	<5.0	<5.0	<5.0	<5.0	<2.5	<0.50	**5.69**	**1,560**	1.82	1.57	**1,450**

Table 5C
Groundwater Monitoring Volatile Organic Compounds Data
Degreasing Tank No. 4
Former Kaiser Aerotech Facilities
San Leandro, California

Well ID	Notes	GW Zone	Sample Date	1,2-DCB	1,3-DCB	1,4-DCB	Chloro-benzene	Chloroform	Methylene Chloride	Chloro-methane	1,1,1-TCA	1,1,2-TCA	1,1-DCA	1,2-DCA	Chloro-ethane	PCE	TCE	cis-1,2-DCE	trans-1,2-DCE	1,1-DCE	Vinyl Chloride
				8260* (ug/L)	8260* (ug/L)	8260* (ug/L)	8260* (ug/L)	8260* (ug/L)	8260* (ug/L)	8260* (ug/L)	8260* (ug/L)	8260* (ug/L)	8260* (ug/L)	8260* (ug/L)	8260* (ug/L)	8260* (ug/L)	8260* (ug/L)	8260* (ug/L)	8260* (ug/L)	8260* (ug/L)	8260* (ug/L)
			MCLs	600	-	5	70	80	5	-	200	5	5	0.5	-	5	5	6	10	6	0.5
			Regulatory Date	9/8/94	-	4/4/89	9/8/94	6/17/06	2/25/89	-	2/25/89	9/8/94	6/24/90	4/4/89	-	5/89	2/25/89	9/8/94	9/8/94	2/25/89	4/4/89
RW-5		B	8/13/03	<10	<10	<10	<10	<10	<100	<10	<10	10	<10	<10	<10	<10	27,000	46	<10	<10	<10
RW-5		B	1/24/05	<150	<150	<150	<150	<150	<150	<150	<150	<150	<150	<150	<150	<150	41,000	300	<150	<150	<150
RW-5	PT ISCO FR	B	6/6/05	<40	<40	<40	<40	<40	<40	<40	<40	<40	<40	<40	<40	<40	9,600	83	<40	<40	<40
RW-5	PT ISCO FR	B	6/22/05	<2.5	<2.5	<2.5	<2.5	12	<5.0	<2.5	<2.5	<2.5	<2.5	<2.5	<2.5	3.5	2,600	70	<2.5	<2.5	3.0
RW-5	PT ISCO FR	B	7/5/05	<20	<20	<20	<20	<20	<20	<20	<20	<20	<20	<20	<20	<20	5,100	74	<20	<20	<20
RW-5	PT ISCO FR	B	7/20/05	<20	<20	<20	<20	<20	<20	<20	<20	<20	<20	<20	<20	<20	3,600	<20	<20	<20	<20
RW-5	PT ISCO FR	B	8/2/05	<20	<20	<20	<20	<20	<20	<20	<20	<20	<20	<20	<20	22	26,000	58	<20	<20	<20
RW-5	PT ISCO FR	B	8/15/05	<20	<20	<20	<20	<20	<20	<20	<20	<20	<20	<20	<20	<20	8,700	<20	<20	<20	<20
RW-5	PT ISCO FR	B	9/14/05	<25	<25	<25	<25	<25	<25	<25	<25	<25	<25	<25	<25	26	33,000	93	<25	<25	<25
RW-5		B	12/15/05	<70	<70	<70	<70	<70	<70	<70	<70	<70	<70	<70	<70	<70	40,000	260	<70	<70	<70
RW-5		B	2/5/08	<250	<250	<250	<250	<250	<250	<250	<250	<250	<250	<250	<250	<250	140,000	2,100	<250	<250	<250
RW-5	RDIP	B	2/3/09	<15	<15	<15	<15	<15	<15	<15	<15	<15	<15	<15	<15	<15	2,700	1,600	<15	<15	110
RW-5	RDIP	B	2/4/10	<40	<40	<40	<40	<40	<40	<40	<40	<40	<40	<40	<40	<40	14,000	34,000	43	72	3,300
RW-5	RDIP	B	2/8/11	<0.50	<0.50	<0.50	<0.50	<0.50	<5.0	<0.50	<0.50	<0.50	<0.50	0.65	2.0	<0.50	0.62	7.9	1.6	<0.50	3.4
RW-6		B	8/13/03	<10	<10	<10	<10	<10	<100	<10	<10	37	<10	20	<10	46	82,000	1,500	<10	13	160
RW-6		B	12/16/03	<20	<20	<20	<20	<20	<200	<20	<20	27	<20	<20	<20	31	39,000	2,300	20	<20	120
RW-6		B	3/10/04	<100	<100	<100	<100	<100	<1,000	<100	<100	<100	<100	<100	<100	<100	23,000	1,500	<100	<100	250
RW-6		B	5/20/04	<20	<20	<20	<20	<20	<200	<20	<20	42	<20	24	<20	30	68,000	2,300	<20	<20	200
RW-6		B	9/29/04	<50	<50	<50	<50	<50	<50	<50	<50	<50	<50	<50	<50	<50	92,000	1,900	<50	<50	240
RW-6		B	12/8/04	<50	<50	<50	<50	<50	<500	<50	<50	<50	<50	<50	<50	<50	72,000	1,400	<50	<50	100
RW-6		B	1/24/05	<90	<90	<90	<90	<90	<90	<90	<90	<90	<90	<90	<90	<90	33,000	1,000	<90	<90	<90
RW-6	PT DPE	B	1/25/05	<150	<150	<150	<150	<150	<150	<150	<150	<150	<150	<150	<150	<150	46,000	1,000	<150	<150	<150
RW-6	PT DPE	B	1/26/05	<100	<100	<100	<100	<100	<100	<100	<100	<100	<100	<100	<100	<100	34,000	710	<100	<100	<100
RW-6	PT DPE	B	1/27/05	<150	<150	<150	<150	<150	<150	<150	<150	<150	<150	<150	<150	<150	41,000	630	<150	<150	<150
RW-6	PT DPE	B	1/28/05	<200	<200	<200	<200	<200	<2,000	<200	<200	<200	<200	<200	<200	<200	31,000	520	<200	<200	<200
RW-6	PT DPE	B	1/29/05	<150	<150	<150	<150	<150	<150	<150	<150	<150	<150	<150	<150	<150	38,000	680	<150	<150	<150
RW-6		B	2/7/05	<200	<200	<200	<200	<200	<2,000	<200	<200	<200	<200	<200	<200	<200	29,000	720	<200	<200	<200
RW-6		B	3/9/05	<70	<70	<70	<70	<70	<70	<70	<70	<70	<70	<70	<70	<70	23,000	740	<70	<70	110
RW-6	PT ISCO FR	B	6/6/05	<70	<70	<70	<70	<70	<70	<70	<70	<70	<70	<70	<70	<70	22,000	950	<70	<70	120
RW-6	PT ISCO FR	B	6/22/05	<5.0	<5.0	<5.0	<5.0	7.8	<5.0	<5.0	6.6	20	<5.0	6.8	<5.0	23	41,000	630	8.8	7.0	61
RW-6	PT ISCO FR	B	7/5/05	<200	<200	<200	<200	<200	<200	<200	<200	<200	<200	<200	<200	<200	56,000	1,000	<200	<200	<200
RW-6	PT ISCO FR	B	7/20/05	<50	<50	<50	<50	<50	<50	<50	<50	<50	<50	<50	<50	<50	16,000	490	<50	<50	78
RW-6	PT ISCO FR	B	8/2/05	<50	<50	<50	<50	<50	<50	<50	<50	<50	<50	<50	<50	<50	42,000	1,200	<50	<50	75
RW-6	PT ISCO FR	B	8/15/05	<200	<200	<200	<200	<200	<2,000	<200	<200	<200	<200	<200	<200	<200	48,000	900	<200	<200	<200
RW-6	PT ISCO FR	B	9/14/05	<300	<300	<300	<300	<300	<300	<300	<300	<300	<300	<300	<300	<300	90,000	2,200	<300	<300	<300

Table 5C
Groundwater Monitoring Volatile Organic Compounds Data
Degreasing Tank No. 4
Former Kaiser Aerotech Facilities
San Leandro, California

Well ID	Notes	GW Zone	Sample Date	1,2-DCB	1,3-DCB	1,4-DCB	Chloro-benzene	Chloroform	Methylene Chloride	Chloro-methane	1,1,1-TCA	1,1,2-TCA	1,1-DCA	1,2-DCA	Chloro-ethane	PCE	TCE	cis-1,2-DCE	trans-1,2-DCE	1,1-DCE	Vinyl Chloride
				8260*	8260*	8260*	8260*	8260*	8260*	8260*	8260*	8260*	8260*	8260*	8260*	8260*	8260*	8260*	8260*	8260*	8260*
				(ug/L)	(ug/L)	(ug/L)	(ug/L)	(ug/L)	(ug/L)	(ug/L)	(ug/L)	(ug/L)	(ug/L)	(ug/L)	(ug/L)	(ug/L)	(ug/L)	(ug/L)	(ug/L)	(ug/L)	(ug/L)
			MCLs	600	-	5	70	80	5	-	200	5	5	0.5	-	5	5	6	10	6	0.5
			Regulatory Date	9/8/94	-	4/4/89	9/8/94	6/17/06	2/25/89	-	2/25/89	9/8/94	6/24/90	4/4/89	-	5/89	2/25/89	9/8/94	9/8/94	2/25/89	4/4/89
RW-6		B	12/15/05	<70	<70	<70	<70	<70	<70	<70	<70	<70	<70	<70	<70	<70	**86,000**	**1,600**	<70	<70	**81**
RW-6		B	3/14/06	< 70	< 70	< 70	< 70	< 70	< 70	< 70	< 70	< 70	< 70	< 70	< 70	< 70	**90,000**	**2,100**	< 70	< 70	**160**
RW-6		B	6/14/06	<250	<250	<250	<250	<250	<250	<250	<250	<250	<250	<250	<250	<250	**92,000**	**3,300**	<250	<250	**270**
RW-6		B	9/21/06	<200	<200	<200	<200	<200	<200	<200	<200	<200	<200	<200	<200	<200	**80,000**	**2,000**	<200	<200	<200
RW-6		B	2/1/07	<20	<20	<20	<20	<20	<20	<20	<20	**38**	<20	<20	<20	**33**	**70,000**	**2,000**	<20	<20	**160**
RW-6		B	5/9/07	<90	<90	<90	<90	<90	<90	<90	<90	<90	<90	<90	<90	<90	**62,000**	**2,600**	<90	<90	**140**
RW-6		B	8/14/07	<90	<90	<90	<90	<90	<90	<90	<90	<90	<90	<90	<90	<90	**52,000**	**2,400**	<90	<90	**250**
RW-6		B	11/13/07	<200	<200	<200	<200	<200	<200	<200	<200	<200	<200	<200	<200	<200	**69,000**	**2,300**	<200	<200	**200**
RW-6		B	2/5/08	<200	<200	<200	<200	<200	<200	<200	<200	<200	<200	<200	<200	<200	**45,000**	**1,600**	<200	<200	<200
RW-6	RDIP	B	8/5/08	<90	<90	<90	<90	<90	<90	<90	<90	<90	<90	<90	<90	<90	**28,000**	**16,000**	<90	<90	**250**
RW-6	RDIP	B	11/6/08	<90	<90	<90	<90	<90	<90	<90	<90	<90	<90	<90	<90	<90	**23,000**	**19,000**	<90	<90	**4,400**
RW-6	RDIP	B	2/2/09	<90	<90	<90	<90	<90	<90	<90	<90	<90	<90	<90	<90	<90	**13,000**	**27,000**	<90	<90	**3,400**
RW-6	RDIP	B	8/4/09	<40	<40	<40	<40	<40	<40	<40	<40	<40	<40	<40	<40	<40	**470**	**9,300**	<40	<40	**4,200**
RW-6	RDIP	B	2/4/10	<15	<15	<15	<15	<15	<15	<15	<15	<15	<15	<15	<15	<15	**260**	**4,000**	**33**	<15	**2,100**
RW-6	RDIP	B	2/8/11	<0.50	<0.50	<0.50	<0.50	<0.50	<5.0	<0.50	<0.50	<0.50	<0.50	**2.0**	**1.2**	<0.50	1.4	**9.4**	3.8	<0.50	**10**
RW-6	RDIP	B	2/7/12	<0.50	<0.50	<0.50	<0.50	<0.50	<5.0	<0.50	<0.50	<0.50	<0.50	**1.5**	**0.78**	<0.50	<0.50	1.2	0.59	<0.50	<0.50
RW-6	O&M	B	2/14/13	<0.50	<0.50	<0.50	<0.50	<0.50	<5.0	<0.50	<0.50	<0.50	<0.50	**0.83**	<0.50	<0.50	**11**	**700**	3.5	0.57	<0.50
RW-6	O&M, DUP	B	2/14/13	<0.50	<0.50	<0.50	<0.50	<0.50	<5.0	<0.50	<0.50	<0.50	<0.50	**0.90**	<0.50	<0.50	**10**	**850**	4.0	0.56	<0.50
RW-6	O&M	B	2/26/14	<3.0	<3.0	<3.0	<3.0	<3.0	<5.0	<3.0	<3.0	<3.0	<3.0	<3.0	<3.0	<3.0	**12**	**1,700**	6.7	<3.0	**530**
RW-6	O&M, DUP	B	2/26/14	<4.0	<4.0	<4.0	<4.0	<4.0	<5.0	<4.0	<4.0	<4.0	<4.0	<4.0	<4.0	<4.0	**9.2**	**1,700**	5.6	<4.0	**380**
RW-6	O&M	B	6/10/15	<0.50	<0.50	<0.50	<0.50	<0.50	<5.0	<0.50	<0.50	1.2	<0.50	**4.1**	<0.50	<0.50	**12.5**	**7,840**	**31.5**	**12.2**	**2,250**
RW-6	O&M	B	2/24/16	<5.0	<5.0	<5.0	<5.0	<5.0	<50	<20	<5.0	<5.0	<5.0	<5.0	<20	<5.0	**14.4**	**1,520**	6.2	<5.0	**778**
RW-6	O&M	B	2/15/17	<5.0	<5.0	<5.0	<5.0	<5.0	<50	<20	<5.0	<5.0	<5.0	<5.0	<20	<5.0	**6.5**	**3,100**	<5.0	<5.0	**887**
RW-6	O&M, DUP 3	B	2/15/17	<10.0	<10.0	<10.0	<10.0	<10.0	<100	<40.0	<10.0	<10.0	<10.0	<10.0	<40.0	<10.0	<10.0	**3,200**	<10.0	<10.0	**1,400**
RW-6	O&M	B	2/14/18	<5.0	<5.0	<5.0	<5.0	<5.0	<50	<5.0	<5.0	<5.0	<5.0	**7.28**	<20	<5.0	<500	**17,400**	**51.2**	**52**	**1,560**
RW-6	O&M, DUP-1	B	2/14/18	<2.5	<2.5	<2.5	<2.5	<2.5	<25	<2.5	<2.5	<2.5	<2.5	**6.22**	<10	<2.5	**15.1**	**22,500**	**53.8**	**53.6**	**2,580**
RW-6	O&M	B	2/13/19	<0.50	<0.50	<0.50	<0.50	<0.50	<5.0	<0.50	<0.50	0.772	<0.50	**3.12**	<2.0	<0.50	**185**	**8,560**	**129**	**13.4**	**4,410**
RW-6	O&M, DUP	B	2/13/19	<0.50	<0.50	<0.50	<0.50	<0.50	<5.0	<0.50	<0.50	<0.50	<0.50	<0.50	<2.0	<0.50	**13.9**	**337**	0.682	0.808	**164**
RW-6	O&M	B	3/10/20	<0.50	<0.50	<0.50	<0.50	<0.50	<2.5	<1.25	<0.50	<0.50	<0.50	**1.86**	<2.5	<0.50	0.645	**40.3**	0.706	<0.50	**46.0**
RW-7		B	8/13/03	<5.0	<5.0	<5.0	<5.0	<5.0	<50	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	**6,700**	**170**	<5.0	<5.0	**9.1**
RW-7		B	1/24/05	<40	<40	<40	<40	<40	<40	<40	<40	<40	<40	<40	<40	<40	**12,000**	**220**	<40	<40	<40
RW-7	PT DPE	B	1/28/05	<5.0	<5.0	<5.0	<5.0	<5.0	<50	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	**1,200**	**41**	<5.0	<5.0	<5.0
RW-7		B	3/9/05	<7.0	<7.0	<7.0	<7.0	<7.0	<7.0	<7.0	<7.0	<7.0	<7.0	<7.0	<7.0	<7.0	**1,800**	**120**	<7.0	<7.0	<7.0
RW-7	PT ISCO FR	B	6/6/05	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	**2,500**	**110**	<10	<10	<10
RW-7	PT ISCO FR	B	6/22/05	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	**7,800**	**160**	<10	<10	<10

Table 5C
Groundwater Monitoring Volatile Organic Compounds Data
Degreasing Tank No. 4
Former Kaiser Aerotech Facilities
San Leandro, California

Well ID	Notes	GW Zone	Sample Date	1,2-DCB	1,3-DCB	1,4-DCB	Chloro-benzene	Chloroform	Methylene Chloride	Chloro-methane	1,1,1-TCA	1,1,2-TCA	1,1-DCA	1,2-DCA	Chloro-ethane	PCE	TCE	cis-1,2-DCE	trans-1,2-DCE	1,1-DCE	Vinyl Chloride
				8260*	8260*	8260*	8260*	8260*	8260*	8260*	8260*	8260*	8260*	8260*	8260*	8260*	8260*	8260*	8260*	8260*	8260*
				(ug/L)	(ug/L)	(ug/L)	(ug/L)	(ug/L)	(ug/L)	(ug/L)	(ug/L)	(ug/L)	(ug/L)	(ug/L)	(ug/L)	(ug/L)	(ug/L)	(ug/L)	(ug/L)	(ug/L)	(ug/L)
			MCLs	600	-	5	70	80	5	-	200	5	5	0.5	-	5	5	6	10	6	0.5
			Regulatory Date	9/8/94	-	4/4/89	9/8/94	6/17/06	2/25/89	-	2/25/89	9/8/94	6/24/90	4/4/89	-	5/89	2/25/89	9/8/94	9/8/94	2/25/89	4/4/89
RW-7	PT ISCO FR	B	7/5/05	<15	<15	<15	<15	<15	<15	<15	<15	<15	<15	<15	<15	<15	**4,100**	**140**	<15	<15	<15
RW-7	PT ISCO FR	B	7/20/05	<15	<15	<15	<15	<15	<15	<15	<15	<15	<15	<15	<15	<15	**3,500**	**130**	<15	<15	<15
RW-7	PT ISCO FR	B	8/2/05	<15	<15	<15	<15	<15	<15	<15	<15	<15	<15	<15	<15	<15	**5,800**	**110**	<15	<15	<15
RW-7	PT ISCO FR	B	8/15/05	<25	<25	<25	<25	<25	<25	<25	<25	<25	<25	<25	<25	<25	**9,900**	**130**	<25	<25	<25
RW-7	PT ISCO FR	B	9/14/05	<50	<50	<50	<50	<50	<50	<50	<50	<50	<50	<50	<50	<50	**11,000**	**190**	<50	<50	<50
RW-7	PT ISCO FR	B	12/15/05	<9.0	<9.0	<9.0	<9.0	<9.0	<9.0	<9.0	<9.0	<9.0	<9.0	<9.0	<9.0	<9.0	**5,000**	**260**	<9.0	<9.0	<9.0
RW-7		B	2/4/08	<20	<20	<20	<20	<20	<20	<20	<20	<20	<20	<20	<20	<20	**4,900**	**600**	<20	<20	**42**
RW-7	RDIP	B	8/6/08	<20	<20	<20	<20	<20	<20	<20	<20	<20	<20	<20	<20	<20	**2,600**	**4,600**	<20	<20	**46**
RW-7	RDIP	B	2/3/09	<20	<20	<20	<20	<20	<20	<20	<20	<20	<20	<20	<20	<20	<20	**5,700**	<20	<20	**790**
RW-7	RDIP	B	8/4/09	<15	<15	<15	<15	<15	<15	<15	<15	<15	<15	<15	<15	<15	**190**	**3,800**	**39**	<15	**1,300**
RW-7	RDIP	B	2/2/10	<1.5	<1.5	<1.5	<1.5	<1.5	<5.0	<1.5	<1.5	<1.5	<1.5	**1.7**	<1.5	<1.5	**130**	**400**	**12**	<1.5	**110**
RW-7	RDIP	B	2/8/11	<0.50	<0.50	<0.50	<0.50	<0.50	<5.0	<0.50	<0.50	<0.50	<0.50	<0.50	1.1	<0.50	1.1	2.5	0.83	<0.50	**0.84**
RW-7	RDIP	B	2/7/12	<0.50	<0.50	<0.50	<0.50	<0.50	<5.0	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	1.8	<0.50	<0.50	<0.50
RW-7	O&M	B	2/14/13	<0.50	<0.50	<0.50	<0.50	<0.50	<5.0	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	0.83	<0.50	<0.50	<0.50
RW-7	O&M	B	2/25/14	<0.50	<0.50	<0.50	<0.50	<0.50	<5.0	<0.50	<0.50	<0.50	<0.50	<0.50	1.2	<0.50	0.67	<0.50	<0.50	<0.50	<0.50
RW-7	O&M	B	6/10/15	<0.50	<0.50	<0.50	<0.50	<0.50	<5.0	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	0.58	<0.50	<0.50	<0.50
RW-7	O&M	B	2/24/16	<0.50	<0.50	<0.50	<0.50	<0.50	<5.0	<0.50	<0.50	<0.50	<0.50	<0.50	<2.0	<0.50	<0.50	0.51	<0.50	<0.50	<0.50
RW-7	O&M	B	2/15/17	<0.50	<0.50	<0.50	<0.50	<0.50	<5.0	<2.0	<0.50	<0.50	<0.50	<0.50	<2.0	<0.50	<0.50	**6.9**	<0.50	<0.50	**2.2**
RW-7	O&M	B	2/13/19	<0.50	<0.50	<0.50	<0.50	<0.50	<5.0	<0.50	<0.50	<0.50	<0.50	<0.50	<2.0	<0.50	<0.50	**9.75**	<0.50	<0.50	**21**

Table 5D
Groundwater Monitoring Volatile Organic Compounds Data
Breezeway Sump
Former Kaiser Aerotech Facilities
San Leandro, California

Well ID	Notes	GW Zone	Sample Date	1,2-DCB	1,3-DCB	1,4-DCB	Chloro-benzene	Chloroform	Methylene Chloride	Chloro-methane	1,1,1-TCA	1,1,2-TCA	1,1-DCA	1,2-DCA	Chloro-ethane	PCE	TCE	cis-1,2-DCE	trans-1,2-DCE	1,1-DCE	Vinyl Chloride
				8260*	8260*	8260*	8260*	8260*	8260*	8260*	8260*	8260*	8260*	8260*	8260*	8260*	8260*	8260*	8260*	8260*	8260*
				(ug/L)	(ug/L)	(ug/L)	(ug/L)	(ug/L)	(ug/L)	(ug/L)	(ug/L)	(ug/L)	(ug/L)	(ug/L)	(ug/L)	(ug/L)	(ug/L)	(ug/L)	(ug/L)	(ug/L)	(ug/L)
			MCLs	600	-	5	70	80	5	-	200	5	5	0.5	-	5	5	6	10	6	0.5
			Regulatory Date	9/8/94	-	4/4/89	9/8/94	6/17/06	2/25/89	-	2/25/89	9/8/94	6/24/90	4/4/89	-	5/89	2/25/89	9/8/94	9/8/94	2/25/89	4/4/89
MW-17		A	9/23/98	<2.5	<2.5	<2.5	<2.5	<2.5	<25	<5.0	<2.5	<2.5	<2.5	<2.5	<5.0	<2.5	**12**	**370**	**63**	<2.5	<2.5
MW-17		A	12/9/98	<2.5	<2.5	<2.5	<2.5	<15	<25	<5.0	<2.5	<2.5	<2.5	<2.5	<5.0	<2.5	<2.5	**160**	**19**	<2.5	<2.5
MW-17		A	3/23/99	<2.5	<2.5	<2.5	<2.5	<15	<25	<5.0	<2.5	<2.5	**5.8**	<2.5	<5.0	<2.5	**2.5**	**320**	**56**	<2.5	<2.5
MW-17		A	6/21/99	<5.0	<5.0	<5.0	<5.0	<30	<50	<10	<5.0	<5.0	<5.0	<5.0	<10	<5.0	**39**	**330**	**75**	<5.0	<5.0
MW-17		A	12/18/99	<5.0	<5.0	<5.0	<5.0	<5.0	<50	<10	<5.0	<5.0	<5.0	<5.0	<10	<5.0	**14**	**310**	**64**	<5.0	<5.0
MW-17		A	3/15/00	<5.0	<5.0	<5.0	<5.0	<5.0	<100	<10	<5.0	<5.0	**8.1**	<5.0	<10	<5.0	**13**	**310**	**73**	<5.0	<5.0
MW-17		A	9/18/00	<5.0	<5.0	<5.0	<5.0	<5.0	<50	<10	<5.0	<5.0	**7.5**	<5.0	<10	<5.0	**11**	**360**	**80**	<5.0	<5.0
MW-17		A	3/14/01	<5.0	<5.0	<5.0	<5.0	<5.0	<50	<10	<5.0	<5.0	**8.6**	<5.0	<10	<5.0	**12**	**300**	**72**	<5.0	<5.0
MW-17		A	9/26/01	<5.0	<5.0	<5.0	<5.0	<10	<50	<10	<5.0	<5.0	<5.0	<5.0	<10	<5.0	**9.6**	**320**	**63**	<5.0	<5.0
MW-17		A	3/28/02	<5.0	<5.0	<5.0	<5.0	<5.0	<50	<10	<5.0	<5.0	**6.9**	<5.0	<10	<5.0	**8.0**	**300**	**57**	<5.0	<5.0
MW-17		A	10/3/02	<2.5	<2.5	<2.5	<2.5	<2.5	<25	<5.0	<2.5	<2.5	<2.5	<2.5	<5.0	<2.5	**5.9**	**130**	**23**	<2.5	<2.5
MW-17		A	3/26/03	<2.5	<2.5	<2.5	<2.5	<2.5	<25	<5.0	<2.5	<2.5	4.2	<2.5	<5.0	<2.5	**6.4**	**220**	**42**	<2.5	<2.5
MW-17		A	9/23/03	<0.50	<0.50	<0.50	<0.50	1.1	<5.0	<0.50	<0.50	<0.50	2.7	<0.50	<0.50	<0.50	**5.3**	**170**	**36**	<0.50	<0.50
MW-17		A	3/10/04	<0.50	<0.50	<0.50	<0.50	<0.50	<5.0	<0.50	<0.50	<0.50	2.2	<0.50	<0.50	<0.50	**11**	**220**	**54**	0.88	<0.50
MW-17		A	3/8/05	<0.50	<0.50	<0.50	<0.50	<0.50	<5.0	<0.50	<0.50	<0.50	1.1	<0.50	<0.50	<0.50	**42**	**220**	**72**	0.80	**0.62**
MW-17	1	A	9/19/05	<0.90	<0.90	<0.90	<0.90	<0.90	<5.0	<0.90	<0.90	<0.90	<0.90	<0.90	<0.90	<0.90	**55**	**210**	**49**	<0.90	<0.90
MW-17		A	3/15/06	< 0.80	< 0.80	< 0.80	< 0.80	< 0.80	< 5.0	< 0.80	< 0.80	< 0.80	< 0.80	< 0.80	< 0.80	< 0.80	**55**	**210**	**64**	0.83	< 0.80
MW-17		A	1/31/07	<0.50	<0.50	<0.50	<0.50	<0.50	< 5.0	<0.50	<0.50	<0.50	0.71	<0.50	<0.50	<0.50	**47**	**180**	**66**	0.82	<0.50
MW-17		A	2/4/08	<0.50	<0.50	<0.50	<0.50	<0.50	< 5.0	<0.50	<0.50	<0.50	0.68	<0.50	<0.50	<0.50	**51**	**180**	**49**	<0.50	<0.50
MW-17		A	2/4/09	<0.50	<0.50	<0.50	<0.50	<0.50	< 5.0	<0.50	<0.50	<0.50	0.58	<0.50	<0.50	<0.50	**73**	**190**	**60**	0.58	<0.50
MW-17		A	2/3/10	<0.50	<0.50	<0.50	<0.50	<0.50	< 5.0	<0.50	<0.50	<0.50	0.54	<0.50	<0.50	<0.50	**52**	**180**	**57**	0.55	<0.50
MW-17		A	2/8/11	<0.50	<0.50	<0.50	<0.50	<0.50	< 5.0	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	**81**	**190**	**57**	0.91	<0.50
MW-17	O&M	A	3/4/13	<0.90	<0.90	<0.90	<0.90	<0.90	<5.0	<0.90	<0.90	<0.90	<0.90	<0.90	<0.90	<0.90	**100**	**220**	**64**	1.3	<0.90
MW-17	O&M	A	6/9/15	<0.84	<0.84	<0.84	<0.84	<0.84	<8.4	<0.84	<0.84	<0.84	<0.84	<0.84	<0.84	<0.84	**71.6**	**161**	**46.5**	<0.84	<0.84
MW-17	O&M	A	2/24/16	<0.72	<0.72	<0.72	<0.72	<0.72	<7.2	<2.9	<0.72	<0.72	<0.72	<0.72	<2.9	<0.72	**63.2**	**158**	**56**	<0.72	<0.72
MW-17	O&M	A	2/15/17	<0.50	<0.50	<0.50	<0.50	<0.50	<5.0	<2.0	<0.50	<0.50	<0.50	<0.50	<2.0	<0.50	**36.3**	**119**	**45.4**	<0.50	<0.50
MW-17	O&M	A	2/12/19	<0.50	<0.50	<0.50	<0.50	<0.50	<5.0	<0.50	<0.50	<0.50	<0.50	<0.50	<2.0	<0.50	**47.7**	**116**	**37.8**	<0.50	<0.50
RW-13	PT DPE	UB	5/23/05	<500	<500	<500	<500	<500	<500	<500	<500	<500	<500	<500	<500	<500	**110,000**	**670**	<500	<500	<500
RW-13	PT DPE	UB	5/25/05	<50	<50	<50	<50	<50	<50	<50	<50	<50	<50	<50	<50	<50	**15,000**	**1,200**	<50	<50	<50
RW-13	PT DPE	UB	5/27/05	<90	<90	<90	<90	<90	<90	<90	<90	<90	<90	<90	<90	**140**	**20,000**	**1,000**	<90	<90	<90
RW-13		UB	6/2/05	<25	<25	<25	<25	<25	<25	<25	<25	<25	<25	<25	<25	**94**	**28,000**	**500**	<25	<25	<25
RW-13		UB	6/8/05	<150	<150	<150	<150	<150	<150	<150	<150	<150	<150	<150	<150	<150	**38,000**	**410**	<150	<150	<150
RW-13		UB	6/13/05	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
RW-13	PT ERD	UB	6/14/05	<150	<150	<150	<150	<150	<150	<150	<150	<150	<150	<150	<150	<150	**41,000**	**440**	<150	<150	<150
RW-13	PT ERD	UB	6/21/05	<150	<150	<150	<150	<150	<150	<150	<150	<150	<150	<150	<150	<150	**25,000**	**400**	<150	<150	<150
RW-13	PT ERD	UB	7/5/05	<100	<100	<100	<100	<100	<100	<100	<100	<100	<100	<100	<100	<100	**30,000**	**430**	<100	<100	<100

Table 5D
Groundwater Monitoring Volatile Organic Compounds Data
Breezeway Sump
Former Kaiser Aerotech Facilities
San Leandro, California

Well ID	Notes	GW Zone	Sample Date	1,2-DCB	1,3-DCB	1,4-DCB	Chloro-benzene	Chloroform	Methylene Chloride	Chloro-methane	1,1,1-TCA	1,1,2-TCA	1,1-DCA	1,2-DCA	Chloro-ethane	PCE	TCE	cis-1,2-DCE	trans-1,2-DCE	1,1-DCE	Vinyl Chloride
				8260*	8260*	8260*	8260*	8260*	8260*	8260*	8260*	8260*	8260*	8260*	8260*	8260*	8260*	8260*	8260*	8260*	8260*
				(ug/L)	(ug/L)	(ug/L)	(ug/L)	(ug/L)	(ug/L)	(ug/L)	(ug/L)	(ug/L)	(ug/L)	(ug/L)	(ug/L)	(ug/L)	(ug/L)	(ug/L)	(ug/L)	(ug/L)	(ug/L)
			MCLs	600	-	5	70	80	5	-	200	5	5	0.5	-	5	5	6	10	6	0.5
			Regulatory Date	9/8/94	-	4/4/89	9/8/94	6/17/06	2/25/89	-	2/25/89	9/8/94	6/24/90	4/4/89	-	5/89	2/25/89	9/8/94	9/8/94	2/25/89	4/4/89
RW-13	PT ERD	UB	7/19/05	<100	<100	<100	<100	<100	<100	<100	<100	<100	<100	<100	<100	<100	**37,000**	**1,700**	<100	<100	<100
RW-13	PT ERD	UB	8/2/05	<10	<10	<10	<10	<10	<10	<10	<10	**28**	<10	<10	<10	**280**	**78,000**	**2,900**	**27**	<10	<10
RW-13	PT ERD	UB	8/22/05	<200	<200	<200	<200	<200	<200	<200	<200	<200	<200	<200	<200	<200	**38,000**	**3,100**	<200	<200	<200
RW-13	PT ERD	UB	8/29/05	<70	<70	<70	<70	<70	<70	<70	<70	<70	<70	<70	<70	**84**	**29,000**	**3,500**	<70	<70	<70
RW-13	PT ERD	UB	9/19/05	<70	<70	<70	<70	<70	<70	<70	<70	<70	<70	<70	<70	**150**	**47,000**	**7,400**	<70	<70	**140**
RW-13	PT ERD	UB	10/12/05	<70	<70	<70	<70	<70	<70	<70	<70	<70	<70	<70	<70	<70	**31,000**	**15,000**	<70	<70	**1,900**
RW-13	PT ERD	UB	11/10/05	<70	<70	<70	<70	<70	<70	<70	<70	<70	<70	<70	<70	<70	**18,000**	**4,800**	<70	<70	**1,800**
RW-13	PT ERD	UB	12/14/05	<50	<50	<50	<50	<50	<50	<50	<50	<50	<50	<50	<50	**54**	**28,000**	**5,700**	<50	<50	**1,200**
RW-13	PT ERD	UB	2/9/06	<50	<50	<50	<50	<50	<50	<50	<50	<50	<50	<50	<50	<50	**14,000**	**5,700**	<50	<50	**710**
RW-13	PT ERD	UB	3/14/06	<50	<50	<50	<50	<50	<50	<50	<50	<50	<50	<50	<50	**50**	**35,000**	**13,000**	<50	<50	**2,000**
RW-13	PT ERD	UB	6/13/06	<50	<50	<50	<50	<50	<50	<50	<50	<50	<50	<50	<50	<50	**33,000**	**15,000**	<50	<50	**1,700**
RW-13	PT ERD	UB	9/21/06	<50	<50	<50	<50	<50	<50	<50	<50	<50	<50	<50	<50	<50	**23,000**	**14,000**	<50	<50	**1,500**
RW-13	PT ERD	UB	10/24/06	<70	<70	<70	<70	<70	<70	<70	<70	<70	<70	<70	<70	<70	**20,000**	**15,000**	<70	<70	**990**
RW-13	PT ERD	UB	1/30/07	<20	<20	<20	<20	<20	<20	<20	<20	<20	<20	<20	<20	<20	**3,900**	**5,200**	<20	<20	**670**
RW-13	PT ERD	UB	5/9/07	<50	<50	<50	<50	<50	<50	<50	<50	<50	<50	<50	<50	<50	**21,000**	**26,000**	**80**	**51**	**2,000**
RW-13	PT ERD	UB	8/15/07	<90	<90	<90	<90	<90	<90	<90	<90	<90	<90	<90	<90	<90	**12,000**	**24,000**	<90	<90	**3,300**
RW-13	PT ERD	UB	11/14/07	<90	<90	<90	<90	<90	<90	<90	<90	<90	<90	<90	<90	<90	**8,900**	**20,000**	<90	<90	**3,800**
RW-13	PT ERD	UB	2/7/08	<25	<25	<25	<25	<25	<25	<25	<25	<25	<25	<25	<25	<25	**1,000**	**8,500**	<25	<25	**1,900**
RW-13	PT ERD	UB	5/6/08	<25	<25	<25	<25	<25	<25	<25	<25	<25	<25	<25	<25	<25	**5,300**	**25,000**	**32**	**46**	**4,300**
RW-13	RDIP	UB	8/5/08	<50	<50	<50	<50	<50	<50	<50	<50	<50	<50	<50	<50	<50	**9,800**	**19,000**	<50	**54**	**2,800**
RW-13	RDIP	UB	2/5/09	<90	<90	<90	<90	<90	<90	<90	<90	<90	<90	<90	<90	<90	**20,000**	**26,000**	<90	<90	**3,300**
RW-13	RDIP	UB	8/6/09	<50	<50	<50	<50	<50	<50	<50	<50	<50	<50	<50	<50	<50	**9,200**	**16,000**	**83**	<50	**3,500**
RW-13	RDIP	UB	2/4/10	<50	<50	<50	<50	<50	<50	<50	<50	<50	<50	<50	<50	<50	**2,800**	**11,000**	<50	<50	**2,200**
RW-13	RDIP	UB	2/9/11	<0.50	<0.50	<0.50	<0.50	<0.50	<5.0	<0.50	<0.50	<0.50	<0.50	<0.50	2.2	<0.50	1.9	**83**	0.63	<0.50	**170**
RW-13	RDIP	UB	2/7/12	<0.50	<0.50	<0.50	<0.50	<0.50	<5.0	<8.0	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	4.9	**520**	0.87	0.58	**950**
RW-13	O&M	UB	2/13/13	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<20	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	**8,800**	**19**	**27**	**2,300**
RW-13	O&M	UB	2/25/14	<0.50	<0.50	<0.50	<0.50	<0.50	<5.0	<0.50	<0.50	<0.50	<0.50	<0.50	0.72	<0.50	<0.50	<0.50	<0.50	<0.50	**5.9**
RW-13	O&M	UB	6/9/15	<0.50	<0.50	<0.50	<0.50	<0.50	<5.0	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	0.71	**91.4**	<0.50	<0.50	**27**
RW-13	O&M	UB	2/24/16	<25	<25	<25	<25	<25	<250	<100	<25	<25	<25	<25	<25	<25	<25	**5,550**	<25	<25	**4,310**
RW-13	O&M	UB	2/15/17	<25.0	<25.0	<25.0	<25.0	<25.0	<250	<100	<25.0	<25.0	<25.0	<25.0	<100	<25.0	<25.0	**34,500**	**45.3**	**39**	**11,900**
RW-13	O&M	UB	2/14/18	<50	<50	<50	<50	<50	<500	<50	<50	<50	<50	<50	<200	<50	<50	**13,800**	<50	<50	**5,640**
RW-13	O&M	UB	2/13/19	<0.50	<0.50	<0.50	<0.50	<0.50	<5.0	<0.50	<0.50	<0.50	<0.50	<0.50	<2.0	<0.50	<0.50	3.92	0.524	<0.50	**22.7**
RW-13	O&M	UB	3/11/20	<0.50	<0.50	<0.50	<0.50	<0.50	<2.5 J4	<1.25 J4	<0.50	<0.50	<0.50	<0.50	<2.5	<0.50	<0.50	1.62	<0.50	<0.50	<0.50
LMW-10		LB	9/19/07	<50	<50	<50	<50	<50	<50	<50	<50	<50	<50	<50	<50	**66**	**22,000**	**11,000**	<50	<50	**580**
LMW-10		LB	11/14/07	<50	<50	<50	<50	<50	<50	<50	<50	<50	<50	<50	<50	**140**	**57,000**	**30,000**	**140**	<50	**3,200**
LMW-10		LB	2/7/08	<150	<150	<150	<150	<150	<150	<150	<150	<150	<150	<150	<150	<150	**39,000**	**50,000**	<150	<150	**2,800**

Table 5D
Groundwater Monitoring Volatile Organic Compounds Data
Breezeway Sump
Former Kaiser Aerotech Facilities
San Leandro, California

Well ID	Notes	GW Zone	Sample Date	1,2-DCB	1,3-DCB	1,4-DCB	Chloro-benzene	Chloroform	Methylene Chloride	Chloro-methane	1,1,1-TCA	1,1,2-TCA	1,1-DCA	1,2-DCA	Chloro-ethane	PCE	TCE	cis-1,2-DCE	trans-1,2-DCE	1,1-DCE	Vinyl Chloride
				8260*	8260*	8260*	8260*	8260*	8260*	8260*	8260*	8260*	8260*	8260*	8260*	8260*	8260*	8260*	8260*	8260*	8260*
				(ug/L)	(ug/L)	(ug/L)	(ug/L)	(ug/L)	(ug/L)	(ug/L)	(ug/L)	(ug/L)	(ug/L)	(ug/L)	(ug/L)	(ug/L)	(ug/L)	(ug/L)	(ug/L)	(ug/L)	(ug/L)
			MCLs	600	-	5	70	80	5	-	200	5	5	0.5	-	5	5	6	10	6	0.5
			Regulatory Date	9/8/94	-	4/4/89	9/8/94	6/17/06	2/25/89	-	2/25/89	9/8/94	6/24/90	4/4/89	-	5/89	2/25/89	9/8/94	9/8/94	2/25/89	4/4/89
LMW-10		LB	5/7/08	<150	<150	<150	<150	<150	<150	<150	<150	<150	<150	<150	<150	300	84,000	49,000	<150	<150	3,600
LMW-10	RDIP	LB	8/5/08	<200	<200	<200	<200	<200	<200	<200	<200	<200	<200	<200	<200	<200	7,500	52,000	<200	250	1,700
LMW-10	RDIP	LB	2/5/09	<90	<90	<90	<90	<90	<90	<90	<90	<90	<90	<90	<90	<90	<90	19,000	<90	<90	10,000
LMW-10	RDIP	LB	8/6/09	<50	<50	<50	<50	<50	<50	<50	<50	<50	<50	<50	<50	<50	200	17,000	70	<50	6,500
LMW-10	RDIP	LB	2/4/10	<50	<50	<50	<50	<50	<50	<50	<50	<50	<50	<50	<50	<50	420	20,000	<50	<50	4,500
LMW-10	RDIP	LB	2/9/11	<50	<50	<50	<50	<50	<50	<50	<50	<50	<50	<50	<50	<50	<50	29,000	50	<50	11,000
LMW-10	RDIP	LB	2/7/12	<25	<25	<25	<25	<25	<25	<80	<25	<25	<25	<25	<25	<25	<25	71,000	150	150	12,000
LMW-10	O&M	LB	3/4/13	<200	<200	<200	<200	<200	<200	<200	<200	<200	<200	<200	<200	<200	22,000	43,000	<200	<200	3,900
LMW-10	O&M	LB	5/22/13	<25	<25	<25	<25	<25	<25	<25	<25	<25	<25	<25	<25	100	32,000	44,000	110	120	3,600
LMW-10	O&M	LB	2/25/14	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	530	<5.0	<5.0	1,800
LMW-10	O&M	LB	6/9/15	<25	<25	<25	<25	<25	<250	<25	<25	<25	<25	<25	<25	<25	<25	14,900	31.9	<25	14,200
LMW-10	O&M	LB	2/24/16	<125	<125	<125	<125	<125	<1,250	<500	<125	<125	<125	<125	<125	<125	<125	29,400	<125	<125	15,500
LMW-10	O&M	LB	2/15/17	<25.0	<25.0	<25.0	<25.0	<25.0	<250	<100	<25.0	<25.0	<25.0	<25.0	<100	<25.0	<25.0	52,300	75.5	77.3	8,830
LMW-10	O&M	LB	2/14/18	<50	<50	<50	<50	<50	<500	<50	<50	<50	<50	<50	<200	153	<5,000	41,100	968	1,140	<5,000
LMW-10	O&M	LB	2/13/19	<0.50	<0.50	<0.50	<0.50	<0.50	<5.0	<0.50	<0.50	<0.50	<0.50	<0.50	<2.0	<0.50	<0.50	34.1	3.12	<0.50	337
LMW-10	O&M	LB	3/11/20	<0.50	<0.50	<0.50	<0.50	<0.50	<2.5 J4	<1.25 J4	<0.50	<0.50	<0.50	<0.50	<2.5	<0.50	4.96	2.79	0.614	<0.50	1.49
RW-12		B	5/20/05	<70	<70	<70	<70	<70	<70	<70	<70	<70	<70	<70	<70	<70	14,000	340	<70	<70	<70
RW-12	PT DPE	B	5/24/05	<70	<70	<70	<70	<70	<70	<70	<70	<70	<70	<70	<70	<70	13,000	1,300	<70	<70	<70
RW-12		B	6/8/05	<40	<40	<40	<40	<40	<40	<40	<40	<40	<40	<40	<40	<40	7,700	330	<40	<40	<40
RW-12		B	6/13/05	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
RW-12	PT ERD	B	6/21/05	<15	<15	<15	<15	<15	<15	<15	<15	<15	<15	<15	<15	35	5,200	800	<15	<15	<15
RW-12	PT ERD	B	7/5/05	<20	<20	<20	<20	<20	<20	<20	<20	<20	<20	<20	<20	35	4,600	2,200	<20	<20	<20
RW-12	PT ERD	B	7/19/05	<20	<20	<20	<20	<20	<20	<20	<20	<20	<20	<20	<20	<20	4,600	4,700	39	<20	<20
RW-12	PT ERD	B	8/2/05	<20	<20	<20	<20	<20	<20	<20	<20	<20	<20	<20	<20	<20	2,000	5,500	28	<20	<20
RW-12	PT ERD	B	8/22/05	<20	<20	<20	<20	<20	<20	<20	<20	<20	<20	<20	<20	<20	1,300	4,200	20	<20	290
RW-12	PT ERD	B	8/29/05	<20	<20	<20	<20	<20	<20	<20	<20	<20	<20	<20	<20	<20	2,600	4,000	25	<20	480
RW-12	PT ERD	B	9/19/05	<15	<15	<15	<15	<15	<15	<15	<15	<15	<15	<15	<15	<15	4,500	4,500	50	<15	370
RW-12	PT ERD	B	10/12/05	<9.0	<9.0	<9.0	<9.0	<9.0	<9.0	<9.0	<9.0	<9.0	<9.0	<9.0	<9.0	<9.0	4,000	3,200	25	<9.0	110
RW-12	PT ERD	B	11/10/05	<9.0	<9.0	<9.0	<9.0	<9.0	<9.0	<9.0	<9.0	<9.0	<9.0	<9.0	<9.0	<9.0	3,100	1,400	20	<9.0	360
RW-12	PT ERD	B	12/14/05	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	1,300	1,100	14	<5.0	130
RW-12	PT ERD	B	2/9/06	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	1,500	1,900	15	<5.0	240
RW-12	PT ERD	B	3/14/06	<7.0	<7.0	<7.0	<7.0	<7.0	<7.0	<7.0	<7.0	<7.0	<7.0	<7.0	<7.0	<7.0	1,700	2,300	16	<7.0	180
RW-12	PT ERD	B	6/13/06	<7.0	<7.0	<7.0	<7.0	<7.0	<7.0	<7.0	<7.0	<7.0	<7.0	<7.0	<7.0	<7.0	640	2,400	21	<7.0	440
RW-12	PT ERD	B	9/21/06	<7.0	<7.0	<7.0	<7.0	<7.0	<7.0	<7.0	<7.0	<7.0	<7.0	<7.0	<7.0	<7.0	380	2,500	17	<7.0	350
RW-12	PT ERD	B	1/31/07	<7.0	<7.0	<7.0	<7.0	<7.0	<7.0	<7.0	<7.0	<7.0	<7.0	<7.0	<7.0	<7.0	180	2,000	14	<7.0	480
RW-12	PT ERD	B	5/10/07	<0.90	<0.90	<0.90	<0.90	<0.90	<5.0	<0.90	<0.90	<0.90	<0.90	<0.90	<0.90	<0.90	410	3,600	17	5.1	800

Table 5D
Groundwater Monitoring Volatile Organic Compounds Data
Breezeway Sump
Former Kaiser Aerotech Facilities
San Leandro, California

Well ID	Notes	GW Zone	Sample Date	1,2-DCB	1,3-DCB	1,4-DCB	Chloro-benzene	Chloroform	Methylene Chloride	Chloro-methane	1,1,1-TCA	1,1,2-TCA	1,1-DCA	1,2-DCA	Chloro-ethane	PCE	TCE	cis-1,2-DCE	trans-1,2-DCE	1,1-DCE	Vinyl Chloride
				8260*	8260*	8260*	8260*	8260*	8260*	8260*	8260*	8260*	8260*	8260*	8260*	8260*	8260*	8260*	8260*	8260*	8260*
				(ug/L)	(ug/L)	(ug/L)	(ug/L)	(ug/L)	(ug/L)	(ug/L)	(ug/L)	(ug/L)	(ug/L)	(ug/L)	(ug/L)	(ug/L)	(ug/L)	(ug/L)	(ug/L)	(ug/L)	(ug/L)
			MCLs	600	-	5	70	80	5	-	200	5	5	0.5	-	5	5	6	10	6	0.5
			Regulatory Date	9/8/94	-	4/4/89	9/8/94	6/17/06	2/25/89	-	2/25/89	9/8/94	6/24/90	4/4/89	-	5/89	2/25/89	9/8/94	9/8/94	2/25/89	4/4/89
RW-12	PT ERD	B	2/7/08	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	**1,400**	6.1	<5.0	**520**
RW-12	RDIP	B	2/5/09	<3.0	<3.0	<3.0	<3.0	<3.0	<5.0	<3.0	<3.0	<3.0	<3.0	<3.0	<3.0	<3.0	**67**	**710**	4.5	<3.0	**310**
RW-12	RDIP	B	2/4/10	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<8.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	**180**	**3,100**	**12**	<5.0	**910**
RW-12	RDIP	B	2/9/11	<15	<15	<15	<15	<15	<15	<15	<15	<15	<15	<15	<15	<15	<15	**3,800**	<15	<15	**780**
RW-12	RDIP	B	2/7/12	<15	<15	<15	<15	<15	<15	<15	<15	<15	<15	<15	<15	<15	<15	**5,800**	<15	<15	**2,500**
RW-12	O&M	B	2/13/13	<25	<25	<25	<25	<25	<25	<25	<25	<25	<25	<25	<25	<25	<25	**9,000**	<25	**29**	**2,500**
RW-12	O&M	B	2/26/14	<0.50	<0.50	<0.50	<0.50	<0.50	<5.0	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	2.0	**36**	0.52	<0.50	**26**
RW-12	O&M	B	6/11/15	<0.50	<0.50	<0.50	<0.50	<0.50	<5.0	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	0.51	**48.4**	<0.50	<0.50	**594**
RW-12	O&M	B	2/24/16	<5.0	<5.0	<5.0	<5.0	<5.0	<50	<20	<5.0	<5.0	<5.0	<5.0	<20	<5.0	<5.0	**235**	<5.0	<5.0	**986**
RW-12	O&M	B	2/15/17	<5.0	<5.0	<5.0	<5.0	<5.0	<50	<20	<5.0	<5.0	<5.0	<5.0	<20	<5.0	<5.0	**862**	<5.0	<5.0	**1,350**
RW-12	O&M	B	2/14/18	<5.0	<5.0	<5.0	<5.0	<5.0	<50	<5.0	<5.0	<5.0	<5.0	<5.0	<20	<5.0	<10	**2,220**	<5.0	**13.4**	**2,110**
RW-12	O&M	B	2/13/19	<0.50	<0.50	<0.50	<0.50	<0.50	<5.0	<0.50	<0.50	<0.50	<0.50	<0.50	<2.0	<0.50	<0.50	3.04	1.95	<0.50	**4.98**
RW-12	O&M; DUP	B	2/13/19	<0.50	<0.50	<0.50	<0.50	<0.50	<5.0	<0.50	<0.50	<0.50	<0.50	<0.50	<2.0	<0.50	<0.50	2.84	1.78	<0.50	**4.37**
RW-12	O&M	B	3/11/20	<0.50	<0.50	<0.50	<0.50	<0.50	<2.5 J4	<1.25 J4	<0.50	<0.50	<0.50	<0.50	<2.5	<0.50	**5.58**	**75.7**	<0.50	<0.50	**463**
RW-8		B	8/13/03	<5.0	<5.0	<5.0	<5.0	<5.0	<50	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	**19**	**8,400**	**130**	6.3	<5.0	<5.0
RW-8		B	3/10/05	<15	<15	<15	<15	<15	<15	<15	<15	<15	<15	<15	<15	**18**	**6,200**	**92**	<15	<15	<15
RW-8		B	5/20/05	<20	<20	<20	<20	<20	<20	<20	<20	<20	<20	<20	<20	<20	**3,900**	**83**	<20	<20	<20
RW-8		B	6/8/05	<15	<15	<15	<15	<15	<15	<15	<15	<15	<15	<15	<15	**40**	**3,900**	**87**	<15	<15	<15
RW-8	PT ERD	B	6/13/05	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
RW-8	PT ERD	B	6/21/05	<25	<25	<25	<25	<25	<25	<25	<25	<25	<25	<25	<25	<25	**5,800**	**150**	<25	<25	<25
RW-8	PT ERD	B	8/2/05	<9.0	<9.0	<9.0	<9.0	<9.0	<9.0	<9.0	<9.0	<9.0	<9.0	<9.0	<9.0	<9.0	**2,000**	**2,600**	9.0	<9.0	<9.0
RW-8	PT ERD	B	8/22/05	<9.0	<9.0	<9.0	<9.0	<9.0	<9.0	<9.0	<9.0	<9.0	<9.0	<9.0	<9.0	<9.0	**1,500**	**2,800**	9.0	<9.0	<9.0
RW-8	PT ERD	B	8/29/05	<9.0	<9.0	<9.0	<9.0	<9.0	<9.0	<9.0	<9.0	<9.0	<9.0	<9.0	<9.0	<9.0	**1,900**	**4,200**	**13**	<9.0	**20**
RW-8	PT ERD	B	9/19/05	<15	<15	<15	<15	<15	<15	<15	<15	<15	<15	<15	<15	<15	**1,600**	**2,600**	<15	<15	**340**
RW-8	PT ERD	B	10/12/05	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	**1,700**	**1,200**	**56**	<5.0	**510**
RW-8	PT ERD	B	11/10/05	<2.5	<2.5	<2.5	<2.5	<2.5	<5.0	<2.5	<2.5	<2.5	<2.5	<2.5	<2.5	<2.5	**830**	**740**	**22**	<2.5	**290**
RW-8	PT ERD	B	12/14/05	<2.5	<2.5	<2.5	<2.5	<2.5	<5.0	<2.5	<2.5	<2.5	<2.5	<2.5	<2.5	2.7	**1,400**	**900**	9.5	<2.5	**380**
RW-8	PT ERD	B	2/9/06	<2.5	<2.5	<2.5	<2.5	<2.5	<5.1	<2.5	<2.5	<2.5	<2.5	<2.5	<2.5	3.8	**2,400**	**1,100**	**47**	<2.5	**360**
RW-8	PT ERD	B	3/14/06	<9.0	<9.0	<9.0	<9.0	<9.0	<9.0	<9.0	<9.0	<9.0	<9.0	<9.0	<9.0	<9.0	**2,500**	**1,300**	**15**	<9.0	**350**
RW-8	PT ERD	B	6/13/06	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	**2,500**	**860**	**44**	<5.0	**190**
RW-8	PT ERD	B	9/21/06	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	**1,100**	**1,300**	**6.8**	<5.0	**260**
RW-8	PT ERD	B	10/24/06	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	**1,600**	**1,400**	7.0	<5.0	**270**
RW-8	PT ERD	B	1/30/07	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	**2,200**	**1,100**	**74**	<5.0	**230**
RW-8	PT ERD	B	5/10/07	<2.5	<2.5	<2.5	<2.5	<2.5	<5.0	<2.5	<2.5	<2.5	<2.5	<2.5	<2.5	<2.5	**1,300**	**1,600**	8.9	2.6	**280**
RW-8	PT ERD	B	8/15/07	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	7.7	<5.0	**1,500**	**1,700**	8.5	<5.0	**390**
RW-8	PT ERD	B	11/14/07	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	8.2	<5.0	**1,500**	**1,900**	**14**	<5.0	**370**

Table 5D
Groundwater Monitoring Volatile Organic Compounds Data
Breezeway Sump
Former Kaiser Aerotech Facilities
San Leandro, California

Well ID	Notes	GW Zone	Sample Date	1,2-DCB	1,3-DCB	1,4-DCB	Chloro-benzene	Chloroform	Methylene Chloride	Chloro-methane	1,1,1-TCA	1,1,2-TCA	1,1-DCA	1,2-DCA	Chloro-ethane	PCE	TCE	cis-1,2-DCE	trans-1,2-DCE	1,1-DCE	Vinyl Chloride
				8260*	8260*	8260*	8260*	8260*	8260*	8260*	8260*	8260*	8260*	8260*	8260*	8260*	8260*	8260*	8260*	8260*	8260*
				(ug/L)	(ug/L)	(ug/L)	(ug/L)	(ug/L)	(ug/L)	(ug/L)	(ug/L)	(ug/L)	(ug/L)	(ug/L)	(ug/L)	(ug/L)	(ug/L)	(ug/L)	(ug/L)	(ug/L)	(ug/L)
			MCLs	600	-	5	70	80	5	-	200	5	5	0.5	-	5	5	6	10	6	0.5
			Regulatory Date	9/8/94	-	4/4/89	9/8/94	6/17/06	2/25/89	-	2/25/89	9/8/94	6/24/90	4/4/89	-	5/89	2/25/89	9/8/94	9/8/94	2/25/89	4/4/89
RW-8	PT ERD	B	2/7/08	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	9.3	<5.0	**1,700**	**1,500**	**12**	<5.0	**330**
RW-8	RDIP	B	8/5/08	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	8.2	<5.0	**1,100**	**920**	7.0	<5.0	**550**
RW-8	RDIP	B	2/5/09	<3.0	<3.0	<3.0	<3.0	<3.0	<5.0	<3.0	<3.0	<3.0	<3.0	<3.0	10	<3.0	**970**	**860**	8.2	<3.0	**400**
RW-8	RDIP	B	8/6/09	<1.0	<1.0	<1.0	<1.0	<1.0	<5.0	<1.0	<1.0	<1.0	<1.0	<1.0	4.2	<1.0	**10**	**380**	7.7	<1.0	**160**
RW-8	RDIP	B	2/4/10	<0.50	<0.50	<0.50	<0.50	<0.50	<5.0	<0.50	<0.50	<0.50	<0.50	<0.50	1.7	<0.50	**18**	**10**	1.3	<0.50	**20**
RW-8	RDIP	B	2/9/11	<0.50	<0.50	<0.50	<0.50	<0.50	<5.0	<2.5	<0.50	<0.50	<0.50	<0.50	0.64	<0.50	1.0	**530**	3.1	0.52	**550**
RW-8	RDIP	B	2/7/12	<2.5	<2.5	<2.5	<2.5	<2.5	<5.0	<5.0	<2.5	<2.5	<2.5	<2.5	<2.5	<2.5	<2.5	**570**	<2.5	<2.5	**480**
RW-8	RDIP, DUP	B	2/7/12	<3.0	<3.0	<3.0	<3.0	<3.0	<5.0	<3.0	<3.0	<3.0	<3.0	<3.0	<3.0	<3.0	<3.0	**570**	<3.0	<3.0	**420**
RW-8	O&M	B	2/12/13	<1.5	<1.5	<1.5	<1.5	<1.5	<5.0	<5.0	<1.5	<1.5	<1.5	<1.5	<1.5	<1.5	2.2	**1,500**	3.6	**7.6**	**660**
RW-8	O&M	B	6/11/15	<0.50	<0.50	<0.50	<0.50	<0.50	<5.0	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	**181**	0.61	**7.6**	**576**
RW-8	O&M	B	2/15/17	<0.50	<0.50	<0.50	<0.50	<0.50	<5.0	<2.0	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	0.98	**861**	1.4	4.5	**836**
RW-8	O&M	B	2/14/18	<6.25	<6.25	<6.25	<6.25	<6.25	<62.5	<6.25	<6.25	<6.25	<6.25	<6.25	<25	<6.25	<6.25	**1,140**	<6.25	<6.25	**992**
RW-8	O&M	B	2/13/19	<0.50	<0.50	<0.50	<0.50	<0.50	<5.0	<0.50 J4	<0.50	<0.50	<0.50	<0.50	<2.0	<0.50	1.80	**1,370**	3.49	**12.6**	**900**
RW-8	O&M	B	3/11/20	<0.50	<0.50	<0.50	<0.50	<0.50	<2.5 J4	<1.25 J4	<0.50	<0.50	<0.50	<0.50	<2.5	<0.50	3.35	**996**	2.50	**9.53**	**745**
UB-6		UB	9/19/07	<2.5	<2.5	<2.5	<2.5	<2.5	<5.0	<2.5	<2.5	<2.5	<2.5	<2.5	18	2.5	**1,100**	**840**	**24**	3.7	**170**
UB-6		UB	11/14/07	<2.5	<2.5	<2.5	<2.5	<2.5	<5.0	<2.5	<2.5	<2.5	<2.5	<2.5	3.2	<2.5	**1,000**	**1,200**	9.7	3.1	**9.9**
UB-6		UB	2/7/08	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	**1,000**	**1,200**	6.2	<5.0	<5.0
UB-6		UB	5/6/08	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	**1,300**	**1,100**	6.8	<5.0	<5.0
UB-6		UB	2/4/09	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	**1,100**	**1,000**	7.7	<5.0	<5.0
UB-6		UB	8/5/09	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	**1,100**	**840**	5.2	<5.0	**5.7**
UB-6		UB	2/4/10	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	**970**	**820**	<5.0	<5.0	**6.2**
UB-6		UB	8/4/10	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	**980**	**710**	<5.0	<5.0	<5.0
UB-6		UB	2/8/11	<2.5	<2.5	<2.5	<2.5	<2.5	<5.0	<2.5	<2.5	<2.5	<2.5	<2.5	<2.5	<2.5	**910**	**780**	**15**	<2.5	**5.6**
UB-6	RDIP	UB	2/8/12	<0.50	<0.50	<0.50	<0.50	<0.50	<5.0	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	1.4	**17**	**18**	<0.50	**32**
UB-6	RDIP, DUP	UB	2/8/12	<0.50	<0.50	<0.50	<0.50	<0.50	<5.0	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	1.2	**18**	**16**	<0.50	**32**
UB-6	O&M	UB	2/13/13	<0.50	<0.50	<0.50	<0.50	<0.50	<5.0	<0.50	<0.50	<0.50	<0.50	<0.50	0.56	<0.50	1.2	**1.4**	1.1	<0.50	<0.50
UB-6	O&M, DUP	UB	2/13/13	<0.50	<0.50	<0.50	<0.50	<0.50	<5.0	<0.50	<0.50	<0.50	<0.50	<0.50	0.57	<0.50	1.2	**1.3**	1.1	<0.50	<0.50
UB-6	O&M	UB	2/26/14	<0.50	<0.50	<0.50	<0.50	<0.50	<5.0	<0.50	<0.50	<0.50	<0.50	<0.50	1.1	<0.50	0.66	**2.6**	1.1	<0.50	**3.0**
UB-6	O&M, DUP	UB	2/26/14	<0.50	<0.50	<0.50	<0.50	<0.50	<5.0	<0.50	<0.50	<0.50	<0.50	<0.50	1.4	<0.50	0.66	**2.7**	1.1	<0.50	**3.1**
UB-6	O&M	UB	6/9/15	<0.50	<0.50	<0.50	<0.50	<0.50	<5.0	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	1.6	**357**	8.4	**7.8**	**294**
UB-6	O&M	UB	2/24/16	<5.0	<5.0	<5.0	<5.0	<5.0	<50	<20	<5.0	<5.0	<5.0	<5.0	<20	<5.0	<5.0	**1,100**	<5.0	**10.3**	**373**
UB-6	O&M	UB	2/15/17	<2.5	<2.5	<2.5	<2.5	<2.5	<25	<10	<2.5	<2.5	<2.5	<2.5	<10	<2.5	**21.2**	**753**	<2.5	**10.9**	**245**
UB-6	O&M	UB	2/14/18	<2.5	<2.5	<2.5	<2.5	<2.5	<25	<2.5	<2.5	<2.5	<2.5	<2.5	<10	<2.5	**6.89**	**656**	<2.5	**13.3**	**211**
UB-6	O&M	UB	2/14/19	<0.50	<0.50	<0.50	<0.50	<0.50	<5.0	<0.50 J4	<0.50	<0.50	<0.50	<0.50	<2.0	<0.50	0.622	2.16	<0.50	<0.50	**0.754**
UB-6	O&M	UB	3/11/20	<0.50	<0.50	<0.50	<0.50	<0.50	<2.5 J4	<1.25 J4	<0.50	<0.50	<0.50	<0.50	<2.5	<0.50	3.07	1.05	<0.50	<0.50	**1.43**

Table 5D
Groundwater Monitoring Volatile Organic Compounds Data
Breezeway Sump
Former Kaiser Aerotech Facilities
San Leandro, California

Well ID	Notes	GW Zone	Sample Date	1,2-DCB	1,3-DCB	1,4-DCB	Chloro-benzene	Chloroform	Methylene Chloride	Chloro-methane	1,1,1-TCA	1,1,2-TCA	1,1-DCA	1,2-DCA	Chloro-ethane	PCE	TCE	cis-1,2-DCE	trans-1,2-DCE	1,1-DCE	Vinyl Chloride
				8260*	8260*	8260*	8260*	8260*	8260*	8260*	8260*	8260*	8260*	8260*	8260*	8260*	8260*	8260*	8260*	8260*	8260*
				(ug/L)	(ug/L)	(ug/L)	(ug/L)	(ug/L)	(ug/L)	(ug/L)	(ug/L)	(ug/L)	(ug/L)	(ug/L)	(ug/L)	(ug/L)	(ug/L)	(ug/L)	(ug/L)	(ug/L)	(ug/L)
			MCLs	600	-	5	70	80	5	-	200	5	5	0.5	-	5	5	6	10	6	0.5
			Regulatory Date	9/8/94	-	4/4/89	9/8/94	6/17/06	2/25/89	-	2/25/89	9/8/94	6/24/90	4/4/89	-	5/89	2/25/89	9/8/94	9/8/94	2/25/89	4/4/89
LB-6		LB	9/19/07	<2.5	<2.5	<2.5	<2.5	<2.5	<5.0	<2.5	<2.5	<2.5	<2.5	<2.5	<2.5	<2.5	**1,200**	**120**	<2.5	<2.5	**7.1**
LB-6		LB	11/14/07	<2.5	<2.5	<2.5	<2.5	<2.5	<5.0	<2.5	<2.5	<2.5	<2.5	<2.5	<2.5	3.5	**1,600**	3.9	<2.5	<2.5	<2.5
LB-6		LB	2/7/08	<2.5	<2.5	<2.5	<2.5	<2.5	<5.0	<2.5	<2.5	<2.5	<2.5	<2.5	<2.5	<2.5	**1,600**	<2.5	<2.5	<2.5	<2.5
LB-6		LB	5/6/08	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	**1,700**	<5.0	<5.0	<5.0	<5.0
LB-6		LB	2/5/09	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	**1,400**	<5.0	<5.0	<5.0	<5.0
LB-6		LB	8/5/09	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	**1,200**	<5.0	<5.0	<5.0	<5.0
LB-6		LB	2/4/10	<3.0	<3.0	<3.0	<3.0	<3.0	<5.0	<3.0	<3.0	<3.0	<3.0	<3.0	<3.0	<3.0	**900**	<3.0	<3.0	<3.0	<3.0
LB-6		LB	8/4/10	<3.0	<3.0	<3.0	<3.0	<3.0	<5.0	<3.0	<3.0	<3.0	<3.0	<3.0	<3.0	<3.0	**1,100**	4.4	<3.0	<3.0	<3.0
LB-6		LB	2/8/11	<2.0	<2.0	<2.0	<2.0	<2.0	<5.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	**380**	**90**	10	<2.0	**15**
LB-6	RDIP	LB	2/8/12	<0.50	<0.50	<0.50	<0.50	<0.50	<5.0	<0.50	<0.50	<0.50	<0.50	<0.50	1.1	<0.50	**8.9**	**25**	**13**	<0.50	**17**
LB-6	O&M	LB	2/13/13	<0.50	<0.50	<0.50	<0.50	<0.50	<5.0	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	2.8	3.0	<0.50	**3.5**
LB-6	O&M	LB	2/26/14	<0.50	<0.50	<0.50	<0.50	<0.50	<5.0	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	0.55	2.0	1.2	<0.50	**2.0**
LB-6	O&M	LB	6/9/15	<0.50	<0.50	<0.50	<0.50	<0.50	<5.0	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	0.61	4.9	<0.50	<0.50	**9.5**
LB-6	O&M	LB	2/24/16	<0.50	<0.50	<0.50	<0.50	<0.50	<5.0	<2.0	<0.50	<0.50	<0.50	<0.50	<2.0	<0.50	0.65	**11.6**	<0.50	<0.50	**3.6**
LB-6	O&M	LB	2/14/18	<0.50	<0.50	<0.50	<0.50	<0.50	<5.0	<0.50	<0.50	<0.50	<0.50	<0.50	<2.0	<0.50	0.826	2.92	<0.50	<0.50	**8.13**
LB-6	O&M	LB	2/14/19	<0.50	<0.50	<0.50	<0.50	<0.50	<5.0	<0.50 J4	<0.50	<0.50	<0.50	<0.50	<2.0	<0.50	0.507	1.87	<0.50	<0.50	**1.24**
LB-6	O&M	LB	3/11/20	<0.50	<0.50	<0.50	<0.50	<0.50	<2.5	<1.25	<0.50	<0.50	<0.50	<0.50	<2.5	<0.50	<0.50	3.52	<0.50	<0.50	**8.63**
LMW-2		B	9/23/98	<5.0	<5.0	<5.0	<5.0	36	<50	<10	<5.0	<5.0	<5.0	<5.0	<10	<5.0	**550**	12	<5.0	<5.0	<5.0
LMW-2		B	12/9/98	<25	<25	<25	<25	<150	<250	<50	<25	<25	<25	<25	<50	<25	**1,700**	<25	<25	<25	<25
LMW-2		B	3/22/99	<25	<25	<25	<25	<150	<250	<50	<25	<25	<25	<25	<50	<25	**3,400**	<25	<25	<25	<25
LMW-2		B	6/23/99	<25	<25	<25	<25	<25	<250	<50	<25	<25	<25	<25	<50	<25	**6,100**	<25	<25	<25	<25
LMW-2		B	12/18/99	<50	<50	<50	<50	<50	<500	<100	<50	<50	<50	<50	<100	<50	**4,700**	<50	<50	<50	<50
LMW-2		B	3/15/00	<50	<50	<50	<50	<50	<1,000	<100	<50	<50	<50	<50	<100	<50	**5,400**	<50	<50	<50	<50
LMW-2		B	9/18/00	<50	<50	<50	<50	<50	<500	<100	<50	<50	<50	<50	<100	<50	**4,900**	<50	<50	<50	<50
LMW-2		B	3/14/01	<100	<100	<100	<100	<100	<1,000	<200	<100	<100	<100	<100	<200	<100	**5,600**	<100	<100	<100	<100
LMW-2		B	9/26/01	<50	<50	<50	<50	<100	<500	<100	<50	<50	<50	<50	<100	<50	**5,500**	<50	<50	<50	<50
LMW-2		B	3/26/02	<250	<250	<250	<250	<250	<2,500	<500	<250	<250	<250	<250	<500	<250	**6,300**	<250	<250	<250	<250
LMW-2		B	10/3/02	<250	<250	<250	<250	<250	<2,500	<500	<250	<250	<250	<250	<500	<250	**6,500**	<250	<250	<250	<250
LMW-2 (2)		B	3/27/03	<50	<50	<50	<50	<50	<500	<100	<50	<50	<50	<50	<100	<50	**5,400**	<50	<50	<50	<50
LMW-2		B	6/26/03	<2.5	<2.5	<2.5	<2.5	<2.5	<25	<2.5	<2.5	<2.5	<2.5	<2.5	<2.5	2.8	**6,300**	**24**	<2.5	<2.5	**7.4**
LMW-2	2	B	9/24/03	<25	<25	<25	<25	<25	<250	<25	<25	<25	<25	<25	<25	<25	**4,300**	**37**	<25	<25	<25
LMW-2		B	12/16/03	<3.0	<3.0	<3.0	<3.0	<3.0	<50	<3.0	<3.0	<3.0	<3.0	<3.0	<3.0	<3.0	**5,100**	**27**	<3.0	<3.0	**5.9**
LMW-2		B	3/10/04	<25	<25	<25	<25	<25	<250	<25	<25	<25	<25	<25	<25	<25	**6,300**	**32**	<25	<25	<25
LMW-2		B	5/20/04	<2.5	<2.5	<2.5	<2.5	<2.5	<25	<2.5	<2.5	<2.5	<2.5	<2.5	<2.5	<2.5	**4,600**	**19**	<2.5	<2.5	**4.9**
LMW-2		B	9/29/04	<3.0	<3.0	<3.0	<3.0	<3.0	<50	<3.0	<3.0	<3.0	<3.0	<3.0	<3.0	<3.0	**6,300**	**32**	<3.0	<3.0	**6.1**
LMW-2		B	12/8/04	<20	<20	<20	<20	<20	<200	<20	<20	<20	<20	<20	<20	<20	**5,000**	**25**	<20	<20	<20

Table 5D
Groundwater Monitoring Volatile Organic Compounds Data
Breezeway Sump
Former Kaiser Aerotech Facilities
San Leandro, California

Well ID	Notes	GW Zone	Sample Date	1,2-DCB	1,3-DCB	1,4-DCB	Chloro-benzene	Chloroform	Methylene Chloride	Chloro-methane	1,1,1-TCA	1,1,2-TCA	1,1-DCA	1,2-DCA	Chloro-ethane	PCE	TCE	cis-1,2-DCE	trans-1,2-DCE	1,1-DCE	Vinyl Chloride
				8260*	8260*	8260*	8260*	8260*	8260*	8260*	8260*	8260*	8260*	8260*	8260*	8260*	8260*	8260*	8260*	8260*	8260*
				(ug/L)	(ug/L)	(ug/L)	(ug/L)	(ug/L)	(ug/L)	(ug/L)	(ug/L)	(ug/L)	(ug/L)	(ug/L)	(ug/L)	(ug/L)	(ug/L)	(ug/L)	(ug/L)	(ug/L)	(ug/L)
			MCLs	600	-	5	70	80	5	-	200	5	5	0.5	-	5	5	6	10	6	0.5
			Regulatory Date	9/8/94	-	4/4/89	9/8/94	6/17/06	2/25/89	-	2/25/89	9/8/94	6/24/90	4/4/89	-	5/89	2/25/89	9/8/94	9/8/94	2/25/89	4/4/89
LMW-2		B	3/8/05	<15	<15	<15	<15	<15	<15	<15	<15	<15	<15	<15	<15	<15	**6,600**	**30**	<15	<15	<15
LMW-2		B	6/14/05	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	**6,100**	**25**	<5.0	<5.0	**6.2**
LMW-2		B	7/19/05	<25	<25	<25	<25	<25	<25	<25	<25	<25	<25	<25	<25	<25	**5,000**	<25	<25	<25	<25
LMW-2		B	8/29/05	<25	<25	<25	<25	<25	<25	<25	<25	<25	<25	<25	<25	<25	**6,000**	**31**	<25	<25	<25
LMW-2		B	12/14/05	<0.90	<0.90	<0.90	<0.90	<0.90	<5.0	<0.90	<0.90	1.8	<0.90	<0.90	<0.90	2.4	**4,600**	**29**	1.3	<0.90	**6.7**
LMW-2		B	3/15/06	< 8.0	< 8.0	< 8.0	< 8.0	< 8.0	< 8.0	< 8.0	< 8.0	< 8.0	< 8.0	< 8.0	< 8.0	< 8.0	**4,200**	**27**	< 8.0	< 8.0	< 8.0
LMW-2		B	6/14/06	<9.0	<9.0	<9.0	<9.0	<9.0	<9.0	<9.0	<9.0	<9.0	<9.0	<9.0	<9.0	<9.0	**2,500**	**18**	<9.0	<9.0	<9.0
LMW-2		B	9/21/06	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	**3,200**	**24**	<5.0	<5.0	<5.0
LMW-2		B	1/31/07	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	**4,100**	**32**	<5.0	<5.0	**7.4**
LMW-92 (d)		B	1/31/07	<5.0	<5.0	<5.0	<9.0	<9.0	<9.0	<9.0	<9.0	<9.0	<9.0	<9.0	<9.0	<9.0	**4,200**	**33**	<9.0	<9.0	**11**
LMW-2		B	5/10/07	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	**4,800**	**43**	<5.0	<5.0	**6.4**
LMW-92 (d)		B	5/10/07	<15	<15	<15	<15	<15	<15	<15	<15	<15	<15	<15	<15	<15	**5,600**	**51**	<15	<15	<15
LMW-2		B	8/15/07	<9.0	<9.0	<9.0	<9.0	<9.0	<9.0	<9.0	<9.0	<9.0	<9.0	<9.0	<9.0	<9.0	**5,200**	**41**	<9.0	<9.0	<9.0
LMW-2 (d)		B	8/15/07	<15	<15	<15	<15	<15	<15	<15	<15	<15	<15	<15	<15	<15	**5,500**	**38**	<15	<15	<15
LMW-2		B	11/14/07	<9.0	<9.0	<9.0	<9.0	<9.0	<9.0	<9.0	<9.0	<9.0	<9.0	<9.0	<9.0	<9.0	**4,400**	**42**	<9.0	<9.0	**9.0**
LMW-2 (d)		B	11/14/07	<9.0	<9.0	<9.0	<9.0	<9.0	<9.0	<9.0	<9.0	<9.0	<9.0	<9.0	<9.0	<9.0	**4,300**	**36**	<9.0	<9.0	**11**
LMW-2		B	2/4/08	<15	<15	<15	<15	<15	<15	<15	<15	<15	<15	<15	<15	<15	**4,100**	**26**	<15	<15	<15
LMW-2 (d)		B	2/4/08	<15	<15	<15	<15	<15	<15	<15	<15	<15	<15	<15	<15	<15	**3,900**	**29**	<15	<15	<15
LMW-2		B	8/5/08	<9.0	<9.0	<9.0	<9.0	<9.0	<9.0	<9.0	<9.0	<9.0	<9.0	<9.0	<9.0	<9.0	**5,200**	**30**	<9.0	<9.0	<9.0
LMW-2 (d)		B	8/5/08	<25	<25	<25	<25	<25	<25	<25	<25	<25	<25	<25	<25	<25	**5,100**	**34**	<25	<25	<25
LMW-2		B	2/4/09	<15	<15	<15	<15	<15	<15	<15	<15	<15	<15	<15	<15	<15	**4,900**	**40**	<15	<15	<15
LMW-2 (d)		B	2/4/09	<15	<15	<15	<15	<15	<15	<15	<15	<15	<15	<15	<15	<15	**4,800**	**35**	<15	<15	<15
LMW-2		B	8/5/09	<15	<15	<15	<15	<15	<15	<15	<15	<15	<15	<15	<15	<15	**4,900**	**37**	<15	<15	<15
LMW-2 (d)		B	8/5/09	<15	<15	<15	<15	<15	<15	<15	<15	<15	<15	<15	<15	<15	**4,800**	**38**	<15	<15	<15
LMW-2		B	2/4/10	<15	<15	<15	<15	<15	<15	<15	<15	<15	<15	<15	<15	<15	**4,700**	**40**	<15	<15	<15
LMW-2 (d)	DUP-3	B	2/4/10	<15	<15	<15	<15	<15	<15	<15	<15	<15	<15	<15	<15	<15	**4,800**	**35**	<15	<15	<15
LMW-2	RDIP	B	8/3/10	<9.0	<9.0	<9.0	<9.0	<9.0	<9.0	<9.0	<9.0	<9.0	<9.0	<9.0	<9.0	<9.0	**2,900**	**370**	<9.0	<9.0	**15**
LMW-2 (d)	RDIP, DUP-1	B	8/3/10	<3.0	<3.0	<3.0	<3.0	<3.0	<5.0	<15	<3.0	<3.0	<3.0	<3.0	<15	<3.0	**3,500**	**380**	<3.0	<3.0	**14**
LMW-2	RDIP	B	2/8/11	<7.0	<7.0	<7.0	<7.0	<7.0	<7.0	<7.0	<7.0	<7.0	<7.0	<7.0	<7.0	<7.0	**2,200**	**710**	**11**	<7.0	**49**
LMW-2 (d)	RDIP, DUP-1	B	2/8/11	<7.0	<7.0	<7.0	<7.0	<7.0	<7.0	<7.0	<7.0	<7.0	<7.0	<7.0	<7.0	<7.0	**2,000**	**770**	**14**	<7.0	**54**
LMW-2	RDIP	B	2/8/12	<0.50	<0.50	<0.50	<0.50	<0.50	<5.0	<0.50	<0.50	<0.50	<0.50	0.62	<0.50	<0.50	**38**	**69**	8.9	<0.50	**33**
LMW-2	O&M	B	2/12/13	<0.50	<0.50	<0.50	<0.50	<0.50	<5.0	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	**62**	**94**	2.7	<0.50	**80**
LMW-2	O&M	B	2/26/14	<0.50	<0.50	<0.50	<0.50	<0.50	<5.0	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	**5.8**	**280**	5.1	<0.50	**210**
LMW-2	O&M	B	6/9/15	<0.50	<0.50	<0.50	<0.50	<0.50	<5.0	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	**7.2**	**49.3**	3.6	<0.50	**881**
LMW-2	O&M	B	2/24/16	<0.50	<0.50	<0.50	<0.50	<0.50	<5.0	<2.0	<0.50	<0.50	<0.50	<0.50	<2.0	<0.50	**111**	**168**	1.4	0.76	**29.5**
LMW-2	O&M	B	2/15/17	<0.50	<0.50	<0.50	<0.50	<0.50	<5.0	<0.50	<0.50	<0.50	<0.50	<0.50	<2.0	<0.50	**165**	**108**	1.1	1.0	**53**
LMW-2	O&M, DUP-6	B	2/15/17	<0.50	<0.50	<0.50	<0.50	<0.50	<5.0	<2.0	<0.50	<0.50	<0.50	<0.50	<2.0	<0.50	**519**	**241**	2.6	2.1	**91.4**

Table 5D
Groundwater Monitoring Volatile Organic Compounds Data
Breezeway Sump
Former Kaiser Aerotech Facilities
San Leandro, California

Well ID	Notes	GW Zone	Sample Date	1,2-DCB	1,3-DCB	1,4-DCB	Chloro-benzene	Chloroform	Methylene Chloride	Chloro-methane	1,1,1-TCA	1,1,2-TCA	1,1-DCA	1,2-DCA	Chloro-ethane	PCE	TCE	cis-1,2-DCE	trans-1,2-DCE	1,1-DCE	Vinyl Chloride
				8260*	8260*	8260*	8260*	8260*	8260*	8260*	8260*	8260*	8260*	8260*	8260*	8260*	8260*	8260*	8260*	8260*	8260*
				(ug/L)	(ug/L)	(ug/L)	(ug/L)	(ug/L)	(ug/L)	(ug/L)	(ug/L)	(ug/L)	(ug/L)	(ug/L)	(ug/L)	(ug/L)	(ug/L)	(ug/L)	(ug/L)	(ug/L)	(ug/L)
			MCLs	600	-	5	70	80	5	-	200	5	5	0.5	-	5	5	6	10	6	0.5
			Regulatory Date	9/8/94	-	4/4/89	9/8/94	6/17/06	2/25/89	-	2/25/89	9/8/94	6/24/90	4/4/89	-	5/89	2/25/89	9/8/94	9/8/94	2/25/89	4/4/89
LMW-2	O&M	B	2/14/18	<10	<10	<10	<10	<10	<100	<10	<10	<10	<10	<10	<40	<10	**536**	**174**	<10	<10	**49**
LMW-2	O&M, DUP-3	B	2/14/18	<2.5	<2.5	<2.5	<2.5	<2.5	<25	<2.5	<2.5	<2.5	<2.5	<2.5	<10	<2.5	**997**	**260**	4.09	2.67	**58.3**
LMW-2	O&M	B	2/12/19	<0.50	<0.50	<0.50	<0.50	<0.50	<5.0	<0.50	<0.50	<0.50	<0.50	<0.50	<2.0	<0.50	0.588	**45.6**	1.76	<0.50	**31.3**
LMW-2	O&M, DUP	B	2/12/19	<0.50	<0.50	<0.50	<0.50	<0.50	<5.0	<0.50	<0.50	<0.50	<0.50	<0.50	<2.0	<0.50	0.536	**44.3**	1.75	<0.50	**30.2**
LMW-2	O&M	B	3/11/20	<0.50	<0.50	<0.50	<0.50	<0.50	<2.5	<1.25	<0.50	<0.50	<0.50	<0.50	<2.5	<0.50	**9.58**	**59.3**	1.00	<0.50	**49.5**

Table 5E
Groundwater Monitoring Volatile Organic Compounds Data
Former Oil/Solvent Storage Area
Former Kaiser Aerotech Facilities
San Leandro, California

Well ID	Notes	GW Zone	Sample Date	1,2-DCB	1,3-DCB	1,4-DCB	Chloro-benzene	Chloro-form	Methylene Chloride	Chloro-methane	1,1,1-TCA	1,1,2-TCA	1,1-DCA	1,2-DCA	Chloro-ethane	PCE	TCE	cis-1,2-DCE	trans-1,2-DCE	1,1-DCE	Vinyl Chloride
				8260*	8260*	8260*	8260*	8260*	8260*	8260*	8260*	8260*	8260*	8260*	8260*	8260*	8260*	8260*	8260*	8260*	8260*
				(ug/L)	(ug/L)	(ug/L)	(ug/L)	(ug/L)	(ug/L)	(ug/L)	(ug/L)	(ug/L)	(ug/L)	(ug/L)	(ug/L)	(ug/L)	(ug/L)	(ug/L)	(ug/L)	(ug/L)	(ug/L)
			MCLs	600	-	5	70	80	5	-	200	5	5	0.5	-	5	5	6	10	6	0.5
			Regulatory Date	9/8/94	-	4/4/89	9/8/94	6/17/06	2/25/89	-	2/25/89	9/8/94	6/24/90	4/4/89	-	5/89	2/25/89	9/8/94	9/8/94	2/25/89	4/4/89
MW-7		A	10/31/96	<50	<50	<50	<50	<50	<50	<50	<50	<50	<50	<50	<50	<50	**2,200**	**640**	<50	<50	<50
MW-7		A	3/21/97	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	18	<5.0	**12**	<5.0	<5.0	<5.0	**320**	**150**	<5.0	<5.0	<5.0
MW-7		A	6/25/97	<6.0	<6.0	<6.0	<6.0	<6.0	<20	<20	13	<6.0	**10**	<6.0	<20	<6.0	**240**	**100**	<6.0	<6.0	<20
MW-7		A	9/22/97	<5.0	<5.0	<5.0	<5.0	<5.0	**7.6**	<5.0	14	<5.0	**12**	<5.0	<5.0	<5.0	**210**	**120**	<5.0	<5.0	<5.0
MW-7		A	12/18/97	<5.0	<5.0	<5.0	<5.0	<5.0	<25	<5.0	8.7	<5.0	**9.9**	<5.0	<5.0	<5.0	**29**	**180**	<5.0	<5.0	**7.9**
MW-7		A	3/24/98	<5.0	<5.0	<5.0	<5.0	<30	<50	<10	6.9	<5.0	**9.6**	<5.0	<10	<5.0	**9.0**	**45**	<5.0	<5.0	**14**
MW-7		A	6/17/98	<0.50	<0.50	<0.50	<0.50	<3.0	<5.0	<1.0	6.4	<0.50	**12**	<0.50	<1.0	<0.50	**8.6**	**25**	<0.50	<0.50	**10**
MW-7		A	9/22/98	<2.5	<2.5	<2.5	<2.5	<2.5	<25	<5.0	5.9	<2.5	**12**	<2.5	<5.0	<2.5	**17**	**160**	<2.5	<2.5	**270**
MW-7		A	12/10/98	<2.5	<2.5	<2.5	<2.5	<15	<25	<5.0	<2.5	<2.5	<2.5	<2.5	<5.0	<2.5	3.5	5.0	<2.5	<2.5	<2.5
MW-7		A	3/23/99	<0.50	<0.50	<0.50	<0.50	<3.0	<5.0	<1.0	3.8	<0.50	**13**	<0.50	<1.0	<0.50	**19**	**26**	<0.50	<0.50	**6.3**
MW-7		A	6/24/99	<0.50	<0.50	<0.50	<0.50	<0.50	<5.0	<1.0	2.0	<0.50	**7.4**	<0.50	<1.0	<0.50	**7.8**	**12**	<0.50	<0.50	**20**
MW-7		A	12/15/99	<0.50	<0.50	<0.50	<0.50	<0.50	<5.0	<1.0	4.0	<0.50	**22**	<0.50	<1.0	<0.50	**16**	**52**	<0.50	<0.50	**14**
MW-7	PT ISCO Mn	A	3/10/00	<0.50	<0.50	<0.50	<0.50	<0.50	<5.0	<1.0	3.3	<0.50	4.6	<0.50	<1.0	<0.50	**8.3**	**12**	<0.50	<0.50	**1.5**
MW-7	PT ISCO Mn	A	3/15/00	<0.50	<0.50	<0.50	<0.50	<0.50	<10	<1.0	8.0	<0.50	**9.5**	<0.50	<1.0	<0.50	**13**	**24**	<0.50	<0.50	<0.50
MW-7	PT ISCO Mn	A	3/27/00	<0.50	<0.50	<0.50	<0.50	<0.50	<5.0	<1.0	3.3	<0.50	**5.1**	<0.50	<1.0	<0.50	**7.9**	**12**	<0.50	<0.50	<0.50
MW-7		A	9/19/00	<0.50	<0.50	<0.50	<0.50	<0.50	<5.0	<1.0	2.5	<0.50	**16**	<0.50	<1.0	<0.50	**15**	**49**	<0.50	<0.50	**16**
MW-7		A	3/14/01	<0.50	<0.50	<0.50	<0.50	<0.50	<5.0	<1.0	<0.50	<0.50	1.7	<0.50	<1.0	<0.50	3.2	5.0	<0.50	<0.50	**2.7**
MW-7		A	9/26/01	<0.50	<0.50	<0.50	<0.50	<1.0	<5.0	<1.0	<0.50	<0.50	**8.2**	<0.50	<1.0	<0.50	**6.8**	**33**	<0.50	<0.50	**16**
MW-7		A	10/3/02	<0.50	<0.50	<0.50	<0.50	<0.50	<5.0	<1.0	<0.50	<0.50	4.8	<0.50	<1.0	<0.50	2.3	**12**	<0.50	<0.50	**6.1**
MW-7		A	3/26/03	<0.50	<0.50	<0.50	<0.50	<0.50	<5.0	<1.0	<0.50	<0.50	0.74	<0.50	<1.0	<0.50	1.1	0.88	<0.50	<0.50	**0.71**
MW-7		A	9/23/03	<0.50	<0.50	<0.50	<0.50	<0.50	<5.0	<0.50	<0.50	<0.50	2.7	<0.50	<0.50	<0.50	0.96	3.2	<0.50	<0.50	**10**
MW-7		A	3/9/04	<0.50	<0.50	<0.50	<0.50	<0.50	<5.0	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	0.77	<0.50	<0.50	<0.50	**0.95**
MW-7		A	9/29/04	<0.50	<0.50	<0.50	<0.50	<0.50	<5.0	<0.50	<0.50	<0.50	2.0	<0.50	<0.50	<0.50	2.0	5.4	<0.50	<0.50	**22**
MW-7		A	3/9/05	<0.50	<0.50	<0.50	<0.50	<0.50	<5.0	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	1.3	<0.50	<0.50	<0.50	<0.50
MW-7		A	9/14/05	<0.50	<0.50	<0.50	<0.50	<0.50	<5.0	<0.50	<0.50	<0.50	1.9	<0.50	<0.50	<0.50	1.0	**11**	<0.50	<0.50	**18**
MW-7		A	3/15/06	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 5.0	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50
MW-7		A	9/20/06	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 5.0	< 0.50	< 0.50	< 0.50	3.8	< 0.50	< 0.50	< 0.50	1.1	**19**	< 0.50	< 0.50	**52**
MW-7		A	2/1/07	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 5.0	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	2.0	4.5	< 0.50	< 0.50	**7.4**
MW-7		A	8/15/07	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 5.0	< 0.50	< 0.50	< 0.50	0.53	< 0.50	< 0.50	< 0.50	1.2	**9.2**	< 0.50	< 0.50	**28**
MW-7		A	2/5/08	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 5.0	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	**7.9**	0.91	< 0.50	< 0.50	**0.56**
MW-7		A	2/4/09	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 5.0	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	**5.7**	**16**	< 0.50	< 0.50	**11**
MW-7		A	2/2/10	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 5.0	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	0.72	< 0.50	< 0.50	0.51	< 0.50	< 0.50	**1.8**
MW-7		A	2/9/11	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 5.0	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	0.76	< 0.50	< 0.50	0.62	< 0.50	< 0.50	**1.8**
MW-7	O&M	A	2/12/13	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 5.0	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	**2.9**
MW-7	O&M	A	6/11/15	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 5.0	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	0.67	< 0.50	< 0.50	**4.6**
MW-7	O&M	A	2/13/17	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 5.0	<2.0	< 0.50	< 0.50	< 0.50	< 0.50	<2.0	< 0.50	< 0.50	<0.50	< 0.50	< 0.50	<0.50

