APPENDICES

APPENDIX A: AIR QUALITY / GREENHOUSE GAS EMISSIONS AND ENERGY REPORT

500 EAST BASELINE ROAD RESIDENTIAL PROJECT AIR QUALITY, GLOBAL CLIMATE CHANGE, AND ENERGY IMPACT ANALYSIS

City of La Verne

April 15, 2020

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Traffic Engineering ● Transportation Planning ● Parking ● Noise & Vibration
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EXECUTIVE SUMMARY

The purpose of this air quality and global climate change impact analysis is to provide an assessment of the impacts resulting from development of the proposed 500 East Baseline Road Residential project and to identify measures that may be necessary to reduce potentially significant impacts.

CONSTRUCTION-SOURCE EMISSIONS

Project construction-source emissions would not exceed applicable regional thresholds of significance established by the South Coast Air Quality Management District (SCAQMD). For localized emissions, the project will not exceed applicable Localized Significance Thresholds (LSTs) established by the SCAQMD.

Project construction-source emissions would not conflict with the Basin Air Quality Management Plan (AQMP). As discussed herein, the project will comply with all applicable SCAQMD construction-source emission reduction rules and guidelines. Project construction source emissions would not cause or substantively contribute to violation of the California Ambient Air Quality Standards (CAAQS) or National Ambient Air Quality Standards (NAAQS).

Established requirements addressing construction equipment operations, and construction material use, storage, and disposal requirements act to minimize odor impacts that may result from construction activities. Moreover, construction-source odor emissions would be temporary, short-term, and intermittent in nature and would not result in persistent impacts that would affect substantial numbers of people. Potential construction-source odor impacts are therefore considered less than significant.

OPERATIONAL-SOURCE EMISSIONS

The project operational-sourced emissions would not exceed applicable regional thresholds of significance established by the SCAQMD. Project operational-source emissions would not result in or cause a significant localized air quality impact as discussed in the Operations-Related Local Air Quality Impacts section of this report. Additionally, project-related trips will not cause or result in CO concentrations exceeding applicable state and/or federal standards (CO "hotspots). Project operational-source emissions would therefore not adversely affect sensitive receptors within the vicinity of the project.

Project operational-source emissions would not conflict with the Basin Air Quality Management Plan (AQMP). The project's emissions meet SCAQMD regional thresholds and will not result in a significant cumulative impact. The project does not propose any such uses or activities that would result in potentially significant operational-source odor impacts. Potential operational-source odor impacts are therefore considered less than significant.

GREENHOUSE GASES

Project-related GHG emissions do not exceed the SCAQMD draft screening threshold of 3,000 MTCO2e per year for all land uses, and GHG emissions are considered to be less than significant.

Furthermore, as the project's GHG emissions do not exceed the SCAQMD draft screening threshold (based on EO S-3-05), the project would not conflict with the goals of SB-32 or the CARB Scoping Plan; therefore, the project would not conflict with an applicable plan, policy or regulation of an agency adopted for the purpose of reducing the emissions of greenhouse gases and impacts are considered to be less than significant.

ENERGY

For new development such as that proposed by the 500 East Baseline Residential Road Project, compliance with California Building Standards Code Title 24 energy efficiency requirements (CalGreen), are considered demonstrable evidence of efficient use of energy. As discussed below, the project would provide for, and promote, energy efficiencies required under other applicable federal and State of California standards and regulations, and in so doing would meet or exceed all California Building Standards Code Title 24 standards. Moreover, energy consumed by the project's operation is calculated to be comparable to, or less than, energy consumed by other residential uses of similar scale and intensity that are constructed and operating in California. On this basis, the project would not result in the inefficient, wasteful, or unnecessary consumption of energy. Further, the project would not cause or result in the need for additional energy producing facilities or energy delivery systems.

1. INTRODUCTION

This section describes the purpose of this air quality, global climate change, and energy impact analysis, project location, proposed development, and study area. Figure 1 shows the project location map and Figure 2 illustrates the project site plan.

PURPOSE AND OBJECTIVES

This study was performed to address the possibility of regional/local air quality impacts and global climate change impacts, from project related air emissions. The objectives of the study include:

- documentation of the atmospheric setting
- discussion of criteria pollutants and greenhouse gases
- discussion of the air quality and global climate change regulatory framework
- analysis of the construction related air quality and greenhouse gas emissions
- analysis of the operations related air quality and greenhouse gas emissions
- analysis of the conformity of the proposed project with the SCAQMD AQMP
- recommendations for mitigation measures

The City of La Verne is the lead agency for this air quality, greenhouse gas, and energy analysis, in accordance with the California Environmental Quality Act authorizing legislation. Although this is a technical report, every effort has been made to write the report clearly and concisely. To assist the reader with terms unique to air quality and global climate change, a definition of terms has been provided in Appendix A.

PROJECT LOCATION

The proposed project is located at 500 East Baseline Road, near the northeast corner of Rodeo Lane and Baseline Road, in an unincorporated portion of Los Angeles County. The project proposes to annex the site into the City of La Verne. A vicinity map showing the project location is provided on Figure 1.

PROJECT DESCRIPTION

The proposed project involves the development of the approximately 19.44 acre site with seven dwelling units of detached single-family residential housing.

Approximately, 5.58 acres (243,130 square feet) of the project site would be subdivided into seven lots, each containing a single-family dwelling unit and attached garage; an additional eighth lot would be designated as a debris basin, and a ninth lot comprising approximately 10.75 acres would be dedicated to open space.

Figure 2 illustrates the proposed site plan.

PHASING AND TIMING

The proposed project is anticipated for opening in 2023. The project is anticipated to be built in one phase with project construction anticipated to start no sooner than October 2021 and being completed by April 2023.

SENSITIVE RECEPTORS IN PROJECT VICINITY

Those who are sensitive to air pollution include children, the elderly, and persons with preexisting respiratory or cardiovascular illness. For purposes of CEQA, the SCAQMD considers a sensitive receptor to be a location where a sensitive individual could remain for 24 hours, such as residences, hospitals, or convalescent facilities

(South Coast Air Quality Management District 2008). Commercial and industrial facilities are not included in the definition because employees do not typically remain on-site for 24 hours.

The nearest sensitive receptors to the project site include the existing single-family detached residential dwelling units located adjacent to the west, approximately 30 feet south east (across Broken Spur Road), approximately 90 feet east (across Broken Spur Road), approximately 100 feet south (across Baseline Road), and approximately 450 feet northeast of the project site. Other air quality sensitive land uses are located further from the project site and would experience lower impacts.

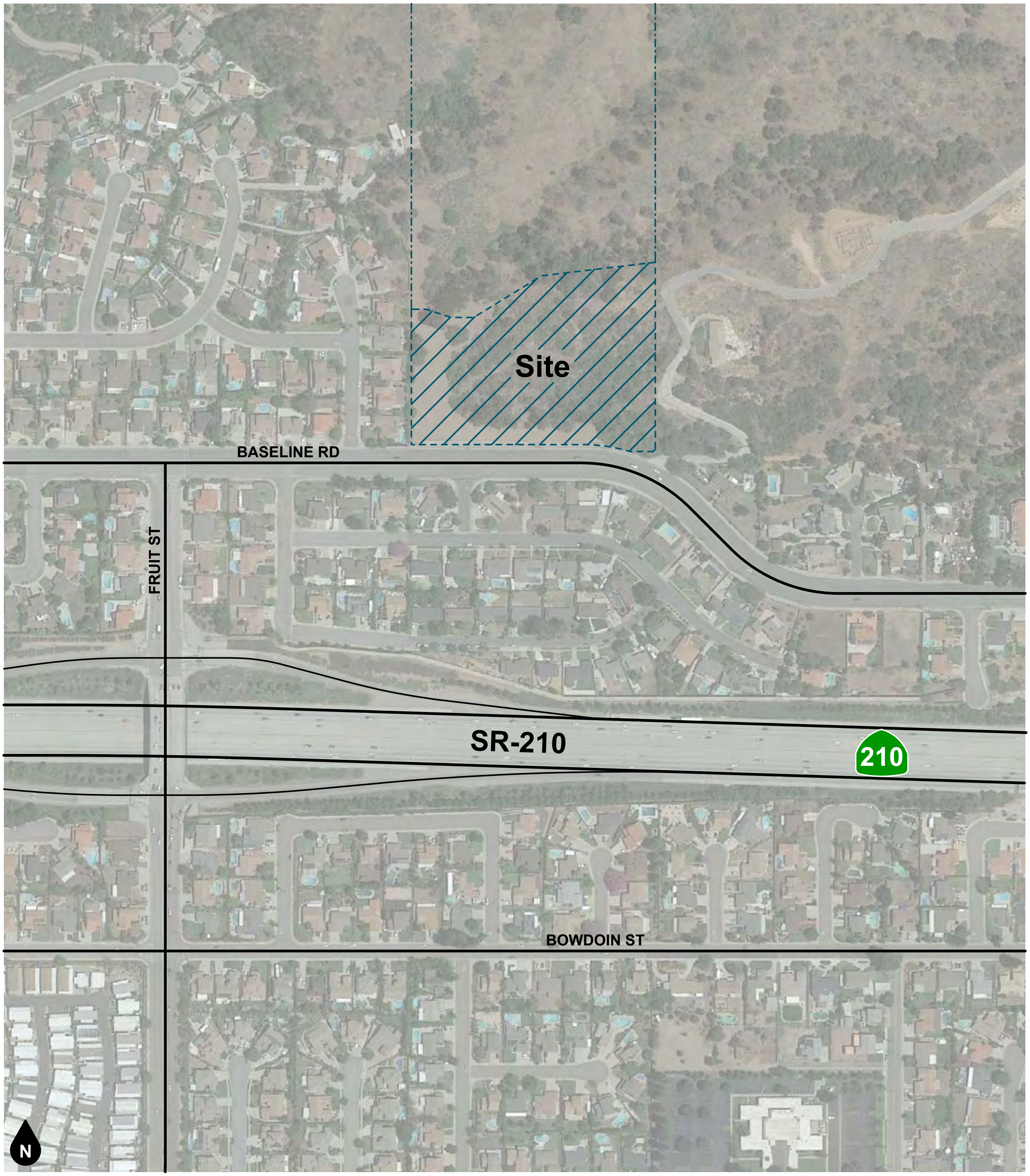

Figure 1
Project Location Map

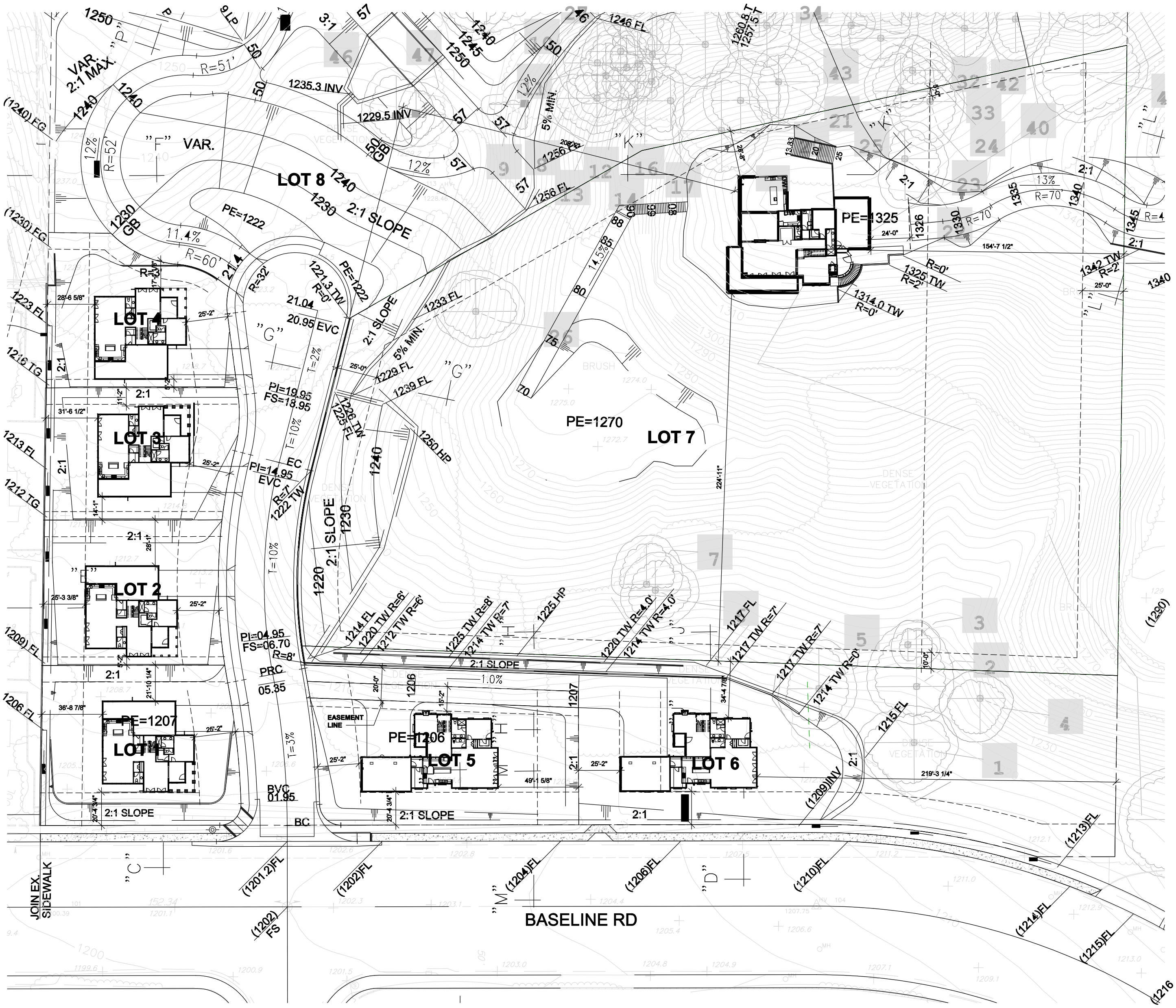

Figure 2
Site Plan

2. AIR QUALITY ANALYSIS

EXISTING AIR QUALITY CONDITIONS

Local Air Quality

The project site is located within unincorporated County of Los Angeles and is to be annexed into the City of La Verne as part of the project. Los Angeles County is part of the South Coast Air Basin (SCAB) that includes all of Orange County as well as the non-desert portions of Los Angeles, Riverside, and San Bernardino Counties. The South Coast Air Basin is located on a coastal plain with connecting broad valleys and low hills to the east. Regionally, the South Coast Air Basin is bounded by the Pacific Ocean to the southwest and high mountains to the east forming the inland perimeter.

Dominant airflows provide the driving mechanism for transport and dispersion of air pollution. The mountains surrounding the region form natural horizontal barriers to the dispersion of air contaminants. Air pollution created in the coastal areas and around the Los Angeles area is transported inland until it reaches the mountains where the combination of mountains and inversion layers generally prevent further dispersion. This poor ventilation results in a gradual degradation of air quality from the coastal areas to inland areas. Air stagnation may occur during the early evening and early morning periods of transition between day and nighttime flows. The region also experiences periods of hot, dry winds from the desert, known as Santa Ana winds. If the Santa Ana winds are strong, they can surpass the sea breeze, which blows from the ocean to the land, and carry the suspended dust and pollutants out to the ocean. If the winds are weak, they are opposed by the sea breeze and cause stagnation, resulting in high pollution events.

The annual average temperature varies little throughout much of the basin, ranging from the low to middle 60s, measured in degrees Fahrenheit (°F). With more pronounced oceanic influence, coastal areas show less variability in annual minimum and maximum temperatures than inland areas where the project site is located. The majority of the annual rainfall in the basin occurs between November and April. Summer rainfall is minimal and is generally limited to scattered thunderstorms in the coastal regions and slightly heavier showers in the eastern portion of the basin along the coastal side of the mountains. Year-to-year patterns in rainfall are unpredictable because of fluctuations in the weather.

Temperature inversions limit the vertical depth through which pollution can be mixed. Among the most common temperature inversions in the basin are radiation inversions, which form on clear winter nights when cold air off mountains sink to the valley floor while the air aloft over the valley remains warm. These inversions, in conjunction with calm winds, trap pollutants near the source. Other types of temperature inversions that affect the basin include marine, subsidence, and high-pressure inversions.

