Appendix A:
Air Quality and Greenhouse Gas Emissions Data

1. Air Quality

Ambient air quality standards (AAQS) have been adopted at State and federal levels for criteria air pollutants. In addition, both the State and federal government regulate the release of toxic air contaminants (TACs). The City of San Francisco is in the San Francisco Bay Area Air Basin (SFBAAB) and is subject to the rules and regulations imposed by the Bay Area Air Quality Management District (BAAQMD), as well as the California AAQS adopted by the California Air Resources Board (CARB) and national AAQS adopted by the United States Environmental Protection Agency (EPA). Federal, State, regional, and local laws, regulations, plans, or guidelines that are potentially applicable to the proposed project are summarized below. The discussion also identifies the natural factors in the air basin that affect air pollution.

1.1 REGULATORY FRAMEWORK

1.1.1 Ambient Air Quality Standards

The Clean Air Act (CAA) was passed in 1963 by the US Congress and has been amended several times. The 1970 Clean Air Act amendments strengthened previous legislation and laid the foundation for the regulatory scheme of the 1970s and 1980s. In 1977, Congress again added several provisions, including nonattainment requirements for areas not meeting National AAQS and the Prevention of Significant Deterioration program. The 1990 amendments represent the latest in a series of federal efforts to regulate the protection of air quality in the United States. The CAA allows states to adopt more stringent standards or to include other pollution species. The California Clean Air Act (CCAA), signed into law in 1988, requires all areas of the state to achieve and maintain the California AAQS by the earliest practical date. The California AAQS tend to be more restrictive than the National AAQS, based on even greater health and welfare concerns.

These National AAQS and California AAQS are the levels of air quality considered to provide a margin of safety in the protection of the public health and welfare. They are designed to protect "sensitive receptors" most susceptible to further respiratory distress, such as asthmatics, the elderly, very young children, people already weakened by other disease or illness, and persons engaged in strenuous work or exercise. Healthy adults can tolerate occasional exposure to air pollutant concentrations considerably above these minimum standards before adverse effects are observed.

Both California and the federal government have established health-based AAQS for seven air pollutants. As shown in Table 1, these pollutants include ozone (O_3), nitrogen dioxide (NO_2), carbon monoxide (CO), sulfur dioxide (SO_2), coarse inhalable particulate matter (PM_{10}), fine inhalable particulate matter ($PM_{2.5}$), and lead (Pb). In addition, the state has set standards for sulfates, hydrogen sulfide, vinyl chloride, and visibility-reducing particles. These standards are designed to protect the health and welfare of the populace with a reasonable margin of safety.

Table 1 Ambient Air Quality Standards for Criteria Pollutants

Pollutant	Averaging Time	California Standard[1]	Federal Primary Standard[2]	Major Pollutant Sources
Ozone (O_3)[3]	1 hour	0.09 ppm	*	Motor vehicles, paints, coatings, and solvents.
	8 hours	0.070 ppm	0.070 ppm	
Carbon Monoxide (CO)	1 hour	20 ppm	35 ppm	Internal combustion engines, primarily gasoline-powered motor vehicles.
	8 hours	9.0 ppm	9 ppm	
Nitrogen Dioxide (NO_2)	Annual Arithmetic Mean	0.030 ppm	0.053 ppm	Motor vehicles, petroleum-refining operations, industrial sources, aircraft, ships, and railroads.
	1 hour	0.18 ppm	0.100 ppm	
Sulfur Dioxide (SO_2)	Annual Arithmetic Mean	*	0.030 ppm	Fuel combustion, chemical plants, sulfur recovery plants, and metal processing.
	1 hour	0.25 ppm	0.075 ppm	
	24 hours	0.04 ppm	0.14 ppm	
Respirable Coarse Particulate Matter (PM_{10})	Annual Arithmetic Mean	20 µg/m3	*	Dust and fume-producing construction, industrial, and agricultural operations, combustion, atmospheric photochemical reactions, and natural activities (e.g., wind-raised dust and ocean sprays).
	24 hours	50 µg/m3	150 µg/m3	
Respirable Fine Particulate Matter ($PM_{2.5}$)[4]	Annual Arithmetic Mean	12 µg/m3	12 µg/m3	Dust and fume-producing construction, industrial, and agricultural operations, combustion, atmospheric photochemical reactions, and natural activities (e.g., wind-raised dust and ocean sprays).
	24 hours	*	35 µg/m3	
Lead (Pb)	30-Day Average	1.5 µg/m3	*	Present source: lead smelters, battery manufacturing & recycling facilities. Past source: combustion of leaded gasoline.
	Calendar Quarter	*	1.5 µg/m3	
	Rolling 3-Month Average	*	0.15 µg/m3	
Sulfates (SO_4)[5]	24 hours	25 µg/m3	*	Industrial processes.
Visibility Reducing Particles	8 hours	ExCo =0.23/km visibility of 10≥ miles	No Federal Standard	Visibility-reducing particles consist of suspended particulate matter, which is a complex mixture of tiny particles that consists of dry solid fragments, solid cores with liquid coatings, and small droplets of liquid. These particles vary greatly in shape, size and chemical composition, and can be made up of many different materials such as metals, soot, soil, dust, and salt.
Hydrogen Sulfide	1 hour	0.03 ppm	No Federal Standard	Hydrogen sulfide (H_2S) is a colorless gas with the odor of rotten eggs. It is formed during bacterial decomposition of sulfur-containing organic substances. Also, it can be present in sewer gas and some natural gas and can be emitted as the result of geothermal energy exploitation.

Table 1 Ambient Air Quality Standards for Criteria Pollutants

Pollutant	Averaging Time	California Standard[1]	Federal Primary Standard[2]	Major Pollutant Sources
Vinyl Chloride	24 hours	0.01 ppm	No Federal Standard	Vinyl chloride (chloroethene), a chlorinated hydrocarbon, is a colorless gas with a mild, sweet odor. Most vinyl chloride is used to make polyvinyl chloride (PVC) plastic and vinyl products. Vinyl chloride has been detected near landfills, sewage plants, and hazardous waste sites, due to microbial breakdown of chlorinated solvents.

Source: California Air Resources Board (CARB). 2016, October 1. Ambient Air Quality Standards. http://www.arb.ca.gov/research/aaqs/aaqs2.pdf.
Notes: ppm: parts per million; µg/m^3: micrograms per cubic meter
* Standard has not been established for this pollutant/duration by this entity.
1 California standards for O_3, CO (except 8-hour Lake Tahoe), SO_2 (1 and 24 hour), NO_2, and particulate matter (PM_{10}, $PM_{2.5}$, and visibility reducing particles), are values that are not to be exceeded. All others are not to be equaled or exceeded. California ambient air quality standards are listed in the Table of Standards in Section 70200 of Title 17 of the California Code of Regulations.
2 National standards (other than O_3, PM, and those based on annual arithmetic mean) are not to be exceeded more than once a year. The O_3 standard is attained when the fourth highest 8-hour concentration measured at each site in a year, averaged over three years, is equal to or less than the standard. For PM_{10}, the 24-hour standard is attained when the expected number of days per calendar year with a 24-hour average concentration above 150 µg/m^3 is equal to or less than one. For $PM_{2.5}$, the 24-hour standard is attained when 98 percent of the daily concentrations, averaged over three years, are equal to or less than the standard.
3 On October 1, 2015, the national 8-hour ozone primary and secondary standards were lowered from 0.075 to 0.070 ppm.
4 On December 14, 2012, the national annual $PM_{2.5}$ primary standard was lowered from 15 µg/m^3 to 12.0 µg/m^3. The existing national 24-hour $PM_{2.5}$ standards (primary and secondary) were retained at 35 µg/m^3, as was the annual secondary standard of 15 µg/m^3. The existing 24-hour PM_{10} standards (primary and secondary) of 150 µg/m^3 also were retained. The form of the annual primary and secondary standards is the annual mean, averaged over 3 years.
5 On June 2, 2010, a new 1-hour SO_2 standard was established and the existing 24-hour and annual primary standards were revoked. The 1-hour national standard is in units of parts per billion (ppb). California standards are in units of parts per million (ppm). To directly compare the 1-hour national standard to the California standard the units can be converted to ppm. In this case, the national standard of 75 ppb is identical to 0.075 ppm.

California has also adopted a host of other regulations that reduce criteria pollutant emissions, including:

- AB 1493: Pavley Fuel Efficiency Standards
- Title 20 California Code of Regulations (CCR): Appliance Energy Efficiency Standards
- Title 24, Part 6, CCR: Building and Energy Efficiency Standards
- Title 24, Part 11, CCR: Green Building Standards Code

1.1.2 Air Pollutants of Concern

A substance in the air that can cause harm to humans and the environment is known as an air pollutant. Pollutants can be in the form of solid particles, liquid droplets, or gases. In addition, they may be natural or man-made.

1.1.2.1 CRITERIA AIR POLLUTANTS

The air pollutants emitted into the ambient air by stationary and mobile sources are regulated by federal and state law. Air pollutants are categorized as primary or secondary pollutants. Primary air pollutants are those that are emitted directly from sources. Carbon monoxide (CO), volatile organic compounds (VOC), nitrogen dioxide (NO_2), sulfur dioxide (SO_2), coarse inhalable particulate matter (PM_{10}), fine inhalable particulate matter ($PM_{2.5}$), and lead (Pb) are primary air pollutants. Of these, CO, SO_2, NO_2, PM_{10}, and $PM_{2.5}$ are "criteria air pollutants," which means that ambient air quality standards (AAQS) have been established for them. VOC and oxides of nitrogen (NO_x) are air pollutant precursors that form secondary criteria pollutants through chemical and photochemical reactions in the atmosphere. Ozone (O_3) and NO_2 are the principal secondary pollutants. A description of each of the primary and secondary criteria air pollutants and their known health effects is presented below.

Carbon Monoxide (CO) is a colorless, odorless gas produced by incomplete combustion of carbon substances, such as gasoline or diesel fuel. CO is a primary criteria air pollutant. CO concentrations tend to be the highest during winter mornings with little to no wind, when surface-based inversions trap the pollutant at ground levels. The highest ambient CO concentrations are generally found near traffic-congested corridors and intersections. When inhaled at high concentrations, CO combines with hemoglobin in the blood and reduces its oxygen-carrying capacity. This results in reduced oxygen reaching the brain, heart, and other body tissues. This condition is especially critical for people with cardiovascular diseases, chronic lung disease, or anemia, as well as for fetuses. Even healthy people exposed to high CO concentrations can experience headaches, dizziness, fatigue, unconsciousness, and even death. [1]

Volatile Organic Compounds (VOC) are compounds composed primarily of hydrogen and carbon atoms. Internal combustion associated with motor vehicle usage is the major source of ROGs. Other sources of ROGs include evaporative emissions from paints and solvents, the application of asphalt paving, and the use of household consumer products such as aerosols. Adverse effects on human health are not caused directly by ROGs, but rather by reactions of ROGs to form secondary pollutants such as O_3. There are no AAQS established for ROGs. However, because they contribute to the formation of O_3, the Air District has established a significance threshold for this pollutant.

Nitrogen Oxides (NO_x) are a by-product of fuel combustion and contribute to the formation of O_3, PM_{10}, and $PM_{2.5}$. The two major components of NO_x are nitric oxide (NO) and NO_2. The principal component of NO_x produced by combustion is NO, but NO reacts with oxygen to form NO_2, creating the mixture of NO and NO_2 commonly called NO_X. NO_2 absorbs blue light; the result is a brownish-red cast to the atmosphere and reduced visibility. NO is a colorless, odorless gas formed from atmospheric nitrogen and oxygen when combustion takes place under high temperature and/or high pressure.[2] NO_2 acts as an acute irritant and in equal concentrations is more injurious than NO. At atmospheric concentrations, however, NO_2 is only potentially irritating. There is some indication of a relationship between NO_2 and chronic pulmonary fibrosis. Some increase in bronchitis in children (2 and 3 years old) has also been observed at concentrations below 0.3 parts per million (ppm). [3]

Sulfur Dioxide (SO_2) is a colorless, pungent, irritating gas formed by the combustion of sulfurous fossil fuels. It enters the atmosphere as a result of burning high-sulfur-content fuel oils and coal and from chemical processes at chemical plants and refineries. Gasoline and natural gas have very low sulfur content and do not release significant quantities of SO_2. When SO_2 forms sulfates (SO_4) in the atmosphere, together these pollutants are referred to as sulfur oxides (SO_x). Thus, SO_2 is both a primary and secondary criteria air pollutant. At sufficiently high concentrations, SO_2 may irritate the upper respiratory tract. At lower concentrations and when combined with particulates, SO_2 may do greater harm by injuring lung tissue. [4]

Suspended Particulate Matter (PM_{10} and $PM_{2.5}$) consists of finely divided solids or liquids such as soot, dust, aerosols, fumes, and mists. In the San Francisco Bay Area Air Basin (SFBAAB or Air Basin), most particulate matter is caused by combustion, factories, construction, grading, demolition, agricultural activities, and motor vehicles. Two forms of fine particulates are now recognized and regulated. Inhalable coarse

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1 Bay Area Air Quality Management District, 2017, Revised California Environmental Quality Act Air Quality Guidelines.
2 Bay Area Air Quality Management District, 2017, Revised California Environmental Quality Act Air Quality Guidelines.
3 Bay Area Air Quality Management District, 2017, Revised California Environmental Quality Act Air Quality Guidelines.
4 Bay Area Air Quality Management District, 2017, Revised California Environmental Quality Act Air Quality Guidelines.

particles, or PM_{10}, include the particulate matter with an aerodynamic diameter of 10 microns (i.e., 10 millionths of a meter or 0.0004 inch) or less. Inhalable fine particles, or $PM_{2.5}$, have an aerodynamic diameter of 2.5 microns or less (i.e., 2.5 millionths of a meter or 0.0001 inch). Diesel particulate matter (DPM) is also classified a carcinogen.

Extended exposure to particulate matter can increase the risk of chronic respiratory disease. PM_{10} bypasses the body's natural filtration system more easily than larger particles and can lodge deep in the lungs. The EPA scientific review concluded that $PM_{2.5}$ penetrates even more deeply into the lungs, and this is more likely to contribute to health effects—at concentrations well below current PM_{10} standards. These health effects include premature death in people with heart or lung disease, nonfatal heart attacks, irregular heartbeat, aggravated asthma, decreased lung function, and increased respiratory symptoms (e.g., irritation of the airways, coughing, or difficulty breathing). Motor vehicles are currently responsible for about half of particulates in the SFBAAB. Wood burning in fireplaces and stoves is another large source of fine particulates. [5]

Ozone (O_3) is commonly referred to as "smog" and is a gas that is formed when ROGs and NO_x, both by-products of internal combustion engine exhaust, undergo photochemical reactions in the presence of sunlight. O_3 is a secondary criteria air pollutant. O_3 concentrations are generally highest during the summer months when direct sunlight, light winds, and warm temperatures create favorable conditions to the formation of this pollutant. O_3 poses a health threat to those who already suffer from respiratory diseases as well as to healthy people. O_3 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. O_3 can also damage plants and trees and materials such as rubber and fabrics.[6]

Lead (Pb) is a metal found naturally in the environment as well as in manufactured products. The major sources of lead emissions have historically been mobile and industrial sources. As a result of the phasing out of leaded gasoline, metal processing is currently the primary source of lead emissions. 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. Because emissions of lead are found only in projects that are permitted by the Air District, lead is not an air quality of concern for the proposed project.

1.1.2.2 TOXIC AIR CONTAMINANTS

The public's exposure to air pollutants classified as toxic air contaminants (TACs) is a significant environmental health issue in California. In 1983, the California Legislature enacted a program to identify the health effects of TACs and to reduce exposure to these contaminants to protect the public health. The California Health and Safety Code defines a TAC as "an air pollutant which may cause or contribute to an increase in mortality or in serious illness, or which may pose a present or potential hazard to human health." A substance that is listed as a hazardous air pollutant (HAP) pursuant to Section 112(b) of the federal Clean Air Act (42 United States Code §7412[b]) is a toxic air contaminant. Under state law, the California Environmental Protection Agency (Cal/EPA), acting through CARB, is authorized to identify a substance as

[5] Bay Area Air Quality Management District, 2017, Revised California Environmental Quality Act Air Quality Guidelines.
[6] Bay Area Air Quality Management District, 2017. Revised California Environmental Quality Act Air Quality Guidelines.

a TAC if it determines that the substance is an air pollutant that may cause or contribute to an increase in mortality or to an increase in serious illness, or may pose a present or potential hazard to human health.

California regulates TACs primarily through Assembly Bill (AB) 1807 (Tanner Air Toxics Act) and AB 2588 (Air Toxics "Hot Spot" Information and Assessment Act of 1987). The Tanner Air Toxics Act sets forth a formal procedure for CARB to designate substances as TACs. Once a TAC is identified, CARB adopts an "airborne toxics control measure" for sources that emit designated TACs. If there is a safe threshold for a substance (i.e., a point below 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 to minimize emissions. To date, CARB has established formal control measures for 11 TACs, all of which are identified as having no safe threshold.

Air toxics from stationary sources are also regulated in California under the Air Toxics "Hot Spot" Information and Assessment Act of 1987. Under AB 2588, toxic air contaminant 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, are required to communicate the results to the public in the form of notices and public meetings.

By the last update to the TAC list in December 1999, CARB had designated 244 compounds as TACs.[7] Additionally, CARB has implemented control measures for a number of compounds that pose high risks and show potential for effective control. The majority of the estimated health risks from TACs can be attributed to relatively few compounds, the most important being particulate matter from diesel-fueled engines.

Diesel Particulate Matter

In 1998, CARB identified particulate emissions from diesel-fueled engines (diesel PM) as a TAC. Previously, the individual chemical compounds in diesel exhaust were considered 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.

CARB has promulgated the following specific rules to limit TAC emissions:

- 13 CCR Chapter 10, Section 2485, Airborne Toxic Control Measure to Limit Diesel-Fueled Commercial Motor Vehicle Idling
- 13 CCR Chapter 10, Section 2480, Airborne Toxic Control Measure to Limit School Bus Idling and Idling at Schools
- 13 CCR Section 2477 and Article 8, Airborne Toxic Control Measure for In-Use Diesel-Fueled Transport Refrigeration Units (TRU) and TRU Generator Sets and Facilities Where TRUs Operate

Community Risk

In addition, to reduce exposure to TACs, CARB developed and approved the *Air Quality and Land Use Handbook: A Community Health Perspective*[8] to provide guidance regarding the siting of sensitive land uses in the vicinity of freeways, distribution centers, rail yards, ports, refineries, chrome-plating facilities, dry cleaners, and

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7 California Air Resources Board (CARB). 1999. California Air Resources Board (CARB). Final Staff Report: Update to the Toxic Air Contaminant List. https://ww3.arb.ca.gov/toxics/id/finalstaffreport.htm.

8 California Air Resources Board (CARB). 2005, April. Air Quality and Land Use Handbook: A Community Health Perspective. https://www.arb.ca.gov/ch/handbook.pdf.

gasoline-dispensing facilities. This guidance document was developed to assess compatibility and associated health risks when placing sensitive receptors near existing pollution sources. CARB's recommendations on the siting of new sensitive land uses were based on a compilation of recent studies that evaluated data on the adverse health effects from proximity to air pollution sources. The key observation in these studies is that proximity to air pollution sources substantially increases exposure and the potential for adverse health effects. There are three carcinogenic toxic air contaminants that constitute the majority of the known health risks from motor vehicle traffic, DPM from trucks, and benzene and 1,3-butadiene from passenger vehicles. CARB recommendations are based on data that show that localized air pollution exposures can be reduced by as much as 80 percent by following CARB minimum distance separations.

1.1.3 Bay Area Air Quality Management District

The Air District is the agency responsible for assuring that the National and California AAQS are attained and maintained in the Air Basin. Air quality conditions in the Air Basin have improved significantly since the Air District was created in 1955. The Air District prepares air quality management plans (AQMP) to attain ambient air quality standards in the Air Basin. The Air District prepares ozone attainment plans for the National O3 standard and clean air plans for the California O_3 standard. These air quality management plans are prepared in coordination with Association of Bay Area Governments (ABAG) and the Metropolitan Transportation Commission (MTC). The Air District adopted the 2017 Clean Air Plan, Spare the Air, Cool the Climate (2017 Clean Air Plan) on April 19, 2017, making it the most recent adopted comprehensive plan. The 2017 Clean Air Plan incorporates significant new scientific data, primarily in the form of updated emissions inventories, ambient measurements, new meteorological episodes, and new air quality modeling tools.

1.1.3.1 BAY AREA AIR QUALITY MANAGEMENT DISTRICT 2017 CLEAN AIR PLAN

2017 Spare the Air, Cool the Climate: A Blueprint for Clean Air and Climate Protection in the Bay Area

The 2017 Clean Air Plan serves as an update to the adopted Bay Area 2010 Clean Air Plan and continues in providing the framework for SFBAAB to achieve attainment of the California and National AAQS. The 2017 Clean Air Plan updates the Bay Area's ozone plan, which is based on the "all feasible measures" approach to meet the requirements of the California Clean Air Act. Additionally, it sets a goal of reducing health risk impacts to local communities by 20 percent by 2020. Furthermore, the 2017 Clean Air Plan also lays the groundwork for reducing GHG emissions in the Bay Area to meet the state's 2030 GHG reduction target and 2050 GHG reduction goal. It also includes a vision for the Bay Area in a post-carbon year 2050 that encompasses the following [9]:

- Construct buildings that are energy efficient and powered by renewable energy.
- Walk, bicycle, and use public transit for the majority of trips and use electric-powered autonomous public transit fleets.
- Incubate and produce clean energy technologies.

[9] Bay Area Air Quality Management District. 2017, April 19. Final 2017 Clean Air Plan, Spare the Air, Cool the Climate: A Blueprint for Clean Air and Climate Protection in the Bay Area. http://www.baaqmd.gov/plans-and-climate/air-quality-plans/plans-under-development.

- Live a low-carbon lifestyle by purchasing low-carbon foods and goods in addition to recycling and putting organic waste to productive use.

A comprehensive multipollutant control strategy has been developed to be implemented in the next three to five years to address public health and climate change and to set a pathway to achieve the 2050 vision. The control strategy includes 85 control measures to reduce emissions of ozone, particulate matter, TACs, and GHG from a full range of emission sources. These control measures cover the following sectors: 1) stationary (industrial) sources; 2) transportation; 3) energy; 4) agriculture; 5) natural and working lands; 6) waste management; 7) water; and 8) super-GHG pollutants. Overall, the proposed control strategy is based on the following key priorities:

- Reduce emissions of criteria air pollutants and toxic air contaminants from all key sources.
- Reduce emissions of "super-GHGs" such as methane, black carbon, and fluorinated gases.
- Decrease demand for fossil fuels (gasoline, diesel, and natural gas).
- Increase efficiency of the energy and transportation systems.
- Reduce demand for vehicle travel, and high-carbon goods and services.
- Decarbonize the energy system.
- Make the electricity supply carbon-free.
- Electrify the transportation and building sectors.

1.1.3.2 BAAQMD'S COMMUNITY AIR RISK EVALUATION PROGRAM (CARE)

The BAAQMD's Community Air Risk Evaluation (CARE) program was initiated in 2004 to evaluate and reduce health risks associated with exposure to outdoor TACs in the Bay Area. Based on findings of the latest report, DPM was found to account for approximately 85 percent of the cancer risk from airborne toxics. Carcinogenic compounds from gasoline-powered cars and light duty trucks were also identified as significant contributors: 1,3-butadiene contributed 4 percent of the cancer risk-weighted emissions, and benzene contributed 3 percent. Collectively, five compounds—DPM, 1,3-butadiene, benzene, formaldehyde, and acetaldehyde—were found to be responsible for more than 90 percent of the cancer risk attributed to emissions. All of these compounds are associated with emissions from internal combustion engines. The most important sources of cancer risk–weighted emissions were combustion-related sources of DPM, including on-road mobile sources (31 percent), construction equipment (29 percent), and ships and harbor craft (13 percent). A 75 percent reduction in DPM was predicted between 2005 and 2015 when the inventory accounted for CARB's diesel regulations. Overall, cancer risk from TACs dropped by more than 50 percent between 2005 and 2015, when emissions inputs accounted for State diesel regulations and other reductions.[10]

Modeled cancer risks from TAC in 2005 were highest near sources of DPM: near core urban areas, along major roadways and freeways, and near maritime shipping terminals. The highest modeled risks were found east of San Francisco, near West Oakland, and the Maritime Port of Oakland. BAAQMD has identified seven impacted communities in the Bay Area:

- Western Contra Costa County and the cities of Richmond and San Pablo

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[10] Bay Area Air Quality Management District. 2014. Improving Air Quality & Health in Bay Area Communities, Community Air Risk Program (CARE) Retrospective and Path Forward (2004–2013), April.

- Western Alameda County along the Interstate 880 (I-880) corridor and the cities of Berkeley, Alameda, Oakland, and Hayward
- San Jose
- Eastern side of San Francisco
- Concord
- Vallejo
- Pittsburgh and Antioch

The project site is not within a CARE-program impacted community.

1.1.3.3 AB 617 COMMUNITY ACTION PLANS

In July of 2017, Governor Brown signed Assembly Bill 617 to develop a new community focused program to more effectively reduce exposure to air pollution and preserve public health in environmental justice communities. The bill directs CARB and all local air districts to take measures to protect communities disproportionally impacted by air pollution through monitoring and implementing air pollution control strategies.

On September 27, 2018, CARB approved BAAQMD's recommended communities for monitoring and emission reduction planning. The state approved communities for year 1 of the program, as well as communities that would move forward over the next five years. Bay Area recommendations included all the Community Air Risk Evaluation (CARE) areas, as well as areas with large sources of air pollution (refineries, seaports, airports, etc.), areas identified via statewide screening tools as having pollution and/or health burden vulnerability, and areas with low life expectancy.[11]

- Year 1 Communities:
  - West Oakland. The West Oakland community was selected for BAAQMD's first Community Action Plan. In 2017, cancer risk in from sources in West Oakland (local sources) was 204 in a million. The primary sources of air pollution in West Oakland include heavy truck and cars, port and rail sources, large industries, and to a lesser extent other sources such as residential sources (i.e., woodburning). The majority (over 90 percent) of cancer risk is from diesel $PM_{2.5}$.[12]
  - Richmond: Richmond was selected for a community monitoring plan in year 1 of the AB 617 program. The Richmond area is in western Contra Costa County and includes most of the City of Richmond and portions of El Cerrito. It also includes communities just north and east of Richmond, such as San Pablo and several unincorporated communities, including North Richmond. The primary goals of the Richmond monitoring effort are to leverage historic and current monitoring studies, to better characterize the area's mix of sources, and to more fully understand the associated air quality and pollution impact. [13]

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[11] BAAQMD. 2019, April 16. San Francisco Bay Area Community Health Protection Program. https://www.baaqmd.gov/~/media/files/ab617-community-health/2019_0325_ab617onepager-pdf.pdf?la=en

[12] BAAQMD. 2019, October 2. West Oakland Community Action Plan.. https://www.baaqmd.gov/community-health/community-health-protection-program/west-oakland-community-action-plan

[13] BAAQMD. 2019, April 16. San Francisco Bay Area Community Health Protection Program. https://www.baaqmd.gov/~/media/files/ab617-community-health/2019_0325_ab617onepager-pdf.pdf?la=en

- Year 2-5 Communities:
  - East Oakland/San Leandro, Eastern San Francisco, the Pittsburg-Bay Point area, San Jose, Tri-Valley, and Vallejo are slated for action in years 2-5 of the AB 617 program.[14]

1.1.3.4 REGULATION 7, ODOROUS SUBSTANCES

Sources of objectionable odors may occur within the City. BAAQMD's Regulation 7, Odorous Substances, places general limitations on odorous substances and specific emission limitations on certain odorous compounds. Odors are also regulated under BAAQMD Regulation 1, Rule 1-301, Public Nuisance, which states that "no person shall discharge from any source whatsoever such quantities of air contaminants or other material which cause injury, detriment, nuisance or annoyance to any considerable number of persons or the public; or which endangers the comfort, repose, health or safety of any such persons or the public, or which causes, or has a natural tendency to cause, injury or damage to business or property." Under BAAQMD's Rule 1-301, a facility that receives three or more violation notices within a 30-day period can be declared a public nuisance.

1.1.3.5 OTHER BAAQMD REGULATIONS

In addition to the plans and programs described above, BAAQMD administers a number of specific regulations on various sources of pollutant emissions that would apply to individual development projects:

- BAAQMD, Regulation 2, Rule 2, New Source Review
- BAAQMD, Regulation 2, Rule 5, New Source Review of Toxic Air Contaminants
- BAAQMD Regulation 6, Rule 1, General Requirements
- BAAQMD Regulation 6, Rule 2, Commercial Cooking Equipment
- BAAQMD Regulation 8, Rule 3, Architectural Coatings
- BAAQMD Regulation 8, Rule 4, General Solvent and Surface Coatings Operations
- BAAQMD Regulation 8, Rule 7, Gasoline Dispensing Facilities
- BAAQMD Regulation 11, Rule 2, Asbestos, Demolition, Renovation and Manufacturing)
- BAAQMD Regulation 11, Rule 18, Reduction of Risk from Air Toxic Emissions at Existing Facilities

1.1.4 Plan Bay Area

Plan Bay Area is the Bay Area's Regional Transportation Plan/Sustainable Community Strategy. The 2040 update to Plan Bay Area was adopted jointly by the ABAG and MTC on July 26, 2017. The 2040 Plan Bay Area update serves as a limited and focused update to the 2013 Plan Bay Area, with updated planning assumptions that incorporate key economic, demographic, and financial trends from the last several years.[15] It lays out a development scenario for the region, which when integrated with the transportation network and other transportation measures and policies, would reduce GHG emissions from transportation (excluding goods movement) beyond the per capita reduction targets identified by the Air Resources Board.

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14 BAAQMD. 2019, April 16. San Francisco Bay Area Community Health Protection Program. https://www.baaqmd.gov/~/media/files/ab617-community-health/2019_0325_ab617onepager-pdf.pdf?la=en

15 Metropolitan Transportation Commission and Association of Bay Area Governments, 2017. Plan Bay Area 2040 Plan.

1.1.5 Santa Clara Valley Transportation Authority

The Santa Clara Valley Transportation Authority (VTA) is the congestion management agency for Santa Clara County. VTA is tasked with developing a comprehensive transportation improvement program among local jurisdictions that will reduce traffic congestion and improve land use decision-making and air quality. VTA's latest congestion management program (CMP) is the 2017 Congestion Management Program Document. VTA's countywide transportation model must be consistent with the regional transportation model developed by the MTC with ABAG data. The countywide transportation model is used to help evaluate cumulative transportation impacts of local land use decisions on the CMP system. In addition, VTA's updated CMP includes multi-modal performance standards and trip reduction and transportation demand management strategies consistent with the goal of reducing regional vehicle miles traveled in accordance with Senate Bill 375. The 2017 CMP also includes a discussion of Senate Bill 743 implementation and relationship to the CMP auto level of service standard. Elements discussed in the 2017 CMP for Santa Clara County, include the following:

- Transportation Analysis Standards Element:
  - Monitor and submit report on the level of service on CMP roadway network intersections using CMP software and procedures
  - Monitor performance of CMP rural highways and freeways.
- Multimodal Performance Measures Element:
  - Collect available transportation performance measurement data for use in land use analysis, deficiency plans and the CIP.
- Transportation Model and Database Element:
  - Certify that the CMP model us consistent with the regional model.
  - Certify that member agency models are consistent with the CMP model.
- Land Use Impact Analysis Element:
  - Prepare a Transportation Impact Analysis (TIA) for projects that generate 100 or more peak hour trips and submit to the CMP according to TIA Guidelines schedule.
  - Submit relevant conditions of approval to VTA for projects generating TIAs.
  - Prepare quarterly report on VTA comments and local agency adopted conditions for VTA Board, Congestion Management Program and Planning Committee, Policy Advisory Committee, Technical Advisory Committee, Citizens Advisory Committee, and Bicycle and Pedestrian Advisory Committee.
  - Prepare and submit land use monitoring data to the CMP on all land use projects approved from July 1 to June 30 of the previous year.
- Capital Improvement Program Element:
  - Develop a list of projects intended to maintain or improve the level of service on the designated system and to maintain transit performance standards.
- Monitoring and Conformance Element:

- Outline the requirements and procedures established for conducting annual traffic LOS and land use monitoring efforts. Support the Traffic Level of Service and Community Form and Impact Analysis Elements.

- Multimodal Improvement Plan Element:
  - Prepare deficiency plans for facilities that violate CMP traffic LOS standards or that are projected to violate LOS standards using the adopted deficiency plan requirements.
  - Submit Deficiency Plan Implementation Status Report as part of annual monitoring.

ENVIRONMENTAL SETTING

1.1.6 San Francisco Bay Area Air Basin

The BAAQMD is the regional air quality agency for the SFBAAB, which 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.[16]

1.1.6.1 METEOROLOGY

The 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 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.

1.1.6.2 WIND PATTERNS

During the summer, winds flowing from the northwest are drawn inland through the Golden Gate and over the lower portions of the San Francisco Peninsula. Immediately south of Mount Tamalpais, the northwesterly winds accelerate considerably and come more directly from the west as they stream through the Golden Gate.

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16 This section describing the air basin is from Bay Area Air Quality Management District, 2017, May, Appendix C: Sample Air Quality Setting, in *California Environmental Quality Act Air Quality Guidelines*.

This channeling of wind through the Golden Gate produces a jet that sweeps eastward and splits off to the northwest toward Richmond and to the southwest toward San Jose when it meets the East Bay hills.

Wind speeds may be strong locally in areas where air is channeled through a narrow opening, such as the Carquinez Strait, the Golden Gate, or the San Bruno gap. For example, the average wind speed at San Francisco International Airport in July is about 17 knots (from 3:00 p.m. to 4:00 p.m.), compared with only 7 knots at San Jose and less than 6 knots at the Farallon Islands.

The air flowing in from the coast to the Central Valley, called the sea breeze, begins developing at or near ground level along the coast in late morning or early afternoon. As the day progresses, the sea breeze layer deepens and increases in velocity while spreading inland. The depth of the sea breeze depends in large part upon the height and strength of the inversion. If the inversion is low and strong, and hence stable, the flow of the sea breeze will be inhibited and stagnant conditions are likely to result.

In the winter, the SFBAAB frequently experiences stormy conditions with moderate to strong winds, as well as periods of stagnation with very light winds. Winter stagnation episodes are characterized by nighttime drainage flows in coastal valleys. Drainage is a reversal of the usual daytime air-flow patterns; air moves from the Central Valley toward the coast and back down toward the Bay from the smaller valleys within the SFBAAB.

1.1.6.3 TEMPERATURE

Summertime temperatures in the SFBAAB are determined in large part by the effect of differential heating between land and water surfaces. Because land tends to heat up and cool off more quickly than water, a large-scale gradient (differential) in temperature is often created between the coast and the Central Valley, and small-scale local gradients are often produced along the shorelines of the ocean and bays. The temperature gradient near the ocean is also exaggerated, especially in summer, because of the upwelling of cold water from the ocean bottom along the coast. On summer afternoons the temperatures at the coast can be 35 degrees Fahrenheit (ºF) cooler than temperatures 15 to 20 miles inland. At night this contrast usually decreases to less than 10ºF.

In the winter, the relationship of minimum and maximum temperatures is reversed. During the daytime the temperature contrast between the coast and inland areas is small, whereas at night the variation in temperature is large. The climatological station nearest to the project site with temperature data is the Santa Clara University Monitoring Station (ID No. 043861). The lowest average temperature is reported at 38.2°F in January, and the highest average temperature is 81.7°F in August.[17]

1.1.6.4 PRECIPITATION

The SFBAAB is characterized by moderately wet winters and dry summers. Winter rains (November through March) account for about 75 percent of the average annual rainfall. The amount of annual precipitation can vary greatly from one part of the SFBAAB to another, even within short distances. In general, total annual rainfall can reach 40 inches in the mountains, but it is often less than 16 inches in sheltered valleys.

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[17] Western Regional Climate Center (WRCC). 2020, July 13 (accessed). Hayward Air Terminal, California ([Station ID] 043861): Period of Record Monthly Climate Summary, 09/19/1998 to 06/09/2016. Western U.S. Climate Summaries. https://wrcc.dri.edu/cgi-bin/cliMAIN.pl?ca3861.

During rainy periods, ventilation (rapid horizontal movement of air and injection of cleaner air) and vertical mixing (an upward and downward movement of air) are usually high, and thus pollution levels tend to be low (i.e. air pollutants are dispersed more readily into the atmosphere rather than accumulate under stagnant conditions). However, during the winter, frequent dry periods do occur, when mixing and ventilation are low and pollutant levels build up. Rainfall historically averages 14.50 inches per year in the project area. [18]

1.1.6.5 WIND CIRCULATION

Low wind speed contributes to the buildup of air pollution because it allows more pollutants to be emitted into the air mass per unit of time. Light winds occur most frequently during periods of low sun (fall and winter, and early morning) and at night. These are also periods when air pollutant emissions from some sources are at their peak, namely, commuter traffic (early morning) and wood-burning appliances (nighttime). The problem can be compounded in valleys, when weak flows carry the pollutants up-valley during the day, and cold air drainage flows move the air mass down-valley at night. Such restricted movement of trapped air provides little opportunity for ventilation and leads to buildup of pollutants to potentially unhealthful levels.

1.1.6.6 INVERSIONS

An inversion is a layer of warmer air over a layer of cooler air. Inversions affect air quality conditions significantly because they influence the mixing depth, i.e. the vertical depth in the atmosphere available for diluting air contaminants near the ground. There are two types of inversions that occur regularly in the SFBAAB. Elevation inversions are more common in the summer and fall, and radiation inversions are more common during the winter. The highest air pollutant concentrations in the SFBAAB generally occur during inversions.

1.1.7 Existing Ambient Air Quality

1.1.7.1 ATTAINMENT STATUS OF THE SFBAAB

Areas that meet AAQS are classified attainment areas, and areas that do not meet these standards are classified nonattainment areas. Severity classifications for O_3 range from marginal, moderate, and serious to severe and extreme. The attainment status for the air basin is shown in Table 2. The air basin is currently designated a nonattainment area for California and National O_3, California and National $PM_{2.5}$, and California PM_{10} AAQS.

Table 2 Attainment Status of Criteria Pollutants in the San Francisco Bay Area Air Basin

Pollutant	State	Federal[1]
Ozone – 1-hour	Nonattainment	Classification revoked (2005)
Ozone – 8-hour	Nonattainment (serious)	Nonattainment
PM_{10}	Nonattainment	Unclassified/Attainment
$PM_{2.5}$	Nonattainment	Unclassified/Attainment
CO	Attainment	Attainment
NO_2	Attainment	Unclassified

[18] Western Regional Climate Center (WRCC). 2020, July 13 (accessed). Hayward Air Terminal, California ([Station ID] 043861): Period of Record Monthly Climate Summary, 09/19/1998 to 06/09/2016. Western U.S. Climate Summaries. https://wrcc.dri.edu/cgi-bin/cliMAIN.pl?ca3861.

Table 2 Attainment Status of Criteria Pollutants in the San Francisco Bay Area Air Basin

Pollutant	State	Federal[1]
SO_2	Attainment	Attainment
Lead	Attainment	Attainment
Sulfates	Attainment	Unclassified/Attainment
All others	Unclassified/Attainment	Unclassified/Attainment

Source: California Air Resources Board, 2019, August, October. Area Designations Maps: State and National. https://ww2.arb.ca.gov/resources/documents/maps-state-and-federal-area-designations.
[1] Federal designations current as of June 30, 2020

1.1.7.2 EXISTING AMBIENT AIR QUALITY

Existing levels of ambient air quality and historical trends and projections in the vicinity of the project site are best documented by measurements made by the BAAQMD. The BAAQMD monitoring station closest to the project site is the San Jose – Jackson Street Avenue Monitoring Station. Data from this station is summarized in Table 3. The data show occasional violations of the State and federal O_3 standards, as well as state PM_{10} and federal $PM_{2.5}$ standards. The State and federal CO and NO_2 standards have not been exceeded in the last five years in the vicinity of the project site.

Table 3 Ambient Air Quality Monitoring Summary

Pollutant/Standard	Number of Days Threshold Were Exceeded and Maximum Levels during Such Violations				
	2014	2015	2016	2017	2018
Ozone (O_3)					
State 1-Hour ≥ 0.09 ppm	0	0	0	0	0
State 8-hour ≥ 0.07 ppm	0	2	0	4	0
Federal 8-Hour > 0.075 ppm	0	2	0	3	0
Maximum 1-Hour Conc. (ppm)	0.089	0.094	0.087	0.121	0.078
Maximum 8-Hour Conc. (ppm)	0.066	0.065	0.066	0.098	0.061
Nitrogen Dioxide (NO_2)					
State 1-Hour ≥ 0.18 (ppm)	0	0	0	0	0
Maximum 1-Hour Conc. (ppb)	58.4	49.3	51.1	67.5	86.1
Coarse Particulates (PM_{10})					
State 24-Hour > 50 μg/m^3	1	1	0	6	4
Federal 24-Hour > 150 μg/m^3	0	0	0	0	1
Maximum 24-Hour Conc. (μg/m^3)	56.4	58.8	40.0	69.4	155.8
Fine Particulates ($PM_{2.5}$)					
Federal 24-Hour > 35 μg/m^3	2	2	0	6	15
Maximum 24-Hour Conc. (μg/m^3)	60.4	49.4	22.6	49.7	133.9

Source: California Air Resources Board, 2019, Air Pollution Data Monitoring Cards (2014, 2015, 2016, 2017, and 2018), Accessed July 20, 2020, https://www.arb.ca.gov/adam/topfour/topfour1.php. Data from the San Jose Jackson Street Monitoring Station for 0_3, NO_2, PM_{10}, and $PM_{2.5}$.
Notes: ppm: parts per million; ppb: parts per billion; μg/m3: or micrograms per cubic meter

1.1.7.3 EXISTING EMISSIONS

The project site is currently developed with one commercial building, which currently generates criteria air pollutants emissions from energy use, transportation, and area sources.

1.1.8 Sensitive Receptors

Some land uses are considered more sensitive to air pollution than others due to the types of population groups or activities involved. Sensitive population groups include children, the elderly, the acutely ill, and the chronically ill, especially those with cardiorespiratory diseases. Residential areas are also considered sensitive receptors to air pollution because residents (including children and the elderly) tend to be at home for extended periods of time, resulting in sustained exposure to any pollutants present. Other sensitive receptors include retirement facilities, hospitals, and schools. Recreational land uses are considered moderately sensitive to air pollution. Although exposure periods are generally short, exercise places a high demand on respiratory functions, which can be impaired by air pollution. In addition, noticeable air pollution can detract from the enjoyment of recreation. Industrial, commercial, retail, and office areas are considered the least sensitive to air pollution. Exposure periods are relatively short and intermittent, since the majority of the workers tend to stay indoors most of the time. In addition, the working population is generally the healthiest segment of the population. The nearest sensitive receptors to the project site are the residents along South Foothill Boulevard to the south and east, along Camino Vista Drive to the west, and along Stevens Creek Boulevard to the north.

1.2 METHODOLOGY

The BAAQMD "CEQA Air Quality Guidelines" were prepared to assist in the evaluation of air quality impacts of projects and plans proposed in the Bay Area. The guidelines provide recommended procedures for evaluating potential air impacts during the environmental review process, consistent with CEQA requirements, and include recommended thresholds of significance, mitigation measures, and background air quality information. They also include recommended assessment methodologies for air toxics, odors, and greenhouse gas emissions. In June 2010, the BAAQMD's Board of Directors adopted CEQA thresholds of significance and an update of the CEQA Guidelines. In May 2011, the updated BAAQMD CEQA Air Quality Guidelines were amended to include a risk and hazards threshold for new receptors and modified procedures for assessing impacts related to risk and hazard impacts; however, this later amendment regarding risk and hazards was the subject of the December 17, 2015 Supreme Court decision (*California Building Industry Association v BAAQMD*), which clarified that CEQA does not require an evaluation of impacts of the environment on a project.[19]

1.2.1 Criteria Air Pollutant Emissions

The proposed project qualifies as a project-level project under BAAQMD's criteria. For project-level analyses, BAAQMD has adopted screening criteria and significance criteria that would be applicable to the proposed

[19] On March 5, 2012, the Alameda County Superior Court issued a judgment finding that the BAAQMD had failed to comply with CEQA when it adopted the thresholds of significance in the BAAQMD CEQA Air Quality Guidelines. The court did not determine whether the thresholds of significance were valid on their merits, but found that the adoption of the thresholds was a project under CEQA. The court issued a writ of mandate ordering the BAAQMD to set aside the thresholds and cease dissemination of them until the BAAQMD complied with CEQA. Following the court's order, the BAAQMD released revised CEQA Air Quality Guidelines in May of 2012 that include guidance on calculating air pollution emissions, obtaining information regarding the health impacts of air pollutants, and identifying potential mitigation measures, and which set aside the significance thresholds. The Alameda County Superior Court, in ordering BAAQMD to set aside the thresholds, did not address the merits of the science or evidence supporting the thresholds, and in light of the subsequent case history discussed below, the science and reasoning contained in the BAAQMD 2011 CEQA Air Quality Guidelines provide the latest state-of-the-art guidance available. On August 13, 2013, the First District Court of Appeal ordered the trial court to reverse the judgment and upheld the BAAQMD's CEQA Guidelines. (*California Building Industry Association versus BAAQMD, Case No. A135335 and A136212 (Court of Appeal, First District, August 13, 2013*).)

project. If a project exceeds the screening level, it would be required to conduct a full analysis using BAAQMD's significance criteria.[20]

Regional Significance Criteria

BAAQMD's criteria for regional significance for projects that exceed the screening thresholds are shown in Table 4. Criteria for both construction and operational phases of the project are shown.

Table 4 BAAQMD Regional (Mass Emissions) Criteria Air Pollutant Significance Thresholds

	Construction Phase	Operational Phase	
Pollutant	Average Daily Emissions (lbs/day)	Average Daily Emissions (lbs/day)	Maximum Annual Emissions (Tons/year)
ROG	54	54	10
NO_x	54	54	10
PM_{10}	82 (Exhaust)	82	15
$PM_{2.5}$	54 (Exhaust)	54	10
PM_{10} and $PM_{2.5}$ Fugitive Dust	Best Management Practices	None	None

Source: Bay Area Air Quality Management District. 2017, May. California Environmental Quality Act Air Quality Guidelines, Appendix D: Threshold of Significance Justification.

BAAQMD is the primary agency responsible for ensuring the health and welfare of sensitive individuals exposed to elevated concentrations of air pollutants in the Air Basin and has established thresholds that would be protective of these individuals. To achieve the health-based standards established by the EPA, BAAQMD prepares the Clean Air Plan that details regional programs to attain the AAQS. Mass emissions in Table 4.3-7 are not correlated with concentrations of air pollutants but contribute to the cumulative air quality impacts in the Air Basin. The thresholds are based on the trigger levels for the federal New Source Review (NSR) Program. The NSR Program was created to ensure projects are consistent with attainment of health-based federal AAQS. Regional emissions from a single project do not single-handedly trigger a regional health impact, and it is speculative to identify how many more individuals in the air basin would be affected by the health effects listed above. Projects that do not exceed the BAAQMD regional significance thresholds in Table 4 would not violate any air quality standards or contribute substantially to an existing or projected air quality violation.

If projects exceed the emissions in Table 4 emissions would cumulatively contribute to the nonattainment status and would contribute in elevating health effects associated to these criteria air pollutants. Known health effects related to ozone include worsening of bronchitis, asthma, and emphysema and a decrease in lung function. Health effects associated with particulate matter include premature death of people with heart or lung disease, nonfatal heart attacks, irregular heartbeat, decreased lung function, and increased respiratory symptoms. Reducing emissions would further contribute to reducing possible health effects related to criteria air pollutants. However, for projects that exceed the emissions in Table 4 it is speculative to determine how exceeding the regional thresholds would affect the number of days the region is in nonattainment since mass

[20] Bay Area Air Quality Management District. 2017, May. California Environmental Quality Act Air Quality Guidelines.

emissions are not correlated with concentrations of emissions or how many additional individuals in the air basin would be affected by the health effects cited above.

BAAQMD has not provided methodology to assess the specific correlation between mass emissions generated and the effect on health in order to address the issue raised in *Sierra Club v. County of Fresno* (Friant Ranch, L.P.) (2018) 6 Cal.5th 502, Case No. S21978. Ozone concentrations are dependent upon a variety of complex factors, including the presence of sunlight and precursor pollutants, natural topography, nearby structures that cause building downwash, atmospheric stability, and wind patterns. Because of the complexities of predicting ground-level ozone concentrations in relation to the National AAQS and California AAQS, it is not possible to link health risks to the magnitude of emissions exceeding the significance thresholds. However, if a project in the Bay Area exceeds the regional significance thresholds, the project could contribute to an increase in health effects in the basin until such time the attainment standard are met in the Air Basin.

Local CO Hotspots

Congested intersections have the potential to create elevated concentrations of CO, referred to as CO hotspots. The significance criteria for CO hotspots are based on the California AAQS for CO, which is 9.0 ppm (8-hour average) and 20.0 ppm (1-hour average). However, with the turnover of older vehicles, introduction of cleaner fuels, and implementation of control technology, the SFBAAB is in attainment of the California and National AAQS, and CO concentrations in the SFBAAB have steadily declined. Because CO concentrations have improved, BAAQMD does not require a CO hotspot analysis if the following criteria are met:

- 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.
- The project would not increase traffic volumes at affected intersections to more than 44,000 vehicles per hour.
- The project traffic would not increase traffic volumes at affected intersection to more than 24,000 vehicles per hour where vertical and/or horizontal mixing is substantially limited (e.g. tunnel, parking garage, bridge underpass, natural or urban street canyon, below-grade roadway).[21]

Odors

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. In addition, odors are also regulated under BAAQMD Regulation 1, Rule 1-301, Public Nuisance, which states that no person shall discharge from any source whatsoever such quantities of air contaminants or other material which cause injury, detriment, nuisance or annoyance to any considerable number of persons or the public; or which endangers the comfort, repose, health or safety of any such persons or the public, or which causes, or has a natural tendency to cause, injury or damage to business or property. Under BAAQMD's Rule 1-301, a facility that receives three or more violation notices within a 30-

[21] Bay Area Air Quality Management District. 2017, May. California Environmental Quality Act Air Quality Guidelines, Appendix D: Threshold of Significance Justification.

day period can be declared a public nuisance. 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.[22]

1.2.2 Toxic Air Contaminants

The BAAQMD's significance thresholds for local community risk and hazard impacts apply to the siting of a new source. Local community risk and hazard impacts are associated with TACs and $PM_{2.5}$ because emissions of these pollutants can have significant health impacts at the local level. The purpose of this environmental evaluation is to identify the significant effects of the proposed project on the environment, not the significant effects of the environment on the proposed project (*California Building Industry Association v. Bay Area Air Quality Management District [2015] 62 Cal.4th 369 [Case No. S213478]*). CEQA does not require an environmental evaluation to analyze the environmental effects of attracting development and people to an area. However, the environmental evaluation must analyze the impacts of environmental hazards on future users when the proposed project exacerbates an existing environmental hazard or condition or if there is an exception to this exemption identified in the Public Resources Code. Schools, residential, commercial, and office uses do not use substantial quantities of TACs and typically do not exacerbate existing hazards, so these thresholds are typically applied to new industrial projects.

For assessing community risk and hazards, sources within a 1,000-foot radius are considered. Sources are defined as freeways, high volume roadways (with volume of 10,000 vehicles or more per day or 1,000 trucks per day), and permitted sources.[23,24]

The proposed project would generate TACs and $PM_{2.5}$ during construction activities that could elevate concentrations of air pollutants at the surrounding residential receptors. The BAAQMD has adopted screening tables for air toxics evaluation during construction.[25] Construction-related TAC and $PM_{2.5}$ impacts should be addressed on a case-by-case basis, taking into consideration the specific construction-related characteristics of each project and proximity to off-site receptors, as applicable.[26]

The project threshold identified below is applied to the proposed project's construction phase emissions:

Community Risk and Hazards – Project

Project-level construction emissions of TACs or $PM_{2.5}$ from the proposed project to individual sensitive receptors within 1,000 feet of the project site that exceed any of the thresholds listed below are considered a potentially significant community health risk:

- Non-compliance with a qualified Community Risk Reduction Plan;

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22 Bay Area Air Quality Management District. 2017, May. California Environmental Quality Act Air Quality Guidelines.
23 Bay Area Air Quality Management District. 2017, May. California Environmental Quality Act Air Quality Guidelines, Appendix D: Threshold of Significance Justification.
24 Bay Area Air Quality Management District. 2012. Recommended Methods for Screening and Modeling Local Risks and Hazards.
25 Bay Area Air Quality Management District. 2010. Screening Tables for Air Toxics Evaluations during Construction.
26 Bay Area Air Quality Management District. 2017, May. California Environmental Quality Act Air Quality Guidelines, Appendix D: Threshold of Significance Justification.

- An excess cancer risk level of more than 10 in one million, or a non-cancer (i.e. chronic or acute) hazard index greater than 1.0 would be a significant cumulatively considerable contribution;
- An incremental increase of greater than 0.3 micrograms per cubic meter ($\mu g/m^3$) annual average $PM_{2.5}$ from a single source would be a significant, cumulatively considerable contribution.[27]

Community Risk and Hazards – Cumulative

Cumulative sources represent the combined total risk values of each of the individual sources within the 1,000-foot evaluation zone.

A project would have a cumulative considerable impact if the aggregate total of all past, present, and foreseeable future sources within a 1,000-foot radius from the fence line of a source or location of a receptor, plus the contribution from the project, exceeds the following:

- Non-compliance with a qualified Community Risk Reduction Plan; or
- An excess cancer risk levels of more than 100 in one million or a chronic non-cancer hazard index (from all local sources) greater than 10.0; or
- 0.8 $\mu g/m^3$ annual average $PM_{2.5}$.[28]

Current BAAQMD guidance recommends the determination of cancer risks using the Office of Environmental Health Hazard Assessment's (OEHHA) methodology, which was originally adopted in 2003.[29,30] In February 2015, OEHHA adopted new health risk assessment guidance which includes several efforts to be more protective of children's health. These updated procedures include the use of age sensitivity factors to account for the higher sensitivity of infants and young children to cancer causing chemicals, and age-specific breathing rates.[31] However, BAAQMD has not formally adopted the new OEHHA methodology into their CEQA guidance. To be conservative, the cancer risks associated with project implementation and significance conclusions were determined using the new 2015 OEHHA guidance for risk assessments.

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27 Bay Area Air Quality Management District. 2017, May. California Environmental Quality Act Air Quality Guidelines, Appendix D: Threshold of Significance Justification.

28 Ibid.

29 Bay Area Air Quality Management District. 2012, Recommended Methods for Screening and Modeling Local Risks and Hazards.

30 Office of Environmental Health Hazard Assessment. 2003. Air Toxics Hot Spots Program Guidance Manual for Preparation of Health Risk Assessments.

31 Office of Environmental Health Hazard Assessment. 2015. Air Toxics Hot Spots Program Guidance Manual for Preparation of Health Risk Assessments.

2. Greenhouse Gas Emissions

Scientists have concluded that human activities are contributing to global climate change by adding large amounts of heat-trapping gases, known as GHG, to the atmosphere. Climate change is the variation of Earth's climate over time, whether due to natural variability or as a result of human activities. The primary source of these GHG is fossil fuel use. The Intergovernmental Panel on Climate Change (IPCC) has identified four major GHG—water vapor,[32] carbon (CO_2), methane (CH_4), and ozone (O_3)—that are the likely cause of an increase in global average temperatures observed within the 20th and 21st centuries. Other GHG identified by the IPCC that contribute to global warming to a lesser extent include nitrous oxide (N_2O), sulfur hexafluoride (SF_6), hydrofluorocarbons, perfluorocarbons, and chlorofluorocarbons.[33, 34] The major GHG are briefly described below.

- **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 respiration, and also as a result of other chemical reactions (e.g. manufacture of cement). Carbon dioxide is removed from the atmosphere (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. Methane emissions also result from livestock and other agricultural practices and from the decay of organic waste in municipal landfills and water treatment facilities.
- **Nitrous oxide (N_2O)** is emitted during agricultural and industrial activities as well as during combustion of fossil fuels and solid waste.
- **Fluorinated gases** are synthetic, strong GHGs that are emitted from a variety of industrial processes. Fluorinated gases are sometimes used as substitutes for ozone-depleting substances. These gases are typically emitted in smaller quantities, but because they are potent GHGs, they are sometimes referred to as high global-warming-potential (GWP) gases.

  - ***Chlorofluorocarbons (CFCs)*** are GHGs covered under the 1987 Montreal Protocol and used for refrigeration, air conditioning, packaging, insulation, solvents, or aerosol propellants. Since they are not destroyed in the lower atmosphere (troposphere, stratosphere), CFCs drift into the upper atmosphere where, given suitable conditions, they break down ozone. These gases are also ozone-depleting gases and are therefore being replaced by other compounds that are GHGs covered under the Kyoto Protocol.

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32 Water vapor (H_2O) is the strongest GHG and the most variable in its phases (vapor, cloud droplets, ice crystals). However, water vapor is not considered a pollutant, but part of the feedback loop rather than a primary cause of change.

33 Black carbon contributes to climate change both directly, by absorbing sunlight, and indirectly, by depositing on snow (making it melt faster) and by interacting with clouds and affecting cloud formation. Black carbon is the most strongly light-absorbing component of particulate matter (PM) emitted from burning fuels such as coal, diesel, and biomass. Reducing black carbon emissions globally can have immediate economic, climate, and public health benefits. California has been an international leader in reducing emissions of black carbon, with close to 95 percent control expected by 2020 due to existing programs that target reducing PM from diesel engines and burning activities (California Air Resources Board (CARB). 2017, March 14. Final Proposed Short-Lived Climate Pollutant Reduction Strategy. https://www.arb.ca.gov/cc/shortlived/shortlived.htm). However, state and national GHG inventories do not yet include black carbon due to ongoing work resolving the precise global warming potential of black carbon. Guidance for CEQA documents does not yet include black carbon.

34 Intergovernmental Panel on Climate Change (IPCC). 2001. Third Assessment Report: Climate Change 2001. New York: Cambridge University Press. https://www.ipcc.ch/site/assets/uploads/2018/03/WGI_TAR_full_report.pdf.

- ***Perfluorocarbons (PFCs)*** are a group of human-made chemicals composed of carbon and fluorine only. These chemicals (predominantly perfluoromethane [CF_4] and perfluoroethane [C_2F_6]) were introduced as alternatives, along with HFCs, to the ozone-depleting substances. In addition, PFCs are emitted as by-products of industrial processes and are used in manufacturing. PFCs do not harm the stratospheric ozone layer, but they have a high global warming potential.

- ***Sulfur Hexafluoride (SF_6)*** is a colorless gas soluble in alcohol and ether, slightly soluble in water. SF_6 is a strong GHG used primarily in electrical transmission and distribution systems as an insulator.

- ***Hydrochlorofluorocarbons (HCFCs)*** contain hydrogen, fluorine, chlorine, and carbon atoms. Although ozone-depleting substances, they are less potent at destroying stratospheric ozone than CFCs. They have been introduced as temporary replacements for CFCs and are also GHGs.

- ***Hydrofluorocarbons (HFCs)*** contain only hydrogen, fluorine, and carbon atoms. They were introduced as alternatives to ozone-depleting substances to serve many industrial, commercial, and personal needs. HFCs are emitted as by-products of industrial processes and are also used in manufacturing. They do not significantly deplete the stratospheric ozone layer, but they are strong GHGs.[35,36]

GHGs are dependent on the lifetime or persistence of the gas molecule in the atmosphere. Some GHGs have stronger greenhouse effects than others. These are referred to as high GWP gases. The GWP of GHG emissions are shown in Table 5. The GWP is used to convert GHGs to CO_2-equivalence (CO_2e) to show the relative potential that different GHGs have to retain infrared radiation in the atmosphere and contribute to the greenhouse effect. For example, under IPCC's Fouth Assessment Report (AR5) GWP values for CH_4, a project that generates 10 MT of CH_4 would be equivalent to 250 MT of CO_2.[37,38]

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[35] Intergovernmental Panel on Climate Change (IPCC). 2001. Third Assessment Report: Climate Change 2001. New York: Cambridge University Press. https://www.ipcc.ch/site/assets/uploads/2018/03/WGI_TAR_full_report.pdf.

[36] US Environmental Protection Agency (USEPA). 2019. Overview of Greenhouse Gases. http://www3.epa.gov/climatechange/ghgemissions/gases.html.

[37] CO_2-equivalence is used to show the relative potential that different GHGs have to retain infrared radiation in the atmosphere and contribute to the greenhouse effect. The global warming potential of a GHG is also dependent on the lifetime, or persistence, of the gas molecule in the atmosphere.

[38] Intergovernmental Panel on Climate Change (IPCC). 2013. Fifth Assessment Report: Climate Change 2013. New York: Cambridge University Press.

Table 5 GHG Emissions and Their Relative Global Warming Potential Compared to CO_2

GHGs	Carbon Dioxide (CO_2)	Methane[1] (CH_4)	Nitrous Oxide (N_2O)
Second Assessment			
Atmospheric Lifetime (Years)	50 to 200	12 (±3)	120
Global Warming Potential Relative to CO_2[2]	1	21	310
Fourth Assessment			
Atmospheric Lifetime (Years)	50 to 200	12	114
Global Warming Potential Relative to CO_2[2]	1	25	298
Fifth Assessment[3]			
Atmospheric Lifetime (Years)	50 to 200	12	121
Global Warming Potential Relative to CO_2[2]	1	28	265

Source: Intergovernmental Panel on Climate Change (IPCC). 1995. Second Assessment Report: Climate Change 1995 https://www.ipcc.ch/site/assets/uploads/2018/02/ipcc_sar_wg_I_full_report.pdf; Intergovernmental Panel on Climate Change (IPCC). 2007. Fourth Assessment Report: Climate Change 2007. New York: Cambridge University Press. https://www.ipcc.ch/site/assets/uploads/2018/02/ar4_syr_full_report.pdf; Intergovernmental Panel on Climate Change (IPCC). 2013. Fifth Assessment Report: Climate Change 2013. New York: Cambridge University Press.

Notes:

1 The methane GWP includes direct effects and indirect effects due to the production of tropospheric ozone and stratospheric water vapor. The indirect effect due to the production of CO_2 is not included.

2 Based on 100-year time horizon of the GWP of the air pollutant compared to CO_2.

3 The GWP values in the IPCC's Fifth Assessment Report (2013)[39] reflect new information on atmospheric lifetimes of GHGs and an improved calculation of the radiative forcing of CO_2.

2.1 CALIFORNIA'S GREENHOUSE GAS SOURCES AND RELATIVE CONTRIBUTION

In 2019, the statewide GHG emissions inventory was updated for 2000 to 2017 emissions using the GWPs in IPCC's AR4.[40] Based on these GWPs, California produced 424.10 $MMTCO_2e$ GHG emissions in 2017. The California Air Resources Board (CARB) categorizes GHG generation into the following seven sectors.[41]

- **Transportation.** Consists of direct tailpipe emissions from on-road vehicle and direct emissions from off-road transportation mobile sources, intrastate aviation, rail, and watercraft. Emissions are generated from the combustion of fuels in on- and off-road vehicles in addition to aviation, rail, and ships.
- **Electric.** Includes emissions from instate power generation (including the portion of cogeneration emissions attributed to electricity generation) and emissions from imported electricity.
- **Industrial.** Includes emissions primarily driven by fuel combustion from sources that include refineries, oil and gas extraction, cement plants, and the portion of cogeneration emissions attribute to thermal energy output.
- **Commercial and Residential.** Accounts for emissions generated from combustion of natural gas and other fuels for household and commercial business use, such as space heating, cooking, and hot water or steam generation. Emissions associated with electricity usage are accounted for in the Electric Sector.
- **Recycling and Waste.** Consists of emissions generated at landfills and from commercial-scale composting.

39 Intergovernmental Panel on Climate Change (IPCC). 2013. Fifth Assessment Report: Climate Change 2013. New York: Cambridge University Press. https://www.ipcc.ch/site/assets/uploads/2018/02/WG1AR5_all_final.pdf.

40 Methodology for determining the statewide GHG inventory is not the same as the methodology used to determine statewide GHG emissions under Assembly Bill 32 (2006).

41 California Air Resources Board (CARB). 2019, August 26. California Greenhouse Emissions for 2000 to 2017: Trends of Emissions and Other Indicators. https://www.arb.ca.gov/cc/inventory/data/data.htm.

- **Agriculture.** Primarily includes methane (CH_4) and nitrous oxide (N_2O) emissions generated from enteric fermentation and manure management from livestock. Also accounts for emissions associated with crop production (fertilizer use, soil preparation and disturbance, and crop residue burning) and fuel combustion associated with stationary agricultural activities (e.g., water pumping, cooling or heating buildings).
- **High Global Warming Potential Gases.** Associated with substitutes for ozone-depleting substances, emissions from electricity transmission and distribution system, and gases emitted in the semiconductor manufacturing process. Substitutes for ozone-depleting substances are used in refrigeration and air conditioning equipment, solvent cleaning, foam production, fire retardants, and aerosols.

California's transportation sector was the single largest generator of GHG emissions, producing 40.1 percent of the state's total emissions. Industrial sector emissions made up 21.1 percent, and electric power generation made up 14.7 percent of the state's emissions inventory. Other major sectors of GHG emissions include commercial and residential (9.7 percent), agriculture and forestry (7.6 percent), high GWP (4.7 percent), and recycling and waste (2.1 percent).[42]

California's GHG emissions have followed a declining trend since 2007. In 2017, emissions from routine GHG-emitting activities statewide were 424 $MMTCO_2e$, 5 $MMTCO_2e$ lower than 2016 levels. This represents an overall decrease of 14 percent since peak levels in 2004 and 7 $MMTCO_2e$ below the 1990 level and the state's 2020 GHG target. During the 2000 to 2017 period, per capita GHG emissions in California have continued to drop from a peak in 2001 of 14.0 $MTCO_2e$ per capita to 10.7 $MTCO_2e$ per capita in 2017, a 24 percent decrease. Overall trends in the inventory also demonstrate that the carbon intensity of California's economy (the amount of carbon pollution per million dollars of gross domestic product) has declined 41 percent since the 2001 peak, while the state's gross domestic product has grown 52 percent during the same period. For the first time since California started to track GHG emissions, California uses more electricity from zero-GHG sources (hydro, solar, wind, and nuclear energy).[43]

2.2 HUMAN INFLUENCE ON CLIMATE CHANGE

For approximately 1,000 years before the Industrial Revolution, the amount of GHGs in the atmosphere remained relatively constant. During the 20th century, however, scientists observed a rapid change in the climate and the quantity of climate change pollutants in the Earth's atmosphere that is attributable to human activities. The amount of CO_2 in the atmosphere has increased by more than 35 percent since preindustrial times and has increased at an average rate of 1.4 parts per million per year since 1960, mainly due to combustion of fossil fuels and deforestation.[44] These recent changes in the quantity and concentration of climate change pollutants far exceed the extremes of the ice ages, and the global mean temperature is warming at a rate that cannot be explained by natural causes alone. Human activities are directly altering the chemical composition of the atmosphere through the buildup of climate change pollutants.[45] In the past,

[42] California Air Resources Board (CARB). 2019, August 26. 2019 Edition California Greenhouse Gas Inventory for 2000-2017: By Category as Defined in the 2008 Scoping Plan. https://www.arb.ca.gov/cc/inventory/data/data.htm.

[43] California Air Resources Board (CARB). 2019, August 26. 2019 Edition California Greenhouse Gas Inventory for 2000-2017: By Category as Defined in the 2008 Scoping Plan. https://www.arb.ca.gov/cc/inventory/data/data.htm.

[44] Intergovernmental Panel on Climate Change (IPCC). 2007. Fourth Assessment Report: Climate Change 2007. New York: Cambridge University Press.

[45] California Climate Action Team (CAT). 2006, March. Climate Action Team Report to Governor Schwarzenegger and the Legislature.

gradual changes in the earth's temperature changed the distribution of species, availability of water, etc. However, human activities are accelerating this process so that environmental impacts associated with climate change no longer occur in a geologic time frame but within a human lifetime.[46]

Like the variability in the projections of the expected increase in global surface temperatures, the environmental consequences of gradual changes in the Earth's temperature are hard to predict. Projections of climate change depend heavily upon future human activity. Therefore, climate models are based on different emission scenarios that account for historical trends in emissions and on observations of the climate record that assess the human influence of the trend and projections for extreme weather events. Climate-change scenarios are affected by varying degrees of uncertainty. For example, there are varying degrees of certainty on the magnitude of the trends for:

- Warmer and fewer cold days and nights over most land areas.
- Warmer and more frequent hot days and nights over most land areas.
- An increase in frequency of warm spells/heat waves over most land areas.
- An increase in frequency of heavy precipitation events (or proportion of total rainfall from heavy falls) over most areas.
- Larger areas affected by drought.
- Intense tropical cyclone activity increases.
- Increased incidence of extreme high sea level (excluding tsunamis).

2.3 POTENTIAL CLIMATE CHANGE IMPACTS FOR CALIFORNIA

Observed changes over the last several decades across the western United States reveal clear signs of climate change. Statewide, average temperatures increased by about 1.7°F from 1895 to 2011, and warming has been greatest in the Sierra Nevada.[47] The years from 2014 through 2016 have shown unprecedented temperatures with 2014 being the warmest.[48] By 2050, California is projected to warm by approximately 2.7°F above 2000 averages, a threefold increase in the rate of warming over the last century. By 2100, average temperatures could increase by 4.1 to 8.6°F, depending on emissions levels.[49]

In California and western North America, observations of the climate have shown: 1) a trend toward warmer winter and spring temperatures; 2) a smaller fraction of precipitation falling as snow; 3) a decrease in the amount of spring snow accumulation in the lower and middle elevation mountain zones; 4) advanced shift in the timing of snowmelt of 5 to 30 days earlier in the spring; and 5) a similar shift (5 to 30 days earlier) in the timing of spring flower blooms.[50] Overall, California has become drier over time, with five of the eight years of severe to extreme drought occurring between 2007 and 2016, with unprecedented dry years occurring in

[46] Intergovernmental Panel on Climate Change (IPCC). 2007. Fourth Assessment Report: Climate Change 2007. New York: Cambridge University Press.

[47] California Climate Change Center (CCCC). 2012, July. Our Changing Climate 2012: Vulnerability and Adaptation to the Increasing Risks from Climate Change in California.

[48] Office of Environmental Health Hazards Assessment (OEHHA). 2018, May. Indicators of Climate Change in California. https://oehha.ca.gov/media/downloads/climate-change/report/2018caindicatorsreportmay2018.pdf.

[49] California Climate Change Center (CCCC). 2012, July. Our Changing Climate 2012: Vulnerability and Adaptation to the Increasing Risks from Climate Change in California.

[50] California Climate Action Team (CAT). 2006, March. Climate Action Team Report to Governor Schwarzenegger and the Legislature.

2014 and 2015. [51] Statewide precipitation has become increasingly variable from year to year, with the driest consecutive four years occurring from 2012 to 2015.[52] According to the California Climate Action Team—a committee of state agency secretaries and the heads of agencies, boards, and departments, led by the Secretary of the California Environmental Protection Agency—even if actions could be taken to immediately curtail climate change emissions, the potency of emissions that have already built up, their long atmospheric lifetimes (see Table 5), and the inertia of the Earth's climate system could produce as much as 0.6°C (1.1°F) of additional warming. Consequently, some impacts from climate change are now considered unavoidable. Global climate change risks to California are shown in Table 6 and include impacts to public health, water resources, agriculture, coastal sea level, forest and biological resources, and energy.

Table 6 Summary of GHG Emissions Risks to California

Impact Category	Potential Risk
Public Health Impacts	Heat waves will be more frequent, hotter, and longer Fewer extremely cold nights Poor air quality made worse Higher temperatures increase ground-level ozone levels
Water Resources Impacts	Decreasing Sierra Nevada snow pack Challenges in securing adequate water supply Potential reduction in hydropower Loss of winter recreation
Agricultural Impacts	Increasing temperature Increasing threats from pests and pathogens Expanded ranges of agricultural weeds Declining productivity Irregular blooms and harvests
Coastal Sea Level Impacts	Accelerated sea level rise Increasing coastal floods Shrinking beaches Worsened impacts on infrastructure
Forest and Biological Resource Impacts	Increased risk and severity of wildfires Lengthening of the wildfire season Movement of forest areas Conversion of forest to grassland Declining forest productivity Increasing threats from pest and pathogens Shifting vegetation and species distribution Altered timing of migration and mating habits Loss of sensitive or slow-moving species
Energy Demand Impacts	Potential reduction in hydropower Increased energy demand

Sources: California Energy Commission (CEC). 2006. Our Changing Climate: Assessing the Risks to California. 2006 Biennial Report. CEC-500-2006-077. California Climate Change Center; California Energy Commission (CEC). 2009, May. The Future Is Now: An Update on Climate Change Science, Impacts, and Response Options for California. CEC-500-2008-0077; California Climate Change Center (CCCC). 2012, July. Our Changing Climate 2012: Vulnerability and Adaptation to the Increasing Risks from Climate Change in California; and California Natural Resources Agency (CNRA). 2014, July. Safeguarding California: Reducing Climate Risk: An Update to the 2009 California Climate Adaptation Strategy. https://resources.ca.gov/CNRALegacyFiles/docs/climate/Final_Safeguarding_CA_Plan_July_31_2014.pdf.

[51] Office of Environmental Health Hazards Assessment (OEHHA). 2018, May. Indicators of Climate Change in California. https://oehha.ca.gov/media/downloads/climate-change/report/2018caindicatorsreportmay2018.pdf.

[52] Office of Environmental Health Hazards Assessment (OEHHA). 2018, May. Indicators of Climate Change in California. https://oehha.ca.gov/media/downloads/climate-change/report/2018caindicatorsreportmay2018.pdf.

2.1 REGULATORY FRAMEWORK

2.1.1 Federal Regulations

The US Environmental Protection Agency (EPA) announced on December 7, 2009, that GHG emissions threaten the public health and welfare of the American people and that GHG emissions from on-road vehicles contribute to that threat. The EPA's final findings respond to the 2007 US Supreme Court decision that GHG emissions fit within the Clean Air Act definition of air pollutants. The findings did not themselves impose any emission reduction requirements but allowed the EPA to finalize the GHG standards proposed in 2009 for new light-duty vehicles as part of the joint rulemaking with the Department of Transportation.[53]

To regulate GHGs from passenger vehicles, EPA was required to issue an endangerment finding. The finding identifies emissions of six key GHGs—CO_2, CH_4, N_2O, hydrofluorocarbons, perfluorocarbons, and SF_6—that have been the subject of scrutiny and intense analysis for decades by scientists in the United States and around the world. The first three are applicable to the proposed project's GHG emissions inventory because they constitute the majority of GHG emissions; they are the GHG emissions that should be evaluated as part of a project's GHG emissions inventory.

2.1.1.1 US MANDATORY REPORTING RULE FOR GREENHOUSE GASES (2009)

In response to the endangerment finding, the EPA issued the Mandatory Reporting of GHG Rule that requires substantial emitters of GHG emissions (large stationary sources, etc.) to report GHG emissions data. Facilities that emit 25,000 $MTCO_2e$ or more per year are required to submit an annual report.

2.1.1.2 UPDATE TO CORPORATE AVERAGE FUEL ECONOMY STANDARDS (2021 TO 2026)

The federal government issued new Corporate Average Fuel Economy (CAFE) standards in 2012 for model years 2017 to 2025, which required a fleet average of 54.5 miles per gallon in 2025. However, on March 30, 2020, the EPA finalized an updated CAFE and GHG emissions standards for passenger cars and light trucks and established new standards, covering model years 2021 through 2026, known as the Safer Affordable Fuel Efficient (SAFE) Vehicles Final Rule for Model Years 2021-2026. Under SAFE, the fuel economy standards will increase 1.5 percent per year compared to the 5 percent per year under the CAFE standards established in 2012. However, consortium of automakers and California have agreed on a voluntary framework to reduce emissions that can serve as an alternative path forward for clean vehicle standards nationwide. Automakers who agreed to the framework are Ford, Honda, BMW of North America, and Volkswagen Group of America. The framework supports continued annual reductions of vehicle greenhouse gas emissions through the 2026 model year, encourages innovation to accelerate the transition to electric vehicles, and provides industry the certainty needed to make investments and create jobs. This commitment means that the auto companies party to the voluntary agreement will only sell cars in the United States that meet the CAFE standards established in 2021 for model years 2017 to 2025.[54]

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[53] US Environmental Protection Agency (USEPA). 2009, December. EPA: Greenhouse Gases Threaten Public Health and the Environment. Science overwhelmingly shows greenhouse gas concentrations at unprecedented levels due to human activity. https://archive.epa.gov/epapages/newsroom_archive/newsreleases/08d11a451131bca585257685005bf252.html.

[54] California Air Resources Board (CARB). 2019, September 5 (accessed). California and major automakers reach groundbreaking framework agreement on clean emission standards. https://ww2.arb.ca.gov/news/california-and-major-automakers-reach-groundbreaking-framework-agreement-clean-emission.

2.1.1.3 EPA REGULATION OF STATIONARY SOURCES UNDER THE CLEAN AIR ACT (ONGOING)

Pursuant to its authority under the Clean Air Act, the EPA has been developing regulations for new, large stationary sources of emissions such as power plants and refineries. Under former President Obama's 2013 Climate Action Plan, the EPA was directed to develop regulations for existing stationary sources as well. On June 19, 2019, the EPA issued the final Affordable Clean Energy (ACE) rule which became effective on August 19, 2019. The ACE rule was crafted under the direction of President Trump's Energy Independence Executive Order. It officially rescinds the Clean Power Plan rule issued during the Obama Administration and sets emissions guidelines for states in developing plans to limit CO_2 emissions from coal-fired power plants.

2.1.2 State Regulations

Current State of California guidance and goals for reductions in GHG emissions are generally embodied in Executive Orders S-03-05 and B-30-15, Assembly Bill (AB) 32, Senate Bill (SB) 32, and SB 375.

2.1.2.1 EXECUTIVE ORDER S-03-05

Executive Order S-03-05, signed June 1, 2005. Executive Order S-03-05 set the following GHG reduction targets for the State:

- 2000 levels by 2010
- 1990 levels by 2020
- 80 percent below 1990 levels by 2050

2.1.2.2 ASSEMBLY BILL 32, THE GLOBAL WARMING SOLUTIONS ACT

State of California guidance and targets for reductions in GHG emissions are generally embodied in the Global Warming Solutions Act, adopted with passage of AB 32. AB 32 was passed by the California state legislature on August 31, 2006, to place the state on a course toward reducing its contribution of GHG emissions. AB 32 follows the 2020 emissions reduction goal established in Executive Order S-03-05.

CARB 2008 Scoping Plan

The first Scoping Plan was adopted by CARB on December 11, 2008. The 2008 Scoping Plan identified that GHG emissions in California are anticipated to be 596 $MMTCO_2e$ in 2020. In December 2007, CARB approved a 2020 emissions limit of 427 $MMTCO_2e$ (471 million tons) for the state (CARB 2008). To effectively implement the emissions cap, AB 32 directed CARB to establish a mandatory reporting system to track and monitor GHG emissions levels for large stationary sources that generate more than 25,000 $MTCO_2e$ per year, prepare a plan demonstrating how the 2020 deadline can be met, and develop appropriate regulations and programs to implement the plan by 2012.

First Update to the Scoping Plan

CARB completed a five-year update to the 2008 Scoping Plan, as required by AB 32. The First Update to the Scoping Plan, adopted May 22, 2014, highlights California's progress toward meeting the near-term 2020 GHG emission reduction goals defined in the 2008 Scoping Plan. As part of the update, CARB recalculated the 1990 GHG emission levels with the updated AR4 GWPs, and the 427 $MMTCO_2e$ 1990 emissions level and 2020 GHG emissions limit, established in response to AB 32, are slightly higher at 431 $MMTCO_2e$. [55]

As identified in the Update to the Scoping Plan, California is on track to meet the goals of AB 32. The update also addresses the state's longer-term GHG goals in a post-2020 element. The post-2020 element provides a high-level view of a long-term strategy for meeting the 2050 GHG goal, including a recommendation for the state to adopt a midterm target. According to the Update to the Scoping Plan, local government reduction targets should chart a reduction trajectory that is consistent with or exceeds the trajectory created by statewide goals.[56] CARB identified that reducing emissions to 80 percent below 1990 levels will require a fundamental shift to efficient, clean energy in every sector of the economy. Progressing toward California's 2050 climate targets will require significant acceleration of GHG reduction rates. Emissions from 2020 to 2050 will have to decline several times faster than the rate needed to reach the 2020 emissions limit. [57]

2.1.2.3 EXECUTIVE ORDER B-30-15

Executive Order B-30-15, signed April 29, 2015, sets a goal of reducing GHG emissions in the state to 40 percent below 1990 levels by year 2030. Executive Order B-30-15 also directs CARB to update the Scoping Plan to quantify the 2030 GHG reduction goal for the state and requires state agencies to implement measures to meet the interim 2030 goal as well as the long-term goal for 2050 in Executive Order S-03-05. It also requires the Natural Resources Agency to conduct triennial updates of the California adaption strategy, Safeguarding California, in order to ensure climate change is accounted for in state planning and investment decisions.

2.1.2.4 SENATE BILL 32 AND ASSEMBLY BILL 197

In September 2016, Governor Brown signed Senate Bill 32 and Assembly Bill 197, making the Executive Order goal for year 2030 into a statewide, mandated legislative target. AB 197 established a joint legislative committee on climate change policies and requires the CARB to prioritize direction emissions reductions rather than the market-based cap-and-trade program for large stationary, mobile, and other sources.

2017 Climate Change Scoping Plan Update

Executive Order B-30-15 and SB 32 required CARB to prepare another update to the Scoping Plan to address the 2030 target for the state. On December 24, 2017, CARB approved the 2017 Climate Change Scoping Plan Update, which outlines potential regulations and programs, including strategies consistent with

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55 California Air Resources Board (CARB). 2014, May 15. First Update to the Climate Change Scoping Plan: Building on the Framework, Pursuant to AB 32, The California Global Warming Solutions Act of 2006. http://www.arb.ca.gov/cc/scopingplan/document/updatedscopingplan2013.htm.

56 California Air Resources Board (CARB). 2014, May 15. First Update to the Climate Change Scoping Plan: Building on the Framework, Pursuant to AB 32, The California Global Warming Solutions Act of 2006. http://www.arb.ca.gov/cc/scopingplan/scopingplan.htm.

57 California Air Resources Board (CARB). 2014, May 15. First Update to the Climate Change Scoping Plan: Building on the Framework, Pursuant to AB 32, The California Global Warming Solutions Act of 2006. http://www.arb.ca.gov/cc/scopingplan/document/updatedscopingplan2013.htm.

AB 197 requirements, to achieve the 2030 target. The 2017 Scoping Plan establishes a new emissions limit of 260 $MMTCO_2e$ for the year 2030, which corresponds to a 40 percent decrease in 1990 levels by 2030.[58]

California's climate strategy will require contributions from all sectors of the economy, including enhanced focus on zero- and near-zero emission vehicle technologies; continued investment in renewables such as solar roofs, wind, and other types of distributed generation; greater use of low carbon fuels; integrated land conservation and development strategies; coordinated efforts to reduce emissions of short-lived climate pollutants (methane, black carbon, and fluorinated gases); and an increased focus on integrated land use planning to support livable, transit-connected communities and conserve agricultural and other lands. Requirements for GHG reductions at stationary sources complement local air pollution control efforts by the local air districts to tighten emissions limits for criteria air pollutants and toxic air contaminants on a broad spectrum of industrial sources. Major elements of the 2017 Scoping Plan framework include:

- Implementing and/or increasing the standards of the Mobile Source Strategy, which include increasing zero-emission (ZE) buses and trucks.
- Low Carbon Fuel Standard (LCFS), with an increased stringency (18 percent by 2030).
- Implementation of SB 350, which expands the Renewables Portfolio Standard (RPS) to 50 percent RPS and doubles energy efficiency savings by 2030.
- California Sustainable Freight Action Plan, which improves freight system efficiency by 25 percent by 2030 and utilizes near-zero emissions technology and deployment of ZE trucks.
- Implementing the proposed Short-Lived Climate Pollutant Strategy, which focuses on reducing methane and hydrofluorocarbon emissions by 40 percent and anthropogenic black carbon emissions by 50 percent by year 2030.
- Post-2020 Cap-and-Trade Program that includes declining caps.
- Continued implementation of SB 375.
- Development of a Natural and Working Lands Action Plan to secure California's land base as a net carbon sink.