Table 5E
Groundwater Monitoring Volatile Organic Compounds Data
Former Oil/Solvent Storage Area
Former Kaiser Aerotech Facilities
San Leandro, California

Well ID	Notes	GW Zone	Sample Date	1,2-DCB	1,3-DCB	1,4-DCB	Chloro-benzene	Chloro-form	Methylene Chloride	Chloro-methane	1,1,1-TCA	1,1,2-TCA	1,1-DCA	1,2-DCA	Chloro-ethane	PCE	TCE	cis-1,2-DCE	trans-1,2-DCE	1,1-DCE	Vinyl Chloride
				8260*	8260*	8260*	8260*	8260*	8260*	8260*	8260*	8260*	8260*	8260*	8260*	8260*	8260*	8260*	8260*	8260*	8260*
				(ug/L)	(ug/L)	(ug/L)	(ug/L)	(ug/L)	(ug/L)	(ug/L)	(ug/L)	(ug/L)	(ug/L)	(ug/L)	(ug/L)	(ug/L)	(ug/L)	(ug/L)	(ug/L)	(ug/L)	(ug/L)
			MCLs	600	-	5	70	80	5	-	200	5	5	0.5	-	5	5	6	10	6	0.5
			Regulatory Date	9/8/94	-	4/4/89	9/8/94	6/17/06	2/25/89	-	2/25/89	9/8/94	6/24/90	4/4/89	-	5/89	2/25/89	9/8/94	9/8/94	2/25/89	4/4/89
MW-7	O&M	A	2/12/19	<0.50	<0.50	<0.50	<0.50	<0.50	<5.0	<0.50	<0.50	<0.50	<0.50	<0.50	<2.0	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50
LMW-4		B	9/22/98	<1,000	<1,000	<1,000	<1,000	<1,000	<10,000	<2,000	<1,000	<1,000	<1,000	<1,000	<2,000	<1,000	**86,000**	**6,200**	<1,000	<1,000	<1,000
LMW-4(d)		B	9/22/98	<1,000	<1,000	<1,000	<1,000	<1,000	<10,000	<2,000	<1,000	<1,000	<1,000	<1,000	<2,000	<1,000	**110,000**	**2,800**	<1,000	**1,200**	<1,000
LMW-4	PT GWE	B	12/10/98	<50	<50	<50	<50	<300	<500	<100	<50	<50	<50	<50	<100	<50	**8,100**	**3,400**	<50	<50	<50
LMW-4(d)	PT GWE	B	12/10/98	<50	<50	<50	<50	<300	<500	<100	<50	<50	<50	<50	<100	<50	**9,500**	**3,700**	<50	<50	<50
LMW-4		B	3/22/99	<250	<250	<250	<250	<1,500	<2,500	<500	<250	<250	<250	<250	<500	<250	**89,000**	**20,000**	<250	<250	<250
LMW-4(d)		B	3/22/99	<250	<250	<250	<250	<1,500	<2,500	<500	<250	<250	<250	<250	<500	<250	**88,000**	**21,000**	<250	<250	<250
LMW-4		B	6/24/99	<500	<500	<500	<500	<500	<5,000	<1,000	<500	<500	<500	<500	<1,000	<500	**71,000**	**14,000**	<500	<500	<500
LMW-4(d)		B	6/24/99	<500	<500	<500	<500	<500	<5,000	<1,000	<500	<500	<500	<500	<1,000	<500	**71,000**	**15,000**	<500	<500	<500
LMW-4		B	12/15/99	<1,000	<1,000	<1,000	<1,000	<1,000	<10,000	<2,000	<1,000	<1,000	<1,000	<1,000	<2,000	<1,000	**48,000**	**21,000**	<1,000	<1,000	<1,000
LMW-4(d)		B	12/15/99	<1,000	<1,000	<1,000	<1,000	<1,000	<10,000	<2,000	<1,000	<1,000	<1,000	<1,000	<2,000	<1,000	**45,000**	**21,000**	<1,000	<1,000	<1,000
LMW-4	PT ISCO Mn	B	3/10/00	<500	<500	<500	<500	<500	<5,000	<1,000	<500	<500	<500	<500	<1,000	<500	**33,000**	**14,000**	<500	<500	<500
LMW-4	PT ISCO Mn	B	3/15/00	<500	<500	<500	<500	<500	<10,000	<1,000	<500	<500	<500	<500	<1,000	<500	**43,000**	**17,000**	<500	<500	<500
LMW-4(d)	PT ISCO Mn	B	3/15/00	<500	<500	<500	<500	<500	<10,000	<1,000	<500	<500	<500	<500	<1,000	<500	**52,000**	**22,000**	<500	<500	<500
LMW-4	PT ISCO Mn	B	3/27/00	<100	<100	<100	<100	<100	<1,000	<200	<100	<100	<100	<100	<200	<100	**36,000**	**20,000**	<100	**200**	**510**
LMW-4		B	9/19/00	<500	<500	<500	<500	<500	<5,000	<1,000	<500	<500	<500	<500	<1,000	<500	**38,000**	**24,000**	<500	<500	**1,400**
LMW-4(d)		B	9/19/00	<500	<500	<500	<500	<500	<5,000	<1,000	<500	<500	<500	<500	<1,000	<500	**34,000**	**21,000**	<500	<500	**1,100**
LMW-4		B	3/14/01	<500	<500	<500	<500	<500	<5,000	<1,000	<500	<500	<500	<500	<1,000	<500	**38,000**	**20,000**	<500	<500	**1,100**
LMW-4(d)		B	3/14/01	<500	<500	<500	<500	<500	<5,000	<1,000	<500	<500	<500	<500	<1,000	<500	**31,000**	**19,000**	<500	<500	**780**
LMW-4		B	9/26/01	<500	<500	<500	<500	<1,000	<5,000	<1,000	<500	<500	<500	<500	<1,000	<500	**29,000**	**14,000**	<500	<500	**920**
LMW-4(d)		B	9/26/01	<500	<500	<500	<500	<500	<5,000	<1,000	<500	<500	<500	<500	<1,000	<500	**25,000**	**9,900**	<500	<500	<500
LMW-4		B	3/26/02	<250	<250	<250	<250	<250	<2,500	<500	<250	<250	<250	<250	<500	<250	**28,000**	**11,000**	<250	<250	**390**
LMW-4(d)		B	3/26/02	<250	<250	<250	<250	<250	<2,500	<500	<250	<250	<250	<250	<500	<250	**26,000**	**10,000**	<250	<250	**370**
LMW-4		B	10/3/02	<250	<250	<250	<250	<250	<2,500	<500	<250	<250	<250	<250	<500	<250	**22,000**	**11,000**	<250	<250	<250
LMW-4		B	3/26/03	<250	<250	<250	<250	<250	<2,500	<500	<250	<250	<250	<250	<500	<250	**18,000**	**10,000**	<250	<250	**960**
LMW-4		B	9/24/03	<50	<50	<50	<50	<50	<500	<50	<50	<50	<50	<50	<50	<50	**12,000**	**9,200**	**58**	**74**	**850**
LMW-4		B	3/9/04	<25	<25	<25	<25	<25	<250	<25	<25	<25	<25	<25	<25	<25	**13,000**	**6,500**	**36**	**43**	**990**
LMW-4		B	2/1/07	<20	<20	<20	<20	<20	<20	<20	<20	<20	<20	<20	<20	<20	**7,900**	**4,800**	**48**	**47**	**610**
LMW-4		B	2/6/08	<25	<25	<25	<25	<25	<25	<25	<25	<25	<25	<25	<25	<25	**6,300**	**3,000**	**60**	**31**	**190**
LMW-4	RDIP	B	8/6/08	<25	<25	<25	<25	<25	<25	<25	<25	<25	<25	<25	<25	<25	**1,200**	**8,000**	**62**	**26**	**830**
LMW-4	RDIP	B	11/6/08	<15	<15	<15	<15	<15	<15	<15	<15	<15	<15	<15	<15	<15	**560**	**3,000**	**43**	<15	**320**
LMW-4 (d)	RDIP	B	11/6/08	<0.50	<0.50	<0.50	<0.50	<0.50	<5.0	<0.50	<0.50	**0.53**	**3.0**	<0.50	<0.50	<0.50	**530**	**2,900**	**41**	3.6	**310**
LMW-4	RDIP	B	2/4/09	<25	<25	<25	<25	<25	<25	<25	<25	<25	<25	<25	<25	<25	**760**	**6,600**	**49**	<25	**360**
LMW-4 (d)	RDIP	B	2/4/09	<15	<15	<15	<15	<15	<15	<15	<15	<15	<15	<15	<15	<15	**720**	**5,500**	**49**	<15	**330**
LMW-4	RDIP	B	8/24/09	<25	<25	<25	<25	<25	<25	<25	<25	<25	<25	<25	<25	<25	**190**	**5,700**	**48**	<25	**740**

Table 5E
Groundwater Monitoring Volatile Organic Compounds Data
Former Oil/Solvent Storage Area
Former Kaiser Aerotech Facilities
San Leandro, California

Well ID	Notes	GW Zone	Sample Date	1,2-DCB	1,3-DCB	1,4-DCB	Chloro-benzene	Chloro-form	Methylene Chloride	Chloro-methane	1,1,1-TCA	1,1,2-TCA	1,1-DCA	1,2-DCA	Chloro-ethane	PCE	TCE	cis-1,2-DCE	trans-1,2-DCE	1,1-DCE	Vinyl Chloride
				8260*	8260*	8260*	8260*	8260*	8260*	8260*	8260*	8260*	8260*	8260*	8260*	8260*	8260*	8260*	8260*	8260*	8260*
				(ug/L)	(ug/L)	(ug/L)	(ug/L)	(ug/L)	(ug/L)	(ug/L)	(ug/L)	(ug/L)	(ug/L)	(ug/L)	(ug/L)	(ug/L)	(ug/L)	(ug/L)	(ug/L)	(ug/L)	(ug/L)
			MCLs	600	-	5	70	80	5	-	200	5	5	0.5	-	5	5	6	10	6	0.5
			Regulatory Date	9/8/94	-	4/4/89	9/8/94	6/17/06	2/25/89	-	2/25/89	9/8/94	6/24/90	4/4/89	-	5/89	2/25/89	9/8/94	9/8/94	2/25/89	4/4/89
LMW-4 (d)	RDIP	B	8/24/09	<15	<15	<15	<15	<15	<15	<15	<15	<15	<15	<15	<15	<15	**210**	**6,400**	**55**	<15	**790**
LMW-4	RDIP	B	2/4/10	<7.0	<7.0	<7.0	<7.0	<7.0	<7.0	<7.0	<7.0	<7.0	<7.0	<7.0	<7.0	<7.0	**27**	**2,200**	**25**	<7.0	**150**
LMW-4 (d)	RDIP	B	2/4/10	<7.0	<7.0	<7.0	<7.0	<7.0	<7.0	<7.0	<7.0	<7.0	<7.0	<7.0	<7.0	<7.0	**31**	**2,300**	**25**	<7.0	**170**
LMW-4	RDIP	B	8/4/10	<6.0	<6.0	<6.0	<6.0	<6.0	<6.0	<6.0	<6.0	<6.0	<6.0	<6.0	<6.0	<6.0	**6.0**	**4,300**	**27**	<6.0	**300**
LMW-4	RDIP	B	2/9/11	<0.50	<0.50	<0.50	<0.50	<0.50	<5.0	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	0.68	4.8	2.0	<0.50	**1.5**
LMW-4	RDIP, DUP	B	2/9/11	<0.50	<0.50	<0.50	<0.50	<0.50	<5.0	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	0.66	5.0	2.2	<0.50	**1.5**
LMW-4	RDIP	B	2/8/12	<0.50	<0.50	<0.50	<0.50	<0.50	<5.0	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	1.4	0.75	<0.50	**0.55**
LMW-4	O&M	B	2/12/13	<0.50	<0.50	<0.50	<0.50	<0.50	<5.0	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	1.0	<0.50	<0.50	<0.50
LMW-4	O&M	B	2/25/14	<0.50	<0.50	<0.50	<0.50	<0.50	<5.0	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	0.90	<0.50	<0.50	<0.50
LMW-4	O&M	B	6/11/15	<0.50	<0.50	<0.50	<0.50	<0.50	<5.0	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	0.80	<0.50	<0.50	<0.50
LMW-4	O&M	B	2/23/16	<0.50	<0.50	<0.50	<0.50	<0.50	<5.0	<2.0	<0.50	<0.50	<0.50	<0.50	<2.0	<0.50	<0.50	0.92	<0.50	<0.50	<0.50
LMW-4	O&M	B	2/13/17	<0.50	<0.50	<0.50	<0.50	<0.50	<5.0	<2.0	<0.50	<0.50	<0.50	<0.50	<2.0	<0.50	<0.50	0.83	<0.50	<0.50	<0.50
LMW-4	O&M	B	2/12/19	<0.50	<0.50	<0.50	<0.50	<0.50	<5.0	<0.50	<0.50	<0.50	0.881	<0.50	<2.0	<0.50	3.38	**119**	<0.50	<0.50	**133**
LMW-8		LB	9/18/07	<30	<30	<30	<30	<30	<30	<30	<30	<30	<30	<30	<30	<30	**17,000**	**1,600**	<30	<30	**220**
LMW-8		LB	11/13/07	<30	<30	<30	<30	<30	<30	<30	<30	<30	<30	<30	<30	<30	**26,000**	**8,300**	**41**	**41**	**420**
LMW-8		LB	2/6/08	<150	<150	<150	<150	<150	<150	<150	<150	<150	<150	<150	<150	<150	**24,000**	**3,000**	<150	<150	**460**
LMW-8		LB	5/7/08	<70	<70	<70	<70	<70	<70	<70	<70	<70	<70	<70	<70	<70	**24,000**	**3,300**	<70	<70	**590**
LMW-8	RDIP	LB	8/6/08	<25	<25	<25	<25	<25	<25	<25	<25	<25	<25	<25	<25	<25	**9,700**	**5,200**	**46**	<25	**230**
LMW-8	RDIP	LB	11/6/08	<25	<25	<25	<25	<25	<25	<25	<25	<25	<25	<25	<25	<25	**6,300**	**13,000**	**51**	**28**	**110**
LMW-8	RDIP	LB	2/3/09	<9.0	<9.0	<9.0	<9.0	<9.0	<9.0	<9.0	<9.0	<9.0	<9.0	<9.0	<9.0	<9.0	**810**	**31,000**	**70**	**65**	**770**
LMW-8	RDIP	LB	8/24/09	<50	<50	<50	<50	<50	<50	<50	<50	<50	<50	<50	<50	<50	**270**	**16,000**	**90**	<50	**3,000**
LMW-8	RDIP	LB	2/3/10	<50	<50	<50	<50	<50	<50	<50	<50	<50	<50	<50	<50	<50	**79**	**12,000**	**72**	<50	**900**
LMW-8	RDIP	LB	8/3/10	<0.50	<0.50	<0.50	<0.50	<0.50	<5.0	<0.50	<0.50	<0.50	<0.50	<0.50	1.2	<0.50	1.2	**590**	**15**	0.60	**110**
LMW-8	RDIP	LB	2/9/11	<0.50	<0.50	<0.50	<0.50	<0.50	<5.0	<0.50	<0.50	<0.50	<0.50	<0.50	0.60	0.66	1.4	**6.5**	2.3	<0.50	**2.5**
LMW-8	RDIP	LB	2/8/12	<0.50	<0.50	<0.50	<0.50	<0.50	<5.0	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	1.3	0.78	<0.50	**0.56**
LMW-8	O&M	LB	2/12/13	<0.50	<0.50	<0.50	<0.50	<0.50	<5.0	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	1.2	0.96	<0.50	**0.64**
LMW-8	O&M	LB	2/25/14	<0.50	<0.50	<0.50	<0.50	<0.50	<5.0	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	0.68	<0.50	<0.50	<0.50
LMW-8	O&M	LB	6/11/15	<0.50	<0.50	<0.50	<0.50	<0.50	<5.0	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	1.6	<0.50	<0.50	**0.71**
LMW-8	O&M	LB	2/23/16	<0.50	<0.50	<0.50	<0.50	<0.50	<5.0	<2.0	<0.50	<0.50	<0.50	<0.50	<2.0	<0.50	<0.50	0.90	**0.59**	<0.50	<0.50
LMW-8	O&M	LB	2/13/17	<0.50	<0.50	<0.50	<0.50	<0.50	<5.0	<2.0	<0.50	<0.50	<0.50	<0.50	<2.0	<0.50	<0.50	0.71	<0.50	<0.50	<0.50
LMW-8	O&M	LB	2/12/19	<0.50	<0.50	<0.50	<0.50	<0.50	<5.0	<0.50	<0.50	<0.50	<0.50	<0.50	<2.0	<0.50	<0.50	1.72	1.27	<0.50	**0.869**
PZ-1		B	9/22/98	<1,000	<1,000	<1,000	<1,000	<1,000	<10,000	<2,000	<1,000	<1,000	<1,000	<1,000	<2,000	<1,000	**57,000**	**22,000**	<1,000	<1,000	<1,000
PZ-1	PT ISCO Mn	B	3/10/00	<1,000	<1,000	<1,000	<1,000	<1,000	<10,000	<2,000	<1,000	<1,000	<1,000	<1,000	<2,000	<1,000	**89,000**	**32,000**	<1,000	<1,000	<1,000
PZ-1	PT ISCO Mn	B	3/26/03	<500	<500	<500	<500	<500	<5,000	<500	<500	<500	<500	<500	<1,000	<500	**45,000**	**37,000**	<500	<500	<500

Table 5E
Groundwater Monitoring Volatile Organic Compounds Data
Former Oil/Solvent Storage Area
Former Kaiser Aerotech Facilities
San Leandro, California

Well ID	Notes	GW Zone	Sample Date	1,2-DCB	1,3-DCB	1,4-DCB	Chloro-benzene	Chloro-form	Methylene Chloride	Chloro-methane	1,1,1-TCA	1,1,2-TCA	1,1-DCA	1,2-DCA	Chloro-ethane	PCE	TCE	cis-1,2-DCE	trans-1,2-DCE	1,1-DCE	Vinyl Chloride
				8260*	8260*	8260*	8260*	8260*	8260*	8260*	8260*	8260*	8260*	8260*	8260*	8260*	8260*	8260*	8260*	8260*	8260*
				(ug/L)	(ug/L)	(ug/L)	(ug/L)	(ug/L)	(ug/L)	(ug/L)	(ug/L)	(ug/L)	(ug/L)	(ug/L)	(ug/L)	(ug/L)	(ug/L)	(ug/L)	(ug/L)	(ug/L)	(ug/L)
			MCLs	600	-	5	70	80	5	-	200	5	5	0.5	-	5	5	6	10	6	0.5
			Regulatory Date	9/8/94	-	4/4/89	9/8/94	6/17/06	2/25/89	-	2/25/89	9/8/94	6/24/90	4/4/89	-	5/89	2/25/89	9/8/94	9/8/94	2/25/89	4/4/89
PZ-1		B	9/29/04	<20	<20	<20	<20	<20	<200	<20	<20	<20	25	<20	<20	<20	12,000	25,000	100	130	2,600
PZ-1		B	3/9/05	<50	<50	<50	<50	<50	<50	<50	<50	<50	<50	<50	<50	<50	8,800	17,000	92	110	2,900
PZ-1		B	9/14/05	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	5.7	25	<5.0	<5.0	<5.0	12,000	20,000	140	110	3,300
PZ-1		B	12/15/05	<70	<70	<70	<70	<70	<70	<70	<70	<70	<70	<70	<70	<70	8,800	17,000	120	100	2,600
PZ-1		B	3/15/06	< 50	< 50	< 50	< 50	< 50	< 50	< 50	< 50	< 50	< 50	< 50	< 50	< 50	14,000	16,000	100	180	3,300
PZ-1		B	9/21/06	<50	<50	<50	<50	<50	<50	<50	<50	<50	<50	<50	<50	<50	12,000	15,000	94	150	1,600
PZ-1		B	2/1/07	<90	<90	<90	<90	<90	<90	<90	<90	<90	<90	<90	<90	<90	21,000	18,000	110	300	2,000
PZ-1		B	8/15/07	<90	<90	<90	<90	<90	<90	<90	<90	<90	<90	<90	<90	<90	16,000	17,000	94	240	1,500
PZ-1		B	2/6/08	<90	<90	<90	<90	<90	<90	<90	<90	<90	<90	<90	<90	<90	18,000	14,000	<90	240	690
PZ-1	RDIP	B	8/7/08	<90	<90	<90	<90	<90	<90	<90	<90	<90	<90	<90	<90	<90	440	26,000	100	110	2,600
PZ-1	RDIP	B	2/3/09	<90	<90	<90	<90	<90	<90	<90	<90	<90	<90	<90	<90	<90	2,900	25,000	100	180	3,100
PZ-1	RDIP	B	8/5/09	<2.0	<2.0	<2.0	<2.0	<2.0	<5.0	<2.0	<2.0	<2.0	32	<2.0	<2.0	<2.0	11	400	10	<2.0	500
PZ-1	RDIP	B	2/3/10	<0.50	<0.50	<0.50	<0.50	<0.50	<5.0	<2.0	<0.50	<0.50	40	1.1	4.0	<0.50	5.6	180	5.4	0.78	180
PZ-1	RDIP	B	8/4/10	<0.50	<0.50	<0.50	<0.50	<0.50	<5.0	<5.0	<0.50	<0.50	3.4	<0.50	4.3	<0.50	2.9	2,600	8.4	2.4	1,600
PZ-1	RDIP	B	2/9/11	<0.50	<0.50	<0.50	<0.50	<0.50	<5.0	<8.0	<0.50	<0.50	4.8	<0.50	2.4	<0.50	11	660	4.6	1.2	1,400
PZ-1	RDIP	B	2/7/12	<0.50	<0.50	<0.50	<0.50	<0.50	<5.0	<8.0	<0.50	<0.50	1.9	<0.50	<0.50	<0.50	21	380	1.7	0.79	1,000
PZ-1	O&M	B	2/12/13	<2.0	<2.0	<2.0	<2.0	<2.0	<5.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	8.2	210	<2.0	<2.0	500
PZ-1	O&M	B	2/25/14	<0.50	<0.50	<0.50	<0.50	<0.50	<5.0	<0.50	<0.50	<0.50	3.0	<0.50	<0.50	<0.50	6.8	480	2.2	1.1	1,500
PZ-1	O&M	B	6/11/15	<5.0	<5.0	<5.0	<5.0	<5.0	<50	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	22.9	3,050	12.9	6.2	2,590
PZ-1	O&M	B	2/24/16	<5.0	<5.0	<5.0	<5.0	<5.0	<50	<5.0	<5.0	<5.0	<5.0	<5.0	<20	<5.0	13.6	369	15.5	<5.0	361
PZ-1	O&M	B	2/15/17	<2.5	<2.5	<2.5	<2.5	<2.5	<25.0	<10.0	<2.5	<2.5	3.9	<2.5	<10.0	<2.5	16.4	816	3.6	3.4	797
PZ-1	O&M	B	2/13/18	<25	<25	<25	<25	<25	<250	<25	<25	<25	<25	<25	<100	<25	<100	11,300	<25	<25	9,060
PZ-1	O&M	B	9/26/18	<0.50	<0.50	<0.50	<0.50	<0.50	<2.50	<1.25	<0.50	<0.50	6.54	<0.50	<2.5	<0.50	13.8	16,900	32.1	30.4	14,100
PZ-1	O&M	B	2/12/19	<0.50	<0.50	<0.50	<0.50	<0.50	<5.0	<0.50	<0.50	<0.50	6.46	<0.50	<2.0	<0.50	16.9	11,700	267	23.4	8,300
PZ-1	O&M	B	3/10/20	<0.50	<0.50	<0.50	<0.50	<0.50	<2.5	<1.25	<0.50	<0.50	14.7	0.519	<2.5	<0.50	17.9	20,700	42.2	52.3	14,000
UB-5		UB	9/19/07	<50	<50	<50	<50	<50	<50	<50	<50	<50	56	<50	<50	<50	14,000	21,000	92	300	620
UB-5		UB	11/13/07	<70	<70	<70	<70	<70	<70	<70	<70	<70	<70	<70	<70	<70	8,600	20,000	91	270	550
UB-5		UB	2/6/08	<40	<40	<40	<40	<40	<40	<40	<40	<40	44	<40	<40	<40	7,700	12,000	85	150	420
UB-5		UB	5/7/08	<70	<70	<70	<70	<70	<70	<70	<70	<70	<70	<70	<70	<70	12,000	20,000	91	210	700
UB-5	RDIP	UB	8/6/08	<70	<70	<70	<70	<70	<70	<70	<70	<70	<70	<70	<70	<70	5,900	17,000	86	150	610
UB-5	RDIP	UB	2/3/09	<70	<70	<70	<70	<70	<70	<70	<70	<70	<70	<70	<70	<70	20,000	20,000	110	260	1,200
UB-5	RDIP	UB	8/4/09	<50	<50	<50	<50	<50	<50	<50	<50	<50	<50	<50	<50	<50	10,000	15,000	67	120	400
UB-5	RDIP	UB	2/3/10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	740	2,500	19	10	66
UB-5	RDIP	UB	8/3/10	<0.50	<0.50	<0.50	<0.50	<0.50	<5.0	<0.50	<0.50	<0.50	2.1	<0.50	2.3	<0.50	18	160	4.5	<0.50	20
UB-5	RDIP	UB	2/9/11	<0.50	<0.50	<0.50	<0.50	<0.50	<5.0	<0.50	<0.50	<0.50	0.55	<0.50	1.9	<0.50	0.72	3.3	1.2	<0.50	0.77

Table 5E
Groundwater Monitoring Volatile Organic Compounds Data
Former Oil/Solvent Storage Area
Former Kaiser Aerotech Facilities
San Leandro, California

Well ID	Notes	GW Zone	Sample Date	1,2-DCB	1,3-DCB	1,4-DCB	Chloro-benzene	Chloro-form	Methylene Chloride	Chloro-methane	1,1,1-TCA	1,1,2-TCA	1,1-DCA	1,2-DCA	Chloro-ethane	PCE	TCE	cis-1,2-DCE	trans-1,2-DCE	1,1-DCE	Vinyl Chloride
				8260*	8260*	8260*	8260*	8260*	8260*	8260*	8260*	8260*	8260*	8260*	8260*	8260*	8260*	8260*	8260*	8260*	8260*
				(ug/L)	(ug/L)	(ug/L)	(ug/L)	(ug/L)	(ug/L)	(ug/L)	(ug/L)	(ug/L)	(ug/L)	(ug/L)	(ug/L)	(ug/L)	(ug/L)	(ug/L)	(ug/L)	(ug/L)	(ug/L)
			MCLs	600	-	5	70	80	5	-	200	5	5	0.5	-	5	5	6	10	6	0.5
			Regulatory Date	9/8/94	-	4/4/89	9/8/94	6/17/06	2/25/89	-	2/25/89	9/8/94	6/24/90	4/4/89	-	5/89	2/25/89	9/8/94	9/8/94	2/25/89	4/4/89
UB-5	RDIP	UB	2/8/12	<0.50	<0.50	<0.50	<0.50	<0.50	<5.0	<0.50	<0.50	<0.50	<0.50	<0.50	0.78	<0.50	<0.50	0.84	7.9	<0.50	<0.50
UB-5	O&M	UB	2/12/13	<0.50	<0.50	<0.50	<0.50	<0.50	<5.0	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	0.88	0.68	<0.50	<0.50
UB-5	O&M	UB	2/25/14	<0.50	<0.50	<0.50	<0.50	<0.50	<5.0	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	1.2	<0.50	<0.50	<0.50
UB-5	O&M	UB	6/11/15	<0.50	<0.50	<0.50	<0.50	<0.50	<5.0	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	0.71	<0.50	<0.50	<0.50
UB-5	O&M	UB	2/23/16	<0.50	<0.50	<0.50	<0.50	<0.50	<5.0	<2.0	<0.50	<0.50	<0.50	<0.50	<2.0	<0.50	<0.50	0.62	<0.50	<0.50	<0.50
UB-5	O&M	UB	2/14/17	<0.50	<0.50	<0.50	<0.50	<0.50	<5.0	<2.0	<0.50	<0.50	1.7	<0.50	<2.0	<0.50	<0.50	0.63	<0.50	<0.50	<0.50
UB-5	O&M	UB	2/12/19	<0.50	<0.50	<0.50	<0.50	<0.50	<5.0	<0.50	<0.50	<0.50	2.63	<0.50	<2.0	<0.50	<0.50	0.747	<0.50	<0.50	<0.50
LB-5		LB	9/18/07	<50	<50	<50	<50	<50	<50	<50	<50	<50	<50	<50	<50	<50	**49,000**	**7,600**	<50	**150**	**260**
LB-5		LB	11/13/07	<90	<90	<90	<90	<90	<90	<90	<90	<90	<90	<90	<90	<90	**130,000**	**10,000**	<90	**290**	**280**
LB-5		LB	2/6/08	<500	<500	<500	<500	<500	<500	<500	<500	<500	<500	<500	<500	<500	**150,000**	**6,800**	<500	<500	<500
LB-5		LB	5/7/08	<500	<500	<500	<500	<500	<500	<500	<500	<500	<500	<500	<500	<500	**170,000**	**6,700**	<500	<500	<500
LB-5	RDIP	LB	8/6/08	<500	<500	<500	<500	<500	<500	<500	<500	<500	<500	<500	<500	<500	**140,000**	**18,000**	<500	<500	<500
LB-5	RDIP	LB	2/3/09	<500	<500	<500	<500	<500	<500	<500	<500	<500	<500	<500	<500	<500	**100,000**	**40,000**	<500	<500	**700**
LB-5	RDIP	LB	8/4/09	<250	<250	<250	<250	<250	<250	<250	<250	<250	<250	<250	<250	<250	**64,000**	**44,000**	<250	<250	**3,500**
LB-5	RDIP	LB	2/3/10	<20	<20	<20	<20	<20	<20	<50	<20	<20	**42**	<20	<20	<20	**590**	**50,000**	**110**	**170**	**5,900**
LB-5	RDIP	LB	8/3/10	<0.50	<0.50	<0.50	<0.50	<0.50	<5.0	<0.80	<0.50	<0.50	**64**	**4.4**	19	<0.50	0.60	**160**	**31**	<0.50	**140**
LB-5	RDIP	LB	2/9/11	<0.50	<0.50	<0.50	<0.50	<0.50	<5.0	<0.80	<0.50	<0.50	4.9	**1.5**	28	<0.50	2.2	**32**	10	<0.50	**38**
LB-5	RDIP	LB	2/8/12	<0.50	<0.50	<0.50	<0.50	<0.50	<5.0	<0.50	<0.50	<0.50	<0.50	**0.63**	5.0	<0.50	<0.50	2.3	1.8	<0.50	**1.0**
LB-5	O&M	LB	2/12/13	<0.50	<0.50	<0.50	<0.50	<0.50	<5.0	<0.50	<0.50	<0.50	3.5	<0.50	2.4	<0.50	<0.50	2.2	0.63	<0.50	**1.1**
LB-5	O&M	LB	2/25/14	<0.50	<0.50	<0.50	<0.50	<0.50	<5.0	<0.50	<0.50	<0.50	**5.6**	<0.50	1.2	<0.50	<0.50	3.0	<0.50	<0.50	**4.0**
LB-5	O&M	LB	6/11/15	<0.50	<0.50	<0.50	<0.50	<0.50	<5.0	<0.50	<0.50	<0.50	**12.7**	<0.50	<0.50	<0.50	0.75	**49.1**	0.80	<0.50	**15.9**
LB-5	O&M	LB	2/23/16	<0.50	<0.50	<0.50	<0.50	<0.50	<5.0	<2.0	<0.50	<0.50	<0.50	<0.50	<2.0	<0.50	**26.5**	**14.1**	<0.50	<0.50	<0.50
LB-5	O&M	LB	2/14/17	<0.50	<0.50	<0.50	<0.50	<0.50	<5.0	<2.0	<0.50	<0.50	<0.50	<0.50	<2.0	<0.50	**6.5**	2.9	<0.50	<0.50	<0.50
LB-5	O&M	LB	2/13/18	<0.50	<0.50	<0.50	<0.50	<0.50	<5.0	<0.50	<0.50	<0.50	<0.50	<0.50	<2.0	<0.50	**25.7**	**7.88**	<0.50	<0.50	<0.50
LB-5	O&M	LB	2/12/19	<0.50	<0.50	<0.50	<0.50	<0.50	<5.0	<0.50	<0.50	<0.50	**21.0**	<0.50	<2.0	<0.50	**12.0**	**1,120**	1.61	1.58	**1,900**
LB-5	O&M	LB	3/10/20	<5.0	<5.0	<5.0	<5.0	<5.0	<25.0	<12.5	<5.0	<5.0	**7.92**	<5.0	<25.0	<5.0	**27.3**	**16,100**	**9.86**	**21.4**	**12,600**

Table 5F
Groundwater Monitoring Volatile Organic Compounds Data
Receiving Dock
Former Kaiser Aerotech Facilities
San Leandro, California

Well ID	Notes	GW Zone	Sample Date	1,2-DCB	1,3-DCB	1,4-DCB	Chloro-benzene	Chloro-form	Methylene Chloride	Chloro-methane	1,1,1-TCA	1,1,2-TCA	1,1-DCA	1,2-DCA	Chloro-ethane	PCE	TCE	cis-1,2-DCE	trans-1,2-DCE	1,1-DCE	Vinyl Chloride
				8260*	8260*	8260*	8260*	8260*	8260*	8260*	8260*	8260*	8260*	8260*	8260*	8260*	8260*	8260*	8260*	8260*	8260*
				(ug/L)	(ug/L)	(ug/L)	(ug/L)	(ug/L)	(ug/L)	(ug/L)	(ug/L)	(ug/L)	(ug/L)	(ug/L)	(ug/L)	(ug/L)	(ug/L)	(ug/L)	(ug/L)	(ug/L)	(ug/L)
			MCLs	600	-	5	70	80	5	-	200	5	5	0.5	-	5	5	6	10	6	0.5
			Regulatory Date	9/8/94	-	4/4/89	9/8/94	6/17/06	2/25/89	-	2/25/89	9/8/94	6/24/90	4/4/89	-	5/89	2/25/89	9/8/94	9/8/94	2/25/89	4/4/89
MW-1		A	11/1/96	0.80	<0.5	1.3	26	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.5
MW-1(d)		A	11/1/96	10.9	0.50	1.5	30	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50
MW-1		A	3/21/97	<1.3	<1.3	3.7	51	<1.3	<1.3	<1.3	<1.3	<1.3	<1.3	<1.3	<1.3	<1.3	<1.3	<1.3	<1.3	<1.3	<1.3
MW-1		A	6/26/97	<0.50	<0.50	0.79	9.5	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.5	<0.5
MW-1		A	9/22/97	<0.50	<0.50	0.70	13	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.5	<0.5
MW-1		A	12/18/97	<5.0	<5.0	**14**	**180**	<5.0	<25	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0
MW-1		A	3/23/98	<5.0	<5.0	<5.0	**73**	<30	<50	<10	<5.0	<5.0	<5.0	<5.0	<10	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0
MW-1		A	6/17/98	0.60	1.8	4.7	**93**	<3.0	<5.0	<1.0	<0.50	<0.50	<0.50	<0.50	<1.0	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50
MW-1		A	9/23/98	<1.0	<1.0	1.1	26	<1.0	<10	<2.0	<1.0	<1.0	<1.0	<1.0	<2.0	<1.0	1.2	<1.0	<1.0	<1.0	<1.0
MW-1		A	12/9/98	<0.50	0.71	2.3	55	<3.0	<5.0	<1.0	<0.50	<0.50	<0.50	<0.50	<1.0	<0.50	4.6	<0.50	<0.50	<0.50	<0.50
MW-1		A	3/22/99	<0.50	1.3	**6.1**	**84**	<3.0	<5.0	<1.0	<0.50	<0.50	<0.50	<0.50	<1.0	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50
MW-1		A	6/23/99	<0.50	<0.50	1.4	22	<0.50	<5	<1	<0.50	<0.50	<0.50	<0.50	<1	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50
MW-1		A	12/15/99	<0.50	<0.50	0.79	21	<0.50	<5.0	<1.0	<0.50	<0.50	<0.50	<0.50	<1.0	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50
MW-1		A	3/14/00	<0.50	0.52	2.1	24	<0.50	<5.0	<1.0	<0.50	<0.50	<0.50	<0.50	<1.0	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50
MW-1		A	9/19/00	<0.50	<0.50	<0.50	4.9	<0.50	<5.0	<1.0	<0.50	<0.50	<0.50	<0.50	<1.0	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50
MW-1		A	3/13/01	<0.50	0.76	2.1	17	<0.50	<5.0	<1.0	<0.50	<0.50	<0.50	<0.50	<1.0	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50
MW-1		A	9/25/01	<0.50	<0.50	<0.50	5.0	<0.50	<5.0	<1.0	<0.50	<0.50	<0.50	<0.50	<1.0	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50
MW-1		A	3/28/02	<0.50	0.57	2.3	15	<0.50	<5.0	<1.0	<0.50	<0.50	<0.50	<0.50	<1.0	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50
MW-1		A	10/3/02	<0.50	<0.50	<0.50	0.58	<0.50	<5.0	<1.0	<0.50	<0.50	<0.50	<0.50	<1.0	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50
MW-1		A	3/26/03	<0.50	<0.50	1.1	4.4	<0.50	<5.0	<1.0	<0.50	<0.50	<0.50	<0.50	<1.0	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50
MW-1		A	3/9/04	<0.50	1.2	3.2	12	<0.50	<5.0	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50
MW-1		A	12/15/05	<0.50	0.53	1.4	11	<0.50	<5.0	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50
MW-1		A	3/15/06	<0.50	0.70	1.8	7.4	<0.50	<5.0	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50
MW-1		A	2/1/07	<0.50	<0.50	0.86	2.1	<0.50	<5.0	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50
MW-1		A	2/4/08	<0.50	1.3	1.3	1.6	<0.50	<5.0	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	**23**	4.4	<0.50	<0.50	<0.50
MW-1		A	2/3/09	<0.50	<0.50	0.80	1.0	<0.50	<5.0	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50
MW-1		A	2/2/10	<0.50	<0.50	0.80	1.2	<0.50	<5.0	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50
MW-1		A	2/8/11	<0.50	<0.50	0.60	<0.50	<0.50	<5.0	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50
LMW-1		UB	9/23/98	<10	<10	<10	<10	<10	<100	<20	<10	<10	<10	<10	<20	<10	**4,900**	**67**	<10	<10	<10
LMW-1		UB	12/10/98	<25	<25	<25	<25	<150	<250	<50	<25	<25	<25	<25	<50	<25	**1,900**	<25	<25	<25	<25
LMW-1		UB	3/22/99	<25	<25	<25	<25	<150	<250	<50	<25	<25	<25	<25	<50	<25	**5,400**	<25	<25	<25	<25
LMW-1		UB	6/23/99	<50	<50	<50	<50	<50	<500	<100	<50	<50	<50	<50	<100	<50	**7,700**	**53**	<50	<50	<50
LMW-1		UB	12/15/99	<250	<250	<250	<250	<250	<2,500	<500	<250	<250	<250	<250	<500	<250	**11,000**	<250	<250	<250	<250
LMW-1		UB	3/14/00	<250	<250	<250	<250	<250	<2,500	<500	<250	<250	<250	<250	<500	<250	**8,700**	<250	<250	<250	<250
LMW-1		UB	9/19/00	<250	<250	<250	<250	<250	<2,500	<500	<250	<250	<250	<250	<500	<250	**10,000**	<250	<250	<250	<250

Table 5F
Groundwater Monitoring Volatile Organic Compounds Data
Receiving Dock
Former Kaiser Aerotech Facilities
San Leandro, California

Well ID	Notes	GW Zone	Sample Date	1,2-DCB	1,3-DCB	1,4-DCB	Chloro-benzene	Chloro-form	Methylene Chloride	Chloro-methane	1,1,1-TCA	1,1,2-TCA	1,1-DCA	1,2-DCA	Chloro-ethane	PCE	TCE	cis-1,2-DCE	trans-1,2-DCE	1,1-DCE	Vinyl Chloride
				8260*	8260*	8260*	8260*	8260*	8260*	8260*	8260*	8260*	8260*	8260*	8260*	8260*	8260*	8260*	8260*	8260*	8260*
				(ug/L)	(ug/L)	(ug/L)	(ug/L)	(ug/L)	(ug/L)	(ug/L)	(ug/L)	(ug/L)	(ug/L)	(ug/L)	(ug/L)	(ug/L)	(ug/L)	(ug/L)	(ug/L)	(ug/L)	(ug/L)
			MCLs	600	-	5	70	80	5	-	200	5	5	0.5	-	5	5	6	10	6	0.5
			Regulatory Date	9/8/94	-	4/4/89	9/8/94	6/17/06	2/25/89	-	2/25/89	9/8/94	6/24/90	4/4/89	-	5/89	2/25/89	9/8/94	9/8/94	2/25/89	4/4/89
LMW-1		UB	3/13/01	<250	<250	<250	<250	<250	<2,500	<500	<250	<250	<250	<250	<500	<250	**8,100**	<250	<250	<250	<250
LMW-1		UB	9/25/01	<250	<250	<250	<250	<250	<2,500	<500	<250	<250	<250	<250	<500	<250	**8,300**	<250	<250	<250	<250
LMW-1		UB	3/28/02	<250	<250	<250	<250	<250	<2,500	<500	<250	<250	<250	<250	<500	<250	**9,700**	<250	<250	<250	<250
LMW-1		UB	10/3/02	<250	<250	<250	<250	<250	<2,500	<500	<250	<250	<250	<250	<500	<250	**9,100**	<250	<250	<250	<250
LMW-1		UB	3/26/03	<250	<250	<250	<250	<250	<2,500	<500	<250	<250	<250	<250	<500	<250	**6,900**	**380**	<250	<250	<250
LMW-1		UB	6/26/03	<5.0	<5.0	<5.0	<5.0	<5.0	<50	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	**8,100**	**350**	5.1	<5.0	<5.0
LMW-1		UB	9/23/03	<20	<20	<20	<20	<20	<200	<20	<20	<20	<20	<20	<20	<20	**6,000**	**340**	<20	<20	<20
LMW-1		UB	3/9/04	<25	<25	<25	<25	<25	<250	<25	<25	<25	<25	<25	<25	<25	**6,800**	**360**	<25	<25	<25
LMW-1		UB	9/29/04	<5.0	<5.0	<5.0	<5.0	<5.0	<50	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	**8,000**	**460**	**14**	<5.0	**6.8**
LMW-1		UB	3/8/05	<9.0	<9.0	<9.0	<9.0	<9.0	<9.0	<9.0	<9.0	<9.0	<9.0	<9.0	<9.0	<9.0	**5,800**	**440**	<9.0	<9.0	<9.0
LMW-1		UB	9/15/05	<7.0	<7.0	<7.0	<7.0	<7.0	<7.0	<7.0	<7.0	<7.0	<7.0	<7.0	<7.0	<7.0	**6,400**	**640**	<7.0	<7.0	<7.0
LMW-1		UB	3/15/06	< 9.0	< 9.0	< 9.0	< 9.0	< 9.0	< 9.0	< 9.0	< 9.0	< 9.0	< 9.0	< 9.0	< 9.0	< 9.0	**4,500**	**620**	< 9.0	< 9.0	< 9.0
LMW-1		UB	9/20/06	< 9.0	< 9.0	< 9.0	< 9.0	< 9.0	< 9.0	< 9.0	< 9.0	< 9.0	< 9.0	< 9.0	< 9.0	< 9.0	**3,800**	**790**	**19**	< 9.0	< 9.0
LMW-1		UB	2/1/07	< 9.0	< 9.0	< 9.0	< 9.0	< 9.0	< 9.0	< 9.0	< 9.0	< 9.0	< 9.0	< 9.0	< 9.0	< 9.0	**4,400**	**600**	< 9.0	< 9.0	< 9.0
LMW-1		UB	8/14/07	< 9.0	< 9.0	< 9.0	< 9.0	< 9.0	< 9.0	< 9.0	< 9.0	< 9.0	< 9.0	< 9.0	< 9.0	< 9.0	**6,000**	**760**	< 9.0	< 9.0	< 9.0
LMW-1		UB	2/4/08	<2.0	<2.0	<2.0	<2.0	<2.0	<5.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	**5,100**	**420**	4.2	<2.0	**2.1**
LMW-1		UB	2/3/09	<25	<25	<25	<25	<25	<25	<25	<25	<25	<25	<25	<25	<25	**7,200**	**630**	<25	<25	<25
LMW-1	RDIP	UB	8/6/09	<9.0	<9.0	<9.0	<9.0	<9.0	<9.0	<9.0	<9.0	<9.0	<9.0	<9.0	<9.0	<9.0	**2,800**	**970**	**15**	<9.0	<9.0
LMW-1	RDIP	UB	2/3/10	<4.0	<4.0	<4.0	<4.0	<4.0	<5.0	<20	<4.0	<4.0	<4.0	<4.0	<4.0	<4.0	**32**	**190**	6.8	<4.0	**1,300**
LMW-1	RDIP	UB	2/9/11	0.80	<0.50	<0.50	<0.50	<0.50	<5.0	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	0.98	0.70	<0.50	<0.50	<0.50
LMW-1	RDIP	UB	2/8/12	0.79	<0.50	<0.50	<0.50	<0.50	<5.0	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50
LMW-1	O&M	UB	2/12/13	<0.50	<0.50	<0.50	<0.50	<0.50	<5.0	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	1.8	<0.50	<0.50	**0.72**
LMW-1	O&M	UB	6/9/15	<0.50	<0.50	<0.50	<0.50	<0.50	<5.0	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	3.6	0.70	<0.50	<0.50	<0.50
LMW-1	O&M	UB	2/23/16	<0.50	<0.50	<0.50	<0.50	<0.50	<5.0	<2.0	<0.50	<0.50	<0.50	<0.50	<2.0	<0.50	4.3	2.5	<0.50	<0.50	<0.50
LMW-1	O&M	UB	2/13/17	<0.50	<0.50	<0.50	<0.50	<0.50	<5.0	<2.0	<0.50	<0.50	<0.50	<0.50	<2.0	<0.50	3.1	2.7	<0.50	<0.50	<0.50
LMW-1	O&M	UB	2/11/19	<0.50	<0.50	<0.50	<0.50	<0.50	<5.0	<0.50	<0.50	<0.50	<0.50	<0.50	<2.0	<0.50	**7.17**	<0.50	<0.50	<0.50	<0.50

Table 5G
Groundwater Monitoring Volatile Organic Compounds Data
Railroad/Western Boundary
Former Kaiser Aerotech Facilities
San Leandro, California

Well ID	Notes	GW Zone	Sample Date	1,2-DCB	1,3-DCB	1,4-DCB	Chloro-benzene	Chloroform	Methylene Chloride	Chloro-methane	1,1,1-TCA	1,1,2-TCA	1,1-DCA	1,2-DCA	Chloro-ethane	PCE	TCE	cis-1,2-DCE	trans-1,2-DCE	1,1-DCE	Vinyl Chloride
				8260*	8260*	8260*	8260*	8260*	8260*	8260*	8260*	8260*	8260*	8260*	8260*	8260*	8260*	8260*	8260*	8260*	8260*
				(ug/L)	(ug/L)	(ug/L)	(ug/L)	(ug/L)	(ug/L)	(ug/L)	(ug/L)	(ug/L)	(ug/L)	(ug/L)	(ug/L)	(ug/L)	(ug/L)	(ug/L)	(ug/L)	(ug/L)	(ug/L)
			MCLs	600	-	5	70	80	5	-	200	5	5	0.5	-	5	5	6	10	6	0.5
			Regulatory Date	9/8/94	-	4/4/89	9/8/94	6/17/06	2/25/89	-	2/25/89	9/8/94	6/24/90	4/4/89	-	5/89	2/25/89	9/8/94	9/8/94	2/25/89	4/4/89
MW-18		A	9/23/98	<10	<10	<10	<10	11	<100	<20	<10	<10	<10	<10	<20	840	27,000	3,900	41	17	200
MW-18		A	12/10/98	<25	<25	<25	<25	<150	<250	<50	<25	<25	<25	<25	<50	130	3,700	800	<25	<25	31
MW-18		A	3/23/99	<120	<120	<120	<120	<750	<1,200	<250	<120	<120	<120	<120	<250	740	18,000	2,100	<120	<120	<120
MW-18		A	6/21/99	<250	<250	<250	<250	<1,500	<2,500	<500	<250	<250	<250	<250	<500	900	18,000	2,900	<250	<250	530
MW-18		A	12/18/99	<250	<250	<250	<250	<250	<2,500	<500	<250	<250	<250	<250	<500	580	12,000	2,800	<250	<250	<250
MW-18		A	3/15/00	<100	<100	<100	<100	<100	<2,000	<200	<100	<100	<100	<100	<200	480	9,200	1,600	<100	<100	180
MW-18		A	9/20/00	<100	<100	<100	<100	<100	<1,000	<200	<100	<100	<100	<100	<200	530	10,000	2,300	<100	<100	310
MW-18		A	3/14/01	<100	<100	<100	<100	<100	<1,000	<200	<100	<100	<100	<100	<200	320	9,000	1,700	<100	<100	110
MW-18		A	9/26/01	<500	<500	<500	<500	<500	<5,000	<1,000	<500	<500	<500	<500	<1,000	<500	12,000	1,700	<500	<500	<500
MW-18		A	4/11/02	<100	<100	<100	<100	<100	<1,000	<200	<100	<100	<100	<100	<200	270	6,700	630	<100	<100	<100
MW-18		A	10/3/02	<250	<250	<250	<250	<250	<2,500	<500	<250	<250	<250	<250	<500	600	20,000	2,600	<250	<250	<250
MW-18		A	3/26/03	<50	<50	<50	81	<50	<500	<100	<50	<50	<50	<50	<100	210	3,300	530	<50	<50	<50
MW-18		A	6/26/03	<5.0	<5.0	<5.0	<5.0	<5.0	<50	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	210	7,800	1,300	31	15	110
MW-18		A	9/23/03	<50	<50	<50	<50	<50	570	<50	<50	<50	<50	<50	<50	290	12,000	1,800	59	<50	120
MW-18		A	3/10/04	<0.50	<0.50	<0.50	0.85	<0.50	<5.0	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	150	5,100	800	13	12	60
MW-18		A	9/29/04	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	300	14,000	2,000	52	18	150
MW-18		A	1/10/05	<5.0	<5.0	<5.0	<5.0	<5.0	<50	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	130	3,200	660	6.2	11	45
MW-18	PT DPE	A	1/13/05	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	89	4,600	560	63	<5.0	8.4
MW-18	PT DPE	A	1/14/05	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	88	5,400	550	63	<5.0	5.5
MW-18	PT DPE	A	1/15/05	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	99	6,200	540	55	<5.0	8.0
MW-18	PT DPE	A	1/16/05	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	66	4,100	480	57	<5.0	<5.0
MW-18		A	1/17/05	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	38	2,600	350	38	<5.0	<5.0
MW-18		A	1/24/05	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	39	1,300	190	16	<5.0	<5.0
MW-18		A	2/16/05	<2.5	<2.5	<2.5	<2.5	<2.5	<25	<2.5	<2.5	<2.5	<2.5	<2.5	<2.5	30	870	170	2.9	<2.5	8.4
MW-18		A	3/8/05	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	54	1,300	230	<5.0	<5.0	15
MW-18		A	6/14/05	<7.0	<7.0	<7.0	<7.0	<7.0	<7.0	<7.0	<7.0	<7.0	<7.0	<7.0	<7.0	59	2,100	300	<7.0	<7.0	18
MW-18		A	9/14/05	<40	<40	<40	<40	<40	<40	<40	<40	<40	<40	<40	<40	170	6,200	770	<40	<40	57
MW-18		A	12/15/05	<15	<15	<15	<15	<15	<15	<15	<15	<15	<15	<15	<15	79	2,800	460	<15	<15	23
MW-18		A	3/15/06	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	43	1,300	210	8.0	< 5.0	11
MW-18		A	6/14/06	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	240	7,500	1,000	46	<5.0	60
MW-18		A	9/20/06	<25	<25	<25	<25	<25	<25	<25	<25	<25	<25	<25	<25	140	7,000	790	47	<25	32
MW-18		A	2/1/07	<4.0	<4.0	<4.0	<4.0	<4.0	<5.0	<4.0	<4.0	<4.0	<4.0	<4.0	<4.0	79	2,700	380	24	5.8	13
MW-18		A	5/9/07	<9.0	<9.0	<9.0	<9.0	<9.0	<5.0	<9.0	<9.0	<9.0	<9.0	<9.0	<9.0	110	5,500	850	51	<9.0	33
MW-18		A	8/14/07	<25	<25	<25	<25	<25	<25	<25	<25	<25	<25	<25	<25	250	13,000	1,400	95	<25	74
MW-18		A	2/6/08	<15	<15	<15	<15	<15	<15	<15	<15	<15	<15	<15	<15	62	2,700	370	28	<15	<15
MW-18		A	8/6/08	<15	<15	<15	<15	<15	<15	<15	<15	<15	<15	<15	<15	220	16,000	1,300	89	<15	67

Table 5G
Groundwater Monitoring Volatile Organic Compounds Data
Railroad/Western Boundary
Former Kaiser Aerotech Facilities
San Leandro, California

Well ID	Notes	GW Zone	Sample Date	1,2-DCB	1,3-DCB	1,4-DCB	Chloro-benzene	Chloroform	Methylene Chloride	Chloro-methane	1,1,1-TCA	1,1,2-TCA	1,1-DCA	1,2-DCA	Chloro-ethane	PCE	TCE	cis-1,2-DCE	trans-1,2-DCE	1,1-DCE	Vinyl Chloride
				8260*	8260*	8260*	8260*	8260*	8260*	8260*	8260*	8260*	8260*	8260*	8260*	8260*	8260*	8260*	8260*	8260*	8260*
				(ug/L)	(ug/L)	(ug/L)	(ug/L)	(ug/L)	(ug/L)	(ug/L)	(ug/L)	(ug/L)	(ug/L)	(ug/L)	(ug/L)	(ug/L)	(ug/L)	(ug/L)	(ug/L)	(ug/L)	(ug/L)
			MCLs	600	-	5	70	80	5	-	200	5	5	0.5	-	5	5	6	10	6	0.5
			Regulatory Date	9/8/94	-	4/4/89	9/8/94	6/17/06	2/25/89	-	2/25/89	9/8/94	6/24/90	4/4/89	-	5/89	2/25/89	9/8/94	9/8/94	2/25/89	4/4/89
MW-18	RDIP	A	2/4/09	<9.0	<9.0	<9.0	<9.0	<9.0	<9.0	<9.0	<9.0	<9.0	<9.0	<9.0	<9.0	**52**	**2,300**	**1,300**	**48**	<9.0	**36**
MW-18	RDIP	A	8/4/09	<8.0	<8.0	<8.0	<8.0	<8.0	<8.0	<8.0	<8.0	<8.0	<8.0	<8.0	<8.0	**31**	**1,300**	**2,000**	**36**	<8.0	**960**
MW-18	RDIP	A	2/4/10	<9.0	<9.0	<9.0	<9.0	<9.0	<9.0	<9.0	<9.0	<9.0	<9.0	<9.0	<9.0	**95**	**5,300**	**1,200**	**67**	**9.5**	**130**
MW-18	RDIP	A	8/3/10	<4.0	<4.0	<4.0	<4.0	<4.0	<5.0	<4.0	<4.0	<4.0	<4.0	<4.0	<4.0	<4.0	**28**	**1,200**	**29**	<4.0	**530**
MW-18	RDIP	A	2/9/11	<0.50	<0.50	<0.50	<0.50	<0.50	<5.0	<0.50	<0.50	<0.50	<0.50	<0.50	1.0	<0.50	0.78	**8.1**	2.8	<0.50	**5.0**
MW-18	RDIP	A	2/8/12	<0.50	<0.50	<0.50	<0.50	<0.50	<5.0	<20	<0.50	<0.50	<0.50	<0.50	0.74	<0.50	**10**	**230**	6.3	0.71	**200**
MW-18	O&M	A	2/14/13	<0.90	<0.90	<0.90	<0.90	<0.90	<5.0	<0.90	<0.90	<0.90	<0.90	<0.90	<0.90	<0.90	**27**	**960**	9.6	3.8	**360**
MW-18	O&M	A	2/25/14	<4.0	<4.0	<4.0	<4.0	<4.0	<5.0	<4.0	<4.0	<4.0	<4.0	<4.0	<4.0	**8.0**	**650**	**1,800**	**34**	**9.2**	**460**
MW-18	O&M	A	6/11/15	<0.50	<0.50	<0.50	<0.50	<0.50	<5.0	<0.50	<0.50	<0.50	0.55	<0.50	<0.50	**17.5**	**63.7**	**90.3**	**52.9**	**7.9**	**49.4**
MW-18	O&M	A	2/23/16	<12.5	<12.5	<12.5	<12.5	<12.5	<125	<50	<12.5	<12.5	<12.5	<12.5	<50	**33.3**	**1,930**	**2,100**	**60.2**	<12.5	**547**
MW-18	O&M	A	2/14/17	<8.3	<8.3	<8.3	<8.3	<8.3	<83.4	<33.3	<8.3	<8.3	<8.3	<8.3	<33.3	**40.8**	**3,040**	**4,690**	**100**	**20.3**	**1,060**
MW-18	O&M	A	2/15/18	<25	<25	<25	<25	<25	<250	<25	<25	<25	<25	<25	<100	<25	**867**	**6,660**	**101**	**26.6**	**944**
MW-18	O&M	A	2/12/19	<0.50	<0.50	<0.50	<0.50	<0.50	<5.0	<0.50	<0.50	<0.50	<0.50	<0.50	<2.0	<0.50	0.716	**6.95**	8.85	<0.50	**8.31**
MW-18	O&M	A	3/11/20	<0.50	<0.50	<0.50	<0.50	<0.50	<2.5	<1.25	<0.50	<0.50	<0.50	<0.50	<2.5	<0.50	0.943	2.52	1.01	<0.50	**2.08**
MW-28		A	9/19/07	<150	<150	<150	<150	<150	<150	<150	<150	<150	<150	<150	<150	**3,100**	**130,000**	**2,300**	<150	<150	<150
MW-28		A	11/14/07	<300	<300	<300	<300	<300	<300	<300	<300	<300	<300	<300	<300	**3,000**	**170,000**	**12,000**	<300	<300	<300
MW-28		A	2/6/08	<300	<300	<300	<300	<300	<300	<300	<300	<300	<300	<300	<300	**3,200**	**160,000**	**6,700**	<300	<300	<300
MW-28		A	5/7/08	<700	<700	<700	<700	<700	<700	<700	<700	<700	<700	<700	<700	**5,100**	**240,000**	**22,000**	<700	<700	**3,000**
MW-28	RDIP	A	8/6/08	<700	<700	<700	<700	<700	<700	<700	<700	<700	<700	<700	<700	**4,500**	**220,000**	**15,000**	<700	<700	**1,800**
MW-28	RDIP	A	11/6/08	<700	<700	<700	<700	<700	<700	<700	<700	<700	<700	<700	<700	**5,200**	**230,000**	**24,000**	<700	<700	**1,000**
MW-28	RDIP	A	2/4/09	<700	<700	<700	<700	<700	<700	<700	<700	<700	<700	<700	<700	**3,700**	**210,000**	**13,000**	<700	<700	<700
MW-28	RDIP	A	5/5/09	<700	<700	<700	<700	<700	<700	<700	<700	<700	<700	<700	<700	**5,200**	**240,000**	**7,700**	<700	<700	<700
MW-28	RDIP	A	8/4/09	<700	<700	<700	<700	<700	<700	<700	<700	<700	<700	<700	<700	**4,400**	**230,000**	**16,000**	<700	<700	**1,100**
MW-28	RDIP	A	11/4/09	<900	<900	<900	<900	<900	<900	<900	<900	<900	<900	<900	<900	**4,800**	**240,000**	**14,000**	<900	<900	**990**
MW-28	RDIP	A	2/2/10	<700	<700	<700	<700	<700	<700	<700	<700	<700	<700	<700	<700	<700	**6,600**	**160,000**	<700	<700	**2,600**
MW-28	RDIP	A	8/3/10	<15	<15	<15	<15	<15	<15	<50	<15	<15	<15	<15	<15	**33**	**520**	**870**	**63**	<15	**4,300**
MW-28	RDIP	A	2/9/11	<0.50	<0.50	<0.50	<0.50	<0.50	<5.0	<0.80	<0.50	0.51	3.0	**1.4**	<0.50	<0.50	<0.50	**36**	**150**	<0.50	**170**
MW-28	RDIP	A	2/8/12	<0.50	<0.50	<0.50	<0.50	<0.50	<5.0	<0.50	<0.50	<0.50	<0.50	<0.50	**1.1**	<0.50	0.73	5.8	5.9	<0.50	**12**
MW-28	O&M	A	2/14/13	<0.50	<0.50	<0.50	<0.50	<0.50	<5.0	<0.50	<0.50	<0.50	<0.50	<0.50	**1.7**	<0.50	1.2	**140**	1.7	0.52	**530**
MW-28	O&M	A	2/25/14	<2.5	<2.5	<2.5	<2.5	<2.5	<5.0	<2.5	<2.5	<2.5	<2.5	<2.5	<2.5	<2.5	<2.5	**1,800**	6.6	**6.2**	**600**
MW-28	O&M	A	6/11/15	<0.50	<0.50	<0.50	<0.50	<0.50	<5.0	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	3.9	2.3	<0.50	<0.50	**1.5**
MW-28	O&M	A	2/23/16	<5.0	<5.0	<5.0	<5.0	<5.0	<50	<20	<5.0	<5.0	<5.0	<5.0	<20	<5.0	<5.0	**311**	<5.0	<5.0	**250**
MW-28	O&M	A	2/14/17	<1.0	<1.0	<1.0	<1.0	<1.0	<10	<4.0	<1.0	<1.0	<1.0	<1.0	<4.0	**113**	**6,060**	**20,800**	**94.7**	**111**	**2,900**
MW-28	O&M	A	2/15/18	<62.5	<62.5	<62.5	<62.5	<62.5	<625	<62.5	<62.5	<62.5	<62.5	<62.5	<250	<62.5	**151**	**8,250**	<62.5	<62.5	**8,630**
MW-28	O&M, 13	A	2/12/19	<0.50	<0.50	<0.50	<0.50	<0.50	<5.0	<0.50	<0.50	<0.50	0.525	**0.520**	<2.0	<0.50	1.10	**8.16**	4.25	<0.50	**17.8**

Table 5G
Groundwater Monitoring Volatile Organic Compounds Data
Railroad/Western Boundary
Former Kaiser Aerotech Facilities
San Leandro, California

Well ID	Notes	GW Zone	Sample Date	1,2-DCB	1,3-DCB	1,4-DCB	Chloro-benzene	Chloroform	Methylene Chloride	Chloro-methane	1,1,1-TCA	1,1,2-TCA	1,1-DCA	1,2-DCA	Chloro-ethane	PCE	TCE	cis-1,2-DCE	trans-1,2-DCE	1,1-DCE	Vinyl Chloride
				8260*	8260*	8260*	8260*	8260*	8260*	8260*	8260*	8260*	8260*	8260*	8260*	8260*	8260*	8260*	8260*	8260*	8260*
				(ug/L)	(ug/L)	(ug/L)	(ug/L)	(ug/L)	(ug/L)	(ug/L)	(ug/L)	(ug/L)	(ug/L)	(ug/L)	(ug/L)	(ug/L)	(ug/L)	(ug/L)	(ug/L)	(ug/L)	(ug/L)
			MCLs	600	-	5	70	80	5	-	200	5	5	0.5	-	5	5	6	10	6	0.5
			Regulatory Date	9/8/94	-	4/4/89	9/8/94	6/17/06	2/25/89	-	2/25/89	9/8/94	6/24/90	4/4/89	-	5/89	2/25/89	9/8/94	9/8/94	2/25/89	4/4/89
MW-28	O&M, 16	A	3/11/20	<0.50	<0.50	<0.50	<0.50	<0.50	<2.5	<1.25	<0.50	<0.50	<0.50	<0.50	<2.5	<0.50	0.602	3.67	<0.50	<0.50	**1.12**
MW-27		A/UB	9/20/06	<150	<150	<150	<150	<150	<150	<150	<150	<150	<150	<150	<150	**2,100**	**92,000**	**1,900**	<150	<150	<150
MW-27		A/UB	2/1/07	<250	<250	<250	<250	<250	<250	<250	<250	<250	<250	<250	<250	**2,100**	**85,000**	**1,600**	<250	<250	<250
MW-27		A/UB	5/9/07	<250	<250	<250	<250	<250	<250	<250	<250	<250	<250	<250	<250	**3,600**	**120,000**	**2,100**	<250	<250	<250
MW-27		A/UB	8/14/07	<150	<150	<150	<150	<150	<150	<150	<150	<150	<150	<150	<150	**2,200**	**69,000**	**1,500**	<150	<150	<150
MW-27		A/UB	11/14/07	<150	<150	<150	<150	<150	<150	<150	<150	<150	<150	<150	<150	**3,200**	**120,000**	**2,400**	<150	<150	<150
MW-27		A/UB	2/6/08	<900	<900	<900	<900	<900	<900	<900	<900	<900	<900	<900	<900	**5,000**	**200,000**	**3,800**	<900	<900	<900
MW-27	RDIP	A/UB	8/6/08	<250	<250	<250	<250	<250	<250	<250	<250	<250	<250	<250	<250	**400**	**8,800**	**72,000**	<250	<250	**600**
MW-27	RDIP	A/UB	11/6/08	<50	<50	<50	<50	<50	<50	<50	<50	<50	<50	<50	<50	**61**	**990**	**11,000**	<50	<50	**5,300**
MW-27	RDIP	A/UB	2/4/09	<9.0	<9.0	<9.0	<9.0	<9.0	<9.0	<9.0	<9.0	<9.0	<9.0	<9.0	<9.0	**20**	**140**	**1,900**	**13**	<9.0	**950**
MW-27	RDIP	A/UB	8/4/09	<0.50	<0.50	<0.50	<0.50	<0.50	<5.0	<0.50	<0.50	<0.50	**0.69**	<0.50	**2.7**	2.5	**20**	**63**	7.2	<0.50	**92**
MW-27	RDIP	A/UB	2/3/10	<0.50	<0.50	<0.50	<0.50	<0.50	<5.0	<2.0	<0.50	<0.50	**0.79**	**0.54**	<0.50	5.0	**42**	**170**	**15**	<0.50	**130**
MW-27	RDIP	A/UB	8/3/10	<0.50	<0.50	<0.50	<0.50	<0.50	<5.0	<0.80	<0.50	<0.50	<0.50	<0.50	<0.50	2.6	**20**	**74**	7.2	<0.50	**88**
MW-27	RDIP	A/UB	2/9/11	<0.50	<0.50	<0.50	<0.50	<0.50	<5.0	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	0.95	4.7	**16**	7.2	<0.50	**10**
MW-27	RDIP	A/UB	2/8/12	<0.50	<0.50	<0.50	<0.50	<0.50	<5.0	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	0.99	1.7	1.7	<0.50	**0.76**
MW-27	O&M	A/UB	2/14/13	<0.50	<0.50	<0.50	<0.50	<0.50	<5.0	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	1.1	1.7	1.4	<0.50	**0.75**
MW-27	O&M	A/UB	2/25/14	<0.50	<0.50	<0.50	<0.50	<0.50	<5.0	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	1.1	<0.50	<0.50	<0.50
MW-27	O&M	A/UB	6/11/15	<0.50	<0.50	<0.50	<0.50	<0.50	<5.0	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	1.2	6.0	<0.50	**0.95**
MW-27	O&M	A/UB	2/23/16	<0.50	<0.50	<0.50	<0.50	<0.50	<5.0	<2.0	<0.50	<0.50	<0.50	<0.50	<2.0	<0.50	<0.50	2.4	2.4	<0.50	<0.50
MW-27	O&M	A/UB	2/14/17	<0.50	<0.50	<0.50	<0.50	<0.50	<5.0	<2.0	<0.50	<0.50	<0.50	<0.50	<2.0	<0.50	1.1	**532**	4.1	3.0	**394**
MW-27	O&M, 11	A/UB	2/15/18	<0.50	<0.50	<0.50	<0.50	<0.50	<5.0	<0.50	<0.50	<0.50	<0.50	<0.50	<2.0	<0.50	<0.50	1.04	2.80	<0.50	**0.56**
MW-27	O&M, 13	A/UB	2/12/19	<0.50	<0.50	<0.50	<0.50	<0.50	<5.0	<0.50	<0.50	<0.50	<0.50	<0.50	<2.0	<0.50	<0.50	2.27	1.51	<0.50	**2.55**
MW-27	O&M, 16	A/UB	3/11/20	<0.50	<0.50	<0.50	<0.50	<0.50	<2.5	<1.25	<0.50	<0.50	<0.50	<0.50	<2.5	<0.50	<0.50	0.949	0.987	<0.50	**1.45**
LMW-9		UB	9/18/07	<150	<150	<150	<150	<150	<150	<150	<150	<150	<150	<150	<150	**1,700**	**84,000**	**1,300**	<150	<150	<150
LMW-9		UB	11/14/07	<150	<150	<150	<150	<150	<150	<150	<150	<150	<150	<150	<150	**4,500**	**210,000**	**4,800**	<150	<150	**170**
LMW-9		UB	2/6/08	<400	<400	<400	<400	<400	<400	<400	<400	<400	<400	<400	<400	**3,000**	**210,000**	**3,000**	<400	<400	<400
LMW-9		UB	5/7/08	<700	<700	<700	<700	<700	<700	<700	<700	<700	<700	<700	<700	**5,700**	**260,000**	**5,800**	<700	<700	<700
LMW-9	RDIP	UB	8/6/08	<900	<900	<900	<900	<900	<900	<900	<900	<900	<900	<900	<900	**6,000**	**240,000**	**6,900**	<900	<900	<900
LMW-9	RDIP	UB	11/6/08	<90	<90	<90	<90	<90	<90	<90	<90	<90	<90	<90	<90	**5,600**	**200,000**	**16,000**	**120**	<90	**350**
LMW-9	RDIP	UB	2/4/09	<700	<700	<700	<700	<700	<700	<700	<700	<700	<700	<700	<700	**5,000**	**240,000**	**4,500**	<700	<700	<700
LMW-9	RDIP	UB	5/6/09	<700	<700	<700	<700	<700	<700	<700	<700	<700	<700	<700	<700	**5,100**	**240,000**	**4,700**	<700	<700	<700
LMW-9	RDIP	UB	8/4/09	<700	<700	<700	<700	<700	<700	<700	<700	<700	<700	<700	<700	**5,400**	**230,000**	**7,400**	<700	<700	<700
LMW-9	RDIP	UB	11/4/09	<1,500	<1,500	<1,500	<1,500	<1,500	<1,500	<1,500	<1,500	<1,500	<1,500	<1,500	<1,500	**6,100**	**270,000**	**6,800**	<1,500	<1,500	<1,500
LMW-9	RDIP	UB	2/3/10	<400	<400	<400	<400	<400	<400	<400	<400	<400	<400	<400	<400	**600**	**23,000**	**120,000**	<400	<400	**4,500**

Table 5G
Groundwater Monitoring Volatile Organic Compounds Data
Railroad/Western Boundary
Former Kaiser Aerotech Facilities
San Leandro, California

Well ID	Notes	GW Zone	Sample Date	1,2-DCB	1,3-DCB	1,4-DCB	Chloro-benzene	Chloroform	Methylene Chloride	Chloro-methane	1,1,1-TCA	1,1,2-TCA	1,1-DCA	1,2-DCA	Chloro-ethane	PCE	TCE	cis-1,2-DCE	trans-1,2-DCE	1,1-DCE	Vinyl Chloride
				8260*	8260*	8260*	8260*	8260*	8260*	8260*	8260*	8260*	8260*	8260*	8260*	8260*	8260*	8260*	8260*	8260*	8260*
				(ug/L)	(ug/L)	(ug/L)	(ug/L)	(ug/L)	(ug/L)	(ug/L)	(ug/L)	(ug/L)	(ug/L)	(ug/L)	(ug/L)	(ug/L)	(ug/L)	(ug/L)	(ug/L)	(ug/L)	(ug/L)
			MCLs	600	-	5	70	80	5	-	200	5	5	0.5	-	5	5	6	10	6	0.5
			Regulatory Date	9/8/94	-	4/4/89	9/8/94	6/17/06	2/25/89	-	2/25/89	9/8/94	6/24/90	4/4/89	-	5/89	2/25/89	9/8/94	9/8/94	2/25/89	4/4/89
LMW-9	RDIP	UB	8/3/10	<15	<15	<15	<15	<15	<15	<15	<15	<15	<15	<15	<15	**88**	**2,700**	**1,600**	**95**	<15	**2,700**
LMW-9	RDIP	UB	2/9/11	<0.50	<0.50	<0.50	<0.50	<0.50	<5.0	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	1.2	5.0	6.8	<0.50	**4.4**
LMW-9	RDIP	UB	2/8/12	<0.50	<0.50	<0.50	<0.50	<0.50	<5.0	<0.50	<0.50	<0.50	<0.50	<0.50	**0.56**	<0.50	<0.50	2.4	<0.50	<0.50	**9.7**
LMW-9	O&M	UB	2/14/13	<0.50	<0.50	<0.50	<0.50	<0.50	<5.0	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	**6.3**	**13**	<0.50	<0.50	**2.0**
LMW-9	O&M	UB	2/25/14	<0.50	<0.50	<0.50	<0.50	<0.50	<5.0	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	2.6	2.0	<0.50	**2.6**
LMW-9	O&M	UB	6/11/15	<0.50	<0.50	<0.50	<0.50	<0.50	<5.0	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	**0.52**	**6.3**	0.87	<0.50	**1.8**
LMW-9	O&M	UB	2/23/16	<8.4	<8.4	<8.4	<8.4	<8.4	<83.5	<33.4	<8.4	<8.4	<8.4	<8.4	<33.4	<8.4	<8.4	**2,290**	<8.4	<8.4	**1,050**
LMW-9	O&M	UB	2/14/17	<8.3	<8.3	<8.3	<8.3	<8.3	<83.4	<33.3	<8.3	<8.3	<8.3	<8.3	<33.3	**118**	**4,460**	**32,800**	**91.2**	**135**	**5,750**
LMW-9	O&M	UB	2/15/18	<75	<75	<75	<75	<75	<750	<75	<75	<75	<75	<75	<300	<75	<75	**13,300**	<75	**82.8**	**9,500**
LMW-9	O&M, 13	UB	2/12/19	<0.50	<0.50	<0.50	<0.50	<0.50	<5.0	<0.50	<0.50	<0.50	<0.50	<0.50	<2.0	0.547	3.00	5.63	2.23	<0.50	**4.33**
LMW-9	O&M, 16	UB	3/11/20	<0.50	<0.50	<0.50	<0.50	<0.50	<2.5	<1.25	<0.50	<0.50	<0.50	<0.50	<2.5	<0.50	<0.50	2.01	<0.50	<0.50	**1.19**
FA-1		A	7/22/08	<250	<250	<250	<250	<250	<250	<250	<250	<250	<250	<250	<250	**880**	**67,000**	**1,900**	<250	<250	<250
FA-1		A	11/6/08	<250	<250	<250	<250	<250	<250	<250	<250	<250	<250	<250	<250	**400**	**63,000**	**5,500**	<250	<250	<250
FA-1		A	2/4/09	<70	<70	<70	<70	<70	<70	<70	<70	<70	<70	<70	<70	**340**	**24,000**	**1,600**	<70	<70	<70
FA-1		A	5/5/09	<40	<40	<40	<40	<40	<40	<40	<40	<40	<40	<40	<40	**160**	**12,000**	**1,100**	**40**	<40	**45**
FA-1		A	8/5/09	<40	<40	<40	<40	<40	<40	<40	<40	<40	<40	<40	<40	**610**	**51,000**	**2,900**	**100**	<40	**180**
FA-1		A	11/4/09	<200	<200	<200	<200	<200	<200	<200	<200	<200	<200	<200	<200	**400**	**44,000**	**2,700**	<200	<200	<200
FA-1		A	2/4/10	<40	<40	<40	<40	<40	<40	<40	<40	<40	<40	<40	<40	**190**	**11,000**	**730**	<40	<40	<40
FA-1		A	5/4/10	<20	<20	<20	<20	<20	<20	<20	<20	<20	<20	<20	<20	**150**	**8,700**	**640**	**39**	<20	**61**
FA-1		A	8/4/10	<40	<40	<40	<40	<40	<40	<40	<40	<40	<40	<40	<40	**860**	**65,000**	**3,100**	**140**	<40	**320**
FA-1		A	2/9/11	<40	<40	<40	<40	<40	<40	<40	<40	<40	<40	<40	<40	**190**	**17,000**	**1,200**	**53**	<40	<40
FA-1		A	2/8/12	<150	<150	<150	<150	<150	<150	<150	<150	<150	<150	<150	<150	**490**	**43,000**	**2,500**	<150	<150	<150
FA-1	O&M	A	2/14/13	<90	<90	<90	<90	<90	<90	<90	<90	<90	<90	<90	<90	**370**	**32,000**	**1,800**	**92**	<90	**140**
FA-1	O&M	A	2/26/14	<250	<250	<250	<250	<250	<250	<250	<250	<250	<250	<250	<250	**690**	**54,000**	**3,100**	<250	<250	<250
FA-1	O&M	A	6/11/15	<83.3	<83.3	<83.3	<83.3	<83.3	<833	<83.3	<83.3	<83.3	<83.3	<83.3	<83.3	**2,170**	**130,000**	**7,970**	**279**	<250	**692**
FA-1	O&M	A	2/24/16	<100	<100	<100	<100	<100	<1,000	<400	<100	<100	<100	<100	<400	**515**	**34,100**	**2,110**	<100	<100	<100
FA-1	O&M	A	2/16/17	<2.5	<2.5	<2.5	<2.5	<2.5	<25.0	<10.0	<2.5	<2.5	<2.5	<2.5	<10.0	**67.1**	**3,390**	**245**	9.9	<2.5	<2.5
FA-1	O&M	A	2/15/18	<100	<100	<100	<100	<100	<1,000	<100	<100	<100	<100	<100	<400	**417**	**44,500**	**3,590**	**103**	<100	<100
FA-1	O&M, 13	A	2/14/19	<0.50	<0.50	<0.50	<0.50	<0.50	<5.0	<0.50 J4	<0.50	0.556	<0.50	<0.50	<2.0	**312**	**19,500**	**1,590**	**70**	**10.3**	**13.2**
FA-1	O&M	A	3/11/20	<25	<25	<25	<25	**89.7**	<125	<62.5	<25	<25	<25	<25	<125	**1,460**	**127,000**	**8,780**	**226**	<25	<25
FUB-1		UB	7/22/08	<400	<400	<400	<400	<400	<400	<400	<400	<400	<400	<400	<400	**5,700**	**240,000**	**8,400**	<400	<400	<400
FUB-1		UB	11/6/08	<90	<90	<90	<90	<90	<90	<90	<90	<90	<90	<90	<90	**5,800**	**190,000**	**11,000**	**130**	<90	**240**
FUB-1		UB	2/4/09	<500	<500	<500	<500	<500	<500	<500	<500	<500	<500	<500	<500	**4,300**	**180,000**	**8,600**	<500	<500	<500
FUB-1		UB	5/5/09	<500	<500	<500	<500	<500	<500	<500	<500	<500	<500	<500	<500	**4,000**	**150,000**	**8,100**	<500	<500	<500

Table 5G
Groundwater Monitoring Volatile Organic Compounds Data
Railroad/Western Boundary
Former Kaiser Aerotech Facilities
San Leandro, California

Well ID	Notes	GW Zone	Sample Date	1,2-DCB	1,3-DCB	1,4-DCB	Chloro-benzene	Chloroform	Methylene Chloride	Chloro-methane	1,1,1-TCA	1,1,2-TCA	1,1-DCA	1,2-DCA	Chloro-ethane	PCE	TCE	cis-1,2-DCE	trans-1,2-DCE	1,1-DCE	Vinyl Chloride
				8260*	8260*	8260*	8260*	8260*	8260*	8260*	8260*	8260*	8260*	8260*	8260*	8260*	8260*	8260*	8260*	8260*	8260*
				(ug/L)	(ug/L)	(ug/L)	(ug/L)	(ug/L)	(ug/L)	(ug/L)	(ug/L)	(ug/L)	(ug/L)	(ug/L)	(ug/L)	(ug/L)	(ug/L)	(ug/L)	(ug/L)	(ug/L)	(ug/L)
			MCLs	600	-	5	70	80	5	-	200	5	5	0.5	-	5	5	6	10	6	0.5
			Regulatory Date	9/8/94	-	4/4/89	9/8/94	6/17/06	2/25/89	-	2/25/89	9/8/94	6/24/90	4/4/89	-	5/89	2/25/89	9/8/94	9/8/94	2/25/89	4/4/89
FUB-1 (d)		UB	5/5/09	<250	<250	<250	<250	<250	<250	<250	<250	<250	<250	<250	<250	**4,300**	**170,000**	**8,300**	<250	<250	<250
FUB-1		UB	8/5/09	<500	<500	<500	<500	<500	<500	<500	<500	<500	<500	<500	<500	**4,200**	**180,000**	**11,000**	<500	<500	<500
FUB-1 (d)		UB	8/5/09	<500	<500	<500	<500	<500	<500	<500	<500	<500	<500	<500	<500	**3,600**	**160,000**	**10,000**	<500	<500	<500
FUB-1		UB	11/4/09	<900	<900	<900	<900	<900	<900	<900	<900	<900	<900	<900	<900	**4,900**	**200,000**	**14,000**	<900	<900	<900
FUB-1 (d)		UB	11/4/09	<900	<900	<900	<900	<900	<900	<900	<900	<900	<900	<900	<900	**4,900**	**200,000**	**15,000**	<900	<900	<900
FUB-1		UB	2/4/10	<500	<500	<500	<500	<500	<500	<500	<500	<500	<500	<500	<500	**2,800**	**120,000**	**14,000**	<500	<500	<500
FUB-1 (d)	DUP-2	UB	2/4/10	<250	<250	<250	<250	<250	<250	<250	<250	<250	<250	<250	<250	**3,500**	**140,000**	**13,000**	<250	<250	<250
FUB-1		UB	5/4/10	<500	<500	<500	<500	<500	<500	<500	<500	<500	<500	<500	<500	**2,700**	**130,000**	**13,000**	<500	<500	<500
FUB-1 (d)	FUB-1-DUP	UB	5/4/10	<500	<500	<500	<500	<500	<500	<500	<500	<500	<500	<500	<500	**2,700**	**140,000**	**14,000**	<500	<500	<500
FUB-1		UB	8/4/10	<500	<500	<500	<500	<500	<500	<500	<500	<500	<500	<500	<500	**3,400**	**170,000**	**14,000**	<500	<500	<500
FUB-1 (d)	DUP-2	UB	8/4/10	<500	<500	<500	<500	<500	<500	<500	<500	<500	<500	<500	<500	**3,100**	**150,000**	**14,000**	<500	<500	<500
FUB-1		UB	2/9/11	<400	<400	<400	<400	<400	<400	<400	<400	<400	<400	<400	<400	**2,100**	**120,000**	**14,000**	<400	<400	<400
FUB-1 (d)	DUP-2	UB	2/9/11	<500	<500	<500	<500	<500	<500	<500	<500	<500	<500	<500	<500	**2,000**	**110,000**	**15,000**	<500	<500	<500
FUB-1		UB	2/8/12	<700	<700	<700	<700	<700	<700	<700	<700	<700	<700	<700	<700	**3,800**	**170,000**	**18,000**	<700	<700	<700
FUB-1	DUP	UB	2/8/12	<500	<500	<500	<500	<500	<500	<500	<500	<500	<500	<500	<500	**3,700**	**160,000**	**17,000**	<500	<500	<500
FUB-1	O&M	UB	2/14/13	<500	<500	<500	<500	<500	<500	<500	<500	<500	<500	<500	<500	**3,000**	**120,000**	**11,000**	<500	<500	<500
FUB-1	O&M, DUP	UB	2/14/13	<500	<500	<500	<500	<500	<500	<500	<500	<500	<500	<500	<500	**2,100**	**94,000**	**9,600**	<500	<500	<500
FUB-1	O&M	UB	2/26/14	<700	<700	<700	<700	<700	<700	<700	<700	<700	<700	<700	<700	**3,500**	**160,000**	**13,000**	<700	<700	<700
FUB-1	O&M, DUP	UB	2/26/14	<700	<700	<700	<700	<700	<700	<700	<700	<700	<700	<700	<700	**3,700**	**160,000**	**14,000**	<700	<700	<700
FUB-1	O&M	UB	6/11/15	<250	<250	<250	<250	<250	<2,500	<250	<250	<250	<250	<250	<250	**3,260**	**171,000**	**14,600**	<250	<250	<250
FUB-1	O&M, DUP	UB	6/11/15	<12.5	<12.5	<12.5	<12.5	<12.5	<12.5	<12.5	<12.5	<12.5	<12.5	<12.5	<12.5	**505**	**189,000**	**2,040**	**30.6**	<250	**21.2**
FUB-1	O&M	UB	2/24/16	<250	<250	<250	<250	<250	<2,500	<1,000	<250	<250	<250	<250	<1,000	**2,390**	**126,000**	**12,300**	<250	<250	<250
FUB-1	O&M, DUP	UB	2/24/16	<500	<500	<500	<500	<500	<5,000	<2,000	<500	<500	<500	<500	<2,000	**2,360**	**123,000**	**11,800**	<500	<500	<500
FUB-1	O&M	UB	2/16/17	<167	<167	<167	<167	<167	<1,670	<667	<167	<167	<167	<167	<667	**1,080**	**62,900**	**6,220**	<167	<167	<167
FUB-1	O&M	UB	2/15/18	<500	<500	<500	<500	<500	<5,000	<500	<500	<500	<500	<500	<2,000	**1,290**	**92,600**	**5,820**	<500	<500	<500
FUB-1	O&M	UB	2/14/19	<25	<25	<25	<25	<25	<250	<25 J4	<25	<25	<25	<25	<100	**1,450**	**105,000**	**9,090**	**183**	**35.1**	<25
FUB-1	O&M	UB	3/11/20	<25	<25	<25	<25	**84.7**	<125	<62.5	<25	<25	<25	<25	<125	**1,790**	**112,000**	**9,540**	**147**	<25	<25
F-2		A/UB	2/4/09	<0.50	<0.50	<0.50	<0.50	<0.50	<5.0	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	**0.55**	**23**	**18**	1.3	<0.50	**2.3**
F-2		A/UB	5/5/09	<0.50	<0.50	<0.50	<0.50	<0.50	<5.0	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	**6.1**	**20**	2.0	<0.50	**9.8**
F-2		A/UB	8/5/09	<0.50	<0.50	<0.50	<0.50	<0.50	<5.0	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	4.1	4.3	0.59	<0.50	**2.6**
F-2		A/UB	11/4/09	<0.50	<0.50	<0.50	<0.50	<0.50	<5.0	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	1.1	4.0	0.54	<0.50	**1.6**
F-2		A/UB	2/1/10	<0.50	<0.50	<0.50	<0.50	<0.50	<5.0	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	1.2	5.2	0.78	<0.50	**3.7**
F-2		A/UB	8/4/10	<0.50	<0.50	<0.50	<0.50	<0.50	<5.0	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50
F-2		A/UB	2/9/11	<0.50	<0.50	<0.50	<0.50	<0.50	<5.0	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50
F-2		A/UB	2/8/12	<0.50	<0.50	<0.50	<0.50	<0.50	<5.0	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50