Summers are often periods of hazy visibility and occasionally unhealthful air. Strong temperature inversions may occur that limit the vertical depth through which air pollution can be dispersed. Air pollutants concentrate because they cannot rise through the inversion layer and disperse. These inversions are more common and persistent during the summer months. Over time, sunlight produces photochemical reactions within this inversion layer that creates ozone, a particularly harmful air pollutant. Occasionally, strong thermal convections occur which allows the air pollutants to rise high enough to pass over the mountains and ultimately dilute the smog cloud.

In the winter, light nocturnal winds result mainly from the drainage of cool air off of the mountains toward the valley floor while the air aloft over the valley remains warm. This forms a type of inversion known as a radiation inversion. Such winds are characterized by stagnation and poor local mixing and trap pollutants such as automobile exhaust near their source. While these inversions may lead to air pollution "hot spots" in heavily developed coastal areas of the basin, there is not enough traffic to cause any winter air pollution problems.

Despite light wind conditions, especially at night and in the early morning, winter is generally a period of good air quality in the project vicinity.

The temperature and precipitation levels for the City of Pomona, closest monitoring station with data to the project site, are shown below in Table 1. Table 1 shows that August is typically the warmest month and December and January are typically the coolest months. Rainfall in the project area varies considerably. Almost all the annual rainfall comes from the fringes of mid-latitude storms from late November to early April, with summers being almost completely dry.

Table 1
Local Monthly Climate Data

Descriptor	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
Avg. Max. Temperature	68.1	69.1	71.4	75.3	78.8	83.7	89.9	90.6	88	80.9	71	67.4
Avg. Min. Temperature	41.5	43.8	45.9	48.5	52.9	56.2	60.4	60.6	58.6	53.8	45.2	41.6
Avg. Total Precipitation (in.)	3.33	3.64	2.80	0.92	0.20	0.07	0.00	0.04	0.20	0.90	1.52	3.11

Source: https://wrcc.dri.edu/cgi-bin/cliMAIN.pl?ca7050

Data from the Pomona Fairplex, CA station (047050).

Pollutants

Pollutants are generally classified as either criteria pollutants or non-criteria pollutants. Federal ambient air quality standards have been established for criteria pollutants, whereas no ambient standards have been established for non-criteria pollutants. For some criteria pollutants, separate standards have been set for different periods. Most standards have been set to protect public health. For some pollutants, standards have been based on other values (such as protection of crops, protection of materials, or avoidance of nuisance conditions). A summary of federal and state ambient air quality standards is provided in the Regulatory Framework section.

Criteria Pollutants

The criteria pollutants consist of: ozone, nitrogen dioxide, carbon monoxide, sulfur dioxide, lead, and particulate matter. These pollutants can harm your health and the environment, and cause property damage. The Environmental Protection Agency (EPA) calls these pollutants "criteria" air pollutants because it regulates them by developing human health-based and/or environmentally-based criteria for setting permissible levels. The following provides descriptions of each of the criteria pollutants.

Nitrogen Dioxides

Nitrogen Oxides (NOx) is the generic term for a group of highly reactive gases which contain nitrogen and oxygen. While most NOx are colorless and odorless, concentrations of nitrogen dioxide (NO_2) can often be seen as a reddish-brown layer over many urban areas. NOx form when fuel is burned at high temperatures, as in a combustion process. The primary manmade sources of NOx are motor vehicles, electric utilities, and other industrial, commercial, and residential sources that burn fuel. NOx reacts with other pollutants to form, ground-level ozone, nitrate particles, acid aerosols, as well as NO_2, which cause respiratory problems. NOx and the pollutants formed from NOx can be transported over long distances, following the patterns of prevailing winds. Therefore controlling NOx is often most effective if done from a regional perspective, rather than focusing on the nearest sources.

Ozone

Ozone (O_3) is not usually emitted directly into the air but at ground-level is created by a chemical reaction between NOx and volatile organic compounds (VOC) in the presence of sunlight. Motor vehicle exhaust, industrial emissions, gasoline vapors, chemical solvents as well as natural sources emit NOx and VOC that help form ozone. Ground-level ozone is the primary constituent of smog. Sunlight and hot weather cause ground-level ozone to form with the greatest concentrations usually occurring downwind from urban areas. Ozone is subsequently considered a regional pollutant. Ground-level ozone is a respiratory irritant and an oxidant that increases susceptibility to respiratory infections and can cause substantial damage to vegetation and other materials. Because NOx and VOC are ozone precursors, the health effects associated with ozone are also indirect health effects associated with significant levels of NOx and VOC emissions.

Carbon Monoxide

Carbon monoxide (CO) is a colorless, odorless gas that is formed when carbon in fuel is not burned completely. It is a component of motor vehicle exhaust, which contributes about 56 percent of all CO emissions nationwide. In cities, 85 to 95 percent of all CO emissions may come from motor vehicle exhaust. Other sources of CO emissions include industrial processes (such as metals processing and chemical manufacturing), residential wood burning, and natural sources such as forest fires. Woodstoves, gas stoves, cigarette smoke, and unvented gas and kerosene space heaters are indoor sources of CO. The highest levels of CO in the outside air typically occur during the colder months of the year when inversion conditions are more frequent. The air pollution becomes trapped near the ground beneath a layer of warm air. CO is described as having only a local influence because it dissipates quickly. Since CO concentrations are strongly associated with motor vehicle emissions, high CO concentrations generally occur in the immediate vicinity of roadways with high traffic volumes and traffic congestion, active parking lots, and in automobile tunnels. Areas adjacent to heavily traveled and congested intersections are particularly susceptible to high CO concentrations.

CO is a public health concern because it combines readily with hemoglobin and thus reduces the amount of oxygen transported in the bloodstream. The health threat from lower levels of CO is most serious for those who suffer from heart disease such as angina, clogged arteries, or congestive heart failure. For a person with heart disease, a single exposure to CO at low levels may cause chest pain and reduce that person's ability to exercise; repeated exposures may contribute to other cardiovascular effects. High levels of CO can affect even healthy people. People who breathe high levels of CO can develop vision problems, reduced ability to work or learn, reduced manual dexterity, and difficulty performing complex tasks. At extremely high levels, CO is poisonous and can cause death.

Sulfur Dioxide

Sulfur Oxide (SOx) gases (including sulfur dioxide [SO2]) are formed when fuel containing sulfur, such as coal and oil is burned, and from the refining of gasoline. SOx dissolves easily in water vapor to form acid and interacts with other gases and particles in the air to form sulfates and other products that can be harmful to people and the environment.

Lead

Lead (Pb) is a metal found naturally in the environment as well as manufactured products. The major sources of lead emissions have historically been motor vehicles and industrial sources. Due to the phase out of leaded gasoline, metal processing is now the primary source of lead emissions to the air. High levels of lead in the air are typically only found near lead smelters, waste incinerators, utilities, and lead-acid battery manufacturers. Exposure of fetuses, infants and children to low levels of lead can adversely affect the development and function of the central nervous system, leading to learning disorders, distractibility, inability to follow simple commands, and lower intelligence quotient. In adults, increased lead levels are associated with increased blood pressure.

Particulate Matter

Particulate matter (PM) is the term for a mixture of solid particles and liquid droplets found in the air. Particulate matter is made up of a number of components including acids (such as nitrates and sulfates), organic chemicals, metals, and soil or dust particles. The size of particles is directly linked to their potential for causing health problems. Particles that are less than 10 micrometers in diameter (PM10) are the particles that generally pass through the throat and nose and enter the lungs. Once inhaled, these particles can affect the heart and lungs and cause serious health effects. Particles that are less than 2.5 micrometers in diameter (PM2.5) have been designated as a subset of PM10 due to their increased negative health impacts and its ability to remain suspended in the air longer and travel further.

Reactive Organic Gases (ROG)

Although not a criteria pollutant, reactive organic gases (ROGs), or volatile organic compounds (VOCs), are defined as any compound of carbon—excluding carbon monoxide, carbon dioxide, carbonic acid, metallic carbides or carbonates, and ammonium carbonate—that participates in atmospheric photochemical reactions. Although there are slight differences in the definition of ROGs and VOCs, the two terms are often used interchangeably. Indoor sources of VOCs include paints, solvents, aerosol sprays, cleansers, tobacco smoke, etc. Outdoor sources of VOCs are from combustion and fuel evaporation. A reduction in VOC emissions reduces certain chemical reactions that contribute to the formulation of ozone. VOCs are transformed into organic aerosols in the atmosphere, which contribute to higher PM10 and lower visibility.

Other Pollutants of Concern

Toxic Air Contaminants

In addition to the above-listed criteria pollutants, toxic air contaminants (TACs) are another group of pollutants of concern. Sources of toxic air contaminants include industrial processes such as petroleum refining and chrome plating operations, commercial operations such as gasoline stations and dry cleaners, and motor vehicle exhaust. Cars and trucks release at least forty different toxic air contaminants. The most important of these toxic air contaminants, in terms of health risk, are diesel particulates, benzene, formaldehyde, 1,3-butadiene, and acetaldehyde. Public exposure to toxic air contaminants can result from emissions from normal operations as well as from accidental releases. Health effects of toxic air contaminants include cancer, birth defects, neurological damage, and death.

Toxic air contaminants are less pervasive in the urban atmosphere than criteria air pollutants, however they are linked to short-term (acute) or long-term (chronic or carcinogenic) adverse human health effects. There are hundreds of different types of toxic air contaminants with varying degrees of toxicity. Sources of toxic air contaminants include industrial processes, commercial operations (e.g., gasoline stations and dry cleaners), and motor vehicle exhaust.

According to the 2013 California Almanac of Emissions and Air Quality, the majority of the estimated health risk from toxic air contaminants can be attributed to relatively few compounds, the most important of which is diesel particulate matter (DPM). Diesel particulate matter is a subset of PM2.5 because the size of diesel particles are typically 2.5 microns and smaller. The identification of diesel particulate matter as a toxic air contaminant in 1998 led the California Air Resources Board (CARB) to adopt the Risk Reduction Plan to Reduce Particulate Matter Emissions from Diesel-fueled Engines and Vehicles in September 2000. The plan's goals are a 75-percent reduction in diesel particulate matter by 2010 and an 85-percent reduction by 2020 from the 2000 baseline. Diesel engines emit a complex mixture of air pollutants, composed of gaseous and solid material. The visible emissions in diesel exhaust are known as particulate matter or PM, which includes carbon particles or "soot". Diesel exhaust also contains a variety of harmful gases and over 40 other cancer-causing substances. California's identification of diesel particulate matter as a toxic air contaminant was based on its potential to cause cancer, premature deaths, and other health problems. Exposure to diesel particulate matter is a health hazard, particularly to children whose lungs are still developing and the elderly who may have other serious health problems. Overall, diesel engine emissions are responsible for the majority of California's potential airborne cancer risk from combustion sources.

Asbestos

Asbestos is listed as a TAC by the ARB and as a Hazardous Air Pollutant by the EPA. Asbestos occurs naturally in mineral formations and crushing or breaking these rocks, through construction or other means, can release asbestiform fibers into the air. Asbestos emissions can result from the sale or use of asbestos-containing materials, road surfacing with such materials, grading activities, and surface mining. The risk of disease is dependent upon the intensity and duration of exposure. When inhaled, asbestos fibers may remain in the lungs and with time may be linked to such diseases as asbestosis, lung cancer, and mesothelioma. Naturally occurring asbestos is not present in Riverside County. The nearest likely locations of naturally occurring asbestos, as identified in the General Location Guide for Ultramafic Rocks in California prepared by the California Division of Mines and Geology, is located in Santa Barbara County. Due to the distance to the nearest natural occurrences of asbestos, the project site is not likely to contain asbestos.

REGULATORY SETTING

The proposed project is addressed through the efforts of various international, federal, state, regional, and local government agencies. These agencies work jointly, as well as individually, to improve air quality through legislation, regulations, planning, policy-making, education, and a variety of programs. The agencies responsible for improving the air quality are discussed below.

Federal – United States Environmental Protection Agency

The United States Environmental Protection Agency (EPA) is responsible for setting and enforcing the National Ambient Air Quality Standards (NAAQS) for atmospheric pollutants. It regulates emission sources that are under the exclusive authority of the federal government, such as aircraft, ships, and certain locomotives. The National Ambient Air Quality Standards (NAAQS) pollutants were identified using medical evidence and are shown below in Table 2.

The EPA and the California Air Resource Board (CARB) designate air basins where ambient air quality standards are exceeded as "nonattainment" areas. If standards are met, the area is designated as an "attainment" area. If there is inadequate or inconclusive data to make a definitive attainment designation, they are considered "unclassified." National nonattainment areas are further designated as marginal, moderate, serious, severe, or extreme as a function of deviation from standards. Each standard has a different definition, or 'form' of what constitutes attainment, based on specific air quality statistics. For example, the Federal 8-hour CO standard is not to be exceeded more than once per year; therefore, an area is in attainment of the CO standard if no more than one 8-hour ambient air monitoring values exceeds the threshold per year. In contrast, the Federal annual PM2.5 standard is met if the three-year average of the annual average PM2.5 concentration is less than or equal to the standard. Attainment status is shown in Table 3.

As part of its enforcement responsibilities, the EPA requires each state with federal nonattainment areas to prepare and submit a State Implementation Plan (SIP) that demonstrates the means to attain the national standards. The State Implementation Plan (SIP) must integrate federal, state, and local components and regulations to identify specific measures to reduce pollution, using a combination of performance standards and market-based programs within the timeframe identified in the State Implementation Plan (SIP).

As indicated below in Table 3, the Basin has been designated by the EPA as a non-attainment area for ozone (O_3) and suspended particulates (PM10 and PM2.5). Currently, the Basin is in attainment with the ambient air quality standards for carbon monoxide (CO), lead, sulfur dioxide (SO_2), suspended particulate matter (PM-2.5), and nitrogen dioxide (NO_2).

State – California Air Resources Board

The California Air Resources Board (CARB), which is a part of the California Environmental Protection Agency, is responsible for the coordination and administration of both federal and state air pollution control programs within California. In this capacity, the CARB conducts research, sets the California Ambient Air Quality Standards (CAAQS), compiles emission inventories, develops suggested control measures, provides oversight of local programs, and prepares the State Implementation Plan (SIP). The California Ambient Air Quality Standards (CAAQS) for criteria pollutants are shown in Table 2. In addition, the CARB establishes emission standards for motor vehicles sold in California, consumer products (e.g., hairspray, aerosol paints, and barbeque lighter fluid), and various types of commercial equipment. It also sets fuel specifications to further reduce vehicular emissions.

The South Coast Air Basin has been designated by the CARB as a nonattainment area for ozone, PM10 and PM2.5. Currently, the South Coast Air Basin is in attainment with the ambient air quality standards for CO, lead, SO2, NO2, and sulfates and is unclassified for visibility reducing particles and Hydrogen Sulfide.

On June 20, 2002, the CARB revised the PM10 annual average standard to 20 µg/m3 and established an annual average standard for PM2.5 of 12 µg/m3. These standards were approved by the Office of Administrative Law in June 2003 and are now effective. On September 27, 2007 CARB approved the South Coast Air Basin and the Coachella Valley 2007 Air Quality Management Plan for Attaining the Federal 8-hour Ozone and PM2.5 Standards. The plan projected attainment for the 8-hour Ozone standard by 2024 and the PM2.5 standard by 2015.

On December 12, 2008 the CARB adopted Resolution 08-43, which limits NOx, PM10 and PM2.5 emissions from on-road diesel truck fleets that operate in California. On October 12, 2009 Executive Order R-09-010 was adopted that codified Resolution 08-43 into Section 2025, Title 13 of the California Code of Regulations. This regulation requires that by the year 2023 all commercial diesel trucks that operate in California shall meet model year 2010 (Tier 4) or latter emission standards. In the interim period, this regulation provides annual interim targets for fleet owners to meet. This regulation also provides a few exemptions including a onetime per year 3-day pass for trucks registered outside of California.