In addition to these statewide strategies, the 2017 Climate Change Scoping Plan also identified local governments as essential partners in achieving the state's long-term GHG reduction goals and recommended local actions to reduce GHG emissions—for example, statewide targets of no more than 6 $MTCO_2e$ or less per capita by 2030 and 2 $MTCO_2e$ or less per capita by 2050. CARB recommends that local governments evaluate and adopt quantitative, locally appropriate goals that align with the statewide per capita targets and sustainable development objectives and develop plans to achieve the local goals. The statewide per capita goals were developed by applying the percent reductions necessary to reach the 2030 and 2050 climate goals (i.e., 40 percent and 80 percent, respectively) to the state's 1990 emissions limit established under AB 32. For CEQA projects, CARB states that lead agencies have discretion to develop evidenced-based numeric thresholds (mass emissions, per capita, or per service population) consistent with the Scoping Plan and the state's long-term GHG goals. To the degree a project relies on GHG mitigation measures, CARB recommends that lead agencies prioritize on-site design features that reduce emissions, especially from vehicle miles traveled (VMT), and direct investments in GHG reductions within the project's region that contribute potential air quality, health, and economic co-benefits. Where further project design or regional investments

[58] California Air Resources Board (CARB). 2017, November. California's 2017 Climate Change Scoping Plan: The Strategy for Achieving California's 2030 Greenhouse Gas Target. https://www.arb.ca.gov/cc/scopingplan/scoping_plan_2017.pdf.

are infeasible or not proven to be effective, CARB recommends mitigating potential GHG impacts through purchasing and retiring carbon credits.

The Scoping Plan scenario is set against what is called the "business as usual" yardstick—that is, what would the GHG emissions look like if the state did nothing at all beyond the policies that are already required and in place to achieve the 2020 limit, as shown in Table 7. It includes the existing renewables requirements, advanced clean cars, the "10 percent" LCFS, and the SB 375 program for more vibrant communities, among others. However, it does not include a range of new policies or measures that have been developed or put into statute over the past two years. Also shown in the table, the known commitments are expected to result in emissions that are 60 $MMTCO_2e$ above the target in 2030. If the estimated GHG reductions from the known commitments are not realized due to delays in implementation or technology deployment, the post-2020 Cap-and-Trade Program would deliver the additional GHG reductions in the sectors it covers to ensure the 2030 target is achieved.

Table 7 2017 Climate Change Scoping Plan Emissions Reductions Gap

Modeling Scenario	2030 GHG Emissions $MMTCO_2e$
Reference Scenario (Business-as-Usual)	389
With Known Commitments	320
2030 GHG Target	**260**
Gap to 2030 Target with Known Commitments	**60**

Source: California Air Resources Board. 2017, November. California's 2017 Climate Change Scoping Plan: The Strategy for Achieving California's 2030 Greenhouse Gas Target. https://www.arb.ca.gov/cc/scopingplan/2030sp_pp_final.pdf.

Table 8 provides estimated GHG emissions by sector compared to 1990 levels, and the range of GHG emissions for each sector estimated for 2030.

Table 8 2017 Scoping Plan Emissions Changes by Sector to Achieve the 2030 Target

Scoping Plan Sector	1990 $MMTCO_2e$	2030 Proposed Plan Ranges $MMTCO_2e$	% Change from 1990
Agricultural	26	24-25	-8% to -4%
Residential and Commercial	44	38-40	-14% to -9%
Electric Power	108	30-53	-72% to -51%
High GWP	3	8-11	267% to 367%
Industrial	98	83-90	-15% to -8%
Recycling and Waste	7	8-9	14% to 29%
Transportation (including TCU)	152	103-111	-32% to -27%
Net Sink[a]	-7	TBD	TBD
Sub Total	431	294-339	-32% to -21%
Cap-and-Trade Program	NA	24-79	NA
Total	431	260	-40%

Source: California Air Resources Board. 2017, November. California's 2017 Climate Change Scoping Plan: The Strategy for Achieving California's 2030 Greenhouse Gas Target. https://www.arb.ca.gov/cc/scopingplan/2030sp_pp_final.pdf.
Notes: TCU = Transportation, Communications, and Utilities; TBD: To Be Determined.
[a] Work is underway through 2017 to estimate the range of potential sequestration benefits from the natural and working lands sector.

2.1.2.5 SENATE BILL 375 – SUSTAINABLE COMMUNITIES STRATEGY

In 2008, SB 375, the Sustainable Communities and Climate Protection Act, was adopted to connect the GHG emissions reductions targets established in the 2008 Scoping Plan for the transportation sector to local land use decisions that affect travel behavior. Its intent is to reduce GHG emissions from light-duty trucks and automobiles (excludes emissions associated with goods movement) by aligning regional long-range transportation plans, investments, and housing allocations to local land use planning to reduce VMT and vehicle trips. Specifically, SB 375 required CARB to establish GHG emissions reduction targets for each of the 18 metropolitan planning organizations (MPOs). The Metropolitan Transportation Commission (MTC) is the MPO for the nine-county San Francisco Bay Area region. MTC's targets are a 7 percent per capita reduction in GHG emissions from 2005 by 2020, and 15 percent per capita reduction from 2005 levels by 2035.[59]

2017 Update to the SB 375 Targets

CARB is required to update the targets for the MPOs every eight years. In June 2017, CARB released updated targets and technical methodology and recently released another update in February 2018. The updated targets consider the need to further reduce VMT, as identified in the 2017 Scoping Plan Update, while balancing the need for additional and more flexible revenue sources to incentivize positive planning and action toward sustainable communities. Like the 2010 targets, the updated SB 375 targets are in units of percent per capita reduction in GHG emissions from automobiles and light trucks relative to 2005. This excludes reductions anticipated from implementation of state technology and fuels strategies and any potential future state strategies such as statewide road user pricing. The proposed targets call for greater per capita GHG emission reductions from SB 375 than are currently in place, which for 2035, translate into proposed targets that either match or exceed the emission reduction levels in the MPOs' currently adopted sustainable communities strategies (SCS). As proposed, CARB staff's proposed targets would result in an additional reduction of over 8 $MMTCO_2e$ in 2035 compared to the current targets. For the next round of SCS updates, CARB's updated targets for the SCAG region are an 8 percent per capita GHG reduction in 2020 from 2005 levels (unchanged from the 2010 target) and a 19 percent per capita GHG reduction in 2035 from 2005 levels (compared to the 2010 target of 13 percent).[60] CARB adopted the updated targets and methodology on March 22, 2018. All SCSs adopted after October 1, 2018, are subject to these new targets.

2.1.2.6 OTHER APPLICABLE MEASURES

Transportation

Assembly Bill 1493

California vehicle GHG emission standards were enacted under AB 1493 (Pavley I). Pavley I is a clean-car standard that reduces GHG emissions from new passenger vehicles (light-duty auto to medium-duty vehicles) from 2009 through 2016 and is anticipated to reduce GHG emissions from new passenger vehicles by 30 percent in 2016. California implements the Pavley I standards through a waiver granted to California by

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59 California Air Resources Board. 2010. Staff Report, Proposed Regional Greenhouse Gas Emission Reduction Targets for Automobiles and Light Trucks Pursuant to Senate Bill 375, August.

60 California Air Resources Board (CARB). 2018, February. Proposed Update to the SB 375 Greenhouse Gas Emission Reduction Targets. https://www.arb.ca.gov/cc/inventory/data/data.htm.

the EPA. In 2012, the EPA issued a Final Rulemaking that sets even more stringent fuel economy and GHG emissions standards for model years 2017 through 2025 light-duty vehicles (see also the discussion on the update to the Corporate Average Fuel Economy standards under *Federal Laws*, above). In January 2012, CARB approved the Advanced Clean Cars program (formerly known as Pavley II) for model years 2017 through 2025. The program combines the control of smog, soot, and global warming gases with requirements for greater numbers of ZE vehicles into a single package of standards. Under California's Advanced Clean Car program, by 2025 new automobiles will emit 34 percent less global warming gases and 75 percent less smog-forming emissions.

Executive Order S-1-07

On January 18, 2007, the state set a new LCFS for transportation fuels sold in the state. Executive Order S-01-07 sets a declining standard for GHG emissions measured in CO_2e gram per unit of fuel energy sold in California. The LCFS requires a reduction of 2.5 percent in the carbon intensity of California's transportation fuels by 2015 and a reduction of at least 10 percent by 2020. The standard applies to refiners, blenders, producers, and importers of transportation fuels, and would use market-based mechanisms to allow these providers to choose how they reduce emissions during the "fuel cycle" using the most economically feasible methods.

Executive Order B-16-2012

On March 23, 2012, the state identified that CARB, the California Energy Commission (CEC), the Public Utilities Commission, and other relevant agencies worked with the Plug-in Electric Vehicle Collaborative and the California Fuel Cell Partnership to establish benchmarks to accommodate ZE vehicles in major metropolitan areas, including infrastructure to support them (e.g., electric vehicle charging stations). The executive order also directed the number of ZE vehicles in California's state vehicle fleet to increase through the normal course of fleet replacement so that at least 10 percent of fleet purchases of light-duty vehicles are ZE by 2015 and at least 25 percent by 2020. The executive order also establishes a target for the transportation sector of reducing GHG emissions 80 percent below 1990 levels.

Renewables Portfolio Standard

Senate Bills 1078, 107, X1-2, and Executive Order S-14-08

A major component of California's Renewable Energy Program is the renewables portfolio standard established under Senate Bills 1078 (Sher) and 107 (Simitian). Under the RPS, certain retail sellers of electricity were required to increase the amount of renewable energy each year by at least 1 percent in order to reach at least 20 percent by December 30, 2010. Executive Order S-14-08, signed in November 2008, expanded the state's renewable energy standard to 33 percent renewable power by 2020. This standard was adopted by the legislature in 2011 (SB X1-2). Renewable sources of electricity include wind, small hydropower, solar, geothermal, biomass, and biogas. The increase in renewable sources for electricity production will decrease indirect GHG emissions from development projects because electricity production from renewable sources is generally considered carbon neutral.

Senate Bill 350

Senate Bill 350 (de Leon), was signed into law September 2015. SB 350 establishes tiered increases to the RPS of 40 percent by 2024, 45 percent by 2027, and 50 percent by 2030. SB 350 also set a new goal to double the energy efficiency savings in electricity and natural gas through energy efficiency and conservation measures.

Senate Bill 100

On September 10, 2018, Governor Brown signed SB 100. Under SB 100, the RPS for public-owned facilities and retail sellers consist of 44 percent renewable energy by 2024, 52 percent by 2027, and 60 percent by 2030. Additionally, SB 100 also established a new RPS requirement of 50 percent by 2026. Furthermore, the bill establishes an overall state policy that eligible renewable energy resources and zero-carbon resources supply 100 percent of all retail sales of electricity to California end-use customers and 100 percent of electricity procured to serve all state agencies by December 31, 2045. Under the bill, the state cannot increase carbon emissions elsewhere in the western grid or allow resource shuffling to achieve the 100 percent carbon-free electricity target.

Executive Order B-55-18

Executive Order B-55-18, signed September 10, 2018, sets a goal "to achieve carbon neutrality as soon as possible, and no later than 2045, and achieve and maintain net negative emissions thereafter." Executive Order B-55-18 directs CARB to work with relevant state agencies to ensure future Scoping Plans identify and recommend measures to achieve the carbon neutrality goal. The goal of carbon neutrality by 2045 is in addition to other statewide goals, meaning not only should emissions be reduced to 80 percent below 1990 levels by 2050, but that, by no later than 2045, the remaining emissions be offset by equivalent net removals of CO_2e from the atmosphere, including through sequestration in forests, soils, and other natural landscapes.

Energy Efficiency

California Building Standards Code – Building Energy Efficiency Standards

Energy conservation standards for new residential and non-residential buildings were adopted by the California Energy Resources Conservation and Development Commission (now the CEC) in June 1977 and most recently revised in 2019 (Title 24, Part 6, of the California Code of Regulations [CCR]). Title 24 requires the design of building shells and building components to conserve energy. The standards are updated periodically to allow for consideration and possible incorporation of new energy efficiency technologies and methods. The 2019 Building Energy Efficiency Standards, which were adopted on May 9, 2018, went into effect on January 1, 2020.

The 2019 standards move towards 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 3 stories and less. Four key areas the 2019 standards will focus on include 1) smart residential photovoltaic systems; 2) updated thermal envelope standards (preventing heat transfer from the interior to exterior and vice versa); 3) residential and nonresidential ventilation requirements; 4) and nonresidential lighting requirements.[61] Under

[61] California Energy Commission (CEC). 2018. News Release: Energy Commission Adopts Standards Requiring Solar Systems for New Homes, First in Nation. http://www.energy.ca.gov/releases/2018_releases/2018-05-09_building_standards_adopted_nr.html.

the 2019 standards, nonresidential buildings and multi-family residential buildings of four stories or more will be 30 percent more energy efficient compared to the 2016 standards while single-family homes will be 7 percent more energy efficient.[62] When accounting for the electricity generated by the solar photovoltaic system, single-family homes would use 53 percent less energy compared to homes built to the 2016 standards.[63]

California Green Building Standards Code – CALGreen

On July 17, 2008, the California Building Standards Commission adopted the nation's first green building standards. The California Green Building Standards Code (24 CCR, Part 11, known as "CALGreen") was adopted as part of the California Building Standards Code. CALGreen established planning and design standards for sustainable site development, energy efficiency (in excess of the California Energy Code requirements), water conservation, material conservation, and internal air contaminants.[64] The mandatory provisions of CALGreen became effective January 1, 2011. The CEC adopted the voluntary standards of the 2019 CALGreen on October 3, 2018. The 2019 CALGreen standards became effective January 1, 2020.

2006 Appliance Energy Efficiency Regulations

The 2006 Appliance Efficiency Regulations (20 CCR §§ 1601–1608) were adopted by the CEC on October 11, 2006 and approved by the California Office of Administrative Law on December 14, 2006. The regulations include standards for both federally regulated appliances and non–federally regulated appliances. Though these regulations are now often viewed as "business as usual," they exceed the standards imposed by all other states, and they reduce GHG emissions by reducing energy demand.

Solid Waste

AB 939

California's Integrated Waste Management Act of 1989 (AB 939, Public Resources Code §§ 40050 et seq.) set a requirement for cities and counties throughout the state to divert 50 percent of all solid waste from landfills by January 1, 2000, through source reduction, recycling, and composting. In 2008, the requirements were modified to reflect a per capita requirement rather than tonnage. To help achieve this, the act requires that each city and county prepare and submit a source reduction and recycling element. AB 939 also established the goal for all California counties to provide at least 15 years of ongoing landfill capacity.

AB 341

AB 341 (Chapter 476, Statutes of 2011) increased the statewide goal for waste diversion to 75 percent by 2020 and requires recycling of waste from commercial and multifamily residential land uses. Section 5.208 of CALGreen also requires that at least 65 percent of the nonhazardous construction and demolition waste from nonresidential construction operations be recycled and/or salvaged for reuse.

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62 California Energy Commission (CEC). 2018. 2019 Building Energy and Efficiency Standards Frequently Asked Questions. http://www.energy.ca.gov/title24/2019standards/documents/2018_Title_24_2019_Building_Standards_FAQ.pdf.

63 California Energy Commission (CEC). 2018. 2019 Building Energy and Efficiency Standards Frequently Asked Questions. http://www.energy.ca.gov/title24/2019standards/documents/2018_Title_24_2019_Building_Standards_FAQ.pdf.

64 The green building standards became mandatory in the 2010 edition of the code.

AB 1327

The California Solid Waste Reuse and Recycling Access Act (AB 1327, Public Resources Code §§ 42900 et seq.) requires areas to be set aside for collecting and loading recyclable materials in development projects. The act required the California Integrated Waste Management Board to develop a model ordinance for adoption by any local agency requiring adequate areas for collection and loading of recyclable materials as part of development projects. Local agencies are required to adopt the model or an ordinance of their own.

AB 1826

In October of 2014, Governor Brown signed AB 1826 requiring businesses to recycle their organic waste on and after April 1, 2016, depending on the amount of waste they generate per week. This law also requires that on and after January 1, 2016, local jurisdictions across the state implement an organic waste recycling program to divert organic waste generated by businesses and multifamily residential dwellings with five or more units. Organic waste means food waste, green waste, landscape and pruning waste, nonhazardous wood waste, and food-soiled paper waste that is mixed with food waste.

Water Efficiency

SBX7-7

The 20x2020 Water Conservation Plan was issued by the Department of Water Resources (DWR) in 2010 pursuant to Senate Bill 7, which was adopted during the 7th Extraordinary Session of 2009–2010 and therefore dubbed "SBX7-7." SBX7-7 mandated urban water conservation and authorized the DWR to prepare a plan implementing urban water conservation requirements (20x2020 Water Conservation Plan). In addition, it required agricultural water providers to prepare agricultural water management plans, measure water deliveries to customers, and implement other efficiency measures. SBX7-7 requires urban water providers to adopt a water conservation target of 20 percent reduction in urban per capita water use by 2020 compared to 2005 baseline use.

AB 1881

The Water Conservation in Landscaping Act of 2006 (AB 1881) requires local agencies to adopt the updated DWR model ordinance or equivalent. AB 1881 also requires the Energy Commission, in consultation with the department, to adopt, by regulation, performance standards and labeling requirements for landscape irrigation equipment, including irrigation controllers, moisture sensors, emission devices, and valves to reduce the wasteful, uneconomic, inefficient, or unnecessary consumption of energy or water.

Short-Lived Climate Pollutant Strategy

Senate Bill 1383

On September 19, 2016, the Governor signed SB 1383 to supplement the GHG reduction strategies in the Scoping Plan to consider short-lived climate pollutants, including black carbon and CH_4. Black carbon is the light-absorbing component of fine particulate matter produced during incomplete combustion of fuels. SB 1383 required the state board, no later than January 1, 2018, to approve and begin implementing a comprehensive strategy to reduce emissions of short-lived climate pollutants to achieve a reduction in methane by 40 percent, hydrofluorocarbon gases by 40 percent, and anthropogenic black carbon by 50 percent below 2013 levels by 2030. The bill also established targets for reducing organic waste in landfills. On March 14, 2017, CARB adopted the Short-Lived Climate Pollutant Reduction Strategy, which identifies the state's approach to reducing anthropogenic and biogenic sources of short-lived climate pollutants. Anthropogenic sources of black carbon include on- and off-road transportation, residential wood burning, fuel combustion (charbroiling), and industrial processes. According to CARB, ambient levels of black carbon in California are 90 percent lower than in the early 1960s, despite the tripling of diesel fuel use.[65] In-use on-road rules are expected to reduce black carbon emissions from on-road sources by 80 percent between 2000 and 2020.

2.1.3 Regional Regulations

Plan Bay Area, Strategy for a Sustainable Region

Plan Bay Area 2040 is the Bay Area's RTP/SCS and was adopted jointly by ABAG and MTC on July 26, 2017. It lays out a development scenario for the region, which, when integrated with the transportation network and other transportation measures and policies, would reduce GHG emissions from transportation (excluding goods movement) beyond the per capita reduction targets identified by CARB. Plan Bay Area 2040 is a limited and focused update to the 2013 Plan Bay Area, with updated planning assumptions that incorporate key economic, demographic, and financial trends from the last several years.

As part of the implementing framework for Plan Bay Area, local governments have identified Priority Development Areas (PDAs) to focus growth. PDAs are transit-oriented, infill development opportunity areas in existing communities. Overall, well over two-thirds of all regional growth in the Bay Area by 2040 is allocated in PDAs. Per the Final Plan Bay Area 2040, while the projected number of new housing units and new jobs within PDAs would increase to 629,000 units and 707,000 jobs compared to the adopted Plan Bay Area 2013, its overall share would be reduced to 77 percent and 55 percent.[66] However, Plan Bay Area 2040 remains on track to meet a 16 percent per capita reduction of GHG emissions by 2035 and a 10 percent per capita reduction by 2020 from 2005 conditions.[67] The proposed project site is not within a PDA.[68]

Bay Area Clean Air Plan

BAAQMD adopted the 2017 Clean Air Plan, Spare the Air, Cool the Climate on April 19, 2017. The 2017 Clean Air Plan also lays the groundwork for reducing GHG emissions in the Bay Area to meet the state's 2030 GHG reduction target and 2050 GHG reduction goal. It also includes a vision for the Bay Area in a post-carbon year 2050 that encompasses the following:

- Construct buildings that are energy efficient and powered by renewable energy.

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65 California Air Resources Board (CARB). 2017, March 14. Final Proposed Short-Lived Climate Pollutant Reduction Strategy. https://www.arb.ca.gov/cc/shortlived/shortlived.htm.

66 Metropolitan Transportation Commission (MTC) and Association of Bay Area Governments (ABAG). 2017, March. Plan Bay Area 2040 Plan.

67 Metropolitan Transportation Commission (MTC) and Association of Bay Area Governments (ABAG). 2017, March. Plan Bay Area 2040 Plan.

68 Associated Bay Area Governments (ABAG). July 2015. Priority Development Area Showcase, http://gis.abag.ca.gov/website/PDAShowcase/.

- Walk, bicycle, and use public transit for the majority of trips and use electric-powered autonomous public transit fleets.
- Incubate and produce clean energy technologies.
- Live a low-carbon lifestyle by purchasing low-carbon foods and goods in addition to recycling and putting organic waste to productive use.[69]

A comprehensive multipollutant control strategy has been developed to be implemented in the next 3 to 5 years to address public health and climate change and to set a pathway to achieve the 2050 vision. The control strategy includes 85 control measures to reduce emissions of ozone, particulate matter, toxic air contaminants, and GHG from a full range of emission sources. These control measures cover the following sectors: 1) stationary (industrial) sources; 2) transportation; 3) energy; 4) agriculture; 5) natural and working lands; 6) waste management; 7) water; and 8) super-GHG pollutants. Overall, the proposed control strategy is based on the following key priorities:

- Reduce emissions of criteria air pollutants and toxic air contaminants from all key sources.
- Reduce emissions of "super-GHGs" such as methane, black carbon, and fluorinated gases.
- Decrease demand for fossil fuels (gasoline, diesel, and natural gas).
- Increase efficiency of the energy and transportation systems.
- Reduce demand for vehicle travel, and high-carbon goods and services.
- Decarbonize the energy system.
- Make the electricity supply carbon-free.
- Electrify the transportation and building sectors.

Bay Area Commuter Benefits Program

Under Air District Regulation 14, Model Source Emissions Reduction Measures, Rule 1, Bay Area Commuter Benefits Program, employers with 50 or more full-time employees within the BAAQMD are required to register and offer commuter benefits to employees. In partnership with the BAAQMD and the Metropolitan Transportation Commission (MTC), the rule's purpose is to improve air quality, reduce GHG emissions, and decrease the Bay Area's traffic congestion by encouraging employees to use alternative commute modes, such as transit, vanpool, carpool, bicycling, and walking. The benefits program allows employees to choose from one of four commuter benefit options including a pre-tax benefit, employer-provided subsidy, employer-provided transit, and alternative commute benefit.

2.1.4 Local Regulations

2.1.4.1 CITY OF CUPERTINO CLIMATE ACTION PLAN

The City of Cupertino published the public draft Climate Action Plan (CAP) in December 2014 to achieve the GHG reduction target of AB 32 for target year 2020. The CAP serves to support California's statewide climate change efforts through identification of actions that can be taken locally, by residents, businesses, and

[69] Bay Area Air Quality Management District, 2017. Final 2017 *Clean Air Plan*, Spare the Air, Cool the Climate: A Blueprint for Clean Air and Climate Protection in the Bay Area. http://www.baaqmd.gov/plans-and-climate/air-quality-plans/current-plans, accessed November 21, 2019.

the City itself, to ensure the State's ambitious reduction goals can be achieved. The strategies outlined in the CAP seek to not only reduce GHG emissions, but also provide energy, water, fuel, and cost savings for the City.[70] The goals established by the City's CAP are the following:

- Goal 1 – Reduce Energy Use: Increase energy efficiency in existing homes and buildings and increase use of renewable energy community-wide.
- Goal 2 – Encourage Alternative Transportation: Support transit, carpooling, walking, and bicycling as viable transportation modes to decrease the number of single-occupancy vehicle trips within the community.
- Goal 3 – Conserve Water: Promote the efficient use and conservation of water in buildings and landscapes.
- Goal 4 – Reduce Solid Waste: Strengthen waste reduction efforts through recycling and organics collection and reduced consumption of materials that otherwise end up in landfills.
- Goal 5 – Expand Green Infrastructure: Enhance the City's existing urban forest on public and private lands.

2.2 ENVIRONMENTAL SETTING

2.2.1 Existing Emissions

The project site is currently developed with one commercial building. The building operations currently generate greenhouse emissions from transportation, area sources, energy use, water use/wastewater generation, and solid waste disposal.

2.3 METHODOLOGY

The BAAQMD CEQA Air Quality Guidelines were prepared to assist in the evaluation of air quality impacts of projects and plans proposed within the Bay Area. The guidelines provide recommended procedures for evaluating potential GHG emissions impacts during the environmental review process, consistent with CEQA requirements, and include recommended thresholds of significance, mitigation measures, and background information.

2.3.1 BAAQMD Standards of Significance

BAAQMD has adopted CEQA Guidelines to evaluate GHG emissions impacts from development projects.[71] Land use development projects include residential, commercial, industrial, and public land use facilities. Direct sources of emissions may include on-site combustion of energy, such as natural gas used for heating and cooking, emissions from industrial processes (not applicable for most land use development projects), and fuel combustion from mobile sources. Indirect emissions are emissions produced off-site from energy

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[70] City of Cupertino, 2015. Climate Action Plan. January, 2015. http://www.cupertino.org/home/showdocument?id=13531

[71] Bay Area Air Quality Management Agency, 2017. California Environmental Quality Act Air Quality Guidelines. http://www.baaqmd.gov/~/media/files/planning-and-research/ceqa/ceqa_guidelines_may2017-pdf.pdf?la=en, accessed April 9, 2020.

production, water conveyance due to a project's energy use and water consumption, and nonbiogenic emissions from waste disposal. Biogenic CO_2 emissions are not included in the quantification of a project's GHG emissions, because biogenic CO_2 is derived from living biomass (e.g., organic matter present in wood, paper, vegetable oils, animal fat, food, animal, and yard waste) as opposed to fossil fuels. BAAQMD is currently updating their CEQA Guidelines. Under the 2017 CEQA Guidelines, BAAQMD identified a tiered approach for assessing GHG emissions impacts of a project:

- **Consistency with a Qualified Greenhouse Gas Reduction Strategy.** If a project is within the jurisdiction of an agency that has a "qualified" GHG reduction strategy, the project can assess consistency of its GHG emissions impacts with the reduction strategy.
- **BAAQMD Screening Level Sizes.** BAAQMD has adopted screening criteria for development projects that would be applicable for the proposed project based on the square footage, units, acreage, students, and/or employees generated by a project. Typical projects that meet the screening criteria do not generate emissions greater than 1,100 $MTCO_2e$ and would not generate significant GHG emissions.
- **Brightline Screening Threshold.** BAAQMD adopted screening criteria for development projects of 1,100 $MTCO_2e$ per year that would be applicable for the proposed project. If a project exceeds the BAAQMD Guidelines' GHG screening-level sizes or screening criteria of 1,100 $MTCO_2e$.
- **Efficiency Threshold.** AB 32 requires the statewide GHG emission to be reduced to 1990 levels by 2020. On a per-capita basis, that means reducing the annual emissions of 14 tons of carbon dioxide for every person in California down to about 10 tons per person by 2020.[72] Hence, BAAQMD's per capita significance threshold is calculated based on the State's land use sector emissions inventory prepared by CARB and the demographic forecasts for the 2008 Scoping Plan. The land use sector GHG emissions for 1990 were estimated by BAAQMD, as identified in Appendix D of the BAAQMD CEQA Guidelines, to be 295.53 $MMTCO_2e$ and the 2020 California service population (SP) to be 64.3 million. Therefore, the threshold that would ensure consistency with the GHG reduction goals of AB 32 is estimated at 4.6 $MTCO_2e$ per service population per year ($MTCO_2e$/SP/yr) for year 2020.[73]

Because the proposed project would have a post-year 2020 opening year (year 2021), an interpolated brightline threshold between the 2020 brightline threshold and the GHG target of SB 32 is utilized. Based on the adopted 1,100 $MTCO_2e$ per year brightline screening threshold, and the GHG reduction target for year 2030 established under SB 32 (i.e., 40 percent 1990 levels by 2030), the interpolated brightline screening threshold of 660 $MTCO_2e$ per year is utilized for the proposed project. If project emissions are below this brightline screening threshold, GHG emissions impacts would be considered less than significant.

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72 California Air Resources Board, 2008. Climate Change Proposed Scoping Plan, a Framework for Change.

73 Bay Area Air Quality Management Agency, 2017. California Environmental Quality Act Air Quality Guidelines. http://www.baaqmd.gov/~/media/files/planning-and-research/ceqa/ceqa_guidelines_may2017-pdf.pdf?la=en, accessed April 9, 2020.

Emissions Worksheet

Criteria Air Pollutant Emissions Summary - Construction

tons/yr	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total
Total Unmitigated	0.18	0.91	0.98	0.00	0.02	0.05	0.07	0.01	0.04	0.05
Total Mitigated	0.11	0.65	1.06	0.00	0.02	0.00	0.03	0.01	0.00	0.01

UNMITIGATED

tons/yr	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total
Total Onsite	0.17	0.87	0.94	0.00	0.01	0.05	0.06	0.00	0.04	0.05
Total Offsite	0.01	0.04	0.04	0.00	0.01	0.00	0.01	0.00	0.00	0.00
check	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00

FOR CONSTRUCTION RISK ASSESSMENT - Unmitigated Run

tons/yr	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total
2022 Onsite	0.17	0.87	0.94	0.00	0.01	0.05	0.06	0.00	0.04	0.05
2022 Offsite	0.01	0.04	0.04	0.00	0.01	0.00	0.01	0.00	0.00	0.00

FOR CONSTRUCTION REGIONAL EMISSIONS - Unmitigated Run

tons/yr	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total
Total 2022	0.18	0.91	0.98	0.00	0.02	0.05	0.07	0.01	0.04	0.05
Construction Total	0.18	0.91	0.98	0.00	0.02	0.05	0.07	0.01	0.04	0.05
Check	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00

MITIGATED

tons/yr	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total
Total Onsite	0.11	0.61	1.02	0.00	0.01	0.00	0.01	0.00	0.00	0.01
Total Offsite	0.01	0.04	0.04	0.00	0.01	0.00	0.01	0.00	0.00	0.00
check	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00

FOR CONSTRUCTION RISK ASSESSMENT - Mitigated Run

tons/yr	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total
2022 Onsite	0.11	0.61	1.02	0.00	0.01	0.00	0.01	0.00	0.00	0.01
2022 Offsite	0.01	0.04	0.04	0.00	0.01	0.00	0.01	0.00	0.00	0.00

FOR CONSTRUCTION REGIONAL EMISSIONS - Mitigated Run

tons/yr	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total
Total 2022	0.11	0.65	1.06	0.00	0.02	0.00	0.03	0.01	0.00	0.01
Construction Total	0.11	0.65	1.06	0.00	0.02	0.00	0.03	0.01	0.00	0.01
Check	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00

3.2 Demolition- 2022

Unmitigated Construction On-Site

Category	tons/yr	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total
Off-Road		0.02	0.15	0.13	0.00		0.01	0.01		0.01	0.01
Total		0.02	0.15	0.13	0.00		0.01	0.01		0.01	0.01

Unmitigated Construction Off-Site

Category	tons/yr	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total
Hauling		0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Vendor		0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Worker		0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Total		0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00

Mitigated Construction On-Site

Category	tons/yr	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total
Off-Road		0.00	0.08	0.14	0.00		0.00	0.00		0.00	0.00
Total		0.00	0.08	0.14	0.00		0.00	0.00		0.00	0.00

Mitigated Construction Off-Site

Category	tons/yr	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total
Hauling		0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Vendor		0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Worker		0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Total		0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00

3.3 Demolition Haul- 2022

Unmitigated Construction On-Site

Category	tons/yr	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total
Fugitive Dust						0.00	0.00	0.00	0.00	0.00	0.00
Off-Road		0.00	0.00	0.00	0.00		0.00	0.00		0.00	0.00
Total		0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00

Unmitigated Construction Off-Site

Category	tons/yr	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total
Hauling		0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Vendor		0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Worker		0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Total		0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00

Mitigated Construction On-Site

Category	tons/yr	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total
Fugitive Dust						0.00	0.00	0.00	0.00	0.00	0.00
Off-Road		0.00	0.00	0.00	0.00		0.00	0.00		0.00	0.00
Total		0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00

Mitigated Construction Off-Site

Category	tons/yr	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total
Hauling		0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Vendor		0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Worker		0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Total		0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00

3.4 Site Preparation - 2022

Unmitigated Construction On-Site

		ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total
Category	tons/yr										
Fugitive Dust						0.00	0.00	0.00	0.00	0.00	0.00
Off-Road		0.00	0.02	0.01	0.00		0.00	0.00		0.00	0.00
Total		0.00	0.02	0.01	0.00	0.00	0.00	0.00	0.00	0.00	0.00

Unmitigated Construction Off-Site

		ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total
Category	tons/yr										
Hauling		0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Vendor		0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Worker		0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Total		0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00

Mitigated Construction On-Site

		ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total
Category	tons/yr										
Fugitive Dust						0.00	0.00	0.00	0.00	0.00	0.00
Off-Road		0.00	0.01	0.01	0.00		0.00	0.00		0.00	0.00
Total		0.00	0.01	0.01	0.00	0.00	0.00	0.00	0.00	0.00	0.00

Mitigated Construction Off-Site

		ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total
Category	tons/yr										
Hauling		0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Vendor		0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Worker		0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Total		0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00

3.5 Grading - 2022

Unmitigated Construction On-Site

		ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total
Category	tons/yr										
Fugitive Dust						0.01	0.00	0.01	0.00	0.00	0.00
Off-Road		0.00	0.03	0.02	0.00		0.00	0.00		0.00	0.00
Total		0.00	0.03	0.02	0.00	0.01	0.00	0.01	0.00	0.00	0.00

Unmitigated Construction Off-Site

		ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total
Category	tons/yr										
Hauling		0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Vendor		0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Worker		0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Total		0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00

Mitigated Construction On-Site

		ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total
Category	tons/yr										
Fugitive Dust						0.01	0.00	0.01	0.00	0.00	0.00
Off-Road		0.00	0.01	0.02	0.00		0.00	0.00		0.00	0.00
Total		0.00	0.01	0.02	0.00	0.01	0.00	0.01	0.00	0.00	0.00

Mitigated Construction Off-Site

		ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total
Category	tons/yr										
Hauling		0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Vendor		0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Worker		0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Total		0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00

3.6 Grading Soil Haul - 2022

Unmitigated Construction On-Site

Category	tons/yr	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total
Fugitive Dust						0.00	0.00	0.00	0.00	0.00	0.00
Off-Road		0.00	0.00	0.00	0.00		0.00	0.00		0.00	0.00
Total		0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00

Unmitigated Construction Off-Site

Category	tons/yr	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total
Hauling		0.00	0.01	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Vendor		0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Worker		0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Total		0.00	0.01	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00

Mitigated Construction On-Site

Category	tons/yr	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total
Fugitive Dust						0.00	0.00	0.00	0.00	0.00	0.00
Off-Road		0.00	0.00	0.00	0.00		0.00	0.00		0.00	0.00
Total		0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00

Mitigated Construction Off-Site

Category	tons/yr	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total
Hauling		0.00	0.01	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Vendor		0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Worker		0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Total		0.00	0.01	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00

3.7 Building Construction - 2022

Unmitigated Construction On-Site

Category	tons/yr	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total
Off-Road		0.07	0.63	0.73	0.00		0.03	0.03		0.03	0.03
Total		0.07	0.63	0.73	0.00		0.03	0.03		0.03	0.03

Unmitigated Construction Off-Site

Category	tons/yr	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total
Hauling		0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Vendor		0.00	0.02	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Worker		0.00	0.00	0.03	0.00	0.01	0.00	0.01	0.00	0.00	0.00
Total		0.00	0.02	0.03	0.00	0.01	0.00	0.01	0.00	0.00	0.00

Mitigated Construction On-Site

Category	tons/yr	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total
Off-Road		0.02	0.47	0.77	0.00		0.00	0.00		0.00	0.00
Total		0.02	0.47	0.77	0.00		0.00	0.00		0.00	0.00

Mitigated Construction Off-Site

Category	tons/yr	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total
Hauling		0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Vendor		0.00	0.02	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Worker		0.00	0.00	0.03	0.00	0.01	0.00	0.01	0.00	0.00	0.00
Total		0.00	0.02	0.03	0.00	0.01	0.00	0.01	0.00	0.00	0.00

3.8 Paving - 2022

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total
Category tons/yr										
Off-Road	0.00	0.04	0.05	0.00		0.00	0.00		0.00	0.00
Paving	0.00					0.00	0.00		0.00	0.00
Total	0.00	0.04	0.05	0.00		0.00	0.00		0.00	0.00

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total
Category tons/yr										
Hauling	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Vendor	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Worker	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Total	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total
Category tons/yr										
Off-Road	0.00	0.04	0.06	0.00		0.00	0.00		0.00	0.00
Paving	0.00					0.00	0.00		0.00	0.00
Total	0.00	0.04	0.06	0.00		0.00	0.00		0.00	0.00

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total
Category tons/yr										
Hauling	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Vendor	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Worker	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Total	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00

3.8 Architectural Coating- 2022

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total
Category tons/yr										
Architectural Coating	0.08					0.00	0.00		0.00	0.00
Off Road	0.00	0.01	0.01	0.00		0.00	0.00		0.00	0.00
Total	0.08	0.01	0.01	0.00		0.00	0.00		0.00	0.00

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total
Category tons/yr										
Hauling	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Vendor	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Worker	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Total	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total
Category tons/yr										
Architectural Coating	0.08					0.00	0.00		0.00	0.00
Off Road	0.00	0.00	0.01	0.00		0.00	0.00		0.00	0.00
Total	0.08	0.00	0.01	0.00		0.00	0.00		0.00	0.00

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total
Category tons/yr										
Hauling	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Vendor	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Worker	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Total	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00

Criteria Air Pollutant Emissions Summary - Construction Unmitigated

Annual emissions divided by total construction duration to obtain average daily emissions. Average construction emissions accounts for the duration of each construction phase and the time each piece of construction equipment is onsite.

Total Construction Days	2022	Calendar Days
218	218	306

Unmigated Run - with Best Control Measures for Fugitive Dust

average lbs/day	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total
Total	2	8	9	0	0.22	0.42	1	0.07	0.40	0
BAAQMD Threshold	54	54	NA	NA	BMP	82	54	BMP	54	NA
Exceeds Threshold	No	No	NA	NA	NA	No	No	NA	No	NA

avg lbs/day	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total
TOTAL 2022	2	8	9	0	0.22	0.42	1	0.07	0.40	0
	0									

avg lbs/day	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total
Total Onsite	1.57	8.01	8.63	0.01	0.10	0.42	0.52	0.03	0.40	0.43
Total Offsite	0.05	0.37	0.37	0.00	0.12	0.00	0.12	0.03	0.00	0.03
	0	0			0	0		0	0	

FOR CONSTRUCTION RISK ASSESSMENT

Onsite Details

avg lbs/day	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total
2022 Onsite	1.57	8.01	8.63	0.01	0.10	0.42	0.52	0.03	0.40	0.43
	0	0	0	0	0	0	0	0	0	0

Offsite Details

avg lbs/day	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total
2022 Offsite	0.05	0.37	0.37	0.00	0.12	0.0014	0.12	0.03	0.0014	0.03
	0	0	0	0	0	0	0	0	0	0

Criteria Air Pollutant Emissions Summary - Construction Mitigated

Annual emissions divided by total construction duration to obtain average daily emissions. Average construction emissions accounts for the duration of each construction phase and the time each piece of construction equipment is onsite.

Total Construction Days	2022	Calendar Days
218	218	306

Mitigated- Tier 4 Emission Standards for Equipment >25 HP

	average lbs/day	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total
Total		1	6	10	0	0	0	0	0	0	0
BAAQMD Threshold		54	54	NA	NA	BMP	82	54	BMP	54	NA
Exceeds Threshold		No	No	NA	NA	NA	No	No	NA	No	NA

	avg lbs/day	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total
TOTAL 2022		1	6	10	0	0.22	0.04	0	0.07	0.04	0
check		1	6	10	0	0	0	0	0	0	0

	avg lbs/day	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total
Total Onsite		0.97	5.58	9.34	0.01	0.10	0.03	0.14	0.03	0.03	0.07
Total Offsite		0.05	0.37	0.37	0.00	0.12	0.00	0.12	0.03	0.00	0.03
check		0	0	0	0	0	0	0	0	0	0

FOR CONSTRUCTION RISK ASSESSMENT

Onsite Details

	avg lbs/day	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total
2022 Onsite		0.97	5.58	9.34	0.01	0.10	0.0349	0.14	0.03	0.0349	0.07
check											

Offsite Details

	avg lbs/day	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total
2022 Offsite		0.05	0.37	0.37	0.00	0.12	0.0014	0.12	0.03	0.0014	0.03
Check											

GHG Emissions Inventory

Construction

	$MTCO_2e$ Total Project*	
2022	172	
Total Construction	**172**	
30-Yr Amortized Construction Emissions	**6**	
BAAQMD Bright-Line Screening Threshold	660	$MTCO_2e$/Year
Exceed Threshold?	**No**	

*CalEEMod, Version 2016.3.2.25

*CalEEMod, Version 2016.3.2.25

** $MTCO_2e$=metric tons of carbon dioxide equivalent.

*** Total construction emissions are amortized over 30 years per BAAQMD methodology; International Energy Agency, 2008, Energy Efficiency Requirements in Building Codes, Energy Efficiency Policies for New Buildings, March.

Assumptions Worksheet

CalEEMod Inputs - 22690 Stevens Creek Boulevard Residential Project, Construction

Name:	22690 Stevens Creek Boulevard Residential Project
Project Number:	COCU-18
Project Location:	22690 Stevens Creek Boulevard, northern and eastern perimeter of Stevens Creek Boulevard and South Foothill Boulevard
County:	Santa Clara
Climate Zone:	4
Land Use Setting:	Urban
Operational Year:	2022
Utility Company:	PGE
Air Basin:	San Francisco Bay Area Air Basin (SFBAAB)
Air District:	Bay Area Air Quality Management District (BAAQMD)

Proiect Site Acreage	0.68
Disturbed Site Acreage	0.68

Project Components		SQFT	Tons
Demolition			
Existing Building		2,409.00	111
Asphalt Demo		4,959.00	234
New Construction			
	Number of Units	**Total SQFT**	**Acres**
Attached Townhomes	9	26,172	0.00
TOTAL BUILDING		26,172	0.000
Parking Lot		1,279	0.03
Total Other Asphalt Surfaces		6,215	0.14
Total Hardscape		2,024	0.05
Total Landscape		10,608	0.24
Open Space		3,840	0.09
Additional Area- Landscaping		5,655	0.13
			0.68

Stories	Building Footprint
3	8,724

CalEEMod Land Use Inputs

Land Use Type	Land Use Subtype	Unit Amount	Size Metric	Lot Acreage	Land Use Square Feet
Residential Housing	Condo/Townhouse	9	DU	0.00	26,172
Parking	Parking Lot	1.279	1000 sqft	0.03	1,279
Parking	Other Asphalt Surfaces	6.215	1000 sqft	0.14	6,215
Parking	Other Non-asphalt Surfaces	22.127	1000. sqft	0.51	22,127
				0.68	

Demolition

Component	Amount to be Demolished (Tons)	Haul Truck Capacity (tons)	Haul Distance (miles)	Total Trip Ends	Trip Ends/ day	Total Days
Building	111	20	20	12	1	20
Asphalt	234	20	20	24	1	20
Total	344.4			36		

Export Haul Travel Distance (1-Way): 20

Soil Haul [1]

Construction Activities	Volume (CY)	Haul Truck Capacity (cy)	Haul Distance (miles)	No. of total one-way import haul (trip ends)	Duration (days)	No. of total one-way haul (trip ends/day)*
Rough Grading (Export)	875	16	20	109	30	4

Architectural Coating

Percentage of Proposed Buildings' Interior Painted:	100%	
Percentage of Proposed Buildings' Exterior Painted:	60%	
Interior Paint VOC content:	50	grams per liter
Exterior Paing VOC content:	50	grams per liter

Residential Structures	Land Use Square Feet	CalEEMod Factor[2]	Total Paintable Surface Area	Paintable Interior Area[1]	Paintable Exterior Area[1]
Residential Housing	26,172	2.7	70,664	52,998	10,600
			70,664	52,998	10,600
Parking Lot	7,494	6%	450	-	450
			450		450

[1]CalEEMod methodology calculates the paintable interior and exterior areas by multiplying the total paintable surface area by 75 and 25 percent, respectively.

[2] The program assumes the total surface for painting equals 2.7 times the floor square footage for residential and 2 times that for nonresidential square footage defined by the user. Architectural coatings for the parking lot is based on CalEEMod methodology applied to a surface parking lot (i.e., striping), in which 6% of surface area is painted.

[3] 100% of the interior and exterior of buildings to be modernized will be painted

BAAQMD Construction BMPs

Replace Ground Cover	PM10:	5	% Reduction
Replace Ground Cover	PM2.5:	5	% Reduction
Water Exposed Area	Frequency:	2	per day
	PM10:	55	% Reduction
	PM25:	55	% Reduction
Unpaved Roads	Vehicle Speed:	15	mph
	Clean Paved Road	9	% PM Reduction

Construction Activities and Schedule Assumptions: 22690 Stevens Creek Boulevard Residential Project

* based on info provided by applicant

CalEEMod Defaults

		Construction Schedule (model default)		
Construction Activities	**Phase Type**	**Start Date**	**End Date**	**CalEEMod Duration (Workday)**
Demolition	Demolition	1/1/2022	1/14/2022	10
Demolition Debris Haul	Demolition	1/1/2022	1/14/2022	10
Site Preparation	Site Preparation	1/15/2022	1/17/2022	1
Grading	Grading	1/17/2022	1/18/2022	2
Grading Soil Haul	Grading	1/17/2022	1/18/2022	2
Building Construction	Building Construction	1/19/2022	6/7/2022	100
Paving	Paving	6/8/2022	6/14/2022	5
Architectural Coating	Architectural Coating	6/15/2022	6/21/2022	5

Normalization Calculations

CalEEMod Default Duration		Construction Duration	
1/1/2022	6/21/2022	1/1/2022	11/1/2022
days of construction	171	days of construction	304
years of construction	0.47	years of construction	0.83
months of construction	5.62	months of construction	9.99

Normalization Factor: 1.78

Normalized CalEEMod Defaults

		Construction Schedule		
Construction Activities	**Phase Type**	**Start Date**	**End Date**	**Normalized Duration (Workday)**
Demolition	Demolition	1/1/2022	1/26/2022	18
Demolition Debris Haul	Demolition	1/1/2022	1/26/2022	18
Site Preparation	Site Preparation	1/27/2022	1/30/2022	2
Grading	Grading	1/31/2022	2/3/2022	4
Grading	Grading	1/31/2022	2/3/2022	4
Building Construction	Building Construction	2/4/2022	10/7/2022	176
Paving	Paving	10/8/2022	10/20/2022	9
Architectural Coating	Architectural Coating	10/21/2022	11/2/2022	9

CalEEMod Construction Off-Road Equipment Inputs

**Based on data provided by applicant, CalEEMod default used for construction equipment*

General Construction Hours: 8 hours btwn 7:00 AM to 4:00 PM (with 1 hr break), Mon-Fri

	Construction Equipment Details						
	Equipment	**model**	**# of Equipment**	**hr/day**	**hp**	**load factor***	**total trips**
Demolition							
	Concrete/Industrial Saw		1	8	81	0.73	
	Rubber Tired Dozers		1	8	247	0.4	
	Tractor/Loader/Backhoe		3	8	97	0.37	
	Worker Trips						13
	Vendor Trips						0
	Hauling Trips						0
	Water Trucks						2
Demolition Haul							
	no additional equipment needed for Demo Haul						
	Worker Trips						0
	Vendor Trips						0
	Hauling Trips						36
Site Preparation							
	Graders		1	8	187	0.41	
	Scrapers		1	8	367	0.4824	
	Tractor/Loader/Backhoe		1	7	97	0.37	
	Worker Trips						8
	Vendor Trips						0
	Hauling Trips						0
	Water Trucks						2
Grading							
	Grader		1	8	187	0.4087	
	Rubber Tired Dozers		1	8	247	0.4	
	Tractor/Loader/Backhoe		2	7	97	0.37	
	Worker Trips						10
	Vendor Trips						0
	Hauling Trips						0
	Water Trucks						2
Grading Soil Haul							
	no additional equipment needed for Demo Haul						
	Worker Trips						0
	Vendor Trips						0
	Hauling Trips						109
Building Construction							
	Crane*		1	1	231	0.29	
	Forklifts		2	7	89	0.2	
	Generator Set		1	8	84	0.74	
	Tractor/Loader/Backhoe		1	6	97	0.37	
	Welders**		3	1	46	0.45	
	Worker Trips						14
	Vendor Trips						2
	Hauling Trips						0

* assumes that crane will only be used onsite for 4 weeks total. For the most conservative results, crane is assumed to operate 8 hours per day, 5 days per week for entire 4 weeks. Averaged hours of use over duration of building construction phase and rounded up to the nearest hour.

** Use of welders would be predominately used during the initial framing; and therefore, the hours of operation of the duration were reduced to 1 hour per day per welder to reflect the average duration for the entire 10 month construction building phase

Paving							
	Cement/Mortar Mixers		1	8	9	0.56	
	Pavers		1	8	130	0.42	
	Paving Equipment		1	8	132	0.3551	
	Roller		2	8	80	0.38	
	Tractor/Loader/Backhoe		1	8	97	0.37	
	Worker Trips						15
	Vendor Trips						0
	Hauling Trips						0
Architectural Coating							
	Air Compressors		1	6	78	0.48	
	Worker Trips						3
	Vendor Trips						0
	Hauling Trips						0

Demo Haul Trip Calculation

*Conversion factors**

0.046	ton/SF
1.2641662	tons/cy
20	tons
15.82070459	CY
0.791035229	CY/ton

Building	BSF Demo	Tons/SF	Tons	Haul Truck (CY)	Haul Truck (Ton)	Round Trips	Total Trip Ends
Combined Building Demo	2,409	0.046	110.814	16	20.00	6	11

*CalEEMod User's Guide Version 2016.3.2, Appendix A

CalEEMod Construction Model

22690 Stevens Creek Boulevard Residential Project

Santa Clara County, Annual

1.0 Project Characteristics

1.1 Land Usage

Land Uses	Size	Metric	Lot Acreage	Floor Surface Area	Population
Other Asphalt Surfaces	6.21	1000sqft	0.14	6,215.00	0
Other Non-Asphalt Surfaces	22.13	1000sqft	0.51	22,127.00	0
Parking Lot	1.28	1000sqft	0.03	1,279.00	0
Condo/Townhouse	9.00	Dwelling Unit	0.00	26,172.00	26

1.2 Other Project Characteristics

Urbanization	Urban	**Wind Speed (m/s)**	2.2	**Precipitation Freq (Days)**	58
Climate Zone	4			**Operational Year**	2022
Utility Company	Pacific Gas & Electric Company				
CO2 Intensity (lb/MWhr)	641.35	**CH4 Intensity (lb/MWhr)**	0.029	**N2O Intensity (lb/MWhr)**	0.006

1.3 User Entered Comments & Non-Default Data

Project Characteristics -

Land Use - building SF provided by applicant

Construction Phase - construction durations from applicant

Off-road Equipment -

Off-road Equipment - based on info from applicant, see assumptions file for additional notes

Off-road Equipment - based on info from applicant

Off-road Equipment - no additional equipment needed for Demo Haul

Off-road Equipment - based on info from applicant

Off-road Equipment - no additional equipment for soil haul

Off-road Equipment - based on info from applicant

Off-road Equipment - based on info from applicant

Trips and VMT - based on trips from applicant, assuming 2 vt/day/water truck

Demolition -

Grading -

Architectural Coating - based on applicant data: <50 g/L paints, 60% exterior coating, assuming striping of parking lot and internal circulation

Construction Off-road Equipment Mitigation - BAAQMD BMPs

Table Name	Column Name	Default Value	New Value
tblArchitecturalCoating	ConstArea_Parking	1,777.00	450.00
tblArchitecturalCoating	ConstArea_Residential_Exterior	17,666.00	10,600.00
tblArchitecturalCoating	EF_Residential_Exterior	150.00	50.00
tblArchitecturalCoating	EF_Residential_Interior	100.00	50.00
tblConstDustMitigation	CleanPavedRoadPercentReduction	0	9
tblConstDustMitigation	WaterUnpavedRoadVehicleSpeed	0	15
tblConstructionPhase	NumDays	5.00	9.00
tblConstructionPhase	NumDays	100.00	176.00
tblConstructionPhase	NumDays	10.00	18.00
tblConstructionPhase	NumDays	10.00	18.00
tblConstructionPhase	NumDays	2.00	4.00
tblConstructionPhase	NumDays	2.00	4.00
tblConstructionPhase	NumDays	5.00	9.00
tblConstructionPhase	NumDays	1.00	2.00
tblGrading	AcresOfGrading	2.00	15.00
tblGrading	AcresOfGrading	3.00	4.50

tblGrading	MaterialExported	0.00	875.00
tblLandUse	LandUseSquareFeet	6,210.00	6,215.00
tblLandUse	LandUseSquareFeet	22,130.00	22,127.00
tblLandUse	LandUseSquareFeet	1,280.00	1,279.00
tblLandUse	LandUseSquareFeet	9,000.00	26,172.00
tblLandUse	LotAcreage	0.56	0.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	4.00	1.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	1.00	0.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	1.00	0.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	1.00	0.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	1.00	2.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	1.00	0.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	1.00	0.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	2.00	1.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	2.00	3.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	2.00	0.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	2.00	0.00
tblOffRoadEquipment	UsageHours	6.00	8.00
tblOffRoadEquipment	UsageHours	4.00	1.00
tblOffRoadEquipment	UsageHours	6.00	7.00
tblOffRoadEquipment	UsageHours	7.00	8.00
tblOffRoadEquipment	UsageHours	7.00	8.00
tblOffRoadEquipment	UsageHours	1.00	8.00
tblOffRoadEquipment	UsageHours	1.00	8.00
tblOffRoadEquipment	UsageHours	8.00	6.00
tblOffRoadEquipment	UsageHours	6.00	8.00
tblOffRoadEquipment	UsageHours	6.00	7.00
tblOffRoadEquipment	UsageHours	7.00	8.00
tblOffRoadEquipment	UsageHours	8.00	7.00

tblTripsAndVMT	HaulingTripNumber	34.00	36.00
tblTripsAndVMT	VendorTripNumber	0.00	2.00
tblTripsAndVMT	VendorTripNumber	0.00	2.00
tblTripsAndVMT	VendorTripNumber	0.00	2.00
tblTripsAndVMT	VendorTripNumber	6.00	2.00
tblTripsAndVMT	WorkerTripNumber	19.00	14.00
tblTripsAndVMT	WorkerTripNumber	4.00	3.00

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					
2022	0.1763	0.9126	0.9805	1.7500e-003	0.0402	0.0460	0.0862	0.0121	0.0437	0.0558	0.0000	152.8587	152.8587	0.0271	0.0000	153.5355
Maximum	**0.1763**	**0.9126**	**0.9805**	**1.7500e-003**	**0.0402**	**0.0460**	**0.0862**	**0.0121**	**0.0437**	**0.0558**	**0.0000**	**152.8587**	**152.8587**	**0.0271**	**0.0000**	**153.5355**

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					
2022	0.1763	0.9126	0.9805	1.7500e-003	0.0242	0.0460	0.0702	7.0800e-003	0.0437	0.0508	0.0000	152.8585	152.8585	0.0271	0.0000	153.5353
Maximum	**0.1763**	**0.9126**	**0.9805**	**1.7500e-003**	**0.0242**	**0.0460**	**0.0702**	**7.0800e-003**	**0.0437**	**0.0508**	**0.0000**	**152.8585**	**152.8585**	**0.0271**	**0.0000**	**153.5353**

	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	39.82	0.00	18.58	41.49	0.00	9.00	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)
5	1-1-2022	3-31-2022	0.4168	0.4168
6	4-1-2022	6-30-2022	0.2655	0.2655
7	7-1-2022	9-30-2022	0.2684	0.2684
		Highest	0.4168	0.4168

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	1/1/2022	1/26/2022	5	18	a
2	Demolition Haul	Demolition	1/1/2022	1/26/2022	5	18	b
3	Site Preparation	Site Preparation	1/27/2022	1/30/2022	5	2	c
4	Grading	Grading	1/31/2022	2/3/2022	5	4	d
5	Grading Soil Haul	Grading	1/31/2022	2/3/2022	5	4	e
6	Building Construction	Building Construction	2/4/2022	10/7/2022	5	176	f
7	Paving	Paving	10/8/2022	10/20/2022	5	9	g
8	Architectural Coating	Architectural Coating	10/21/2022	11/2/2022	5	9	h

Acres of Grading (Site Preparation Phase): 4.5

Acres of Grading (Grading Phase): 15

Acres of Paving: 0.68

Residential Indoor: 52,998; Residential Outdoor: 10,600; Non-Residential Indoor: 0; Non-Residential Outdoor: 0; Striped Parking Area:

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	Rubber Tired Dozers	1	8.00	247	0.40
Demolition	Tractors/Loaders/Backhoes	3	8.00	97	0.37
Demolition Haul	Concrete/Industrial Saws	0	8.00	81	0.73
Demolition Haul	Rubber Tired Dozers	0	1.00	247	0.40
Demolition Haul	Tractors/Loaders/Backhoes	0	6.00	97	0.37
Site Preparation	Graders	1	8.00	187	0.41
Site Preparation	Scrapers	1	8.00	367	0.48
Site Preparation	Tractors/Loaders/Backhoes	1	7.00	97	0.37
Grading	Concrete/Industrial Saws	0	8.00	81	0.73
Grading	Graders	1	8.00	187	0.41
Grading	Rubber Tired Dozers	1	8.00	247	0.40
Grading	Tractors/Loaders/Backhoes	2	7.00	97	0.37
Grading Soil Haul	Concrete/Industrial Saws	0	8.00	81	0.73
Grading Soil Haul	Rubber Tired Dozers	0	1.00	247	0.40
Grading Soil Haul	Tractors/Loaders/Backhoes	0	6.00	97	0.37
Building Construction	Cranes	1	1.00	231	0.29
Building Construction	Forklifts	2	7.00	89	0.20
Building Construction	Generator Sets	1	8.00	84	0.74
Building Construction	Tractors/Loaders/Backhoes	1	6.00	97	0.37
Building Construction	Welders	3	1.00	46	0.45
Paving	Cement and Mortar Mixers	1	8.00	9	0.56
Paving	Pavers	1	8.00	130	0.42
Paving	Paving Equipment	1	8.00	132	0.36
Paving	Rollers	2	8.00	80	0.38
Paving	Tractors/Loaders/Backhoes	1	8.00	97	0.37
Architectural Coating	Air Compressors	1	6.00	78	0.48

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	5	13.00	2.00	0.00	10.80	7.30	20.00	LD_Mix	HDT_Mix	HHDT
Demolition Haul	0	0.00	0.00	36.00	10.80	7.30	20.00	LD_Mix	HDT_Mix	HHDT
Site Preparation	3	8.00	2.00	0.00	10.80	7.30	20.00	LD_Mix	HDT_Mix	HHDT
Grading	4	10.00	2.00	0.00	10.80	7.30	20.00	LD_Mix	HDT_Mix	HHDT
Grading Soil Haul	0	0.00	0.00	109.00	10.80	7.30	20.00	LD_Mix	HDT_Mix	HHDT
Building Construction	8	14.00	2.00	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	3.00	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

Reduce Vehicle Speed on Unpaved Roads

Clean Paved Roads

3.2 Demolition - 2022

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	0.0152	0.1496	0.1256	2.2000e-004		7.5400e-003	7.5400e-003		7.0500e-003	7.0500e-003	0.0000	18.9699	18.9699	4.8300e-003	0.0000	19.0908
Total	**0.0152**	**0.1496**	**0.1256**	**2.2000e-004**		**7.5400e-003**	**7.5400e-003**		**7.0500e-003**	**7.0500e-003**	**0.0000**	**18.9699**	**18.9699**	**4.8300e-003**	**0.0000**	**19.0908**

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	5.0000e-005	1.7500e-003	4.6000e-004	0.0000	1.2000e-004	0.0000	1.2000e-004	3.0000e-005	0.0000	4.0000e-005	0.0000	0.4618	0.4618	2.0000e-005	0.0000	0.4623
Worker	3.4000e-004	2.2000e-004	2.4600e-003	1.0000e-005	9.3000e-004	1.0000e-005	9.3000e-004	2.5000e-004	1.0000e-005	2.5000e-004	0.0000	0.7403	0.7403	2.0000e-005	0.0000	0.7406
Total	**3.9000e-004**	**1.9700e-003**	**2.9200e-003**	**1.0000e-005**	**1.0500e-003**	**1.0000e-005**	**1.0500e-003**	**2.8000e-004**	**1.0000e-005**	**2.9000e-004**	**0.0000**	**1.2020**	**1.2020**	**4.0000e-005**	**0.0000**	**1.2029**

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	0.0152	0.1496	0.1256	2.2000e-004		7.5400e-003	7.5400e-003		7.0500e-003	7.0500e-003	0.0000	18.9699	18.9699	4.8300e-003	0.0000	19.0908
Total	**0.0152**	**0.1496**	**0.1256**	**2.2000e-004**		**7.5400e-003**	**7.5400e-003**		**7.0500e-003**	**7.0500e-003**	**0.0000**	**18.9699**	**18.9699**	**4.8300e-003**	**0.0000**	**19.0908**

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	5.0000e-005	1.7500e-003	4.6000e-004	0.0000	1.1000e-004	0.0000	1.1000e-004	3.0000e-005	0.0000	4.0000e-005	0.0000	0.4618	0.4618	2.0000e-005	0.0000	0.4623
Worker	3.4000e-004	2.2000e-004	2.4600e-003	1.0000e-005	8.6000e-004	1.0000e-005	8.6000e-004	2.3000e-004	1.0000e-005	2.3000e-004	0.0000	0.7403	0.7403	2.0000e-005	0.0000	0.7406
Total	**3.9000e-004**	**1.9700e-003**	**2.9200e-003**	**1.0000e-005**	**9.7000e-004**	**1.0000e-005**	**9.7000e-004**	**2.6000e-004**	**1.0000e-005**	**2.7000e-004**	**0.0000**	**1.2020**	**1.2020**	**4.0000e-005**	**0.0000**	**1.2029**

3.3 Demolition Haul - 2022

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					3.6800e-003	0.0000	3.6800e-003	5.6000e-004	0.0000	5.6000e-004	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	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	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**3.6800e-003**	**0.0000**	**3.6800e-003**	**5.6000e-004**	**0.0000**	**5.6000e-004**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**

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	1.3000e-004	4.4200e-003	1.0300e-003	1.0000e-005	3.1000e-004	1.0000e-005	3.2000e-004	8.0000e-005	1.0000e-005	1.0000e-004	0.0000	1.3372	1.3372	6.0000e-005	0.0000	1.3387
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	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
Total	**1.3000e-004**	**4.4200e-003**	**1.0300e-003**	**1.0000e-005**	**3.1000e-004**	**1.0000e-005**	**3.2000e-004**	**8.0000e-005**	**1.0000e-005**	**1.0000e-004**	**0.0000**	**1.3372**	**1.3372**	**6.0000e-005**	**0.0000**	**1.3387**

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					1.5800e-003	0.0000	1.5800e-003	2.4000e-004	0.0000	2.4000e-004	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	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	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**1.5800e-003**	**0.0000**	**1.5800e-003**	**2.4000e-004**	**0.0000**	**2.4000e-004**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**

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	1.3000e-004	4.4200e-003	1.0300e-003	1.0000e-005	2.8000e-004	1.0000e-005	3.0000e-004	8.0000e-005	1.0000e-005	9.0000e-005	0.0000	1.3372	1.3372	6.0000e-005	0.0000	1.3387

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	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
Total	**1.3000e-004**	**4.4200e-003**	**1.0300e-003**	**1.0000e-005**	**2.8000e-004**	**1.0000e-005**	**3.0000e-004**	**8.0000e-005**	**1.0000e-005**	**9.0000e-005**	**0.0000**	**1.3372**	**1.3372**	**6.0000e-005**	**0.0000**	**1.3387**

3.4 Site Preparation - 2022

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					2.3900e-003	0.0000	2.3900e-003	2.6000e-004	0.0000	2.6000e-004	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	1.3800e-003	0.0157	0.0101	2.0000e-005		6.0000e-004	6.0000e-004		5.5000e-004	5.5000e-004	0.0000	2.1547	2.1547	7.0000e-004	0.0000	2.1721
Total	**1.3800e-003**	**0.0157**	**0.0101**	**2.0000e-005**	**2.3900e-003**	**6.0000e-004**	**2.9900e-003**	**2.6000e-004**	**5.5000e-004**	**8.1000e-004**	**0.0000**	**2.1547**	**2.1547**	**7.0000e-004**	**0.0000**	**2.1721**

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	1.0000e-005	1.9000e-004	5.0000e-005	0.0000	1.0000e-005	0.0000	1.0000e-005	0.0000	0.0000	0.0000	0.0000	0.0513	0.0513	0.0000	0.0000	0.0514
Worker	2.0000e-005	2.0000e-005	1.7000e-004	0.0000	6.0000e-005	0.0000	6.0000e-005	2.0000e-005	0.0000	2.0000e-005	0.0000	0.0506	0.0506	0.0000	0.0000	0.0506

Total	3.0000e-005	2.1000e-004	2.2000e-004	0.0000	7.0000e-005	0.0000	7.0000e-005	2.0000e-005	0.0000	2.0000e-005	0.0000	0.1019	0.1019	0.0000	0.0000	0.1020

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					1.0200e-003	0.0000	1.0200e-003	1.1000e-004	0.0000	1.1000e-004	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	1.3800e-003	0.0157	0.0101	2.0000e-005		6.0000e-004	6.0000e-004		5.5000e-004	5.5000e-004	0.0000	2.1547	2.1547	7.0000e-004	0.0000	2.1721
Total	**1.3800e-003**	**0.0157**	**0.0101**	**2.0000e-005**	**1.0200e-003**	**6.0000e-004**	**1.6200e-003**	**1.1000e-004**	**5.5000e-004**	**6.6000e-004**	**0.0000**	**2.1547**	**2.1547**	**7.0000e-004**	**0.0000**	**2.1721**

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	1.0000e-005	1.9000e-004	5.0000e-005	0.0000	1.0000e-005	0.0000	1.0000e-005	0.0000	0.0000	0.0000	0.0000	0.0513	0.0513	0.0000	0.0000	0.0514
Worker	2.0000e-005	2.0000e-005	1.7000e-004	0.0000	6.0000e-005	0.0000	6.0000e-005	2.0000e-005	0.0000	2.0000e-005	0.0000	0.0506	0.0506	0.0000	0.0000	0.0506
Total	**3.0000e-005**	**2.1000e-004**	**2.2000e-004**	**0.0000**	**7.0000e-005**	**0.0000**	**7.0000e-005**	**2.0000e-005**	**0.0000**	**2.0000e-005**	**0.0000**	**0.1019**	**0.1019**	**0.0000**	**0.0000**	**0.1020**

3.5 Grading - 2022

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					0.0200	0.0000	0.0200	7.4800e-003	0.0000	7.4800e-003	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	3.0800e-003	0.0340	0.0184	4.0000e-005		1.4800e-003	1.4800e-003		1.3700e-003	1.3700e-003	0.0000	3.6205	3.6205	1.1700e-003	0.0000	3.6498
Total	**3.0800e-003**	**0.0340**	**0.0184**	**4.0000e-005**	**0.0200**	**1.4800e-003**	**0.0215**	**7.4800e-003**	**1.3700e-003**	**8.8500e-003**	**0.0000**	**3.6205**	**3.6205**	**1.1700e-003**	**0.0000**	**3.6498**

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	1.0000e-005	3.9000e-004	1.0000e-004	0.0000	3.0000e-005	0.0000	3.0000e-005	1.0000e-005	0.0000	1.0000e-005	0.0000	0.1026	0.1026	0.0000	0.0000	0.1027
Worker	6.0000e-005	4.0000e-005	4.2000e-004	0.0000	1.6000e-004	0.0000	1.6000e-004	4.0000e-005	0.0000	4.0000e-005	0.0000	0.1265	0.1265	0.0000	0.0000	0.1266
Total	**7.0000e-005**	**4.3000e-004**	**5.2000e-004**	**0.0000**	**1.9000e-004**	**0.0000**	**1.9000e-004**	**5.0000e-005**	**0.0000**	**5.0000e-005**	**0.0000**	**0.2292**	**0.2292**	**0.0000**	**0.0000**	**0.2293**

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					8.5500e-003	0.0000	8.5500e-003	3.2000e-003	0.0000	3.2000e-003	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	3.0800e-003	0.0340	0.0184	4.0000e-005		1.4800e-003	1.4800e-003		1.3700e-003	1.3700e-003	0.0000	3.6205	3.6205	1.1700e-003	0.0000	3.6498
Total	**3.0800e-003**	**0.0340**	**0.0184**	**4.0000e-005**	**8.5500e-003**	**1.4800e-003**	**0.0100**	**3.2000e-003**	**1.3700e-003**	**4.5700e-003**	**0.0000**	**3.6205**	**3.6205**	**1.1700e-003**	**0.0000**	**3.6498**

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	1.0000e-005	3.9000e-004	1.0000e-004	0.0000	2.0000e-005	0.0000	3.0000e-005	1.0000e-005	0.0000	1.0000e-005	0.0000	0.1026	0.1026	0.0000	0.0000	0.1027
Worker	6.0000e-005	4.0000e-005	4.2000e-004	0.0000	1.5000e-004	0.0000	1.5000e-004	4.0000e-005	0.0000	4.0000e-005	0.0000	0.1265	0.1265	0.0000	0.0000	0.1266
Total	**7.0000e-005**	**4.3000e-004**	**5.2000e-004**	**0.0000**	**1.7000e-004**	**0.0000**	**1.8000e-004**	**5.0000e-005**	**0.0000**	**5.0000e-005**	**0.0000**	**0.2292**	**0.2292**	**0.0000**	**0.0000**	**0.2293**

3.6 Grading Soil Haul - 2022

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					5.0000e-005	0.0000	5.0000e-005	1.0000e-005	0.0000	1.0000e-005	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000

Off-Road	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	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**5.0000e-005**	**0.0000**	**5.0000e-005**	**1.0000e-005**	**0.0000**	**1.0000e-005**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**

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	4.0000e-004	0.0134	3.1200e-003	4.0000e-005	9.2000e-004	4.0000e-005	9.6000e-004	2.5000e-004	4.0000e-005	2.9000e-004	0.0000	4.0487	4.0487	1.8000e-004	0.0000	4.0533
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	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
Total	**4.0000e-004**	**0.0134**	**3.1200e-003**	**4.0000e-005**	**9.2000e-004**	**4.0000e-005**	**9.6000e-004**	**2.5000e-004**	**4.0000e-005**	**2.9000e-004**	**0.0000**	**4.0487**	**4.0487**	**1.8000e-004**	**0.0000**	**4.0533**

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					2.0000e-005	0.0000	2.0000e-005	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	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	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**2.0000e-005**	**0.0000**	**2.0000e-005**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**

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	4.0000e-004	0.0134	3.1200e-003	4.0000e-005	8.6000e-004	4.0000e-005	9.0000e-004	2.4000e-004	4.0000e-005	2.8000e-004	0.0000	4.0487	4.0487	1.8000e-004	0.0000	4.0533
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	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
Total	**4.0000e-004**	**0.0134**	**3.1200e-003**	**4.0000e-005**	**8.6000e-004**	**4.0000e-005**	**9.0000e-004**	**2.4000e-004**	**4.0000e-005**	**2.8000e-004**	**0.0000**	**4.0487**	**4.0487**	**1.8000e-004**	**0.0000**	**4.0533**

3.7 Building Construction - 2022

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	0.0706	0.6250	0.7256	1.1700e-003		0.0337	0.0337		0.0322	0.0322	0.0000	100.2434	100.2434	0.0174	0.0000	100.6792
Total	**0.0706**	**0.6250**	**0.7256**	**1.1700e-003**		**0.0337**	**0.0337**		**0.0322**	**0.0322**	**0.0000**	**100.2434**	**100.2434**	**0.0174**	**0.0000**	**100.6792**

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	5.4000e-004	0.0171	4.5300e-003	5.0000e-005	1.1600e-003	3.0000e-005	1.1900e-003	3.3000e-004	3.0000e-005	3.7000e-004	0.0000	4.5153	4.5153	1.9000e-004	0.0000	4.5200
Worker	3.5400e-003	2.3600e-003	0.0259	9.0000e-005	9.7700e-003	6.0000e-005	9.8300e-003	2.6000e-003	6.0000e-005	2.6500e-003	0.0000	7.7948	7.7948	1.6000e-004	0.0000	7.7989
Total	**4.0800e-003**	**0.0195**	**0.0304**	**1.4000e-004**	**0.0109**	**9.0000e-005**	**0.0110**	**2.9300e-003**	**9.0000e-005**	**3.0200e-003**	**0.0000**	**12.3101**	**12.3101**	**3.5000e-004**	**0.0000**	**12.3190**

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	0.0706	0.6250	0.7256	1.1700e-003		0.0337	0.0337		0.0322	0.0322	0.0000	100.2433	100.2433	0.0174	0.0000	100.6791
Total	**0.0706**	**0.6250**	**0.7256**	**1.1700e-003**		**0.0337**	**0.0337**		**0.0322**	**0.0322**	**0.0000**	**100.2433**	**100.2433**	**0.0174**	**0.0000**	**100.6791**

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					

	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
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	5.4000e-004	0.0171	4.5300e-003	5.0000e-005	1.0800e-003	3.0000e-005	1.1200e-003	3.2000e-004	3.0000e-005	3.5000e-004	0.0000	4.5153	4.5153	1.9000e-004	0.0000	4.5200
Worker	3.5400e-003	2.3600e-003	0.0259	9.0000e-005	9.0100e-003	6.0000e-005	9.0700e-003	2.4100e-003	6.0000e-005	2.4700e-003	0.0000	7.7948	7.7948	1.6000e-004	0.0000	7.7989
Total	**4.0800e-003**	**0.0195**	**0.0304**	**1.4000e-004**	**0.0101**	**9.0000e-005**	**0.0102**	**2.7300e-003**	**9.0000e-005**	**2.8200e-003**	**0.0000**	**12.3101**	**12.3101**	**3.5000e-004**	**0.0000**	**12.3190**

3.8 Paving - 2022

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	4.2400e-003	0.0420	0.0526	8.0000e-005		2.2000e-003	2.2000e-003		2.0200e-003	2.0200e-003	0.0000	6.9795	6.9795	2.2100e-003	0.0000	7.0348
Paving	2.2000e-004					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Total	**4.4600e-003**	**0.0420**	**0.0526**	**8.0000e-005**		**2.2000e-003**	**2.2000e-003**		**2.0200e-003**	**2.0200e-003**	**0.0000**	**6.9795**	**6.9795**	**2.2100e-003**	**0.0000**	**7.0348**

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	1.9000e-004	1.3000e-004	1.4200e-003	0.0000	5.4000e-004	0.0000	5.4000e-004	1.4000e-004	0.0000	1.5000e-004	0.0000	0.4271	0.4271	1.0000e-005	0.0000	0.4273

Total	**1.9000e-004**	**1.3000e-004**	**1.4200e-003**	**0.0000**	**5.4000e-004**	**0.0000**	**5.4000e-004**	**1.4000e-004**	**0.0000**	**1.5000e-004**	**0.0000**	**0.4271**	**0.4271**	**1.0000e-005**	**0.0000**	**0.4273**

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	4.2400e-003	0.0420	0.0526	8.0000e-005		2.2000e-003	2.2000e-003		2.0200e-003	2.0200e-003	0.0000	6.9795	6.9795	2.2100e-003	0.0000	7.0348
Paving	2.2000e-004					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Total	**4.4600e-003**	**0.0420**	**0.0526**	**8.0000e-005**		**2.2000e-003**	**2.2000e-003**		**2.0200e-003**	**2.0200e-003**	**0.0000**	**6.9795**	**6.9795**	**2.2100e-003**	**0.0000**	**7.0348**

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	1.9000e-004	1.3000e-004	1.4200e-003	0.0000	4.9000e-004	0.0000	5.0000e-004	1.3000e-004	0.0000	1.4000e-004	0.0000	0.4271	0.4271	1.0000e-005	0.0000	0.4273
Total	**1.9000e-004**	**1.3000e-004**	**1.4200e-003**	**0.0000**	**4.9000e-004**	**0.0000**	**5.0000e-004**	**1.3000e-004**	**0.0000**	**1.4000e-004**	**0.0000**	**0.4271**	**0.4271**	**1.0000e-005**	**0.0000**	**0.4273**

3.9 Architectural Coating - 2022

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	0.0753					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	9.2000e-004	6.3400e-003	8.1600e-003	1.0000e-005		3.7000e-004	3.7000e-004		3.7000e-004	3.7000e-004	0.0000	1.1490	1.1490	7.0000e-005	0.0000	1.1508
Total	**0.0762**	**6.3400e-003**	**8.1600e-003**	**1.0000e-005**		**3.7000e-004**	**3.7000e-004**		**3.7000e-004**	**3.7000e-004**	**0.0000**	**1.1490**	**1.1490**	**7.0000e-005**	**0.0000**	**1.1508**

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	4.0000e-005	3.0000e-005	2.8000e-004	0.0000	1.1000e-004	0.0000	1.1000e-004	3.0000e-005	0.0000	3.0000e-005	0.0000	0.0854	0.0854	0.0000	0.0000	0.0855
Total	**4.0000e-005**	**3.0000e-005**	**2.8000e-004**	**0.0000**	**1.1000e-004**	**0.0000**	**1.1000e-004**	**3.0000e-005**	**0.0000**	**3.0000e-005**	**0.0000**	**0.0854**	**0.0854**	**0.0000**	**0.0000**	**0.0855**

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	0.0753					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	9.2000e-004	6.3400e-003	8.1600e-003	1.0000e-005		3.7000e-004	3.7000e-004		3.7000e-004	3.7000e-004	0.0000	1.1490	1.1490	7.0000e-005	0.0000	1.1508
Total	**0.0762**	**6.3400e-003**	**8.1600e-003**	**1.0000e-005**		**3.7000e-004**	**3.7000e-004**		**3.7000e-004**	**3.7000e-004**	**0.0000**	**1.1490**	**1.1490**	**7.0000e-005**	**0.0000**	**1.1508**

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	4.0000e-005	3.0000e-005	2.8000e-004	0.0000	1.0000e-004	0.0000	1.0000e-004	3.0000e-005	0.0000	3.0000e-005	0.0000	0.0854	0.0854	0.0000	0.0000	0.0855
Total	**4.0000e-005**	**3.0000e-005**	**2.8000e-004**	**0.0000**	**1.0000e-004**	**0.0000**	**1.0000e-004**	**3.0000e-005**	**0.0000**	**3.0000e-005**	**0.0000**	**0.0854**	**0.0854**	**0.0000**	**0.0000**	**0.0855**

CalEEMod Mitigated Construction Model

22690 Stevens Creek Boulevard Residential Project Mitigated Construction

Santa Clara County, Annual

1.0 Project Characteristics

1.1 Land Usage

Land Uses	Size	Metric	Lot Acreage	Floor Surface Area	Population
Other Asphalt Surfaces	6.21	1000sqft	0.14	6,215.00	0
Other Non-Asphalt Surfaces	22.13	1000sqft	0.51	22,127.00	0
Parking Lot	1.28	1000sqft	0.03	1,279.00	0
Condo/Townhouse	9.00	Dwelling Unit	0.00	26,172.00	26

1.2 Other Project Characteristics

Urbanization	Urban	**Wind Speed (m/s)**	2.2	**Precipitation Freq (Days)**	58
Climate Zone	4			**Operational Year**	2022
Utility Company	Pacific Gas & Electric Company				
CO2 Intensity (lb/MWhr)	641.35	**CH4 Intensity (lb/MWhr)**	0.029	**N2O Intensity (lb/MWhr)**	0.006

1.3 User Entered Comments & Non-Default Data

Project Characteristics -

Land Use - building SF provided by applicant

Construction Phase - construction durations from applicant

Off-road Equipment -

Off-road Equipment - based on info from applicant, see assumptions file for additional notes

Off-road Equipment - based on info from applicant

Off-road Equipment - no additional equipment needed for Demo Haul

Off-road Equipment - based on info from applicant

Off-road Equipment - no additional equipment for soil haul

Off-road Equipment - based on info from applicant

Off-road Equipment - based on info from applicant

Trips and VMT - based on trips from applicant, assuming 2 vt/day/water truck

Demolition -

Grading -

Architectural Coating - based on applicant data: <50 g/L paints, 60% exterior coating, assuming striping of parking lot and internal circulation

Construction Off-road Equipment Mitigation - BAAQMD BMPs, MM: Tier 4 Interim equipment for >25 HP

Table Name	Column Name	Default Value	New Value
tblArchitecturalCoating	ConstArea_Parking	1,777.00	450.00
tblArchitecturalCoating	ConstArea_Residential_Exterior	17,666.00	10,600.00
tblArchitecturalCoating	EF_Residential_Exterior	150.00	50.00
tblArchitecturalCoating	EF_Residential_Interior	100.00	50.00
tblConstDustMitigation	CleanPavedRoadPercentReduction	0	9
tblConstDustMitigation	WaterUnpavedRoadVehicleSpeed	0	15
tblConstEquipMitigation	NumberOfEquipmentMitigated	0.00	1.00
tblConstEquipMitigation	NumberOfEquipmentMitigated	0.00	1.00
tblConstEquipMitigation	NumberOfEquipmentMitigated	0.00	1.00
tblConstEquipMitigation	NumberOfEquipmentMitigated	0.00	1.00
tblConstEquipMitigation	NumberOfEquipmentMitigated	0.00	2.00
tblConstEquipMitigation	NumberOfEquipmentMitigated	0.00	1.00
tblConstEquipMitigation	NumberOfEquipmentMitigated	0.00	2.00
tblConstEquipMitigation	NumberOfEquipmentMitigated	0.00	1.00
tblConstEquipMitigation	NumberOfEquipmentMitigated	0.00	1.00
tblConstEquipMitigation	NumberOfEquipmentMitigated	0.00	2.00

tblConstEquipMitigation	NumberOfEquipmentMitigated	0.00	2.00
tblConstEquipMitigation	NumberOfEquipmentMitigated	0.00	1.00
tblConstEquipMitigation	NumberOfEquipmentMitigated	0.00	8.00
tblConstEquipMitigation	NumberOfEquipmentMitigated	0.00	3.00
tblConstEquipMitigation	Tier	No Change	Tier 4 Interim
tblConstEquipMitigation	Tier	No Change	Tier 4 Interim
tblConstEquipMitigation	Tier	No Change	Tier 4 Interim
tblConstEquipMitigation	Tier	No Change	Tier 4 Interim
tblConstEquipMitigation	Tier	No Change	Tier 4 Interim
tblConstEquipMitigation	Tier	No Change	Tier 4 Interim
tblConstEquipMitigation	Tier	No Change	Tier 4 Interim
tblConstEquipMitigation	Tier	No Change	Tier 4 Interim
tblConstEquipMitigation	Tier	No Change	Tier 4 Interim
tblConstEquipMitigation	Tier	No Change	Tier 4 Interim
tblConstEquipMitigation	Tier	No Change	Tier 4 Interim
tblConstEquipMitigation	Tier	No Change	Tier 4 Interim
tblConstEquipMitigation	Tier	No Change	Tier 4 Interim
tblConstructionPhase	NumDays	10.00	18.00
tblConstructionPhase	NumDays	10.00	18.00
tblConstructionPhase	NumDays	1.00	2.00
tblConstructionPhase	NumDays	2.00	4.00
tblConstructionPhase	NumDays	2.00	4.00
tblConstructionPhase	NumDays	100.00	176.00
tblConstructionPhase	NumDays	5.00	9.00
tblConstructionPhase	NumDays	5.00	9.00
tblGrading	AcresOfGrading	2.00	15.00
tblGrading	AcresOfGrading	3.00	4.50
tblGrading	MaterialExported	0.00	875.00
tblLandUse	LandUseSquareFeet	6,210.00	6,215.00

tblLandUse	LandUseSquareFeet	22,130.00	22,127.00
tblLandUse	LandUseSquareFeet	1,280.00	1,279.00
tblLandUse	LandUseSquareFeet	9,000.00	26,172.00
tblLandUse	LotAcreage	0.56	0.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	2.00	3.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	1.00	0.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	1.00	0.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	2.00	0.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	1.00	0.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	1.00	0.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	1.00	0.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	2.00	0.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	2.00	1.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	4.00	1.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	1.00	2.00
tblOffRoadEquipment	UsageHours	6.00	8.00
tblOffRoadEquipment	UsageHours	4.00	1.00
tblOffRoadEquipment	UsageHours	6.00	7.00
tblOffRoadEquipment	UsageHours	7.00	8.00
tblOffRoadEquipment	UsageHours	7.00	8.00
tblOffRoadEquipment	UsageHours	1.00	8.00
tblOffRoadEquipment	UsageHours	1.00	8.00
tblOffRoadEquipment	UsageHours	8.00	6.00
tblOffRoadEquipment	UsageHours	6.00	8.00
tblOffRoadEquipment	UsageHours	6.00	7.00
tblOffRoadEquipment	UsageHours	7.00	8.00
tblOffRoadEquipment	UsageHours	8.00	7.00
tblTripsAndVMT	HaulingTripNumber	34.00	36.00
tblTripsAndVMT	VendorTripNumber	0.00	2.00

tblTripsAndVMT	VendorTripNumber	0.00	2.00
tblTripsAndVMT	VendorTripNumber	0.00	2.00
tblTripsAndVMT	VendorTripNumber	6.00	2.00
tblTripsAndVMT	WorkerTripNumber	19.00	14.00
tblTripsAndVMT	WorkerTripNumber	4.00	3.00