Table 5G
Groundwater Monitoring Volatile Organic Compounds Data
Railroad/Western Boundary
Former Kaiser Aerotech Facilities
San Leandro, California

Well ID	Notes	GW Zone	Sample Date	1,2-DCB	1,3-DCB	1,4-DCB	Chloro-benzene	Chloroform	Methylene Chloride	Chloro-methane	1,1,1-TCA	1,1,2-TCA	1,1-DCA	1,2-DCA	Chloro-ethane	PCE	TCE	cis-1,2-DCE	trans-1,2-DCE	1,1-DCE	Vinyl Chloride
				8260*	8260*	8260*	8260*	8260*	8260*	8260*	8260*	8260*	8260*	8260*	8260*	8260*	8260*	8260*	8260*	8260*	8260*
				(ug/L)	(ug/L)	(ug/L)	(ug/L)	(ug/L)	(ug/L)	(ug/L)	(ug/L)	(ug/L)	(ug/L)	(ug/L)	(ug/L)	(ug/L)	(ug/L)	(ug/L)	(ug/L)	(ug/L)	(ug/L)
			MCLs	600	-	5	70	80	5	-	200	5	5	0.5	-	5	5	6	10	6	0.5
			Regulatory Date	9/8/94	-	4/4/89	9/8/94	6/17/06	2/25/89	-	2/25/89	9/8/94	6/24/90	4/4/89	-	5/89	2/25/89	9/8/94	9/8/94	2/25/89	4/4/89
F-2	O&M	A/UB	2/14/13	<0.50	<0.50	<0.50	<0.50	<0.50	<5.0	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	2.6	0.58	<0.50	**1.1**
F-2	O&M	A/UB	2/26/14	<0.50	<0.50	<0.50	<0.50	<0.50	<5.0	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50
F-2	O&M	A/UB	6/11/15	<0.50	<0.50	<0.50	<0.50	<0.50	<5.0	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	1.4	0.54	<0.50	<0.50	<0.50
F-2	O&M	A/UB	2/24/16	<0.50	<0.50	<0.50	<0.50	<0.50	<5.0	<2.0	<0.50	<0.50	<0.50	<0.50	<2.0	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50
F-2	O&M	A/UB	2/16/17	<0.50	<0.50	<0.50	<0.50	<0.50	<5.0	<2.0	<0.50	<0.50	<0.50	<0.50	<2.0	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50
F-2	O&M	A/UB	2/15/18	<0.50	<0.50	<0.50	<0.50	<0.50	<5.0	<0.50	<0.50	<0.50	<0.50	<0.50	<2.0	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50
F-2	O&M	A/UB	2/14/19	<0.50	<0.50	<0.50	<0.50	<0.50	<5.0	<0.50 J4	<0.50	<0.50	<0.50	<0.50	<2.0	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50
F-2	O&M	A/UB	3/11/20	<0.50	<0.50	<0.50	<0.50	<0.50	<2.5	<1.25	<0.50	<0.50	<0.50	<0.50	<2.5	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50

Table 5H
Groundwater Monitoring Volatile Organic Compounds Data
Monitored Natural Attenuation and Destroyed/Not Used Wells
Former Kaiser Aerotech Facilities
San Leandro, California

Well ID	Notes	GW Zone	Sample Date	1,2-DCB	1,3-DCB	1,4-DCB	Chloro-benzene	Chloro-form	Methylene Chloride	Chloro-methane	1,1,1-TCA	1,1,2-TCA	1,1-DCA	1,2-DCA	Chloro-ethane	PCE	TCE	cis-1,2-DCE	trans-1,2-DCE	1,1-DCE	Vinyl Chloride
				8260*	8260*	8260*	8260*	8260*	8260*	8260*	8260*	8260*	8260*	8260*	8260*	8260*	8260*	8260*	8260*	8260*	8260*
				(ug/L)	(ug/L)	(ug/L)	(ug/L)	(ug/L)	(ug/L)	(ug/L)	(ug/L)	(ug/L)	(ug/L)	(ug/L)	(ug/L)	(ug/L)	(ug/L)	(ug/L)	(ug/L)	(ug/L)	(ug/L)
			MCLs	600	-	5	70	80	5	-	200	5	5	0.5	-	5	5	6	10	6	0.5
			Regulatory Date	9/8/94	-	4/4/89	9/8/94	6/17/06	2/25/89	-	2/25/89	9/8/94	6/24/90	4/4/89	-	5/89	2/25/89	9/8/94	9/8/94	2/25/89	4/4/89
MW-3		A	10/31/96	<25	<25	<25	<25	<25	<25	<25	<25	<25	<25	<25	<25	<25	**650**	**230**	**30**	<25	<25
MW-3		A	3/21/97	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	**910**	**250**	**43**	<5.0	<5.0
MW-3		A	6/26/97	<15	<15	<15	<15	<15	<50	<50	<15	<15	<15	<15	<50	<15	**600**	**370**	**28**	<15	<50
MW-3		A	9/22/97	<25	<25	<25	<25	<25	<25	<25	<25	<25	<25	<25	<25	<25	**570**	**390**	**32**	<25	<25
MW-3		A	12/18/97	<25	<25	<25	<25	<25	<130	<25	<25	<25	<25	<25	<25	<25	**540**	**420**	**42**	<25	<25
MW-3		A	3/23/98	<25	<25	<25	<25	<150	<250	<50	<25	<25	<25	<25	<50	<25	**490**	**230**	**31**	<25	**26**
MW-3		A	6/18/98	<2.5	<2.5	<2.5	<2.5	<15	<25	<5.0	<2.5	<2.5	<2.5	<2.5	<5.0	<2.5	**740**	**190**	**24**	<2.5	<2.5
MW-3		A	9/24/98	<5.0	<5.0	<5.0	<5.0	<5.0	<50	<10	<5.0	<5.0	<5.0	<5.0	<10	<5.0	**720**	**250**	**33**	<5.0	**7.0**
MW-3		A	12/9/98	<5.0	<5.0	<5.0	<5.0	<30	<50	<10	<5.0	<5.0	<5.0	<5.0	<10	<5.0	**240**	**110**	**10**	<5.0	<5.0
MW-3		A	3/23/99	<5.0	<5.0	<5.0	<5.0	<30	<50	<10	<5.0	<5.0	<5.0	<5.0	6	<5.0	**740**	**250**	**35**	<5.0	<5.0
MW-3		A	6/21/99	<10	<10	<10	<10	<60	<100	<20	<10	<10	<10	<10	<20	<10	**730**	**280**	**47**	<10	<10
MW-3		A	12/18/99	<10	<10	<10	<10	<10	<100	<20	<10	<10	<10	<10	<20	<10	**470**	**260**	**36**	<10	<10
MW-3		A	3/15/00	<10	<10	<10	<10	<10	<200	<20	<10	<10	<10	<10	<20	<10	**540**	**230**	**52**	<10	<10
MW-3		A	9/18/00	<10	<10	<10	<10	<10	<100	<20	<10	<10	<10	<10	<20	<10	**660**	**290**	**49**	<10	<10
MW-3		A	3/14/01	<10	<10	<10	<10	<10	<100	<20	<10	<10	<10	<10	<20	<10	**450**	**210**	**44**	<10	<10
MW-3		A	9/25/01	<10	<10	<10	<10	<10	<100	<20	<10	<10	<10	<10	<20	<10	**330**	**110**	**37**	<10	<10
MW-3		A	3/28/02	<13	<13	<13	<13	<13	<130	<25	<13	<13	<13	<13	<25	<13	**650**	**260**	**50**	<13	<13
MW-3		A	10/3/02	<10	<10	<10	<10	<10	<100	<20	<10	<10	<10	<10	<20	<10	**670**	**270**	**41**	<10	<10
MW-3		A	3/26/03	<5.0	<5.0	<5.0	<5.0	<5.0	<50	<10	<5.0	<5.0	<5.0	<5.0	<10	<5.0	**490**	**190**	**42**	<5.0	**11**
MW-3		A	3/10/04	<0.50	<0.50	<0.50	<0.50	<0.50	<5.0	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	**350**	**180**	**43**	0.82	**7.4**
MW-3		A	3/8/05	<1.0	<1.0	<1.0	<1.0	<1.0	<5.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	**330**	**180**	**50**	<1.0	**4.0**
MW-3		A	3/14/2006	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 5.0	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	**300**	**180**	**52**	< 0.50	**6.9**
MW-3		A	2/2/2007	<0.90	<0.90	<0.90	<0.90	<0.90	< 5.0	<0.90	<0.90	<0.90	<0.90	<0.90	<0.90	<0.90	**380**	**200**	**51**	**1.1**	**19**
MW-3		A	2/6/2008	<1.5	<1.5	<1.5	<1.5	<1.5	< 5.0	<1.5	<1.5	<1.5	<1.5	<1.5	<1.5	<1.5	**400**	**190**	**42**	<1.5	**4.4**
MW-3		A	2/5/2009	<0.90	<0.90	<0.90	<0.90	<0.90	< 5.0	<0.90	<0.90	<0.90	<0.90	<0.90	<0.90	<0.90	**390**	**190**	**47**	<0.90	**6.7**
MW-3		A	2/3/2010	<1.5	<1.5	<1.5	<1.5	<1.5	< 5.0	<1.5	<1.5	<1.5	<1.5	<1.5	<1.5	<1.5	**370**	**190**	**55**	<1.5	**8.3**
MW-3		A	2/8/2011	<1.5	<1.5	<1.5	<1.5	<1.5	< 5.0	<1.5	<1.5	<1.5	<1.5	<1.5	<1.5	<1.5	**270**	**170**	**37**	<1.5	**13**
MW-3	O&M	A	2/14/2013	<0.90	<0.90	<0.90	<0.90	<0.90	< 5.0	<0.90	<0.90	<0.90	<0.90	<0.90	<0.90	<0.90	**51**	**230**	**29**	<0.90	**19**
MW-3	O&M, DUP	A	2/14/2013	<0.90	<0.90	<0.90	<0.90	<0.90	< 5.0	<0.90	<0.90	<0.90	<0.90	<0.90	<0.90	<0.90	**49**	**220**	**29**	<0.90	**19**
MW-3	O&M	A	6/10/2015	<0.84	<0.84	<0.84	<0.84	<0.84	<8.4	<0.84	<0.84	<0.84	<0.84	<0.84	<0.84	<0.84	**101**	**206**	**34.3**	<0.84	**14**
MW-3	O&M, DUP	A	6/10/2015	<0.50	<0.50	<0.50	<0.50	<0.50	<5.0	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	**111**	**210**	**38.9**	0.75	**16.7**
MW-3	O&M	A	2/15/2017	<0.50	<0.50	<0.50	<0.50	<0.50	<5.0	<2.0	<0.50	<0.50	<0.50	<0.50	<2.0	<0.50	**91.4**	**136**	**19.1**	<0.50	<0.50
MW-3	O&M	A	2/11/2019	<0.50	<0.50	<0.50	<0.50	<0.50	<5.0	<2.0	<0.50	<0.50	<0.50	<0.50	<2.0	<0.50	**53.8**	**197**	**29.6**	<0.500	**11.7**
MW-4		A	10/31/96	<100	<100	<100	<100	<100	<100	<100	<100	<100	<100	<100	<100	<100	**1,000**	**3,700**	**460**	<100	**1,400**
MW-4		A	3/21/97	<100	<100	<100	<100	<100	<100	<100	<100	<100	<100	<100	<100	<100	**770**	**3,500**	**470**	<100	**290**

Table 5H
Groundwater Monitoring Volatile Organic Compounds Data
Monitored Natural Attenuation and Destroyed/Not Used Wells
Former Kaiser Aerotech Facilities
San Leandro, California

Well ID	Notes	GW Zone	Sample Date	1,2-DCB	1,3-DCB	1,4-DCB	Chloro-benzene	Chloro-form	Methylene Chloride	Chloro-methane	1,1,1-TCA	1,1,2-TCA	1,1-DCA	1,2-DCA	Chloro-ethane	PCE	TCE	cis-1,2-DCE	trans-1,2-DCE	1,1-DCE	Vinyl Chloride
				8260*	8260*	8260*	8260*	8260*	8260*	8260*	8260*	8260*	8260*	8260*	8260*	8260*	8260*	8260*	8260*	8260*	8260*
				(ug/L)	(ug/L)	(ug/L)	(ug/L)	(ug/L)	(ug/L)	(ug/L)	(ug/L)	(ug/L)	(ug/L)	(ug/L)	(ug/L)	(ug/L)	(ug/L)	(ug/L)	(ug/L)	(ug/L)	(ug/L)
			MCLs	600	-	5	70	80	5	-	200	5	5	0.5	-	5	5	6	10	6	0.5
			Regulatory Date	9/8/94	-	4/4/89	9/8/94	6/17/06	2/25/89	-	2/25/89	9/8/94	6/24/90	4/4/89	-	5/89	2/25/89	9/8/94	9/8/94	2/25/89	4/4/89
MW-4		A	6/26/97	<60	<60	<60	<60	<60	<200	<200	<60	<60	<60	<60	<200	<60	280	3,000	340	<60	550
MW-4		A	9/22/97	<50	<50	<50	<50	<50	<50	<50	<50	<50	<50	<50	<50	<50	360	3,300	370	<50	200
MW-4		A	12/18/97	<50	<50	<50	<50	<50	<250	<50	<50	<50	<50	<50	<50	<50	520	3,200	410	<50	160
MW-4		A	3/23/98	<100	<100	<100	<100	<600	<1,000	<200	<100	<100	<100	<100	<200	<100	460	2,100	300	<100	200
MW-4		A	6/17/98	<10	<10	<10	<10	<60	<100	<20	<10	<10	<10	<10	<20	<10	220	1,800	190	<10	130
MW-4		A	9/24/98	<10	<10	<10	<10	<10	<100	<20	<10	<10	11	<10	<20	<10	220	2,500	250	<10	120
MW-4		A	12/9/98	<5.0	<5.0	<5.0	<5.0	<30	<50	<10	<5.0	<5.0	<5.0	<5.0	<10	<5.0	230	1,400	170	<5.0	110
MW-4		A	3/23/99	<25	<25	<25	<25	<150	<250	<50	<25	<25	<25	<25	<50	<25	510	2,500	320	<25	190
MW-4		A	6/21/99	<50	<50	<50	<50	<300	<500	<100	<50	<50	<50	<50	<100	<50	410	2,000	290	<50	200
MW-4		A	12/18/99	<25	<25	<25	<25	<25	<250	<50	<25	<25	<25	<25	<50	<25	380	2,200	330	<25	120
MW-4		A	3/15/00	<25	<25	<25	<25	<25	<500	<50	<25	<25	<25	<25	<50	<25	540	1,800	310	<25	220
MW-4		A	9/20/00	<25	<25	<25	<25	<25	<250	<50	<25	<25	<25	<25	<50	<25	510	2,300	420	<25	260
MW-4		A	3/14/01	<25	<25	<25	<25	<25	<250	<50	<25	<25	<25	<25	<50	<25	470	1,800	330	<25	120
MW-4		A	9/27/01	<25	<25	<25	<25	<25	<250	<50	<25	<25	50	<25	<50	<25	390	1,900	320	<25	180
MW-4		A	10/3/02	<25	<25	<25	<25	<25	<250	<50	<25	<25	<25	<25	<50	<25	370	1,800	280	<25	88
MW-4		A	3/26/03	<10	<10	<10	<10	<10	<100	<20	<10	<10	<10	<10	<20	<10	270	960	170	<10	57
MW-4		A	9/23/03	<0.50	<0.50	0.56	<0.50	<0.50	<5.0	<0.50	<0.50	<0.50	3.7	<0.50	<0.50	<0.50	210	1,100	210	2.5	62
MW-4		A	3/10/04	<0.50	<0.50	<0.50	<0.50	<0.50	<5.0	<0.50	<0.50	<0.50	2.8	<0.50	<0.50	<0.50	180	900	140	1.6	38
MW-4		A	3/8/05	<2.5	<2.5	<2.5	<2.5	<2.5	<5.0	<2.5	<2.5	<2.5	<2.5	<2.5	<2.5	<2.5	150	590	120	<2.5	28
MW-4		A	3/15/06	< 1.5	< 1.5	< 1.5	< 1.5	< 1.5	< 5.0	< 1.5	< 1.5	< 1.5	< 1.5	< 1.5	< 1.5	< 1.5	89	420	87	< 1.5	15
MW-4		A	2/1/07	< 1.5	< 1.5	< 1.5	< 1.5	< 1.5	< 5.0	< 1.5	< 1.5	< 1.5	< 1.5	< 1.5	< 1.5	< 1.5	58	350	83	< 1.5	12
MW-4		A	2/6/08	<0.90	<0.90	<0.90	<0.90	<0.90	< 5.0	<0.90	<0.90	<0.90	<0.90	<0.90	<0.90	<0.90	34	210	49	<0.90	3.8
MW-4		A	2/4/09	<0.90	<0.90	<0.90	<0.90	<0.90	< 5.0	<0.90	<0.90	<0.90	<0.90	<0.90	<0.90	<0.90	34	260	62	<0.90	3.4
MW-4		A	2/2/10	<0.50	<0.50	<0.50	<0.50	<0.50	<5.0	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	19	170	38	<0.50	1.9
MW-4		A	2/8/11	<0.50	<0.50	<0.50	<0.50	<0.50	<5.0	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	11	130	37	<0.50	4.6
MW-4	O&M	A	2/14/13	<0.50	<0.50	<0.50	<0.50	<0.50	<5.0	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	7.2	100	29	<0.50	3.6
MW-4	O&M	A	6/11/15	<0.50	<0.50	<0.50	<0.50	<0.50	<5.0	<0.50	<0.50	<0.50	0.55	<0.50	<0.50	<0.50	6.0	84.4	21.1	<0.50	2.5
MW-4	O&M	A	2/15/17	<0.50	<0.50	<0.50	<0.50	<0.50	<5.0	<2.0	<0.50	<0.50	<0.50	<0.50	<2.0	<0.50	4.8	60.3	15.3	<0.50	1.6
MW-4	Sup.	A	2/14/18	<0.50	<0.50	<0.50	<0.50	<0.50	<5.0	<0.50	<0.50	<0.50	<0.50	<0.50	0.727	<0.50	4.51	57.8	18.5	<0.50	3.32
MW-4	O&M	A	2/11/19	<0.50	<0.50	<0.50	<0.50	<0.50	<5.0	<0.50	<0.50	<0.50	<0.50	<0.50	<2.0	<0.50	4.43	43.8	7.29	<0.50	<0.50
MW-5		A	11/1/96	<25	<25	<25	<25	<25	<25	<25	<25	<25	<25	<25	<25	<25	52	720	17	<25	<25
MW-5		A	3/21/97	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	75	400	7.4	<5.0	<5.0
MW-5		A	6/26/97	<6.0	<6.0	<6.0	<6.0	<6.0	<20	<20	<6.0	<6.0	<6.0	<6.0	<20	<6.0	73	330	12	<6.0	<20
MW-5		A	9/22/97	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	66	310	14	<10	<10
MW-5		A	12/18/97	<10	<10	<10	<10	<10	<50	<10	<10	<10	<10	<10	<10	<10	53	320	15	<10	<10

Table 5H
Groundwater Monitoring Volatile Organic Compounds Data
Monitored Natural Attenuation and Destroyed/Not Used Wells
Former Kaiser Aerotech Facilities
San Leandro, California

Well ID	Notes	GW Zone	Sample Date	1,2-DCB	1,3-DCB	1,4-DCB	Chloro-benzene	Chloro-form	Methylene Chloride	Chloro-methane	1,1,1-TCA	1,1,2-TCA	1,1-DCA	1,2-DCA	Chloro-ethane	PCE	TCE	cis-1,2-DCE	trans-1,2-DCE	1,1-DCE	Vinyl Chloride
				8260*	8260*	8260*	8260*	8260*	8260*	8260*	8260*	8260*	8260*	8260*	8260*	8260*	8260*	8260*	8260*	8260*	8260*
				(ug/L)	(ug/L)	(ug/L)	(ug/L)	(ug/L)	(ug/L)	(ug/L)	(ug/L)	(ug/L)	(ug/L)	(ug/L)	(ug/L)	(ug/L)	(ug/L)	(ug/L)	(ug/L)	(ug/L)	(ug/L)
			MCLs	600	-	5	70	80	5	-	200	5	5	0.5	-	5	5	6	10	6	0.5
			Regulatory Date	9/8/94	-	4/4/89	9/8/94	6/17/06	2/25/89	-	2/25/89	9/8/94	6/24/90	4/4/89	-	5/89	2/25/89	9/8/94	9/8/94	2/25/89	4/4/89
MW-5		A	3/23/98	<10	<10	<10	<10	<60	<100	<20	<10	<10	<10	<10	<20	<10	**37**	**170**	<10	<10	<10
MW-5		A	6/17/98	<0.50	<0.50	<0.50	<0.50	<3.0	<5.0	<1.0	<0.50	<0.50	<0.50	<0.50	<1.0	<0.50	**26**	**130**	7.5	<0.50	**5.9**
MW-5		A	9/24/98	<1.0	<1.0	<1.0	<1.0	<1.0	<10	<2.0	<1.0	<1.0	<1.0	<1.0	<2.0	**1.2**	**44**	**180**	6.2	<1.0	**9.0**
MW-5		A	12/10/98	<0.50	<0.50	<0.50	<0.50	<3.0	<5.0	<1.0	<0.50	<0.50	<0.50	<0.50	<1.0	<0.50	**39**	**130**	4.2	<0.50	<0.50
MW-5		A	3/23/99	<1.0	<1.0	<1.0	<1.0	<6.0	<10	<2.0	<1.0	<1.0	<1.0	<1.0	<2.0	<1.0	**59**	**200**	6.3	<1.0	<1.0
MW-5		A	6/23/99	<2.5	<2.5	<2.5	<2.5	<2.5	<25	<5	<2.5	<2.5	<2.5	<2.5	<5	<2.5	**53**	**130**	4.6	<2.5	**3.4**
MW-5		A	12/18/99	<2.0	<2.0	<2.0	<2.0	<2.0	<20	<4.0	<2.0	<2.0	<2.0	<2.0	<4.0	<2.0	**32**	**130**	8.7	<2.0	<2.0
MW-5		A	3/15/00	<2.5	<2.5	<2.5	<2.5	<2.5	<50	<5.0	<2.5	<2.5	<2.5	<2.5	<5.0	<2.5	**84**	**190**	8.7	<2.5	<2.5
MW-5		A	9/20/00	<2.5	<2.5	<2.5	<2.5	<2.5	<25	<5.0	<2.5	<2.5	<2.5	<2.5	<5.0	<2.5	**48**	**140**	**20**	<2.5	**10**
MW-5		A	3/14/01	<2.5	<2.5	<2.5	<2.5	<2.5	<25	<5.0	<2.5	<2.5	<2.5	<2.5	<5.0	<2.5	**41**	**120**	4.7	<2.5	<2.5
MW-5		A	9/26/01	<2.0	<2.0	<2.0	<2.0	<4.0	<20	<4.0	<2.0	<2.0	<2.0	<2.0	<4.0	<2.0	**34**	**100**	**14**	<2.0	**5.1**
MW-5		A	10/3/02	<0.50	<0.50	<0.50	<0.50	<0.50	<5.0	<1.0	<0.50	<0.50	<0.50	<0.50	<1.0	<0.50	**32**	**85**	**12**	<0.50	**1.9**
MW-5		A	3/26/03	<1.0	<1.0	<1.0	<1.0	<1.0	<10	<2.0	<1.0	<1.0	<1.0	<1.0	<2.0	<1.0	**35**	**100**	4.4	<1.0	<1.0
MW-5		A	9/23/03	<0.50	<0.50	<0.50	<0.50	<0.50	<5.0	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	**52**	**120**	8.1	<0.50	<0.50
MW-5		A	3/9/04	<0.50	<0.50	<0.50	<0.50	<0.50	<5.0	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	**43**	**100**	5.9	<0.50	**0.78**
MW-5		A	3/8/05	<0.50	<0.50	<0.50	<0.50	<0.50	<5.0	<0.50	<0.50	<0.50	1.6	<0.50	<0.50	<0.50	**100**	**240**	**22**	1.5	**4.1**
MW-5		A	3/15/06	< 0.90	< 0.90	< 0.90	< 0.90	< 0.90	< 5.0	< 0.90	< 0.90	< 0.90	2.1	< 0.90	< 0.90	< 0.90	**120**	**270**	**26**	1.3	**4.6**
MW-5		A	2/1/07	<1.5	<1.5	<1.5	<1.5	<1.5	< 5.0	<1.5	<1.5	<1.5	2.2	<1.5	<1.5	<1.5	**130**	**320**	**33**	1.9	**9.0**
MW-5 (d)		A	2/1/07	<1.5	<1.5	<1.5	<1.5	<1.5	< 5.0	<1.5	<1.5	<1.5	2.5	<1.5	<1.5	<1.5	**140**	**350**	**35**	2.0	**11**
MW-5		A	2/7/08	0.71	<0.50	<0.50	<0.50	<0.50	< 5.0	<0.50	<0.50	<0.50	3.3	<0.50	<0.50	<0.50	**150**	**310**	**30**	1.7	**7.1**
MW-5 (d)		A	2/7/08	0.65	<0.50	<0.50	<0.50	<0.50	< 5.0	<0.50	<0.50	<0.50	3.2	<0.50	<0.50	<0.50	**140**	**310**	**31**	1.8	**7.5**
MW-5		A	2/4/09	<1.5	<1.5	<1.5	<1.5	<1.5	< 5.0	<1.5	<1.5	<1.5	3.2	<1.5	<1.5	<1.5	**94**	**350**	**31**	<1.5	**8.7**
MW-5 (d)		A	2/4/09	<2.0	<2.0	<2.0	<2.0	<2.0	< 5.0	<2.0	<2.0	<2.0	3.4	<2.0	<2.0	<2.0	**95**	**350**	**30**	<2.0	**8.6**
MW-5		A	2/2/10	<1.5	<1.5	<1.5	<1.5	<1.5	<5.0	<1.5	<1.5	<1.5	4.8	<1.5	<1.5	<1.5	**200**	**390**	**16**	2.6	**10**
MW-5		A	2/9/11	<1.5	<1.5	<1.5	<1.5	<1.5	<5.0	<1.5	<1.5	<1.5	4.6	<1.5	<1.5	<1.5	**190**	**360**	**14**	3.1	**6.6**
MW-5	O&M	A	2/13/13	<1.5	<1.5	<1.5	<1.5	<1.5	<5.0	<1.5	<1.5	<1.5	2.6	<1.5	<1.5	<1.5	**52**	**340**	**19**	3.3	**26**
MW-5	O&M	A	6/11/15	<1.2	<1.2	<1.2	<1.2	<1.2	<12.5	<1.2	<1.2	<1.2	2.3	<1.2	<1.2	<1.2	**50.8**	**217**	9.6	<1.2	**8.7**
MW-5	O&M	A	2/14/17	<0.84	<0.84	<0.84	<0.84	<0.84	<8.4	<3.3	<0.84	<0.84	2.7	<0.84	<3.3	<0.84	**29.8**	**245**	**21**	1.2	**31.6**
MW-5	O&M	A	2/11/19	<0.50	<0.50	<0.50	<0.50	<0.50	<5.0	<0.50	<0.50	<0.50	1.44	<0.50	<2.0	<0.50	**52.5**	**320**	6.35	0.60	**0.707**
MW-6		A	11/1/96	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50
MW-6		A	3/21/97	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50
MW-6		A	6/26/97	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50
MW-6		A	9/22/97	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50
MW-6		A	12/18/97	<0.50	<0.50	<0.50	<0.50	<0.50	<2.5	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50
MW-6		A	3/23/98	<0.50	<0.50	<0.50	<0.50	<3.0	<5.0	<1.0	<0.50	<0.50	<0.50	<0.50	<1.0	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50

Table 5H
Groundwater Monitoring Volatile Organic Compounds Data
Monitored Natural Attenuation and Destroyed/Not Used Wells
Former Kaiser Aerotech Facilities
San Leandro, California

Well ID	Notes	GW Zone	Sample Date	1,2-DCB	1,3-DCB	1,4-DCB	Chloro-benzene	Chloro-form	Methylene Chloride	Chloro-methane	1,1,1-TCA	1,1,2-TCA	1,1-DCA	1,2-DCA	Chloro-ethane	PCE	TCE	cis-1,2-DCE	trans-1,2-DCE	1,1-DCE	Vinyl Chloride
				8260*	8260*	8260*	8260*	8260*	8260*	8260*	8260*	8260*	8260*	8260*	8260*	8260*	8260*	8260*	8260*	8260*	8260*
				(ug/L)	(ug/L)	(ug/L)	(ug/L)	(ug/L)	(ug/L)	(ug/L)	(ug/L)	(ug/L)	(ug/L)	(ug/L)	(ug/L)	(ug/L)	(ug/L)	(ug/L)	(ug/L)	(ug/L)	(ug/L)
			MCLs	600	-	5	70	80	5	-	200	5	5	0.5	-	5	5	6	10	6	0.5
			Regulatory Date	9/8/94	-	4/4/89	9/8/94	6/17/06	2/25/89	-	2/25/89	9/8/94	6/24/90	4/4/89	-	5/89	2/25/89	9/8/94	9/8/94	2/25/89	4/4/89
MW-6		A	6/17/98	<0.50	<0.50	<0.50	<0.50	<3.0	<5.0	<1.0	<0.50	<0.50	<0.50	<0.50	<1.0	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50
MW-6		A	9/24/98	<0.50	<0.50	<0.50	<0.50	<0.50	<5.0	<1.0	<0.50	<0.50	<0.50	<0.50	<1.0	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50
MW-6		A	12/10/98	<0.50	<0.50	<0.50	<0.50	<3.0	<5.0	<1.0	<0.50	<0.50	<0.50	<0.50	<1.0	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50
MW-6		A	3/23/99	<0.50	<0.50	<0.50	<0.50	<3.0	<5.0	<1.0	<0.50	<0.50	<0.50	<0.50	<1.0	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50
MW-6		A	6/23/99	<0.50	<0.50	<0.50	<0.50	<0.50	<5.0	<1.0	<0.50	<0.50	<0.50	<0.50	<1.0	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50
MW-6		A	12/18/99	<0.50	<0.50	<0.50	<0.50	<0.50	<5.0	<1.0	<0.50	<0.50	<0.50	<0.50	<1.0	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50
MW-6		A	3/15/00	<0.50	<0.50	<0.50	<0.50	<0.50	<10	<1.0	<0.50	<0.50	<0.50	<0.50	<1.0	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50
MW-6		A	9/20/00	<0.50	<0.50	<0.50	<0.50	<0.50	<5.0	<1.0	<0.50	<0.50	<0.50	<0.50	<1.0	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50
MW-6		A	3/14/01	<0.50	<0.50	<0.50	<0.50	<0.50	<5.0	<1.0	<0.50	<0.50	<0.50	<0.50	<1.0	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50
MW-6		A	10/3/02	<0.50	<0.50	<0.50	<0.50	<0.50	<5.0	<1.0	<0.50	<0.50	<0.50	<0.50	<1.0	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50
MW-6		A	3/26/03	<0.50	<0.50	<0.50	<0.50	<0.50	<5.0	<1.0	<0.50	<0.50	<0.50	<0.50	<1.0	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50
MW-6		A	5/18/06	<0.50	<0.50	<0.50	<0.50	<0.50	<5.0	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	**8.8**	1.2	<0.50	**0.57**
MW-6		A	8/15/07	<0.50	<0.50	<0.50	<0.50	<0.50	<5.0	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	3.4	**45**	8.6	<0.50	**1.1**
MW-6		A	2/5/08	<0.50	<0.50	<0.50	<0.50	<0.50	<5.0	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	1.3	**49**	**12**	<0.50	**4.1**
MW-6		A	2/2/09	<0.50	<0.50	<0.50	<0.50	<0.50	<5.0	<0.50	<0.50	<0.50	0.72	<0.50	<0.50	<0.50	<0.50	**15**	**19**	<0.50	**33**
MW-6		A	2/2/10	<0.50	<0.50	<0.50	<0.50	<0.50	<5.0	<0.50	<0.50	<0.50	1.5	<0.50	<0.50	<0.50	<0.50	**17**	**18**	<0.50	**73**
MW-6		A	2/9/11	<0.50	<0.50	<0.50	<0.50	<0.50	<5.0	<0.50	<0.50	<0.50	2.1	<0.50	<0.50	<0.50	<0.50	5.9	9.6	<0.50	**41**
MW-6	O&M	A	3/4/13	<0.50	<0.50	<0.50	0.54	<0.50	<5.0	<0.50	<0.50	<0.50	2.2	<0.50	<0.50	<0.50	<0.50	3.5	**13**	<0.50	**24**
MW-6	O&M	A	6/10/15	<0.50	<0.50	<0.50	0.69	<0.50	<5.0	<0.50	<0.50	<0.50	1.6	<0.50	<0.50	<0.50	<0.50	**24.1**	**12.8**	<0.50	**97.9**
MW-6	O&M	A	2/15/17	<0.50	<0.50	<0.50	<0.50	<0.50	<5.0	<2.0	<0.50	<0.50	<0.50	<0.50	<2.0	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50
MW-6	O&M	A	2/11/19	<0.50	<0.50	<0.50	<0.50	<0.50	<5.0	<0.50	<0.50	<0.50	1.35	<0.50	<2.0	<0.50	<0.50	**39.4**	5.25	<0.50	**13.5**
MW-8A		A	3/21/97	<50	<50	<50	<50	<50	<50	<50	<50	<50	<50	<50	<50	<50	**410**	**2,200**	<50	<50	**270**
MW-8A		A	6/25/97	<60	<60	<60	<60	<60	<200	<200	<60	<60	<60	<60	<200	<60	**570**	**3,300**	<60	<60	**810**
MW-8A		A	9/22/97	<100	<100	<100	<100	<100	**160**	<100	<100	<100	<100	<100	<100	<100	**490**	**2,100**	<100	<100	**160**
MW-8A		A	12/18/97	<100	<100	<100	<100	<100	<500	<100	<100	<100	<100	<100	<100	**140**	**450**	**1,300**	<100	<100	<100
MW-8A		A	3/23/98	<100	<100	<100	<100	<600	<1,000	<200	<100	<100	<100	<100	<200	<100	**610**	**1,800**	<100	<100	**210**
MW-8A		A	6/17/98	<10	<10	<10	<10	<60	<100	<20	<10	<10	<10	<10	<20	<10	**680**	**1,800**	<10	<10	**120**
MW-8A		A	9/22/98	<10	<10	<10	<10	<10	<100	<20	**25**	<10	**25**	<10	<20	<10	**700**	**2,400**	**11**	**22**	**830**
MW-8A		A	12/9/98	<10	<10	<10	<10	<60	<100	<20	<10	<10	<10	<10	<20	<10	**61**	**100**	<10	<10	<10
MW-8A		A	3/22/99	<0.50	<0.50	<0.50	<0.50	<3.0	<5.0	<1.0	<0.50	<0.50	<0.50	<0.50	<1.0	<0.50	1.3	**26**	<0.50	<0.50	<0.50
MW-8A		A	6/28/99	<5.0	<5.0	<5.0	<5.0	<30	<50	<10	**31**	<5.0	**21**	<5.0	<10	<5.0	**580**	**1,900**	**12**	**14**	**180**
MW-8A		A	9/21/99	<50	<50	<50	<50	<300	<500	<100	<50	<50	<50	<50	<100	<50	**570**	**2,100**	<50	<50	**63**
MW-8A		A	12/14/99	<1.0	<1.0	<1.0	<1.0	<1.0	<10	<2.0	<1.0	<1.0	<1.0	<1.0	<2.0	<1.0	**26**	**51**	<1.0	<1.0	**5.7**
MW-8A		A	3/14/00	<13	<13	<13	<13	<13	<130	<25	<13	<13	**15**	<13	<25	<13	**420**	**1,400**	<13	<13	**140**
MW-8A		A	9/20/00	<25	<25	<25	<25	<25	<250	<50	<25	<25	<25	<25	<50	<25	**570**	**1,800**	<25	<25	**160**

Table 5H
Groundwater Monitoring Volatile Organic Compounds Data
Monitored Natural Attenuation and Destroyed/Not Used Wells
Former Kaiser Aerotech Facilities
San Leandro, California

Well ID	Notes	GW Zone	Sample Date	1,2-DCB	1,3-DCB	1,4-DCB	Chloro-benzene	Chloro-form	Methylene Chloride	Chloro-methane	1,1,1-TCA	1,1,2-TCA	1,1-DCA	1,2-DCA	Chloro-ethane	PCE	TCE	cis-1,2-DCE	trans-1,2-DCE	1,1-DCE	Vinyl Chloride
				8260*	8260*	8260*	8260*	8260*	8260*	8260*	8260*	8260*	8260*	8260*	8260*	8260*	8260*	8260*	8260*	8260*	8260*
				(ug/L)	(ug/L)	(ug/L)	(ug/L)	(ug/L)	(ug/L)	(ug/L)	(ug/L)	(ug/L)	(ug/L)	(ug/L)	(ug/L)	(ug/L)	(ug/L)	(ug/L)	(ug/L)	(ug/L)	(ug/L)
			MCLs	600	-	5	70	80	5	-	200	5	5	0.5	-	5	5	6	10	6	0.5
			Regulatory Date	9/8/94	-	4/4/89	9/8/94	6/17/06	2/25/89	-	2/25/89	9/8/94	6/24/90	4/4/89	-	5/89	2/25/89	9/8/94	9/8/94	2/25/89	4/4/89
MW-8A		A	3/13/01	<25	<25	<25	<25	<25	<250	<50	<25	<25	<25	<25	<50	<25	580	1,400	<25	<25	120
MW-8A		A	9/24/01	<25	<25	<25	<25	<25	<250	<50	<25	<25	<25	<25	<50	<25	470	1,300	<25	<25	61
MW-8A		A	3/28/02	<50	<50	<50	<50	<50	<500	<100	<50	<50	<50	<50	<100	<50	600	1,500	<50	<50	110
MW-8A		A	10/3/02	<25	<25	<25	<25	<25	<250	<50	<25	<25	<25	<25	<50	<25	590	1,500	<25	<25	110
MW-8A		A	3/26/03	<20	<20	<20	<20	<20	<200	<40	<20	<20	<20	<20	<40	<20	440	1,100	<20	<20	120
MW-8A		A	9/24/03	<1.0	<1.0	<1.0	2.3	<1.0	<10	<1.0	2.0	<1.0	12	<1.0	<1.0	<1.0	450	1,200	9.8	12	130
MW-8A		A	3/10/04	<0.50	<0.50	<0.50	1.3	<0.50	<5.0	<0.50	1.1	<0.50	7.8	<0.50	<0.50	<0.50	330	830	7.0	6.1	75
MW-8A		A	3/9/05	<2.5	<2.5	<2.5	<2.5	<2.5	<5.0	<2.5	<2.5	<2.5	5.2	<2.5	<2.5	<2.5	150	520	5.7	4.4	35
MW-8A		A	3/15/06	< 1.5	< 1.5	< 1.5	< 1.5	< 1.5	< 5.0	< 1.5	< 1.5	< 1.5	4.6	< 1.5	< 1.5	< 1.5	160	480	7.0	4.4	72
MW-8A		A	2/1/07	<0.50	<0.50	<0.50	1.2	<0.50	<5.0	<0.50	<0.50	<0.50	3.6	<0.50	<0.50	<0.50	100	580	6.7	5.0	100
MW-8A		A	2/5/08	<2.0	<2.0	<2.0	<5.0	<2.0	<2.0	<2.0	<2.0	<2.0	3.2	<2.0	<2.0	<2.0	70	450	6.7	3.5	65
MW-8A		A	2/1/10	<1.5	<1.5	<1.5	<1.5	<1.5	<5.0	<1.5	<1.5	<1.5	1.8	<1.5	<1.5	<1.5	43	320	5.0	2.1	57
MW-8A		A	2/8/11	<1.5	<1.5	<1.5	<1.5	<1.5	<5.0	<1.5	<1.5	<1.5	2.1	<1.5	<1.5	<1.5	40	400	5.0	3.3	110
MW-8A	O&M	A	2/14/13	<0.90	<0.90	<0.90	0.93	<0.90	<5.0	<0.90	<0.90	<0.90	1.1	<0.90	<0.90	<0.90	15	220	5.4	1.2	57
MW-8A	O&M	A	6/10/15	Insufficient Water to Sample																	
MW-8A	O&M	A	2/14/17	<0.50	<0.50	<0.50	0.74	<0.50	<5.0	<2.0	<0.50	<0.50	0.90	<0.50	<2.0	<0.50	13.3	133	3.0	0.79	65.3
MW-8A	O&M	A	2/11/19	<0.50	<0.50	<0.50	0.646	<0.50	<5.0	<0.50	<0.50	<0.50	0.689	<0.50	<2.0	<0.50	9.23	109	3.13	<0.50	27.5
MW-9		A	10/31/96	<50	<50	<50	<50	<50	<50	<50	<50	<50	<50	<50	<50	<50	180	980	100	<50	140
MW-9		A	3/21/97	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	210	1,000	140	<5.0	38
MW-9(d)		A	3/21/97	<13	<13	<13	<13	<13	<13	<13	<13	<13	<13	<13	<13	<13	150	880	140	<13	30
MW-9		A	6/25/97	<15	<15	<15	<15	<15	<50	<50	<15	<15	<15	<15	<50	<15	87	830	120	<15	100
MW-9(d)		A	6/26/97	<30	<30	<30	<30	<30	<100	<100	<30	<30	<30	<30	<100	<30	84	840	120	<30	94
MW-9		A	9/22/97	<25	<25	<25	<25	<25	<25	<25	<25	<25	<25	<25	<25	<25	71	640	110	<25	49
MW-9(d)		A	9/22/97	<13	<13	<13	<13	<13	<13	<13	<13	<13	<13	<13	<13	<13	74	660	110	<13	48
MW-9		A	12/19/97	<25	<25	<25	<25	<25	<130	<25	<25	<25	<25	<25	<25	<25	110	1,100	180	<25	50
MW-9(d)		A	12/19/97	<13	<13	<13	<13	<13	<63	<13	<13	<13	<13	<13	<13	<13	96	990	160	<13	47
MW-9		A	3/24/98	<50	<50	<50	<50	<300	<500	<100	<50	<50	<50	<50	<100	<50	70	450	88	<50	53
MW-9(d)		A	3/24/98	<5.0	<5.0	<5.0	<5.0	<30	<50	<10	<5.0	<5.0	<5.0	<5.0	<10	<5.0	59	660	82	<5.0	30
MW-9		A	6/18/98	<2.5	<2.5	<2.5	<2.5	<15	<25	<5.0	<2.5	<2.5	<2.5	<2.5	<5.0	<2.5	95	780	120	<2.5	32
MW-9(d)		A	6/18/98	<2.5	<2.5	<2.5	<2.5	<15	<25	<5.0	<2.5	<2.5	5.7	<2.5	<5.0	<2.5	98	770	140	<2.5	39
MW-9		A	9/22/98	<10	<10	<10	<10	<10	<100	<20	<10	<10	<10	<10	<20	<10	100	850	160	<10	200
MW-9(d)		A	9/22/98	<10	<10	<10	<10	<10	<100	<20	<10	<10	<10	<10	<20	<10	84	660	120	<10	74
MW-9		A	12/9/98	<5.0	<5.0	<5.0	<5.0	<30	<50	<10	<5.0	<5.0	<5.0	<5.0	<10	<5.0	91	620	88	<5.0	33
MW-9(d)		A	12/9/98	<5.0	<5.0	<5.0	<5.0	<30	<50	<10	<5.0	<5.0	<5.0	<5.0	<10	<5.0	96	640	91	<5.0	34
MW-9		A	3/22/99	<10	<10	<10	<10	<60	<100	<20	<10	<10	<10	<10	<20	<10	170	1,100	170	<10	50

Table 5H
Groundwater Monitoring Volatile Organic Compounds Data
Monitored Natural Attenuation and Destroyed/Not Used Wells
Former Kaiser Aerotech Facilities
San Leandro, California

Well ID	Notes	GW Zone	Sample Date	1,2-DCB	1,3-DCB	1,4-DCB	Chloro-benzene	Chloro-form	Methylene Chloride	Chloro-methane	1,1,1-TCA	1,1,2-TCA	1,1-DCA	1,2-DCA	Chloro-ethane	PCE	TCE	cis-1,2-DCE	trans-1,2-DCE	1,1-DCE	Vinyl Chloride
				8260*	8260*	8260*	8260*	8260*	8260*	8260*	8260*	8260*	8260*	8260*	8260*	8260*	8260*	8260*	8260*	8260*	8260*
				(ug/L)	(ug/L)	(ug/L)	(ug/L)	(ug/L)	(ug/L)	(ug/L)	(ug/L)	(ug/L)	(ug/L)	(ug/L)	(ug/L)	(ug/L)	(ug/L)	(ug/L)	(ug/L)	(ug/L)	(ug/L)
			MCLs	600	-	5	70	80	5	-	200	5	5	0.5	-	5	5	6	10	6	0.5
			Regulatory Date	9/8/94	-	4/4/89	9/8/94	6/17/06	2/25/89	-	2/25/89	9/8/94	6/24/90	4/4/89	-	5/89	2/25/89	9/8/94	9/8/94	2/25/89	4/4/89
MW-9(d)		A	3/22/99	<5.0	<5.0	<5.0	<5.0	<30	<50	<10	<5.0	<5.0	<5.0	<5.0	<10	<5.0	**240**	**1,200**	**220**	<5.0	**46**
MW-9(d)		A	6/22/99	<25	<25	<25	<25	<150	<250	<50	<25	<25	<25	<25	<50	<25	<25	**7,400**	**1,400**	<25	**620**
MW-9		A	6/29/99	<10	<10	<10	<10	<60	<100	<20	<10	<10	<10	<10	<20	<10	**150**	**950**	**160**	<10	**110**
MW-9		A	9/21/99	<25	<25	<25	<25	<150	<250	<50	<25	<25	<25	<25	<50	<25	**210**	**1,400**	**230**	<25	**66**
MW-9		A	9/21/99	<25	<25	<25	<25	<150	<250	<50	<25	<25	<25	<25	<50	<25	**170**	**1,300**	**220**	<25	**44**
MW-9(d)		A	9/21/99	<10	<10	<10	<10	<60	<100	<20	<10	<10	<10	<10	<20	<10	**180**	**1,100**	**210**	<10	**66**
MW-9		A	12/15/99	<25	<25	<25	<25	<25	<250	<50	<25	<25	<25	<25	<50	<25	**190**	**1,600**	**300**	<25	**79**
MW-9(d)		A	12/15/99	<10	<10	<10	<10	<10	<100	<20	<10	<10	<10	<10	<20	<10	**170**	**1,300**	**290**	<10	**96**
MW-9		A	3/14/00	<25	<25	<25	<25	<25	<500	<50	<25	<25	<25	<25	<50	<25	**270**	**1,400**	**320**	<25	<25
MW-9(d)		A	3/14/00	<10	<10	<10	<10	<10	<200	<20	<10	<10	<10	<10	<20	<10	**240**	**1,100**	**280**	<10	**81**
MW-9		A	9/21/00	<25	<25	<25	<25	<25	<250	<50	<25	<25	<25	<25	<50	<25	**170**	**1,400**	**280**	<25	**120**
MW-9(d)		A	9/21/00	<10	<10	<10	<10	<10	<100	<20	<10	<10	<10	<10	<20	<10	**160**	**1,000**	**250**	<10	**120**
MW-9		A	3/13/01	<25	<25	<25	<25	<25	<250	<50	<25	<25	<25	<25	<50	<25	**110**	**1,100**	**200**	<25	**69**
MW-9(d)		A	3/13/01	<10	<10	<10	<10	<10	<100	<20	<10	<10	<10	<10	<20	<10	**98**	**1,000**	**210**	<10	**75**
MW-9		A	9/25/01	<25	<25	<25	<25	<25	<250	<50	<25	<25	<25	<25	<50	<25	**100**	**930**	**200**	<25	**54**
MW-9(d)		A	9/25/01	<10	<10	<10	<10	<10	<100	<20	<10	<10	<10	<10	<20	<10	<10	**1,300**	**260**	<10	**110**
MW-9		A	3/28/02	<25	<25	<25	<25	<25	<250	<50	<25	<25	<25	<25	<50	<25	**93**	**1,200**	**170**	<25	**54**
MW-9(d)		A	3/28/02	<10	<10	<10	<10	<10	<100	<20	<10	<10	<10	<10	<20	<10	**120**	**1,500**	<25	<10	**88**
MW-9		A	10/3/02	<25	<25	<25	<25	<25	<250	<50	<25	<25	<25	<25	<50	<25	**120**	**1,300**	**220**	<25	**82**
MW-9		A	3/26/03	<10	<10	<10	<10	<10	<100	<20	<10	<10	<10	<10	<20	<10	**49**	**580**	**72**	<10	**42**
MW-9		A	3/9/04	<0.50	<0.50	<0.50	<0.50	<0.50	<5.0	<0.50	0.89	<0.50	**9.4**	<0.50	<0.50	<0.50	**66**	**920**	**110**	4.1	**59**
MW-9		A	3/10/05	<2.5	<2.5	<2.5	<2.5	<2.5	<5.0	<2.5	<2.5	<2.5	**9.6**	<2.5	<2.5	<2.5	**100**	**800**	**150**	**6.2**	**84**
MW-9		A	3/15/06	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 5.0	< 1.0	< 1.0	< 1.0	**6.6**	< 1.0	< 1.0	< 1.0	**37**	**650**	**85**	2.2	**47**
MW-9		A	2/1/07	<2.5	<2.5	<2.5	<2.5	<2.5	<5.0	<2.5	<2.5	<2.5	**6.4**	<2.5	<2.5	<2.5	**33**	**600**	**98**	3.3	**59**
MW-9		A	2/5/08	<1.5	<1.5	<1.5	<1.5	<1.5	<5.0	<1.5	<1.5	<1.5	4.7	<1.5	<1.5	<1.5	**8.9**	**340**	**70**	<1.5	**54**
MW-9		A	2/2/09	<0.90	<0.90	<0.90	<0.90	<0.90	<5.0	<0.90	<0.90	<0.90	3.6	<0.90	<0.90	<0.90	4.5	**240**	**80**	<0.90	**87**
MW-9		A	2/1/10	<0.90	<0.90	<0.90	<0.90	<0.90	<5.0	<0.90	<0.90	<0.90	3.2	<0.90	<0.90	<0.90	**6.8**	**380**	**100**	1.5	**28**
MW-9		A	2/8/11	<0.50	<0.50	<0.50	<0.50	<0.50	<5.0	<0.50	<0.50	<0.50	2.6	<0.50	<0.50	<0.50	<0.50	**84**	**42**	<0.50	**76**
MW-9	O&M	A	2/12/13	<0.50	<0.50	<0.50	<0.50	<0.50	<5.0	<0.50	<0.50	<0.50	1.8	<0.50	<0.50	<0.50	3.1	**270**	**110**	0.62	**97**
MW-9	O&M	A	6/9/15	<2.5	<2.5	<2.5	<2.5	<2.5	<25	<2.5	<2.5	<2.5	<2.5	<2.5	<2.5	<2.5	**778**	**1,660**	**386**	**11.5**	**91.3**
MW-9	Sup.	A	2/23/16	<2.8	<2.8	<2.8	<2.8	<2.8	<27.8	<11.1	<2.8	<2.8	<2.8	<2.8	<11.1	<2.8	**64**	**1,040**	**154**	3.7	**167**
MW-9	Sup. , DUP 1	A	2/23/16	<3.1	<3.1	<3.1	<3.1	<3.1	<31.2	<12.5	<3.1	<3.1	<3.1	<3.1	<12.5	<3.1	**243**	**1,110**	**196**	5.1	**131**
MW-9	Sup.	A	9/22/16	<5.0	<5.0	<5.0	<5.0	<5.0	<50.0	<5.0	<5.0	<5.0	<5.0	<5.0	<20.0	<5.0	**446**	**1,440**	**255**	**7.7**	**55.9**
MW-9	O&M	A	2/14/17	<1.7	<1.7	<1.7	<1.7	<1.7	<16.6	<6.7	<1.7	<1.7	<1.7	<1.7	<6.7	<1.7	**49.3**	**607**	**138**	2.4	**129**
MW-9	O&M, DUP 1	A	2/14/17	<2.5	<2.5	<2.5	<2.5	<2.5	<25.0	<10.0	<2.5	<2.5	<2.5	<2.5	<10.0	<2.5	**42.5**	**607**	**123**	<2.5	**115**
MW-9	Sup.	A	9/20/17	<1.2	<1.2	<1.2	<1.2	<1.2	<12.5	<5.0	<1.2	<1.2	<1.2	<1.2	<5.0	<1.2	**21.3**	**458**	**112**	1.7	**108**

Table 5H
Groundwater Monitoring Volatile Organic Compounds Data
Monitored Natural Attenuation and Destroyed/Not Used Wells
Former Kaiser Aerotech Facilities
San Leandro, California

Well ID	Notes	GW Zone	Sample Date	1,2-DCB	1,3-DCB	1,4-DCB	Chloro-benzene	Chloro-form	Methylene Chloride	Chloro-methane	1,1,1-TCA	1,1,2-TCA	1,1-DCA	1,2-DCA	Chloro-ethane	PCE	TCE	cis-1,2-DCE	trans-1,2-DCE	1,1-DCE	Vinyl Chloride
				8260*	8260*	8260*	8260*	8260*	8260*	8260*	8260*	8260*	8260*	8260*	8260*	8260*	8260*	8260*	8260*	8260*	8260*
				(ug/L)	(ug/L)	(ug/L)	(ug/L)	(ug/L)	(ug/L)	(ug/L)	(ug/L)	(ug/L)	(ug/L)	(ug/L)	(ug/L)	(ug/L)	(ug/L)	(ug/L)	(ug/L)	(ug/L)	(ug/L)
			MCLs	600	-	5	70	80	5	-	200	5	5	0.5	-	5	5	6	10	6	0.5
			Regulatory Date	9/8/94	-	4/4/89	9/8/94	6/17/06	2/25/89	-	2/25/89	9/8/94	6/24/90	4/4/89	-	5/89	2/25/89	9/8/94	9/8/94	2/25/89	4/4/89
MW-9	Sup.	A	2/13/18	<1.67	<1.67	<1.67	<1.67	<1.67	<16.7	<1.67	<1.67	<1.67	<1.67	<1.67	<6.66	<1.67	**9.99**	**228**	**90.8**	<1.67	**151**
MW-9	Sup.	A	9/26/18	<0.50	<0.50	<0.50	1.2	<0.50	<2.5	<1.25	<0.50	<0.50	0.85	<0.50	<2.5	<0.50	**15.4**	**747**	**231**	2.7	**93.1**
MW-9	Sup., DUP	A	9/26/18	<0.50	<0.50	<0.50	1.2	<0.50	<2.5	<1.25	<0.50	<0.50	0.71	<0.50	<2.5	<0.50	**15.4**	**705**	**217**	2.7	**89.2**
MW-9	O&M	A	2/11/19	<0.50	<0.50	<0.50	0.855	<0.50	<5.0	<0.50	<0.50	<0.50	0.637	<0.50	<2.0	<0.50	**5.27**	**239**	**113**	0.543	**141**
MW-9	O&M	A	3/10/20	<0.50	<0.50	<0.50	0.692	<0.50	<2.5	<1.25	<0.50	<0.50	0.559	<0.50	<2.5	<0.50	4.47	**262**	**94.3**	1.06	**107**
MW-9	O&M, DUP	A	3/10/20	<0.50	<0.50	<0.50	0.673	<0.50	<2.5	<1.25	<0.50	<0.50	0.558	<0.50	<2.5	<0.50	4.23	**252**	**89.9**	1.04	**57.3**
MW-12		A	3/21/97	<0.50	<0.50	<0.50	<0.50	4.5	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	2.7	2.2	1.4	<0.50	<0.50
MW-12		A	6/25/97	<0.50	<0.50	<0.50	<0.50	<0.50	3.7	2.4	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	2.3	4.1	2.7	<0.50	**5.7**
MW-12		A	9/22/97	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	2.9	2.6	1.4	<0.50	<0.50
MW-12		A	12/19/97	<0.50	<0.50	<0.50	<0.50	<0.50	<2.5	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	2.3	3.3	2.2	<0.50	**1.4**
MW-12		A	3/24/98	<0.50	<0.50	<0.50	<0.50	<3.0	<5.0	<1.0	<0.50	<0.50	<0.50	<0.50	<1.0	<0.50	1.9	1.9	1.3	<0.50	**1.2**
MW-12		A	6/17/98	<0.50	<0.50	<0.50	<0.50	<3.0	<5.0	<1.0	<0.50	<0.50	<0.50	<0.50	<1.0	<0.50	1.5	1.4	<0.50	<0.50	<0.50
MW-12		A	9/22/98	<0.50	<0.50	<0.50	<0.50	<0.50	<5.0	<1.0	<0.50	<0.50	<0.50	<0.50	<1.0	<0.50	2.3	1.9	0.97	<0.50	<0.50
MW-12		A	12/9/98	<0.50	<0.50	<0.50	<0.50	<3.0	<5.0	<1.0	<0.50	<0.50	<0.50	<0.50	<1.0	<0.50	3.4	4.4	<0.50	<0.50	<0.50
MW-12		A	3/22/99	<0.50	<0.50	<0.50	<0.50	<3.0	<5.0	<1.0	<0.50	<0.50	<0.50	<0.50	<1.0	<0.50	<0.50	0.84	<0.50	<0.50	<0.50
MW-12		A	6/23/99	<0.50	<0.50	<0.50	<0.50	<0.50	<5.0	<1.0	<0.50	<0.50	<0.50	<0.50	<1.0	<0.50	2.3	1.9	0.95	<0.50	<0.50
MW-12		A	9/21/99	<0.50	<0.50	<0.50	<0.50	<3.0	<5.0	<1.0	<0.50	<0.50	<0.50	<0.50	<1.0	<0.50	2.8	2.7	1.2	<0.50	<0.50
MW-12		A	12/14/99	<0.50	<0.50	<0.50	<0.50	<0.50	<5.0	<1.0	<0.50	<0.50	<0.50	<0.50	<1.0	<0.50	2.6	2.5	1.2	<0.50	<0.50
MW-12		A	3/15/00	<0.50	<0.50	<0.50	<0.50	<0.50	<10	<1.0	<0.50	<0.50	<0.50	<0.50	<1.0	<0.50	1.7	1.2	0.88	<0.50	<0.50
MW-12		A	9/20/00	<0.50	<0.50	<0.50	<0.50	<0.50	<5.0	<1.0	<0.50	<0.50	<0.50	<0.50	<1.0	<0.50	3.2	1.9	1.2	<0.50	<0.50
MW-12		A	3/13/01	<0.50	<0.50	<0.50	<0.50	<0.50	<5.0	<1.0	<0.50	<0.50	<0.50	<0.50	<1.0	<0.50	1.5	1.4	0.63	<0.50	<0.50
MW-12		A	9/25/01	<0.50	<0.50	<0.50	<0.50	<0.50	<5.0	<1.0	<0.50	<0.50	<0.50	<0.50	<1.0	<0.50	1.7	1.6	1.8	<0.50	<0.50
MW-12		A	3/28/02	<0.50	<0.50	<0.50	<0.50	<0.50	<5.0	<1.0	<0.50	<0.50	<0.50	<0.50	<1.0	<0.50	1.7	1.7	0.95	<0.50	<0.50
MW-12		A	10/3/02	<0.50	<0.50	<0.50	<0.50	<0.50	<5.0	<1.0	<0.50	<0.50	<0.50	<0.50	<1.0	<0.50	1.0	0.82	<0.50	<0.50	<0.50
MW-12		A	3/26/03	<0.50	<0.50	<0.50	<0.50	<0.50	<5.0	<1.0	<0.50	<0.50	<0.50	<0.50	<1.0	<0.50	1.5	1.4	0.95	<0.50	<0.50
MW-12		A	3/10/04	<0.50	<0.50	<0.50	<0.50	<0.50	<5.0	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50
MW-12		A	3/9/05	<0.50	<0.50	<0.50	<0.50	<0.50	<5.0	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	0.83	0.98	<0.50	<0.50	<0.50
MW-12		A	3/15/06	<0.50	<0.50	<0.50	<0.50	<0.50	<5.0	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	0.98	1.7	0.71	<0.50	**0.84**
MW-12		A	2/1/07	<0.50	<0.50	<0.50	<0.50	<0.50	<5.0	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	3.6	2.9	1.3	<0.50	**1.3**
MW-12		A	2/5/08	<0.50	<0.50	<0.50	<0.50	<0.50	<5.0	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	1.4	3.0	1.5	<0.50	**2.4**
MW-12		A	2/4/09	<0.50	<0.50	<0.50	<0.50	<0.50	<5.0	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	1.3	2.0	0.60	<0.50	<0.50
MW-12		A	2/1/10	<0.50	<0.50	<0.50	<0.50	<0.50	<5.0	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	1.3	2.5	1.3	<0.50	**1.4**
MW-12		A	2/8/11	<0.50	<0.50	<0.50	<0.50	<0.50	<5.0	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	1.2	2.0	0.88	<0.50	**0.68**
MW-12	O&M	A	2/14/13	<0.50	<0.50	<0.50	<0.50	<0.50	<5.0	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	1.1	2.7	1.3	<0.50	**0.60**
MW-12	O&M	A	6/10/15	<0.50	<0.50	<0.50	<0.50	<0.50	<5.0	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	0.52	2.7	1.2	<0.50	<0.50

Table 5H
Groundwater Monitoring Volatile Organic Compounds Data
Monitored Natural Attenuation and Destroyed/Not Used Wells
Former Kaiser Aerotech Facilities
San Leandro, California

Well ID	Notes	GW Zone	Sample Date	1,2-DCB	1,3-DCB	1,4-DCB	Chloro-benzene	Chloro-form	Methylene Chloride	Chloro-methane	1,1,1-TCA	1,1,2-TCA	1,1-DCA	1,2-DCA	Chloro-ethane	PCE	TCE	cis-1,2-DCE	trans-1,2-DCE	1,1-DCE	Vinyl Chloride
				8260*	8260*	8260*	8260*	8260*	8260*	8260*	8260*	8260*	8260*	8260*	8260*	8260*	8260*	8260*	8260*	8260*	8260*
				(ug/L)	(ug/L)	(ug/L)	(ug/L)	(ug/L)	(ug/L)	(ug/L)	(ug/L)	(ug/L)	(ug/L)	(ug/L)	(ug/L)	(ug/L)	(ug/L)	(ug/L)	(ug/L)	(ug/L)	(ug/L)
			MCLs	600	-	5	70	80	5	-	200	5	5	0.5	-	5	5	6	10	6	0.5
			Regulatory Date	9/8/94	-	4/4/89	9/8/94	6/17/06	2/25/89	-	2/25/89	9/8/94	6/24/90	4/4/89	-	5/89	2/25/89	9/8/94	9/8/94	2/25/89	4/4/89
MW-12	Sup.	A	2/23/16	<0.50	<0.50	<0.50	<0.50	<0.50	<5.0	<2.0	<0.50	<0.50	<0.50	<0.50	<2.0	<0.50	0.51	1.8	0.69	<0.50	<0.50
MW-12	O&M	A	2/13/17	<0.50	<0.50	<0.50	<0.50	<0.50	<5.0	<2.0	<0.50	<0.50	<0.50	<0.50	<2.0	<0.50	0.61	1.9	0.79	<0.50	<0.50
MW-12	O&M	A	2/11/19	<0.50	<0.50	<0.50	<0.50	<0.50	<5.0	<0.50	<0.50	<0.50	<0.50	<0.50	<2.0	<0.50	<0.50	2.46	1.03	<0.50	<0.50
MW-13		A	3/21/97	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	**6.6**	<5.0	<5.0	<5.0	**11**	**250**	**78**	<5.0	**48**
MW-13		A	6/25/97	<6.0	<6.0	<6.0	<6.0	<6.0	<20	<20	<6.0	<6.0	**7.6**	<6.0	<20	NA	**11**	**230**	**52**	<6.0	**40**
MW-13		A	9/22/97	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	**8.8**	<5.0	<5.0	<5.0	**14**	**270**	**63**	<5.0	**30**
MW-13		A	12/18/97	<5.0	<5.0	<5.0	<5.0	<5.0	<25	<5.0	<5.0	<5.0	**11**	<5.0	<5.0	<5.0	**10**	**260**	**67**	<5.0	**20**
MW-13		A	3/23/98	<10	<10	<10	<10	<60	<100	<20	<10	<10	**11**	<10	<20	<10	**42**	**180**	**37**	<10	**10**
MW-13		A	6/17/98	<5.0	<5.0	<5.0	<5.0	<30	<50	<10	<5.0	<5.0	**20**	<5.0	<10	<5.0	**43**	**370**	**100**	<5.0	**110**
MW-13		A	9/24/98	<2.5	<2.5	<2.5	<2.5	<2.5	<25	<5.0	<2.5	<2.5	**11**	<2.5	<5.0	<2.5	**29**	**310**	**58**	<2.5	**85**
MW-13		A	12/9/98	<2.5	<2.5	<2.5	<2.5	<15	<25	<5.0	<2.5	<2.5	**10**	<2.5	<5.0	<2.5	**31**	**230**	**44**	<2.5	**36**
MW-13		A	3/23/99	<2.5	<2.5	<2.5	<2.5	<15	<25	<5.0	<2.5	<2.5	**11**	<2.5	<5.0	<2.5	**180**	**450**	**120**	<2.5	**64**
MW-13		A	6/24/99	<5.0	<5.0	<5.0	<5.0	<5.0	<50	<10	<5.0	<5.0	**8.6**	<5.0	<10	<5.0	**130**	**290**	**83**	<5.0	**210**
MW-13		A	12/14/99	<5.0	<5.0	<5.0	<5.0	<5.0	<50	<10	<5.0	<5.0	**8.9**	<5.0	<10	<5.0	**68**	**340**	**85**	<5.0	**25**
MW-13		A	3/15/00	<5.0	<5.0	<5.0	<5.0	<5.0	<100	<10	<5.0	<5.0	**6.6**	<5.0	<10	<5.0	**150**	**470**	**120**	<5.0	**95**
MW-13		A	9/19/00	<5.0	<5.0	<5.0	<5.0	<5.0	<50	<10	<5.0	<5.0	**7.8**	<5.0	<10	<5.0	**100**	**410**	**100**	<5.0	**58**
MW-13		A	3/14/01	<5.0	<5.0	<5.0	<5.0	<5.0	<50	<10	<5.0	<5.0	**5.1**	<5.0	<10	<5.0	**180**	**500**	**160**	<5.0	**51**
MW-13		A	9/26/01	<5.0	<5.0	<5.0	<5.0	<5.0	<50	<10	<5.0	<5.0	**17**	<5.0	<10	<5.0	**150**	**380**	**82**	<5.0	**44**
MW-13		A	3/28/02	<13	<13	<13	<13	<13	<130	<25	<13	<13	<13	<13	<25	<13	**190**	**630**	**170**	<13	**61**
MW-13		A	10/3/02	<10	<10	<10	<10	<10	<100	<20	<10	<10	<10	<10	<20	<10	**120**	**340**	**73**	<10	<10
MW-13		A	3/27/03	<2.5	<2.5	<2.5	<2.5	<2.5	<25	<5.0	<2.5	<2.5	**6.7**	<2.5	<5.0	<2.5	**50**	**210**	**56**	<2.5	**5.1**
MW-13		A	6/26/03	<0.50	<0.50	<0.50	<0.50	<0.50	<5.0	<0.50	<0.50	<0.50	**9.1**	<0.50	<0.50	<0.50	**75**	**230**	**110**	2.0	**15**
MW-13		A	9/23/03	<0.50	<0.50	<0.50	<0.50	<0.50	<5.0	<0.50	<0.50	<0.50	**7.7**	<0.50	<0.50	<0.50	**56**	**290**	**94**	3.3	**24**
MW-13		A	3/10/04	<0.50	<0.50	<0.50	<0.50	<0.50	<5.0	<0.50	<0.50	<0.50	**5.7**	<0.50	<0.50	<0.50	**32**	**210**	**76**	2.3	**14**
MW-13		A	3/10/05	<0.50	<0.50	<0.50	<0.50	<0.50	<5.0	<0.50	<0.50	<0.50	2.8	<0.50	<0.50	<0.50	**14**	**160**	**52**	1.0	**2.3**
MW-13		A	3/15/06	<0.50	<0.50	<0.50	<0.50	<0.50	<5.0	<0.50	<0.50	<0.50	1.9	<0.50	<0.50	<0.50	**8.4**	**120**	**35**	0.62	<0.50
MW-13		A	2/2/07	<0.50	<0.50	<0.50	<0.50	<0.50	<5.0	<0.50	<0.50	<0.50	3.6	<0.50	<0.50	<0.50	**6.8**	**140**	**32**	0.88	<0.50
MW-13		A	2/5/08	<0.50	<0.50	<0.50	<0.50	<0.50	<5.0	<0.50	<0.50	<0.50	1.4	<0.50	<0.50	<0.50	3.8	**110**	**28**	1.0	<0.50
MW-13		A	2/3/09	<0.50	<0.50	<0.50	<0.50	<0.50	<5.0	<0.50	<0.50	<0.50	0.71	<0.50	<0.50	<0.50	3.2	**84**	**18**	<0.50	<0.50
MW-13		A	2/3/10	<0.50	<0.50	<0.50	<0.50	<0.50	<5.0	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	2.0	**89**	**19**	0.55	<0.50
MW-13		A	2/9/11	<0.50	<0.50	<0.50	<0.50	<0.50	<5.0	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	2.0	**78**	7.1	<0.50	<0.50
MW-13	O&M	A	2/14/13	<0.50	<0.50	<0.50	<0.50	<0.50	<5.0	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	1.8	**57**	9.1	<0.50	<0.50
MW-13	O&M	A	6/11/15	<0.50	<0.50	<0.50	<0.50	<0.50	<5.0	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	1.6	**51.5**	8.7	<0.50	<0.50
MW-13	O&M	A	2/15/17	<0.50	<0.50	<0.50	<0.50	<0.50	<5.0	<2.0	<0.50	<0.50	<0.50	<0.50	<2.0	<0.50	1.3	**46.3**	7.0	<0.50	<0.50
MW-13	O&M	A	2/13/19	<0.50	<0.50	<0.50	<0.50	<0.50	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<2.0	<0.50	1.33	**41.0**	5.38	<0.50	<0.50

Table 5H
Groundwater Monitoring Volatile Organic Compounds Data
Monitored Natural Attenuation and Destroyed/Not Used Wells
Former Kaiser Aerotech Facilities
San Leandro, California

Well ID	Notes	GW Zone	Sample Date	1,2-DCB	1,3-DCB	1,4-DCB	Chloro-benzene	Chloro-form	Methylene Chloride	Chloro-methane	1,1,1-TCA	1,1,2-TCA	1,1-DCA	1,2-DCA	Chloro-ethane	PCE	TCE	cis-1,2-DCE	trans-1,2-DCE	1,1-DCE	Vinyl Chloride
				8260*	8260*	8260*	8260*	8260*	8260*	8260*	8260*	8260*	8260*	8260*	8260*	8260*	8260*	8260*	8260*	8260*	8260*
				(ug/L)	(ug/L)	(ug/L)	(ug/L)	(ug/L)	(ug/L)	(ug/L)	(ug/L)	(ug/L)	(ug/L)	(ug/L)	(ug/L)	(ug/L)	(ug/L)	(ug/L)	(ug/L)	(ug/L)	(ug/L)
			MCLs	600	-	5	70	80	5	-	200	5	5	0.5	-	5	5	6	10	6	0.5
			Regulatory Date	9/8/94	-	4/4/89	9/8/94	6/17/06	2/25/89	-	2/25/89	9/8/94	6/24/90	4/4/89	-	5/89	2/25/89	9/8/94	9/8/94	2/25/89	4/4/89
MW-15		A	9/23/98	<1.0	<1.0	<1.0	<1.0	<1.0	<10	<2.0	<1.0	<1.0	<1.0	<1.0	<2.0	<1.0	**62**	3.4	<1.0	<1.0	<1.0
MW-15		A	12/9/98	<0.50	<0.50	<0.50	<0.50	<3.0	<5.0	<1.0	<0.50	<0.50	<0.50	<0.50	<1.0	<0.50	**41**	1.3	<0.50	<0.50	<0.50
MW-15		A	3/23/99	<0.50	<0.50	<0.50	<0.50	<3.0	<5.0	<1.0	<0.50	<0.50	<0.50	<0.50	<1.0	<0.50	**110**	**6.3**	<0.50	<0.50	<0.50
MW-15		A	6/24/99	<1.0	<1.0	<1.0	<1.0	<1.0	<10	<2.0	<1.0	<1.0	<1.0	<1.0	<2.0	<1.0	**63**	3.4	<1.0	<1.0	<1.0
MW-15		A	12/14/99	<0.50	<0.50	<0.50	<0.50	0.73	<5.0	<1.0	<0.50	<0.50	<0.50	<0.50	<1.0	<0.50	**45**	2.4	<0.50	<0.50	<0.50
MW-15		A	3/15/00	<0.50	<0.50	<0.50	<0.50	<0.50	<10	<1.0	<0.50	<0.50	<0.50	<0.50	<1.0	<0.50	**67**	**8.3**	<0.50	<0.50	<0.50
MW-15		A	9/19/00	<0.50	<0.50	<0.50	<0.50	<0.50	<5.0	<1.0	<0.50	<0.50	<0.50	<0.50	<1.0	<0.50	**56**	3.6	<0.50	<0.50	<0.50
MW-15		A	3/14/01	<1.0	<1.0	<1.0	<1.0	<1.0	<10	<2.0	<1.0	<1.0	<1.0	<1.0	<2.0	<1.0	**68**	4.3	<1.0	<1.0	<1.0
MW-15		A	9/26/01	<1.0	<1.0	<1.0	<1.0	<1.0	<10	<2.0	<1.0	<1.0	<1.0	<1.0	<2.0	<1.0	**55**	<1.0	<1.0	<1.0	<1.0
MW-15		A	3/28/02	<0.50	<0.50	<0.50	<0.50	<0.50	<5.0	<1.0	<0.50	<0.50	<0.50	<0.50	<1.0	<0.50	**54**	3.8	<0.50	<0.50	<0.50
MW-15		A	10/3/02	<1.0	<1.0	<1.0	<1.0	<1.0	<10	<2.0	<1.0	<1.0	<1.0	<1.0	<2.0	<1.0	**45**	1.7	<1.0	<1.0	<1.0
MW-15		A	3/26/03	<0.50	<0.50	<0.50	<0.50	<0.50	<5.0	<1.0	<0.50	<0.50	<0.50	<0.50	<1.0	<0.50	**34**	2.2	<0.50	<0.50	<0.50
MW-15		A	3/10/04	<0.50	<0.50	<0.50	<0.50	<0.50	<5.0	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	**33**	2.4	<0.50	<0.50	<0.50
MW-15		A	3/9/05	<0.50	<0.50	<0.50	<0.50	<0.50	<5.0	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	**36**	3.1	**0.50**	<0.50	<0.50
MW-15		A	3/15/06	<0.50	<0.50	<0.50	<0.50	<0.50	<5.0	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	**53**	5.0	**0.60**	<0.50	<0.50
MW-15		A	1/31/07	<0.50	<0.50	<0.50	<0.50	<0.50	<5.0	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	**49**	**16**	<0.50	<0.50	**0.53**
MW-15		A	2/5/08	<0.50	<0.50	<0.50	<0.50	<0.50	<5.0	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	**38**	**6.5**	<0.50	<0.50	<0.50
MW-15		A	2/3/09	<0.50	<0.50	<0.50	<0.50	<0.50	<5.0	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	**25**	5.4	<0.50	<0.50	<0.50
MW-15		A	2/3/10	<0.50	<0.50	<0.50	<0.50	<0.50	<5.0	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	**28**	**26**	<0.50	<0.50	<0.50
MW-15		A	2/8/11	<0.50	<0.50	<0.50	<0.50	<0.50	<5.0	<0.50	<0.50	<0.50	<0.50	<0.50	27	<0.50	**24**	**98**	1.9	0.62	**47**
MW-15	O&M	A	2/14/13	<0.50	<0.50	<0.50	<0.50	<0.50	<5.0	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	< 0.50	**21**	1.2	<0.50	**61**
MW-15	O&M	A	6/10/15	<0.50	<0.50	<0.50	<0.50	<0.50	<5.0	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	0.86	3.6	<0.50	<0.50	**6.7**
MW-15	O&M	A	2/15/17	<0.50	<0.50	<0.50	<0.50	<0.50	<5.0	<2.0	<0.50	<0.50	<0.50	<0.50	<2.0	<0.50	1.7	1.9	<0.50	<0.50	<0.50
MW-15	O&M	A	2/13/19	<0.50	<0.50	<0.50	<0.50	<0.50	<5.0	<0.50	<0.50	<0.50	<0.50	<0.50	<2.00	<0.50	0.812	1.05	<0.50	<0.50	<0.50
MW-16		A	9/22/98	<100	<100	<100	<100	<100	<1,000	<200	<100	<100	<100	<100	<200	<100	<100	**9,300**	**1,300**	<100	**2,500**
MW-16		A	12/9/98	<10	<10	<10	<10	**86**	<100	<20	<10	<10	<10	<10	<20	<10	<10	**2,300**	**260**	<10	**110**
MW-16		A	3/22/99	<50	<50	<50	<50	<300	<500	<100	<50	<50	<50	<50	<100	<50	**620**	**11,000**	**780**	<50	**82**
MW-16		A	6/22/99	<250	<250	<250	<250	<1500	<2,500	<500	<250	<250	<250	<250	<500	<250	<250	**9,400**	**1,300**	<250	**680**
MW-16		A	9/21/99	<100	<100	<100	<100	<600	<1,000	<200	<100	<100	<100	<100	<200	<100	<100	**12,000**	**1,800**	<100	**720**
MW-16		A	3/14/00	<100	<100	<100	<100	<100	<1,000	<200	<100	<100	<100	<100	<200	<100	<100	**11,000**	**1,500**	<100	**450**
MW-16		A	9/24/01	<100	<100	<100	<100	<100	<1,000	<200	<100	<100	<100	<100	<200	<100	<100	**9,700**	**1,100**	<100	**560**
MW-16		A	3/28/02	<250	<250	<250	<250	<250	<2,500	<500	<250	<250	<250	<250	<500	<250	<250	**7,300**	**880**	<250	**370**
MW-16		A	10/3/02	<50	<50	<50	<50	<50	<500	<100	<50	<50	<50	<50	<100	<50	<50	**5,200**	**940**	<50	**380**
MW-16		A	3/26/03	<50	<50	<50	<50	<50	<500	<100	<50	<50	<50	<50	<100	<50	<50	**2,100**	**500**	<50	**180**

Table 5H
Groundwater Monitoring Volatile Organic Compounds Data
Monitored Natural Attenuation and Destroyed/Not Used Wells
Former Kaiser Aerotech Facilities
San Leandro, California

Well ID	Notes	GW Zone	Sample Date	1,2-DCB	1,3-DCB	1,4-DCB	Chloro-benzene	Chloro-form	Methylene Chloride	Chloro-methane	1,1,1-TCA	1,1,2-TCA	1,1-DCA	1,2-DCA	Chloro-ethane	PCE	TCE	cis-1,2-DCE	trans-1,2-DCE	1,1-DCE	Vinyl Chloride
				8260*	8260*	8260*	8260*	8260*	8260*	8260*	8260*	8260*	8260*	8260*	8260*	8260*	8260*	8260*	8260*	8260*	8260*
				(ug/L)	(ug/L)	(ug/L)	(ug/L)	(ug/L)	(ug/L)	(ug/L)	(ug/L)	(ug/L)	(ug/L)	(ug/L)	(ug/L)	(ug/L)	(ug/L)	(ug/L)	(ug/L)	(ug/L)	(ug/L)
			MCLs	600	-	5	70	80	5	-	200	5	5	0.5	-	5	5	6	10	6	0.5
			Regulatory Date	9/8/94	-	4/4/89	9/8/94	6/17/06	2/25/89	-	2/25/89	9/8/94	6/24/90	4/4/89	-	5/89	2/25/89	9/8/94	9/8/94	2/25/89	4/4/89
MW-16		A	9/23/03	<2.5	<2.5	<2.5	<2.5	<2.5	<25	<2.5	<2.5	<2.5	7.9	<2.5	<2.5	<2.5	<2.5	3,700	880	8.8	240
MW-16		A	3/10/04	<2.5	<2.5	<2.5	<2.5	<2.5	<5.0	<2.5	<2.5	<2.5	8.2	<2.5	<2.5	<2.5	50	5,700	930	9.4	440
MW-16		A	3/9/05	<25	<25	<25	<25	<25	<25	<25	<25	<25	<25	<25	<25	<25	<25	7,600	960	<25	510
MW-16		A	3/15/06	< 25	< 25	< 25	< 25	< 25	< 25	< 25	< 25	< 25	< 25	< 25	< 25	< 25	< 25	6,100	690	< 25	300
MW-16		A	2/1/07	<15	<15	<15	<15	<15	<15	<15	<15	<15	<15	<15	<15	<15	<15	5,700	720	19	320
MW-16		A	2/4/08	<15	<15	<15	<15	<15	<15	<15	<15	<15	<15	<15	<15	<15	<15	3,900	450	<15	210
MW-16		A	2/2/09	<15	<15	<15	<15	<15	<15	<15	<15	<15	<15	<15	<15	<15	<15	3,600	400	<15	240
MW-16		A	2/1/10	<7.0	<7.0	<7.0	<7.0	<7.0	<7.0	<7.0	<7.0	<7.0	<7.0	<7.0	<7.0	<7.0	<7.0	2,400	300	12	200
MW-16		A	2/8/11	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	1,600	210	11	220
MW-16	O&M	A	2/13/13	<2.5	<2.5	<2.5	<2.5	<2.5	<5.0	<2.5	<2.5	<2.5	3.8	<2.5	<2.5	<2.5	6.6	730	160	7.6	130
MW-16	O&M	A	6/10/15	<2.5	<2.5	<2.5	<2.5	<2.5	<25	<2.5	<2.5	<2.5	<2.5	<2.5	<2.5	<2.5	<2.5	480	47.6	4.9	30.8
MW-16	O&M	A	2/14/17	<0.84	<0.84	0.99	<0.84	<0.84	<8.4	<3.3	<0.84	<0.84	1.8	<0.84	<3.3	<0.84	<0.84	250	38.9	<0.84	26.5
MW-16	O&M	A	2/11/19	<0.50	<0.50	0.937	<0.50	<0.50	<5.0	<0.50	<0.50	<0.50	1.73	<0.50	<2.0	<0.50	<0.50	85.7	32.6	<0.50	25.6
MW-20		A	3/27/06	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	6.6	< 5.0	< 5.0	< 5.0	8.0	1,800	480	5.6	160
MW-20		A	6/14/06	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	1,400	330	<5.0	79
MW-20		A	9/20/06	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	6.3	<5.0	<5.0	<5.0	<9.0	2,000	480	5.8	89
MW-20		A	2/2/07	<2.5	<2.5	<2.5	<2.5	<2.5	<5.0	<2.5	<2.5	<2.5	6.4	<2.5	<2.5	<2.5	<2.5	1,800	520	5.6	110
MW-20		A	5/8/07	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	1,300	400	<5.0	88
MW-20		A	2/5/08	<6.0	<6.0	<6.0	<6.0	<6.0	<6.0	<6.0	<6.0	<6.0	7.3	<6.0	<6.0	<6.0	<6.0	1,600	530	<6.0	140
MW-20		A	2/4/09	<7.0	<7.0	<7.0	<7.0	<7.0	<7.0	<7.0	<7.0	<7.0	<7.0	<7.0	<7.0	<7.0	<7.0	1,400	480	<7.0	58
MW-20		A	2/2/10	<7.0	<7.0	<7.0	<7.0	<7.0	<7.0	<7.0	<7.0	<7.0	<7.0	<7.0	<7.0	<7.0	<7.0	1,400	450	7.4	43
MW-20		A	2/8/11	<4.0	<4.0	<4.0	<4.0	<4.0	<5.0	<4.0	<4.0	<4.0	4.7	<4.0	<4.0	<4.0	<4.0	870	220	<4.0	44
MW-20	O&M	A	2/13/13	<4.0	<4.0	<4.0	<4.0	<4.0	<5.0	<4.0	<4.0	<4.0	4.5	<4.0	<4.0	<4.0	<4.0	820	210	4.5	42
MW-20	O&M	A	6/10/15	<3.6	<3.6	<3.6	<3.6	<3.6	<35.7	<3.6	<3.6	<3.6	<3.6	<3.6	<3.6	<3.6	3.6	666	154	4.9	20
MW-20	O&M	A	2/14/17	<2.5	<2.5	<2.5	<2.5	<2.5	<25	<10.0	<2.5	<2.5	2.7	<2.5	<10.0	<2.5	<2.5	452	67.8	<2.5	17.8
MW-20	O&M	A	2/11/19	<0.50	<0.50	1.51	<0.50	<0.50	<5.0	<0.50	<0.50	<0.50	2.22	<0.50	<2.0	<0.50	<0.50	297	45.8	0.732	17.6
MW-21		A	3/27/06	< 50	< 50	< 50	< 50	< 50	< 50	< 50	< 50	< 50	< 50	< 50	< 50	< 50	640	9,300	430	< 50	340
MW-21		A	6/14/06	<25	<25	<25	<25	<25	<25	<25	<25	<25	<25	<25	<25	<25	760	7,200	320	<25	290
MW-21		A	9/20/06	<20	<20	<20	<20	<20	<20	<20	<20	<20	<20	<20	<20	<20	770	8,400	310	<20	290
MW-21		A	2/1/07	<20	<20	<20	<20	<20	<20	<20	<20	<20	<20	<20	<20	<20	1,200	11,000	390	24	470
MW-21		A	5/8/07	<30	<30	<30	<30	<30	<30	<30	<30	<30	<30	<30	<30	<30	1,000	9,000	360	<30	410
MW-21		A	8/15/07	<25	<25	<25	<25	<25	<25	<25	<25	<25	<25	<25	<25	<25	740	8,600	390	<25	500
MW-21		A	2/5/08	<30	<30	<30	<30	<30	<30	<30	<30	<30	<30	<30	<30	<30	500	8,200	390	<30	540
MW-21		A	2/3/09	<2.5	<2.5	<2.5	<2.5	<2.5	<5.0	<2.5	<2.5	<2.5	4.1	<2.5	<2.5	<2.5	270	8,200	310	13	330

Table 5H
Groundwater Monitoring Volatile Organic Compounds Data
Monitored Natural Attenuation and Destroyed/Not Used Wells
Former Kaiser Aerotech Facilities
San Leandro, California