The CARB is also responsible for regulations pertaining to toxic air contaminants. The Air Toxics "Hot Spots" Information and Assessment Act (AB 2588, 1987, Connelly) was enacted in 1987 as a means to establish a formal air toxics emission inventory risk quantification program. AB 2588, as amended, establishes a process that requires stationary sources to report the type and quantities of certain substances their facilities routinely release into the South Coast Air Basin. The data is ranked by high, intermediate, and low categories, which are determined by: the potency, toxicity, quantity, volume, and proximity of the facility to nearby receptors.

AB 617 Nonvehicular air pollution: criteria air pollutants and toxic air contaminants

This bill requires the state board to develop a uniform statewide system of annual reporting of emissions of criteria air pollutants and toxic air contaminants for use by certain categories of stationary sources. The bill requires those stationary sources to report their annual emissions of criteria air pollutants and toxic air contaminants, as specified. This bill required the state board, by October 1, 2018, to prepare a monitoring plan regarding technologies for monitoring criteria air pollutants and toxic air contaminants and the need for and benefits of additional community air monitoring systems, as defined. The bill requires the state board to select, based on the monitoring plan, the highest priority locations in the state for the deployment of community air monitoring systems. The bill requires an air district containing a selected location, by July 1, 2019, to deploy a system in the selected location. The bill would authorize the air district to require a stationary source that emits air pollutants in, or that materially affect, the selected location to deploy a fence-line monitoring system, as defined, or other specified real-time, on-site monitoring. The bill authorizes the state board, by January 1, 2020, and annually thereafter, to select additional locations for the deployment of the systems. The bill would require air districts that have deployed a system to provide to the state board air quality data produced by the system. By increasing the duties of air districts, this bill would impose a state-mandated local program. The bill requires the state board to publish the data on its Internet Web site.

Regional

The SCAQMD is the agency principally responsible for comprehensive air pollution control in the South Coast Air Basin. To that end, as a regional agency, the SCAQMD works directly with the Southern California Association of Governments (SCAG), county transportation commissions, and local governments and cooperates actively with all federal and state agencies.

South Coast Air Quality Management District

The SCAQMD develops rules and regulations, establishes permitting requirements for stationary sources, inspects emission sources, and enforces such measures through educational programs or fines, when necessary. The SCAQMD is directly responsible for reducing emissions from stationary, mobile, and indirect sources. It has responded to this requirement by preparing a sequence of AQMPs. On June 30, 2016, the SCAQMD released its Draft 2016 AQMP. The 2016 AQMP is a regional blueprint for achieving the federal air quality standards and healthful air.

Air Quality Management Plan

The 2016 AQMP includes both stationary and mobile source strategies to ensure that rapidly approaching attainment deadlines are met, that public health is protected to the maximum extent feasible, and that the region is not faced with burdensome sanctions if the Plan is not approved or if the NAAQS are not met on time. As with every AQMP, a comprehensive analysis of emissions, meteorology, atmospheric chemistry, regional growth projections, and the impact of existing control measures is updated with the latest data and methods. The most significant air quality challenge in the Basin is to reduce nitrogen oxide (NOx) emissions sufficiently to meet the upcoming ozone standard deadlines. On March 23, 2017 the CARB approved the 2016 AQMP. The primary goal of this Air Quality Management Plan is to meet clean air standards and protect public health, including ensuring benefits to environmental justice and disadvantaged communities. Now that the Plan has been approved by the CARB, it has been forwarded to the U.S. EPA for its review. The Plan was approved by the EPA on June 15, 2017.

SCAQMD Rules and Regulations

During construction and operation, the project must comply with applicable rules and regulations. The following are rules the project <u>may</u> be required to comply with, either directly, or indirectly:

SCAQMD Rule 402

Prohibits a person from discharging 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 to the public, or which endanger the comfort, repose, health or safety of any such persons or the public, or which cause, or have a natural tendency to cause, injury or damage to business or property.

SCAQMD Rule 403

Governs emissions of fugitive dust during construction and operation activities. Compliance with this rule is achieved through application of standard Best Management Practices, such as application of water or chemical stabilizers to disturbed soils, covering haul vehicles, restricting vehicle speeds on unpaved roads to 15 miles per hour, sweeping loose dirt from paved site access roadways, cessation of construction activity when winds exceed 25 mph, and establishing a permanent ground cover on finished sites.

Rule 403 requires that fugitive dust be controlled with best available control measures so that the presence of such dust does not remain visible in the atmosphere beyond the property line of the emission source. In addition, SCAQMD Rule 403 requires implementation of dust suppression techniques to prevent fugitive dust from creating a nuisance off-site. Applicable dust suppression techniques from Rule 403 are summarized below. Implementation of these dust suppression techniques can reduce the fugitive dust generation (and thus the PM_{10} component). Compliance with these rules would reduce impacts on nearby sensitive receptors. Rule 403 measures may include but are not limited to the following:

- Apply nontoxic chemical soil stabilizers according to manufacturers' specifications to all inactive construction areas (previously graded areas inactive for 10 days or more).
- Water active sites at least three times daily. (Locations where grading is to occur will be thoroughly watered prior to earthmoving.)
- Cover all trucks hauling dirt, sand, soil, or other loose materials, or maintain at least 0.6 meters (2 feet) of freeboard (vertical space between the top of the load and top of the trailer) in accordance with the requirements of California Vehicle Code section 23114.
- Reduce traffic speeds on all unpaved roads to 15 miles per hour (mph) or less.
- Suspension of all grading activities when wind speeds (including instantaneous wind gusts) exceed 25 mph.
- Bumper strips or similar best management practices shall be provided where vehicles enter and exit the construction site onto paved roads or wash off trucks and any equipment leaving the site each trip.
- Replanting disturbed areas as soon as practical.
- During all construction activities, construction contractors shall sweep on-site and off-site streets if silt is carried to adjacent public thoroughfares, to reduce the amount of particulate matter on public streets. All sweepers shall be compliant with SCAQMD Rule 1186.1, Less Polluting Sweepers.

SCAQMD Rule 445

Prohibits permanently installed wood burning devices into any new development. A wood burning device means any fireplace, wood burning heater, or pellet-fueled wood heater, or any similarly enclosed, permanently installed, indoor or outdoor device burning any solid fuel for aesthetic or space-heating purposes, which has a heat input of less than one million British thermal units per hour.

SCAQMD Rule 481

Applies to all spray painting and spray coating operations and equipment. The rule states that a person shall not use or operate any spray painting or spray coating equipment unless one of the following conditions is met:

(1) The spray coating equipment is operated inside a control enclosure, which is approved by the Executive Officer. Any control enclosure for which an application for permit for new construction, alteration, or change of ownership or location is submitted after the date of adoption of this rule shall be exhausted only through filters at a design face velocity not less than 100 feet per minute nor greater than 300 feet per minute, or through a water wash system designed to be equally effective for the purpose of air pollution control.
(2) Coatings are applied with high-volume low-pressure, electrostatic and/or airless spray equipment.
(3) An alternative method of coating application or control is used which has effectiveness equal to or greater than the equipment specified in the rule.

SCAQMD Rule 1108

Governs the sale, use, and manufacturing of asphalt and limits the volatile organic compound (VOC) content in asphalt used in the South Coast Air Basin. This rule would regulate the VOC content of asphalt used during construction. Therefore, all asphalt used during construction of the project must comply with SCAQMD Rule 1108.

SCAQMD Rule 1113

Governs the sale, use, and manufacturing of architectural coating and limits the VOC content in paints and paint solvents. This rule regulates the VOC content of paints available during construction. Therefore, all paints and solvents used during construction and operation of the project must comply with SCAQMD Rule 1113.

SCAQMD Rule 1143

Governs the manufacture, sale, and use of paint thinners and solvents used in thinning of coating materials, cleaning of coating application equipment, and other solvent cleaning operations by limiting their VOC content. This rule regulates the VOC content of solvents used during construction. Solvents used during the construction phase must comply with this rule.

SCAQMD Rule 1186

Limits the presence of fugitive dust on paved and unpaved roads and sets certification protocols and requirements for street sweepers that are under contract to provide sweeping services to any federal, state, county, agency or special district such as water, air, sanitation, transit, or school district.

SCAQMD Rule 1303

Governs the permitting of re-located or new major emission sources, requiring Best Available Control Measures and setting significance limits for PM_{10} among other pollutants.

SCAQMD Rule 1401

New Source Review of Toxic Air Contaminants, specifies limits for maximum individual cancer risk, cancer burden, and non-cancer acute and chronic hazard index from new permit units, relocations, or modifications to existing permit units, which emit toxic air contaminants.

SCAQMD Rule 1403

Asbestos Emissions from Demolition/Renovation Activities, specifies work practice requirements to limit asbestos emissions from building demolition and renovation activities, including the removal and associated disturbance of asbestos-containing materials (ACM).

SCAQMD Rule 2202

On-Road Motor Vehicle Mitigation Options, is to provide employers with a menu of options to reduce mobile source emissions generated from employee commutes, to comply with federal and state Clean Air Act requirements, Health & Safety Code Section 40458, and Section 182(d)(1)(B) of the federal Clean Air Act. It applies to any employer who employs 250 or more employees on a full or part-time basis at a worksite for a consecutive six-month period calculated as a monthly average.

In order to assist local agencies with direction on GHG emissions, the SCAQMD organized a working group and adopted Rules 2700, 2701, 2702, and 3002 which are described below.

SCAQMD Rules 2700 and 2701

The SCAQMD adopted Rules 2700 and 2701 on December 5, 2008, which establishes the administrative structure for a voluntary program designed to quantify GHG emission reductions. Rule 2700 establishes definitions for the various terms used in Regulation XXVII – Global Climate Change. Rule 2701 provides specific protocols for private parties to follow to generate certified GHG emission reductions for projects within the district. Approved protocols include forest projects, urban tree planting, and manure management. The SCAQMD is currently developing additional protocols for other reduction measures. For a GHG emission reduction project to qualify, it must be verified and certified by the SCAQMD Executive Officer, who has 60 days to approve or deny the Plan to reduce GHG emissions. Upon approval of the Plan, the Executive Officer issues required to issue a certified receipt of the GHG emission reductions within 90 days.

SCAQMD Rule 2702

The SCAQMD adopted Rule 2702 on February 6, 2009, which establishes a voluntary air quality investment program from which SCAQMD can collect funds from parties that desire certified GHG emission reductions, pool those funds, and use them to purchase or fund GHG emission reduction projects within two years, unless extended by the Governing Board. Priority will be given to projects that result in co-benefit emission reductions of GHG emissions and criteria or toxic air pollutants within environmental justice areas. Further, this voluntary program may compete with the cap-and-trade program identified for implementation in CARB's Scoping Plan, or a Federal cap and trade program.

SCAQMD Rule 3002

The SCAQMD amended Rule 3002 on November 5, 2010 to include facilities that emit greater than 100,000 tons per year of CO_2e are required to apply for a Title V permit by July 1, 2011. A Title V permit is for facilities that are considered major sources of emissions.

Air Quality Guidance Documents

SCAQMD CEQA Handbook

Although the SCAQMD is responsible for regional air quality planning efforts, it does not have the authority to directly regulate air quality issues associated with plans and new development projects throughout the South Coast Air Basin. Instead, this is controlled through local jurisdictions in accordance with the California Environmental Quality Act (CEQA). In order to assist local jurisdictions with air quality compliance issues the CEQA Air Quality Handbook (SCAQMD CEQA Handbook) prepared by the SCAQMD (1993) with the most current updates found at http://www.aqmd.gov/ceqa/hdbk.html, was developed in accordance with the projections and programs of the AQMP. The purpose of the SCAQMD CEQA Handbook is to assist Lead Agencies, as well as consultants, project proponents, and other interested parties in evaluating a proposed project's potential air quality impacts. Specifically, the SCAQMD CEQA Handbook explains the procedures that the SCAQMD recommends be followed for the environmental review process required by CEQA. The SCAQMD CEQA Handbook provides direction on how to evaluate potential air quality impacts, how to determine whether these impacts are significant, and how to mitigate these impacts. SCAQMD is in the process of developing an "Air Quality Analysis Guidance Handbook" to replace the CEQA Air Quality Handbook approved by the AQMD Governing Board in 1993. The 1993 CEQA Air Quality Handbook is still available but not online. In addition, there are sections of the 1993 Handbook that are obsolete. In order to assist the CEQA practitioner in conducting an air quality analysis while the new Handbook is being prepared, supplemental information regarding: significance thresholds and analysis, emissions factors, cumulative impacts emissions analysis, and other useful subjects, are available at the SCAQMD website[1]. The SCAQMD CEQA Handbook and supplemental information is used in this analysis.

Southern California Association of Governments

The SCAG is the regional planning agency for Los Angeles, Orange, Ventura, Riverside, San Bernardino and Imperial Counties and addresses regional issues relating to transportation, the economy, community development and the environment. SCAG is the Federally designated MPO for the majority of the southern California region and is the largest MPO in the nation. With respect to air quality planning, SCAG has prepared the Regional Transportation Plan and Regional Transportation Improvement Plan (RTIP), which addresses regional development and growth forecasts. These plans form the basis for the land use and transportation components of the AQMP, which are utilized in the preparation of air quality forecasts and in the consistency analysis included in the AQMP. The Regional Transportation Plan, Regional Transportation Improvement Plan, and AQMP are based on projections originating within the City and County General Plans.

On April 7, 2016, SCAG's Regional Council adopted the 2016-2040 Regional Transportation Plan/ Sustainable Communities Strategy (2016 RTP/SCS or Plan). The Plan is a long-range visioning plan that balances future mobility and housing needs with economic, environmental and public health goals. The Plan charts a course for closely integrating land use and transportation – so that the region can grow smartly and sustainably. It outlines more than $556.5 billion in transportation system investments through 2040. The Plan was prepared through a collaborative, continuous, and comprehensive process with input from local governments, county transportation commissions, tribal governments, non-profit organizations, businesses and local stakeholders within the counties of Imperial, Los Angeles, Orange, Riverside, San Bernardino and Ventura. In June 2016, SCAG received its conformity determination from the Federal Highway Administration (FHWA) and the Federal Transit Administration (FTA) indicating that all air quality conformity requirements for the 2016 RTP/SCS and associated 2015 FTIP Consistency Amendment through Amendment 15-12 have been met.

Local – City of La Verne

Local jurisdictions, such as the City of La Verne, have the authority and responsibility to reduce air pollution through its police power and decision-making authority. Specifically, the City is responsible for the assessment

[1] http://www.aqmd.gov/home/regulations/ceqa/air-quality-analysis-handbook.

and mitigation of air emissions resulting from its land use decisions. The City is also responsible for the implementation of transportation control measures as outlined in the 2016 AQMP. Examples of such measures include bus turnouts, energy-efficient streetlights, and synchronized traffic signals. In accordance with CEQA requirements and the CEQA review process, the City assesses the air quality impacts of new development projects, requires mitigation of potentially significant air quality impacts by conditioning discretionary permits, and monitors and enforces implementation of such mitigation.

The City relies on the expertise of the SCAQMD and utilizes the SCAQMD CEQA Air Quality Handbook as the guidance document for the environmental review of plans and development proposals within its jurisdiction.

The City of La Verne General Plan contains the following air quality-related goals, policies, and implementation measures that are applicable to the proposed project:

Goal 5 Improve our air quality.

Policies

5.1 Reduce vehicular air pollution.

Implementation Measures:

a. Adopt the South Coast Air Quality Management Plan.

b. Participate in the South Coast Air Quality Management District's attainment program.

c. Continue our public employee bicycle incentive program.

d. Require public and private development to encourage employees to walk, bicycle or carpool to work through transportation demand and trip reduction measures.

e. Support the purchase of additional bicycles for police department bicycle patrol to supplement the current four.

f. Include pedestrian and bicycle paths whenever possible in our Capital Improvement Program, placing special emphasis on east-west routes.

g. Object officially to actions of other agencies that would result in increased pollution.

h. Insist on the development of adequate mitigation measures and a monitoring program to enforce other agency actions.