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					
2022	0.1763	0.9126	0.9805	1.7500e-003	0.0402	0.0460	0.0862	0.0121	0.0437	0.0558	0.0000	152.8587	152.8587	0.0271	0.0000	153.5355
Maximum	**0.1763**	**0.9126**	**0.9805**	**1.7500e-003**	**0.0402**	**0.0460**	**0.0862**	**0.0121**	**0.0437**	**0.0558**	**0.0000**	**152.8587**	**152.8587**	**0.0271**	**0.0000**	**153.5355**

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					
2022	0.1110	0.6478	1.0583	1.7500e-003	0.0242	3.9500e-003	0.0282	7.0800e-003	3.9400e-003	0.0110	0.0000	152.8585	152.8585	0.0271	0.0000	153.5353
Maximum	**0.1110**	**0.6478**	**1.0583**	**1.7500e-003**	**0.0242**	**3.9500e-003**	**0.0282**	**7.0800e-003**	**3.9400e-003**	**0.0110**	**0.0000**	**152.8585**	**152.8585**	**0.0271**	**0.0000**	**153.5353**

	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	**37.03**	**29.02**	**-7.93**	**0.00**	**39.82**	**91.41**	**67.34**	**41.49**	**90.98**	**80.22**	**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)
5	1-1-2022	3-31-2022	0.4168	0.2539
6	4-1-2022	6-30-2022	0.2655	0.1910
7	7-1-2022	9-30-2022	0.2684	0.1931
		Highest	0.4168	0.2539

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	1/1/2022	1/26/2022	5	18	a
2	Demolition Haul	Demolition	1/1/2022	1/26/2022	5	18	b
3	Site Preparation	Site Preparation	1/27/2022	1/30/2022	5	2	c
4	Grading	Grading	1/31/2022	2/3/2022	5	4	d
5	Grading Soil Haul	Grading	1/31/2022	2/3/2022	5	4	e
6	Building Construction	Building Construction	2/4/2022	10/7/2022	5	176	f
7	Paving	Paving	10/8/2022	10/20/2022	5	9	g
8	Architectural Coating	Architectural Coating	10/21/2022	11/2/2022	5	9	h

Acres of Grading (Site Preparation Phase): 4.5

Acres of Grading (Grading Phase): 15

Acres of Paving: 0.68

Residential Indoor: 52,998; Residential Outdoor: 10,600; Non-Residential Indoor: 0; Non-Residential Outdoor: 0; Striped Parking Area:

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	Rubber Tired Dozers	1	8.00	247	0.40

Demolition	Tractors/Loaders/Backhoes	3	8.00	97	0.37
Demolition Haul	Concrete/Industrial Saws	0	8.00	81	0.73
Demolition Haul	Rubber Tired Dozers	0	1.00	247	0.40
Demolition Haul	Tractors/Loaders/Backhoes	0	6.00	97	0.37
Site Preparation	Graders	1	8.00	187	0.41
Site Preparation	Scrapers	1	8.00	367	0.48
Site Preparation	Tractors/Loaders/Backhoes	1	7.00	97	0.37
Grading	Concrete/Industrial Saws	0	8.00	81	0.73
Grading	Graders	1	8.00	187	0.41
Grading	Rubber Tired Dozers	1	8.00	247	0.40
Grading	Tractors/Loaders/Backhoes	2	7.00	97	0.37
Grading Soil Haul	Concrete/Industrial Saws	0	8.00	81	0.73
Grading Soil Haul	Rubber Tired Dozers	0	1.00	247	0.40
Grading Soil Haul	Tractors/Loaders/Backhoes	0	6.00	97	0.37
Building Construction	Cranes	1	1.00	231	0.29
Building Construction	Forklifts	2	7.00	89	0.20
Building Construction	Generator Sets	1	8.00	84	0.74
Building Construction	Tractors/Loaders/Backhoes	1	6.00	97	0.37
Building Construction	Welders	3	1.00	46	0.45
Paving	Cement and Mortar Mixers	1	8.00	9	0.56
Paving	Pavers	1	8.00	130	0.42
Paving	Paving Equipment	1	8.00	132	0.36
Paving	Rollers	2	8.00	80	0.38
Paving	Tractors/Loaders/Backhoes	1	8.00	97	0.37
Architectural Coating	Air Compressors	1	6.00	78	0.48

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	5	13.00	2.00	0.00	10.80	7.30	20.00	LD_Mix	HDT_Mix	HHDT
Demolition Haul	0	0.00	0.00	36.00	10.80	7.30	20.00	LD_Mix	HDT_Mix	HHDT
Site Preparation	3	8.00	2.00	0.00	10.80	7.30	20.00	LD_Mix	HDT_Mix	HHDT
Grading	4	10.00	2.00	0.00	10.80	7.30	20.00	LD_Mix	HDT_Mix	HHDT
Grading Soil Haul	0	0.00	0.00	109.00	10.80	7.30	20.00	LD_Mix	HDT_Mix	HHDT
Building Construction	8	14.00	2.00	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	3.00	0.00	0.00	10.80	7.30	20.00	LD_Mix	HDT_Mix	HHDT

3.1 Mitigation Measures Construction

Use Cleaner Engines for Construction Equipment

Replace Ground Cover

Water Exposed Area

Reduce Vehicle Speed on Unpaved Roads

Clean Paved Roads

3.2 Demolition - 2022

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	0.0152	0.1496	0.1256	2.2000e-004		7.5400e-003	7.5400e-003		7.0500e-003	7.0500e-003	0.0000	18.9699	18.9699	4.8300e-003	0.0000	19.0908
Total	**0.0152**	**0.1496**	**0.1256**	**2.2000e-004**		**7.5400e-003**	**7.5400e-003**		**7.0500e-003**	**7.0500e-003**	**0.0000**	**18.9699**	**18.9699**	**4.8300e-003**	**0.0000**	**19.0908**

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	5.0000e-005	1.7500e-003	4.6000e-004	0.0000	1.2000e-004	0.0000	1.2000e-004	3.0000e-005	0.0000	4.0000e-005	0.0000	0.4618	0.4618	2.0000e-005	0.0000	0.4623
Worker	3.4000e-004	2.2000e-004	2.4600e-003	1.0000e-005	9.3000e-004	1.0000e-005	9.3000e-004	2.5000e-004	1.0000e-005	2.5000e-004	0.0000	0.7403	0.7403	2.0000e-005	0.0000	0.7406
Total	**3.9000e-004**	**1.9700e-003**	**2.9200e-003**	**1.0000e-005**	**1.0500e-003**	**1.0000e-005**	**1.0500e-003**	**2.8000e-004**	**1.0000e-005**	**2.9000e-004**	**0.0000**	**1.2020**	**1.2020**	**4.0000e-005**	**0.0000**	**1.2029**

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	4.1700e-003	0.0769	0.1387	2.2000e-004		3.4000e-004	3.4000e-004		3.4000e-004	3.4000e-004	0.0000	18.9699	18.9699	4.8300e-003	0.0000	19.0908
Total	**4.1700e-003**	**0.0769**	**0.1387**	**2.2000e-004**		**3.4000e-004**	**3.4000e-004**		**3.4000e-004**	**3.4000e-004**	**0.0000**	**18.9699**	**18.9699**	**4.8300e-003**	**0.0000**	**19.0908**

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	5.0000e-005	1.7500e-003	4.6000e-004	0.0000	1.1000e-004	0.0000	1.1000e-004	3.0000e-005	0.0000	4.0000e-005	0.0000	0.4618	0.4618	2.0000e-005	0.0000	0.4623
Worker	3.4000e-004	2.2000e-004	2.4600e-003	1.0000e-005	8.6000e-004	1.0000e-005	8.6000e-004	2.3000e-004	1.0000e-005	2.3000e-004	0.0000	0.7403	0.7403	2.0000e-005	0.0000	0.7406
Total	**3.9000e-004**	**1.9700e-003**	**2.9200e-003**	**1.0000e-005**	**9.7000e-004**	**1.0000e-005**	**9.7000e-004**	**2.6000e-004**	**1.0000e-005**	**2.7000e-004**	**0.0000**	**1.2020**	**1.2020**	**4.0000e-005**	**0.0000**	**1.2029**

3.3 Demolition Haul - 2022

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					3.6800e-003	0.0000	3.6800e-003	5.6000e-004	0.0000	5.6000e-004	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	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	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**3.6800e-003**	**0.0000**	**3.6800e-003**	**5.6000e-004**	**0.0000**	**5.6000e-004**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**

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					

	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
Hauling	1.3000e-004	4.4200e-003	1.0300e-003	1.0000e-005	3.1000e-004	1.0000e-005	3.2000e-004	8.0000e-005	1.0000e-005	1.0000e-004	0.0000	1.3372	1.3372	6.0000e-005	0.0000	1.3387
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	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
Total	**1.3000e-004**	**4.4200e-003**	**1.0300e-003**	**1.0000e-005**	**3.1000e-004**	**1.0000e-005**	**3.2000e-004**	**8.0000e-005**	**1.0000e-005**	**1.0000e-004**	**0.0000**	**1.3372**	**1.3372**	**6.0000e-005**	**0.0000**	**1.3387**

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					1.5800e-003	0.0000	1.5800e-003	2.4000e-004	0.0000	2.4000e-004	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	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	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**1.5800e-003**	**0.0000**	**1.5800e-003**	**2.4000e-004**	**0.0000**	**2.4000e-004**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**

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	1.3000e-004	4.4200e-003	1.0300e-003	1.0000e-005	2.8000e-004	1.0000e-005	3.0000e-004	8.0000e-005	1.0000e-005	9.0000e-005	0.0000	1.3372	1.3372	6.0000e-005	0.0000	1.3387
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	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

Total	1.3000e-004	4.4200e-003	1.0300e-003	1.0000e-005	2.8000e-004	1.0000e-005	3.0000e-004	8.0000e-005	1.0000e-005	9.0000e-005	0.0000	1.3372	1.3372	6.0000e-005	0.0000	1.3387

3.4 Site Preparation - 2022

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					2.3900e-003	0.0000	2.3900e-003	2.6000e-004	0.0000	2.6000e-004	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	1.3800e-003	0.0157	0.0101	2.0000e-005		6.0000e-004	6.0000e-004		5.5000e-004	5.5000e-004	0.0000	2.1547	2.1547	7.0000e-004	0.0000	2.1721
Total	**1.3800e-003**	**0.0157**	**0.0101**	**2.0000e-005**	**2.3900e-003**	**6.0000e-004**	**2.9900e-003**	**2.6000e-004**	**5.5000e-004**	**8.1000e-004**	**0.0000**	**2.1547**	**2.1547**	**7.0000e-004**	**0.0000**	**2.1721**

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	1.0000e-005	1.9000e-004	5.0000e-005	0.0000	1.0000e-005	0.0000	1.0000e-005	0.0000	0.0000	0.0000	0.0000	0.0513	0.0513	0.0000	0.0000	0.0514
Worker	2.0000e-005	2.0000e-005	1.7000e-004	0.0000	6.0000e-005	0.0000	6.0000e-005	2.0000e-005	0.0000	2.0000e-005	0.0000	0.0506	0.0506	0.0000	0.0000	0.0506
Total	**3.0000e-005**	**2.1000e-004**	**2.2000e-004**	**0.0000**	**7.0000e-005**	**0.0000**	**7.0000e-005**	**2.0000e-005**	**0.0000**	**2.0000e-005**	**0.0000**	**0.1019**	**0.1019**	**0.0000**	**0.0000**	**0.1020**

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					1.0200e-003	0.0000	1.0200e-003	1.1000e-004	0.0000	1.1000e-004	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	4.2000e-004	6.9400e-003	0.0136	2.0000e-005		4.0000e-005	4.0000e-005		4.0000e-005	4.0000e-005	0.0000	2.1547	2.1547	7.0000e-004	0.0000	2.1721
Total	**4.2000e-004**	**6.9400e-003**	**0.0136**	**2.0000e-005**	**1.0200e-003**	**4.0000e-005**	**1.0600e-003**	**1.1000e-004**	**4.0000e-005**	**1.5000e-004**	**0.0000**	**2.1547**	**2.1547**	**7.0000e-004**	**0.0000**	**2.1721**

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	1.0000e-005	1.9000e-004	5.0000e-005	0.0000	1.0000e-005	0.0000	1.0000e-005	0.0000	0.0000	0.0000	0.0000	0.0513	0.0513	0.0000	0.0000	0.0514
Worker	2.0000e-005	2.0000e-005	1.7000e-004	0.0000	6.0000e-005	0.0000	6.0000e-005	2.0000e-005	0.0000	2.0000e-005	0.0000	0.0506	0.0506	0.0000	0.0000	0.0506
Total	**3.0000e-005**	**2.1000e-004**	**2.2000e-004**	**0.0000**	**7.0000e-005**	**0.0000**	**7.0000e-005**	**2.0000e-005**	**0.0000**	**2.0000e-005**	**0.0000**	**0.1019**	**0.1019**	**0.0000**	**0.0000**	**0.1020**

3.5 Grading - 2022

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					0.0200	0.0000	0.0200	7.4800e-003	0.0000	7.4800e-003	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	3.0800e-003	0.0340	0.0184	4.0000e-005		1.4800e-003	1.4800e-003		1.3700e-003	1.3700e-003	0.0000	3.6205	3.6205	1.1700e-003	0.0000	3.6498
Total	**3.0800e-003**	**0.0340**	**0.0184**	**4.0000e-005**	**0.0200**	**1.4800e-003**	**0.0215**	**7.4800e-003**	**1.3700e-003**	**8.8500e-003**	**0.0000**	**3.6205**	**3.6205**	**1.1700e-003**	**0.0000**	**3.6498**

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	1.0000e-005	3.9000e-004	1.0000e-004	0.0000	3.0000e-005	0.0000	3.0000e-005	1.0000e-005	0.0000	1.0000e-005	0.0000	0.1026	0.1026	0.0000	0.0000	0.1027
Worker	6.0000e-005	4.0000e-005	4.2000e-004	0.0000	1.6000e-004	0.0000	1.6000e-004	4.0000e-005	0.0000	4.0000e-005	0.0000	0.1265	0.1265	0.0000	0.0000	0.1266
Total	**7.0000e-005**	**4.3000e-004**	**5.2000e-004**	**0.0000**	**1.9000e-004**	**0.0000**	**1.9000e-004**	**5.0000e-005**	**0.0000**	**5.0000e-005**	**0.0000**	**0.2292**	**0.2292**	**0.0000**	**0.0000**	**0.2293**

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					8.5500e-003	0.0000	8.5500e-003	3.2000e-003	0.0000	3.2000e-003	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000

Category	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
Off-Road	7.4000e-004	0.0127	0.0243	4.0000e-005		7.0000e-005	7.0000e-005		7.0000e-005	7.0000e-005	0.0000	3.6205	3.6205	1.1700e-003	0.0000	3.6498
Total	**7.4000e-004**	**0.0127**	**0.0243**	**4.0000e-005**	**8.5500e-003**	**7.0000e-005**	**8.6200e-003**	**3.2000e-003**	**7.0000e-005**	**3.2700e-003**	**0.0000**	**3.6205**	**3.6205**	**1.1700e-003**	**0.0000**	**3.6498**

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	1.0000e-005	3.9000e-004	1.0000e-004	0.0000	2.0000e-005	0.0000	3.0000e-005	1.0000e-005	0.0000	1.0000e-005	0.0000	0.1026	0.1026	0.0000	0.0000	0.1027
Worker	6.0000e-005	4.0000e-005	4.2000e-004	0.0000	1.5000e-004	0.0000	1.5000e-004	4.0000e-005	0.0000	4.0000e-005	0.0000	0.1265	0.1265	0.0000	0.0000	0.1266
Total	**7.0000e-005**	**4.3000e-004**	**5.2000e-004**	**0.0000**	**1.7000e-004**	**0.0000**	**1.8000e-004**	**5.0000e-005**	**0.0000**	**5.0000e-005**	**0.0000**	**0.2292**	**0.2292**	**0.0000**	**0.0000**	**0.2293**

3.6 Grading Soil Haul - 2022

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					5.0000e-005	0.0000	5.0000e-005	1.0000e-005	0.0000	1.0000e-005	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	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	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**5.0000e-005**	**0.0000**	**5.0000e-005**	**1.0000e-005**	**0.0000**	**1.0000e-005**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**

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	4.0000e-004	0.0134	3.1200e-003	4.0000e-005	9.2000e-004	4.0000e-005	9.6000e-004	2.5000e-004	4.0000e-005	2.9000e-004	0.0000	4.0487	4.0487	1.8000e-004	0.0000	4.0533
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	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
Total	**4.0000e-004**	**0.0134**	**3.1200e-003**	**4.0000e-005**	**9.2000e-004**	**4.0000e-005**	**9.6000e-004**	**2.5000e-004**	**4.0000e-005**	**2.9000e-004**	**0.0000**	**4.0487**	**4.0487**	**1.8000e-004**	**0.0000**	**4.0533**

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					2.0000e-005	0.0000	2.0000e-005	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	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	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**2.0000e-005**	**0.0000**	**2.0000e-005**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**

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	4.0000e-004	0.0134	3.1200e-003	4.0000e-005	8.6000e-004	4.0000e-005	9.0000e-004	2.4000e-004	4.0000e-005	2.8000e-004	0.0000	4.0487	4.0487	1.8000e-004	0.0000	4.0533
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	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
Total	**4.0000e-004**	**0.0134**	**3.1200e-003**	**4.0000e-005**	**8.6000e-004**	**4.0000e-005**	**9.0000e-004**	**2.4000e-004**	**4.0000e-005**	**2.8000e-004**	**0.0000**	**4.0487**	**4.0487**	**1.8000e-004**	**0.0000**	**4.0533**

3.7 Building Construction - 2022

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	0.0706	0.6250	0.7256	1.1700e-003		0.0337	0.0337		0.0322	0.0322	0.0000	100.2434	100.2434	0.0174	0.0000	100.6792
Total	**0.0706**	**0.6250**	**0.7256**	**1.1700e-003**		**0.0337**	**0.0337**		**0.0322**	**0.0322**	**0.0000**	**100.2434**	**100.2434**	**0.0174**	**0.0000**	**100.6792**

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					

Category	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
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	5.4000e-004	0.0171	4.5300e-003	5.0000e-005	1.1600e-003	3.0000e-005	1.1900e-003	3.3000e-004	3.0000e-005	3.7000e-004	0.0000	4.5153	4.5153	1.9000e-004	0.0000	4.5200
Worker	3.5400e-003	2.3600e-003	0.0259	9.0000e-005	9.7700e-003	6.0000e-005	9.8300e-003	2.6000e-003	6.0000e-005	2.6500e-003	0.0000	7.7948	7.7948	1.6000e-004	0.0000	7.7989
Total	**4.0800e-003**	**0.0195**	**0.0304**	**1.4000e-004**	**0.0109**	**9.0000e-005**	**0.0110**	**2.9300e-003**	**9.0000e-005**	**3.0200e-003**	**0.0000**	**12.3101**	**12.3101**	**3.5000e-004**	**0.0000**	**12.3190**

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	0.0230	0.4709	0.7736	1.1700e-003		3.1400e-003	3.1400e-003		3.1400e-003	3.1400e-003	0.0000	100.2433	100.2433	0.0174	0.0000	100.6791
Total	**0.0230**	**0.4709**	**0.7736**	**1.1700e-003**		**3.1400e-003**	**3.1400e-003**		**3.1400e-003**	**3.1400e-003**	**0.0000**	**100.2433**	**100.2433**	**0.0174**	**0.0000**	**100.6791**

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	5.4000e-004	0.0171	4.5300e-003	5.0000e-005	1.0800e-003	3.0000e-005	1.1200e-003	3.2000e-004	3.0000e-005	3.5000e-004	0.0000	4.5153	4.5153	1.9000e-004	0.0000	4.5200
Worker	3.5400e-003	2.3600e-003	0.0259	9.0000e-005	9.0100e-003	6.0000e-005	9.0700e-003	2.4100e-003	6.0000e-005	2.4700e-003	0.0000	7.7948	7.7948	1.6000e-004	0.0000	7.7989

Total	**4.0800e-003**	**0.0195**	**0.0304**	**1.4000e-004**	**0.0101**	**9.0000e-005**	**0.0102**	**2.7300e-003**	**9.0000e-005**	**2.8200e-003**	**0.0000**	**12.3101**	**12.3101**	**3.5000e-004**	**0.0000**	**12.3190**

3.8 Paving - 2022

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	4.2400e-003	0.0420	0.0526	8.0000e-005		2.2000e-003	2.2000e-003		2.0200e-003	2.0200e-003	0.0000	6.9795	6.9795	2.2100e-003	0.0000	7.0348
Paving	2.2000e-004					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Total	**4.4600e-003**	**0.0420**	**0.0526**	**8.0000e-005**		**2.2000e-003**	**2.2000e-003**		**2.0200e-003**	**2.0200e-003**	**0.0000**	**6.9795**	**6.9795**	**2.2100e-003**	**0.0000**	**7.0348**

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	1.9000e-004	1.3000e-004	1.4200e-003	0.0000	5.4000e-004	0.0000	5.4000e-004	1.4000e-004	0.0000	1.5000e-004	0.0000	0.4271	0.4271	1.0000e-005	0.0000	0.4273
Total	**1.9000e-004**	**1.3000e-004**	**1.4200e-003**	**0.0000**	**5.4000e-004**	**0.0000**	**5.4000e-004**	**1.4000e-004**	**0.0000**	**1.5000e-004**	**0.0000**	**0.4271**	**0.4271**	**1.0000e-005**	**0.0000**	**0.4273**

Mitigated Construction On-Site

Category	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
	tons/yr										MT/yr					
Off-Road	1.5900e-003	0.0355	0.0598	8.0000e-005		1.9000e-004	1.9000e-004		1.9000e-004	1.9000e-004	0.0000	6.9795	6.9795	2.2100e-003	0.0000	7.0348
Paving	2.2000e-004					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Total	**1.8100e-003**	**0.0355**	**0.0598**	**8.0000e-005**		**1.9000e-004**	**1.9000e-004**		**1.9000e-004**	**1.9000e-004**	**0.0000**	**6.9795**	**6.9795**	**2.2100e-003**	**0.0000**	**7.0348**

Mitigated Construction Off-Site

Category	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
	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	1.9000e-004	1.3000e-004	1.4200e-003	0.0000	4.9000e-004	0.0000	5.0000e-004	1.3000e-004	0.0000	1.4000e-004	0.0000	0.4271	0.4271	1.0000e-005	0.0000	0.4273
Total	**1.9000e-004**	**1.3000e-004**	**1.4200e-003**	**0.0000**	**4.9000e-004**	**0.0000**	**5.0000e-004**	**1.3000e-004**	**0.0000**	**1.4000e-004**	**0.0000**	**0.4271**	**0.4271**	**1.0000e-005**	**0.0000**	**0.4273**

3.9 Architectural Coating - 2022

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	0.0753					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	9.2000e-004	6.3400e-003	8.1600e-003	1.0000e-005		3.7000e-004	3.7000e-004		3.7000e-004	3.7000e-004	0.0000	1.1490	1.1490	7.0000e-005	0.0000	1.1508
Total	**0.0762**	**6.3400e-003**	**8.1600e-003**	**1.0000e-005**		**3.7000e-004**	**3.7000e-004**		**3.7000e-004**	**3.7000e-004**	**0.0000**	**1.1490**	**1.1490**	**7.0000e-005**	**0.0000**	**1.1508**

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	4.0000e-005	3.0000e-005	2.8000e-004	0.0000	1.1000e-004	0.0000	1.1000e-004	3.0000e-005	0.0000	3.0000e-005	0.0000	0.0854	0.0854	0.0000	0.0000	0.0855
Total	**4.0000e-005**	**3.0000e-005**	**2.8000e-004**	**0.0000**	**1.1000e-004**	**0.0000**	**1.1000e-004**	**3.0000e-005**	**0.0000**	**3.0000e-005**	**0.0000**	**0.0854**	**0.0854**	**0.0000**	**0.0000**	**0.0855**

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	0.0753					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000

Off-Road	2.5000e-004	4.7700e-003	8.2500e-003	1.0000e-005		2.0000e-005	2.0000e-005		2.0000e-005	2.0000e-005	0.0000	1.1490	1.1490	7.0000e-005	0.0000	1.1508
Total	**0.0755**	**4.7700e-003**	**8.2500e-003**	**1.0000e-005**		**2.0000e-005**	**2.0000e-005**		**2.0000e-005**	**2.0000e-005**	**0.0000**	**1.1490**	**1.1490**	**7.0000e-005**	**0.0000**	**1.1508**

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	4.0000e-005	3.0000e-005	2.8000e-004	0.0000	1.0000e-004	0.0000	1.0000e-004	3.0000e-005	0.0000	3.0000e-005	0.0000	0.0854	0.0854	0.0000	0.0000	0.0855
Total	**4.0000e-005**	**3.0000e-005**	**2.8000e-004**	**0.0000**	**1.0000e-004**	**0.0000**	**1.0000e-004**	**3.0000e-005**	**0.0000**	**3.0000e-005**	**0.0000**	**0.0854**	**0.0854**	**0.0000**	**0.0000**	**0.0855**

APPENDIX B:
HEALTH RISK ASSESSMENT

1. Health Risk Assessment

1.1 CONSTRUCTION HEALTH RISK ASSESSMENT

The City of Cupertino (City) proposes to redevelop the project site with a residential development located at 22690 Stevens Creek Boulevard in Cupertino, California. The proposed project would involve demolishing the existing commercial building on an approximately 0.68-acre site and construction of a nine-unit, single-family attached residential, with one accessory dwelling unit. The site is currently developed with a convenience store and associated paved surface parking. A portion of the site is an undeveloped and unpaved lot. The following provides the background methodology used for the construction health risk assessment for the proposed project.

The latest version of the Bay Area Air Quality Management District (BAAQMD) CEQA Air Quality Guidelines requires projects to evaluate the impacts of construction activities on sensitive receptors (BAAQMD, 2017). Project construction is anticipated to take place starting at the beginning of January 2022 and be completed by November 2022 (approximately 218 workdays). The nearest sensitive receptors to the project site include the adjacent single-family residences to the south. Additional sensitive receptors within 1,000 feet of the site are senior living residents at Sunny View Bay Area Retirement Community, approximately 525 feet to the northeast. The BAAQMD has developed *Screening Tables for Air Toxics Evaluation During Construction* (2017) that evaluate construction-related health risks associated with residential, commercial, and industrial projects. According to the screening tables, the receptors are closer than the distance of 100 meters (328 feet) that would screen out potential health risks and, therefore, could be potentially impacted from the proposed construction activities. As a result, a site-specific construction health risk assessment (HRA) has been prepared for the proposed project. This HRA considers the health impact to off-site sensitive receptors (i.e., children at the nearby residences and senior living residents) from construction emissions at the project site, including diesel equipment exhaust (diesel particulate matter or DPM) and particulate matter less than 2.5 microns ($PM_{2.5}$).

It should be noted that these health impacts are based on conservative (i.e., health protective) assumptions. The United States Environmental Protection Agency (USEPA, 2005) and the Office of Environmental Health Hazard Assessment (OEHHA, 2015) note that conservative assumptions used in a risk assessment are intended to ensure that the estimated risks do not underestimate the actual risks. Therefore, the estimated risks may not necessarily represent actual risks experienced by populations at or near a site. The use of conservative assumptions tends to produce upper-bound estimates of exposure and thus risk.

For residential-based receptors, the following conservative assumptions were used:

- It was assumed that maximum-exposed off-site residential receptors (both children and adults) stood outdoors and are subject to DPM at their residence for 8 hours per day, and approximately 260 construction days per year. In reality, California residents typically will spend on average 2 hours per day outdoors at their residences (USEPA, 2011). This would result in lower exposures to construction related DPM emissions and lower estimated risk values.

- The calculated risk for infants from third trimester to age 2 is multiplied by a factor of 10 to account for early life exposure and uncertainty in child versus adult exposure impacts (OEHHA, 2015).

For senior living residents, the following conservative assumptions were used:

- It was assumed that maximum exposed receptor (senior living resident) stood outside and are subject to DPM at the retirement community for 8 hours per weekday and approximately 260 construction days per year.

1.2 METHODOLOGY AND SIGNIFICANCE THRESHOLDS

For this HRA, the BAAQMD significance thresholds were deemed to be appropriate and the thresholds that were used for this project are shown below:

- Excess cancer risk of more than 10 in a million
- Non-cancer hazard index (chronic or acute) greater than 1.0
- Incremental increase in average annual $PM_{2.5}$ concentration of greater than 0.3 $\mu g/m^3$

The methodology used in this HRA is consistent with the following BAAQMD and the OEHHA guidance documents:

- BAAQMD, 2017. *California Environmental Quality Act (CEQA) Air Quality Guidelines*. May 2017.
- BAAQMD, 2016. *Planning Healthy Places*. May 2016.
- BAAQMD, 2010. *Screening Tables for Air Toxics Evaluation During Construction*. May 2010.
- BAAQMD, 2012. *Recommended Methods for Screening and Modeling Local Risks and Hazards*. Version 3.0. May 2012.
- OEHHA. 2015. *Air Toxics Hot Spots Program Guidance Manual for the Preparation of Health Risk Assessments*. February 2015.

Potential exposures to DPM and $PM_{2.5}$ from proposed project construction were evaluated for off-site sensitive receptors in close proximity to the site. Pollutant concentrations were estimated using an air dispersion model, and excess lifetime cancer risks and chronic non-cancer hazard indexes were calculated. These risks were then compared to the significance thresholds adopted for this HRA.

1.3 CONSTRUCTION EMISSIONS

Construction emissions were calculated as average daily emissions in pounds per day, using the proposed construction schedule and the latest version of California Emissions Estimation Model, known as CalEEMod Version 2016.3.2 (CAPCOA, 2016). DPM emissions were based on the CalEEMod construction runs, using annual exhaust PM_{10} construction emissions presented in pounds (lbs) per day. The $PM_{2.5}$ emissions were taken from the CalEEMod output for exhaust $PM_{2.5}$ also presented in lbs per day.

The project was assumed to take place over 10 months years (218 work days) from January 2022 to November 2022. The average daily emission rates from construction equipment used during the proposed project were determined by dividing the annual average emissions for each construction year by the number of construction days per year for each calendar year of construction (i.e., 2022). The off-site hauling emission rates were adjusted to evaluate localized emissions from the 0.42-mile haul route within 1,000 feet of the project site. The CalEEMod construction emissions output and emission rate calculations are provided in Appendix A of the HRA.

1.4 DISPERSION MODELING

Air quality modeling was performed using the AERMOD atmospheric dispersion model to assess the impact of emitted compounds on sensitive receptors near the project. The model is a steady state Gaussian plume model and is an approved model by BAAQMD for estimating ground level impacts from point and fugitive sources in simple and complex terrain. The on-site construction emissions for the project were modeled as poly-area sources. The off-site mobile sources were modeled as adjacent line volume sources. The model requires additional input parameters, including chemical emission data and local meteorology. Inputs for the construction emission rates are those described in Section 1.3. Meteorological data obtained from the BAAQMD for the nearest representative meteorological station (Moffett Federal Airfield Airport) with the five latest available years (2009 to 2013) of record were used to represent local weather conditions and prevailing winds.

The modeling analysis also considered the spatial distribution and elevation of each emitting source in relation to the sensitive receptors. To accommodate the model's Cartesian grid format, direction-dependent calculations were obtained by identifying the Universal Transverse Mercator (UTM) coordinates for each source location. In addition, digital elevation model (DEM) data for the area were obtained and included in the model runs to account for complex terrain. An emission release height of 4.15 meters was used as representative of the stack exhaust height for off-road construction equipment and diesel truck traffic, and an initial vertical dispersion parameter of 1.93 m was used, per California Air Resources Board (CARB) guidance (2000).

To determine contaminant impacts during construction hours, the model's Season-Hour-Day (HRDOW) scalar option was invoked to predict flagpole-level concentrations (1.5 m for receptors) for construction emissions generated between the hours of 7:00 AM and 4:00 PM with a 1-hour lunch break. In addition, a scalar factor was applied to the risk calculations to account for the number of days receptors are exposed to construction emissions per year.

A unit emission rate of 1 gram per second was used for all modeling runs. The unit emission rates were proportioned over the poly-area sources for on-site construction emissions and divided between the volume sources for off-site hauling emissions. The maximum modeled concentrations from the output files were then multiplied by the emission rates calculated in Appendix A to obtain the maximum flagpole-level concentrations at the off-site maximum exposed receptors (MER). The off-site MER is a single-family residence immediately south of the site. The MER location is the receptor location associated with the maximum predicted AERMOD concentrations from the on-site emission source. The calculated on-site emission rates are approximately 4 orders of magnitude higher than the calculated off-site emission rates (see Appendix A). Therefore, the maximum concentrations associated with the on-site emission sources produce the highest overall ground-level MER concentrations and, consequently, highest calculated health risks.

The air dispersion model output for the emission sources is presented in Appendix B. The model output DPM and $PM_{2.5}$ concentrations from the construction emission sources are provided in Appendix C.

1.5 RISK CHARACTERIZATION

1.5.1 Carcinogenic Chemical Risk

A threshold of ten in a million ($10x10^{-6}$) has been established as a level posing no significant risk for exposures to carcinogens. Health risks associated with exposure to carcinogenic compounds can be defined in terms of the probability of developing cancer as a result of exposure to a chemical at a given concentration. The cancer risk probability is determined by multiplying the chemical's annual concentration by its cancer potency factor (CPF), a measure of the carcinogenic potential of a chemical when a dose is received through the inhalation pathway. It is an upper-limit estimate of the probability of contracting cancer as a result of continuous exposure to an ambient concentration of one microgram per cubic meter ($\mu g/m^3$) over a lifetime of 70 years.

Recent guidance from OEHHA recommends a refinement to the standard point estimate approach with the use of age-specific breathing rates and age sensitivity factors (ASFs) to assess risk for susceptible subpopulations such as children. For the inhalation pathway, the procedure requires the incorporation of several discrete variates to effectively quantify dose for each age group. Once determined, contaminant dose is multiplied by the cancer potency factor in units of inverse dose expressed in milligrams per kilogram per day $(mg/kg/day)^{-1}$ to derive the cancer risk estimate. Therefore, to accommodate the unique exposures associated with the sensitive receptors, the following dose algorithm was used.

$$\mathrm{Dose}_{\mathrm{AIR,per\ age\ group}} = (\mathrm{C}_{\mathrm{air}} \times \mathrm{EF} \times [\frac{\mathrm{BR}}{\mathrm{BW}}] \times \mathrm{A} \times \mathrm{CF})$$

Where:

$Dose_{AIR}$	=	dose by inhalation (mg/kg-day), per age group
C_{air}	=	concentration of contaminant in air ($\mu g/m^3$)
EF	=	exposure frequency (number of days/365 days)
BR/BW	=	daily breathing rate normalized to body weight (L/kg-day)
A	=	inhalation absorption factor (default = 1)
CF	=	conversion factor ($1x10^{-6}$, μg to mg, L to m^3)

The inhalation absorption factor (A) is a unitless factor that is only used if the cancer potency factor included a correction for absorption across the lung. The default value of 1 was used for this assessment. For residential receptors, the exposure frequency (EF) of 0.96 is used to represent 350 days per year to allow for a two week period away from home each year (OEHHA, 2015). The 95th percentile daily breathing rates (BR/BW), exposure duration (ED), age sensitivity factors (ASFs), and fraction of time at home (FAH) for the various age groups are provided herein:

Age Groups	BR/BW (L/kg-day)	ED	ASF	FAH
Third trimester	361	0.25	10	0.85
0-2 age group	1,090	2	10	0.85
2-9 age group	861	7	3	0.72
2-16 age group	745	14	3	0.72
16-30 age group	335	14	1	0.73
16-70 age group	290	54	1	0.73

For construction analysis, the exposure duration spans the length of construction (e.g. 218 work days, approximately 0.84 year). As the length of construction is less than 2 years, only the third trimester and 0-2 age bins apply to the construction analysis for the off-site residential receptors.

To represent the unique characteristics of senior living populations, the assessment employed the USEPA's guidance to develop viable dose estimates based on reasonable maximum exposure, defined as the "highest exposure that is reasonably expected to occur" for a given receptor population. To assess senior living residential risk, exposures were adjusted to account for an employment period of 365 days per year for 30 years. This timeline is considered appropriate for potential senior living exposures established by OEHHA.

To calculate the overall cancer risk, the risk for each appropriate age group is calculated per the following equation:

$$\text{Cancer Risk}_{\text{AIR}} = \text{Dose}_{\text{AIR}} \times \text{CPF} \times \text{ASF} \times \text{FAH} \times \frac{\text{ED}}{AT}$$

Where:

Dose_{AIR}	=	dose by inhalation (mg/kg-day), per age group
CPF	=	cancer potency factor, chemical-specific $(\text{mg/kg-day})^{-1}$
ASF	=	age sensitivity factor, per age group
FAH	=	fraction of time at home, per age group (for residential receptors only)
ED	=	exposure duration (years)
AT	=	averaging time period over which exposure duration is averaged (70 years)

The CPFs used in the assessment were obtained from OEHHA guidance. The excess lifetime cancer risks during the construction period to the maximally exposed resident were calculated based on the factors provided above. The cancer risks for each age group are summed to estimate the total cancer risk for each toxic chemical species. The final step converts the cancer risk in scientific notation to a whole number that expresses the cancer risk in "chances per million" by multiplying the cancer risk by a factor of 1×10^6 (i.e. 1 million).

The calculated results are provided in Appendix C.

1.5.2 Non-Carcinogenic Hazards

An evaluation was also conducted of the potential non-cancer effects of chronic chemical exposures. Adverse health effects are evaluated by comparing the annual receptor level (flagpole) concentration of each chemical compound with the appropriate reference exposure limit (REL). Available RELs promulgated by OEHHA were considered in the assessment.

The hazard index approach was used to quantify non-carcinogenic impacts. The hazard index assumes that chronic sub-threshold exposures adversely affect a specific organ or organ system (toxicological endpoint). Target organs presented in regulatory guidance were used for each discrete chemical exposure. To calculate the hazard index, each chemical concentration or dose is divided by the appropriate toxicity value. This ratio is summed for compounds affecting the same toxicological endpoint. A health hazard is presumed to exist where the total equals or exceeds one.

The chronic hazard analysis for DPM is provided in Appendix C. The calculations contain the relevant exposure concentrations and corresponding reference dose values used in the evaluation of non-carcinogenic exposures.

1.5.3 Criteria Pollutants

The BAAQMD has recently incorporated $PM_{2.5}$ into the District's CEQA significance thresholds due to recent studies that show adverse health impacts from exposure to this pollutant. An incremental increase of greater than 0.3 $\mu g/m^3$ for the annual average $PM_{2.5}$ concentration is considered to be a significant impact.

1.6 CONSTRUCTION HRA RESULTS

The calculated results are provided in Appendix C and the results are summarized in Table 1.

TABLE 1. CONSTRUCTION RISK SUMMARY - UNMITIGATED

Receptor	Cancer Risk (per million)	Chronic Hazards	$PM_{2.5}$ ($\mu g/m^3$)
Maximum Exposed Receptor – Off-site Resident	**59.4**	0.133	**0.63**
Maximum Exposed Receptor – Senior Living Resident	0.009	0.002	0.001
BAAQMD Threshold	10	1.0	0.30
Exceeds Threshold?	**Yes**	**No**	**Yes**

Note: Cancer risk calculated using 2015 OEHHA HRA guidance.

Cancer risk for the residential MER from project-related construction emissions was calculated to be 59.4in a million, which exceeds the 10 in a million significance threshold. In accordance with the latest 2015 OEHHA guidance, the calculated total cancer risk conservatively assumes that the risk for the MER consists of a pregnant woman in the third trimester that subsequently gives birth to an infant during the approximately 10-month construction period; therefore, all calculated risk values were multiplied by a factor of 10. In addition, it was conservatively assumed that the residents were outdoors 8 hours a day, 260-261 construction days per year and exposed to all of the daily construction emissions. The cancer risk for the maximum exposed senior living residential receptor would not exceed 10 per million.

For non-carcinogenic effects, the chronic hazard index identified for each toxicological endpoint totaled less than one for all the off-site sensitive receptors. Therefore, chronic non-carcinogenic hazards are within acceptable limits. For the residential MER, the maximum annual $PM_{2.5}$ concentration of 0.63 $\mu g/m^3$ exceeds the BAAQMD significance threshold of 0.3 micrograms per cubic meter ($\mu g/m^3$). However, the maximum annual $PM_{2.5}$ concentration for the maximum exposed senior living residential receptor does not exceed the threshold.

The following mitigation measure to project construction equipment is proposed because the incremental cancer risk and maximum annual $PM_{2.5}$ concentration at the residential MER would exceed BAAQMD's significance thresholds:

Mitigation Measure AQ-2: During construction, the construction contractor(s) shall:

- Use construction equipment that meets the United States Environmental Protection Agency's (EPA) Tier 4 Interim emissions standards for off-road diesel-powered construction equipment with more than 25 horsepower, unless it can be demonstrated to the City of Cupertino Building Division that such equipment is not available. Any emissions control device used by the contractor shall achieve emissions reductions that are no less than what could be achieved by Tier 4 Interim emissions standards for a similarly sized engine, as defined by the California Air Resources Board's regulations.

- Prior to issuance of any construction permit, ensure that all construction plans submitted to the City of Cupertino Planning Department and/or Building Division clearly show the requirement for EPA Tier 4 Interim emissions standards for construction equipment over 25 horsepower.
- Maintain a list of all operating equipment in use on the project site for verification by the City of Cupertino Building Division official or his/her designee. The construction equipment list shall state the makes, models, and number of construction equipment on-site.
- Ensure that all equipment shall be properly serviced and maintained in accordance with the manufacturer's recommendations.
- Communicate with all sub-contractors in contracts and construction documents that all nonessential idling of construction equipment is restricted to 5 minutes or less in compliance with California Air Resources Board Rule 2449 and is responsible for ensuring that this requirement is met.

Mitigation Measure AQ-2 would reduce the project's localized construction emissions, as shown in Table 2. The results indicate that, with mitigation, cancer risks and annual $PM_{2.5}$ concentrations would be less than BAAQMD's significance thresholds for residential-based receptors. Therefore, the project would not expose off-site sensitive receptors to substantial concentrations of air pollutant emissions during construction and impacts would be *less than significant with mitigation*.

TABLE 2 CONSTRUCTION RISK SUMMARY – MITIGATED

Receptor	Cancer Risk (per million)	Chronic Hazards	$PM_{2.5}$ ($\mu g/m^3$)[a]
Maximum Exposed Receptor – Off-site Resident	4.9	0.011	0.05
Maximum Exposed Receptor – Senior Living Resident	<0.001	<0.001	<0.001
BAAQMD Threshold	10	1.0	0.3
Exceeds Threshold?	**No**	**No**	**No**

Risks incorporate Mitigation Measure AQ-2, which requires all equipment of 25 horsepower or more be fitted with engines that meet the EPA's Tier 4 Interim emissions standards.
Note: Cancer risk calculated using 2015 OEHHA HRA guidance.

2. References

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California Air Resources Board (CARB). 2000. *Risk Reduction Plan to Reduce Particulate Matter Emissions from Diesel-Fueled Engines and Vehicles.*

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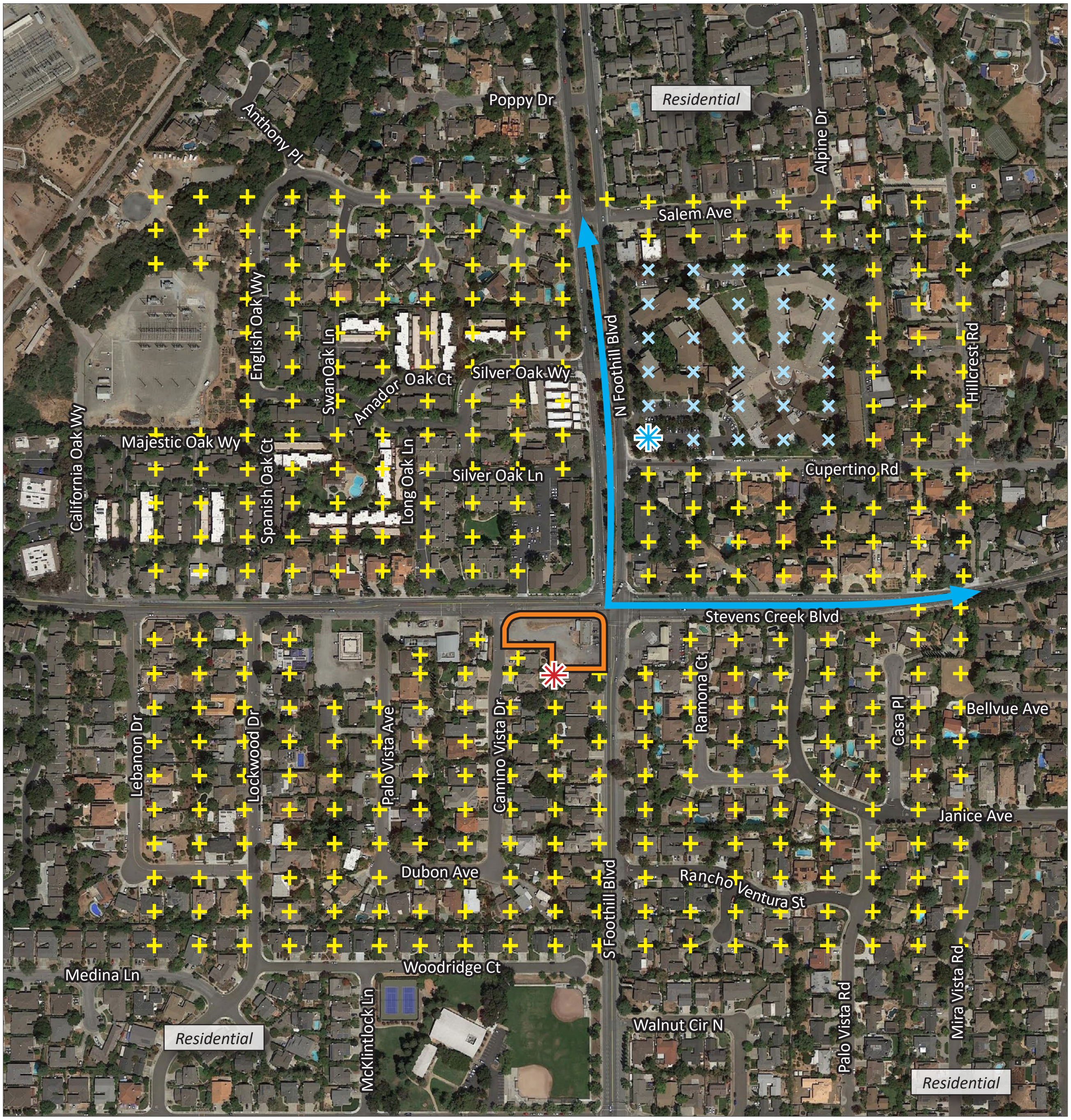
United States Environmental Protection Agency (USEPA). 2011. *Exposure Factors Handbook 2011 Edition (Final).* EPA/600/R-09/052F, 2011.

______. 2005. *Guideline on Air Quality Models* (Revised). EPA-450/2-78-027R.

Appendix A. Emission Rate Calculations

Appendix B. Air Dispersion Model Output

Appendix C. Construction Risk Calculations



Source: Google Earth Pro, 2020; PlaceWorks, 2020.

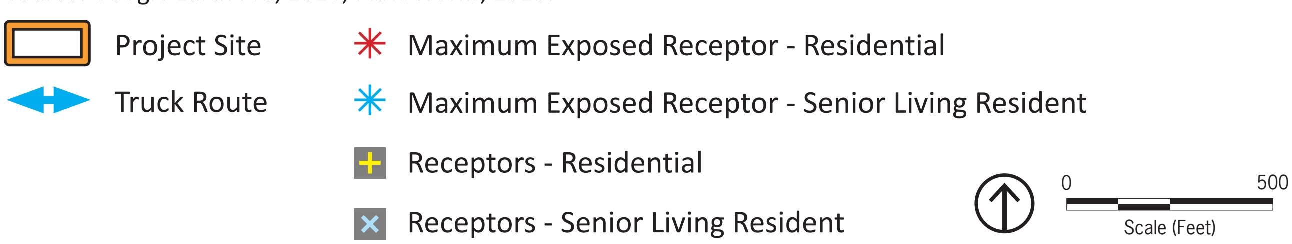


Figure 1
Site and Off-Site Receptor Locations

Appendix A. Emission Rate Calculations

Construction Emissions - DPM and PM2.5
Input to Risk Tables

Average Daily Emissions and Emission Rates

Onsite Construction PM10 Exhaust Emissions[1]

Year	Average Daily Emissions (lbs/day)	Average Daily Emissions (lbs/hr)	Emission Rate (g/s)
2022	0.42	5.26E-02	6.63E-03

Onsite Construction PM2.5 Exhaust Emissions[2]

Average Daily Emissions (lbs/day)	Average Daily Emissions (lbs/hr)	Emission Rate (g/s)
0.40	5.00E-02	6.29E-03

Offsite Construction PM10 Exhaust Emissions[1]

Year	Average Daily Emissions (lbs/day)	Hauling Emissions w/in 1,000ft (lbs/day) [3]	Emission Rate (lbs/hr)	Emission Rate (g/s)
2022	1.38E-03	2.89E-05	3.61E-06	4.55E-07

Offsite Construction PM2.5 Exhaust Emissions[2]

Average Daily Emissions (lbs/day)	Hauling Emissions w/in 1,000ft (lbs/day) [3]	Emission Rate (lbs/hr)	Emission Rate (g/s)
1.38E-03	2.89E-05	3.61E-06	4.55E-07

Note: Emissions evenly distributed over 55 modeled volume sources.

Hauling Length (miles)	20	miles
Haul Length within 1,000 ft of Site (mile) [3]	0.42	miles
Hours per work day (7:00 AM to 4:00 PM, 1-hour of breaks) [4]	8	hours

Year	Workdays	Risk Scalar [5]
2022	218	0.84

[1] DPM emissions taken as PM_{10} exhaust emissions from CalEEMod average daily emissions.

[2] $PM_{2.5}$ emissions taken as $PM_{2.5}$ exhaust emissions from CalEEMod average daily emissions.

[3] Emissions from CalEEMod offsite average daily emissions, which is based on proportioned haul truck trip distances, are adjusted to evaluate emissions from the 0.42-mile route within 1,000 of the project site.

[4] Work hours applied in By Hour/Day (HRDOW) variable emissions module in air dispersion model (see App B - Air Dispersion Model Output).

[5] Risk scalars determined for each year of construction to adjust receptor exposures to the exposure durations for each construction year (see App C - Risk Calculations).

Construction Emissions - DPM and PM2.5
Input to Risk Tables
With Mitigation - Tier 4 Interim Engines for Eq. > 25 hp

Average Daily Emissions and Emission Rates: Mitigated Scenario

Onsite Construction PM10 Exhaust Emissions[1]			
Year	Average Daily Emissions (lbs/day)	Average Daily Emissions (lbs/hr)	Emission Rate (g/s)
2022	0.03	4.36E-03	5.49E-04

Onsite Construction PM2.5 Exhaust Emissions[2]		
Average Daily Emissions (lbs/day)	Average Daily Emissions (lbs/hr)	Emission Rate (g/s)
0.03	4.36E-03	5.49E-04

Offsite Construction PM10 Exhaust Emissions[1]				
Year	Average Daily Emissions (lbs/day)	Hauling Emissions w/in 1,000ft (lbs/day)[3]	Emission Rate (lbs/hr)	Emission Rate (g/s)
2022	1.38E-03	2.89E-05	3.61E-06	4.55E-07

Offsite Construction PM2.5 Exhaust Emissions[2]			
Average Daily Emissions (lbs/day)	Hauling Emissions w/in 1,000ft (lbs/day)[3]	Emission Rate (lbs/hr)	Emission Rate (g/s)
1.38E-03	2.89E-05	3.61E-06	4.55E-07

Note: Emissions evenly distributed over 55 modeled volume sources.

Hauling Length (miles)	20	miles
Haul Length within 1,000 ft of Site (mile)[3]	0.42	miles
Hours per work day (7:00 AM to 4:00 PM, 1-hour of breaks)[4]	8	hours

Year	Workdays	Risk Scalar[5]
2022	218	0.84

[1] DPM emissions taken as PM_{10} exhaust emissions from CalEEMod average daily emissions.

[2] $PM_{2.5}$ emissions taken as $PM_{2.5}$ exhaust emissions from CalEEMod average daily emissions.

[3] Emissions from CalEEMod offsite average daily emissions, which is based on proportioned haul truck trip distances, are adjusted to evaluate emissions from the 0.42-mile route within 1,000 of the project site.

[4] Work hours applied in By Hour/Day (HRDOW) variable emissions module in air dispersion model (see App B - Air Dispersion Model Output).

[5] Risk scalars determined for each year of construction to adjust receptor exposures to the exposure durations for each construction year (see App C - Risk Calculations).

Appendix B. Air Dispersion Model Output

Model Output
Unit Emission Rates (1 g/s)

```
*** AERMOD - VERSION  19191 ***   *** 22690 Stevens Creek Blvd, Cupertino                                ***        07/21/20
*** AERMET - VERSION  14134 ***   *** Construction HRA, Residential Receptors                            ***        09:29:47
                                                                                                                    PAGE   1
*** MODELOPTs:    RegDFAULT  CONC  ELEV  FLGPOL  URBAN

                                          ***     MODEL SETUP OPTIONS SUMMARY       ***
- - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - -

**Model Is Setup For Calculation of Average CONCentration Values.

  --  DEPOSITION LOGIC  --
**NO GAS DEPOSITION Data Provided.
**NO PARTICLE DEPOSITION Data Provided.
**Model Uses NO DRY DEPLETION.  DRYDPLT  =  F
**Model Uses NO WET DEPLETION.  WETDPLT  =  F

**Model Uses URBAN Dispersion Algorithm for the SBL for    56 Source(s),
  for Total of    1 Urban Area(s):
  Urban Population =   1928000.0 ;  Urban Roughness Length =  1.000 m

**Model Uses Regulatory DEFAULT Options:
        1. Stack-tip Downwash.
        2. Model Accounts for ELEVated Terrain Effects.
        3. Use Calms Processing Routine.
        4. Use Missing Data Processing Routine.
        5. No Exponential Decay.
        6. Urban Roughness Length of 1.0 Meter Assumed.

**Other Options Specified:
        CCVR_Sub - Meteorological data includes CCVR substitutions
        TEMP_Sub - Meteorological data includes TEMP substitutions

**Model Accepts FLAGPOLE Receptor Heights.

**The User Specified a Pollutant Type of:  OTHER

**Model Calculates PERIOD Averages Only

**This Run Includes:     56 Source(s);       2 Source Group(s); and     391 Receptor(s)

               with:      0 POINT(s), including
                          0 POINTCAP(s) and      0 POINTHOR(s)
                and:     55 VOLUME source(s)
                and:      1 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      0 line(s)


**Model Set To Continue RUNning After the Setup Testing.
```

```
**The AERMET Input Meteorological Data Version Date:  14134

**Output Options Selected:
         Model Outputs Tables of PERIOD Averages by Receptor
         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) =    11.90 ;  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 =      3.6 MB of RAM.

**Input Runstream File:          aermod.inp
**Output Print File:             aermod.out

**Detailed Error/Message File:   COCU18.err
**File for Summary of Results:   COCU18.sum
```

Model Output
Unit Emission Rates (1 g/s)

*** 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
L0000001	0	0.18182E-01	582491.5	4131335.0	114.4	4.15	5.67	3.26	YES	HRDOW
L0000002	0	0.18182E-01	582493.1	4131322.9	114.8	4.15	5.67	3.26	YES	HRDOW
L0000003	0	0.18182E-01	582494.6	4131310.8	115.2	4.15	5.67	3.26	YES	HRDOW
L0000004	0	0.18182E-01	582496.2	4131298.8	115.7	4.15	5.67	3.26	YES	HRDOW
L0000005	0	0.18182E-01	582497.8	4131286.7	116.1	4.15	5.67	3.26	YES	HRDOW
L0000006	0	0.18182E-01	582499.3	4131274.6	116.2	4.15	5.67	3.26	YES	HRDOW
L0000007	0	0.18182E-01	582500.9	4131262.5	116.4	4.15	5.67	3.26	YES	HRDOW
L0000008	0	0.18182E-01	582502.2	4131250.4	116.3	4.15	5.67	3.26	YES	HRDOW
L0000009	0	0.18182E-01	582503.6	4131238.2	116.0	4.15	5.67	3.26	YES	HRDOW
L0000010	0	0.18182E-01	582504.9	4131226.1	115.8	4.15	5.67	3.26	YES	HRDOW
L0000011	0	0.18182E-01	582506.2	4131214.0	115.7	4.15	5.67	3.26	YES	HRDOW
L0000012	0	0.18182E-01	582507.5	4131201.9	115.7	4.15	5.67	3.26	YES	HRDOW
L0000013	0	0.18182E-01	582508.7	4131189.8	115.8	4.15	5.67	3.26	YES	HRDOW
L0000014	0	0.18182E-01	582509.7	4131177.6	115.9	4.15	5.67	3.26	YES	HRDOW
L0000015	0	0.18182E-01	582510.6	4131165.4	115.9	4.15	5.67	3.26	YES	HRDOW
L0000016	0	0.18182E-01	582511.6	4131153.3	116.0	4.15	5.67	3.26	YES	HRDOW
L0000017	0	0.18182E-01	582512.5	4131141.1	116.1	4.15	5.67	3.26	YES	HRDOW
L0000018	0	0.18182E-01	582513.5	4131129.0	116.2	4.15	5.67	3.26	YES	HRDOW
L0000019	0	0.18182E-01	582514.4	4131116.8	116.3	4.15	5.67	3.26	YES	HRDOW
L0000020	0	0.18182E-01	582514.8	4131104.6	116.5	4.15	5.67	3.26	YES	HRDOW
L0000021	0	0.18182E-01	582515.2	4131092.4	116.6	4.15	5.67	3.26	YES	HRDOW
L0000022	0	0.18182E-01	582515.7	4131080.3	116.7	4.15	5.67	3.26	YES	HRDOW
L0000023	0	0.18182E-01	582516.1	4131068.1	116.8	4.15	5.67	3.26	YES	HRDOW
L0000024	0	0.18182E-01	582516.5	4131055.9	117.0	4.15	5.67	3.26	YES	HRDOW
L0000025	0	0.18182E-01	582517.0	4131043.7	117.2	4.15	5.67	3.26	YES	HRDOW
L0000026	0	0.18182E-01	582517.4	4131031.5	117.5	4.15	5.67	3.26	YES	HRDOW
L0000027	0	0.18182E-01	582517.8	4131019.3	117.8	4.15	5.67	3.26	YES	HRDOW
L0000028	0	0.18182E-01	582518.3	4131007.2	118.0	4.15	5.67	3.26	YES	HRDOW
L0000029	0	0.18182E-01	582518.7	4130995.0	118.1	4.15	5.67	3.26	YES	HRDOW
L0000030	0	0.18182E-01	582530.6	4130995.2	117.8	4.15	5.67	3.26	YES	HRDOW
L0000031	0	0.18182E-01	582542.8	4130995.8	117.8	4.15	5.67	3.26	YES	HRDOW
L0000032	0	0.18182E-01	582555.0	4130996.4	117.7	4.15	5.67	3.26	YES	HRDOW
L0000033	0	0.18182E-01	582567.1	4130996.9	117.8	4.15	5.67	3.26	YES	HRDOW
L0000034	0	0.18182E-01	582579.3	4130997.5	117.8	4.15	5.67	3.26	YES	HRDOW
L0000035	0	0.18182E-01	582591.5	4130998.0	118.1	4.15	5.67	3.26	YES	HRDOW
L0000036	0	0.18182E-01	582603.7	4130998.6	118.3	4.15	5.67	3.26	YES	HRDOW
L0000037	0	0.18182E-01	582615.8	4130999.2	118.5	4.15	5.67	3.26	YES	HRDOW
L0000038	0	0.18182E-01	582628.0	4130999.7	118.6	4.15	5.67	3.26	YES	HRDOW

L0000039	0	0.18182E-01	582640.2	4131000.3	118.7	4.15	5.67	3.26	YES	HRDOW
L0000040	0	0.18182E-01	582652.4	4131000.9	118.7	4.15	5.67	3.26	YES	HRDOW

*** MODELOPTs: RegDFAULT CONC ELEV FLGPOL URBAN

*** 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
L0000041	0	0.18182E-01	582664.6	4131001.4	118.6	4.15	5.67	3.26	YES	HRDOW
L0000042	0	0.18182E-01	582676.7	4131002.0	118.5	4.15	5.67	3.26	YES	HRDOW
L0000043	0	0.18182E-01	582688.9	4131001.9	118.6	4.15	5.67	3.26	YES	HRDOW
L0000044	0	0.18182E-01	582701.1	4131001.7	118.8	4.15	5.67	3.26	YES	HRDOW
L0000045	0	0.18182E-01	582713.3	4131001.5	119.0	4.15	5.67	3.26	YES	HRDOW
L0000046	0	0.18182E-01	582725.5	4131001.3	119.1	4.15	5.67	3.26	YES	HRDOW
L0000047	0	0.18182E-01	582737.7	4131001.1	119.3	4.15	5.67	3.26	YES	HRDOW
L0000048	0	0.18182E-01	582749.9	4131000.9	119.5	4.15	5.67	3.26	YES	HRDOW
L0000049	0	0.18182E-01	582762.1	4131000.7	119.6	4.15	5.67	3.26	YES	HRDOW
L0000050	0	0.18182E-01	582774.2	4131001.3	119.5	4.15	5.67	3.26	YES	HRDOW
L0000051	0	0.18182E-01	582786.3	4131003.2	119.5	4.15	5.67	3.26	YES	HRDOW
L0000052	0	0.18182E-01	582798.3	4131005.0	119.5	4.15	5.67	3.26	YES	HRDOW
L0000053	0	0.18182E-01	582810.4	4131006.9	119.5	4.15	5.67	3.26	YES	HRDOW
L0000054	0	0.18182E-01	582822.4	4131008.7	119.5	4.15	5.67	3.26	YES	HRDOW
L0000055	0	0.18182E-01	582834.5	4131010.6	119.5	4.15	5.67	3.26	YES	HRDOW

*** MODELOPTs: RegDFAULT CONC ELEV FLGPOL URBAN

*** AREAPOLY SOURCE DATA ***

SOURCE ID	NUMBER PART. CATS.	EMISSION RATE (GRAMS/SEC /METER**2)	LOCATION OF AREA X (METERS)	Y (METERS)	BASE ELEV. (METERS)	RELEASE HEIGHT (METERS)	NUMBER OF VERTS.	INIT. SZ (METERS)	URBAN SOURCE	EMISSION RATE SCALAR VARY BY
1	0	0.32580E-03	582509.2	4130943.0	118.2	4.15	11	1.93	YES	HRDOW

Model Output
Unit Emission Rates (1 g/s)

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*** AERMOD - VERSION  19191 ***   *** 22690 Stevens Creek Blvd, Cupertino                              ***        07/21/20
*** AERMET - VERSION  14134 ***   *** Construction HRA, Residential Receptors                          ***        09:29:47
                                                                                                                  PAGE   5
*** MODELOPTs:    RegDFAULT  CONC  ELEV  FLGPOL  URBAN

                                          *** SOURCE IDs DEFINING SOURCE GROUPS ***

SRCGROUP ID                                             SOURCE IDs
-----------                                             ----------
 ONSITE     1            ,

 HAUL       L0000001     , L0000002     , L0000003     , L0000004     , L0000005     , L0000006     , L0000007     , L0000008     ,

            L0000009     , L0000010     , L0000011     , L0000012     , L0000013     , L0000014     , L0000015     , L0000016     ,

            L0000017     , L0000018     , L0000019     , L0000020     , L0000021     , L0000022     , L0000023     , L0000024     ,

            L0000025     , L0000026     , L0000027     , L0000028     , L0000029     , L0000030     , L0000031     , L0000032     ,

            L0000033     , L0000034     , L0000035     , L0000036     , L0000037     , L0000038     , L0000039     , L0000040     ,

            L0000041     , L0000042     , L0000043     , L0000044     , L0000045     , L0000046     , L0000047     , L0000048     ,

            L0000049     , L0000050     , L0000051     , L0000052     , L0000053     , L0000054     , L0000055     ,
*** AERMOD - VERSION  19191 ***   *** 22690 Stevens Creek Blvd, Cupertino                              ***        07/21/20
*** AERMET - VERSION  14134 ***   *** Construction HRA, Residential Receptors                          ***        09:29:47
                                                                                                                  PAGE   6
*** MODELOPTs:    RegDFAULT  CONC  ELEV  FLGPOL  URBAN

                                          *** SOURCE IDs DEFINED AS URBAN SOURCES ***

 URBAN ID   URBAN POP                                   SOURCE IDs
 --------   ---------                                   ----------

             1928000.   1            , L0000001     , L0000002     , L0000003     , L0000004     , L0000005     , L0000006     ,
L0000007     ,

            L0000008     , L0000009     , L0000010     , L0000011     , L0000012     , L0000013     , L0000014     , L0000015     ,

            L0000016     , L0000017     , L0000018     , L0000019     , L0000020     , L0000021     , L0000022     , L0000023     ,

            L0000024     , L0000025     , L0000026     , L0000027     , L0000028     , L0000029     , L0000030     , L0000031     ,

            L0000032     , L0000033     , L0000034     , L0000035     , L0000036     , L0000037     , L0000038     , L0000039     ,

            L0000040     , L0000041     , L0000042     , L0000043     , L0000044     , L0000045     , L0000046     , L0000047     ,

            L0000048     , L0000049     , L0000050     , L0000051     , L0000052     , L0000053     , L0000054     , L0000055     ,
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*** AERMOD - VERSION  19191 ***   *** 22690 Stevens Creek Blvd, Cupertino                                ***        07/21/20
*** AERMET - VERSION  14134 ***   *** Construction HRA, Residential Receptors                            ***        09:29:47
                                                                                                                    PAGE   7
*** MODELOPTs:    RegDFAULT  CONC  ELEV  FLGPOL  URBAN

                  * SOURCE EMISSION RATE SCALARS WHICH VARY DIURNALLY AND BY DAY OF WEEK (HRDOW) *

SOURCE ID = ALL SOURCES            ; SOURCE TYPE = AREAPOLY and VOLUME:
 HOUR    SCALAR   HOUR    SCALAR   HOUR    SCALAR   HOUR    SCALAR   HOUR    SCALAR   HOUR    SCALAR   HOUR    SCALAR   HOUR    SCALAR
- - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - -
                                             DAY OF WEEK = WEEKDAY
   1  .0000E+00    2  .0000E+00    3  .0000E+00    4  .0000E+00    5  .0000E+00    6  .0000E+00    7  .0000E+00    8  .1000E+01
   9  .1000E+01   10  .1000E+01   11  .1000E+01   12  .1000E+01   13  .0000E+00   14  .1000E+01   15  .1000E+01   16  .1000E+01
  17  .0000E+00   18  .0000E+00   19  .0000E+00   20  .0000E+00   21  .0000E+00   22  .0000E+00   23  .0000E+00   24  .0000E+00
                                             DAY OF WEEK = SATURDAY
   1  .0000E+00    2  .0000E+00    3  .0000E+00    4  .0000E+00    5  .0000E+00    6  .0000E+00    7  .0000E+00    8  .0000E+00
   9  .0000E+00   10  .0000E+00   11  .0000E+00   12  .0000E+00   13  .0000E+00   14  .0000E+00   15  .0000E+00   16  .0000E+00
  17  .0000E+00   18  .0000E+00   19  .0000E+00   20  .0000E+00   21  .0000E+00   22  .0000E+00   23  .0000E+00   24  .0000E+00
                                             DAY OF WEEK = SUNDAY
   1  .0000E+00    2  .0000E+00    3  .0000E+00    4  .0000E+00    5  .0000E+00    6  .0000E+00    7  .0000E+00    8  .0000E+00
   9  .0000E+00   10  .0000E+00   11  .0000E+00   12  .0000E+00   13  .0000E+00   14  .0000E+00   15  .0000E+00   16  .0000E+00
  17  .0000E+00   18  .0000E+00   19  .0000E+00   20  .0000E+00   21  .0000E+00   22  .0000E+00   23  .0000E+00   24  .0000E+00
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*** AERMOD - VERSION  19191 ***   *** 22690 Stevens Creek Blvd, Cupertino                                ***        07/21/20
*** AERMET - VERSION  14134 ***   *** Construction HRA, Residential Receptors                            ***        09:29:47
                                                                                                                    PAGE  69
*** MODELOPTs:    RegDFAULT  CONC  ELEV  FLGPOL  URBAN

                                        *** 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,
```

Model Output
Unit Emission Rates (1 g/s)

*** AERMOD - VERSION 19191 *** *** 22690 Stevens Creek Blvd, Cupertino *** 07/21/20
*** AERMET - VERSION 14134 *** *** Construction HRA, Residential Receptors *** 09:29:47

*** MODELOPTs: RegDFAULT CONC ELEV FLGPOL URBAN

*** UP TO THE FIRST 24 HOURS OF METEOROLOGICAL DATA ***

Surface file: ..\MetData\745090.SFC Met Version: 14134
Profile file: ..\MetData\745090.PFL
Surface format: FREE
Profile format: FREE
Surface station no.: 23244 Upper air station no.: 23230
Name: UNKNOWN Name: OAKLAND/WSO_AP
Year: 2009 Year: 2009

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
09	01	01	1	01	-12.1	0.213	-9.000	-9.000	-999.	236.	72.6	0.09	0.54	1.00	2.86	1.	10.0	282.5	2.0
09	01	01	1	02	-14.9	0.261	-9.000	-9.000	-999.	321.	109.2	0.09	0.54	1.00	3.36	18.	10.0	282.0	2.0
09	01	01	1	03	-9.1	0.160	-9.000	-9.000	-999.	158.	40.7	0.09	0.54	1.00	2.36	24.	10.0	282.0	2.0
09	01	01	1	04	-999.0	-9.000	-9.000	-9.000	-999.	-999.	-99999.0	0.24	0.54	1.00	0.00	0.	10.0	281.4	2.0
09	01	01	1	05	-3.9	0.075	-9.000	-9.000	-999.	49.	9.8	0.09	0.54	1.00	1.76	23.	10.0	281.4	2.0
09	01	01	1	06	-9.1	0.159	-9.000	-9.000	-999.	153.	40.5	0.09	0.54	1.00	2.36	2.	10.0	280.9	2.0
09	01	01	1	07	-9.1	0.159	-9.000	-9.000	-999.	153.	40.5	0.09	0.54	1.00	2.36	15.	10.0	280.9	2.0
09	01	01	1	08	-4.7	0.084	-9.000	-9.000	-999.	61.	11.7	0.15	0.54	0.73	1.76	323.	10.0	280.9	2.0
09	01	01	1	09	-4.9	0.212	-9.000	-9.000	-999.	234.	179.0	0.15	0.54	0.38	2.36	357.	10.0	280.4	2.0
09	01	01	1	10	5.7	0.163	0.241	0.014	89.	159.	-69.3	0.09	0.54	0.25	1.76	11.	10.0	280.9	2.0
09	01	01	1	11	12.2	-9.000	-9.000	-9.000	158.	-999.	-99999.0	0.24	0.54	0.21	0.00	0.	10.0	280.9	2.0
09	01	01	1	12	16.0	0.426	0.456	0.016	216.	668.	-442.4	0.15	0.54	0.19	4.36	346.	10.0	281.4	2.0
09	01	01	1	13	16.6	0.236	0.493	0.015	263.	305.	-71.8	0.36	0.54	0.19	1.76	253.	10.0	281.4	2.0
09	01	01	1	14	14.2	-9.000	-9.000	-9.000	297.	-999.	-99999.0	0.24	0.54	0.20	0.00	0.	10.0	282.0	2.0
09	01	01	1	15	44.9	-9.000	-9.000	-9.000	387.	-999.	-99999.0	0.24	0.54	0.23	0.00	0.	10.0	283.8	2.0
09	01	01	1	16	13.2	-9.000	-9.000	-9.000	410.	-999.	-99999.0	0.24	0.54	0.31	0.00	0.	10.0	284.1	2.0
09	01	01	1	17	-12.3	0.130	-9.000	-9.000	-999.	112.	16.2	0.15	0.54	0.55	2.36	351.	10.0	282.1	2.0
09	01	01	1	18	-9.3	0.106	-9.000	-9.000	-999.	83.	11.6	0.36	0.54	1.00	1.76	297.	10.0	282.1	2.0
09	01	01	1	19	-999.0	-9.000	-9.000	-9.000	-999.	-999.	-99999.0	0.24	0.54	1.00	0.00	0.	10.0	281.1	2.0
09	01	01	1	20	-999.0	-9.000	-9.000	-9.000	-999.	-999.	-99999.0	0.24	0.54	1.00	0.00	0.	10.0	281.1	2.0
09	01	01	1	21	-999.0	-9.000	-9.000	-9.000	-999.	-999.	-99999.0	0.24	0.54	1.00	0.00	0.	10.0	281.1	2.0
09	01	01	1	22	-999.0	-9.000	-9.000	-9.000	-999.	-999.	-99999.0	0.24	0.54	1.00	0.00	0.	10.0	281.1	2.0
09	01	01	1	23	-999.0	-9.000	-9.000	-9.000	-999.	-999.	-99999.0	0.24	0.54	1.00	0.00	0.	10.0	281.1	2.0
09	01	01	1	24	-999.0	-9.000	-9.000	-9.000	-999.	-999.	-99999.0	0.24	0.54	1.00	0.00	0.	10.0	280.1	2.0

First hour of profile data

YR	MO	DY	HR	HEIGHT	F	WDIR	WSPD	AMB_TMP	sigmaA	sigmaW	sigmaV
09	01	01	01	10.0	1	1.	2.86	282.6	99.0	-99.00	-99.00

F indicates top of profile (=1) or below (=0)

Model Output
Unit Emission Rates (1 g/s)

*** MODELOPTs: RegDFAULT CONC ELEV FLGPOL URBAN

*** THE PERIOD (43872 HRS) AVERAGE CONCENTRATION VALUES FOR SOURCE GROUP: ONSITE ***
INCLUDING SOURCE(S): 1 ,

*** DISCRETE CARTESIAN RECEPTOR POINTS ***

** CONC OF OTHER IN MICROGRAMS/M**3 **

X-COORD (M)	Y-COORD (M)	CONC	X-COORD (M)	Y-COORD (M)	CONC
582111.53	4130697.09	0.05189	582151.53	4130697.09	0.07355
582191.53	4130697.09	0.11089	582231.53	4130697.09	0.17458
582271.53	4130697.09	0.28405	582311.53	4130697.09	0.47641
582351.53	4130697.09	0.81880	582391.53	4130697.09	1.40788
582431.53	4130697.09	2.30141	582471.53	4130697.09	3.32345
582511.53	4130697.09	3.99311	582551.53	4130697.09	3.94542
582591.53	4130697.09	3.26933	582631.53	4130697.09	2.38250
582671.53	4130697.09	1.60654	582711.53	4130697.09	1.06612
582751.53	4130697.09	0.72524	582791.53	4130697.09	0.50365
582831.53	4130697.09	0.36942	582111.53	4130727.09	0.04952
582151.53	4130727.09	0.06999	582191.53	4130727.09	0.10432
582231.53	4130727.09	0.16687	582271.53	4130727.09	0.28133
582311.53	4130727.09	0.48998	582351.53	4130727.09	0.88966
582391.53	4130727.09	1.63663	582431.53	4130727.09	2.82829
582471.53	4130727.09	4.21964	582511.53	4130727.09	5.07564
582551.53	4130727.09	4.82709	582591.53	4130727.09	3.75293
582631.53	4130727.09	2.55915	582671.53	4130727.09	1.63694
582711.53	4130727.09	1.04707	582751.53	4130727.09	0.69840
582791.53	4130727.09	0.48244	582831.53	4130727.09	0.35241
582111.53	4130757.09	0.04771	582151.53	4130757.09	0.06665
582191.53	4130757.09	0.09885	582231.53	4130757.09	0.15697
582271.53	4130757.09	0.27029	582311.53	4130757.09	0.50033
582351.53	4130757.09	0.96869	582391.53	4130757.09	1.91856
582431.53	4130757.09	3.55198	582471.53	4130757.09	5.52092
582511.53	4130757.09	6.61787	582551.53	4130757.09	5.96909
582591.53	4130757.09	4.28447	582631.53	4130757.09	2.68401
582671.53	4130757.09	1.61156	582711.53	4130757.09	0.99565
582751.53	4130757.09	0.66169	582791.53	4130757.09	0.45952
582831.53	4130757.09	0.33672	582111.53	4130787.09	0.04610
582151.53	4130787.09	0.06314	582191.53	4130787.09	0.09220
582231.53	4130787.09	0.14623	582271.53	4130787.09	0.25486
582311.53	4130787.09	0.49388	582351.53	4130787.09	1.02153
582391.53	4130787.09	2.24565	582431.53	4130787.09	4.57734
582471.53	4130787.09	7.49411	582511.53	4130787.09	8.89340
582551.53	4130787.09	7.44053	582591.53	4130787.09	4.77933
582631.53	4130787.09	2.71167	582671.53	4130787.09	1.53764
582711.53	4130787.09	0.93253	582751.53	4130787.09	0.62012

582791.53	4130787.09	0.43549	582831.53	4130787.09	0.32200
582111.53	4130817.09	0.04577	582151.53	4130817.09	0.06132
582191.53	4130817.09	0.08694	582231.53	4130817.09	0.13549

*** MODELOPTs: RegDFAULT CONC ELEV FLGPOL URBAN

*** THE PERIOD (43872 HRS) AVERAGE CONCENTRATION VALUES FOR SOURCE GROUP: ONSITE ***
INCLUDING SOURCE(S): 1 ,

*** DISCRETE CARTESIAN RECEPTOR POINTS ***

** CONC OF OTHER IN MICROGRAMS/M**3 **

X-COORD (M)	Y-COORD (M)	CONC	X-COORD (M)	Y-COORD (M)	CONC
582271.53	4130817.09	0.23558	582311.53	4130817.09	0.46890
582351.53	4130817.09	1.05415	582391.53	4130817.09	2.63392
582431.53	4130817.09	6.04365	582471.53	4130817.09	10.62496
582511.53	4130817.09	12.42714	582551.53	4130817.09	9.31481
582591.53	4130817.09	5.18312	582631.53	4130817.09	2.63745
582671.53	4130817.09	1.42584	582711.53	4130817.09	0.86979
582751.53	4130817.09	0.57752	582791.53	4130817.09	0.41270
582831.53	4130817.09	0.30963	582111.53	4130847.09	0.04705
582151.53	4130847.09	0.06131	582191.53	4130847.09	0.08443
582231.53	4130847.09	0.12732	582271.53	4130847.09	0.21588
582311.53	4130847.09	0.43081	582351.53	4130847.09	1.02414
582391.53	4130847.09	3.01469	582431.53	4130847.09	8.23465
582471.53	4130847.09	16.01141	582511.53	4130847.09	18.27891
582551.53	4130847.09	11.55991	582591.53	4130847.09	5.34022
582631.53	4130847.09	2.44792	582671.53	4130847.09	1.29038
582711.53	4130847.09	0.79329	582751.53	4130847.09	0.53716
582791.53	4130847.09	0.39246	582831.53	4130847.09	0.29926
582111.53	4130877.09	0.05020	582151.53	4130877.09	0.06442
582191.53	4130877.09	0.08617	582231.53	4130877.09	0.12472
582271.53	4130877.09	0.20059	582311.53	4130877.09	0.38597
582351.53	4130877.09	0.94648	582391.53	4130877.09	3.35059
582431.53	4130877.09	11.79760	582471.53	4130877.09	26.20561
582511.53	4130877.09	28.81194	582551.53	4130877.09	13.59630
582591.53	4130877.09	4.96884	582631.53	4130877.09	2.14041
582671.53	4130877.09	1.14880	582711.53	4130877.09	0.72485
582751.53	4130877.09	0.50483	582791.53	4130877.09	0.37574
582831.53	4130877.09	0.29007	582111.53	4130907.09	0.05579
582151.53	4130907.09	0.07130	582191.53	4130907.09	0.09367
582231.53	4130907.09	0.13185	582271.53	4130907.09	0.20049
582311.53	4130907.09	0.36494	582351.53	4130907.09	0.83355
582391.53	4130907.09	3.37559	582431.53	4130907.09	18.27494
582471.53	4130907.09	47.59861	582511.53	4130907.09	49.39619
582551.53	4130907.09	13.60759	582591.53	4130907.09	4.07477
582631.53	4130907.09	1.80554	582671.53	4130907.09	1.02630

Model Output
Unit Emission Rates (1 g/s)

582711.53	4130907.09	0.67270	582751.53	4130907.09	0.47952
582791.53	4130907.09	0.36197	582831.53	4130907.09	0.28218
582111.53	4130937.09	0.06519	582151.53	4130937.09	0.08381
582191.53	4130937.09	0.11147	582231.53	4130937.09	0.15502
582351.53	4130937.09	0.79028	582391.53	4130937.09	2.78391
582431.53	4130937.09	34.50093	**582471.53**	**4130937.09**	**100.09548 Residential MER**

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*** AERMOD - VERSION  19191 ***   *** 22690 Stevens Creek Blvd, Cupertino                      ***        07/21/20
*** AERMET - VERSION  14134 ***   *** Construction HRA, Residential Receptors                  ***        09:29:47
                                                                                                          PAGE  73
*** MODELOPTs:    RegDFAULT  CONC  ELEV  FLGPOL  URBAN

                     *** THE PERIOD ( 43872 HRS) AVERAGE CONCENTRATION   VALUES FOR SOURCE GROUP: ONSITE   ***
                         INCLUDING SOURCE(S):     1           ,

                                  *** DISCRETE CARTESIAN RECEPTOR POINTS ***

                             ** CONC OF OTHER    IN MICROGRAMS/M**3                          **
```