Well ID	Notes	GW Zone	Sample Date	1,2-DCB	1,3-DCB	1,4-DCB	Chloro-benzene	Chloro-form	Methylene Chloride	Chloro-methane	1,1,1-TCA	1,1,2-TCA	1,1-DCA	1,2-DCA	Chloro-ethane	PCE	TCE	cis-1,2-DCE	trans-1,2-DCE	1,1-DCE	Vinyl Chloride
				8260*	8260*	8260*	8260*	8260*	8260*	8260*	8260*	8260*	8260*	8260*	8260*	8260*	8260*	8260*	8260*	8260*	8260*
				(ug/L)	(ug/L)	(ug/L)	(ug/L)	(ug/L)	(ug/L)	(ug/L)	(ug/L)	(ug/L)	(ug/L)	(ug/L)	(ug/L)	(ug/L)	(ug/L)	(ug/L)	(ug/L)	(ug/L)	(ug/L)
			MCLs	600	-	5	70	80	5	-	200	5	5	0.5	-	5	5	6	10	6	0.5
			Regulatory Date	9/8/94	-	4/4/89	9/8/94	6/17/06	2/25/89	-	2/25/89	9/8/94	6/24/90	4/4/89	-	5/89	2/25/89	9/8/94	9/8/94	2/25/89	4/4/89
MW-21		A	2/1/10	<25	<25	<25	<25	<25	<25	<25	<25	<25	<25	<25	<25	<25	**240**	**6,600**	**360**	<25	**370**
MW-21		A	2/8/11	<25	<25	<25	<25	<25	<25	<25	<25	<25	<25	<25	<25	<25	**380**	**7,800**	**440**	<25	**690**
MW-21	O&M	A	2/13/13	<25	<25	<25	<25	<25	<25	<25	<25	<25	<25	<25	<25	<25	**220**	**6,500**	**300**	**130**	**590**
MW-21	O&M	A	6/11/15	<25	<25	<25	<25	<25	<250	<25	<25	<25	<25	<25	<25	<25	**60.6**	**5,470**	**241**	<25	**880**
MW-21	Sup.	A	2/23/16	<8.4	<8.4	<8.4	<8.4	<8.4	<83.5	<33.4	<8.4	<8.4	<8.4	<8.4	<33.4	<8.4	**25**	**3,150**	**226**	<8.4	**594**
MW-21	O&M	A	2/14/17	<16.7	<16.7	<16.7	<16.7	<16.7	<167	<66.7	<16.7	<16.7	<16.7	<16.7	<66.7	<16.7	**38.9**	**3,600**	**252**	<16.7	**950**
MW-21	O&M	A	2/11/19	<0.50	<0.50	<0.50	0.545	<0.50	<5.0	<0.50	<0.50	<0.50	1.97	<0.50	<2.0	<0.50	4.83	**1,560**	**144**	2.86	**468**
MW-24		A	3/27/06	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 5.0	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	2.2	< 0.50	< 0.50	< 0.50	< 0.50
MW-24		A	6/14/06	<0.50	<0.50	<0.50	<0.50	<0.50	<5.0	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	**5.4**	0.88	<0.50	<0.50	<0.50
MW-24		A	9/20/06	<0.50	<0.50	<0.50	<0.50	<0.50	<5.0	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	**8.0**	2.8	<0.50	<0.50	<0.50
MW-24		A	2/1/07	<0.50	<0.50	<0.50	<0.50	<0.50	<5.0	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	4.8	2.4	<0.50	<0.50	<0.50
MW-24		A	5/10/07	<0.50	<0.50	<0.50	<0.50	<0.50	<5.0	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	**34**	**8.1**	<0.50	<0.50	**1.3**
MW-24		A	2/6/08	<0.50	<0.50	<0.50	<0.50	<0.50	<5.0	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	2.0	1.1	<0.50	<0.50	<0.50
MW-24		A	2/3/09	<0.50	<0.50	<0.50	<0.50	<0.50	<5.0	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	2.6	2.5	<0.50	<0.50	<0.50
MW-24		A	2/2/10	<0.50	<0.50	<0.50	<0.50	<0.50	<5.0	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	2.3	2.4	<0.50	<0.50	<0.50
MW-24		A	2/8/11	<0.50	<0.50	<0.50	<0.50	<0.50	<5.0	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	2.5	2.4	<0.50	<0.50	<0.50
MW-25		A	3/27/06	0.90	< 0.50	< 0.50	< 0.50	< 0.50	< 5.0	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	**27**	**110**	0.63	< 0.50	**3.7**
MW-25		A	6/14/06	1.3	<0.50	<0.50	<0.50	<0.50	<5.0	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	**9.8**	**58**	<0.50	<0.50	**3.6**
MW-25		A	9/20/06	2.7	<0.50	<0.50	1.2	<0.50	<5.0	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	**5.4**	**140**	1.7	<0.50	**38**
MW-25		A	2/1/07	2.6	<0.50	<0.50	1.2	<0.50	<5.0	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	**4.2**	**110**	1.6	<0.50	**70**
MW-25		A	5/10/07	2.0	<0.50	<0.50	0.85	<0.50	<5.0	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	0.68	**79**	**140**	1.5	<0.50	**45**
MW-25		A	2/5/08	<0.50	<0.50	<0.50	<0.50	<0.50	<5.0	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	**14**	**93**	0.86	<0.50	**13**
MW-25		A	2/3/09	2.0	<0.50	<0.50	<0.50	<0.50	<5.0	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	**6.5**	**38**	0.59	<0.50	**33**
MW-25		A	2/2/10	1.6	<0.50	<0.50	<0.50	<0.50	<5.0	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	**8.3**	**42**	<0.50	<0.50	**22**
MW-25		A	2/8/11	1.9	<0.50	<0.50	<0.50	<0.50	<5.0	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	0.75	**11**	<0.50	<0.50	**24**
MW-25	O&M	A	2/14/13	1.2	<0.50	<0.50	<0.50	<0.50	<5.0	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	2.4	<0.50	<0.50	**17**
MW-25	O&M	A	6/10/15	1.3	<0.50	<0.50	<0.50	<0.50	<5.0	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	1.1	<0.50	<0.50	**32.2**
MW-25	O&M	A	2/13/17	0.71	<0.50	<0.50	<0.50	<0.50	<5.0	<2.0	<0.50	<0.50	<0.50	<0.50	<2.0	<0.50	<0.50	3.2	<0.50	<0.50	**9.7**
MW-25	O&M	A	2/11/19	0.653	<0.50	<0.50	<0.50	<0.50	<5.0	<0.50	<0.50	<0.50	<0.50	<0.50	<2.0	<0.50	<0.50	4.26	<0.50	<0.50	**17.4**
LMW-3		UB	9/22/98	<10	<10	<10	<10	<10	<100	<20	<10	<10	<10	<10	<20	<10	**460**	**1,500**	**160**	<10	**72**
LMW-3		UB	12/10/98	<5.0	<5.0	<5.0	<5.0	<30	<50	<10	<5.0	<5.0	<5.0	<5.0	<10	<5.0	**290**	**580**	**62**	<5.0	**13**
LMW-3		UB	3/22/99	<5.0	<5.0	<5.0	<5.0	<30	<50	<10	<5.0	<5.0	<5.0	<5.0	<10	<5.0	**410**	**950**	**100**	<5.0	<5.0
LMW-3		UB	6/23/99	<10	<10	<10	<10	<10	<100	<20	<10	<10	<10	<10	<20	<10	**450**	**1,100**	**150**	<10	**56**

Table 5H
Groundwater Monitoring Volatile Organic Compounds Data
Monitored Natural Attenuation and Destroyed/Not Used Wells
Former Kaiser Aerotech Facilities
San Leandro, California

Well ID	Notes	GW Zone	Sample Date	1,2-DCB	1,3-DCB	1,4-DCB	Chloro-benzene	Chloro-form	Methylene Chloride	Chloro-methane	1,1,1-TCA	1,1,2-TCA	1,1-DCA	1,2-DCA	Chloro-ethane	PCE	TCE	cis-1,2-DCE	trans-1,2-DCE	1,1-DCE	Vinyl Chloride
				8260*	8260*	8260*	8260*	8260*	8260*	8260*	8260*	8260*	8260*	8260*	8260*	8260*	8260*	8260*	8260*	8260*	8260*
				(ug/L)	(ug/L)	(ug/L)	(ug/L)	(ug/L)	(ug/L)	(ug/L)	(ug/L)	(ug/L)	(ug/L)	(ug/L)	(ug/L)	(ug/L)	(ug/L)	(ug/L)	(ug/L)	(ug/L)	(ug/L)
			MCLs	600	-	5	70	80	5	-	200	5	5	0.5	-	5	5	6	10	6	0.5
			Regulatory Date	9/8/94	-	4/4/89	9/8/94	6/17/06	2/25/89	-	2/25/89	9/8/94	6/24/90	4/4/89	-	5/89	2/25/89	9/8/94	9/8/94	2/25/89	4/4/89
LMW-3		UB	9/21/99	<10	<10	<10	<10	<60	<100	<20	<10	<10	<10	<10	<20	<10	**460**	**1,200**	**190**	<10	<10
LMW-3		UB	9/21/99	<25	<25	<25	<25	<150	<250	<50	<25	<25	<25	<25	<50	<25	**400**	**1,100**	**140**	<25	<25
LMW-3		UB	12/14/99	<10	<10	<10	<10	<10	<100	<20	<10	<10	<10	<10	<20	<10	**630**	**1,500**	**270**	<10	**51**
LMW-3		UB	3/14/00	<10	<10	<10	<10	<10	<100	<20	<10	<10	<10	<10	<20	<10	**670**	**1,300**	**280**	<10	<10
LMW-3		UB	9/21/00	<10	<10	<10	<10	<10	<100	<20	<10	<10	<10	<10	<20	<10	**660**	**1,100**	**290**	<10	**72**
LMW-3		UB	3/13/01	<25	<25	<25	<25	<25	<250	<50	<25	<25	<25	<25	<50	<25	**800**	**1,700**	**340**	<25	**95**
LMW-3		UB	9/25/01	<25	<25	<25	<25	<25	<250	<50	<25	<25	<25	<25	<50	<25	**490**	**1,100**	**230**	<25	<25
LMW-3		UB	3/26/02	<50	<50	<50	<50	<50	<500	<100	<50	<50	<50	<50	<100	<50	**510**	**1,700**	**280**	<50	<50
LMW-3		UB	10/3/02	<25	<25	<25	<25	<25	<250	<50	<25	<25	<25	<25	<50	<25	**360**	**1,300**	**210**	<25	<25
LMW-3		UB	3/26/03	<10	<10	<10	<10	<10	<100	<20	<10	<10	<10	<10	<20	<10	**300**	**1,500**	**260**	<10	**55**
LMW-3		UB	3/9/04	<5.0	<5.0	<5.0	<5.0	<5.0	<50	<5.0	<5.0	<5.0	**7.1**	<5.0	<5.0	<5.0	**310**	**1,400**	**270**	<5.0	**54**
LMW-3		UB	3/10/05	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	**7.5**	<5.0	<5.0	<5.0	**230**	**1,300**	**280**	**8.4**	**84**
LMW-3		UB	3/15/06	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 5.0	< 2.5	< 2.5	< 2.5	4.5	< 2.5	< 2.5	< 2.5	**88**	**860**	**160**	< 2.5	**2.5**
LMW-3		UB	2/1/07	<4.0	<4.0	<4.0	<4.0	<4.0	< 5.0	<4.0	<4.0	<4.0	**6.1**	<4.0	<4.0	<4.0	**120**	**1,000**	**180**	<4.0	**38**
LMW-3		UB	2/4/08	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 5.0	< 2.5	< 2.5	< 2.5	4.9	< 2.5	< 2.5	< 2.5	**110**	**780**	**140**	<2.5	**11**
LMW-3		UB	2/2/09	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 5.0	< 2.5	< 2.5	< 2.5	3.2	< 2.5	< 2.5	< 2.5	**62**	**580**	**100**	<2.5	**10**
LMW-3		UB	2/1/10	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 5.0	< 2.5	< 2.5	< 2.5	3.6	< 2.5	< 2.5	< 2.5	**76**	**630**	**110**	<2.5	**18**
LMW-3		UB	2/8/11	<1.5	<1.5	<1.5	<1.5	<1.5	<5.0	<1.5	<1.5	<1.5	2.5	<1.5	<1.5	<1.5	**44**	**430**	**71**	<1.5	**2.8**
LMW-3	O&M	UB	6/9/15	<2.5	<2.5	<2.5	<2.5	<2.5	<25	<2.5	<2.5	<2.5	<2.5	<2.5	<2.5	<2.5	**63.3**	**525**	**131**	<2.5	<2.5
LMW-3	O&M, DUP	UB	6/9/15	<0.50	<0.50	<0.50	<0.50	<0.50	<5.0	<0.50	<0.50	<0.50	2.3	<0.50	<0.50	<0.50	**64**	**470**	**131**	1.1	2.8
LMW-3	Sup.	UB	9/22/16	<1.7	<1.7	<1.7	<1.7	<1.7	<16.6	<1.7	<1.7	<1.7	<1.7	<1.7	<6.7	<1.7	**44**	**407**	**102**	<1.7	<1.7
LMW-3	Sup, DUP	UB	9/22/16	<1.7	<1.7	<1.7	<1.7	<1.7	<16.6	<1.7	<1.7	<1.7	<1.7	<1.7	<6.7	<1.7	**45.9**	**406**	**102**	<1.7	<1.7
LMW-3	O&M	UB	2/14/17	<1.7	<1.7	<1.7	<1.7	<1.7	<16.6	<1.7	<1.7	<1.7	<1.7	<1.7	<6.7	<1.7	**35.5**	**452**	**115**	<1.7	<1.7
LMW-3	O&M, DUP-2	UB	2/14/17	<1.2	<1.2	<1.2	<1.2	<1.2	<16.6	<5.0	<1.2	<1.2	1.6	<1.2	<5.0	<1.2	**36.6**	**453**	**113**	<1.2	<1.2
LMW-3	Sup.	UB	2/13/18	<1.7	<1.7	<1.7	<1.7	<1.7	<16.7	<1.7	<1.7	<1.7	<1.7	<1.7	<6.7	<1.7	**72.8**	**445**	**146**	<1.67	<1.67
LMW-3	O&M	UB	2/11/19	<0.50	<0.50	<0.50	<0.50	<0.50	<5.0	<0.50	<0.50	<0.50	1.40	<0.50	<2.0	<0.50	**56.2**	**467**	**144**	1.01	<0.50
LMW-3	O&M, DUP	UB	2/11/19	<0.50	<0.50	<0.50	<0.50	<0.50	<5.0	<0.50	<0.50	<0.50	1.22	<0.50	<2.0	<0.50	**53.2**	**465**	**136**	0.942	<0.50
LMW-3	O&M	UB	3/10/20	<0.50	<0.50	<0.50	<0.50	<0.50	<2.5	<1.25	<0.50	<0.50	1.11	<0.50	<2.5	<0.50	**64.2**	**501**	**138**	0.969	<0.50
LMW-5		B	6/26/03	<0.50	<0.50	<0.50	<0.50	<0.50	<5.0	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	**31**	**130**	**72**	1.0	**8.6**
LMW-5		B	3/10/04	<0.50	<0.50	<0.50	<0.50	<0.50	<5.0	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	**34**	**9.0**	4.6	<0.50	<0.50
LMW-5		B	9/29/04	<0.50	<0.50	<0.50	<0.50	<0.50	<5.0	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	**32**	5.6	3.7	<0.50	**0.53**
LMW-5		B	3/10/05	<0.50	<0.50	<0.50	<0.50	<0.50	<5.0	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	**36**	1.7	0.79	<0.50	<0.50
LMW-5		B	9/14/05	<0.50	<0.50	<0.50	<0.50	<0.50	<5.0	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	**31**	1.2	<0.50	<0.50	<0.50
LMW-5		B	9/20/06	<0.50	<0.50	<0.50	<0.50	<0.50	<5.0	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	**33**	2.5	1.3	<0.50	<0.50
LMW-5		B	2/2/07	<0.50	<0.50	<0.50	<0.50	<0.50	<5.0	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	**27**	2.4	2.0	<0.50	<0.50

Table 5H
Groundwater Monitoring Volatile Organic Compounds Data
Monitored Natural Attenuation and Destroyed/Not Used Wells
Former Kaiser Aerotech Facilities
San Leandro, California

Well ID	Notes	GW Zone	Sample Date	1,2-DCB	1,3-DCB	1,4-DCB	Chloro-benzene	Chloro-form	Methylene Chloride	Chloro-methane	1,1,1-TCA	1,1,2-TCA	1,1-DCA	1,2-DCA	Chloro-ethane	PCE	TCE	cis-1,2-DCE	trans-1,2-DCE	1,1-DCE	Vinyl Chloride
				8260*	8260*	8260*	8260*	8260*	8260*	8260*	8260*	8260*	8260*	8260*	8260*	8260*	8260*	8260*	8260*	8260*	8260*
				(ug/L)	(ug/L)	(ug/L)	(ug/L)	(ug/L)	(ug/L)	(ug/L)	(ug/L)	(ug/L)	(ug/L)	(ug/L)	(ug/L)	(ug/L)	(ug/L)	(ug/L)	(ug/L)	(ug/L)	(ug/L)
			MCLs	600	-	5	70	80	5	-	200	5	5	0.5	-	5	5	6	10	6	0.5
			Regulatory Date	9/8/94	-	4/4/89	9/8/94	6/17/06	2/25/89	-	2/25/89	9/8/94	6/24/90	4/4/89	-	5/89	2/25/89	9/8/94	9/8/94	2/25/89	4/4/89
LMW-5		B	8/15/07	<0.50	<0.50	<0.50	<0.50	<0.50	<5.0	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	**28**	2.0	1.4	<0.50	<0.50
LMW-5		B	2/5/08	<0.50	<0.50	<0.50	<0.50	<0.50	<5.0	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	**34**	4.1	1.6	<0.50	<0.50
LMW-5		B	2/3/09	<0.50	<0.50	<0.50	<0.50	<0.50	<5.0	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	**28**	2.5	2.1	<0.50	<0.50
LMW-5		B	2/1/10	<0.50	<0.50	<0.50	<0.50	<0.50	<5.0	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	**30**	2.0	1.6	<0.50	<0.50
LMW-5		B	2/8/11	<0.50	<0.50	<0.50	<0.50	<0.50	<5.0	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	**28**	1.4	0.55	<0.50	<0.50
LMW-5	O&M	B	2/14/13	<0.50	<0.50	<0.50	<0.50	<0.50	<5.0	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	**27**	1.9	0.77	<0.50	<0.50
LMW-5	O&M	B	6/10/15	<0.50	<0.50	<0.50	<0.50	<0.50	<5.0	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	**25.4**	1.7	0.62	<0.50	<0.50
LMW-5	O&M	B	2/14/17	<0.50	<0.50	<0.50	<0.50	<0.50	<5.0	<2.0	<0.50	<0.50	<0.50	<0.50	<2.0	<0.50	**18.2**	1.2	0.53	<0.50	<0.50
LMW-5	O&M	B	2/11/19	<0.50	<0.50	<0.50	<0.50	<0.50	<5.0	<0.50	<0.50	<0.50	<0.50	<0.50	<2.0	<0.50	**22.6**	1.12	0.565	<0.50	<0.50
LMW-7		B	3/27/06	< 4.0	< 4.0	< 4.0	< 4.0	< 4.0	< 5.0	< 4.0	< 4.0	< 4.0	5.0	< 4.0	< 4.0	< 4.0	**48**	**980**	**180**	< 4.0	**12**
LMW-7		B	6/14/06	<1.0	<1.0	<1.0	<1.0	<1.0	<5.0	<1.0	<1.0	<1.0	2.2	<1.0	<1.0	<1.0	4.4	**310**	**76**	1.6	**5.2**
LMW-7		B	9/20/06	<2.0	<2.0	<2.0	<2.0	<2.0	<5.0	<2.0	<2.0	<2.0	2.2	<2.0	<2.0	<2.0	2.8	**550**	**77**	<2.0	**4.1**
LMW-7		B	2/1/07	<2.0	<2.0	<2.0	<2.0	<2.0	<5.0	<2.0	<2.0	<2.0	2.1	<2.0	<2.0	<2.0	**5.4**	**570**	**83**	<2.0	**6.5**
LMW-7		B	5/8/07	<0.90	<0.90	<0.90	<0.90	<0.90	<5.0	<0.90	<0.90	<0.90	1.6	<0.90	<0.90	<0.90	1.1	**490**	**63**	1.2	**4.9**
LMW-7		B	2/5/08	<2.5	<2.5	<2.5	<2.5	<2.5	<5.0	<2.5	<2.5	<2.5	2.6	<2.5	<2.5	<2.5	<2.5	**580**	**93**	<2.5	**6.0**
LMW-7		B	2/3/09	<2.0	<2.0	<2.0	<2.0	<2.0	<5.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	**540**	**88**	<2.0	**8.4**
LMW-7		B	2/1/10	<1.5	<1.5	<1.5	<1.5	<1.5	<5.0	<1.5	<1.5	<1.5	<1.5	<1.5	<1.5	<1.5	<1.5	**450**	**74**	1.6	**8.2**
LMW-7		B	2/8/11	<1.5	<1.5	<1.5	<1.5	<1.5	<5.0	<1.5	<1.5	<1.5	<1.5	<1.5	<1.5	<1.5	<1.5	**340**	**65**	<1.5	**7.4**
LMW-7	O&M	B	2/14/13	<1.5	<1.5	<1.5	<1.5	<1.5	<5.0	<1.5	<1.5	<1.5	<1.5	<1.5	<1.5	<1.5	<1.5	**370**	**78**	<1.5	<1.5
LMW-7	O&M	B	6/10/15	<1.2	<1.2	<1.2	<1.2	<1.2	<12.5	<1.2	<1.2	<1.2	<1.2	<1.2	<1.2	<1.2	<1.2	**573**	**150**	<1.2	**11.4**
LMW-7	O&M	B	2/13/17	<2.5	<2.5	<2.5	<2.5	<2.5	<25.0	<10.0	<2.5	<2.5	<2.5	<2.5	<10.0	<2.5	<2.5	**464**	**134**	<2.5	<2.5
LMW-7	O&M	B	2/11/19	<0.50	<0.50	<0.50	<0.50	<0.50	<5.0	<0.50	<0.50	<0.50	0.670	<0.50	<2.0	<0.50	1.36	**597**	**199**	<0.50	<0.50
SAZ-1(d)		C	9/23/98	<0.50	<0.50	<0.50	**1.3**	**37**	<5.0	<1.0	<0.50	<0.50	<0.50	<0.50	<1.0	<0.50	**42**	**2.4**	<0.50	<0.50	<0.50
SAZ-1		C	12/10/98	<0.50	<0.50	<0.50	<0.50	<3.0	<5.0	<1.0	<0.50	<0.50	<0.50	<0.50	<1.0	<0.50	1.6	<0.50	<0.50	<0.50	<0.50
SAZ-1(d)		C	12/10/98	<0.50	<0.50	<0.50	<0.50	<3.0	<5.0	<1.0	<0.50	<0.50	<0.50	<0.50	<1.0	<0.50	1.4	<0.50	<0.50	<0.50	<0.50
SAZ-1		C	1/14/99	<0.50	<0.50	<0.50	<0.50	<3.0	<5.0	<1.0	<0.50	<0.50	<0.50	<0.50	<1.0	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50
SAZ-1(d)		C	1/14/99	<0.50	<0.50	<0.50	<0.50	<3.0	<5.0	<1.0	<0.50	<0.50	<0.50	<0.50	<1.0	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50
SAZ-1		C	3/22/99	<0.50	<0.50	<0.50	<0.50	<3.0	<5.0	<1.0	<0.50	<0.50	<0.50	<0.50	<1.0	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50
SAZ-1(d)		C	3/23/99	<0.50	<0.50	<0.50	<0.50	<3.0	<5.0	<1.0	<0.50	<0.50	<0.50	<0.50	<1.0	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50
SAZ-1		C	6/22/99	<0.50	<0.50	<0.50	<0.50	<3.0	<5.0	<1.0	<0.50	<0.50	<0.50	<0.50	<1.0	<0.50	2.6	<0.50	<0.50	<0.50	<0.50
SAZ-1(d)		C	6/22/99	<0.50	<0.50	<0.50	<0.50	<3.0	<5.0	<1.0	<0.50	<0.50	<0.50	<0.50	<1.0	<0.50	2.2	<0.50	<0.50	<0.50	<0.50
SAZ-1		C	12/14/99	<0.50	<0.50	<0.50	<0.50	<0.50	<5.0	<1.0	<0.50	<0.50	<0.50	<0.50	<1.0	<0.50	2.9	<0.50	<0.50	<0.50	<0.50
SAZ-1(d)		C	12/14/99	<0.50	<0.50	<0.50	<0.50	<0.50	<5.0	<1.0	<0.50	<0.50	<0.50	<0.50	<1.0	<0.50	2.6	<0.50	<0.50	<0.50	<0.50
SAZ-1		C	3/14/00	<0.50	<0.50	<0.50	<0.50	<0.50	<5.0	<1.0	<0.50	<0.50	<0.50	<0.50	<1.0	<0.50	2.5	<0.50	<0.50	<0.50	<0.50

Table 5H
Groundwater Monitoring Volatile Organic Compounds Data
Monitored Natural Attenuation and Destroyed/Not Used Wells
Former Kaiser Aerotech Facilities
San Leandro, California

Well ID	Notes	GW Zone	Sample Date	1,2-DCB	1,3-DCB	1,4-DCB	Chloro-benzene	Chloro-form	Methylene Chloride	Chloro-methane	1,1,1-TCA	1,1,2-TCA	1,1-DCA	1,2-DCA	Chloro-ethane	PCE	TCE	cis-1,2-DCE	trans-1,2-DCE	1,1-DCE	Vinyl Chloride
				8260*	8260*	8260*	8260*	8260*	8260*	8260*	8260*	8260*	8260*	8260*	8260*	8260*	8260*	8260*	8260*	8260*	8260*
				(ug/L)	(ug/L)	(ug/L)	(ug/L)	(ug/L)	(ug/L)	(ug/L)	(ug/L)	(ug/L)	(ug/L)	(ug/L)	(ug/L)	(ug/L)	(ug/L)	(ug/L)	(ug/L)	(ug/L)	(ug/L)
			MCLs	600	-	5	70	80	5	-	200	5	5	0.5	-	5	5	6	10	6	0.5
			Regulatory Date	9/8/94	-	4/4/89	9/8/94	6/17/06	2/25/89	-	2/25/89	9/8/94	6/24/90	4/4/89	-	5/89	2/25/89	9/8/94	9/8/94	2/25/89	4/4/89
SAZ-1(d)		C	3/14/00	<0.50	<0.50	<0.50	<0.50	<0.50	<10	<1.0	<0.50	<0.50	<0.50	<0.50	<1.0	<0.50	2.4	<0.50	<0.50	<0.50	<0.50
SAZ-1		C	9/19/00	<0.50	<0.50	<0.50	<0.50	<0.50	<5.0	<1.0	<0.50	<0.50	<0.50	<0.50	<1.0	<0.50	2.8	<0.50	<0.50	<0.50	<0.50
SAZ-1(d)		C	9/19/00	<0.50	<0.50	<0.50	<0.50	<0.50	<5.0	<1.0	<0.50	<0.50	<0.50	<0.50	<1.0	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50
SAZ-1		C	3/13/01	<0.50	<0.50	<0.50	<0.50	<0.50	<5.0	<1.0	<0.50	<0.50	<0.50	<0.50	<1.0	<0.50	2.6	<0.50	<0.50	<0.50	<0.50
SAZ-1(d)		C	3/13/01	<0.50	<0.50	<0.50	<0.50	<0.50	<5.0	<1.0	<0.50	<0.50	<0.50	<0.50	<1.0	<0.50	2.5	<0.50	<0.50	<0.50	<0.50
SAZ-1		C	9/25/01	<0.50	<0.50	<0.50	<0.50	<0.50	<5.0	<1.0	<0.50	<0.50	<0.50	<0.50	<1.0	<0.50	2.7	<0.50	<0.50	<0.50	<0.50
SAZ-1(d)		C	9/25/01	<0.50	<0.50	<0.50	<0.50	<0.50	<5.0	<1.0	<0.50	<0.50	<0.50	<0.50	<1.0	<0.50	3.8	<0.50	<0.50	<0.50	<0.50
SAZ-1		C	3/28/02	<0.50	<0.50	<0.50	<0.50	<0.50	<5.0	<1.0	<0.50	<0.50	<0.50	<0.50	<1.0	<0.50	3.1	<0.50	<0.50	<0.50	<0.50
SAZ-1(d)		C	3/28/02	<0.50	<0.50	<0.50	<0.50	<0.50	<5.0	<1.0	<0.50	<0.50	<0.50	<0.50	<1.0	<0.50	3.4	<0.50	<0.50	<0.50	<0.50
SAZ-1		C	10/3/02	<0.50	<0.50	<0.50	<0.50	<0.50	<5.0	<1.0	<0.50	<0.50	<0.50	<0.50	<1.0	<0.50	4.1	<0.50	<0.50	<0.50	<0.50
SAZ-1		C	3/26/03	<0.50	<0.50	<0.50	<0.50	<0.50	<5.0	<1.0	<0.50	<0.50	<0.50	<0.50	<1.0	<0.50	3.9	<0.50	<0.50	<0.50	<0.50
SAZ-1		C	6/26/03	<0.50	<0.50	<0.50	<0.50	<0.50	<5.0	<1.0	<0.50	<0.50	<0.50	<0.50	<1.0	<0.50	3.8	<0.50	<0.50	<0.50	<0.50
SAZ-1 (d)		C	6/26/03	<0.50	<0.50	<0.50	<0.50	<0.50	<5.0	<1.0	<0.50	<0.50	<0.50	<0.50	<1.0	<0.50	3.8	<0.50	<0.50	<0.50	<0.50
SAZ-1		C	9/23/03	<0.50	<0.50	<0.50	<0.50	<0.50	<5.0	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	4.0	<0.50	<0.50	<0.50	<0.50
SAZ-1		C	12/16/03	<0.50	<0.50	<0.50	<0.50	<0.50	<5.0	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	**10**	<0.50	<0.50	<0.50	<0.50
SAZ-1		C	3/9/04	<0.50	<0.50	<0.50	<0.50	<0.50	<5.0	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	4.7	<0.50	<0.50	<0.50	<0.50
SAZ-1 (d)		C	3/9/04	<0.50	<0.50	<0.50	<0.50	<0.50	<5.0	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	3.7	<0.50	<0.50	<0.50	<0.50
SAZ-1		C	5/20/04	<0.50	<0.50	<0.50	<0.50	<0.50	<5.0	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	4.3	<0.50	<0.50	<0.50	<0.50
SAZ-1		C	9/29/04	<0.50	<0.50	<0.50	<0.50	<0.50	<5.0	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	4.0	<0.50	<0.50	<0.50	<0.50
SAZ-1 (d)		C	9/29/04	<0.50	<0.50	<0.50	<0.50	<0.50	<5.0	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	4.9	<0.50	<0.50	<0.50	<0.50
SAZ-1		C	12/8/04	<0.50	<0.50	<0.50	<0.50	<0.50	<5.0	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	4.1	<0.50	<0.50	<0.50	<0.50
SAZ-1		C	3/8/05	<0.50	<0.50	<0.50	<0.50	<0.50	<5.0	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	4.4	<0.50	<0.50	<0.50	<0.50
SAZ-1 (d)		C	3/8/05	<0.50	<0.50	<0.50	<0.50	<0.50	<5.0	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	4.8	<0.50	<0.50	<0.50	<0.50
SAZ-1		C	6/14/05	<0.50	<0.50	<0.50	<0.50	<0.50	<5.0	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	3.9	<0.50	<0.50	<0.50	<0.50
SAZ-1		C	9/14/05	<0.50	<0.50	<0.50	<0.50	<0.50	<5.0	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	3.8	<0.50	<0.50	<0.50	<0.50
SAZ-1 (d)		C	9/14/05	<0.50	<0.50	<0.50	<0.50	<0.50	<5.0	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	**5.5**	<0.50	<0.50	<0.50	<0.50
SAZ-1		C	12/15/05	<0.50	<0.50	<0.50	<0.50	<0.50	<5.0	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	5.0	<0.50	<0.50	<0.50	<0.50
SAZ-1 (d)		C	12/15/05	<0.50	<0.50	<0.50	<0.50	<0.50	<5.0	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	4.8	<0.50	<0.50	<0.50	<0.50
SAZ-1		C	3/15/06	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 5.0	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	**5.9**	< 0.50	< 0.50	< 0.50	< 0.50
SAZ-1 (d)		C	3/15/06	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 5.0	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	**5.5**	< 0.50	< 0.50	< 0.50	< 0.50
SAZ-1		C	6/14/06	<0.50	<0.50	<0.50	<0.50	<0.50	<5.0	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	3.8	<0.50	<0.50	<0.50	<0.50
SAZ-1 (d)		C	6/14/06	<0.50	<0.50	<0.50	<0.50	<0.50	<5.0	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	3.7	<0.50	<0.50	<0.50	<0.50
SAZ-1		C	9/20/06	<0.50	<0.50	<0.50	<0.50	<0.50	<5.0	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	**5.8**	<0.50	<0.50	<0.50	<0.50
SAZ-1 (d)		C	9/20/06	<0.50	<0.50	<0.50	<0.50	<0.50	<5.0	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	**6.1**	<0.50	<0.50	<0.50	<0.50
SAZ-1		C	1/31/07	<0.50	<0.50	<0.50	<0.50	<0.50	<5.0	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	**6.6**	<0.50	<0.50	<0.50	<0.50
SAZ-91 (d)		C	1/31/07	<0.50	<0.50	<0.50	<0.50	<0.50	<5.0	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	4.5	<0.50	<0.50	<0.50	<0.50

Table 5H
Groundwater Monitoring Volatile Organic Compounds Data
Monitored Natural Attenuation and Destroyed/Not Used Wells
Former Kaiser Aerotech Facilities
San Leandro, California

Well ID	Notes	GW Zone	Sample Date	1,2-DCB	1,3-DCB	1,4-DCB	Chloro-benzene	Chloro-form	Methylene Chloride	Chloro-methane	1,1,1-TCA	1,1,2-TCA	1,1-DCA	1,2-DCA	Chloro-ethane	PCE	TCE	cis-1,2-DCE	trans-1,2-DCE	1,1-DCE	Vinyl Chloride
				8260*	8260*	8260*	8260*	8260*	8260*	8260*	8260*	8260*	8260*	8260*	8260*	8260*	8260*	8260*	8260*	8260*	8260*
				(ug/L)	(ug/L)	(ug/L)	(ug/L)	(ug/L)	(ug/L)	(ug/L)	(ug/L)	(ug/L)	(ug/L)	(ug/L)	(ug/L)	(ug/L)	(ug/L)	(ug/L)	(ug/L)	(ug/L)	(ug/L)
			MCLs	600	-	5	70	80	5	-	200	5	5	0.5	-	5	5	6	10	6	0.5
			Regulatory Date	9/8/94	-	4/4/89	9/8/94	6/17/06	2/25/89	-	2/25/89	9/8/94	6/24/90	4/4/89	-	5/89	2/25/89	9/8/94	9/8/94	2/25/89	4/4/89
SAZ-1		C	5/8/07	<0.50	<0.50	<0.50	<0.50	<0.50	<5.0	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	4.8	<0.50	<0.50	<0.50	<0.50
SAZ-91 (d)		C	5/8/07	<0.50	<0.50	<0.50	<0.50	<0.50	<5.0	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	**5.5**	<0.50	<0.50	<0.50	<0.50
SAZ-1		C	8/14/07	<0.50	<0.50	<0.50	<0.50	<0.50	<5.0	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	4.8	<0.50	<0.50	<0.50	<0.50
SAZ-1 (d)		C	8/14/07	<0.50	<0.50	<0.50	<0.50	<0.50	<5.0	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	4.8	<0.50	<0.50	<0.50	<0.50
SAZ-1		C	11/13/07	<0.50	<0.50	<0.50	<0.50	<0.50	<5.0	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	4.8	<0.50	<0.50	<0.50	<0.50
SAZ-1 (d)		C	11/13/07	<0.50	<0.50	<0.50	<0.50	<0.50	<5.0	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	4.9	<0.50	<0.50	<0.50	<0.50
SAZ-1		C	2/4/08	<0.50	<0.50	<0.50	<0.50	<0.50	<5.0	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	**5.6**	<0.50	<0.50	<0.50	<0.50
SAZ-1 (d)		C	2/4/08	<0.50	<0.50	<0.50	<0.50	<0.50	<5.0	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	**5.6**	<0.50	<0.50	<0.50	<0.50
SAZ-1		C	2/2/09	<0.50	<0.50	<0.50	<0.50	<0.50	<5.0	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	**5.7**	<0.50	<0.50	<0.50	<0.50
SAZ-1		C	2/2/10	<0.50	<0.50	<0.50	<0.50	<0.50	<5.0	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	**5.3**	<0.50	<0.50	<0.50	<0.50
SAZ-1 (d)	DUP-1	C	2/2/10	<0.50	<0.50	<0.50	<0.50	<0.50	<5.0	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	**5.3**	<0.50	<0.50	<0.50	<0.50
SAZ-1		C	2/8/11	<0.50	<0.50	<0.50	<0.50	<0.50	<5.0	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	4.8	<0.50	<0.50	<0.50	<0.50
SAZ-1 (d)	DUP-1	C	2/8/11	<0.50	<0.50	<0.50	<0.50	<0.50	<5.0	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	4.7	<0.50	<0.50	<0.50	<0.50
SAZ-2		C	9/23/98	<5.0	<5.0	<5.0	<5.0	9.2	<50	<10	<5.0	<5.0	<5.0	<5.0	<10	**7.3**	**590**	**91**	<5.0	<5.0	<0.50
SAZ-2		C	12/10/98	<0.50	<0.50	<0.50	<0.50	<3.0	<5.0	<1.0	<0.50	<0.50	<0.50	<0.50	<1.0	<0.50	0.74	<0.50	<0.50	<0.50	<0.50
SAZ-2		C	1/14/99	<0.50	<0.50	<0.50	<0.50	<3.0	<5.0	<1.0	<0.50	<0.50	<0.50	<0.50	<1.0	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50
SAZ-2		C	3/23/99	<0.50	<0.50	<0.50	<0.50	<3.0	<5.0	<1.0	<0.50	<0.50	<0.50	<0.50	<1.0	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50
SAZ-2		C	6/22/99	<0.50	<0.50	<0.50	<0.50	<3.0	<5.0	<1.0	<0.50	<0.50	<0.50	<0.50	<1.0	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50
SAZ-2		C	12/15/99	<0.50	<0.50	<0.50	<0.50	<0.50	<5.0	<1.0	<0.50	<0.50	<0.50	<0.50	<1.0	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50
SAZ-2		C	3/15/00	<0.50	<0.50	<0.50	<0.50	<0.50	<10	<1.0	<0.50	<0.50	<0.50	<0.50	<1.0	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50
SAZ-2		C	9/19/00	<0.50	<0.50	<0.50	<0.50	<0.50	<5.0	<1.0	<0.50	<0.50	<0.50	<0.50	<1.0	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50
SAZ-2		C	3/14/01	<0.50	<0.50	<0.50	<0.50	<0.50	<5.0	<1.0	<0.50	<0.50	<0.50	<0.50	<1.0	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50
SAZ-2		C	9/27/01	<0.50	<0.50	<0.50	<0.50	<0.50	<5.0	<1.0	<0.50	<0.50	<0.50	<0.50	<1.0	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50
SAZ-2		C	3/28/02	<0.50	<0.50	<0.50	<0.50	<0.50	<5.0	<1.0	<0.50	<0.50	<0.50	<0.50	<1.0	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50
SAZ-2		C	10/3/02	<0.50	<0.50	<0.50	<0.50	<0.50	<5.0	<1.0	<0.50	<0.50	<0.50	<0.50	<1.0	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50
SAZ-2		C	3/26/03	<0.50	<0.50	<0.50	<0.50	<0.50	<5.0	<1.0	<0.50	<0.50	<0.50	<0.50	<1.0	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50
SAZ-2		C	3/10/04	<0.50	<0.50	<0.50	<0.50	<0.50	<5.0	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50
SAZ-2		C	3/8/05	<0.50	<0.50	<0.50	<0.50	<0.50	<5.0	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50
SAZ-2		C	3/15/06	<0.50	<0.50	<0.50	<0.50	<0.50	<5.0	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50
SAZ-2		C	1/31/07	<0.50	<0.50	<0.50	<0.50	<0.50	<5.0	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50
SAZ-2		C	2/4/08	<0.50	<0.50	<0.50	<0.50	<0.50	<5.0	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50
SAZ-2		C	2/2/09	<0.50	<0.50	<0.50	<0.50	<0.50	<5.0	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50
SAZ-2 (d)		C	2/2/09	<0.50	<0.50	<0.50	<0.50	<0.50	<5.0	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50
SAZ-2		C	2/3/10	<0.50	<0.50	<0.50	<0.50	<0.50	<5.0	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50

Table 5H
Groundwater Monitoring Volatile Organic Compounds Data
Monitored Natural Attenuation and Destroyed/Not Used Wells
Former Kaiser Aerotech Facilities
San Leandro, California

Well ID	Notes	GW Zone	Sample Date	1,2-DCB	1,3-DCB	1,4-DCB	Chloro-benzene	Chloro-form	Methylene Chloride	Chloro-methane	1,1,1-TCA	1,1,2-TCA	1,1-DCA	1,2-DCA	Chloro-ethane	PCE	TCE	cis-1,2-DCE	trans-1,2-DCE	1,1-DCE	Vinyl Chloride
				8260*	8260*	8260*	8260*	8260*	8260*	8260*	8260*	8260*	8260*	8260*	8260*	8260*	8260*	8260*	8260*	8260*	8260*
				(ug/L)	(ug/L)	(ug/L)	(ug/L)	(ug/L)	(ug/L)	(ug/L)	(ug/L)	(ug/L)	(ug/L)	(ug/L)	(ug/L)	(ug/L)	(ug/L)	(ug/L)	(ug/L)	(ug/L)	(ug/L)
			MCLs	600	-	5	70	80	5	-	200	5	5	0.5	-	5	5	6	10	6	0.5
			Regulatory Date	9/8/94	-	4/4/89	9/8/94	6/17/06	2/25/89	-	2/25/89	9/8/94	6/24/90	4/4/89	-	5/89	2/25/89	9/8/94	9/8/94	2/25/89	4/4/89
SAZ-2		C	2/8/11	<0.50	<0.50	<0.50	<0.50	<0.50	<5.0	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50
SAZ-3		C	9/22/98	<10	<10	<10	<10	11	<100	<20	<10	<10	<10	<10	<20	<10	**93**	<10	<10	<10	<10
SAZ-3		C	12/10/98	<0.50	<0.50	<0.50	<0.50	<3.0	<5.0	<1.0	<0.50	<0.50	<0.50	<0.50	<1.0	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50
SAZ-3		C	1/14/99	<0.50	<0.50	<0.50	<0.50	<3.0	<5.0	<1.0	<0.50	<0.50	<0.50	<0.50	<1.0	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50
SAZ-3		C	3/22/99	<0.50	<0.50	<0.50	<0.50	<3.0	<5.0	<1.0	<0.50	<0.50	<0.50	<0.50	<1.0	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50
SAZ-3		C	6/22/99	<0.50	<0.50	<0.50	<0.50	<3.0	<5.0	<1.0	<0.50	<0.50	<0.50	<0.50	<1.0	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50
SAZ-3		C	9/21/99	<0.50	<0.50	<0.50	<0.50	<3.0	<5.0	<1.0	<0.50	<0.50	<0.50	<0.50	<1.0	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50
SAZ-3		C	12/14/99	0.53	<0.50	<0.50	<0.50	<0.50	<5.0	<1.0	<0.50	<0.50	<0.50	<0.50	<1.0	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50
SAZ-3		C	3/14/00	<0.50	<0.50	<0.50	<0.50	<0.50	<5.0	<1.0	<0.50	<0.50	<0.50	<0.50	<1.0	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50
SAZ-3		C	9/21/00	<0.50	<0.50	<0.50	<0.50	<0.50	<5.0	<1.0	<0.50	<0.50	<0.50	<0.50	<1.0	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50
SAZ-3		C	3/13/01	<0.50	<0.50	<0.50	<0.50	<0.50	<5.0	<1.0	<0.50	<0.50	<0.50	<0.50	<1.0	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50
SAZ-3		C	9/25/01	<0.50	<0.50	<0.50	<0.50	<0.50	<5.0	<1.0	<0.50	<0.50	<0.50	<0.50	<1.0	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50
SAZ-3		C	3/26/02	<0.50	<0.50	<0.50	<0.50	<0.50	<5.0	<1.0	<0.50	<0.50	<0.50	<0.50	<1.0	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50
SAZ-3		C	10/3/02	<0.50	<0.50	<0.50	<0.50	<0.50	<5.0	<1.0	<0.50	<0.50	<0.50	<0.50	<1.0	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50
SAZ-3		C	3/26/03	<0.50	<0.50	<0.50	<0.50	<0.50	<5.0	<1.0	<0.50	<0.50	<0.50	<0.50	<1.0	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50
SAZ-3		C	3/9/04	<0.50	<0.50	<0.50	<0.50	<0.50	<5.0	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	0.83	0.94	<0.50	<0.50	<0.50
SAZ-3		C	3/10/05	<0.50	<0.50	<0.50	<0.50	<0.50	<5.0	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50
SAZ-3		C	3/15/06	<0.50	<0.50	<0.50	<0.50	<0.50	<5.0	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50
SAZ-3	3	C	1/31/07	<0.50	<0.50	<0.50	<0.50	<0.50	<5.0	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	**19**	**1.8**	<0.50	<0.50	<0.50
SAZ-3		C	5/8/07	<0.50	<0.50	<0.50	<0.50	<0.50	<5.0	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50
SAZ-3		C	2/4/08	<0.50	<0.50	<0.50	<0.50	<0.50	<5.0	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50
SAZ-3		C	2/2/09	<0.50	<0.50	<0.50	<0.50	<0.50	<5.0	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50
SAZ-3		C	2/1/10	<0.50	<0.50	<0.50	<0.50	<0.50	<5.0	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50
SAZ-3		C	2/8/11	<0.50	<0.50	<0.50	<0.50	<0.50	<5.0	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50

Table 5H
Groundwater Monitoring Volatile Organic Compounds Data
Monitored Natural Attenuation and Destroyed/Not Used Wells
Former Kaiser Aerotech Facilities
San Leandro, California

Notes:
*Volatile organic compound analyses (VOC) conducted after October 2002 by EPA Method 8260B.
VOC analyses conducted prior to that date by EPA Methods 8260B, 8021B or previously promulgated equivalents (EPA 8010, 8240).
Maximum contaminant levels (MCLs) and regulatory dates from Drinking Water, U.S.EPA vs. California, updated March 2018.
Concentrations above noted MCLs are emboldened.

GW Zone	Groundwater Zone
A	A-zone - approximately 5-15 feet below ground surface
UB	Upper B-zone - approximately 15-25 feet below ground surface
LB	Lower B-zone - approximately 25-35 feet below ground surface
C	C-zone - below approximately 35-40 feet below ground surface
DCB	Dichlorobenzene
TCA	Trichloroethane
DCA	Dichloroethane
PCE	Tetrachloroethene
TCE	Trichloroethene
DCE	Dichloroethene
ug/L	Micrograms per liter
<	Not detected at or above the specified reporting limit
(d), DUP	Duplicate sample
grab	well not purged prior to sampling
--	Not reported
J4	The associated batch QC was outside the established quality control range for accuracy.
PT	Results may reflect influence of noted pilot test activities.
GWE	Pumping Test
ISCO Mn	Permanganate Injection Test
ISCO FR	Modified Fenton's Reagent Pilot Test
DPE	High Vacuum Dual Phase Extraction
ERD	Enhanced Reductive Dechlorination using Sodium Lactate
RDIP	Results may reflect influence of ERD activities outlined in Remedial Design and Implementation Plan.
O&M	Operation and Maintenance Plan Monitoring Program
Sup.	Supplemental sampling to evaluate concentration trends from upgradient offsite source(s)
1	Sample for MW-17 mislabeled in field; appears as LMW-2 in lab report.
2	Estimated concentration; recovery value exceeded calibration range of instrument.
3	Sample mislabeled in field; appears as SAZ-1 in lab report. Results suggest potential cross-contamination.
4	Wells MW-2, MW-8, MW-10, MW-14 and MC-1 destroyed in May 2009.
5	Well MW-8 was reported as abandoned in March 1997 (SECOR, 1997) and relocated in October 2003.
6	Wells IW-2 and TP-1 destroyed in June 2003.
7	1,2-dichloropropane at 1.5 µg/L in well RW-1 and 2.1 µg/L in well RW-4.
8	1,2-dichloropropane at 1.2 µg/L in well LPZ-5.
9	1,2-dichloropropane at 0.51 µg/L in well LPZ-2, 0.90 µg/L in well LPZ-3, 1.6 µg/L in well LPZ-5, and 1.0 µg/L in well LB-3.
10	1,2-dichloropropane at 1.4 µg/L in well LPZ-3, 3.9 µg/L in well LPZ-5, and 0.95 µg/L in well LB-3.
11	2-chlorotoluene at 2.91 µg/L in well MW-27.
12	1,2,4-trichlorobenzene at 1.42 µg/L in well PZ-2.
13	2-chlorotoluene at 9.60 µg/L in well MW-28, 1.59 µg/L in well MW-27, 6.78 µg/L in well LMW-9, and 7.75 µg/L in well FA-1.
14	1,2,4-trichlorobenzene at 1.27 µg/L in well PZ-2.
15	1,2-dichloropropane at 1.19 µg/L in well LPZ-3.
16	2-chlorotoluene at 5.14 µg/L in well MW-28, 1.81 µg/L in well MW-27, and 2.63 µg/L in well LMW-9.

Table 6A
Groundwater Elevation Data, Field Measurements and Other Analyses
A-Zone Hotspots
Former Kaiser Aerotech Facilities
San Leandro, California

Monitoring Well	Notes	GW Zone	Date	Top of Casing Elevation (ft msl)	Depth to Groundwater (ft BTOC)	Groundwater Elevation (ft msl)	TOC[Note 1] (mg/L)	Specific conductance field (µS/cm)	pH field	ORP field (mV)	Dissolved Oxygen field (mg/L)
PZ-2		A	6/26/03	11.61	6.74	4.87	--	1,064	--	163.5	1.08
PZ-2		A	9/23/03	11.61	7.06	4.55	--	--	--	--	--
PZ-2		A	9/24/03	11.61	--	--	**8.1**	1,096	--	17.6	0.25
PZ-2		A	3/9/04	11.59	6.11	5.48	--	--	--	--	--
PZ-2		A	3/10/04	11.59	--	--	--	680	--	-171.4	1.00
PZ-2		A	9/29/04	11.59	6.98	4.61	--	999	--	--	--
PZ-2		A	2/1/05	11.59	--	--	--	654	--	--	--
PZ-2		A	3/8/05	11.59	5.58	6.01	--	--	--	--	--
PZ-2		A	3/10/05	11.59	--	--	--	687	--	-106	0.61
PZ-2		A	9/14/05	11.59	6.94	4.65	--	956	--	-308.3	1.70
PZ-2		A	3/15/06	11.59	5.10	6.49	--	1,083	--	-108.8	4.79
PZ-2		A	9/20/06	11.59	6.87	4.72	--	1,020	6.80	-19.5	0.20
PZ-2		A	9/20/06	11.59	6.43	5.16	--	--	--	--	--
PZ-2		A	2/2/07	11.59	6.55	5.04	--	1,932	10.79	-74.9	2.86
PZ-2		A	8/15/07	11.59	6.89	4.70	--	1,059	6.74	-30.4	1.28
PZ-2		A	11/14/07	11.59	6.51	5.08	--	--	--	--	--
PZ-2		A	2/5/08	11.59	5.51	6.08	--	1,085	7.39	109.5	2.54
PZ-2	RDIP	A	6/4/08	11.59	6.88	4.71	--	1,244	--	--	--
PZ-2	RDIP	A	11/6/08	11.59	6.52	5.07	--	6,639	6.51	-72.8	4.51
PZ-2	RDIP	A	2/2/09	11.59	6.61	4.98	**900**	5,404	6.74	-60.6	2.19
PZ-2	RDIP	A	5/6/09	11.59	6.40	5.19	--	3,629	6.66	-24.2	0.28
PZ-2	RDIP	A	8/25/09	11.59	6.96	4.63	--	--	--	--	--
PZ-2	RDIP	A	11/4/09	11.59	6.43	5.16	--	--	--	--	--
PZ-2	RDIP	A	2/1/10	11.59	4.81	6.78	**17**	738	6.74	-50.7	2.58
PZ-2	RDIP	A	8/3/10	11.59	6.60	4.99	--	--	--	--	--
PZ-2	RDIP	A	2/9/11	11.59	6.45	5.14	--	2,241	7.97	-105	0.27
PZ-2	RDIP	A	2/7/12	11.59	6.38	5.21	--	3,310	6.83	-26.9	0.15
PZ-2	O&M	A	2/13/13	11.59	6.68	4.91	--	2,642	6.78	-230.1	1.47
PZ-2	O&M	A	2/25/14	11.59	6.69	4.90	--	1,548	6.72	-88.4	3.12
PZ-2	O&M	A	6/11/15	11.59	6.61	4.98	--	1,912	5.99	-29.4	--
PZ-2	O&M	A	2/23/16	11.59	6.51	5.08	--	1,290	7.69	-126.3	0.91
PZ-2	O&M	A	2/14/17	11.59	5.30	6.29	--	1,078	7.17	64.1	0.13
PZ-2	O&M	A	2/14/18	11.59	6.67	4.92	--	1,180	7.06	-47.7	0.35
PZ-2	O&M	A	2/12/19	11.59	5.60	5.99	--	1,274	7.49	-34.6	0.64
PZ-2	O&M	A	3/10/20	11.59	6.73	4.86	--	1,024	6.92	-12.3	1.66
MW-22		A	3/21/06	12.35	5.37	6.98	--	896	--	--	--
MW-22		A	3/27/06	12.35	5.20	7.15	--	986	--	121.2	1.2
MW-22		A	6/14/06	12.35	6.81	5.54	--	806	6.41	70.3	0.14
MW-22		A	9/20/06	12.35	7.11	5.24	--	845	6.85	7.4	0.20
MW-22		A	2/1/07	12.35	6.41	5.94	--	778	6.78	55.2	0.25
MW-22		A	5/8/07	12.35	6.74	5.61	--	818	6.68	12.2	1.19
MW-22		A	8/15/07	12.35	7.18	5.17	--	903	6.57	45.2	0.18
MW-22		A	11/14/07	12.35	6.81	5.54	--	1,058	7.08	17.2	0.81
MW-22		A	2/5/08	12.35	5.76	6.59	--	902	6.51	20.7	0.62
MW-22		A	5/6/08	12.35	6.85	5.50	--	--	--	--	--
MW-22	RDIP	A	6/7/08	12.35	5.72	6.63	--	--	--	--	--
MW-22	RDIP	A	6/7/08	12.35	1.36	10.99	--	69,632	--	--	--
MW-22	RDIP	A	8/6/08	12.35	7.15	5.20	--	9,509	6.26	-103.4	1.07
MW-22	RDIP	A	11/6/08	12.35	6.84	5.51	--	--	--	--	--
MW-22	RDIP	A	11/10/08	12.35	--	--	--	6,320	--	-57.3	4.40
MW-22	RDIP	A	2/4/09	12.35	6.86	5.49	**3,200**	7,030	6.71	-69.8	2.09
MW-22	RDIP	A	5/6/09	12.35	6.61	5.74	--	3,697	6.89	-55.4	0.86
MW-22	RDIP	A	8/5/09	12.35	7.34	5.01	--	--	--	--	--
MW-22	RDIP	A	11/4/09	12.35	6.91	5.44	--	--	--	--	--
MW-22	RDIP	A	2/1/10	12.35	5.78	6.57	**13**	2,202	6.61	-87.9	2.34
MW-22	RDIP	A	5/11/10	12.35	6.42	5.93	--	2,467	--	--	--
MW-22	RDIP	A	2/9/11	12.35	6.85	5.50	--	2,676	7.78	-96	0.20
MW-22	RDIP	A	2/7/12	12.35	6.65	5.70	--	3,138	6.66	-3.7	0.39

Table 6A
Groundwater Elevation Data, Field Measurements and Other Analyses
A-Zone Hotspots
Former Kaiser Aerotech Facilities
San Leandro, California

Monitoring Well	Notes	GW Zone	Date	Top of Casing Elevation	Depth to Groundwater	Groundwater Elevation	TOC[Note 1]	Specific conductance field	pH field	ORP field	Dissolved Oxygen field
				(ft msl)	(ft BTOC)	(ft msl)	(mg/L)	(µS/cm)		(mV)	(mg/L)
MW-22	O&M	A	2/14/13	12.35	6.71	5.64	--	2,772	6.59	-172.1	2.10
MW-22	O&M	A	2/25/14	12.35	6.97	5.38	--	932	6.47	-61.8	13.75
MW-22	O&M	A	6/9/15	12.35	7.27	5.08	--	2,051	5.96	146.6	--
MW-22	O&M	A	2/23/16	12.35	6.50	5.85	--	971	7.25	-69.1	0.82
MW-22	O&M	A	2/14/17	12.35	5.20	7.15	--	809	7.14	75.2	0.14
MW-22	O&M	A	2/14/18	12.35	6.81	5.54	--	1,057	7.01	-60.2	0.92
MW-22	O&M	A	2/12/19	12.35	5.79	6.56	--	893	5.72	26.8	0.11
MW-22	O&M	A	3/10/20	12.35	7.06	5.29	--	861	6.93	2.6	2.59
MW-23		A	3/21/06	14.46	8.14	6.32	--	1,468	--	--	--
MW-23		A	3/27/06	14.46	8.10	6.36	--	1,457	--	85.2	1.45
MW-23		A	6/14/06	14.46	9.15	5.31	--	1,341	6.71	-30.2	1.68
MW-23		A	9/20/06	14.46	9.55	4.91	--	1,257	6.96	163.7	1.35
MW-23		A	1/30/07	14.46	8.99	5.47	--	--	--	--	--
MW-23		A	2/1/07	14.46	--	--	--	1,122	6.74	82	0.29
MW-23		A	5/8/07	14.46	9.21	5.25	--	1,194	6.59	111.2	0.72
MW-23		A	8/15/07	14.46	9.45	5.01	--	1,231	6.62	31.0	0.17
MW-23		A	11/14/07	14.46	9.29	5.17	--	--	--	--	--
MW-23		A	2/5/08	14.46	8.33	6.13	--	1,216	6.53	-42.2	1.42
MW-23		A	5/6/08	14.46	9.18	5.28	--	--	--	--	--
MW-23		A	6/4/08	14.46	9.36	5.10	--	1,472	--	--	--
MW-23		A	6/4/08	14.46	6.85	7.61	--	60,217	--	--	--
MW-23	RDIP	A	8/6/08	14.46	9.34	5.12	--	5,220	6.22	-104.7	0.74
MW-23	RDIP	A	11/6/08	14.46	9.60	4.86	--	--	--	--	--
MW-23	RDIP	A	11/10/08	14.46	--	--	--	2,404	--	-73.9	3.79
MW-23	RDIP	A	2/3/09	14.46	9.40	5.06	**310**	3,198	6.56	-57.8	3.60
MW-23	RDIP	A	5/6/09	14.46	9.10	5.36	--	3,009	6.57	-63.2	0.28
MW-23	RDIP	A	8/5/09	14.46	9.43	5.03	--	--	--	--	--
MW-23	RDIP	A	11/4/09	14.46	9.53	4.93	--	--	--	--	--
MW-23	RDIP	A	2/1/10	14.46	8.85	5.61	**8.3**	1,971	6.47	-57.8	2.72
MW-23	RDIP	A	8/3/10	14.46	9.42	5.04	--	--	--	--	--
MW-23	RDIP	A	2/8/11	14.46	9.09	5.37	--	1,466	6.68	-105	0.44
MW-23	RDIP	A	2/7/12	14.46	9.08	5.38	--	2,882	6.78	-1.9	0.33
MW-23	O&M	A	2/14/13	14.46	9.57	4.89	--	1,159	6.49	-161.9	1.23
MW-23	O&M	A	2/25/14	14.46	9.35	5.11	--	1,798	6.71	-92.6	2.70
MW-23	O&M	A	6/10/15	14.46	9.55	4.91	--	1,893	7.27	-120.7	0.10
MW-23	O&M	A	2/23/16	14.46	9.03	5.43	--	1,272	7.49	-95.7	0.85
MW-23	O&M	A	2/13/17	14.46	8.00	6.46	--	951	7.70	50	0.14
MW-23	O&M	A	2/14/18	14.46	9.25	5.21	--	1,066	6.79	-2.6	0.75
MW-23	O&M	A	2/11/19	14.46	8.65	5.81	--	1,394	6.80	-105.5	0.25
MW-23	O&M	A	3/10/20	14.46	9.41	5.05	--	1,094	6.68	52.0	2.19
MW-26		A	3/21/06	10.35	4.40	5.95	--	1,352	--	--	--
MW-26		A	3/27/06	10.35	4.11	6.24	--	1,015	--	108	2.69
MW-26		A	6/14/06	10.35	5.53	4.82	--	1,023	6.89	-25.0	1.96
MW-26		A	9/21/06	10.35	5.80	4.55	--	872	7.04	71.1	0.90
MW-26		A	1/31/07	10.35	5.40	4.95	--	756	6.87	171.3	0.40
MW-26		A	5/9/07	10.35	5.44	4.91	--	869	6.99	29.4	2.29
MW-26		A	8/14/07	10.35	5.80	4.55	--	909	7.07	14.3	2.41
MW-26		A	11/13/07	10.35	5.42	4.93	--	--	--	--	--
MW-26		A	2/5/08	10.35	4.30	6.05	--	975	7.26	19.8	4.02
MW-26		A	5/8/08	10.35	5.81	4.54	--	--	--	--	--
MW-26	RDIP	A	6/10/08	10.35	4.21	6.14	--	825	--	--	--
MW-26	RDIP	A	6/10/08	10.35	1.24	9.11	--	64,789	--	--	--
MW-26	RDIP	A	8/5/08	10.35	5.74	4.61	--	3,770	6.67	-214.3	0.73
MW-26	RDIP	A	11/6/08	10.35	5.22	5.13	--	1,555	--	58.2	2.39
MW-26	RDIP	A	2/3/09	10.35	5.52	4.83	**460**	4,886	6.69	-122.3	0.57
MW-26	RDIP	A	3/18/09	10.35	5.21	5.14	--	4,889	--	--	--
MW-26	RDIP	A	5/6/09	10.35	5.26	5.09	--	3,140	6.89	-83.9	0.16
MW-26	RDIP	A	11/4/09	10.35	5.49	4.86	--	--	--	--	--

Table 6A
Groundwater Elevation Data, Field Measurements and Other Analyses
A-Zone Hotspots
Former Kaiser Aerotech Facilities
San Leandro, California

Monitoring Well	Notes	GW Zone	Date	Top of Casing Elevation	Depth to Groundwater	Groundwater Elevation	TOC[Note 1]	Specific conductance field	pH field	ORP field	Dissolved Oxygen field
				(ft msl)	(ft BTOC)	(ft msl)	(mg/L)	(µS/cm)		(mV)	(mg/L)
MW-26	RDIP	A	2/1/10	10.35	4.45	5.90	**7.0**	1,942	6.86	-92.8	2.59
MW-26	RDIP	A	5/10/10	10.35	5.22	5.13	--	2,048	--	--	--
MW-26	RDIP	A	8/3/10	10.35	5.69	4.66	--	--	--	--	--
MW-26	RDIP	A	2/8/11	10.35	5.40	4.95	--	2,972	6.62	-35.7	1.8
MW-26	RDIP	A	2/7/12	10.35	5.42	4.93	--	2,501	7.09	-93.8	0.31
MW-26	O&M	A	2/14/13	10.35	5.56	4.79	--	2,021	7.06	-172.9	0.87
MW-26	O&M	A	2/25/14	10.35	5.61	4.74	--	770	6.92	43.8	2.14
MW-26	O&M	A	6/10/15	10.35	5.79	4.56	--	851	6.98	39.2	1.36
MW-26	O&M	A	2/24/16	10.35	5.50	4.85	--	773	7.30	24.8	0.97
MW-26	O&M	A	2/15/17	10.35	4.24	6.11	--	660	7.83	86.0	0.48
MW-26	O&M	A	2/14/18	10.35	4.50	5.85	--	604	6.97	61.9	1.37
MW-26	O&M	A	2/13/19	10.35	4.30	6.05	--	1,092	7.91	65.7	0.48
MW-26	O&M	A	3/11/20	10.35	5.75	4.60	--	1,864	6.82	46.0	0.83

Table 6B
Groundwater Elevation Data, Field Measurements and Other Analyses
Degreasing Tank No. 1
Former Kaiser Aerotech Facilities
San Leandro, California

Monitoring Well	Notes	GW Zone	Date	Top of Casing Elevation (ft msl)	Depth to Groundwater (ft BTOC)	Groundwater Elevation (ft msl)	TOC[Note 1] (mg/L)	Specific conductance field (µS/cm)	pH field	ORP field (mV)	Dissolved Oxygen field (mg/L)
MW-11		A	11/14/96	10.90	5.59	5.31	--	--	--	--	--
MW-11		A	3/20/97	10.90	4.93	5.97	--	--	--	--	--
MW-11		A	6/25/97	10.90	5.42	5.48	--	--	--	--	--
MW-11		A	9/22/97	10.90	5.61	5.29	--	--	--	--	--
MW-11		A	12/18/97	10.90	4.00	6.90	--	--	--	--	--
MW-11		A	3/23/98	10.90	4.35	6.55	--	--	--	--	--
MW-11		A	6/17/98	10.90	4.95	5.95	--	--	--	--	--
MW-11		A	9/22/98	10.90	5.71	5.19	--	--	--	--	--
MW-11		A	9/24/98	10.90	--	--	--	--	--	250	3.05
MW-11		A	12/9/98	10.90	4.78	6.12	--	--	--	162	6.03
MW-11		A	3/22/99	10.90	4.14	6.76	--	--	--	--	--
MW-11		A	6/21/99	10.90	5.56	5.34	--	--	--	--	--
MW-11		A	9/20/99	10.90	5.90	5.00	--	--	--	--	--
MW-11		A	12/13/99	10.90	5.39	5.51	--	--	--	--	--
MW-11		A	3/13/00	10.90	3.48	7.42	--	--	--	--	--
MW-11		A	9/18/00	10.90	5.68	5.22	--	--	--	--	--
MW-11		A	3/12/01	10.90	4.28	6.62	--	590	--	--	--
MW-11		A	9/24/01	10.90	5.80	5.10	--	--	--	--	--
MW-11		A	3/26/02	10.90	4.15	6.75	--	--	--	--	--
MW-11		A	10/3/02	10.90	5.75	5.15	--	722	--	--	--
MW-11		A	3/26/03	10.90	4.91	5.99	--	659	--	-24.9	0.63
MW-11		A	9/23/03	10.90	5.69	5.21	--	705	--	-17.5	0.30
MW-11		A	12/16/03	10.90	4.49	6.41	--	--	--	--	--
MW-11		A	3/9/04	10.90	4.41	6.49	--	601	--	27.9	1.67
MW-11		A	5/20/04	10.90	5.39	5.51	--	--	--	--	--
MW-11		A	9/29/04	10.90	5.62	5.28	--	630	--	51.3	0.43
MW-11		A	12/8/04	10.90	4.34	6.56	--	--	--	--	--
MW-11		A	3/8/05	10.90	3.84	7.06	--	--	--	--	--
MW-11		A	3/9/05	10.90	--	--	--	611	--	20.1	0.44
MW-11		A	6/14/05	10.90	4.96	5.94	--	--	--	--	--
MW-11		A	9/14/05	10.90	5.60	5.30	--	712	--	76.9	3.82
MW-11		A	12/14/05	10.90	5.20	5.70	--	--	--	--	--
MW-11		A	3/15/06	10.90	3.31	7.59	--	645	--	-65.6	10.15
MW-11		A	6/13/06	10.90	5.11	5.79	--	--	--	--	--
MW-11		A	9/20/06	10.90	5.55	5.35	--	723	8.01	-182	1.21
MW-11		A	1/31/07	10.90	5.00	5.90	--	828	6.68	-98.8	6.99
MW-11		A	2/6/08	10.90	3.72	7.18	--	503	6.88	-5.7	2.17
MW-11		A	6/2/08	10.90	5.37	5.53	--	688	--	--	--
MW-11	RDIP	A	8/7/08	10.90	5.55	5.35	--	784	7.07	-69.0	0.38
MW-11	RDIP	A	11/6/08	10.90	5.20	5.70	--	--	--	--	--
MW-11	RDIP	A	12/2/08	10.90	5.42	5.48	--	736	--	-133.8	--
MW-11	RDIP	A	2/5/09	10.90	5.12	5.78	--	836	6.70	-39.6	4.60
MW-11	RDIP	A	5/6/09	10.90	4.87	6.03	--	415	6.76	191.0	5.60
MW-11	RDIP	A	8/5/09	10.90	5.62	5.28	--	783	6.60	-186.0	3.02
MW-11	RDIP	A	11/4/09	10.90	5.16	5.74	--	--	--	--	--
MW-11	RDIP	A	2/2/10	10.90	3.74	7.16	--	567	6.76	-193.8	0.41
MW-11	RDIP	A	5/18/10	10.90	4.94	5.96	--	602	--	--	--
MW-11	RDIP	A	8/3/10	10.90	5.39	5.51	--	--	--	--	--
MW-11	RDIP	A	2/8/11	10.90	5.00	5.90	--	522	6.86	-92	0.17
MW-11	O&M	A	2/13/13	10.90	5.21	5.69	--	518	6.67	-160.3	1.47
MW-11	O&M	A	6/9/15	10.90	5.62	5.28	--	512	6.53	144.3	--
MW-11	O&M	A	2/13/17	10.90	3.00	7.90	--	174	7.78	145.1	0.59
MW-11	O&M	A	2/12/19	10.90	3.87	7.03	--	284	6.53	126.7	2.14
MW-11	O&M	A	3/10/20	10.90	5.38	5.52	--	624	7.47	51.4	2.86
MW-19		A	9/14/05	10.56	5.91	4.65	--	852	--	-6.3	3.63
MW-19		A	12/14/05	10.56	5.40	5.16	--	899	--	-48.3	7.75
MW-19		A	3/14/06	10.56	5.61	4.95	--	1,000	--	130.9	3.15
MW-19		A	6/13/06	10.56	4.86	5.70	--	--	--	--	--

Table 6B
Groundwater Elevation Data, Field Measurements and Other Analyses
Degreasing Tank No. 1
Former Kaiser Aerotech Facilities
San Leandro, California

Monitoring Well	Notes	GW Zone	Date	Top of Casing Elevation	Depth to Groundwater	Groundwater Elevation	TOC[Note 1]	Specific conductance field	pH field	ORP field	Dissolved Oxygen field
				(ft msl)	(ft BTOC)	(ft msl)	(mg/L)	(µS/cm)		(mV)	(mg/L)
MW-19		A	9/20/06	10.56	5.19	5.37	--	811	8.91	-238	0.41
MW-19		A	1/30/07	10.56	5.21	5.35	--	--	--	--	--
MW-19		A	1/31/07	10.56	4.79	5.77	--	986	7.72	-46.9	5.12
MW-19		A	5/10/07	10.56	5.92	4.64	--	900	6.93	-14.1	2.19
MW-19		A	8/14/07	10.56	5.31	5.25	--	1,098	6.93	10.2	1.49
MW-19		A	11/13/07	10.56	5.04	5.52	--	--	--	--	--
MW-19		A	2/5/08	10.56	3.51	7.05	--	1,225	6.67	-105.3	1.5
MW-19		A	6/11/08	10.56	5.44	5.12	--	1,098	--	--	--
MW-19		A	6/12/08	10.56	6.11	4.45	--	1,174	--	--	--
MW-19	RDIP	A	8/6/08	10.56	5.28	5.28	--	1,553	7.07	-319	0.31
MW-19	RDIP	A	11/6/08	10.56	6.18	4.38	--	--	--	--	--
MW-19	RDIP	A	12/2/08	10.56	5.47	5.09	--	751	--	--	--
MW-19	RDIP	A	2/5/09	10.56	5.02	5.54	**79**	2,308	6.69	-91.2	1.83
MW-19	RDIP	A	5/6/09	10.56	5.86	4.70	--	1,758	6.48	-68.1	0.19
MW-19	RDIP	A	8/6/09	10.56	5.76	4.80	--	1,877	6.68	-162.4	0.77
MW-19	RDIP	A	11/4/09	10.56	5.76	4.80	--	--	--	--	--
MW-19	RDIP	A	2/2/10	10.56	3.81	6.75	--	1,559	6.56	-112.1	0.81
MW-19	RDIP	A	2/9/11	10.56	4.73	5.83	--	1,301	7.05	-81.0	0.28
MW-19	O&M	A	2/13/13	10.56	4.94	5.62	--	1,107	6.50	-26.8	0.44
MW-19	O&M	A	6/9/15	10.56	5.29	5.27	--	2,076	6.19	81.9	--
MW-19	O&M	A	2/13/17	10.56	3.50	7.06	--	843	7.27	16.0	0.11
MW-19	O&M	A	2/12/19	10.56	3.65	6.91	--	2,562	7.37	-57.4	0.42
MW-29		A	9/18/07	10.32	5.17	5.15	**5.8**	2,507	6.94	63.2	0.87
MW-29		A	11/13/07	10.32	4.80	5.52	--	1,107	8.59	-63.7	1.64
MW-29		A	2/4/08	10.32	3.20	7.12	--	1,017	7.28	13.5	2.97
MW-29		A	5/6/08	10.32	4.83	5.49	--	846	4.91	448.0	0.72
MW-29	RDIP	A	8/5/08	10.32	5.07	5.25	--	919	6.73	104.4	2.02
MW-29	RDIP	A	11/6/08	10.32	4.69	5.63	--	--	--	--	--
MW-29	RDIP	A	12/2/08	10.32	4.71	5.61	--	707	--	-10.3	--
MW-29	RDIP	A	2/2/09	10.32	4.73	5.59	**5.0**	870	6.93	48.5	2.07
MW-29	RDIP	A	5/6/09	10.32	4.51	5.81	--	765	6.94	393.6	5.12
MW-29	RDIP	A	8/5/09	10.32	5.20	5.12	--	848	6.76	35.2	2.72
MW-29	RDIP	A	11/4/09	10.32	4.64	5.68	--	--	--	--	--
MW-29	RDIP	A	2/3/10	10.32	3.91	6.41	--	900	6.78	78.8	1.05
MW-29	RDIP	A	3/26/10	10.32	4.25	6.07	--	960	--	--	--
MW-29	RDIP	A	5/4/10	10.32	4.19	6.13	--	836	8.06	-235.5	0.36
MW-29	RDIP	A	8/3/10	10.32	5.00	5.32	--	--	--	--	--
MW-29	RDIP	A	8/4/10	10.32	--	--	**27**	897	7.39	-32.7	1.07
MW-29	RDIP	A	2/8/11	10.32	4.58	5.74	--	760	7.03	-72.2	1.91
MW-29	RDIP	A	2/7/12	10.32	4.54	5.78	--	787	6.95	252	0.14
MW-29	RDIP	A	8/23/12	10.32	5.27	5.05	**30**	724	8.33	-2.5	1.09
MW-29	O&M	A	2/14/13	10.32	4.80	5.52	--	815	7.12	128.5	0.69
MW-29	O&M	A	2/25/14	10.32	4.87	5.45	--	647	6.98	173.7	2.20
MW-29	O&M	A	6/10/15	10.32	5.10	5.22	--	763	7.49	-11.7	0.45
MW-29	O&M	A	2/24/16	10.32	4.64	5.68	**5.1**	670	8.14	10.5	1.31
MW-29	O&M	A	2/15/17	10.32	3.10	7.22	**3.3**	546	7.70	63.5	0.48
MW-29	O&M	A	2/14/18	10.32	4.68	5.64	--	543	6.96	27.4	0.76
MW-29	O&M	A	9/12/18	10.32	5.11	5.21	--	612	7.95	-9.5	--
MW-29	O&M	A	2/13/19	10.32	3.38	6.94	--	11,287	7.06	-25.9	0.52
MW-29	O&M	A	3/10/20	10.32	5.05	5.27	--	3,054	6.69	-28.3	1.60
UB-2		UB	3/27/06	10.97	3.20	7.77	**9.1**	1,082	--	-2.5	1.94
UB-2		UB	4/3/06	10.97	2.92	8.05	--	968	--	43	0.50
UB-2	PT ERD	UB	5/8/06	10.97	5.12	5.85	--	--	--	--	--
UB-2	PT ERD	UB	9/20/06	10.97	5.61	5.36	--	--	--	--	--
UB-2	PT ERD	UB	1/31/07	10.97	5.07	5.90	--	882	10.65	-160.4	4.20
UB-2	PT ERD	UB	5/10/07	10.97	5.10	5.87	**2.1**	663	7.24	-118.5	1.30
UB-2	PT ERD	UB	2/6/08	11.15	4.54	6.61	--	686	7.23	-15.9	0.39
UB-2	PT ERD	UB	6/2/08	11.15	5.38	5.77	--	596	--	--	--

Table 6B
Groundwater Elevation Data, Field Measurements and Other Analyses
Degreasing Tank No. 1
Former Kaiser Aerotech Facilities
San Leandro, California

Monitoring Well	Notes	GW Zone	Date	Top of Casing Elevation	Depth to Groundwater	Groundwater Elevation	TOC[Note 1]	Specific conductance field	pH field	ORP field	Dissolved Oxygen field
				(ft msl)	(ft BTOC)	(ft msl)	(mg/L)	(µS/cm)		(mV)	(mg/L)
UB-2	RDIP	UB	6/3/08	11.15	6.25	4.90	--	44,100	--	--	--
UB-2	RDIP	UB	6/3/08	11.15	--	--	--	46,972	--	--	--
UB-2	RDIP	UB	6/11/08	11.15	7.02	4.13	--	27,136	--	--	--
UB-2	RDIP	UB	6/12/08	11.15	7.02	4.13	--	26,435	--	--	--
UB-2	RDIP	UB	11/6/08	11.15	--	--	--	17,232	--	-132.9	3.05
UB-2	RDIP	UB	2/5/09	11.15	6.29	4.86	--	17,432	6.60	-100.6	1.90
UB-2	RDIP	UB	2/1/10	11.15	4.69	6.46	**85**	3,811	6.72	-95.4	1.57
UB-2	RDIP	UB	2/8/11	11.15	5.17	5.98	--	4,254	7.05	-75.8	0.49
UB-2	RDIP	UB	8/10/11	11.15	5.45	5.70	--	4,019	6.81	-119.7	--
UB-2	RDIP	UB	2/7/12	11.15	5.20	5.95	--	3,525	6.87	-94.8	0.26
UB-2	O&M	UB	2/13/13	11.15	5.17	5.98	--	3,633	7.44	-66.7	1.03
UB-2	O&M	UB	9/17/14	11.15	5.84	5.31	--	2,862	7.34	-100.9	0.74
UB-2	O&M	UB	6/9/15	11.15	5.77	5.38	--	1,666	6.66	42.2	--
UB-2	O&M	UB	2/23/16	11.15	4.94	6.21	--	2,649	6.53	-50.9	4.66
UB-2	O&M	UB	9/22/16	11.15	5.90	5.25	--	2,398	7.14	-26.2	0.59
UB-2	O&M	UB	2/13/17	11.15	3.05	8.10	--	610	7.91	76.4	0.18
UB-2	O&M	UB	9/20/17	11.15	5.77	5.38	**1.5**	1,155	6.68	-60.7	0.50
UB-2	O&M	UB	2/13/18	11.15	5.17	5.98	--	1,790	6.98	-45.4	1.63
UB-2	O&M	UB	9/26/18			Well is parked over; unable to access					
UB-2	O&M	UB	2/12/19	11.15	3.96	7.19	--	1,759	6.56	-52.4	0.09
UB-2	O&M	UB	9/24/19			Well is parked over; unable to access					
UB-2	O&M	UB	3/10/20	11.15	5.51	5.64	--	1,569	7.07	-20.0	1.13
LPZ-2		UB	8/12/03	10.60	5.31	5.29	--	858	--	-38.1	3.41
LPZ-2		UB	9/29/04	10.60	6.41	4.19	--	563	--	-460	0.84
LPZ-2		UB	12/8/04	10.60	4.54	6.06	--	449	--	-28.4	1.01
LPZ-2		UB	3/8/05	10.60	3.58	7.02	--	--	--	--	--
LPZ-2		UB	3/9/05	10.60	--	--	--	730	--	9.0	0.42
LPZ-2		UB	6/14/05	10.60	4.41	6.19	--	716	--	-112.6	0.15
LPZ-2		UB	9/14/05	10.60	5.35	5.25	--	768	--	-203.6	1.04
LPZ-2		UB	12/15/05	10.60	4.95	5.65	--	483	--	-105.6	3.95
LPZ-2		UB	3/14/06	10.60	3.10	7.50	--	633	--	142.4	1.45
LPZ-2		UB	4/3/06	10.60	3.17	7.43	--	767	--	57.0	0.1
LPZ-2		UB	4/5/06	10.60	1.91	8.69	--	1150	--	75.0	0.3
LPZ-2	PT ERD	UB	5/8/06	10.60	4.37	6.23	**540**	2,199	7.39	-196.6	4.37
LPZ-2	PT ERD	UB	6/13/06	10.60	4.84	5.76	**860**	2,812	6.42	-72.4	1.21
LPZ-2	PT ERD	UB	7/12/06	10.60	5.05	5.55	**1,100**	3,010	6.28	-127.7	0.12
LPZ-2	PT ERD	UB	8/9/06	10.60	5.13	5.47	**980**	3,391	6.52	-136.9	2.39
LPZ-2	PT ERD	UB	9/20/06	10.60	5.20	5.40	**1,000**	3,373	6.59	-131.8	0.45
LPZ-2	PT ERD	UB	10/24/06	10.60	5.26	5.34	**1,400**	2,798	6.78	-89.5	0.24
LPZ-2	PT ERD	UB	1/31/07	10.60	4.77	5.83	**530**	2,810	6.94	-74.4	6.82
LPZ-2	PT ERD	UB	5/10/07	10.60	5.15	5.45	**1,000**	2,667	6.63	-45.3	1.27
LPZ-2	PT ERD	UB	8/14/07	10.60	5.25	5.35	**600**	2,384	6.37	-110.8	0.25
LPZ-2	PT ERD	UB	11/13/07	10.60	4.92	5.68	**380**	1,662	6.53	-102	0.36
LPZ-2	PT ERD	UB	2/6/08	10.60	3.72	6.88	**250**	1,879	6.64	-135.9	0.59
LPZ-2	PT ERD	UB	6/2/08	10.60	5.35	5.25	--	1,635	--	--	--
LPZ-2	PT ERD	UB	6/4/08	10.60	4.59	6.01	--	1,902	--	--	--
LPZ-2	RDIP	UB	8/6/08	10.60	5.32	5.28	--	4,941	6.53	-311	0.20
LPZ-2	RDIP	UB	11/6/08	10.60	--	--	--	2,357	--	-93.3	2.86
LPZ-2	RDIP	UB	2/4/09	10.60	5.10	5.50	**640**	3,204	6.72	-118.5	1.24
LPZ-2	RDIP	UB	8/5/09	10.60	5.48	5.12	--	3,097	6.67	-172.6	1.42
LPZ-2	RDIP	UB	2/2/10	10.60	3.59	7.01	**60**	2,439	6.45	-90.4	1.26
LPZ-2	RDIP	UB	5/17/10	10.60	5.14	5.46	--	3,128	--	--	--
LPZ-2	RDIP	UB	5/18/10	10.60	4.53	6.07	--	8,125	--	--	--
LPZ-2	RDIP	UB	8/3/10	10.60	5.20	5.40	--	--	--	--	--
LPZ-2	RDIP	UB	8/4/10	10.60	--	--	--	5,236	7.28	-163.2	0.60
LPZ-2	RDIP	UB	2/8/11	10.60	5.10	5.50	--	4,154	6.90	-129.5	0.14
LPZ-2	RDIP	UB	8/10/11	10.60	5.10	5.50	--	3,351	6.64	-112.6	--
LPZ-2	RDIP	UB	2/7/12	10.60	5.04	5.56	--	2,972	6.55	-93.8	0.74
LPZ-2	RDIP	UB	8/23/12	10.60	5.42	5.18	--	2,704	6.39	-33.7	0.60

Table 6B
Groundwater Elevation Data, Field Measurements and Other Analyses
Degreasing Tank No. 1
Former Kaiser Aerotech Facilities
San Leandro, California

Monitoring Well	Notes	GW Zone	Date	Top of Casing Elevation	Depth to Groundwater	Groundwater Elevation	TOC[Note 1]	Specific conductance field	pH field	ORP field	Dissolved Oxygen field
				(ft msl)	(ft BTOC)	(ft msl)	(mg/L)	(µS/cm)		(mV)	(mg/L)
LPZ-2	O&M	UB	2/13/13	10.60	4.95	5.65	**150**	2,402	7.41	-41.1	0.66
LPZ-2	O&M	UB	9/24/13	10.60	6.65	3.95	--	7,135	6.22	-75.7	1.02
LPZ-2	O&M	UB	2/25/14	10.60	5.02	5.58	**2,100**	2,711	6.72	-150.9	1.15
LPZ-2	O&M	UB	9/17/14	10.60	5.72	4.88	--	3,261	6.73	-131.8	2.99
LPZ-2	O&M	UB	6/9/15	10.60	5.65	4.95	--	3,153	7.45	-151.5	0.92
LPZ-2	O&M	UB	2/23/16	10.60	5.24	5.36	**3.2**	2,467	6.25	-29.1	11.31
LPZ-2	O&M	UB	9/22/16	10.60	5.50	5.10	--	2,331	6.20	-93.1	1.65
LPZ-2	O&M	UB	2/13/17	10.60	2.90	7.70	--	1,618	6.78	-111.6	1.34
LPZ-2	O&M	UB	9/20/17	10.60	5.39	5.21	--	2,081	6.52	-97.5	0.43
LPZ-2	O&M	UB	2/13/18	10.60	4.77	5.83	--	1,677	6.75	-70.1	0.44
LPZ-2	O&M	UB	9/11/18	10.60	5.40	5.20	--	--	--	--	--
LPZ-2	O&M	UB	9/26/18	10.60	5.48	5.12	--	6,968	6.53	-69.7	3.41
LPZ-2	O&M	UB	2/12/19	10.60	3.78	6.82	--	5,828	7.42	-142.1	0.30
LPZ-2	O&M	UB	9/24/19	10.60	5.90	4.70	--	3,588	6.58	-76.5	0.38
LPZ-2	O&M	UB	3/10/20	10.60	5.23	5.37	**3.17**	3,169	6.86	-78.4	2.20
LPZ-3		B	8/12/03	10.65	5.23	5.42	--	802	--	-35.7	0.35
LPZ-3		B	3/10/05	10.65	3.60	7.05	--	--	--	--	--
LPZ-3		B	3/9/05	10.65	--	--	--	498	--	3.6	0.04
LPZ-3		B	9/14/05	10.65	5.30	5.35	--	392	--	-181.0	1.25
LPZ-3		B	12/15/05	10.65	4.96	5.69	--	384	--	-101.2	2.05
LPZ-3		B	4/3/06	10.65	2.84	7.81	--	12,600	--	34.5	0.1
LPZ-3		B	4/4/06	10.65	2.71	7.94	--	8,535	--	-290.0	0.5
LPZ-3		B	4/5/06	10.65	2.36	8.29	--	32,350	--	75.0	0.9
LPZ-3	PT ERD	B	5/8/06	10.65	4.63	6.02	**14,000**	16,572	7.13	-385.2	1.69
LPZ-3	PT ERD	B	6/13/06	10.65	5.13	5.52	**13,000**	14,450	6.05	-91.7	0.49
LPZ-3	PT ERD	B	7/12/06	10.65	5.38	5.27	**12,000**	12,132	6.01	-91	0.03
LPZ-3	PT ERD	B	8/9/06	10.65	5.48	5.17	**8,500**	12,525	6.37	-160.9	1.87
LPZ-3	PT ERD	B	9/20/06	10.65	5.55	5.10	**7,000**	10,079	6.31	-83.4	0.46
LPZ-3	PT ERD	B	10/24/06	10.65	5.38	5.27	**6,000**	9,400	6.51	-49.7	0.23
LPZ-3	PT ERD	B	1/30/07	10.65	4.86	5.79	**7,400**	8,384	6.02	-14.6	2.19
LPZ-3	PT ERD	B	2/6/08	10.65	3.92	6.73	--	9,098	6.04	-122.4	0.29
LPZ-3	PT ERD	B	6/2/08	10.65	5.31	5.34	--	6,209	--	--	--
LPZ-3	PT ERD	B	6/4/08	10.65	5.19	5.46	--	7,190	--	--	--
LPZ-3	RDIP	B	6/11/08	10.60	6.18	4.42	--	10,966	--	--	--
LPZ-3	RDIP	B	2/4/09	10.65	6.82	3.83	--	16,279	6.38	-139.0	2.43
LPZ-3	RDIP	B	2/2/10	10.65	3.97	6.68	--	12,766	6.14	-96.1	0.42
LPZ-3	RDIP	B	5/17/10	10.65	5.19	5.46	--	11,724	--	--	--
LPZ-3	RDIP	B	5/18/10	10.65	3.26	7.39	--	46,208	--	--	--
LPZ-3	RDIP	B	8/3/10	10.65	5.64	5.01	--	--	--	--	--
LPZ-3	RDIP	B	8/4/10	10.65	--	--	--	20,082	6.94	-156.7	0.59
LPZ-3	RDIP	B	2/8/11	10.65	5.07	5.58	--	20,565	6.74	-181.0	1.29
LPZ-3	RDIP	B	8/10/11	10.65	5.25	5.40	--	13,267	6.83	-192.3	--
LPZ-3	RDIP	B	2/7/12	10.65	4.95	5.70	--	12,495	6.85	-112.5	0.36
LPZ-3	RDIP	B	8/23/12	10.65	5.54	5.11	--	9,732	8.30	-80.7	1.98
LPZ-3	O&M	B	2/13/13	10.65	5.15	5.50	**180**	8,839	7.83	-131.4	0.60
LPZ-3	O&M	B	7/29/13	10.65	--	--	--	9,855	6.05	-3.4	0.89
LPZ-3	O&M	B	7/30/13	10.65	--	--	--	119	8.90	259.2	5.87
LPZ-3	O&M	B	9/24/13	10.65	5.64	5.01	--	12,689	6.30	-81.3	0.92
LPZ-3	O&M	B	2/25/14	10.65	5.30	5.35	--	11,448	7.24	-110.2	1.07
LPZ-3	O&M	B	9/17/14	10.65	5.75	4.90	--	10,918	7.34	-135.9	1.55
LPZ-3	O&M	B	6/9/15	10.65	5.50	5.15	--	10,573	7.07	-112.5	2.09
LPZ-3	O&M	B	2/23/16	10.65	4.82	5.83	--	8,905	6.80	44.3	10.11
LPZ-3	O&M	B	9/22/16	10.65	5.69	4.96	--	8,876	7.56	-64.7	0.80
LPZ-3	O&M	B	2/13/17	10.65	2.78	7.87	--	2,578	7.98	-127.3	0.97
LPZ-3	O&M	B	9/20/17	10.65	5.50	5.15	--	6,400	6.98	-100.3	0.95
LPZ-3	O&M	B	2/13/18	10.65	5.00	5.65	--	4,440	6.95	-89.2	0.44
LPZ-3	O&M	B	9/11/18	10.65	5.45	5.20	--	3,958	7.49	-89.1	--
LPZ-3	O&M	B	9/26/18	10.65	5.87	4.78	--	13,863	6.83	-179	5.68
LPZ-3	O&M	B	2/12/19	10.65	4.10	6.55	--	15,872	7.02	-153.1	0.16