5.2 Reduce energy consumption.

<u>Implementation Measures:</u>

a. Require energy-saving designs and features in new and refurbished buildings in accordance with state energy conservation guidelines.

b. Assist local utility companies with their public education energy conservation programs.

c. Encourage public employees to follow energy conservation procedures.

d. Require new dwelling units to contain solar dry plumbing, in addition to other provisions of the solar collector ordinance.

Table 2
State and Federal Criteria Pollutant Standards

Air Pollutant	Concentration / Averaging Time: California Standards	Concentration / Averaging Time: Federal Primary Standards	Most Relevant Effects
Ozone (O_3)	0.09 ppm/1-hour 0.07 ppm/8-hour	0.070 ppm/8-hour	(a) Decline in pulmonary function and localized lung edema in humans and animals; (b) Risk to public health implied by alterations in pulmonary morphology and host defense in animals; (c) Increased mortality risk; (d) Risk to public health implied by altered connective tissue metabolism and altered pulmonary morphology in animals after long-term exposures and pulmonary function decrements in chronically exposed humans; (e) Vegetation damage; and (f) Property damage.
Carbon Monoxide (CO)	20.0 ppm/1-hour 9.0 ppm/8-hour	35.0 ppm/1-hour 9.0 ppm/8-hour	(a) Aggravation of angina pectoris and other aspects of coronary heart disease; (b) Decreased exercise tolerance in persons with peripheral vascular disease and lung disease; (c) Impairment of central nervous system functions; and (d) Possible increased risk to fetuses.
Nitrogen Dioxide (NO_2)	0.18 ppm/1-hour 0.03 ppm/annual	100 ppb/1-hour 0.053 ppm/annual	(a) Potential to aggravate chronic respiratory disease and respiratory symptoms in sensitive groups; (b) Risk to public health implied by pulmonary and extra-pulmonary biochemical and cellular changes and pulmonary structural changes; and (c) Contribution to atmospheric discoloration.
Sulfur Dioxide (SO_2)	0.25 ppm/1-hour 0.04 ppm/24-hour	75 ppb/1-hour 0.14 ppm/annual	(a) Bronchoconstriction accompanied by symptoms which may include wheezing, shortness of breath and chest tightness, during exercise or physical activity in persons with asthma.
Suspended Particulate Matter (PM_{10})	50 $\mu g/m^3$/24-hour 20 $\mu g/m^3$/annual	150 $\mu g/m^3$/24-hour	(a) Exacerbation of symptoms in sensitive patients with respiratory or cardiovascular disease; (b) Declines in pulmonary function growth in children; (c) Increased risk of premature death from heart or lung diseases in elderly.
Suspended Particulate Matter ($PM_{2.5}$)	12 $\mu g/m^3$ / annual	35 $\mu g/m^3$/24-hour 12 $\mu g/m^3$/annual	
Sulfates	25 $\mu g/m^3$/24-hour	No Federal Standards	(a) Decrease in ventilatory function; (b) Aggravation of asthmatic symptoms; (c) Aggravation of cardio-pulmonary disease; (d) Vegetation damage; (e) Degradation of visibility; (f) property damage.
Lead	1.5 $\mu g/m^3$/30-day	0.15 $\mu g/m^3$/3-month rolling	(a) Learning disabilities; (b) Impairment of blood formation and nerve conduction.
Visibility Reducing Particles	Extinction coefficient of 0.23 per kilometer-visibility of 10 miles or more due to particles when humidity is less than 70 percent.	No Federal Standards	Visibility impairment on days when relative humidity is less than 70 percent.

Source: http://www3.epa.gov/climatechange/ghgemissions/gases.html

Table 3
South Coast Air Basin Attainment Status

Pollutant	State Status	National Status
Ozone	Nonattainment	Nonattainment (Extreme)
Carbon monoxide	Attainment	Attainment/Unclassified
Nitrogen dioxide	Attainment	Attainment/Unclassified
Sulfur dioxide	Attainment	Attainment/Unclassified
PM10	Nonattainment	Attainment (Maintenance)
PM2.5	Nonattainment	Nonattainment (Moderate)

Source (Federal and State Status): California Air Resources Board, October 2018.

MONITORED AIR QUALITY

The air quality at any site is dependent on the regional air quality and local pollutant sources. Regional air quality is determined by the release of pollutants throughout the air basin. Estimates of the existing emissions in the Basin provided in the Final 2016 Air Quality Management Plan prepared by SCAQMD (March 2017) indicate that collectively, mobile sources account for 60 percent of the VOC, 90 percent of the NOx emissions, 95 percent of the CO emissions and 34 percent of directly emitted PM2.5, with another 13 percent of PM2.5 from road dust.

The EPA and the ARB designate air basins where ambient air quality standards are exceeded as "nonattainment" areas. If standards are met, the area is designated as an "attainment" area. If there is inadequate or inconclusive data to make a definitive attainment designation, they are considered "unclassified". National nonattainment areas are further designated as marginal, moderate, serious, severe, or extreme as a function of deviation from standards. Each standard has a different definition, or 'form' of what constitutes attainment, based on specific air quality statistics. For example, the Federal 8-hour CO standard is not to be exceeded more than once per year; therefore, an area is in attainment of the CO standard if no more than one 8-hour ambient air monitoring values exceeds the threshold per year. In contrast, the Federal annual PM2.5 standard is met if the three-year average of the annual average PM2.5 concentration is less than or equal to the standard. Attainment status is shown in Table 3.

The SCAQMD has divided the South Coast Air Basin into 38 air-monitoring areas with a designated ambient air monitoring station representative of each area. The project site is located in the Pomona-Walnut Valley Air Monitoring Area (Area 10), which is located in Los Angeles County and covers from the San Gabriel Mountains on the north, the City of West Covina on the west, the Los Angeles and Orange County line on the south, and the Los Angeles and San Bernardino County line on the east. The nearest air monitoring station to the project site is the Pomona Monitoring Station (Pomona Station). The Pomona Station is located approximately 3.8 miles south of the project site at 924 North Garvey Avenue, Pomona. Since not all the monitoring stations monitor for all pollutants, the next nearest station located approximately 5.43 miles northwest of the site at 840 Laurel, Glendora, was used to complete the air pollutants concentration profiles (Glendora Station).

Table 4 presents the monitored pollutant levels from the Pomona and Glendora Stations. However, it should be noted that due to the air monitoring stations distances from the project site, recorded air pollution levels at the air monitoring station reflect with varying degrees of accuracy, local air quality conditions at the project site.

Table 4 summarizes 2016 through 2018 published monitoring data, which is the most recent 3-year period available. The data shows that during the past few years, the project area has exceeded the ozone standards.

Ozone

During the 2016 to 2018 monitoring period, the State 1-hour concentration standard for ozone was exceeded between seven and 20 days each year at the Pomona Station. The State 8-hour ozone standard has been exceeded between 11 and 38 days each year over the past three years at the Pomona Station. The Federal 8-hour ozone standard was exceeded between ten and 35 days each year over the past three years at the Pomona Station.

Ozone is a secondary pollutant as it is not directly emitted. Ozone is the result of chemical reactions between other pollutants, most importantly hydrocarbons and NO_2, which occur only in the presence of bright sunlight. Pollutants emitted from upwind cities react during transport downwind to produce the oxidant concentrations experienced in the area. Many areas of the SCAQMD contribute to the ozone levels experienced at the monitoring station, with the more significant areas being those directly upwind.

Carbon Monoxide

CO is another important pollutant that is due mainly to motor vehicles. The Pomona Station did not record an exceedance of the state or federal 8-hour CO standard for the last three years.

Nitrogen Dioxide

The Pomona Station did not record an exceedance of the State or Federal NO_2 standards for the last three years.

Particulate Matter

Over the past three years, there was insufficient data for the State 24-hour concentration standards for PM10 at the Glendora Station. Over the past three years, the Glendora Station did not record an exceedance of the Federal 24-hour standards for PM10.

Over the past three years, there was insufficient data for the Federal 24 hour standard for PM2.5 at the Glendora Station.

According to the EPA, some people are much more sensitive than others to breathing fine particles (PM10 and PM2.5). People with influenza, chronic respiratory and cardiovascular diseases, and the elderly may suffer worsening illness and premature death due to breathing these fine particles. People with bronchitis can expect aggravated symptoms from breathing in fine particles. Children may experience decline in lung function due to breathing in PM10 and PM2.5. Other groups considered sensitive are smokers and people who cannot breathe well through their noses. Exercising athletes are also considered sensitive, because many breathe through their mouths during exercise.

Table 4
Air Quality Monitoring Summary

Pollutant (Standard)[1]		2016	2017	2018
		Year		
Ozone:	Maximum 1-Hour Concentration (ppm)	0.127	0.147	0.112
	Days > CAAQS (0.09 ppm)	20	18	7
	Maximum 8-Hour Concentration (ppm)	0.092	0.114	0.092
	Days > NAAQS (0.070 ppm)	26	35	10
	Days > CAAQS (0.070 ppm)	29	38	11
Carbon Monoxide:	Maximum 8-Hour Concentration (ppm)	*	*	*
	Days > CAAQS (9 ppm)	0	0	0
	Days > NAAQS (9 ppm)	0	0	0
Nitrogen Dioxide:	Maximum 1-Hour Concentration (ppm)	0.069	0.081	0.068
	Days > CAAQS (0.18 ppm)	0	0	0
Inhalable Particulates (PM10):[2]	Maximum 24-Hour Concentration (µg/m^3)	75.1	140.7	101.7
	Days > NAAQS (150 µg/m3)	0	0	0
	Days > CAAQS (50 µg/m3)	*	*	*
	Annual Average (µg/m3)	31.0	32.9	28.6
Ultra-Fine Particulates (PM2.5):[2]	Maximum 24-Hour Concentration (µg/m3)	44.1	109.6	84.8
	Days > NAAQS (35 µg/m3)	*	*	*
	Annual Average (µg/m3)	*	*	*

Notes:
Source: http://www.arb.ca.gov/adam/topfour/topfour1.php. Data from the Pomona Monitoring Station, unless otherwise noted.
(1) CAAQS = California Ambient Air Quality Standard; NAAQS = National Ambient Air Quality Standard; ppm = parts per million
* Means there was insufficient data available to determine value.
(2) Data from the Glendora-Laurel Monitoring Station.

AIR QUALITY STANDARDS

Significance Thresholds

Appendix G of the State CEQA Guidelines

Appendix G of the State CEQA Guidelines states that, where available, the significance criteria established by the applicable air quality management district or air pollution control district may be relied upon to make a significance determination. Pursuant to Appendix G, the project would result in a significant impact related to air quality if it would:

- Conflict with or obstruct the implementation of the applicable air quality plan;
- Result in a cumulatively considerable net increase of any criteria pollutant for which the project region is nonattainment under an applicable federal or state ambient air quality standard;
- Expose sensitive receptors to substantial pollutant concentrations; or
- Result in other emissions (such as those leading to odors) adversely affecting a substantial number of people.

The CEQA Guidelines Section 15064.7 provides the significance criteria established by the applicable air quality management district or air pollution control district, when available, may be relied upon to make determinations of significance. The potential air quality impacts of the project are, therefore, evaluated according to thresholds developed by SCAQMD in their CEQA Air Quality Handbook, Air Quality Analysis Guidance Handbook, and subsequent guidance, which are listed below.[2] Therefore, the project would result in a potentially significant impact to air quality if it would:

AIR-1: Conflict with or obstruct the implementation of the applicable air quality plan;

AIR-2: Violate any air quality standard or contribute substantially to an existing or projected air quality violation as a result of:

- Criteria pollutant emissions during construction (direct and indirect) in excess of the SCAQMD's regional significance thresholds,
- Criteria pollutant emissions during operation (direct and indirect) in excess of the SCAQMD's regional significance thresholds.

AIR-3: Result in a cumulatively considerable net increase of any criteria pollutant for which the project region is nonattainment under an applicable federal or state ambient air quality standard (including releasing emissions which exceed quantitative thresholds for ozone precursors);

AIR-4: Expose sensitive receptors to substantial pollutant concentrations that would:

- Exceed SCAQMD's localized significance thresholds,
- Cause or contribute to the formation of CO hotspots.

AIR-5: Create objectionable odors affecting a substantial number of people.

The SCAQMD is in the process of developing an Air Quality Analysis Guidance Handbook to replace the CEQA Air Quality Handbook. In the interim, supplemental guidance has been adopted by the SCAQMD. The

[2] While the SCAQMD CEQA Air Quality Handbook contains significance thresholds for lead, Project construction and operation would not include sources of lead emissions and would not exceed the established thresholds for lead. Unleaded fuel and unleaded paints have virtually eliminated lead emissions from industrial land use projects such as the Project. As a result, lead emissions are not further evaluated herein.

potential air quality impacts of the project are, therefore, evaluated according to numeric indicators developed by the SCAQMD in the CEQA Air Quality Handbook and supplemental guidance from the SCAQMD.[3]

Regional Air Quality

Many air quality impacts that derive from dispersed mobile sources, which are the dominate pollution generators in the basin, often occurs hours later and miles away after photochemical processes have converted primary exhaust pollutants into secondary contaminants such as ozone. The incremental regional air quality impact of an individual project is generally very small and difficult to measure. Therefore, the SCAQMD has developed significance thresholds based on the volume of pollution emitted rather than on actual ambient air quality because the direct air quality impact of a project is not quantifiable on a regional scale. The SCAQMD CEQA Handbook states that any project in the South Coast Air Basin with daily emissions that exceed any of the identified significance thresholds should be considered as having an individually and cumulatively significant air quality impact. For the purposes to this air quality impact analysis, a regional air quality impact would be considered significant if emissions exceed the SCAQMD significance thresholds identified in Table 5.

Local Air Quality

Project-related construction air emissions may have the potential to exceed the State and Federal air quality standards in the project vicinity, even though these pollutant emissions may not be significant enough to create a regional impact to the South Coast Air Basin. In order to assess local air quality impacts the SCAQMD has developed Localized Significant Thresholds (LSTs) to assess the project-related air emissions in the project vicinity. The SCAQMD has also provided Final Localized Significant Threshold Methodology (LST Methodology), June 2003, which details the methodology to analyze local air emission impacts. The Localized Significant Threshold Methodology found that the primary emissions of concern are NO_2, CO, PM10, and PM2.5.

The significance thresholds for the local emissions of NO_2 and CO are determined by subtracting the highest background concentration from the last three years of these pollutants from Table 4 above, from the most restrictive ambient air quality standards for these pollutants that are outlined in the Localized Significant Thresholds. Table 5 shows the ambient air quality standards for NO_2, CO, and PM10 and PM2.5.

Toxic Air Contaminants

Construction

Temporary TAC emissions associated with DPM emissions from heavy construction equipment would occur during the construction phase of the Project. According to the Office of Environmental Health Hazard Assessment (OEHHA)[4] and the SCAQMD *Health Risk Assessment Guidance for Analyzing Cancer Risks from Mobile Source Diesel Idling Emissions for CEQA Air Quality Analysis* (August 2003),[5] health effects from TACs are described in terms of individual cancer risk. "Individual Cancer Risk" is the likelihood that a person exposed to concentrations of TACs over a 30-year lifetime will contract cancer based on the use of standard risk-assessment methodology. Additionally, the SCAQMD CEQA guidance does not require a HRA for short-term construction emissions. Construction activities associated with the project would be sporadic, transitory, and

[3] While the SCAQMD CEQA Air Quality Handbook contains significance thresholds for lead, Project construction and operation would not include sources of lead emissions and would not exceed the established thresholds for lead. Unleaded fuel and unleaded paints have virtually eliminated lead emissions from residential land use projects such as the Project. As a result, lead emissions are not further evaluated herein.

[4] Office of Environmental Health Hazard Assessment, Air Toxic Hot Spots Program Risk Assessment Guidelines Guidance Manual for Preparation of Health Risk Assessment, February 2015, https://oehha.ca.gov/media/downloads/crnr/2015guidancemanual.pdf.

[5] South Coast Air Quality Management District, Health Risk Assessment Guidance for Analyzing Cancer Risks from Mobile Source Diesel Idling Emissions for CEQA Air Quality Analysis, August 2003,http://www.aqmd.gov/docs/default-source/ceqa/handbook/mobile-source-toxics-analysis.doc?sfvrsn=2.

short-term in nature (approximately 18 months). Thus, construction of the project would not result in a substantial, long-term (i.e., 30-year) source of TAC emissions. Nonetheless, a qualitative assessment of TAC emissions associated with short-term construction TAC emissions is provided in the analysis section below.