X-COORD (M)	Y-COORD (M)	CONC	X-COORD (M)	Y-COORD (M)	CONC
582511.53	4130937.09	82.87908	582551.53	4130937.09	10.03204
582591.53	4130937.09	3.11132	582631.53	4130937.09	1.53411
582671.53	4130937.09	0.93244	582711.53	4130937.09	0.63124
582751.53	4130937.09	0.45748	582791.53	4130937.09	0.34873
582831.53	4130937.09	0.27389	582111.53	4130967.09	0.08051
582151.53	4130967.09	0.10516	582191.53	4130967.09	0.14347
582231.53	4130967.09	0.20338	582346.84	4130955.96	0.85895
582432.70	4130954.20	63.76270	582591.53	4130967.09	2.44773
582631.53	4130967.09	1.33224	582671.53	4130967.09	0.84815
582711.53	4130967.09	0.58825	582751.53	4130967.09	0.43211
582791.53	4130967.09	0.33208	582831.53	4130967.09	0.26319
582791.53	4130997.09	0.31055	582831.53	4130997.09	0.24894
582111.53	4131027.09	0.13618	582151.53	4131027.09	0.18690
582191.53	4131027.09	0.28764	582231.53	4131027.09	0.43190
582271.53	4131027.09	0.70203	582311.53	4131027.09	1.26051
582351.53	4131027.09	2.61908	582391.53	4131027.09	5.80612
582431.53	4131027.09	8.86529	582551.53	4131027.09	1.87406
582591.53	4131027.09	1.26219	582631.53	4131027.09	0.86566
582671.53	4131027.09	0.61821	582711.53	4131027.09	0.46207
582751.53	4131027.09	0.35649	582791.53	4131027.09	0.28340
582831.53	4131027.09	0.23097	582111.53	4131057.09	0.18496
582151.53	4131057.09	0.25401	582191.53	4131057.09	0.36403
582231.53	4131057.09	0.54775	582271.53	4131057.09	0.87426
582311.53	4131057.09	1.48729	582351.53	4131057.09	2.62758
582391.53	4131057.09	4.17865	582431.53	4131057.09	4.65023
582551.53	4131057.09	1.07905	582591.53	4131057.09	0.82318
582631.53	4131057.09	0.63545	582671.53	4131057.09	0.49180
582711.53	4131057.09	0.38700	582751.53	4131057.09	0.30892
582791.53	4131057.09	0.25148	582831.53	4131057.09	0.20952
582111.53	4131087.09	0.22281	582151.53	4131087.09	0.30569
582191.53	4131087.09	0.43406	582231.53	4131087.09	0.64013

582271.53	4131087.09	0.97725	582311.53	4131087.09	1.50923
582351.53	4131087.09	2.24413	582391.53	4131087.09	2.84264
582431.53	4131087.09	2.64266	582551.53	4131087.09	0.68446
582591.53	4131087.09	0.55723	582631.53	4131087.09	0.46111
582671.53	4131087.09	0.38214	582711.53	4131087.09	0.31667
582751.53	4131087.09	0.26128	582791.53	4131087.09	0.21848
582831.53	4131087.09	0.18631	582111.53	4131117.09	0.25874
582151.53	4131117.09	0.35121	582191.53	4131117.09	0.48792
582231.53	4131117.09	0.69163	582271.53	4131117.09	0.98900

*** MODELOPTs: RegDFAULT CONC ELEV FLGPOL URBAN

*** THE PERIOD (43872 HRS) AVERAGE CONCENTRATION VALUES FOR SOURCE GROUP: **ONSITE** ***
INCLUDING SOURCE(S): 1 ,

*** DISCRETE CARTESIAN RECEPTOR POINTS ***

** CONC OF OTHER IN MICROGRAMS/M**3 **

X-COORD (M)	Y-COORD (M)	CONC	X-COORD (M)	Y-COORD (M)	CONC	
582311.53	4131117.09	1.38063	582351.53	4131117.09	1.78228	
582391.53	4131117.09	1.94068	582431.53	4131117.09	1.63066	
582471.53	4131117.09	1.06596	582551.53	4131117.09	0.47546	
582591.53	4131117.09	0.39693	582631.53	4131117.09	0.34144	
582671.53	4131117.09	0.29512	582711.53	4131117.09	0.25477	
582751.53	4131117.09	0.21816	582791.53	4131117.09	0.18724	
582831.53	4131117.09	0.16369	582111.53	4131147.09	0.28920	
582151.53	4131147.09	0.38420	582191.53	4131147.09	0.51711	
582231.53	4131147.09	0.69943	582271.53	4131147.09	0.93330	
582311.53	4131147.09	1.18975	582351.53	4131147.09	1.37674	
582391.53	4131147.09	1.35359	582431.53	4131147.09	1.07509	
582471.53	4131147.09	0.73475	**582551.53**	**4131147.09**	**0.35128**	**Senior Living MER**
582591.53	4131147.09	0.29613	582631.53	4131147.09	0.26066	
582671.53	4131147.09	0.23117	582711.53	4131147.09	0.20513	
582751.53	4131147.09	0.18133	582791.53	4131147.09	0.15919	
582831.53	4131147.09	0.14238	582191.53	4131177.09	0.52245	
582231.53	4131177.09	0.67294	582271.53	4131177.09	0.84153	
582311.53	4131177.09	0.99177	582351.53	4131177.09	1.05745	
582391.53	4131177.09	0.96851	582431.53	4131177.09	0.74691	
582471.53	4131177.09	0.53006	582551.53	4131177.09	0.27049	
582591.53	4131177.09	0.22966	582631.53	4131177.09	0.20512	
582671.53	4131177.09	0.18481	582711.53	4131177.09	0.16720	
582751.53	4131177.09	0.15120	582791.53	4131177.09	0.13508	
582831.53	4131177.09	0.12319	582191.53	4131207.09	0.50886	
582231.53	4131207.09	0.62482	582271.53	4131207.09	0.73702	
582311.53	4131207.09	0.81443	582351.53	4131207.09	0.81501	
582391.53	4131207.09	0.71201	582431.53	4131207.09	0.54578	
582471.53	4131207.09	0.39239	582551.53	4131207.09	0.21524	

Model Output
Unit Emission Rates (1 g/s)

582591.53	4131207.09	0.18420	582631.53	4131207.09	0.16575
582671.53	4131207.09	0.15099	582711.53	4131207.09	0.13822
582751.53	4131207.09	0.12710	582791.53	4131207.09	0.11511
582831.53	4131207.09	0.10693	582191.53	4131237.09	0.48155
582231.53	4131237.09	0.56590	582271.53	4131237.09	0.63460
582311.53	4131237.09	0.66528	582351.53	4131237.09	0.63328
582391.53	4131237.09	0.53726	582431.53	4131237.09	0.41256
582471.53	4131237.09	0.30158	582551.53	4131237.09	0.17565
582591.53	4131237.09	0.15125	582631.53	4131237.09	0.13683
582671.53	4131237.09	0.12562	582711.53	4131237.09	0.11591
582751.53	4131237.09	0.10769	582791.53	4131237.09	0.09844
582831.53	4131237.09	0.09265	582191.53	4131267.09	0.44593

Model Output
Unit Emission Rates (1 g/s)

*** MODELOPTs: RegDFAULT CONC ELEV FLGPOL URBAN

*** THE PERIOD (43872 HRS) AVERAGE CONCENTRATION VALUES FOR SOURCE GROUP: ONSITE ***
INCLUDING SOURCE(S): 1 ,

*** DISCRETE CARTESIAN RECEPTOR POINTS ***

** CONC OF OTHER IN MICROGRAMS/M**3 **

X-COORD (M)	Y-COORD (M)	CONC	X-COORD (M)	Y-COORD (M)	CONC
582231.53	4131267.09	0.50378	582271.53	4131267.09	0.54105
582311.53	4131267.09	0.54341	582351.53	4131267.09	0.49812
582391.53	4131267.09	0.41455	582431.53	4131267.09	0.32036
582471.53	4131267.09	0.24115	582551.53	4131267.09	0.14620
582591.53	4131267.09	0.12649	582631.53	4131267.09	0.11479
582671.53	4131267.09	0.10613	582711.53	4131267.09	0.09861
582751.53	4131267.09	0.09206	582791.53	4131267.09	0.08453
582831.53	4131267.09	0.08071	582111.53	4131297.09	0.31074
582151.53	4131297.09	0.35967	582191.53	4131297.09	0.40678
582231.53	4131297.09	0.44331	582271.53	4131297.09	0.45907
582311.53	4131297.09	0.44568	582351.53	4131297.09	0.39689
582391.53	4131297.09	0.32638	582431.53	4131297.09	0.25717
582471.53	4131297.09	0.19865	582551.53	4131297.09	0.12362
582591.53	4131297.09	0.10719	582631.53	4131297.09	0.09763
582671.53	4131297.09	0.09079	582711.53	4131297.09	0.08490
582751.53	4131297.09	0.07920	582791.53	4131297.09	0.07345
582831.53	4131297.09	0.07071	582111.53	4131327.09	0.29669
582151.53	4131327.09	0.33396	582191.53	4131327.09	0.36628
582231.53	4131327.09	0.38743	582271.53	4131327.09	0.38913
582311.53	4131327.09	0.36796	582351.53	4131327.09	0.32176
582391.53	4131327.09	0.26334	582431.53	4131327.09	0.21073
582471.53	4131327.09	0.16437	582551.53	4131327.09	0.10582
582591.53	4131327.09	0.09219	582631.53	4131327.09	0.08416
582671.53	4131327.09	0.07857	582711.53	4131327.09	0.07399
582751.53	4131327.09	0.06897	582791.53	4131327.09	0.06523
582831.53	4131327.09	0.06141	582111.53	4131357.09	0.27967
582151.53	4131357.09	0.30744	582191.53	4131357.09	0.32741
582231.53	4131357.09	0.33693	582271.53	4131357.09	0.32985
582311.53	4131357.09	0.30547	582351.53	4131357.09	0.26400
582391.53	4131357.09	0.21569	582431.53	4131357.09	0.17357
582471.53	4131357.09	0.13805	582511.53	4131357.09	0.11018
582551.53	4131357.09	0.09154	582591.53	4131357.09	0.08018
582631.53	4131357.09	0.07333	582671.53	4131357.09	0.06868
582711.53	4131357.09	0.06491	582751.53	4131357.09	0.06080
582791.53	4131357.09	0.05661	582831.53	4131357.09	0.05563
582397.42	4130968.19	3.87683			

Model Output
Unit Emission Rates (1 g/s)


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*** MODELOPTs:     RegDFAULT  CONC  ELEV  FLGPOL  URBAN

                             *** THE PERIOD ( 43872 HRS) AVERAGE CONCENTRATION   VALUES FOR SOURCE GROUP: HAUL     ***
                                 INCLUDING SOURCE(S):     L0000001     , L0000002     , L0000003     , L0000004     , L0000005     ,
                L0000006     , L0000007     , L0000008     , L0000009     , L0000010     , L0000011     , L0000012     , L0000013     ,
                L0000014     , L0000015     , L0000016     , L0000017     , L0000018     , L0000019     , L0000020     , L0000021     ,
                L0000022     , L0000023     , L0000024     , L0000025     , L0000026     , L0000027     , L0000028     ,  . . .        ,

                                             *** DISCRETE CARTESIAN RECEPTOR POINTS ***

                                        ** CONC OF OTHER     IN MICROGRAMS/M**3                          **
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X-COORD (M)	Y-COORD (M)	CONC	X-COORD (M)	Y-COORD (M)	CONC
582111.53	4130697.09	0.05167	582151.53	4130697.09	0.06331
582191.53	4130697.09	0.07974	582231.53	4130697.09	0.10132
582271.53	4130697.09	0.13072	582311.53	4130697.09	0.17310
582351.53	4130697.09	0.23498	582391.53	4130697.09	0.32612
582431.53	4130697.09	0.46467	582471.53	4130697.09	0.66271
582511.53	4130697.09	0.91001	582551.53	4130697.09	1.16888
582591.53	4130697.09	1.38560	582631.53	4130697.09	1.51096
582671.53	4130697.09	1.54037	582711.53	4130697.09	1.49919
582751.53	4130697.09	1.41292	582791.53	4130697.09	1.28713
582831.53	4130697.09	1.13567	582111.53	4130727.09	0.05304
582151.53	4130727.09	0.06530	582191.53	4130727.09	0.08140
582231.53	4130727.09	0.10448	582271.53	4130727.09	0.13651
582311.53	4130727.09	0.18076	582351.53	4130727.09	0.24873
582391.53	4130727.09	0.35357	582431.53	4130727.09	0.51553
582471.53	4130727.09	0.75512	582511.53	4130727.09	1.06432
582551.53	4130727.09	1.38424	582591.53	4130727.09	1.63707
582631.53	4130727.09	1.76723	582671.53	4130727.09	1.77899
582711.53	4130727.09	1.71214	582751.53	4130727.09	1.60006
582791.53	4130727.09	1.44895	582831.53	4130727.09	1.26482
582111.53	4130757.09	0.05503	582151.53	4130757.09	0.06765
582191.53	4130757.09	0.08473	582231.53	4130757.09	0.10774
582271.53	4130757.09	0.14117	582311.53	4130757.09	0.19170
582351.53	4130757.09	0.26672	582391.53	4130757.09	0.38865
582431.53	4130757.09	0.57920	582471.53	4130757.09	0.87133
582511.53	4130757.09	1.26118	582551.53	4130757.09	1.66597
582591.53	4130757.09	1.96289	582631.53	4130757.09	2.08739
582671.53	4130757.09	2.06739	582711.53	4130757.09	1.96458
582751.53	4130757.09	1.82865	582791.53	4130757.09	1.64930
582831.53	4130757.09	1.42469	582111.53	4130787.09	0.05636
582151.53	4130787.09	0.06905	582191.53	4130787.09	0.08659
582231.53	4130787.09	0.11153	582271.53	4130787.09	0.14709
582311.53	4130787.09	0.20189	582351.53	4130787.09	0.28329
582391.53	4130787.09	0.42628	582431.53	4130787.09	0.65277
582471.53	4130787.09	1.01510	582511.53	4130787.09	1.51837

582551.53	4130787.09	2.03749	582591.53	4130787.09	2.38798
582631.53	4130787.09	2.49246	582671.53	4130787.09	2.42283
582711.53	4130787.09	2.27891	582751.53	4130787.09	2.11582
582791.53	4130787.09	1.90475	582831.53	4130787.09	1.62696
582111.53	4130817.09	0.05820	582151.53	4130817.09	0.07145
582191.53	4130817.09	0.08888	582231.53	4130817.09	0.11539

*** MODELOPTs: RegDFAULT CONC ELEV FLGPOL URBAN

*** THE PERIOD (43872 HRS) AVERAGE CONCENTRATION VALUES FOR SOURCE GROUP: HAUL ***
INCLUDING SOURCE(S): L0000001 , L0000002 , L0000003 , L0000004 , L0000005 ,
L0000006 , L0000007 , L0000008 , L0000009 , L0000010 , L0000011 , L0000012 , L0000013 ,
L0000014 , L0000015 , L0000016 , L0000017 , L0000018 , L0000019 , L0000020 , L0000021 ,
L0000022 , L0000023 , L0000024 , L0000025 , L0000026 , L0000027 , L0000028 , . . . ,

*** DISCRETE CARTESIAN RECEPTOR POINTS ***

** CONC OF OTHER IN MICROGRAMS/M**3 **

X-COORD (M)	Y-COORD (M)	CONC	X-COORD (M)	Y-COORD (M)	CONC
582271.53	4130817.09	0.15371	582311.53	4130817.09	0.21388
582351.53	4130817.09	0.30388	582391.53	4130817.09	0.46589
582431.53	4130817.09	0.73654	582471.53	4130817.09	1.19003
582511.53	4130817.09	1.86731	582551.53	4130817.09	2.55825
582591.53	4130817.09	2.96581	582631.53	4130817.09	3.01828
582671.53	4130817.09	2.87423	582711.53	4130817.09	2.69283
582751.53	4130817.09	2.49136	582791.53	4130817.09	2.24369
582831.53	4130817.09	1.89265	582111.53	4130847.09	0.06055
582151.53	4130847.09	0.07381	582191.53	4130847.09	0.09200
582231.53	4130847.09	0.11993	582271.53	4130847.09	0.16126
582311.53	4130847.09	0.22684	582351.53	4130847.09	0.31988
582391.53	4130847.09	0.50944	582431.53	4130847.09	0.82585
582471.53	4130847.09	1.41254	582511.53	4130847.09	2.36058
582551.53	4130847.09	3.31987	582591.53	4130847.09	3.77196
582631.53	4130847.09	3.71822	582671.53	4130847.09	3.46970
582711.53	4130847.09	3.23395	582751.53	4130847.09	3.00444
582791.53	4130847.09	2.71420	582831.53	4130847.09	2.25416
582111.53	4130877.09	0.06311	582151.53	4130877.09	0.07722
582191.53	4130877.09	0.09606	582231.53	4130877.09	0.12535
582271.53	4130877.09	0.17059	582311.53	4130877.09	0.24370
582351.53	4130877.09	0.34594	582391.53	4130877.09	0.55532
582431.53	4130877.09	0.92945	582471.53	4130877.09	1.69634
582511.53	4130877.09	3.09613	582551.53	4130877.09	4.49736
582591.53	4130877.09	4.93492	582631.53	4130877.09	4.68033
582671.53	4130877.09	4.29814	582711.53	4130877.09	4.00340
582751.53	4130877.09	3.75841	582791.53	4130877.09	3.40977
582831.53	4130877.09	2.77396	582111.53	4130907.09	0.06602
582151.53	4130907.09	0.08090	582191.53	4130907.09	0.10022

582231.53	4130907.09	0.13144	582271.53	4130907.09	0.17923
582311.53	4130907.09	0.25980	582351.53	4130907.09	0.37613
582391.53	4130907.09	0.59813	582431.53	4130907.09	1.03941
582471.53	4130907.09	2.04509	582511.53	4130907.09	4.28167
582551.53	4130907.09	6.48070	582591.53	4130907.09	6.69201
582631.53	4130907.09	6.09257	582671.53	4130907.09	5.55213
582711.53	4130907.09	5.21053	582751.53	4130907.09	4.95637
582791.53	4130907.09	4.52873	582831.53	4130907.09	3.58090
582111.53	4130937.09	0.06958	582151.53	4130937.09	0.08499
582191.53	4130937.09	0.10663	582231.53	4130937.09	0.13806
582351.53	4130937.09	0.40978	582391.53	4130937.09	0.64673
582431.53	4130937.09	1.16261	**582471.53**	**4130937.09**	**2.46913 Residential MER**

*** AERMOD - VERSION 19191 *** *** 22690 Stevens Creek Blvd, Cupertino *** 07/21/20
*** AERMET - VERSION 14134 *** *** Construction HRA, Residential Receptors *** 09:29:47
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*** MODELOPTs: RegDFAULT CONC ELEV FLGPOL URBAN

*** THE PERIOD (43872 HRS) AVERAGE CONCENTRATION VALUES FOR SOURCE GROUP: **HAUL** ***
INCLUDING SOURCE(S): L0000001 , L0000002 , L0000003 , L0000004 , L0000005 ,
L0000006 , L0000007 , L0000008 , L0000009 , L0000010 , L0000011 , L0000012 , L0000013 ,
L0000014 , L0000015 , L0000016 , L0000017 , L0000018 , L0000019 , L0000020 , L0000021 ,
L0000022 , L0000023 , L0000024 , L0000025 , L0000026 , L0000027 , L0000028 , . . . ,

*** DISCRETE CARTESIAN RECEPTOR POINTS ***

** CONC OF OTHER IN MICROGRAMS/M**3 **

X-COORD (M)	Y-COORD (M)	CONC	X-COORD (M)	Y-COORD (M)	CONC
582511.53	4130937.09	6.46338	582551.53	4130937.09	10.17475
582591.53	4130937.09	9.51216	582631.53	4130937.09	8.37963
582671.53	4130937.09	7.67943	582711.53	4130937.09	7.31784
582751.53	4130937.09	7.08066	582791.53	4130937.09	6.54256
582831.53	4130937.09	4.97111	582111.53	4130967.09	0.07375
582151.53	4130967.09	0.08980	582191.53	4130967.09	0.11471
582231.53	4130967.09	0.14728	582346.84	4130955.96	0.40835
582432.70	4130954.20	1.27035	582591.53	4130967.09	14.50955
582631.53	4130967.09	12.61346	582671.53	4130967.09	11.79222
582711.53	4130967.09	11.50556	582751.53	4130967.09	11.30374
582791.53	4130967.09	10.50606	582831.53	4130967.09	7.71376
582791.53	4130997.09	5.97759	582831.53	4130997.09	13.90706
582111.53	4131027.09	0.08778	582151.53	4131027.09	0.10781
582191.53	4131027.09	0.13747	582231.53	4131027.09	0.17737
582271.53	4131027.09	0.24245	582311.53	4131027.09	0.33929
582351.53	4131027.09	0.52439	582391.53	4131027.09	0.88209
582431.53	4131027.09	1.71829	582551.53	4131027.09	13.06873
582591.53	4131027.09	8.64230	582631.53	4131027.09	7.33676
582671.53	4131027.09	6.65000	582711.53	4131027.09	6.21801
582751.53	4131027.09	5.69418	582791.53	4131027.09	5.61049
582831.53	4131027.09	4.53402	582111.53	4131057.09	0.09609
582151.53	4131057.09	0.11940	582191.53	4131057.09	0.15098

Model Output
Unit Emission Rates (1 g/s)

582231.53	4131057.09	0.19588	582271.53	4131057.09	0.26270
582311.53	4131057.09	0.37166	582351.53	4131057.09	0.57967
582391.53	4131057.09	0.97790	582431.53	4131057.09	1.95677
582551.53	4131057.09	11.08283	582591.53	4131057.09	5.87362
582631.53	4131057.09	4.29355	582671.53	4131057.09	3.63376
582711.53	4131057.09	3.22691	582751.53	4131057.09	2.83303
582791.53	4131057.09	2.39781	582831.53	4131057.09	1.69674
582111.53	4131087.09	0.10460	582151.53	4131087.09	0.12928
582191.53	4131087.09	0.16358	582231.53	4131087.09	0.21530
582271.53	4131087.09	0.29750	582311.53	4131087.09	0.41570
582351.53	4131087.09	0.63543	582391.53	4131087.09	1.07086
582431.53	4131087.09	2.09843	582551.53	4131087.09	10.03954
582591.53	4131087.09	4.74800	582631.53	4131087.09	3.12262
582671.53	4131087.09	2.43297	582711.53	4131087.09	2.05446
582751.53	4131087.09	1.72927	582791.53	4131087.09	1.34769
582831.53	4131087.09	0.98257	582111.53	4131117.09	0.11462
582151.53	4131117.09	0.14405	582191.53	4131117.09	0.18379
582231.53	4131117.09	0.24142	582271.53	4131117.09	0.33054

*** MODELOPTs: RegDFAULT CONC ELEV FLGPOL URBAN

*** THE PERIOD (43872 HRS) AVERAGE CONCENTRATION VALUES FOR SOURCE GROUP: **HAUL** ***
INCLUDING SOURCE(S): L0000001 , L0000002 , L0000003 , L0000004 , L0000005 ,
L0000006 , L0000007 , L0000008 , L0000009 , L0000010 , L0000011 , L0000012 , L0000013 ,
L0000014 , L0000015 , L0000016 , L0000017 , L0000018 , L0000019 , L0000020 , L0000021 ,
L0000022 , L0000023 , L0000024 , L0000025 , L0000026 , L0000027 , L0000028 , . . . ,

*** DISCRETE CARTESIAN RECEPTOR POINTS ***

** CONC OF OTHER IN MICROGRAMS/M**3 **

X-COORD (M)	Y-COORD (M)	CONC	X-COORD (M)	Y-COORD (M)	CONC
582311.53	4131117.09	0.46162	582351.53	4131117.09	0.69205
582391.53	4131117.09	1.14711	582431.53	4131117.09	2.17961
582471.53	4131117.09	5.25086	582551.53	4131117.09	9.05604
582591.53	4131117.09	4.03365	582631.53	4131117.09	2.48101
582671.53	4131117.09	1.81692	582711.53	4131117.09	1.46229
582751.53	4131117.09	1.19176	582791.53	4131117.09	0.90705
582831.53	4131117.09	0.70126	582111.53	4131147.09	0.12817
582151.53	4131147.09	0.15812	582191.53	4131147.09	0.19975
582231.53	4131147.09	0.26104	582271.53	4131147.09	0.35304
582311.53	4131147.09	0.49772	582351.53	4131147.09	0.73985
582391.53	4131147.09	1.19780	582431.53	4131147.09	2.18580
582471.53	4131147.09	5.54534	**582551.53**	**4131147.09**	**8.07810 Senior Living MER**
582591.53	4131147.09	3.47273	582631.53	4131147.09	2.03535
582671.53	4131147.09	1.43406	582711.53	4131147.09	1.11463
582751.53	4131147.09	0.88494	582791.53	4131147.09	0.67626
582831.53	4131147.09	0.53997	582191.53	4131177.09	0.21200

582231.53	4131177.09	0.27632	582271.53	4131177.09	0.37353
582311.53	4131177.09	0.52444	582351.53	4131177.09	0.76845
582391.53	4131177.09	1.20335	582431.53	4131177.09	2.12790
582471.53	4131177.09	5.82646	582551.53	4131177.09	7.10314
582591.53	4131177.09	2.93618	582631.53	4131177.09	1.68132
582671.53	4131177.09	1.16194	582711.53	4131177.09	0.88512
582751.53	4131177.09	0.69286	582791.53	4131177.09	0.53429
582831.53	4131177.09	0.43484	582191.53	4131207.09	0.22392
582231.53	4131207.09	0.29001	582271.53	4131207.09	0.38993
582311.53	4131207.09	0.53967	582351.53	4131207.09	0.77476
582391.53	4131207.09	1.17754	582431.53	4131207.09	2.10803
582471.53	4131207.09	5.82456	582551.53	4131207.09	5.98920
582591.53	4131207.09	2.43515	582631.53	4131207.09	1.38644
582671.53	4131207.09	0.95496	582711.53	4131207.09	0.72292
582751.53	4131207.09	0.56383	582791.53	4131207.09	0.43992
582831.53	4131207.09	0.36410	582191.53	4131237.09	0.23462
582231.53	4131237.09	0.30005	582271.53	4131237.09	0.39991
582311.53	4131237.09	0.54588	582351.53	4131237.09	0.76509
582391.53	4131237.09	1.14414	582431.53	4131237.09	2.05135
582471.53	4131237.09	5.81887	582551.53	4131237.09	4.82430
582591.53	4131237.09	1.96034	582631.53	4131237.09	1.13834
582671.53	4131237.09	0.79269	582711.53	4131237.09	0.60175
582751.53	4131237.09	0.46952	582791.53	4131237.09	0.36976
582831.53	4131237.09	0.31102	582191.53	4131267.09	0.24272

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*** MODELOPTs: RegDFAULT CONC ELEV FLGPOL URBAN

*** THE PERIOD (43872 HRS) AVERAGE CONCENTRATION VALUES FOR SOURCE GROUP: HAUL ***
INCLUDING SOURCE(S): L0000001 , L0000002 , L0000003 , L0000004 , L0000005 ,
L0000006 , L0000007 , L0000008 , L0000009 , L0000010 , L0000011 , L0000012 , L0000013 ,
L0000014 , L0000015 , L0000016 , L0000017 , L0000018 , L0000019 , L0000020 , L0000021 ,
L0000022 , L0000023 , L0000024 , L0000025 , L0000026 , L0000027 , L0000028 , . . . ,

*** DISCRETE CARTESIAN RECEPTOR POINTS ***

** CONC OF OTHER IN MICROGRAMS/M**3 **

X-COORD (M)	Y-COORD (M)	CONC	X-COORD (M)	Y-COORD (M)	CONC
582231.53	4131267.09	0.30747	582271.53	4131267.09	0.40504
582311.53	4131267.09	0.54478	582351.53	4131267.09	0.74653
582391.53	4131267.09	1.10679	582431.53	4131267.09	1.93989
582471.53	4131267.09	5.84643	582551.53	4131267.09	3.62973
582591.53	4131267.09	1.53456	582631.53	4131267.09	0.93176
582671.53	4131267.09	0.66246	582711.53	4131267.09	0.50707
582751.53	4131267.09	0.39549	582791.53	4131267.09	0.31736
582831.53	4131267.09	0.26953	582111.53	4131297.09	0.16431
582151.53	4131297.09	0.20121	582191.53	4131297.09	0.24862
582231.53	4131297.09	0.31327	582271.53	4131297.09	0.40640

Model Output
Unit Emission Rates (1 g/s)

582311.53	4131297.09	0.53806	582351.53	4131297.09	0.72082
582391.53	4131297.09	1.05697	582431.53	4131297.09	1.82672
582471.53	4131297.09	5.69981	582551.53	4131297.09	2.50871
582591.53	4131297.09	1.17928	582631.53	4131297.09	0.75941
582671.53	4131297.09	0.55493	582711.53	4131297.09	0.43030
582751.53	4131297.09	0.33540	582791.53	4131297.09	0.27293
582831.53	4131297.09	0.23343	582111.53	4131327.09	0.16747
582151.53	4131327.09	0.20535	582191.53	4131327.09	0.25367
582231.53	4131327.09	0.31494	582271.53	4131327.09	0.40264
582311.53	4131327.09	0.52522	582351.53	4131327.09	0.69299
582391.53	4131327.09	1.00594	582431.53	4131327.09	1.69329
582471.53	4131327.09	4.85240	582551.53	4131327.09	1.66482
582591.53	4131327.09	0.90533	582631.53	4131327.09	0.61717
582671.53	4131327.09	0.46389	582711.53	4131327.09	0.36528
582751.53	4131327.09	0.28576	582791.53	4131327.09	0.23081
582831.53	4131327.09	0.20298	582111.53	4131357.09	0.16775
582151.53	4131357.09	0.20613	582191.53	4131357.09	0.25454
582231.53	4131357.09	0.31391	582271.53	4131357.09	0.39478
582311.53	4131357.09	0.50711	582351.53	4131357.09	0.65401
582391.53	4131357.09	0.92886	582431.53	4131357.09	1.41802
582471.53	4131357.09	2.82995	582511.53	4131357.09	2.11478
582551.53	4131357.09	1.08243	582591.53	4131357.09	0.68512
582631.53	4131357.09	0.49688	582671.53	4131357.09	0.38623
582711.53	4131357.09	0.31095	582751.53	4131357.09	0.24654
582791.53	4131357.09	0.19212	582831.53	4131357.09	0.17279
582397.42	4130968.19	0.77674			

Model Output
Unit Emission Rates (1 g/s)


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 *** MODELOPTs:    RegDFAULT  CONC  ELEV  FLGPOL  URBAN

                                         *** THE SUMMARY OF MAXIMUM PERIOD ( 43872 HRS) RESULTS ***

                                     ** CONC OF OTHER    IN MICROGRAMS/M**3                          **

                                                                                                          NETWORK
GROUP ID                      AVERAGE CONC               RECEPTOR  (XR, YR, ZELEV, ZHILL, ZFLAG)  OF TYPE  GRID-ID
- - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - -
                                                   Residential MER
ONSITE    1ST HIGHEST VALUE IS     100.09548 AT (  582471.53,  4130937.09,   119.33,   254.10,    1.50)  DC
          2ND HIGHEST VALUE IS      82.87908 AT (  582511.53,  4130937.09,   118.32,   254.10,    1.50)  DC
          3RD HIGHEST VALUE IS      63.76270 AT (  582432.70,  4130954.20,   119.91,   254.10,    1.50)  DC
          4TH HIGHEST VALUE IS      49.39619 AT (  582511.53,  4130907.09,   118.67,   254.10,    1.50)  DC
          5TH HIGHEST VALUE IS      47.59861 AT (  582471.53,  4130907.09,   119.44,   254.10,    1.50)  DC
          6TH HIGHEST VALUE IS      34.50093 AT (  582431.53,  4130937.09,   120.06,   254.10,    1.50)  DC
          7TH HIGHEST VALUE IS      28.81194 AT (  582511.53,  4130877.09,   118.77,   254.10,    1.50)  DC
          8TH HIGHEST VALUE IS      26.20561 AT (  582471.53,  4130877.09,   119.56,   254.10,    1.50)  DC
          9TH HIGHEST VALUE IS      18.27891 AT (  582511.53,  4130847.09,   119.02,   254.10,    1.50)  DC
         10TH HIGHEST VALUE IS      18.27494 AT (  582431.53,  4130907.09,   120.13,   254.10,    1.50)  DC

HAUL      1ST HIGHEST VALUE IS      14.50955 AT (  582591.53,  4130967.09,   118.21,   254.10,    1.50)  DC
          2ND HIGHEST VALUE IS      13.90706 AT (  582831.53,  4130997.09,   119.67,   119.67,    1.50)  DC
          3RD HIGHEST VALUE IS      13.06873 AT (  582551.53,  4131027.09,   117.53,   254.10,    1.50)  DC
          4TH HIGHEST VALUE IS      12.61346 AT (  582631.53,  4130967.09,   119.30,   254.10,    1.50)  DC
          5TH HIGHEST VALUE IS      11.79222 AT (  582671.53,  4130967.09,   119.16,   252.84,    1.50)  DC
          6TH HIGHEST VALUE IS      11.50556 AT (  582711.53,  4130967.09,   119.28,   119.28,    1.50)  DC
          7TH HIGHEST VALUE IS      11.30374 AT (  582751.53,  4130967.09,   119.72,   119.72,    1.50)  DC
          8TH HIGHEST VALUE IS      11.08283 AT (  582551.53,  4131057.09,   116.80,   254.10,    1.50)  DC
          9TH HIGHEST VALUE IS      10.50606 AT (  582791.53,  4130967.09,   119.60,   119.60,    1.50)  DC
         10TH HIGHEST VALUE IS      10.17475 AT (  582551.53,  4130937.09,   118.24,   254.10,    1.50)  DC

 *** RECEPTOR TYPES:  GC = GRIDCART
                      GP = GRIDPOLR
                      DC = DISCCART
                      DP = DISCPOLR
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*** AERMOD - VERSION  19191 ***   *** 22690 Stevens Creek Blvd, Cupertino                              ***        07/21/20
*** AERMET - VERSION  14134 ***   *** Construction HRA, Residential Receptors                          ***        09:29:47
                                                                                                                   PAGE  82
*** MODELOPTs:    RegDFAULT  CONC  ELEV  FLGPOL  URBAN

*** Message Summary : AERMOD Model Execution ***

 --------- Summary of Total Messages --------

A Total of           0 Fatal Error Message(s)
A Total of           0 Warning Message(s)
A Total of       15496 Informational Message(s)

A Total of       43872 Hours Were Processed

A Total of       14061 Calm Hours Identified

A Total of        1435 Missing Hours Identified (  3.27 Percent)


   ******** FATAL ERROR MESSAGES ********
              ***  NONE  ***


   ********   WARNING MESSAGES   ********
              ***  NONE  ***


   ************************************
   *** AERMOD Finishes Successfully ***
   ************************************
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Appendix C. Construction Risk Calculations

Table C1
Residential MER Concentrations for Risk Calculations

Contaminant (a)	Source (b)		Model Output [1] (µg/m³) (c)	Emission Rates [2] (g/s) (d)	MER Conc. (µg/m³) (e)	Total MER Conc. Annual Average (µg/m³) (f)
Residential Receptors - Unmitigated						
DPM	2022	On-Site Emissions	100.1	6.63E-03	6.64E-01	6.64E-01
		Truck Route	2.47	4.55E-07	1.12E-06	
Total DPM concentrations used for Cancer Risk and Chronic Hazard calculations						
$PM_{2.5}$	2022	On-Site Emissions	100.1	6.29E-03	6.30E-01	6.30E-01
		Truck Route	2.47	4.55E-07	1.12E-06	
			Maximum Annual $PM_{2.5}$ Concentration			**0.63**
Residential Receptors - Mitigated Run: Tier 4 Interim Engines for eq. > 25 HP						
DPM	2022	On-Site Emissions	100.1	5.49E-04	5.50E-02	5.50E-02
		Truck Route	2.47	4.55E-07	1.12E-06	
Total DPM concentrations used for Cancer Risk and Chronic Hazard calculations						
$PM_{2.5}$	2022	On-Site Emissions	100.1	5.49E-04	5.50E-02	5.50E-02
		Truck Route	2.47	4.55E-07	1.12E-06	
			Maximum Annual $PM_{2.5}$ Concentration			**0.05**

Maximum Exposed Receptor (MER) UTM coordinates: 582471.53E, 4130937.09N

[1] Model Output at the MER based on unit emission rates for sources (1 g/s).

[2] Emission Rates from Emission Rate Calculations (Appendix A - Construction Emissions).

Table C2
Residential MER Health Risk Calculations

Source		MER Conc. (µg/m^3)	Weight Fraction	Contaminant	URF (µg/m^3)$^{-1}$	CPF (mg/kg/day)$^{-1}$	Dose (by age bin) 3rd Trimester (mg/kg-day)	Dose (by age bin) 0 < 2 years (mg/kg-day)	Carcinogenic Risks (by age bin) 3rd Trimester per million	Carcinogenic Risks (by age bin) 0 < 2 years per million	**Total Cancer Risk** per million	**Chronic Hazards [3]** REL (µg/m^3)	**Chronic Hazards [3]** RESP
(a)		(b)	(c)	(d)	(e)	(f)	(g)	(h)	(j)	(k)	(m)	(n)	(o)
Residential Receptors - Unmitigated													
2022	On & Off-Site Emissions	6.64E-01	1.00E+00	DPM	3.0E-04	1.1E+00	2.30E-04	6.94E-04	7.32E+00	5.20E+01	59.4	5.0E+00	1.33E-01
										Total	**59.4**		**0.133**
Residential Receptors - Mitigated Run: Tier 4 Interim Engines for eq. > 25 HP													
2022	On & Off-Site Emissions	5.50E-02	1.00E+00	DPM	3.0E-04	1.1E+00	1.90E-05	5.74E-05	6.06E-01	4.31E+00	4.9	5.0E+00	1.10E-02
										Total	**4.9**		**0.011**

Maximum Exposed Receptor (MER) UTM coordinates: 582471.53E, 4130937.09N

		3rd Trimester	0 < 2 years
	OEHHA age bin	3rd Trimester	0 < 2 years
	exposure year(s)	2022	2022
Dose Exposure Factors:	exposure frequency (days/year)	350	350
	inhalation rate (L/kg-day) [1]	361	1090
	inhalation absorption factor	1	1
	conversion factor (mg/µg; m^3/L)	1.0E-06	1.0E-06
Risk Calculation Factors:	age sensitivity factor	10	10
	averaging time (years)	70	70
	per million	1.0E+06	1.0E+06
	fraction of time at home	0.85	0.85

exposure durations per age bin		exposure durations (year)	
Construction Year	Risk Scalar [2]	3rd Trimester	0 < 2 years
2022	0.84	0.25	0.59
Total	0.84	0.25	0.59

[1] Inhalation rate taken as the 95th percentile breathing rates (OEHHA, 2015).

[2] Risk scalar determined for each year of construction to adjust receptor exposures to the exposure durations for each construction year (see App A - Construction Emissions).

[3] Chronic Hazards for DPM using the chronic reference exposure level (REL) for the Respiratory Toxicological Endpoint.

Table C3
Senior Living MER Concentrations for Risk Calculations

Contaminant (a)	Source (b)		Model Output [1] ($\mu g/m^3$) (c)	Emission Rates [2] (g/s) (d)	MER Conc. ($\mu g/m^3$) (e)	Total MER Conc. Annual Average ($\mu g/m^3$) (f)
Senior Living Receptors - Unmitigated						
DPM	2022	On-Site Emissions	0.35	6.63E-03	2.33E-03	2.33E-03
		Truck Route	8.08	4.55E-07	3.68E-06	
Total DPM concentrations used for Cancer Risk and Chronic Hazard calculations						
$PM_{2.5}$	2022	On-Site Emissions	0.35	6.29E-03	2.21E-03	2.21E-03
		Truck Route	8.08	4.55E-07	3.68E-06	
			Maximum Annual $PM_{2.5}$ Concentration			**2.2E-03**
Senior Living Receptors - Mitigated Run: Tier 4 Interim Engines for eq. > 50 HP						
DPM	2022	On-Site Emissions	0.35	5.49E-04	1.92E-04	1.96E-04
		Truck Route	8.08	4.55E-07	3.68E-06	
Total DPM concentrations used for Cancer Risk and Chronic Hazard calculations						
$PM_{2.5}$	2022	On-Site Emissions	0.35	5.49E-04	1.92E-04	1.96E-04
		Truck Route	8.08	4.55E-07	3.68E-06	
			Maximum Annual $PM_{2.5}$ Concentration			**2.0E-04**

Senior Living MER UTM coordinates: 582551.53E, 4131147.09N

[1] Model Output at the MER based on unit emission rates for sources (1 g/s).

[2] Emission Rates from Emission Rate Calculations (Appendix A - Construction Emissions).

Table C4
Senior Living MER Health Risk Calculations

Source		MER Conc. (µg/m³)	Weight Fraction	Contaminant			Dose (by age bin)		**Carcinogenic Risks (by age bin)**		**Chronic Hazards [3]**	
					URF $(\mu g/m^3)^{-1}$	CPF $(mg/kg/day)^{-1}$	Senior Resident 16 < 70 years (mg/kg-day)		Senior Resident 16 < 70 years per million		REL (µg/m³)	RESP
(a)		(b)	(c)	(d)	(e)	(f)	(g)		(j)		(n)	(o)
Senior Living Receptors - Unmitigated												
2022	On & Off-Site	2.33E-03	1.00E+00	DPM	3.0E-04	1.1E+00	6.77E-07		8.51E-03		5.0E+00	4.67E-04
							Total		**8.5E-03**			**4.7E-04**
Senior Living Receptors - Mitigated Run: Tier 4 Interim Engines for eq. > 50 HP												
2022	On & Off-Site	1.96E-04	1.00E+00	DPM	3.0E-04	1.1E+00	5.68E-08		7.14E-04		5.0E+00	3.92E-05
							Total		**7.1E-04**			**3.9E-05**

		Senior Resident
	OEHHA age bin	16 < 70 years
	exposure year(s)	2021-2022
Dose Exposure Factors:	exposure frequency (days/year)	365
	inhalation rate (L/kg-day) [1]	290
	inhalation absorption factor	1
	conversion factor (mg/µg; m³/L)	1.0E-06
Risk Calculation Factors:	age sensitivity factor	1
	averaging time (years)	70
	per million	1.0E+06

exposure durations per age bin		exposure durations (year)
Construction Year	Risk Scalar [2]	Senior Res
2022	0.84	0.84
Total	0.84	0.84

[1] Inhalation rate taken as the 95th percentile breathing rates (OEHHA, 2015).

[2] Risk scalar determined for each year of construction to adjust receptor exposures to the exposure durations for each construction year (see App A - Construction Emissions).

[3] Chronic Hazards for DPM using the chronic reference exposure level (REL) for the Respiratory Toxicological Endpoint.

Appendix C:
Geotechnical Report

Geotechnical Report

For the New Development at

22690 Stevens Creek
Cupertino, CA 95014
APN#342-14-104

Prepared for

Mr. Ali Mozaffari
Alan Enterprise LLC

By

Achievement Engineering Corp.
2455 Autumnvale Drive, Unit E
San Jose, California, 95131

Project Number: 4134
Date: March 03, 2020

ACHIEVEMENT
ENGINEERING
CORP.

Project Number: 4134
Date: March 03, 2020

Mr. Ali Mozaffari
22690 Stevens Creek
Cupertino, CA 95014

Subject: Geotechnical Report for the New Development at
22690 Stevens Creek
Cupertino, CA 95014
APN#342-14-104

Dear Sir,

Achievement Engineering Corp. (AEC) is pleased to submit this Geotechnical Report for the above-referenced project. The purpose of this study was to evaluate the subsurface soil conditions at the proposed site and develop recommendations for the design and construction of the structure foundations.

We appreciate the opportunity to be of service to you on this project and would be happy to discuss our findings with you. We look forward to serving as your geotechnical/ environmental engineer on the future projects.

Respectfully Submitted,
Achievement Engineering Corp.

REGISTERED PROFESSIONAL ENGINEER
S. MARY SAFAAI
No. C 64774
Exp. 06/30/21
CIVIL
STATE OF CALIFORNIA

Sadaf M. Safaai, PE
Project Engineer

Copies: Mr. Ali Mozaffari, Alan Enterprise LLC

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Exhibit II - Lab Results

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Exhibit IV – USGS Seismic Design

Exhibit V – Shallow Footing Design

1- Introduction

Achievement Engineering Corp. (AEC) has performed a geotechnical investigation at 22690 Stevens Creek, Cupertino, CA 95014. This report discusses the findings of the geotechnical investigation program, including the site soils and groundwater presence, and presents recommendations for the design and construction of the foundation of the structure.

The objective of this report is to evaluate the characteristics of the subsurface strata and to obtain geotechnical parameters for the design of the foundation.

The following report highlights the significant findings and conclusions representing our best professional judgment based on information and data available to us during the course of this investigation.

1-1- Project Description

The purpose of this study was to investigate the subsurface soil and groundwater presence at the site of 22690 Stevens Creek, Cupertino, CA 95014 and to develop foundation design recommendations for the project based on our evaluation of subsurface conditions. In addition, comments and recommendations related to foundation are provided in this report. Other geotechnical aspects of the project design, including lateral earth pressures, drainage and backfill requirements, are also discussed.

The Site is located at 22690 Stevens Creek, Cupertino, CA 95014, with coordinates of 37° 19' 18.32" N and 122° 04' 8.12" W.

The vicinity map of the project is illustrated in Exhibit III. The Site Location in Topographic Map and Landslide Map have also been presented in Exhibit III of the report showing the subject site is located on Class 0 – No Susceptibility Landslide Zone (Source USGS).

1-2- Geologic Setting and Faults

1-2-1 Regional Geology

The project site is located within the Coast Range Geomorphic Province. Local uplift of the Santa Cruz Mountains within the last 2 to 3 million years has occurred due to a restraining bend of the San Andreas Fault, producing transpressional forces across the plate boundary. Thrust faults bound the San Andreas Fault, are responsible for uplift of the range. The range is characterized by rugged hills with moderate relief, steep valleys, and locally steep hillsides abutting drainages. East-flowing drainages result in dissection of the mountain range and alluvial deposition within the San Francisco Bay structural trough.

The site is underlain by surficial sediments (Qoa/Qt), older surficial sediments (age; late Pleistocene) older alluvial terrace gravel; sand and clay, un-deformed.

The Site Location on 7.5' Series Geologic Map by USGS, has been represented in Exhibit III of the report.

1-2-2- Faults

Fault activity map of California (CGS, 2010) shows that there are some faults around the site location (Exhibit III). Among the eight faults of Monte Vista-Shannon, Berrocal, Cascade, Stanford, San Andreas San Jose, Pulgas and Butano, the nearest one to the site location is Monte Vista-Shannon fault with a distance of 0.5 mile (Exhibit III) and the most major one is San Andreas with a distance of 4.7 miles.

The project site is located on the north of Monte Vista-Shannon (0.5 mi.), northeast of Berrocal Fault (1.91 mi.), northwest of Cascade Fault (2.13), southwest of Stanford Fault (4.0 mi.), northeast of San Andreas fault (4.7 mi.), southwest of San Jose (6.32 mi.) , southeast of Pulgas (7.29 mi.) and northeast of Butano Fault (8.45 mi).

The Monte Vista Shannon Fault is a potentially active fault. It is a relatively short fault that runs between and generally parallel to the much longer San Andreas Fault and Hayward Fault Zones, trending northwest along the eastern foothills of the Santa Cruz Mountains in the Coast Range Geomorphic Province. The most recent activity has been estimated to have been approximately 700,000 years ago. It has a slip rate of 0.4 mm/year. The fault runs through the campus of the Foothill College.

The Berrocal is a late Quaternary southwest-dipping, reverse-dextral oblique slip fault zone that forms a part of what has been referred to as the Southwestern Santa Clara Valley thrust belt. The Berrocal fault zone, which is commonly associated with the Monte Vista-Shannon fault zone, offsets sediment of the Pliocene-Pleistocene Santa Clara Formation and probably deforms late Pleistocene fluvial and alluvial fan deposits. It has been concluded that the Berrocal fault zone lacks evidence of Holocene displacement. Late Quaternary slip rate is poorly constrained and the recurrence interval is not known. The amount of uplift of late Pleistocene terraces (about 250 ka) of ancestral Los Gatos Creek suggests a post-250 ka incision rate of 0.6 mm/yr.

The Cascade fault is a potentially active fault. It is a relatively short fault that stretches from City of Los Gatos to City of Los Altos in Southern Bay Area. This fault is an undifferentiated Quaternary possibly active in Late Quaternary or Holocene, reverse to reverse-dextral oblique slip fault that forms a part of what McLaughlin et al. (1996) refer to as the Southwestern Santa Clara Valley thrust belt, which is located generally along the foothills of the northeastern Santa Cruz Mountains. Slip rates for the Cascade fault is still unknown, although Hitchcock and Kelson (1999) determined a 0.2±0.05 mm/yr incision rate of Regnart Creek across the trace of the Cascade fault.

Stanford and Pulgas Faults are Quaternary fault with undifferentiated ages. The San Andreas is the best-known and largest fault system in North America. This fault trends in a northwesterly direction for nearly 780 miles through much of western California. It is a transform boundary separating two crustal plates that move very slowly. The Pacific plate located at the west, moves northwestward relative to the North America plate, causing earthquakes along the faults. The slip rate for this fault is up to 1.5 in./year.

The San Jose fault dips steeply to the north. Type of Faulting is left-lateral strike-slip; minor reverse component possible with a length of 18 km, close to Claremont, La Verne and Pomona. Its last Significant Quake was Feb. 28, 1990 (ML 5.4). Its most recent surface rupture was Late Quaternary. It has a slip rate between 0.2 and 2.0 mm/yr with probable magnitude of ML 5 to 6.

The San Andreas is the best-known and largest fault system in North America. This fault trends in a northwesterly direction for nearly 780 miles through much of western California. It is a transform boundary separating two crustal plates that move very slowly. The Pacific plate located at the west, moves northwestward relative to the North America plate, causing earthquakes along the faults. The slip rate for this fault is up to 1.5 in./year.

The Butano Fault extends for 46 km from San Gregorio to the San Andreas Fault; it exhibits right lateral motion, at slip rate of less than 0.2 mm/yr. (Quaternary Fault and Fold Database of the United States).

2- Project Investigation

A subsurface exploration program consisting of two test borings was conducted on 2 February 2020 under the supervision of AEC.

2-1- Field Investigation and Exploratory Boreholes

The test borings were drilled up to depths of 7 and 8 ft. below the ground surface. Borings were advanced using 3 $_{1/2}$" diameter hollow stem augers. Borings were terminated at these depths due to refusal. Table 1 shows the specifications of the boreholes; the boreholes location is shown in Exhibit III. Boreholes log is also presented in Exhibit I of the report.

Table 1- Specifications of the borehole

Borehole Name	Depth (ft.)	Diameter (inch)
B1	7	3 1/2”
B2	8	3 1/2”

2-1-1- Ground Water Table

According to the boreholes log, no water table has been encountered in borehole up to depth of 8 ft.

2-1-2- Standard Penetration Test (SPT) (ASTM: D1586)

Soil samples were typically recovered continuously at 1-2 ft. intervals by driving a standard split-spoon sampler ((1-3/8 in). I.D., (2 in.) O.D., a distance of 18 inches or 24 inches into the undisturbed soil under the impact of a 140 lb. hammer free-falling 30 inches. The number of blows required to advance the sampler through each 6 in. interval was recorded. The “N” value is taken as the number of blows required to advance the sampler the last 12 in. of the 18-in. sampling range. When the split-spoon sampler was advanced over 24-in. range, the “N” value is the number of blows required to drive the sampler the middle 12 in. Variations of SPT versus depth, in different boreholes, are presented in Figure 1 and Table 2.

Table 2-The value of SPT versus depth in borehole

	Depth (ft)	N_{spt}
B1	2	>50
	5	>50
B2	2	15
	5	>50

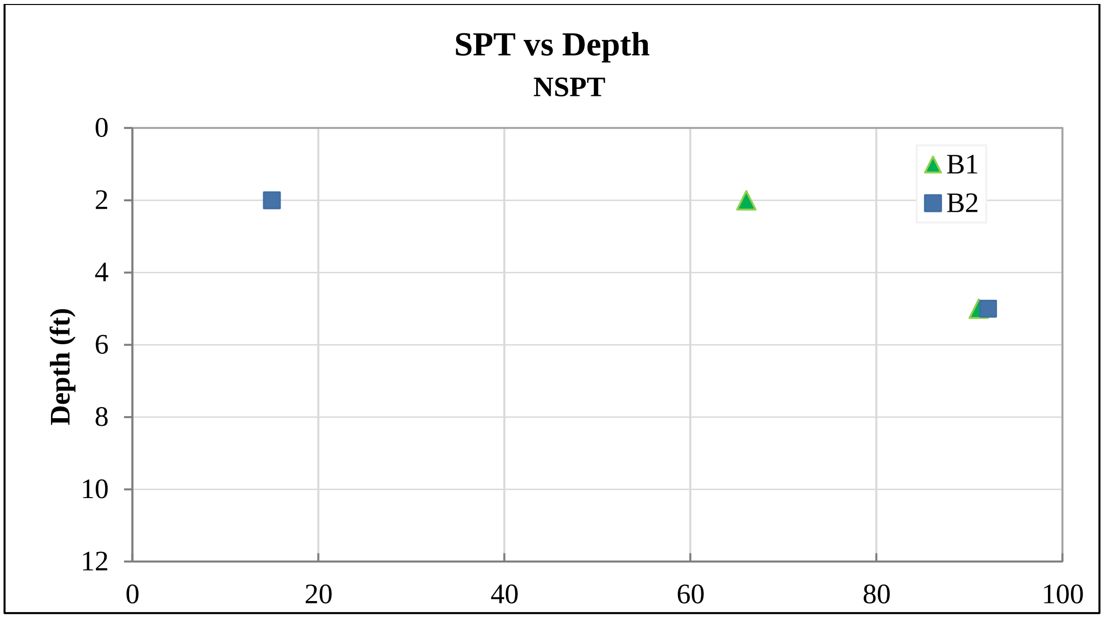

Figure 1-Variation of SPT versus depth in different boreholes

According to SPT test results, the SPT value is more than 50 in B1 which is due to a very dense layer of clayey sand, also the SPT values are 15 near the ground surface in B2 and are more than 50 in other depths, this shows existence of a firm layer of clay near ground at B2, but eventually that the consistency will change to hard.

According to the US Army Corps of Engineers, ENGINEER MANUAL ENGINEERING AND DESIGN, Geotechnical Investigations, the descriptive consistency of fine-grained soils may be classified as "very firm" to "hard" per SPT correlation and "very dense" for coarse-grained soils.

Table 3- Granular soils classification based on SPT number (US Army Corps of Engineers Manual)

Density of Coarse-Grained Soils

Descriptive Term	Blows per Foot[1,2]	Field Test
Very loose	Less than 4	----------
Loose	4-10	Easily penetrated with a 13-mm- (1/2-in.-) diam reinforcing rod pushed by hand
Medium dense	10-30	Easily penetrated with a 13-mm- (1/2-in.-) diam reinforcing rod driven with a 2.3-kg (5-lb) hammer
Dense rod	30-50	Penetrated 0.3 m (1 ft) with a 13-mm- (1/2-in.-) diam reinforcing driven with a 2.3-kg (5-lb) hammer
Very dense	Greater than 50	Penetrated only a few centimeters with a 13-mm- (1/2-in.-) diam reinforcing rod driven with a 2.3-kg (5-lb) hammer

Table 4- Strength of fine-grained soils (US Army Corps of Engineers Manual)

Descriptive Term	Blows[1] per Foot[2]	Unconfined Compressive Strength kPa	(tsf)	Field Test
Very soft	< 2	<25	(< 0.25)	Core (height twice diameter) sags under its own weight while standing on end; squeezes between fingers when fist is closed
Soft	2-4	25-50	(0.25-0.5)	Easily molded by fingers
Medium	4-8	50-100	(0.5-1.0)	Molded by strong pressure of fingers
Firm	8-15	100-190	(1.0-2.0)	Imprinted very slightly by finger pressure
Very firm	15-30	190-380	(2.0-4.0)	Cannot be imprinted with finger pressure; can be penetrated with a pencil
Hard	> 30	> 380	(> 4.0)	Imprinted only slightly by pencil point

2-2- Laboratory Test Results

A laboratory soil testing program was performed to determine soil classification and for correlation of engineering properties. Laboratory tests were performed on selected samples of the soils. Testing consisted of geotechnical index tests including water content and density determinations and grain size distributions and Atterberg Limits. The results of these tests have been used to estimate the main parameters required for designing of the foundation, such as internal friction angle and cohesion. The details of Lab tests are presented in Exhibit II.

2-2-1- Grain Size Analysis

Particle size analysis ASTM (D421-85(02)), (D422-63(02))

Atterberg limits (AASHTO T89 and T90 – ASTM D4318)

The particle size analysis is conducted on the selected soil samples in accordance with the abovementioned standards.

According to particle distribution results, soil classification is determined in compliance with the Unified Soil Classification System (USCS) (ASTM D2487 and ASTM D2488) and is recorded on the borehole log. Grain size distribution tests results are presented in Table 5. According to grain size distribution tests results, alluvial part of the site is categorized mainly as clay of low plasticity and clayey sand.

Table 5- Grain size distribution tests results

Borehole No.	Sample Depth (ft.)	Graining (%)			Atterberg Limits		Classification (USCS)
		Gravel	Sand	Clay and Silt	LL %	PI %	
B1	2	22.8	44.3	32.9	23.9	9	SC
B1	2	9.5	36.3	54.2	22.8	9.5	CL

2-3- Natural Moisture Content and Density Test

- Natural moisture content ASTM (D2216-98)

The natural moisture contents of soil samples are measured for the selected samples, the value of each is indicated in borehole logs.

- Density Tests

Density of the selected soil samples has been determined by measuring the weight and volume of the samples obtained from sample liners. Water content and dry density tests results of the soil samples are summarized in Table 6.

Table 6- Water content and dry unit weight

Borehole No.	Sample Depth (ft.)	Height of Sample	w (%)	Dry Density (pcf)
B1	1-2	-	12	-
B1	2-3.5	6”	10	122.2
B1	4-5	-	11	-
B1	5-6.5	6”	11	120.7
B2	1-2	-	9	-
B2	2-3.5	6”	10	107.4
B2	4-5	-	11	-
B2	5-6.5	6”	12	116.5

3- Description of Soil Layers

3-1- General Description of the Subsurface Soil Layers

Based on the visual observations during the drilling, in-situ test results and laboratory testing, the encountered soil is generally classified as:

- Clayey sand (SC)
- Clay of low plasticity (CL)

The soil is classified as very dense clayey sand in B1 and a very firm low plasticity clay in B2 (at surface).

3-2- Geotechnical Parameters

The SPT has been used to correlate engineering parameters such as strength, angle of internal friction (Table 7) and the stress-strain modulus (Es) as shown in Table 8.

Table 7- Typical values of soil friction angle for different soils according to USCS

Description	USCS	Soil friction angle [°]		Reference
		min	max	
Inorganic clays, silty clays, sandy clays of low plasticity	CL	27	35	[1]
Silty clay	OL, CL, OH, CH	18	32	[2]
Clay	CL, CH, OH, OL	18	28	[2]

1. Swiss Standard SN 670 010b, Characteristic Coefficients of soils, Association of Swiss Road and Traffic Engineers
2. Minnesota Department of Transportation, Pavement Design, 2007

Table 8-Equations for stress-strain modulus E_s by several test methods (Bowles, 2002)

E_s in kPa for SPT and units of q_c for CPT; divide kPa by 50 to obtain ksf.

Soil	SPT	CPT
Sand (normally consolidated)	$E_s = 500(N+15)$ $= 7000\sqrt{N}$ $= 6000N$ — — — ‡$E_s = (15\,000 \text{ to } 22\,000) \cdot \ln N$	$E_s = (2 \text{ to } 4)q_u$ $= 8000\sqrt{q_c}$ — — — $E_s = 1.2(3D_r^2+2)q_c$ *$E_s = (1+D_r^2)q_c$
Sand (saturated)	$E_s = 250(N+15)$	$E_s = Fq_c$ $e = 1.0 \quad F = 3.5$ $e = 0.6 \quad F = 7.0$
Sands, all (norm. consol.)	¶$E_s = (2600 \text{ to } 2900)N$	
Sand (overconsolidated)	†$E_s = 40\,000 + 1050N$ $E_{s(OCR)} \approx E_{s,nc}\sqrt{OCR}$	$E_s = (6 \text{ to } 30)q_c$
Gravelly sand	$E_s = 1200(N+6)$ $= 600(N+6) \quad N \le 15$ $= 600(N+6) + 2000 \quad N > 15$	
Clayey sand	$E_s = 320(N+15)$	$E_s = (3 \text{ to } 6)q_c$
Silts, sandy silt, or clayey silt	$E_s = 300(N+6)$ If $q_c < 2500$ kPa use $\quad$ $^{\$}E_s' = 2.5q_c$ $2500 < q_c < 5000$ use $\quad E_s' = 4q_c + 5000$ where $E_s' = \text{constrained modulus} = \dfrac{E_s(1-\mu)}{(1+\mu)(1-2\mu)} = \dfrac{1}{m_v}$	$E_s = (1 \text{ to } 2)q_c$
Soft clay or clayey silt		$E_s = (3 \text{ to } 8)q_c$

Final values of geotechnical parameters for the subject site using the field observations, in-situ and laboratory tests are summarized in Table 9.

Table 9- Geotechnical Parameters Estimates

Material	γ_{wet} (pcf)	γ_{sat} (pcf)	c (ksf)	φ (degrees)	E_s (ksf)	ν	K_0	K_a	K_p
SC	134	138	0.3	30	600	0.3	0.5	0.33	3.0
CL	124	132	0.35	27	350	0.4	0.55	0.38	2.66

γ_{wet} : wet unit weight in the field. E_s : elasticity modulus

γ_{sat} : saturated unit weight. ν : poisson ratio

c : cohesion. K_0 : at rest earth pressure

φ : angle of internal friction K_a , K_p: active and passive earth pressure

4- Foundation Design Recommendations

Recommendations presented herein are based on the proposed building layout and site development plan as understood at this time. The development is muli-family residential and commercial structures of three story. However, at the time of preparation of this report, structural column loads were not available and no construction document is available. As further information is developed by the architect and/or structural engineer concerning these items, the design criteria should be reviewed by AEC for continued applicability. As a general recommendation, foundation and below-grade elements of the building should be designed in accordance with the building code selected for design. The following sections provide specific geotechnical design recommendations for the foundation and below-grade structure, if any.

The foundation bearing soils are typically very firm low plasticity clay and very dense clayey sand. It is necessary to build up the subgrade to achieve the proposed footing subgrade level, for this it is recommended that compacted structural fill be used. The compacted structural fill should be graded in accordance with the recommendations in Section 7.2.1.

4-1- Recommended Foundation

Based on the loading conditions assumed by us and subsurface conditions as observed in the field investigations it is our opinion that direct soil bearing foundations such as reinforced concrete **strip foundation** will likely provide the most technically-feasible and cost-effective foundation system for the proposed structure.

4-2- Allowable Bearing Capacity

As noted above, the foundation bearing soils at the site consist of very firm low plasticity clay and very dense clayey sand. The recommended maximum allowable gross bearing pressure for design of **strip footing** in these soils in undisturbed condition is **3.3 ksf** for **18 in. width** and **3.2 ksf** for **15 in.** widths. This bearing pressure value applies to the total dead load plus permanently and/or frequently applied live loads including the weight of the foundation elements. This bearing pressure may however, be increased by one-third when considering transient loads such as earthquake forces.

The least lateral dimension of continuous footings should be 18 in., for the structures. Exterior footings and footings in unheated areas should bear a minimum of 12 in. below the adjacent ground surface. The bottom of footings should be established below a 2 horizontal to 1 vertical (2H:1V) slope line drawn upward and outward from the bottom of any adjacent utility or structure.

The outputs of foundation bearing capacity are presented in Exhibit V and can be consulted for other footing widths, in case of existence of detached parkings in the development for example.

4-3- Total Settlement

Settlement considerations, rather than bearing capacity, generally control spread footing or reinforced concrete mat foundation selection and design at these depths in these soils. It is our opinion that for the maximum allowable bearing pressure recommended above, soil bearing foundations should experience a maximum post-construction settlement of approximately 1 in. We anticipate that the majority of the settlements will occur during or soon after construction with the largest settlements occurring at the center of the structure. As noted above, the anticipated bearing pressure is more than the existing pressure of the overburden soils at the proposed bearing elevation so settlement will control foundation selection.

4-4- Differential Settlement

Differential settlements are generally caused by variations in soil profile (including layer thickness), compressibility characteristics, applied load, bearing pressures, foundation dimension, and foundation stiffness. At this time, it is expected that the differential settlement should be on the order of ½ inch. However, when the design documents are ready, this value should be re-evaluated.

4-5- Modulus of Subgrade Reaction

If a reinforced concrete strip is selected as the preferred option, the structural design of reinforced concrete strip foundations typically requires a modulus of subgrade reaction (Winkler spring) or a similar elastic analysis method to determine thickness and reinforcing requirements for the **strip** foundation. We recommend that a modulus of subgrade reaction (k_s) of **116 kips per cubic foot (kcf)** be used.

4-6- Ground Floor Slabs

It is recommended that the ground floor slabs of buildings and structures, if any, be designed as soil-supported slabs-on-grade, bearing on a minimum 6-inch thick layer of crushed stone that is graded in accordance with the recommendations in Section 7.2. We also recommend that a 10 mil-thick polyethylene vapor barrier be placed on top of the aggregate layer to reduce moisture condensation on the underside of the slab-on-grade.

4-7- Lateral Resistance

Shallow foundations bearing on a reinforced subgrade or on compacted structural fill may be designed to resist lateral forces using a friction coefficient of 0.4 along the bottom of the foundations and a passive resistance of 365 pounds per square foot per foot (pcf) of depth on the vertical sides of the foundations. This value does not include a safety factor; a safety factor of 1.5 should be used against sliding in the design. The frictional and passive pressure components of lateral resistance may be combined, provided that passive resistance does not exceed two-thirds of the total. The top 24-in of soil should be neglected when calculating passive lateral earth pressures unless the area around the foundation is covered with pavement.

Retaining wall, if any, will be subjected to lateral earth pressures. A soil wet unit weight and coefficient of active lateral earth pressure (k_a) of 129 pcf and 0.42, respectively, should be utilized for design of walls.

Additional active pressure should be added for a surcharge condition due to sloping ground, vehicular traffic or adjacent structures and should be designed for each condition as the project progresses.

4-8- Site and Foundation Drainage

As previously discussed, and as shown on the test boring logs, groundwater was not encountered in any of the other explorations. However, during periods of significant precipitation, or during the spring thaw, there is a possibility that water could become trapped on the outside face of the walls, with no way to relieve the pressure head from the accumulated water, the water could exert excess pressure on the walls and leak into the finished below grade spaces.

To drain such water, it is recommended that a perimeter wall drain be provided along the outside of the wall. The perimeter drain should consist of a 0.1 m (4-inch) diameter perforated pipe surrounded by 0.15 m (6 inches) of crushed stone, graded in accordance with the recommendations in Section 7.2.2, placed inside a non-woven geotextile filter fabric to limit silting. The perimeter drain trench should be backfilled with compacted structural fill. Pipe invert elevations should be kept below the bottom of the adjacent slab but above the footing bearing elevation. The perimeter drain should be pitched to drain by gravity to the site storm drain system.

All grades must provide effective drainage away from the structures, during and after construction. Water ponding next to the structures can result in greater than calculated soil movement and differential floor slab settlement, cracked slab and wall movement or leaked roof. Effective drainage should be maintained during life time of the building.

Exposed ground should be sloped at a minimum 5 percent away from the structure for the at least 10 ft. beyond the perimeter of the structure. After the construction (building and landscape), we recommend final grades to be inspected for effective drainage. Grades of the around of the building should also be inspected periodically during life time of the building.

Planters located within 10 ft. of the structure should be self-contained to prevent water accessing the building and pavement subgrade soil (if any). Sprinkler main and spray heads should be located a minimum 5 ft. away from the building lines. Low volume, drip styled landscaped irrigation should not be used near the building. Roof run off should be located in the drains or gutters. Roof drain and downspouts should discharge onto pavements that slope away from building/structures or the downspouts should extend a minimum of 10 ft. away from the structures.

4-9- Utility Trenches

Utility trenches should be properly backfilled. The pipes should be bedded on clean sands (Sand Equivalent greater than 30) to a depth of at least 1 foot over the pipe, and the bedding material must be inspected and approved in writing by a representative from our firm. The use of gravel is not acceptable unless used in conjunction with filter fabric to prevent the gravel from having direct contact with soil. The remainder of the trench backfill may be derived from onsite soil or approved import soil, compacted as necessary, until the required compaction is obtained as below:

Utility trenches should be backfilled with fill placed in lifts not exceeding 8 inches in uncompacted thickness. Native backfill materials should be compacted to at least 90 percent relative compaction and granular import material should be compacted to at least 95 percent relative compaction. These compaction recommendations assume a reasonable “cushion” layer around the pipes.

If imported granular soil is used, sufficient water should be added during the trench backfilling operations to prevent the soil from “bulking” during compaction.

5- Liquefaction Consideration

Liquefaction is a phenomenon in which loose, saturated, relatively cohesionless soil deposits lose shear strength during strong ground motions. Primary factors controlling liquefaction include intensity and duration of ground motion, gradation characteristics of the subsurface soils, in-situ stress conditions, and the depth to groundwater. Liquefaction is typified by a loss of shear strength in the liquefied layers due to rapid increases in pore water pressure generated by earthquake accelerations.

Liquefaction typically occurs in areas where the soils below the water table are composed of poorly consolidated, fine to medium-grained, primarily sandy soil. In addition to the requisite soil conditions, the ground acceleration and duration of the earthquake must also be of a sufficient level to induce liquefaction.

The project location on liquefaction map (Source CGS) site is not within liquefaction hazard zone, thus further study was not within the scope of services for this report.

6- Seismic Design Considerations

The details of USGS seismic design are presented in Exhibit IV.

7- Construction Considerations

7-1- General

The primary purpose of this section of the report is to comment on items related to excavation, earthwork and related geotechnical aspects of the proposed foundation design. It is written primarily for the engineer having responsibility of preparation for the plans and specifications of the foundation, but it may also aid personnel who monitor the construction. Prospective contractors for this project must evaluate construction problems on the basis of their experience on similar projects, taking into account their own construction methods and procedures.

7-2- Fill Materials

7-2-1- Compacted Structural Fill

The structural fill should be a well-graded granular material. Caltrans AB Class II is recommended to be used for this purpose with the following specifications.

Table 10-CALTRANS AB Class II recommended parameters

Material	γ_d (pcf)	γ_{sat} (pcf)	c (ksf)	φ (degrees)
CALTRANS AB CLASS II (92% compacted)	125	130	0.1	38

Minimum 5 feet of the compacted backfill behind any wall is required for wall of 10' tall, shorter wall can have narrower backfill zone.

Imported structural fill should be used if the on-site excavated soils cannot meet the gradation requirements indicated above.

In addition to the above requirements, structural fill to be placed in the upper 3 ft. of filled areas during periods of wet and/or freezing weather should contain less than 5 percent passing the No. 200

sieve. Material proposed as structural fill should be tested and approved by a qualified geotechnical engineer prior to its use.

To evaluate the suitability and the quality of the fill source, we recommend that the laboratory testing of fill material be performed in accordance with the ASTM Test Methods indicated below.

Table 11- Summary of ASTM Test Methods

Summary of ASTM Test Methods	
Test	ASTM Designation
Moisture Content	D 2216
Modified Proctor	D 1557
Sieve Analysis	D 422
Atterberg Limits	D 4318

Structural fill in unconfined areas should be placed in horizontal lifts not exceeding 9-in. in loose thickness and compacted to at least 95 percent of the laboratory maximum dry density, as determined by ASTM Test D 1557 (Modified Proctor). Structural fill should be moisture conditioned to within ±2 percentage points of the optimum moisture content.

Structural fill should be compacted by self-propelled vibratory rollers or other approved compaction equipment. Where compaction occurs in confined areas, the loose lift thickness should be reduced to a maximum of 6 in. and compaction performed by hand-guided vibratory compactors or tampers.

Before placing fill materials, the exposed natural soil should be observed and proof rolled to identify any soft compressible layers. At the end of each day's operations, the last lift should be rolled by a smooth-wheel roller to eliminate ridges of un-compacted soil to aid runoff and drainage. No layer of fill should be placed until the underlying materials have been approved.

7-2-2- Common Fill

Common (non-structural) fill should consist of sandy or gravelly soil with a maximum particle size of 3 inches, with less than 35 percent passing the No. 200 sieve, and with a plasticity index of 20 or less.

7-3- Quality Control

Placement and compaction of all fill materials should be monitored and tested by a qualified technician under supervision of a professional geotechnical engineer. We recommend that all structural fill placements be tested in accordance with ASTM D2922 and D3017 (Nuclear Density Method) to verify the density, degree of compaction, and moisture content of the fill. The specifications should call for frequent testing on each lift. In the event where any portion of the fill fails to meet the compaction requirements, the area should be reworked, re-compacted, and retested until the specified compaction is achieved.

8- Summary of Design recommendation

The site soil parameters need to be chosen from Table 9.

The in-fill soil back of any wall in contact with geogrid in general needs to be in compliance of section 7.2.

All the design methods and parameters including factor of safeties need to be followed per requirements of the engineer designing the structure. All the construction details are required to be per direction of the engineer designing the structure.

Drainage is required per detail and specs of footings.

All the deviations from this report needs to be brought to the attention of AEC as will be discussed in section 9.

Section 7.3 of this report and all the special inspection requirements mentioned in the report are required to be performed by AEC and needs to be identified on the cover sheet of the construction documents before being submitted to the authority having jurisdiction. The plans are required to be reviewed by AEC and be verified to be in compliance with the requirements of this report before being submitted to jurisdiction having authority.

9- Limitations

This Report was prepared pursuant to an Agreement dated 01/24/2020 between Mr. Ali Mozaffari (Alan Enterprise LLC) and AEC. All uses of this Report are subject to, and deemed acceptance of, the conditions and restrictions contained in the Agreement. The observations and conclusions described in this Report are based solely on the Scope of Services provided pursuant to the Agreement. AEC has not performed any additional observations, investigations, studies or other testing not specified in the Agreement and the Report. AEC shall not be liable for the existence of any condition the discovery of which would have required the performance of services not authorized under the Agreement.

This Report is prepared for the exclusive use Alan Enterprise LLC in connection with the design and construction of the mentioned development. There are no intended beneficiaries other than Alan Enterprise LLC AEC shall owe no duty, whatsoever, to any other person or entity on account of the

Agreement or the Report. Use of this Report by any person or entity other than Alan Enterprise LLC for any purpose whatsoever is expressly forbidden unless such other person or entity obtains written authorization from Alan Enterprise LLC and from AEC. Use of this Report by such other person or entity without the written authorization of Alan Enterprise LLC and AEC shall be at such other person's or entities sole risk, and shall be without legal exposure or liability to AEC.

Use of this Report by any person or entity, including by Alan Enterprise LLC for a purpose other than for the design and construction of the proposed development is expressly prohibited unless such person or entity obtains written authorization from AEC indicating that the Report is adequate for such other use. Use of this Report by any person or entity for such other purpose without written authorization by AEC shall be at such person's or entities sole risk and shall be without legal exposure or liability to AEC.

This report reflects site conditions observed and described by records available to AEC as of the date of report preparation. The passage of time may result in significant changes in site conditions, technology, or economic conditions which could alter the findings and/or recommendations of the report. Accordingly, Alan Enterprise LLC and any other party to whom the report is provided recognize and agree that AEC shall bear no liability for deviations from observed conditions or available records after the time of report preparation.

Use of this Report by any person or entity in violation of the restrictions expressed in this Report shall be deemed and accepted by the user as conclusive evidence that such use and the reliance placed on this Report, or any portions thereof, is unreasonable, and that the user accepts full and exclusive responsibility and liability for any losses, damages or other liability which may result.

10- References

1- 7.5' Series Geologic Map, USGS.

2- 7.5' Series Topographic Map, USGS.

3- ASTM test methods.

4- Department of the U.S. army corps of engineers Washington, DC 20314-1000, Engineering and design geotechnical investigations, Manual No. 1110-1-1804.

5- Fault activity map of California, CGS, 2010.

6- Foundation analysis and design, Joseph E. Bowles, McGraw-Hill, fifth edition.

7- Liquefaction map, USGS.

8- Landslide map, USGS.

9- Minnesota Department of Transportation, Pavement Design, 2007.

10- Swiss Standard SN 670 010b, Characteristic Coefficients of soils, Association of Swiss Road and Traffic Engineers.

11- Quaternary Fault and Fold Database of the United States.

Exhibit I
Boring Log

EXPLORATORY BORING LOG	Project No : 4134	Borehole No. : B1
Address: Cupertino	Test Date : 2/4/2020	Logged By : Nami
Company Drilling: AEC Drilling Corp.	BORING DIA.:	BORING ELEV.: ---
LOACATION OF BOREHOLE : Specified on Plan	SAMPLER: SPT SPT C2 :cal. 2" C2.5 :cal. 2.5"	Weather: Sunny

Notes:

Description:	USCS SOIL TYPE	DEPTH (feet)	SAMPLE	BLOWS PER FOOT	N-SPT	POCKET PEN. (tsf)	DRY DENSITY (pcf)	MOIST. CONT. (%)	FINES (%)	SANDS (%)	GRAVELS (%)	LIQUID LIMIT	PLASTICITY INDEX	
0.0 - 7 ft **Brown clayey sand with gravel (SC) - Damp - Particle is angular with elongated shape and gravel maximum size - None reaction with HCL - Hard to very hard consistency - Strong cementation - Blocky structure - None dilatancy - Low to none dry strength - High toughness - Non plastic - Very dense.**		1												
								12.0						
		2		**40**										
			C2.5	**49**	**66**	**>4.5**	**122.2**	**10**	**32.9**	**44.3**	**22.8**	**23.9**	**9.0**	
		3		**53**										
		4												
								11.0						
		5		**58**										
			C2.5	**67**	**91**	**>4.5**	**120.7**	**11.0**						
		6		**73**										
		7												
Refusal depth at 7 ft **No underground water encountered**		8												
		9												
		10												
		11												
		12												
		13												
		14												
		15												
		16												
		17												
		18												
		19												
		20												
		21												
		22												
		23												
		24												
		25												
		26												

EXPLORATORY BORING LOG	Project No : 4134	Borehole No. : B2
Address: Cupertino	Test Date : 2/4/2020	Logged By : Nami
Company Drilling: AEC Drilling Corp.	BORING DIA.:	BORING ELEV.: ---
LOACATION OF BOREHOLE : Specified on Plan	SAMPLER: SPT SPT; C2 :cal. 2"; C2.5 :cal. 2.5"	Weather: Sunny

Notes:

Description:	USCS SOIL TYPE	DEPTH (feet)	SAMPLE	BLOWS PER FOOT	N-SPT	POCKET PEN. (tsf)	DRY DENSITY (pcf)	MOIST. CONT. (%)	FINES (%)	SANDS (%)	GRAVELS (%)	LIQUID LIMIT	PLASTICITY INDEX	
0.0 - 4 ft **Brown to light brown sandy lean clay (CL)** **Wet - Maximum particle size is cobble and angular with elongated shape - No odor - None reaction with HCL-Hard consistency Strong cementation - Blocky structure - None dilatancy - None dry strength - High Toughness - None plastic - Stiff.**		1												
								9.0						
		2		7										
			C2.5	11	15	>4.5	107.4	10	54.2	36.3	9.5	22.8	9.5	
		3		12										
		4												
								11.0						
4.0 - 8.0 ft		5		44										
Same as above but hard.			C2.5	68	92	>4.5	116.5	12.0						
		6		73										
		7												
		8												
Refusal depth at 8 ft **No underground water encountered**		9												
		10												
		11												
		12												
		13												
		14												
		15												
		16												
		17												
		18												
		19												
		20												
		21												
		22												
		23												
		24												
		25												
		26												

Exhibit II
Lab Results

ACHIEVEMENT ENGINEERING CORP.

Moisture Density
(AASHTO T265 - ASTM D2216)

Report Date:	2/17/2020
Project No:	4134
Project Name:	Alan
Project Address:	Cupertino
Technician:	Nami

Type of Material:	Soil	Sample Description:	
Source:	Field		
Sampled by:	Nami	Sample Date:	2/4/2020

Sample No:	B1 1'- 2'	B1 2' - 3.5'	B1 4' - 5'	B1 5' - 6.5'			
Ht. of Sample:	Disturbed	6.00	Disturbed	6.00			
Tare No:	CA - 17	CA - 10	CA - 5	CA - 14			
Gross Wet Wt:	1057.69	1255.72	1270.78	1241.74			
Gross Dry Wt:	977.95	1167.76	1174.42	1152.29			
Tare Wt:	309.93	315.16	313.25	310.13			
Net Dry Wt:	668.02	852.60	861.17	842.16			
Wt. of Water:	79.74	87.96	96.36	89.45			
% Moisture	12%	10%	11%	11%			
Liners Dia		2.5"		2.5"			
Density Factors		0.860		0.860			
Dry Density		122.21		120.71			

Tested By: Nami   Reviewed E A.F

Signature: __________   Signature: __________

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ACHIEVEMENT ENGINEERING CORP.

Moisture Density
(AASHTO T265 - ASTM D2216)

Report Date:	2/17/2020
Project No:	4134
Project Name:	Alan
Project Address:	Cupertino
Technician:	Nami

Type of Material:	Soil	Sample Description:	
Source:	Field		
Sampled by:	Nami	Sample Date:	2/4/2020

Sample No:	B2 1'- 2'	B2 2' - 3.5'	B2 4' - 5'	B2 5' - 6.5'			
Ht. of Sample:	Disturbed	6.00	Disturbed	6.00			
Tare No:	CA - 2	CA - 3	CA - 6	CA - 15			
Gross Wet Wt:	1221.66	1139.35	1328.28	1217.07			
Gross Dry Wt:	1144.92	1060.98	1224.34	1123.01			
Tare Wt:	311.43	311.66	311.80	309.96			
Net Dry Wt:	833.49	749.32	912.54	813.05			
Wt. of Water:	76.74	78.37	103.94	94.06			
% Moisture	9%	10%	11%	12%			
Liners Dia		2.5"		2.5"			
Density Factors		0.860		0.860			
Dry Density		107.40		116.54			

Tested By: Nami   Reviewed E A.F

Signature: ____________   Signature: ____________

SIEVE ANALYSIS SHEET
(AASHTO T27-ASTM C136 and D6913)

ACHIEVEMENT ENGINEERING CORP.