Table 6B
Groundwater Elevation Data, Field Measurements and Other Analyses
Degreasing Tank No. 1
Former Kaiser Aerotech Facilities
San Leandro, California

Monitoring Well	Notes	GW Zone	Date	Top of Casing Elevation	Depth to Groundwater	Groundwater Elevation	TOC[Note 1]	Specific conductance field	pH field	ORP field	Dissolved Oxygen field
				(ft msl)	(ft BTOC)	(ft msl)	(mg/L)	(µS/cm)		(mV)	(mg/L)
LPZ-3	O&M	B	9/24/19	10.65	5.69	4.96	--	12,630	7.30	-121.8	0.22
LPZ-3	O&M	B	3/10/20	10.65	5.41	5.24	--	10,603	7.36	-84.7	2.20
LPZ-5		LB	8/12/03	10.57	5.18	5.39	--	658	--	-42.2	0.28
LPZ-5		LB	9/23/03	10.57	5.35	5.22	--	--	--	--	--
LPZ-5		LB	12/16/03	10.57	4.21	6.36	--	502	--	158.4	0.07
LPZ-5		LB	3/9/04	10.57	4.14	6.43	--	411	--	27	0.36
LPZ-5		LB	5/20/04	10.57	5.00	5.57	--	388	--	-67.5	0.07
LPZ-5		LB	3/8/05	10.57	3.55	7.02	--	--	--	--	--
LPZ-5		LB	3/9/05	10.57	--	--	--	582	--	4.6	0.12
LPZ-5		LB	9/14/05	10.57	5.30	5.27	--	585	--	-200.2	1.37
LPZ-5		LB	12/15/05	10.57	4.92	5.65	--	492	--	-113.4	0.63
LPZ-5	PT ERD	LB	5/8/06	10.57	4.35	6.22	**3,900**	6,208	7.01	-229.9	2.34
LPZ-5	PT ERD	LB	6/13/06	10.57	4.83	5.74	**10,000**	9,331	5.90	-51.7	0.72
LPZ-5	PT ERD	LB	7/12/06	10.57	5.18	5.39	**4,700**	3,922	5.88	-106.5	0.05
LPZ-5	PT ERD	LB	8/9/06	10.57	5.20	5.37	**5,000**	8,134	6.25	-115.9	1.86
LPZ-5	PT ERD	LB	9/20/06	10.57	5.25	5.32	**5,000**	7,997	6.24	-100.6	0.55
LPZ-5	PT ERD	LB	10/24/06	10.57	5.62	4.95	**4,500**	7,040	6.42	-38.1	0.26
LPZ-5	PT ERD	LB	1/30/07	10.57	4.60	5.97	**4,100**	6,759	6.01	-47.9	0.37
LPZ-5	PT ERD	LB	8/14/07	10.57	5.20	5.37	**3,700**	7,307	6.00	-43.9	0.17
LPZ-5	PT ERD	LB	11/13/07	10.57	5.06	5.51	**98**	6,218	5.53	-33.6	0.41
LPZ-5	PT ERD	LB	2/6/08	10.57	3.77	6.80	**2,200**	6,111	6.06	-74.1	0.34
LPZ-5	PT ERD	LB	6/11/08	10.57	6.08	4.49	--	2,834	--	--	--
LPZ-5	PT ERD	LB	6/12/08	10.57	1.30	9.27	--	4,063	--	--	--
LPZ-5	RDIP	LB	8/6/08	10.57	5.40	5.17	--	10,854	6.38	-310	0.25
LPZ-5	RDIP	LB	11/6/08	10.57	--	--	--	819	--	-126.8	2.13
LPZ-5	RDIP	LB	12/2/08	10.57	5.33	5.24	--	211	--	-206	--
LPZ-5	RDIP	LB	2/4/09	10.57	5.50	5.07	**6,000**	10,307	6.22	-116.9	2.53
LPZ-5	RDIP	LB	8/5/09	10.57	5.51	5.06	--	10,309	6.18	-171.6	1.60
LPZ-5	RDIP	LB	2/2/10	10.57	4.00	6.57	**4,700**	10,122	6.07	-67.3	0.93
LPZ-5	RDIP	LB	5/17/10	10.57	4.86	5.71	--	6,542	--	--	--
LPZ-5	RDIP	LB	8/3/10	10.57	5.20	5.37	--	--	--	--	--
LPZ-5	RDIP	LB	8/4/10	10.57	--	--	--	6,006	7.33	-150.8	2.14
LPZ-5	RDIP	LB	2/8/11	10.57	4.91	5.66	--	12,201	6.56	-112.5	0.31
LPZ-5	RDIP	LB	8/10/11	10.57	4.95	5.62	--	4,856	6.84	-144.7	0.31
LPZ-5	RDIP	LB	2/7/12	10.57	5.02	5.55	**170**	4,832	6.67	-96.9	0.96
LPZ-5	RDIP	LB	8/23/12	10.57	5.43	5.14	--	4,493	7.40	-81.3	1.78
LPZ-5	O&M	LB	2/13/13	10.57	5.16	5.41	**260**	4,400	7.72	-118.3	0.44
LPZ-5	O&M	LB	9/24/13	10.57	5.72	4.85	--	7,241	6.37	-87.8	0.97
LPZ-5	O&M	LB	2/25/14	10.57	5.14	5.43	--	4,106	6.47	-64.3	1.57
LPZ-5	O&M	LB	9/17/14	10.57	5.64	4.93	--	5,241	6.88	-114.6	0.97
LPZ-5	O&M	LB	6/9/15	10.57	5.25	5.32	**91.6**	290	7.61	-122.9	0.77
LPZ-5	O&M	LB	2/23/16	10.57	4.95	5.62	**60**	3,296	6.43	-49.8	11.17
LPZ-5	O&M	LB	9/22/16	10.57	5.47	5.10	--	4,264	7.33	-44.2	1.05
LPZ-5	O&M	LB	2/13/17	10.57	3.00	7.57	**46.2**	4,471	7.02	-134.0	0.29
LPZ-5	O&M	LB	9/20/17	10.57	5.40	5.17	--	4,537	6.67	-111.5	0.30
LPZ-5	O&M	LB	2/13/18	10.57	4.82	5.75	--	4,376	6.83	-113.2	0.65
LPZ-5	O&M	LB	9/11/18	10.57	5.09	5.48	--	--	--	--	--
LPZ-5	O&M	LB	9/26/18	10.57	5.64	4.93	--	5,779	6.82	-116.3	3.27
LPZ-5	O&M	LB	2/12/19	10.57	3.70	6.87	**1,260**	1,957	6.40	-83.6	0.14
LPZ-5	O&M	LB	9/24/19	10.57	5.38	5.19	--	5,780	6.90	-112.0	0.24
LPZ-5	O&M	LB	3/10/20	10.57	5.41	5.16	**1,500**	6,310	6.87	-115.4	0.86
UB-3		UB	9/18/07	10.51	5.91	4.60	**6.3**	847.8	6.88	172.6	0.61
UB-3		UB	11/13/07	10.51	5.12	5.39	--	740	7.36	26.8	0.47
UB-3		UB	2/4/08	10.51	3.36	7.15	--	856	7.49	66.5	2.74
UB-3		UB	5/7/08	10.51	4.69	5.82	--	747	6.27	373.8	1.91
UB-3		UB	6/4/08	10.51	5.31	5.20	--	695	--	--	--
UB-3		UB	6/4/08	10.51	5.02	5.49	--	800	--	--	--
UB-3		UB	8/5/08	10.51	5.41	5.10	--	757	7.27	130.6	3.37

Table 6B
Groundwater Elevation Data, Field Measurements and Other Analyses
Degreasing Tank No. 1
Former Kaiser Aerotech Facilities
San Leandro, California

Monitoring Well	Notes	GW Zone	Date	Top of Casing Elevation	Depth to Groundwater	Groundwater Elevation	TOC[Note 1]	Specific conductance field	pH field	ORP field	Dissolved Oxygen field
				(ft msl)	(ft BTOC)	(ft msl)	(mg/L)	(µS/cm)		(mV)	(mg/L)
UB-3		UB	11/6/08	10.51	4.95	5.56	--	673	--	-50.8	2.57
UB-3		UB	12/2/08	10.51	4.85	5.66	--	621	--	-91.3	--
UB-3		UB	2/2/09	10.51	4.88	5.63	**3.5**	677	7.54	24.2	1.55
UB-3		UB	5/6/09	10.51	4.61	5.90	--	622	7.60	117.2	3.28
UB-3	RDIP	UB	8/4/09	10.51	5.33	5.18	**1.9**	731	7.50	-85.1	1.40
UB-3	RDIP	UB	10/20/09	10.51	5.52	4.99	--	653	--	--	--
UB-3	RDIP	UB	10/21/09	10.51	4.40	6.11	--	695	--	--	--
UB-3	RDIP	UB	11/4/09	10.51	4.94	5.57	--	775	13.00	-273.7	0.30
UB-3	RDIP	UB	2/3/10	10.51	3.83	6.68	**2.8**	876	7.31	32.1	0.28
UB-3	RDIP	UB	3/26/10	10.51	4.38	6.13	--	852	--	--	--
UB-3	RDIP	UB	3/30/10	10.51	4.15	6.36	--	1,040	--	--	--
UB-3	RDIP	UB	5/4/10	10.51	4.15	6.36	--	1,030	8.53	-324.1	0.37
UB-3	RDIP	UB	8/3/10	10.51	5.11	5.40	--	--	--	--	--
UB-3	RDIP	UB	8/4/10	10.51	--	--	**51**	1,037	7.04	-170.9	0.36
UB-3	RDIP	UB	2/9/11	10.51	4.73	5.78	--	867	7.49	-27.5	0.37
UB-3	RDIP	UB	8/10/11	10.51	5.00	5.51	**1.4**	858	7.91	-49.2	--
UB-3	RDIP	UB	10/18/11	10.51	5.00	5.51	--	894	7.01	-12.3	2.12
UB-3	RDIP	UB	10/21/11	10.51	--	--	--	25,802	6.75	-56.9	3.37
UB-3	RDIP	UB	2/7/12	10.51	5.00	5.51	--	1,473	6.08	-69.8	0.62
UB-3	RDIP	UB	8/23/12	10.51	5.45	5.06	--	8,345	8.32	-53.7	2.33
UB-3	O&M	UB	2/14/13	10.51	5.03	5.48	**250**	6,489	7.88	-13.1	0.46
UB-3	O&M	UB	7/30/13	10.51	--	--	--	5,482	7.83	-21.6	2.24
UB-3	O&M	UB	7/31/13	10.51	--	--	--	2,493	8.24	-18.7	5.43
UB-3	O&M	UB	9/24/13	10.51	5.54	4.97	--	11,694	6.49	-58.6	1.01
UB-3	O&M	UB	2/26/14	10.51	5.18	5.33	**930**	6,460	7.28	-95.5	2.62
UB-3	O&M	UB	9/17/14	10.51	5.75	4.76	--	5,860	7.23	-132.4	0.50
UB-3	O&M	UB	6/10/15	10.51	5.43	5.08	--	4,950	6.80	-104.3	1.16
UB-3	O&M	UB	2/24/16	10.51	4.68	5.83	--	3,671	7.65	-89.9	0.89
UB-3	O&M	UB	9/22/16	10.51	5.59	4.92	--	3,273	7.55	-63.4	0.83
UB-3	O&M	UB	2/15/17	10.51	3.80	6.71	--	2,622	7.64	-10.0	0.85
UB-3	O&M	UB	9/20/17	10.51	5.50	5.01	**2.4**	2,203	6.81	-107.3	0.97
UB-3	O&M	UB	2/14/18	10.51	5.31	5.20	--	2,398	7.20	-104.6	0.41
UB-3	O&M	UB	9/12/18	10.51	5.48	5.03	--	--	--	--	--
UB-3	O&M	UB	9/26/18	10.51	5.53	4.98	--	1,304	7.29	-69.4	2.46
UB-3	O&M	UB	2/13/19	10.51	3.50	7.01	--	2,510	6.64	-74.3	0.21
UB-3	O&M	UB	9/24/19	10.51	5.42	5.09	--	1,826	6.42	-37.6	0.47
UB-3	O&M	UB	3/10/20	10.51	5.27	5.24	--	2,062	7.08	34.0	2.00
LB-3		LB	9/18/07	10.49	5.35	5.14	**2.9**	620.1	6.84	222	1.45
LB-3		LB	11/13/07	10.49	4.92	5.57	--	755	7.63	22.3	0.24
LB-3		LB	2/4/08	10.49	3.49	7.00	--	739	7.55	69.3	3.18
LB-3		LB	5/6/08	10.49	6.50	3.99	--	720	6.68	--	--
LB-3		LB	6/4/08	10.49	5.54	4.95	--	545	--	--	--
LB-3		LB	6/4/08	10.49	4.41	6.08	--	945	--	--	--
LB-3		LB	8/5/08	10.49	5.04	5.45	--	723	7.09	78.1	3.05
LB-3		LB	11/6/08	10.49	5.90	4.59	--	619	--	-47.8	2.45
LB-3		LB	12/2/08	10.49	5.91	4.58	--	630	--	-61.9	--
LB-3		LB	2/2/09	10.49	5.15	5.34	**4.6**	647	7.49	44.5	2.79
LB-3		LB	5/6/09	10.49	4.50	5.99	--	556	7.49	141.6	5.46
LB-3	RDIP	LB	8/4/09	10.49	5.37	5.12	**1.5**	693	7.36	-39.8	0.77
LB-3	RDIP	LB	10/20/09	10.49	4.36	6.13	--	615	--	--	--
LB-3	RDIP	LB	10/21/09	10.49	3.34	7.15	--	635	--	--	--
LB-3	RDIP	LB	11/4/09	10.49	5.90	4.59	--	534	6.96	-16.4	0.12
LB-3	RDIP	LB	2/3/10	10.49	3.73	6.76	**2.9**	665	7.34	68.1	3.27
LB-3	RDIP	LB	3/30/10	10.49	2.79	7.70	--	704	--	--	--
LB-3	RDIP	LB	5/4/10	10.49	4.19	6.30	--	1,180	8.73	-313.7	0.33
LB-3	RDIP	LB	8/3/10	10.49	4.96	5.53	--	--	--	--	--
LB-3	RDIP	LB	8/4/10	10.49	--	--	**1,400**	1,416	7.68	-147.8	0.63
LB-3	RDIP	LB	2/9/11	10.49	4.79	5.70	--	1,119	7.41	-32.7	0.23
LB-3	RDIP	LB	8/10/11	10.49	4.80	5.69	**1.3**	1,001	7.27	-77.1	--

Table 6B
Groundwater Elevation Data, Field Measurements and Other Analyses
Degreasing Tank No. 1
Former Kaiser Aerotech Facilities
San Leandro, California

Monitoring Well	Notes	GW Zone	Date	Top of Casing Elevation	Depth to Groundwater	Groundwater Elevation	TOC[Note 1]	Specific conductance field	pH field	ORP field	Dissolved Oxygen field
				(ft msl)	(ft BTOC)	(ft msl)	(mg/L)	(µS/cm)		(mV)	(mg/L)
LB-3	RDIP	LB	10/18/11	10.49	5.20	5.29	--	1,093	6.69	-46.1	1.51
LB-3	RDIP	LB	10/21/11	10.49	--	--	--	58,790	6.99	25.2	5.61
LB-3	RDIP	LB	2/7/12	10.49	5.24	5.25	--	21,782	6.34	-137.8	0.79
LB-3	RDIP	LB	8/23/12	10.49	5.40	5.09	--	9,675	7.38	-53.4	1.21
LB-3	O&M	LB	2/14/13	10.49	5.01	5.48	**5,400**	10,794	7.92	-12.3	0.48
LB-3	O&M	LB	7/31/13	10.49	--	--	--	13,874	7.02	-34.2	2.09
LB-3	O&M	LB	7/31/13	10.49	--	--	--	84	9.34	91.5	6.93
LB-3	O&M	LB	9/24/13	10.49	5.52	4.97	--	8,597	6.33	-65.5	0.83
LB-3	O&M	LB	2/26/14	10.49	5.12	5.37	**1,200**	6,198	6.83	-120.7	2.50
LB-3	O&M	LB	9/17/14	10.49	5.69	4.80	--	5,081	7.25	-160.1	0.59
LB-3	O&M	LB	6/10/15	10.49	5.35	5.14	--	4,238	6.83	-102.4	1.74
LB-3	O&M	LB	2/24/16	10.49	4.60	5.89	--	3,451	7.97	-99.3	0.90
LB-3	O&M	LB	9/22/16	10.49	5.49	5.00	--	4,141	7.52	-67.3	0.60
LB-3	O&M	LB	2/15/17	10.49	3.50	6.99	--	2,055	7.69	-9.2	0.68
LB-3	O&M	LB	9/20/17	10.49	5.30	5.19	--	2,436	6.97	-126.8	0.63
LB-3	O&M	LB	2/14/18	10.49	5.27	5.22	--	2,471	7.20	-110.1	1.10
LB-3	O&M	LB	9/12/18	10.49	5.30	5.19	--	--	--	--	--
LB-3	O&M	LB	9/26/18	10.49	5.37	5.12	--	2,228	7.22	-116.4	1.97
LB-3	O&M	LB	2/13/19	10.49	3.48	7.01	--	2,408	6.57	-42.1	0.27
LB-3	O&M	LB	9/24/19	10.49	5.25	5.24	--	1,810	6.26	-28.6	0.51
LB-3	O&M	LB	3/10/20	10.49	5.00	5.49	--	1,725	7.61	81.7	1.78
LB-3	O&M	LB	3/11/20	10.49	--	--	**1.46 B**	1,737	7.90	43.6	0.53
UB-4		UB	9/18/07	10.18	5.41	4.77	**4.0**	929	7.57	78	0.59
UB-4		UB	11/13/07	10.18	4.95	5.23	--	741	7.11	-6.5	0.40
UB-4		UB	2/4/08	10.18	3.28	6.90	--	917	7.41	79.2	0.51
UB-4		UB	5/6/08	10.18	4.87	5.31	--	790	5.48	--	--
UB-4		UB	2/2/09	10.18	4.74	5.44	--	702	7.37	58.2	0.66
UB-4		UB	2/4/10	10.18	3.75	6.43	--	868	7.17	162.9	0.44
UB-4		UB	3/22/10	10.18	4.27	5.91	--	1,086	--	--	--
UB-4		UB	4/2/10	10.18	3.03	7.15	--	822	--	--	--
UB-4		UB	5/4/10	10.18	4.88	5.30	--	827	8.16	-273.2	0.52
UB-4		UB	5/10/10	10.18	4.14	6.04	--	905	--	--	--
UB-4		UB	8/3/10	10.18	5.03	5.15	--	--	--	--	--
UB-4	RDIP	UB	8/4/10	10.18	--	--	**480**	2,608	7.36	-195.1	0.78
UB-4	RDIP	UB	2/9/11	10.18	4.74	5.44	--	2,208	7.56	-115.7	0.97
UB-4	RDIP	UB	8/10/11	10.18	4.94	5.24	--	2,403	6.79	-114.7	--
UB-4	RDIP	UB	10/18/11	10.18	5.41	4.77	--	2,408	6.28	-184.5	0.50
UB-4	RDIP	UB	10/21/11	10.18	5.53	4.65	--	39,481	8.15	-195.4	1.23
UB-4	RDIP	UB	2/7/12	10.18	4.91	5.27	--	7,501	6.14	-88.1	0.79
UB-4	RDIP	UB	8/23/12	10.18	5.35	4.83	--	3,887	8.43	-106.4	1.88
UB-4	O&M	UB	2/13/13	10.18	4.93	5.25	**680**	3,489	7.78	-85.9	0.61
UB-4	O&M	UB	7/31/13	10.18	--	--	--	4,431	7.46	-55.1	2.05
UB-4	O&M	UB	7/31/13	10.18	--	--	--	79	8.79	128.6	7.54
UB-4	O&M	UB	9/24/13	10.18	5.46	4.72	--	15,238	6.33	-53.7	0.32
UB-4	O&M	UB	2/26/14	10.18	5.03	5.15	**3,800**	12,897	7.05	-164.3	1.79
UB-4	O&M	UB	9/17/14	10.18	5.70	4.48	--	10,869	7.30	-153.1	0.52
UB-4	O&M	UB	6/10/15	10.18	5.40	4.78	--	8,413	7.35	-139.7	1.78
UB-4	O&M	UB	2/24/16	10.18	4.65	5.53	--	5,184	7.63	-130.1	0.78
UB-4	O&M	UB	9/22/16	10.18	5.53	4.65	--	5,097	7.40	-65	0.64
UB-4	O&M	UB	2/15/17	10.18	3.40	6.78	--	2,664	7.53	-67.3	0.73
UB-4	O&M	UB	9/20/17	10.18	5.40	4.78	--	4,161	7.07	-59.7	0.58
UB-4	O&M	UB	2/14/18	10.18	4.91	5.27	--	2,683	7.29	-84.2	0.25
UB-4	O&M	UB	9/26/18	10.18	5.42	4.76	--	3,010	7.38	-153.7	0.74
UB-4	O&M	UB	2/13/19	10.18	3.60	6.58	--	2,491	7.59	-103.1	0.56
UB-4	O&M	UB	9/24/19	10.18	5.35	4.83	--	2,050	7.28	-69.8	0.81
UB-4	O&M	UB	3/10/20	10.18	5.15	5.03	--	2,874	7.82	58.5	0.81
LB-4		LB	9/18/07	10.14	5.60	4.54	**3.4**	754	7.04	138.8	1.57
LB-4		LB	11/13/07	10.14	4.75	5.39	--	639	7.47	-73.6	0.08

Table 6B
Groundwater Elevation Data, Field Measurements and Other Analyses
Degreasing Tank No. 1
Former Kaiser Aerotech Facilities
San Leandro, California

Monitoring Well	Notes	GW Zone	Date	Top of Casing Elevation	Depth to Groundwater	Groundwater Elevation	TOC[Note 1]	Specific conductance field	pH field	ORP field	Dissolved Oxygen field
				(ft msl)	(ft BTOC)	(ft msl)	(mg/L)	(µS/cm)		(mV)	(mg/L)
LB-4		LB	2/4/08	10.14	4.58	5.56	--	660	7.38	85.2	1.43
LB-4		LB	5/6/08	10.14	4.60	5.54	--	643	6.24	--	--
LB-4		LB	2/2/09	10.14	4.91	5.23	--	603	7.37	-73.9	0.55
LB-4		LB	2/3/10	10.14	3.92	6.22	--	617	7.28	13.8	0.25
LB-4		LB	3/22/10	10.14	4.34	5.80	--	694	--	--	--
LB-4		LB	4/2/10	10.14	0.78	9.36	--	690	--	--	--
LB-4		LB	5/4/10	10.14	4.10	6.04	--	702	7.90	-323.4	0.31
LB-4		LB	5/10/10	10.14	2.85	7.29	--	768	--	--	--
LB-4		LB	8/3/10	10.14	4.98	5.16	--	--	--	--	--
LB-4	RDIP	LB	8/4/10	10.14	--	--	**1,700**	3,698	7.52	-260.4	0.34
LB-4	RDIP	LB	2/9/11	10.14	4.69	5.45	--	1,574	7.70	-123.4	1.25
LB-4	RDIP	LB	8/10/11	10.14	4.90	5.24	--	1,527	6.78	-89.0	--
LB-4	RDIP	LB	10/18/11	10.14	5.18	4.96	--	1,435	6.12	-163.3	0.44
LB-4	RDIP	LB	10/21/11	10.14	5.98	4.16	--	49,081	8.38	-126.7	1.58
LB-4	RDIP	LB	2/7/12	10.14	5.20	4.94	--	14,954	6.18	-113.9	0.91
LB-4	RDIP	LB	8/23/12	10.14	6.70	3.44	--	13,262	8.07	-141.2	1.43
LB-4	O&M	LB	2/13/13	10.14	5.35	4.79	**240**	10,485	7.85	-102.3	0.53
LB-4	O&M	LB	7/31/13	10.14	--	--	--	8,650	7.20	-92.6	0.81
LB-4	O&M	LB	7/31/13	10.14	--	--	--	83	7.55	255.8	7.0
LB-4	O&M	LB	9/24/13	10.14	5.42	4.72	--	8,178	6.60	-52.3	0.30
LB-4	O&M	LB	2/26/14	10.14	5.02	5.12	**480**	9,108	7.21	-150.4	1.96
LB-4	O&M	LB	9/17/14	10.14	5.55	4.59	--	8,484	7.59	-143.3	0.48
LB-4	O&M	LB	6/10/15	10.14	5.46	4.68	--	8,455	7.31	-129.7	1.83
LB-4	O&M	LB	2/24/16	10.14	4.88	5.26	--	7,086	7.38	-127.9	1.40
LB-4	O&M	LB	9/22/16	10.14	5.57	4.57	--	7,172	7.51	-92.1	0.73
LB-4	O&M	LB	2/15/17	10.14	3.53	6.61	--	5,656	7.58	-133.7	0.78
LB-4	O&M	LB	9/20/17	10.14	5.37	4.77	--	3,309	6.88	-121.7	0.43
LB-4	O&M	LB	2/14/18	10.14	5.05	5.09	--	2,556	6.82	-83.0	1.75
LB-4	O&M	LB	9/26/18	10.14	5.44	4.70	--	1,881	7.05	-86.8	3.68
LB-4	O&M	LB	2/13/19	10.14	3.67	6.47	--	2,440	6.93	-84.5	0.36
LB-4	O&M	LB	9/24/19	10.14	5.31	4.83	--	1,984	7.18	-42.1	0.66
LB-4	O&M	LB	3/10/20	10.14	5.11	5.03	--	2,151	7.64	46.6	0.47

Table 6C
Groundwater Elevation Data, Field Measurements and Other Analyses
Degreasing Tank No. 4
Former Kaiser Aerotech Facilities
San Leandro, California

Monitoring Well	Notes	GW Zone	Date	Top of Casing Elevation (ft msl)	Depth to Groundwater (ft BTOC)	Groundwater Elevation (ft msl)	TOC[Note 1] (mg/L)	Specific conductance field (µS/cm)	pH field	ORP field (mV)	Dissolved Oxygen field (mg/L)
RW-5		B	8/12/03	9.76	4.82	4.94	--	--	--	--	--
RW-5		B	8/13/03	9.76	--	--	--	812	--	70.4	4.15
RW-5		B	9/23/03	9.76	4.86	4.90	--	787	--	-106	6.86
RW-5	PT ISCO FR	B	6/6/05	9.76	--	--	--	612	--	43.7	5.87
RW-5	PT ISCO FR	B	6/8/05	9.76	--	--	--	2,780	--	371.8	45.65
RW-5	PT ISCO FR	B	6/9/05	9.76	--	--	--	2,622	--	341.2	43.66
RW-5	PT ISCO FR	B	6/10/05	9.76	--	--	--	2,570	--	344.3	43.67
RW-5	PT ISCO FR	B	6/13/05	9.76	--	--	--	2,355	--	262.4	42.27
RW-5	PT ISCO FR	B	6/16/05	9.76	--	--	--	--	--	163	34.60
RW-5	PT ISCO FR	B	6/22/05	9.76	--	--	--	1,095	--	64.4	5.20
RW-5	PT ISCO FR	B	6/27/05	9.76	--	--	--	2,640	--	241	20.50
RW-5	PT ISCO FR	B	7/5/05	9.97	--	--	--	1,179	--	74.1	22.44
RW-5	PT ISCO FR	B	7/11/05	9.97	--	--	--	1,326	--	88.6	24.75
RW-5	PT ISCO FR	B	7/20/05	9.97	--	--	--	620	--	225	17.00
RW-5	PT ISCO FR	B	7/27/05	9.97	--	--	--	1,242	--	146	39.19
RW-5	PT ISCO FR	B	8/2/05	9.97	--	--	--	1,360	--	40.6	30.15
RW-5	PT ISCO FR	B	8/8/05	9.97	--	--	--	1,166	--	51.0	30.00
RW-5	PT ISCO FR	B	8/10/05	9.97	--	--	--	3,160	--	286.4	30.14
RW-5	PT ISCO FR	B	8/15/05	9.97	--	--	--	1,918	--	151.3	20.92
RW-5	PT ISCO FR	B	8/22/05	9.97	--	--	--	1,588	--	213.6	22.88
RW-5	PT ISCO FR	B	8/29/05	9.97	--	--	--	1,716	--	47.4	13.95
RW-5	PT ISCO FR	B	9/6/05	9.97	--	--	--	2,390	--	-116.7	0.19
RW-5	PT ISCO FR	B	9/14/05	9.97	4.99	4.98	--	1,351	--	66.0	23.42
RW-5		B	12/14/05	9.97	4.64	5.33	--	1,499	--	18.8	4.72
RW-5		B	2/1/07	9.97	4.50	5.47	--	--	--	--	--
RW-5		B	2/4/08	10.03	4.56	5.47	--	1,044	7.25	-55.5	4.09
RW-5		B	6/5/08	10.03	5.22	4.81	--	965	--	--	--
RW-5		B	6/5/08	10.03	1.88	8.15	--	60,253	--	--	--
RW-5	RDIP	B	11/6/08	10.03	--	--	--	8,684	--	-133.2	2.76
RW-5	RDIP	B	2/3/09	10.03	4.72	5.31	--	13,107	6.60	-119.0	2.04
RW-5	RDIP	B	5/19/09	10.03	4.66	5.37	--	6,015	--	--	--
RW-5	RDIP	B	5/21/09	10.03	--	--	--	6,988	--	--	--
RW-5	RDIP	B	8/4/09	10.03	4.21	5.82	--	--	--	--	--
RW-5	RDIP	B	2/4/10	10.03	6.00	4.03	--	10,294	6.73	-132.9	1.92
RW-5	RDIP	B	2/8/11	10.03	4.42	5.61	--	15,953	7.40	-149.1	0.26
RW-5	RDIP	B	2/8/12	10.03	4.55	5.48	--	6,205	6.86	-142.3	1.88
RW-5	O&M	B	2/14/13	10.03	4.70	5.33	--	2,634	7.54	-52.5	0.82
RW-5	O&M	B	2/26/14	10.03	4.61	5.42	--	3,449	6.98	-106.4	4.79
RW-5	O&M	B	6/10/15	10.03	4.99	5.04	--	2,235	6.60	-97.3	0.32
RW-5	O&M	B	2/24/16	10.03	4.10	5.93	--	1,761	7.40	-106.8	1.15
RW-5	O&M	B	2/15/17	10.03	3.00	7.03	--	6,662	7.08	-122.7	0.74
RW-5	O&M	B	2/14/18	10.03	4.50	5.53	--	4,296	7.06	-28.3	1.03
RW-5	O&M	B	9/11/18	10.03	4.98	5.05	--	--	--	--	--
RW-5	O&M	B	9/26/18	10.03	5.10	4.93	--	--	--	--	--
RW-5	O&M	B	2/13/19	10.03	3.52	6.51	--	44,182	8.09	-262.4	0.12
RW-5	O&M	B	3/10/20	10.03	4.80	5.23	--	7,398	7.06	-105.0	1.39
RW-6		B	8/12/03	9.23	4.30	4.93	--	--	--	--	--
RW-6		B	8/13/03	9.23	--	--	--	768	--	36.4	0.65
RW-6		B	12/16/03	9.23	3.30	5.93	--	654	--	131.7	0.37
RW-6		B	3/9/04	9.23	3.25	5.98	--	--	--	--	--
RW-6		B	3/10/04	9.23	--	--	--	745	--	1.6	0.17
RW-6		B	5/20/04	9.23	4.17	5.06	--	692	--	-66.5	0.08
RW-6		B	9/29/04	9.23	4.27	4.96	--	540	--	68.5	0.54
RW-6		B	12/8/04	9.23	3.41	5.82	--	690	--	-27.6	0.89
RW-6		B	3/8/05	9.23	2.96	6.27	--	--	--	-72.4	0.43
RW-6		B	3/9/05	9.23	--	--	--	697	--	-1.0	0.14
RW-6	PT ISCO FR	B	6/6/05	9.23	--	--	--	707	--	--	--
RW-6	PT ISCO FR	B	6/8/05	9.23	--	--	--	1,679	--	222	46.6

Table 6C
Groundwater Elevation Data, Field Measurements and Other Analyses
Degreasing Tank No. 4
Former Kaiser Aerotech Facilities
San Leandro, California

Monitoring Well	Notes	GW Zone	Date	Top of Casing Elevation	Depth to Groundwater	Groundwater Elevation	TOC[Note 1]	Specific conductance field	pH field	ORP field	Dissolved Oxygen field
				(ft msl)	(ft BTOC)	(ft msl)	(mg/L)	(µS/cm)		(mV)	(mg/L)
RW-6	PT ISCO FR	B	6/9/05	9.23	--	--	--	1,597	--	199.7	47.42
RW-6	PT ISCO FR	B	6/10/05	9.23	--	--	--	1,588	--	197.9	47.58
RW-6	PT ISCO FR	B	6/13/05	9.23	--	--	--	1,284	--	121.8	47.68
RW-6	PT ISCO FR	B	6/16/05	9.23	--	--	--	--	--	42.6	7.78
RW-6	PT ISCO FR	B	6/22/05	9.23	--	--	--	862	--	-3.9	6.17
RW-6	PT ISCO FR	B	6/27/05	9.23	--	--	--	1,126	--	165	52.6
RW-6	PT ISCO FR	B	7/5/05	9.99	--	--	--	662	--	62.4	26.57
RW-6	PT ISCO FR	B	7/11/05	9.99	--	--	--	930	--	83.4	35.40
RW-6	PT ISCO FR	B	7/20/05	9.99	--	--	--	844	--	80	17.00
RW-6	PT ISCO FR	B	7/27/05	9.99	--	--	--	999	--	145	36.95
RW-6	PT ISCO FR	B	8/2/05	9.99	--	--	--	1,012	--	24.6	28.90
RW-6	PT ISCO FR	B	8/8/05	9.99	--	--	--	893	--	45.0	29.00
RW-6	PT ISCO FR	B	8/8/05	9.99	--	--	--	904	--	43.0	26.00
RW-6	PT ISCO FR	B	8/9/05	9.99	--	--	--	972	--	330.0	38.68
RW-6	PT ISCO FR	B	8/9/05	9.99	--	--	--	975	--	325.0	39.00
RW-6	PT ISCO FR	B	8/10/05	9.99	--	--	--	999	--	295.9	37.13
RW-6	PT ISCO FR	B	8/15/05	9.99	--	--	--	936	--	111.4	22.13
RW-6	PT ISCO FR	B	8/22/05	9.99	--	--	--	921	--	229.9	51.31
RW-6	PT ISCO FR	B	8/29/05	9.99	--	--	--	1,538	--	-62.2	29.00
RW-6	PT ISCO FR	B	9/6/05	9.99	--	--	--	1,523	--	-22.1	24.24
RW-6	PT ISCO FR	B	9/14/05	9.99	5.04	4.95	--	830	--	225.3	29.80
RW-6		B	12/15/05	9.99	4.82	5.17	--	840	--	-26.3	8.63
RW-6		B	3/14/06	9.99	3.17	6.82	--	897	--	-74.2	6.74
RW-6		B	6/14/06	9.99	4.93	5.06	--	819	6.97	-38.9	0.97
RW-6		B	9/21/06	9.99	4.92	5.07	--	772	7.30	-38.3	0.15
RW-6		B	2/1/07	9.99	4.57	5.42	--	1,569	11.16	34.9	3.53
RW-6		B	5/9/07	9.99	4.54	5.45	--	755	7.14	-24.0	0.45
RW-6		B	8/14/07	9.99	4.98	5.01	--	802	7.24	-110.3	0.23
RW-6		B	11/13/07	9.99	4.58	5.41	--	776	7.28	-26.3	0.15
RW-6		B	2/5/08	9.99	3.20	6.79	--	896	7.27	136	1.56
RW-6		B	5/6/08	9.99	4.60	5.39	--	--	--	--	--
RW-6	RDIP	B	6/5/08	10.07	4.98	5.09	--	754	--	--	--
RW-6	RDIP	B	8/5/08	10.07	4.98	5.09	**17,000**	18,619	6.42	-78.9	2.45
RW-6	RDIP	B	11/6/08	10.07	4.68	5.39	--	9,400	6.34	-115.5	0.56
RW-6	RDIP	B	2/2/09	10.07	4.82	5.25	**4,100**	8,759	6.48	-211.1	1.30
RW-6	RDIP	B	5/6/09	10.07	4.45	5.62	--	4,819	6.65	-104.4	1.18
RW-6	RDIP	B	5/19/09	10.07	4.65	5.42	--	5,574	--	--	--
RW-6	RDIP	B	5/21/09	10.07	4.72	5.35	--	5,728	--	--	--
RW-6	RDIP	B	8/4/09	10.07	6.83	3.24	--	15,458	6.28	-231.9	2.00
RW-6	RDIP	B	11/4/09	10.07	4.73	5.34	--	--	--	--	--
RW-6	RDIP	B	2/4/10	10.07	3.77	6.30	**920**	6,194	6.67	-126.8	0.96
RW-6	RDIP	B	5/4/10	10.07	4.18	5.89	--	4,811	7.85	-244	0.91
RW-6	RDIP	B	8/3/10	10.07	4.71	5.36	--	--	--	--	--
RW-6	RDIP	B	8/4/10	10.07	--	--	--	5,028	7.74	-101.6	0.85
RW-6	RDIP	B	2/8/11	10.07	4.54	5.53	--	13,821	6.81	-96.3	0.62
RW-6	RDIP	B	2/7/12	10.07	4.62	5.45	--	3,931	6.94	-152.0	0.34
RW-6	O&M	B	2/14/13	10.07	4.62	5.45	**110**	2,013	7.52	-78.4	0.27
RW-6	O&M	B	2/26/14	10.07	4.72	5.35	--	7,561	7.09	-87.8	3.09
RW-6	O&M	B	6/10/15	10.07	5.02	5.05	--	1,575	6.57	-79.4	0.44
RW-6	O&M	B	2/24/16	10.07	4.22	5.85	--	1,213	7.34	-75.9	0.71
RW-6	O&M	B	2/15/17	10.07	3.10	6.97	**3.7**	2,102	7.61	-129.3	0.80
RW-6	O&M	B	2/14/18	10.07	4.60	5.47	--	2,365	6.92	-32.5	0.58
RW-6	O&M	B	9/11/18	10.07	5.11	4.96	--	1,043	7.55	-197.2	--
RW-6	O&M	B	9/26/18	10.07	5.42	4.65	--	--	--	--	--
RW-6	O&M	B	2/13/19	10.07	3.60	6.47	--	46,728	7.96	-350.7	0.57
RW-6	O&M	B	3/10/20	10.07	4.90	5.17	--	4,331	6.89	-92.2	1.24
RW-7		B	8/12/03	10.11	5.19	4.92	--	--	--	--	--
RW-7		B	8/13/03	10.11	--	--	--	1,524	--	-103.1	2.03
RW-7		B	9/23/03	10.11	5.25	4.86	--	694	--	-104.9	7.72

Table 6C
Groundwater Elevation Data, Field Measurements and Other Analyses
Degreasing Tank No. 4
Former Kaiser Aerotech Facilities
San Leandro, California

Monitoring Well	Notes	GW Zone	Date	Top of Casing Elevation	Depth to Groundwater	Groundwater Elevation	TOC[Note 1]	Specific conductance field	pH field	ORP field	Dissolved Oxygen field
				(ft msl)	(ft BTOC)	(ft msl)	(mg/L)	(µS/cm)		(mV)	(mg/L)
RW-7		B	3/8/05	10.11	3.70	6.41	--	--	--	--	--
RW-7		B	3/9/05	10.11	--	--	--	660	--	29.6	4.70
RW-7	PT ISCO FR	B	6/6/05	10.11	--	--	--	684	--	-49.3	1.49
RW-7	PT ISCO FR	B	6/6/05	10.11	--	--	--	--	--	38.7	4.60
RW-7	PT ISCO FR	B	6/7/05	10.11	--	--	--	--	--	45.8	6.65
RW-7	PT ISCO FR	B	6/7/05	10.11	--	--	--	--	--	44.3	6.64
RW-7	PT ISCO FR	B	6/8/05	10.11	--	--	--	588	--	71.5	5.69
RW-7	PT ISCO FR	B	6/9/05	10.11	--	--	--	589	--	47.7	4.59
RW-7	PT ISCO FR	B	6/10/05	10.11	--	--	--	589	--	47.2	3.39
RW-7	PT ISCO FR	B	6/13/05	10.11	--	--	--	590	--	41.3	2.60
RW-7	PT ISCO FR	B	6/16/05	10.11	--	--	--	--	--	42.3	1.40
RW-7	PT ISCO FR	B	6/22/05	10.11	--	--	--	710	--	-50.3	4.40
RW-7	PT ISCO FR	B	6/27/05	10.11	--	--	--	628	--	177.3	3.30
RW-7	PT ISCO FR	B	7/5/05	10.11	--	--	--	624	--	36.9	4.54
RW-7	PT ISCO FR	B	7/11/05	10.11	--	--	--	637	--	76	3.23
RW-7	PT ISCO FR	B	7/11/05	10.11	--	--	--	637	--	73.7	3.30
RW-7	PT ISCO FR	B	7/11/05	10.11	--	--	--	639	--	74	3.40
RW-7	PT ISCO FR	B	7/12/05	10.11	--	--	--	725	--	82.4	3.80
RW-7	PT ISCO FR	B	7/12/05	10.11	--	--	--	637	--	91	4.50
RW-7	PT ISCO FR	B	7/20/05	10.11	--	--	--	655	--	26.6	6.90
RW-7	PT ISCO FR	B	7/27/05	10.11	--	--	--	716	--	178	4.54
RW-7	PT ISCO FR	B	8/2/05	10.11	--	--	--	772	--	-35.2	5.47
RW-7	PT ISCO FR	B	8/8/05	10.11	--	--	--	705	--	-7.5	5.76
RW-7	PT ISCO FR	B	8/8/05	10.11	--	--	--	706	--	-3.0	6.30
RW-7	PT ISCO FR	B	8/8/05	10.11	--	--	--	710	--	-2.0	6.50
RW-7	PT ISCO FR	B	8/9/05	10.11	--	--	--	711	--	30.0	5.50
RW-7	PT ISCO FR	B	8/9/05	10.11	--	--	--	711	--	0.20	5.70
RW-7	PT ISCO FR	B	8/10/05	10.11	--	--	--	717	--	62.1	4.70
RW-7	PT ISCO FR	B	8/15/05	10.11	--	--	--	781	--	217.3	6.73
RW-7	PT ISCO FR	B	8/22/05	10.11	--	--	--	731	--	181.7	0.32
RW-7	PT ISCO FR	B	8/29/05	10.11	--	--	--	729	--	86.6	1.00
RW-7	PT ISCO FR	B	9/6/05	10.11	--	--	--	749	--	37.9	0.58
RW-7	PT ISCO FR	B	9/14/05	10.11	5.24	4.87	--	612	--	173.6	2.36
RW-7		B	12/15/05	10.11	5.15	4.96	--	818	--	-46.3	13.75
RW-7		B	2/4/08	10.11	3.92	6.19	--	861	7.59	53.2	2.63
RW-7		B	6/5/08	10.11	6.11	4.00	--	808	--	--	--
RW-7	RDIP	B	8/6/08	10.11	5.16	4.95	--	1,842	6.67	-72.9	1.68
RW-7	RDIP	B	11/6/08	10.11	--	--	--	824	--	17.5	2.45
RW-7	RDIP	B	12/2/08	10.11	4.95	5.16	--	775	--	-255.7	--
RW-7	RDIP	B	2/3/09	10.11	5.85	4.26	**3,700**	12,621	6.26	-60.3	2.28
RW-7	RDIP	B	5/19/09	10.11	6.04	4.07	--	985	--	--	--
RW-7	RDIP	B	5/20/09	10.11	5.98	4.13	--	54,390	--	--	--
RW-7	RDIP	B	5/21/09	10.11	1.34	8.77	--	46,421	--	--	--
RW-7	RDIP	B	6/4/09	10.11	5.81	4.30	--	29,320	--	--	--
RW-7	RDIP	B	6/5/09	10.11	3.28	6.83	--	28,307	--	--	--
RW-7	RDIP	B	8/4/09	10.11	5.65	4.46	**17,000**	31,918	6.44	-232.1	4.74
RW-7	RDIP	B	2/2/10	10.11	3.90	6.21	**5,900**	14,765	6.59	-208.3	0.27
RW-7	RDIP	B	2/8/11	10.11	4.50	5.61	--	5,857	7.25	-139.4	0.31
RW-7	RDIP	B	2/7/12	10.11	4.80	5.31	--	4,864	7.00	-118.6	0.78
RW-7	O&M	B	2/14/13	10.11	4.87	5.24	--	5,065	7.63	-75.8	0.41
RW-7	O&M	B	2/26/14	10.11	4.99	5.12	--	4,717	7.32	-48.9	1.59
RW-7	O&M	B	6/10/15	10.11	5.29	4.82	--	5,004	6.90	-24.7	0.47
RW-7	O&M	B	2/24/16	10.11	4.80	5.31	--	3,898	7.54	-10.3	1.02
RW-7	O&M	B	2/15/17	10.11	3.34	6.77	--	3,814	7.38	-150.3	0.70
RW-7	O&M	B	9/11/18	10.11	5.01	5.10	--	--	--	--	--
RW-7	O&M	B	9/26/18	10.11	5.35	4.76	--	--	--	--	--
RW-7	O&M	B	2/13/19	10.11	3.58	6.53	--	4,754	7.32	-103.8	0.36

Table 6D
Groundwater Elevation Data, Field Measurements and Other Analyses
Breezeway Sump
Former Kaiser Aerotech Facilities
San Leandro, California

Monitoring Well	Notes	GW Zone	Date	Top of Casing Elevation (ft msl)	Depth to Groundwater (ft BTOC)	Groundwater Elevation (ft msl)	TOC[Note 1] (mg/L)	Specific conductance field (µS/cm)	pH field	ORP field (mV)	Dissolved Oxygen field (mg/L)
MW-17		A	9/22/98	9.41	6.18	3.23	--	--	--	--	--
MW-17		A	9/23/98	9.41	--	--	--	--	--	140.6	2.21
MW-17		A	12/9/98	9.41	5.90	3.51	--	--	--	143.0	2.91
MW-17		A	3/22/99	9.41	5.81	3.60	--	--	--	--	--
MW-17		A	6/21/99	9.41	6.13	3.28	--	--	--	--	--
MW-17		A	9/20/99	9.41	6.17	3.24	--	--	--	--	--
MW-17		A	12/13/99	9.41	6.01	3.40	--	--	--	--	--
MW-17		A	3/13/00	9.41	5.68	3.73	--	--	--	--	--
MW-17		A	9/18/00	9.41	6.12	3.29	--	--	--	--	--
MW-17		A	3/12/01	9.41	5.84	3.57	--	856	--	--	--
MW-17		A	9/24/01	9.41	6.15	3.26	--	--	--	--	--
MW-17		A	3/26/02	9.41	5.73	3.68	--	--	--	--	--
MW-17		A	10/3/02	9.41	6.03	3.38	--	751	--	--	--
MW-17		A	3/26/03	9.41	5.99	3.42	--	1,008	--	-0.96	0.86
MW-17		A	6/26/03	9.41	6.08	3.33	--	--	--	--	--
MW-17		A	9/23/03	9.41	6.16	3.25	--	880	--	-246.0	0.58
MW-17		A	12/16/03	9.41	5.83	3.58	--	--	--	--	--
MW-17		A	3/9/04	9.41	5.98	3.43	--	--	--	--	--
MW-17		A	3/10/04	9.41	--	--	--	867	--	96.6	0.46
MW-17		A	5/20/04	9.41	6.17	3.24	--	--	--	--	--
MW-17		A	9/29/04	9.41	6.16	3.25	--	--	--	--	--
MW-17		A	12/8/04	9.41	4.65	4.76	--	--	--	--	--
MW-17		A	3/8/05	9.41	5.83	3.58	--	852	--	-32.0	1.58
MW-17		A	6/14/05	9.41	6.05	3.36	--	--	--	--	--
MW-17		A	9/14/05	9.41	6.10	3.31	--	--	--	--	--
MW-17		A	12/14/05	9.41	6.11	3.30	--	--	--	--	--
MW-17		A	3/15/06	9.41	5.36	4.05	--	906	--	135.3	1.49
MW-17		A	6/13/06	9.41	6.12	3.29	--	--	--	--	--
MW-17		A	9/20/06	9.41	6.24	3.17	--	--	--	--	--
MW-17		A	1/30/07	9.41	6.03	3.38	--	--	--	--	--
MW-17		A	1/31/07	9.41	--	--	--	858	6.95	-32.2	0.58
MW-17		A	5/9/07	9.41	6.05	3.36	--	--	--	--	--
MW-17		A	8/15/07	9.41	6.17	3.24	--	--	--	--	--
MW-17		A	11/14/07	9.41	6.06	3.35	--	--	--	--	--
MW-17		A	2/4/08	9.41	5.74	3.67	--	979	7.20	-4.3	2.08
MW-17		A	5/6/08	9.41	6.18	3.23	--	--	--	--	--
MW-17		A	8/5/08	9.41	6.22	3.19	--	--	--	--	--
MW-17		A	11/6/08	9.41	6.03	3.38	--	--	--	--	--
MW-17		A	2/4/09	9.41	6.08	3.33	--	1,894	7.12	6.6	0.41
MW-17		A	3/6/09	9.41	--	--	--	851	--	137	2.35
MW-17		A	5/6/09	9.41	5.97	3.44	--	--	--	--	--
MW-17		A	8/25/09	9.41	6.22	3.19	--	--	--	--	--
MW-17		A	11/4/09	9.41	6.12	3.29	--	--	--	--	--
MW-17		A	2/3/10	9.41	5.84	3.57	--	980	7.05	61.1	0.64
MW-17		A	5/4/10	9.41	6.05	3.36	--	--	--	--	--
MW-17		A	5/10/10	9.41	6.01	3.40	--	1,092	--	--	--
MW-17		A	8/3/10	9.41	4.16	5.25	--	--	--	--	--
MW-17		A	2/8/11	9.41	6.07	3.34	--	908	6.65	-88.6	1.78
MW-17		A	10/18/11	9.41	6.13	3.28	--	1,056	7.26	-139.5	0.71
MW-17		A	10/21/11	9.41	6.13	3.28	--	983	7.94	17.5	0.79
MW-17		A	2/7/12	9.41	6.01	3.40	--	--	--	--	--
MW-17		A	2/12/13	9.41	6.17	3.24	--	--	--	--	--
MW-17		A	3/4/13	9.41	6.19	3.22	--	890	7.42	204.3	0.87
MW-17		A	2/26/14	9.41	6.11	3.30	--	--	--	--	--
MW-17		A	6/9/15	9.41	6.24	3.17	--	1,234	7.24	-57.3	1.18
MW-17		A	2/24/16	9.41	6.10	3.31	--	1,016	6.67	2.64	17.51
MW-17		A	2/15/17	9.41	5.85	3.56	3.0	829	7.69	30.5	0.79
MW-17		A	2/14/18	9.41	6.15	3.26	--	--	--	--	--
MW-17		A	9/10/18	9.41	6.23	3.18	--	803	7.26	-36.8	--

Table 6D
Groundwater Elevation Data, Field Measurements and Other Analyses
Breezeway Sump
Former Kaiser Aerotech Facilities
San Leandro, California

Monitoring Well	Notes	GW Zone	Date	Top of Casing Elevation	Depth to Groundwater	Groundwater Elevation	TOC[Note 1]	Specific conductance field	pH field	ORP field	Dissolved Oxygen field
				(ft msl)	(ft BTOC)	(ft msl)	(mg/L)	(µS/cm)		(mV)	(mg/L)
MW-17		A	2/12/19	9.41	5.80	3.61	--	923	7.69	88.2	0.54
MW-17		A	3/11/20	9.41	6.22	3.19	--	--	--	--	--
RW-13		UB	6/8/05	9.58	5.18	4.40	**12**	599	--	-97.5	0.31
RW-13	PT ERD	UB	6/13/05	9.58	5.03	4.55	--	742	--	43.6	0.19
RW-13	PT ERD	UB	6/14/05	9.58	5.05	4.53	--	--	--	43.4	0.88
RW-13	PT ERD	UB	6/16/05	9.58	5.61	3.97	--	--	--	45.0	1.70
RW-13	PT ERD	UB	6/21/05	9.58	5.19	4.39	**15,000**	16,163	--	-98.4	2.11
RW-13	PT ERD	UB	6/27/05	9.58	5.35	4.23	**4,400**	13,173	--	-470.0	0.69
RW-13	PT ERD	UB	7/5/05	9.58	5.36	4.22	**8,500**	10,678	--	0.90	0.72
RW-13	PT ERD	UB	7/12/05	9.58	5.38	4.20	**7,900**	9,665	--	32.9	1.54
RW-13	PT ERD	UB	7/19/05	9.58	5.72	3.86	**7,200**	10,505	--	-193.4	0.49
RW-13	PT ERD	UB	7/26/05	9.58	5.75	3.83	--	13,153	--	-300.0	0.68
RW-13	PT ERD	UB	8/2/05	9.58	6.09	3.49	**19,000**	24,566	--	-131.9	1.56
RW-13	PT ERD	UB	8/10/05	9.58	6.05	3.53	--	23,927	--	-328.5	0.11
RW-13	PT ERD	UB	8/15/05	9.58	6.05	3.53	--	36,922	--	-532.5	1.10
RW-13	PT ERD	UB	8/22/05	9.58	6.35	3.23	**12,000**	16,602	--	-310.9	1.22
RW-13	PT ERD	UB	8/23/05	9.58	5.78	3.80	--	33,600	--	-300.0	0.25
RW-13	PT ERD	UB	8/29/05	9.58	5.84	3.74	**12,000**	16,529	--	-275.6	0.63
RW-13	PT ERD	UB	9/6/05	9.58	5.74	3.84	--	28,765	--	-239.8	0.35
RW-13	PT ERD	UB	9/12/05	9.58	6.20	3.38	--	26,328	--	-239.2	0.27
RW-13	PT ERD	UB	9/19/05	9.58	5.75	3.83	**6,400**	15,369	--	-225.5	0.62
RW-13	PT ERD	UB	10/12/05	9.58	5.90	3.68	**5,700**	9,194	--	-202.2	5.46
RW-13	PT ERD	UB	11/10/05	9.58	5.60	3.98	**4,800**	7,850	--	-183.5	1.95
RW-13	PT ERD	UB	12/14/05	9.58	5.39	4.19	**3,800**	7,550	--	-133.2	7.03
RW-13	PT ERD	UB	2/9/06	9.58	4.70	4.88	**1,900**	6,558	--	-87.1	10.71
RW-13	PT ERD	UB	3/14/06	9.58	4.25	5.33	**2,000**	5,694	--	-108.4	1.14
RW-13	PT ERD	UB	6/13/06	9.58	5.61	3.97	**2,800**	6,987	6.34	7.9	1.46
RW-13	PT ERD	UB	9/21/06	9.58	5.53	4.05	**1,900**	6,138	6.74	-141.9	0.08
RW-13	PT ERD	UB	10/24/06	9.58	5.69	3.89	--	4,859	7.04	-102.4	0.19
RW-13	PT ERD	UB	1/30/07	9.58	5.56	4.02	**440**	793	7.05	-143.1	0.31
RW-13	PT ERD	UB	5/9/07	9.58	5.12	4.46	**1,000**	4,335	6.71	-72.6	3.23
RW-13	PT ERD	UB	8/15/07	9.58	5.69	3.89	**680**	4,222	6.93	-86.1	3.08
RW-13	PT ERD	UB	11/14/07	9.58	5.70	3.88	**1,400**	3,345	6.64	-68.5	4.08
RW-13	PT ERD	UB	2/7/08	9.58	4.60	4.98	**330**	2,590	6.59	-140.0	0.96
RW-13	PT ERD	UB	5/6/08	9.58	5.45	4.13	**360**	3,226	6.65	-98.2	0.87
RW-13	PT ERD	UB	6/6/08	9.58	5.78	3.80	--	1,684	--	--	--
RW-13	RDIP	UB	6/6/08	9.58	5.49	4.09	--	63,747	--	--	--
RW-13	RDIP	UB	6/11/08	9.58	6.36	3.22	--	33,518	--	--	--
RW-13	RDIP	UB	8/5/08	9.82	8.05	1.77	**13,000**	20,670	6.52	-260.0	0.51
RW-13	RDIP	UB	11/6/08	9.82	5.47	4.35	--	14,608	--	62.8	3.55
RW-13	RDIP	UB	2/5/09	9.82	5.59	4.23	**4,400**	22,592	6.70	-128.7	1.35
RW-13	RDIP	UB	5/6/09	9.82	5.02	4.80	--	6,720	7.05	-146.6	1.31
RW-13	RDIP	UB	5/20/09	9.82	5.51	4.31	--	7,433	--	--	--
RW-13	RDIP	UB	5/20/09	9.82	5.33	4.49	--	7,417	--	--	--
RW-13	RDIP	UB	8/6/09	9.82	5.86	3.96	--	7,029	6.97	-193.9	0.77
RW-13	RDIP	UB	11/4/09	9.82	5.41	4.41	--	--	--	--	--
RW-13	RDIP	UB	2/4/10	9.82	4.62	5.20	**670**	4,931	6.86	-134.5	0.21
RW-13	RDIP	UB	8/3/10	9.82	5.48	4.34	--	--	--	--	--
RW-13	RDIP	UB	8/4/10	9.82	--	--	--	2,919	7.57	-160.8	2.62
RW-13	RDIP	UB	2/9/11	9.82	5.24	4.58	--	3,249	7.40	-121.3	0.66
RW-13	RDIP	UB	10/18/11	9.82	5.30	4.52	--	2,346	7.24	-221.3	0.38
RW-13	RDIP	UB	10/21/11	9.82	5.19	4.63	--	2,108	8.40	-211.3	0.41
RW-13	RDIP	UB	2/7/12	9.82	5.10	4.72	--	1,666	7.28	-182.2	0.46
RW-13	O&M	UB	2/13/13	9.82	5.11	4.71	**56**	1,451	7.68	-60.1	0.86
RW-13	O&M	UB	7/31/13	9.82	5.75	4.07	--	1,043	8.13	-51.3	1.21
RW-13	O&M	UB	7/31/13	9.82	4.58	5.24	--	26,546	6.32	166.5	6.78
RW-13	O&M	UB	9/24/13	9.82	5.76	4.06	--	13,706	6.32	-107.9	0.95
RW-13	O&M	UB	2/25/14	9.82	5.60	4.22	--	9,244	7.17	-163.5	1.95
RW-13	O&M	UB	6/9/15	9.82	5.75	4.07	--	5,926	7.50	-166.5	1.77

Table 6D
Groundwater Elevation Data, Field Measurements and Other Analyses
Breezeway Sump
Former Kaiser Aerotech Facilities
San Leandro, California

Monitoring Well	Notes	GW Zone	Date	Top of Casing Elevation	Depth to Groundwater	Groundwater Elevation	TOC[Note 1]	Specific conductance field	pH field	ORP field	Dissolved Oxygen field
				(ft msl)	(ft BTOC)	(ft msl)	(mg/L)	(µS/cm)		(mV)	(mg/L)
RW-13	O&M	UB	2/24/16	9.82	5.12	4.70	**8.4**	4,698	6.38	-89.7	2.63
RW-13	O&M	UB	2/15/17	9.82	4.20	5.62	**2.7**	2,176	7.83	-57.8	0.84
RW-13	O&M	UB	2/14/18	9.82	5.20	4.62	--	1,773	7.01	-43.7	0.97
RW-13	O&M	UB	9/10/18	9.82	5.50	4.32	--	1,343	7.61	-117.2	--
RW-13	O&M	UB	9/12/18	9.82	5.52	4.30	--	--	--	--	--
RW-13	O&M	UB	2/13/19	9.82	4.45	5.37	--	9,669	8.36	-147.5	0.51
RW-13	O&M	UB	3/11/20	9.82	5.52	4.30	--	6,249	7.18	-45.2	1.27
LMW-10	PT ERD	LB	9/19/07	10.08	5.39	4.69	**820**	2,209	7.83	-167.0	0.27
LMW-10	PT ERD	LB	11/13/07	10.08	6.14	3.94	**9,700**	1,505	6.60	-81.5	0.29
LMW-10	PT ERD	LB	2/7/08	10.08	5.29	4.79	**42**	1,350	6.56	-81.7	2.80
LMW-10	PT ERD	LB	5/7/08	10.08	5.79	4.29	--	715	6.82	-94.4	0.97
LMW-10	PT ERD	LB	6/6/08	10.08	6.40	3.68	--	829	--	--	--
LMW-10	PT ERD	LB	6/11/08	10.08	4.24	5.84	--	1,183	--	--	--
LMW-10	PT ERD	LB	6/11/08	10.08	1.97	8.11	--	66,845	--	--	--
LMW-10	RDIP	LB	8/5/08	10.07	6.45	3.62	**9,300**	15,194	6.33	-296.0	0.50
LMW-10	RDIP	LB	11/6/08	10.07	6.55	3.52	--	8,701	--	35.4	3.51
LMW-10	RDIP	LB	2/5/09	10.07	6.23	3.84	**1,600**	13,111	6.51	-128.3	0.69
LMW-10	RDIP	LB	5/6/09	10.07	5.20	4.87	--	5,529	6.86	-114.1	2.51
LMW-10	RDIP	LB	5/20/09	10.07	5.08	4.99	--	6,341	--	--	--
LMW-10	RDIP	LB	5/20/09	10.07	4.98	5.09	--	6,359	--	--	--
LMW-10	RDIP	LB	8/6/09	10.07	7.74	2.33	--	5,381	6.76	-164.3	1.05
LMW-10	RDIP	LB	11/4/09	10.07	5.37	4.70	--	--	--	--	--
LMW-10	RDIP	LB	2/4/10	10.07	4.70	5.37	**65**	3,837	5.92	-154.6	1.00
LMW-10	RDIP	LB	8/3/10	10.07	5.45	4.62	--	--	--	--	--
LMW-10	RDIP	LB	8/4/10	10.07	--	--	--	3,321	7.16	-131.2	0.93
LMW-10	RDIP	LB	2/9/11	10.07	5.39	4.68	--	2,777	7.06	-95.3	0.34
LMW-10	RDIP	LB	10/18/11	10.07	5.36	4.71	--	1,498	6.79	-195.9	0.75
LMW-10	RDIP	LB	10/21/11	10.07	5.00	5.07	--	1,368	8.54	-186.3	0.55
LMW-10	RDIP	LB	2/7/12	10.07	5.05	5.02	**60**	1,520	7.35	-53.0	0.35
LMW-10	RDIP	LB	2/13/13	10.07	5.30	4.77	**75**	1,251	7.70	-41.4	1.11
LMW-10	O&M	LB	3/4/13	10.07	5.45	4.62	--	--	--	--	--
LMW-10	O&M	LB	7/30/13	10.07	--	--	--	1,184	9.39	-46.8	0.77
LMW-10	O&M	LB	7/30/13	10.07	--	--	--	170	8.98	67.8	6.86
LMW-10	O&M	LB	9/24/13	10.07	5.73	4.34	--	12,172	6.15	-64.7	0.98
LMW-10	O&M	LB	2/25/14	10.07	5.92	4.15	**1,300**	5,059	6.76	-124.7	1.45
LMW-10	O&M	LB	6/9/15	10.07	5.65	4.42	--	2,587	7.10	-130.3	1.06
LMW-10	O&M	LB	2/24/16	10.07	5.16	4.91	**5.5**	2,263	5.99	-62.2	2.04
LMW-10	O&M	LB	2/15/17	10.07	5.65	4.42	--	1,506	7.45	-86.5	0.81
LMW-10	O&M	LB	2/16/17	10.07	--	--	**2.8**	--	--	--	--
LMW-10	O&M	LB	2/14/18	10.07	5.60	4.47	--	1,055	6.90	-62.2	0.72
LMW-10	O&M	LB	9/10/18	10.07	5.70	4.37	--	792	7.14	-131.8	--
LMW-10	O&M	LB	9/12/18	10.07	6.04	4.03	--	--	--	--	--
LMW-10	O&M	LB	2/13/19	10.07	4.60	5.47	--	8,608	7.75	-130.4	0.65
LMW-10	O&M	LB	3/11/20	10.07	5.92	4.15	--	6,117	7.07	-75.8	0.79
RW-12		B	6/8/05	9.75	5.36	4.39	**6.2**	520	--	45.1	0.42
RW-12	PT ERD	B	6/13/05	9.75	5.22	4.53	--	510	--	46.2	1.66
RW-12	PT ERD	B	6/14/05	9.75	5.24	4.51	**23**	--	--	48.3	0.89
RW-12	PT ERD	B	6/16/05	9.75	5.32	4.43	**340**	--	--	0.90	0.55
RW-12	PT ERD	B	6/21/05	9.75	5.28	4.47	**7,000**	8,968	--	-225.7	0.68
RW-12	PT ERD	B	6/27/05	9.75	5.48	4.27	**1,900**	16,876	--	-138.1	0.82
RW-12	PT ERD	B	7/5/05	9.75	5.49	4.26	**3,800**	5,888	--	-22.5	0.68
RW-12	PT ERD	B	7/12/05	9.75	5.51	4.24	**3,800**	3,582	--	-4.6	0.84
RW-12	PT ERD	B	7/19/05	9.75	5.89	3.86	**4,600**	6,582	--	-216.7	0.82
RW-12	PT ERD	B	7/26/05	9.75	5.83	3.92	--	5,702	--	-250.0	0.70
RW-12	PT ERD	B	7/26/05	9.75	5.51	4.24	--	25,205	--	-270.0	0.70
RW-12	PT ERD	B	8/2/05	9.75	5.79	3.96	**3,800**	7,030	--	-140.1	0.95
RW-12	PT ERD	B	8/10/05	9.75	5.70	4.05	--	8,207	--	-134.7	0.37
RW-12	PT ERD	B	8/15/05	9.75	5.75	4.00	--	8,164	--	-249.3	1.00

Table 6D
Groundwater Elevation Data, Field Measurements and Other Analyses
Breezeway Sump
Former Kaiser Aerotech Facilities
San Leandro, California

Monitoring Well	Notes	GW Zone	Date	Top of Casing Elevation	Depth to Groundwater	Groundwater Elevation	TOC[Note 1]	Specific conductance field	pH field	ORP field	Dissolved Oxygen field
				(ft msl)	(ft BTOC)	(ft msl)	(mg/L)	(µS/cm)		(mV)	(mg/L)
RW-12	PT ERD	B	8/22/05	9.75	5.69	4.06	**4,700**	7,349	--	-157.9	1.63
RW-12	PT ERD	B	8/23/05	9.75	5.66	4.09	--	16,500	--	-250.0	1.70
RW-12	PT ERD	B	8/29/05	9.75	5.72	4.03	**10,000**	12,050	--	-183.5	0.46
RW-12	PT ERD	B	9/6/05	9.75	5.96	3.79	--	12,285	--	-122.3	1.10
RW-12	PT ERD	B	9/12/05	9.75	5.78	3.97	--	15,725	--	-142.6	0.95
RW-12	PT ERD	B	9/19/05	9.75	5.86	3.89	**6,700**	15,350	--	-183.8	1.71
RW-12	PT ERD	B	10/12/05	9.75	5.59	4.16	**12,000**	14,765	--	-226.2	0.3
RW-12	PT ERD	B	11/10/05	9.75	5.90	3.85	**9,100**	12,766	--	-215.7	0.77
RW-12	PT ERD	B	12/14/05	9.75	5.46	4.29	**4,800**	10,400	--	-107.0	1.94
RW-12	PT ERD	B	2/9/06	9.75	4.76	4.99	**3,200**	9,495	--	-64.5	9.3
RW-12	PT ERD	B	3/14/06	9.75	4.78	4.97	**5,000**	10,510	--	-89.4	0.92
RW-12	PT ERD	B	6/13/06	9.75	5.11	4.64	**4,500**	9,384	6.39	-49.2	0.88
RW-12	PT ERD	B	9/21/06	9.75	5.35	4.40	**2,500**	6,781	6.65	-120.2	0.13
RW-12	PT ERD	B	1/31/07	9.75	5.10	4.65	**2,900**	6,666	7.07	-65.3	5.44
RW-12	PT ERD	B	5/10/07	9.75	5.87	3.88	--	5,822	6.62	-122.5	0.49
RW-12	PT ERD	B	2/7/08	9.75	5.96	3.79	**390**	2,456	6.62	-170.7	0.44
RW-12	PT ERD	B	6/6/08	9.75	5.42	4.33	--	1,458	--	--	--
RW-12	PT ERD	B	6/6/08	9.75	1.05	8.70	--	1,795	--	--	--
RW-12	PT ERD	B	6/11/08	9.75	6.94	2.81	--	7,363	--	--	--
RW-12	PT ERD	B	6/11/08	9.75	2.54	7.21	--	7,753	--	--	--
RW-12	RDIP	B	11/6/08	9.75	--	--	--	4,225	--	194.3	3.54
RW-12	RDIP	B	2/5/09	9.75	7.48	2.27	--	10,690	6.86	-147.3	1.32
RW-12	RDIP	B	5/20/09	9.75	5.13	4.62	--	2,878	--	--	--
RW-12	RDIP	B	5/20/09	9.75	4.18	5.57	--	2,896	--	--	--
RW-12	RDIP	B	2/4/10	9.75	6.10	3.65	--	2,233	5.87	-149.3	1.40
RW-12	RDIP	B	2/9/11	9.75	5.60	4.15	--	1,209	7.43	-114.4	0.49
RW-12	RDIP	B	10/18/11	9.75	5.88	3.87	--	1,237	7.41	-198.4	0.62
RW-12	RDIP	B	10/21/11	9.75	5.92	3.83	--	1,130	8.73	-113.4	0.79
RW-12	RDIP	B	2/7/12	9.75	5.00	4.75	--	1,147	7.70	-113.7	0.47
RW-12	O&M	B	2/13/13	9.75	5.39	4.36	**56**	988	7.53	-89.8	0.59
RW-12	O&M	B	2/26/14	9.75	7.48	2.27	--	1,508	6.77	-124.4	1.23
RW-12	O&M	B	6/11/15	9.75	5.26	4.49	--	646	6.01	129.0	--
RW-12	O&M	B	2/24/16	9.75	5.04	4.71	**5.2**	886	6.41	-81.9	1.98
RW-12	O&M	B	2/15/17	9.75	4.36	5.39	--	1,284	7.81	18.3	0.38
RW-12	O&M	B	2/14/18	9.75	5.15	4.60	--	1,271	7.07	-60.3	0.81
RW-12	O&M	B	9/10/18	9.75	--	--	--	644	7.82	-11.7	--
RW-12	O&M	B	9/12/18	9.75	5.45	4.30	--	--	--	--	--
RW-12	O&M	B	2/13/19	9.75	4.48	5.27	--	5,670	7.84	-98.9	0.71
RW-12	O&M	B	3/11/20	9.75	5.39	4.36	**1.07 B**	1,784	7.00	-45.0	0.81
RW-8		B	8/12/03	9.85	5.79	4.06	--	--	--	--	--
RW-8		B	8/13/03	9.85	--	--	--	672	--	88.2	0.21
RW-8		B	2/1/05	9.85	--	--	--	476	--	--	--
RW-8		B	3/8/05	9.85	4.88	4.97	--	--	--	--	--
RW-8		B	3/10/05	9.85	--	--	--	515	--	26.6	0.56
RW-8		B	6/8/05	9.85	5.45	4.40	**4.7**	473	--	36.0	0.25
RW-8	PT ERD	B	6/13/05	9.85	5.35	4.50	--	476	--	44.8	0.67
RW-8	PT ERD	B	6/14/05	9.85	5.37	4.48	--	--	--	44.3	1.06
RW-8	PT ERD	B	6/16/05	9.85	5.35	4.50	--	--	--	44.0	0.55
RW-8	PT ERD	B	6/21/05	9.85	5.41	4.44	**5.7**	562	--	-84.0	0.77
RW-8	PT ERD	B	6/27/05	9.85	5.51	4.34	**5.5**	512	--	38.6	0.56
RW-8	PT ERD	B	7/5/05	9.85	--	--	--	515	--	57.2	0.89
RW-8	PT ERD	B	7/12/05	9.85	5.69	4.16	--	530	--	79.7	0.57
RW-8	PT ERD	B	7/26/05	9.85	5.90	3.95	--	594	--	-20.0	0.55
RW-8	PT ERD	B	7/26/05	9.85	5.52	4.33	--	643	--	-80.0	0.5
RW-8	PT ERD	B	8/2/05	9.85	5.82	4.03	**8.0**	659	--	-175.5	0.66
RW-8	PT ERD	B	8/10/05	9.85	5.74	4.11	--	627	--	-183.8	0.93
RW-8	PT ERD	B	8/15/05	9.85	5.83	4.02	--	705	--	-267.3	0.07
RW-8	PT ERD	B	8/22/05	9.85	5.77	4.08	**11**	612	--	-184.1	0.25
RW-8	PT ERD	B	8/23/05	9.85	5.59	4.26	--	710	--	-163.0	0.25

Table 6D
Groundwater Elevation Data, Field Measurements and Other Analyses
Breezeway Sump
Former Kaiser Aerotech Facilities
San Leandro, California

Monitoring Well	Notes	GW Zone	Date	Top of Casing Elevation	Depth to Groundwater	Groundwater Elevation	TOC[Note 1]	Specific conductance field	pH field	ORP field	Dissolved Oxygen field
				(ft msl)	(ft BTOC)	(ft msl)	(mg/L)	(µS/cm)		(mV)	(mg/L)
RW-8	PT ERD	B	8/29/05	9.85	5.75	4.10	**24**	690	--	-185.5	0.30
RW-8	PT ERD	B	9/6/05	9.85	5.67	4.18	--	1,097	--	-187.6	0.03
RW-8	PT ERD	B	9/12/05	9.85	6.20	3.65	--	721	--	-241.2	0.15
RW-8	PT ERD	B	9/19/05	9.85	5.80	4.05	**48**	772	--	-229.6	2.04
RW-8	PT ERD	B	10/12/05	9.85	7.30	2.55	**48**	781	--	-282.5	0.19
RW-8	PT ERD	B	11/10/05	9.85	6.90	2.95	**54**	683	--	-243.1	2.41
RW-8	PT ERD	B	12/14/05	9.85	5.56	4.29	**45**	950	--	-166.0	1.46
RW-8	PT ERD	B	2/9/06	9.85	4.98	4.87	**72**	944	--	-64.4	8.63
RW-8	PT ERD	B	3/14/06	9.85	4.34	5.51	**172**	862	--	-203.3	1.74
RW-8	PT ERD	B	6/13/06	9.85	5.19	4.66	**17**	801	6.84	-39.9	1.07
RW-8	PT ERD	B	9/21/06	9.85	5.55	4.30	**1.8**	727	7.35	-149.5	0.08
RW-8	PT ERD	B	10/24/06	9.85	6.39	3.46	--	665	7.42	-87.7	0.13
RW-8	PT ERD	B	1/30/07	9.85	6.05	3.80	<0.50	664	7.17	-95.1	1.55
RW-8	PT ERD	B	5/10/07	9.85	5.24	4.61	<0.50	719	7.03	-52.0	2.58
RW-8	PT ERD	B	8/14/07	9.85	5.48	4.37	**3.2**	768	7.13	10.2	0.50
RW-8	PT ERD	B	11/14/07	9.85	5.76	4.09	--	690	7.04	-45.8	0.23
RW-8	PT ERD	B	2/7/08	9.85	4.80	5.05	**1.5**	799	7.11	-121.3	0.24
RW-8	PT ERD	B	6/11/08	9.85	5.26	4.59	--	757	--	--	--
RW-8	RDIP	B	8/5/08	9.85	5.82	4.03	--	831	7.33	-244.0	0.12
RW-8	RDIP	B	11/10/08	9.85	--	--	--	811	--	-62.1	2.60
RW-8	RDIP	B	2/5/09	9.85	5.46	4.39	**8.4**	1,641	7.14	-144.0	2.57
RW-8	RDIP	B	5/6/09	9.85	5.11	4.74	--	700	7.36	-113.9	2.77
RW-8	RDIP	B	5/20/09	10.25	5.42	4.83	--	787	--	--	--
RW-8	RDIP	B	5/20/09	10.25	--	--	--	57,101	--	--	--
RW-8	RDIP	B	8/6/09	10.25	6.05	4.20	**4,800**	10,377	6.41	-209.9	2.26
RW-8	RDIP	B	10/21/09	10.25	4.31	5.94	--	6,782	--	--	--
RW-8	RDIP	B	2/4/10	10.25	4.63	5.62	--	4,857	6.73	-173.9	1.10
RW-8	RDIP	B	2/9/11	10.25	5.18	5.07	--	1,472	7.37	-85.6	0.60
RW-8	RDIP	B	10/18/11	10.25	5.29	4.96	--	1,192	7.25	-130.4	0.84
RW-8	RDIP	B	10/21/11	10.25	5.15	5.10	--	1,080	8.50	-178.6	0.82
RW-8	RDIP	B	2/7/12	10.25	5.08	5.17	--	1,097	7.89	-48.1	0.95
RW-8	O&M	B	2/12/13	10.25	5.25	5.00	**52**	1,173	6.97	-8.1	0.83
RW-8	O&M	B	7/31/13	10.25	5.09	5.16	--	892	8.81	2.7	1.41
RW-8	O&M	B	7/31/13	10.25	--	--	--	35,841	6.90	274.9	2.14
RW-8	O&M	B	9/24/13	10.25	5.70	4.55	--	6,449	6.03	-50.3	1.08
RW-8	O&M	B	2/26/14	10.25	5.45	4.80	--	2,196	6.90	-106.2	1.97
RW-8	O&M	B	6/11/15	10.25	5.38	4.87	--	861	6.00	104.6	--
RW-8	O&M	B	2/24/16	10.25	5.10	5.15	--	1,403	6.69	-70.7	1.73
RW-8	O&M	B	2/15/17	10.25	5.57	4.68	--	1,153	7.71	-77.3	0.47
RW-8	O&M	B	2/14/18	10.25	5.25	5.00	--	1,118	7.11	-51.1	0.43
RW-8	O&M	B	9/10/18	10.25	5.58	4.67	--	759	7.38	-40.8	--
RW-8	O&M	B	2/13/19	10.25	4.18	6.07	--	1,121	6.61	-32.4	0.32
RW-8	O&M	B	3/11/20	10.25	5.43	4.82	--	1,069	7.08	-59.8	0.94
UB-6		UB	9/19/07	9.51	5.79	3.72	**8.0**	1,590	8.34	-179.0	3.42
UB-6		UB	11/14/07	9.51	6.28	3.23	--	701	7.20	-0.80	0.44
UB-6		UB	2/7/08	9.51	7.71	1.80	--	699	7.49	-38.4	0.78
UB-6		UB	5/6/08	9.51	6.21	3.30	--	749	7.34	--	--
UB-6		UB	2/4/09	9.51	5.90	3.61	--	1,320	7.52	21.7	2.04
UB-6		UB	8/5/09	9.51	5.91	3.60	--	717	7.18	42.3	6.98
UB-6		UB	10/21/09	9.51	6.66	2.85	--	686	--	--	--
UB-6		UB	11/4/09	9.51	6.34	3.17	--	611	8.65	-194.2	0.42
UB-6		UB	2/4/10	9.51	5.12	4.39	**2.9**	711	7.23	173.7	1.51
UB-6		UB	5/10/10	9.51	5.30	4.21	--	779	--	--	--
UB-6		UB	8/3/10	9.51	5.70	3.81	--	--	--	--	--
UB-6		UB	8/4/10	9.51	--	--	--	621	7.30	-73.3	0.22
UB-6		UB	2/8/11	9.51	5.46	4.05	--	570	7.03	-56.4	0.54
UB-6		UB	10/18/11	9.51	5.60	3.91	**0.87**	696	7.00	57.1	0.57
UB-6	RDIP	UB	10/21/11	9.51	6.30	3.21	--	52,290	9.99	40.8	2.63
UB-6	RDIP	UB	2/7/12	9.51	5.29	4.22	--	5,266	7.42	-128.7	0.76

Table 6D
Groundwater Elevation Data, Field Measurements and Other Analyses
Breezeway Sump
Former Kaiser Aerotech Facilities
San Leandro, California

Monitoring Well	Notes	GW Zone	Date	Top of Casing Elevation	Depth to Groundwater	Groundwater Elevation	TOC[Note 1]	Specific conductance field	pH field	ORP field	Dissolved Oxygen field
				(ft msl)	(ft BTOC)	(ft msl)	(mg/L)	(µS/cm)		(mV)	(mg/L)
UB-6	O&M	UB	2/13/13	9.51	5.59	3.92	**170**	2,656	7.97	-135.9	0.54
UB-6	O&M	UB	9/24/13	9.51	5.84	3.67	--	6,349	7.00	-106.7	0.62
UB-6	O&M	UB	2/26/14	9.51	5.65	3.86	**150**	3,144	7.41	-182.6	0.75
UB-6	O&M	UB	6/9/15	9.51	5.75	3.76	**2.3**	914	7.68	-181.3	2.49
UB-6	O&M	UB	2/24/16	9.51	5.42	4.09	--	800	6.09	-61.0	1.83
UB-6	O&M	UB	2/15/17	9.51	5.44	4.07	**1.7**	594	7.88	44.4	0.29
UB-6	O&M	UB	2/14/18	9.51	6.37	3.14	--	655	7.26	-118.4	0.36
UB-6	O&M	UB	9/10/18	9.51	5.99	3.52	--	621	7.38	-70.2	--
UB-6	O&M	UB	2/14/19	9.51	4.55	4.96	--	6,856	6.88	-12.4	0.98
UB-6	O&M	UB	3/11/20	9.51	5.81	3.70	--	3,014	7.43	-52.6	0.99
LB-6		LB	9/19/07	9.68	5.10	4.58	**2.9**	765	8.03	-151.0	0.12
LB-6		LB	11/14/07	9.68	4.90	4.78	--	730	6.84	90.4	0.66
LB-6		LB	2/7/08	9.68	4.16	5.52	--	706	7.39	-47.4	0.74
LB-6		LB	5/6/08	9.68	4.99	4.69	--	736	7.07	--	--
LB-6		LB	2/5/09	9.68	4.86	4.82	--	1,399	7.10	96.8	1.30
LB-6		LB	8/5/09	9.68	5.17	4.51	--	727	6.90	16.1	0.37
LB-6		LB	10/21/09	9.68	4.40	5.28	--	723	--	--	--
LB-6		LB	11/4/09	9.68	4.84	4.84	--	641	12.98	-404.5	0.21
LB-6		LB	2/4/10	9.68	4.12	5.56	**2.7**	701	7.04	174.6	2.68
LB-6		LB	5/10/10	9.68	3.57	6.11	--	769	--	--	--
LB-6		LB	8/3/10	9.68	5.03	4.65	--	--	--	--	--
LB-6		LB	8/4/10	9.68	--	--	--	614	7.13	-32.7	0.09
LB-6		LB	2/8/11	9.68	4.70	4.98	--	562	7.01	-43.9	0.58
LB-6		LB	10/18/11	9.68	4.85	4.83	**0.89**	803	7.02	-79.2	0.34
LB-6	RDIP	LB	10/21/11	9.68	5.69	3.99	--	38,020	9.09	44.7	2.63
LB-6	RDIP	LB	2/7/12	9.68	4.79	4.89	--	2,766	7.62	-145.3	1.22
LB-6	O&M	LB	2/13/13	9.68	4.95	4.73	**65**	1,075	7.74	-69.7	0.89
LB-6	O&M	LB	7/31/13	9.68	4.69	4.99	--	818	8.85	32.3	0.92
LB-6	O&M	LB	7/31/13	9.68	--	--	--	41,995	7.38	264.1	5.15
LB-6	O&M	LB	9/24/13	9.68	5.30	4.38	--	7,473	6.50	-77.5	0.70
LB-6	O&M	LB	2/26/14	9.68	5.10	4.58	**160**	3,459	7.73	-189.7	1.49
LB-6	O&M	LB	6/9/15	9.68	5.30	4.38	**3.0**	801	7.98	-160.3	1.54
LB-6	O&M	LB	2/24/16	9.68	4.84	4.84	--	688	6.09	-1.6	2.03
LB-6	O&M	LB	2/14/18	9.68	4.98	4.70	--	1,091	7.22	-116.5	0.08
LB-6	O&M	LB	9/10/18	9.68	5.35	4.33	--	245	7.49	20.3	--
LB-6	O&M	LB	2/14/19	9.68	3.20	6.48	--	1,279	7.16	-42.2	0.72
LB-6	O&M	LB	3/11/20	9.68	5.36	4.32	--	1,664	7.60	-40.1	1.74
LMW-2		B	9/22/98	9.08	4.64	4.44	--	--	--	--	--
LMW-2		B	9/23/98	9.08	--	--	--	--	--	113.4	0.94
LMW-2		B	12/9/98	9.08	4.02	5.06	--	--	--	173.0	5.27
LMW-2		B	3/22/99	9.08	3.71	5.37	--	--	--	--	--
LMW-2		B	6/21/99	9.08	4.60	4.48	--	--	--	--	--
LMW-2		B	9/20/99	9.08	4.76	4.32	--	--	--	--	--
LMW-2		B	12/13/99	9.08	4.38	4.70	--	--	--	--	--
LMW-2		B	3/13/00	9.08	3.28	5.80	--	--	--	--	--
LMW-2		B	9/18/00	9.08	4.61	4.47	--	--	--	--	--
LMW-2		B	3/12/01	9.08	3.81	5.27	--	684	--	--	--
LMW-2		B	9/24/01	9.08	4.77	4.31	--	--	--	--	--
LMW-2		B	3/26/02	9.08	3.73	5.35	--	--	--	--	--
LMW-2		B	10/3/02	9.08	4.87	4.21	--	850	--	--	--
LMW-2		B	3/26/03	9.08	4.29	4.79	--	734	--	--	--
LMW-2		B	3/27/03	9.08	--	--	--	753	--	-10.2	0.87
LMW-2		B	6/26/03	9.08	4.60	4.48	--	726	--	166.9	0.55
LMW-2		B	9/23/03	9.08	4.80	4.28	--	--	--	--	--
LMW-2		B	9/24/03	9.08	--	--	**1.2**	762	--	75.0	0.25
LMW-2		B	12/16/03	9.08	3.96	5.12	--	670	--	183.2	0.10
LMW-2		B	3/9/04	9.08	4.00	5.08	--	--	--	--	--
LMW-2		B	3/10/04	9.08	--	--	--	664	--	216.2	0.50

Table 6D
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Breezeway Sump
Former Kaiser Aerotech Facilities
San Leandro, California

Monitoring Well	Notes	GW Zone	Date	Top of Casing Elevation	Depth to Groundwater	Groundwater Elevation	TOC[Note 1]	Specific conductance field	pH field	ORP field	Dissolved Oxygen field
				(ft msl)	(ft BTOC)	(ft msl)	(mg/L)	(µS/cm)		(mV)	(mg/L)
LMW-2		B	5/20/04	9.08	4.51	4.57	--	685	--	-59.4	0.04
LMW-2		B	9/29/04	9.08	4.70	4.38	--	538	--	4.1	0.22
LMW-2		B	12/8/04	9.08	3.62	5.46	--	646	--	-15.7	0.52
LMW-2		B	3/8/05	9.08	3.55	5.53	--	433	--	-35.3	1.16
LMW-2		B	6/14/05	9.08	4.30	4.78	--	647	--	-62.0	1.54
LMW-2		B	12/14/05	9.08	4.58	4.50	--	740	--	-161.0	1.07
LMW-2		B	3/15/06	9.08	3.23	5.85	--	665	--	121.3	1.08
LMW-2		B	6/14/06	9.08	4.43	4.65	--	737	6.99	-37.2	1.29
LMW-2		B	9/21/06	9.08	4.62	4.46	--	704	7.18	-24.8	0.13
LMW-2		B	1/30/07	9.08	4.05	5.03	--	--	--	--	--
LMW-2		B	1/31/07	9.08	4.52	4.56	--	623	6.99	-15.5	0.15
LMW-2		B	5/10/07	9.08	4.34	4.74	--	694	7.10	-46.4	0.37
LMW-2		B	8/15/07	9.08	4.59	4.49	--	713	6.58	41.8	0.42
LMW-2		B	11/14/07	9.08	4.34	4.74	--	736	7.72	34.9	0.45
LMW-2		B	2/4/08	9.08	3.22	5.86	--	722	7.24	-78.1	0.55
LMW-2		B	5/6/08	9.08	4.64	4.44	--	--	--	--	--
LMW-2		B	8/5/08	9.08	4.64	4.44	--	757	7.17	-338.0	1.98
LMW-2		B	11/6/08	9.08	4.30	4.78	--	--	--	--	--
LMW-2		B	2/4/09	9.08	4.34	4.74	--	1,366	7.11	-67.6	1.09
LMW-2		B	3/6/09	9.08	--	--	--	825	--	-42.3	2.15
LMW-2		B	5/6/09	9.08	4.11	4.97	--	--	--	--	--
LMW-2		B	8/5/09	9.08	4.66	4.42	--	735	--	48.6	1.40
LMW-2		B	8/25/09	9.08	4.51	4.57	--	--	7.22	--	--
LMW-2		B	11/4/09	9.08	4.33	4.75	--	--	--	--	--
LMW-2		B	2/4/10	9.08	3.71	5.37	--	701	6.97	170.2	0.31
LMW-2		B	5/4/10	9.08	3.84	5.24	--	--	--	--	--
LMW-2		B	5/10/10	9.08	5.35	3.73	--	648	--	--	--
LMW-2	RDIP	B	8/3/10	9.08	4.51	4.57	**18**	716	7.46	-82.9	0.03
LMW-2	RDIP	B	2/8/11	9.08	4.24	4.84	--	535	6.82	-108.7	0.83
LMW-2	RDIP	B	10/18/11	9.08	4.39	4.69	**19**	183	7.71	-286.3	0.85
LMW-2	RDIP	B	10/21/11	9.08	5.49	3.59	--	33,935	8.84	37.2	2.05
LMW-2	RDIP	B	2/8/12	9.08	4.29	4.79	**130**	1,299	8.77	-262.6	0.42
LMW-2	O&M	B	2/12/13	9.08	4.40	4.68	**28**	99	7.62	-149.3	0.98
LMW-2	O&M	B	7/31/13	9.08	3.15	5.93	--	383	7.63	-61.9	0.98
LMW-2	O&M	B	7/31/13	9.08	2.74	6.34	--	4,631	10.44	160.3	8.73
LMW-2	O&M	B	9/24/13	9.08	4.77	4.31	--	2,563	6.57	-71.3	1.04
LMW-2	O&M	B	2/26/14	9.08	4.40	4.68	**43**	487	6.85	-112.7	0.96
LMW-2	O&M	B	6/9/15	9.08	4.85	4.23	**3.8**	187	7.33	-157.7	1.12
LMW-2	O&M	B	2/24/16	9.08	4.38	4.70	**6.6**	140	5.22	194.2	3.54
LMW-2	O&M	B	2/15/17	9.08	3.50	5.58	**3.6**	122	7.86	18.0	0.97
LMW-2	O&M	B	2/14/18	9.08	4.55	4.53	**36.2**	180	7.35	-28.3	0.71
LMW-2	O&M	B	9/10/18	9.08	4.57	4.51	**--**	148	7.34	-147.4	0.71
LMW-2	O&M	B	2/12/19	9.08	3.62	5.46	**--**	1,220	6.75	-64.8	0.16
LMW-2	O&M	B	3/11/20	9.08	4.74	4.34	**2.23**	1,172	8.07	47.5	0.46