Operation

According to the SCAQMD CEQA Handbook, any project that has the potential to expose the public to toxic air contaminants in excess of the following thresholds would be considered to have a significant air quality impact:

- If the Maximum Incremental Cancer Risk is 10 in one million or greater; or
- Toxic air contaminants from the proposed project would result in a Hazard Index increase of 1 or greater.

In order to determine if the proposed project may have a significant impact related to hazardous air pollutants (HAP), the Health Risk Assessment Guidance for analyzing Cancer Risks from Mobile Source Diesel Idling Emissions for CEQA Air Quality Analysis, (Diesel Analysis), prepared by SCAQMD, August 2003, recommends that if the proposed project is anticipated to create hazardous air pollutants through stationary sources or regular operations of diesel trucks on the project site, then the proximity of the nearest receptors to the source of the hazardous air pollutants and the toxicity of the hazardous air pollutants should be analyzed through a comprehensive facility-wide health risk assessment (HRA).

As determined in the *California Building Industry Association v. Bay Area Air Quality Management District* (2015) 62 Cal. 4th 369 (CBIA) case the California Supreme Court determined that CEQA does not generally require an impact analysis of the existing environmental conditions on the future residents of a proposed project and generally only requires an analysis of the proposed project's impact on the environment. However, the CBIA case also stated that when a proposed project brings development and people into an area already subject to specific hazards and the new development/people exacerbate the existing hazards, then CEQA requires an analysis of the hazards and the proposed project's effect in terms of increasing the risks related to those hazards. In regards to air quality hazards, TACs are defined as substances that may cause or contribute to an increase in deaths or in serious illness, or that may pose a present or potential hazard to human health. As such, if a proposed project would not exacerbate pre-existing hazards (e.g., TAC health risks) then an analysis of those hazards and the proposed project's effect on increasing those hazards is not required.

The project is that of residential uses and will not be a source of toxic air contaminants. The existing conditions on the project site only include vacant land that does not contain any operational land uses that emit toxic air contaminants. However, as the project is locating sensitive receptors in close proximity to freeway-related DPM sources, the potential for DPM emission impacts is examined in Section 3 of this report.

Odor Impacts

The SCAQMD CEQA Handbook states that an odor impact would occur if the proposed project creates an odor nuisance pursuant to SCAQMD Rule 402, which states:

A person shall not 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 to the public, or which endanger the comfort, repose, health or safety of any such persons or the public, or which cause, or have a natural tendency to cause, injury or damage to business or property.

The provisions of this rule shall not apply to odors emanating from agricultural operations necessary for the growing of crops or the raising of fowl or animals.

If the proposed project results in a violation of Rule 402 with regards to odor impacts, then the proposed project would create a significant odor impact.

Table 5
SCAQMD Air Quality Significance Thresholds

Mass Daily Thresholds		
Pollutant	Construction (lbs/day)	Operation (lbs/day)
NOx	100	55
VOC	75	55
PM10	150	150
PM2.5	55	55
SOx	150	150
CO	550	550
Lead	3	3

Toxic Air Contaminants, Odor and GHG Thresholds	
TACs	Maximum Incremental Cancer Risk ≥ 10 in 1 million Cancer Burden > 0.5 excess cancer cases (in areas ≥ 1 in 1 million) Chronic & Acute Hazard Index > 1.0 (project increment)
Odor	Project creates an odor nuisance pursuant to SCAQMD Rule 402
GHG	10,000 MT/yr CO2e for industrial projects

Ambient Air Quality Standards	
Pollutant	SCAQMD Standards
NO2 -1-hour average	0.18 ppm (338 µg/m^3)
PM10 -24-hour average Construction Operations	 10.4 µg/m^3 2.5 ug/m^3
PM2.5 -24-hour average Construction Operations	 10.4 µg/m^3 2.5 µg/m^3
SO2 1-hour average 24-hour average	 0.25 ppm 0.04 ppm
CO 1-hour average 8-hour average	 20 ppm (23,000 µg/m^3) 9 ppm (10,000 µg/m^3)
Lead 30-day average Rolling 3-month average Quarterly average	 1.5 µg/m^3 0.15 µg/m^3 1.5 µg/m^3

Source: http://www.aqmd.gov/ceqa/handbook/signthres.pdf

SHORT-TERM CONSTRUCTION EMISSIONS

Construction activities associated with the proposed project would have the potential to generate air emissions, toxic air contaminant emissions, and odor impacts. Assumptions for the phasing, duration, and required equipment for the construction of the proposed project were obtained from the project applicant. The construction activities for the proposed project are anticipated to include: site preparation of approximately 3.74 acres to remove existing vegetation; grading of approximately 19.44 acres; construction of seven single-family detached residential dwelling units; paving of approximately 1.1 acres for on-site roadways and driveways; and application of architectural coatings. See Appendix B for more details.

The proposed project is anticipated to start construction no sooner than October 2021 and being completed by April 2023. The project will be operational in 2023.

Methodology

The following provides a discussion of the methodology used to calculate regional construction air emissions and an analysis of the proposed project's short-term construction emissions for the criteria pollutants. The construction-related regional air quality impacts have been analyzed for both criteria pollutants and GHGs.

Emissions are estimated using the CalEEMod (Version 2016.3.2) software, which is a statewide land use emissions computer model designed to provide a uniform platform for government agencies, land use planners, and environmental professionals to quantify potential criteria pollutant and GHG emissions from a variety of land use projects. CalEEMod was developed in collaboration with the air districts of California. Regional data (e.g., emission factors, trip lengths, meteorology, source inventory, etc.) have been provided by the various California air districts to account for local requirements and conditions. The model is considered to be an accurate and comprehensive tool for quantifying air quality and GHG impacts from land use projects throughout California and is recommended by the SCAQMD.[6]

Daily regional emissions during construction are forecasted by assuming a conservative estimate of construction activities (i.e., assuming all construction occurs at the earliest feasible date) and applying the mobile source and fugitive dust emissions factors. The input values used in this analysis were adjusted to be project-specific for the construction schedule and the equipment used was based on CalEEMod defaults. The CalEEMod program uses the EMFAC2014 computer program to calculate the emission rates specific for the eastern portion of Los Angeles County for construction-related employee vehicle trips and the OFFROAD2011 computer program to calculate emission rates for heavy truck operations. EMFAC2014 and OFFROAD2011 are computer programs generated by CARB that calculates composite emission rates for vehicles. Emission rates are reported by the program in grams per trip and grams per mile or grams per running hour. Daily truck trips and CalEEMod default trip length data were used to assess roadway emissions from truck exhaust. The maximum daily emissions are estimated values for the worst case day and do not represent the emissions that would occur for every day of project construction. The maximum daily emissions are compared to the SCAQMD daily regional numeric indicators. Detailed construction equipment lists, construction scheduling, and emission calculations are provided in Appendix B.

The project will be required to comply with existing SCAQMD rules for the reduction of fugitive dust emissions. SCAQMD Rule 403 establishes these procedures. Compliance with this rule is achieved through application of standard best management practices in construction and operation activities, such as application of water or chemical stabilizers to disturbed soils, managing haul road dust by application of water, covering haul vehicles, restricting vehicle speeds on unpaved roads to 15 mph, sweeping loose dirt from paved site access roadways, cessation of construction activity when winds exceed 25 mph and establishing a permanent, stabilizing ground cover on finished sites. In addition, projects that disturb 50 acres or more of soil or move 5,000 cubic yards of materials per day are required to submit a Fugitive Dust Control Plan or a Large Operation

[6] South Coast Air Quality Management District, California Emissions Estimator Model, http://www.aqmd.gov/ caleemod/.

Notification Form to SCAQMD. Based on the size of the Project area (approximately 19.44 acres) a Fugitive Dust Control Plan or Large Operation Notification would not be required.

SCAQMD's Rule 403 minimum requirements require that the application of the best available dust control measures are used for all grading operations and include the application of water or other soil stabilizers in sufficient quantity to prevent the generation of visible dust plumes. Compliance with Rule 403 would require the use of water trucks during all phases where earth moving operations would occur. Compliance with Rule 403 has been include in the CalEEMod modeling for the proposed project.

Per SCAQMD Rule 1113 as amended on June 3, 2011, the architectural coatings that would be applied after January 1, 2014 will be limited to an average of 50 grams per liter or less.

The phases of the construction activities which have been analyzed below for each phase are: (1) site preparation, (2) grading, (3) building construction, (4) paving, and (5) application of architectural coatings. Details pertaining to the project's construction timing and the type of equipment modeled for each construction phase are available in the CalEEMod output in Appendix B.

Construction-Related Regional Impacts

The construction-related criteria pollutant emissions for each phase are shown below in Table 6. Table 6 shows that none of the project's emissions will exceed regional thresholds. Therefore, a less than significant regional air quality impact would occur from construction of the proposed project.

Construction-Related Local Impacts

Construction-related air emissions may have the potential to exceed the State and Federal air quality standards in the project vicinity, even though these pollutant emissions may not be significant enough to create a regional impact to the South Coast Air Basin. The proposed project has been analyzed for the potential local air quality impacts created from: construction-related fugitive dust and diesel emissions; from toxic air contaminants; and from construction-related odor impacts.

Local Air Quality Impacts from Construction

The SCAQMD has published a "Fact Sheet for Applying CalEEMod to Localized Significance Thresholds" (South Coast Air Quality Management District 2011b). CalEEMod calculates construction emissions based on the number of equipment hours and the maximum daily disturbance activity possible for each piece of equipment. In order to compare CalEEMod reported emissions against the localized significance threshold lookup tables, the CEQA document should contain the following parameters:

(1) The off-road equipment list (including type of equipment, horsepower, and hours of operation) assumed for the day of construction activity with maximum emissions.
(2) The maximum number of acres disturbed on the peak day.
(3) Any emission control devices added onto off-road equipment.
(4) Specific dust suppression techniques used on the day of construction activity with maximum emissions.

The CalEEMod output in Appendix B show the equipment used for this analysis.

As shown in Table 7, the maximum number of acres disturbed in a day would be 1.5 acres during grading**.** The local air quality emissions from construction were analyzed using the SCAQMD's Mass Rate Localized Significant Threshold Look-up Tables and the methodology described in Localized Significance Threshold Methodology prepared by SCAQMD (revised July 2008). The Look-up Tables were developed by the SCAQMD in order to readily determine if the daily emissions of CO, NOx, PM10, and PM2.5 from the proposed project could result in a significant impact to the local air quality. The emission thresholds were calculated based on the Pomona-Walnut Valley source receptor area (SRA) 10 and a disturbance value of one acre per day, to be conservative. According to LST Methodology, any receptor located closer than 25 meters (82 feet) shall be based on the 25 meter thresholds. The nearest sensitive receptors to the project site are the existing single-family detached residential dwelling units located adjacent to the west of the project site; therefore, the SCAQMD Look-up Tables for 25 meters was used. Table 8 shows the on-site emissions from the CalEEMod model for the different construction phases and the LST emissions thresholds.

The data provided in Table 8 shows that none of the analyzed criteria pollutants would exceed the local emissions thresholds at the nearest sensitive receptors. Therefore, a less than significant local air quality impact would occur from construction of the proposed project.

Construction-Related Toxic Air Contaminant Impacts

The greatest potential for toxic air contaminant emissions would be related to diesel particulate emissions associated with heavy equipment operations during construction of the proposed project. According to the Office of Environmental Health Hazard Assessment (OEHHA)[7] and the SCAQMD *Health Risk Assessment Guidance for Analyzing Cancer Risks from Mobile Source Diesel Idling Emissions for CEQA Air Quality Analysis* (August 2003),[8] health effects from TACs are described in terms of individual cancer risk based on a lifetime (i.e., 30-year) resident exposure duration. Given the temporary and short-term construction schedule (approximately 18 months), the project would not result in a long-term (i.e., lifetime or 30-year) exposure as a result of project construction. Furthermore, construction-based particulate matter (PM) emissions (including diesel exhaust emissions) do not exceed any local or regional thresholds.

The project would comply with the CARB Air Toxics Control Measure that limits diesel powered equipment and vehicle idling to no more than 5 minutes at a location, and the CARB In-Use Off-Road Diesel Vehicle Regulation; compliance with these would minimize emissions of TACs during construction. The project would also comply with the requirements of SCAQMD Rule 1403 if asbestos is found during the renovation and construction activities. Therefore, impacts from TACs during construction would be less than significant.

Construction-Related Odor Impacts

Potential sources that may emit odors during construction activities include the application of materials such as asphalt pavement. The objectionable odors that may be produced during the construction process are of short-term in nature and the odor emissions are expected to cease upon the drying or hardening of the odor producing materials. Due to the short-term nature and limited amounts of odor producing materials being utilized, no significant impact related to odors would occur during construction of the proposed project. Diesel exhaust and VOCs would be emitted during construction of the project, which are objectionable to some; however, emissions would disperse rapidly from the project site and therefore should not reach an objectionable level at the nearest sensitive receptors.

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[7] Office of Environmental Health Hazard Assessment, Air Toxic Hot Spots Program Risk Assessment Guidelines Guidance Manual for Preparation of Health Risk Assessment, February 2015, https://oehha.ca.gov/media/downloads/crnr/2015guidancemanual.pdf.

[8] South Coast Air Quality Management District, Health Risk Assessment Guidance for Analyzing Cancer Risks from Mobile Source Diesel Idling Emissions for CEQA Air Quality Analysis, August 2003,http://www.aqmd.gov/docs/default-source/ceqa/handbook/mobile-source-toxics-analysis.doc?sfvrsn=2.

Table 6
Construction-Related Regional Pollutant Emissions

Activity		Pollutant Emissions (pounds/day)					
		ROG	NOx	CO	SO_2	PM10	PM2.5
Site Preparation	On-Site[1]	1.23	12.87	6.30	0.01	3.04	1.89
	Off-Site[2]	0.09	0.06	0.73	0.00	0.20	0.05
	Subtotal	1.32	12.93	7.02	0.01	3.24	1.94
Grading	On-Site[1]	1.35	14.75	12.54	0.02	1.05	0.63
	Off-Site[2]	0.10	0.07	0.81	0.00	0.23	0.06
	Subtotal	1.44	14.82	13.34	0.03	1.27	0.69
Building Construction	On-Site[1]	1.85	17.08	18.32	0.03	0.89	0.83
	Off-Site[2]	1.45	9.96	11.91	0.05	3.54	0.98
	Subtotal	3.30	27.04	30.24	0.08	4.43	1.81
Paving	On-Site[1]	1.18	10.19	14.58	0.02	0.51	0.47
	Off-Site[2]	0.06	0.04	0.51	0.00	0.17	0.05
	Subtotal	1.24	10.23	15.10	0.02	0.68	0.52
Architectural Coating	On-Site[1]	19.67	1.30	1.81	0.00	0.07	0.07
	Off-Site[2]	0.22	0.14	1.75	0.01	0.57	0.16
	Subtotal	19.89	1.44	3.56	0.01	0.65	0.23
Total for overlapping phases[3]		24.42	38.71	48.89	0.12	5.75	2.56
SCAQMD Thresholds		75	100	550	150	150	55
Exceeds Thresholds?		No	No	No	No	No	No

Notes:
Source: CalEEMod Version 2016.3.2

(1) On-site emissions from equipment operated on-site that is not operated on public roads. On-site site preparation and grading PM-10 and PM-2.5 emissions show mitigated values for fugitive dust for compliance with SCAQMD Rule 403.

(2) Off-site emissions from equipment operated on public roads.

(3) Construction, painting and paving phases may overlap.

Table 7
Maximum Number of Acres Disturbed Per Day

Activity	Equipment	Number	Acres/8hr-day	Total Acres
Site Preparation	Rubber Tired Dozers	1	0.5	0.5
	Crawler Tractors[1]	1	0.5	0.5
Total for phase		-	-	1
Grading	Scraper	1	1	1
	Crawler Tractors[1]	1	0.5	0.5
Total for phase		-	-	1.5

Notes:
Source: South Coast AQMD, Fact Sheet for Applying CalEEMod to Localized Significance Thresholds, 2011b.