Date:	2/20/2020
Project No.:	4134
Project Name:	Alan
Project Address:	Cupertino
Tested By:	Nami
Material:	Soil

Borehole Number and Depth: **B1 2' - 3.5'**
Nominal Max. Size in sample = ½”
Min. Test Sample size in kg [lb] = 2 [4]
Nominal Dimension of seive = 8"

	Sieve Size	Sieve Size	Wt. Ret. (gr)	% Ret.	% Passing	Retained Limit (kg)
4	100mm	4”	0	0.00%	100.00%	
3	75mm	3”	0	0.00%	100.00%	
2	50mm	2”	0	0.00%	100.00%	
1	37.5mm	1 ½”	0	0.00%	100.00%	
1	25mm	1”	0	0.00%	100.00%	
1	19mm	¾”	0	0.00%	100.00%	
0	12.5mm	½”	23.15	7.87%	92.13%	
0	9.5mm	3/8”	8.56	2.91%	89.21%	
0	4.75mm	#4	35.44	12.06%	77.16%	
0	2.36mm	#8	27.6	9.39%	67.77%	
0	1.18mm	#16	18.9	6.43%	61.34%	
0	600μm	#30	16.07	5.47%	55.87%	
0	300μm	#50	22.47	7.64%	48.23%	
0	150μm	#100	24.18	8.23%	40.00%	
0	75μm	#200	21.01	7.15%	32.86%	

Pan #: CA - 10
Pan weight (gr): 315.16
Mass of pan & dried sample before wash (gr): 609.13
Original mass before wash (gr): **293.97**
Min. readability of scale (gr) = 0.29
Mass of pan & dried sample after wash (gr): 512.6
Mass of sample after wash & being dried (gr): **197.44**
Mass after mechanical shake (gr): **197.38**

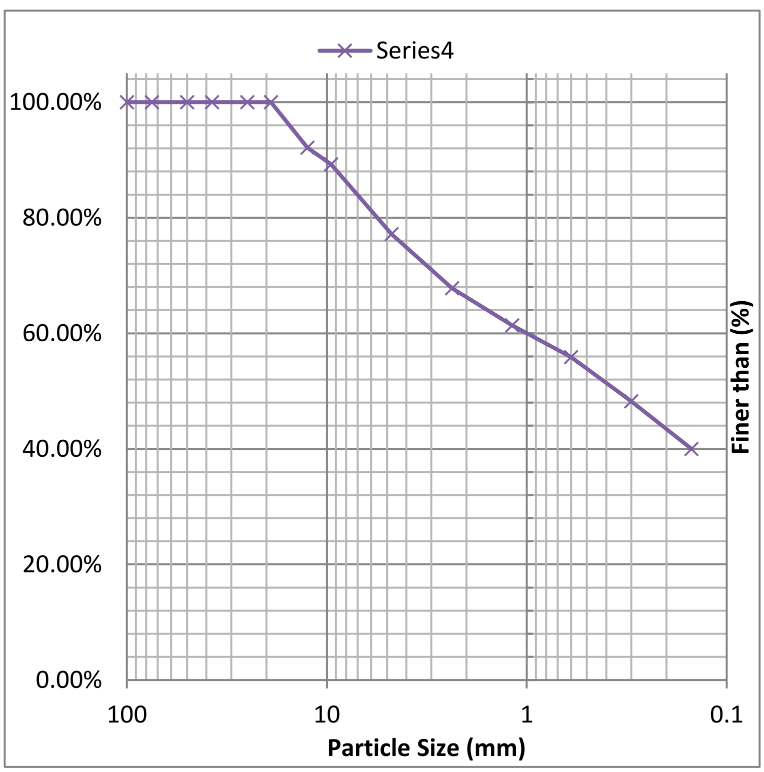
Percent of Gravel = **22.84%**
Fine Content = **32.86%**
Percent of Sand = **44.30%**

D_{10} (mm)= **0.0750**
D_{30} (mm)= **0.0750**
D_{60} (mm)= **1.0379**
D_{50} (mm)= **0.3695**

Cc= **13.8**
Cu= **0.1**

Check for waste limt (0.3%) : 0.03%

100



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ACHIEVEMENT ENGINEERING CORP.

SIEVE ANALYSIS SHEET
(AASHTO T27-ASTM C136 and D6913)

Date:	2/20/2020
Project No.:	4134
Project Name:	Alan
Project Address:	Cupertino
Tested By:	Nami
Material:	Soil

Borehole Number and Depth: **B2 2' - 3.5'**
Nominal Max. Size in sample = ½”
Min. Test Sample size in kg [lb] = 2 [4]
Nominal Dimension of seive = 8"

	Sieve Size	Sieve Size	Wt. Ret. (gr)	% Ret.	% Passing	Retained Limit (kg)
4	100mm	4”	0	0.00%	100.00%	
3	75mm	3”	0	0.00%	100.00%	
2	50mm	2”	0	0.00%	100.00%	
1	37.5mm	1 ½”	0	0.00%	100.00%	
1	25mm	1”	0	0.00%	100.00%	
1	19mm	¾”	0	0.00%	100.00%	
0	12.5mm	½”	7.43	2.49%	97.51%	
0	9.5mm	3/8”	5.59	1.87%	95.64%	
0	4.75mm	#4	15.17	5.09%	90.55%	
0	2.36mm	#8	12.91	4.33%	86.22%	
0	1.18mm	#16	13.15	4.41%	81.81%	
0	600μm	#30	14.83	4.97%	76.84%	
0	300μm	#50	22.92	7.68%	69.16%	
0	150μm	#100	23.68	7.94%	61.22%	
0	75μm	#200	20.87	7.00%	54.23%	

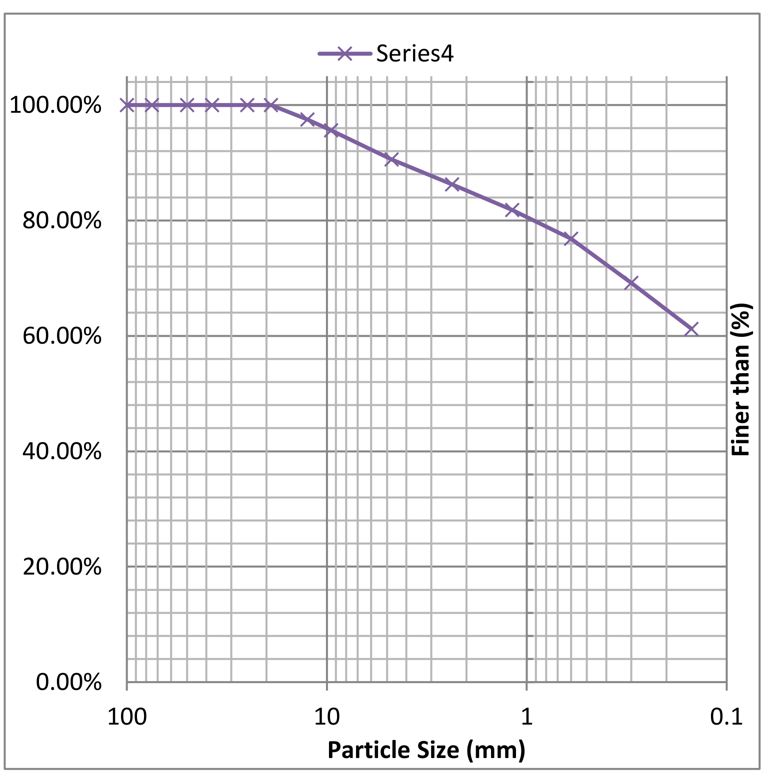
Pan #: CA - 3
Pan weight (gr): 311.66
Mass of pan & dried sample before wash (gr): 609.98
Original mass before wash (gr): 298.32
Min. readability of scale (gr) = 0.30
Mass of pan & dried sample after wash (gr): 448.3
Mass of sample after wash & being dried (gr): 136.64
Mass after mechanical shake (gr): 136.55
Percent of Gravel = 9.45%
Fine Content = 54.23%
Percent of Sand = 36.32%

D_{10} (mm)= 0.0750
D_{30} (mm)= 0.0750
D_{60} (mm)= 0.1369
D_{50} (mm)= 0.0750

Cc= 1.8
Cu= 0.5

Check for waste limt (0.3%) : 0.07%

100



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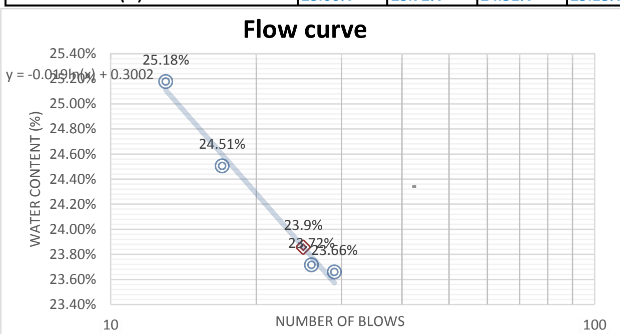
Atterberg Limits
(AASHTO T89 and T90 - ASTM D4318)

Sample Description:	SOIL	Report Date:	2/28/2020
Boring No:	B1	Project No:	4134
Sample ID:	228204134	Project Name:	Alan
Sample Depth:	2' - 3.5'	Project Address:	Cupertino
Material:	SOIL	Technician:	Nami

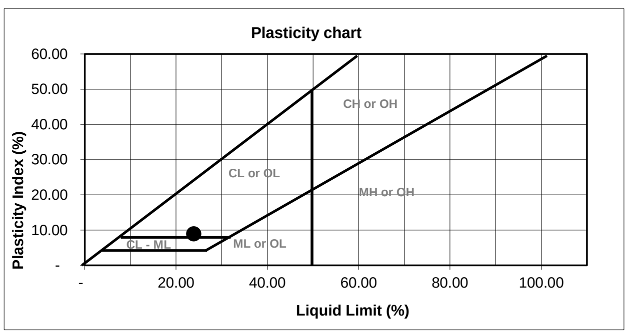
	Liquid Limit				Plastic Limit		
	1	2	3	4	1	2	3
No. of blows	29	26	17	13			
Tare No.	AB - 2	LB - 6	AE - 2	AD - 1	LB - 8	AC - 2	AD - 2
Gross Wet Weight (gr)	20.63	23.33	23.90	21.82	5.42	5.21	5.38
Gross Dry Weight (gr)	18.82	21.02	21.42	19.69	5.29	5.08	5.25
Tare Weight (gr)	11.17	11.28	11.30	11.23	4.35	4.27	4.37
Net Dry Weight (gr)	7.65	9.74	10.12	8.46	0.94	0.81	0.88
Weight of Water (gr)	1.81	2.31	2.48	2.13	0.13	0.13	0.13
Water Content (%)	23.66%	23.72%	24.51%	25.18%	13.83%	16.05%	14.77%



Group Symbol CL

Shrinkage Limit Results

Liquid Limit %	23.86
Plastic Limit %	14.88
Plasticity Index	8.97
Shrinkage Limit %	
B – Value	
Toughness Index	



Tested By:	Nami	Reviewed By:	A.F
Signature:		Signature:	

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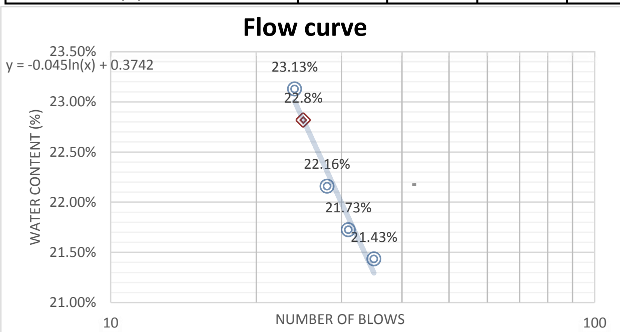
Atterberg Limits
(AASHTO T89 and T90 - ASTM D4318)

Sample Description:	SOIL	Report Date:	2/28/2020
Boring No:	B2	Project No:	4134
Sample ID:	22820 -4134	Project Name:	Alan
Sample Depth:	2' - 3.5'	Project Address:	Cupertino
Material:	SOIL	Technician:	Nami

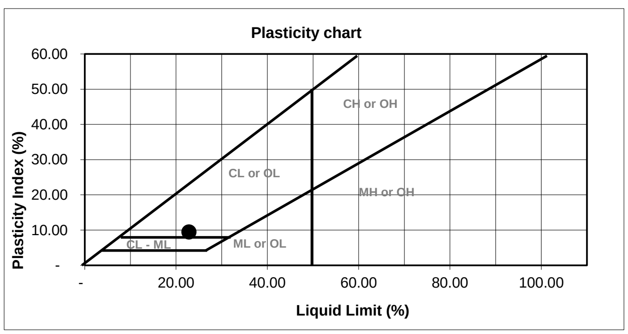
	Liquid Limit				Plastic Limit		
	1	2	3	4	1	2	3
No. of blows	35	31	28	24			
Tare No.	AL - 2	AE - 3	AD - 2	LB - 1	L - 3	AC - 3	AE - 6
Gross Wet Weight (gr)	24.86	22.92	24.38	23.76	5.45	5.48	5.82
Gross Dry Weight (gr)	22.44	20.83	22.00	21.41	5.32	5.34	5.66
Tare Weight (gr)	11.15	11.21	11.26	11.25	4.32	4.36	4.39
Net Dry Weight (gr)	11.29	9.62	10.74	10.16	1	0.98	1.27
Weight of Water (gr)	2.42	2.09	2.38	2.35	0.13	0.14	0.16
Water Content (%)	21.43%	21.73%	22.16%	23.13%	13.00%	14.29%	12.60%



Group Symbol CL

Shrinkage Limit Results

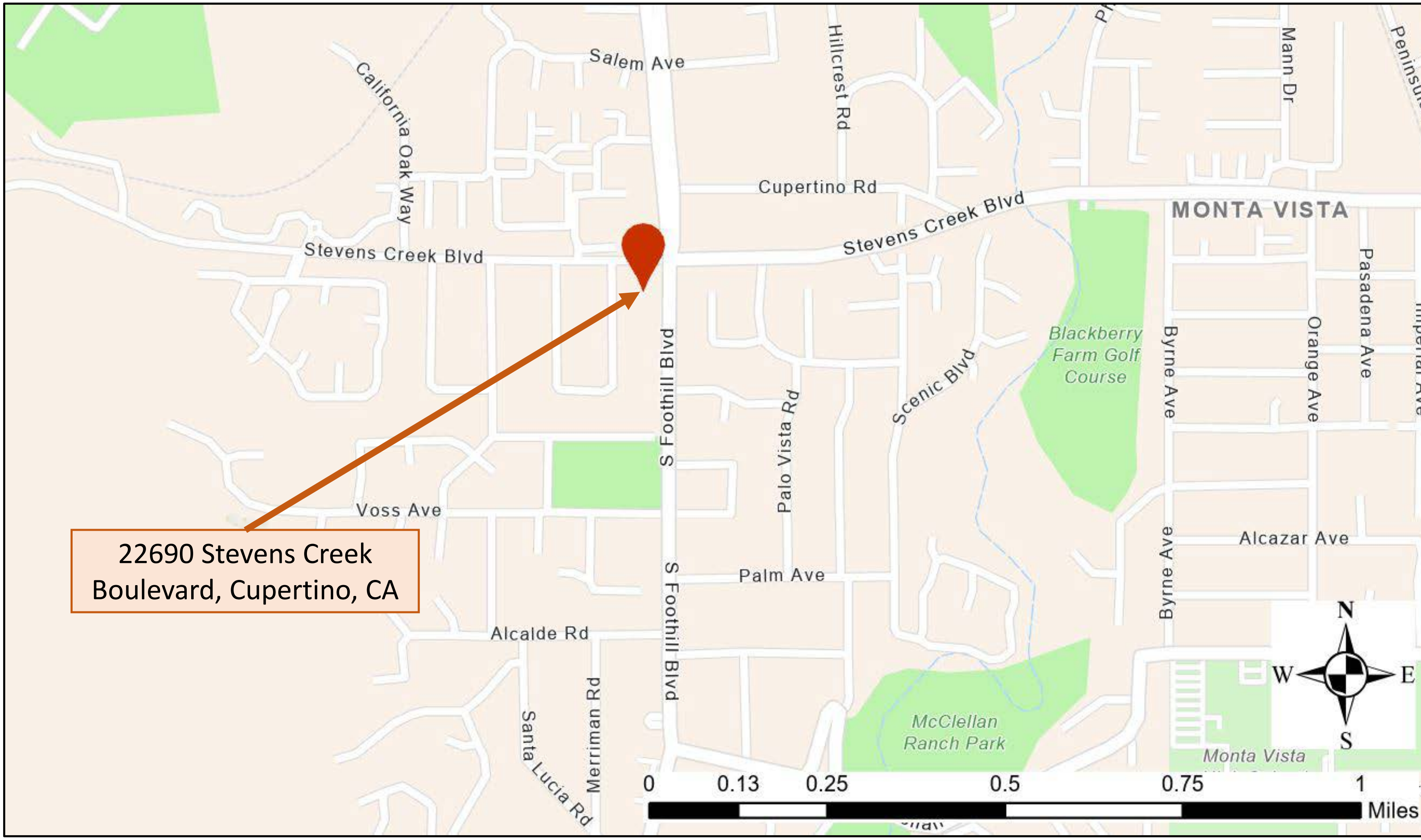
Liquid Limit %	22.82
Plastic Limit %	13.29
Plasticity Index	9.53
Shrinkage Limit %	
B – Value	
Toughness Index	



Tested By: Nami Reviewed By: A.F

Signature: Signature:

Exhibit III
Maps



ACHIEVEMENT ENGINEERING CORP.

Project Number: 4134

Project Title: Ali Mozaffari - 22690 Stevens Creek Blv – Exhibit III

Vicinity Map

REVISIONS

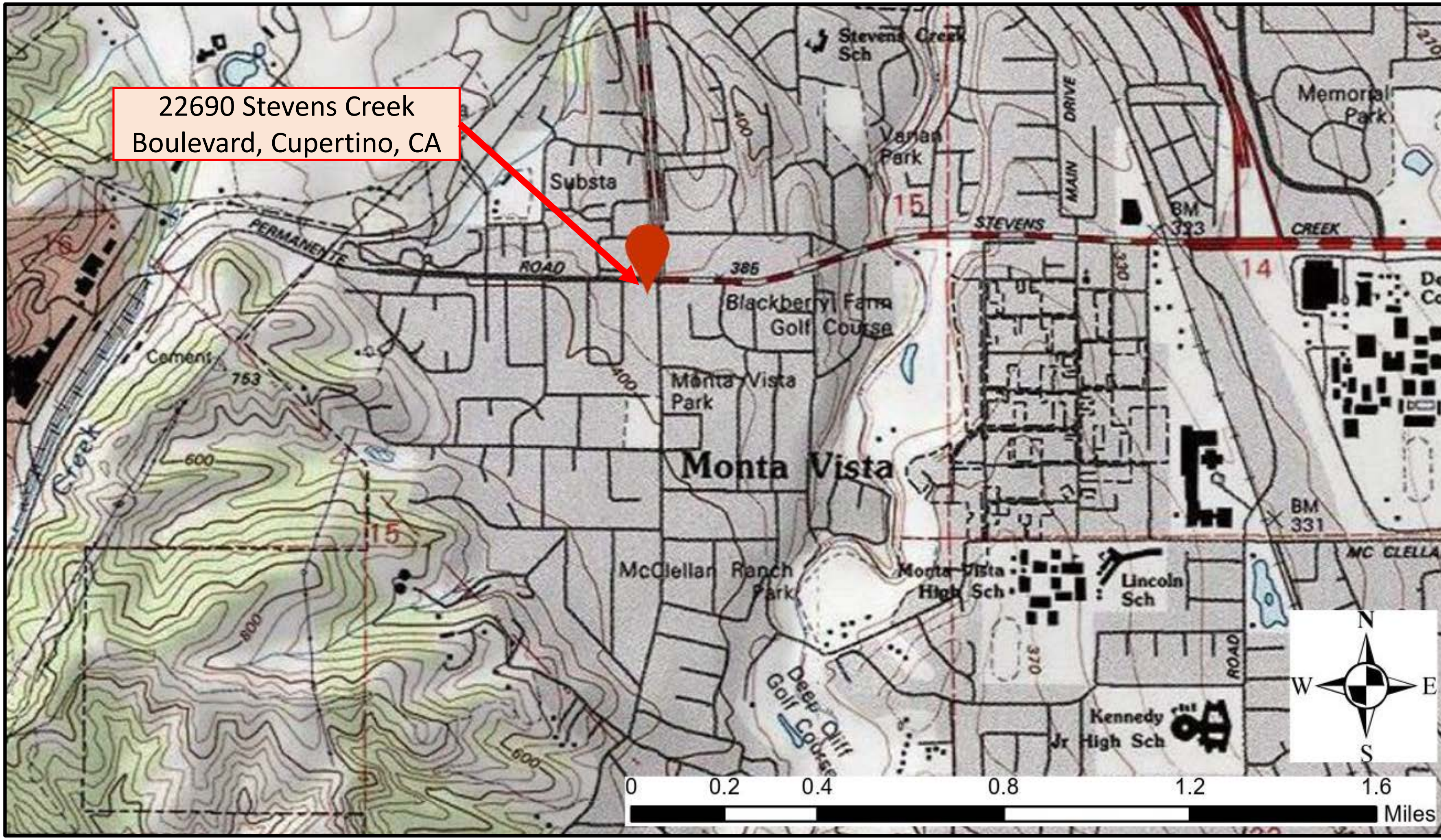
	MM/DD/YYYY	REMARKS
0	02/29/2020	
1	__/__/__	
2	__/__/__	
3	__/__/__	
4	__/__/__	

M

01

ACHIEVEMENT ENGINEERING CORP.

			REVISIONS		M
Project Number: 4134	Project Title: Ali Mozaffari - 22690 Stevens Creek Blv – Exhibit III		MM/DD/YYYY	REMARKS	
		0	02/29/2020		
		1	__/ __/__		02
Boring Location Map		2	__/ __/__		
		3	__/ __/__		
		4	__/ __/__		



ACHIEVEMENT ENGINEERING CORP.

Project Number:
4134

Project Title:
Ali Mozaffari - 22690 Stevens Creek Blv – Exhibit III

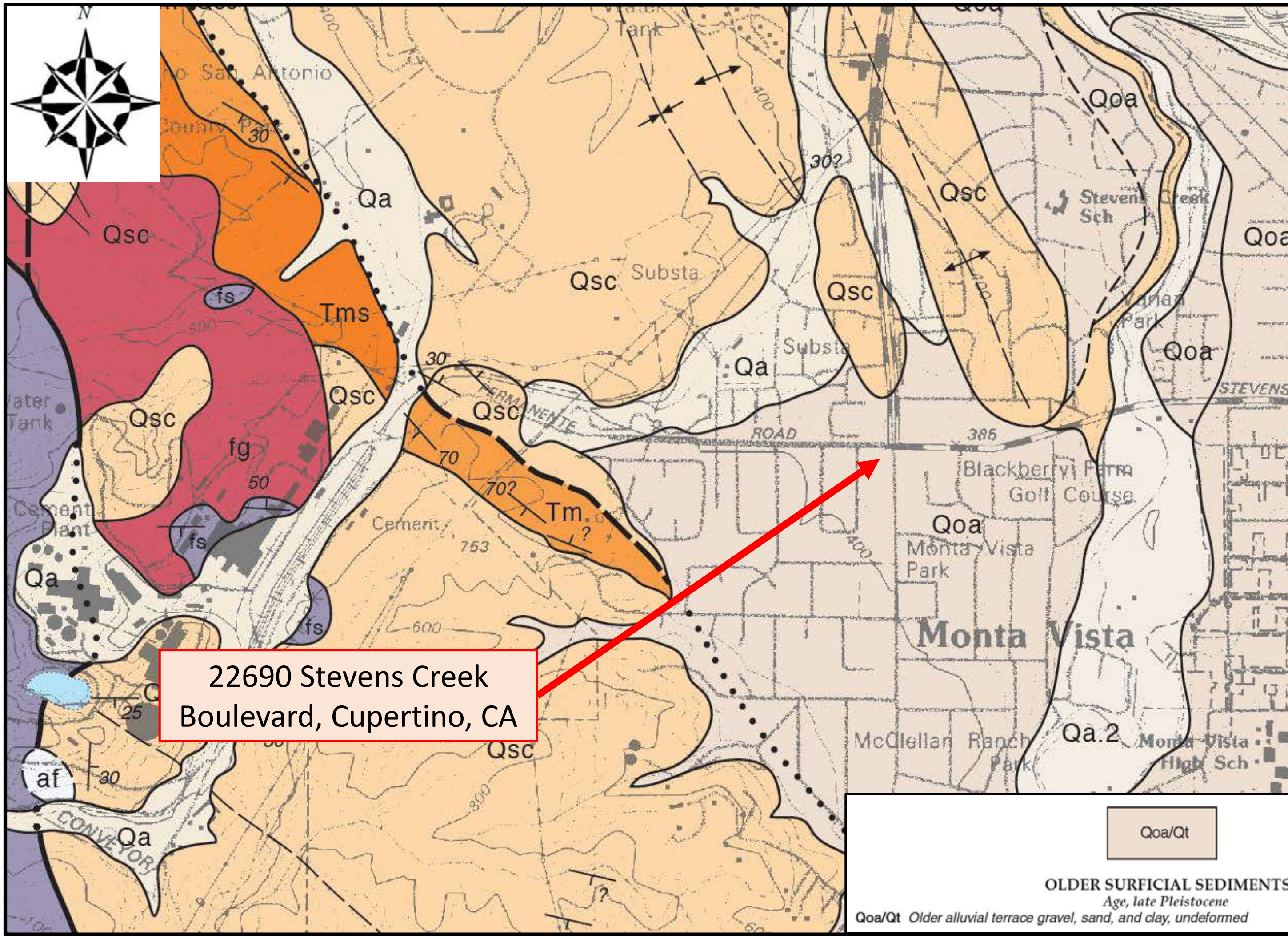
Site Location on 7.5' quadrangle Series Topographical Map by USGS

REVISIONS

	MM/DD/YYYY	REMARKS
0	02/29/2020	
1	__/__/__	
2	__/__/__	
3	__/__/__	
4	__/__/__	

M

03



ACHIEVEMENT ENGINEERING CORP.

Project Number: 4134

Project Title: Ali Mozaffari - 22690 Stevens Creek Blv – Exhibit III

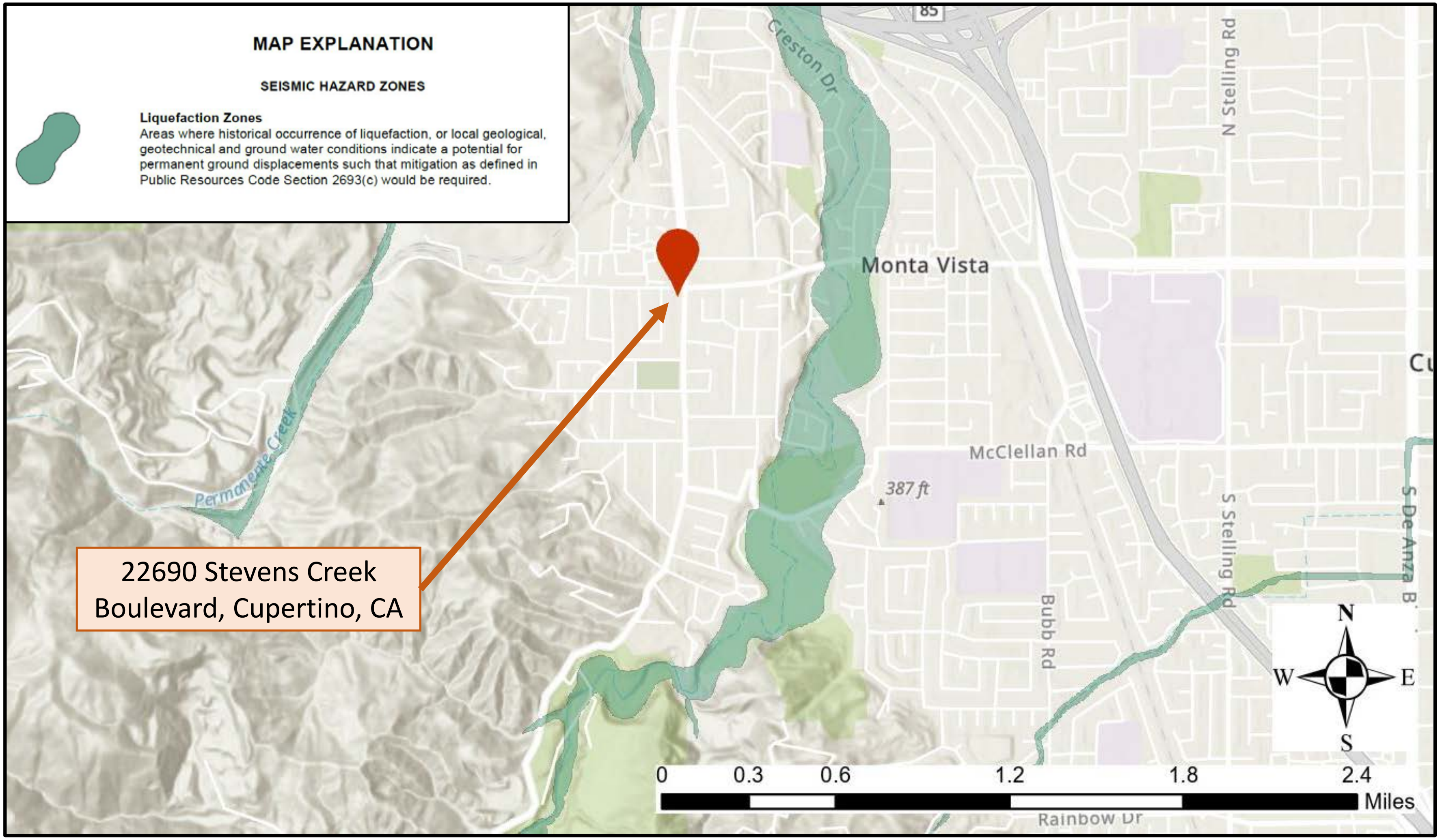
Site Location on 7.5' quadrangle Series Geological Map by USGS

REVISIONS

	MM/DD/YYYY	REMARKS
0	02/29/2020	
1	___/___/___	
2	___/___/___	
3	___/___/___	
4	___/___/___	

M

04



ACHIEVEMENT ENGINEERING CORP.

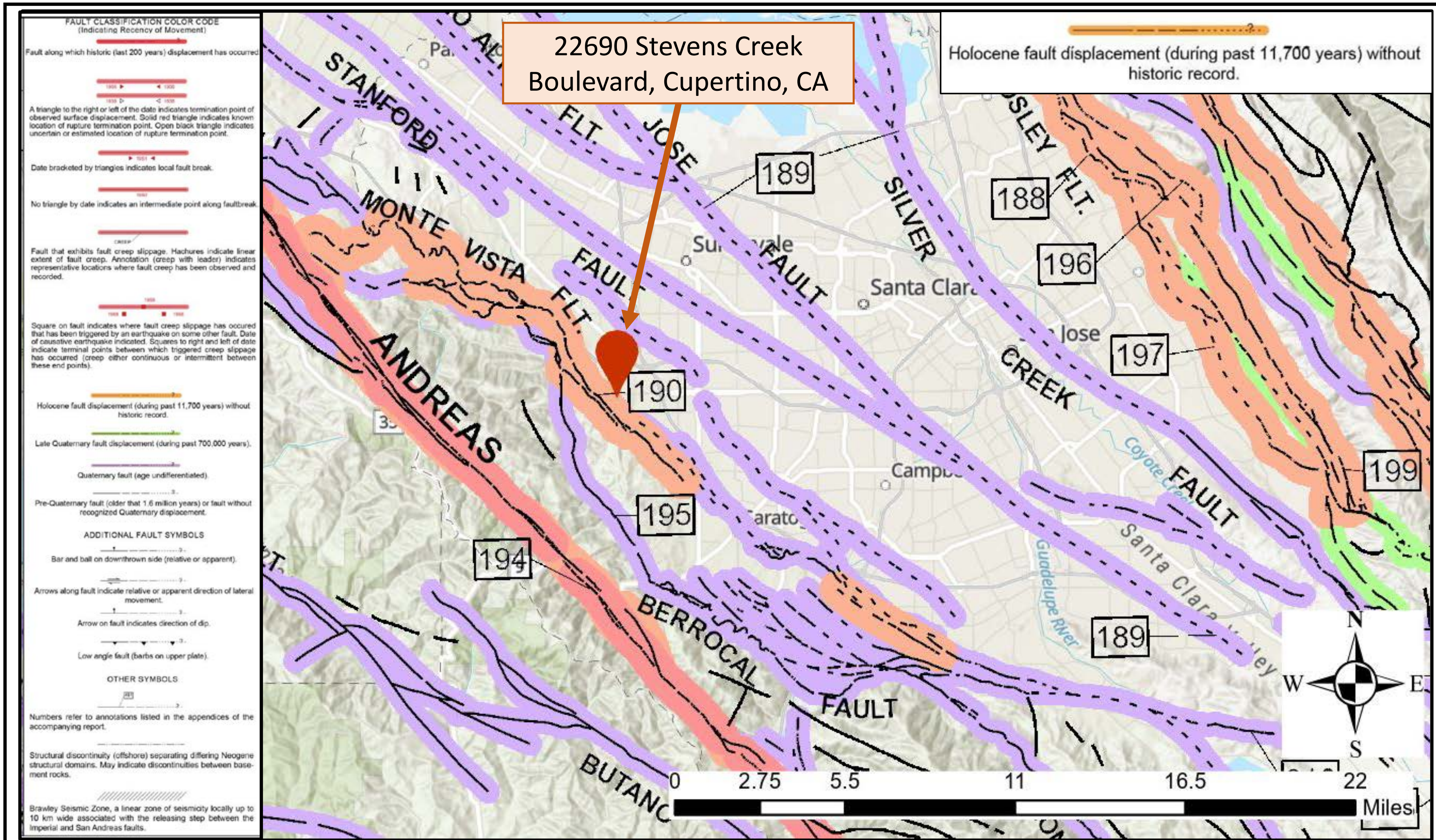
Project Number: 4134	Project Title: Ali Mozaffari - 22690 Stevens Creek Blv – Exhibit III
Site Location on State Map for Earthquake Zone of required investigation by CGS (site is **NOT** located within hazard zone)	

REVISIONS

	MM/DD/YYYY	REMARKS
0	02/29/2020	
1	__/__/__	
2	__/__/__	
3	__/__/__	
4	__/__/__	

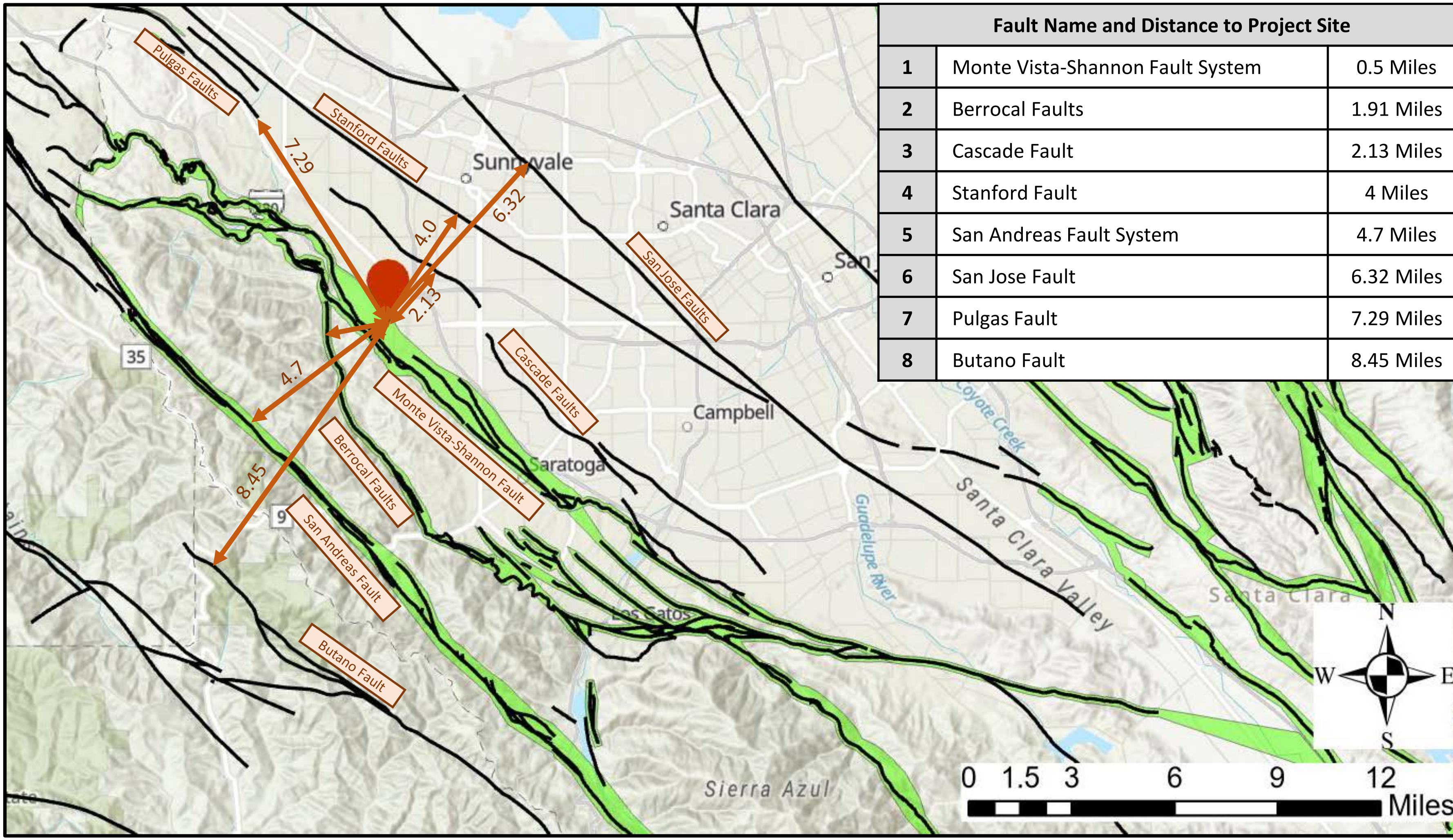
M

05



ACHIEVEMENT ENGINEERING CORP.	Project Number: 4134	Project Title: Ali Mozaffari - 22690 Stevens Creek Blv – Exhibit III	REVISIONS	M
	Site Location on Fault Activity Map of California (2010) by CGS			06

	MM/DD/YYYY	REMARKS
0	02/29/2020	
1	__/__/__	
2	__/__/__	
3	__/__/__	
4	__/__/__	



Fault Name and Distance to Project Site		
1	Monte Vista-Shannon Fault System	0.5 Miles
2	Berrocal Faults	1.91 Miles
3	Cascade Fault	2.13 Miles
4	Stanford Fault	4 Miles
5	San Andreas Fault System	4.7 Miles
6	San Jose Fault	6.32 Miles
7	Pulgas Fault	7.29 Miles
8	Butano Fault	8.45 Miles

ACHIEVEMENT ENGINEERING CORP.

Project Number:
4134

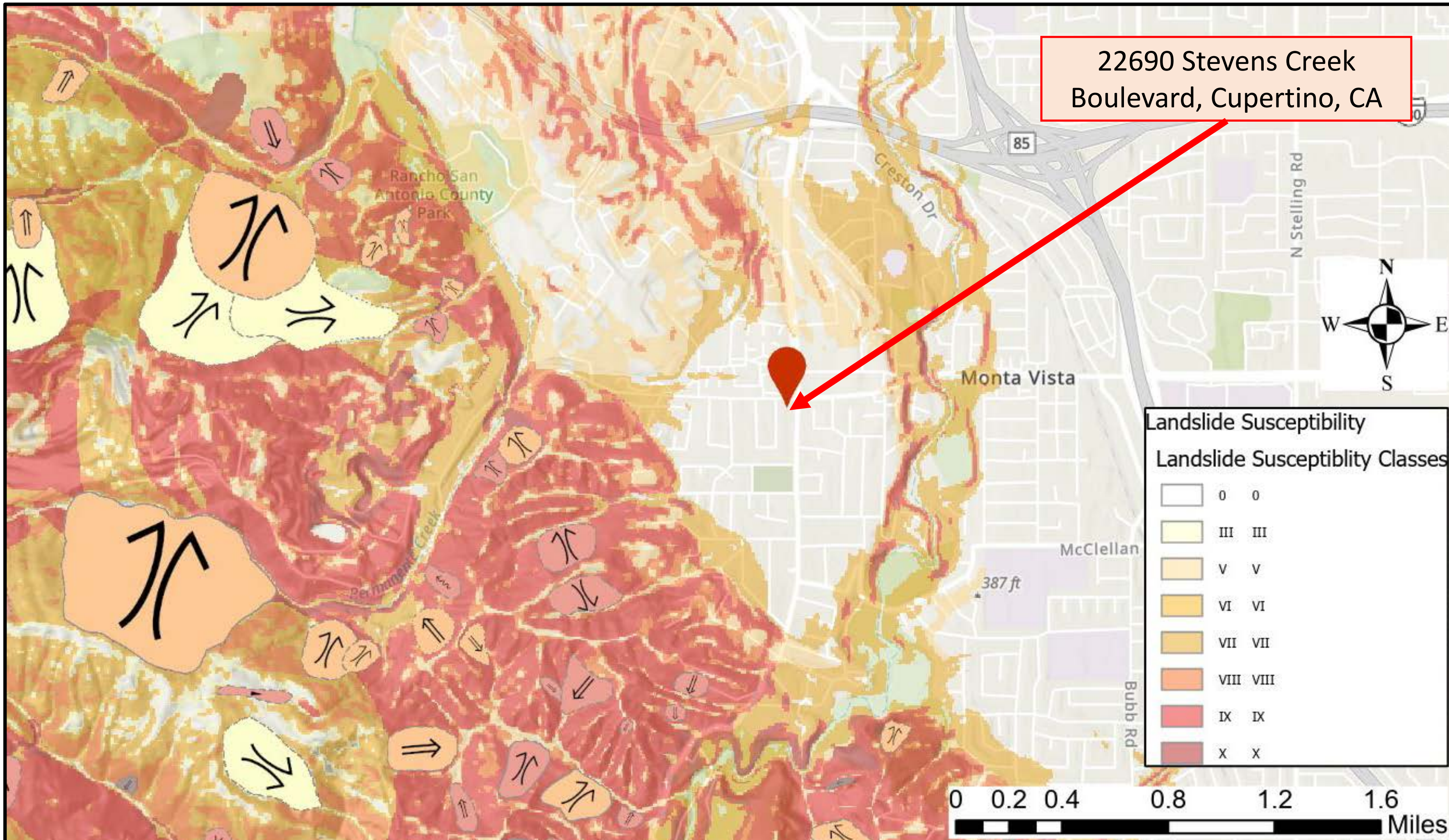
Project Title:
Ali Mozaffari - 22690 Stevens Creek Blv – Exhibit III

Site Location distance to Nears Faults
(10-mile Radius)

REVISIONS		
	MM/DD/YYYY	REMARKS
0	02/29/2020	
1	__/__/__	
2	__/__/__	
3	__/__/__	
4	__/__/__	

M

07



ACHIEVEMENT ENGINEERING CORP.

Project Number: 4134

Project Title: Ali Mozaffari - 22690 Stevens Creek Blv – Exhibit III

Project Location on Landslide Susceptibility Map (Source USGS) site is within **Class 0 – No Susceptibility**

REVISIONS		
	MM/DD/YYYY	REMARKS
0	02/29/2020	
1	__/__/__	
2	__/__/__	
3	__/__/__	
4	__/__/__	

M

08

Exhibit IV
USGS Seismic Design

4134

22690 Stevens Creek Blvd, Cupertino, CA 95014, USA

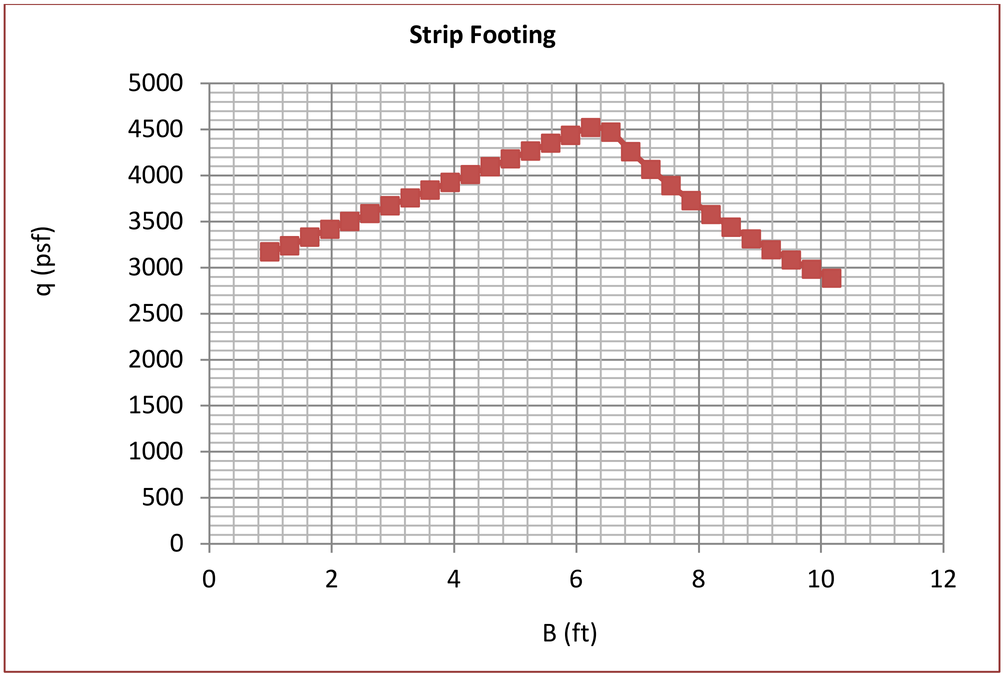
Latitude, Longitude: 37.3217554, -122.068922

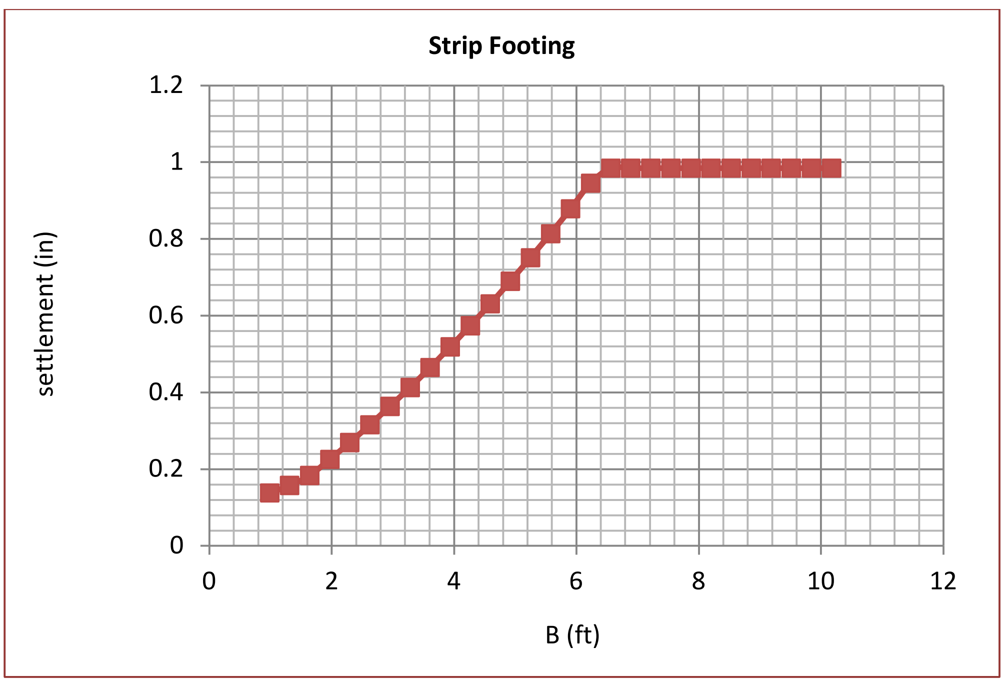
Date	2/13/2020, 2:11:29 PM
Design Code Reference Document	ASCE7-16
Risk Category	II
Site Class	D - Stiff Soil

Type	Value	Description
S_S	2.281	MCE_R ground motion. (for 0.2 second period)
S_1	0.821	MCE_R ground motion. (for 1.0s period)
S_{MS}	2.281	Site-modified spectral acceleration value
S_{M1}	null -See Section 11.4.8	Site-modified spectral acceleration value
S_{DS}	1.521	Numeric seismic design value at 0.2 second SA
S_{D1}	null -See Section 11.4.8	Numeric seismic design value at 1.0 second SA

Type	Value	Description
SDC	null -See Section 11.4.8	Seismic design category
F_a	1	Site amplification factor at 0.2 second
F_v	null -See Section 11.4.8	Site amplification factor at 1.0 second
PGA	0.943	MCE_G peak ground acceleration
F_{PGA}	1.1	Site amplification factor at PGA
PGA_M	1.037	Site modified peak ground acceleration
T_L	12	Long-period transition period in seconds
SsRT	2.335	Probabilistic risk-targeted ground motion. (0.2 second)
SsUH	2.573	Factored uniform-hazard (2% probability of exceedance in 50 years) spectral acceleration
SsD	2.281	Factored deterministic acceleration value. (0.2 second)
S1RT	0.941	Probabilistic risk-targeted ground motion. (1.0 second)
S1UH	1.054	Factored uniform-hazard (2% probability of exceedance in 50 years) spectral acceleration.
S1D	0.821	Factored deterministic acceleration value. (1.0 second)
PGAd	0.943	Factored deterministic acceleration value. (Peak Ground Acceleration)
C_{RS}	0.907	Mapped value of the risk coefficient at short periods
C_{R1}	0.893	Mapped value of the risk coefficient at a period of 1 s

Exhibit V
Shallow Footing Design


Strip Footing
5000
4500
4000
3500
3000
2500
2000
1500
1000
500
0
q (psf)
0
2
4
6
8
10
12
B (ft)


Strip Footing
1.2
1
0.8
0.6
0.4
0.2
0
settlement (in)
0
2
4
6
8
10
12
B (ft)

ACHIEVEMENT
ENGINEERING
CORP.

Project Number: 4134
Date: March 25, 2020

Mr. Ali Mozaffari
22690 Stevens Creek
Cupertino, CA 95014

Subject: Addendum to Geotechnical Report (Pavement Design) for the New Development at 22690 Stevens Creek
Cupertino, CA 95014
APN#342-14-104

Dear Sir,

In response to your inquiry, and your authorization, the following professional services were provided:

- Two sets of CBR test (ASTM D1383) have been performed on selected samples collected from the site (Please refer to the attached test results).
- Recommendations for pavement design and pedestrian concrete sidewalk.

Pavement Design and Pedestrian Rigid Concrete Sidewalk Recommendations

As previously discussed, two sets of CBR tests (per ASTM D1383) have been performed for two surficial samples collected from the Site. California Bearing Ratio (CBR) test results indicated that near surface soils have an average CBR value of approximately 1.4 that is classified as poor subgrade per Reference 1. Based on the correlations between CBR and MR (Resilient Modulus) per Reference 2, the corresponding MR and California R-Value for the surficial soil at the Site are 2025 psi and 3, respectively. The soil classification test shows the surface soil of the site is SC /CL, in Unified Soil Classification System.

Subgrade Preparation

Remove all debris, large rocks, vegetation and topsoil from the area to be paved. These items either do not compact well or cause non-uniform compaction and mat thickness.

It is recommended that the poor soil undergo subgrade treatment or replacement before placing aggregate and asphalt. For more information on subgrade treatments refer to Chapter 4.0 of Reference 1.

The subgrade should be compacted to a minimum of 95 percent of the maximum dry density as determined by ASTM D1557 to ensure the compacted subgrade is able to support construction traffic. If the subgrade ruts excessively under construction traffic, it should be repaired before being paved over. Left unrepaired subgrade ruts may reflectively cause premature pavement rutting.

It is recommended that a representative from our firm be present at the site and observe the integrity of the subgrade during the construction. In case the poor soil is present or unsuitable materials are encountered as predicted, the subgrade may require stabilization (such as lime treatment), over-excavation (and replacing the unsuitable soil with gravel borrows) and adding a base course and perhaps a subbase course over the subgrade, that proper methods will be recommended if needed during construction observation.

After final grading (often called fine-grading), the subgrade elevation should generally conform closely to the construction plan subgrade elevation. Large elevation discrepancies should not be compensated for by varying pavement or base thickness because hot mix asphalt (HMA) and aggregates are more expensive than subgrade.

Rigid Concrete Pavement Recommendation for a TI (Traffic Index) below 9

Utilizing the Reference 3 rigid pavement catalog decision tree, the site surface soil is classified as Type II of subgrade and the Site is located in Caltrans Pavement Climate Region of Central Coast. Thus, the recommended rigid pavement structural depth for TI ≤ 9, with lateral support is 0.70 ft. doweled JPCP (Jointed Plain Concrete Pavement) or 1.00 ft. AB (Class 2 Aggregate Base) and for the case without lateral support is 0.75 ft. doweled JPCP or 1.00 ft. AB and the (Table 623.1E, Reference 3).

AC (Asphalt Concrete) pavement recommendations for a TI of 5, 6 and 7

Considerations regarding worker safety, short construction windows, or the amount of area to be paved may make it desirable to reduce the total thickness of the pavement by placing full depth hot mix asphalt (HMA). Also, full depth hot mix asphalt is less affected by moisture or frost, does not allow moisture build up in the subgrade, provides no permeable layers that entrap water, and has a more uniform pavement structure. In this step of design, assuming a full depth HMA for pavement and using the Reference 3, the recommendation for AC pavement structural depth has been summarized in the table below.

ACHIEVEMENT ENGINEERING CORP.

Table 1- Recommended AC pavement structural depth

TI	GE [1](ft.)	HMA Thickness (ft.)
5	1.6	0.60
6	2.0	0.75
7	2.3	0.90

1) Gravel Equivalent in ft.

Proper mix of AC with Performance Grade for climate region of Central Coast can be used for full depth pavement (please refer to Table 632.1 of Reference 3).

Please note that the thicknesses determined and outlined in this section, are not intended to preclude other combinations and thicknesses of materials. Adjustments to the thickness of the various materials may be made to accommodate construction restrictions or practices, and minimize costs, provided the minimum thicknesses, maximum thicknesses, and minimum GE requirements (including safety factors) of the entire pavement structure and each layer are as specified and the contractor can modify them based on credible references as the project progresses and more data will be available (Per Reference 3).

It is our pleasure to provide you our professional services. If you have any question or need any additional information, please do not hesitate to call us at your convenience.

Sincerely Yours,

Sadaf M. Safaai P.E.
State of California Licensed Civil Engineer

Reference

1- Asphalt Paving Design Guide, Asphalt Pavement Association of Oregon, Revised October 2003.

2- FHWA, Geotechnical Aspects of Pavements Reference Manual / Participant Workbook, Publication No. FHWA NHI-05-037, May 2006.

3- California Department of Transportation, Highway Design Manual, Sixth Edition, 2017.

CBR

Test Result

Alan

Enterprise LLc

4134

C B R 1

California Bearing Ratio (CBR)
ASTM: D 1883 - AASHTO: T193-99

ACHIEVEMENT ENGINEERING CORP.

Report Date:	3/23/2020	AEC Project#:	4134
*Client:	Alan Enterprise	Sample No.:	CBR1-1
Report ID:	**032320 - 4134 - L50 - NH**	Page #:	1
*Project Address:	Cupertino		

Density Data		
Condition of specimen	**Before Soaking**	**After Soaking**
Wt. of Compacted Sample, Mold and Base Plate, (Lb)	25.848	25.951
Wt. of Mold and Base Plate, (Lb)	15.83	
Wt. of Sample, (Lb)	10.018	
Height of Speciment, (in3)	4.59	
Vol. of Specimen, (in3)	6	
Moisture Content, (%)	12	
Dry Density, (Lbs/C.F)	126.72	

Expansion Ratio Determination		
Surcharge Weight, (Lb)	10	Expansion Ratio (ER):
Initial Height of Specimen, (in)	4.59	
Initial Dial Gauge Reading, (in)	0	
Final Dial Gauge Reading, (in)	0.022	
Difference, (in)	0.022	

$$ER = \left(\frac{0.022}{4.59}\right) = 0.479$$

Water Content Data		
Sample Condition:	**before Soaking**	**After Soaking**
Sample No	**CBR1-1**	
Tare No	CA - 19	
Gross wet weight	589.15	
Gross Dry Weight	562.13	
Tare Weight	336.93	
Net Dry weight	225.2	
Weight of Water	27.02	
Moisture (%)	12	

Remark:

Tested by (Name / Initial):	Nami	NH	**Signature:**	
Form#: L-50	Date Prepared: 02/11/2019		Revision No: 1	Revised: 04/06/2019

California Bearing Ratio (CBR)

ASTM: D 1883 - AASHTO: T193-99

ACHIEVEMENT ENGINEERING CORP.

Report Date:	3/23/2020	AEC Project#:	4134
*Client:	Alan Enterprise	Sample No.:	CBR1-2
Report ID:	**032320 - 4134 - L50 - NH**	Page #:	2
*Project Address:	Cupertino		

Density Data		
Condition of specimen	**Before Soaking**	**After Soaking**
Wt. of Compacted Sample, Mold and Base Plate, (Lb)	26.019	25.951
Wt. of Mold and Base Plate, (Lb)	15.866	
Wt. of Sample, (Lb)	10.153	
Height of Speciment, (in3)	4.59	
Vol. of Specimen, (in3)	6	
Moisture Content, (%)	12	
Dry Density, (Lbs/C.F)	126.72	

Expansion Ratio Determination		
Surcharge Weight, (Lb)	10	Expansion Ratio (ER):
Initial Height of Specimen, (in)	4.59	
Initial Dial Gauge Reading, (in)	0	
Final Dial Gauge Reading, (in)	0.022	
Difference, (in)	0.022	

$$ER = \left(\frac{0.022}{4.59}\right) = 0.479$$

Water Content Data		
Sample Condition:	**before Soaking**	**After Soaking**
Sample No	**CBR1-2**	
Tare No	CA - 22	
Gross wet weight	535.63	
Gross Dry Weight	514.41	
Tare Weight	336.73	
Net Dry weight	177.68	
Weight of Water	21.22	
Moisture (%)	12	

Remark:

Tested by (Name / Initial):	Nami	NH	**Signature:**	

Form#: L-50	Date Prepared: 02/11/2019	Revision No: 1	Revised: 04/06/2019

California Bearing Ratio (CBR)

ASTM: D 1883 - AASHTO: T193-99

ACHIEVEMENT ENGINEERING CORP.

Report Date:	3/23/2020	AEC Project#:	4134		
*Client:	Alan Enterprise	Sample No.:	CBR1-3		
Report ID:	**032320 - 4134 - L50 - NH**		Page #:	3	
*Project Address:	Cupertino				

Density Data		
Condition of specimen	**Before Soaking**	**After Soaking**
Wt. of Compacted Sample, Mold and Base Plate, (Lb)	25.949	26.028
Wt. of Mold and Base Plate, (Lb)	15.792	
Wt. of Sample, (Lb)	10.157	
Height of Speciment, (in3)	4.59	
Vol. of Specimen, (in3)	6	
Moisture Content, (%)	12	
Dry Density, (Lbs/C.F)	126.72	

Expansion Ratio Determination		
Surcharge Weight, (Lb)	10	Expansion Ratio (ER):
Initial Height of Specimen, (in)	4.59	$ER = \left(\frac{0.022}{4.59}\right) = 0.479$
Initial Dial Gauge Reading, (in)	0	
Final Dial Gauge Reading, (in)	0.022	
Difference, (in)	0.022	

Water Content Data		
Sample Condition:	**before Soaking**	**After Soaking**
Sample No	**CBR1-3**	
Tare No	CA - 21	
Gross wet weight	526.28	
Gross Dry Weight	505.99	
Tare Weight	337.93	
Net Dry weight	168.06	
Weight of Water	20.29	
Moisture (%)	12	

Remark:

Tested by (Name / Initial):	Nami	NH	**Signature:**	
Form#: L-50	Date Prepared: 02/11/2019		Revision No: 1	Revised: 04/06/2019

California Bearing Ratio of Laboratory Compacted Soils (CBR)

Client	AEC	**Lab Ref**	
Project	Alan Enterprise LLC	**Job**	4134
Borehole	CBR1-1	**Sample**	CBR1-1

Test Details	
Standard	ASTM D1883-99 / AASHTO T193-98
Sample Type	Bulk disturbed sample
Sample Description	Silty Sand
Location	Cupertino
Variations from Procedure	None

Specimen & Equipment Details			
Specimen Reference	A	**Method of Sample Preparation**	ASTM D 1883
Diameter	6.0000 in		
Height	4.5900 in		
Dry Density before Soak	1.91 lb/ft3	**Dry Density after Soak**	1.91 lb/ft3
Surcharge Weight	10.0000 lb	**Comments**	
Moisture Content			
Before Compaction	1.00 %	**After Compaction**	12.00 %
Top 1” Layer after penetration	0.00 %	**Average after soak**	13.15 %

Soaking Details	
Soaking Time	96.00 hrs
Sample Weight after Soaking	10.1210 lb
Soaking Travel	0.0220 in
Swell	0.48 %

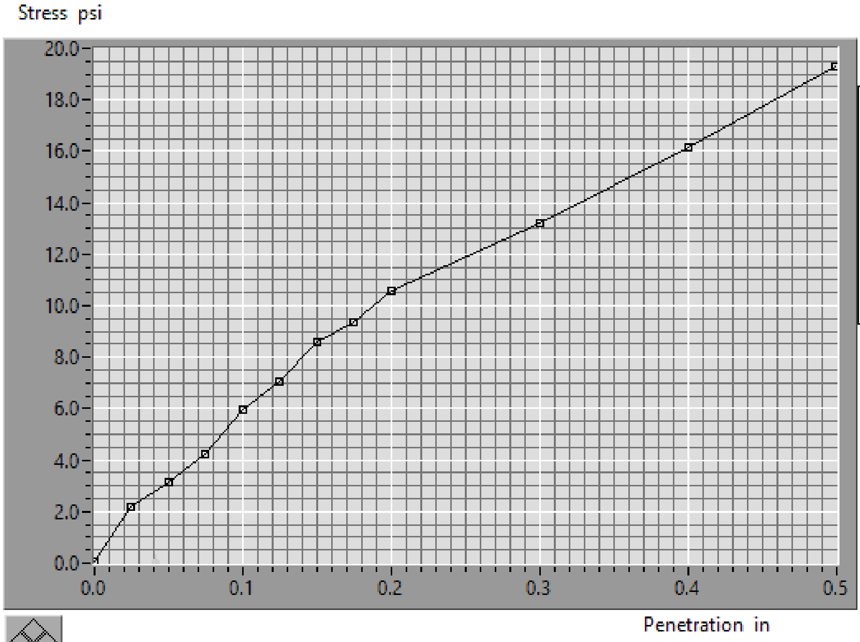
Tested By and Date:	Nami 03/23/20
Checked By and Date:	A.F 03/23/20
Approved By and Date:	S.H 03/236/20

California Bearing Ratio of Laboratory Compacted Soils (CBR)

Client	AEC	**Lab Ref**	
Project	Alan Enterprise LLC	**Job**	4134
Borehole	CBR1-1	**Sample**	CBR1-1

ASTM-D1883-99 / AASHTO-T193-98

Penetration Stage



Penetration	0.10 in	0.20 in
Stress	6.0 psi	10.6 psi
Standard Stress	1000.0 psi	1492.8 psi
CBR	0.6 %	0.7 %

California Bearing Ratio of Laboratory Compacted Soils (CBR)

Client	AEC	**Lab Ref**	
Project	Alan Enterprise LLC	**Job**	4134
Borehole	CBR1	**Sample**	CBR1-2

Test Details	
Standard	ASTM D1883-99 / AASHTO T193-98
Sample Type	Bulk disturbed sample
Sample Description	Silty Sand
Location	Cupertino
Variations from Procedure	None

Specimen & Equipment Details			
Specimen Reference	B	**Method of Sample Preparation**	ASTM D 1883
Diameter	6.0000 in		
Height	4.5900 in		
Dry Density before Soak	1.93 lb/ft3	**Dry Density after Soak**	1.93 lb/ft3
Surcharge Weight	1.0000 lb	**Comments**	
Moisture Content			
Before Compaction	1.00 %	**After Compaction**	12.00 %
Top 1" Layer after penetration	0.00 %	**Average after soak**	12.88 %

Soaking Details	
Soaking Time	96.00 hrs
Sample Weight after Soaking	10.2330 lb
Soaking Travel	0.0220 in
Swell	0.48 %

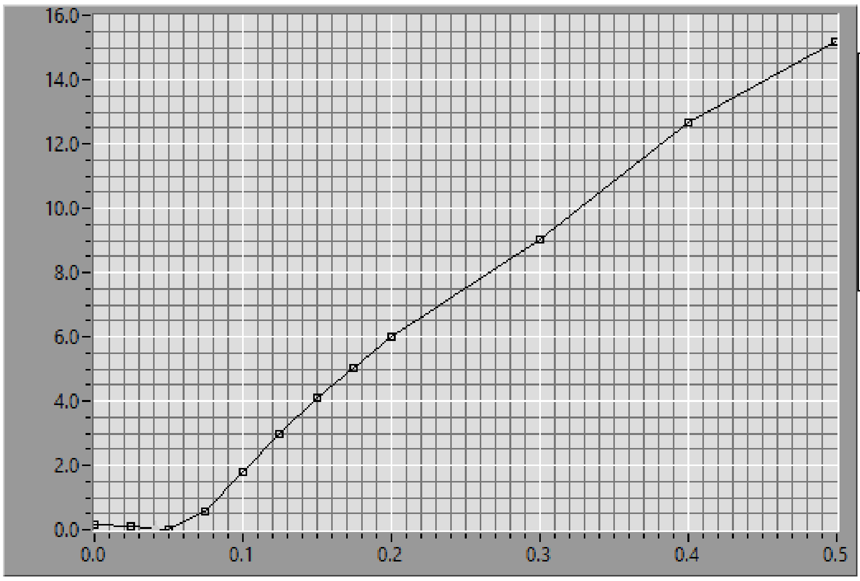
Tested By and Date:	Nami 03/23/2020
Checked By and Date:	A.F 03/23/2020
Approved By and Date:	S.H 03/23/2020

California Bearing Ratio of Laboratory Compacted Soils (CBR)

Client	AEC	**Lab Ref**	
Project	Alan Enterprise LLC	**Job**	4134
Borehole	CBR1	**Sample**	CBR1-2

ASTM-D1883-99 / AASHTO-T193-98

Penetration Stage



Penetration	0.10	in	0.20	in
Stress	1.8	psi	6.0	psi
Standard Stress	1000.0	psi	1492.8	psi
CBR	0.2	%	0.4	%

California Bearing Ratio of Laboratory Compacted Soils (CBR)

Client	AEC	**Lab Ref**	
Project	Alan Enterprise LLC	**Job**	4134
Borehole	CBR1	**Sample**	CBR1-3

Test Details	
Standard	ASTM D1883-99 / AASHTO T193-98
Sample Type	Bulk disturbed sample
Sample Description	Silty Sand
Location	Cupertino
Variations from Procedure	None

Specimen & Equipment Details			
Specimen Reference	C	**Method of Sample Preparation**	ASTM D 1883
Diameter	6.0000 in		
Height	4.5900 in		
Dry Density before Soak	1.93 lb/ft3	**Dry Density after Soak**	1.93 lb/ft3
Surcharge Weight	10.0000 lb	**Comments**	
Moisture Content			
Before Compaction	1.00 %	**After Compaction**	12.00 %
Top 1" Layer after penetration	0.00 %	**Average after soak**	12.87 %

Soaking Details	
Soaking Time	96.00 hrs
Sample Weight after Soaking	10.2360 lb
Soaking Travel	0.0220 in
Swell	0.48 %

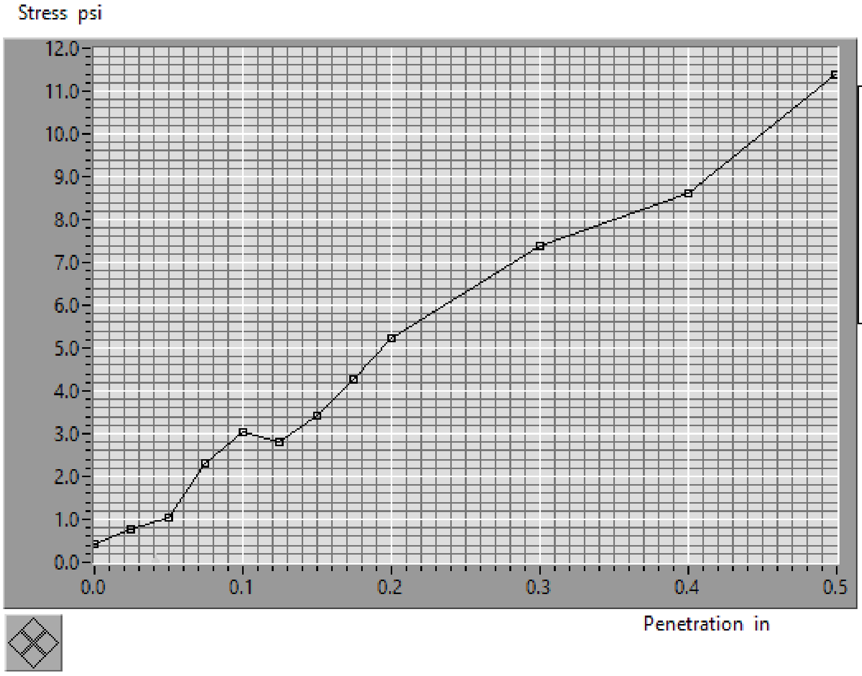
Tested By and Date:	Nami 03/23/2020
Checked By and Date:	A.F 03/23/2020
Approved By and Date:	S.H 03/23/2020

California Bearing Ratio of Laboratory Compacted Soils (CBR)

Client	AEC	**Lab Ref**	
Project	Alan Enterprise LLC	**Job**	4134
Borehole	CBR1	**Sample**	CBR1-3

ASTM-D1883-99 / AASHTO-T193-98

Penetration Stage



Penetration	0.10 in	0.20 in
Stress	3.0 psi	5.2 psi
Standard Stress	1000.0 psi	1492.8 psi
CBR	0.3 %	0.3 %

LABORATORY COMPACTION (Modified)
(ASTM D1557)

Report Date:	3/10/2020
Project No:	4134
Project Name:	Alan Enterprise LLC
Project Address:	22690 Stevens Creek BLVD, Cupertino
Technician	GIVO
Page #:	Page 1 of 2

Sample #:	CBR1
Sample ID:	03102020 - 4134 - Soil - CBR1
Curve No.	1

Type of Material:	Soil	Material Description:	Silty Sand
Source:	FIELD	Sample Date:	3/10/2020
Sampled by:	MOBIN		

Soil Compaction Data:

Compaction Sample No.	**1**	**2**	**3**	**4**
Weight of Wet Soil & Mold (gr)	10163.1	10431.5	10709.8	10474.9
Weight of Mold (gr)	5905.7	5905.7	5905.7	5905.7
Wet Unit Weight (pcf)	125.31	133.21	141.40	134.49
Tare Number	H-19	AE-9	H-25	H-30
Weight of Tare (gr)	126	125.6	127.5	127.3
Weight of Wet Soil & Tare (gr)	457.8	442.3	389.9	456.2
Weight of Dry Soil & Tare (gr)	438.12	416.95	362.65	413.46
Weight of Water (gr)	19.68	25.35	27.25	42.74
Weight of Dry Soil (gr)	312.12	291.35	235.15	286.16
Moisture Content %	6.31	8.70	11.59	14.94
Dry Unit Weight (pcf)	117.88	122.55	126.72	117.01

Maximum Dry Density (Lbs/C.F):	**126.72**
Optimum Mositure (%):	**12%**

	#4	**3/8"**	**3/4"**	
Weight Class	A	B	C	D
Weight (lbs)	687.9	54.3	36.6	236.5
Percentage (%)	0.678	0.053	0.036	0.233

Bulk Mass (lbs):	1015.3

List of Methods	
Method A:	No
Method A w/ Correction OR Method B:	No
Method B:	No
Method B w/ Correction OR Method C:	No
Method C:	YES
Not Applicable:	No

Rammer Type:	Mechanical

Tested By: GIVO

Reviewed By: #REF!

Signature: ____________

Signature: ____________

2455 Autumnvale Drive, Unit E | San Jose, CA 95131| Tel: (408) 217-9174 | Fax: (408) 217-9632
www.achieveng.com

ACHIEVEMENT ENGINEERING CORP.

Moisture Density
(AASHTO T265 - ASTM D2216)

Report Date:	3/23/2020
Project No:	4134
Project Name:	Alan Enterprise LLC
Project Address:	Cupertino
Technician:	Nami

Type of Material:	Soil	Sample Description:	
Source:	Field		
Sampled by:	Nami	Sample Date:	3/8/2020

Sample No:	CBR1-1	CBR1-2	CBR1-3				
Ht. of Sample:	Disturbed	Disturbed	Disturbed				
Tare No:	CA - 19	CA - 22	CA - 21				
Gross Wet Wt:	589.15	535.63	526.28				
Gross Dry Wt:	562.13	514.41	505.99				
Tare Wt:	336.93	336.73	337.93				
Net Dry Wt:	225.20	177.68	168.06				
Wt. of Water:	27.02	21.22	20.29				
% Moisture	12%	12%	12%				
Liners Dia							
Density Factors							
Dry Density							

Tested By: Nami — Reviewed E A.F

Signature: ______ — Signature: ______

C B R 2

California Bearing Ratio (CBR)

ASTM: D 1883 - AASHTO: T193-99

ACHIEVEMENT ENGINEERING CORP.

Report Date:	3/23/2020	AEC Project#:	4134
*Client:	Alan Enterprise	Sample No.:	CBR2-1
Report ID:	**032320 - 4134 - L50 - NH**	Page #:	4
*Project Address:	Cupertino		

Density Data

Condition of specimen	**Before Soaking**	**After Soaking**
Wt. of Compacted Sample, Mold and Base Plate, (Lb)	24.947	25.509
Wt. of Mold and Base Plate, (Lb)	15.822	
Wt. of Sample, (Lb)	9.125	
Height of Speciment, (in3)	4.59	
Vol. of Specimen, (in3)	6	
Moisture Content, (%)	11	
Dry Density, (Lbs/C.F)	123.99	

Expansion Ratio Determination

Surcharge Weight, (Lb)	10	Expansion Ratio (ER):
Initial Height of Specimen, (in)	4.59	$ER = \left(\frac{0.048}{4.59}\right) = 1.045$
Initial Dial Gauge Reading, (in)	0	
Final Dial Gauge Reading, (in)	0.048	
Difference, (in)	0.048	

Water Content Data

Sample Condition:	**before Soaking**	**After Soaking**
Sample No	**CBR2-1**	
Tare No	CA - 3	
Gross wet weight	861.22	
Gross Dry Weight	811.47	
Tare Weight	342.2	
Net Dry weight	469.27	
Weight of Water	49.75	
Moisture (%)	11	

Remark:

Tested by (Name / Initial):	Nami	NH	**Signature:**	

Form#: L-50	Date Prepared: 02/11/2019	Revision No: 1	Revised: 04/06/2019

California Bearing Ratio (CBR)

ASTM: D 1883 - AASHTO: T193-99

Report Date:	3/23/2020	AEC Project#:	4134
*Client:	Alan Enterprise	Sample No.:	CBR2-1
Report ID:	**032320 - 4134 - L50 - NH**	Page #:	5
*Project Address:	Cupertino		

Density Data

Condition of specimen	**Before Soaking**	**After Soaking**
Wt. of Compacted Sample, Mold and Base Plate, (Lb)	27.418	27.697
Wt. of Mold and Base Plate, (Lb)	17.558	
Wt. of Sample, (Lb)	9.86	
Height of Speciment, (in3)	4.59	
Vol. of Specimen, (in3)	6	
Moisture Content, (%)	11	
Dry Density, (Lbs/C.F)	123.99	

Expansion Ratio Determination

Surcharge Weight, (Lb)	10	Expansion Ratio (ER):
Initial Height of Specimen, (in)	4.59	
Initial Dial Gauge Reading, (in)	0	
Final Dial Gauge Reading, (in)	0.048	
Difference, (in)	0.048	

$$ER = \left(\frac{0.048}{4.59}\right) = 1.045$$

Water Content Data

Sample Condition:	**before Soaking**	**After Soaking**
Sample No	**CBR2-2**	
Tare No	CA - 4	
Gross wet weight	525.94	
Gross Dry Weight	506.92	
Tare Weight	336.3	
Net Dry weight	170.62	
Weight of Water	19.02	
Moisture (%)	11	

Remark:

Tested by (Name / Initial):	Nami	NH	**Signature:**	

Form#: L-50	Date Prepared: 02/11/2019	Revision No: 1	Revised: 04/06/2019

California Bearing Ratio (CBR)

ASTM: D 1883 - AASHTO: T193-99

ACHIEVEMENT ENGINEERING CORP.

Report Date:	3/23/2020	AEC Project#:	4134
*Client:	Alan Enterprise	Sample No.:	CBR2-1
Report ID:	**032320 - 4134 - L50 - NH**	Page #:	6
*Project Address:	Cupertino		

Density Data		
Condition of specimen	**Before Soaking**	**After Soaking**
Wt. of Compacted Sample, Mold and Base Plate, (Lb)	27.798	27.969
Wt. of Mold and Base Plate, (Lb)	17.696	
Wt. of Sample, (Lb)	10.102	
Height of Speciment, (in3)	4.59	
Vol. of Specimen, (in3)	6	
Moisture Content, (%)	11	
Dry Density, (Lbs/C.F)	123.99	

Expansion Ratio Determination		
Surcharge Weight, (Lb)	10	Expansion Ratio (ER):
Initial Height of Specimen, (in)	4.59	
Initial Dial Gauge Reading, (in)	0	
Final Dial Gauge Reading, (in)	0.048	
Difference, (in)	0.048	

$$ER = \left(\frac{0.048}{4.59}\right) = 1.045$$

Water Content Data		
Sample Condition:	**before Soaking**	**After Soaking**
Sample No	**CBR2-3**	
Tare No	CA - 5	
Gross wet weight	416.63	
Gross Dry Weight	408.8	
Tare Weight	337.02	
Net Dry weight	71.78	
Weight of Water	7.83	
Moisture (%)	11	

Remark:

Tested by (Name / Initial):	Nami	NH	**Signature:**	

Form#: L-50	Date Prepared: 02/11/2019	Revision No: 1	Revised: 04/06/2019

California Bearing Ratio of Laboratory Compacted Soils (CBR)

Client	AEC	**Lab Ref**	
Project	Alan Enterprise LLC	**Job**	4134
Borehole	CBR2	**Sample**	CBR2-1

Test Details	
Standard	ASTM D1883-99 / AASHTO T193-98
Sample Type	Bulk disturbed sample
Sample Description	Silty Sand
Location	Cupertino
Variations from Procedure	None

Specimen & Equipment Details			
Specimen Reference	A	**Method of Sample Preparation**	ASTM D 1883
Diameter	6.0000 in		
Height	4.5900 in		
Dry Density before Soak	1.75 lb/ft3	**Dry Density after Soak**	1.75 lb/ft3
Surcharge Weight	10.0000 lb	**Comments**	
Moisture Content			
Before Compaction	1.00 %	**After Compaction**	11.00 %
Top 1" Layer after penetration	0.00 %	**Average after soak**	17.84 %

Soaking Details	
Soaking Time	96.00 hrs
Sample Weight after Soaking	9.6870 lb
Soaking Travel	0.0480 in
Swell	1.05 %

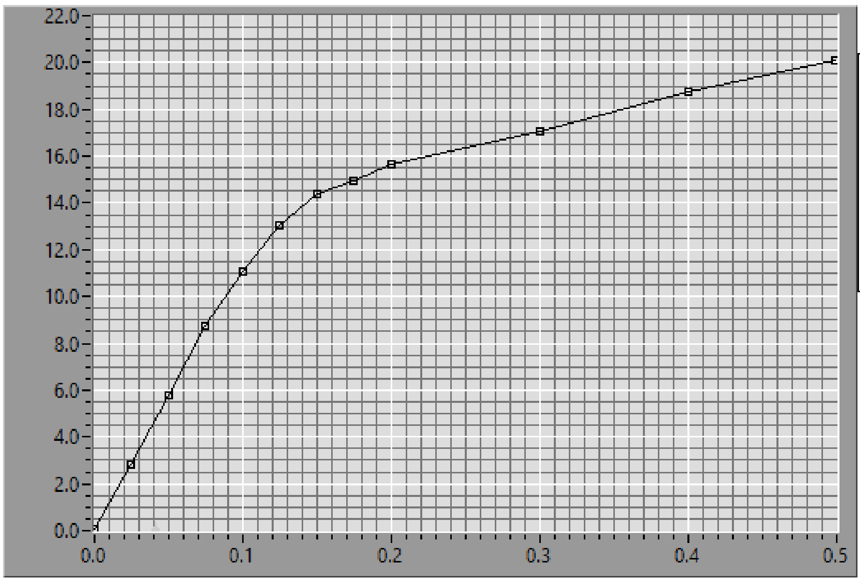
Tested By and Date:	Nami 03/23/2020
Checked By and Date:	A.F 03/23/2020
Approved By and Date:	S.H 03/23/2020

California Bearing Ratio of Laboratory Compacted Soils (CBR)

Client	AEC	**Lab Ref**	
Project	Alan Enterprise LLC	**Job**	4134
Borehole	CBR2	**Sample**	CBR2-1

ASTM-D1883-99 / AASHTO-T193-98

Penetration Stage



Penetration	0.10 in	0.20 in
Stress	11.1 psi	15.7 psi
Standard Stress	1000.0 psi	1492.8 psi
CBR	1.1 %	1.1 %

California Bearing Ratio of Laboratory Compacted Soils (CBR)

Client	AEC	**Lab Ref**	
Project	Alan Enterprise LLC	**Job**	4134
Borehole	CBR2	**Sample**	CBR2-2

Test Details	
Standard	ASTM D1883-99 / AASHTO T193-98
Sample Type	Bulk disturbed sample
Sample Description	Silty Sand
Location	Cupertino
Variations from Procedure	None

Specimen & Equipment Details			
Specimen Reference	B	**Method of Sample Preparation**	ASTM D 1883
Diameter	6.0000 in		
Height	4.5900 in		
Dry Density before Soak	1.89 lb/ft3	**Dry Density after Soak**	1.89 lb/ft3
Surcharge Weight	10.0000 lb	**Comments**	
Moisture Content			
Before Compaction	1.00 %	**After Compaction**	11.00 %
Top 1" Layer after penetration	0.00 %	**Average after soak**	14.14 %

Soaking Details	
Soaking Time	96.00 hrs
Sample Weight after Soaking	10.1390 lb
Soaking Travel	0.0480 in
Swell	1.05 %

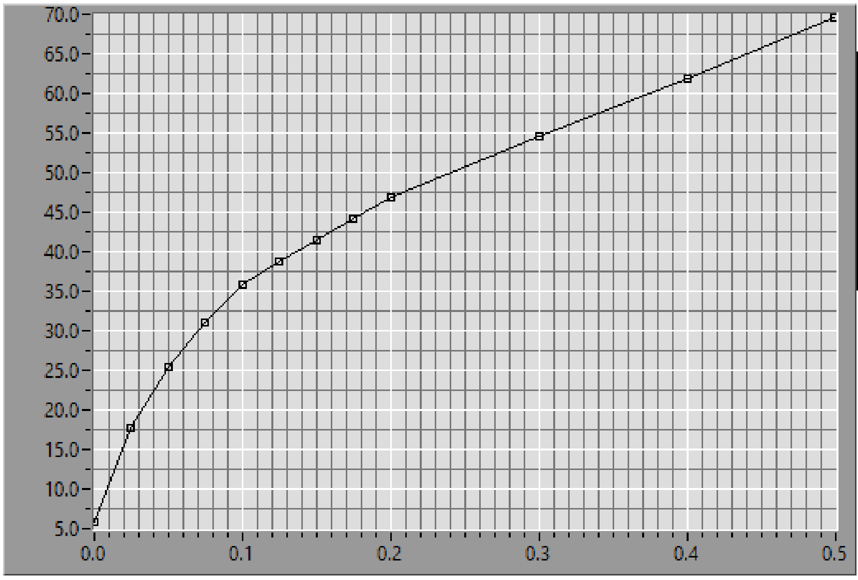
Tested By and Date:	Nami 03/23/2020
Checked By and Date:	A.F 03/23/2020
Approved By and Date:	S.H 03/23/2020

California Bearing Ratio of Laboratory Compacted Soils (CBR)

Client	AEC	Lab Ref	
Project	Alan Enterprise LLC	Job	4134
Borehole	CBR2	Sample	CBR2-2

ASTM-D1883-99 / AASHTO-T193-98

Penetration Stage



Penetration	0.10 in	0.20 in
Stress	35.8 psi	46.8 psi
Standard Stress	1000.0 psi	1492.8 psi
CBR	3.6 %	3.1 %

California Bearing Ratio of Laboratory Compacted Soils (CBR)

Client	AEC	**Lab Ref**	
Project	Alan Enterprise LLC	**Job**	4134
Borehole	CBR2	**Sample**	CBR2-3

Test Details	
Standard	ASTM D1883-99 / AASHTO T193-98
Sample Type	Bulk disturbed sample
Sample Description	Silty Sand
Location	Cupertino
Variations from Procedure	None

Specimen & Equipment Details			
Specimen Reference	C	**Method of Sample Preparation**	ASTM D 1883
Diameter	6.0000 in		
Height	4.5900 in		
Dry Density before Soak	1.94 lb/ft3	**Dry Density after Soak**	1.94 lb/ft3
Surcharge Weight	10.0000 lb	**Comments**	
Moisture Content			
Before Compaction	1.00 %	**After Compaction**	11.00 %
Top 1” Layer **after penetration**	0.00 %	**Average after soak**	12.88 %

Soaking Details	
Soaking Time	96.00 hrs
Sample Weight after Soaking	10.2730 lb
Soaking Travel	0.0480 in
Swell	1.05 %

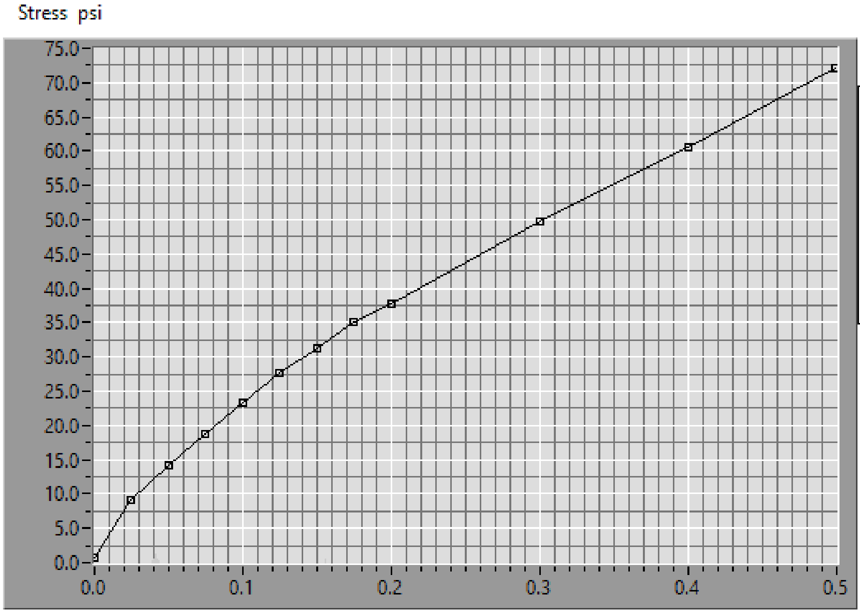
Tested By and Date:	Nami 03/23/2020
Checked By and Date:	A.F 03/23/2020
Approved By and Date:	S.H 03/23/2020

California Bearing Ratio of Laboratory Compacted Soils (CBR)

Client	AEC	Lab Ref	
Project	Alan Enterprise LLC	Job	4134
Borehole	CBR2	Sample	CBR2-3

ASTM-D1883-99 / AASHTO-T193-98

Penetration Stage



Penetration	0.10 in	0.20 in
Stress	23.3 psi	37.7 psi
Standard Stress	1000.0 psi	1492.8 psi
CBR	2.3 %	2.5 %

LABORATORY COMPACTION (Modified)
(ASTM D1557)

ACHIEVEMENT ENGINEERING CORP.