Table 6E
Groundwater Elevation Data, Field Measurements and Other Analyses
Former Oil/Solvent Storage Area
Former Kaiser Aerotech Facilities
San Leandro, California

Monitoring Well	Notes	GW Zone	Date	Top of Casing Elevation (ft msl)	Depth to Groundwater (ft BTOC)	Groundwater Elevation (ft msl)	TOC[Note 1] (mg/L)	Specific Conductance field (µS/cm)	pH field	ORP field (mV)	Dissolved Oxygen field (mg/L)
MW-7		A	11/14/96	12.05	6.87	5.18	--	--	--	--	--
MW-7		A	3/20/97	12.05	5.59	6.46	--	--	--	--	--
MW-7		A	6/25/97	12.05	6.67	5.38	--	--	--	--	--
MW-7		A	9/22/97	12.05	6.85	5.20	--	--	--	--	--
MW-7		A	12/18/97	12.05	5.22	6.83	--	--	--	--	--
MW-7		A	3/23/98	12.05	5.69	6.36	--	--	--	--	--
MW-7		A	6/17/98	12.05	6.28	5.77	--	--	--	--	--
MW-7		A	9/22/98	12.05	6.95	5.10	--	--	--	95.3	1.83
MW-7		A	12/9/98	12.05	6.13	5.92	--	--	--	--	--
MW-7		A	3/22/99	12.05	5.53	6.52	--	--	--	--	--
MW-7		A	6/21/99	12.05	6.83	5.22	--	--	--	--	--
MW-7		A	9/20/99	12.05	7.12	4.93	--	--	--	--	--
MW-7		A	12/13/99	12.05	6.68	5.37	--	--	--	--	--
MW-7		A	12/15/99	12.05	--	--	--	--	--	168.0	--
MW-7		A	3/10/00	12.05	--	--	--	--	--	179.0	--
MW-7	PT ISCO Mn	A	3/13/00	12.05	4.96	7.09	--	--	--	--	--
MW-7	PT ISCO Mn	A	3/27/03	12.05	--	--	--	--	--	260	--
MW-7		A	4/10/00	12.05	--	--	--	--	--	81.0	--
MW-7		A	5/15/00	12.05	--	--	--	--	--	199.0	--
MW-7		A	6/15/00	12.05	--	--	--	--	--	192	--
MW-7		A	9/18/00	12.05	6.89	5.16	--	--	--	--	--
MW-7		A	3/12/01	12.05	5.75	6.30	--	531	--	--	--
MW-7		A	9/24/01	12.05	7.00	5.05	--	--	--	--	--
MW-7		A	3/26/02	12.05	5.52	6.53	--	--	--	--	--
MW-7		A	10/3/02	12.05	6.98	5.07	--	987	--	--	--
MW-7		A	3/26/03	12.05	6.25	5.80	--	750	--	9.1	2.06
MW-7		A	6/26/03	12.05	6.62	5.43	--	--	--	--	--
MW-7		A	9/23/03	12.05	6.91	5.14	--	908	--	-31.0	0.51
MW-7		A	3/9/04	12.05	5.79	6.26	--	340	--	-108.6	3.36
MW-7		A	9/29/04	12.05	6.82	5.23	--	766	--	-132.7	1.02
MW-7		A	3/8/05	12.05	5.19	6.86	--	--	--	--	--
MW-7		A	3/9/05	12.05	--	--	--	313	--	-2.0	1.27
MW-7		A	9/14/05	12.05	6.88	5.17	--	652	--	-316.6	1.12
MW-7		A	9/14/05	12.05	6.88	5.17	--	652	--	-316.6	1.12
MW-7		A	3/15/06	12.05	4.60	7.45	--	208	--	136.5	4.15
MW-7		A	9/20/06	12.05	6.84	5.21	--	655	6.59	-1.5	1.12
MW-7		A	1/30/07	12.05	6.34	5.71	--	--	--	--	--
MW-7		A	2/1/07	12.05	6.40	5.65	--	1,486	8.37	-102.4	7.65
MW-7		A	5/10/07	12.05	6.41	5.64	--	--	--	--	--
MW-7		A	8/15/07	12.05	6.81	5.24	--	543	6.78	46.1	1.70
MW-7		A	11/13/07	12.05	6.44	5.61	--	--	--	--	--
MW-7		A	2/5/08	12.05	5.11	6.94	--	487	6.98	16.5	1.97
MW-7		A	5/7/08	12.05	6.54	5.51	--	--	--	--	--
MW-7		A	8/5/08	12.05	6.78	5.27	--	--	--	--	--
MW-7		A	11/6/08	12.05	6.49	5.56	--	--	--	--	--
MW-7		A	2/3/09	12.05	6.49	5.56	--	735	6.51	-4.6	2.09
MW-7		A	5/6/09	12.05	6.25	5.80	--	654	6.30	-32.7	0.79
MW-7		A	8/4/09	12.05	6.82	5.23	--	--	--	--	--
MW-7		A	8/24/09	12.05	6.91	5.14	--	--	--	--	--
MW-7		A	11/4/09	12.05	6.48	5.57	--	--	--	--	--
MW-7		A	2/2/10	12.05	5.28	6.77	--	385	6.52	-165.3	0.53
MW-7		A	8/3/10	12.05	6.67	5.38	--	--	--	--	--
MW-7		A	2/9/11	12.05	6.33	5.72	--	681	7.72	-87	0.35
MW-7		A	2/7/12	12.05	5.78	6.27	--	--	--	--	--
MW-7	O&M	A	2/12/13	12.05	6.54	5.51	--	358	6.36	-23.2	0.91
MW-7	O&M	A	6/11/15	12.05	6.30	5.75	--	647	6.77	10.7	1.15
MW-7	O&M	A	2/23/16	12.05	6.19	5.86	--	--	--	--	--
MW-7	O&M	A	2/13/17	12.05	4.55	7.50	--	236	7.14	-85.9	0.71
MW-7	O&M	A	2/12/19	12.05	5.35	6.70	--	378	6.08	176.4	0.49

Table 6E
Groundwater Elevation Data, Field Measurements and Other Analyses
Former Oil/Solvent Storage Area
Former Kaiser Aerotech Facilities
San Leandro, California

Monitoring Well	Notes	GW Zone	Date	Top of Casing Elevation (ft msl)	Depth to Groundwater (ft BTOC)	Groundwater Elevation (ft msl)	TOC[Note 1] (mg/L)	Specific Conductance field (µS/cm)	pH field	ORP field (mV)	Dissolved Oxygen field (mg/L)
LMW-4		B	9/22/98	14.71	9.52	5.19	--	--	--	94.5	1.94
LMW-4		B	12/9/98	14.71	8.73	5.98	--	--	--	--	--
LMW-4		B	12/10/98	14.71	--	--	--	--	--	81.0	6.90
LMW-4		B	3/22/99	14.71	8.09	6.62	--	--	--	--	--
LMW-4		B	6/21/99	14.71	9.42	5.29	--	--	--	--	--
LMW-4		B	9/20/99	14.71	9.72	4.99	--	--	--	--	--
LMW-4		B	12/13/99	14.71	9.25	5.46	--	--	--	--	--
LMW-4		B	12/15/99	14.71	--	--	--	--	--	81.0	--
LMW-4	PT ISCO Mn	B	3/10/00	14.71	--	--	--	--	--	51.0	--
LMW-4	PT ISCO Mn	B	3/13/00	14.71	7.51	7.20	--	--	--	--	--
LMW-4	PT ISCO Mn	B	3/27/00	14.71	--	--	--	--	--	240.0	--
LMW-4		B	6/15/00	14.71	--	--	--	--	--	136.0	--
LMW-4		B	9/18/00	14.71	9.51	5.20	--	--	--	--	--
LMW-4		B	3/12/01	14.71	8.31	6.40	--	743	--	--	--
LMW-4		B	9/24/01	14.71	9.02	5.69	--	--	--	--	--
LMW-4		B	3/26/02	14.71	8.07	6.64	--	--	--	--	--
LMW-4		B	10/3/02	14.71	9.72	4.99	--	888	--	--	--
LMW-4		B	3/26/03	14.71	8.79	5.92	--	861	--	61.0	1.20
LMW-4		B	6/26/03	14.71	9.18	5.53	--	--	--	--	--
LMW-4		B	9/23/03	14.71	9.50	5.21	--	903	--	--	--
LMW-4		B	9/24/03	14.71	--	--	**4.9**	--	--	-16	0.51
LMW-4		B	3/9/04	12.13	5.91	6.22	--	770	--	-91.5	0.40
LMW-4		B	2/1/05	12.13	--	--	--	627	--	--	--
LMW-4		B	9/20/06	12.13	6.78	5.35	--	--	--	--	--
LMW-4		B	1/30/07	12.13	6.44	5.69	--	--	--	--	--
LMW-4		B	2/1/07	12.13	7.09	5.04	--	808	7.11	-63.3	0.43
LMW-4		B	2/4/08	12.13	5.27	6.86	--	870	7.18	-130.1	0.87
LMW-4		B	6/9/08	12.13	6.86	5.27	--	916	--	--	--
LMW-4	RDIP	B	6/10/08	12.13	6.01	6.12	--	69,847	--	--	--
LMW-4	RDIP	B	6/10/08	12.13	6.19	5.94	--	46,974	--	--	--
LMW-4	RDIP	B	8/6/08	12.13	7.68	4.45	**9,600**	17,863	6.30	-135.2	0.27
LMW-4	RDIP	B	11/6/08	12.13	6.95	5.18	--	14,535	6.11	-162.0	0.30
LMW-4	RDIP	B	2/4/09	12.13	7.05	5.08	**9,700**	15,477	6.35	-153.0	2.80
LMW-4	RDIP	B	5/6/09	12.13	6.80	5.33	--	11,662	6.29	-21.0	0.31
LMW-4	RDIP	B	8/24/09	12.13	7.31	4.82	**9,300**	12,325	6.35	-180.9	0.27
LMW-4	RDIP	B	10/19/09	12.13	6.90	5.23	--	10,379	--	--	--
LMW-4	RDIP	B	10/19/09	12.13	6.90	5.23	--	10,379	--	--	--
LMW-4	RDIP	B	10/23/09	12.13	6.31	5.82	--	10,204	--	--	--
LMW-4	RDIP	B	11/4/09	12.13	6.90	5.23	--	11,164	6.72	-172.7	1.43
LMW-4	RDIP	B	2/4/10	12.13	5.98	6.15	**7,900**	15,543	6.39	-60.8	0.94
LMW-4	RDIP	B	5/4/10	12.13	6.70	5.43	--	11,920	7.12	-206.3	0.84
LMW-4	RDIP	B	5/7/10	12.13	6.40	5.73	--	13,470	--	--	--
LMW-4	RDIP	B	8/3/10	12.13	7.05	5.08	--	--	--	--	--
LMW-4	RDIP	B	8/4/10	12.13	--	--	**7,900**	15,174	7.07	-105.6	0.79
LMW-4	RDIP	B	2/9/11	12.13	6.74	5.39	--	8,683	7.25	-95.6	0.97
LMW-4	RDIP	B	2/8/12	12.13	6.91	5.22	--	6,198	7.02	-91.2	0.18
LMW-4	O&M	B	2/12/13	12.13	6.94	5.19	--	7,391	7.44	-63.4	0.63
LMW-4	O&M	B	2/25/14	12.13	6.94	5.19	--	5,701	7.01	-111.3	1.83
LMW-4	O&M	B	6/11/15	12.13	7.28	4.85	--	5,714	6.92	-116.5	1.18
LMW-4	O&M	B	2/23/16	12.13	6.75	5.38	--	6,309	6.76	-92.5	4.25
LMW-4	O&M	B	2/13/17	12.13	4.60	7.53	--	4,098	7.51	-121.3	0.42
LMW-4	O&M	B	2/12/19	12.13	5.58	6.55	--	4,873	6.89	-109.7	0.68
LMW-8		LB	9/19/07	12.22	6.95	5.27	**5.2**	893	7.39	24.0	1.08
LMW-8		LB	11/13/07	12.22	6.50	5.72	--	828	6.58	-25.4	0.14
LMW-8		LB	2/6/08	12.22	5.25	6.97	--	890	7.18	-135.9	0.73
LMW-8		LB	5/7/08	12.22	5.08	7.14	--	883	5.91	376.5	2.10
LMW-8		LB	6/9/08	12.22	6.83	5.39	--	891	--	--	--
LMW-8		LB	6/10/08	12.22	3.71	8.51	--	916	--	--	--

Table 6E
Groundwater Elevation Data, Field Measurements and Other Analyses
Former Oil/Solvent Storage Area
Former Kaiser Aerotech Facilities
San Leandro, California

Monitoring Well	Notes	GW Zone	Date	Top of Casing Elevation	Depth to Groundwater	Groundwater Elevation	TOC[Note 1]	Specific Conductance field	pH field	ORP field	Dissolved Oxygen field
				(ft msl)	(ft BTOC)	(ft msl)	(mg/L)	(µS/cm)		(mV)	(mg/L)
LMW-8		LB	6/10/08	12.22	7.15	5.07	--	64,389	--	--	--
LMW-8	RDIP	LB	8/5/08	12.22	7.24	4.98	**17,000**	22,300	6.39	-99.5	1.68
LMW-8	RDIP	LB	11/6/08	12.22	7.52	4.70	--	18,811	6.12	-147.0	0.27
LMW-8	RDIP	LB	11/6/08	12.22	--	--	<5.0	<5.0	<5.0	-147.0	0.27
LMW-8	RDIP	LB	2/3/09	12.22	8.18	4.04	**12,000**	17,092	6.29	-80.7	2.29
LMW-8	RDIP	LB	5/6/09	12.22	6.67	5.55	--	11,099	6.06	-4.5	0.21
LMW-8	RDIP	LB	8/24/09	12.22	8.21	4.01	**9,000**	11,437	6.25	-223.5	0.61
LMW-8	RDIP	LB	11/4/09	12.22	6.73	5.49	--	10,193	7.03	-213.9	1.76
LMW-8	RDIP	LB	2/3/10	12.22	5.76	6.46	**10,000**	15,902	6.04	-67.0	0.24
LMW-8	RDIP	LB	5/4/10	12.22	6.25	5.97	--	11,364	7.24	-201.8	0.59
LMW-8	RDIP	LB	5/7/10	12.22	6.39	5.83	--	14,735	--	--	--
LMW-8	RDIP	LB	8/3/10	12.22	7.85	4.37	**4,200**	9,607	6.89	-70.3	0.73
LMW-8	RDIP	LB	2/9/11	12.22	6.60	5.62	--	8,484	7.09	-80.1	0.26
LMW-8	RDIP	LB	2/8/12	12.22	7.26	4.96	--	5,644	6.80	-90.9	0.2
LMW-8	O&M	LB	2/12/13	12.22	6.92	5.30	--	6,587	7.38	-43.6	0.68
LMW-8	O&M	LB	2/25/14	12.22	7.07	5.15	--	5,429	6.89	-124.7	1.81
LMW-8	O&M	LB	6/11/15	12.22	6.87	5.35	--	4,700	6.95	-48.2	1.84
LMW-8	O&M	LB	2/23/16	12.22	7.25	4.97	--	5,296	6.67	-78.9	2.28
LMW-8	O&M	LB	2/13/17	12.22	6.59	5.63	--	4,728	7.10	-126.2	0.63
LMW-8	O&M	LB	2/13/18	12.22	6.50	5.72	--	4,106	6.89	-103.5	0.88
LMW-8	O&M	LB	2/12/19	12.22	6.03	6.19	--	4,075	6.72	-114.5	0.33
PZ-1		B	9/22/98	11.37	6.15	5.22	--	--	--	96.6	1.34
PZ-1		B	12/9/98	11.37	5.06	6.31	--	--	--	--	--
PZ-1	PT ISCO Mn	B	3/10/00	11.37	--	--	--	--	--	210.0	--
PZ-1	PT ISCO Mn	B	3/26/03	11.37	5.30	6.07	--	877	--	70.6	1.65
PZ-1		B	9/29/04	11.37	6.10	5.27	--	807	--	-47.4	0.93
PZ-1		B	3/8/05	11.37	4.38	6.99	--	--	--	--	--
PZ-1		B	3/9/05	11.37	--	--	--	714	--	-10.6	0.17
PZ-1		B	9/14/05	11.37	6.12	5.25	--	757	--	-335.2	0.82
PZ-1		B	12/15/05	11.37	5.87	5.50	--	931	--	-39.3	1.64
PZ-1		B	3/15/06	11.37	4.80	6.57	--	691	--	18.7	1.65
PZ-1		B	9/20/06	11.37	6.64	4.73	--	852	7.37	7.7	0.21
PZ-1		B	1/30/07	11.37	5.93	5.44	--	--	--	--	--
PZ-1		B	2/1/07	11.37	6.01	5.36	--	1,878	9.96	-84.7	3.64
PZ-1		B	8/15/07	11.37	6.29	5.08	--	865	7.57	-55.4	0.84
PZ-1		B	2/6/08	11.37	5.56	5.81	--	890	7.25	-124.9	0.39
PZ-1		B	5/7/08	11.37	5.87	5.50	--	--	--	--	--
PZ-1	RDIP	B	8/7/08	11.37	6.63	4.74	**23**	1,278	6.83	-201.0	0.29
PZ-1	RDIP	B	2/3/09	11.37	5.87	5.50	**16**	1,300	6.61	-42.1	1.21
PZ-1	RDIP	B	8/5/09	11.37	5.73	5.64	--	2,836	6.72	-89.4	1.68
PZ-1	RDIP	B	2/3/10	11.37	4.38	6.99	--	4,470	6.28	-127.4	0.73
PZ-1	RDIP	B	8/3/10	11.37	6.02	5.35	--	--	--	--	--
PZ-1	RDIP	B	8/4/10	11.37	--	--	--	1,368	6.73	-62.5	1.00
PZ-1	RDIP	B	2/9/11	11.37	9.33	2.04	--	33	7.20	88	3.51
PZ-1	RDIP	B	2/7/12	11.37	5.50	5.87	--	--	--	--	--
PZ-1	O&M	B	2/12/13	11.37	5.83	5.54	--	--	--	--	--
PZ-1	O&M	B	2/25/14	11.37	5.82	5.55	--	--	--	--	--
PZ-1	O&M	B	6/11/15	--	--	--	--	--	--	--	--
PZ-1	O&M	B	2/24/16	11.37	5.60	5.77	--	--	--	--	--
PZ-1	O&M	B	2/15/17	11.37	4.20	7.17	--	1,997	7.71	-74.9	0.81
PZ-1	O&M	B	2/13/18	11.37	5.76	5.61	--	57	3.88	135.8	1.68
PZ-1	Supp.	B	9/26/18	11.37	6.19	5.18	--	--	--	--	--
PZ-1	O&M	B	2/12/19	11.37	4.67	6.70	--	--	--	--	--
PZ-1	O&M	B	3/10/20	11.37	5.81	5.56	**8.26**	974	7.08	-17.0	1.63
UB-5		UB	9/18/07	12.29	7.09	5.20	**10**	1,078	7.20	73.0	0.62
UB-5		UB	11/13/07	12.29	8.91	3.38	--	1,174	8.33	-27.3	1.40
UB-5		UB	2/6/08	12.29	5.43	6.86	--	1,121	7.11	-135.6	1.75
UB-5		UB	5/7/08	12.29	6.67	5.62	--	1,095	5.67	--	--

Table 6E
Groundwater Elevation Data, Field Measurements and Other Analyses
Former Oil/Solvent Storage Area
Former Kaiser Aerotech Facilities
San Leandro, California

Monitoring Well	Notes	GW Zone	Date	Top of Casing Elevation	Depth to Groundwater	Groundwater Elevation	TOC[Note 1]	Specific Conductance field	pH field	ORP field	Dissolved Oxygen field
				(ft msl)	(ft BTOC)	(ft msl)	(mg/L)	(µS/cm)		(mV)	(mg/L)
UB-5		UB	6/9/08	12.29	10.94	1.35	--	1,051	--	--	--
UB-5		UB	6/10/08	12.29	6.66	5.63	--	1,095	--	--	--
UB-5		UB	6/10/08	12.29	7.04	5.25	--	1,072	--	--	--
UB-5		UB	8/6/08	12.29	6.50	5.79	--	1,145	7.00	2.4	0.69
UB-5		UB	11/6/08	12.29	11.55	0.74	--	--	--	--	--
UB-5		UB	11/10/08	12.29	--	--	--	1,003	--	-39.4	4.99
UB-5		UB	12/2/08	12.29	7.75	4.54	--	969	--	-58.0	--
UB-5		UB	2/3/09	12.29	6.74	5.55	**9.2**	1,086	7.15	-41.2	0.91
UB-5	RDIP	UB	8/4/09	12.29	7.01	5.28	**4.0**	1,063	7.19	-100.8	0.67
UB-5	RDIP	UB	10/19/09	12.29	6.93	5.36	--	869	--	--	--
UB-5	RDIP	UB	10/23/09	12.29	5.35	6.94	--	55,412	--	--	--
UB-5	RDIP	UB	11/4/09	12.29	6.85	5.44	--	14,529	6.38	-241.3	1.92
UB-5	RDIP	UB	2/3/10	12.29	5.78	6.51	--	15,742	6.27	-110.4	0.95
UB-5	RDIP	UB	5/12/10	12.29	6.42	5.87	--	10,440	--	--	--
UB-5	RDIP	UB	8/3/10	12.29	6.89	5.40	**5,200**	9,493	6.65	-19.7	0.71
UB-5	RDIP	UB	2/9/11	12.29	6.49	5.80	--	15,445	6.68	-50.8	0.27
UB-5	RDIP	UB	2/8/12	12.29	6.81	5.48	--	10,959	6.75	-75.8	1.66
UB-5	O&M	UB	2/12/13	12.29	7.05	5.24	--	8,896	7.73	-55.4	0.78
UB-5	O&M	UB	2/25/14	12.29	7.02	5.27	--	6,692	7.08	-149.8	1.97
UB-5	O&M	UB	6/11/15	12.29	7.00	5.29	--	4,860	7.99	-161.0	2.58
UB-5	O&M	UB	2/23/16	12.29	6.51	5.78	--	7,568	6.82	-101.6	3.02
UB-5	O&M	UB	2/14/17	12.29	4.81	7.48	--	3,830	7.48	-52.9	0.74
UB-5	O&M	UB	2/13/18	12.29	6.45	5.84	--	2,774	7.15	56.4	0.81
UB-5	O&M	UB	2/12/19	12.29	5.62	6.67	--	6,691	7.29	-137.2	0.32
LB-5		LB	9/18/07	12.15	7.03	5.12	**4.8**	823.1	6.75	73.4	0.83
LB-5		LB	11/13/07	12.15	6.51	5.64	--	856	7.98	-20.3	0.25
LB-5		LB	2/6/08	12.15	5.31	6.84	--	838	7.23	-123.4	1.13
LB-5		LB	5/7/08	12.15	6.50	5.65	--	827	4.57	--	--
LB-5		LB	6/9/08	12.15	6.91	5.24	--	833	--	--	--
LB-5		LB	6/10/08	12.15	5.97	6.18	--	836	--	--	--
LB-5		LB	6/10/08	12.15	6.01	6.14	--	867	--	--	--
LB-5		LB	8/5/08	12.15	6.77	5.38	--	877	7.02	-14.6	3.56
LB-5		LB	11/6/08	12.15	6.17	5.98	--	--	--	--	--
LB-5		LB	11/10/08	12.15	--	--	--	847	--	-26.8	3.03
LB-5		LB	12/2/08	12.15	6.98	5.17	--	782	--	--	--
LB-5		LB	2/3/09	12.15	6.49	5.66	**4.8**	918	7.25	-53.5	0.78
LB-5	RDIP	LB	8/4/09	12.15	6.90	5.25	**2.6**	1,035	7.27	-110.5	8.73
LB-5	RDIP	LB	10/19/09	12.15	6.42	5.73	--	781	--	--	--
LB-5	RDIP	LB	10/22/09	12.15	6.52	5.63	--	53,980	--	--	--
LB-5	RDIP	LB	11/4/09	12.15	7.31	4.84	--	19,075	6.91	-179.1	2.56
LB-5	RDIP	LB	2/3/10	12.15	5.72	6.43	--	13,526	6.06	-90.4	0.40
LB-5	RDIP	LB	5/12/10	12.15	6.30	5.85	--	5,047	--	--	--
LB-5	RDIP	LB	8/3/10	12.15	7.86	4.29	**3,400**	7,618	6.37	-27.9	0.85
LB-5	RDIP	LB	2/9/11	12.15	8.32	3.83	--	5,700	7.21	-77.7	0.42
LB-5	RDIP	LB	2/8/12	12.15	7.91	4.24	--	5,017	6.77	-94.1	0.48
LB-5	O&M	LB	2/12/13	12.15	6.64	5.51	--	4,784	7.01	-11.7	0.92
LB-5	O&M	LB	2/25/14	12.15	6.90	5.25	--	3,677	6.78	-97.3	1.79
LB-5	O&M	LB	6/11/15	12.15	6.80	5.35	--	2,963	7.97	-204.7	3.48
LB-5	O&M	LB	2/23/16	12.15	6.25	5.90	--	744	6.33	64.5	3.63
LB-5	O&M	LB	2/14/17	12.15	4.78	7.37	--	2,904	7.11	64.8	0.51
LB-5	O&M	LB	2/13/18	12.15	6.40	5.75	--	1,869	6.64	30.3	0.97
LB-5	O&M	LB	2/12/19	12.15	5.42	6.73	--	3,142	6.76	-121.4	0.49
LB-5	O&M	LB	3/10/20	12.15	6.74	5.41	--	1,352	7.55	43.4	2.08

Table 6F
Groundwater Elevation Data, Field Measurements and Other Analyses
Receiving Dock
Former Kaiser Aerotech Facilities
San Leandro, California

Monitoring Well	Notes	GW Zone	Date	Top of Casing Elevation (ft msl)	Depth to Groundwater (ft BTOC)	Groundwater Elevation (ft msl)	TOC[Note 1] (mg/L)	Specific conductance field (µS/cm)	pH field	ORP field (mV)	Dissolved Oxygen field (mg/L)
MW-1		A	11/14/96	11.50	5.96	5.54	--	--	--	--	--
MW-1		A	3/20/97	11.50	5.26	6.24	--	--	--	--	--
MW-1		A	6/25/97	11.50	5.75	5.75	--	--	--	--	--
MW-1		A	9/22/97	11.50	5.98	5.52	--	--	--	--	--
MW-1		A	12/18/97	11.50	3.89	7.61	--	--	--	--	--
MW-1		A	3/23/98	11.50	4.41	7.09	--	--	--	--	--
MW-1		A	6/17/98	11.50	5.28	6.22	--	--	--	--	--
MW-1		A	9/22/98	11.50	6.08	5.42	--	--	--	--	--
MW-1		A	9/23/98	11.50	--	--	--	--	--	27.5	2.94
MW-1		A	12/9/98	11.50	4.94	6.56	--	--	--	147	6.19
MW-1		A	3/22/99	11.50	4.45	7.05	--	--	--	--	--
MW-1		A	6/21/99	11.50	5.93	5.57	--	--	--	--	--
MW-1		A	9/20/99	11.50	6.27	5.23	--	--	--	--	--
MW-1		A	12/13/99	11.50	5.73	5.77	--	--	--	--	--
MW-1		A	3/13/00	11.50	3.79	7.71	--	--	--	--	--
MW-1		A	9/18/00	11.50	6.04	5.46	--	--	--	--	--
MW-1		A	3/12/01	11.50	4.59	6.91	--	737	--	--	--
MW-1		A	9/24/01	11.50	6.16	5.34	--	--	--	--	--
MW-1		A	3/26/02	11.50	4.43	7.07	--	--	--	--	--
MW-1		A	10/3/02	11.50	6.07	5.43	--	929	--	--	--
MW-1		A	3/26/03	11.50	5.15	6.35	--	476	--	-43.9	1.79
MW-1		A	6/26/03	11.50	5.66	5.84	--	--	--	--	--
MW-1		A	9/23/03	11.50	5.99	5.51	--	--	--	--	--
MW-1		A	12/16/03	11.50	4.76	6.74	--	--	--	--	--
MW-1		A	3/9/04	11.50	4.63	6.87	--	630	--	40.0	0.34
MW-1		A	5/20/04	11.50	5.69	5.81	--	--	--	--	--
MW-1		A	9/29/04	11.50	5.93	5.57	--	--	--	--	--
MW-1		A	12/8/04	11.50	4.08	7.42	--	--	--	--	--
MW-1		A	3/8/05	11.50	3.87	7.63	--	--	--	--	--
MW-1		A	6/14/05	11.50	5.23	6.27	--	--	--	--	--
MW-1		A	9/14/05	11.50	5.80	5.70	--	--	--	--	--
MW-1		A	12/15/05	11.50	5.41	6.09	--	867	--	-27.5	1.59
MW-1		A	3/15/06	11.50	3.75	7.75	--	554	--	92.6	4.42
MW-1		A	6/13/06	11.50	5.51	5.99	--	--	--	--	--
MW-1		A	9/20/06	11.50	4.75	6.75	--	--	--	--	--
MW-1		A	1/30/07	11.50	5.25	6.25	--	--	--	--	--
MW-1		A	2/1/07	11.50	5.32	6.18	--	1,704	10.66	76.2	4.79
MW-1		A	5/8/07	11.50	5.31	6.19	--	--	--	--	--
MW-1		A	8/14/07	11.50	5.85	5.65	--	--	--	--	--
MW-1		A	11/13/07	11.50	5.40	6.10	--	--	--	--	--
MW-1		A	2/4/08	11.50	3.39	8.11	--	677	7.30	-38.2	1.63
MW-1		A	5/7/08	11.50	5.68	5.82	--	--	--	--	--
MW-1		A	8/5/08	11.50	5.74	5.76	--	--	--	--	--
MW-1		A	11/6/08	11.50	5.25	6.25	--	--	--	--	--
MW-1		A	2/3/09	11.50	5.39	6.11	--	1,556	6.94	-25.9	1.26
MW-1		A	5/6/09	11.50	5.11	6.39	--	--	--	--	--
MW-1		A	5/20/09	11.50	5.42	6.08	--	670	--	--	--
MW-1		A	5/20/09	11.50	5.02	6.48	--	898	--	--	--
MW-1		A	6/3/09	11.50	5.49	6.01	--	861	--	--	--
MW-1		A	6/3/09	11.50	5.50	6.00	--	916	--	--	--
MW-1		A	8/4/09	11.50	5.90	5.60	--	--	--	--	--
MW-1		A	11/4/09	11.50	5.46	6.04	--	--	--	--	--
MW-1		A	2/2/10	11.50	3.84	7.66	--	724	6.73	34.9	0.32
MW-1		A	5/4/10	11.50	4.95	6.55	--	--	--	--	--
MW-1		A	8/3/10	11.50	5.66	5.84	--	--	--	--	--
MW-1		A	2/8/11	11.50	5.22	6.28	--	843	6.82	-116	0.13
MW-1		A	2/8/12	11.50	5.04	6.46	--	--	--	--	--
MW-1	O&M	A	2/12/13	11.50	5.41	6.09	--	--	--	--	--
MW-1	O&M	A	2/25/14	11.50	5.49	6.01	--	--	--	--	--

Table 6F
Groundwater Elevation Data, Field Measurements and Other Analyses
Receiving Dock
Former Kaiser Aerotech Facilities
San Leandro, California

Monitoring Well	Notes	GW Zone	Date	Top of Casing Elevation (ft msl)	Depth to Groundwater (ft BTOC)	Groundwater Elevation (ft msl)	TOC[Note 1] (mg/L)	Specific conductance field (µS/cm)	pH field	ORP field (mV)	Dissolved Oxygen field (mg/L)
MW-1	O&M	A	6/9/15	11.50	5.96	5.54	--	--	--	--	--
MW-1	O&M	A	2/23/16	11.50	5.05	6.45	--	--	--	--	--
MW-1	O&M	A	2/13/17	11.50	3.10	8.40	--	--	--	--	--
MW-1	O&M	A	2/13/18	11.50	5.30	6.20	--	--	--	--	--
MW-1	O&M	A	2/11/19	11.50	3.85	7.65	--	--	--	--	--
MW-1	O&M	A	3/10/20	11.50	5.60	5.90	--	--	--	--	--
LMW-1		UB	9/22/98	11.12	5.69	5.43	--	--	--	--	--
LMW-1		UB	9/23/98	11.12	--	--	--	--	--	139.3	3.18
LMW-1		UB	12/9/98	11.12	4.85	6.27	--	--	--	--	--
LMW-1		UB	12/10/98	11.12	--	--	--	--	--	132.0	4.93
LMW-1		UB	3/22/99	11.12	4.25	6.87	--	--	--	--	--
LMW-1		UB	6/21/99	11.12	4.53	6.59	--	--	--	--	--
LMW-1		UB	9/20/99	11.12	5.86	5.26	--	--	--	--	--
LMW-1		UB	12/13/99	11.12	5.36	5.76	--	--	--	--	--
LMW-1		UB	3/13/00	11.12	3.63	7.49	--	--	--	--	--
LMW-1		UB	9/18/00	11.12	5.68	5.44	--	--	--	--	--
LMW-1		UB	3/12/01	11.12	4.39	6.73	--	743	--	--	--
LMW-1		UB	9/24/01	11.12	5.75	5.37	--	--	--	--	--
LMW-1		UB	3/26/02	11.12	4.29	6.83	--	--	--	--	--
LMW-1		UB	10/3/02	11.12	5.75	5.37	--	930	--	--	--
LMW-1		UB	3/26/03	11.12	4.94	6.18	--	822	--	-34.4	9.06
LMW-1		UB	6/26/03	11.12	5.37	5.75	--	783	--	150.6	1.71
LMW-1		UB	9/23/03	11.12	5.71	5.41	--	835	--	8.0	3.28
LMW-1		UB	12/16/03	11.12	4.94	6.18	--	--	--	--	--
LMW-1		UB	3/9/04	11.12	4.48	6.64	--	677	--	43.0	1.05
LMW-1		UB	5/20/04	11.12	5.41	5.71	--	--	--	--	--
LMW-1		UB	9/29/04	11.12	5.61	5.51	--	515	--	51.8	1.57
LMW-1		UB	12/8/04	11.12	4.54	6.58	--	--	--	--	--
LMW-1		UB	3/8/05	11.12	3.79	7.33	--	440	--	-34.6	2.17
LMW-1		UB	6/14/05	11.12	4.93	6.19	--	--	--	--	--
LMW-1		UB	9/14/05	11.12	5.65	5.47	--	504	--	-179.3	3.96
LMW-1		UB	12/14/05	11.12	4.79	6.33	--	--	--	--	--
LMW-1		UB	3/15/06	11.12	3.90	7.22	--	572	--	113.1	3.02
LMW-1		UB	6/13/06	11.12	4.02	7.10	--	--	--	--	--
LMW-1		UB	9/20/06	11.12	5.55	5.57	--	758	7.79	-186.0	0.41
LMW-1		UB	2/1/07	11.12	5.09	6.03	--	1,536	9.98	-135.0	5.38
LMW-1		UB	5/10/07	11.12	5.20	5.92	--	694	--	--	--
LMW-1		UB	8/14/07	11.12	5.47	5.65	--	983	7.40	-40.0	4.57
LMW-1		UB	2/4/08	11.12	3.75	7.37	--	760	7.82	-43.3	5.76
LMW-1		UB	5/7/08	11.12	5.69	5.43	--	--	--	--	--
LMW-1		UB	8/5/08	11.12	5.51	5.61	--	--	--	--	--
LMW-1		UB	11/6/08	11.12	5.09	6.03	--	--	--	--	--
LMW-1		UB	2/3/09	11.12	5.19	5.93	--	1,386	7.87	-31.4	3.87
LMW-1		UB	5/6/09	11.12	4.94	6.18	--	--	--	--	--
LMW-1	RDIP	UB	5/20/09	11.19	6.72	4.47	--	785	--	--	--
LMW-1	RDIP	UB	5/20/09	11.19	0.00	11.19	--	56,823	--	--	--
LMW-1	RDIP	UB	6/3/09	11.19	4.51	6.68	--	42950	--	--	--
LMW-1	RDIP	UB	6/3/09	11.19	1.45	9.74	--	43,100	--	--	--
LMW-1	RDIP	UB	8/6/09	11.19	5.28	5.91	18,000	28,708	6.69	-102.2	1.12
LMW-1	RDIP	UB	11/4/09	11.19	5.45	5.74	--	13,583	6.44	-285.3	1.25
LMW-1	RDIP	UB	2/3/10	11.19	4.69	6.50	--	14,916	6.40	-85.0	0.91
LMW-1	RDIP	UB	5/4/10	11.19	5.20	5.99	--	--	--	--	--
LMW-1	RDIP	UB	8/3/10	11.19	5.60	5.59	--	--	--	--	--
LMW-1	RDIP	UB	8/4/10	11.19	--	--	--	10,119	7.70	-50.1	3.19
LMW-1	RDIP	UB	2/9/11	11.19	6.23	4.96	--	15,997	7.01	-58.4	0.44
LMW-1	RDIP	UB	2/8/12	11.19	5.29	5.90	--	6,174	7.12	-91.7	0.63
LMW-1	O&M	UB	2/12/13	11.19	5.05	6.14	--	4,525	6.99	-64.8	0.83
LMW-1	O&M	UB	2/25/14	11.19	5.21	5.98	--	--	--	--	--

Table 6F
Groundwater Elevation Data, Field Measurements and Other Analyses
Receiving Dock
Former Kaiser Aerotech Facilities
San Leandro, California

Monitoring Well	Notes	GW Zone	Date	Top of Casing Elevation (ft msl)	Depth to Groundwater (ft BTOC)	Groundwater Elevation (ft msl)	TOC[Note 1] (mg/L)	Specific conductance field (µS/cm)	pH field	ORP field (mV)	Dissolved Oxygen field (mg/L)
LMW-1	O&M	UB	6/9/15	11.19	5.66	5.53	--	1,870	6.73	170.9	--
LMW-1	O&M	UB	2/23/16	11.19	4.85	6.34	--	1,671	7.52	-5.7	0.74
LMW-1	O&M	UB	2/13/17	11.19	2.85	8.34	--	1,014	7.10	156.3	0.16
LMW-1	O&M	UB	2/13/18	11.19	4.80	6.39	--	--	--	--	--
LMW-1	O&M	UB	2/11/19	11.19	3.99	7.20	--	1,196	7.76	39.2	2.37
LMW-1	O&M	UB	3/10/20	11.19	5.45	5.74	--	--	--	--	--

Table 6G
Groundwater Elevation Data, Field Measurements and Other Analyses
Railroad Western Boundary
Former Kaiser Aerotech Facilities
San Leandro, California

Monitoring Well	Notes	GW Zone	Date	Top of Casing Elevation (ft msl)	Depth to Groundwater (ft BTOC)	Groundwater Elevation (ft msl)	TOC[Note 1] (mg/L)	Specific conductance field (µS/cm)	pH field	ORP field (mV)	Dissolved Oxygen field (mg/L)
MW-18		A	9/22/98	8.18	5.16	3.02	--	--	--	--	--
MW-18		A	9/23/98	8.18	--	--	--	--	--	99.3	2.69
MW-18		A	12/9/98	8.18	5.03	3.15	--	--	--	--	--
MW-18		A	12/10/98	8.18	--	--	--	--	--	176.0	3.54
MW-18		A	3/22/99	8.18	5.04	3.14	--	--	--	--	--
MW-18		A	6/21/99	8.18	5.16	3.02	--	--	--	--	--
MW-18		A	9/20/99	8.18	5.14	3.04	--	--	--	--	--
MW-18		A	12/13/99	8.18	5.10	3.08	--	--	--	--	--
MW-18		A	3/13/00	8.18	5.04	3.14	--	--	--	--	--
MW-18		A	9/18/00	8.18	5.13	3.05	--	--	--	--	--
MW-18		A	3/12/01	8.18	5.07	3.11	--	506	--	--	--
MW-18		A	9/24/01	8.18	5.15	3.03	--	--	--	--	--
MW-18		A	3/26/02	8.18	--	--	--	--	--	--	--
MW-18		A	10/3/02	8.18	5.18	3.00	--	848	--	--	--
MW-18		A	3/26/03	8.18	5.13	3.05	--	477	--	-20.5	0.98
MW-18		A	6/26/03	8.18	5.17	3.01	--	561	--	167.3	0.60
MW-18		A	9/23/03	8.18	5.17	3.01	--	700	--	-233.3	0.71
MW-18		A	12/16/03	8.18	5.00	3.18	--	--	--	--	--
MW-18		A	3/9/04	8.18	4.95	3.23	--	--	--	--	--
MW-18		A	3/10/04	8.18	--	--	--	435	--	-54.2	0.82
MW-18		A	5/20/04	8.18	5.23	2.95	--	--	--	--	--
MW-18		A	9/29/04	8.18	5.18	3.00	--	704	--	-66.2	0.32
MW-18		A	12/9/04	8.18	3.30	4.88	--	--	--	--	--
MW-18		A	3/8/05	8.18	5.18	3.00	--	270	--	-38.1	1.10
MW-18		A	6/14/05	8.18	5.19	2.99	--	399	--	-66.5	0.48
MW-18		A	9/14/05	8.18	5.18	3.00	--	554	--	430	1.34
MW-18		A	12/14/05	8.18	5.20	2.98	--	523	--	-30.7	1.88
MW-18		A	3/15/06	8.18	4.70	3.48	--	447	--	-100.6	4.73
MW-18		A	6/14/06	8.18	5.20	2.98	--	569	7.49	-63.5	1.71
MW-18		A	9/20/06	8.18	5.23	2.95	--	624	7.49	-24.6	0.38
MW-18		A	2/1/07	8.18	5.08	3.10	--	413	7.56	-26.7	0.71
MW-18		A	5/9/07	8.18	5.18	3.00	--	559	7.00	265.9	4.23
MW-18		A	8/14/07	8.18	5.22	2.96	--	702	7.40	-20.8	0.47
MW-18		A	11/14/07	8.18	5.18	3.00	--	--	--	--	--
MW-18		A	2/6/08	8.18	5.15	3.03	--	498	7.83	-38.8	1.72
MW-18		A	6/13/08	8.18	5.21	2.97	--	--	--	--	--
MW-18		A	8/6/08	8.18	5.21	2.97	--	738	7.41	-127.0	0.87
MW-18		A	9/30/08	8.18	5.22	2.96	--	720	--	--	--
MW-18		A	2/4/09	8.18	5.13	3.05	**2.8**	1,103	7.44	-72.5	1.03
MW-18		A	3/18/09	8.18	5.09	3.09	--	533	--	--	--
MW-18		A	5/6/09	8.18	5.06	3.12	--	--	--	--	--
MW-18		A	8/4/09	8.18	5.08	3.10	**4.2**	886	7.45	-67.1	2.38
MW-18		A	11/4/09	8.18	5.18	3.00	--	--	7.51	--	--
MW-18		A	11/17/09	8.18	5.13	3.05	--	658	--	--	--
MW-18		A	11/18/09	8.18	5.10	3.08	--	618	--	--	--
MW-18		A	2/4/10	8.18	5.06	3.12	--	519	7.31	166.4	0.51
MW-18		A	5/4/10	8.18	5.20	2.98	--	--	--	--	--
MW-18		A	5/6/10	8.18	5.10	3.08	--	574	--	--	--
MW-18		A	5/18/10	8.18	5.20	2.98	--	887	--	--	--
MW-18	RDIP	A	5/18/10	8.18	4.80	3.38	--	59,435	--	--	--
MW-18	RDIP	A	8/3/10	8.18	5.29	2.89	--	3,198	6.28	-95.2	0.04
MW-18	RDIP	A	2/9/11	8.18	5.23	2.95	--	3,162	7.36	-77.5	0.53
MW-18	RDIP	A	2/8/12	8.18	5.15	3.03	--	2,058	8.20	-161.6	0.33
MW-18	O&M	A	2/14/13	8.18	5.22	2.96	--	1,419	7.93	-51.4	0.74
MW-18	O&M	A	2/25/14	8.18	5.31	2.87	--	1,069	7.36	-118.1	1.40
MW-18	O&M	A	6/11/15	8.18	5.24	2.94	**3.2**	784	8.01	-80.2	0.18
MW-18	O&M	A	2/23/16	8.18	5.31	2.87	--	991	7.07	-47.6	4.06
MW-18	O&M	A	2/14/17	8.18	5.30	2.88	**2.0**	844	7.12	-20.3	0.83
MW-18	O&M	A	2/15/18	8.18	5.45	2.73	--	720	7.00	-20.9	1.01

Table 6G
Groundwater Elevation Data, Field Measurements and Other Analyses
Railroad Western Boundary
Former Kaiser Aerotech Facilities
San Leandro, California

Monitoring Well	Notes	GW Zone	Date	Top of Casing Elevation (ft msl)	Depth to Groundwater (ft BTOC)	Groundwater Elevation (ft msl)	TOC[Note 1] (mg/L)	Specific conductance field (µS/cm)	pH field	ORP field (mV)	Dissolved Oxygen field (mg/L)
MW-18	O&M	A	9/11/18	8.18	5.40	2.78	--	869	4.72	-42.2	--
MW-18	O&M	A	2/12/19	8.18	5.12	3.06	--	5,071	7.94	-47.6	0.13
MW-18	O&M	A	3/11/20	8.18	5.33	2.85	--	2,113	7.59	-55.3	0.55
MW-28		A	9/19/07	8.04	4.92	3.12	**22**	877.1	7.18	129.0	1.33
MW-28		A	11/14/07	8.04	4.73	3.31	--	715	7.88	-5.7	1.69
MW-28		A	2/6/08	8.04	4.83	3.21	--	642	7.34	22.4	0.98
MW-28		A	5/7/08	8.04	5.02	3.02	--	575	7.39	-5.8	0.98
MW-28		A	6/13/08	8.04	5.01	3.03	--	649	--	--	--
MW-28	RDIP	A	8/6/08	8.04	4.93	3.11	**8.6**	706	7.54	-173.0	2.21
MW-28	RDIP	A	9/30/08	8.04	4.94	3.10	--	602	--	--	--
MW-28	RDIP	A	10/1/08	8.04	3.80	4.24	--	667	--	--	--
MW-28	RDIP	A	11/6/08	8.04	4.90	3.14	**150**	694	7.26	-76.0	3.18
MW-28	RDIP	A	12/2/08	8.04	4.89	3.15	--	661	--	-122.3	--
MW-28	RDIP	A	2/4/09	8.04	4.79	3.25	**8.2**	1,226	7.45	-1.6	1.37
MW-28	RDIP	A	5/5/09	8.04	3.91	4.13	**3.1**	522	7.53	-29.0	2.01
MW-28	RDIP	A	5/6/09	8.04	4.68	3.36	--	551	7.52	135.7	7.54
MW-28	RDIP	A	8/4/09	8.04	4.93	3.11	**3.5**	693	7.28	-34.6	6.07
MW-28	RDIP	A	11/4/09	8.04	4.88	3.16	**2.8**	648	6.65	-24.8	0.58
MW-28	RDIP	A	11/17/09	8.04	4.89	3.15	--	675	--	--	--
MW-28	RDIP	A	11/18/09	8.04	2.86	5.18	--	723	--	--	--
MW-28	RDIP	A	2/2/10	8.04	4.75	3.29	**2,800**	6,491	6.55	-104.8	2.10
MW-28	RDIP	A	5/4/10	8.04	4.90	3.14	--	--	--	--	--
MW-28	RDIP	A	5/6/10	8.04	4.73	3.31	--	2,059	--	--	--
MW-28	RDIP	A	5/18/10	8.04	5.04	3.00	--	1,929	--	--	--
MW-28	RDIP	A	5/18/10	8.04	4.90	3.14	--	61,698	--	--	--
MW-28	RDIP	A	8/3/10	8.04	5.18	2.86	--	16,001	6.26	-112.1	0.88
MW-28	RDIP	A	2/9/11	8.04	4.99	3.05	--	12,631	7.13	-86.8	0.31
MW-28	RDIP	A	2/8/12	8.04	4.85	3.19	--	3,255	7.99	-152.9	0.35
MW-28	O&M	A	2/14/13	8.04	4.98	3.06	--	2,000	7.30	-24.3	0.36
MW-28	O&M	A	2/25/14	8.04	5.06	2.98	--	1,834	6.91	-135.1	1.34
MW-28	O&M	A	6/11/15	8.04	4.84	3.20	**20.8**	565	7.97	-178.8	0.11
MW-28	O&M	A	2/23/16	8.04	4.98	3.06	--	1,809	6.69	-134.6	4.31
MW-28	O&M	A	2/14/17	8.04	5.00	3.04	--	2,778	7.13	-78.6	0.42
MW-28	O&M	A	2/15/18	8.04	5.08	2.96	--	1,222	7.28	-23.4	0.63
MW-28	O&M	A	9/11/18	8.04	5.22	2.82	--	1,617	7.39	-117.3	--
MW-28	O&M	A	2/12/19	8.04	5.85	2.19	--	11,780	7.58	-94.2	0.21
MW-28	O&M	A	3/11/20	8.04	5.15	2.89	--	5,807	7.78	-51.7	0.72
MW-27		UB	9/20/06	8.14	5.14	3.00	--	724	7.41	45.0	1.99
MW-27		UB	2/1/07	8.14	5.03	3.11	--	641	7.46	-42.3	0.21
MW-27		UB	5/9/07	8.14	4.95	3.19	--	665	7.36	149.3	1.77
MW-27		UB	8/14/07	8.14	5.06	3.08	--	819	7.36	-42.2	0.25
MW-27		UB	11/14/07	8.14	5.10	3.04	--	785	7.31	8.2	1.23
MW-27		UB	2/6/08	8.14	4.91	3.23	--	682	7.52	-63.6	0.46
MW-27		UB	6/13/08	8.14	5.21	2.93	--	791	--	--	--
MW-27	RDIP	UB	6/13/08	8.14	5.79	2.35	--	68,578	--	--	--
MW-27	RDIP	UB	8/6/08	8.26	5.12	3.14	**6,100**	12,212	6.50	-293.0	0.38
MW-27	RDIP	UB	9/30/08	8.14	5.24	2.90	--	4,662	--	--	--
MW-27	RDIP	UB	9/30/08	8.14	5.51	2.63	--	49,858	--	--	--
MW-27	RDIP	UB	11/6/08	8.26	5.21	3.05	**27,000**	29,747	6.38	-240.0	1.87
MW-27	RDIP	UB	12/2/08	8.26	5.31	2.95	--	19,185	--	-261.1	--
MW-27	RDIP	UB	2/4/09	8.26	5.24	3.02	**8,800**	34,589	6.51	-199.3	1.06
MW-27	RDIP	UB	3/18/09	8.26	5.06	3.20	--	9,504	--	--	--
MW-27	RDIP	UB	5/6/09	8.26	4.96	3.30	--	--	--	--	--
MW-27	RDIP	UB	8/4/09	8.26	5.48	2.78	**2,900**	9,901	7.07	-133.4	1.17
MW-27	RDIP	UB	11/17/09	8.26	4.41	3.85	--	7,659	--	--	--
MW-27	RDIP	UB	11/18/09	8.26	4.27	3.99	--	9,930	--	--	--
MW-27	RDIP	UB	2/3/10	8.26	5.31	2.95	**5,200**	14,518	6.65	-118.4	2.77
MW-27	RDIP	UB	5/4/10	8.26	5.22	3.04	--	--	--	--	--
MW-27	RDIP	UB	5/6/10	8.26	5.27	2.99	--	16,531	--	--	--

Table 6G
Groundwater Elevation Data, Field Measurements and Other Analyses
Railroad Western Boundary
Former Kaiser Aerotech Facilities
San Leandro, California

Monitoring Well	Notes	GW Zone	Date	Top of Casing Elevation (ft msl)	Depth to Groundwater (ft BTOC)	Groundwater Elevation (ft msl)	TOC[Note 1] (mg/L)	Specific conductance field (µS/cm)	pH field	ORP field (mV)	Dissolved Oxygen field (mg/L)
MW-27	RDIP	UB	5/18/10	8.26	5.20	3.06	--	1,520	--	--	--
MW-27	RDIP	UB	5/18/10	8.26	4.17	4.09	--	4,948	--	--	--
MW-27	RDIP	UB	8/3/10	8.26	5.30	2.96	--	12,290	6.61	-153.6	0.12
MW-27	RDIP	UB	2/9/11	8.26	5.02	3.24	--	18,515	7.38	-117.9	0.30
MW-27	RDIP	UB	2/8/12	8.26	5.45	2.81	--	15,348	7.84	-192.3	0.79
MW-27	O&M	UB	2/14/13	8.26	5.35	2.91	--	10,918	7.50	-17.5	0.82
MW-27	O&M	UB	2/25/14	8.26	5.40	2.86	--	10,137	7.33	-162.3	1.89
MW-27	O&M	UB	6/11/15	8.26	5.27	2.99	--	8,653	7.93	-160.2	0.09
MW-27	O&M	UB	2/23/16	8.26	5.14	3.12	--	7,587	6.98	-117.8	4.14
MW-27	O&M	UB	2/14/17	8.26	4.93	3.33	--	4,999	6.92	-131	0.63
MW-27	O&M	UB	2/15/18	8.26	5.39	2.87	--	3,376	7.55	-117.3	1.12
MW-27	O&M	UB	2/12/19	8.26	5.08	3.18	--	4,842	8.04	-117.5	0.69
MW-27	O&M	UB	3/11/20	8.26	5.29	2.97	--	3,575	7.99	-52.2	0.88
LMW-9		UB	9/19/07	7.97	4.88	3.09	**5.6**	686.7	7.43	164.0	1.38
LMW-9		UB	11/14/07	7.97	4.91	3.06	--	690	7.77	-24.7	1.57
LMW-9		UB	2/6/08	7.97	4.84	3.13	--	651	7.38	-8.4	0.96
LMW-9		UB	5/7/08	7.97	5.13	2.84	--	668	7.47	-14.5	0.79
LMW-9		UB	6/13/08	7.97	4.94	3.03	--	683	--	--	--
LMW-9	RDIP	UB	8/7/08	7.97	4.87	3.10	**4.7**	703	7.74	-239.0	0.30
LMW-9	RDIP	UB	9/30/08	7.97	4.89	3.08	--	610	--	--	--
LMW-9	RDIP	UB	10/1/08	7.97	3.91	4.06	--	679	--	--	--
LMW-9	RDIP	UB	11/6/08	7.97	4.81	3.16	**5.5**	662	7.24	-25.4	1.87
LMW-9	RDIP	UB	12/2/08	7.97	4.91	3.06	--	622	--	-111.5	--
LMW-9	RDIP	UB	2/4/09	7.97	4.83	3.14	**15**	1,161	7.48	-15.3	1.27
LMW-9	RDIP	UB	3/18/09	7.97	4.85	3.12	--	496	--	--	--
LMW-9	RDIP	UB	5/5/09	7.97	3.74	4.23	**3.2**	518	7.48	-54.0	2.05
LMW-9	RDIP	UB	5/6/09	7.97	4.58	3.39	--	145	7.68	127.4	3.22
LMW-9	RDIP	UB	8/4/09	7.97	4.87	3.10	**4.3**	658	7.34	-20.2	5.62
LMW-9	RDIP	UB	11/4/09	7.97	4.82	3.15	**2.8**	635	7.53	-132.3	0.36
LMW-9	RDIP	UB	11/18/09	7.97	4.95	3.02	--	63,329	--	--	--
LMW-9	RDIP	UB	2/3/10	7.97	4.95	3.02	**6,800**	13,194	6.27	-151.3	0.62
LMW-9	RDIP	UB	5/4/10	7.97	4.91	3.06	--	1,680	6.75	-277.4	0.37
LMW-9	RDIP	UB	5/18/10	7.97	4.95	3.02	--	6,121	--	--	--
LMW-9	RDIP	UB	5/18/10	7.97	4.04	3.93	--	6,625	--	--	--
LMW-9	RDIP	UB	8/3/10	7.97	5.01	2.96	--	13,595	6.36	-143.4	0.04
LMW-9	RDIP	UB	2/9/11	7.97	5.23	2.74	--	17,019	7.14	-87.8	0.35
LMW-9	RDIP	UB	2/8/12	7.97	4.99	2.98	--	8,527	8.09	-172.3	0.45
LMW-9	O&M	UB	2/14/13	7.97	4.90	3.07	--	4,863	7.40	-9.1	0.59
LMW-9	O&M	UB	2/25/14	7.97	5.05	2.92	--	6,710	6.98	-129.1	1.93
LMW-9	O&M	UB	6/11/15	7.97	4.80	3.17	--	2,736	8.00	-144.3	0.14
LMW-9	O&M	UB	2/23/16	7.97	4.95	3.02	--	6,261	6.59	-92.9	4.65
LMW-9	O&M	UB	2/14/17	7.97	4.79	3.18	**3.6**	5,102	6.97	-95.9	0.71
LMW-9	O&M	UB	2/15/18	7.97	5.00	2.97	--	1,371	7.12	-15.3	0.58
LMW-9	O&M	UB	9/11/18	7.97	5.35	2.62	--	3,455	7.27	-120.6	--
LMW-9	O&M	UB	2/12/19	7.97	5.01	2.96	--	15,286	7.86	-133.9	0.12
LMW-9	O&M	UB	3/11/20	7.97	5.23	2.74	--	7,228	7.82	-90.5	0.63
FA-1		A	7/18/08	8.07	4.96	3.11	--	940	--	--	--
FA-1		A	7/22/08	8.07	4.93	3.14	--	1,081	--	-227.9	3.84
FA-1		A	8/6/08	8.07	5.00	3.07	--	--	--	--	--
FA-1		A	11/6/08	8.07	4.71	3.36	--	896	7.46	52.3	2.67
FA-1		A	12/2/08	8.07	4.95	3.12	--	719	--	-46.9	--
FA-1		A	2/4/09	8.07	4.83	3.24	**8.6**	1,525	7.61	18.9	0.34
FA-1		A	5/5/09	8.07	3.42	4.65	--	576	7.75	-3.7	3.56
FA-1		A	5/6/09	8.07	4.77	3.30	--	503	7.68	121.8	2.81
FA-1		A	8/5/09	8.07	4.62	3.45	**3.0**	751	7.38	132.1	1.32
FA-1		A	11/4/09	8.07	4.72	3.35	--	815	7.52	-32.5	0.51
FA-1		A	11/17/09	8.07	4.97	3.10	--	792	--	--	--

Table 6G
Groundwater Elevation Data, Field Measurements and Other Analyses
Railroad Western Boundary
Former Kaiser Aerotech Facilities
San Leandro, California

Monitoring Well	Notes	GW Zone	Date	Top of Casing Elevation (ft msl)	Depth to Groundwater (ft BTOC)	Groundwater Elevation (ft msl)	TOC[Note 1] (mg/L)	Specific conductance field (µS/cm)	pH field	ORP field (mV)	Dissolved Oxygen field (mg/L)
FA-1		A	11/18/09	8.07	4.88	3.19	--	782	--	--	--
FA-1		A	2/4/10	8.07	4.56	3.51	**3.5**	755	7.40	180.3	0.98
FA-1		A	5/4/10	8.07	5.05	3.02	--	649	7.94	35.0	1.74
FA-1		A	8/3/10	8.07	4.99	3.08	--	--	--	--	--
FA-1		A	8/4/10	8.07	--	--	--	632	7.61	-30.3	0.55
FA-1		A	2/9/11	8.07	4.87	3.20	--	695	7.93	-111.9	1.37
FA-1		A	2/8/12	8.07	4.66	3.41	--	692	7.50	66.4	0.41
FA-1		A	2/14/13	8.07	4.85	3.22	--	615	7.54	-17.6	0.68
FA-1		A	2/26/14	8.07	4.04	4.03	--	620	7.64	191.3	7.64
FA-1		A	6/11/15	8.07	4.63	3.44	--	595	7.18	49.5	--
FA-1		A	2/24/16	8.07	4.77	3.30	--	621	6.26	53.1	1.94
FA-1		A	2/16/17	8.07	2.40	5.67	--	390	7.16	53.4	0.85
FA-1		A	2/15/18	8.07	4.90	3.17	--	517	7.33	66.0	0.95
FA-1		A	2/14/19	8.07	1.78	6.29	--	619	7.24	79.8	0.82
FA-1		A	3/11/20	8.07	4.84	3.23	--	718	6.32	64.0	0.88
FUB-1		UB	7/18/08	8.13	5.02	3.11	--	827	--	--	--
FUB-1		UB	7/22/08	8.13	5.00	3.13	--	857	--	-302.7	0.75
FUB-1		UB	8/5/08	8.13	5.05	3.08	--	--	--	--	--
FUB-1		UB	11/6/08	8.13	4.73	3.40	--	830	7.21	-34.4	4.74
FUB-1		UB	12/2/08	8.13	5.03	3.10	--	752	--	-42.6	--
FUB-1		UB	2/4/09	8.13	5.10	3.03	**5.8**	1,469	7.34	-6.6	0.62
FUB-1		UB	5/5/09	8.13	3.74	4.39	--	623	7.48	-22.0	2.29
FUB-1		UB	5/6/09	8.13	4.59	3.54	--	555	7.38	93.6	2.56
FUB-1		UB	8/5/09	8.13	4.69	3.44	**3.7**	803	7.29	73.4	2.72
FUB-1		UB	11/4/09	8.13	4.91	3.22	--	786	7.37	-36.5	1.31
FUB-1		UB	11/17/09	8.13	4.59	3.54	--	793	--	--	--
FUB-1		UB	11/18/09	8.13	4.82	3.31	--	793	--	--	--
FUB-1		UB	2/4/10	8.13	4.76	3.37	**4.8**	769	7.26	170.1	3.02
FUB-1		UB	5/4/10	8.13	5.12	3.01	--	762	7.56	104.6	0.94
FUB-1		UB	8/3/10	8.13	5.02	3.11	--	--	--	--	--
FUB-1		UB	8/4/10	8.13	--	--	--	689	7.38	-45.7	0.07
FUB-1		UB	2/9/11	8.13	4.89	3.24	--	797	7.86	-119.7	1.61
FUB-1		UB	2/8/12	8.13	4.56	3.57	--	783	7.25	63.4	0.73
FUB-1		UB	2/14/13	8.13	4.94	3.19	--	823	7.51	6.8	0.96
FUB-1		UB	2/26/14	8.13	4.95	3.18	--	652	7.43	209.4	4.82
FUB-1		UB	6/11/15	8.13	4.72	3.41	--	594	7.10	45.2	--
FUB-1		UB	2/24/16	8.13	4.90	3.23	--	743	6.03	54.2	1.91
FUB-1		UB	2/16/17	8.13	2.90	5.23	--	620	7.12	64.8	0.89
FUB-1		UB	2/15/18	8.13	5.00	3.13	--	562	7.30	75.2	1.03
FUB-1		UB	2/14/19	8.13	2.10	6.03	--	717	7.11	97.5	0.89
FUB-1		UB	3/11/20	8.13	5.08	3.05	--	730	6.50	68.5	1.68
F-2		A/B	2/4/09	8.69	5.14	3.55	--	1,589	7.55	-32.8	0.50
F-2		A/B	5/5/09	8.69	4.31	4.38	--	597	7.49	-34.4	2.08
F-2		A/B	5/6/09	8.69	4.72	3.97	--	523	7.54	89.7	2.31
F-2		A/B	8/5/09	8.32	4.97	3.35	--	716	7.29	-43.8	3.94
F-2		A/B	11/4/09	8.32	4.99	3.33	--	653	7.30	-126.9	0.46
F-2		A/B	2/1/10	8.32	4.57	3.75	--	680	7.40	-2.7	2.60
F-2		A/B	5/4/10	8.32	4.91	3.41	--	--	--	--	--
F-2		A/B	8/3/10	8.32	5.20	3.12	--	--	--	--	--
F-2		A/B	8/4/10	8.32	--	--	--	742	7.38	-140.3	0.99
F-2		A/B	2/9/11	8.32	3.89	4.43	--	694	7.80	-112.3	1.29
F-2		A/B	2/8/12	8.32	5.02	3.30	--	682	7.26	-18.4	0.07
F-2		A/B	2/14/13	8.32	5.05	3.27	--	627	7.63	-21.2	0.41
F-2		A/B	2/26/14	8.32	5.20	3.12	--	579	7.20	205.1	--
F-2		A/B	6/11/15	8.32	5.25	3.07	--	506	6.48	119.0	--
F-2		A/B	2/24/16	8.32	5.07	3.25	--	673	6.16	62.2	1.59
F-2		A/B	2/16/17	8.32	4.80	3.52	--	602	7.01	79.3	0.85

Table 6G
Groundwater Elevation Data, Field Measurements and Other Analyses
Railroad Western Boundary
Former Kaiser Aerotech Facilities
San Leandro, California

Monitoring Well	Notes	GW Zone	Date	Top of Casing Elevation	Depth to Groundwater	Groundwater Elevation	TOC[Note 1]	Specific conductance field	pH field	ORP field	Dissolved Oxygen field
				(ft msl)	(ft BTOC)	(ft msl)	(mg/L)	(µS/cm)		(mV)	(mg/L)
F-2		A/B	2/15/18	8.32	5.19	3.13	--	598	6.86	91.5	0.97
F-2		A/B	2/14/19	8.32	4.20	4.12	--	665	6.49	103.4	0.64
F-2		A/B	3/11/20	8.32	5.17	3.15	--	635	6.42	61.1	1.62

Table 6H
Groundwater Elevation Data, Field Measurements and Other Analyses
Monitored Natural Attenuation and Destroyed/Not Used Wells
Former Kaiser Aerotech Facilities
San Leandro, California

Monitoring Well	Notes	GW Zone	Date	Top of Casing Elevation (ft msl)	Depth to Groundwater (ft BTOC)	Groundwater Elevation (ft msl)	TOC[Note 1] (mg/L)	Specific conductance field (µS/cm)	pH field	ORP field (mV)	Dissolved Oxygen field (mg/L)
MW-3		A	11/14/96	9.20	5.80	3.40	--	--	--	--	--
MW-3		A	3/20/97	9.20	5.65	3.55	--	--	--	--	--
MW-3		A	6/25/97	9.20	5.82	3.38	--	--	--	--	--
MW-3		A	9/22/97	9.20	5.84	3.36	--	--	--	--	--
MW-3		A	12/18/97	9.20	5.23	3.97	--	--	--	--	--
MW-3		A	3/23/98	9.20	5.51	3.69	--	--	--	--	--
MW-3		A	6/17/98	9.20	5.68	3.52	--	--	--	--	--
MW-3		A	9/22/98	9.20	5.85	3.35	--	--	--	--	--
MW-3		A	9/24/98	9.20	--	--	--	--	--	132.2	1.58
MW-3		A	12/9/98	9.20	5.56	3.64	--	--	--	195.0	4.35
MW-3		A	3/22/99	9.20	5.43	3.77	--	--	--	--	--
MW-3		A	6/21/99	9.20	5.80	3.40	--	--	--	--	--
MW-3		A	9/20/99	9.20	5.87	3.33	--	--	--	--	--
MW-3		A	12/13/99	9.20	5.71	3.49	--	--	--	--	--
MW-3		A	3/13/00	9.20	5.31	3.89	--	--	--	--	--
MW-3		A	9/18/00	9.20	5.80	3.40	--	--	--	--	--
MW-3		A	3/12/01	9.20	5.47	3.73	--	828	--	--	--
MW-3		A	9/24/01	9.20	5.84	3.36	--	--	--	--	--
MW-3		A	3/26/02	9.20	5.37	3.83	--	--	--	--	--
MW-3		A	10/3/02	9.20	5.84	3.36	--	1,080	--	--	--
MW-3		A	3/26/03	9.20	5.63	3.57	--	952	--	-5.0	1.70
MW-3		A	3/9/04	9.20	5.40	3.80	--	828	--	--	--
MW-3		A	3/10/04	9.20	--	--	--	--	--	90.5	0.54
MW-3		A	3/8/05	9.20	5.35	3.85	--	746	--	-12.5	2.16
MW-3		A	3/14/06	9.20	4.86	4.34	--	885	--	119.8	1.94
MW-3		A	2/2/07	9.20	5.59	3.61	--	2,012	9.91	-108.2	2.80
MW-3		A	2/2/07	9.20	6.05	3.15	--	--	--	--	--
MW-3		A	8/15/07	9.20	5.86	3.34	--	--	--	--	--
MW-3		A	11/14/07	9.20	5.65	3.55	--	--	--	--	--
MW-3		A	2/6/08	9.20	5.30	3.90	--	969	7.37	-72.3	1.28
MW-3		A	2/5/09	9.20	5.71	3.49	--	1,848	7.02	-3.9	0.51
MW-3		A	5/6/09	9.20	5.65	3.55	--	--	--	--	--
MW-3		A	8/4/09	9.20	5.75	3.45	--	--	--	--	--
MW-3		A	11/4/09	9.20	5.72	3.48	--	--	--	--	--
MW-3		A	2/3/10	9.20	5.41	3.79	--	925	7.06	71.4	0.90
MW-3		A	8/3/10	9.20	5.85	3.35	--	--	--	--	--
MW-3		A	2/8/11	9.20	5.62	3.58	--	877	6.99	-47.5	0.60
MW-3	O&M	A	2/14/13	9.20	5.46	3.74	--	829	6.97	-156.6	1.25
MW-3	O&M	A	6/10/15	9.20	5.80	3.40	--	762	6.70	112.4	--
MW-3	O&M	A	2/15/17	9.20	5.45	3.75	--	687	7.75	122.1	0.86
MW-3	O&M	A	2/11/19	9.20	5.40	3.80	--	870	6.91	179.5	0.30
MW-4		A	11/14/96	9.13	5.60	3.53	--	--	--	--	--
MW-4		A	3/20/97	9.13	5.38	3.75	--	--	--	--	--
MW-4		A	6/25/97	9.13	5.62	3.51	--	--	--	--	--
MW-4		A	9/23/97	9.13	5.70	3.43	--	--	--	--	--
MW-4		A	12/18/97	9.13	4.98	4.15	--	--	--	--	--
MW-4		A	3/23/98	9.13	5.22	3.91	--	--	--	--	--
MW-4		A	6/17/98	9.13	5.45	3.68	--	--	--	--	--
MW-4		A	9/22/98	9.13	5.71	3.42	--	--	--	--	--
MW-4		A	9/24/98	9.13	--	--	--	--	--	100.1	2.2
MW-4		A	12/9/98	9.13	5.22	3.91	--	--	--	71.0	5.78
MW-4		A	3/22/99	9.13	5.05	4.08	--	--	--	--	--
MW-4		A	6/21/99	9.13	5.63	3.50	--	--	--	--	--
MW-4		A	9/20/99	9.13	5.73	3.40	--	--	--	--	--
MW-4		A	12/13/99	9.13	5.43	3.70	--	--	--	--	--
MW-4		A	3/13/00	9.13	4.86	4.27	--	--	--	--	--
MW-4		A	9/18/00	9.13	5.67	3.46	--	--	--	--	--
MW-4		A	3/12/01	9.13	5.21	3.92	--	819	--	--	--

Table 6H
Groundwater Elevation Data, Field Measurements and Other Analyses
Monitored Natural Attenuation and Destroyed/Not Used Wells
Former Kaiser Aerotech Facilities
San Leandro, California

Monitoring Well	Notes	GW Zone	Date	Top of Casing Elevation (ft msl)	Depth to Groundwater (ft BTOC)	Groundwater Elevation (ft msl)	TOC[Note 1] (mg/L)	Specific conductance field (µS/cm)	pH field	ORP field (mV)	Dissolved Oxygen field (mg/L)
MW-4		A	9/24/01	9.13	5.75	3.38	--	--	--	--	--
MW-4		A	3/26/02	9.13	4.95	4.18	--	--	--	--	--
MW-4		A	10/3/02	9.13	5.57	3.56	--	930	--	--	--
MW-4		A	3/26/03	9.13	5.36	3.77	--	835	--	-74.5	1.04
MW-4		A	9/23/03	9.13	5.76	3.37	--	859	--	-279.2	0.26
MW-4		A	12/16/03	9.13	4.91	4.22	--	--	--	--	--
MW-4		A	3/9/04	9.13	5.18	3.95	--	--	--	--	--
MW-4		A	3/10/04	9.13	--	--	--	683	--	-55.7	1.75
MW-4		A	5/20/04	9.13	5.75	3.38	--	--	--	--	--
MW-4		A	9/29/04	9.13	5.76	3.37	--	--	--	--	--
MW-4		A	12/8/04	9.13	4.16	4.97	--	--	--	--	--
MW-4		A	3/8/05	9.13	5.16	3.97	--	693	--	-42.1	2.51
MW-4		A	6/14/05	9.13	5.50	3.63	--	--	--	--	--
MW-4		A	9/14/05	9.13	5.77	3.36	--	--	--	--	--
MW-4		A	12/14/05	9.13	5.70	3.43	--	--	--	--	--
MW-4		A	3/15/06	9.13	4.75	4.38	--	765	--	-107.0	4.59
MW-4		A	6/13/06	9.13	5.65	3.48	--	--	--	--	--
MW-4		A	9/20/06	9.13	5.80	3.33	--	--	--	--	--
MW-4		A	2/1/07	9.13	5.59	3.54	--	662	7.28	-31.0	0.47
MW-4		A	8/15/07	9.13	5.76	3.37	--	--	--	--	--
MW-4		A	11/14/07	9.13	5.54	3.59	--	--	--	--	--
MW-4		A	2/6/08	9.13	5.14	3.99	--	799	7.39	-55.8	1.97
MW-4		A	5/7/08	9.13	6.00	3.13	--	--	--	--	--
MW-4		A	8/5/08	9.13	4.92	4.21	--	--	--	--	--
MW-4		A	11/6/08	9.13	5.42	3.71	--	--	--	--	--
MW-4		A	2/4/09	9.13	5.60	3.53	--	1,490	7.31	-18.7	0.56
MW-4		A	3/6/09	9.13	--	--	--	920	--	-4.5	3.47
MW-4		A	5/6/09	9.13	5.36	3.77	--	--	--	--	--
MW-4		A	8/4/09	9.13	5.61	3.52	--	--	--	--	--
MW-4		A	11/4/09	9.13	5.63	3.50	--	--	--	--	--
MW-4		A	2/2/10	9.13	5.31	3.82	--	778	7.26	187.1	2.67
MW-4		A	5/4/10	9.13	5.48	3.65	--	--	--	--	--
MW-4		A	8/3/10	9.13	5.71	3.42	--	--	--	--	--
MW-4		A	2/8/11	9.13	5.51	3.62	--	716	6.74	-103.6	1.35
MW-4	O&M	A	2/14/13	9.13	5.67	3.46	--	673	7.22	-169.0	2.86
MW-4	O&M	A	6/11/15	9.13	5.51	3.62	--	660	6.96	63.2	--
MW-4	O&M	A	2/15/17	9.13	4.97	4.16	--	--	--	--	--
MW-4	Sup.	A	2/14/18	9.13	5.65	3.48	--	634	7.15	62.6	0.98
MW-4	O&M	A	2/11/19	9.13	5.04	4.09	--	732	7.24	136.4	0.29
MW-5		A	11/14/96	9.90	5.63	4.27	--	--	--	--	--
MW-5		A	3/20/97	9.90	3.73	6.17	--	--	--	--	--
MW-5		A	6/25/97	9.90	4.88	5.02	--	--	--	--	--
MW-5		A	9/22/97	9.90	5.08	4.82	--	--	--	--	--
MW-5		A	12/18/97	9.90	3.35	6.55	--	--	--	--	--
MW-5		A	3/23/98	9.90	3.82	6.08	--	--	--	--	--
MW-5		A	6/17/98	9.90	3.94	5.96	--	--	--	--	--
MW-5		A	9/22/98	9.90	5.04	4.86	--	--	--	--	--
MW-5		A	9/24/03	9.90	--	--	--	--	--	195.1	1.5
MW-5		A	12/9/98	9.90	3.99	5.91	--	--	--	--	--
MW-5		A	12/10/98	9.90	--	--	--	--	--	163.0	3.81
MW-5		A	3/22/99	9.90	3.71	6.19	--	--	--	--	--
MW-5		A	6/21/99	9.90	5.01	4.89	--	--	--	--	--
MW-5		A	9/20/99	9.90	5.23	4.67	--	--	--	--	--
MW-5		A	12/13/99	9.90	4.54	5.36	--	--	--	--	--
MW-5		A	3/13/00	9.90	3.02	6.88	--	--	--	--	--
MW-5		A	9/18/00	9.90	5.10	4.80	--	--	--	--	--

Table 6H
Groundwater Elevation Data, Field Measurements and Other Analyses
Monitored Natural Attenuation and Destroyed/Not Used Wells
Former Kaiser Aerotech Facilities
San Leandro, California

Monitoring Well	Notes	GW Zone	Date	Top of Casing Elevation (ft msl)	Depth to Groundwater (ft BTOC)	Groundwater Elevation (ft msl)	TOC[Note 1] (mg/L)	Specific conductance field (µS/cm)	pH field	ORP field (mV)	Dissolved Oxygen field (mg/L)
MW-5		A	3/12/01	9.90	3.78	6.12	--	687	--	--	--
MW-5		A	9/24/01	9.90	5.25	4.65	--	--	--	--	--
MW-5		A	3/26/02	9.90	3.72	6.18	--	--	--	--	--
MW-5		A	10/3/02	9.90	5.21	4.69	--	753	--	--	--
MW-5		A	3/26/03	9.90	4.27	5.63	--	817	--	-6.9	1.28
MW-5		A	9/23/03	9.90	5.18	4.72	--	715	--	18.9	7.20
MW-5		A	12/16/03	9.90	4.36	5.54	--	--	--	--	--
MW-5		A	3/9/04	9.90	3.93	5.97	--	662	--	194.2	2.58
MW-5		A	5/20/04	9.90	4.91	4.99	--	--	--	--	--
MW-5		A	9/29/04	9.90	5.09	4.81	--	--	--	--	--
MW-5		A	12/8/04	9.90	4.21	5.69	--	--	--	--	--
MW-5		A	3/8/05	9.90	3.24	6.66	--	667	--	-30.4	2.72
MW-5		A	6/14/05	9.90	4.51	5.39	--	--	--	--	--
MW-5		A	9/14/05	9.90	5.10	4.80	--	--	--	--	--
MW-5		A	12/14/05	9.90	4.66	5.24	--	--	--	--	--
MW-5		A	3/15/06	9.90	3.23	6.67	--	920	--	-75.6	6.47
MW-5		A	6/13/06	9.90	4.69	5.21	--	--	--	--	--
MW-5		A	9/20/06	9.90	5.00	4.90	--	--	--	--	--
MW-5		A	2/1/07	9.90	4.52	5.38	--	689	7.00	19.5	0.75
MW-5		A	5/10/07	9.90	4.59	5.31	--	--	--	--	--
MW-5		A	8/15/07	9.90	5.02	4.88	--	--	--	--	--
MW-5		A	11/13/07	9.90	5.78	4.12	--	--	--	--	--
MW-5		A	2/7/08	9.90	3.67	6.23	--	902	7.25	-10.1	3.21
MW-5		A	8/5/08	9.90	5.03	4.87	--	--	--	--	--
MW-5		A	11/6/08	9.90	4.48	5.42	--	--	--	--	--
MW-5		A	2/4/09	9.90	4.72	5.18	--	1,661	7.06	3.8	2.84
MW-5		A	3/6/09	9.90	--	--	--	951	--	102.5	4.25
MW-5		A	5/6/09	9.90	4.65	5.25	--	--	--	--	--
MW-5		A	8/4/09	9.90	5.11	4.79	--	--	--	--	--
MW-5		A	11/4/09	9.90	4.61	5.29	--	--	--	--	--
MW-5		A	2/2/10	9.90	3.49	6.41	--	909	6.94	86.0	1.01
MW-5		A	8/3/10	9.90	4.92	4.98	--	--	--	--	--
MW-5		A	2/9/11	9.90	4.55	5.35	--	946	8.21	-82	0.24
MW-5	O&M	A	2/13/13	9.90	4.75	5.15	--	791	6.74	108.5	0.64
MW-5	O&M	A	6/11/15	9.90	5.04	4.86	--	831	6.09	145.9	--
MW-5	O&M	A	2/14/17	9.90	3.80	6.10	--	872	7.22	4.7	0.97
MW-5	O&M	A	2/11/19	9.90	3.88	6.02	--	923	6.94	156.2	0.23
MW-6		A	11/14/96	9.40	5.26	4.14	--	--	--	--	--
MW-6		A	3/20/97	9.40	4.76	4.64	--	--	--	--	--
MW-6		A	6/25/97	9.40	5.22	4.18	--	--	--	--	--
MW-6		A	9/23/97	9.40	5.33	4.07	--	--	--	--	--
MW-6		A	12/18/97	9.40	3.76	5.64	--	--	--	--	--
MW-6		A	3/23/98	9.40	4.30	5.10	--	--	--	--	--
MW-6		A	6/17/98	9.40	4.82	4.58	--	--	--	--	--
MW-6		A	9/22/98	9.40	5.38	4.02	--	--	--	--	--
MW-6		A	9/24/98	9.40	--	--	--	--	--	74.2	2.26
MW-6		A	12/9/98	9.40	4.10	5.30	--	--	--	--	--
MW-6		A	12/10/98	9.40	--	--	--	--	--	65.0	3.49
MW-6		A	3/22/99	9.40	3.88	5.52	--	--	--	--	--
MW-6		A	6/21/99	9.40	5.25	4.15	--	--	--	--	--
MW-6		A	9/20/99	9.40	5.47	3.93	--	--	--	--	--
MW-6		A	12/13/99	9.40	4.67	4.73	--	--	--	--	--
MW-6		A	3/13/00	9.40	3.32	6.08	--	--	--	--	--
MW-6		A	9/18/00	9.40	5.32	4.08	--	--	--	--	--
MW-6		A	3/12/01	9.40	4.24	5.16	--	390	--	--	--
MW-6		A	9/24/01	9.40	--	--	--	--	--	--	--
MW-6		A	3/26/02	9.40	3.51	5.89	--	--	--	4.5	1.28
MW-6		A	10/3/02	9.40	5.51	3.89	--	554	--	--	--

Table 6H
Groundwater Elevation Data, Field Measurements and Other Analyses
Monitored Natural Attenuation and Destroyed/Not Used Wells
Former Kaiser Aerotech Facilities
San Leandro, California

Monitoring Well	Notes	GW Zone	Date	Top of Casing Elevation (ft msl)	Depth to Groundwater (ft BTOC)	Groundwater Elevation (ft msl)	TOC[Note 1] (mg/L)	Specific conductance field (µS/cm)	pH field	ORP field (mV)	Dissolved Oxygen field (mg/L)
MW-6		A	3/26/03	9.40	4.57	4.83	--	590	--	--	--
MW-6		A	3/9/04	9.40	4.81	4.59	--	--	--	--	--
MW-6		A	5/18/06	9.40	5.03	4.37	--	793	6.25	42.2	21.75
MW-6		A	9/20/06	9.40	5.39	4.01	--	--	--	--	--
MW-6		A	8/15/07	9.40	5.39	4.01	--	805	7.49	-4.1	1.79
MW-6		A	2/8/08	9.40	4.48	4.92	--	853	7.38	19.4	1.54
MW-6		A	8/5/08	9.40	4.80	4.60	--	--	--	--	--
MW-6		A	2/2/09	9.40	5.15	4.25	--	954	7.13	29.8	1.49
MW-6		A	8/25/09	9.40	5.47	3.93	--	--	--	--	--
MW-6		A	11/4/09	9.40	5.09	4.31	--	--	--	--	--
MW-6		A	2/2/10	9.40	4.54	4.86	--	860	7.05	177.8	1.06
MW-6		A	8/3/10	9.40	5.19	4.21	--	--	--	--	--
MW-6		A	2/9/11	9.40	5.29	4.11	--	896	8.30	-73	0.21
MW-6	O&M	A	3/4/13	9.40	5.26	4.14	--	815	7.53	212.4	1.05
MW-6	O&M	A	6/10/15	9.40	5.10	4.30	--	785	6.21	157.7	--
MW-6	O&M	A	2/15/17	9.40	5.65	3.75	--	396	7.93	93.4	0.31
MW-6	O&M	A	2/11/19	9.40	4.40	5.00	--	986	7.10	167.8	0.24
MW-8A		A	3/20/97	12.97	7.32	5.65	--	--	--	--	--
MW-8A		A	6/25/97	12.97	7.74	5.23	--	--	--	--	--
MW-8A		A	9/23/97	12.97	7.89	5.08	--	--	--	--	--
MW-8A		A	12/18/97	12.97	6.34	6.63	--	--	--	--	--
MW-8A		A	3/23/98	12.97	6.78	6.19	--	--	--	--	--
MW-8A		A	6/17/98	12.97	7.37	5.60	--	--	--	--	--
MW-8A		A	9/22/98	12.97	7.94	5.03	--	--	--	154.5	3.60
MW-8A		A	12/9/98	12.97	7.18	5.79	--	--	--	241.0	13.66
MW-8A		A	3/22/99	12.97	6.57	6.40	--	--	--	--	--
MW-8A		A	6/28/99	12.97	7.92	5.05	--	--	--	--	--
MW-8A		A	9/20/99	12.97	8.15	4.82	--	--	--	--	--
MW-8A		A	12/13/99	12.97	7.71	5.26	--	--	--	--	--
MW-8A		A	3/13/00	12.97	6.59	6.38	--	--	--	--	--
MW-8A		A	9/18/00	12.97	7.93	5.04	--	--	--	--	--
MW-8A		A	3/12/01	12.97	6.81	6.16	--	908	--	--	--
MW-8A		A	9/24/01	12.97	8.06	4.91	--	--	--	--	--
MW-8A		A	3/26/02	12.97	6.66	6.31	--	--	--	--	--
MW-8A		A	10/3/02	12.97	8.08	4.89	--	1,240	--	--	--
MW-8A		A	3/26/03	12.97	7.32	5.65	--	1,020	--	80.7	2.11
MW-8A		A	9/23/03	12.97	7.99	4.98	--	--	--	--	--
MW-8A		A	9/24/03	12.97	--	--	--	1,058	--	427.3	1.37
MW-8A		A	12/16/03	12.97	7.15	5.82	--	--	--	--	--
MW-8A		A	3/9/04	13.98	7.75	6.23	--	--	--	--	--
MW-8A		A	3/10/04	13.98	--	--	--	990	--	-16.9	1.63
MW-8A		A	5/20/04	13.98	8.71	5.27	--	--	--	--	--
MW-8A		A	9/29/04	13.98	8.90	5.08	--	--	--	--	--
MW-8A		A	12/8/04	13.98	7.93	6.05	--	--	--	--	--
MW-8A		A	3/8/05	13.98	7.54	6.44	--	--	--	--	--
MW-8A		A	3/9/05	13.98	--	--	--	958	--	18.4	1.66
MW-8A		A	6/14/05	13.97	8.35	5.62	--	--	--	--	--
MW-8A		A	9/14/05	13.97	8.90	5.07	--	--	--	--	--
MW-8A		A	12/14/05	13.97	8.63	5.34	--	--	--	--	--
MW-8A		A	3/15/06	13.97	7.48	6.49	--	1,389	--	-83.3	9.40
MW-8A		A	6/13/06	13.97	8.09	5.88	--	--	--	--	--
MW-8A		A	9/20/06	13.97	8.68	5.29	--	--	--	--	--
MW-8A		A	1/30/07	13.97	8.43	5.54	--	--	--	--	--
MW-8A		A	2/1/07	13.97	8.45	5.52	--	527	6.48	51.4	0.46
MW-8A		A	8/15/07	13.97	8.83	5.14	--	--	--	--	--
MW-8A		A	11/13/07	13.97	8.50	5.47	--	--	--	--	--
MW-8A		A	2/5/08	13.97	7.88	6.09	--	1,294	6.33	-37.1	0.87
MW-8A		A	2/3/09	13.97	8.43	5.54	--	--	--	--	--