(1) Tractor/loader/backhoe is a suitable surrogate for a crawler tractor per SCAQMD staff.

Table 8
Local Construction Emissions at the Nearest Receptors

Activity	On-Site Pollutant Emissions (pounds/day)			
	NOx	CO	PM10	PM2.5
Site Preparation	12.87	6.30	3.04	1.89
Grading	14.75	12.54	1.05	0.63
Building Construction	17.08	18.32	0.89	0.83
Paving	10.19	14.58	0.51	0.47
Architectural Coating	1.30	1.81	0.07	0.07
SCAQMD Thresholds [1]	103	612	4	3
Exceeds Threshold?	No	No	No	No

Notes:
Source: Calculated from CalEEMod and SCAQMD's Mass Rate Look-up Tables for 1 acre, to be conservative, at a distance of 25 m in SRA 10 Pomona/Walnut Valley.

(1) The nearest sensitive receptors are the existing single-family detached residential dwelling units located adjacent to the west of the project site; therefore, the 25 meter threshold was used.

Note: The project will disturb up to a maximum of 1.5 acres a day during grading (see Table 7).

LONG-TERM OPERATIONAL EMISSIONS

The on-going operation of the proposed project would result in a long-term increase in air quality emissions. This increase would be due to emissions from the project-generated vehicle trips and through operational emissions from the on-going use of the proposed project. The following section provides an analysis of potential long-term air quality impacts due to: regional air quality and local air quality impacts with the on-going operations of the proposed project.

Operations-Related Regional Air Quality Impacts

The potential operations-related air emissions have been analyzed below for the criteria pollutants and cumulative impacts.

Operations-Related Criteria Pollutants Analysis

The operations-related criteria air quality impacts created by the proposed project have been analyzed through the use of the CalEEMod model. The operating emissions were based on the year 2023, which is the anticipated opening year for the proposed project. The operations daily emissions printouts from the CalEEMod model are provided in Appendix B. The CalEEMod analyzes operational emissions from area sources, energy usage, and mobile sources, which are discussed below.

Mobile Sources

Mobile sources include emissions from the additional vehicle miles generated from the proposed project. The vehicle trips associated with the proposed project have been analyzed by inputting the project-generated vehicular trips (trip generation rate) from the 500 East Baseline Road Residential Project Trip Generation Analysis (Trip Generation Analysis) prepared by Ganddini Group, Inc. (February 2020) into the CalEEMod Model. The Trip Generation Analysis found that the proposed project will generate approximately 66 total trips per day with a trip generation rate of 9.44 trips per dwelling unit per day for the single-family residential use. The program then applies the emission factors for each trip which is provided by the EMFAC2014 model to determine the vehicular traffic pollutant emissions.

Area Sources

Per the CAPCOA Appendix A Calculation Details for CalEEMod, area sources include emissions from consumer products, landscape equipment and architectural coatings. Landscape maintenance includes fuel combustion emissions from equipment such as lawn mowers, rototillers, shredders/grinders, blowers, trimmers, chain saws, and hedge trimmers, as well as air compressors, generators, and pumps. As specifics were not known about the landscaping equipment fleet, CalEEMod defaults were used to estimate emissions from landscaping equipment. No changes were made to the default area source parameters.

Energy Usage

Energy usage includes emissions from the generation of electricity and natural gas used on-site. No changes were made to the default energy usage parameters.

Project Impacts

The worst-case summer or winter criteria pollutant emissions created from the proposed project's long-term operations have been calculated and are shown below in Table 9. The results show that none of the SCAQMD regional thresholds would be exceeded. Therefore, a less than significant regional air quality impact would occur from operation of the proposed project.

Operations-Related Local Air Quality Impacts

Project-related air emissions may have the potential to exceed the State and Federal air quality standards in the project vicinity, even though these pollutant emissions may not be significant enough to create a regional impact to the South Coast Air Basin. The proposed project has been analyzed for the potential local CO emission impacts from the project-generated vehicular trips and from the potential local air quality impacts from on-site operations. The following analysis analyzes the vehicular CO emissions, local impacts from on-site operations per SCAQMD LST methodology, and odor impacts.

Local CO Emission Impacts from Project-Generated Vehicular Trips

CO is the pollutant of major concern along roadways because the most notable source of CO is motor vehicles. For this reason, CO concentrations are usually indicative of the local air quality generated by a roadway network and are used as an indicator of potential local air quality impacts. Local air quality impacts can be assessed by comparing future without and with project CO levels to the State and Federal CO standards which were presented above in Section 2.

To determine if the proposed project could cause emission levels in excess of the CO standards discussed above in Section 2, a sensitivity analysis is typically conducted to determine the potential for CO "hot spots" at a number of intersections in the general project vicinity. Because of reduced speeds and vehicle queuing, "hot spots" potentially can occur at high traffic volume intersections with a Level of Service E or worse.

The analysis prepared for CO attainment in the South Coast Air Basin by the SCAQMD can be used to assist in evaluating the potential for CO exceedances in the South Coast Air Basin. CO attainment was thoroughly analyzed as part of the SCAQMD's 2003 Air Quality Management Plan (2003 AQMP) and the 1992 Federal Attainment Plan for Carbon Monoxide (1992 CO Plan). As discussed in the 1992 CO Plan, peak carbon monoxide concentrations in the South Coast Air Basin are due to unusual meteorological and topographical conditions, and not due to the impact of particular intersections. Considering the region's unique meteorological conditions and the increasingly stringent CO emissions standards, CO modeling was performed as part of 1992 CO Plan and subsequent plan updates and air quality management plans. In the 1992 CO Plan, a CO hot spot analysis was conducted for four busy intersections in Los Angeles at the peak morning and afternoon time periods. The intersections evaluated included: South Long Beach Boulevard and Imperial Highway (Lynwood); Wilshire Boulevard and Veteran Avenue (Westwood); Sunset Boulevard and Highland Avenue (Hollywood); and La Cienega Boulevard and Century Boulevard (Inglewood). These analyses did not predict a violation of CO standards. The busiest intersection evaluated was that at Wilshire Boulevard and Veteran Avenue, which has a daily traffic volume of approximately 100,000 vehicles per day. The Los Angeles County Metropolitan Transportation Authority evaluated the Level of Service in the vicinity of the Wilshire Boulevard/Veteran Avenue intersection and found it to be Level of Service E during the morning peak hour and Level of Service F during the afternoon peak hour.

The Trip Generation Analysis showed that the project would generate a maximum of approximately 66 daily vehicle trips and did not even require a Traffic Impact Analysis. The 1992 Federal Attainment Plan for Carbon Monoxide (1992 CO Plan) showed that an intersection which has a daily traffic volume of approximately 100,000 vehicles per day would not violate the CO standard. Therefore, as the project is anticipated to only generate a maximum of 66 daily vehicle trips, no CO "hot spot" modeling was performed and no significant long-term air quality impact is anticipated to local air quality with the on-going use of the proposed project.

Local Air Quality Impacts from On-Site Operations

Project-related air emissions from on-site sources such as architectural coatings, landscaping equipment, on-site usage of natural gas appliances as well as the operation of vehicles on-site may have the potential to exceed the State and Federal air quality standards in the project vicinity, even though these pollutant emissions may not be significant enough to create a regional impact to the South Coast Air Basin. The nearest sensitive receptor that may be impacted by the proposed project are the existing single-family detached residential dwelling units located adjacent to the west, approximately 30 feet southeast (across Broken Spur Road), approximately 90 feet east (across Broken Spur Road), approximately 100 feet south (across Baseline Road), and approximately 450 feet northeast of the project site.

According to SCAQMD LST methodology, LSTs would apply to the operational phase of a project, if the project includes stationary sources, or attracts mobile sources (such as heavy-duty trucks) that may spend long periods queuing and idling at the site; such as industrial warehouse/transfer facilities. The proposed project consists of a residential use, and does not include such uses. Therefore, due the lack of stationary source emissions, no long-term localized significance threshold analysis is warranted.

Operations-Related Odor Impacts

Potential sources that may emit odors during the on-going operations of the proposed project would include odor emissions from the intermittent diesel delivery truck emissions and trash storage areas. Due to the distance of the nearest receptors from the project site and through compliance with SCAQMD's Rule 402 no significant impact related to odors would occur during the on-going operations of the proposed project.

Table 9
Regional Operational Pollutant Emissions

Activity	Pollutant Emissions (pounds/day)					
	ROG	NOx	CO	SO2	PM10	PM2.5
Area Sources[1]	1.05	0.11	0.62	0.00	0.01	0.01
Energy Usage[2]	0.01	0.05	0.02	0.00	0.00	0.00
Mobile Sources[3]	0.11	0.46	1.51	0.01	0.48	0.13
Total Emissions	1.17	0.62	2.15	0.01	0.50	0.15
SCAQMD Thresholds	55	55	550	150	150	55
Exceeds Threshold?	No	No	No	No	No	No

Notes:
Source: CalEEMod Version 2016.3.2; the higher of either summer or winter emissions.

(1) Area sources consist of emissions from consumer products, architectural coatings, and landscaping equipment.

(2) Energy usage consists of emissions from generation of electricity and on-site natural gas usage.

(3) Mobile sources consist of emissions from vehicles and road dust.

CUMULATIVE AIR QUALITY IMPACTS

There are a number of cumulative projects in the project area that have not yet been built or are currently under construction. Since the timing or sequencing of the cumulative projects is unknown, any quantitative analysis to ascertain daily construction emissions that assumes multiple, concurrent construction projects would be speculative. Further, cumulative projects include local development as well as general growth within the project area. However, as with most development, the greatest source of emissions is from mobile sources, which travel well out of the local area. Therefore, from an air quality standpoint, the cumulative analysis would extend beyond any local projects and when wind patterns are considered would cover an even larger area. The SCAQMD recommends using two different methodologies: (1) that project-specific air quality impacts be used to determine the potential cumulative impacts to regional air quality;[9] and (2) that a project's consistency with the current AQMP be used to determine its potential cumulative impacts.

Project Specific Impacts

The project area is out of attainment for ozone and in 2018 was out of attainment for PM10. Construction and operation of cumulative projects will further degrade the local air quality, as well as the air quality of the South Coast Air Basin. The greatest cumulative impact on the quality of regional air cell will be the incremental addition of pollutants mainly from increased traffic volumes from residential, commercial, and industrial development and the use of heavy equipment and trucks associated with the construction of these projects. Air quality will be temporarily degraded during construction activities that occur separately or simultaneously. However, in accordance with the SCAQMD methodology, projects that do not exceed the SCAQMD criteria or can be mitigated to less than criteria levels are not significant and do not add to the overall cumulative impact. A significant impact may occur if a project would add a cumulatively considerable contribution of a federal or state non-attainment pollutant.

Project operations would generate emissions of NOx, ROG, CO, PM10, and PM2.5, which would not exceed the SCAQMD regional or local thresholds and would not be expected to result in ground level concentrations that exceed the NAAQS or CAAQS. Since the project would not introduce any substantial stationary sources of emissions, CO is the benchmark pollutant for assessing local area air quality impacts from post-construction motor vehicle operations. As indicated earlier, no violations of the state and federal CO standards are projected to occur for the project, based on the magnitude of traffic the project is anticipated to create. Therefore, operation of the project would not result in a cumulatively considerable net increase for non-attainment of criteria pollutants or ozone precursors. As a result, the project would result in a less than significant cumulative impact for operational emissions.

Air Quality Compliance

The California Environmental Quality Act (CEQA) requires a discussion of any inconsistencies between a proposed project and applicable General Plans and Regional Plans (CEQA Guidelines Section 15125). The regional plan that applies to the proposed project includes the SCAQMD Air Quality Management Plan (AQMP). Therefore, this section discusses any potential inconsistencies of the proposed project with the AQMP.

The purpose of this discussion is to set forth the issues regarding consistency with the assumptions and objectives of the AQMP and discuss whether the proposed project would interfere with the region's ability to comply with Federal and State air quality standards. If the decision-makers determine that the proposed project is inconsistent, the lead agency may consider project modifications or inclusion of mitigation to eliminate the inconsistency.

[9] South Coast Air Quality Management District, Potential Control Strategies to Address Cumulative Impacts from Air Pollution White Paper, 1993, http://www.aqmd.gov/home/regulations/ceqa/air-quality-analysis-handbook.

The SCAQMD CEQA Handbook states that "New or amended General Plan Elements (including land use zoning and density amendments), Specific Plans, and significant projects must be analyzed for consistency with the AQMP". Strict consistency with all aspects of the plan is usually not required A proposed project should be considered to be consistent with the AQMP if it furthers one or more policies and does not obstruct other policies. The SCAQMD CEQA Handbook identifies two key indicators of consistency:

(1) Whether the project will result in an increase in the frequency or severity of existing air quality violations or cause or contribute to new violations, or delay timely attainment of air quality standards or the interim emission reductions specified in the AQMP.
(2) Whether the project will exceed the assumptions in the AQMP in 2016 or increments based on the year of project buildout and phase.

Both of these criteria are evaluated in the following sections.

Criteria 1 – Increase in the Frequency or Severity of Violations

Based on the air quality modeling analysis contained in this Air Analysis, short-term construction impacts will not result in significant impacts based on the SCAQMD regional and local thresholds of significance. This Air Analysis also found that long-term operations impacts will not result in significant impacts based on the SCAQMD local and regional thresholds of significance.

Therefore, the proposed project is not projected to contribute to the exceedance of any air pollutant concentration standards and is found to be consistent with the AQMP for the first criterion.

Criteria 2 – Exceed Assumptions in the AQMP?

Consistency with the AQMP assumptions is determined by performing an analysis of the proposed project with the assumptions in the AQMP. The emphasis of this criterion is to ensure that the analyses conducted for the proposed project are based on the same forecasts as the AQMP. The <u>2016-2040 Regional Transportation/Sustainable Communities Strategy</u> prepared by SCAG (2016) includes chapters on: the challenges in a changing region, creating a plan for our future, and the road to greater mobility and sustainable growth. These chapters currently respond directly to federal and state requirements placed on SCAG. Local governments are required to use these as the basis of their plans for purposes of consistency with applicable regional plans under CEQA. For this project, the City of La Verne General Plan Land Use Plan defines the assumptions that are represented in the AQMP.

The project site is currently located in unincorporated County of Los Angeles and is to be annexed into the City of La Verne with the development of the proposed project. The project site is currently located in the sphere of influence of the City of La Verne and is designated as Hillside Residential (HR) (0 to 2 dwelling units per acre) on the City of La Verne General Plan Update Existing Conditions Report Figure 1-3 Current General Plan Land Use Designations (June 2018). The project proposes to develop the approximately 19.44 acre project site with seven single-family detached residential dwelling units. The proposed residential uses would be consistent with the City's land use designation. Therefore, the proposed project would not exceed the AQMP assumptions for the project site and is found to be consistent with the AQMP for the second criterion.

Based on the above, the proposed project will not result in an inconsistency with the SCAQMD AQMP. Therefore, a less than significant impact will occur.

3. DIESEL EMISSIONS HEALTH RISK ASSESSMENT

According to SCAQMD methodology, health effects from carcinogenic air toxics are usually described in terms of individual cancer risk. “Individual Cancer Risk” is the likelihood that a person exposed to concentrations of toxic air contaminants over a 30-year lifetime will contract cancer, based on the use of revised Office of Environmental Health Hazard Assessment (OEHHA) risk-assessment methodology[10]. The 2015 OEHHA guidance states that "Districts are to determine which facilities will prepare an HRA based on a prioritization process outlined in the law. The process by which Districts identify priority facilities for risk assessment involves consideration of potency, toxicity, quantity of emissions, and proximity to sensitive receptors such as hospitals, daycare centers, schools, work-sites, and residences." In their August 2003 Health Risk Assessment Guidance for Analyzing Cancer Risks from Mobile Source Diesel Idling Emissions for CEQA Air Quality Analysis, SCAQMD defers to CARB (State) guidance for "technical guidance for diesel toxic impact analyses for various source categories."