Report Date:	3/10/2020
Project No:	4134
Project Name:	Alan Enterprise LLC
Project Address:	22690 Stevens Creek BLVD, Cupertino
Technician	GIVO
Page #:	Page 1 of 2

Sample #:	CBR2
Sample ID:	03102020 - 4134 - Soil - CBR2
Curve No.	2

Type of Material:	Soil	Material Description:	Silty Sand
Source:	FIELD	Sample Date:	3/10/2020
Sampled by:	MOBIN		

Soil Compaction Data:

Compaction Sample No.	1	2	3	4
Weight of Wet Soil & Mold (gr)	10206.8	10503.3	10591.2	10310.9
Weight of Mold (gr)	5905.7	5905.7	5905.7	5905.7
Wet Unit Weight (pcf)	126.60	135.32	137.91	129.66
Tare Number	A-7	AE-21	H-31	H-8
Weight of Tare (gr)	134.2	126.3	127.9	129.5
Weight of Wet Soil & Tare (gr)	451.4	453.8	433.5	444.4
Weight of Dry Soil & Tare (gr)	431.75	425.35	400.95	402.1
Weight of Water (gr)	19.65	28.45	32.55	42.3
Weight of Dry Soil (gr)	297.55	299.05	273.05	272.6
Moisture Content %	6.60	9.51	11.92	15.52
Dry Unit Weight (pcf)	118.75	123.57	123.22	112.24

Maximum Dry Density (Lbs/C.F):	**123.99**
Optimum Mositure (%):	**11%**

	#4	3/8"	3/4"	
Weight Class	A	B	C	D
Weight (lbs)	756.3	37.5	45.6	219.3
Percentage (%)	0.714	0.035	0.043	0.207

Bulk Mass (lbs):	1058.7

List of Methods	
Method A:	No
Method A w/ Correction OR Method B:	No
Method B:	No
Method B w/ Correction OR Method C:	No
Method C:	YES
Not Applicable:	No

Rammer Type:	Mechanical

Tested By: GIVO

Reviewed By: #REF!

Signature: ____________

Signature: ____________

2455 Autumnvale Drive, Unit E | San Jose, CA 95131| Tel: (408) 217-9174 | Fax: (408) 217-9632
www.achieveng.com

Moisture Density
(AASHTO T265 - ASTM D2216)

Report Date:	3/23/2020
Project No:	4134
Project Name:	Alan Enterprise LLC
Project Address:	Cupertino
Technician:	Nami

Type of Material:	Soil	Sample Description:	
Source:	Field		
Sampled by:	Nami	Sample Date:	3/8/2020

Sample No:	CBR2 - 1	CBR2 - 2	CBR2 - 3				
Ht. of Sample:	Disturbed	Disturbed	Disturbed				
Tare No:	CA - 3	CA - 4	CA - 5				
Gross Wet Wt:	861.22	525.94	416.63				
Gross Dry Wt:	811.47	506.92	408.80				
Tare Wt:	342.20	336.30	337.02				
Net Dry Wt:	469.27	170.62	71.78				
Wt. of Water:	49.75	19.02	7.83				
% Moisture	11%	11%	11%				
Liners Dia							
Density Factors							
Dry Density							

Tested By: Nami   Reviewed E A.F

Signature: ____________   Signature: ____________

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Appendix D: Phase I Environmental Site Assessment

July 29, 2019

Alan Enterprise LLC.
Mr. Ali Mozafari

Reference: Phase I Environmental Site Assessment Report for
22690 Stevens Creek Boulevard,
Cupertino, California 95014
(Three parcels with APNs 342-14-04, 342-14-05, and 342-14-66)
AEC Project No. 3940

Dear Mr. Mozafari:

Achievement Engineering Corp. (AEC) is pleased to submit this report of Phase I Environmental Site Assessment (ESA) for the above-referenced project. This report presents a review of the information collected through historical research and our site visit (including interviews) and a summary of our professional judgment based on the information available.

We appreciate the opportunity to be of service to you on this project and would be happy to discuss our findings with you. We look forward to serving as your environmental/geotechnical engineer on your future projects.

Respectfully,

ACHIEVEMENT ENGINEERING CORP.

Sadaf Safaai, PE
Project Engineer

Copies: Mr. Ali Mozafari

TABLE OF CONTENTS

1- EXECUTIVE SUMMARY

Achievement Engineering Corp. (AEC) was retained by Alan Enterprise LLC. to perform a Phase I Environmental Site Assessment (ESA) of the property located at 22690 Stevens Creek Boulevard, Cupertino, California 95014 (Three parcels with APNs 342-14-04, 342-14-05, and 342-14-66). The following summary highlights the significant findings and conclusions representing our best professional judgment based on the information and data available to us during the course of this assessment. The reader is referred to the report text for full details.

<u>PHYSICAL SETTING</u>

- The subject site is located at 22690 Stevens Creek Boulevard, Cupertino, California 95014 (Three parcels with APNs 342-14-04, 342-14-05, and 342-14-66), with coordinates of 37° 19' 18.27'' N and 122° 4' 8.20'' W.
- The topography of the subject is relatively flat at the target property with an average elevation of approximately 386.0 feet (General topographic gradient is NNE).
- It appears that the upper soil near the site is Urban Land, with unreported surface texture and drainage class.
- Rock stratigraphic unit geologic age identification is as follows:

Era: Cenozoic

Category: Continental Deposits

System: Tertiary

Series: Pliocene

Code: Tpc (decoded above as Era, System & Series)

The subject site does not contain any evidence of jurisdictional non-tidal wetlands (national or state).

<u>HISTORICAL DATA</u>

The subject site is currently owned by Bateh Brothers Liquors and Mini Mart (George and Nahida Bateh) and is located on the west south corner of Stevens Creek Blvd. and Foothill Blvd. intersection at 22690 Stevens Creek Boulevard, Cupertino, California 95014, within mixed use plan development(General Commercial) zone of Cupertino.

The subject site comprised of three parcels with assessor parcel number (APN) 342-14-04, 342-14-05, and 342-14-66, with a total area of approximately 0.75 acre. Review of the historical data available for the subject site reveals that most probably the development of the site <u>as is</u> took place between 1950 and 1956 (based on aerial photos), the first city directory listing for this property belongs to 1975, before that, this address does not exist in 1970 and 1968 listings. Bateh Brothers Liquors and Mini Mart has been listed in 2014 back to 1980 listings. In 1975 directory, a Frank's Liquor and Grocery Store has been listed. Also an interview conducted by others in 2017 reveals that before 1976, the place was used as a bar. No building permit was found indicating any other use for this property. Per aerial photos, in 1939 an orchard was in the property that cannot be observed in 1950 aerial photo. Sometime between 1939 and 1950 the trees were gradually cleared, starting from north to south. The existence of fertilizers, pesticides and metals are possible in the shallow soil due to this historical land use.

Also, review of the historical data for adjacent properties of the subject site using the City Directory Abstract (refer to Appendix E) provided by EDR reveals that for the most part, uses were mixed residential and commercial (a veterinary clinic has existed since (at least 1989) at 10012 N. Foothill Blvd.) and Beacon Service Station has been in service under different names as follows:

1995- to Present -Cupertino Beacon Service Station, Cupertino Auto Care
1989- Foothill Mobil
1981-1984 -McElroy Mobil Service
1976 -D&D Mobil Service
1971 -Johns Mobil Service, Mobil Oil Corporation
1968 -Johns Mobil

<u>ENVIRONMENTAL LIEN</u>

The search by EDR indicates that no environmental lien was found for the subject property. Also no OTHER ACTIVITY AND USE LIMITATIONS (AULs) was found for this property. The Appendix L exhibits the search results.

<u>SITE RECONNAISSANCE</u>

Hazardous Materials –Hazardous chemicals and/or products, as defined in the Code of Federal Regulations 29 CFR 1910.1200, is not used per record and was not observed at the subject site.

Storage Tanks – Currently, no underground storage tank is being used at the subject site. Per Phase I performed by EIS in March 2017, the current business stored small quantities of propane in a locked metal cabinet adjacent to the northeastern building exterior.

Waste Generation – At the time of this ESA, no hazardous or regulated wastes has been observed at the Site. Dumpsters for domestic waste located at the back of building.

Surface Areas – Currently, The subject property consists of three conjoined parcels that form an L-shaped area of approximately 0.75-acres. One 3,025-SF commercial structure is developed on the northeastern corner of the property. The building is currently occupied by Bateh Bros Liquors & Mini Mart. Paved asphalt parking spaces are located on the eastern portion of the Site. The rest of the property is currently an undeveloped dirt and gravel lot.

Adjacent Properties – Adjacent properties are mixed use (commercial, services and residentials) Two major properties are Beacon Service Station at 22510 Stevens Creek Blvd. and Arcadia Veterinary at 10012 N. Foothill Blvd.

CONCLUSIONS

Based on the currently available information, the subject site is currently owned by Bateh Brothers Liquors and Mini Mart (George and Nahida Bateh), located at 22690 Stevens Creek Boulevard, Cupertino, CA 95014 within mixed use plan development (General Commercial) zone of Cupertino. The site itself has not been listed in any data base searched.

In May 2017 EIS performed a limited Phase II investigation at this property to assess the impact of neighboring site (Cupertino Beacon at 22510 Stevens Creek) at this property. Above-ESL benzene concentration in soil vapor was found in the borings at the subject site.

There is one site listed on various databases in the close proximity to and at higher elevation of the subject site;

- Santa Clara County Fire Station (Also recorded as Monta Vista Fire station) at 22620 Stevens Creek Blvd., 332 ft., west of the subject site.

There are two sites in the close proximity of the site, but at lower elevations:

- Cupertino Beacon at 22510 Stevens Creek, 180 ft. east of the subject property
- Foothill Auto Services at 10121 N. Foothill, 620 ft., north of the subject property

The review of the aerial photos and historical use of the property as an orchard from at least 1939 to 1950 indicate that there is a potential that metals and pesticides exist in shallow site soil. Above-ESL benzene concentration in soil vapor was found in the borings at the subject site is also a recognized environmental conditions. Besides, the open LUST case and documented soil, groundwater, and soil vapor contamination at neighboring property 22510 Stevens Creek Boulevard (Cupertino Beacon) represents an offsite controlled recognized environmental condition. To assess the impacts of the neighboring site at the subject site, conducting a limited Phase II investigation is recommended.

No disturbed soil areas, discolored or polluted water, unusual or noxious, floor drains, PCB containing transformers or nearby former railroad tracks was observed at the subject site.

2- PURPOSE

The purpose of this Phase I ESA is limited to providing an assessment of current environmental conditions at the subject site, to the extent feasible, based on the data available and as referenced as part of an estate transaction process. The assessment was conducted to identify and highlight recognized environmental conditions (REC). REC can be defined as the presence or likely presence of any hazardous substances or petroleum products in, on, or at a property: 1) due to any release to the environment, 2) under conditions indicative of a release to the environment; or 3) under conditions that pose a material threat of a future release to the environment. De minimis conditions are not recognized environmental conditions. The following scope of work was performed to identify REC associated with the subject site:

- A review and evaluation of federal and state databases systems including Federal NPL, Federal Delisted NPL site list, Federal CERCLIS, Federal RCRA (CORRACTS and non- CORRACTS) facilities list, Federal CERCLIS NFRAP, Federal RCRA Generator list, Federal institutional controls/engineering controls registries, Federal ERNS list, State- and tribal, State and tribal landfill and/or solid waste disposal site lists, State and tribal leaking storage tank lists, State and tribal registered storage tank lists, State and tribal voluntary cleanup sites and State and tribal Brownfields sites, Local Brownfield lists, Local Lists of Landfill / Solid Waste Disposal Sites, Local Lists of Hazardous waste / Contaminated Sites, Local Land Records, Records of Emergency Release Reports, EDR High Risk Historical Records, EDR Recovered Government Archives and Other Ascertainable Records, as indicated in Appendix A, pages 6 and 7.

- An evaluation of the physical characteristics of the site including topography, geology, soil type, wetlands, and flood plain information.

- A review and evaluation of standards practiced including historical information available for the subject site such as aerial photographs, zoning records and historical maps, reviewing land uses by the aid of City Directory.

- A site visit searching for physical indication of any contamination, documenting it with photographs and interviews with land owner/local peopleworking in the area looking for history of any contamination or release.

- Review of the two reports “Phase I Environmental Site Assessment, 22690 Stevens Creek Boulevard, Santa Clara, California” dated March 2017 and “Phase II Limited Soil, Groundwater, & Soil Vapor Investigation Report, 22690 Stevens Creek Boulevard, Cupertino, California”, dated May 2017, both prepared by EIS.

3- METHODOLOGY USED

The following assessment and pertaining report were prepared in accordance with ASTM E 1527-2013, Standard Practice for Environmental Site Assessment: Phase I Environmental Site Assessment Process. We used the following methods to evaluate the environmental conditions at the subject site.

A review of the regulatory status of the subject site as it pertains to regulated activities involving the use of hazardous chemicals, the generation of hazardous waste, the treatment, storage, or disposal of hazardous waste, or the release of regulated substances. AEC used services of Environmental Data Resources, Inc. (EDR) to conduct the appropriate radius searches of the subject site of this report in conformance with the scope and limitations of the above referenced ASTM. The Standard approximate minimum search review distances requirements are as follows (*The ones in italic font do not have standard distances, but have been reviewed under the distances specified, if any data available for the subject site*):

To One (1) Mile:

- Federal National Priorities List (NPL).
- Resource Conservation and Recovery Act - Treatment, Storage, and Disposal Facilities (RCRA-TSD).
- Federal RCRA CORRACTS facilities list
- State- and tribal-equivalent NPL
- *Notify 65*

To One-Half (0.5) of a Mile:

- Federal Delisted NPL site list
- Federal CERCLIS list
- Federal CERCLIS NFRAP site list
- Solid Waste Disposal Facilities, Active and Inactive (SWLF)
- Federal RCRA non-CORRACTS TSD facilities list
- State- and tribal-equivalent CERCLIS
- State and tribal landfill and/or solid waste disposal site lists
- State and tribal leaking storage tank lists (LUST)
- State and tribal voluntary cleanup sites
- *HIST CORTESE*
- *Local Lists of Hazardous waste / Contaminated Sites*

To One-Quarter (0.25) of a Mile:

- *RCRA-SQG*
- *RCRA-LQG*

- *RCRA-CESQG*
- *Local Lists of Registered Storage Tanks (SWEEPS, HIST UST, CA FID UST, CERS TANKS)*
- *Available State Lists of Underground Storage Tanks (USTs).*
- *CUPA Listings*
- *DRYCLEANERS*

To One-Eighth (0.125) of a Mile:

- Environmental Response Notification System (ERNS)
- Resource Conservation and Recovery Act - Large Quantity Generators (RCRA- LgGen)
- Resource Conservation and Recovery Act - Small Quantity Generators (RCRA- SmGen)
- *EDR Hist Cleaner*
- *EDR Hist Auto list*
- Federal institutional controls/engineering controls registries

A copy of the EDR Report is attached as Appendix A. This report also includes the time that information requested, last updated by EDR and last updated by the original reference.

- AEC has forwarded correspondences to Santa Clara Department of Environmental Health (SCDEH) and Santa Clara Fire Department in compliance with the Freedom of Information Act (FOIA). The results of all inquiries will be documented in Appendix F. DTSC (Department of Toxic Substances Control) Archives will also be consulted.

- Historical research of the subject site back to year 1897 was conducted (when data available). The history of site development and usage was developed using the following historical sources:
    - Aerial photographs available from EDR back to 1939.
    - City directories available from EDR back to 1968.
    - Historical Topographic maps obtained from EDR back to 1897.
    - Certified Sanborn maps obtained for this address was not available.

AEC representative visually and physically observed the peripheral surface areas of the subject site on 27 July, 2019. In addition, the observations of the adjacent properties to identify high-risk and contamination migration concerns were made by a walk-through of the accessible sections of the referenced site and its surroundings. An interview was conducted with George Bateh the owner of the liquor store and a mechanic who has worked in Cupertino Beacon for almost 19 years which the responses have been used in preparing this report.

4- REGULATORY REVIEW

4-1- Standard Environmental Records Reviewed.

The target property was not listed in any of the databases searched by EDR. Among the standard databases searched by EDR, the following can be named (for full details, see end of Appendix A):

Federal NPL site list
- NPL National Priority List
- Proposed NPL- Proposed National Priority List Sites
- NPL LIENS Federal Superfund Liens

Federal Delisted NPL site list
- Delisted NPL National Priority List Deletions

Federal CERCLIS list
- FEDERAL FACILITY Federal Facility Site Information listing
- SEMS Superfund Enterprise Management System

Federal CERCLIS NFRAP site list
- SEMS-ARCHIVE: Superfund Enterprise Management System Archive

Federal RCRA CORRACTS facilities list
- CORRACTS Corrective Action Report

Federal RCRA non-CORRACTS TSD facilities list
- RCRA-TSDF: RCRA - Treatment, Storage and Disposal

Federal RCRA generators list
- RCRA-LQG RCRA - Large Quantity Generators
- RCRA-CESQG RCRA - Conditionally Exempt Small Quantity Generator

Federal institutional controls / engineering controls registries
- LUCIS Land Use Control Information System
- US ENG CONTROLS Engineering Controls Sites List
- US INST CONTROL Sites with Institutional Controls

Federal ERNS list
- ERNS Emergency Response Notification System

State- and tribal - equivalent NPL
- CA RESPONSE: State Response Sites

State and tribal leaking storage tank lists

INDIAN LUST

State and tribal landfill and/or solid waste disposal site lists
- SWF/LF Solid Waste Information System

State and tribal registered storage tank lists
- FEMA UST Underground Storage Tank Listing
- UST CLOSURE: Proposed Closure of Underground Storage Tank (UST) Cases
- UST: Active UST Facilities

State and tribal voluntary cleanup sites
- INDIAN VCP: Voluntary Cleanup Priority Listing

State and tribal Brownfields sites
- BROWNFIELDS Considered Brownfields Sites Listing

Additional Environmental Records are listed in pages 5 to 7, Appendix A.

4-2- **Surrounding Sites Search results**

4-2-1- Federal CERCLIS NFRAP:

SEMS-ARCHIVE: SEMS-ARCHIVE (Superfund Enterprise Management System Archive) tracks sites that have no further interest under the Federal Superfund Program based on available information. The list was formerly known as the CERCLIS-NFRAP, renamed to SEMS ARCHIVE by the EPA in 2015. EPA may perform a minimal level of assessment work at a site while it is archived if site conditions change and/or new information becomes available. Archived sites have been removed and archived from the inventory of SEMS sites. Archived status indicates that, to the best of EPA's knowledge, assessment at a site has been completed and that EPA has determined no further steps will be taken to list the site on the National Priorities List (NPL), unless information indicates this decision was not appropriate or other considerations require a recommendation for listing at a later time. The decision does not necessarily mean that there is no hazard associated with a given site; it only means that based upon available information, the location is not judged to be potential NPL site.

A review of the SEMS-ARCHIVE list, as provided by EDR, and dated 04/11/2019 has revealed that there is 1 SEMS-ARCHIVE site within approximately 0.5 miles of the target property:

SEMS-ARCHIVE		
Equal/Higher Elevation	**Address**	**Direction / Distance**
KAISER ALUMINUM FOIL	*23333 STEVENS CREEK*	*W 1/4 - 1/2 (0.366 mi.)*

4-2-2- State- and tribal - equivalent CERCLIS

CA ENVIROSTOR: The Department of Toxic Substances Control's (DTSC's) Site Mitigation and Brownfields Reuse Program's (SMBRP's) EnviroStor database identifies sites that have known contamination or sites for which here may be reasons to investigate further. The database includes the following site types: Federal Superfund sites (National Priorities List (NPL)); State Response, including Military Facilities and State Superfund; Voluntary Cleanup; and School sites. EnviroStor provides similar information to the information that was available in CalSites, and provides additional site information, including, but not limited to, identification of formerly-contaminated properties that have been released for reuse, properties where environmental deed restrictions have been recorded to prevent inappropriate land uses, and risk characterization information that is used to assess potential impacts to public health and the environment at contaminated sites.

A review of the CA ENVIROSTOR list, as provided by EDR, and dated 04/29/2019 has revealed that there are 4 CA ENVIROSTOR sites within approximately 1 mile of the target property.

CA ENVIROSTOR Equal/Higher Elevation		
Lower Elevation	**Address**	**Direction / Distance**
KAISER ALUMINUM AND	23333 STEVENS CREEK	W 1/4 - 1/2 (0.366 mi.)
KAISER CEMENT CORP	2401 STEVENS CREEK B	W 1/2 - 1 (0.994 mi.)

CA ENVIROSTOR Lower Elevation		
Lower Elevation	**Address**	**Direction / Distance**
BLACKBERRY FARM PLAY	21979 SAN FERNANDO D	ESE 1/4 - 1/2 (0.485 mi.)
ACRIAN INC	10131 BUBB RD	E 1/2 - 1 (0.973 mi.)

4-2-3- State and tribal leaking storage tank lists

CA LUST: Leaking Underground Storage Tank (LUST) Sites included in GeoTracker. GeoTracker is the Water Boards data management system for sites that impact, or have the potential to impact, water quality in California, with emphasis on groundwater.

A review of the CA LUST list, as provided by EDR, has revealed that there are 7 CA LUST sites within approximately 0.5 miles of the target property.

CA LUST Equal/Higher Elevation		
Equal/Higher	**Address**	**Direction / Distance**
SANTA CLARA COUNTY F	22620 STEVENS CREEK	W 0 - 1/8 (0.063 mi.)
MONTA VISTA SUBSTATI	10110 CALIFORNIA OAK	NW 1/4 - 1/2 (0.327 mi.)

CA LUST Lower Elevation		
Lower	**Address**	**Direction / Distance**
CUPERTINO BEACON	22510 STEVENS CREEK	E 0 - 1/8 (0.034 mi.)
CUPERTINO BEACON	22510 STEVENS CREEK	E 0 - 1/8 (0.034 mi.)
ARCO #6182	10121 N FOOTHILL BLV	N 0 - 1/8 (0.119 mi.)
FOOTHILL AUTO SERVIC	10121 N. FOOTHILL BO	N 0 - 1/8 (0.119 mi.)
FACCIOLA RESIDENCE	22371 CUPERTINO RD	ENE 1/8 - 1/4 (0.189 mi.)

CA CPS-SLIC: Cleanup Program Sites (CPS; also known as Site Cleanups [SC] and formerly known as Spills, Leaks, Investigations, and Cleanups [SLIC] sites) included in GeoTracker. GeoTracker is the Water Boards data management system for sites that impact, or have the potential to impact, water quality in California, with emphasis on groundwater.

A review of the CA CPS-SLIC list, as provided by EDR, has revealed that there are 2 CA CPS-SLIC sites within approximately 0.5 miles of the target property.

CA CPS-SLIC Equal/Higher Elevation		
Equal/Higher	Address	Direction / Distance
KAISER ALUMINUM AND	*23333 STEVENS CREEK*	*W 1/4 - 1/2 (0.366 mi.)*
PRIVATE RESIDENCE	*PRIVATE RESIDENCE*	*S 1/4 - 1/2 (0.495 mi.)*

CA HIST LUST: A listing of open and closed leaking underground storage tanks. This listing is no longer updated by the county. Leaking underground storage tanks are now handled by the Department of Environmental Health.

A review of the CA HIST LUST list, as provided by EDR, and dated 03/29/2005 has revealed that there are 4 CA HIST LUST sites within approximately 0.5 miles of the target property.

CA HIST LUST Equal/Higher Elevation		
Equal/Higher	Address	Direction / Distance
SANTA CLARA COUNTY F	*22620 STEVENS CREEK*	*W 0 - 1/8 (0.063 mi.)*

CA HIST LUST Lower Elevation		
Lower	Address	Direction / Distance
CUPERTINO BEACON	*22510 STEVENS CREEK*	*E 0 - 1/8 (0.034 mi.)*
ARCO #6182	*10121 N FOOTHILL BLV*	*N 0 - 1/8 (0.119 mi.)*
FACCIOLA RESIDENCE	*22371 CUPERTINO RD*	*ENE 1/8 - 1/4 (0.189 mi.)*

4-2-4- State and tribal registered storage tank lists

CA UST: The Underground Storage Tank database contains registered USTs. USTs are regulated under Subtitle I of the Resource Conservation and Recovery Act (RCRA). The data come from the State Water Resources Control Board's Hazardous Substance Storage Container Database.

A review of the UST list, as provided by EDR, has revealed that there is 1 UST site within approximately 0.25 miles of the target property.

CA UST Equal/Higher Elevation		
Equal/Higher	Address	Direction / Distance
MONTA VISTA FIRE STA	*22620 STEVENS CREEK*	*W 0 - 1/8 (0.063 mi.)*

CA UST Lower Elevation		
Lower	Address	Direction / Distance
CUPERTINO BEACON	*22510 STEVENS CREEK*	*E 0 - 1/8 (0.034 mi.)*

CA UST Lower Elevation		
Lower	**Address**	**Direction / Distance**
BEACON SERVICE STATI	*22510 STEVENS CREEK*	*E 0 - 1/8 (0.034 mi.)*
ARCO SERVICE STATION	*10121 N FOOTHILL BL*	*N 0 - 1/8 (0.119 mi.)*

4-2-5- State and tribal voluntary cleanup sites

CA VCP: Contains low threat level properties with either confirmed or unconfirmed releases and the project proponents have request that DTSC oversee investigation and/or cleanup activities and have agreed to provide coverage for DTSC's costs.

A review of the CA VCP list, as provided by EDR, and dated 04/29/2019 has revealed that there is 1 CA VCP site within approximately 0.5 miles of the target property.

CA VCP Lower Elevation		
Lower	**Address**	**Direction / Distance**
BLACKBERRY FARM PLAY	*21979 SAN FERNANDO D*	*ESE 1/4 - 1/2 (0.485 mi.)*

4-2-6- Local Lists of Hazardous waste / Contaminated Sites

CA CERS HAZ WASTE: List of sites in the California Environmental Protection Agency (CalEPA) Regulated Site Portal which fall under the Hazardous Chemical Management, Hazardous Waste Onsite Treatment, Household Hazardous Waste Collection, Hazardous Waste Generator, and RCRA LQ HW Generator programs.

A review of the CA CERS HAZ WASTE list, as provided by EDR, and dated 04/09/2019 has revealed that there are 4 CA CERS HAZ WASTE sites within approximately 0.25 miles of the target property.

CA CERS HAZ WASTE Equal/Higher Elevation		
Equal/Higher	**Address**	**Direction / Distance**
DONNA COTNER DDS	*10011 N FOOTHILL BL*	*NW 0 - 1/8 (0.021 mi.)*

CA CERS HAZ WASTE Lower Elevation		
Lower	**Address**	**Direction / Distance**
CUPERTINO BEACON	*22510 STEVENS CREEK*	*E 0 - 1/8 (0.034 mi.)*
CUPERTINO AUTO REPAIR	*22510 STEVENS CREEK*	*E 0 - 1/8 (0.034 mi.)*
ACADIA VETERINARY CL	*10012 N FOOTHILL BL*	*NE 0 - 1/8 (0.038 mi.)*

4-2-7- Local Lists of Registered Storage Tanks

CA SWEEPS UST: Statewide Environmental Evaluation and Planning System. This underground storage tank listing was updated and maintained by a company contacted by the SWRCB in the early 1990's. The listing is no longer updated or maintained. The local agency is the contact for more information on a site on the SWEEPS list.

A review of the CA SWEEPS UST list, as provided by EDR, and dated 06/01/1994 has revealed that there are 4 CA SWEEPS UST sites within approximately 0.25 miles of the target property.

CA SWEEPS UST Equal/Higher Elevation		
Equal/Higher	Address	Direction / Distance
SANTA CLARA COUNTY F	22620 STEVENS CREEK	W 0 - 1/8 (0.063 mi.)

CA SWEEPS UST Lower Elevation		
Lower	Address	Direction / Distance
BEACON SERVICE STATI	22510 STEVENS CREEK	E 0 - 1/8 (0.034 mi.)
FOOTHILL AUTO SERVIC	10121 N. FOOTHILL BO	N 0 - 1/8 (0.119 mi.)
FACCIOLA RESIDENCE	22371 CUPERTINO RD	ENE 1/8 - 1/4 (0.189 mi.)

CA HIST UST: Historical UST Registered Database.

A review of the CA HIST UST list, as provided by EDR, and dated 10/15/1990 has revealed that there are 4 CA HIST UST sites within approximately 0.25 miles of the target property.

CA HIST UST Lower Elevation		
Lower	Address	Direction / Distance
MOBIL SERVICE STATIO	22510 STEVENS CREEK	E 0 - 1/8 (0.034 mi.)
G. JENSEN'S INC.	10121 N FOOTHILL BLV	N 0 - 1/8 (0.119 mi.)
G. JENSEN'S INC.	10121 N FOOTHILL BLV	N 0 - 1/8 (0.119 mi.)
FOOTHILL AUTO SERVIC	10121 N FOOTHILL BLV	N 0 - 1/8 (0.119 mi.)

CA FID UST: The Facility Inventory Database contains active and inactive underground storage tank locations. The source is the State Water Resource Control Board.

A review of the CA FID UST list, as provided by EDR, and dated 10/31/1994 has revealed that there is 1 CA FID UST site within approximately 0.25 miles of the target property.

CA FID UST Lower Elevation		
Lower	Address	Direction / Distance
MOBIL SERVICE STATIO	22510 STEVENS CREEK	E 0 - 1/8 (0.034 mi.)

CA CERS TANKS: List of sites in the California Environmental Protection Agency (CalEPA) Regulated Site Portal which fall under the Aboveground Petroleum Storage and Underground Storage Tank regulatory programs.

A review of the CA CERS TANKS list, as provided by EDR, and dated 04/09/2019 has revealed that there are 2 CA CERS TANKS sites within approximately 0.25 miles of the target property.

CA CERS TANKS Equal/Higher Elevation		
Equal/Higher	**Address**	**Direction / Distance**
MONTA VISTA FIRE STA	*22620 STEVENS CREEK*	*W 0 - 1/8 (0.063 mi.)*

CA CERS TANKS Lower Elevation		
Lower	**Address**	**Direction / Distance**
CUPERTINO BEACON	*22510 STEVENS CREEK*	*E 0 - 1/8 (0.034 mi.)*

4-2-8- Other Ascertainable Records

RCRA NonGen / NLR: RCRAInfo is EPA's comprehensive information system, providing access to data supporting the Resource Conservation and Recovery Act (RCRA) of 1976 and the Hazardous and Solid Waste Amendments (HSWA) of 1984. The database includes selective information on sites which generate, transport, store, treat and/or dispose of hazardous waste as defined by the Resource Conservation and Recovery Act (RCRA). Non-Generators do not presently generate hazardous waste.

A review of the RCRA NonGen / NLR list, as provided by EDR, and dated 03/25/2019 has revealed that there are 4 RCRA NonGen / NLR sites within approximately 0.25 miles of the target property.

RCRA NonGen / NLR Equal/Higher Elevation		
Equal/Higher	**Address**	**Direction / Distance**
LIFETIME DENTAL CARE	*10011 N FOOTHILL BLV*	*NW 0 - 1/8 (0.021 mi.)*
CAMBRIDGE PROPERTY M	*22731 STEVENS CREEK*	*W 1/8 - 1/4 (0.174 mi.)*

RCRA NonGen / NLR Lower Elevation		
Lower	**Address**	**Direction / Distance**
CUPERTINO AUTO CARE	*22510 STEVENS CREEK*	*E 0 - 1/8 (0.034 mi.)*
DAVID RANNELLS	*10073 AMADOR OAK COU*	*NNW 1/8 - 1/4 (0.151 mi.)*

CA Cortese: The sites for the list are designated by the State Water Resource Control Board (LUST), the Integrated Waste Board (SWF/LS), and the Department of Toxic Substances Control (Cal-Sites).

A review of the CA Cortese list, as provided by EDR, and dated 03/25/2019 has revealed that there is 1 CA Cortese site within approximately 0.5 miles of the target property.

CA Cortese Lower Elevation		
Lower	**Address**	**Direction / Distance**
CUPERTINO BEACON	22510 STEVENS CREEK	E 0 - 1/8 (0.034 mi.)

CA CUPA Listings: A listing of sites included in the county's Certified Unified Program Agency database. California's Secretary for Environmental Protection established the unified hazardous materials and hazardous waste regulatory program as required by chapter 6.11 of the California Health and Safety Code. The Unified Program consolidates the administration, permits, inspections, and enforcement activities.

A review of the CA CUPA Listings list, as provided by EDR, has revealed that there are 10 CA CUPA Listings sites within approximately 0.25 miles of the target property.

CA CUPA Equal/Higher Elevation		
Equal/Higher	**Address**	**Direction / Distance**
DONNA COTNER DDS	10011 N FOOTHILL BL	NW 0 - 1/8 (0.021 mi.)
GARFIELD FAMILY CHIR	10011 N FOOTHILL BL	NW 0 - 1/8 (0.021 mi.)
LIFETIME DENTAL CARE	10011 N FOOTHILL BL	NW 0 - 1/8 (0.021 mi.)

CA CUPA Lower Elevation		
Lower	**Address**	**Direction / Distance**
CUPERTINO BEACON	22510 STEVENS CREEK	E 0 - 1/8 (0.034 mi.)
CUPERTINO AUTO CARE	22510 STEVENS CREEK	E 0 - 1/8 (0.034 mi.)
ACADIA VETERINARY CL	10012 N FOOTHILL BL	NE 0 - 1/8 (0.038 mi.)
FOOTHILL VALERO	10121 N FOOTHILL BL	N 0 - 1/8 (0.119 mi.)
FREEMANS AUTO SERVIC	10121 N FOOTHILL BL	N 0 - 1/8 (0.119 mi.)
FOOTHILL AUTO SERVIC	10121 N FOOTHILL BL	N 0 - 1/8 (0.119 mi.)
AAA AUTO REPAIR AND	10121 N FOOTHILL BL	N 0 - 1/8 (0.119 mi.)

CA HIST CORTESE: The sites for the list are designated by the State Water Resource Control Board [LUST], the Integrated Waste Board [SWF/LS], and the Department of Toxic Substances Control [CALSITES]. This listing is no longer updated by the state agency.

A review of the CA HIST CORTESE list, as provided by EDR, and dated 04/01/2001 has revealed that there are 5 CA HIST CORTESE sites within approximately 0.5 miles of the target property.

CA HIST CORTESE Equal/Higher Elevation		
Equal/Higher	**Address**	**Direction / Distance**
SANTA CLARA COUNTY F	22620 STEVENS CREEK	W 0 - 1/8 (0.063 mi.)
KAISER ALUMINUM AND	23333 STEVENS CREEK	W 1/4 - 1/2 (0.366 mi.)

CA HIST CORTESE Lower Elevation		
Lower	**Address**	**Direction / Distance**
CUPERTINO BEACON	*22510 STEVENS CREEK*	*E 0 - 1/8 (0.034 mi.)*
ARCO #6182	*10121 N FOOTHILL BLV*	*N 0 - 1/8 (0.113 mi.)*
FACCIOLA RESIDENCE	*22371 CUPERTINO RD*	*ENE 1/8 - 1/4 (0.189 mi.)*

CA HWP: Detailed information on permitted hazardous waste facilities and corrective action ("clean ups") tracked in EnviroStor.

A review of the CA HWP list, as provided by EDR, and dated 05/20/2019 has revealed that there is 1 CA HWP site within approximately 1 mile of the target property.

CA HWP Lower Elevation		
Lower	**Address**	**Direction / Distance**
ACRIAN INC	*10131 BUBB RD*	*E 1/2 - 1 (0.973 mi.)*

CA Notify 65: Listings of all Proposition 65 incidents reported to counties by the State Water Resources Control Board and the Regional Water Quality Control Board. This database is no longer updated by the reporting agency.

A review of the CA Notify 65 list, as provided by EDR, and dated 03/18/2019 has revealed that there is 1 CA Notify 65 site within approximately 1 mile of the target property.

CA HIST CORTESE Lower Elevation		
Lower	**Address**	**Direction / Distance**
ARCO SERVICE STA	*10121 N FOOTHILL BLV*	*N 0 - 1/8 (0.119 mi.)*

4-2-9- EDR HIGH RISK HISTORICAL RECORDS

4-2-9-1- EDR Exclusive Records

EDR Hist Auto: EDR has searched selected national collections of business directories and has collected listings of potential gas station/filling station/service station sites that were available to EDR researchers. EDR's review was limited to those categories of sources that might, in EDR's opinion, include gas station/filling station/service station establishments. The categories reviewed included, but were not limited to gas, gas station, gasoline station, filling station, auto, automobile repair, auto service station, service station, etc. This database falls within a category of information EDR classifies as "High Risk Historical Records", or HRHR. EDR's HRHR effort presents unique and sometimes proprietary data about past sites and operations that typically create environmental concerns, but may not show up in current government records searches.

A review of the EDR Hist Auto list, as provided by EDR, has revealed that there are 4 EDR Hist Auto sites within approximately 0.125 miles of the target property.

Hist Auto list Lower Elevation		
Lower	**Address**	**Direction / Distance**
ACTION AUTO SERVICE	10010 FOOTHILL BLVD	NE 0 - 1/8 (0.026 mi.)
JOHNS MOBIL SERVICE	22510 STEVENS CREEK	E 0 - 1/8 (0.034 mi.)
FOOTHILL AUTO SERVIC	10121 N FOOTHILL BLV	N 0 - 1/8 (0.119 mi.)
ACED ACRO SERVICE	10121 FOOTHILL	N 0 - 1/8 (0.119 mi.)

4-2-10- Unmapped addresses

Due to poor or inadequate address information, the following sites were not mapped:

	CA CDL
Kaiser Cement Corp Permanente Plan	SEMS
1x Stevens Creek Quarry	CA HAZNET
Stevens Creek Dam	FINDS
Bridge 37c0571 Over Stevens Creek	FINDS
Stevens Creek Quarry, Inc.	US MINES

4-3- OTHER REGULATORY INFORMATION

In addition to the above referenced databases, EDR supplied information from numerous existing government databases. The list of the databases is provided in the attached EDR report (Appendix A).

4-4- FREEDOM OF INFORMATION ACT (FOIA) REQUEST

AEC has forwarded correspondences to Santa Clara Department of Environmental Health (SCDEH) and Santa Clara Fire Department in compliance with the Freedom of Information Act (FOIA). The results of all inquiries will be documented in Appendix F. DTSC (Department of Toxic Substances Control) Archives will also be consulted.

5- PHYSICAL SETTING

5-1- TOPOGRAPHY

The United States Geological Survey (USGS) maps were reviewed. The topography of the subject site is relatively flat and general topographic gradient is NNE. The site itself is at an approximate average elevation of 386.0 feet above mean sea level. Elevation profiles are provided in Appendix A under physical setting.

5-2- SOILS

The Soil Survey of the area, available from the United States Department of Agriculture-NRCS was reviewed. It appears that the upper soil near the site is Urban Land, with unreported surface texture and drainage class.

5-3- FLOOD PLAIN INFORMATION

The Federal Emergency Management Agency (FEMA), through its National Flood Insurance Program, has published Flood Insurance Rate Maps that delineate flood zones. Flood events of a magnitude that are expected to be equaled or exceeded once on the average during any 100-year, or 500-year period have been selected as having special significance for flood plain management and for flood insurance rates. These events, commonly termed the 100- and 500-year floods, have a 1 and 0.2 percent chance, respectively, of being equaled or exceeded during any year. Although the recurrence interval represents the long-term average period between floods of a specific magnitude, rare floods could occur at short intervals or even within the same year. FEMA has made delineations based on whether a particular area experiences minimal flooding, is within the boundary of the 100-year flood, or is within the boundary of the 500-year flood. The Site is noted on FEMA Map Number 06085C0204H (FEMA firm Flood data). The site is not located within 100- year but it is within 500-year flood zone.

5-4- GEOLOGY

The project site is located within the Coast Range Geomorphic Province. Local uplift of the Santa Cruz Mountains within the last 2 to 3 million years has occurred due to a restraining bend of the San Andreas Fault, producing transpressional forces across the plate boundary. Thrust faults bound the San Andreas Fault are responsible for uplift of the range. The range is characterized by rugged hills with moderate relief, steep valleys, and locally steep hillsides abutting drainages. East-flowing drainages result in dissection of the mountain range and alluvial deposition within the San Francisco Bay structural trough.

The site is located on SEARS POINT ASSEMBLAGE, TPc, Claystone—Massive to laminated gray claystone.

Rock stratigraphic unit geologic age identification is as follows:

Era: Cenozoic
Category: Continental Deposits
System: Tertiary
Series: Pliocene
Code: Tpc (decoded above as Era, System & Series)

5-5- **SURFACE WATER/GROUND WATER HYDROLOGY**

Groundwater flow direction for a particular site is best determined by a qualified environmental professional using site-specific well data. Since ascertainable well data for the subject site is not available, it is necessary to rely on EDR to determine ground water flow. EDR utilized the information available from federal and state well databases from the nearest wells located near to the subject site. The direction of the flow for the existing wells farther from the subject site that can be helpful in deciding if the contamination can travel toward the subject site has been presented in EDR, Appendix A, TC5722958.2s Page A-6 .The groundwater levels vary near the subject site and has not been reported in EDR Report. The direction of flow, in the vicinity of the site is also variable and it has not been reported in the report. Phase II Subsurface Investigation Report for the subject site by EIS, May 2017, indicated that groundwater was observed at 21.6 to 29.0 ft. bgs in the two advanced borings.

6- HISTORICAL REVIEW

6-1- **PRESENT OWNER**

The subject site is currently owned by Bateh Brothers Liquors and Mini Market (George and Nahida Bateh).

6-2- **AERIAL PHOTOGRAPHS**

A review of historical aerial photographs for the years 1939, 1948,1950 1956, 1963, 1968, 1974, 1980, 1998, 2006, 2009, 2012 and 2016 was performed (Appendix C). Review of the historical data available for the subject site reveals that most probably the development of the site as is took place in 1953 (based on aerial photos).

6-3- **HISTORICAL MAPS**

Sanborn Fire Insurance maps were requested from EDR. EDR certified that the complete holdings of the Sanborn Library, LLC collection have been searched based on the supplied target property information and no map for the subject site was found (Appendix D).

The first city directory listing for this property belongs to 1975 with the name of Frank's Liquor and grocery. Bateh Brothers Liquors has been listed since 1980. No building permit indicating any other land-use was found in the searched records. Per aerial photos, in 1939 an orchard was in the property that cannot be observed in 1950 aerial photo. Sometime between 1939 and 1950 the trees were gradually cleared, starting from north to south. The existence of fertilizers and pesticides are possible in the soil due to this historical land use.

6-4- **HISTORICAL CHAIN OF TITLE REPORT**

Obtaining a Historical Chain of Title Report is beyond the scope of services of this Phase I ESA report for the subject site.

6-5- **ZONING AND LAND USE RECORDS**

By reviewing Cupertino zoning map, the target property located at 22690 Stevens Creek Boulevard in mixed use plan development (General Commercial) zone of Cupertino. (Refer to Appendix I).

7- SITE RECONNAISSANCE

7-1- **HAZARDOUS SUBSTANCES AND CONTAINERS**

During our site visit dated 27 July, 2109, no pools or sumps containing possible hazardous substances or petroleum products were observed.

7-2- **FACILITY STORAGE TANKS**

Our observations did not reveal the presence of any tank on the subject site. In addition, no evidence of underground pipelines bisecting the subject site was observed during the site visit dated 27 July, 2109. No current evidence of above ground gasoline or diesel storage tanks was observed at the subject site. The historical and regulatory record review revealed no evidence of any USTs previously used at the property. The current business stored small quantities of propane in a locked metal cabinet adjacent to the northeastern building exterior.

7-3- **SOLID WASTE GENERATION AND DISPOSAL**

The property is currently a liquor store and parking lot and no regulated solid waste is generated at the property. A Dumpster for collecting domestic wastes exists at the property.

7-4- **STORM WATER AND WASTE WATER SYSTEMS**

Storm water from paved surface areas is sloped to a public drain. Observation of the storm water system did not identify any abnormal accumulation of petroleum run-off or foreign material. No unusual blockages of the storm water control system were observed. Public water and sewer services are available to the area. During the ESA, no wastewater pretreatment or discharge control devices were observed or reported. The subject site did not contain any pits, ponds, or lagoons.

7-5- **SURFACE AREAS**

The subject property consists of three conjoined parcels that form an L-shaped area of approximately 0.75-acres. One 3,025-SF commercial structure is developed on the northeastern corner of the property. The building is currently occupied by Bateh Bros Liquors & Mini Mart. Paved asphalt parking spaces are located on the eastern portion of the Site. The rest of the property is currently an undeveloped dirt and gravel lot.

7-6- **AREA RECONNAISSANCE**

During the site visit dated 27 July, 2109, observations were made of the adjacent properties. These observations were made to identify recognized environmental conditions that have the potential for impacting the subject site. No issues of environmental concern were obvious as the site visit was conducted except existence of a Cupertino Beacon (Formerly Foothill Mobil) that is within 180 ft .radius, but at a lower elevation of the subject site.

8- ADDITIONAL ENVIRONMENTAL CONCERNS

8-1- WETLANDS

Wetlands include freshwater marshes, wet meadows, bogs, shrub swamps, wooded swamps, bottomland hardwood forests, shallow ponds, seepage areas, and springs. They range in size from small isolated depressions surrounded by uplands to large complexes thousands of acres in size on the flood plains of major rivers. Review of the available site information did not identify any jurisdictional wetlands (State Wetlands or National Wetlands Inventory) at the subject site.

8-2- AIR EMISSIONS

No activity generating any air emission was recognized by the land use in the subject site.

9- FINDINGS AND CONCLUSIONS

AEC performed a Phase I Environmental Site Assessment in conformance with the scope and limitations of ASTM Practice E 1527-13 Phase I Environmental Site Assessment Process of the property located at 22690 Stevens Creek Boulevard, Cupertino, CA 95014, (Three parcels with APNs 342-14-04, 342-14-05, and 342-14-66). Any exceptions to, or deletions from this practice are described in Section 10.0 of this report. AEC has additionally made the following observations:

Based on the currently available information, the subject site is currently owned by Bateh Brothers Liquors and Mini Mart (George and Nahida Bateh), located at 22690 Stevens Creek Boulevard, Cupertino, CA 95014 within mixed use plan development (General Commercial) zone of Cupertino. The site itself has not been listed in any data base searched.

In May 2017 EIS performed a limited Phase II investigation at this property to assess the impact of neighboring site (Cupertino Beacon at 22510 Stevens Creek) at this property:

EIS advanced two exploratory soil borings on the subject property to collect soil, groundwater, and oil vapor samples on May 2, 2017. EIS concluded as followed:

- Soils encountered during the investigation included interbedded gravelly sand, silty sand, sandy gravel, clayey sand, and sandy silt to an explored depth of approximately 34 ft. bgs. Groundwater was encountered in boreholes SB-1 and SB-2 at depths of 21.61 and 29.09 ft. bgs, respectively.

- There were no detectable concentrations of TPH-g, BTEX or MTBE in the soil or groundwater samples.

- Soil sample SB-2@28', collected from directly to the east of the Site liquor store, contained TPH-d at 1.9 mg/kg and TPH-o at 11 mg/kg. Both concentrations are below applicable ESLs for residential and commercial/industrial uses.

- Groundwater sample SB-2, collected directly to the east of the Site liquor store, contained TPH-d at 310 µg/L and TPH-o at 620 µg/L. Both concentrations exceed the applicable ESL of 150 µg/L. TPH-d and TPH-o were not detected in the groundwater sample collected from boring SB-2.

- Soil vapor sample SB-1@5', collected from the asphalt-paved parking lot in the southeastern portion of the Site, contained TPH at 20,000 µg/m3 and benzene at 930 µg/m3. The benzene concentration exceeds the applicable ESLs for residential and commercial/industrial uses. The TPH concentration is below the applicable TPH-g ESLs. TPH and benzene were not detected above laboratory reporting limits in soil vapor sample SB-2@5' collected east of the Site liquor store.

There is one site listed on various databases in the close proximity to and at higher elevation of the subject site;

1- Santa Clara County Fire Station (Also recorded as Monta Vista Fire station) at 22620 Stevens Creek Blvd., 332 ft., west of the subject site

This site is a closed clean up site. The leak (diesel) was reported in 1997 and the case reported closed in 1998. The facility currently owns a UST, but no leakage or violation found in the record.

There are two sites in the close proximity of the site, but at lower elevations:

2- Cupertino Beacon at 22510 Stevens Creek, 180 ft. east of the subject property

This property located east across the street from the subject site, has historically been occupied by multiple fuel service stations and auto repair businesses since 1968. Former occupants include Cupertino Beacon service station and Cupertino Auto Care from at least 1995 to present, Foothill Mobil in 1989, McElroy Mobil Service from 1981 to 1984, D&D Mobil Service in 1976, and Johns Mobil Service from at least 1968 to 1971. There is currently an open regulatory LUST case at 22510 Stevens Creek Boulevard.

In 1999, the SCVWD advanced borings adjacent to the site within Stevens Creek and South Foothill Boulevards. MTBE was detected in soil and groundwater samples collected from the borings at concentrations of up to 0.8 ppm and 8.5 ppb, respectively. In December, a waste oil UST was removed and the fuel piping was replaced. An estimated 275 tons of soil were removed at this time. Prior to installation of the new piping and fuel dispensers, 3 horizontal vapor extraction wells were installed parallel to the fuel dispenser islands.

January 2000 - 7 direct-push soil borings (GP1 through GP7) were advanced onsite to 15-34 feet below the ground surface (ft bgs). Groundwater was not encountered in the borings. The highest TPHg concentrations (2,200 ppm) were reported for borings in the central portion of the site. MTBE was detected in all soil samples at concentrations up to 140 ppm.

April 2002 - 3 direct push soil borings (GP8 through GP10) and 6 vapor extraction wells were advanced onsite. Grab groundwater samples were collected and reported to contain up to 120,000 ppb TPHg, 24,000 ppb Benzene, and 34,000 ppb MTBE. In December, 9 monitoring wells (MW1 through MW9) and one vapor well were installed onsite. Periodic groundwater monitoring began at the site.

Between January 2003 and December 2004, several extended soil vapor extraction (SVE) events were conducted at the site.

February 2004 - offsite well MW10 was advanced to the north of the site across Stevens Creek Blvd. to a depth of 40 ft bgs. In May, 5 direct-push borings (DP1 through DP5) were advanced offsite. TPHg was not detected in any of the soil samples. Grab groundwater samples were reported to contain up to 96 ppb TPHg; Benzene and MTBE were not reported to be present above the laboratory reporting limits.

January 2007 - 3 additional offsite monitoring wells (MW11 through MW13), 3 onsite monitoring wells (MW14 through MW16), 3 onsite vapor probe wells and 2 vapor extraction wells were installed. In April, vapor extraction and multi-phase extraction feasibility tests were conducted. Dual phase extraction with air sparging has been proposed as the remedial alternative for this site.

In April 2008 – two monitoring wells (MW17 and MW18), 2 air sparging wells (AS1 and AS2) and 1 vapor extraction well (V1A) were installed onsite.

In April 2009 - 4 discrete-screened wells (DSW1 through DSW4) were advanced to depths of up to 66 ft bgs to asses if higher permeability soils are present below the depth of 40 ft bgs. Initial groundwater samples from these wells reported concentrations up to 409 ppb TPHg, 2.3 ppb Benzene, and 695 ppb MTBE. These wells were incorporated into the groundwater monitoring program.

The address is currently occupied by a Cupertino Beacon service station and Cupertino Auto Care. The service station has one 6,000-gallon diesel UST and two gasoline USTs of 10,000 and 12,000-gallons, located on the northwestern section of the property.

3- Foothill Auto Services at 10121 N. Foothill, 620 ft., north of the subject property

This site is a closed LUST clean up site, its initial record going back to 1988.

The review of the aerial photos and historical use of the property as an orchard from at least 1938 to early 1950s indicate that there is a potential that metals and pesticides exist in shallow site soil. Above-ESL benzene concentration in soil vapor was found in the borings at the subject site is a recognized environmental conditions. Besides, the open LUST case and documented soil, groundwater, and soil vapor contamination at neighboring property (Cupertino Beacon) 22510 Stevens Creek Boulevard represents an offsite controlled recognized environmental condition. To assess the impacts of the neighboring site at the subject site, a limited Phase II investigation is recommended.

No disturbed soil areas, discolored or polluted water, unusual or noxious, floor drains, PCB containing transformers or nearby former railroad tracks was observed at the subject site.

10- LIMITATIONS

The following limitations and exceptions are noted:

- AEC relied on Environmental Data Resources, Inc. (EDR) for regulatory review information (i.e., NPL, CERCLIS, CERC, etc.) and the Directory listing, While it is believed that the third party information contained in this report is reliable, AEC cannot guarantee the accuracy or completeness of this information.

- The scope of this assessment does not include site testing of ASTM non-scope considerations that include but are not limited to the following: asbestos-containing materials; radon; lead-based paint; and lead in drinking water.

- The scope of this assessment does not include any testing or sampling of materials such as soils, water, air, etc.

- The scope of this assessment does not include the evaluation of any subsurface conditions.

- Visual and physical observations were limited to accessible areas of the subject site and the areas of the site that AEC is contractually obligated.

- Any additional limitations to the methodology has been used, is specifically addressed in the relevant sections of this report and Appendices.

- This Phase I Environmental Site Assessment report has been prepared for the benefit of the Tesla and may solely be relied upon by its employees and affiliates, and their counsel and consultants.

APPENDIX A – EDR REPORT

22690 Stevens Creek Boulevard
22690 Stevens Creek Boulevard
Cupertino, CA 95014

Inquiry Number: 5722958.2s
July 22, 2019

The EDR Radius Map™ Report with GeoCheck®

6 Armstrong Road, 4th floor
Shelton, CT 06484
Toll Free: 800.352.0050
www.edrnet.com

FORM-LBB-LMI

TABLE OF CONTENTS

GEOCHECK ADDENDUM

Thank you for your business.
Please contact EDR at 1-800-352-0050
with any questions or comments.

EXECUTIVE SUMMARY

A search of available environmental records was conducted by Environmental Data Resources, Inc (EDR). The report was designed to assist parties seeking to meet the search requirements of EPA's Standards and Practices for All Appropriate Inquiries (40 CFR Part 312), the ASTM Standard Practice for Environmental Site Assessments (E 1527-13), the ASTM Standard Practice for Environmental Site Assessments for Forestland or Rural Property (E 2247-16), the ASTM Standard Practice for Limited Environmental Due Diligence: Transaction Screen Process (E 1528-14) or custom requirements developed for the evaluation of environmental risk associated with a parcel of real estate.

TARGET PROPERTY INFORMATION

ADDRESS

22690 STEVENS CREEK BOULEVARD
CUPERTINO, CA 95014

COORDINATES

Latitude (North):	37.3217440 - 37˚ 19' 18.27''
Longitude (West):	122.0689470 - 122˚ 4' 8.20''
Universal Tranverse Mercator:	Zone 10
UTM X (Meters):	582494.1
UTM Y (Meters):	4130767.8
Elevation:	386 ft. above sea level

USGS TOPOGRAPHIC MAP ASSOCIATED WITH TARGET PROPERTY

Target Property Map:	5640178 CUPERTINO, CA
Version Date:	2012

AERIAL PHOTOGRAPHY IN THIS REPORT

Portions of Photo from:	20140606, 20140608
Source:	USDA

MAPPED SITES SUMMARY

Target Property Address:
22690 STEVENS CREEK BOULEVARD
CUPERTINO, CA 95014

Click on Map ID to see full detail.

MAP ID	SITE NAME	ADDRESS	DATABASE ACRONYMS	RELATIVE ELEVATION	DIST (ft. & mi.) DIRECTION
A1	DONNA COTNER DDS	10011 N FOOTHILL BL	CA CERS HAZ WASTE, CA CUPA Listings	Higher	111, 0.021, NW
A2	GARFIELD FAMILY CHIR	10011 N FOOTHILL BL	CA CUPA Listings	Higher	111, 0.021, NW
A3	LIFETIME DENTAL CARE	10011 N FOOTHILL BLV	RCRA NonGen / NLR	Higher	111, 0.021, NW
A4	LIFETIME DENTAL CARE	10011 N FOOTHILL BL	CA CUPA Listings	Higher	111, 0.021, NW
A5	ACTION AUTO SERVICE	10010 FOOTHILL BLVD	EDR Hist Auto	Lower	135, 0.026, NE
B6	BEACON SERVICE STATI	22510 STEVENS CREEK	CA SWEEPS UST, CA FID UST	Lower	180, 0.034, East
B7	MOBIL SERVICE STATIO	22510 STEVENS CREEK	CA HIST UST	Lower	180, 0.034, East
B8	CUPERTINO BEACON	22510 STEVENS CREEK	CA LUST, CA HIST LUST	Lower	180, 0.034, East
B9	CUPERTINO AUTO CARE	22510 STEVENS CREEK	RCRA NonGen / NLR	Lower	180, 0.034, East
B10	CUPERTINO BEACON	22510 STEVENS CREEK	CA LUST, CA CERS HAZ WASTE, CA CERS TANKS, CA...	Lower	180, 0.034, East
B11	CUPERTINO BEACON	22510 STEVENS CREEK	CA UST	Lower	180, 0.034, East
B12	JOHNS MOBIL SERVICE	22510 STEVENS CREEK	EDR Hist Auto	Lower	180, 0.034, East
B13	BEACON SERVICE STATI	22510 STEVENS CREEK	CA UST	Lower	180, 0.034, East
B14	CUPERTINO AUTO REPAI	22510 STEVENS CREEK	CA CERS HAZ WASTE, CA CUPA Listings, CA CERS	Lower	180, 0.034, East
B15	ACADIA VETERINARY CL	10012 N FOOTHILL BL	CA CERS HAZ WASTE, CA CUPA Listings	Lower	202, 0.038, NE
C16	MONTA VISTA FIRE STA	22620 STEVENS CREEK	CA CERS TANKS, CA CERS	Higher	332, 0.063, West
C17	MONTA VISTA FIRE STA	22620 STEVENS CREEK	CA UST	Higher	332, 0.063, West
C18	SANTA CLARA COUNTY F	22620 STEVENS CREEK	CA LUST, CA HIST LUST, CA SWEEPS UST, CA EMI, CA...	Higher	332, 0.063, West
D19	ARCO	10121 FOOTHILL	CA HIST CORTESE	Lower	597, 0.113, North
D20	FOOTHILL AUTO SERVIC	10121 N FOOTHILL BLV	EDR Hist Auto	Lower	626, 0.119, North
D21	FOOTHILL VALERO	10121 N FOOTHILL BL	CA CUPA Listings	Lower	626, 0.119, North
D22	FREEMANS AUTO SERVIC	10121 N FOOTHILL BL	CA CUPA Listings	Lower	626, 0.119, North
D23	ARCO #6182	10121 N FOOTHILL BLV	CA LUST, CA HIST LUST, CA CERS	Lower	626, 0.119, North
D24	G JENSENS INC	10121 NORTH FOOTHILL	CA HIST UST, CA HAZNET	Lower	626, 0.119, North
D25	FOOTHILL AUTO SERVIC	10121 N FOOTHILL BL	CA CUPA Listings	Lower	626, 0.119, North
D26	G. JENSEN'S INC.	10121 N FOOTHILL BLV	CA HIST UST	Lower	626, 0.119, North
D27	AAA AUTO REPAIR AND	10121 N FOOTHILL BL	CA CUPA Listings	Lower	626, 0.119, North
D28	ARCO SERVICE STATION	10121 N FOOTHILL BL	CA UST	Lower	626, 0.119, North
D29	FOOTHILL AUTO SERVIC	10121 N. FOOTHILL BO	CA LUST, CA SWEEPS UST, CA HIST UST, CA CERS	Lower	626, 0.119, North
D30	ARCO SERVICE STATION	10121 NORTH FOOTHILL	CA Notify 65	Lower	626, 0.119, North
D31	ACED ACRO SERVICE	10121 FOOTHILL	EDR Hist Auto	Lower	627, 0.119, North
32	DAVID RANNELLS	10073 AMADOR OAK COU	RCRA NonGen / NLR	Lower	798, 0.151, NNW
33	CAMBRIDGE PROPERTY M	22731 STEVENS CREEK	RCRA NonGen / NLR	Higher	920, 0.174, West
34	FACCIOLA RESIDENCE	22371 CUPERTINO RD	CA LUST, CA HIST LUST, CA SWEEPS UST, CA HIST...	Lower	999, 0.189, ENE
35	MONTA VISTA SUBSTATI	10110 CALIFORNIA OAK	CA LUST, CA NPDES, CA CIWQS, CA CERS	Higher	1725, 0.327, NW
E36	KAISER ALUMINUM AND	23333 STEVENS CREEK	CA ENVIROSTOR, CA CPS-SLIC, CA EMI, CA HIST...	Higher	1932, 0.366, West
E37	KAISER ALUMINUM FOIL	23333 STEVENS CREEK	SEMS-ARCHIVE, RCRA-SQG, NY MANIFEST	Higher	1932, 0.366, West
38	BLACKBERRY FARM PLAY	21979 SAN FERNANDO D	CA ENVIROSTOR, CA VCP, CA CUPA Listings	Lower	2560, 0.485, ESE
39	PRIVATE RESIDENCE	PRIVATE RESIDENCE	CA CPS-SLIC	Higher	2615, 0.495, South

MAPPED SITES SUMMARY

Target Property Address:
22690 STEVENS CREEK BOULEVARD
CUPERTINO, CA 95014

Click on Map ID to see full detail.

MAP ID	SITE NAME	ADDRESS	DATABASE ACRONYMS	RELATIVE ELEVATION	DIST (ft. & mi.) DIRECTION
40	ACRIAN INC	10131 BUBB RD	SEMS-ARCHIVE, CA ENVIROSTOR, CA HIST UST, RCRA...	Lower	5138, 0.973, East
41	KAISER CEMENT CORP,	2401 STEVENS CREEK B	CA ENVIROSTOR, CA HIST CORTESE	Higher	5250, 0.994, West

EXECUTIVE SUMMARY

TARGET PROPERTY SEARCH RESULTS

The target property was not listed in any of the databases searched by EDR.

DATABASES WITH NO MAPPED SITES

No mapped sites were found in EDR's search of available ("reasonably ascertainable ") government records either on the target property or within the search radius around the target property for the following databases:

STANDARD ENVIRONMENTAL RECORDS

Federal NPL site list

NPL........................ National Priority List
Proposed NPL.............. Proposed National Priority List Sites
NPL LIENS.................. Federal Superfund Liens

Federal Delisted NPL site list

Delisted NPL.............. National Priority List Deletions

Federal CERCLIS list

FEDERAL FACILITY........ Federal Facility Site Information listing
SEMS........................ Superfund Enterprise Management System

Federal RCRA CORRACTS facilities list

CORRACTS.................. Corrective Action Report

Federal RCRA non-CORRACTS TSD facilities list

RCRA-TSDF................ RCRA - Treatment, Storage and Disposal

Federal RCRA generators list

RCRA-LQG.................. RCRA - Large Quantity Generators
RCRA-CESQG.............. RCRA - Conditionally Exempt Small Quantity Generator

Federal institutional controls / engineering controls registries

LUCIS........................ Land Use Control Information System
US ENG CONTROLS....... Engineering Controls Sites List
US INST CONTROL........ Sites with Institutional Controls

Federal ERNS list

ERNS........................ Emergency Response Notification System

State- and tribal - equivalent NPL

CA RESPONSE.............. State Response Sites

State and tribal landfill and/or solid waste disposal site lists

CA SWF/LF.................. Solid Waste Information System

State and tribal leaking storage tank lists

INDIAN LUST................ Leaking Underground Storage Tanks on Indian Land

State and tribal registered storage tank lists

FEMA UST.................... Underground Storage Tank Listing
CA AST........................ Aboveground Petroleum Storage Tank Facilities
INDIAN UST.................. Underground Storage Tanks on Indian Land

State and tribal voluntary cleanup sites

INDIAN VCP.................. Voluntary Cleanup Priority Listing

State and tribal Brownfields sites

CA BROWNFIELDS.......... Considered Brownfieds Sites Listing

ADDITIONAL ENVIRONMENTAL RECORDS

Local Brownfield lists

US BROWNFIELDS.......... A Listing of Brownfields Sites

Local Lists of Landfill / Solid Waste Disposal Sites

CA WMUDS/SWAT........... Waste Management Unit Database
CA SWRCY.................... Recycler Database
CA HAULERS................. Registered Waste Tire Haulers Listing
INDIAN ODI.................. Report on the Status of Open Dumps on Indian Lands
DEBRIS REGION 9........... Torres Martinez Reservation Illegal Dump Site Locations
ODI............................. Open Dump Inventory
IHS OPEN DUMPS.......... Open Dumps on Indian Land

Local Lists of Hazardous waste / Contaminated Sites

US HIST CDL................. Delisted National Clandestine Laboratory Register
CA HIST Cal-Sites........... Historical Calsites Database
CA SCH........................ School Property Evaluation Program
CA CDL........................ Clandestine Drug Labs
CA Toxic Pits................ Toxic Pits Cleanup Act Sites
US CDL........................ National Clandestine Laboratory Register
CA PFAS....................... PFAS Contamination Site Location Listing

Local Land Records

CA LIENS...................... Environmental Liens Listing

LIENS 2........................ CERCLA Lien Information
CA DEED..................... Deed Restriction Listing

Records of Emergency Release Reports

HMIRS......................... Hazardous Materials Information Reporting System
CA CHMIRS................... California Hazardous Material Incident Report System
CA LDS........................ Land Disposal Sites Listing
CA MCS....................... Military Cleanup Sites Listing
CA SPILLS 90.................. SPILLS 90 data from FirstSearch

Other Ascertainable Records

FUDS.......................... Formerly Used Defense Sites
DOD........................... Department of Defense Sites
SCRD DRYCLEANERS....... State Coalition for Remediation of Drycleaners Listing
US FIN ASSUR................ Financial Assurance Information
EPA WATCH LIST............ EPA WATCH LIST
2020 COR ACTION........... 2020 Corrective Action Program List
TSCA.......................... Toxic Substances Control Act
TRIS........................... Toxic Chemical Release Inventory System
SSTS.......................... Section 7 Tracking Systems
ROD........................... Records Of Decision
RMP........................... Risk Management Plans
RAATS......................... RCRA Administrative Action Tracking System
PRP............................ Potentially Responsible Parties
PADS.......................... PCB Activity Database System
ICIS............................ Integrated Compliance Information System
FTTS........................... FIFRA/ TSCA Tracking System - FIFRA (Federal Insecticide, Fungicide, & Rodenticide Act)/TSCA (Toxic Substances Control Act)
MLTS.......................... Material Licensing Tracking System
COAL ASH DOE.............. Steam-Electric Plant Operation Data
COAL ASH EPA............... Coal Combustion Residues Surface Impoundments List
PCB TRANSFORMER......... PCB Transformer Registration Database
RADINFO...................... Radiation Information Database
HIST FTTS..................... FIFRA/TSCA Tracking System Administrative Case Listing
DOT OPS...................... Incident and Accident Data
CONSENT..................... Superfund (CERCLA) Consent Decrees
INDIAN RESERV.............. Indian Reservations
FUSRAP....................... Formerly Utilized Sites Remedial Action Program
UMTRA......................... Uranium Mill Tailings Sites
LEAD SMELTERS............. Lead Smelter Sites
US AIRS....................... Aerometric Information Retrieval System Facility Subsystem
US MINES..................... Mines Master Index File
ABANDONED MINES......... Abandoned Mines
UXO............................ Unexploded Ordnance Sites
DOCKET HWC................ Hazardous Waste Compliance Docket Listing
FUELS PROGRAM............ EPA Fuels Program Registered Listing
CA BOND EXP. PLAN........ Bond Expenditure Plan
CA DRYCLEANERS.......... Cleaner Facilities
CA ENF........................ Enforcement Action Listing
CA Financial Assurance...... Financial Assurance Information Listing
CA ICE......................... ICE
CA HWT........................ Registered Hazardous Waste Transporter Database
CA MINES...................... Mines Site Location Listing

CA MWMP	Medical Waste Management Program Listing
CA PEST LIC	Pesticide Regulation Licenses Listing
CA PROC	Certified Processors Database
CA HAZMAT	Hazardous Material Facilities
CA UIC	UIC Listing
CA UIC GEO	UIC GEO (GEOTRACKER)
CA WASTEWATER PITS	Oil Wastewater Pits Listing
CA WDS	Waste Discharge System
CA WIP	Well Investigation Program Case List
CA MILITARY PRIV SITES	MILITARY PRIV SITES (GEOTRACKER)
CA PROJECT	PROJECT (GEOTRACKER)
CA WDR	Waste Discharge Requirements Listing
CA OTHER OIL GAS	OTHER OIL & GAS (GEOTRACKER)
CA PROD WATER PONDS	PROD WATER PONDS (GEOTRACKER)
CA SAMPLING POINT	SAMPLING POINT (GEOTRACKER)
CA WELL STIM PROJ	Well Stimulation Project (GEOTRACKER)

EDR HIGH RISK HISTORICAL RECORDS

EDR Exclusive Records

EDR MGP	EDR Proprietary Manufactured Gas Plants
EDR Hist Cleaner	EDR Exclusive Historical Cleaners

EDR RECOVERED GOVERNMENT ARCHIVES

Exclusive Recovered Govt. Archives

CA RGA LF	Recovered Government Archive Solid Waste Facilities List
CA RGA LUST	Recovered Government Archive Leaking Underground Storage Tank

SURROUNDING SITES: SEARCH RESULTS

Surrounding sites were identified in the following databases.

Elevations have been determined from the USGS Digital Elevation Model and should be evaluated on a relative (not an absolute) basis. Relative elevation information between sites of close proximity should be field verified. Sites with an elevation equal to or higher than the target property have been differentiated below from sites with an elevation lower than the target property.
Page numbers and map identification numbers refer to the EDR Radius Map report where detailed data on individual sites can be reviewed.

Sites listed in ***bold italics*** are in multiple databases.

Unmappable (orphan) sites are not considered in the foregoing analysis.

STANDARD ENVIRONMENTAL RECORDS

Federal CERCLIS NFRAP site list

SEMS-ARCHIVE: SEMS-ARCHIVE (Superfund Enterprise Management System Archive) tracks sites that have no further interest under the Federal Superfund Program based on available information. The list was formerly known as the CERCLIS-NFRAP, renamed to SEMS ARCHIVE by the EPA in 2015. EPA may perform a minimal level of assessment work at a site while it is archived if site conditions change and/or new information becomes available. Archived sites have been removed and archived from the inventory of SEMS sites. Archived status indicates that, to the best of EPA's knowledge, assessment at a site has been completed and that EPA has determined no further steps will be taken to list the site on the National Priorities List (NPL), unless information indicates this decision was not appropriate or other considerations require a recommendation for listing at a later time. The decision does not necessarily mean that there is no hazard associated with a given site; it only means that. based upon available information, the location is not judged to be potential NPL site.

A review of the SEMS-ARCHIVE list, as provided by EDR, and dated 04/11/2019 has revealed that there is 1 SEMS-ARCHIVE site within approximately 0.5 miles of the target property.

Equal/Higher Elevation	Address	Direction / Distance	Map ID	Page
KAISER ALUMINUM FOIL Site ID: 0901179 EPA Id: CAD009155284	***23333 STEVENS CREEK***	***W 1/4 - 1/2 (0.366 mi.)***	***E37***	***103***

State- and tribal - equivalent CERCLIS

CA ENVIROSTOR: The Department of Toxic Substances Control's (DTSC's) Site Mitigation and Brownfields Reuse Program's (SMBRP's) EnviroStor database identifes sites that have known contamination or sites for which there may be reasons to investigate further. The database includes the following site types: Federal Superfund sites (National Priorities List (NPL)); State Response, including Military Facilities and State Superfund; Voluntary Cleanup; and School sites. EnviroStor provides similar information to the information that was available in CalSites, and provides additional site information, including, but not limited to, identification of formerly-contaminated properties that have been released for reuse, properties where environmental deed restrictions have been recorded to prevent inappropriate land uses, and risk characterization information that is used to assess potential impacts to public health and the environment at contaminated sites.

A review of the CA ENVIROSTOR list, as provided by EDR, and dated 04/29/2019 has revealed that there are 4 CA ENVIROSTOR sites within approximately 1 mile of the target property.

Equal/Higher Elevation	Address	Direction / Distance	Map ID	Page
KAISER ALUMINUM AND Facility Id: 43330001 Status: Refer: RWQCB	***23333 STEVENS CREEK***	***W 1/4 - 1/2 (0.366 mi.)***	***E36***	***100***
KAISER CEMENT CORP, Facility Id: 43350079 Status: Refer: Other Agency	***2401 STEVENS CREEK B***	***W 1/2 - 1 (0.994 mi.)***	***41***	***117***

Lower Elevation	Address	Direction / Distance	Map ID	Page
BLACKBERRY FARM PLAY Facility Id: 60001205 Status: No Further Action	***21979 SAN FERNANDO D***	***ESE 1/4 - 1/2 (0.485 mi.)***	***38***	***108***
ACRIAN INC Facility Id: 80001710 Status: Inactive - Needs Evaluation	***10131 BUBB RD***	***E 1/2 - 1 (0.973 mi.)***	***40***	***111***

State and tribal leaking storage tank lists

CA LUST: Leaking Underground Storage Tank (LUST) Sites included in GeoTracker. GeoTracker is the Water Boards data management system for sites that impact, or have the potential to impact, water quality in California, with emphasis on groundwater.

A review of the CA LUST list, as provided by EDR, has revealed that there are 7 CA LUST sites within approximately 0.5 miles of the target property.

Equal/Higher Elevation	Address	Direction / Distance	Map ID	Page
SANTA CLARA COUNTY F	*22620 STEVENS CREEK*	*W 0 - 1/8 (0.063 mi.)*	*C18*	*70*

Database: LUST, Date of Government Version: 12/10/2018
Database: LUST REG 2, Date of Government Version: 09/30/2004
Database: LUST SANTA CLARA, Date of Government Version: 03/03/2014
Status: Completed - Case Closed
Facility Status: Case Closed
Date Closed: 03/30/1998
Global Id: T0608502037
SCVWD ID: 07S2W15F02F
date9: 3/30/1998

MONTA VISTA SUBSTATI	*10110 CALIFORNIA OAK*	*NW 1/4 - 1/2 (0.327 mi.)*	*35*	*96*

Database: LUST, Date of Government Version: 12/10/2018
Database: LUST SANTA CLARA, Date of Government Version: 03/03/2014
Status: Completed - Case Closed
Date Closed: 11/20/2006
Global Id: T0608594350
SCVWD ID: 07S2W15F03F

Lower Elevation	Address	Direction / Distance	Map ID	Page
CUPERTINO BEACON	*22510 STEVENS CREEK*	*E 0 - 1/8 (0.034 mi.)*	*B8*	*16*

Database: LUST REG 2, Date of Government Version: 09/30/2004
Facility Status: Pollution Characterization

CUPERTINO BEACON	*22510 STEVENS CREEK*	*E 0 - 1/8 (0.034 mi.)*	*B10*	*18*

Database: LUST, Date of Government Version: 12/10/2018
Database: LUST SANTA CLARA, Date of Government Version: 03/03/2014
Status: Open - Verification Monitoring
Global Id: T0608548766
SCVWD ID: 07S2W15K01F

ARCO #6182	*10121 N FOOTHILL BLV*	*N 0 - 1/8 (0.119 mi.)*	*D23*	*77*

Database: LUST REG 2, Date of Government Version: 09/30/2004
Facility Status: Case Closed
date9: 7/29/1996

FOOTHILL AUTO SERVIC	*10121 N. FOOTHILL BO*	*N 0 - 1/8 (0.119 mi.)*	*D29*	*82*

Database: LUST, Date of Government Version: 12/10/2018
Database: LUST SANTA CLARA, Date of Government Version: 03/03/2014
Status: Completed - Case Closed
Date Closed: 07/29/1996
Global Id: T10000004993
Global Id: T0608500152
SCVWD ID: 07S2W15F04F
SCVWD ID: 07S2W15F01F

FACCIOLA RESIDENCE	*22371 CUPERTINO RD*	*ENE 1/8 - 1/4 (0.189 mi.)*	*34*	*95*

Database: LUST REG 2, Date of Government Version: 09/30/2004
Database: LUST SANTA CLARA, Date of Government Version: 03/03/2014

Facility Status: Case Closed
Date Closed: 01/09/1995
SCVWD ID: 07S2W15G01F
date9: 1/9/1995

CA CPS-SLIC: Cleanup Program Sites (CPS; also known as Site Cleanups [SC] and formerly known as Spills, Leaks, Investigations, and Cleanups [SLIC] sites) included in GeoTracker. GeoTracker is the Water Boards data management system for sites that impact, or have the potential to impact, water quality in California, with emphasis on groundwater.

A review of the CA CPS-SLIC list, as provided by EDR, has revealed that there are 2 CA CPS-SLIC sites within approximately 0.5 miles of the target property.

Equal/Higher Elevation	Address	Direction / Distance	Map ID	Page
KAISER ALUMINUM AND	***23333 STEVENS CREEK***	***W 1/4 - 1/2 (0.366 mi.)***	***E36***	***100***
Database: SLIC REG 2, Date of Government Version: 09/30/2004 Facility Id: 43S0663				
PRIVATE RESIDENCE	PRIVATE RESIDENCE	S 1/4 - 1/2 (0.495 mi.)	39	110
Database: CPS-SLIC, Date of Government Version: 12/10/2018 Facility Status: Completed - Case Closed Global Id: T10000003039				

CA HIST LUST: A listing of open and closed leaking underground storage tanks. This listing is no longer updated by the county. Leaking underground storage tanks are now handled by the Department of Environmental Health.

A review of the CA HIST LUST list, as provided by EDR, and dated 03/29/2005 has revealed that there are 4 CA HIST LUST sites within approximately 0.5 miles of the target property.

Equal/Higher Elevation	Address	Direction / Distance	Map ID	Page
SANTA CLARA COUNTY F	***22620 STEVENS CREEK***	***W 0 - 1/8 (0.063 mi.)***	***C18***	***70***
SCVWD ID: 07S2W15F02				

Lower Elevation	Address	Direction / Distance	Map ID	Page
CUPERTINO BEACON	***22510 STEVENS CREEK***	***E 0 - 1/8 (0.034 mi.)***	***B8***	***16***
SCVWD ID: 07S2W15K01				
ARCO #6182	***10121 N FOOTHILL BLV***	***N 0 - 1/8 (0.119 mi.)***	***D23***	***77***
SCVWD ID: 07S2W15F01				
FACCIOLA RESIDENCE	***22371 CUPERTINO RD***	***ENE 1/8 - 1/4 (0.189 mi.)***	***34***	***95***
SCVWD ID: 07S2W15G01				

State and tribal registered storage tank lists

CA UST: The Underground Storage Tank database contains registered USTs. USTs are regulated under Subtitle I of the Resource Conservation and Recovery Act (RCRA). The data come from the State Water Resources Control Board's Hazardous Substance Storage Container Database.

A review of the CA UST list, as provided by EDR, has revealed that there are 4 CA UST sites within approximately 0.25 miles of the target property.

Equal/Higher Elevation	Address	Direction / Distance	Map ID	Page
MONTA VISTA FIRE STA Database: UST, Date of Government Version: 12/10/2018 Facility Id: 45	22620 STEVENS CREEK	W 0 - 1/8 (0.063 mi.)	C17	69

Lower Elevation	Address	Direction / Distance	Map ID	Page
CUPERTINO BEACON Database: UST, Date of Government Version: 12/10/2018	22510 STEVENS CREEK	E 0 - 1/8 (0.034 mi.)	B11	46
BEACON SERVICE STATI Database: UST, Date of Government Version: 12/10/2018 Facility Id: 44	22510 STEVENS CREEK	E 0 - 1/8 (0.034 mi.)	B13	48
ARCO SERVICE STATION Database: UST, Date of Government Version: 12/10/2018 Facility Id: 35	10121 N FOOTHILL BL	N 0 - 1/8 (0.119 mi.)	D28	82

State and tribal voluntary cleanup sites

CA VCP: Contains low threat level properties with either confirmed or unconfirmed releases and the project proponents have request that DTSC oversee investigation and/or cleanup activities and have agreed to provide coverage for DTSC's costs.

A review of the CA VCP list, as provided by EDR, and dated 04/29/2019 has revealed that there is 1 CA VCP site within approximately 0.5 miles of the target property.

Lower Elevation	Address	Direction / Distance	Map ID	Page
BLACKBERRY FARM PLAY Status: No Further Action Facility Id: 60001205	***21979 SAN FERNANDO D***	***ESE 1/4 - 1/2 (0.485 mi.)***	***38***	***108***

ADDITIONAL ENVIRONMENTAL RECORDS

Local Lists of Hazardous waste / Contaminated Sites

CA CERS HAZ WASTE: List of sites in the California Environmental Protection Agency (CalEPA) Regulated Site Portal which fall under the Hazardous Chemical Management, Hazardous Waste Onsite Treatment, Household Hazardous Waste Collection, Hazardous Waste Generator, and RCRA LQ HW Generator programs.