Table 6H
Groundwater Elevation Data, Field Measurements and Other Analyses
Monitored Natural Attenuation and Destroyed/Not Used Wells
Former Kaiser Aerotech Facilities
San Leandro, California

Monitoring Well	Notes	GW Zone	Date	Top of Casing Elevation (ft msl)	Depth to Groundwater (ft BTOC)	Groundwater Elevation (ft msl)	TOC[Note 1] (mg/L)	Specific conductance field (µS/cm)	pH field	ORP field (mV)	Dissolved Oxygen field (mg/L)
MW-8A		A	2/1/10	13.97	7.63	6.34	--	1,279	6.57	75.6	1.50
MW-8A		A	2/8/11	13.97	8.46	5.51	--	1,175	6.52	-83	0.46
MW-8A	O&M	A	2/14/13	13.97	8.66	5.31	--	947	6.45	-149.2	1.69
MW-8A	O&M	A	6/9/15	13.97	9.72	4.25	--	--	--	--	--
MW-8A	O&M	A	6/10/15	13.97	9.70	4.27	--	948	6.01	124	--
MW-8A	O&M	A	2/14/17	13.97	7.05	6.92	--	500	5.78	143.1	0.13
MW-8A	O&M	A	2/11/19	13.97	7.80	6.17	--	1,032	6.62	140.6	0.34
MW-9		A	11/14/96	11.94	7.37	4.57	--	--	--	--	--
MW-9		A	3/20/97	11.94	6.95	4.99	--	--	--	--	--
MW-9		A	6/25/97	11.94	7.34	4.60	--	--	--	--	--
MW-9		A	9/23/97	11.94	7.62	4.32	--	--	--	--	--
MW-9		A	12/18/97	11.94	7.00	4.94	--	--	--	--	--
MW-9		A	3/23/98	11.94	6.69	5.25	--	--	--	--	--
MW-9		A	6/17/98	11.94	7.00	4.94	--	--	--	--	--
MW-9		A	9/22/98	11.94	7.33	4.61	--	--	--	158.5	1.44
MW-9		A	12/9/98	12.04	6.80	5.24	--	--	--	--	--
MW-9		A	3/22/99	12.04	6.59	5.45	--	--	--	--	--
MW-9		A	6/29/99	12.04	7.15	4.89	--	--	--	--	--
MW-9		A	9/20/99	12.04	7.55	4.49	--	--	--	--	--
MW-9		A	12/13/99	12.04	7.24	4.80	--	--	--	--	--
MW-9		A	3/13/00	12.04	6.21	5.83	--	--	--	--	--
MW-9		A	9/18/00	12.04	7.33	4.71	--	--	--	--	--
MW-9		A	3/12/01	12.04	6.59	5.45	--	1,062	--	--	--
MW-9		A	9/24/01	12.04	7.52	4.52	--	--	--	--	--
MW-9		A	3/26/02	12.04	6.43	5.61	--	--	--	--	--
MW-9		A	10/3/02	12.04	7.60	4.44	--	1,670	--	--	--
MW-9		A	3/26/03	12.04	7.01	5.03	--	1,289	--	83.6	1.94
MW-9		A	6/26/03	12.04	7.72	4.32	--	--	--	--	--
MW-9		A	9/23/03	12.04	7.71	4.33	--	--	--	--	--
MW-9		A	12/16/03	12.04	6.92	5.12	--	--	--	--	--
MW-9		A	3/9/04	13.02	7.68	5.34	--	1,183	--	40.4	2.25
MW-9		A	5/20/04	13.02	5.15	7.87	--	--	--	--	--
MW-9		A	9/29/04	13.02	8.25	4.77	--	--	--	--	--
MW-9		A	12/8/04	13.02	7.57	5.45	--	--	--	--	--
MW-9		A	3/8/05	13.02	7.20	5.82	--	--	--	--	--
MW-9		A	3/10/05	13.02	--	--	--	1,125	--	-19.8	2.68
MW-9		A	6/14/05	13.02	7.82	5.20	--	--	--	--	--
MW-9		A	9/14/05	13.02	6.20	6.82	--	--	--	--	--
MW-9		A	12/14/05	13.02	8.10	4.92	--	--	--	--	--
MW-9		A	3/15/06	13.02	7.55	5.47	--	1,277	--	95.6	3.17
MW-9		A	6/13/06	13.02	7.94	5.08	--	--	--	--	--
MW-9		A	9/20/06	13.02	8.11	4.91	--	--	--	--	--
MW-9		A	1/30/07	13.02	7.89	5.13	--	--	--	--	--
MW-9		A	2/1/07	13.02	--	--	--	1,319	6.61	-9.8	0.64
MW-9		A	8/14/07	13.02	8.21	4.81	--	--	--	--	--
MW-9		A	11/14/07	13.02	8.18	4.84	--	--	--	--	--
MW-9		A	2/5/08	13.02	7.15	5.87	--	1,489	6.47	20.4	1.82
MW-9		A	5/6/08	13.02	7.90	5.12	--	--	--	--	--
MW-9		A	8/5/08	13.02	8.30	4.72	--	--	--	--	--
MW-9		A	11/6/08	13.02	8.40	4.62	--	--	--	--	--
MW-9		A	2/2/09	13.02	8.11	4.91	--	1,748	6.67	21.3	1.72
MW-9		A	5/6/09	13.02	7.81	5.21	--	--	--	--	--
MW-9		A	8/4/09	13.02	8.43	4.59	--	--	--	--	--
MW-9		A	8/24/09	13.02	8.40	4.62	--	--	--	--	--
MW-9		A	11/4/09	13.02	8.38	4.64	--	--	--	--	--
MW-9		A	2/1/10	13.02	7.33	5.69	--	1,510	6.61	12.6	1.78
MW-9		A	5/4/10	13.02	7.84	5.18	--	--	--	--	--
MW-9		A	8/3/10	13.02	8.27	4.75	--	--	--	--	--

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Monitored Natural Attenuation and Destroyed/Not Used Wells
Former Kaiser Aerotech Facilities
San Leandro, California

Monitoring Well	Notes	GW Zone	Date	Top of Casing Elevation (ft msl)	Depth to Groundwater (ft BTOC)	Groundwater Elevation (ft msl)	TOC[Note 1] (mg/L)	Specific conductance field (µS/cm)	pH field	ORP field (mV)	Dissolved Oxygen field (mg/L)
MW-9		A	2/8/11	13.02	7.90	5.12	--	1,545	6.47	-80	1.61
MW-9		A	2/7/12	13.02	8.14	4.88	--	--	--	--	--
MW-9	O&M	A	2/12/13	13.02	8.15	4.87	--	1,332	6.40	24.7	1.00
MW-9	O&M	A	2/25/14	13.02	8.17	4.85	--	--	--	--	--
MW-9	O&M	A	6/9/15	13.02	8.38	4.64	--	1,264	5.95	166.9	--
MW-9	Sup.	A	2/23/16	13.02	8.20	4.82	--	1,322	6.74	-15.5	0.81
MW-9	Sup.	A	9/22/16	13.02	8.62	4.40	--	1,376	6.78	127.0	1.78
MW-9	O&M	A	2/14/17	13.02	7.31	5.71	--	1,325	6.95	-16.8	0.81
MW-9	Sup.	A	9/20/17	13.02	8.40	4.62	--	1,364	6.22	1.0	0.56
MW-9	Sup.	A	2/13/18	13.02	8.00	5.02	--	1,318	6.54	-8.3	1.72
MW-9	Sup.	A	9/26/18	13.02	8.60	4.42	--	1,140	6.81	-27.9	1.76
MW-9	O&M	A	2/11/19	13.02	7.41	5.61	--	1,317	6.59	-2.9	0.28
MW-9	Sup.	A	9/24/19	13.02	8.27	4.75	--	1,263	6.17	-5.0	0.42
MW-9	O&M	A	3/10/20	13.02	7.78	5.24	--	1,008	6.74	24.3	1.48
MW-12		A	3/20/97	10.89	5.55	5.34	--	--	--	--	--
MW-12		A	6/25/97	10.89	6.12	4.77	--	--	--	--	--
MW-12		A	9/23/97	10.89	6.21	4.68	--	--	--	--	--
MW-12		A	12/18/97	10.89	5.58	5.31	--	--	--	--	--
MW-12		A	3/23/98	10.89	4.62	6.27	--	--	--	--	--
MW-12		A	6/17/98	10.89	5.39	5.50	--	--	--	--	--
MW-12		A	9/22/98	10.89	6.21	4.68	--	--	--	127.4	2.01
MW-12		A	12/9/98	10.89	5.04	5.85	--	--	--	256.0	12.65
MW-12		A	3/22/99	10.89	4.68	6.21	--	--	--	--	--
MW-12		A	6/21/99	10.89	6.13	4.76	--	--	--	--	--
MW-12		A	9/20/99	10.89	6.42	4.47	--	--	--	--	--
MW-12		A	12/13/99	10.89	5.84	5.05	--	--	--	--	--
MW-12		A	3/13/00	10.89	4.40	6.49	--	--	--	--	--
MW-12		A	9/18/00	10.89	6.18	4.71	--	--	--	--	--
MW-12		A	3/12/01	10.89	5.24	5.65	--	989	--	--	--
MW-12		A	9/24/01	10.89	6.38	4.51	--	--	--	--	--
MW-12		A	3/26/02	10.89	5.24	5.65	--	--	--	81.9	1.85
MW-12		A	10/3/02	10.89	6.62	4.27	--	1,100	--	--	--
MW-12		A	3/26/03	10.89	5.69	5.20	--	1,008	--	--	--
MW-12		A	12/16/03	10.89	5.10	5.79	--	--	--	--	--
MW-12		A	3/9/04	11.63	5.68	5.95	--	--	--	--	--
MW-12		A	3/10/04	11.63	--	--	--	621	--	-2.0	2.81
MW-12		A	5/20/04	11.63	6.65	4.98	--	--	--	--	--
MW-12		A	9/29/04	11.63	7.05	4.58	--	--	--	--	--
MW-12		A	12/8/04	11.63	6.35	5.28	--	--	--	--	--
MW-12		A	3/8/05	11.63	5.31	6.32	--	--	--	--	--
MW-12		A	3/9/05	11.63	--	--	--	880	--	24.6	1.50
MW-12		A	6/14/05	11.63	5.79	5.84	--	--	--	--	--
MW-12		A	9/14/05	11.63	7.00	4.63	--	--	--	--	--
MW-12		A	12/14/05	11.63	5.32	6.31	--	--	--	--	--
MW-12		A	3/15/06	11.63	5.28	6.35	--	1,171	--	-72.7	5.11
MW-12		A	6/13/06	11.63	5.61	6.02	--	--	--	--	--
MW-12		A	9/20/06	11.63	6.00	5.63	--	--	--	--	--
MW-12		A	1/30/07	11.63	5.65	5.98	--	--	--	--	--
MW-12		A	2/1/07	11.63	--	--	--	922	6.71	65.7	2.58
MW-12		A	5/8/07	11.63	6.38	5.25	--	--	--	--	--
MW-12		A	8/14/07	11.63	6.76	4.87	--	--	--	--	--
MW-12		A	11/14/07	11.63	6.56	5.07	--	--	--	--	--
MW-12		A	2/5/08	11.63	6.09	5.54	--	1,009	6.89	-1.9	0.82
MW-12		A	5/6/08	11.63	7.07	4.56	--	--	--	--	--
MW-12		A	8/6/08	11.63	7.30	4.33	--	--	--	--	--
MW-12		A	11/6/08	11.63	7.08	4.55	--	--	--	--	--
MW-12		A	2/4/09	11.63	6.48	5.15	--	854	6.75	51.9	2.11
MW-12		A	5/6/09	11.63	7.06	4.57	--	--	--	--	--

Table 6H
Groundwater Elevation Data, Field Measurements and Other Analyses
Monitored Natural Attenuation and Destroyed/Not Used Wells
Former Kaiser Aerotech Facilities
San Leandro, California

Monitoring Well	Notes	GW Zone	Date	Top of Casing Elevation (ft msl)	Depth to Groundwater (ft BTOC)	Groundwater Elevation (ft msl)	TOC[Note 1] (mg/L)	Specific conductance field (µS/cm)	pH field	ORP field (mV)	Dissolved Oxygen field (mg/L)
MW-12		A	8/5/09	11.63	7.33	4.30	--	--	--	--	--
MW-12		A	11/4/09	11.63	7.23	4.40	--	--	--	--	--
MW-12		A	2/1/10	11.63	6.48	5.15	--	915	6.67	85.7	2.44
MW-12		A	8/3/10	11.63	7.72	3.91	--	--	--	--	--
MW-12		A	2/8/11	11.63	6.63	5.00	--	922	6.51	-96	0.38
MW-12	O&M	A	2/14/13	11.63	6.58	5.05	--	792	6.59	-157.2	1.39
MW-12	O&M	A	6/10/15	11.63	7.07	4.56	--	716	6.46	105.1	--
MW-12	Sup.	A	2/23/16	11.63	6.95	4.68	--	971	6.67	88.7	0.97
MW-12	O&M	A	2/14/17	11.63	6.31	5.32	--	719	6.96	160.4	0.11
MW-12	O&M	A	2/11/19	11.63	6.15	5.48	--	970	6.87	149.8	0.25
MW-13		A	3/20/97	9.78	5.03	4.75	--	--	--	--	--
MW-13		A	6/25/97	9.78	5.40	4.38	--	--	--	--	--
MW-13		A	9/22/97	9.78	5.51	4.27	--	--	--	--	--
MW-13		A	12/18/97	9.78	4.05	5.73	--	--	--	--	--
MW-13		A	3/23/98	9.78	4.30	5.48	--	--	--	--	--
MW-13		A	6/17/98	9.78	5.09	4.69	--	--	--	--	--
MW-13		A	9/22/98	9.78	5.55	4.23	--	--	--	--	--
MW-13		A	9/24/98	9.78	--	--	--	--	--	202.1	4.67
MW-13		A	12/9/98	9.78	4.81	4.97	--	--	--	206.0	7.43
MW-13		A	3/22/99	9.78	4.40	5.38	--	--	--	--	--
MW-13		A	6/21/99	9.78	5.35	4.43	--	--	--	--	--
MW-13		A	9/20/99	9.78	5.68	4.10	--	--	--	--	--
MW-13		A	12/13/99	9.78	5.18	4.60	--	--	--	--	--
MW-13		A	3/13/00	9.78	4.23	5.55	--	--	--	--	--
MW-13		A	9/18/00	9.78	5.51	4.27	--	--	--	--	--
MW-13		A	3/12/01	9.78	4.58	5.20	--	837	--	--	--
MW-13		A	9/24/01	9.78	5.63	4.15	--	--	--	--	--
MW-13		A	3/26/02	9.78	4.48	5.30	--	--	--	--	--
MW-13		A	10/3/02	9.78	5.60	4.18	--	1,100	--	--	--
MW-13		A	3/26/03	9.78	4.92	4.86	--	--	--	--	--
MW-13		A	3/27/03	9.78	--	--	--	8,670	--	--	5.75
MW-13		A	6/26/03	9.78	5.26	4.52	--	--	--	--	--
MW-13		A	9/23/03	9.78	5.58	4.20	--	--	--	--	--
MW-13		A	12/16/03	9.78	4.68	5.10	--	--	--	--	--
MW-13		A	3/9/04	9.78	4.63	5.15	--	--	--	--	--
MW-13		A	3/10/04	9.78	--	--	--	1,045	--	--	--
MW-13		A	5/20/04	9.78	5.37	4.41	--	--	--	--	--
MW-13		A	9/29/04	9.78	5.48	4.30	--	--	--	--	--
MW-13		A	12/8/04	9.78	4.48	5.30	--	--	--	--	--
MW-13		A	3/8/05	9.78	4.40	5.38	--	--	--	--	--
MW-13		A	6/14/05	9.78	5.01	4.77	--	--	--	--	--
MW-13		A	9/14/05	9.78	5.50	4.28	--	--	--	--	--
MW-13		A	12/14/05	9.78	5.31	4.47	--	--	--	--	--
MW-13		A	3/15/06	9.78	4.18	5.60	--	--	--	--	--
MW-13		A	6/13/06	9.78	5.18	4.60	--	--	--	--	--
MW-13		A	9/21/06	9.78	5.45	4.33	--	--	--	--	--
MW-13		A	2/2/07	9.78	5.20	4.58	--	--	--	--	--
MW-13		A	2/5/08	9.78	4.21	5.57	--	1,175	7.40	12.8	2.80
MW-13		A	5/7/08	9.78	5.54	4.24	--	--	--	--	--
MW-13		A	8/6/08	9.78	5.50	4.28	--	--	--	--	--
MW-13		A	11/6/08	9.78	5.22	4.56	--	--	--	--	--
MW-13		A	2/3/09	9.78	5.36	4.42	--	1,902	7.06	-27.0	0.57
MW-13		A	8/4/09	9.78	5.46	4.32	--	--	--	--	--
MW-13		A	11/4/09	9.78	5.21	4.57	--	--	--	--	--
MW-13		A	2/3/10	9.78	4.21	5.57	--	1,000	6.84	75.7	1.28
MW-13		A	8/3/10	9.78	5.45	4.33	--	--	--	--	--
MW-13		A	2/8/11	9.78	5.25	4.53	--	398	5.94	-108	4.85
MW-13	O&M	A	2/14/13	9.78	5.55	4.23	--	--	--	--	--

Table 6H
Groundwater Elevation Data, Field Measurements and Other Analyses
Monitored Natural Attenuation and Destroyed/Not Used Wells
Former Kaiser Aerotech Facilities
San Leandro, California

Monitoring Well	Notes	GW Zone	Date	Top of Casing Elevation (ft msl)	Depth to Groundwater (ft BTOC)	Groundwater Elevation (ft msl)	TOC[Note 1] (mg/L)	Specific conductance field (µS/cm)	pH field	ORP field (mV)	Dissolved Oxygen field (mg/L)
MW-13	O&M	A	2/15/17	9.78	4.60	5.18	--	919	7.61	20.3	1.01
MW-13	O&M	A	2/13/19	9.78	4.87	4.91	--	757	7.49	48.1	1.83
MW-15		A	9/22/98	10.78	6.06	4.72	--	--	--	--	--
MW-15		A	9/23/98	10.78	--	--	--	--	--	220.1	2.70
MW-15		A	12/9/98	10.78	5.21	5.57	--	--	--	239.0	4.18
MW-15		A	3/22/99	10.78	4.72	6.06	--	--	--	--	--
MW-15		A	6/21/99	10.78	5.90	4.88	--	--	--	--	--
MW-15		A	9/20/99	10.78	6.21	4.57	--	--	--	--	--
MW-15		A	12/13/99	10.78	5.77	5.01	--	--	--	--	--
MW-15		A	3/13/00	10.78	4.40	6.38	--	--	--	--	--
MW-15		A	9/18/00	10.78	6.02	4.76	--	--	--	--	--
MW-15		A	3/12/01	10.78	4.84	5.94	--	751	--	--	--
MW-15		A	9/24/01	10.78	6.19	4.59	--	--	--	--	--
MW-15		A	3/26/02	10.78	4.79	5.99	--	--	--	--	--
MW-15		A	10/3/02	10.78	6.09	4.69	--	960	--	--	--
MW-15		A	3/26/03	10.78	5.35	5.43	--	895	--	-2.9	0.78
MW-15		A	3/9/04	10.78	4.97	5.81	--	--	--	--	--
MW-15		A	3/10/04	10.78	--	--	--	722	--	107.0	0.68
MW-15		A	3/8/05	10.78	4.51	6.27	--	--	--	--	--
MW-15		A	3/9/05	10.78	--	--	--	715	--	11.2	1.73
MW-15		A	3/15/06	10.78	4.15	6.63	--	668	--	166	2.34
MW-15		A	1/31/07	10.78	5.46	5.32	--	723	6.81	172.1	0.35
MW-15		A	2/5/08	10.78	4.21	6.57	--	923	7.25	25.8	2.87
MW-15		A	2/3/09	10.78	5.61	5.17	--	1,628	7.03	19.6	2.28
MW-15		A	8/4/09	10.78	6.04	4.74	--	--	--	--	--
MW-15		A	2/3/10	10.78	4.51	6.27	--	944	6.75	83.9	0.87
MW-15		A	3/22/10	10.78	5.05	5.73	--	1,078	--	--	--
MW-15		A	5/10/10	10.78	5.22	5.56	--	1,070	--	--	--
MW-15		A	2/8/11	10.78	5.47	5.31	--	1,119	6.36	-117.2	1.32
MW-15	O&M	A	2/14/13	10.78	6.69	4.09	--	700	6.82	-168.2	1.11
MW-15	O&M	A	6/10/15	10.78	5.97	4.81	--	910	7.00	-53.8	1.10
MW-15	O&M	A	2/15/17	10.78	4.16	6.62	--	641	7.68	73	0.29
MW-15	O&M	A	2/13/19	10.78	4.25	6.53	--	729	7.61	110.3	0.49
MW-16		A	9/22/98	11.45	6.78	4.67	--	--	--	149.7	3.59
MW-16		A	12/9/98	11.45	5.82	5.63	--	--	--	206.0	12.92
MW-16		A	3/22/99	11.45	5.46	5.99	--	--	--	--	--
MW-16		A	6/21/99	11.45	6.71	4.74	--	--	--	--	--
MW-16		A	9/20/99	11.45	6.99	4.46	--	--	--	--	--
MW-16		A	12/13/99	11.45	--	--	--	--	--	--	--
MW-16		A	3/13/00	11.45	5.06	6.39	--	--	--	--	--
MW-16		A	9/18/00	11.45	--	--	--	--	--	--	--
MW-16		A	3/12/01	11.45	--	--	--	--	--	--	--
MW-16		A	9/24/01	11.45	7.01	4.44	--	--	--	--	--
MW-16		A	3/26/02	11.45	5.90	5.55	--	--	--	--	--
MW-16		A	10/3/02	11.45	7.54	3.91	--	1,200	--	--	--
MW-16		A	3/26/03	11.45	6.67	4.78	--	988	--	87.9	0.88
MW-16		A	9/23/03	11.45	7.48	3.97	--	1,075	--	55.1	0.67
MW-16		A	12/16/03	11.45	6.45	5.00	--	--	--	--	--
MW-16		A	3/9/04	11.45	6.58	4.87	--	--	--	--	--
MW-16		A	3/10/04	11.45	--	--	--	593	--	-91.2	0.69
MW-16		A	5/20/04	11.45	7.16	4.29	--	--	--	--	--
MW-16		A	9/29/04	11.45	7.35	4.10	--	--	--	--	--
MW-16		A	12/8/04	11.45	6.03	5.42	--	--	--	--	--
MW-16		A	3/8/05	11.45	6.00	5.45	--	--	--	--	--
MW-16		A	3/9/05	11.45	--	--	--	889	--	6.3	1.43
MW-16		A	6/14/05	11.45	6.81	4.64	--	--	--	--	--
MW-16		A	9/14/05	11.96	7.40	4.56	--	--	--	--	--
MW-16		A	12/14/05	11.96	7.09	4.87	--	--	--	--	--

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Groundwater Elevation Data, Field Measurements and Other Analyses
Monitored Natural Attenuation and Destroyed/Not Used Wells
Former Kaiser Aerotech Facilities
San Leandro, California

Monitoring Well	Notes	GW Zone	Date	Top of Casing Elevation (ft msl)	Depth to Groundwater (ft BTOC)	Groundwater Elevation (ft msl)	TOC[Note 1] (mg/L)	Specific conductance field (µS/cm)	pH field	ORP field (mV)	Dissolved Oxygen field (mg/L)
MW-16		A	3/15/06	11.96	5.48	6.48	--	1,100	--	-78.7	3.45
MW-16		A	6/13/06	11.96	7.01	4.95	--	--	--	--	--
MW-16		A	9/20/06	11.96	7.26	4.70	--	--	--	--	--
MW-16		A	1/30/07	11.96	6.83	5.13	--	--	--	--	--
MW-16		A	2/1/07	11.96	6.40	5.56	--	999	6.61	17.3	0.79
MW-16		A	8/15/07	11.96	7.33	4.63	--	--	--	--	--
MW-16		A	11/14/07	11.96	6.93	5.03	--	--	--	--	--
MW-16		A	2/5/08	11.96	5.97	5.99	--	1,211	6.49	-39.6	1.40
MW-16		A	2/2/09	11.96	7.05	4.91	--	1,342	6.77	24.0	2.01
MW-16		A	2/1/10	11.96	6.02	5.94	--	1,245	6.63	27.8	3.21
MW-16		A	2/8/11	11.96	6.98	4.98	--	1,223	6.67	-61	0.28
MW-16	O&M	A	2/13/13	11.96	7.09	4.87	--	1,178	6.56	-234.2	3.36
MW-16	O&M	A	6/10/15	11.96	7.30	4.66	--	1,221	6.60	60.9	--
MW-16	O&M	A	2/14/17	11.96	5.65	6.31	--	939	7.64	77.3	0.16
MW-16	O&M	A	2/11/19	11.96	5.91	6.05	--	1,130	6.63	31.7	0.27
MW-20		A	3/21/06	10.35	4.34	6.01	--	1,280	--	--	--
MW-20		A	3/27/06	10.35	4.82	5.53	--	1,424	--	55.0	1.44
MW-20		A	6/14/06	10.35	5.86	4.49	--	1,226	6.92	-51.1	2.86
MW-20		A	9/20/06	10.35	6.10	4.25	--	1,149	6.94	-32.5	0.39
MW-20		A	1/30/07	10.35	5.64	4.71	--	--	--	--	--
MW-20		A	2/2/07	10.35	5.80	4.55	--	1,995	9.74	56.5	3.08
MW-20		A	5/8/07	10.35	5.65	4.70	--	1,122	6.75	-97.2	1.22
MW-20		A	8/15/07	10.35	6.12	4.23	--	--	--	--	--
MW-20		A	11/14/07	10.35	5.74	4.61	--	--	--	--	--
MW-20		A	2/5/08	10.35	4.91	5.44	--	1,182	7.18	103.2	0.93
MW-20		A	5/6/08	10.35	5.84	4.51	--	--	--	--	--
MW-20		A	8/5/08	10.35	6.08	4.27	--	--	--	--	--
MW-20		A	11/6/08	10.35	5.62	4.73	--	--	--	--	--
MW-20		A	2/4/09	10.35	5.89	4.46	--	1,245	6.93	-30.1	1.18
MW-20		A	5/6/09	10.35	5.48	4.87	--	--	--	--	--
MW-20		A	8/5/09	10.35	6.62	3.73	--	--	--	--	--
MW-20		A	11/4/09	10.35	5.62	4.73	--	--	--	--	--
MW-20		A	2/2/10	10.35	4.83	5.52	--	1,215	6.82	46.1	1.05
MW-20		A	8/3/10	10.35	5.89	4.46	--	--	--	--	--
MW-20		A	2/8/11	10.35	5.72	4.63	--	1,270	6.86	-74	0.17
MW-20	O&M	A	2/13/13	10.35	5.69	4.66	--	1,096	6.65	95.4	0.43
MW-20	O&M	A	6/10/15	10.35	5.96	4.39	--	1,051	6.44	92.6	--
MW-20	O&M	A	2/14/17	10.35	4.95	5.40	--	989	7.51	44.6	0.11
MW-20	O&M	A	2/11/19	10.35	5.38	4.97	--	1,224	6.72	49.4	0.31
MW-21		A	3/21/06	13.24	6.67	6.57	--	1,161	--	--	--
MW-21		A	3/27/06	13.24	6.51	6.73	--	1,252	--	130.8	1.57
MW-21		A	6/14/06	13.24	7.97	5.27	--	1,155	6.35	63.7	0.06
MW-21		A	9/20/06	13.24	8.26	4.98	--	1,133	6.79	48.0	1.36
MW-21		A	1/30/07	13.24	7.83	5.41	--	--	--	--	--
MW-21		A	2/1/07	13.24	7.96	5.28	--	2,032	10.87	-157.0	4.44
MW-21		A	5/8/07	13.24	7.82	5.42	--	1,113	6.65	88.7	1.69
MW-21		A	8/15/07	13.24	8.32	4.92	--	1,132	6.61	41.2	0.45
MW-21		A	11/14/07	13.24	7.96	5.28	--	--	--	--	--
MW-21		A	2/5/08	13.24	6.96	6.28	--	1,120	6.56	-20.8	1.45
MW-21		A	8/5/08	13.24	8.32	4.92	--	--	--	--	--
MW-21		A	11/6/08	13.24	7.95	5.29	--	--	--	--	--
MW-21		A	2/3/09	13.24	7.58	5.66	--	1,190	6.79	61.5	1.71
MW-21		A	5/6/09	13.24	7.75	5.49	--	--	--	--	--
MW-21		A	8/5/09	13.24	8.32	4.92	--	--	--	--	--
MW-21		A	11/4/09	13.24	7.93	5.31	--	--	--	--	--
MW-21		A	2/1/10	13.24	6.84	6.40	--	1,163	6.67	59.4	1.21
MW-21		A	8/3/10	13.24	8.16	5.08	--	--	--	--	--

Table 6H
Groundwater Elevation Data, Field Measurements and Other Analyses
Monitored Natural Attenuation and Destroyed/Not Used Wells
Former Kaiser Aerotech Facilities
San Leandro, California

Monitoring Well	Notes	GW Zone	Date	Top of Casing Elevation (ft msl)	Depth to Groundwater (ft BTOC)	Groundwater Elevation (ft msl)	TOC[Note 1] (mg/L)	Specific conductance field (µS/cm)	pH field	ORP field (mV)	Dissolved Oxygen field (mg/L)
MW-21		A	2/8/11	13.24	7.90	5.34	--	1,163	6.67	-61	0.24
MW-21	O&M	A	2/13/13	13.24	8.08	5.16	--	1,093	6.53	-231.8	1.85
MW-21	O&M	A	6/11/15	13.24	8.16	5.08	--	890	5.94	101.1	--
MW-21	Sup.	A	2/23/16	13.24	7.80	5.44	--	1,067	6.70	27.8	0.74
MW-21	O&M	A	2/14/17	13.24	6.55	6.69	--	903	6.92	134.9	0.12
MW-21	O&M	A	2/11/19	13.24	6.95	6.29	--	1,043	6.61	23.9	0.26
MW-24		A	3/21/06	11.76	4.24	7.52	--	794	--	--	--
MW-24		A	3/27/06	11.76	4.05	7.71	--	924	--	106.3	2.05
MW-24		A	6/14/06	11.76	5.83	5.93	--	516	6.65	62.8	0.12
MW-24		A	9/20/06	11.76	6.20	5.56	--	790	8.90	-278.6	0.24
MW-24		A	1/30/07	11.76	5.69	6.07	--	--	--	--	--
MW-24		A	2/1/07	11.76	5.79	5.97	--	1,560	11.15	-123.7	3.85
MW-24		A	5/8/07	11.76	5.77	5.99	--	760	6.85	-43.6	1.24
MW-24		A	8/14/07	11.76	6.28	5.48	--	--	--	--	--
MW-24		A	11/13/07	11.76	5.82	5.94	--	--	--	--	--
MW-24		A	2/6/08	11.76	4.34	7.42	--	746	6.84	-13.7	0.88
MW-24		A	2/3/09	11.76	5.82	5.94	--	1,364	6.95	-39.7	0.45
MW-24		A	2/2/10	11.76	4.44	7.32	--	787	6.84	2.3	0.28
MW-24		A	2/8/11	11.76	5.68	6.08	--	754	7.01	-81	0.10
MW-24		A	2/7/12	11.76	5.68	6.08	--	--	--	--	--
MW-24	O&M	A	2/14/13	11.76	5.91	5.85	--	--	--	--	--
MW-24	O&M	A	2/25/14	11.76	5.96	5.80	--	--	--	--	--
MW-24	O&M	A	2/14/17	11.76	4.10	7.66	--	--	--	--	--
MW-24	O&M	A	2/14/18	11.76	5.76	6.00	--	--	--	--	--
MW-24	O&M	A	2/11/19	11.76	4.43	7.33	--	--	--	--	--
MW-24	O&M	A	3/11/20	11.76	5.03	6.73	--	--	--	--	--
MW-25		A	3/21/06	11.46	4.14	7.32	--	1,678	--	--	--
MW-25		A	3/27/06	11.46	4.20	7.26	--	1,159	--	108.5	2.61
MW-25		A	6/14/06	11.46	5.55	5.91	--	986	6.89	60.1	0.35
MW-25		A	9/20/06	11.46	6.06	5.40	--	910	7.09	-77.6	0.16
MW-25		A	1/30/07	11.46	5.76	5.70	--	--	--	--	--
MW-25		A	2/1/07	11.46	5.69	5.77	--	2,013	9.91	132.3	4.19
MW-25		A	5/8/07	11.46	5.92	5.54	--	881	6.88	-88.0	0.81
MW-25		A	8/14/07	11.46	5.82	5.64	--	--	--	--	--
MW-25		A	11/13/07	11.46	5.67	5.79	--	--	--	--	--
MW-25		A	2/5/08	11.46	5.00	6.46	--	961	7.29	13.7	2.72
MW-25		A	2/3/09	11.46	5.45	6.01	--	1,718	7.05	-59.1	0.67
MW-25		A	5/20/09	11.46	5.77	5.69	--	947	--	--	--
MW-25		A	6/4/09	11.46	5.75	5.71	--	962	--	--	--
MW-25		A	8/4/09	11.46	6.23	5.23	--	875	--	--	--
MW-25		A	2/2/10	11.46	4.30	7.16	--	918	6.85	23.1	0.61
MW-25		A	2/8/11	11.46	5.55	5.91	--	925	7.03	-75	0.12
MW-25	O&M	A	2/14/13	11.46	5.75	5.71	--	713	6.96	-156.4	0.59
MW-25	O&M	A	6/10/15	11.46	6.13	5.33	--	745	6.54	68.7	--
MW-25	O&M	A	2/13/17	11.46	5.10	6.36	--	667	7.51	64.4	0.14
MW-25	O&M	A	2/11/19	11.46	5.06	6.40	--	863	7.18	-25.8	0.42
LMW-3		UB	9/22/98	15.36	10.78	4.58	--	--	--	181.5	4.52
LMW-3		UB	12/9/98	15.36	10.22	5.14	--	--	--	--	--
LMW-3		UB	12/10/98	15.36	--	--	--	--	--	214.0	10.87
LMW-3		UB	3/22/99	15.36	9.88	5.48	--	--	--	--	--
LMW-3		UB	6/21/99	15.36	10.68	4.68	--	--	--	--	--
LMW-3		UB	9/20/99	15.36	10.88	4.48	--	--	--	--	--
LMW-3		UB	12/13/99	15.36	10.53	4.83	--	--	--	--	--

Table 6H
Groundwater Elevation Data, Field Measurements and Other Analyses
Monitored Natural Attenuation and Destroyed/Not Used Wells
Former Kaiser Aerotech Facilities
San Leandro, California

Monitoring Well	Notes	GW Zone	Date	Top of Casing Elevation (ft msl)	Depth to Groundwater (ft BTOC)	Groundwater Elevation (ft msl)	TOC[Note 1] (mg/L)	Specific conductance field (µS/cm)	pH field	ORP field (mV)	Dissolved Oxygen field (mg/L)
LMW-3		UB	3/13/00	15.36	9.57	5.79	--	--	--	--	--
LMW-3		UB	9/18/00	15.36	10.67	4.69	--	--	--	--	--
LMW-3		UB	3/12/01	15.36	10.03	5.33	--	883	--	--	--
LMW-3		UB	9/24/01	15.36	10.85	4.51	--	--	--	--	--
LMW-3		UB	3/26/02	15.36	9.83	5.53	--	--	--	--	--
LMW-3		UB	10/3/02	15.36	12.05	3.31	--	1,080	--	--	--
LMW-3		UB	3/26/03	15.36	10.37	4.99	--	954	--	--	--
LMW-3		UB	6/26/03	15.36	10.53	4.83	--	--	--	75.9	1.51
LMW-3		UB	9/23/03	15.36	10.78	4.58	--	--	--	--	--
LMW-3		UB	12/16/03	15.36	10.10	5.26	--	--	--	--	--
LMW-3		UB	3/9/04	12.88	7.71	5.17	--	867	--	115.3	3.74
LMW-3		UB	5/20/04	12.88	8.11	4.77	--	--	--	--	--
LMW-3		UB	9/29/04	12.88	8.26	4.62	--	--	--	--	--
LMW-3		UB	12/8/04	12.88	7.39	5.49	--	--	--	--	--
LMW-3		UB	3/8/05	12.88	7.42	5.46	--	--	--	--	--
LMW-3		UB	3/10/05	12.88	--	--	--	858	--	16.3	3.74
LMW-3		UB	6/14/05	12.88	7.86	5.02	--	--	--	--	--
LMW-3		UB	9/14/05	12.88	8.30	4.58	--	--	--	--	--
LMW-3		UB	12/14/05	12.88	8.11	4.77		--	--	--	--
LMW-3		UB	3/15/06	12.88	7.13	5.75	--	902	--	126.5	2.50
LMW-3		UB	6/13/06	12.88	7.97	4.91	--	--	--	--	--
LMW-3		UB	9/20/06	12.88	8.15	4.73	--	--	--	--	--
LMW-3		UB	1/30/07	12.88	7.89	4.99	--	--	--	--	--
LMW-3		UB	2/1/07	12.88	--	--	--	926	7.05	50.0	2.35
LMW-3		UB	8/14/07	12.88	8.68	4.20	--	--	--	--	--
LMW-3		UB	2/4/08	12.88	7.87	5.01	--	968	7.29	-33.3	2.28
LMW-3		UB	5/6/08	12.88	7.97	4.91	--	--	--	--	--
LMW-3		UB	8/5/08	12.88	8.21	4.67	--	--	--	--	--
LMW-3		UB	11/6/08	12.88	8.05	4.83	--	--	--	--	--
LMW-3		UB	2/2/09	12.88	8.17	4.71	--	1,040	7.21	69.6	2.72
LMW-3		UB	5/6/09	12.88	7.84	5.04	--	--	--	--	--
LMW-3		UB	8/24/09	12.88	8.30	4.58	--	--	--	--	--
LMW-3		UB	11/4/09	12.88	8.09	4.79	--	--	--	--	--
LMW-3		UB	2/1/10	12.88	7.36	5.52	--	970	7.04	64.7	1.42
LMW-3		UB	5/4/10	12.88	7.90	4.98	--	--	--	--	--
LMW-3		UB	8/3/10	12.88	8.14	4.74	--	--	--	--	--
LMW-3		UB	2/8/11	12.88	7.96	4.92	--	955	7.07	-72	1.25
LMW-3		UB	2/7/12	12.88	7.95	4.93	--	--	--	--	--
LMW-3	O&M	UB	2/12/13	12.88	8.12	4.76	--	893	7.01	220.6	2.92
LMW-3	O&M	UB	2/25/14	12.88	8.35	4.53	--	--	--	--	--
LMW-3	O&M	UB	6/9/15	12.88	8.42	4.46	--	764	6.24	154.7	--
LMW-3	O&M	UB	2/23/16	12.88	8.02	4.86	--	--	--	--	--
LMW-3	Sup.	UB	9/22/16	12.88	8.45	4.43	--	951	7.16	140.1	1.87
LMW-3	O&M	UB	2/14/17	12.88	7.50	5.38	--	1,013	7.44	19.2	0.73
LMW-3	Sup.	UB	2/13/18	12.88	7.94	4.94	--	887	7.05	54.6	2.64
LMW-3	O&M	UB	2/11/19	12.88	7.79	5.09	--	918	7.26	-11.3	0.78
LMW-3	O&M	UB	3/10/20	12.88	8.23	4.65	--	915	7.53	54.0	4.16
LMW-5		B	6/26/03	12.93	7.79	5.14	--	991	--	168.2	0.66
LMW-5		B	3/9/04	12.93	7.07	5.86	--	--	--	--	--
LMW-5		B	3/10/04	12.93	--	--	--	666	--	-79.9	0.59
LMW-5		B	9/29/04	12.93	7.53	5.40	--	563	--	68.4	0.24
LMW-5		B	3/8/05	12.93	6.70	6.23	--	--	--	--	--
LMW-5		B	3/10/05	12.93	--	--	--	685	--	5.9	0.34
LMW-5		B	9/14/05	12.93	7.97	4.96	--	707	--	-343.8	0.61
LMW-5		B	9/20/06	12.93	7.63	5.30	--	800	8.02	-144.1	0.30
LMW-5		B	1/30/07	12.93	7.58	5.35	--	--	--	--	--
LMW-5		B	2/2/07	12.93	7.47	5.46	--	1,760	9.41	-4.2	2.83
LMW-5		B	8/15/07	12.93	7.92	5.01	--	782	6.97	-26.5	0.10

Table 6H
Groundwater Elevation Data, Field Measurements and Other Analyses
Monitored Natural Attenuation and Destroyed/Not Used Wells
Former Kaiser Aerotech Facilities
San Leandro, California

Monitoring Well	Notes	GW Zone	Date	Top of Casing Elevation (ft msl)	Depth to Groundwater (ft BTOC)	Groundwater Elevation (ft msl)	TOC[Note 1] (mg/L)	Specific conductance field (µS/cm)	pH field	ORP field (mV)	Dissolved Oxygen field (mg/L)
LMW-5		B	11/14/07	12.93	7.60	5.33	--	--	--	--	--
LMW-5		B	2/5/08	12.93	6.78	6.15	--	772	7.00	-104.2	0.68
LMW-5		B	2/3/09	12.93	7.54	5.39	--	813	7.09	81.7	0.59
LMW-5		B	2/1/10	12.93	6.44	6.49	--	759	6.99	84.8	2.58
LMW-5		B	2/8/11	12.93	7.42	5.51	--	759	7.22	-74	0.16
LMW-5	O&M	B	2/14/13	12.93	7.54	5.39	--	684	7.03	-109.2	4.94
LMW-5	O&M	B	6/10/15	12.93	7.35	5.58	--	588	6.92	217.1	--
LMW-5	O&M	B	2/14/17	12.93	6.70	6.23	--	576	7.96	96.3	0.18
LMW-5	O&M	B	2/11/19	12.93	6.65	6.28	--	689	7.00	152.0	0.20
LMW-7		UB	3/27/06	14.12	11.80	2.32	--	1,240	--	79.5	3.75
LMW-7		UB	6/14/06	14.12	9.51	4.61	--	1,022	7.09	-51.0	1.21
LMW-7		UB	9/20/06	14.12	8.90	5.22	--	1,045	8.49	-192.3	0.49
LMW-7		UB	1/30/07	14.12	12.57	1.55	--	--	--	--	--
LMW-7		UB	2/1/07	14.12	--	--	--	894	7.07	10.3	0.52
LMW-7		UB	5/8/07	14.12	8.74	5.38	--	896	6.89	107.2	1.99
LMW-7		UB	2/5/08	14.12	8.45	5.67	--	933	6.85	-48.1	0.87
LMW-7		UB	2/3/09	14.12	9.09	5.03	--	966	7.13	-6.7	0.85
LMW-7		UB	2/1/10	14.12	8.29	5.83	--	895	7.08	37.0	0.81
LMW-7		UB	2/8/11	14.12	8.81	5.31	--	893	7.13	-104	0.10
LMW-7	O&M	UB	2/14/13	14.12	8.99	5.13	--	806	7.17	-129.8	3.98
LMW-7	O&M	UB	6/10/15	14.12	7.35	6.77	--	756	6.98	178.7	--
LMW-7	O&M	UB	2/13/17	14.12	8.15	5.97	--	680	8.12	84.7	0.36
LMW-7	O&M	UB	2/11/19	14.12	8.46	5.66	--	816	7.18	-62.4	0.67
SAZ-1		C	9/22/98	11.50	4.43	7.07	--	--	--	--	--
SAZ-1		C	9/23/98	11.50	--	--	--	--	--	101.3	1.04
SAZ-1		C	12/9/98	11.50	4.12	7.38	--	--	--	--	--
SAZ-1		C	12/10/98	11.50	--	--	--	--	--	153.0	4.38
SAZ-1		C	1/14/99	11.50	4.81	6.69	--	--	--	--	--
SAZ-1		C	3/22/99	11.50	3.42	8.08	--	--	--	--	--
SAZ-1		C	6/21/99	11.50	4.88	6.62	--	--	--	--	--
SAZ-1		C	9/20/99	11.50	5.04	6.46	--	--	--	--	--
SAZ-1		C	12/13/99	11.50	4.43	7.07	--	--	--	--	--
SAZ-1		C	3/13/00	11.50	2.59	8.91	--	--	--	--	--
SAZ-1		C	9/18/00	11.50	4.55	6.95	--	--	--	--	--
SAZ-1		C	3/12/01	11.50	3.47	8.03	--	617	--	--	--
SAZ-1		C	9/24/01	11.50	4.94	6.56	--	--	--	--	--
SAZ-1		C	3/26/02	11.50	3.57	7.93	--	--	--	--	--
SAZ-1		C	10/3/02	11.50	5.24	6.26	--	690	--	--	--
SAZ-1		C	3/26/03	11.50	4.28	7.22	--	665	--	-18.6	0.54
SAZ-1		C	6/26/03	11.50	4.69	6.81	--	642	--	147.9	1.08
SAZ-1		C	9/23/03	11.50	4.94	6.56	--	676	--	-9.1	0.43
SAZ-1		C	12/16/03	11.50	3.92	7.58	--	573	--	221.7	0.31
SAZ-1		C	3/9/04	11.50	3.64	7.86	--	570	--	27.1	0.58
SAZ-1		C	5/20/04	11.50	4.00	7.50	--	666	--	19.8	0.37
SAZ-1		C	9/29/04	11.50	4.79	6.71	--	624	--	-12.1	1.02
SAZ-1		C	12/8/04	11.50	3.58	7.92	--	580	--	-3.9	0.45
SAZ-1		C	3/8/05	11.50	3.05	8.45	--	420	--	-36.7	0.67
SAZ-1		C	6/14/05	11.50	3.97	7.53	--	582	--	-100.6	1.23
SAZ-1		C	9/14/05	11.50	4.57	6.93	--	586	--	-9.5	2.46
SAZ-1		C	12/16/05	11.50	3.91	7.59	--	672	--	22.6	0.53
SAZ-1		C	3/15/06	11.50	2.33	9.17	--	600	--	120.9	2.00
SAZ-1		C	6/14/06	11.50	3.51	7.99	--	596	6.65	56.9	0.47
SAZ-1		C	9/20/06	11.50	4.00	7.50	--	653	7.60	-66.3	0.54
SAZ-1		C	1/30/07	11.50	3.74	7.76	--	--	--	--	--
SAZ-1		C	1/31/07	11.50	--	--	--	569	6.93	61.3	0.71
SAZ-1		C	5/8/07	11.50	3.74	7.76	--	618	6.79	160.9	3.01
SAZ-1		C	8/14/07	11.50	4.33	7.17	--	650	6.67	-31.2	0.51

Table 6H
Groundwater Elevation Data, Field Measurements and Other Analyses
Monitored Natural Attenuation and Destroyed/Not Used Wells
Former Kaiser Aerotech Facilities
San Leandro, California

Monitoring Well	Notes	GW Zone	Date	Top of Casing Elevation (ft msl)	Depth to Groundwater (ft BTOC)	Groundwater Elevation (ft msl)	TOC[Note 1] (mg/L)	Specific conductance field (µS/cm)	pH field	ORP field (mV)	Dissolved Oxygen field (mg/L)
SAZ-1		C	11/13/07	11.50	3.97	7.53	--	597	6.90	320.0	0.89
SAZ-1		C	2/4/08	11.50	2.58	8.92	--	655	6.90	142.3	0.62
SAZ-1		C	5/7/08	11.50	3.94	7.56	--	--	--	--	--
SAZ-1		C	8/5/08	11.50	4.33	7.17	--	--	--	--	--
SAZ-1		C	11/6/08	11.50	4.03	7.47	--	--	--	--	--
SAZ-1		C	2/2/09	11.50	4.10	7.40	--	714	6.95	149.8	1.47
SAZ-1		C	5/6/09	11.50	3.66	7.84	--	--	--	--	--
SAZ-1		C	8/4/09	11.50	4.39	7.11	--	--	--	--	--
SAZ-1		C	11/4/09	11.50	3.99	7.51	--	--	--	--	--
SAZ-1		C	2/2/10	11.50	2.88	8.62	--	643	6.80	55.1	0.42
SAZ-1		C	5/4/10	11.50	3.52	7.98	--	--	--	--	--
SAZ-1		C	8/3/10	11.50	4.12	7.38	--	--	--	--	--
SAZ-1		C	2/8/11	11.50	3.70	7.80	--	641	7.03	-89	0.19
SAZ-1		C	2/7/12	11.50	3.93	7.57	--	--	--	--	--
SAZ-1	O&M	C	2/12/13	11.50	4.12	7.38	--	--	--	--	--
SAZ-1	O&M	C	2/25/14	11.50	4.28	7.22	--	--	--	--	--
SAZ-1	O&M	C	6/9/15	11.50	4.36	7.14	--	--	--	--	--
SAZ-1	O&M	C	2/23/16	11.50	3.60	7.90	--	--	--	--	--
SAZ-1	O&M	C	2/13/17	11.50	2.00	9.50	--	--	--	--	--
SAZ-1	O&M	C	2/13/18	11.50	3.74	7.76	--	--	--	--	--
SAZ-1	O&M	C	2/11/19	11.50	2.83	8.67	--	--	--	--	--
SAZ-1	O&M	C	3/10/20	11.50	4.05	7.45	--	--	--	--	--
SAZ-2		C	9/22/98	9.45	4.27	5.18	--	--	--	--	--
SAZ-2		C	9/23/98	9.45	--	--	--	--	--	15.2	2.68
SAZ-2		C	12/9/98	9.45	3.61	5.84	--	--	--	--	--
SAZ-2		C	12/10/98	9.45	--	--	--	--	--	153.0	7.82
SAZ-2		C	1/14/99	9.45	4.31	5.14	--	--	--	--	--
SAZ-2		C	3/22/99	9.45	3.18	6.27	--	--	--	--	--
SAZ-2		C	6/21/99	9.45	4.37	5.08	--	--	--	--	--
SAZ-2		C	9/20/99	9.45	4.62	4.83	--	--	--	--	--
SAZ-2		C	12/13/99	9.45	4.08	5.37	--	--	--	--	--
SAZ-2		C	3/13/00	9.45	2.62	6.83	--	--	--	--	--
SAZ-2		C	9/18/00	9.45	4.22	5.23	--	--	--	--	--
SAZ-2		C	3/12/01	9.45	3.39	6.06	--	460	--	--	--
SAZ-2		C	9/24/01	9.45	4.65	4.80	--	--	--	--	--
SAZ-2		C	3/26/02	9.45	3.53	5.92	--	--	--	--	--
SAZ-2		C	10/3/02	9.45	5.03	4.42	--	557	--	--	--
SAZ-2		C	3/26/03	9.45	6.53	2.92	--	468	--	-24.6	1.16
SAZ-2		C	6/26/03	9.45	4.47	4.98	--	--	--	--	--
SAZ-2		C	9/23/03	9.45	4.80	4.65	--	--	--	--	--
SAZ-2		C	12/16/03	9.45	3.85	5.60	--	--	--	--	--
SAZ-2		C	3/9/04	9.45	3.65	5.80	--	--	--	--	--
SAZ-2		C	3/10/04	9.45	--	--	--	473	--	13.1	1.83
SAZ-2		C	5/20/04	9.45	4.28	5.17	--	--	--	--	--
SAZ-2		C	9/29/04	9.45	4.65	4.80	--	--	--	--	--
SAZ-2		C	12/8/04	9.45	4.10	5.35	--	--	--	--	--
SAZ-2		C	3/8/05	9.45	3.34	6.11	--	299	--	-48.3	1.27
SAZ-2		C	6/14/05	9.45	3.66	5.79	--	--	--	--	--
SAZ-2		C	9/14/05	9.45	3.90	5.55	--	--	--	--	--
SAZ-2		C	12/14/05	9.45	4.13	5.32	--	--	--	--	--
SAZ-2		C	3/15/06	9.45	3.08	6.37	--	448	--	40.8	2.80
SAZ-2		C	6/13/06	9.45	3.77	5.68	--	--	--	--	--
SAZ-2		C	9/20/06	9.45	3.72	5.73	--	--	--	--	--
SAZ-2		C	1/30/07	9.45	3.98	5.47	--	494	7.40	-36.9	0.98
SAZ-2		C	5/9/07	9.45	3.80	5.65	--	--	--	--	--
SAZ-2		C	8/14/07	9.45	4.41	5.04	--	--	--	--	--
SAZ-2		C	11/14/07	9.45	4.32	5.13	--	--	--	--	--
SAZ-2		C	2/4/08	9.45	3.41	6.04	--	533	7.53	-25.0	2.21

Table 6H
Groundwater Elevation Data, Field Measurements and Other Analyses
Monitored Natural Attenuation and Destroyed/Not Used Wells
Former Kaiser Aerotech Facilities
San Leandro, California

Monitoring Well	Notes	GW Zone	Date	Top of Casing Elevation (ft msl)	Depth to Groundwater (ft BTOC)	Groundwater Elevation (ft msl)	TOC[Note 1] (mg/L)	Specific conductance field (µS/cm)	pH field	ORP field (mV)	Dissolved Oxygen field (mg/L)
SAZ-2		C	5/6/08	9.45	4.29	5.16	--	--	--	--	--
SAZ-2		C	8/5/08	9.45	4.47	4.98	--	--	--	--	--
SAZ-2		C	11/6/08	9.45	4.22	5.23	--	--	--	--	--
SAZ-2		C	2/2/09	9.45	4.12	5.33	--	525	7.45	-18.0	1.65
SAZ-2		C	5/6/09	9.45	3.65	5.80	--	--	--	--	--
SAZ-2		C	8/4/09	9.45	4.53	4.92	--	--	--	--	--
SAZ-2		C	8/25/09	9.45	4.68	4.77	--	--	--	--	--
SAZ-2		C	11/4/09	9.45	4.05	5.40	--	--	--	--	--
SAZ-2		C	2/3/10	9.45	3.13	6.32	--	534	7.42	22.6	0.91
SAZ-2		C	5/4/10	9.45	3.46	5.99	--	--	--	--	--
SAZ-2		C	8/3/10	9.45	4.38	5.07	--	--	--	--	--
SAZ-2		C	2/8/11	9.45	3.72	5.73	--	406	6.94	-89.7	1.18
SAZ-2		C	2/7/12	9.45	3.24	6.21	--	--	--	--	--
SAZ-2	O&M	C	2/12/13	9.45	3.83	5.62	--	--	--	--	--
SAZ-2	O&M	C	2/26/14	9.45	3.50	5.95	--	--	--	--	--
SAZ-2	O&M	C	6/9/15	9.45	4.62	4.83	--	--	--	--	--
SAZ-2	O&M	C	2/24/16	9.45	4.43	5.02	--	--	--	--	--
SAZ-2	O&M	C	2/15/17	9.45	2.60	6.85	--	--	--	--	--
SAZ-2	O&M	C	2/14/18	9.45	3.77	5.68	--	--	--	--	--
SAZ-2	O&M	C	9/10/18	9.45	4.50	4.95	--	391	7.55	-21.2	--
SAZ-2	O&M	C	2/12/19	9.45	3.64	5.81	--	--	--	--	--
SAZ-2	O&M	C	3/11/20	9.45	4.30	5.15	--	--	--	--	--
SAZ-3		C	9/22/98	12.16	5.14	7.02	--	--	--	228.3	0.93
SAZ-3		C	12/9/98	12.16	5.30	6.86	--	--	--	--	--
SAZ-3		C	12/10/98	12.16	--	--	--	--	--	248.0	8.30
SAZ-3		C	1/14/99	12.16	5.93	6.23	--	--	--	--	--
SAZ-3		C	3/22/99	12.16	4.61	7.55	--	--	--	--	--
SAZ-3		C	6/21/99	12.16	5.97	6.19	--	--	--	--	--
SAZ-3		C	9/20/99	12.16	6.17	5.99	--	--	--	--	--
SAZ-3		C	12/13/99	12.16	5.53	6.63	--	--	--	--	--
SAZ-3		C	3/13/00	12.16	3.84	8.32	--	--	--	--	--
SAZ-3		C	9/18/00	12.16	5.69	6.47	--	--	--	--	--
SAZ-3		C	3/12/01	12.16	4.70	7.46	--	643	--	--	--
SAZ-3		C	9/24/01	12.16	6.10	6.06	--	--	--	--	--
SAZ-3		C	3/26/02	12.16	4.83	7.33	--	--	--	--	--
SAZ-3		C	10/3/02	12.16	6.49	5.67	--	790	--	--	--
SAZ-3		C	3/26/03	12.16	5.55	6.61	--	664	--	87.5	1.20
SAZ-3		C	6/26/03	12.16	5.95	6.21	--	--	--	--	--
SAZ-3		C	9/23/03	12.16	6.16	6.00	--	--	--	--	--
SAZ-3		C	12/16/03	12.16	5.12	7.04	--	--	--	--	--
SAZ-3		C	3/9/04	12.91	5.73	7.18	--	585	--	141.3	0.75
SAZ-3		C	5/20/04	12.91	6.08	6.83	--	--	--	--	--
SAZ-3		C	9/29/04	12.91	6.80	6.11	--	--	--	--	--
SAZ-3		C	12/8/04	12.91	6.22	6.69	--	--	--	--	--
SAZ-3		C	3/8/05	12.91	5.15	7.76	--	--	--	--	--
SAZ-3		C	3/10/05	12.91	--	--	--	588	--	5.5	0.43
SAZ-3		C	6/14/05	12.91	6.01	6.90	--	--	--	--	--
SAZ-3		C	9/14/05	12.91	6.60	6.31	--	--	--	--	--
SAZ-3		C	12/14/05	12.91	6.01	6.90	--	--	--	--	--
SAZ-3		C	3/15/06	12.91	4.47	8.44	--	543	--	125.4	1.47
SAZ-3		C	6/13/06	12.91	6.11	6.80	--	--	--	--	--
SAZ-3		C	9/20/06	12.91	6.20	6.71	--	--	--	--	--
SAZ-3		C	1/30/07	12.91	5.79	7.12	--	--	--	--	--
SAZ-3		C	1/31/07	12.91	--	--	--	594	6.74	84.9	0.53
SAZ-3		C	5/8/07	12.91	5.88	7.03	--	619	6.79	140.3	3.71
SAZ-3		C	8/14/07	12.91	6.42	6.49	--	--	--	--	--
SAZ-3		C	11/14/07	12.91	6.10	6.81	--	--	--	--	--
SAZ-3		C	2/4/08	12.91	4.66	8.25	--	633	6.87	136.4	0.70

Table 6H
Groundwater Elevation Data, Field Measurements and Other Analyses
Monitored Natural Attenuation and Destroyed/Not Used Wells
Former Kaiser Aerotech Facilities
San Leandro, California

Monitoring Well	Notes	GW Zone	Date	Top of Casing Elevation (ft msl)	Depth to Groundwater (ft BTOC)	Groundwater Elevation (ft msl)	TOC[Note 1] (mg/L)	Specific conductance field (µS/cm)	pH field	ORP field (mV)	Dissolved Oxygen field (mg/L)
SAZ-3		C	5/6/08	12.91	6.03	6.88	--	--	--	--	--
SAZ-3		C	8/5/08	12.91	6.40	6.51	--	--	--	--	--
SAZ-3		C	11/6/08	12.91	6.17	6.74	--	--	--	--	--
SAZ-3		C	2/2/09	12.91	6.10	6.81	--	720	6.87	149.8	0.92
SAZ-3		C	5/6/09	12.91	5.74	7.17	--	--	--	--	--
SAZ-3		C	8/4/09	12.91	6.41	6.50	--	--	--	--	--
SAZ-3		C	8/24/09	12.91	6.52	6.39	--	--	--	--	--
SAZ-3		C	11/4/09	12.91	6.05	6.86	--	--	--	--	--
SAZ-3		C	2/1/10	12.91	4.85	8.06	--	650	6.85	80.9	0.79
SAZ-3		C	5/4/10	12.91	5.62	7.29	--	--	--	--	--
SAZ-3		C	8/3/10	12.91	6.17	6.74	--	--	--	--	--
SAZ-3		C	2/8/11	12.91	5.73	7.18	--	713	7.16	-110	0.36
SAZ-3		C	2/7/12	12.91	5.92	6.99	--	--	--	--	--
SAZ-3	O&M	C	2/12/13	12.91	6.28	6.63	--	--	--	--	--
SAZ-3	O&M	C	2/25/14	12.91	6.23	6.68	--	--	--	--	--
SAZ-3	O&M	C	6/9/15	12.91	6.40	6.51	--	--	--	--	--
SAZ-3	O&M	C	2/23/16	12.91	5.64	7.27	--	--	--	--	--
SAZ-3	O&M	C	2/14/17	12.91	4.10	8.81	--	--	--	--	--
SAZ-3	O&M	C	2/13/18	12.91	5.78	7.13	--	--	--	--	--
SAZ-3	O&M	C	2/11/19	12.91	4.85	8.06	--	--	--	--	--
SAZ-3	O&M	C	3/10/20	12.91	6.13	6.78	--	--	--	--	--

Notes:

GW Zone	Groundwater Zone
A	A-zone - approximately 5-15 feet bgs
UB	Upper B-zone - approximately 15-25 feet bgs
LB	Lower B-zone - approximately 25-35 feet bgs
C	C-zone - below approximately 35-40 feet bgs
TOC	Total Organic Carbon
bgs	Below ground surface
ft BTOC	Feet below top of casing
ft msl	Elevation in feet relative to mean sea level
Inc.	Inconclusive
mg/L	milligrams per liter
mV	millivolts
µS/cm	microsiemens per centimeter
--	Not reported
Note 1	TOC was analyzed by EPA Method 415.1 or Standard Method (SM) 5310D prior to 2015, SM5310D in 2016, SM5310B in 2015 and 2017,

Results may reflect influence of noted pilot/field test activities:

PT	Pumping Test
GWE	Groundwater Extraction
ISCO Mn	Permanganate Injection Test
ISCO FR	Modified Fenton's Reagent Pilot Test
DPE	High Vacuum Dual Phase Extraction
ERD	Enhanced Reductive Dechlorination using Sodium Lactate
RDIP	Results may reflect influence of ERD outlined in the Remedial Design and Implementation Plan RDIP, April 28, 2008)
O&M	Operation and Maintenance Plan Monitoring Program
Sup.	Supplemental sampling to evaluate concentration trends from upgradient offsite source(s)
1	Well IW-1 was reconstructed as B-zone well IW-2 in 2000. Well IW-2 was destroyed in June 2003.
2	Wells MW-2, MW-8, MW-10, MW-14 and MC-1 destroyed in May 200
3	Well MW-8 was reported as abandoned in March 1997 (SECOR, 1997); found during construction activities in October 2003.

APPENDIX C5

HISTORICAL SUBSLAB VAPOR, INDOOR AIR, AND SOIL VAPOR DATA

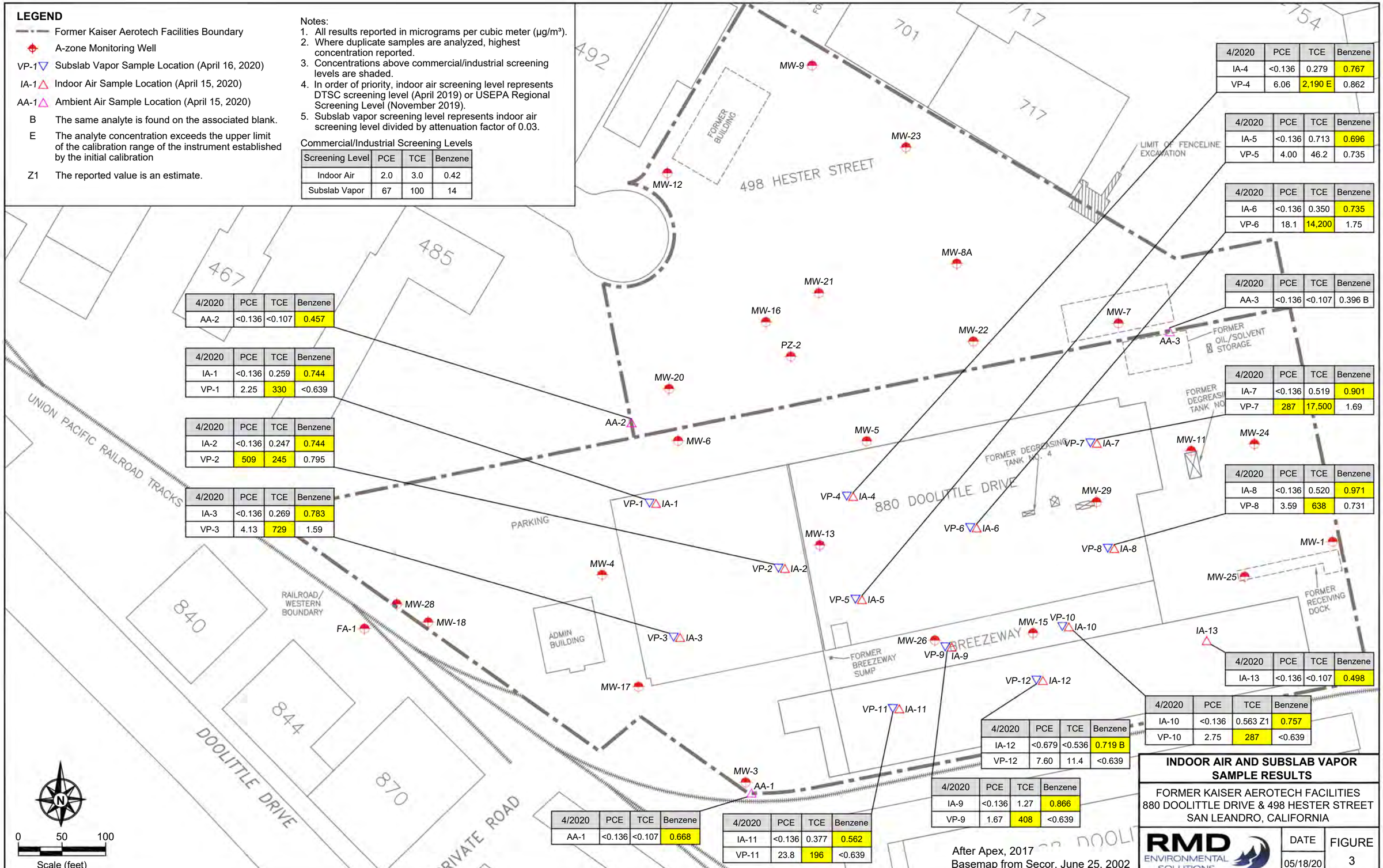
LEGEND

- Former Kaiser Aerotech Facilities Boundary
- A-zone Monitoring Well
- VP-1 Subslab Vapor Sample Location (April 16, 2020)
- IA-1 Indoor Air Sample Location (April 15, 2020)
- AA-1 Ambient Air Sample Location (April 15, 2020)
- B The same analyte is found on the associated blank.
- E The analyte concentration exceeds the upper limit of the calibration range of the instrument established by the initial calibration
- Z1 The reported value is an estimate.

Notes:
1. All results reported in micrograms per cubic meter (µg/m³).
2. Where duplicate samples are analyzed, highest concentration reported.
3. Concentrations above commercial/industrial screening levels are shaded.
4. In order of priority, indoor air screening level represents DTSC screening level (April 2019) or USEPA Regional Screening Level (November 2019).
5. Subslab vapor screening level represents indoor air screening level divided by attenuation factor of 0.03.

Commercial/Industrial Screening Levels

Screening Level	PCE	TCE	Benzene
Indoor Air	2.0	3.0	0.42
Subslab Vapor	67	100	14



4/2020	PCE	TCE	Benzene
IA-4	<0.136	0.279	0.767
VP-4	6.06	2,190 E	0.862

4/2020	PCE	TCE	Benzene
IA-5	<0.136	0.713	0.696
VP-5	4.00	46.2	0.735

4/2020	PCE	TCE	Benzene
IA-6	<0.136	0.350	0.735
VP-6	18.1	14,200	1.75

4/2020	PCE	TCE	Benzene
AA-3	<0.136	<0.107	0.396 B

4/2020	PCE	TCE	Benzene
IA-7	<0.136	0.519	0.901
VP-7	287	17,500	1.69

4/2020	PCE	TCE	Benzene
IA-8	<0.136	0.520	0.971
VP-8	3.59	638	0.731

4/2020	PCE	TCE	Benzene
IA-13	<0.136	<0.107	0.498

4/2020	PCE	TCE	Benzene
IA-10	<0.136	0.563 Z1	0.757
VP-10	2.75	287	<0.639

4/2020	PCE	TCE	Benzene
AA-2	<0.136	<0.107	0.457

4/2020	PCE	TCE	Benzene
IA-1	<0.136	0.259	0.744
VP-1	2.25	330	<0.639

4/2020	PCE	TCE	Benzene
IA-2	<0.136	0.247	0.744
VP-2	509	245	0.795

4/2020	PCE	TCE	Benzene
IA-3	<0.136	0.269	0.783
VP-3	4.13	729	1.59

4/2020	PCE	TCE	Benzene
IA-12	<0.679	<0.536	0.719 B
VP-12	7.60	11.4	<0.639

4/2020	PCE	TCE	Benzene
IA-9	<0.136	1.27	0.866
VP-9	1.67	408	<0.639

4/2020	PCE	TCE	Benzene
AA-1	<0.136	<0.107	0.668

4/2020	PCE	TCE	Benzene
IA-11	<0.136	0.377	0.562
VP-11	23.8	196	<0.639

After Apex, 2017
Basemap from Secor, June 25, 2002

INDOOR AIR AND SUBSLAB VAPOR SAMPLE RESULTS

FORMER KAISER AEROTECH FACILITIES
880 DOOLITTLE DRIVE & 498 HESTER STREET
SAN LEANDRO, CALIFORNIA

RMD ENVIRONMENTAL SOLUTIONS

DATE	FIGURE
05/18/20	3

Table 1
Summary of Indoor Air Analytical Results - VOCs
Former Kaiser Aerotech Facilities
880 Doolittle Drive and 498 Hester Street
San Leandro, California

Sample ID	Date	Notes	PCE ($\mu g/m^3$)	TCE ($\mu g/m^3$)	cis-1,2-DCE ($\mu g/m^3$)	trans-1,2-DCE ($\mu g/m^3$)	1,1-DCE ($\mu g/m^3$)	Vinyl Chloride ($\mu g/m^3$)	Benzene ($\mu g/m^3$)	Toluene ($\mu g/m^3$)	Ethylbenzene ($\mu g/m^3$)	Total Xylenes ($\mu g/m^3$)	Carbon Tetrachloride ($\mu g/m^3$)	Chloromethane ($\mu g/m^3$)	1,2-DCA ($\mu g/m^3$)
DTSC SL /USEPA RSL - Indoor Air Commercial/Industrial [1]			2.0	3.0	35	350	310	0.16	0.42	1,300	4.9	440	2.0	390	0.47
TCE Commercial/Industrial ARAL / URAL [2]			--	8.0 / 24	--	--	--	--	--	--	--	--	--	--	--
IA-1	4/15/2020		<0.136	**0.259**	<0.0793	<0.0793	<0.0793	<0.0511	**0.744**	--	**0.408**	--	**0.477**	**1.10**	**0.0984**
IA-2	4/15/2020	Within	<0.136	**0.247**	<0.0793	<0.0793	<0.0793	<0.0511	**0.744**	--	**0.387**	--	**0.464**	**1.05**	**0.098**
IA-3	4/15/2020		<0.136	**0.269**	<0.0793	<0.0793	<0.0793	<0.0511	**0.783**	--	**0.431**	--	**0.488**	**1.16**	**0.0862**
IA-4	4/15/2020	Within	<0.136	**0.279**	<0.0793	<0.0793	<0.0793	<0.0511	**0.767**	--	**0.316**	--	**0.464**	**1.02**	**0.0915**
	4/15/2020	Duplicate	<0.136	**0.265**	<0.0793	<0.0793	<0.0793	<0.0511	**0.620**	--	**0.274**	--	**0.534**	**1.16**	**0.113**
IA-5	4/15/2020		<0.136	**0.713**	<0.0793	<0.0793	<0.0793	<0.0511	**0.696**	--	**0.323**	--	**0.496**	**1.05**	**0.0911**
IA-6	4/15/2020	Near	<0.136	**0.350**	**0.111**	<0.0793	<0.0793	<0.0511	**0.735**	--	**0.338**	--	**0.468**	**1.04**	**0.0871**
IA-7	4/15/2020		<0.136	**0.519**	<0.0793	<0.0793	<0.0793	<0.0511	**0.901**	--	**0.429**	--	**0.592**	**1.25**	**0.132**
IA-8	4/15/2020		<0.136	**0.520**	<0.0793	<0.0793	<0.0793	<0.0511	**0.971**	--	**0.430**	--	**0.535**	**1.28**	**0.113**
IA-9	4/15/2020		<0.136	**1.27**	**0.100**	<0.0793	<0.0793	<0.0511	**0.866**	--	**0.409**	--	**0.537**	**1.24**	**0.113**
IA-10	4/15/2020		<0.136	**0.563 Z1**	<0.0793	<0.0793	<0.0793	<0.0511	**0.757**	--	**0.405 Z1**	--	**0.535 Z1**	**1.23**	**0.100 Z1**
IA-11	4/15/2020		<0.136	**0.377**	<0.0793	<0.0793	<0.0793	<0.0511	**0.562**	--	**0.237**	--	**0.515**	**1.05**	**0.0976**
IA-12	4/15/2020		<0.679	<0.536	<0.396	<0.396	<0.396	<0.256	**0.719 B**	--	<0.650	--	<0.630	**1.82**	<0.405
IA-13	4/15/2020		<0.136	<0.107	<0.0793	<0.0793	<0.0793	<0.0511	**0.498**	--	**0.276**	--	**0.471**	**1.04**	<0.0810
AA-1	4/15/2020		<0.136	<0.107	<0.0793	<0.0793	<0.0793	<0.0511	**0.668**	--	**0.222**	--	**0.561**	**1.13**	**0.104**
AA-2	4/15/2020		<0.136	<0.107	<0.0793	<0.0793	<0.0793	<0.0511	**0.457**	--	**0.215**	--	**0.478**	**1.10**	**0.0964**
AA-3	4/15/2020		<0.136	<0.107	<0.0793	<0.0793	<0.0793	<0.0511	**0.396 B**	--	**0.179**	--	**0.473**	**1.04**	**0.0919**

Notes:
Detections are indicated in **bold**.
Highlighted value exceeds the DTSC SL / USEPA RSL for commercial/industrial land use.
Volatile organic compounds (VOCs) measured by EPA Method TO-15 in selective ion monitoring (SIM) acquisition mode.
$\mu g/m^3$ = micrograms per cubic meter.
DTSC SL = Department of Toxic Substances Control Screening Level (DTSC, June 2020).
USEPA RSL = U.S. Environmental Protection Agency Regional Screening Level (USEPA, May 2021).
ARAL = Accelerated Response Action Level.
URAL = Urgent Response Action Level.
-- = No published value or not reported.
<0.136 = Not detected above indicated laboratory reporting limit.
[1] For constituents where DTSC SLs (HHRA Note 3) are not published, USEPA RSLs are used.
[2] The TCE indoor air action levels shown represent commercial/industrial exposure scenario for a 8-hour workday (DTSC, 2014).

PCE = Tetrachloroethene.
TCE = Trichloroethene.
DCE = Dichloroethene.
DCA = Dichloroethane.
B = The same analyte is found in the associated blank.
Z1 = The reported value is an estimate.

Within = Within footprint of proposed new commercial building
Near = Near footprint of proposed new commercial building

References:

DTSC, 2014. HERO HHRA Note Number: 5, Health-based Indoor Air Screening Criteria for Trichloroethylene (TCE). August 23.
DTSC, 2020. Human Health Risk Assessment (HHRA) Note Number 3, DTSC-modified Screening Levels (DTSC SLs). Human and Ecological Risk Office (HERO). June.
USEPA, 2021. Regional Screening Levels (TR=1E-06, HQ=1). May.

Table 2
Subslab Vapor Sample Analytical Results - VOCs
Former Kaiser Aerotech Facilities
880 Doolittle Drive and 498 Hester Street
San Leandro, California

Probe	Sample Depth	Date Sampled	Notes	PCE ($\mu g/m^3$)	TCE ($\mu g/m^3$)	cis-1,2-DCE ($\mu g/m^3$)	trans-1,2-DCE ($\mu g/m^3$)	1,1-DCE ($\mu g/m^3$)	Vinyl Chloride ($\mu g/m^3$)	Benzene ($\mu g/m^3$)	Toluene ($\mu g/m^3$)	Ethylbenzene ($\mu g/m^3$)	Total Xylenes ($\mu g/m^3$)
DTSC SL / USEPA RSL - Subslab Vapor Commercial / Industrial [1,2] USEPA $AF_{default}$ = 0.03				**67**	**100**	**1,200**	**12,000**	**10,000**	**5.3**	**14**	**43,000**	**160**	**15,000**
TCE Commercial/Industrial ARAL/URAL [2,4] USEPA $AF_{default}$ = 0.03				**--**	**270 / 800**	**--**	**--**	**--**	**--**	**--**	**--**	**--**	**--**
DTSC SL / USEPA RSL - Subslab Vapor Commercial / Industrial [1,3] DTSC AF_{fcb} - Future Commercial Building = 0.0005				**4,000**	**6,000**	**70,000**	**700,000**	**620,000**	**320**	**840**	**2,600,000**	**9,800**	**880,000**
TCE Commercial/Industrial ARAL/URAL [3,4] DTSC AF_{fcb} - Future Commercial Building = 0.0005				**--**	**16,000 / 48,000**	**--**	**--**	**--**	**--**	**--**	**--**	**--**	**--**
VP-1	Subslab	4/16/2020		**2.25**	**330**	**3.11**	**1.63**	<0.793	<0.511	<0.639	**2.12**	<0.867	**2.30**
VP-2	Subslab	4/16/2020	Within	**509**	**245**	**27.4**	**1.89**	<0.793	<0.511	**0.795**	**8.55**	**1.06**	**4.71**
VP-3	Subslab	4/16/2020		**4.13**	**729**	**40.0**	**16.8**	<0.793	<0.511	**1.59**	**3.12**	<0.867	**2.88**
VP-4	Subslab	4/16/2020	Within	**6.06**	**2,190 E**	**8.20**	**2.48**	<0.793	<0.511	<0.639	**1.66**	**1.13**	**2.53**
	Subslab	4/16/2020	Duplicate	**3.29**	**198**	**6.98**	**2.14**	<0.793	<0.511	**0.862**	**0.829**	<0.867	**<0.867**
VP-5	Subslab	4/16/2020		**4.00**	**46.2**	<0.793	<0.793	<0.793	<0.511	**0.735**	**2.45**	<0.867	**3.71**
VP-6	Subslab	4/16/2020	Near	**18.1**	**14,200**	**73.7**	**68.2**	<0.793	<0.511	**1.75**	**1.55**	**1.32**	**10.0**
VP-7	Subslab	4/16/2020		**287**	**17,500**	**97.9**	**86.0**	<0.793	<0.511	**1.69**	**1.71**	<0.867	**3.82**
VP-8	Subslab	4/16/2020		**3.59**	**638**	<3.96	<3.96	<3.96	<2.56	**0.731**	**3.36**	**0.897**	**4.69**
VP-9	Subslab	4/16/2020		**1.67**	**408**	**2.13**	<0.793	<0.793	<0.511	<0.639	**1.31**	<0.867	**3.20**
VP-10	Subslab	4/16/2020		**2.75**	**287**	**2.15**	<0.793	<0.793	<0.511	<0.639	**2.97**	**3.02**	**11.9**
VP-11	Subslab	4/16/2020		**23.8**	**196**	**39.5**	**7.61**	<0.793	<0.511	<0.639	**1.89**	<0.867	**4.02**
VP-12	Subslab	4/16/2020		**7.60**	**11.4**	<0.793	<0.793	<0.793	<0.511	<0.639	**2.21**	<0.867	**3.63**

Notes:
Detections are indicated in **bold**.
Highlighted value exceeds the DTSC SL / USEPA RSL for commercial/industrial land use for default attenuation factor ($AF_{default}$) of 0.03.
Volatile organic compounds (VOCs) measured by EPA Method TO-15.
Refer to laboratory report for full analyte list. Other VOCs were reported by the laboratory however concentrations were either low (below commercial SLs) or constituents do not have screening levels associated with them and are not expected to be regulatory drivers for environmental response (Table 3).

$\mu g/m^3$ = micrograms per cubic meter.
DTSC SL = Department of Toxic Substances Control Screening Level (DTSC, June 2020).
USEPA RSL = U.S. Environmental Protection Agency Regional Screening Level (USEPA, May 2021).
ARAL = Accelerated Response Action Level.
URAL = Urgent Response Action Level.
AF = attenuation factor.
ND<0.793 = Not detected above indicated laboratory reporting limit.
-- = No published value.
TCE = Trichloroethene.
PCE = Tetrachloroethene.
DCE = Dichloroethene.
Within = Within footprint of proposed new commercial building
Near = Near footprint of proposed new commercial building
E = The analyte concentration exceeds the upper limit of the calibration range of the instrument established by the initial calibration (iCAL).
[1] In order of priority, the screening level represents the DTSC-modified screening level (DTSC, 2020) followed by USEPA Regional Screening Level (RSL; USEPA, 2021).
[2] The screening level for subslab vapor is calculated by dividing the applicable indoor air screening level by the $AF_{default}$ of 0.03 (USEPA, 2015).
[3] The screening level for subslab vapor is calculated by dividing the applicable indoor air screening level by the AF_{fcb} of 0.0005 (DTSC, 2011).
[4] The TCE action levels represent commercial/industrial exposure scenario for a 8-hour workday (DTSC, 2014).

References:

DTSC. 2011. Final Guidance for the Evaluation and Mitigation of Subsurface Vapor Intrusion to Indoor Air. October.
DTSC, 2014. HERO HHRA Note Number: 5, Health-based Indoor Air Screening Criteria for Trichloroethylene (TCE). August 23.
DTSC, 2020. Human Health Risk Assessment (HHRA) Note Number 3, DTSC-modified Screening Levels (DTSC SLs). Human and Ecological Risk Office (HERO). June.
USEPA. 2015. OSWER Technical Guide for Assessing and Mitigating the Vapor Intrusion Pathway from Subsurface Vapor Sources to Indoor Air. Office of Solid Waste and Emergency Response. June.
USEPA, 2021. Regional Screening Levels (TR=1E-06, HQ=1). May.

Table 3
Summary of Maximum Subslab Vapor Concentrations - Other VOCs
Former Kaiser Aerotech Facilities
880 Doolittle Drive and 498 Hester Street
San Leandro, California

Analyte	Maximum Detected Concentration	DTSC SL / USEPA RSL - Commercial/Industrial[1] USEPA $AF_{default}$ = 0.03
	(µg/m^3)	(µg/m^3)
Acetone	326	4,700,000
2-Butanone (MEK)	50.7	730,000
Carbon disulfide	13.9	100,000
Chloroform	12.8	18
Chloromethane	1.72	13,000
Cyclohexane	46.5	870,000
1,2-Dichlorobenzene	5.60	29,000
1,3-Dichlorobenzene	3.01	--
1,1-Dichloroethane	8.98	260
1,1-Difluoroethane	77.5	6,000,000
1,4-Dioxane	6.81	83
Ethanol	144	--
4-Ethyltoluene	1.32	--
Freon 11 (Trichlorofluoromethane)	1.91	180,000
Freon 12 (Dichlorodifluoromethane)	22.1	15,000
Freon 113 (1,1,2-Trichlorotrifluoroethane)	2.19	730,000
Heptane	11.6	60,000
n-Hexane	370	100,000
Isopropylbenzene	1.34	60,000
Methyl Butyl Ketone	8.06	4,300
Methylene Chloride	10.9	400
4-Methyl-2-Pentanone (MIBK)	7.78	430,000
2-Propanol	50.9	29,000
Propene	4.22	430,000
Tetrahydrofuran	3.98	290,000
1,1,1-Trichloroethane	87.6	150,000
1,2,4-Trimethylbenzene	2.38	8,700
1,3,5-Trimethylbenzene	2.07	8,700
2,2,4-Trimethylpentane	78.9	--

Notes:
Volatile organic compounds (VOCs) measured by EPA Method TO-15.
µg/m^3 = Micrograms per cubic meter.
DTSC SL = Department of Toxic Substances Control Screening Level (DTSC, June 2020).
USEPA RSL = U.S. Environmental Protection Agency Regional Screening Level (USEPA, May 2021).
AF = attenuation factor.
-- = No published value.
[1] The screening level for subslab vapor is calculated by dividing the applicable indoor air screening level by the $AF_{default}$ of 0.03. For constituents where DTSC SLs (HHRA Note 3) are not published, USEPA RSLs are used.

References:
Department of Toxic Substances Control (DTSC), 2020. Human Health Risk Assessment (HHRA) Note Number 3, DTSC-modified Screening Levels (DTSC SLs). Human and Ecological Risk Office (HERO). June.
U.S. Environmental Protection Agency (USEPA), 2021. Regional Screening Levels (TR=1E-06, HQ=1). May.

Table 4
Summary of Subslab Vapor Sample Analytical Results - Helium
Former Kaiser Aerotech Facilities
San Leandro, California

Sample ID	Sample Date	Depth (feet bgs)	Helium in Sample (%)	Average Helium Under Shroud (%)	Leak Ratio [1] (%)
VP-1	4/16/2020	Subslab	<0.100	21.0	--
VP-2	4/16/2020	Subslab	<0.100	23.6	--
VP-3	4/16/2020	Subslab	<0.100	26.4	--
VP-4	4/16/2020	Subslab	<0.100	21.0	--
VP-4-DUP	4/16/2020	Subslab	<0.100	21.4	--
VP-5	4/16/2020	Subslab	<0.100	27.3	--
VP-6	4/16/2020	Subslab	<0.100	24.7	--
VP-7	4/16/2020	Subslab	<0.100	18.9	--
VP-8	4/16/2020	Subslab	<0.100	30.3	--
VP-9	4/16/2020	Subslab	**0.968**	18.0	5
VP-10	4/16/2020	Subslab	**0.682**	21.3	3
VP-11	4/16/2020	Subslab	<0.100	24.2	--
VP-12	4/16/2020	Subslab	<0.100	25.9	--

Notes:
Helium and oxygen analyzed by ASTM Method D-1946.
bgs = below ground surface.
% = percent.
<0.100 = Not detected above indicated reporting limit.
-- = Not calculated, helium not detected in sample.
Bold values were reported above laboratory detection limits.
[1] Estimated leak ratio (%) = [Concentration of Helium in Sample (%)] / [Concentration of Helium in Shroud (%)] X100.

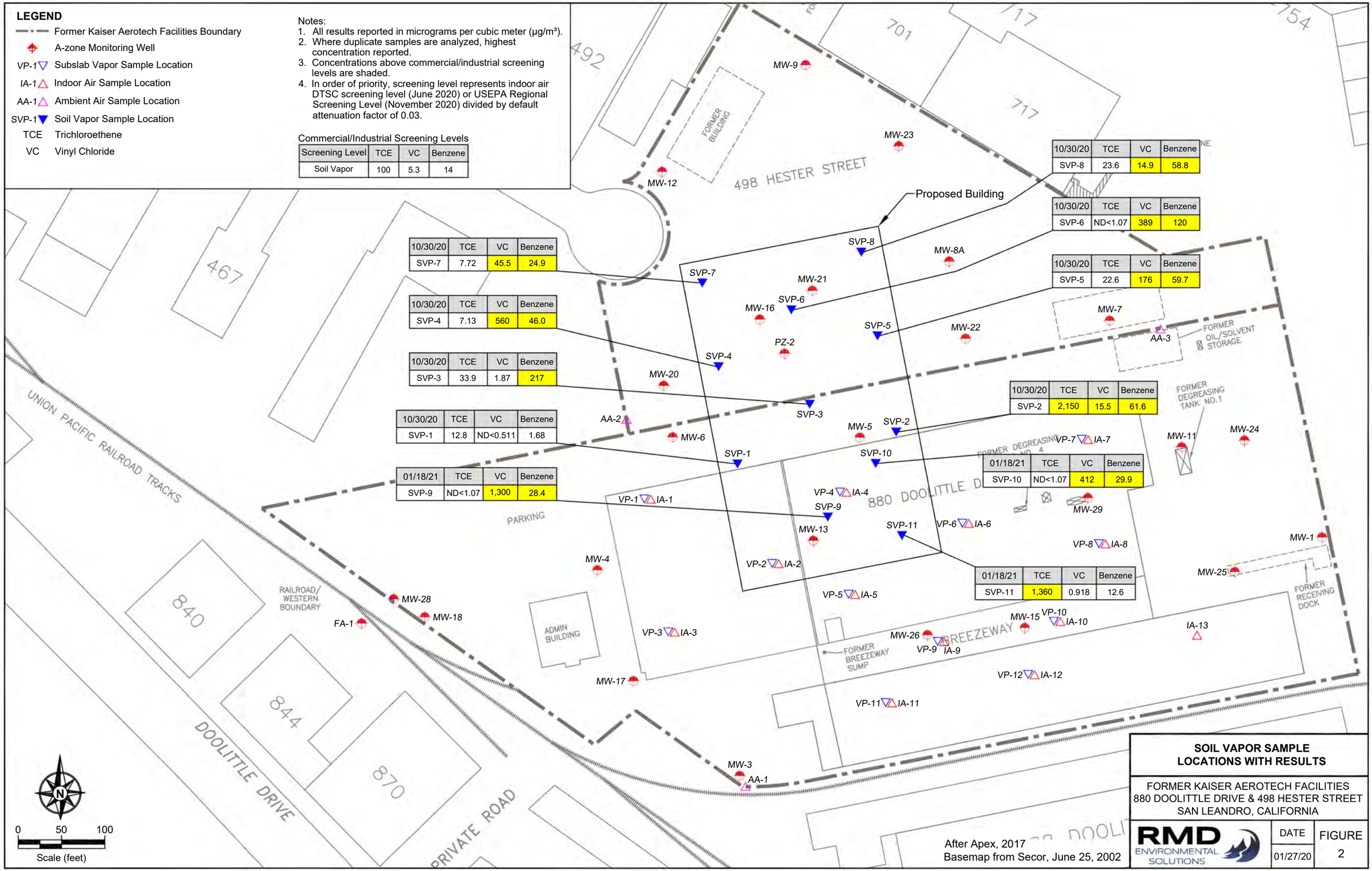
LEGEND

- Former Kaiser Aerotech Facilities Boundary
- A-zone Monitoring Well
- VP-1 Subslab Vapor Sample Location
- IA-1 Indoor Air Sample Location
- AA-1 Ambient Air Sample Location
- SVP-1 Soil Vapor Sample Location
- TCE Trichloroethene
- VC Vinyl Chloride

Notes:
1. All results reported in micrograms per cubic meter (µg/m³).
2. Where duplicate samples are analyzed, highest concentration reported.
3. Concentrations above commercial/industrial screening levels are shaded.
4. In order of priority, screening level represents indoor air DTSC screening level (June 2020) or USEPA Regional Screening Level (November 2020) divided by default attenuation factor of 0.03.