As stated previously, in the *California Building Industry Association v. Bay Area Air Quality Management District (2015) 62 Cal. 4th 369* (CBIA) case, the California Supreme Court determined that CEQA does not generally require an impact analysis of the existing environmental conditions on the future residents of a proposed project and generally only requires an analysis of the proposed project’s impact on the environment. However, the CBIA case also stated that when a proposed project brings development and people into an area already subject to specific hazards and the new development/people exacerbate the existing hazards, then CEQA requires an analysis of the hazards and the proposed project’s effect in terms of increasing the risks related to those hazards. In regards to air quality hazards, toxic air contaminants (TACs) are defined as substances that may cause or contribute to an increase in deaths or in serious illness, or that may pose a present or potential hazard to human health. As such, if a proposed project would not exacerbate pre-existing hazards (e.g., TAC health risks) then an analysis of those hazards and the proposed project’s effect on increasing those hazards is not required. The project is that of residential uses and will not be a source of toxic air contaminants. The existing conditions on the project site only include vacant land that does not contain any operational land uses that emit toxic air contaminants.

The California Air Pollution Control Officers Association (CAPCOA) has developed TAC health risk assessment guidelines to provide consistent, statewide procedures for preparing the health risk assessments required under the Air Toxics “Hot Spots” Act. The title of these guidelines is CAPCOA Air Toxics “Hot Spots” Program Revised 1992 Risk Assessment Guidelines. The District recommends that lead agencies conduct TAC risk assessments in accordance with the CAPCOA Risk Assessment Guidelines, as supplemented by the District’s supplemental guidelines. According to SCAQMD and CAPCOA guidelines, health effects from carcinogenic air toxics are usually described in terms of individual cancer risk. “Individual Cancer Risk” is the likelihood that a person exposed to concentrations of toxic air contaminants over a 30-year lifetime will contract cancer, based on the use of standard risk-assessment methodology.

The nearest sensitive receptors to the project site are the existing single-family detached residential dwelling units located adjacent to the west, approximately 30 feet southeast (across Broken Spur Road), approximately 90 feet east (across Broken Spur Road), approximately 100 feet south (across Baseline Road), and approximately 450 feet northeast of the project site.

The most recent Health Risk Assessment for Proposed Land Use Projects, prepared by CAPCOA, July 2009, recommends avoiding siting new sensitive land uses within 500 feet of a freeway. A summary of the basis for the distance recommendations can be found in the ARB Handbook *Air Quality and Land Use Handbook: A Community Health Perspective*.

[10] In February 2015, the Office of Environmental Health Hazard Assessment updated their "Air Toxics Hot Spots Program, Risk Assessments Guidelines, Guidance Manual for Preparation of Health Risk Assessments; however, the updated OEHHA guidance states in the page footers "do not cite or quote." SCAQMD staff have incorporated the updates into their methodology for SCAQMD's Rules 1401, 1401.1, 1402, and 212, and have updated their HRA Guidance for permitting; however they are still in the process of updating the guidance for CEQA analyses (via working group sessions).

The proposed residential uses are located approximately 640 feet north of the Interstate 210 Freeway off-ramps. Therefore, as the project would be locating sensitive receptors further than 500 feet from the freeway, a quantitative health risk assessment for the proposed residential use is not required. Significant TAC impacts from freeway sources are not anticipated and no significant long-term operations-related TAC impacts to the proposed project would occur.

4. GLOBAL CLIMATE CHANGE ANALYSIS

EXISTING GREENHOUSE GAS ENVIRONMENT

Constituent gases of the Earth's atmosphere, called atmospheric greenhouse gases (GHG), play a critical role in the Earth's radiation amount by trapping infrared radiation emitted from the Earth's surface, which otherwise would have escaped to space. Prominent greenhouse gases contributing to this process include carbon dioxide (CO_2), methane (CH_4), ozone, water vapor, nitrous oxide (N_2O), and chlorofluorocarbons (CFCs). This phenomenon, known as the Greenhouse Effect, is responsible for maintaining a habitable climate. Anthropogenic (caused or produced by humans) emissions of these greenhouse gases in excess of natural ambient concentrations are responsible for the enhancement of the Greenhouse Effect and have led to a trend of unnatural warming of the Earth's natural climate, known as global warming or climate change. Emissions of gases that induce global warming are attributable to human activities associated with industrial/manufacturing, agriculture, utilities, transportation, and residential land uses. Transportation is responsible for 41 percent of the State's greenhouse gas emissions, followed by electricity generation. Emissions of CO_2 and nitrous oxide (NOx) are byproducts of fossil fuel combustion. Methane, a potent greenhouse gas, results from off-gassing associated with agricultural practices and landfills. Sinks of CO_2, where CO_2 is stored outside of the atmosphere, include uptake by vegetation and dissolution into the ocean. The following provides a description of each of the greenhouse gases and their global warming potential.

Water Vapor

Water vapor is the most abundant, important, and variable GHG in the atmosphere. Water vapor is not considered a pollutant; in the atmosphere it maintains a climate necessary for life. Changes in its concentration are primarily considered a result of climate feedbacks related to the warming of the atmosphere rather than a direct result of industrialization. The feedback loop in which water is involved is critically important to projecting future climate change. As the temperature of the atmosphere rises, more water is evaporated from ground storage (rivers, oceans, reservoirs, soil). Because the air is warmer, the relative humidity can be higher (in essence, the air is able to "hold" more water when it is warmer), leading to more water vapor in the atmosphere. As a GHG, the higher concentration of water vapor is then able to absorb more thermal indirect energy radiated from the Earth, thus further warming the atmosphere. The warmer atmosphere can then hold more water vapor and so on and so on. This is referred to as a "positive feedback loop". The extent to which this positive feedback loop will continue is unknown as there is also dynamics that put the positive feedback loop in check. As an example, when water vapor increases in the atmosphere, more of it will eventually also condense into clouds, which are more able to reflect incoming solar radiation (thus allowing less energy to reach the Earth's surface and heat it up).

Carbon Dioxide (CO_2)

The natural production and absorption of CO_2 is achieved through the terrestrial biosphere and the ocean. However, humankind has altered the natural carbon cycle by burning coal, oil, natural gas, and wood. Since the industrial revolution began in the mid-1700s. Each of these activities has increased in scale and distribution. CO_2 was the first GHG demonstrated to be increasing in atmospheric concentration with the first conclusive measurements being made in the last half of the 20th century. Prior to the industrial revolution, concentrations were fairly stable at 280 parts per million (ppm). The International Panel on Climate Change (IPCC Fifth Assessment Report, 2014) Emissions of CO_2 from fossil fuel combustion and industrial processes contributed about 78% of the total GHG emissions increase from 1970 to 2010, with a similar percentage contribution for the increase during the period 2000 to 2010. Globally, economic and population growth continued to be the most important drivers of increases in CO_2 emissions from fossil fuel combustion. The contribution of population growth between 2000 and 2010 remained roughly identical to the previous three decades, while the contribution of economic growth has risen sharply.

Methane (CH_4)

CH_4 is an extremely effective absorber of radiation, although its atmospheric concentration is less than that of CO_2. Its lifetime in the atmosphere is brief (10 to 12 years), compared to some other GHGs (such as CO_2, N_2O, and Chlorofluorocarbons (CFCs). CH_4 has both natural and anthropogenic sources. It is released as part of the biological processes in low oxygen environments, such as in swamplands or in rice production (at the roots of the plants). Over the last 50 years, human activities such as growing rice, raising cattle, using natural gas, and mining coal have added to the atmospheric concentration of methane. Other anthropocentric sources include fossil-fuel combustion and biomass burning.

Nitrous Oxide (N_2O)

Concentrations of N_2O also began to rise at the beginning of the industrial revolution. In 1998, the global concentration of this GHG was documented at 314 parts per billion (ppb). N_2O is produced by microbial processes in soil and water, including those reactions which occur in fertilizer containing nitrogen. In addition to agricultural sources, some industrial processes (fossil fuel-fired power plants, nylon production, nitric acid production, and vehicle emissions) also contribute to its atmospheric load. It is also commonly used as an aerosol spray propellant, (i.e., in whipped cream bottles, in potato chip bags to keep chips fresh, and in rocket engines and in race cars).

Chlorofluorocarbons (CFC)

CFCs are gases formed synthetically by replacing all hydrogen atoms in methane or ethane (C_2H_6) with chlorine and/or fluorine atoms. CFCs are nontoxic, nonflammable, insoluble, and chemically unreactive in the troposphere (the level of air at the Earth's surface). CFCs have no natural source, but were first synthesized in 1928. It was used for refrigerants, aerosol propellants, and cleaning solvents. Due to the discovery that they are able to destroy stratospheric ozone, a global effort to halt their production was undertaken and in 1989 the European Community agreed to ban CFCs by 2000 and subsequent treaties banned CFCs worldwide by 2010. This effort was extremely successful, and the levels of the major CFCs are now remaining level or declining. However, their long atmospheric lifetimes mean that some of the CFCs will remain in the atmosphere for over 100 years.

Hydrofluorocarbons (HFC)

HFCs are synthetic man-made chemicals that are used as a substitute for CFCs. Out of all the GHGs, they are one of three groups with the highest global warming potential. The HFCs with the largest measured atmospheric abundances are (in order), HFC-23 (CHF_3), HFC-134a (CF_3CH_2F), and HFC-152a (CH_3CHF_2). Prior to 1990, the only significant emissions were HFC-23. HFC-134a use is increasing due to its use as a refrigerant. Concentrations of HFC-23 and HFC-134a in the atmosphere are now about 10 parts per trillion (ppt) each. Concentrations of HFC-152a are about 1 ppt. HFCs are manmade for applications such as automobile air conditioners and refrigerants.

Perfluorocarbons (PFC)

PFCs have stable molecular structures and do not break down through the chemical processes in the lower atmosphere. High-energy ultraviolet rays about 60 kilometers above Earth's surface are able to destroy the compounds. Because of this, PFCs have very long lifetimes, between 10,000 and 50,000 years. Two common PFCs are tetrafluoromethane (CF_4) and hexafluoroethane (C_2F_6). Concentrations of CF_4 in the atmosphere are over 70 ppt. The two main sources of PFCs are primary aluminum production and semiconductor manufacturing.

Sulfur Hexafluoride (SF_6)

SF_6 is an inorganic, odorless, colorless, nontoxic, nonflammable gas. SF_6 has the highest global warming potential of any gas evaluated; 23,900 times that of CO_2. Concentrations in the 1990s were about 4 ppt. Sulfur hexafluoride is used for insulation in electric power transmission and distribution equipment, in the magnesium industry, in semiconductor manufacturing, and as a tracer gas for leak detection.

Aerosols

Aerosols are particles emitted into the air through burning biomass (plant material) and fossil fuels. Aerosols can warm the atmosphere by absorbing and emitting heat and can cool the atmosphere by reflecting light. Cloud formation can also be affected by aerosols. Sulfate aerosols are emitted when fuel containing sulfur is burned. Black carbon (or soot) is emitted during biomass burning due to the incomplete combustion of fossil fuels. Particulate matter regulation has been lowering aerosol concentrations in the United States; however, global concentrations are likely increasing.

Global Warming Potential

The Global Warming Potential (GWP) was developed to allow comparisons of the global warming impacts of different gases. Specifically, it is a measure of how much energy the emissions of 1 ton of a gas will absorb over a given period of time, relative to the emissions of 1 ton of carbon dioxide (CO_2). The larger the GWP, the more that a given gas warms the Earth compared to CO_2 over that time period. The time period usually used for GWPs is 100 years. GWPs provide a common unit of measure, which allows analysts to add up emissions estimates of different gases (e.g., to compile a national GHG inventory), and allows policymakers to compare emissions reduction opportunities across sectors and gases. A summary of the atmospheric lifetime and the global warming potential of selected gases are summarized in Table 10. As shown in Table 10, the global warming potential of GHGs ranges from 1 to 22,800.

Table 10
Global Warming Potentials and Atmospheric Lifetimes

Gas	Atmospheric Lifetime	Global Warming Potential[1] (100 Year Horizon)
Carbon Dioxide (CO_2)	--[2]	1
Methane (CH_4)	12	28-36
Nitrous Oxide (NO)	114	298
Hydrofluorocarbons (HFCs)	1-270	12-14,800
Perfluorocarbons (PFCs)	2,600-50,000	7,390-12,200
Nitrogen trifluoride (NF_3)	740	17,200
Sulfur Hexafluoride (SF_6)	3,200	22,800

Notes:
Source: http://www3.epa.gov/climatechange/ghgemissions/gases.html

(1) Compared to the same quantity of CO_2 emissions.

(2) Carbon dioxide's lifetime is poorly defined because the gas is not destroyed over time, but instead moves among different parts of the ocean–atmosphere–land system. Some of the excess carbon dioxide will be absorbed quickly (for example, by the ocean surface), but some will remain in the atmosphere for thousands of years, due in part to the very slow process by which carbon is transferred to ocean sediments.

GREENHOUSE GAS STANDARDS AND REGULATION

International

Montreal Protocol

In 1988, the United Nations established the Intergovernmental Panel on Climate Change (IPCC) to evaluate the impacts of global climate change and to develop strategies that nations could implement to curtail global climate change. In 1992, the United States joined other countries around the world in signing the United Nations' Framework Convention on Climate Change (UNFCCC) agreement with the goal of controlling GHG emissions. As a result, the Climate Change Action Plan was developed to address the reduction of GHGs in the United States. The plan consists of more than 50 voluntary programs.

Additionally, the Montreal Protocol was originally signed in 1987 and substantially amended in 1990 and 1992. The Montreal Protocol stipulates that the production and consumption of compounds that deplete ozone in the stratosphere—CFCs, halons, carbon tetrachloride, and methyl chloroform—were to be phased out, with the first three by the year 2000 and methyl chloroform by 2005.

The Paris Agreement

The Paris Agreement became effective on November 4, 2016. Thirty days after this date at least 55 Parties to the United Nations Framework Convention on Climate Change (Convention), accounting in total for at least an estimated 55 % of the total global greenhouse gas emissions, had deposited their instruments of ratification, acceptance, approval or accession with the Depositary.

The Paris Agreement built upon the Convention and – for the first time – attempted to bring all nations into a common cause to undertake ambitious efforts to combat climate change and adapt to its effects, with enhanced support to assist developing countries to do so. As such, it charts a new course in the global climate effort.

The Paris Agreement's central aim is to strengthen the global response to the threat of climate change by keeping a global temperature rise this century well below 2 degrees Celsius above pre-industrial levels and to pursue efforts to limit the temperature increase even further to 1.5 degrees Celsius. Additionally, the agreement aims to strengthen the ability of countries to deal with the impacts of climate change. To reach these ambitious goals, appropriate financial flows, a new technology framework and an enhanced capacity building framework will be put in place, thus supporting action by developing countries and the most vulnerable countries, in line with their own national objectives. The Agreement also provides for enhanced transparency of action and support through a more robust transparency framework. The Trump administration has recently indicated the United States federal government will no longer participate in the Paris agreement. However, the U.S. cannot technically withdraw from the Agreement until November 4, 2020.

Federal

The United States Environmental Protection Agency (USEPA) is responsible for implementing federal policy to address GHGs. The federal government administers a wide array of public-private partnerships to reduce the GHG intensity generated in the United States. These programs focus on energy efficiency, renewable energy, methane and other non-CO2 gases, agricultural practices, and implementation of technologies to achieve GHG reductions. The USEPA implements numerous voluntary programs that contribute to the reduction of GHG emissions. These programs (e.g., the ENERGY STAR labeling system for energy-efficient products) play a significant role in encouraging voluntary reductions from large corporations, consumers, industrial and commercial buildings, and many major industrial sectors.

In Massachusetts v. Environmental Protection Agency (Docket No. 05–1120), argued November 29, 2006 and decided April 2, 2007, the U.S. Supreme Court held that not only did the EPA have authority to regulate greenhouse gases, but the EPA's reasons for not regulating this area did not fit the statutory requirements. As such, the U.S. Supreme Court ruled that the EPA should be required to regulate CO_2 and other greenhouse gases as pollutants under the federal Clean Air Act (CAA).