A review of the CA CERS HAZ WASTE list, as provided by EDR, and dated 04/09/2019 has revealed that there are 4 CA CERS HAZ WASTE sites within approximately 0.25 miles of the target property.

Equal/Higher Elevation	Address	Direction / Distance	Map ID	Page
DONNA COTNER DDS	***10011 N FOOTHILL BL***	***NW 0 - 1/8 (0.021 mi.)***	***A1***	***9***

Lower Elevation	Address	Direction / Distance	Map ID	Page
CUPERTINO BEACON	***22510 STEVENS CREEK***	***E 0 - 1/8 (0.034 mi.)***	***B10***	***18***

EXECUTIVE SUMMARY

Lower Elevation	Address	Direction / Distance	Map ID	Page
CUPERTINO AUTO REPAI	***22510 STEVENS CREEK***	***E 0 - 1/8 (0.034 mi.)***	***B14***	***48***
ACADIA VETERINARY CL	***10012 N FOOTHILL BL***	***NE 0 - 1/8 (0.038 mi.)***	***B15***	***57***

Local Lists of Registered Storage Tanks

CA SWEEPS UST: Statewide Environmental Evaluation and Planning System. This underground storage tank listing was updated and maintained by a company contacted by the SWRCB in the early 1990's. The listing is no longer updated or maintained. The local agency is the contact for more information on a site on the SWEEPS list.

A review of the CA SWEEPS UST list, as provided by EDR, and dated 06/01/1994 has revealed that there are 4 CA SWEEPS UST sites within approximately 0.25 miles of the target property.

Equal/Higher Elevation	Address	Direction / Distance	Map ID	Page
SANTA CLARA COUNTY F Status: A Tank Status: A Comp Number: 298	***22620 STEVENS CREEK***	***W 0 - 1/8 (0.063 mi.)***	***C18***	***70***

Lower Elevation	Address	Direction / Distance	Map ID	Page
BEACON SERVICE STATI Status: A Tank Status: A Comp Number: 39475	***22510 STEVENS CREEK***	***E 0 - 1/8 (0.034 mi.)***	***B6***	***13***
FOOTHILL AUTO SERVIC Status: A Tank Status: A Comp Number: 27102	***10121 N. FOOTHILL BO***	***N 0 - 1/8 (0.119 mi.)***	***D29***	***82***
FACCIOLA RESIDENCE Comp Number: 337	***22371 CUPERTINO RD***	***ENE 1/8 - 1/4 (0.189 mi.)***	***34***	***95***

CA HIST UST: Historical UST Registered Database.

A review of the CA HIST UST list, as provided by EDR, and dated 10/15/1990 has revealed that there are 4 CA HIST UST sites within approximately 0.25 miles of the target property.

Lower Elevation	Address	Direction / Distance	Map ID	Page
MOBIL SERVICE STATIO Facility Id: 00000039475	22510 STEVENS CREEK	E 0 - 1/8 (0.034 mi.)	B7	15
G JENSENS INC	***10121 NORTH FOOTHILL***	***N 0 - 1/8 (0.119 mi.)***	***D24***	***78***
G. JENSEN'S INC. Facility Id: 00000060177	10121 N FOOTHILL BLV	N 0 - 1/8 (0.119 mi.)	D26	80
FOOTHILL AUTO SERVIC Facility Id: 00000027102	***10121 N. FOOTHILL BO***	***N 0 - 1/8 (0.119 mi.)***	***D29***	***82***

EXECUTIVE SUMMARY

CA FID UST: The Facility Inventory Database contains active and inactive underground storage tank locations. The source is the State Water Resource Control Board.

A review of the CA FID UST list, as provided by EDR, and dated 10/31/1994 has revealed that there is 1 CA FID UST site within approximately 0.25 miles of the target property.

Lower Elevation	Address	Direction / Distance	Map ID	Page
BEACON SERVICE STATI Facility Id: 43001931 Status: A	***22510 STEVENS CREEK***	***E 0 - 1/8 (0.034 mi.)***	***B6***	***13***

CA CERS TANKS: List of sites in the California Environmental Protection Agency (CalEPA) Regulated Site Portal which fall under the Aboveground Petroleum Storage and Underground Storage Tank regulatory programs.

A review of the CA CERS TANKS list, as provided by EDR, and dated 04/09/2019 has revealed that there are 2 CA CERS TANKS sites within approximately 0.25 miles of the target property.

Equal/Higher Elevation	Address	Direction / Distance	Map ID	Page
MONTA VISTA FIRE STA	***22620 STEVENS CREEK***	***W 0 - 1/8 (0.063 mi.)***	***C16***	***61***

Lower Elevation	Address	Direction / Distance	Map ID	Page
CUPERTINO BEACON	***22510 STEVENS CREEK***	***E 0 - 1/8 (0.034 mi.)***	***B10***	***18***

Other Ascertainable Records

RCRA NonGen / NLR: RCRAInfo is EPA's comprehensive information system, providing access to data supporting the Resource Conservation and Recovery Act (RCRA) of 1976 and the Hazardous and Solid Waste Amendments (HSWA) of 1984. The database includes selective information on sites which generate, transport, store, treat and/or dispose of hazardous waste as defined by the Resource Conservation and Recovery Act (RCRA). Non-Generators do not presently generate hazardous waste.

A review of the RCRA NonGen / NLR list, as provided by EDR, and dated 03/25/2019 has revealed that there are 4 RCRA NonGen / NLR sites within approximately 0.25 miles of the target property.

Equal/Higher Elevation	Address	Direction / Distance	Map ID	Page
LIFETIME DENTAL CARE EPA ID:: CAL000441261	10011 N FOOTHILL BLV	NW 0 - 1/8 (0.021 mi.)	A3	11
CAMBRIDGE PROPERTY M EPA ID:: CAC002981476	22731 STEVENS CREEK	W 1/8 - 1/4 (0.174 mi.)	33	93

Lower Elevation	Address	Direction / Distance	Map ID	Page
CUPERTINO AUTO CARE EPA ID:: CAL000419408	22510 STEVENS CREEK	E 0 - 1/8 (0.034 mi.)	B9	16
DAVID RANNELLS EPA ID:: CAC002974544	10073 AMADOR OAK COU	NNW 1/8 - 1/4 (0.151 mi.)	32	92

CA Cortese: The sites for the list are designated by the State Water Resource Control Board (LUST), the Integrated Waste Board (SWF/LS), and the Department of Toxic Substances Control (Cal-Sites).

A review of the CA Cortese list, as provided by EDR, and dated 03/25/2019 has revealed that there is 1 CA Cortese site within approximately 0.5 miles of the target property.

Lower Elevation	Address	Direction / Distance	Map ID	Page
CUPERTINO BEACON	***22510 STEVENS CREEK***	***E 0 - 1/8 (0.034 mi.)***	***B10***	***18***
Cleanup Status: OPEN - VERIFICATION MONITORING				

CA CUPA Listings: A listing of sites included in the county's Certified Unified Program Agency database. California's Secretary for Environmental Protection established the unified hazardous materials and hazardous waste regulatory program as required by chapter 6.11 of the California Health and Safety Code. The Unified Program consolidates the administration, permits, inspections, and enforcement activities.

A review of the CA CUPA Listings list, as provided by EDR, has revealed that there are 10 CA CUPA Listings sites within approximately 0.25 miles of the target property.

Equal/Higher Elevation	Address	Direction / Distance	Map ID	Page
DONNA COTNER DDS	***10011 N FOOTHILL BL***	***NW 0 - 1/8 (0.021 mi.)***	***A1***	***9***
Database: CUPA SANTA CLARA, Date of Government Version: 05/16/2019				
GARFIELD FAMILY CHIR	10011 N FOOTHILL BL	NW 0 - 1/8 (0.021 mi.)	A2	11
Database: CUPA SANTA CLARA, Date of Government Version: 05/16/2019				
LIFETIME DENTAL CARE	10011 N FOOTHILL BL	NW 0 - 1/8 (0.021 mi.)	A4	12
Database: CUPA SANTA CLARA, Date of Government Version: 05/16/2019				

Lower Elevation	Address	Direction / Distance	Map ID	Page
CUPERTINO BEACON	***22510 STEVENS CREEK***	***E 0 - 1/8 (0.034 mi.)***	***B10***	***18***
Database: CUPA SANTA CLARA, Date of Government Version: 05/16/2019				
CUPERTINO AUTO REPAI	***22510 STEVENS CREEK***	***E 0 - 1/8 (0.034 mi.)***	***B14***	***48***
Database: CUPA SANTA CLARA, Date of Government Version: 05/16/2019				
ACADIA VETERINARY CL	***10012 N FOOTHILL BL***	***NE 0 - 1/8 (0.038 mi.)***	***B15***	***57***
Database: CUPA SANTA CLARA, Date of Government Version: 05/16/2019				
FOOTHILL VALERO	10121 N FOOTHILL BL	N 0 - 1/8 (0.119 mi.)	D21	76
Database: CUPA SANTA CLARA, Date of Government Version: 05/16/2019				
FREEMANS AUTO SERVIC	10121 N FOOTHILL BL	N 0 - 1/8 (0.119 mi.)	D22	76
Database: CUPA SANTA CLARA, Date of Government Version: 05/16/2019				
FOOTHILL AUTO SERVIC	10121 N FOOTHILL BL	N 0 - 1/8 (0.119 mi.)	D25	80
Database: CUPA SANTA CLARA, Date of Government Version: 05/16/2019				
AAA AUTO REPAIR AND	10121 N FOOTHILL BL	N 0 - 1/8 (0.119 mi.)	D27	81
Database: CUPA SANTA CLARA, Date of Government Version: 05/16/2019				

CA HIST CORTESE: The sites for the list are designated by the State Water Resource Control Board [LUST], the Integrated Waste Board [SWF/LS], and the Department of Toxic Substances Control [CALSITES]. This listing is no longer updated by the state agency.

A review of the CA HIST CORTESE list, as provided by EDR, and dated 04/01/2001 has revealed that there are 5 CA HIST CORTESE sites within approximately 0.5 miles of the target property.

Equal/Higher Elevation	Address	Direction / Distance	Map ID	Page
SANTA CLARA COUNTY F Reg Id: 43-2219	***22620 STEVENS CREEK***	***W 0 - 1/8 (0.063 mi.)***	***C18***	***70***
KAISER ALUMINUM AND Reg Id: 43-0770	***23333 STEVENS CREEK***	***W 1/4 - 1/2 (0.366 mi.)***	***E36***	***100***

Lower Elevation	Address	Direction / Distance	Map ID	Page
CUPERTINO BEACON Reg Id: 43-0455	***22510 STEVENS CREEK***	***E 0 - 1/8 (0.034 mi.)***	***B10***	***18***
ARCO Reg Id: 43-0084	10121 FOOTHILL	N 0 - 1/8 (0.113 mi.)	D19	75
FACCIOLA RESIDENCE Reg Id: 43-1785	***22371 CUPERTINO RD***	***ENE 1/8 - 1/4 (0.189 mi.)***	***34***	***95***

CA HWP: Detailed information on permitted hazardous waste facilities and corrective action ("cleanups") tracked in EnviroStor.

A review of the CA HWP list, as provided by EDR, and dated 05/20/2019 has revealed that there is 1 CA HWP site within approximately 1 mile of the target property.

Lower Elevation	Address	Direction / Distance	Map ID	Page
ACRIAN INC EPA Id: CAD092205889 Cleanup Status: CLOSED	***10131 BUBB RD***	***E 1/2 - 1 (0.973 mi.)***	***40***	***111***

CA Notify 65: Listings of all Proposition 65 incidents reported to counties by the State Water Resources Control Board and the Regional Water Quality Control Board. This database is no longer updated by the reporting agency.

A review of the CA Notify 65 list, as provided by EDR, and dated 03/18/2019 has revealed that there is 1 CA Notify 65 site within approximately 1 mile of the target property.

Lower Elevation	Address	Direction / Distance	Map ID	Page
ARCO SERVICE STATION	10121 NORTH FOOTHILL	N 0 - 1/8 (0.119 mi.)	D30	92

EDR HIGH RISK HISTORICAL RECORDS

EDR Exclusive Records

EDR Hist Auto: EDR has searched selected national collections of business directories and has collected listings of potential gas station/filling station/service station sites that were available to EDR researchers. EDR's review was limited to those categories of sources that might, in EDR's opinion, include gas station/filling station/service station establishments. The categories reviewed included, but were not limited to gas, gas station, gasoline station, filling station, auto, automobile repair, auto service station, service station, etc. This database falls within a category of information EDR classifies as "High Risk Historical Records", or HRHR. EDR's HRHR effort presents unique and sometimes proprietary data about past sites and operations that typically create environmental concerns, but may not show up in current government records searches.

A review of the EDR Hist Auto list, as provided by EDR, has revealed that there are 4 EDR Hist Auto sites within approximately 0.125 miles of the target property.

Lower Elevation	Address	Direction / Distance	Map ID	Page
ACTION AUTO SERVICE	10010 FOOTHILL BLVD	NE 0 - 1/8 (0.026 mi.)	A5	13
JOHNS MOBIL SERVICE	22510 STEVENS CREEK	E 0 - 1/8 (0.034 mi.)	B12	46
FOOTHILL AUTO SERVIC	10121 N FOOTHILL BLV	N 0 - 1/8 (0.119 mi.)	D20	75
ACED ACRO SERVICE	10121 FOOTHILL	N 0 - 1/8 (0.119 mi.)	D31	92

EXECUTIVE SUMMARY

Due to poor or inadequate address information, the following sites were not mapped. Count: 6 records.

Site Name	Database(s)
	CA CDL
KAISER CEMENT CORP PERMANENTE PLAN	SEMS
1X STEVENS CREEK QUARRY	CA HAZNET
STEVENS CREEK DAM	FINDS
BRIDGE 37C0571 OVER STEVENS CREEK	FINDS
STEVENS CREEK QUARRY, INC.	US MINES

APPENDIX E:
PHASE II ENVIRONMENTAL SITE ASSESSMENT

Phase II Environmental Site Assessment Report

Prepared for

Alan Enterprise LLC.
22690 Stevens Creek Boulevard,
Cupertino, California 95014
(Three parcels with APNs 342-14-04, 342-14-05, and 342-14-66)

By

Achievement Engineering Corp.
2455 Autumnvale Drive, Unit E
San Jose, California, 95134

Project Number: 3974
Date: October 17, 2019

ACHIEVEMENT ENGINEERING CORP.

Project Number: 3974
Date: October 17, 2019

Alan Enterprise LLC.
Mr. Ali Mozafari

Subject: Phase II Environmental Site Assessment Report
22690 Stevens Creek Boulevard,
Cupertino, California 95014
(Three parcels with APNs 342-14-04, 342-14-05, and 342-14-66)

Dear Sir,

Achievement Engineering Corp. (AEC) is pleased to submit this Phase II Environmental Site Assessment Report for the above-referenced project. The purpose of this study was to evaluate the subsurface conditions at the subject site and for the proposed development. The subject site is currently owned by Bateh Brothers Liquors and Mini Mart (George and Nahida Bateh) and is a land totaling of three parcels, approximately 0.75 acre located on the west south corner of Stevens Creek Blvd. and Foothill Blvd. intersection, at 22690 Stevens Creek Boulevard, Cupertino, California 95014, within mixed-use plan development (General Commercial) zone of Cupertino. The site itself has not been listed in any searched data bases (Please refer to reference 1).

In May 2017, EIS performed a limited Phase II investigation to assess the impact of the neighboring site (Cupertino Beacon at 22510 Stevens Creek Blvd.) at this property. Above-ESL benzene concentration in soil vapor was found in the borings at the subject site at that time.

There is one site listed on various databases in the close proximity to and at higher elevation of the subject site;

- ✓ Santa Clara County Fire Station (Also recorded as Monta Vista Fire station) at 22620 Stevens Creek Blvd., 332 ft. west of the subject site.

There are two sites in the close proximity of the site, but at lower elevations:

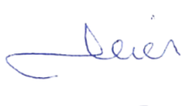
- ✓ Cupertino Beacon at 22510 Stevens Creek Blvd., 180 ft. east of the subject property.

- ✓ Foothill Auto Services at 10121 N. Foothill Blvd., 620 ft., north of the subject property.

The review of the aerial photos and historical use of the property as an orchard, from at least 1939 to 1950, indicate that there is also a potential of metals and pesticides existing in shallow site soil. Above-ESL benzene concentration in soil vapor was found in the borings at the subject site is also a recognized environmental conditions. Besides, the open LUST case and documented soil, groundwater, and soil vapor contamination at neighboring property 22510 Stevens Creek Blvd. (Cupertino Beacon) represents an offsite controlled recognized environmental condition. To assess the impacts of the neighboring site at the subject site, conducting a limited Phase II investigation was recommended. This subsurface investigation program was designed to evaluate the soil and water conditions regarding the above mentioned contaminants.

We appreciate the opportunity to be of service to you on this project and would be happy to discuss our findings with you. We look forward to serving as your geotechnical/ environmental engineer on the future projects.

Respectfully Submitted,
Achievement Engineering Corp.



Sadaf Safaai, PE
Project Engineer

Copies: Alan Enterprise LLC.
Mr. Ali Mozafari

Table of Contents

1- INTRODUCTION

Achievement Engineering Corp. (AEC) was retained by Alan Enterprise LLC. to conduct a Phase II Environmental Site Assessment (Phase II ESA) for 22690 Stevens Creek Boulevard, Cupertino, California 95014, (three parcels with APNs 342-14-04, 342-14-05, and 342-14-66).

The attached Figure M01, Exhibit I shows the general location of the subject property. Providing technical assistance to Alan Enterprise LLC, AEC is contracted to assess the subject property for potential contaminants of concern, namely total petroleum hydrocarbons as gasoline, diesel, and motor oil (TPH-g/-d/-o), the aromatic hydrocarbons benzene, toluene, ethylbenzene total xylenes (BTEX) and MTBE. Soil vapor samples were analyzed for TPH and benzene. The samples at B3 have been tested for the presence of the pesticides and heavy metals. The Phase II ESA was performed in conformance with the scope and limitations of the American Society of Testing and Materials (ASTM) Standard Designation E1903-11, Standard Practice for Environmental Site Assessments: Phase II Environmental Site Assessment Process. Any limitations have been practiced, is summarized in section7.

The Phase II ESA activities consisted of the drilling of three (3) exploratory borings and the collection of soil samples for submittal to an analytical lab for analyses for potential contaminants of concern.

Soil vapor sampling was also performed during this project following the guidelines of the Department of Toxic Substances Control's (DTSC) "Guidance for the Evaluation and Mitigation of Subsurface Vapor Intrusion to Indoor Air" (DTSC, 2011) and "Advisory – Active Soil Gas Investigations" (DTSC et al, 2015). Temporary soil vapor probes were installed in borings B-1, B-2 and B-3 at a depth of 5.0 ft. bgs. The samples were taken on September 18, 2019. Utilizing 1 L Summa Canisters at negative pressure. Three (3) samples were taken from each of the three (3) boreholes. A purge canister was used to purge the tubes first to minimize contamination from above layers.

This report documents the activities and results of the environmental investigation conducted by AEC on September 11, 2019 and September 18, 2019.

The following report highlights the significant findings and conclusions representing our best professional judgment based on the information and data available to us during the course of this investigation.

2- SCOPE OF WORK

The Phase II ESA was performed in general accordance with the scope of work in AEC Fee Proposal, Phase II Environmental Site Assessment, f22690 Stevens Creek Boulevard, Cupertino, California 95014 (three parcels with APNs 342-14-04, 342-14-05, and 342-14-66). The scope of work was to evaluate shallow subsurface soil conditions of the subject site (at specific new development location) with respect to potential contaminants of concern.

The scope of work for this investigation included the following:

- The drilling on 11 September, 2019 of three (3) exploratory borings to collect soil samples for laboratory analyses.
- Installing micro soil vapor probe on 11 September, 2019.
- Collecting soil vapor samples in canisters on 18 September 2019.
- Laboratory analysis of the soil samples for potential contaminants of concern, namely TPH gasoline, TPH diesel, TPH motor oil, MTBE, BTEX, heavy metals and pesticides.
- Laboratory analysis of soil vapor samples for TPH and benzene.
- Preparation of this technical report documenting the investigation activities and results.

3- PROPERTY DESCRIPTION

The subject site is currently owned by Bateh Brothers Liquors and Mini Mart (George and Nahida Bateh) and is a land totaling 0.75 acre (combined three parcels) located on the west south corner of Stevens Creek Blvd. and Foothill Blvd. intersection at 22690 Stevens Creek Boulevard, Cupertino, California 95014, within mixed use plan development (General Commercial) zone of Cupertino. The site itself has not been listed in any data bases. Review of the historical data available for the subject site reveals that most probably the development of the site, as is, took place between 1950 and 1956 (based on aerial photos), the first city directory listing for this property belongs to 1975, before that, this address does not exist in 1970 and 1968 listings. Bateh Brothers Liquors and Mini Mart has been listed in 2014 back to 1980 listings. In 1975 directory, a Frank's Liquor and Grocery Store has been listed. Also an interview conducted by others in 2017 reveals that before 1976, the place was used as a bar. No building permit was found indicating any other use for this property. Per aerial photos, in 1939 an orchard was in the property that cannot be observed in 1950 aerial photo. Sometime between 1939 and 1950 the trees were gradually cleared, starting from north to south. The existence of fertilizers, pesticides and metals are possible in the shallow soil due to this historical land use.

Also, rev reveals that for the most part, uses were mixed residential and commercial (a veterinary clinic has existed since, at least 1989, at 10012 N. Foothill Blvd. and Beacon Service Station has been in service under different names as follows:

1995- to Present -Cupertino Beacon Service Station, Cupertino Auto Care
1989- Foothill Mobil
1981-1984 -McElroy Mobil Service
1976 -D&D Mobil Service
1971 -Johns Mobil Service, Mobil Oil Corporation
1968 -Johns Mobil

3-1- Topography and Geological Setting

The United States Geological Survey (USGS) maps were reviewed. The topography of the subject site is relatively flat and general topographic gradient is NNE. The site itself is at an approximate average elevation of 386.0 feet above mean sea level.

The project site is located within the Coast Range Geomorphic Province. Local uplift of the Santa Cruz Mountains within the last 2 to 3 million years has occurred due to a restraining bend of the San Andreas Fault, producing transpressional forces across the plate boundary. Thrust faults bound the San Andreas Fault are responsible for uplift of the range. The range is characterized by rugged hills with moderate relief, steep valleys, and locally steep hillsides abutting drainages. East-flowing drainages result in dissection of the mountain range and alluvial deposition within the San Francisco Bay structural trough.

Soils encountered during the investigation included interbedded gravelly sand, silty sand, sandy gravel, clayey sand, and sandy silt to an explored depth of approximately 40ft bgs. Groundwater was not encountered during this investigation, however in previous explorations by others, groundwater had been encountered between 20 and 30 ft. bgs.

4- PROJECT INVESTIGATION

Prior to the field activities, AEC attempted to secure a Soil Boring Permit from the Santa Clara Department of Environmental Health. No need for permitting was confirmed by the DEH.

The proposed boring locations were marked on the ground with white paint. Underground Service Alert (USA) was notified to provide the required utility clearance. The boring locations were cleared of underground utilities. A health and safety plan was prepared to govern and control the field work by AEC staff and subcontractors.

4-1- Field Investigation and Exploratory Boreholes

Three (3) exploratory borings, designated B-1, B-2 and B-3, were completed by AEC on September 11, 2019. Isotech Environmental Corp., a C57 licensed drilling contractor (C57 #799951 B), drilled the borings under the direction of a geologist from AEC. The drilling was accomplished with the use of direct push drilling equipment providing continuous soil sampling capability. B1 and B2 were advanced into approximately forty (40) feet below ground surface (bgs.), B3 was advanced into ten (10) feet. Bgs. DPT drives or pushes small- diameter rods (2 in.) tools into the subsurface by hydraulic or percussive methods. Closed piston, single-tube samplers provided high integrity samples. Dual tube samplers utilize concentric casings to advance the boring. The outer casing remains in place as the inner casing is used to trip out the sample as the boring is advanced incrementally. The outer casing prevents borehole collapse and generally reduces the potential for cross contamination between sampling intervals.

The geologist collected soil samples from each boring for potential laboratory analyses. Sampling consisted of sealing the samples and then labeling and placing the sample in an ice chest for cold storage. Following the protocol provided by the laboratory and manufacturer, Torrent Laboratory Inc. sampling was also performed as follows. A dedicated syringe was driven into freshly exposed soil to retrieve approximately five (5) grams of soil. The extracted soil was then transferred into laboratory-supplied, 40-milliliter volatile organic analysis vials (40 mL VOAs). The VOAs were promptly sealed with Teflon caps provided, labeled with identification information, and placed in the ice chest. AEC followed chain of custody protocol in the transfer of the soil samples to the laboratory, as presented in Exhibit III.

The soil vapor samples were taken on September 19, 2019, using 1L Summa Canisters at negative pressure. Three samples were taken from each of three boreholes. A purge canister was used to purge the tubes first to minimize contamination from above layers.

All down-hole drilling and sampling equipment was cleaned with environmental detergent and rinsed between uses to prevent cross-contamination.

4-2- Laboratory Analysis

The soil samples were submitted with chain of custody documentation to Torrent Laboratory Inc., of Milpitas, California. Torrent Laboratory Inc. is certified for chemical analyses by the Department of Health Services, Environmental Laboratory Accreditation Program (ELAP No. 1991).

The samples were subjected to the following laboratory analytical methods:

TPH gasoline, Test Method 8260TPH
TPH motor oil, Test Method USEPA Method 8015B

TPH as Diesel, Test Method SW8015B
MTBE, Test Method SW8260B
BTEX, Test Method SW8260B
Pesticides (Organochlorine Pesticides by Method 8081B) and heavy metals (CAM 17, heavy metals)

The latter tests were just performed for samples from B-3.

Soil vapor samples were analyzed for TPH and benzene by USEPA method TO-15.

Please note that it is our understanding that the new development is residential. Laboratory analytical testings have been performed on selected soil samples at 25.0 and 35.0 ft. for B1, 25.0 ft. for B2 and 5.0 ft. for B3 and the rest of the samples were put on hold in case further investigations required (per page 20 of Exhibit III, Analytical Test Results).

The laboratories reported that the samples were received in good condition and with appropriate chain of custody documentation. The analytical results were laboratory certified with no significant anomalies reported in the data. The laboratory analytical reports are provided in Exhibit III.

5- ENVIRONMENTAL SCREENING LEVELS

The Regional Water Quality Control Board, San Francisco Bay Region (RWQCB, February 2016-REV 3.0) guidance, Screening for Environmental Concerns at Sites with Contaminated Soil and Groundwater, presents environmental screening levels (ESLs) for soil and groundwater that address human health exposure risk, ecological habitat protection, and groundwater protection. For carcinogens, the human health screening levels for carcinogens are based on a target cancer risk of one-in-a-million (10-6). A hazard quotient of 0.2 is the basis for non-carcinogenic risk.

The RWQCB (February 2016) considers two (2) groundwater use scenarios: one where groundwater IS a potential source of drinking water resource, and the other where groundwater IS NOT a potential drinking water resource.

The role of environmental screening levels is to screen sites and help identify areas, contaminants and conditions that may require further attention and risk assessment. In general, at sites where contaminants are below screening levels, no further action is warranted provided that the exposure assumptions match or approximate those used in developing the screening levels. Furthermore, contaminants above screening levels, does not automatically trigger or require remedial action. According to RWQCB (February 2016), chemical concentrations in soil and groundwater above ESLs could pose negligible risk.

Factors, such as background levels, have to be considered in evaluating sample data and the need for remedial action or risk management. Remedial action is generally not warranted for naturally-occurring metals in soil and groundwater.

6- INVESTIGATION RESULTS AND RECOMMENDATIONS

Three (3) exploratory borings were completed on September 11, 2019 at the subject site and the result of the investigation is as follows.

6-1- Soil and Water: Organics

Soil samples from 25.0 and 35.0 feet depths for B1 and from 25.0 feet depth for B2 were analyzed for TPH (Gasoline), TPH (Diesel), TPH (Motor oil) MTBE and BTEX. Soil sample from 5.0 feet depth for B3 was analyzed for heavy metals and Organochlorine Pesticides. The soil analytical results for organics are compared with Tier 1 ESL values (that are conservative) as well as Toxicity Characteristic Leaching Procedure (TCLP) Regulatory Levels as attached in the Exhibit II, Environmental Screening Levels and STLC and TTLC Regulatory Limits Tables.

Analytical Results

B1- 25 ft.: TPH diesel: 16.2 mg/Kg, TPH motor oil: 141 mg/Kg, Pentacosane: 72.6 %4,
(S)4 Bromofluorobenzene: 104 %
(S) Dibromofluoromethane: 106 %
(S) Toluene-d8: 94.7 %
(S) 4-Bromofluorobenzene: 84.6 %

B1-35 ft.: All compounds were non-detectable for this sample.
Pentacosane: 67.1 %4,
(S)4 Bromofluorobenzene: 107 %
(S) Dibromofluoromethane: 106 %
(S) Toluene-d8: 95.4 %
(S) 4-Bromofluorobenzene: 84.7 %

B2- 25 ft.: All compounds were non-detectable for this sample.
Pentacosane (S): 63.8 %
(S)4 Bromofluorobenzene: 102 %
(S) Dibromofluoromethane: 109 %
(S) Toluene-d8: 94.4 %
(S) 4-Bromofluorobenzene: 84.9 %

B3- 5 ft.:

TPH as Diesel: 2.04 mg/Kg, Pentacosane (S): 70.3 %,
(S) 4-Bromofluorobenzene: 99.2 %
(S) Dibromofluoromethane: 107 %
(S) Toluene-d8: 98.1 %
(S) 4-Bromofluorobenzene: 88.4 %
TCMX (S): 58.5 %
DCBP (S): 64.5 %

Groundwater was not encountered or tested at any borings.

6-2- Soil and Water: Heavy Metals

B3- 5 ft.:
Arsenic: 2.50 mg/Kg
Barium: 150 mg/Kg
Chromium: 56.6 mg/Kg
Cobalt: 14.7 mg/Kg
Copper: 26.0 mg/Kg
Lead: 4.92 mg/Kg
Nickel: 41.3 mg/Kg
Vanadium: 72.1 mg/Kg
Zinc: 52.8 mg/Kg

6-3- Soil Vapor

Soil vapor samples collected from 5. ft. bgs and were analyzed for TPH and benzene by USEPA method TO-15.

SP1-B1

Parameters:	Analysis Method	DF	MDL	PQL	Results ug/m3
Carbon Disulfide	ETO15	1	0.37	1.6	36
Hexane	ETO15	1	0.46	1.8	2.6
tert-Butanol	ETO15	1	0.62	1.5	1.9
Chloroform	ETO15	1	0.97	2.4	3.1
Toluene	ETO15	1	0.75	1.9	5.2
Tetrachloroethylene	ETO15	1	1.5	3.4	26
Ethyl Benzene	ETO15	1	0.63	2.2	2.6
m,p-Xylene	ETO15	1	0.98	2.2	7.5
4-Ethyl Toluene	ETO15	1	0.55	2.5	9.1
1,2,4-Trimethylbenzene	ETO15	1	0.60	2.5	10
Naphthalene	ETO15	1	1.3	2.6	2.6
2-Propanol (Isopropyl Alcohol)	ETO15	6	7.7	74	320

SP2-B2 1909158-002

Parameters:	Analysis Method	DF	MDL	PQL	Results ug/m3
2-Propanol (Isopropyl Alcohol)	ETO15	1	1.3	12	24

SP3-B3 1909158-003

Parameters:	Analysis Method	DF	MDL	PQL	Results ug/m3
2-Propanol (Isopropyl Alcohol)	ETO15	1	1.3	12	26
Acetone	ETO15	1	0.40	12	13
Hexane	ETO15	1	0.46	1.8	1.9

Environmental Screening Results

The soil analytical results for organics meet the RWQCB (February 2016) ESLs for a residential land use (the most conservative scenario) for soil and heavy metal concentrations does not exceed TTLC values.

However, Arsenic in the soil sample is higher than 6.7×10^{-2} mg/Kg of Tier 1 screening level. For the case of Chromium since the concentration was 50 mg/Kg, per code recommendation a WET extraction test has been conducted. No Chromium was detected (STLC) as indicated in page (17 of 33) of Exhibit III.

Based on these national studies and the regional data presented (Reference 2), it is apparent that arsenic concentrations across much of the United States are elevated with respect to residential RBSLs. Several states have recognized the importance of background with regards to remediation involving arsenic in soil:

California Environmental Protection Agency (CalEPA) Department of Toxic Substances Control (DTSC) has set an arsenic background concentration of 6 mg/kg to be used at Los Angeles Unified District school sites (CalEPA, 2005).

6-4- Recommendations

There are no drinking water supply wells on the subject property and vicinity, and the *subject property* is in the service area of the municipal potable water supply system.

Although the recent investigation results indicate no-risk or insignificant levels of TPH (Gasoline), TPH (Diesel), TPH (Motor Oils), MTBE, BETEX, Organochlorine Pesticides and heavy metals in the soil, above the regulatory values, AEC recommends the following in the event the *subject property* is to be redeveloped:

• A routine health and safety plan to ensure the safety and protection of the public and construction workers during construction.

• Installation of a vapor barrier beneath the concrete foundation slab of the proposed building at the site to mitigate potential odor risks associated with concentration of vapors (such as propanol).

The soil of the site may be hauled to any landfill.

7- LIMITATIONS

This Report was prepared pursuant to an Agreement dated 8 August 2019 between Alan Enterprise LLC. and AEC. All uses of this Report are subject to, and deemed acceptance of, the conditions and restrictions contained in the Agreement. The observations and conclusions described in this Report are based solely on the Scope of Services provided pursuant to the Agreement. AEC has not performed any additional observations, investigations, studies or other testing not specified in the Agreement and the Report. AEC shall not be liable for the existence of any condition the discovery of which would have required the performance of services not authorized under the Agreement.

This Report is prepared for the exclusive use of Alan Enterprise LLC. and its sub-contractors in connection with the design and construction of the development. There are no intended beneficiaries other than Alan Enterprise LLC. and its sub-contractors. AEC shall owe no duty, whatsoever, to any other person or entity on account of the Agreement or the Report. Use of this Report by any person or entity other than Alan Enterprise LLC. and its sub-contractors for any purpose whatsoever is expressly forbidden unless such other person or entity obtains written authorization from Alan Enterprise LLC. and AEC. Use of this Report by such other person or entity without the written authorization of Alan Enterprise LLC. and AEC shall be at such other person's or entities sole risk, and shall be without legal exposure or liability to AEC.

Use of this Report by any person or entity, including by Alan Enterprise LLC. and its sub-contractors, for a purpose other than for the design and construction of the proposed development is expressly prohibited unless such person or entity obtains written authorization from AEC indicating that the Report is adequate for such other use. Use of this Report by any person or entity for such other purpose without written authorization by AEC shall be at such person's or entities sole risk and shall be without legal exposure or liability to AEC.

This report reflects site conditions observed and described by records available to AEC as of the date of report preparation. The passage of time may result in significant changes in site conditions, technology, or economic conditions which could alter the findings and/or recommendations of the report. Accordingly, Alan Enterprise LLC. and any other party to whom the report is provided recognize and agree that AEC shall bear no liability for deviations from observed conditions or available records after the time of report preparation.

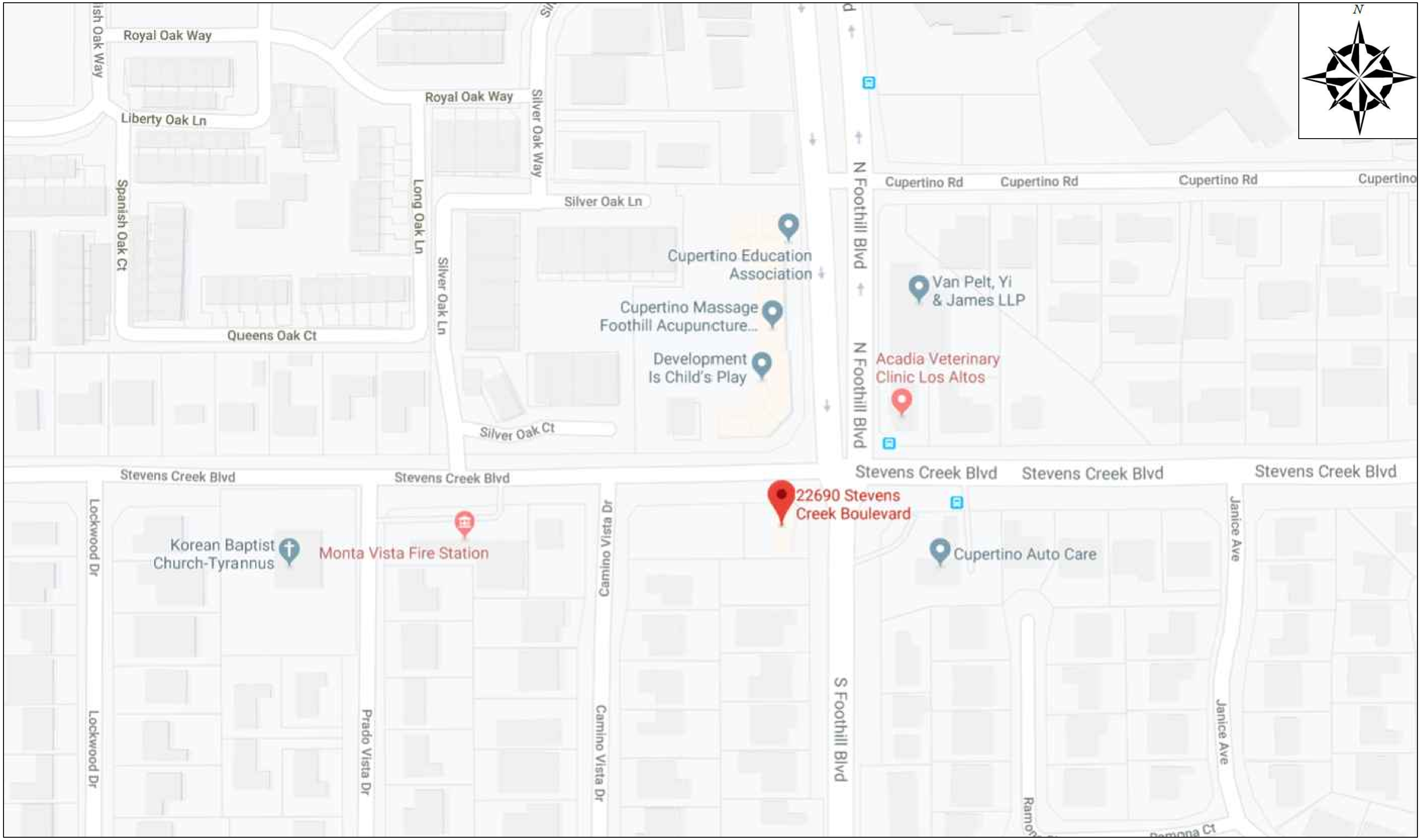
Use of this Report by any person or entity in violation of the restrictions expressed in this Report shall be deemed and accepted by the user as conclusive evidence that such use and the reliance placed on this Report, or any portions thereof, is unreasonable, and that the user accepts full and exclusive responsibility and liability for any losses, damages or other liability which may result.

8- REFERENCES

1- Phase I Environmental Site Assessment Report for 22690 Stevens Creek Boulevard, Cupertino, California 95014 (Three parcels with APNs 342-14-04, 342-14-05, and 342-14-66), AEC Project No. 3940, July 29, 2019.

2- Background Versus Risk-Based Screening Levels -An Examination Of Arsenic Background Soil Concentrations In Seven States, Kelly A.S. Vosnakis, Elizabeth Perry, Karen Madsen, Lisa J.N. Bradley, AECOM, Proceedings of the Annual International Conference on Soils, Sediments, Water and Energy, Volume 14, Article 10, January 2010.

Exhibit I



ACHIEVEMENT ENGINEERING CORP.

Project Number: 3974	Project Title: Ali Mozafari - Phase II - Exhibit III
	Vicinity Map

REVISIONS

	MM/DD/YY	REMARKS
0	09/26/19	...
1	__/__/__	...
2	__/__/__	...
3	__/__/__	...
4	__/__/__	

M 01

ACHIEVEMENT ENGINEERING CORP.

Project Number: 3974

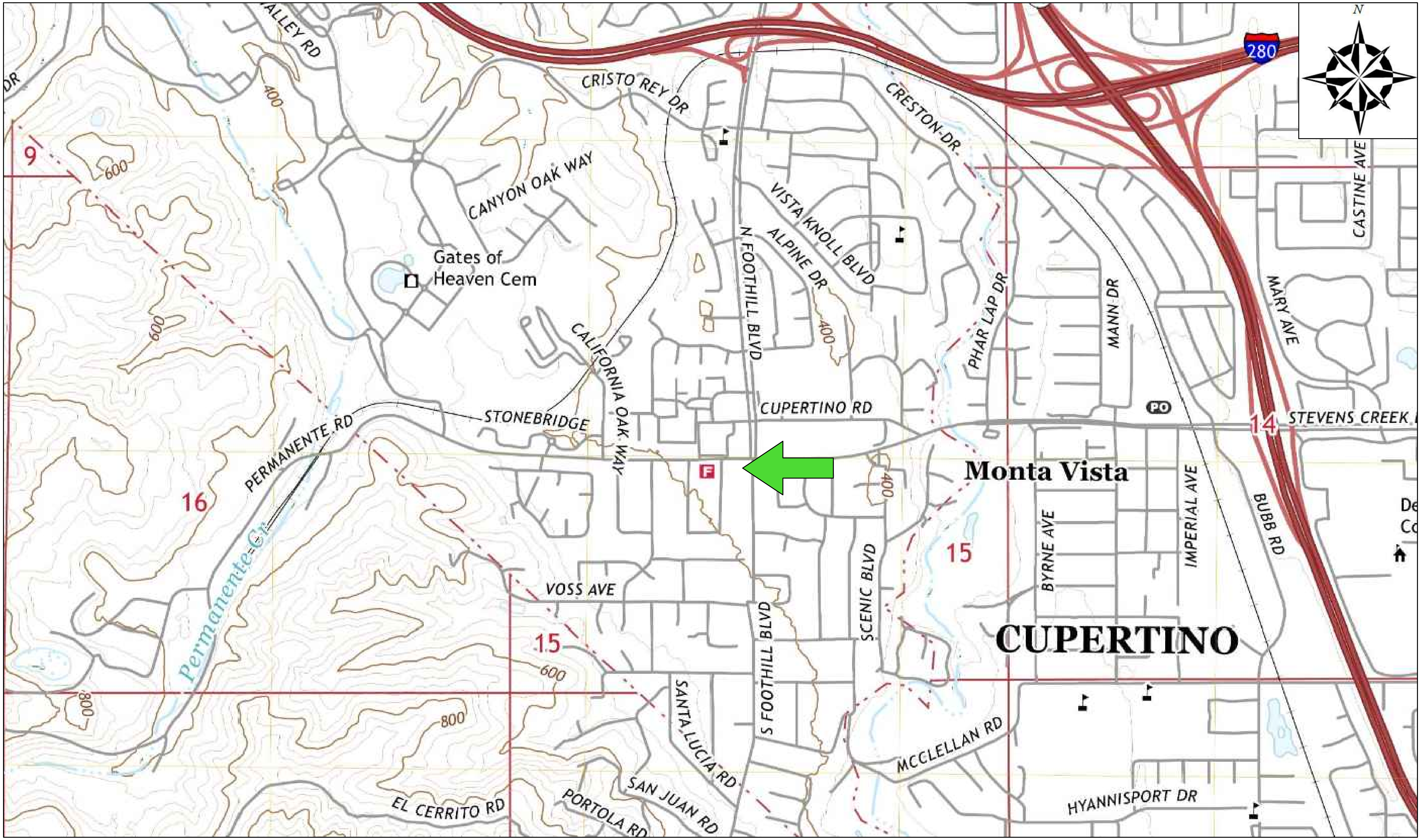
Project Title: Ali Mozafari - Phase II - Exhibit III

Boring Location

REVISIONS

	MM/DD/YY	REMARKS
0	09/26/19	...
1	_ _/_ _/_ _	...
2	_ _/_ _/_ _	...
3	_ _/_ _/_ _	...
4	_ _/_ _/_ _	

M 02



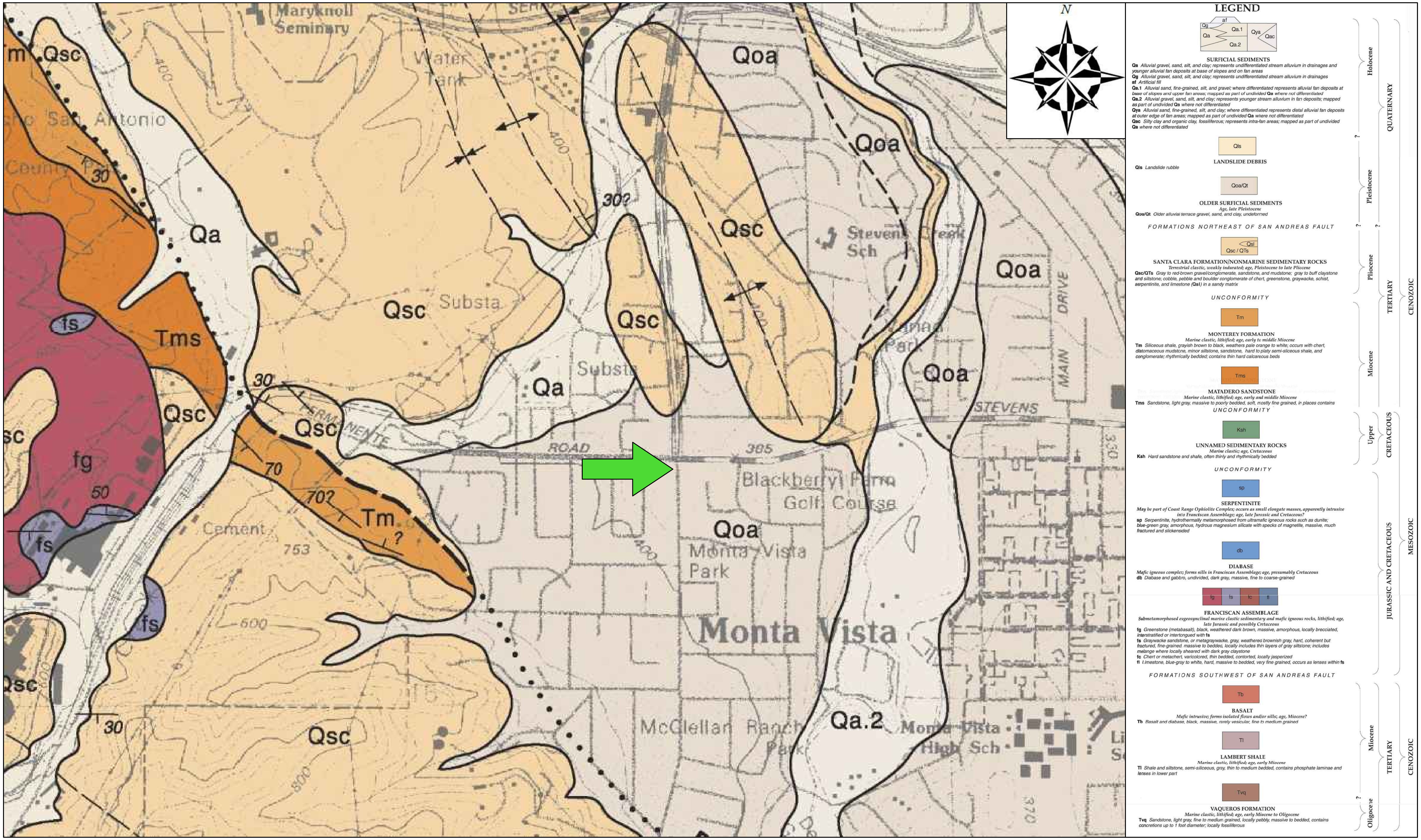
ACHIEVEMENT ENGINEERING CORP.

Project Number: 3974	Project Title: Ali Mozafari - Phase II - Exhibit III
Site Location on Cupertino quadrangle 7.5' Series Topographic Map by USGS	

REVISIONS

	MM/DD/YY	REMARKS
0	09/26/19	...
1	__/__/__	...
2	__/__/__	...
3	__/__/__	...
4	__/__/__	

M 03



ACHIEVEMENT ENGINEERING CORP.	

Project Number: 3974

Project Title: Ali Mozafari - Phase II - Exhibit III

Site Location on Cupertino and San Jose West quadrangles
7.5' Series Geologic Map by T. W. Dibblee and J.A. Minch 2007

REVISIONS

	MM/DD/YY	REMARKS
0	09/26/19	...
1	__/__/__	...
2	__/__/__	...
3	__/__/__	...
4	__/__/__	

M 04

Exhibit II

		Concentration in soil samples												
Boring	Sample Depth (ft)	TPH gasoline (mg/Kg)	TPH Diesel (mg/Kg)	TPH motor oil (mg/Kg)	MTBE (mg/Kg)	Benzene (mg/Kg)	OCPs (mg/Kg)	Aresenic (mg/Kg)	Barium (mg/Kg)	Chromium (mg/Kg)	Cobalt (mg/Kg)	Copper (mg/Kg)	Lead (mg/Kg)	Nickel (mg/Kg)
B-1	35.0	ND	16.2	141	ND	ND	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
B-1	25.0	ND	ND	ND	ND	ND	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
B-2	25.0	ND	ND	ND	ND	ND	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
B-3	10.0	ND	2.04	ND	ND	ND	ND	2.5	150	56.6	14.7	26	4.92	41.3
Tier 1 ESL (Soil) mg/Kg		100	230	5100	2.3 *10^-2	4.4 *10^-2	*	6.7 *10^-2	3000	0.3	230	3100	80	86
TTLC (mg/Kg)								500.0	10000.0	500.0	8000.0	2500.0	1000.0	2000.0

		Concentrations in the vapor samples												
Boring	Sample Depth (ft)	Carbon Disulfide ug/m3	Hexane ug/m3	tert-Butanol ug/m3	Chloroform ug/m3	Toluene ug/m3	Tetrachloro ethylene ug/m3	Ethyl Benzene ug/m3	m,p-Xylene ug/m3	4-Ethyl Toluene ug/m3	1,2,4-Trimethyl benzene ug/m3	Naphthalene ug/m3	2-Propanol (Isopropyl Alcohol) ug/m3	Aceton ug/m3
B-1	5.0	36	2.6	1.9	3.1	5.2	26	2.6	7.5	9.1	10	2.6	320	
B-2	5.0	ND	ND	ND	ND								24	
B-3	5.0	ND	1.9	ND	ND								26	13
Tier 1 ESL (Vapor) ug/m3		*	*	*	61	1.6 *10^5	240	560	5.2*10^4	*	*	41	*	1.5*10^7

Exhibit III

Torrent LABORATORY, INC.

Arsh Firouzjaei
Achievement Engineering Corp
2455 Autumnvale Dr.
San Jose, California 95131
Tel: 408 217 9174
Fax: 408 217 9632
Email: arash@achieveng.com

RE: Alan Enterprise

Work Order No.: 1909078 Rev: 1

Dear Arash Firouzjaei:

Torrent Laboratory, Inc. received 9 sample(s) on September 11, 2019 for the analyses presented in the following Report.

As requested on the Chain of Custody, five samples were placed on hold.

All data for associated QC met EPA or laboratory specification(s) except where noted in the case narrative.

Torrent Laboratory, Inc. is certified by the State of California, ELAP #1991. If you have any questions regarding these test results, please feel free to contact the Project Management Team at (408)263-5258; ext 204.

Kathie Evans

Kathie Evans
Project Manager

September 18, 2019
Date

Date: 9/18/2019

Client: Achievement Engineering Corp

Project: Alan Enterprise

Work Order: 1909078

CASE NARRATIVE

Unless otherwise indicated in the following narrative, no issues encountered with the receiving, preparation, analysis or reporting of the results associated with this work order.

Unless otherwise indicated in the following narrative, no results have been method and/or field blank corrected.

Reported results relate only to the items/samples tested by the laboratory.

This report shall not be reproduced, except in full, without the written approval of Torrent Analytical, Inc.

REVISIONS

Report revised to include STLC data.

STLC

Note: Extraction of 50 g sample / 500g 0.2M Sodium Citrate Solution was performed according to wet extraction procedure (WET) which was rotated in a rotary shaker for 48 hours (+/- 4 hours).

Date Prepared: 10/8/19 at 5:15 PM to 10/10/19 at 1:50 PM

Rev. 1 (10/16/19)

Sample Result Summary

Report prepared for:	Arash Firouzjaei	Date Received:	09/11/19
	Achievement Engineering Corp	Date Reported:	09/18/19

B1-25' 1909078-003

Parameters:	Analysis Method	DF	MDL	PQL	Results	Unit
TPH as Diesel	SW8015B	4	3.4	8.0	16.2	mg/Kg
TPH as Motor Oil	SW8015B	4	13	40	141	mg/Kg

B1-35' 1909078-004

Parameters:	Analysis Method	DF	MDL	PQL	Results	Unit

All compounds were non-detectable for this sample.

B2-25' 1909078-007

Parameters:	Analysis Method	DF	MDL	PQL	Results	Unit

All compounds were non-detectable for this sample.

B3-5' 1909078-008

Parameters:	Analysis Method	DF	MDL	PQL	Results	Unit
Arsenic	SW6010B	1	0.15	1.30	2.50	mg/Kg
Barium	SW6010B	1	0.055	5.00	150	mg/Kg
Chromium	SW6010B	1	0.075	5.00	56.6	mg/Kg
Cobalt	SW6010B	1	0.070	5.00	14.7	mg/Kg
Copper	SW6010B	1	0.20	5.00	26.0	mg/Kg
Lead	SW6010B	1	0.10	3.00	4.92	mg/Kg
Nickel	SW6010B	1	0.50	5.00	41.3	mg/Kg
Vanadium	SW6010B	1	0.10	5.00	72.1	mg/Kg
Zinc	SW6010B	1	0.30	5.00	52.8	mg/Kg
TPH as Diesel	SW8015B	1	0.85	2.0	2.04	mg/Kg

Torrent LABORATORY, INC.

SAMPLE RESULTS

Report prepared for: Arash Firouzjaei
Achievement Engineering Corp

Date/Time Received: 09/11/19, 1:10 pm
Date Reported: 09/18/19

Client Sample ID:	B1-25'	**Lab Sample ID:**	1909078-003A
Project Name/Location:	Alan Enterprise	**Sample Matrix:**	Soil
Project Number:	3974		
Date/Time Sampled:	09/10/19 / 11:58		
SDG:			

Prep Method:	3546_TPH	**Prep Batch Date/Time:**	9/13/19	12:50:00PM
Prep Batch ID:	1116592	**Prep Analyst:**	EDORR	

Parameters:	Analysis Method	DF	MDL	PQL	Results	Q	Units	Analyzed	Time	By	Analytical Batch
TPH as Diesel	SW8015B	4	3.4	8.0	**16.2**	x	mg/Kg	09/16/19	15:54	MK	442459
TPH as Motor Oil	SW8015B	4	13	40	**141**		mg/Kg	09/16/19	15:54	MK	442459
			Acceptance Limits								
Pentacosane (S)	SW8015B		59 - 129		**72.6**		%	09/16/19	15:54	MK	442459

NOTE: x-not typical of Diesel ref. std: peaks within Diesel range quantified as diesel

Torrent LABORATORY, INC.

SAMPLE RESULTS

Report prepared for: Arash Firouzjaei
Achievement Engineering Corp

Date/Time Received: 09/11/19, 1:10 pm
Date Reported: 09/18/19

Client Sample ID:	B1-25'	**Lab Sample ID:**	1909078-003A
Project Name/Location:	Alan Enterprise	**Sample Matrix:**	Soil
Project Number:	3974		
Date/Time Sampled:	09/10/19 / 11:58		
SDG:			

Prep Method:	5035GRO	**Prep Batch Date/Time:**	9/16/19	9:43:00AM
Prep Batch ID:	1116690	**Prep Analyst:**	BPATEL	

Parameters:	Analysis Method	DF	MDL	PQL	Results	Q	Units	Analyzed	Time	By	Analytical Batch
TPH(Gasoline)	8260TPH	1	43	100	ND		ug/Kg	09/16/19	17:03	BP	442441
(S) 4-Bromofluorobenzene	8260TPH		43.9 - 127		**104**		%	09/16/19	17:03	BP	442441

SAMPLE RESULTS

Report prepared for: Arash Firouzjaei
Achievement Engineering Corp

Date/Time Received: 09/11/19, 1:10 pm
Date Reported: 09/18/19

Client Sample ID:	B1-25'	**Lab Sample ID:**	1909078-003A
Project Name/Location:	Alan Enterprise	**Sample Matrix:**	Soil
Project Number:	3974		
Date/Time Sampled:	09/10/19 / 11:58		
SDG:			

Prep Method:	5035	**Prep Batch Date/Time:**	9/16/19	9:43:00AM
Prep Batch ID:	1116658	**Prep Analyst:**	BPATEL	

Parameters:	Analysis Method	DF	MDL	PQL	Results	Q	Units	Analyzed	Time	By	Analytical Batch
MTBE	SW8260B	1	2.3	10	ND		ug/Kg	09/16/19	17:03	BP	442441
Benzene	SW8260B	1	2.2	10	ND		ug/Kg	09/16/19	17:03	BP	442441
Toluene	SW8260B	1	1.8	10	ND		ug/Kg	09/16/19	17:03	BP	442441
Ethylbenzene	SW8260B	1	1.7	10	ND		ug/Kg	09/16/19	17:03	BP	442441
m,p-Xylene	SW8260B	1	3.2	10	ND		ug/Kg	09/16/19	17:03	BP	442441
o-Xylene	SW8260B	1	1.7	10	ND		ug/Kg	09/16/19	17:03	BP	442441
(S) Dibromofluoromethane	SW8260B		59.8 - 148		**106**		%	09/16/19	17:03	BP	442441
(S) Toluene-d8	SW8260B		55.2 - 133		**94.7**		%	09/16/19	17:03	BP	442441
(S) 4-Bromofluorobenzene	SW8260B		55.8 - 141		**84.6**		%	09/16/19	17:03	BP	442441

Torrent LABORATORY, INC.

SAMPLE RESULTS

Report prepared for: Arash Firouzjaei
Achievement Engineering Corp

Date/Time Received: 09/11/19, 1:10 pm
Date Reported: 09/18/19

Client Sample ID:	B1-35'	**Lab Sample ID:**	1909078-004A
Project Name/Location:	Alan Enterprise	**Sample Matrix:**	Soil
Project Number:	3974		
Date/Time Sampled:	09/10/19 / 12:10		
SDG:			

Prep Method:	3546_TPH	**Prep Batch Date/Time:**	9/13/19	12:50:00PM
Prep Batch ID:	1116592	**Prep Analyst:**	EDORR	

Parameters:	Analysis Method	DF	MDL	PQL	Results	Q	Units	Analyzed	Time	By	Analytical Batch
TPH as Diesel	SW8015B	1	0.85	2.0	ND		mg/Kg	09/14/19	13:56	MK	442459
TPH as Motor Oil	SW8015B	1	3.2	10	ND		mg/Kg	09/14/19	13:56	MK	442459
			Acceptance Limits								
Pentacosane (S)	SW8015B		59 - 129		**67.1**		%	09/14/19	13:56	MK	442459

Torrent LABORATORY, INC.

SAMPLE RESULTS

Report prepared for: Arash Firouzjaei
Achievement Engineering Corp

Date/Time Received: 09/11/19, 1:10 pm
Date Reported: 09/18/19

Client Sample ID:	B1-35'	**Lab Sample ID:**	1909078-004A
Project Name/Location:	Alan Enterprise	**Sample Matrix:**	Soil
Project Number:	3974		
Date/Time Sampled:	09/10/19 / 12:10		
SDG:			

Prep Method:	5035GRO	**Prep Batch Date/Time:**	9/16/19	9:43:00AM
Prep Batch ID:	1116690	**Prep Analyst:**	BPATEL	

Parameters:	Analysis Method	DF	MDL	PQL	Results	Q	Units	Analyzed	Time	By	Analytical Batch
TPH(Gasoline)	8260TPH	1	43	100	ND		ug/Kg	09/16/19	17:32	BP	442441
(S) 4-Bromofluorobenzene	8260TPH		43.9 - 127		**107**		%	09/16/19	17:32	BP	442441

Torrent LABORATORY, INC.

SAMPLE RESULTS

Report prepared for:	Arash Firouzjaei Achievement Engineering Corp	**Date/Time Received:**	09/11/19, 1:10 pm
		Date Reported:	09/18/19

Client Sample ID:	B1-35'	**Lab Sample ID:**	1909078-004A
Project Name/Location:	Alan Enterprise	**Sample Matrix:**	Soil
Project Number:	3974		
Date/Time Sampled:	09/10/19 / 12:10		
SDG:			

Prep Method: 5035		**Prep Batch Date/Time:**	9/16/19 9:43:00AM
Prep Batch ID: 1116658		**Prep Analyst:**	BPATEL

Parameters:	Analysis Method	DF	MDL	PQL	Results	Q	Units	Analyzed	Time	By	Analytical Batch
MTBE	SW8260B	1	2.3	10	ND		ug/Kg	09/16/19	17:32	BP	442441
Benzene	SW8260B	1	2.2	10	ND		ug/Kg	09/16/19	17:32	BP	442441
Toluene	SW8260B	1	1.8	10	ND		ug/Kg	09/16/19	17:32	BP	442441
Ethylbenzene	SW8260B	1	1.7	10	ND		ug/Kg	09/16/19	17:32	BP	442441
m,p-Xylene	SW8260B	1	3.2	10	ND		ug/Kg	09/16/19	17:32	BP	442441
o-Xylene	SW8260B	1	1.7	10	ND		ug/Kg	09/16/19	17:32	BP	442441
(S) Dibromofluoromethane	SW8260B		59.8 - 148		**106**		%	09/16/19	17:32	BP	442441
(S) Toluene-d8	SW8260B		55.2 - 133		**95.4**		%	09/16/19	17:32	BP	442441
(S) 4-Bromofluorobenzene	SW8260B		55.8 - 141		**84.7**		%	09/16/19	17:32	BP	442441

SAMPLE RESULTS

Report prepared for: Arash Firouzjaei
Achievement Engineering Corp

Date/Time Received: 09/11/19, 1:10 pm
Date Reported: 09/18/19

Client Sample ID:	B2-25'	**Lab Sample ID:**	1909078-007A
Project Name/Location:	Alan Enterprise	**Sample Matrix:**	Soil
Project Number:	3974		
Date/Time Sampled:	09/10/19 / 12:30		
SDG:			

Prep Method:	3546_TPH	**Prep Batch Date/Time:**	9/13/19	12:50:00PM
Prep Batch ID:	1116592	**Prep Analyst:**	EDORR	

Parameters:	Analysis Method	DF	MDL	PQL	Results	Q	Units	Analyzed	Time	By	Analytical Batch
TPH as Diesel	SW8015B	1	0.85	2.0	ND		mg/Kg	09/14/19	14:20	MK	442459
TPH as Motor Oil	SW8015B	1	3.2	10	ND		mg/Kg	09/14/19	14:20	MK	442459
			Acceptance Limits								
Pentacosane (S)	SW8015B		59 - 129		**63.8**		%	09/14/19	14:20	MK	442459

SAMPLE RESULTS

Report prepared for: Arash Firouzjaei
Achievement Engineering Corp

Date/Time Received: 09/11/19, 1:10 pm
Date Reported: 09/18/19

Client Sample ID:	B2-25'	**Lab Sample ID:**	1909078-007A
Project Name/Location:	Alan Enterprise	**Sample Matrix:**	Soil
Project Number:	3974		
Date/Time Sampled:	09/10/19 / 12:30		
SDG:			

Prep Method:	5035GRO	**Prep Batch Date/Time:**	9/16/19	9:43:00AM
Prep Batch ID:	1116690	**Prep Analyst:**	BPATEL	

Parameters:	Analysis Method	DF	MDL	PQL	Results	Q	Units	Analyzed	Time	By	Analytical Batch
TPH(Gasoline)	8260TPH	1	43	100	ND		ug/Kg	09/16/19	18:00	BP	442441
(S) 4-Bromofluorobenzene	8260TPH		43.9 - 127		**102**		%	09/16/19	18:00	BP	442441

SAMPLE RESULTS

Report prepared for: Arash Firouzjaei
Achievement Engineering Corp

Date/Time Received: 09/11/19, 1:10 pm
Date Reported: 09/18/19

Client Sample ID:	B2-25'	**Lab Sample ID:**	1909078-007A
Project Name/Location:	Alan Enterprise	**Sample Matrix:**	Soil
Project Number:	3974		
Date/Time Sampled:	09/10/19 / 12:30		
SDG:			

Prep Method:	5035	**Prep Batch Date/Time:**	9/16/19	9:43:00AM
Prep Batch ID:	1116658	**Prep Analyst:**	BPATEL	

Parameters:	Analysis Method	DF	MDL	PQL	Results	Q	Units	Analyzed	Time	By	Analytical Batch
MTBE	SW8260B	1	2.3	10	ND		ug/Kg	09/16/19	18:00	BP	442441
Benzene	SW8260B	1	2.2	10	ND		ug/Kg	09/16/19	18:00	BP	442441
Toluene	SW8260B	1	1.8	10	ND		ug/Kg	09/16/19	18:00	BP	442441
Ethylbenzene	SW8260B	1	1.7	10	ND		ug/Kg	09/16/19	18:00	BP	442441
m,p-Xylene	SW8260B	1	3.2	10	ND		ug/Kg	09/16/19	18:00	BP	442441
o-Xylene	SW8260B	1	1.7	10	ND		ug/Kg	09/16/19	18:00	BP	442441
(S) Dibromofluoromethane	SW8260B		59.8 - 148		**109**		%	09/16/19	18:00	BP	442441
(S) Toluene-d8	SW8260B		55.2 - 133		**94.4**		%	09/16/19	18:00	BP	442441
(S) 4-Bromofluorobenzene	SW8260B		55.8 - 141		**84.9**		%	09/16/19	18:00	BP	442441

SAMPLE RESULTS

Report prepared for: Arash Firouzjaei
Achievement Engineering Corp

Date/Time Received: 09/11/19, 1:10 pm
Date Reported: 09/18/19

Client Sample ID:	B3-5'	**Lab Sample ID:**	1909078-008A
Project Name/Location:	Alan Enterprise	**Sample Matrix:**	Soil
Project Number:	3974		
Date/Time Sampled:	09/10/19 / 14:00		
SDG:			

Prep Method:	7471BP	**Prep Batch Date/Time:**	9/16/19	4:15:00PM
Prep Batch ID:	1116656	**Prep Analyst:**	BJAY	

Parameters:	Analysis Method	DF	MDL	PQL	Results	Q	Units	Analyzed	Time	By	Analytical Batch
Mercury	SW7471B	1	0.083	0.50	ND		mg/Kg	09/17/19	10:53	BJAY	442463

Torrent LABORATORY, INC.

SAMPLE RESULTS

Report prepared for: Arash Firouzjaei
Achievement Engineering Corp

Date/Time Received: 09/11/19, 1:10 pm
Date Reported: 09/18/19

Client Sample ID:	B3-5'	**Lab Sample ID:**	1909078-008A
Project Name/Location:	Alan Enterprise	**Sample Matrix:**	Soil
Project Number:	3974		
Date/Time Sampled:	09/10/19 / 14:00		
SDG:			

Prep Method:	3050B	**Prep Batch Date/Time:**	9/16/19	4:15:00PM
Prep Batch ID:	1116655	**Prep Analyst:**	BJAY	

Parameters:	Analysis Method	DF	MDL	PQL	Results	Q	Units	Analyzed	Time	By	Analytical Batch
Antimony	SW6010B	1	0.050	5.00	ND		mg/Kg	09/17/19	13:25	PPATEL	442461
Arsenic	SW6010B	1	0.15	1.30	**2.50**		mg/Kg	09/17/19	13:25	PPATEL	442461
Barium	SW6010B	1	0.055	5.00	**150**		mg/Kg	09/17/19	13:25	PPATEL	442461
Beryllium	SW6010B	1	0.055	5.00	ND		mg/Kg	09/17/19	13:25	PPATEL	442461
Cadmium	SW6010B	1	0.10	5.00	ND		mg/Kg	09/17/19	13:25	PPATEL	442461
Chromium	SW6010B	1	0.075	5.00	**56.6**		mg/Kg	09/17/19	13:25	PPATEL	442461
Cobalt	SW6010B	1	0.070	5.00	**14.7**		mg/Kg	09/17/19	13:25	PPATEL	442461
Copper	SW6010B	1	0.20	5.00	**26.0**		mg/Kg	09/17/19	13:25	PPATEL	442461
Lead	SW6010B	1	0.10	3.00	**4.92**		mg/Kg	09/17/19	13:25	PPATEL	442461
Molybdenum	SW6010B	1	0.050	5.00	ND		mg/Kg	09/17/19	13:25	PPATEL	442461
Nickel	SW6010B	1	0.50	5.00	**41.3**		mg/Kg	09/17/19	13:25	PPATEL	442461
Silver	SW6010B	1	0.15	5.00	ND		mg/Kg	09/17/19	13:25	PPATEL	442461
Vanadium	SW6010B	1	0.10	5.00	**72.1**		mg/Kg	09/17/19	13:25	PPATEL	442461

SAMPLE RESULTS

Report prepared for: Arash Firouzjaei
Achievement Engineering Corp

Date/Time Received: 09/11/19, 1:10 pm
Date Reported: 09/18/19

Client Sample ID:	B3-5'	**Lab Sample ID:**	1909078-008A
Project Name/Location:	Alan Enterprise	**Sample Matrix:**	Soil
Project Number:	3974		
Date/Time Sampled:	09/10/19 / 14:00		
SDG:			

Prep Method:	3050B	**Prep Batch Date/Time:**	9/16/19	4:15:00PM
Prep Batch ID:	1116655	**Prep Analyst:**	BJAY	

Parameters:	Analysis Method	DF	MDL	PQL	Results	Q	Units	Analyzed	Time	By	Analytical Batch
Selenium	SW6010B	1	0.22	5.00	ND		mg/Kg	09/17/19	16:09	PPATEL	442473
Zinc	SW6010B	1	0.30	5.00	**52.8**		mg/Kg	09/17/19	16:09	PPATEL	442473

SAMPLE RESULTS

Report prepared for: Arash Firouzjaei
Achievement Engineering Corp

Date/Time Received: 09/11/19, 1:10 pm
Date Reported: 09/18/19

Client Sample ID:	B3-5'	**Lab Sample ID:**	1909078-008A
Project Name/Location:	Alan Enterprise	**Sample Matrix:**	Soil
Project Number:	3974		
Date/Time Sampled:	09/10/19 / 14:00		
SDG:			

Prep Method: 3050B		**Prep Batch Date/Time:**	9/16/19	4:15:00PM
Prep Batch ID: 1116655		**Prep Analyst:**	BJAY	

Parameters:	Analysis Method	DF	MDL	PQL	Results	Q	Units	Analyzed	Time	By	Analytical Batch
The results shown below are reported using their MDL.											
Thallium	SW6010B	10	5.5	50.0	ND		mg/Kg	09/17/19	13:32	PPATEL	442461

NOTE: Diluted due to suppression of the spectral signal in undiluted run

SAMPLE RESULTS

Report prepared for: Arash Firouzjaei
Achievement Engineering Corp

Date/Time Received: 09/11/19, 1:10 pm
Date Reported: 09/18/19

Client Sample ID:	B3-5'	**Lab Sample ID:**	1909078-008A
Project Name/Location:	Alan Enterprise	**Sample Matrix:**	Soil
Project Number:	3974		
Date/Time Sampled:	09/10/19 / 14:00		
SDG:			

Prep Method:	WET/3010B	**Prep Batch Date/Time:**	10/10/19 3:50:00PM
Prep Batch ID:	1117290	**Prep Analyst:**	BJAY

Parameters:	Analysis Method	DF	MDL	PQL	Results	Q	Units	Analyzed	Time	By	Analytical Batch
Chromium (STLC)	SW6010B	1	0.010	0.20	ND		mg/L	10/10/19	20:00	PPATEL	443035

Torrent LABORATORY, INC.

SAMPLE RESULTS

Report prepared for:	Arash Firouzjaei Achievement Engineering Corp	**Date/Time Received:**	09/11/19, 1:10 pm
		Date Reported:	09/18/19

Client Sample ID:	B3-5'	**Lab Sample ID:**	1909078-008A
Project Name/Location:	Alan Enterprise	**Sample Matrix:**	Soil
Project Number:	3974		
Date/Time Sampled:	09/10/19 / 14:00		
SDG:			

Prep Method:	3546_OCP	**Prep Batch Date/Time:**	9/12/19	2:43:00PM
Prep Batch ID:	1116553	**Prep Analyst:**	EDORR	

Parameters:	Analysis Method	DF	MDL	PQL	Results	Q	Units	Analyzed	Time	By	Analytical Batch
alpha-BHC	SW8081B	1	0.13	2.0	ND		ug/Kg	09/13/19	15:25	LA	442401
gamma-BHC (Lindane)	SW8081B	1	0.16	2.0	ND		ug/Kg	09/13/19	15:25	LA	442401
beta-BHC	SW8081B	1	0.32	2.0	ND		ug/Kg	09/13/19	15:25	LA	442401
delta-BHC	SW8081B	1	0.16	2.0	ND		ug/Kg	09/13/19	15:25	LA	442401
Heptachlor	SW8081B	1	0.11	2.0	ND		ug/Kg	09/13/19	15:25	LA	442401
Aldrin	SW8081B	1	0.20	2.0	ND		ug/Kg	09/13/19	15:25	LA	442401
Heptachlor Epoxide	SW8081B	1	0.078	2.0	ND		ug/Kg	09/13/19	15:25	LA	442401
gamma-Chlordane	SW8081B	1	0.16	2.0	ND		ug/Kg	09/13/19	15:25	LA	442401
alpha-Chlordane	SW8081B	1	0.17	2.0	ND		ug/Kg	09/13/19	15:25	LA	442401
4,4'-DDE	SW8081B	1	0.19	2.0	ND		ug/Kg	09/13/19	15:25	LA	442401
Endosulfan I	SW8081B	1	0.18	2.0	ND		ug/Kg	09/13/19	15:25	LA	442401
Dieldrin	SW8081B	1	0.15	2.0	ND		ug/Kg	09/13/19	15:25	LA	442401
Endrin	SW8081B	1	0.19	2.0	ND		ug/Kg	09/13/19	15:25	LA	442401
4,4'-DDD	SW8081B	1	0.57	2.0	ND		ug/Kg	09/13/19	15:25	LA	442401
Endosulfan II	SW8081B	1	0.58	2.0	ND		ug/Kg	09/13/19	15:25	LA	442401
4,4'-DDT	SW8081B	1	0.13	2.0	ND		ug/Kg	09/13/19	15:25	LA	442401
Endrin Aldehyde	SW8081B	1	0.15	2.0	ND		ug/Kg	09/13/19	15:25	LA	442401
Methoxychlor	SW8081B	1	0.20	2.0	ND		ug/Kg	09/13/19	15:25	LA	442401
Endosulfan Sulfate	SW8081B	1	0.12	2.0	ND		ug/Kg	09/13/19	15:25	LA	442401
Endrin Ketone	SW8081B	1	0.094	2.0	ND		ug/Kg	09/13/19	15:25	LA	442401
Chlordane	SW8081B	1	2.1	20	ND		ug/Kg	09/13/19	15:25	LA	442401
Toxaphene	SW8081B	1	8.5	50	ND		ug/Kg	09/13/19	15:25	LA	442401
			Acceptance Limits								
TCMX (S)	SW8081B		48 - 125		**58.5**		%	09/13/19	15:25	LA	442401
DCBP (S)	SW8081B		38 - 135		**64.5**		%	09/13/19	15:25	LA	442401

SAMPLE RESULTS

Report prepared for:	Arash Firouzjaei Achievement Engineering Corp	**Date/Time Received:**	09/11/19, 1:10 pm
		Date Reported:	09/18/19

Client Sample ID:	B3-5'	**Lab Sample ID:**	1909078-008A
Project Name/Location:	Alan Enterprise	**Sample Matrix:**	Soil
Project Number:	3974		
Date/Time Sampled:	09/10/19 / 14:00		
SDG:			

Prep Method:	3546_TPH	**Prep Batch Date/Time:**	9/13/19	12:50:00PM
Prep Batch ID:	1116592	**Prep Analyst:**	EDORR	

Parameters:	Analysis Method	DF	MDL	PQL	Results	Q	Units	Analyzed	Time	By	Analytical Batch
TPH as Diesel	SW8015B	1	0.85	2.0	**2.04**	x	mg/Kg	09/17/19	14:48	MK	442459
TPH as Motor Oil	SW8015B	1	3.2	10	ND		mg/Kg	09/17/19	14:48	MK	442459
			Acceptance Limits								
Pentacosane (S)	SW8015B		59 - 129		**70.3**		%	09/17/19	14:48	MK	442459

NOTE: x-not typical of Diesel ref. std: peaks within Diesel range quantified as diesel

SAMPLE RESULTS

Report prepared for: Arash Firouzjaei
Achievement Engineering Corp

Date/Time Received: 09/11/19, 1:10 pm
Date Reported: 09/18/19

Client Sample ID:	B3-5'	**Lab Sample ID:**	1909078-008A
Project Name/Location:	Alan Enterprise	**Sample Matrix:**	Soil
Project Number:	3974		
Date/Time Sampled:	09/10/19 / 14:00		
SDG:			

Prep Method:	5035GRO	**Prep Batch Date/Time:**	9/16/19	9:43:00AM
Prep Batch ID:	1116690	**Prep Analyst:**	BPATEL	

Parameters:	Analysis Method	DF	MDL	PQL	Results	Q	Units	Analyzed	Time	By	Analytical Batch
TPH(Gasoline)	8260TPH	1	43	100	ND		ug/Kg	09/16/19	18:30	BP	442441
(S) 4-Bromofluorobenzene	8260TPH		43.9 - 127		**99.2**		%	09/16/19	18:30	BP	442441

SAMPLE RESULTS

Report prepared for:	Arash Firouzjaei Achievement Engineering Corp	**Date/Time Received:**	09/11/19, 1:10 pm
		Date Reported:	09/18/19

Client Sample ID:	B3-5'	**Lab Sample ID:**	1909078-008A
Project Name/Location:	Alan Enterprise	**Sample Matrix:**	Soil
Project Number:	3974		
Date/Time Sampled:	09/10/19 / 14:00		
SDG:			

Prep Method: 5035		**Prep Batch Date/Time:**	9/16/19	9:43:00AM
Prep Batch ID: 1116658		**Prep Analyst:**	BPATEL	

Parameters:	Analysis Method	DF	MDL	PQL	Results	Q	Units	Analyzed	Time	By	Analytical Batch
MTBE	SW8260B	1	2.3	10	ND		ug/Kg	09/16/19	18:30	BP	442441
Benzene	SW8260B	1	2.2	10	ND		ug/Kg	09/16/19	18:30	BP	442441
Toluene	SW8260B	1	1.8	10	ND		ug/Kg	09/16/19	18:30	BP	442441
Ethylbenzene	SW8260B	1	1.7	10	ND		ug/Kg	09/16/19	18:30	BP	442441
m,p-Xylene	SW8260B	1	3.2	10	ND		ug/Kg	09/16/19	18:30	BP	442441
o-Xylene	SW8260B	1	1.7	10	ND		ug/Kg	09/16/19	18:30	BP	442441
(S) Dibromofluoromethane	SW8260B		59.8 - 148		**107**		%	09/16/19	18:30	BP	442441
(S) Toluene-d8	SW8260B		55.2 - 133		**98.1**		%	09/16/19	18:30	BP	442441
(S) 4-Bromofluorobenzene	SW8260B		55.8 - 141		**88.4**		%	09/16/19	18:30	BP	442441

MB Summary Report

Work Order:	1909078	Prep Method:	3546_OCP	Prep Date:	09/12/19	Prep Batch:	1116553
Matrix:	Soil	Analytical Method:	SW8081B	Analyzed Date:	9/13/2019	Analytical Batch:	442401
Units:	ug/Kg						

Parameters	MDL	PQL	Method Blank Conc.	Lab Qualifier
alpha-BHC	0.13	2.0	ND	
gamma-BHC (Lindane)	0.16	2.0	ND	
beta-BHC	0.32	2.0	ND	
delta-BHC	0.16	2.0	ND	
Heptachlor	0.11	2.0	ND	
Aldrin	0.20	2.0	ND	
Heptachlor Epoxide	0.078	2.0	ND	
gamma-Chlordane	0.16	2.0	ND	
alpha-Chlordane	0.17	2.0	ND	
4,4'-DDE	0.19	2.0	ND	
Endosulfan I	0.18	2.0	ND	
Dieldrin	0.15	2.0	ND	
Endrin	0.19	2.0	ND	
4,4'-DDD	0.57	2.0	ND	
Endosulfan II	0.58	2.0	ND	
4,4'-DDT	0.13	2.0	ND	
Endrin Aldehyde	0.15	2.0	ND	
Methoxychlor	0.20	2.0	ND	
Endosulfan Sulfate	0.12	2.0	ND	
Endrin Ketone	0.094	2.0	ND	
Chlordane	2.1	20	ND	
Toxaphene	8.5	50	ND	
TCMX (S)			89.1	
DCBP (S)			100	

Work Order:	1909078	Prep Method:	3546_TPH	Prep Date:	09/13/19	Prep Batch:	1116592
Matrix:	Soil	Analytical Method:	SW8015B	Analyzed Date:	9/14/2019	Analytical Batch:	442459
Units:	mg/Kg						

Parameters	MDL	PQL	Method Blank Conc.	Lab Qualifier
TPH as Diesel	0.85	2.0	0.941	
TPH as Motor Oil	3.2	10	ND	
Pentacosane (S)			89.2	

MB Summary Report

Work Order:	1909078	Prep Method:	3050B	Prep Date:	09/16/19	Prep Batch:	1116655
Matrix:	Soil	Analytical Method:	SW6010B	Analyzed Date:	9/17/2019	Analytical Batch:	442461
Units:	mg/Kg						

Parameters	MDL	PQL	Method Blank Conc.	Lab Qualifier
Antimony	0.050	5.00	ND	
Arsenic	0.15	1.30	ND	
Barium	0.055	5.00	0.055	
Beryllium	0.055	5.00	ND	
Cadmium	0.10	5.00	ND	
Chromium	0.075	5.00	ND	
Cobalt	0.070	5.00	ND	
Copper	0.20	5.00	0.99	
Lead	0.10	1.30	ND	
Molybdenum	0.050	5.00	0.050	
Nickel	0.50	5.00	ND	
Silver	0.15	5.00	ND	
Thallium	0.55	5.00	ND	
Vanadium	0.10	5.00	ND	

Work Order:	1909078	Prep Method:	7471BP	Prep Date:	09/16/19	Prep Batch:	1116656
Matrix:	Soil	Analytical Method:	SW7471B	Analyzed Date:	9/17/2019	Analytical Batch:	442463
Units:	mg/Kg						

Parameters	MDL	PQL	Method Blank Conc.	Lab Qualifier
Mercury	0.083	0.50	ND	

Torrent LABORATORY, INC.