Commercial/Industrial Screening Levels

Screening Level	TCE	VC	Benzene
Soil Vapor	100	5.3	14



10/30/20	TCE	VC	Benzene
SVP-8	23.6	14.9	58.8

10/30/20	TCE	VC	Benzene
SVP-6	ND<1.07	389	120

10/30/20	TCE	VC	Benzene
SVP-5	22.6	176	59.7

10/30/20	TCE	VC	Benzene
SVP-7	7.72	45.5	24.9

10/30/20	TCE	VC	Benzene
SVP-4	7.13	560	46.0

10/30/20	TCE	VC	Benzene
SVP-3	33.9	1.87	217

10/30/20	TCE	VC	Benzene
SVP-2	2,150	15.5	61.6

10/30/20	TCE	VC	Benzene
SVP-1	12.8	ND<0.511	1.68

01/18/21	TCE	VC	Benzene
SVP-10	ND<1.07	412	29.9

01/18/21	TCE	VC	Benzene
SVP-9	ND<1.07	1,300	28.4

01/18/21	TCE	VC	Benzene
SVP-11	1,360	0.918	12.6

After Apex, 2017
Basemap from Secor, June 25, 2002

SOIL VAPOR SAMPLE LOCATIONS WITH RESULTS

FORMER KAISER AEROTECH FACILITIES
880 DOOLITTLE DRIVE & 498 HESTER STREET
SAN LEANDRO, CALIFORNIA

RMD ENVIRONMENTAL SOLUTIONS

DATE	FIGURE
01/27/20	2

Table 4
Soil Vapor Sample Analytical Results - VOCs
Former Kaiser Aerotech Facilities
880 Doolittle Drive and 498 Hester Street
San Leandro, California

Probe	Sample Depth	Date Sampled	PCE	TCE	cis-1,2-DCE	trans-1,2-DCE	1,1-DCE	Vinyl Chloride	Benzene	Toluene	Ethylbenzene	Total Xylenes	Acetone	Carbon Disulfide	Carbon Tetrachloride	Chlorobenzene	Chloromethane	Cyclohexane	1,3-DCB	1,4-DCB
			(µg/m^3)	(µg/m^3)	(µg/m^3)	(µg/m^3)	(µg/m^3)	(µg/m^3)	(µg/m^3)	(µg/m^3)	(µg/m^3)	(µg/m^3)	(µg/m^3)	(µg/m^3)	(µg/m^3)	(µg/m^3)	(µg/m^3)	(µg/m^3)	(µg/m^3)	(µg/m^3)
DTSC SL / USEPA RSL - Soil Vapor Commercial / Industrial [1,2] USEPA $AF_{default}$ = 0.03			67	100	1,200	12,000	10,000	5.3	14	43,000	160	15,000	4,700,000	100,000	67	7,300	13,000	870,000	–	37
TCE Commercial/Industrial ARAL/URAL [2,4] USEPA $AF_{default}$ = 0.03			–	270 / 800	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–
DTSC SL / USEPA RSL - Soil Vapor Commercial / Industrial [1,3] DTSC AF_{fcb} - Future Commercial Building = 0.0005			4,000	6,000	70,000	700,000	620,000	320	840	2,600,000	9,800	880,000	280,000,000	6,200,000	4,000	440,000	780,000	52,000,000	–	2,200
TCE Commercial/Industrial ARAL/URAL [3,4] DTSC AF_{fcb} - Future Commercial Building = 0.0005			–	16,000 / 48,000	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–
SVP-1	5	10/30/2020	4.22	12.8	1.12	2.14	ND<0.793	ND<0.511	1.68	51.6	4.14	28.6	19.6	4.45	ND<1.26	ND<0.924	0.706	ND<0.689	12.1	ND<1.2
SVP-2	4.75	10/30/2020	1.99	2,150	571	16.7	55.9	15.5	61.6	467	41.3	151	146	33.0	ND<1.26	ND<0.924	0.607	14.2	9.68	ND<1.2
SVP-3	4.75	10/30/2020	10.9	33.9	8.68	ND<0.793	ND<0.793	1.87	217	1,500	183	709	233	47.0	1.58	ND<0.924	2.73	42.4	25.4	ND<1.2
SVP-4	5	10/30/2020	ND<1.36	7.13	1,570	215	3.69	560	46.0	135	6.85	31.9	101	71.6	ND<1.26	ND<0.924	ND<0.413	79.6	7.03	ND<1.2
SVP-5	5	10/30/2020	ND<1.36	22.6	55.1	51.9	2.29	176	59.7	131	22.7	98.4	70.8	15.5	ND<1.26	ND<0.924	ND<0.413	93.7	7.27	ND<1.2
SVP-6	5	10/30/2020	ND<1.36	ND<1.07	97.9	206	1.82	389	120	315	78.0	327	105	183	ND<1.26	ND<0.924	1.21	152	10.6	ND<1.2
SVP-7	5	10/30/2020	ND<1.36	7.72	18.8	2.97	ND<0.793	45.5	24.9	61.0	4.38	21.7	38.0	61.9	ND<1.26	ND<0.924	1.31	49.6	15.0	ND<1.2
SVP-8	5	10/30/2020	2.59	23.6	82.8	7.37	1.08	14.9	58.8	220	14.5	54.9	147	178	ND<1.26	ND<0.924	1.60	86.1	13.5	ND<1.2
SVP-8-Dup	5	10/30/2020	ND<1.36	23.4	80.8	7.17	0.943	13.6	56.5	223	14.5	54.8	187	171	ND<1.26	ND<0.924	1.53	84.0	12.3	ND<1.2
SVP-9	4.25	1/18/2021	ND<1.36	ND<1.07	103	2.59	5.03	1,300	28.4	89.3	7.24	31.2	225	134	ND<1.26	4.49	ND<0.413	17.6	17.0	3.30
SVP-10	4.25	1/18/2021	ND<1.36	ND<1.07	10.1	3.72	ND<0.793	412	29.9	72.7	7.33	32.9	120	36.4	ND<1.26	25.3	ND<0.413	88.2	28.4	10.4
SVP-11	4.25	1/18/2021	2.31	1,360	638	184	0.816	0.918	10.0	291	9.80	40.3	231	34.2	ND<1.26	ND<0.924	0.971	28.0	7.21	ND<1.2
SVP-11-Dup	4.25	1/18/2021	ND<1.36	437	199	285	1.35	ND<0.511	12.6	80.6	6.68	31.2	56.6	20.8	ND<1.26	ND<0.924	0.425	7.09	10.2	ND<1.2

Table 4
Soil Vapor Sample Analytical Results - VOCs
Former Kaiser Aerotech Facilities
880 Doolittle Drive and 498 Hester Street
San Leandro, California

Probe	Sample Depth	Date Sampled	1,1-DCA	1,4-Dioxane	Ethanol	4-Ethyltoluene	Freon-11	Freon-12	Heptane	N-Hexane	MEK	Methylene Chloride	MIBK	Naphthalene	2-Propanol	Propene	Styrene	1,2,4-TMB	1,3,5-TMB	2,2,4-TMP
			(µg/m^3)	(µg/m^3)	(µg/m^3)	(µg/m^3)	(µg/m^3)	(µg/m^3)	(µg/m^3)	(µg/m^3)	(µg/m^3)	(µg/m^3)	(µg/m^3)	(µg/m^3)	(µg/m^3)	(µg/m^3)	(µg/m^3)	(µg/m^3)	(µg/m^3)	(µg/m^3)
DTSC SL / USEPA RSL - Soil Vapor Commercial / Industrial [1,2] USEPA $AF_{default}$ = 0.03			**260**	**83**	**--**	**--**	**180,000**	**15,000**	**60,000**	**100,000**	**730,000**	**400**	**430,000**	**12**	**29,000**	**430,000**	**130,000**	**8,700**	**8,700**	**--**
TCE Commercial/Industrial ARAL/URAL [2,4] USEPA $AF_{default}$ = 0.03			**--**	**--**	**--**	**--**	**--**	**--**	**--**	**--**	**--**	**--**	**--**	**--**	**--**	**--**	**--**	**--**	**--**	**--**
DTSC SL / USEPA RSL - Soil Vapor Commercial / Industrial [1,3] DTSC AF_{fcb} - Future Commercial Building = 0.0005			**15,000**	**5,000**	**--**	**--**	**11,000,000**	**880,000**	**3,600,000**	**6,200,000**	**44,000,000**	**24,000**	**26,000,000**	**720**	**1,800,000**	**26,000,000**	**7,800,000**	**520,000**	**520,000**	**--**
TCE Commercial/Industrial ARAL/URAL [3,4] DTSC AF_{fcb} - Future Commercial Building = 0.0005			**--**	**--**	**--**	**--**	**--**	**--**	**--**	**--**	**--**	**--**	**--**	**--**	**--**	**--**	**--**	**--**	**--**	**--**
SVP-1	5	10/30/2020	ND<0.802	**2.61**	**68.8**	ND<0.982	**1.48**	**1.83**	**7.28**	**3.26**	**6.07**	**1.31**	ND<5.12	ND<3.3	**6.88**	**23.2**	ND<0.851	**5.40**	**1.79**	**1.67**
SVP-2	4.75	10/30/2020	**47.3**	ND<0.721	**60.3**	**18.6**	**1.15**	**2.05**	**187**	**46.5**	**11.3**	**2.09**	ND<5.12	ND<3.3	**12.1**	**48.9**	ND<0.851	**13.1**	**8.10**	**167**
SVP-3	4.75	10/30/2020	ND<0.802	ND<0.721	**120**	**111**	**5.47**	**2.07**	**838**	**133**	**20.9**	**4.31**	ND<5.12	ND<3.3	ND<3.07	**78.3**	ND<0.851	**79.5**	**48.5**	**472**
SVP-4	5	10/30/2020	**137**	**3.02**	**158**	**5.01**	ND<1.12	**1.99**	**53.2**	**38.1**	**14.5**	ND<0.694	**6.14**	ND<3.3	ND<3.07	ND<0.689	ND<0.851	**4.01**	**2.18**	**79.9**
SVP-5	5	10/30/2020	**57.3**	**4.04**	**73.7**	**15.7**	ND<1.12	**2.85**	**32.2**	**47.9**	**30.4**	ND<0.694	**10.8**	ND<3.3	ND<3.07	ND<0.689	ND<0.851	**12.3**	**5.60**	**41.2**
SVP-6	5	10/30/2020	**111**	ND<0.721	**79.2**	**58.4**	ND<1.12	**2.27**	ND<0.818	**87.1**	**16.7**	ND<0.694	**9.91**	ND<3.3	ND<3.07	ND<0.689	ND<0.851	**41.9**	**20.4**	**3,410**
SVP-7	5	10/30/2020	**3.29**	ND<0.721	**70.0**	**4.11**	**1.19**	**4.66**	**67.1**	**78.6**	**13.1**	ND<0.694	**5.20**	ND<3.3	ND<3.07	ND<0.689	ND<0.851	**4.24**	**1.53**	ND<0.934
SVP-8	5	10/30/2020	**19.4**	ND<0.721	**70.3**	**7.31**	**3.19**	**2.76**	**122**	**197**	**74.9**	ND<0.694	**9.50**	ND<3.3	ND<3.07	**1,220**	ND<0.851	**5.79**	**2.55**	**17.3**
SVP-8-Dup	5	10/30/2020	**18.9**	**2.10**	**95.4**	**7.07**	**3.01**	**2.62**	**120**	**196**	**69.9**	**6.29**	**9.38**	ND<3.3	ND<3.07	**1,370**	ND<0.851	**5.50**	**2.45**	**16.3**
SVP-9	4.25	1/18/2021	**6.09**	ND<0.721	**135**	**4.96**	ND<1.12	**2.06**	**81.0**	**48.3**	ND<3.69	**2.18**	ND<5.12	ND<3.3	**44.7**	ND<0.689	**1.08**	**8.64**	**1.68**	**44.6**
SVP-10	4.25	1/18/2021	**2.84**	ND<0.721	**171**	**4.22**	ND<1.12	**0.989**	**48.7**	**125**	**20.2**	ND<0.694	ND<5.12	**3.36**	**25.6**	ND<0.689	ND<0.851	**6.72**	**1.61**	**46.4**
SVP-11	4.25	1/18/2021	**3.89**	ND<0.721	**149**	**4.85**	**1.19**	**4.80**	**72.4**	**24.0**	ND<3.69	**5.87**	**7.57**	ND<3.3	**111**	ND<0.689	**4.47**	**10.4**	**1.82**	**7.05**
SVP-11-Dup	4.25	1/18/2021	**0.974**	ND<0.721	**163**	**3.76**	ND<1.12	**7.22**	**42.1**	**13.2**	ND<3.69	**1.63**	ND<5.12	ND<3.3	**26.8**	**9.5**	ND<0.851	**12.6**	**2.19**	**7.47**

Notes:
Detections are indicated in **bold**.
Highlighted value exceeds the DTSC SL / USEPA RSL for commercial/industrial land use for default attenuation factor ($AF_{default}$) of 0.03.
Volatile organic compounds (VOCs) measured by EPA Method TO-15.
µg/m^3 = micrograms per cubic meter.
DTSC SL = Department of Toxic Substances Control Screening Level (DTSC, June 2020).
USEPA RSL = U.S. Environmental Protection Agency Regional Screening Level (USEPA, May 2021).
ND<1.36 = Not detected above indicated laboratory reporting limit.
PCE = Tetrachloroethene.
TCE = Trichloroethene.
DCE = Dichloroethene.
DCB = Dichlorobenzene.
DCA = Dichloroethane.
Freon-11 = Trichlorofluoromethane.
Freon-12 = Dichlorodifluoromethane.
MEK = Methyl ethyl ketone (2-Butanone).
ARAL = Accelerated Response Action Level.
URAL = Urgent Response Action Level.
AF = attenuation factor.
MIBK = Methyl isobutyl ketone (4-Methyl-2-pentanone).
TMB = Trimethylbenzene.
TMP = Trimethylpentane.
[1] In order of priority, the screening level represents the DTSC-modified screening level (DTSC, 2020) followed by USEPA Regional Screening Level (RSL; USEPA, 2021).
[2] The screening level for soil vapor is calculated by dividing the applicable indoor air screening level by the $AF_{default}$ of 0.03 (USEPA, 2015).
[3] The screening level for soil vapor is calculated by dividing the applicable indoor air screening level by the AF_{fcb} of 0.0005 (DTSC, 2011).
[4] The TCE action levels represent commercial/industrial exposure scenario for a 8-hour workday (DTSC, 2014).

References:

DTSC. 2011. Final Guidance for the Evaluation and Mitigation of Subsurface Vapor Intrusion to Indoor Air. October.
DTSC, 2014. HERO HHRA Note Number: 5, Health-based Indoor Air Screening Criteria for Trichloroethylene (TCE). August 23.
DTSC, 2020. Human Health Risk Assessment (HHRA) Note Number 3, DTSC-modified Screening Levels (DTSC SLs). Human and Ecological Risk Office (HERO). June.
USEPA. 2015. OSWER Technical Guide for Assessing and Mitigating the Vapor Intrusion Pathway from Subsurface Vapor Sources to Indoor Air. Office of Solid Waste and Emergency Response. June.
USEPA, 2021. Regional Screening Levels (TR=1E-06, HQ=1). May.

Table 4
Soil Vapor Sample Analytical Results - Helium
Former Kaiser Aerotech Facilities
880 Doolittle Drive and 498 Hester Street
San Leandro, California

Sample ID	Sample Date	Depth (feet bgs)	Helium in Sample (%)	Average Helium Under Shroud (%)	Leak Ratio[1] (%)
SVP-1	10/30/2020	5	ND<0.100	22.4	--
SVP-2	10/30/2020	4.75	ND<0.100	20.8	--
SVP-3	10/30/2020	4.75	ND<0.100	23.0	--
SVP-4	10/30/2020	5	ND<0.100	25.0	--
SVP-5	10/30/2020	5	ND<0.100	23.7	--
SVP-6	10/30/2020	5	ND<0.100	23.8	--
SVP-7	10/30/2020	5	ND<0.100	21.4	--
SVP-8	10/30/2020	5	ND<0.100	21.9	--
SVP-8-DUP	10/30/2020	5	ND<0.100	21.9	--
SVP-9	1/18/2021	4.25	ND<0.100	24.3	--
SVP-10	1/18/2021	4.25	ND<0.100	22.0	--
SVP-11	1/18/2021	4.25	ND<0.100	23.8	--
SVP-11-DUP	1/18/2021	4.25	ND<0.100	23.8	--

Notes:
Helium and oxygen analyzed by ASTM Method D-1946.
bgs = below ground surface.
% = percent.
ND<0.100 = Not detected above indicated reporting limit.
-- = Not calculated, helium not detected in sample.
Bold values were reported above laboratory detection limits.
[1]Estimated leak ratio (%) = [Concentration of Helium in Sample (%)] / [Concentration of Helium in Shroud (%)] X100.

APPENDIX D

BAY AREA AIR QUALITY MANAGEMENT DISTRICT (BAAQMD)

NOTIFICATION FORM

Bay Area Air Quality Management District	**COMPLIANCE & ENFORCEMENT DIVISION**	***Notification Form*** ***Regulation 8 Rule 40***

REMOVAL OF UNDERGROUND STORAGE TANKS *OR* TREATMENT OF CONTAMINATED SOIL

SITE OF ACTIVITY

Site Address:	**City & Zip:**	**Site#:**
Specific Location of Project within Address:		
Owner/Operator:		

Check any that apply (400 numbers refer to regulation section requiring reporting):

☐ Tank Removal or Replacement ***(401)*** ☐ Contaminated Soil Excavation and Removal ***(402)***

☐ Aeration of Soil < 50 ppmw organic content, but does not meet Section 118 Exemption ***(403)***

☐ Section 114 Exempt; Date Pipeline Leak ***Started:*** _____ Vol. Of Soil: _____ ***(403)***

☐ Section 115 Exempt; Date Contamination Unrelated to UST Activities ***Discovered:*** _____ ***(405)***

If only Tank Removal is selected, attach results showing soil is not contaminated

CONTRACTOR INFORMATION

Name:	**Site Contact:**	**Phone:**
Address:		

TANK REMOVAL *(Section 401)*

Scheduled Start Date:	**Number and Size of Tank(s):**

Explain Methods of:

Piping drainage or flushing ***(310.1)*** _____

Liquid and sludge removal ***(310.2)*** _____

Vapor removal *(310.3)* **[Check One]** ☐ Water Displacement ☐ Vapor Freeing* ☐ Ventilation*

* Emission controls required for vapor freeing or ventilation if tank size greater than 250 gallons.

COMPLETE INFORMATION BELOW OR ATTACH SAMPLE RESULTS SHOWING SOIL IS UNCONTAMINATED (310.4)

CONTAMINATED SOIL EXCAVATION AND REMOVAL *(Section 402)*

Scheduled Start Date:	**Scheduled Completion Date:**

Purpose of Excavation: _____

Quantity of Soil: _____ **Organic Content & Type:** _____

Methods used to quantify and analyze soil: _____

Method of Stockpile Control *(304-306)*

☐ Water Spray ☐ Covered ☐ Vapor Suppressant (List Material Used): _____

Method of Site Closure *(306)*

☐ Backfilled ☐ Contaminated Soil Removed

☐ Onsite Treatment (Describe): _____ A/C or P/O #: _____

Loaded Trucks Covered? *(306.2)* ☐ Yes ☐ No

AERATION OF SOIL < 50 PPMW ORGANIC CONTENT *(Section 403)*

You must submit a Permit Application and Risk Screening Analysis *(Forms will be sent to you)*

FOR BAAQMD USE ONLY

Fax/PM Date:	By:	Disp to I#:	Area:	Date:	By:
Inv Req Date:	By:	Fwd to Supv.		Date:	By:

See Page Two to Complete This Form Press to clear form ***Approved 7/8/03***

OTHER PUBLIC AGENCY CONTACTED *(Fire District, Hazardous Materials, City or County)**?***	
Agency Name:	Contact Name:
Address:	Phone:

EMERGENCY REMOVAL ORDER APPLICABLE?	
Agency Name:	Contact Name:
Address:	Phone:

H:\Pub_data\Janet\Reg 8-40\forms\notifdraft3.doc

GENERAL INFORMATION

- This notification form shall be used to notify the BAAQMD of any projects subject to the reporting requirements in Regulation 8, Rule 40, Sections 401 through 405. Notifications may be emailed to compliance@baaqmd.gov; or mailed to the address listed at the bottom of this form.
- An invoice for payment will be sent to the person listed under "Contractor Information" as the person responsible, unless the project is exempt from fee payment (see next item).
- See "Frequently Asked Questions" (FAQ) for definition of projects, change procedures, permit requirements, emergency conditions, project exemptions, and fee exemptions. For any questions not answered in the FAQ, contact the Compliance Assistance Counselor at (415) 749-4999.

INSTRUCTIONS

- **SITE OF ACTIVITY:** Give the site street address and indicate if it has any existing BAAQMD site number, for either a plant or GDF. Identify the specific project location if the site contains more than one building. Indicate all applicable activity types by checking appropriate boxes. For reporting requirements under Sections 401 through 403, additional information is required, as below.
- **CONTRACTOR INFORMATION:** Identify the contractor that is responsible for performing the work at the site location listed. This contractor is also responsible for payment of the applicable notification fee, if the project is not exempt.
- **SECTION 401 - TANK REMOVAL/REPLACEMENT:** All soils disturbed and/or excavated as part of the tank removal shall be subject to the requirements of Sections 304 through 306, unless the soil has been determined not to be contaminated by measurement of organic content using the procedures in Sections 601 and 602. Complete requirements for Section 402 or submit sample results showing that the soil is not contaminated.
- **SECTION 402 - CONTAMINATED SOIL EXCAVATION AND REMOVAL:**
  - Be as accurate as possible for the Scheduled Start and Completion Dates. Specific requirements apply for excavation projects triggered within either 45 or 90 days (Reg. 8-40-306.4) and Authority to Construct requirements for projects lasting longer than three months (Reg. 2-1-128.16).
  - If a vapor suppressant is used, attach a product data sheet or MSDS.
  - If Method of Site Closure used is Onsite Treatment, describe specific method, (e.g., bioremediation, vapor extraction, air sparging, thermal desorption, etc.).
  - If Onsite Treatment is used, indicate whether an Authority to Construct was obtained by providing the Application No. or attach copy of BAAQMD Certification of Exemption.
- **SECTION 403 – AERATION OF SOIL < 50 PPMW ORGANIC CONTENT:** Section 301 exempts from control the aeration of soil containing less than 50 ppmw of organic compounds, but Section 403 still requires reporting of **ANY** soil aeration. If such a project does not meet the exemption criteria of Section 118, then a Permit Application and Risk Screening Analysis must be submitted.
- **EMERGENCY REMOVAL INFORMATION (IF APPLICABLE):** The rule defines an emergency tank removal or excavation of contaminated soil as "carried out pursuant to an order of a state or local government agency issued because the contaminated soil poses an imminent threat to public health and safety." If the project(s) meet this definition, then identify the agency that issued the order. Under Section 402 requirements, on line two, identify the purpose as indicated in the order.

APPENDIX E

DEPARTMENT OF TOXIC SUBSTANCES CONTROL (DTSC)

INFORMATION ADVISORY CLEAN IMPORTED FILL MATERIAL

Information Advisory
Clean Imported Fill Material

October 2001

DEPARTMENT OF TOXIC SUBSTANCES CONTROL

It is DTSC's mission to restore, protect and enhance the environment, to ensure public health, environmental quality and economic vitality, by regulating hazardous waste, conducting and overseeing cleanups, and developing and promoting pollution prevention.

State of California

California Environmental Protection Agency

Executive Summary

This fact sheet has been prepared to ensure that inappropriate fill material is not introduced onto sensitive land use properties under the oversight of the DTSC or applicable regulatory authorities. Sensitive land use properties include those that contain facilities such as hospitals, homes, day care centers, and schools. This document only focuses on human health concerns and ecological issues are not addressed. It identifies those types of land use activities that may be appropriate when determining whether a site may be used as a fill material source area. It also provides guidelines for the appropriate types of analyses that should be performed relative to the former land use, and for the number of samples that should be collected and analyzed based on the estimated volume of fill material that will need to be used. The information provided in this fact sheet is not regulatory in nature, rather is to be used as a guide, and in most situations the final decision as to the acceptability of fill material for a sensitive land use property is made on a case-by-case basis by the appropriate regulatory agency.

Introduction

The use of imported fill material has recently come under scrutiny because of the instances where contaminated soil has been brought onto an otherwise clean site. However, there are currently no established standards in the statutes or regulations that address environmental requirements for imported fill material. Therefore, the California Environmental Protection Agency, Department of Toxic Substances Control (DTSC) has prepared this fact sheet to identify procedures that can be used to minimize the possibility of introducing contaminated soil onto a site that requires imported fill material. Such sites include those that are undergoing site remediation, corrective action, and closure activities overseen by DTSC or the appropriate regulatory agency. These procedures may also apply to construction projects that will result in sensitive land uses. The intent of this fact sheet is to protect people who live on or otherwise use a sensitive land use property. By using this fact sheet as a guide, the reader will minimize the chance of introducing fill material that may result in potential risk to human health or the environment at some future time.

The energy challenge facing California is real. Every Californian needs to take immediate action to reduce energy consumption. For a list of simple ways you can reduce demand and cut your energy costs, see our website at www.dtsc.ca.gov.

Overview

Both natural and manmade fill materials are used for a variety of purposes. Fill material properties are commonly controlled to meet the necessary site specific engineering specifications. Because most sites requiring fill material are located in or near urban areas, the fill materials are often obtained from construction projects that generate an excess of soil, and from demolition debris (asphalt, broken concrete, etc.). However, materials from those types of sites may or may not be appropriate, depending on the proposed use of the fill, and the quality of the assessment and/or mitigation measures, if necessary. Therefore, unless material from construction projects can be demonstrated to be free of contamination and/or appropriate for the proposed use, the use of that material as fill should be avoided.

Selecting Fill Material

In general, the fill source area should be located in nonindustrial areas, and not from sites undergoing an environmental cleanup. Nonindustrial sites include those that were previously undeveloped, or used solely for residential or agricultural purposes. If the source is from an agricultural area, care should be taken to insure that the fill does not include former agricultural waste process byproducts such as manure or other decomposed organic material. Undesirable sources of fill material include industrial and/or commercial sites where hazardous ma-

Potential Contaminants Based on the Fill Source Area

Fill Source:	Target Compounds
Land near to an existing freeway	Lead (EPA methods 6010B or 7471A), PAHs (EPA method 8310)
Land near a mining area or rock quarry	Heavy Metals (EPA methods 6010B and 7471A), asbestos (polarized light microscopy), pH
Agricultural land	Pesticides (Organochlorine Pesticides: EPA method 8081A or 8080A; Organophosphorus Pesticides: EPA method 8141A; Chlorinated Herbicides: EPA method 8151A), heavy metals (EPA methods 6010B and 7471A)
Residential/acceptable commercial land	VOCs (EPA method 8021 or 8260B, as appropriate and combined with collection by EPA Method 5035), semi-VOCs (EPA method 8270C), TPH (modified EPA method 8015), PCBs (EPA method 8082 or 8080A), heavy metals including lead (EPA methods 6010B and 7471A), asbestos (OSHA Method ID-191)

**The recommended analyses should be performed in accordance with USEPA SW-846 methods (1996). Other possible analyses include Hexavalent Chromium: EPA method 7199*

Recommended Fill Material Sampling Schedule

Area of Individual Borrow Area	Sampling Requirements
2 acres or less	Minimum of 4 samples
2 to 4 acres	Minimum of 1 sample every 1/2 acre
4 to 10 acres	Minimum of 8 samples
Greater than 10 acres	Minimum of 8 locations with 4 subsamples per location

Volume of Borrow Area Stockpile	Samples per Volume
Up to 1,000 cubic yards	1 sample per 250 cubic yards
1,000 to 5,000 cubic yards	4 samples for first 1000 cubic yards +1 sample per each additional 500 cubic yards
Greater than 5,000 cubic yards	12 samples for first 5,000 cubic yards + 1 sample per each additional 1,000 cubic yards

terials were used, handled or stored as part of the business operations, or unpaved parking areas where petroleum hydrocarbons could have been spilled or leaked into the soil. Undesirable commercial sites include former gasoline service stations, retail strip malls that contained dry cleaners or photographic processing facilities, paint stores, auto repair and/or painting facilities. Undesirable industrial facilities include metal processing shops, manufacturing facilities, aerospace facilities, oil refineries, waste treatment plants, etc. Alternatives to using fill from construction sites include the use of fill material obtained from a commercial supplier of fill material or from soil pits in rural or suburban areas. However, care should be taken to ensure that those materials are also uncontaminated.

Documentation and Analysis

In order to minimize the potential of introducing contaminated fill material onto a site, it is necessary to verify through documentation that the fill source is appropriate and/or to have the fill material analyzed for potential contaminants based on the location and history of the source area. Fill documentation should include detailed information on the previous use of the land from where the fill is taken, whether an environmental site assessment was performed and its findings, and the results of any testing performed. It is recommended that any such documentation should be signed by an appropriately licensed (CA-registered) individual. If such documentation is not available or is inadequate, samples of the fill material should be chemically analyzed. Analysis of the fill material should be based on the source of the fill and knowledge of the prior land use.

Detectable amounts of compounds of concern within the fill material should be evaluated for risk in accordance with the DTSC Preliminary Endangerment Assessment (PEA) Guidance Manual. If

metal analyses are performed, only those metals (CAM 17 / Title 22) to which risk levels have been assigned need to be evaluated. At present, the DTSC is working to establish California Screening Levels (CSL) to determine whether some compounds of concern pose a risk. Until such time as these CSL values are established, DTSC recommends that the DTSC PEA Guidance Manual or an equivalent process be referenced. This guidance may include the Regional Water Quality Control Board's (RWQCB) guidelines for reuse of non-hazardous petroleum hydrocarbon contaminated soil as applied to Total Petroleum Hydrocarbons (TPH) only. The RWQCB guidelines should not be used for volatile organic compounds (VOCs) or semi-volatile organic compounds (SVOCS). In addition, a standard laboratory data package, including a summary of the QA/QC (Quality Assurance/Quality Control) sample results should also accompany all analytical reports.

When possible, representative samples should be collected at the borrow area while the potential fill material is still in place, and analyzed prior to removal from the borrow area. In addition to performing the appropriate analyses of the fill material, an appropriate number of samples should also be determined based on the approximate volume or area of soil to be used as fill material. The table above can be used as a guide to determine the number of samples needed to adequately characterize the fill material when sampled at the borrow site.

Alternative Sampling

A Phase I or PEA may be conducted prior to sampling to determine whether the borrow area may have been impacted by previous activities on the property. After the property has been evaluated, any sampling that may be required can be determined during a meeting with DTSC or appropriate regulatory agency. However, if it is not possible to analyze the fill material at the borrow area or determine that it is appropriate for use via a Phase I or PEA, it is recommended that one (1) sample per truckload be collected and analyzed for all compounds of concern to ensure that the imported soil is uncontaminated and acceptable. (See chart on Potential Contaminants Based on the Fill Source Area for appropriate analyses). This sampling frequency may be modified upon consultation with the DTSC or appropriate regulatory agency if all of the fill material is derived from a common borrow area. However, fill material that is not characterized at the borrow area will need to be stockpiled either on or off-site until the analyses have been completed. In addition, should contaminants exceeding acceptance criteria be identified in the stockpiled fill material, that material will be deemed unacceptable and new fill material will need to be obtained, sampled and analyzed. Therefore, the DTSC recommends that all sampling and analyses should be completed prior to delivery to the site to ensure the soil is free of contamination, and to eliminate unnecessary transportation charges for unacceptable fill material.

Composite sampling for fill material characterization may or may not be appropriate, depending on quality and homogeneity of source/borrow area, and compounds of concern. Compositing samples for volatile and semivolatile constituents is not acceptable. Composite sampling for heavy metals, pesticides, herbicides or PAH's from unanalyzed stockpiled soil is also unacceptable, unless it is stockpiled at the borrow area and originates from the same source area. In addition, if samples are composited, they should be from the same soil layer, and not from different soil layers.

When very large volumes of fill material are anticipated, or when larger areas are being considered as borrow areas, the DTSC recommends that a Phase I or PEA be conducted on the area to ensure that the borrow area has not been impacted by previous activities on the property. After the property has been evaluated, any sampling that may be required can be determined during a meeting with the DTSC.

For further information, call Shahir Haddad, P.E. at (714) 484-5368.

Department of Toxic Substances Control

Jared Blumenfeld
Secretary for
Environmental Protection

Meredith Williams, Ph.D., Director
700 Heinz Avenue
Berkeley, California 94710-2721

Gavin Newsom
Governor

August 3, 2021

Leandro Brookshire, LLC
Mr. Brett Richer
Pier 1, Bay 1
San Francisco, CA 94111
bricher@prologis.com

REVISED SOIL AND GROUNDWATER MANAGEMENT PLAN (SGMP) APPROVAL LETTER FOR THE FORMER KAISER AEROTECH FACILITIES (200559-11018)

Dear Mr. Richer:

The Department of Toxic Substances Control (DTSC) has reviewed the Revised Soil and Groundwater Management Plan (SGMP) for the Former Kaiser Aerotech Facilities site (Site) located at 880 Doolittle Drive and 498 Hester Street, San Leandro, California, submitted by RMD Environmental Solutions, Inc. (RMD) and dated June 11, 2021. The purpose of this SGMP is to provide guidance for proper handling, management, and disposal of impacted soil and groundwater that may be encountered during the activities described in the plan. This SGMP has been revised to incorporate responses to May 7, 2021 DTSC comments.

DTSC hereby approves the SGMP. Please submit one final paper copy for the Site file with attention to project manager Yongsheng “Johnny” Sun.

If you have any questions or need further assistance, please contact project manager Yongsheng “Johnny” Sun at yongsheng.sun@dtsc.ca.gov, or (510) 540-3872.

Sincerely,

John Karachewski

John Karachewski, PhD, PG, CHG Unit Chief
Site Mitigation and Restoration Program – Berkeley Office

Enclosure
cc: See next page

Printed on Recycled Paper

cc: Mr. Khaled Rahman, P.G., C.HG.
RMD Environmental Solutions, Inc.
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Appendix E

Evaluation of Site Sound Emissions

EVALUATION OF SITE SOUND EMISSIONS

PROPOSED DISTRIBUTION FACILITY
San Leandro, CA

Revision 2

Prepared for: **Prologis, Inc.**

Prepared by: **John T. Baldassano, Jr.**
jbaldassano@acousticalconsultant.com

Reviewed by: **Benjamin C. Mueller, P.E.**
bmueller@acousticalconsultant.com

Date: **5 February 2024**

OAA File: **4301B**

OSTERGAARD ACOUSTICAL ASSOCIATES

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INTRODUCTION

Ostergaard Acoustical Associates (OAA) was asked to assist with the evaluation of potential sound emissions from a proposed speculative distribution facility planned for construction in San Leandro, Alameda County, California. The project site is located southeast of the Hester Street cul-de-sac and currently comprises an industrial warehouse. Plans call for all existing structures on site to be removed and the construction of a distribution facility in the southeastern portion of the site. This report addresses on-site noise radiated to nearby potentially noise-sensitive receptors.

The purpose of this sound study is to analyze future site sound emissions for comparison with applicable code limits and to evaluate the potential for noise complaints. Research indicates that the City of San Leandro does have a noise code, but it generally discusses noise in a qualitative manner and provides no applicable quantitative limits. The County noise code has merit and while not enforceable within City limits, was used as a foundation for development of project noise goals. Therefore, expected site sound emissions from the facility were evaluated against criteria recommended by OAA based the County noise code limits, professional experience, and information available on existing ambient conditions. The objective of the project goal is to protect potentially noise sensitive receptors and meet the intent of the City noise code. Sound produced by the site comprises steady sound from rooftop HVAC equipment as well as intermittent sound from truck and car[1] movements.

Work by OAA was overseen by Benjamin C. Mueller, P.E., with assistance from OAA Staff. The representative at Prologis Inc. coordinating this project is Ms. Claudia Tarpin.

[1] Note that throughout this report, the term "car" collectively refers to personal passenger vehicles including automobiles, vans, pick-ups, or SUVs. The term "truck" refers to heavy trucks such as over-the-road or line-haul trucks.

SITE AND VICINITY

Figure 1 is an aerial image obtained from Google Earth outlining the site property line in red. The site and most of the surrounding area currently comprise industrial properties in the IG, Industrial General, district. Many uses in the vicinity also utilize heavy trucks. Certain properties in the area are in the IP, Industrial Park, district and accommodate non-noise-sensitive industrial uses. West of the site, across Doolittle Drive, is a golf course located in Oakland. About ¾ of a mile beyond is the Oakland International Airport; the site is in line with two of the runways. Abutting the site to the east are other industrial uses. A railroad right-of-way is 500 feet to the east with residences fronting on Tudor Court in the RS, Residential Single-Family, district beyond. Adjacent to these residences to the south are other IP and IG district uses; just east of this residential neighborhood is Interstate-880. Given the surroundings, the area is expected to be regularly exposed to moderately high sound levels, and therefore, nearby residences are not assumed to be particularly noise-sensitive. Nevertheless, site noise should still be evaluated at these receptors to assess any acoustical impact.

Plans call for the existing industrial use and all structures to be removed and a new 239,573 ft^2 distribution facility constructed roughly in the same location as the previous building. Office space will accommodate about 10,000 ft^2 of the building footprint. The remaining 229,573 ft^2 will be used for warehouse storage. The proposed building will be 50 feet tall. Existing site access will remain via Hester Street to the northwest and an unnamed street connecting to Doolittle Drive to the southwest. These driveways will accommodate both cars and trucks. Onsite driveways circle the building, allowing truck access to the truck court located along the north and south sides of the building. There are approximately 27 dock doors along the north side of the building and 37 dock doors along the south side. Associate parking is provided in a triangular lot on the west side of the building; trailer parking is provided north of the building.

Specific traffic counts depend on the end user tenant. While the extent of onsite traffic and the hours of operation are unknown, the sound study has followed the same conservative assumptions made in the traffic study, based on the size of the site and proposed building. Typical warehouses operate 24/7 with much of the activity during the daytime hours; nighttime operations are generally used to prepare for the next day. The focus of this study is to analyze potential nighttime activity as this is generally when residential receptors are most sensitive and code limits are more stringent.

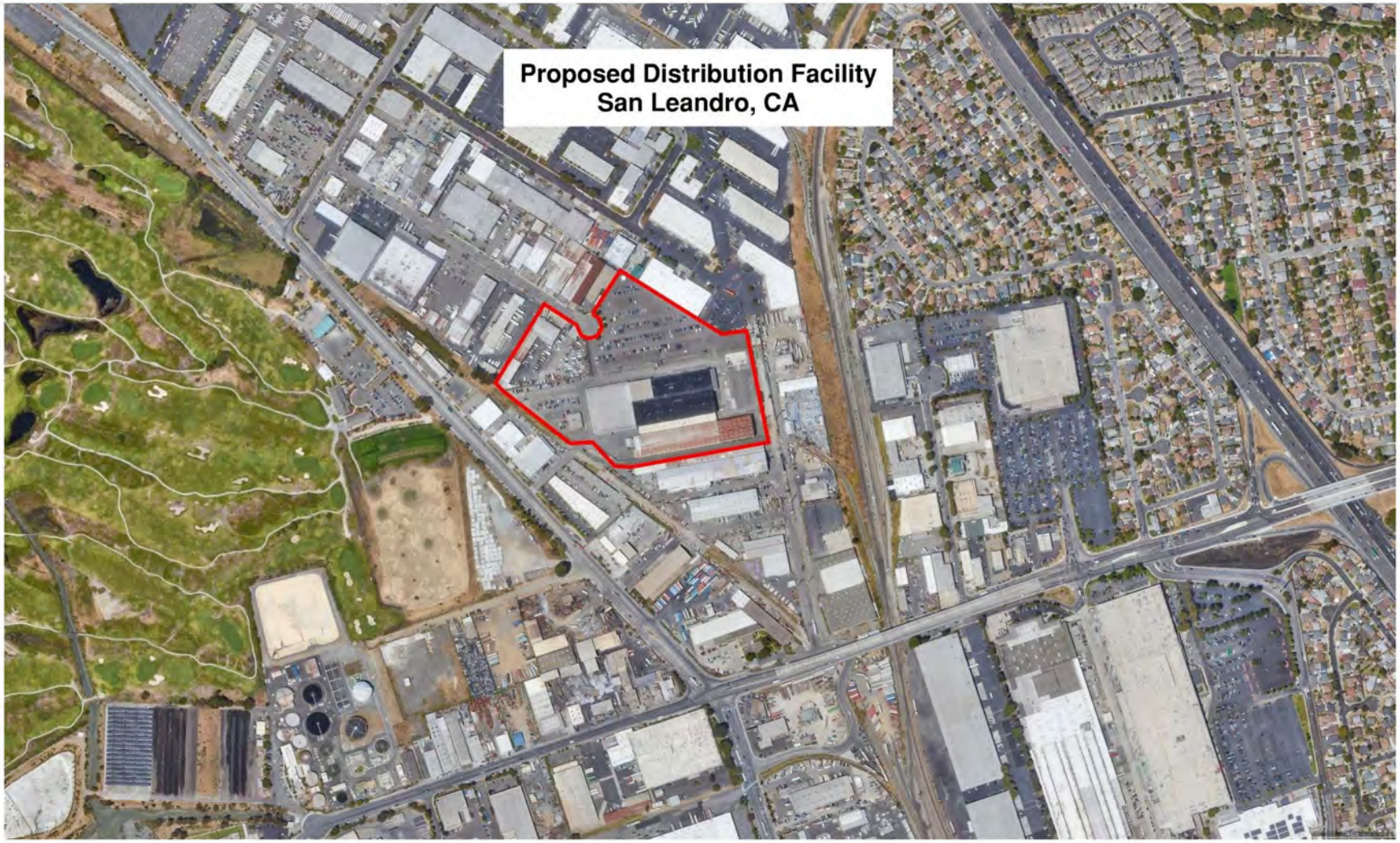


Figure 1 — Google Earth image showing the proposed distribution facility site and vicinity in San Leandro, CA. The site property line is approximately outlined in red.

REGULATIONS/GOALS

When developing a site of this type, it is appropriate to consider how sound from the project will likely be received, especially by noise-sensitive receptors. Sound produced by distribution facilities is characterized by motor vehicle activity, such as idling and vehicle movement, as well as steady HVAC equipment. These sound sources were evaluated and compared to applicable noise code limits. As a general practice, when motor vehicles are on site, they are considered part of a site's sound emissions; when vehicles are on public roads, they are not. When vehicles are departing or approaching the facility, they are expected to blend in with existing traffic flow sound in the area.

City, County, and State codes were reviewed for applicable noise regulations. The City of San Leandro discusses noise in Chapter 4.1: *Noise*. The code prohibits disturbing, excessive, and offensive noise and specifically prohibits certain acts in connection with loud noise, but none are relevant to the site. All discussions of noise are in a qualitative manner and do not include quantitative limits. Zoning code Section 4-1670: *Performance Standards* also call for compliance with Chapter 4-1. Sections 2-740 and 2-741 provide additional performance standards that apply to industrial activities within 200 feet of a residential district. Because this site is 500 feet away from a residential district, these are not applicable. Alameda County also has a noise code, found under Chapter 6.60: *Noise*. While it does not apply to incorporated areas of the County, it was reviewed for thoroughness. The County noise code limits apply at receiving properties based on their use, and sets various limits based on the duration of the noise. Higher limits are allowed for shorter periods of time. In summary, steady sound is limited at residential receptors to 50 dB(A) during the day hours (0700-to-2200 hours) and 45 dB(A) during the corresponding night hours. During the night, levels up to 60 dB(A) are allowed for up to 1 minute, 55 dB(A) for up to 5 minutes, and 50 dB(A) for up to 15 minutes in a given hour. Daytime noise code limits for residences are 5 dB higher in level. Commercial noise code limits are 15 dB higher in level than residential limits. The County does not provide any limits for industrial receptors. There is also a provision that says if the ambient sound is greater than the provided limits, then the code limits shall be equal to the ambient sound level. It is not clear whether this code applies to on-site motor vehicles or not. The State of California does not have any site noise regulations but does regulates motor vehicle noise in California Vehicle Code Sections 27150 and 27200. These codes require all motor vehicle to have exhaust mufflers and provide maximum allowable sound levels for various types of vehicles at a distance of 50 feet. In particular, for heavy trucks manufactured after 1987, the maximum sound pressure level permitted is 80 dB(A) at 50 feet. This limit is readily met by vehicles in good working condition.

A brief discussion of the relevant noise codes is needed. The City code does not provide any quantitative limits for site sound emissions, and State codes for motor vehicles are relative to the vehicle, not the receptor. The County noise code has merit; while not enforceable within the City jurisdiction, it was used as a basis for development of project noise goals. OAA finds that a limit of 45 dB(A) for a residential receptor during the night is generally acceptable for steady noise sources. However, given the density and make-up of the area, it is likely overly stringent if applied here. Based on experience, an urban area such as this would naturally have ambient sound levels far greater than this limit. In our opinion, the County code allowance for excursions that occur between 1 minute and 15 minutes of 55-to-60 dB(A) are nominally acceptable at residential receptors during the night, especially for dwellings nearby well-travelled roadways.

Based on experience, OAA would typically set a project goal for steady HVAC sound of 50 dB(A) at residences during the night. Intermittent maximum sound levels from truck activity should strive to not exceed 55 dB(A). This approach is supported by the County noise code as well as the expected ambient sound levels currently present. While OAA has not carried out our own ambient sound survey, this project noise goal is acceptable and appropriate based on professional experience and several online references that provide ambient sound information for the area. Site maximum sound levels of this magnitude will be far lower in level than sound produced by the active railway adjacent to the nearby residences.

Various references support this logic. The National Transportation Noise Map of the City of San Leandro shows that the area around the site is expected to experience 24-hour average sound levels of 50-to-60 dB(A), based on data collected in 2018. This is shown graphically in Figure 2 below. In addition, a review of the City of San Leandro 2035 General Plan discusses existing and future ambient noise in Chapter 7: Environmental Hazards Element. Figure 7-6 of this report shows that residences east of the site are within the 60 dB(A) CNEL contour given their distance from Interstate-880. The report qualifies this contour as being normally or conditionally acceptable in Chart 7-2. Note that the General Plan uses the CNEL (Community Noise Equivalent Level) metric, which is calculated from 24-hour data; this metric is commonly used to assist in planning and zoning and is not a metric that is appropriate to evaluate the potential for acoustical impacts or complaints. OAA introduced this reference merely to support the conclusion that this area is inherently active and justify the project noise goal. Using a 24-hour metric for a distribution facility would potentially diminish the presence of the short-term maximum sound levels associated with truck activity and is not recommended.

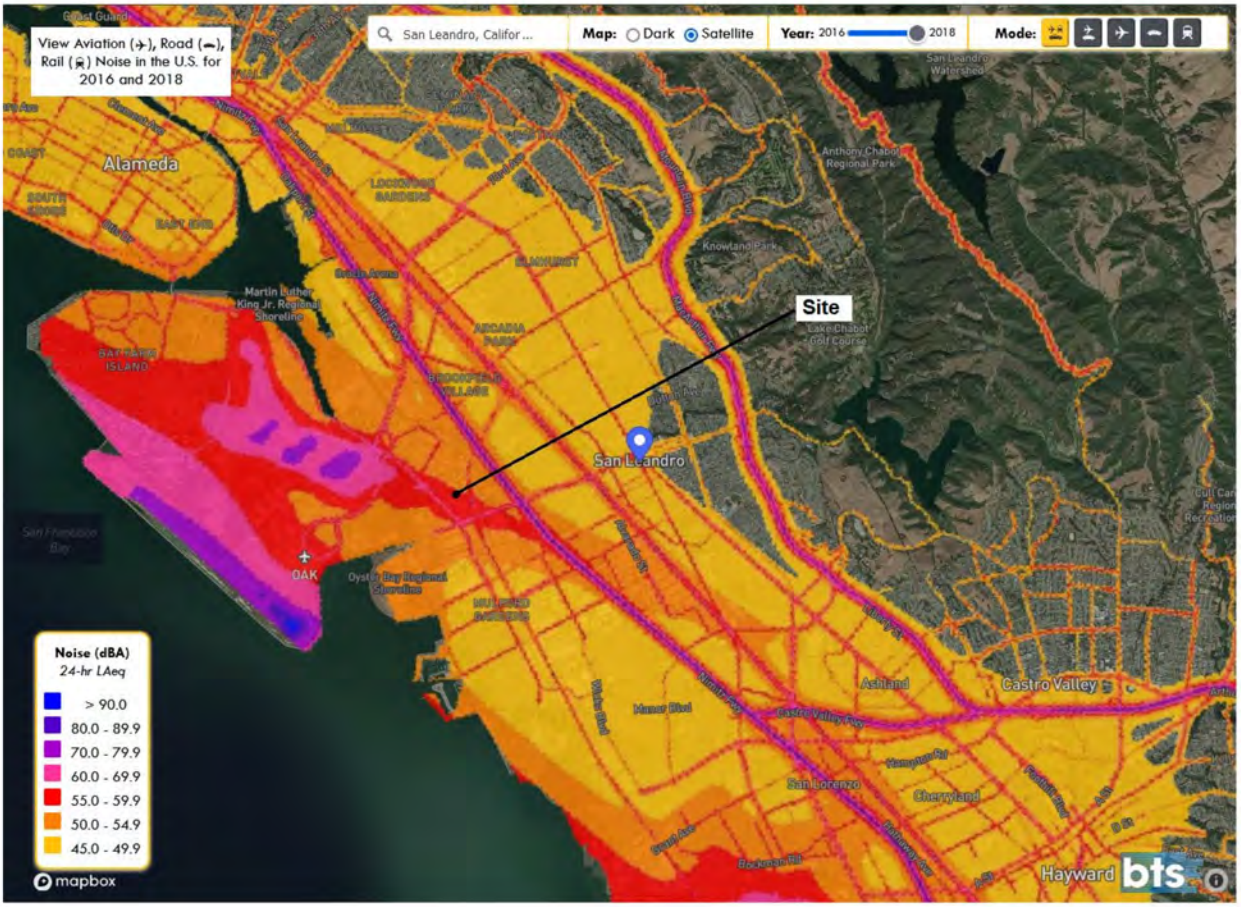


Figure 2 — Image taken from the National Transportation Noise map of San Leandro. Site location is identified on the map.

We understand that, while our recommendations are based on experience and cited references, they are considered speculative. To minimize this speculation, OAA has defaulted to using the County code nighttime limit of 45 dB(A) for steady site sound and 55 dB(A) for maximum intermittent truck sounds for residential receptors. The intermittent limit is appropriate since maximum truck operations will not occur for durations over 5 minutes in a given hour. Rational supporting this is provided in subsequent sections. Project noise goals are not warranted for industrial uses at any time, as they are not considered particularly noise-sensitive receptors.

It should be noted that a specific analysis was not carried out for personal motor vehicles. Based on experience, while they may be greater in quantity, they are significantly lower in level than heavy trucks. Hence, if on-site truck analyses are shown to meet project goals, personal motor vehicle sound will as well.

EXPECTED SOUND EMISSIONS

Acoustical modelling software, specifically CadnaA, was used to create and analyze site sound emissions for the site. The model takes into account relevant parameters between the noise source and receptor positions of interest to predict how sound will propagate. In addition to distance attenuation, the model accounts for the effects of terrain, various types of ground cover, shielding by structures, and reflections from buildings. Model results show only the sound emissions of the site, which are directly comparable to project noise goals; ambient sound is not included in the model. In the model, buildings are white, and the site property line is outlined in red. North is pointing generally up in all acoustical modelling figures.

The acoustical model shows the results graphically as A-weighted sound level contours, in 1 dB increments, and tabulates the summed A-weighted sound levels at five discrete locations at the façade of nearby residential receptors. Sound level contours are at ear height, 5 feet above grade. Location B is at 15 feet above grade to typify an upper story receptor; Locations C through F typify single story receptors at 5 feet above grade. Location A is not used and reserved for future use.

Rooftop HVAC Sound

Rooftop HVAC equipment produces noise that is nominally steady in nature, and hence will not vary significantly over time. Based on similar projects, a conservative estimation is to assume 1 ton of cooling capacity for every 725 ft^2 of building area. This equates to about fourteen (14) 25-ton HVAC units evenly distributed on top of the building. The sound power level for each 25-ton unit is assumed to be 93 dB(A) re 1 picowatt based on typical manufacturer's sound data.

The noise from the 14 rooftop units was included in the HVAC sound model. Noise sources were placed 4 feet above the rooftop, and sound was projected off site. Figure 3 shows the results graphically and tabulates the summed A-weighted sound levels at the five residential receptor Locations. The results show that, with all rooftop units operating, HVAC sound levels at off-site receptors are in the 38-to-40 dB(A) range.

This analysis shows that there is little concern about HVAC sound. HVAC sound is sufficiently controlled via distance and roof shielding effects so that this noise meets the 45 dB(A) project noise goal at all residences by wide margins. Note that for these model results to be realized, acoustical performance of HVAC equipment must be acoustically aligned with what was modelled.

Figure 3 — A-weighted sound emission contours, 5 feet above grade, from rooftop HVAC equipment. Each of the rooftop units shown with a blue + sign. Buildings shown in white. Site property line outlined in red. Location B is at 15 feet above grade; all other Locations are at 5 feet above grade.

Truck Activity

OAA has had the opportunity to visit various distribution and logistics facilities over the years to survey and document the sounds of truck activity. Distribution facilities will have over-the-road line-haul trucks as well as terminal tractors (yard tractors) active on site. Line-haul trucks deliver trailers from off-site whereas terminal tractors do not leave the site and move trailers between the docks and parking areas. Terminal tractors are responsible for the majority of back-up movements on-site. From an acoustical aspect, terminal tractors and line-haul trucks are acoustically equivalent.

Truck noise in typical dock and trailer parking areas can routinely produce maximum sound levels of 79 dB(A) at 50 feet. This sound level was determined based on OAA field data, by looking at a wide variety of truck activity, such as truck movement, air brakes, back-up alarms, and coupling/decoupling, and distilling it to a single conservative maximum level and spectrum for use in acoustical studies such as this. A driving truck exhibits slightly lower maximum sound levels of 74 dB(A) at 50 feet. Personnel vehicles produce typical maximum sound levels of 59 dB(A) at 50 feet, and hence are traditionally not an acoustical concern. The height of a truck source for all truck activity is modelled at a conservative height of 8 feet above grade. OAA has found that using these maximum sound levels at this height ensures a conservative approach to evaluating truck sound. When specific individual activities are modelled at their actual height and sound level, results are typically lower in level than predicted below. For example, many of the high sound level activities, such as back-up alarms and air brakes, occur at a height of 4 feet above grade, not 8 feet. This is a critical detail when evaluating the effectiveness of a sound barrier or berm and when considering intervening topography. It is also important to recognize that all truck noise is dynamic in nature. Maximum sound levels only occur for a short duration and are not representative of the constant sound level produced by on-site trucks.

While there will certainly be multiple trucks on-site at any given time, experience shows that off-site maximum sound levels are governed by specific individual truck activity that occurs closest to a given receptor. Several factors support this. Due to maximum levels being dynamic and short in duration, it is unlikely that multiple truck sound level maximums will occur at the exact same time and location. In addition, safe practices prevent more than one truck from operating at the same time and in the same vicinity. Hence, two short duration maximum sound levels overlapping in a manner that exacerbates the situation is very improbable. Should this extremely rare alignment occur, with two similar sources occurring at the same time and vicinity, emissions would only be 3 dB higher due to the logarithmic nature of sound pressure level addition.

Trucks were modelled at various on-site locations. Of particular interest are the worst-case truck locations; these occur at the eastern portions of the site. Truck yard activity was modelled in areas of the truck yard closest to residential receptors and modelled as a white "+". A driving truck was also modelled along the onsite driveway east of the building and is shown as a pink "+". Figures 4 through 6 take the HVAC sound model and add the intermittent maximum sound emissions contributed by on-site heavy truck activity. These figures show the following results:

- Figure 4 shows truck yard activity in the northeast portion of the site. Worst-case maximum sound emissions are 55 dB(A) at Location D and 56 dB(A) at Location E.

- Figure 5 provides the results for driving truck activity along the eastern onsite driveway. Maximum sound emissions range from 51-to-55 dB(A) at all Locations.

- Figure 6 shows sound emissions from truck yard activity in the south of the building. Worst-case emissions are 54 dB(A) at Locations B and C.

Overall, model results show that worst-case truck activity will be no greater than 56 dB(A) at off-site residential receptors. Note that Figures show the worst-case truck positions; most activity onsite will occur farther west than presented in this report and will benefit from shielding provided by intervening buildings and additional distance. As such, most activity onsite will be substantially lower than the results presented in this report. In addition to sufficiently low magnitude sound levels, a review of the traffic study, prepared by Kimley Horn and dated January 2024, shows that the proposed project expects approximately 46 truck trips, or 23 individual trucks, daily for this use. That distills down to about 1 truck each hour if spread out equally across the day; in reality, uses such as this will typically have more daytime activity than night. These low trip counts mean that should maximum sound levels occur from truck activity, that they would be infrequent and short in duration. This also supports that maximum sound levels would occur for durations of less than 1 minute in an hour; hence, modelled results would fully comply with the County noise code. OAA finds that even if the worse-case scenario of 56 dB(A) were to occur for a period of 5 minutes, that this would meet the intent of the County code goals and not result in any negative acoustical impact for this project.

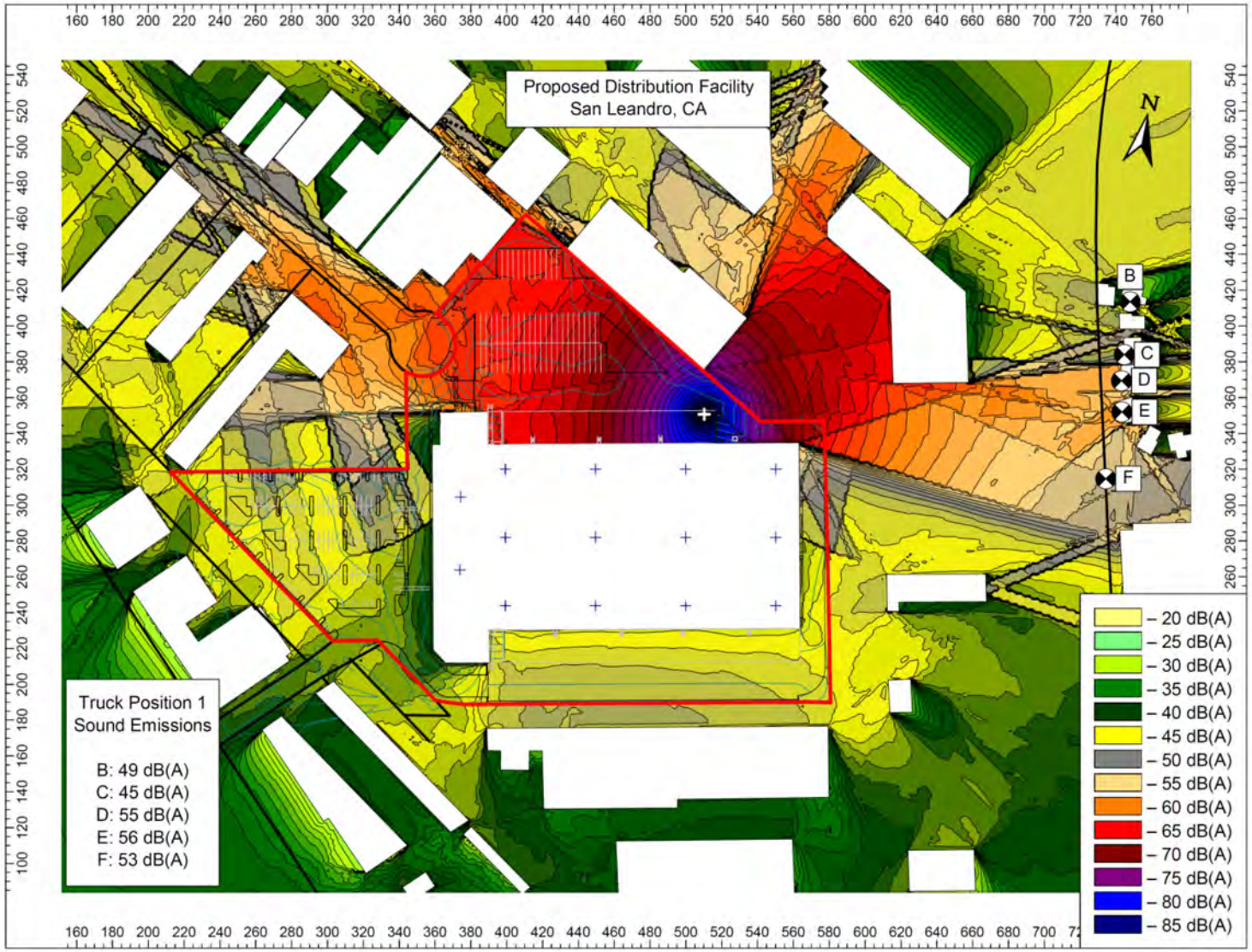


Figure 4 — A-weighted sound level contours 5 feet above grade expected for rooftop equipment and Truck Position 1. Rooftop units shown with a blue "+" sign. Heavy truck yard activity shown with a white "+" sign. Buildings shown in white. Site property line outlined in red. Location B is at 15 feet above grade; all other Locations are at 5 feet above grade.

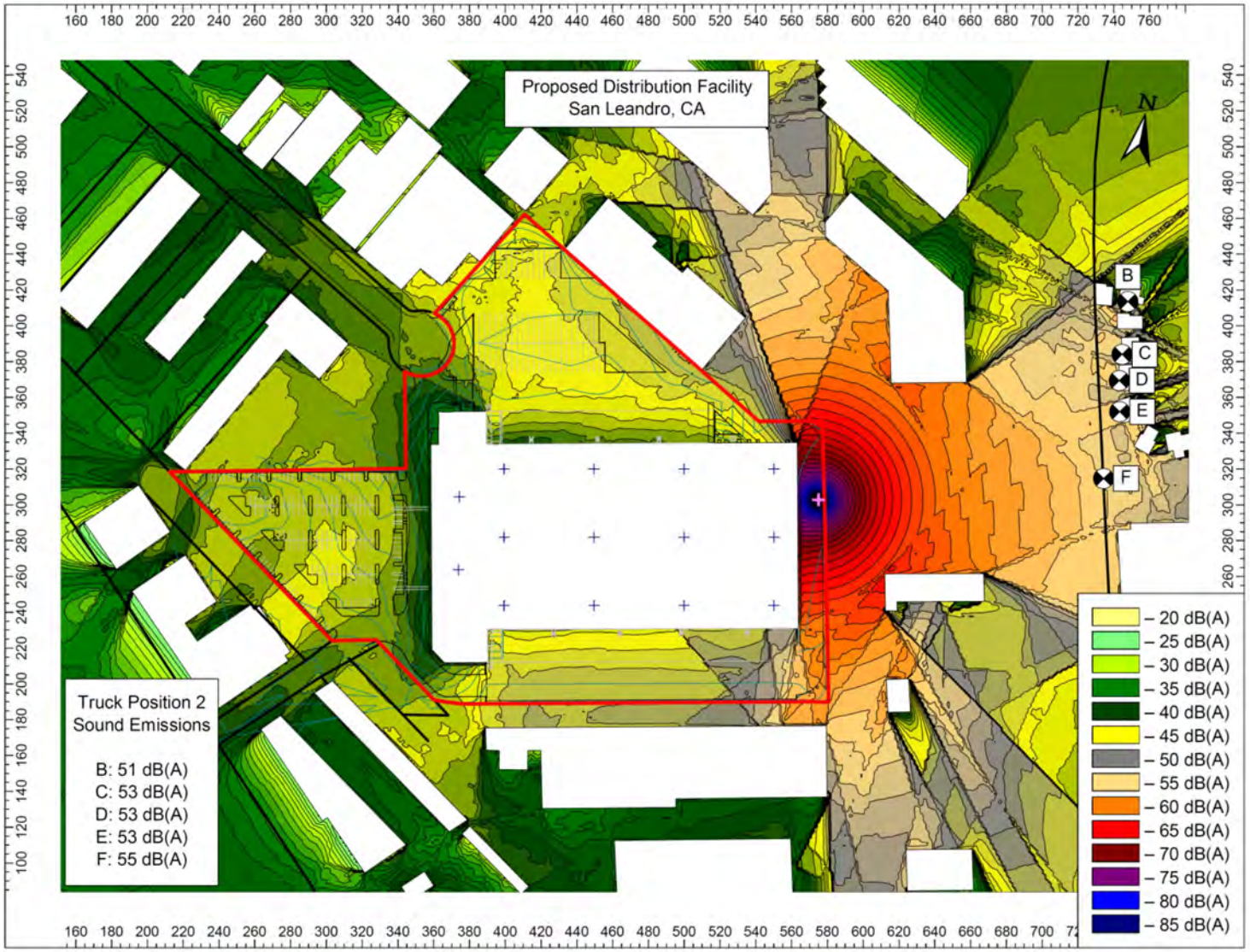


Figure 5 — A-weighted sound level contours 5 feet above grade expected for rooftop equipment and Truck Position 2. Rooftop units shown with a blue "+" sign. Driving truck shown with a pink "+" sign. Buildings shown in white. Site property line outlined in red. Location B is at 15 feet above grade; all other Locations are at 5 feet above grade.

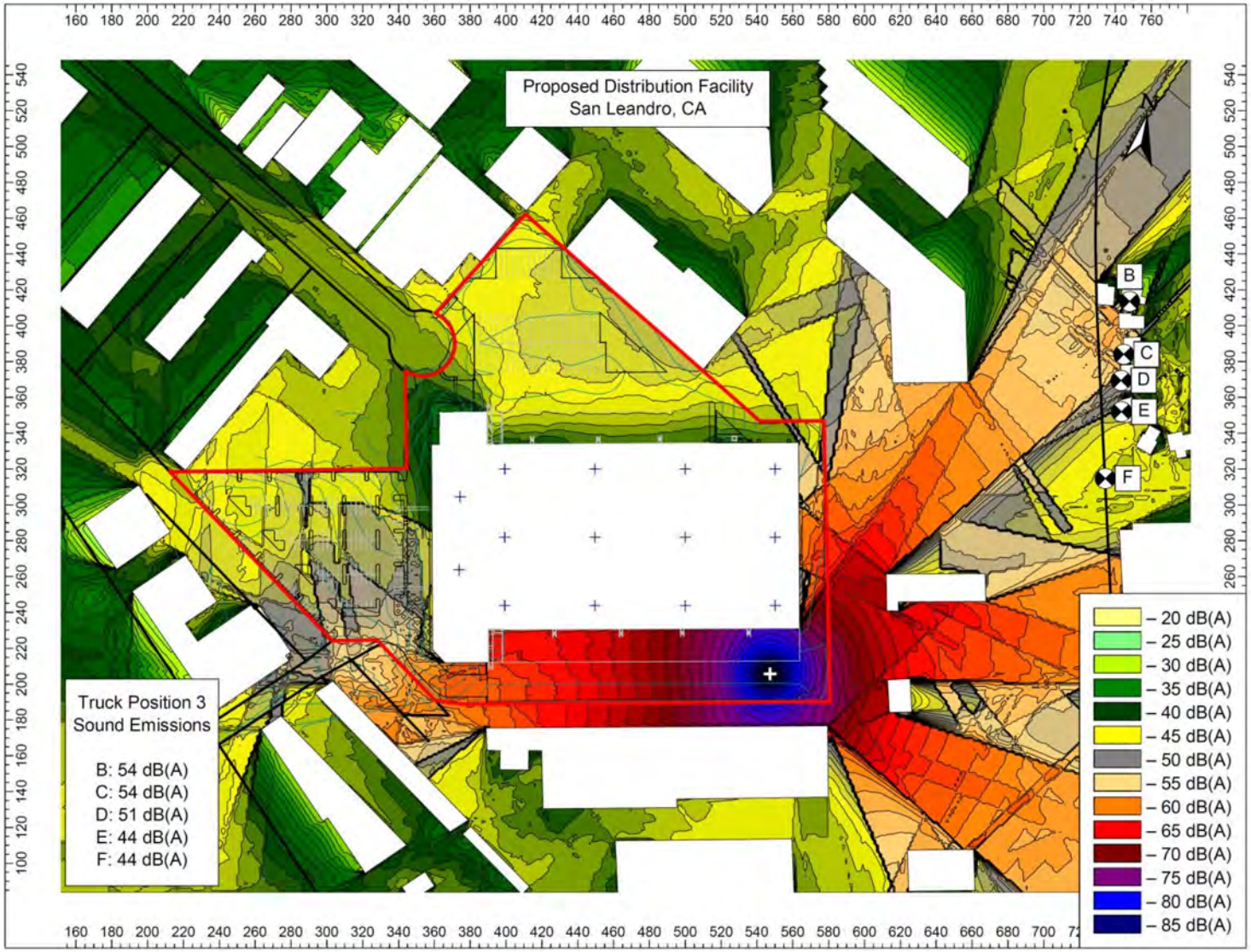


Figure 6 — A-weighted sound level contours 5 feet above grade expected for rooftop equipment and Truck Position 3. Rooftop units shown with a blue "+" sign. Heavy truck yard activity shown with a white "+" sign. Buildings shown in white. Site property line outlined in red. Location B is at 15 feet above grade; all other Locations are at 5 feet above grade.

ADDITIONAL IMPACT EVALAUTIONS

While the focus of this study is on site sound emissions from the proposed use and the possible acoustical impact, we understand that environmental reviews traditionally also examine other types of impacts. Specifically, off-site traffic, construction noise, vibration, and airport noise have been analyzed.

Off-site Traffic

While off-site truck routes are not regulated by noise codes, they were reviewed to evaluate their potential for acoustical impact. Actual truck routes are not known but it is logical to assume that all trucks will access the site from Nimitz Freeway (Interstate-880) to the northeast via Davis Street and Doolittle Drive. These are major roads in the area and assumed to be well-travelled at all hours. While this route is in proximity to a few residences, these residences are assumed to not be particularly noise-sensitive as they are adjacent to the Interstate and it's associated on/off ramps. Given all the above, offsite routes are not expected to have any negative impact on the area and trucks going to and from the site will blend in with other traffic flow sound in the area.

Construction Noise

Construction noise that will occur during the development of the site is regulated by City noise codes. San Leandro Code §4-1-1115(b) states that construction activity which is adjacent to or across a street or right-of-way from a residential use is prohibited except between 0700-to-1900 hours during the week and between 0800-to-1900 hours on a weekend. No construction is permitted on Federal holidays. The premise of this ordinance is to contain construction activities during the daytime hours when ambient sound is higher in level and residential sensitivity is reduced.

Although construction activity is exempt from noise limits during allowable hours and are temporary in nature, it is worth discussing considerations to minimize the acoustical impact of this activity. The proposed building is almost 590 feet from the nearest dwelling. Earth moving equipment used during the civil construction phase of the project could be slightly closer to off-site receptors temporarily. Construction equipment, such as bulldozers, front end loaders, and dump trucks, can typically produce maximum sound levels of 80 dB(A) at 50 feet. At assumed distances of at least 450 feet from nearby receptors, maximum construction activity sound levels would be in the low-60s. Levels of this magnitude are not uncommon in an active developed area and are not expected to illicit noise complaints or impact the health, safety, and welfare of the

public. Regardless, to minimize receptor exposure to construction noise during this phase, the following best practice construction mitigation measures will be considered:

- Limit all heavy equipment operation to non-noise-sensitive daytime hours and follow allowable town construction hours as applicable.

- If possible, limit the number of equipment operating near one receptor at a given time. Avoid exposing any one receptor to high sound levels for an extended period of time.

- Place stationary equipment such as generators, compressors, and office trailers away from receptors.

- Avoid having construction parking or laydown areas nearby receptors.

- Coordinate any high sound level construction activities with town representatives and provide advance notice to residences as feasible.

Specific noise issues can be individually evaluated for tailored noise mitigation recommendations should traditional methods above not be sufficient.

Vibration

No City code vibration regulations were found. There is a provision in the County noise code, §6.60.050(B.8), that requires that no individual shall operate or permit the operation of any device that creates vibration which is above the vibration perception threshold at or beyond the property boundary of the source. While the County code does not apply within the City limits, this is a typical approach to evaluating vibration impacts and hence was used as criterion for this project. Off-site vibrations are challenging to quantify; as a result, it is best to discuss vibration comparatively and subjectively to determine if there may be negative impacts. The following were facts were considered:

- There are no major vibration producing equipment or activities proposed on site. The primary noise source on site is truck activity. Trucks have rubber tires which significantly reduce any vibration transmitted into the ground and off-site receptors.

- This site has historically been an industrial use for decades. The proposed use is not dramatically different than other uses in the area, which also accommodate heavy trucks. Many of these existing industrial uses are closer to residences than this project.

- The dominant source of vibration will continue to be rail activity, which is between nearby residences and this project.

Given the above, we conclude there will be no negative impact from vibrations associated with this project.

Airport Noise

Environmental impact studies generally focus on whether the proposed project might have impacts on the surrounding area. When evaluating airport noise, the focus is on whether the airport might have a negative impact on the project.

The project site is in line with, and approximately 4,500 feet east of, Runways 10L/28R and 10R/28L at Oakland International Airport. The site is about 9,000 feet northeast of Oakland International Airport's longest runway, Runway 12/30.

The Oakland International Airport implements a noise management program which monitors airport noise and mitigates complaints. Extensive information about the program as well as documents and study results can be found online at https://flyquietoak.com/. A review of the resources listed here indicates that runways in line with the site are infrequently used, between 4-12% of the time. In addition, a long-term sound monitor terminal (Monitor #10) is located on Tudor Court, which coincides with the residences closest to this project. Aircraft Noise Summary portal data show that the majority of maximum aircraft activity here is around 64 dB(A), which is driven by airport arrivals. Data also show that aircraft passovers can produce levels in excess of 80 dB(A). Despite this, the Noise Complaint Dashboard portal data show there have been 27 noise complaints from 7 individuals in San Leandro during the 2023 year. None of these complaints are in the vicinity of the site. Based on these details, OAA concludes that airport operations will not have any negative impact on this industrial use.

CONCLUSION

Plans call for the development of a distribution facility in the San Leandro, Alameda County, California. Noise sources on-site will comprise personal vehicles, heavy trucks, and rooftop HVAC units. Our review concludes that the City and State codes provide some direction but are of limited use. The County noise code has merit, despite not being enforceable within city limits. Because of this, a project noise goal at potentially sensitive receptors was established based on the County noise code, expected ambient sound levels, and professional experience. Compliance with project goals will meet the intent of the City noise code. Given the surrounding area, steady HVAC site sound emissions should strive to not exceed 45 dB(A) during the nighttime hours at nearby receptors to minimize the potential for complaints. Similarly, intermittent on-site truck activity sound levels should strive to not exceed 55 dB(A). A project noise goal is not warranted for nearby commercial and industrial properties as these properties are not considered noise-sensitive.

Analyses show that HVAC sound emissions meet the 45 dB(A) project goal via distance attenuation and roof shielding effects by wide margins. HVAC sound is expected to be below existing average ambient sound levels, and hence, will not able to be detected at nearby residential receptors. Maximum sound levels produced by on-site heavy truck activity meets the intent of project goals at all nearby existing receptors. Off-site truck routes are also of little acoustical concern to the area as trucks leaving the site will blend in with the existing traffic flow sound in the area and not be discernable from existing activity in the area. Given the above, it is our professional opinion that this project will not have any negative acoustical impact on the surrounding area. Existing sound sources in the area, such as the active railroad corridor and local and distant traffic flow will continue to dominate sound in the area. The project layout represents good acoustical planning and will put the site in a position to minimize the potential for noise complaints.

Appendix F

Noise Letter Report

Rincon Consultants, Inc.
449 15th Street, Suite 303
Oakland, California 94612
510-834-4455

February 27, 2024
Rincon Project No. 22-13727

Cindy Lemaire, AICP, CNU-A, Senior Planner
City of San Leandro
Community Development Department
835 East 14th Street
San Leandro, California 94577
Via email: clemaire@sanleandro.org

Subject: Noise Letter Report for the 880 Doolittle Drive Warehouse Project

Dear Justin:

Rincon Consultants, Inc. (Rincon) is pleased to provide this Noise Letter Report prepared for the 880 Doolittle Drive Warehouse Project (project) to ensure that it is designed by the applicant and conditioned by the City of San Leandro (City) to comply with the City's exterior and interior noise standards. The project would involve consolidating the two parcels comprising the project site into a single parcel, demolishing existing vacant structures, and developing a new industrial shell building on site. The proposed project also includes a new surface parking lot, internal circulation roadways, new utility connections, and landscaping. Nearby noise-sensitive receptors (single-family residences) would temporarily be exposed to project construction noise. This acoustical analysis reviews detailed architectural plans provided by HPA Architecture, dated September 20, 2022. Fundamentals of noise and acoustics are included in the EIR.

Regulatory Setting

City of San Leandro Noise and Land Use Compatibility

The City of San Leandro adopted the 2035 General Plan in 2016 (City of San Leandro 2016a). The City of San Leandro General Plan establishes the following goals and policies that would apply to the project:

Goal EH-7 **Ensure that noise associated with the day-to-day activities of San Leandro residents and businesses does not impede the peace and quiet of the community.**

Policy EH-7.3 **Residential Exterior Noise Standard.** Strive to maintain an exterior noise level of no more than 60 dB Ldn in residential areas. Recognizing that some San Leandro neighborhoods already exceed the noise level, encourage a variety of noise abatement measures that benefit these areas.

Policy EH-7.7 **Noise Reduction Measures.** Encourage local businesses to reduce noise impacts on the community by replacing excessively noisy equipment and machinery, applying noise-reduction technology, and following operating procedures that limit the potential for conflicts.

Policy EH-7.9 **Vibration Impacts.** Limit the potential for vibration impacts from construction and ongoing operations to disturb sensitive uses such as housing and schools.

City of San Leandro Municipal Code

The City of San Leandro Municipal Code (City of San Leandro 2023) includes noise standards and regulations. The following sections of the Noise Ordinance are relevant to the analysis:

Section 4-1-115 of the San Leandro Municipal Code prohibits certain acts related to noise, such as construction-related noise near residential uses outside of the hours of 7 a.m. and 7 p.m. on weekdays and 8 a.m. and 7 p.m. on weekends. Noise within public parks and noise that conflicts with residential uses is also prohibited.

Neither the City of San Leandro nor the County of Alameda has specific and/or quantitative regulatory standards for construction or operational vibration sources. San Leandro Zoning Code Part IV, Article 16, Division 3, Provision 4-1670B, Vibration, requires that no use, activity, or process produce vibrations that are perceptible without instruments by a reasonable person at the property lines of a site. This performance standard applies to all land use classifications in all zoning districts.

Construction Noise Standards

While the City does not have specific noise level criteria for assessing construction noise impact, the Federal Transit Administration (FTA) has developed guidance for determining if construction of a project would expose various land uses to significant noise levels or if a project would result in a substantial temporary increase in noise levels (FTA 2018). Based on FTA guidance, a significant impact would occur if project-generated construction noise exceeds the 8-hour 80 dBA L_{eq} noise limit at nearby residences.

Groundborne Vibration Standards

Groundborne vibration of concern in environmental analysis consists of the oscillatory waves that move from a source through the ground to adjacent structures. While people have varying sensitivities to vibrations at different frequencies, in general they are most sensitive to low-frequency vibration. Vibration in buildings, such as from nearby construction activities, may cause windows, items on shelves, and pictures on walls to rattle.

Vibration sensitive receptors are similar to noise sensitive receptors, including residences and institutional uses such as schools, churches, and hospitals. However, vibration sensitive receptors also include buildings where vibrations may interfere with vibration-sensitive equipment. Vibration sensitive receptors near the site include industrial buildings adjacent to the project boundary to the north and west; industrial buildings 35 feet to the south and an industrial building 95 feet to the east; and single-family residential building 510 feet to the northeast of the project site.

Vibration limits used in this analysis to determine a potential impact to local land uses from construction activities, such as, vibratory compaction or excavation, are based on information contained in the 2018 FTA *Transit Noise and Vibration Impact Assessment Manual*. Groundborne vibration levels that could induce potential architectural damage to buildings are identified in Table 1. Based on FTA recommendations, limiting vibration levels to below 0.5 in/sec peak particle velocity (PPV) at Reinforced concrete, steel, or timber (no plaster) (which would apply to the nearby industrial building structures) would prevent architectural damage.

Table 1 Groundborne Vibration Architectural Damage Criteria

Building Category	PPV (in/sec)
I. Reinforced concrete, steel, or timber (no plaster)	0.5
II. Engineered concrete and masonry (no plaster)	0.3
III. Non-engineered timber and masonry buildings	0.2
IV. Buildings extremely susceptible to vibration damage	0.12

in/sec = inches per second; PPV = peak particle velocity
Source: FTA 2018

Project Impacts

Construction Noise

To determine construction noise impacts, noise was estimated using the Federal Highway Administration (FHWA) Roadway Construction Noise Model (RCNM) Version 1.1. Shown in Table 2, noise was modeled at the property line of the nearest residential noise-sensitive receivers from the closest property line of on-site construction activity.

Table 2 Estimated Noise Levels by Construction Phase

	L_{eq} dBA	
Construction Phase	RCNM Reference Noise Level[1] 50 feet	Residences to the Northeast (510 feet)
Demolition	82	62
Site Preparation	83	63
Grading	84	64
Building Construction	78	58
Paving	78	58

[1] RCNM reference noise levels are noise levels generated during each construction phase measured from a point 50 feet from the location of the construction phase.
Source: Roadway Construction Noise Model. See Attachment A for modeling outputs.

From the eastern boundary of the project site, the nearest noise-sensitive receivers include a single-family residence located approximately 510 feet northeast. As shown in Table 2, construction noise levels of up to 64 dBA L_{eq} during grading would not exceed the FTA residential daytime standard of 80 dBA $L_{eq\ (8\text{-hour})}$. Therefore, construction noise impacts would be less than significant.

Groundborne Vibration

Construction activities have the greatest potential to generate ground-borne vibration affecting nearby receptors, especially during paving of the project site. Construction activities known to generate excessive groundborne vibration, such as pile driving and blasting, would not be needed to construct the proposed project. The greatest vibratory source during construction in the project vicinity would be a roller used during paving. Construction vibration estimates are based on vibration levels reported by the FTA. Table 3 shows typical vibration levels for various pieces of construction equipment used in the assessment of construction vibration.

Table 3 Construction Vibration Levels

Equipment	in/sec PPV			
	Reference Level 25 feet	Industrial Buildings to the North and West 10 feet	Industrial Building to the South 35 feet	Industrial Building to the East 95 feet
Vibratory Roller	0.210	0.830	0.127	0.028
Large Bulldozer	0.089	0.352	0.054	0.012
Loaded Trucks	0.076	0.300	0.046	0.010
Small Bulldozer	0.003	0.198	0.030	0.007
Static Roller	0.050	0.012	0.002	<0.001
Threshold for Structural Damage to Building		0.5	0.5	0.5
Threshold Exceeded?		**Yes**	**No**	**No**

in/sec = inches per second; PPV = peak particle velocity
Notes: Vibration analysis worksheets are included in the Appendix to this report.
Source: FTA 2018

Based on the recommendations of the FTA, shown in Table 1, limiting vibration levels to below 0.5 in/sec PPV at industrial structures would prevent architectural damage regardless of building construction type. As provided by the client, the greatest anticipated source of vibration during project construction activities would be from a vibratory roller, which would be used during paving. Based on the project site plan, it is assumed the vibratory roller may be used within 10 feet of the nearest off-site industrial structures to the north and west of the project site during paving activities. A vibratory roller generates approximately 0.830 in/sec PPV at 10 feet, which would exceed the significance threshold of 0.5 inches per second (in/sec) PPV. Therefore, if uncontrolled, proposed project construction activities would have a significant impact on the generation or exposure of persons to excessive groundborne vibration. Other construction equipment would not exceed the threshold.

Operation of the proposed project would not include substantial sources of vibration. Therefore, the operation of the proposed project would have no impact on exposure to excessive groundborne vibration or groundborne noise levels.

Mitigation Measures

The following mitigation measure is recommended:

N-1 Construction Vibration Control Plan

For paving activities within 15 feet of the sensitive receptors to the north and west, use of a static roller in lieu of a vibratory roller shall be implemented. City staff shall verify that this requirement is incorporated into construction plans prior to issuance of a building permit.

Significance after Mitigation

Mitigation N-1 would require that use of a static roller in lieu of a vibratory roller is used within 15 feet of off-site receptors to reduce construction-related vibration. Specifically, use of a static roller would generate vibration levels of approximately 0.05 in/sec PPV at a distance of 25 feet (McIver 2012). A static roller would generate approximately 0.198 in/sec PPV within 10 feet of sensitive receptors to the north and west. With implementation of Mitigation measure N-1, project groundborne vibration would be less than the significance threshold of 0.5 in/sec PPV at off-site sensitive receptors to the north and west. Therefore, with mitigation, project construction vibration impacts would be less than significant.

Traffic Noise

A project normally has a significant effect on the environment related to noise if it substantially increases the ambient noise levels for adjoining areas. Changes of less than 1 dBA are usually indiscernible. Changes of 1 to 3 dBA are detectable under quiet, controlled conditions. Most people can detect changes in sound levels of approximately 3 dBA under normal, quiet conditions. A change of 5 dBA is readily discernible to most people in an exterior environment. Therefore, less of an increase from roadway noise is allowed. Based on similar criteria from the Federal Aviation Administration (FAA), the following thresholds of significance are used to assess roadway vehicle noise impacts at sensitive receiver locations:

- Greater than 1.5 dBA CNEL increase for ambient noise environments of 65 dBA CNEL and higher;
- Greater than 3 dBA CNEL increase for ambient noise environments of 60-64 dBA CNEL;
- Greater than 5 dBA CNEL increase for ambient noise environments of less than 60 dBA CNEL and where the resulting future noise level would exceed 60 dBA CNEL.

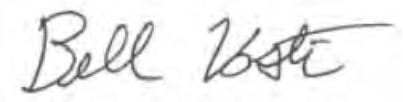
Using information provided by Kimley Horn (Kimley Horn 2024), the proposed project would generate up to 1,543 new daily peak vehicle trips that would increase noise levels on nearby roadways. The proposed project would not make substantial alterations to roadway alignments or substantially change the vehicle classifications mix on local roadways. Therefore, the primary factor affecting off-site noise levels would be increased traffic volumes. The project's increase in traffic noise was estimated by adding the project daily trip generation to the existing average daily traffic (ADT) volume on the surrounding roadways analyzed in the City of San Leandro General Plan Update Draft EIR (City of San Leandro 2016b).

The existing ADT on Doolittle Road, between Adams Avenue to Davis Street, is 29,400. This addition of 1,543 daily vehicle trips would result in an increase in traffic noise that would be approximately 0.2 dBA CNEL. As stated in the City of San Leandro General Plan Update Draft EIR (City of San Leandro 2016b), the existing ambient noise level for Doolittle Drive, between Adams Avenue to Davis Street, is 71.8 dBA at 50 feet. A significant impact would occur if project-related traffic increases the 71.8 dBA ambient noise environment of noise-sensitive locations by 1.5 dBA or more. As the project would result in a traffic noise increase 0.2 dBA, the project's traffic noise increase would not exceed 1.5 dBA or more, and impacts would be less than significant.

This concludes the acoustical analysis and construction noise assessment for the subject project. If there are questions regarding the content of this letter report, please feel free to contact me.

Sincerely,

Rincon Consultants, Inc.



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Appendix

Noise

Construction Noise

	Noise Level @ 50 ft	Single Family Residential to NE
Distance		510
Demolition	82	61.828
Site Preparation	83	62.828
Grading	84	63.828
Building Construction	78	57.828
Paving	78	57.828

Construction Vibration

	Vibration @ 25 ft	Industrial to the N & W	Industrial to the South	Industrial to the East
Distance		10	35	95
Vibratory Roller	0.21	0.830	0.127	0.028
Large Bulldozer	0.089	0.352	0.054	0.012
Loaded Trucks	0.076	0.300	0.046	0.010
Static Roller	0.05	0.198	0.030	0.007
Small Bulldozer	0.003	0.012	0.002	0.000