MB Summary Report

Work Order:	1909078	Prep Method:	5035	Prep Date:	09/16/19	Prep Batch:	1116658
Matrix:	Soil	Analytical Method:	SW8260B	Analyzed Date:	9/16/2019	Analytical Batch:	442441
Units:	ug/Kg						

Parameters	MDL	PQL	Method Blank Conc.	Lab Qualifier
Dichlorodifluoromethane	1.2	10	ND	
Chloromethane	1.8	10	ND	
Vinyl Chloride	2.0	10	ND	
Bromomethane	2.7	10	ND	
Chloroethane	3.0	10	ND	
Trichlorofluoromethane	2.1	10	ND	
1,1-Dichloroethene	2.0	10	ND	
Freon 113	1.9	10	ND	
Methylene Chloride	7.1	10	ND	
trans-1,2-Dichloroethene	2.1	10	ND	
MTBE	2.3	10	ND	
TBA	12	50	ND	
Diisopropyl ether	2.3	10	ND	
1,1-Dichloroethane	2.2	10	ND	
Ethyl tert-Butyl ether	2.3	10	ND	
cis-1,2-Dichloroethene	2.2	10	ND	
2,2-Dichloropropane	1.9	10	ND	
Bromochloromethane	2.3	10	ND	
Chloroform	2.4	10	ND	
Carbon Tetrachloride	2.1	10	ND	
1,1,1-Trichloroethane	2.1	10	ND	
1,1-Dichloropropene	2.0	10	ND	
Benzene	2.2	10	ND	
TAME	2.3	10	ND	
1,2-Dichloroethane	2.3	10	ND	
Trichloroethylene	1.8	10	ND	
Dibromomethane	1.8	10	ND	
1,2-Dichloropropane	1.9	10	ND	
Bromodichloromethane	2.0	10	ND	
cis-1,3-Dichloropropene	1.6	10	ND	
Toluene	1.8	10	ND	
Tetrachloroethylene	1.7	10	ND	
trans-1,3-Dichloropropene	1.6	10	ND	
1,1,2-Trichloroethane	1.8	10	ND	
Dibromochloromethane	1.9	10	ND	
1,3-Dichloropropane	1.8	10	ND	
1,2-Dibromoethane	1.8	10	ND	
Chlorobenzene	1.8	10	ND	
Ethylbenzene	1.7	10	ND	
1,1,1,2-Tetrachloroethane	1.9	10	ND	
m,p-Xylene	3.2	10	ND	

MB Summary Report

Work Order:	1909078	Prep Method:	5035	Prep Date:	09/16/19	Prep Batch:	1116658
Matrix:	Soil	Analytical Method:	SW8260B	Analyzed Date:	9/16/2019	Analytical Batch:	442441
Units:	ug/Kg						

Parameters	MDL	PQL	Method Blank Conc.	Lab Qualifier
o-Xylene	1.7	10	ND	
Styrene	1.6	10	ND	
Bromoform	1.7	10	ND	
Isopropyl Benzene	1.6	10	ND	
n-Propylbenzene	1.6	10	ND	
Bromobenzene	1.8	10	ND	
1,1,2,2-Tetrachloroethane	1.9	10	ND	
2-Chlorotoluene	1.8	10	ND	
1,3,5-Trimethylbenzene	1.6	10	ND	
1,2,3-Trichloropropane	1.9	10	ND	
4-Chlorotoluene	1.6	10	ND	
tert-Butylbenzene	1.6	10	ND	
1,2,4-Trimethylbenzene	1.4	10	ND	
sec-Butyl Benzene	1.6	10	ND	
p-Isopropyltoluene	1.5	10	ND	
1,3-Dichlorobenzene	1.7	10	ND	
1,4-Dichlorobenzene	1.7	10	ND	
n-Butylbenzene	1.5	10	ND	
1,2-Dichlorobenzene	1.8	10	ND	
1,2-Dibromo-3-Chloropropane	1.8	10	3.7	
Hexachlorobutadiene	1.4	10	2.8	
1,2,4-Trichlorobenzene	1.5	10	ND	
Naphthalene	1.7	10	4.0	
1,2,3-Trichlorobenzene	1.7	10	ND	
2-Butanone	2.3	10	2.9	
4-Methyl-2-Pentanone	2.0	10	ND	
(S) Dibromofluoromethane			101	
(S) Toluene-d8			93.8	
(S) 4-Bromofluorobenzene			82.8	

Work Order:	1909078	Prep Method:	5035GRO	Prep Date:	09/16/19	Prep Batch:	1116690
Matrix:	Soil	Analytical Method:	SW8260B	Analyzed Date:	9/16/2019	Analytical Batch:	442441
Units:	mg/Kg						

Parameters	MDL	PQL	Method Blank Conc.	Lab Qualifier
TPH(Gasoline)	0.043	0.10	0.089	
(S) 4-Bromofluorobenzene			112	

Torrent LABORATORY, INC.

MB Summary Report

Work Order:	1909078	**Prep Method:**	WET/3010B	**Prep Date:**	10/10/19	**Prep Batch:**	1117290
Matrix:	Soil	**Analytical Method:**	SW6010B	**Analyzed Date:**	10/10/2019	**Analytical Batch:**	443035
Units:	mg/L						

Parameters	MDL	PQL	Method Blank Conc.	Lab Qualifier
Chromium (STLC)	0.010	0.20	0.033	
Lead (STLC)	0.050	0.20	0.054	
Nickel (STLC)	0.010	0.20	ND	

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LCS/LCSD Summary Report

Raw values are used in quality control assessment.

Work Order:	1909078	**Prep Method:**	3546_OCP	**Prep Date:**	09/12/19	**Prep Batch:**	1116553
Matrix:	Soil	**Analytical Method:**	SW8081B	**Analyzed Date:**	9/13/2019	**Analytical Batch:**	442401
Units:	ug/Kg						

Parameters	MDL	PQL	Method Blank Conc.	Spike Conc.	LCS % Recovery	LCSD % Recovery	LCS/LCSD % RPD	% Recovery Limits	% RPD Limits	Lab Qualifier
gamma-BHC (Lindane)	0.16	2.0	ND	40	94.1	93.7	0.532	25 - 135	30	
Heptachlor	0.11	2.0	ND	40	99.4	97.8	1.77	40 - 130	30	
Aldrin	0.20	2.0	ND	40	94.2	93.1	1.07	25 - 140	30	
Dieldrin	0.15	2.0	ND	40	93.0	91.7	1.35	60 - 130	30	
Endrin	0.19	2.0	ND	40	98.6	95.7	3.08	55 - 135	30	
4,4'-DDT	0.13	2.0	ND	40	102	101	1.72	45 - 140	30	
TCMX (S)				100	94.2	88.5		48 - 125		
DCBP (S)				100	108	98.5		38 - 135		

Work Order:	1909078	**Prep Method:**	3546_TPH	**Prep Date:**	09/13/19	**Prep Batch:**	1116592
Matrix:	Soil	**Analytical Method:**	SW8015B	**Analyzed Date:**	9/14/2019	**Analytical Batch:**	442459
Units:	mg/Kg						

Parameters	MDL	PQL	Method Blank Conc.	Spike Conc.	LCS % Recovery	LCSD % Recovery	LCS/LCSD % RPD	% Recovery Limits	% RPD Limits	Lab Qualifier
TPH as Diesel	0.85	2.0	0.941	25.0	75.0	70.0	7.16	52 - 115	30	
Pentacosane (S)				200	81.1	77.2		59 - 129		

Work Order:	1909078	**Prep Method:**	3050B	**Prep Date:**	09/16/19	**Prep Batch:**	1116655
Matrix:	Soil	**Analytical Method:**	SW6010B	**Analyzed Date:**	9/17/2019	**Analytical Batch:**	442461
Units:	mg/Kg						

Parameters	MDL	PQL	Method Blank Conc.	Spike Conc.	LCS % Recovery	LCSD % Recovery	LCS/LCSD % RPD	% Recovery Limits	% RPD Limits	Lab Qualifier
Antimony	0.050	5.00	ND	50	87.8	91.4	4.02	80 - 120	30	
Arsenic	0.15	1.30	ND	50	88.3	93.3	5.51	80 - 120	30	
Barium	0.055	5.00	0.055	50	94.1	99.1	4.97	80 - 120	30	
Beryllium	0.055	5.00	ND	50	90.8	93.6	3.04	80 - 120	30	
Cadmium	0.10	5.00	ND	50	90.4	94.6	4.54	80 - 120	30	
Chromium	0.075	5.00	ND	50	92.4	97.2	5.06	80 - 120	30	
Cobalt	0.070	5.00	ND	50	88.6	92.1	3.98	80 - 120	30	
Copper	0.20	5.00	0.99	50	100	105	4.10	80 - 120	30	
Lead	0.10	3.00	ND	50	87.9	92.9	5.54	80 - 120	30	
Molybdenum	0.050	5.00	0.050	50	94.7	98.5	3.93	80 - 120	30	
Nickel	0.50	5.00	ND	50	87.9	91.6	4.01	80 - 120	30	
Silver	0.15	5.00	ND	50	91.7	94.1	2.37	80 - 120	30	
Thallium	0.20	5.00	ND	50	92.2	97.6	5.69	80 - 120	30	
Vanadium	0.10	5.00	ND	50	96.2	101	4.67	80 - 120	30	

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LCS/LCSD Summary Report

Raw values are used in quality control assessment.

Work Order:	1909078	Prep Method:	7471BP	Prep Date:	09/16/19	Prep Batch:	1116656
Matrix:	Soil	Analytical Method:	SW7471B	Analyzed Date:	9/17/2019	Analytical Batch:	442463
Units:	mg/Kg						

Parameters	MDL	PQL	Method Blank Conc.	Spike Conc.	LCS % Recovery	LCSD % Recovery	LCS/LCSD % RPD	% Recovery Limits	% RPD Limits	Lab Qualifier
Mercury	0.047	0.50	ND	1.25	86.4	80.7	6.70	80 - 120	30	

Work Order:	1909078	Prep Method:	5035	Prep Date:	09/16/19	Prep Batch:	1116658
Matrix:	Soil	Analytical Method:	SW8260B	Analyzed Date:	9/16/2019	Analytical Batch:	442441
Units:	ug/Kg						

Parameters	MDL	PQL	Method Blank Conc.	Spike Conc.	LCS % Recovery	LCSD % Recovery	LCS/LCSD % RPD	% Recovery Limits	% RPD Limits	Lab Qualifier
1,1-Dichloroethene	2.0	10	ND	50.0	81.5	81.5	0.000	53.7 - 139	30	
Benzene	2.2	10	ND	50.0	98.9	98.7	0.202	66.5 - 135	30	
Trichloroethylene	1.8	10	ND	50.0	104	103	1.16	57.5 - 150	30	
Toluene	1.8	10	ND	50.0	101	103	1.96	56.8 - 134	30	
Chlorobenzene	1.8	10	ND	50.0	101	103	1.18	57.4 - 134	30	
(S) Dibromofluoromethane				50.0	108	105		59.8 - 148		
(S) Toluene-d8				50.0	100	99.0		55.2 - 133		
(S) 4-Bromofluorobenzene				50.0	96.7	95.7		55.8 - 141		

Work Order:	1909078	Prep Method:	5035GRO	Prep Date:	09/16/19	Prep Batch:	1116690
Matrix:	Soil	Analytical Method:	SW8260B	Analyzed Date:	9/16/2019	Analytical Batch:	442441
Units:	mg/Kg						

Parameters	MDL	PQL	Method Blank Conc.	Spike Conc.	LCS % Recovery	LCSD % Recovery	LCS/LCSD % RPD	% Recovery Limits	% RPD Limits	Lab Qualifier
TPH(Gasoline)	0.043	0.10	0.089	1	106	118	10.7	48.2 - 132	30	
(S) 4-Bromofluorobenzene				50	125	104		43.9 - 127		

Work Order:	1909078	Prep Method:	WET/3010B	Prep Date:	10/10/19	Prep Batch:	1117290
Matrix:	Soil	Analytical Method:	SW6010B	Analyzed Date:	10/10/2019	Analytical Batch:	443035
Units:	mg/L						

Parameters	MDL	PQL	Method Blank Conc.	Spike Conc.	LCS % Recovery	LCSD % Recovery	LCS/LCSD % RPD	% Recovery Limits	% RPD Limits	Lab Qualifier
Chromium (STLC)	0.010	0.20	0.033	10	88.5	88.8	0.338	80 - 120	20	
Lead (STLC)	0.050	0.20	0.054	10	95.7	96.1	0.417	80 - 120	20	
Nickel (STLC)	0.010	0.20	ND	10	83.3	83.5	0.240	80 - 120	20	

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MS/MSD Summary Report

Raw values are used in quality control assessment.

Work Order:	1909078	**Prep Method:**	3546_TPH	**Prep Date:**	09/13/19	**Prep Batch:**	1116592
Matrix:	**Soil**	**Analytical Method:**	SW8015B	**Analyzed Date:**	9/17/2019	**Analytical Batch:**	442459
Spiked Sample:	1909078-008A						
Units:	mg/Kg						

Parameters	MDL	PQL	Sample Conc.	Spike Conc.	MS % Recovery	MSD % Recovery	MS/MSD % RPD	% Recovery Limits	% RPD Limits	Lab Qualifier
TPH as Diesel	0.850	2.00	ND	25.0	71.3	75.4	9.32	52 - 115	30	
Pentacosane (S)				200	86.0	84.5		59 - 129		

Laboratory Qualifiers and Definitions

DEFINITIONS:

Accuracy/Bias (% Recovery) - The closeness of agreement between an observed value and an accepted reference value.
Blank (Method/Preparation Blank) -MB/PB - An analyte-free matrix to which all reagents are added in the same volumes/proportions as used in sample processing. The method blank is used to document contamination resulting from the analytical process.
Duplicate - a field sample and/or laboratory QC sample prepared in duplicate following all of the same processes and procedures used on the original sample (sample duplicate, LCSD, MSD)
Laboratory Control Sample (LCS ad LCSD) - A known matrix spiked with compounds representative of the target analyte(s). This is used to document laboratory performance.
Matrix - the component or substrate that contains the analyte of interest (e.g., - groundwater, sediment, soil, waste water, etc)
Matrix Spike (MS/MSD) - Client sample spiked with identical concentrations of target analyte (s). The spiking occurs prior to the sample preparation and analysis. They are used to document the precision and bias of a method in a given sample matrix.
Method Detection Limit (MDL) - the minimum concentration of a substance that can be measured and reported with a 99% confidence that the analyte concentration is greater than zero
Practical Quantitation Limit/Reporting Limit/Limit of Quantitation (PQL/RL/LOQ) - a laboratory determined value at 2 to 5 times above the MDL that can be reproduced in a manner that results in a 99% confidence level that the result is both accurate and precise. PQLs/RLs/LODs reflect all preparation factors and/or dilution factors that have been applied to the sample during the preparation and/or analytical processes.
Precision (%RPD) - The agreement among a set of replicate/duplicate measurements without regard to known value of the replicates
Surrogate (S) or (Surr) - An organic compound which is similar to the target analyte(s) in chemical composition and behavior in the analytical process, but which is not normally found in environmental samples. Surrogates are used in most organic analysis to demonstrate matrix compatibility with the chosen method of analysis
Tentatively Identified Compound (TIC) - A compound not contained within the analytical calibration standards but present in the GCMS library of defined compounds. When the library is searched for an unknown compound, it can frequently give a tentative identification to the compound based on retention time and primary and secondary ion match. TICs are reported as estimates and are candidates for further investigation.
Units: the unit of measure used to express the reported result - **mg/L** and ***mg/Kg*** (equivalent to PPM - parts per million in **liquid** and ***solid***), **ug/L** and ***ug/Kg*** (equivalent to PPB - parts per billion in **liquid** and ***solid***), **ug/m3**, ***mg/m3***, **ppbv** and ***ppmv*** (all units of measure for reporting concentrations in air), **%** (equivalent to 10000 ppm or 1,000,000 ppb), **ug/Wipe** (concentration found on the surface of a single Wipe usually taken over a 100cm2 surface)

LABORATORY QUALIFIERS:

B - Indicates when the analyte is found in the associated method or preparation blank
D - Surrogate is not recoverable due to the necessary dilution of the sample
E - Indicates the reportable value is outside of the calibration range of the instrument but within the linear range of the instrument (unless otherwise noted) Values reported with an E qualifier should be considered as estimated.
H- Indicates that the recommended holding time for the analyte or compound has been exceeded
J- Indicates a value between the method MDL and PQL and that the reported concentration should be considered as estimated rather the quantitative
NA - Not Analyzed
N/A - Not Applicable
ND - Not Detected at a concentration greater than the PQL/RL or, if reported to the MDL, at greater than the MDL.
NR - Not recoverable - a matrix spike concentration is not recoverable due to a concentration within the original sample that is greater than four times the spike concentration added
R- The % RPD between a duplicate set of samples is outside of the absolute values established by laboratory control charts
S- Spike recovery is outside of established method and/or laboratory control limits. Further explanation of the use of this qualifier should be included within a case narrative
X -Used to indicate that a value based on pattern identification is within the pattern range but not typical of the pattern found in standards. Further explanation may or may not be provided within the sample footnote and/or the case narrative.

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Sample Receipt Checklist

Client Name: Achievement Engineering Corp

Project Name: Alan Enterprise

Work Order No.: 1909078

Date and Time Received: 9/11/2019 1:10:00PM

Received By: Helena Ueng

Physically Logged By: Helena Ueng

Checklist Completed By: Helena Ueng

Carrier Name: Client Drop Off

Chain of Custody (COC) Information

Chain of custody present?	Yes
Chain of custody signed when relinquished and received?	Yes
Chain of custody agrees with sample labels?	Yes
Custody seals intact on sample bottles?	Not Present

Sample Receipt Information

Custody seals intact on shipping container/cooler?	Not Present
Shipping Container/Cooler In Good Condition?	Yes
Samples in proper container/bottle?	Yes
Samples containers intact?	Yes
Sufficient sample volume for indicated test?	Yes

Sample Preservation and Hold Time (HT) Information

All samples received within holding time?	Yes
Container/Temp Blank temperature in compliance?	Temperature: 13.0 °C
Water-VOA vials have zero headspace?	No VOA vials submitted
Water-pH acceptable upon receipt?	N/A

pH Checked by: N/A

pH Adjusted by: N/A

Comments:

Samples transported on ice

Login Summary Report

Client ID:	TL6309	Achievement Engineering Corp	**QC Level:**	II
Project Name:	Alan Enterprise		**TAT Requested:**	5+ day:5
Project # :	3974		**Date Received:**	9/11/2019
Report Due Date:	9/18/2019		**Time Received:**	1:10 pm

Comments:

Work Order # : ***1909078***

WO Sample ID	Client Sample ID	Collection Date/Time	Matrix	Scheduled Disposal	Sample On Hold	Test On Hold	Requested Tests	Subbed
1909078-001A	B1-5'	09/10/19 10:38	Soil	03/08/20			Hold Samples	
1909078-002A	B1-15'	09/10/19 11:14	Soil	03/08/20			Hold Samples	
1909078-003A	B1-25'	09/10/19 11:58	Soil	03/08/20			TPHDO_S_8015(Mod) VOC_S_MBTEX VOC_S_GRO	
1909078-004A	B1-35'	09/10/19 12:10	Soil	03/08/20			TPHDO_S_8015(Mod) VOC_S_MBTEX VOC_S_GRO	
1909078-005A	B2-5'	09/10/19 11:30	Soil	03/08/20			Hold Samples	
1909078-006A	B2-15'	09/10/19 13:00	Soil	03/08/20			Hold Samples	
1909078-007A	B2-25'	09/10/19 12:30	Soil	03/08/20			TPHDO_S_8015(Mod) VOC_S_MBTEX VOC_S_GRO	
1909078-008A	B3-5'	09/10/19 14:00	Soil	03/08/20			TPHDO_S_8015(Mod) Met_S_CAM17STLC Pest_S_8081OCP Met_S_6010B CAM17 Hg_S_7471B VOC_S_MBTEX VOC_S_GRO	
1909078-009A	B3-10'	09/10/19 15:00	Soil	03/08/20			Hold Samples	

Torrent LABORATORY, INC.

Torrent LABORATORY, INC.
483 Sinclair Frontage Road
Milpitas, CA 95035
Phone: 408.263.5258
FAX: 408.263.8293
www.torrentlab.com

CHAIN OF CUSTODY

• NOTE: SHADED AREAS ARE FOR TORRENT LAB USE ONLY •

LAB WORK ORDER NO: 1909078

Company Name: Achievement Engineering ☐ ☐ Env. ☐ Special
Project #: 3974 PO #:
Address: 2455 Autumnvale Drive, unit E, San Jose
Project Name: Alan Enterprise
City: San Jose State: CA Zip Code: 95131
Comments:
Telephone: 408 217 9714 Cell:
SAMPLER: Quote #:
REPORT TO: Arash, Nami (Amin) BILL TO:
EMAIL: nami@achieveng.com Arash@achiveng.com

TURNAROUND TIME: ☐ 10 Work Days ☐ 4 Work Days ☐ 1 Work Day ☐ 7 Work Days ☐ 3 Work Days ☐ Noon - Nxt Day ☒ 5 Work Days ☐ 2 Work Days ☐ 2 - 8 Hours

SAMPLE TYPE: ☐ Storm Water ☐ Air ☐ Waste Water ☐ Wipe ☐ Ground Water ☐ Other ☐ Soil ☐ Product / Bulk

REPORT FORMAT: ☐ Level II - Std. ☐ Excel - EDD ☐ EDF ☐ Std.-EDD ☐ QC Level III ☐ QC Level IV

ANALYSIS REQUESTED

LAB ID	CANISTER I.D.	CLIENT'S SAMPLE I.D.	DATE / TIME SAMPLED		MATRIX	# OF CONT	CONT TYPE	BTEX, M (8260B)	TPH-g	TPH-d/MO	OCP's	Heavy metals (CAM 17)					REMARKS
001A		B1-5'	9/10/19	1038	soil	1	glass jar										HOLD
002A		B1-15'	↓	1114	↓	1	↓										HOLD
003A		B1-25'		1158		1		X	X	X							
004A		B1-35'		12:10		1		X	X	X							
005A		B2-5'		1130		1											HOLD
006A		B2-15'		1300		1											HOLD
007A		B2-25'		1230		1		X	X	X							
008A		B3-5'		1400		1		X	X	X	X	X					
009A		B3-10'		1500		1											HOLD

	Relinquished By:	Print:	Date:	Time:	Received By:	Print:	Date:	Time:
1		Nami	09/11/19	1:10		Helenvallera	9/11/19	1310
2								

Were Samples Received in Good Condition? ☒ Yes ☐ NO Samples on Ice? ☒ Yes ☐ NO Method of Shipment D/O Sample seals intact? ☐ Yes ☐ NO ☒ N/A

NOTE: Samples are discarded by the laboratory 30 days from date of receipt unless other arrangements are made.

#2 Samples transported on ice

Log In By: Date: Labeled By: Date: Temp 13 °C Page ___ of ___ Rev. 4

Appendix F: Noise Data

Fundamentals of Noise

NOISE

Noise is most often defined as unwanted sound; whether it is loud, unpleasant, unexpected, or otherwise undesirable. Although sound can be easily measured, the perception of noise and the physical response to sound complicate the analysis of its impact on people. People judge the relative magnitude of sound sensation in subjective terms such as "noisiness" or "loudness."

Noise Descriptors

The following are brief definitions of terminology used in this chapter:

- **Sound.** A disturbance created by a vibrating object, which, when transmitted by pressure waves through a medium such as air, is capable of being detected by a receiving mechanism, such as the human ear or a microphone.

- **Noise.** Sound that is loud, unpleasant, unexpected, or otherwise undesirable.

- **Decibel (dB).** A unitless measure of sound, expressed on a logarithmic scale and with respect to a defined reference sound pressure. The standard reference pressure is 20 micropascals (20 μPa).

- **A-Weighted Decibel (dBA).** An overall frequency-weighted sound level in decibels that approximates the frequency response of the human ear.

- **Equivalent Continuous Noise Level (L_{eq}); also called the Energy-Equivalent Noise Level.** The value of an equivalent, steady sound level which, in a stated time period (often over an hour) and at a stated location, has the same A-weighted sound energy as the time-varying sound. Thus, the L_{eq} metric is a single numerical value that represents the equivalent amount of variable sound energy received by a receptor over the specified duration.

- **Statistical Sound Level (L_n).** The sound level that is exceeded "n" percent of time during a given sample period. For example, the L_{50} level is the statistical indicator of the time-varying noise signal that is exceeded 50 percent of the time (during each sampling period); that is, half of the sampling time, the changing noise levels are above this value and half of the time they are below it. This is called the "median sound level." The L_{10} level, likewise, is the value that is exceeded 10 percent of the time (i.e., near the maximum) and this is often known as the "intrusive sound level." The L_{90} is the sound level exceeded 90 percent of the time and is often considered the "effective background level" or "residual noise level."

- **Maximum Sound Level (L_{max}).** The highest RMS sound level measured during the measurement period.
- **Root Mean Square Sound Level (RMS).** The square root of the average of the square of the sound pressure over the measurement period.

- **Day-Night Sound Level (L_{dn} or DNL).** The energy-average of the A-weighted sound levels occurring during a 24-hour period, with 10 dB added to the sound levels occurring during the period from 10:00 PM to 7:00 AM.

- **Community Noise Equivalent Level (CNEL).** The energy average of the A-weighted sound levels occurring during a 24-hour period, with 5 dB added from 7:00 PM to 10:00 PM and 10 dB from 10:00 PM to 7:00 AM. NOTE: For general community/environmental noise, CNEL and L_{dn} values rarely differ by more than 1 dB (with the CNEL being only slightly more restrictive – that is, higher than the L_{dn} value). As a matter of practice, L_{dn} and CNEL values are interchangeable and are treated as equivalent in this assessment.

- **Peak Particle Velocity (PPV).** The peak rate of speed at which soil particles move (e.g., inches per second) due to ground vibration.

- **Sensitive Receptor.** Noise- and vibration-sensitive receptors include land uses where quiet environments are necessary for enjoyment and public health and safety. Residences, schools, motels and hotels, libraries, religious institutions, hospitals, and nursing homes are examples.

Characteristics of Sound

When an object vibrates, it radiates part of its energy in the form of a pressure wave. Sound is that pressure wave transmitted through the air. Technically, airborne sound is a rapid fluctuation or oscillation of air pressure above and below atmospheric pressure that creates sound waves.

Sound can be described in terms of amplitude (loudness), frequency (pitch), or duration (time). Loudness or amplitude is measured in dB, frequency or pitch is measured in Hertz [Hz] or cycles per second, and duration or time variations is measured in seconds or minutes.

Amplitude

Unlike linear units such as inches or pounds, decibels are measured on a logarithmic scale. Because of the physical characteristics of noise transmission and perception, the relative loudness of sound does not closely match the actual amounts of sound energy. Table 1 presents the subjective effect of changes in sound pressure levels. Ambient sounds generally range from 30 dBA (very quiet) to 100 dBA (very loud). Changes of 1 to 3 dB are detectable under quiet, controlled conditions, and changes of less than 1 dB are usually not discernible (even under ideal conditions). A 3 dB change in noise levels is considered the minimum change that is detectable with human hearing in outside environments. A change of 5 dB is readily discernible to most people in an exterior environment, and a 10 dB change is perceived as a doubling (or halving) of the sound.

Table 1 Noise Perceptibility

Change in dB	Noise Level
± 3 dB	Barely perceptible increase
± 5 dB	Readily perceptible increase
± 10 dB	Twice or half as loud
± 20 dB	Four times or one-quarter as loud

Source: California Department of Transportation (Caltrans). 2013, September. Technical Noise Supplement (“TeNS”).

Frequency

The human ear is not equally sensitive to all frequencies. Sound waves below 16 Hz are not heard at all, but are "felt" more as a vibration. Similarly, though people with extremely sensitive hearing can hear sounds as high as 20,000 Hz, most people cannot hear above 15,000 Hz. In all cases, hearing acuity falls off rapidly above about 10,000 Hz and below about 200 Hz.

When describing sound and its effect on a human population, A-weighted (dBA) sound levels are typically used to approximate the response of the human ear. The A-weighted noise level has been found to correlate well with people's judgments of the "noisiness" of different sounds and has been used for many years as a measure of community and industrial noise. Although the A-weighted scale and the energy-equivalent metric are commonly used to quantify the range of human response to individual events or general community sound levels, the degree of annoyance or other response also depends on several other perceptibility factors, including:

- Ambient (background) sound level
- General nature of the existing conditions (e.g., quiet rural or busy urban)
- Difference between the magnitude of the sound event level and the ambient condition
- Duration of the sound event
- Number of event occurrences and their repetitiveness
- Time of day that the event occurs

Duration

Time variation in noise exposure is typically expressed in terms of a steady-state energy level equal to the energy content of the time varying period (called L_{eq}), or alternately, as a statistical description of the sound level that is exceeded over some fraction of a given observation period. For example, the L_{50} noise level represents the noise level that is exceeded 50 percent of the time; half the time the noise level exceeds this level and half the time the noise level is less than this level. This level is also representative of the level that is exceeded 30 minutes in an hour. Similarly, the L_2, L_8 and L_{25} values represent the noise levels that are exceeded 2, 8, and 25 percent of the time or 1, 5, and 15 minutes per hour, respectively. These "n" values are typically used to demonstrate compliance for stationary noise sources with many cities' noise ordinances. Other values typically noted during a noise survey are the L_{min} and L_{max}. These values represent the minimum and maximum root-mean-square noise levels obtained over the measurement period, respectively.

Because community receptors are more sensitive to unwanted noise intrusion during the evening and at night, state law and many local jurisdictions use an adjusted 24-hour noise descriptor called the Community Noise Equivalent Level (CNEL) or Day-Night Noise Level (L_{dn}). The CNEL descriptor requires that an artificial increment (or "penalty") of 5 dBA be added to the actual noise level for the hours from 7:00 PM to 10:00 PM and 10 dBA for the hours from 10:00 PM to 7:00 AM. The L_{dn} descriptor uses the same methodology except that there is no artificial increment added to the hours between 7:00 PM and 10:00 PM. Both descriptors give roughly the same 24-hour level, with the CNEL being only slightly more restrictive (i.e., higher). The CNEL or L_{dn} metrics are commonly applied to the assessment of roadway and airport-related noise sources.

Sound Propagation

Sound dissipates exponentially with distance from the noise source. This phenomenon is known as "spreading loss." For a single-point source, sound levels decrease by approximately 6 dB for each doubling of distance from the source (conservatively neglecting ground attenuation effects, air absorption factors, and barrier shielding). For example, if a backhoe at 50 feet generates 84 dBA, at 100 feet the noise level would be 79 dBA, and at 200 feet it would be 73 dBA. This drop-off rate is appropriate for noise generated by on-site operations from stationary equipment or activity at a project site. If noise is produced by a line source, such as highway traffic, the sound decreases by 3 dB for each doubling of distance over a reflective ("hard site") surface such as concrete or asphalt. Line source noise in a relatively flat environment with ground-level absorptive vegetation decreases by an additional 1.5 dB for each doubling of distance.

Psychological and Physiological Effects of Noise

Physical damage to human hearing begins at prolonged exposure to noise levels higher than 85 dBA. Exposure to high noise levels affects the entire system, with prolonged noise exposure in excess of 75 dBA increasing body tensions, thereby affecting blood pressure and functions of the heart and the nervous system. Extended periods of noise exposure above 90 dBA results in permanent cell damage, which is the main driver for employee hearing protection regulations in the workplace. For community environments, the ambient or background noise problem is widespread, through generally worse in urban areas than in outlying, less-developed areas. Elevated ambient noise levels can result in noise interference (e.g., speech interruption/masking, sleep disturbance, disturbance of concentration) and cause annoyance. Since most people do not routinely work with decibels or A-weighted sound levels, it is often difficult to appreciate what a given sound pressure level number means. To help relate noise level values to common experience, Table 2 shows typical noise levels from familiar sources.

Table 2 Typical Noise Levels

Common Outdoor Activities	Noise Level (dBA)	Common Indoor Activities
Onset of physical discomfort	120+	
	110	Rock Band (near amplification system)
Jet Flyover at 1,000 feet		
	100	
Gas Lawn Mower at three feet		
	90	
Diesel Truck at 50 feet, at 50 mph		Food Blender at 3 feet
	80	Garbage Disposal at 3 feet
Noisy Urban Area, Daytime		
	70	Vacuum Cleaner at 10 feet
Commercial Area		Normal speech at 3 feet
Heavy Traffic at 300 feet	60	
		Large Business Office
Quiet Urban Daytime	50	Dishwasher Next Room
Quiet Urban Nighttime	40	Theater, Large Conference Room (background)
Quiet Suburban Nighttime		
	30	Library
Quiet Rural Nighttime		Bedroom at Night, Concert Hall (background)
	20	
		Broadcast/Recording Studio
	10	
Lowest Threshold of Human Hearing	0	Lowest Threshold of Human Hearing

Source: California Department of Transportation (Caltrans). 2013, September. Technical Noise Supplement ("TeNS").

Vibration Fundamentals

Vibration is an oscillatory motion through a solid medium in which the motion's amplitude can be described in terms of displacement, velocity, or acceleration. Vibration is normally associated with activities stemming from operations of railroads or vibration-intensive stationary sources, but can also be associated with construction equipment such as jackhammers, pile drivers, and hydraulic hammers. As with noise, vibration can be described by both its amplitude and frequency. Vibration displacement is the distance that a point on a surface moves away from its original static position; velocity is the instantaneous speed that a point on a surface moves; and acceleration is the rate of change of the speed. Each of these descriptors can be used to correlate vibration to human response, building damage, and acceptable equipment vibration levels. During construction, the operation of construction equipment can cause groundborne vibration. During the operational phase of a project, receptors may be subject to levels of vibration that can cause annoyance due to noise generated from vibration of a structure or items within a structure.

Vibration amplitudes are usually described in terms of either the peak particle velocity (PPV) or the root mean square (RMS) velocity. PPV is the maximum instantaneous peak of the vibration signal and RMS is the square root of the average of the squared amplitude of the signal. PPV is more appropriate for evaluating potential building damage and RMS is typically more suitable for evaluating human response.

As with airborne sound, annoyance with vibrational energy is a subjective measure, depending on the level of activity and the sensitivity of the individual. To sensitive individuals, vibrations approaching the threshold of perception can be annoying. Persons accustomed to elevated ambient vibration levels, such as in an urban environment, may tolerate higher vibration levels. Table 3 displays the human response and the effects on buildings resulting from continuous vibration (in terms of various levels of PPV).

Table 3 Human Reaction to Typical Vibration Levels

Vibration Level, PPV (in/sec)	Human Reaction	Effect on Buildings
0.006–0.019	Threshold of perception, possibility of intrusion	Vibrations unlikely to cause damage of any type
0.08	Vibrations readily perceptible	Recommended upper level of vibration to which ruins and ancient monuments should be subjected
0.10	Level at which continuous vibration begins to annoy people	Virtually no risk of “architectural” (i.e. not structural) damage to normal buildings
0.20	Vibrations annoying to people in buildings	Threshold at which there is a risk to “architectural” damage to normal dwelling – houses with plastered walls and ceilings
0.4–0.6	Vibrations considered unpleasant by people subjected to continuous vibrations and unacceptable to some people walking on bridges	Vibrations at a greater level than normally expected from traffic, but would cause “architectural” damage and possibly minor structural damage

Source: California Department of Transportation (Caltrans). 2013, September. Transportation and Construction Vibration Guidance Manual.

LOCAL REGULATIONS AND STANDARDS

NOISE

The noise environment is an accumulation of many different sources, ranging from human voices to major sources such as freeway traffic. The degree to which noise becomes an annoyance depends on a variety of factors including noise level, time of day, background sounds, and surrounding land use.

COMMUNITY NOISE FUNDAMENTALS

The three elements of community noise are noise level, noise spectrum, and variation in noise level with time. Noise level is measured in decibels (dB). Noise is composed of various frequencies within a noise spectrum that define the character of the noise. Since human hearing is more sensitive to the higher speech frequencies, the A-weighted frequency network is applied, in accordance with national and international standards, to adjust the measured noise level to more closely relate to human perception of loudness.

Noise environments have different characteristics that vary with duration and time of day; for instance a freeway may emit a fairly constant noise level for long periods while an airport may emit many short-term high level noise events punctuated by extended periods of quiet. To provide a standard measure for community noise exposure that takes into account the time-varying characteristics, the State of California adopted the Community Noise Equivalent Level (CNEL) as the standard metric. The CNEL is a 24-hour energy average metric that penalizes evening and nighttime noise, and provides a uniform measure for time-varying noise environments.

NOISE ENVIRONMENT

The noise environment can generally be divided into two categories: transportation-related and non-transportation related noise. Traffic noise is the greatest contributor to noise pollution in Cupertino and one of the most difficult to control through local effort. Two major freeways (Interstate 280 and Highway 85) and four major corridors (Stevens Creek Boulevard, De Anza Boulevard, Homestead Road, and Foothill Boulevard) cross Cupertino. These roadways are utilized not only by local residents and employees, but also by commuters to destinations beyond Cupertino. Heavy-duty trucking operations to and from the Hanson Permanente Cement Plant and Stevens Creek Quarry located in the western foothills near Stevens Creek Boulevard and Foothill Boulevard are also a significant transportation-related noise contributor.

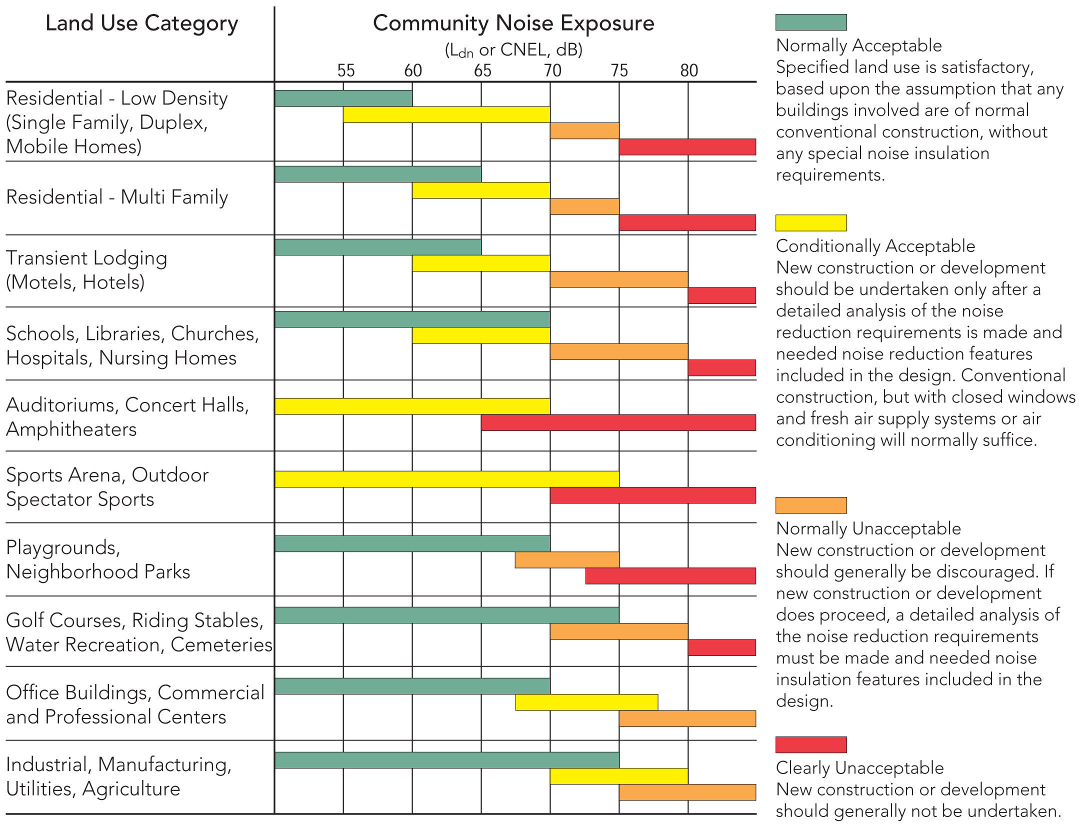
Cupertino receives some aircraft noise from facilities within the region including San Jose International Airport, Moffett Federal Airfield and Palo Alto Airport; however, the Cupertino city limit does not fall within the identified noise contours of any airport. One railroad line passes through the Monta Vista neighborhood and connects with the Hanson Permanente Cement Plant. This freight railway operates at very low frequencies, with approximately three train trips in each direction per week, usually during the daytime or early evening.

Non-transportation noise varies from stationary equipment (e.g., air conditioning units) to construction activity. Regulation to minimize excessive noise from non-transportation sources includes compliance with the City's noise standards that limit certain noise-generating activity during evening and early morning, when ambient noise levels tend to be lower. Advancements in technology to muffle sound also reduce noise from construction equipment and stationary equipment such as compressors and generators.

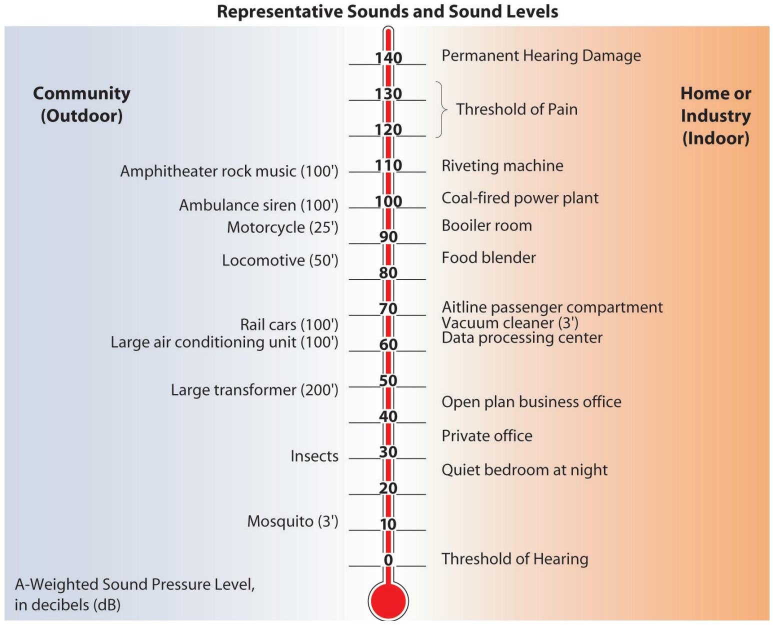
LAND USE COMPATIBILITY

The Cupertino Municipal Code, Title 10, outlines the maximum noise levels on receiving properties based upon land use types (**Figure HS-8**). Land use decisions and the development review process play a large role in minimizing noise impacts on sensitive land uses. Noise compatibility may be achieved by avoiding the location of conflicting land uses adjacent to one another and incorporating buffers and noise control techniques including setbacks, landscaping, building transitions, site design, and building construction techniques. Selection of the appropriate noise control technique will vary depending on the level of noise that needs to be reduced as well as the location and intended land use.

FIGURE HS-8
LAND USE COMPATIBILITY FOR COMMUNITY NOISE ENVIRONMENTS



Representative Sounds and Sound Levels



LOOKING FORWARD

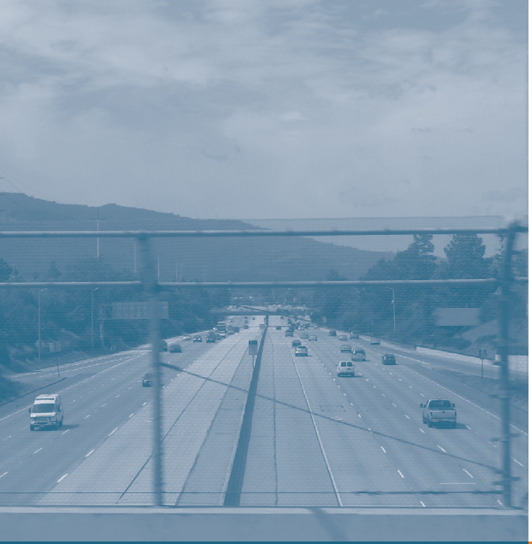
As Cupertino's resident and employee population grows, the City must identify ways to ensure public safety and support the community's high quality of life. Innovative site design and construction techniques are needed to reduce noise in developments near major corridors and where uses are mixed to ensure compatibility. Fire protection and public safety should be enhanced in a manner that provides a high quality of service while continuing to be fiscally responsible. The following are ways the City will address key challenges and opportunities facing Cupertino:

1. **NOISE.**
   As State, regional and local policies encourage mixed-use development near corridors, the City should look to ways to reduce noise impacts on residences near and in such developments through site design, landscaping and construction techniques. Additionally, the City should review locations and site design for sensitive uses including schools, childcare facilities and hospitals to ensure that they are not negatively impacted by noise.

2. **PROJECT DESIGN AND OPERATIONS.**
   Measures such as project and building design, emergency access, operations and maintenance of property, can help developments promote public and fire safety. Such measures will also allow the providers to maintain a high service level, while accommodating future growth.

3. **COMMUNITY PARTICIPATION.**
   The City and service providers should enhance community participation through new and existing programs such as neighborhood watch, emergency preparedness and school programs.

4. **SHARED RESOURCES.**
   The City can enhance emergency, fire safety and public safety services by coordinating programs with service providers and neighboring cities through shared services, mutual aid and agreements.



GOAL HS-8
Minimize noise impacts on the community and maintain a compatible noise environment for existing and future land use

NOISE

The City seeks to ensure that the community continues to enjoy a high quality of life through reduce noise pollution, effective project design and noise management operations.

POLICY HS-8.1: LAND USE DECISION EVALUATION
Use the Land Use Compatibility for Community Noise Environments chart, the Future Noise Contour Map (see Figure D-1 in Appendix D) and the City Municipal Code to evaluate land use decisions.

POLICY HS-8.2: BUILDING AND SITE DESIGN
Minimize noise impacts through appropriate building and site design.

STRATEGIES:

HS-8.2.1: Commercial Delivery Areas. Locate delivery areas for new commercial and industrial developments away from existing or planned homes.

HS-8.2.2: Noise Control Techniques. Require analysis and implementation of techniques to control the effects of noise from industrial equipment and processes for projects near low-intensity residential uses.

HS-8.2.3: Sound Wall Requirements. Exercise discretion in requiring sound walls to be sure that all other measures of noise control have been explored and that the sound wall blends with the neighborhood. Sound walls should be designed and landscaped to fit into the environment.

POLICY HS-8.3: CONSTRUCTION AND MAINTENANCE ACTIVITIES

Regulate construction and maintenance activities. Establish and enforce reasonable allowable periods of the day, during weekdays, weekends and holidays for construction activities. Require construction contractors to use the best available technology to minimize excessive noise and vibration from construction equipment such as pile drivers, jack hammers, and vibratory rollers.

POLICY HS-8.4: FREEWAY DESIGN AND NEIGHBORHOOD NOISE

Ensure that roads and development along Highway 85 and Interstate 280 are designed and improved in a way that minimizes neighborhood noise.

POLICY HS-8.5: NEIGHBORHOODS

Review residents' needs for convenience and safety and prioritize them over the convenient movement of commute or through traffic where practical.

POLICY HS-8.6: TRAFFIC CALMING SOLUTIONS TO STREET NOISE

Evaluate solutions to discourage through traffic in neighborhoods through enhanced paving and modified street design.

STRATEGY:

HS-8.6.1: Local Improvement.
Modify street design to minimize noise impact to neighbors.

POLICY HS-8.7: REDUCTION OF NOISE FROM TRUCKING OPERATIONS

Work to carry out noise mitigation measures to diminish noise along Foothill and Stevens Creek Boulevards from the quarry and cement plant trucking operations. These measures include regulation of truck speed, the volume of truck activity, and trucking activity hours to avoid late evening and early morning. Alternatives to truck transport, specifically rail, are strongly encouraged when feasible.

STRATEGIES:

HS-8.7.1: Restrictions in the County's Use Permit.
Coordinate with the County to restrict the number of trucks, their speed and noise levels along Foothill and Stevens Creek Boulevards, to the extent allowed in the Use Permit. Ensure that restrictions are monitored and enforced by the County.

HS-8.7.2: Road Improvements to Reduce Truck Impacts.
Consider road improvements such as medians, landscaping, noise attenuating asphalt, and other methods to reduce quarry truck impacts.

Print

Cupertino, CA Municipal Code

CHAPTER 10.48: COMMUNITY NOISE CONTROL*

Section

* Prior ordinance history: Ords. 1022, 1066, 1107, 1149, 1179 and 1278.

10.48.010 Definitions.

For purposes of this chapter:

"Commercial area" means commercially-zoned property as defined in the community zoning ordinance.

"Commercial establishment" means any store, factory, manufacturing or industrial plant used for the sale, manufacturing, fabrication, assembly or storage of goods, wares and merchandise.

"Construction" means any site preparation, assembly, erection, repair, substantial alteration, or similar action, of public or private property, rights-of-way, structures, utilities or similar property, including vehicle pick-up or delivery of construction materials or demolition debris but excluding demolition and grading.

"Daytime" means the period from seven a.m. to eight p.m. on weekdays, and the period from nine a.m. to six p.m. on weekends.

"Decibel (dB)" means a unit for measuring relative sound pressure, logarithmically referenced to a pressure of twenty micronewtons per square meter.

"Demolition" means any dismantling, intentional destruction or removal of structures, utilities, public or private right-of-way surfaces, or similar property.

"Emergency" means any occurrence or set of circumstances involving actual or imminent physical danger, crisis, trauma, or property damage which demands immediate action.

"Emergency work" means any work performed for the purpose of preventing or alleviating the physical danger, trauma, or property damage threatened or caused by an emergency, or restoration of conditions and property to their status prior to the emergency.

"Holidays" means the following days: New Year's Day, Memorial Day, Independence Day, Labor Day, Thanksgiving Day, Christmas Day.

"Industrial area" means industrially-zoned property as defined in the community zoning ordinance.

"Muffler" means a device for reducing or dissipating the sound of escaping gases, or other types of noise, from a mechanical device or engine.

"Multiple-family dwelling unit" means a residential structure containing separate living quarters for two or more families, each unit with similar and common access to the outside.

"NCO" means noise control officer.

"Nighttime" means periods of weekdays from eight p.m. to twelve midnight, and from midnight to seven a.m., and periods on weekends from six p.m. to midnight and from midnight to nine a.m.

"Noise" means any sound which annoys or disturbs humans or which causes or tends to cause an adverse psychological or physiological effect on humans.

"Noise Control Officer (NCO)" means the municipal agency, department or individual having lead responsibility for implementation and enforcement of this chapter, as designated by the City Manager and approved by the City Council.

"Noise disturbance" means any sound which:

1. Endangers or injures the safety or health of humans or animals; or
2. Annoys or disturbs a reasonable person of normal sensitivities; or
3. Endangers or damages personal or real property.

"Noise level" means the same as sound level.

"Nonresidential area" means land zoned for other than residential uses, such as commercial, professional office, industrial or public, as defined in the zoning ordinance, but not including public rights-of-way.

"Person" means any individual, association, partnership, corporation, or public agency, and includes any associated officer, employee or department.

"Property boundary" means an imaginary line along the ground surface, and its vertical extension, which separates the real property owned by one person from that owned by another person.

"Public area" means any property or structures thereon which are owned, utilized, or controlled by a governmental entity.

"Public right-of-way" means any street, avenue, boulevard, highway, parkway, alley or similar place which is owned or controlled by a governmental entity.

"Residential area" means residentially zoned land as defined in the community zoning ordinance.

"Sound" means a rapid variation in air pressure, which, because of its magnitude and frequency, can be heard by a human with average hearing ability.

"Sound level" means the maximum continuous or repeated peak value measured by the use of a sound level meter and the "A" weighting network, as specified in American National Standards Institute specifications for sound level meters (ANSI S IA - 1971, or the latest revision). The reading obtained in decibels is designated dBA. If the meter response characteristic is not indicated, "SLOW" response shall be used.

"Sound level meter" means an instrument which includes a microphone, amplifier, RMS detector, integrator or time averager, output meter, and weighting networks used to measure sound levels, and meets American National Standards Institute specification S 1.4 - 1971, or latest revision, for Type 1, Type 2 or Type 2A operation.

"Weekday" means any day, Monday through Friday, that is not one of the holidays.

"Weekend" means Saturdays and Sundays that are not holidays.

"Vehicular deliveries or pickups" means the delivery or pickup or the arrival for the delivery or pickup of goods, wares, merchandise and waste material by the use of motor vehicles, including, but not limited to, the operation of motorized commercial ground-sweeping or waste-removal machinery, whether portable or self-propelled.

(Ord. 1871, (part), 2001)

10.48.011 Notice of Violation.

Except in the case where there is clear evidence that a person is acting in good faith and with all deliberate speed to comply with provisions of this chapter after a verbal or written warning of a violation, the continuing violation shall be cause for either a citation, complaint, or an abatement order to be issued by the Noise Control Officer, or other responsible official.

(Ord. 1871, (part), 2001)

10.48.013 Multiple Section Application.

In the event that more than one section of this chapter apply generally and simultaneously to a given noise source or incident, the least restrictive regulation shall be in effect, and the most restrictive limit shall not be invoked, except as sources and incidents are specifically identified in the most restrictive limit which is applicable.

(Ord. 1871, (part), 2001)

10.48.014 Other Remedies.

No provision of this chapter shall be construed to impair any common law or statutory cause of action, or legal remedy therefrom, of any person for injury or damage arising from any violation of this chapter or from other law. The provisions of this chapter are not intended to affect in any manner, violations or arrests of persons for a violation of Section 415 of the California Penal Code or any other provision of State law. The unavailability of a sound level meter to enforce the provisions of this chapter does not preclude the enforcement of any provision of State law.

(Ord. 1871, (part), 2001)

10.48.020 Lead Agency/Official.

The noise control program established by this chapter shall be administered by and the responsibility of, the Noise Control Officer (NCO).

(Ord. 1871, (part), 2001)

10.48.021 Powers of the Noise Control Officer.

In order to implement and enforce this chapter and for the general purpose of noise abatement and control, the NCO shall have, in addition to any other vested authority, the power to:

A. Review of Public and Private Projects. Review of public and private projects, subject to mandatory review or approval by other departments, for compliance with this ordinance, if such projects are likely to cause noise in violation of this chapter;

B. Inspections. Upon presentation of proper credentials and with permission of the property owner or occupant, enter and investigate a potential ordinance violation on any property or place, and inspect any report or records at any reasonable time. If permission is refused or cannot be obtained, a search warrant may be obtained from a court of competent jurisdiction upon showing of probable cause to believe that a violation of this chapter may exist. Such inspection may include administration of any necessary tests.

(Ord. 1871, (part), 2001)

10.48.022 Duties of the Noise Control Officer.

In order to implement and enforce this chapter effectively, the NCO shall within a reasonable time after the effective date of the ordinance codified in this chapter:

A. Guidelines, Testing Methods and Procedures. Develop and promulgate guidelines, testing methods and procedures as required. Any noise measurement procedure used in enforcement of this chapter which tends to underestimate the actual noise level of the source being measured shall not invalidate the enforcement action;

B. Investigate and Pursue Violations. In consonance with provisions of this chapter, investigate and pursue possible violations;

C. Delegation of Authority. Delegate functions, where appropriate under this chapter, to other personnel and to other departments, subject to approval of the City Manager.

(Ord. 1871, (part), 2001)

10.48.023 Duties and Responsibilities of Other Departments.

A. Departmental Actions. All City departments shall, to the fullest extent consistent with other law, carry out their programs in such a manner as to further the policy and intent of this chapter.

B. Project Approval. All departments whose duty it is to review and approve new projects, or changes to existing projects, that may result in the production of disturbing noise, shall consult with the NCO prior to any such approval.

C. Contracts. Any written contract, agreement, purchase order, or other instrument whereby the City is committed to the expenditure of five thousand dollars or more in return for goods or services, and which involves noise-producing activities, shall contain provisions requiring compliance with this chapter.

(Ord. 1871, (part), 2001)

10.48.029 Homeowner or Resident-Conducted Construction Work Exception.

Construction conducted by the homeowner or resident of a single dwelling, using domestic construction tools is allowed on holidays between the hours of nine a.m. and six p.m.

(Ord. 1871, (part), 2001)

10.48.030 Emergency Exception.

The provisions of this chapter shall not apply to the emission of sound for the purpose of alerting persons to the existence of an emergency, or the emission of sound in the performance of emergency work.

(Ord. 1871, (part), 2001)

10.48.031 Special Exceptions.

A. The NCO shall have the authority, consistent with this section, to grant special exceptions which may be requested.

B. Any person seeking a special exception pursuant to this section shall file an application with the NCO. The application shall contain information which demonstrates that bringing the source of sound, or activity for which the special exception is sought, into compliance with this chapter would constitute an unreasonable hardship on the applicant, on the community, or on other persons. Prior to issuance of an exception, the NCO shall notify owners and/or occupants of nearby properties which may be affected by such exceptions. Any individual who claims to be adversely affected by allowance of the special exceptions may file a statement with the NCO containing any information to support his claim. If the NCO finds that a sufficient controversy exists regarding an application, a public hearing may be held.

C. In determining whether to grant or deny the application, the NCO shall balance the hardship to the applicant, the community, and other persons of not granting the special exception against the adverse impact on the health, safety, and welfare of persons affected, the adverse impact on property affected, and any other adverse impacts of granting the special exception. Applicants for special exceptions and persons contesting special exceptions may be required to submit any information the NCO may reasonably require. In granting or denying an application, the NCO shall place on public file a copy of the decision and the reasons for denying or granting the special exception.

D. Special exceptions shall be granted by notice to the applicant containing all necessary conditions, including a time limit on the permitted activity. The special exception shall not become effective until all conditions are agreed to by the applicant. Noncompliance with any condition of the special exception shall terminate it and subject the person holding it to those provisions of this chapter regulating the source of sound or activity for which the special exception was granted.

E. Application for extension of time limits specified in special exceptions or for modification of other substantial conditions shall be treated like applications for initial special exceptions under subsection B of this section.

(Ord. 1871, (part), 2001)

10.48.032 Appeals.

Appeals of any decision of the NCO shall be made to the City Council.

(Ord. 1871, (part), 2001)

10.48.040 Daytime and Nighttime Maximum Noise Levels.

Individual noise sources, or the combination of a group of noise sources located on the same property, shall not produce a noise level exceeding those specified on property zoned as follows, unless specifically provided in another section of this chapter:

Land Use at Point of Origin	**Maximum Noise Level at Complaint Site of Receiving Property**	
	Nighttime	Daytime
Residential	50 dBA	60 dBA
Nonresidential	55 dBA	65 dBA

(Ord. 1921, (part), 2003; Ord. 1871, (part), 2001)

10.48.050 Brief Daytime Incidents.

A. During the daytime period only, brief noise incidents exceeding limits in other sections of this chapter are allowed; providing, that the sum of the noise duration in minutes plus the excess noise level does not exceed twenty in a two-hour period. For example, the following combinations would be allowable:

Noise Increment Above Normal Standard	**Noise Duration in 2-Hour Period**

5 DBA	15 minutes
10 dBA	10 minutes
15 dBA	5 minutes
19 dBA	1 minute

B. For multifamily dwelling interior noise, Section 10.48.054, the sum of excess noise level and duration in minutes of a brief daytime incident shall not exceed ten in any two-hour period, measured at the receiving location.

C. Section 10.48.050A does not apply to Section 10.48.055 (Motor Vehicle Idling).

(Ord. 1871, (part), 2001)

10.48.051 Landscape Maintenance Activities.

The use of motorized equipment for landscape maintenance activities shall be limited to the hours of 8:00 a.m. to 8:00 p.m. on weekdays, and 9:00 a.m. to 6:00 p.m. on weekends and holidays, with the exception of landscape maintenance activities for public schools, public and private golf courses, and public facilities, which are allowed to begin at 7:00 a.m. The use of motorized equipment for landscape maintenance activities during these hours is exempted from the limits of Section 10.48.040; provided, that reasonable efforts are made by the user to minimize the disturbances to nearby residents by, for example, installation of appropriate mufflers or noise baffles, running equipment only the minimal period necessary, and locating equipment so as to generate minimum noise levels on adjoining properties.

(Ord. 1921, (part), 2003; Ord. 1871, (part), 2001)

10.48.052 Outdoor Public Events.

A. Outdoor events open to the general public on nonresidential property, such as parades, rallies, fairs, concerts and special sales and promotional events, involving generation of noise levels higher than would normally occur, by use of the human voice, public address systems, musical instruments, electronic amplification systems, and similar soundproducing activities, are allowed upon obtaining an appropriate permit from the city, and subject to the following general limitations:

1. The event shall not produce noise levels above seventy dBA on any residential property for a period longer than three hours during daytime.

2. The event shall not produce noise levels above sixty dBA on any residential property during the period from eight p.m. to eleven p.m., and above fifty-five dBA for any other nighttime period.

3. Continuous or repeated peak noise levels above ninety-five dBA shall not be produced at any location where persons may be continuously exposed.

B. The conditions imposed upon the event or activity in the permit issued by the City, regarding maximum noise level, location of noise sources, or duration of activity, for example, may be more limiting than this section, to protect certain individuals, areas or nearby activities which would otherwise be disturbed, and these permit conditions, when in conflict with this section, are overriding.

(Ord. 1871, (part), 2001)

10.48.053 Grading, Construction and Demolition.

A. Grading, construction and demolition activities shall be allowed to exceed the noise limits of Section 10.48.040 during daytime hours; provided, that the equipment utilized has high-quality noise muffler and abatement devices installed and in good condition, and the activity meets one of the following two criteria:

1. No individual device produces a noise level more than eighty-seven dBA at a distance of twenty-five feet (7.5 meters); or

2. The noise level on any nearby property does not exceed eighty dBA.

B. Notwithstanding Section 10.48.053A, it is a violation of this chapter to engage in any grading, street construction, demolition or underground utility work within seven hundred fifty feet of a residential area on Saturdays, Sundays and holidays, and during the nighttime period, except as provided in Section 10.48.030.

C. Construction, other than street construction, is prohibited on holidays, except as provided in Sections 10.48.029 and 10.48.030.

D. Construction, other than street construction, is prohibited during nighttime periods unless it meets the nighttime standards of Section 10.48.040.

E. The use of helicopters as a part of a construction and/or demolition activity shall be restricted to between the hours of nine a.m. and six thirty p.m. Monday through Friday only, and prohibited on the weekends and holidays. The notice shall be given at least twenty-four hours in advance of said usage. In cases of emergency, the twenty-four hour period may be waived.

(Ord. 1871, (part), 2001)

10.48.054 Interior Noise in Multiple-Family Dwellings.

Noise produced in any multiple-family dwelling unit shall not produce a noise level exceeding 45 dBA five feet from any wall in any adjoining unit during the period between seven a.m. and ten p.m., or exceeding 40 dBA during hours from ten p.m. to seven a.m. the following day.

(Ord. 1871, (part), 2001)

10.48.055 Motor Vehicle Idling.

Motor vehicles, including automobiles, trucks, motorcycles, motor scooters and trailers or other equipment towed by a motor vehicle, shall not be allowed to remain in one location with the engine or auxiliary motors running for more than three minutes in any hour, in an area other than on a public right-of-way, unless:

A. The regular noise limits of Section 10.48.040 are met while the engine and/or auxiliary motors are running; or

B. The vehicle is in use for provision of police, fire, medical, or other emergency services.

(Ord. 1871, (part), 2001)

10.48.056 Noise from Registered Motor Vehicles.

A. It is a violation of this chapter to own or operate a motor vehicle, including automobiles, trucks, motorcycles and other similar devices of a type subject to registration, as defined in California Vehicle Code, which has a faulty, defective, deteriorated, modified, replaced, or no exhaust and/or muffler system, and which produces an excessive and disturbing noise level, as defined in California Vehicle Code Sections 27150 and 27151.

B. The Stationary Vehicle Test Procedure, as adopted by the California Highway Patrol, may be utilized as prima facie evidence of violation of this section.

(Ord. 1871, (part), 2001)

10.48.057 Noise from Off-Road Recreational Vehicles.

It is a violation of this chapter to own or operate:

A. Any off-road recreational vehicle, including all-terrain vehicles, dirt bikes, dune buggies and other similar devices, as defined in Division 16.5 of the California Vehicle Code, which has a faulty, defective, deteriorated, modified, replaced, or no exhaust and/or muffler system, and which produces an excessive and disturbing noise level, as specified in California Vehicle Code Section 38365;

B. Any off-road recreational vehicle producing a noise level:

1. Exceeding ninety-eight dBA within twenty inches of any component at an intermediate engine speed of two thousand to four thousand revolutions per minute in a stationary position; or

2. Exceeding eighty dBA under any condition of acceleration, speed, grade, and load at a distance of fifty feet. At greater or lesser measurement distances, the maximum noise level changes by four dB for each doubling or halving of distance. The sound level meter shall be set for FAST response for this measurement.

(Ord. 1871, (part), 2001)

10.48.060 Noise Disturbances.

No person shall unreasonably make, continue, or cause to be made or continued, any noise disturbance as defined in Section 10.48.010.

(Ord. 1871, (part), 2001)

10.48.061 Animals and Birds.

It is unlawful and a nuisance for any person to keep, maintain or permit upon any lot or parcel of land within the City under his control any animal, including any fowl, which by any sound or cry shall habitually disturb the peace and comfort of any person in the reasonable and comfortable enjoyment of life or property.

(Ord. 1871, (part), 2001)

10.48.062 Nighttime Deliveries and Pickups.

It is unlawful and a nuisance for any person to make or allow vehicular deliveries or pickups to or from commercial establishments (defined as any store, factory, manufacturing, or industrial plant used for the sale, manufacturing, fabrication, assembly or storage of goods, wares and merchandise) by the use of private roads, alleys or other ways located on either side or the back of any building housing the commercial establishment where such private road, alley or other way lies between the building and any adjacent parcel of land zoned for residential purposes, between the hours of eight p.m. and eight a.m. weekdays (Monday through Friday) and six p.m. and nine a.m. on weekends (Saturday and Sunday) and holidays except as may be permitted under Section 10.48.029.

(Ord. 1871, (part), 2001)

10.48.070 Violation–Penalty.

Any person who violates the provisions of this chapter shall be guilty of a misdemeanor and upon conviction thereof shall be punished as provided in Chapter 1.12.

(Ord. 1886, (part), 2001; Ord. 1871, (part), 2001)

CONSTRUCTION NOISE MODELING

Roadway Construction Noise Model (RCNM),Version 1.1

Report date: 06/10/2020
Case Description: COCU-18

**** Receptor #1 ****

		Baselines (dBA)		
Description	Land Use	Daytime	Evening	Night
Building Construction	Residential	65.0	60.0	55.0

Equipment

Description	Impact Device	Usage (%)	Spec Lmax (dBA)	Actual Lmax (dBA)	Receptor Distance (feet)	Estimated Shielding (dBA)
Crane	No	16		80.6	50.0	0.0
Generator	No	50		80.6	50.0	0.0
Tractor	No	40	84.0		50.0	0.0

Results

			Noise Limits (dBA)						Noise Limit Exceedance (dBA)					
	Calculated (dBA)		Day		Evening		Night		Day		Evening		Night	
Equipment	Lmax	L10	Lmax	L10	Lmax	L10	Lmax	L10	Lmax	L10	Lmax	L10	Lmax	L10
Crane	80.6	75.6	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Generator	80.6	80.6	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Tractor	84.0	83.0	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Total	84.0	85.5	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A

Roadway Construction Noise Model (RCNM),Version 1.1

Report date: 06/10/2020
Case Description: COCU-18

**** Receptor #1 ****

Baselines (dBA)

Description	Land Use	Daytime	Evening	Night
Demolition	Residential	65.0	60.0	55.0

Equipment

Description	Impact Device	Usage (%)	Spec Lmax (dBA)	Actual Lmax (dBA)	Receptor Distance (feet)	Estimated Shielding (dBA)
Concrete Saw	No	20		89.6	50.0	0.0
Dozer	No	40		81.7	50.0	0.0
Tractor	No	40	84.0		50.0	0.0

Results

	Calculated (dBA)		Noise Limits (dBA) Day		Evening		Night		Noise Limit Exceedance (dBA) Day		Evening		Night	
Equipment	Lmax	L10	Lmax	L10	Lmax	L10	Lmax	L10	Lmax	L10	Lmax	L10	Lmax	L10
Concrete Saw	89.6	85.6	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Dozer	81.7	80.7	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Tractor	84.0	83.0	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Total	89.6	88.3	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A

Roadway Construction Noise Model (RCNM),Version 1.1

Report date: 06/10/2020
Case Description: COCU-18

**** Receptor #1 ****

		Baselines (dBA)		
Description	Land Use	Daytime	Evening	Night
Grading	Residential	65.0	60.0	55.0

Equipment

Description	Impact Device	Usage (%)	Spec Lmax (dBA)	Actual Lmax (dBA)	Receptor Distance (feet)	Estimated Shielding (dBA)
Grader	No	40	85.0		50.0	0.0
Dozer	No	40		81.7	50.0	0.0
Tractor	No	40	84.0		50.0	0.0

Results

	Calculated (dBA)		Noise Limits (dBA) Day		Evening		Night		Noise Limit Exceedance (dBA) Day		Evening		Night	
Equipment	Lmax	L10	Lmax	L10	Lmax	L10	Lmax	L10	Lmax	L10	Lmax	L10	Lmax	L10
Grader	85.0	84.0	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Dozer	81.7	80.7	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Tractor	84.0	83.0	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Total	85.0	87.6	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A

Roadway Construction Noise Model (RCNM),Version 1.1

Report date: 06/10/2020
Case Description: COCU-18

**** Receptor #1 ****

		Baselines (dBA)		
Description	Land Use	Daytime	Evening	Night
Paving/Arch Coating	Residential	65.0	60.0	55.0

Equipment

Description	Impact Device	Spec Usage (%)	Spec Lmax (dBA)	Actual Lmax (dBA)	Receptor Distance (feet)	Estimated Shielding (dBA)
Pavement Scarafier	No	20		89.5	50.0	0.0
Roller	No	20		80.0	50.0	0.0
Tractor	No	40	84.0		50.0	0.0

Results

	Calculated (dBA)		Noise Limits (dBA) Day		Evening		Night		Noise Limit Exceedance (dBA) Day		Evening		Night	
Equipment	Lmax	L10	Lmax	L10	Lmax	L10	Lmax	L10	Lmax	L10	Lmax	L10	Lmax	L10
Pavement Scarafier	89.5	85.5	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Roller	80.0	76.0	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Tractor	84.0	83.0	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Total	89.5	87.8	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A

Roadway Construction Noise Model (RCNM),Version 1.1

Report date: 06/10/2020
Case Description: COCU-18

**** Receptor #1 ****

Baselines (dBA)

Description	Land Use	Daytime	Evening	Night
Site Preperation	Residential	65.0	60.0	55.0

Equipment

Description	Impact Device	Spec Usage (%)	Actual Lmax (dBA)	Receptor Lmax (dBA)	Estimated Distance (feet)	Shielding (dBA)
Grader	No	40	85.0		50.0	0.0
Scraper	No	40		83.6	50.0	0.0
Tractor	No	40	84.0		50.0	0.0

Results

	Calculated (dBA)		Noise Limits (dBA) Day		Evening		Night		Noise Limit Exceedance (dBA) Day		Evening		Night	
Equipment	Lmax	L10	Lmax	L10	Lmax	L10	Lmax	L10	Lmax	L10	Lmax	L10	Lmax	L10
Grader	85.0	84.0	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Scraper	83.6	82.6	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Tractor	84.0	83.0	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Total	85.0	88.0	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A

Roadway Construction Noise Model (RCNM),Version 1.1

Report date: 06/10/2020
Case Description: COCU-18

**** Receptor #1 ****

Baselines (dBA)

Description	Land Use	Daytime	Evening	Night
Building Construction	Residential	65.0	60.0	55.0

Equipment

Description	Impact Device	Usage (%)	Spec Lmax (dBA)	Actual Lmax (dBA)	Receptor Distance (feet)	Estimated Shielding (dBA)
Crane	No	16		80.6	50.0	0.0
Generator	No	50		80.6	50.0	0.0
Tractor	No	40	84.0		50.0	0.0

Results

	Calculated (dBA)		Noise Limits (dBA) Day		Evening		Night		Noise Limit Exceedance (dBA) Day		Evening		Night	
Equipment	Lmax	Leq	Lmax	Leq	Lmax	Leq	Lmax	Leq	Lmax	Leq	Lmax	Leq	Lmax	Leq
Crane	80.6	72.6	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Generator	80.6	77.6	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Tractor	84.0	80.0	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Total	84.0	82.5	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A

Roadway Construction Noise Model (RCNM),Version 1.1

Report date: 06/10/2020
Case Description: COCU-18

**** Receptor #1 ****

Description	Land Use	Baselines (dBA) Daytime	Evening	Night
Demolition	Residential	65.0	60.0	55.0

Equipment

Description	Impact Device	Usage (%)	Spec Lmax (dBA)	Actual Lmax (dBA)	Receptor Distance (feet)	Estimated Shielding (dBA)
Concrete Saw	No	20		89.6	50.0	0.0
Dozer	No	40		81.7	50.0	0.0
Tractor	No	40	84.0		50.0	0.0

Results

	Calculated (dBA)		Noise Limits (dBA) Day		Evening		Night		Noise Limit Exceedance (dBA) Day		Evening		Night	
Equipment	Lmax	Leq	Lmax	Leq	Lmax	Leq	Lmax	Leq	Lmax	Leq	Lmax	Leq	Lmax	Leq
Concrete Saw	89.6	82.6	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Dozer	81.7	77.7	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Tractor	84.0	80.0	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Total	89.6	85.3	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A

Roadway Construction Noise Model (RCNM),Version 1.1

Report date: 06/10/2020
Case Description: COCU-18

**** Receptor #1 ****

		Baselines (dBA)		
Description	Land Use	Daytime	Evening	Night
Grading	Residential	65.0	60.0	55.0

Equipment

Description	Impact Device	Usage (%)	Spec Lmax (dBA)	Actual Lmax (dBA)	Receptor Distance (feet)	Estimated Shielding (dBA)
Grader	No	40	85.0		50.0	0.0
Dozer	No	40		81.7	50.0	0.0
Tractor	No	40	84.0		50.0	0.0

Results

	Calculated (dBA)		Noise Limits (dBA)						Noise Limit Exceedance (dBA)					
			Day		Evening		Night		Day		Evening		Night	
Equipment	Lmax	Leq	Lmax	Leq	Lmax	Leq	Lmax	Leq	Lmax	Leq	Lmax	Leq	Lmax	Leq
Grader	85.0	81.0	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Dozer	81.7	77.7	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Tractor	84.0	80.0	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Total	85.0	84.6	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A

Paving&ArchCoating

Roadway Construction Noise Model (RCNM),Version 1.1

Report date: 07/07/2020

Case Description: COCU-18

**** Receptor #1 ****

Description	Land Use	Baselines (dBA) Daytime	Evening	Night
Paving/Arch Coating	Residential	65.0	60.0	55.0

Equipment

Description	Impact Device	Usage (%)	Spec Lmax (dBA)	Actual Lmax (dBA)	Receptor Distance (feet)	Estimated Shielding (dBA)
Pavement Scarafier	No	20		89.5	50.0	0.0
Roller	No	20		80.0	50.0	0.0
Tractor	No	40	84.0		50.0	0.0

Results

	Calculated (dBA)		Noise Limits (dBA) Day		Evening		Night		Noise Limit Exceedance (dBA) Day		Evening		Night	
Equipment	Lmax	Leq	Lmax	Leq	Lmax	Leq	Lmax	Leq	Lmax	Leq	Lmax	Leq	Lmax	Leq
Pavement Scarafier	89.5	82.5	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Roller	80.0	73.0	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Tractor	84.0	80.0	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Total	89.5	84.8	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A

Roadway Construction Noise Model (RCNM),Version 1.1

Report date: 06/10/2020
Case Description: COCU-18

**** Receptor #1 ****

Description	Land Use	Baselines (dBA) Daytime	Evening	Night
Site Preperation	Residential	65.0	60.0	55.0

Equipment

Description	Impact Device	Usage (%)	Spec Lmax (dBA)	Actual Lmax (dBA)	Receptor Distance (feet)	Estimated Shielding (dBA)
Grader	No	40	85.0		50.0	0.0
Scraper	No	40		83.6	50.0	0.0
Tractor	No	40	84.0		50.0	0.0

Results

	Calculated (dBA)		Noise Limits (dBA) Day		Evening		Night		Noise Limit Exceedance (dBA) Day		Evening		Night	
Equipment	Lmax	Leq	Lmax	Leq	Lmax	Leq	Lmax	Leq	Lmax	Leq	Lmax	Leq	Lmax	Leq
Grader	85.0	81.0	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Scraper	83.6	79.6	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Tractor	84.0	80.0	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Total	85.0	85.0	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A

Attenuation Calculation, L10				
	RCNM Reference		Senstive Receptors to South	
Construction Activities	dBA L10	distance (ft)	dBA L10	distance (ft)
Demolition	88.3	50	85.4	70
Site Preparation	88.0		85.1	
Grading	87.6		84.7	
Building Construction	85.5		82.6	

	Senstive Receptors to South		Senstive Receptors to North	
Construction Activities	dBA L10	distance (ft)	dBA L10	distance (ft)
Demolition	85.4	70	79.7	135
Site Preparation	85.1		79.4	
Grading	84.7		79.0	
Building Construction	82.6		76.9	
Paving	87.8	50	78.3	150

	Senstive Receptors to South		Sensitive Receptors to Southeast	
Construction Activities	dBA L10	distance (ft)	dBA L10	distance (ft)
Demolition	85.4	70	76.9	185
Site Preparation	85.1		76.6	
Grading	84.7		76.2	
Building Construction	82.6		74.1	
Paving	87.8	50	76.9	175

	Senstive Receptors to South		Sensistive Receptors to West	
Construction Activities	dBA L10	distance (ft)	dBA L10	distance (ft)
Demolition	85.4	70	74.3	250
Site Preparation	85.1		74.0	
Grading	84.7		73.6	
Building Construction	82.6		71.5	
Paving	87.8	50	74.2	240

Attenuation calculated through Inverse Square Law: Lp(R2) = Lp(R1) - 20Log(R2/R1)

Attenuation Calculation, Leq				
	RCNM Reference		Senstive Receptors to South	
Construction Activities	dBA Leq	distance (ft)	dBA Leq	distance (ft)
Demolition	85.3	50	82.4	70
Site Preparation	85		82.1	
Grading	84.6		81.7	
Building Construction	82.5		79.6	

	Senstive Receptors to South		Senstive Receptors to North	
Construction Activities	dBA Leq	distance (ft)	dBA Leq	distance (ft)
Demolition	82.4	70	76.7	135
Site Preparation	82.1		76.4	
Grading	81.7		76.0	
Building Construction	79.6		73.9	
Paving	84.8	50	75.3	150

	Senstive Receptors to South		Sensitive Receptors to Southeast	
Construction Activities	dBA Leq	distance (ft)	dBA Leq	distance (ft)
Demolition	82.4	70	73.9	185
Site Preparation	82.1		73.6	
Grading	81.7		73.2	
Building Construction	79.6		71.1	
Paving	84.8	50	73.9	175

	Senstive Receptors to South		Sensistive Receptors to West	
Construction Activities	dBA Leq	distance (ft)	dBA Leq	distance (ft)
Demolition	82.4	70	71.3	250
Site Preparation	82.1		71.0	
Grading	81.7		70.6	
Building Construction	79.6		68.5	
Paving	84.8	50	71.2	240

Attenuation calculated through Inverse Square Law: Lp(R2) = Lp(R1) - 20Log(R2/R1)

APPENDIX G: TRANSPORTATION DATA

Memorandum

Date: January 10, 2020

To: Mr. Ali Mozaffari, Alan Enterprise, LLC

From: Brian Jackson

Subject: Trip Generation Study for a Residential Project on Stevens Creek Bl in Cupertino, CA

Hexagon Transportation Consultants, Inc. has completed a trip generation study for a proposed residential development at 22690 Stevens Creek Boulevard in Cupertino, California. As proposed, the project would demolish an existing convenience market/liquor store and construct 9 three-story residential units. Each single-family residential unit would have a two-car garage. Eight additional parking spaces would be provided on-site.

The purpose of this trip generation study is to document the projected number of net new AM and PM peak hour vehicle trips generated by the proposed residential project. The City of Cupertino typically does not require preparation of a comprehensive transportation impact analysis, including an evaluation of intersection level of service, for projects deemed “small”. For small projects, a trip generation analysis usually is sufficient. Based on a preliminary evaluation of the proposed project and the previous use to be replaced, City of Cupertino staff have indicated that a trip generation study will suffice. Additionally, City of Cupertino staff have requested that vehicle miles traveled (VMT) be reported for existing and project conditions for informational purposes.

Project Trip Generation

Hexagon prepared project trip estimates based on trip generation rates obtained from the *ITE Trip Generation Manual, 10th Edition (2017)*. The average weekday daily, AM peak hour, and PM peak hour trip generation rates for Single-Family Housing (Land Use 210) were applied to the proposed project. Single-family detached units have the highest trip generation rate per dwelling unit of all residential uses because they are the largest units in size and have more residents and more vehicles per unit than other residential land uses. Based on the ITE rates for Single-Family Housing, the proposed project would be expected to generate 85 gross daily vehicle trips, with 7 gross trips occurring during the weekday AM peak hour of traffic (one-hour period between 7:00 AM and 9:00 AM) and 9 gross trips occurring during the weekday PM peak hour of traffic (one-hour period between 4:00 PM and 6:00 PM).

Trip credits associated with the existing liquor store/convenience market to be removed can be applied to the project trip generation estimates. The weekday daily, AM peak hour, and PM peak hour vehicular trips generated by the existing building were estimated using standard ITE trip rates for Convenience Market (Land Use 851) because the store closed in December of 2019. The Convenience Market category is defined as markets that are open between 15 and 24 hours per day and that sell convenience foods, newspapers, magazines, and often beer and wine, but do not provide gasoline pumps. Based on the ITE rates for a 2,400 square foot (s.f.) Convenience Market, the previous use is estimated to have generated 1,829 gross daily vehicle trips, with 150 gross trips occurring during the weekday AM peak hour and 118 gross trips occurring during the weekday PM peak hour.

After applying the estimated trip credits associated with the previous use on the site, the 9-unit residential project would be expected to generate 1,744 fewer daily vehicle trips than the previous use, with 143 fewer trips occurring during the AM peak hour and 109 fewer trips occurring during the PM peak hour (see Table 1).

Table 1
Project Trip Generation Estimates

				AM Peak Hour				PM Peak Hour			
Land Use	Size	Daily Rate	Daily Trips	Rate	In	Out	Total	Rate	In	Out	Total
Proposed Use											
Attached Residential [1]	9 DU	9.44	85	0.74	2	5	7	0.99	6	3	9
Existing Use											
Convenience Market [2]	2,400 SF	762.28	1,829	62.54	75	75	150	49.11	60	58	118
Net Project Trips:			**(1,744)**		**(73)**	**(70)**	**(143)**		**(54)**	**(55)**	**(109)**

Notes:

[1] Trip generation based on average rates contained in the ITE Trip Generation Manual, 10th Edition, for Single-Family Housing (Land Use 210), located in a General Urban/Suburban setting. Rates are expressed in trips per dwelling unit (DU).

[2] Convenience Market (Land Use 851) average rates from ITE *Trip Generation, 10th Edition* (2017) were used for the existing building (Bateh Bros. Liquors & MiniMart). The size of the existing building was estimated using the Existing Conditions plan prepared by BKF Engineers.

Transportation Policy Change

Historically, traffic impact analysis has focused on the identification of traffic impacts and potential roadway improvements based on auto delay to relieve traffic congestion that may result due to planned growth. However, with the adoption of the State of California Senate Bill 743 (SB 743), all public agencies will be required by July 2020 to base transportation impacts on vehicle miles traveled (VMT) rather than level of service (LOS). The change in measurement is intended to better evaluate the effects on the state's goals for climate change and multi-modal transportation. In adherence with SB 743 legislation, the City of Cupertino intends to adopt a new Transportation Analysis Policy prior to July 2020. The new City Policy ultimately will establish the thresholds for transportation impacts under CEQA based on VMT rather than intersection LOS. The intent of this change is to shift the focus of transportation analysis under CEQA from vehicle delay and roadway auto capacity to a reduction in vehicle emissions, and the creation of robust multimodal networks that support integrated land uses. Starting in July 2020, all new projects in the City of Cupertino will be required to analyze transportation impacts using the VMT metric. In the interim, automobile delay is still considered the standard metric in determining a significant impact, and the City of Cupertino will continue to apply the current LOS criteria.

VMT Evaluation

VMT is the total miles of travel by personal motorized vehicles a project is expected to generate in a day. VMT measures the full distance of personal motorized vehicle-trips with one end within the project and is a useful metric in understanding the overall effects of a project on the transportation system. Many factors affect travel behavior and trip lengths such as density of land use, diversity of land uses, design of the transportation network, distance to high-quality transit, and demographics. Low-density development separated from other land uses and located in areas with poor access to transit generates more automobile travel and higher VMT compared to development located in urban areas with more access to transit. The California Emissions Estimator Model (CalEEMod) was used to estimate the VMT for existing and project conditions for informational purposes.

Based on the CalEEMod tool, the existing retail use on the site (a 2,400 s.f. convenience market) has an approximate daily VMT of 3,800 miles. The proposed 9-unit residential project would produce an approximate daily VMT of 538 miles based on the CalEEMod calculations. This equates to a daily reduction of 3,262 VMT for the site with the project.