In response to the FY2008 Consolidations Appropriations Act (H.R. 2764; Public Law 110-161), EPA proposed a rule on March 10, 2009 that requires mandatory reporting of GHG emissions from large sources in the United States. On September 22, 2009, the Final Mandatory Reporting of GHG Rule was signed and published in the Federal Register on October 30, 2009. The rule became effective on December 29, 2009. This rule requires suppliers of fossil fuels or industrial GHGs, manufacturers of vehicles and engines, and facilities that emit 25,000 metric tons or more per year of GHG emissions to submit annual reports to EPA.

On December 7, 2009, the EPA Administrator signed two distinct findings under section 202(a) of the Clean Air Act. One is an endangerment finding that finds concentrations of the six GHGs in the atmosphere threaten the public health and welfare of current and future generations. The other is a cause or contribute finding, that finds emissions from new motor vehicles and new motor vehicle engines contribute to the GHG pollution which threatens public health and welfare. These actions will not themselves impose any requirements on industry or other entities. However, it is a prerequisite to finalizing the EPA's proposed GHG emission standards for light-duty vehicles, which were jointly proposed by the EPA and Department of Transportation on September 15, 2009.

Clean Air Act

In Massachusetts v. Environmental Protection Agency (Docket No. 05–1120), the U.S. Supreme Court held in April of 2007 that the USEPA has statutory authority under Section 202 of the federal Clean Air Act (CAA) to regulate GHGs. The court did not hold that the USEPA was required to regulate GHG emissions; however, it indicated that the agency must decide whether GHGs cause or contribute to air pollution that is reasonably anticipated to endanger public health or welfare. On December 7, 2009, the USEPA Administrator signed two distinct findings regarding GHGs under Section 202(a) of the CAA. The USEPA adopted a Final Endangerment Finding for the six defined GHGs (CO2, CH4, N2O, HFCs, PFCs, and SF6) on December 7, 2009. The Endangerment Finding is required before USEPA can regulate GHG emissions under Section 202(a)(1) of the CAA consistently with the United States Supreme Court decision. The USEPA also adopted a Cause or Contribute Finding in which the USEPA Administrator found that GHG emissions from new motor vehicle and motor vehicle engines are contributing to air pollution, which is endangering public health and welfare. These findings do not, by themselves, impose any requirements on industry or other entities. However, these actions were a prerequisite for implementing GHG emissions standards for vehicles.

Energy Independence Security Act

The Energy Independence and Security Act of 2007 (EISA) facilitates the reduction of national GHG emissions by requiring the following:

- Increasing the supply of alternative fuel sources by setting a mandatory Renewable Fuel Standard (RFS) that requires fuel producers to use at least 36 billion gallons of biofuel in 2022;
- Prescribing or revising standards affecting regional efficiency for heating and cooling products, procedures for new or amended standards, energy conservation, energy efficiency labeling for consumer electronic products, residential boiler efficiency, electric motor efficiency, and home appliances;
- Requiring approximately 25 percent greater efficiency for light bulbs by phasing out incandescent light bulbs between 2012 and 2014; requiring approximately 200 percent greater efficiency for light bulbs, or similar energy savings, by 2020; and
- While superseded by the USEPA and NHTSA actions described above, (i) establishing miles per gallon targets for cars and light trucks and (ii) directing the NHTSA to establish a fuel economy program for medium- and heavy-duty trucks and create a separate fuel economy standard for trucks.

Additional provisions of EISA address energy savings in government and public institutions, promote research for alternative energy, additional research in carbon capture, international energy programs, and the creation of green jobs.[11]

Executive Order 13432

In response to the Massachusetts v. Environmental Protection Agency ruling, the President signed Executive Order 13432 on May 14, 2007, directing the USEPA, along with the Departments of Transportation, Energy, and Agriculture, to initiate a regulatory process that responds to the Supreme Court's decision. Executive Order 13432 was codified into law by the 2009 Omnibus Appropriations Law signed on February 17, 2009. The order sets goals in the areas of energy efficiency, acquisition, renewable energy, toxics reductions, recycling, sustainable buildings, electronics stewardship, fleets, and water conservation. Light-Duty Vehicle Greenhouse Gas and Corporate Average Fuel Economy Standards.

On May 19, 2009, President Obama announced a national policy for fuel efficiency and emissions standards in the United States auto industry. The adopted federal standard applies to passenger cars and light-duty trucks for model years 2012 through 2016. The rule surpasses the prior Corporate Average Fuel Economy standards (CAFE)[12] and requires an average fuel economy standard of 35.5 miles per gallon (mpg) and 250 grams of CO2 per mile by model year 2016, based on USEPA calculation methods. These standards were formally adopted on April 1, 2010. In August 2012, standards were adopted for model year 2017 through 2025 for passenger cars and light-duty trucks. By 2025, vehicles are required to achieve 54.5 mpg (if GHG reductions are achieved exclusively through fuel economy improvements) and 163 grams of CO2 per mile. According to the USEPA, a model year 2025 vehicle would emit one-half of the GHG emissions from a model year 2010 vehicle.[13] In 2017, the USEPA recommended no change to the GHG standards for light-duty vehicles for model years 2022-2025.

In August 2018, the USEPA and NHTSA proposed the Safer Affordable Fuel-Efficient Vehicles Rule that would, if adopted, maintain the CAFE and CO2 standards applicable in model year 2020 for model years 2021 through 2026. The estimated CAFE and CO2 standards for model year 2020 are 43.7 mpg and 204 grams of CO2 per mile for passenger cars and 31.3 mpg and 284 grams of CO2 per mile for light trucks, projecting an overall industry average of 37 mpg, as compared to 46.7 mpg under the standards issued in 2012. The proposal, if adopted, would also exclude CO2- equivalent emission improvements associated with air conditioning refrigerants and leakage (and, optionally, offsets for nitrous oxide and methane emissions) after model year 2020.[14]

State of California

California Air Resources Board

CARB, a part of the California Environmental Protection Agency (CalEPA), is responsible for the coordination and administration of both federal and state air pollution control programs within California. In this capacity, CARB conducts research, sets state ambient air quality standards (California Ambient Air Quality Standards [CAAQS]), compiles emission inventories, develops suggested control measures, and provides oversight of

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[11] A green job, as defined by the United States Department of Labor, is a job in business that produces goods or provides services that benefit the environment or conserve natural resources.
[12] The Corporate Average Fuel Economy standards are regulations in the United States, first enacted by Congress in 1975, to improve the average fuel economy of cars and light trucks. The U.S Department of Transportation has delegated the National Highway Traffic Safety Administration as the regulatory agency for the Corporate Average Fuel Economy standards.
[13] United States Environmental Protection Agency, EPA and NHTSA Set Standards to Reduce Greenhouse Gases and Improve Fuel Economy for Model Years 2017-2025 Cars and Light Trucks, August 2012, https://nepis.epa.gov/ Exe/ZyPDF.cgi/P100EZ7C.PDF?Dockey=P100EZ7C.PDF.
[14] National Highway Traffic Safety Administration (NHTSA) and U.S. Environmental Protection Agency (USEPA), 2018. Federal Register / Vol. 83, No. 165 / Friday, August 24, 2018 / Proposed Rules, The Safer Affordable Fuel-Efficient (SAFE) Vehicles Rule for Model Years 2021–2026 Passenger Cars and Light Trucks 2018. Available at: https://www.gpo.gov/fdsys/pkg/FR-2018-08-24/pdf/2018-16820.pdf.

local programs. CARB establishes emissions standards for motor vehicles sold in California, consumer products (such as hairspray, aerosol paints, and barbecue lighter fluid), and various types of commercial equipment. It also sets fuel specifications to further reduce vehicular emissions.

In 2004, the California Air Resources Board (CARB) adopted an Airborne Toxic Control Measure to limit heavy-duty diesel motor vehicle idling in order to reduce public exposure to diesel particulate matter and other toxic air contaminants (Title 13 California Code of Regulations [CCR], Section 2485). The measure applies to diesel-fueled commercial vehicles with gross vehicle weight ratings greater than 10,000 pounds that are licensed to operate on highways, regardless of where they are registered. This measure generally does not allow diesel-fueled commercial vehicles to idle for more than 5 minutes at any given location with certain exemptions for equipment in which idling is a necessary function such as concrete trucks. While this measure primarily targets diesel particulate matter emissions, it has co-benefits of minimizing GHG emissions from unnecessary truck idling.

In 2008, CARB approved the Truck and Bus regulation to reduce particulate matter and nitrogen oxide emissions from existing diesel vehicles operating in California (13 CCR, Section 2025, subsection (h)). CARB has also promulgated emission standards for off-road diesel construction equipment of greater than 25 horsepower such as bulldozers, loaders, backhoes and forklifts, as well as many other self-propelled off-road diesel vehicles. The regulation, adopted by the CARB on July 26, 2007, aims to reduce emissions by installation of diesel soot filters and encouraging the retirement, replacement, or repower of older, dirtier engines with newer emission controlled models. Refer to Section IV.B, *Air Quality*, of this Draft EIR for additional details regarding these regulations. While these regulations primarily target reductions in criteria air pollutant emission, they have co-benefits of minimizing GHG emissions due to improved engine efficiencies.

The State currently has no regulations that establish ambient air quality standards for GHGs. However, the State has passed laws directing CARB to develop actions to reduce GHG emissions, which are listed below.

Assembly Bill 1493

California Assembly Bill 1493 enacted on July 22, 2002, required the CARB to develop and adopt regulations that reduce GHGs emitted by passenger vehicles and light duty trucks. In 2005, the CARB submitted a "waiver" request to the EPA from a portion of the federal Clean Air Act in order to allow the State to set more stringent tailpipe emission standards for CO_2 and other GHG emissions from passenger vehicles and light duty trucks. On December 19, 2007 the EPA announced that it denied the "waiver" request. On January 21, 2009, CARB submitted a letter to the EPA administrator regarding the State's request to reconsider the waiver denial. The EPA approved the waiver on June 30, 2009.

Executive Order S-3-05

The California Governor issued Executive Order S-3-05, GHG Emission, in June 2005, which established the following reduction targets:

- By 2010, California shall reduce GHG emissions to 2000 levels;
- By 2020, California shall reduce GHG emissions to 1990 levels; and
- By 2050, California shall reduce GHG emissions to 80 percent below 1990 levels.

The Executive Order directed the secretary of the California Environmental Protection Agency (CalEPA) to coordinate a multi-agency effort to reduce GHG emissions to the target levels. To comply with the Executive Order, the secretary of CalEPA created the California Climate Action Team (CAT), made up of members from various state agencies and commissions. The team released its first report in March 2006. The report proposed to achieve the targets by building on the voluntary actions of businesses, local governments, and communities and through State incentive and regulatory programs.

Assembly Bill 32 (California Health and Safety Code, Division 25.5 – California Global Warming Solutions Act of 2006)

In 2006, the California State Legislature adopted Assembly Bill (AB) 32 (codified in the California Health and Safety Code [HSC], Division 25.5 – California Global Warming Solutions Act of 2006), which focuses on reducing GHG emissions in California to 1990 levels by 2020. HSC Division 25.5 defines GHGs as CO2, CH4, N2O, HFCs, PFCs, and SF6 and represents the first enforceable statewide program to limit emissions of these GHGs from all major industries with penalties for noncompliance. The law further requires that reduction measures be technologically feasible and cost effective. Under HSC Division 25.5, CARB has the primary responsibility for reducing GHG emissions. CARB is required to adopt rules and regulations directing state actions that would achieve GHG emissions reductions equivalent to 1990 statewide levels by 2020.

Senate Bill 32 and Assembly Bill 197

In 2016, the California State Legislature adopted Senate Bill (SB) 32 and its companion bill AB 197, and both were signed by Governor Brown. SB 32 and AB 197 amends HSC Division 25.5 and establishes a new climate pollution reduction target of 40 percent below 1990 levels by 2030 and includes provisions to ensure the benefits of state climate policies reach into disadvantaged communities.

Climate Change Scoping Plan (2008)

A specific requirement of AB 32 was to prepare a Climate Change Scoping Plan for achieving the maximum technologically feasible and cost-effective GHG emission reduction by 2020 (Health and Safety Code section 38561 (h)). CARB developed an AB 32 Scoping Plan that contains strategies to achieve the 2020 emissions cap. The initial Scoping Plan was approved in 2008, and contains a mix of recommended strategies that combined direct regulations, market-based approaches, voluntary measures, policies, and other emission reduction programs calculated to meet the 2020 statewide GHG emission limit and initiate the transformations needed to achieve the State's long-range climate objectives.

As required by HSC Division 25.5, CARB approved the 1990 GHG emissions inventory, thereby establishing the emissions limit for 2020. The 2020 emissions limit was originally set at 427 MMTCO2e using the GWP values from the IPCC SAR. CARB also projected the state's 2020 GHG emissions under no-action-taken (NAT) conditions – that is, emissions that would occur without any plans, policies, or regulations to reduce GHG emissions. CARB originally used an average of the state's GHG emissions from 2002 through 2004 and projected the 2020 levels at approximately 596 MMTCO2e (using GWP values from the IPCC SAR). Therefore, under the original projections, the state must reduce its 2020 NAT emissions by 28.4 percent in order to meet the 1990 target of 427 MMTCO2e.

First Update to the Climate Change Scoping Plan (2014)

The First Update to the Scoping Plan was approved by CARB in May 2014 and builds upon the initial Scoping Plan with new strategies and recommendations. In 2014, CARB revised the target using the GWP values from the IPCC AR4 and determined that the 1990 GHG emissions inventory and 2020 GHG emissions limit is 431 MMTCO2e. CARB also updated the State's 2020 NAT emissions estimate to account for the effect of the 2007–2009 economic recession, new estimates for future fuel and energy demand, and the reductions required by regulation that were recently adopted for motor vehicles and renewable energy. CARB's projected statewide 2020 emissions estimate using the GWP values from the IPCC AR4 is 509.4 MMTCO2e.

2017 Climate Change Scoping Plan

In response to the 2030 GHG reduction target, CARB adopted the 2017 Climate Change Scoping Plan at a public meeting held in December 2017. The 2017 Scoping Plan outlines the strategies the State will implement to achieve the 2030 GHG reduction target of 40 percent below 1990 levels. The 2017 Scoping Plan also addresses GHG emissions from natural and working lands of California, including the agriculture and forestry sectors. The 2017 Scoping Plan considered the Scoping Plan Scenario and four alternatives for achieving the required GHG reductions but ultimately selected the Scoping Plan Scenario.

CARB states that the Scoping Plan Scenario "is the best choice to achieve the State's climate and clean air goals."[15] Under the Scoping Plan Scenario, the majority of the reductions would result from the continuation of the Cap-and-Trade regulation. Additional reductions are achieved from electricity sector standards (i.e., utility providers to supply at least 50 percent renewable electricity by 2030), doubling the energy efficiency savings at end uses, additional reductions from the LCFS, implementing the short-lived GHG strategy (e.g., hydrofluorocarbons), and implementing the mobile source strategy and sustainable freight action plan. The alternatives were designed to consider various combinations of these programs, as well as consideration of a carbon tax in the event the Cap-and-Trade regulation is not continued. However, in July 2017, the California Legislature voted to extend the Cap-and-Trade regulation to 2030. Implementing this Scoping Plan will ensure that California's climate actions continue to promote innovation, drive the generation of new jobs, and achieve continued reductions of smog and air toxics. The ambitious approach draws on a decade of successful programs that address the major sources of climate-changing gases in every sector of the economy:

- More Clean Cars and Trucks: The plan sets out far-reaching programs to incentivize the sale of millions of zero-emission vehicles, drive the deployment of zero-emission trucks, and shift to a cleaner system of handling freight statewide.
- Increased Renewable Energy: California's electric utilities are ahead of schedule meeting the requirement that 33 percent of electricity come from renewable sources by 2020. The Scoping Plan guides utilities to 50 percent renewables, as required under SB 350.
- Slashing Super-Pollutants: The plan calls for a significant cut in super-pollutants such as methane and HFC refrigerants, which are responsible for as much as 40 percent of global warming.
- Cleaner Industry and Electricity: California's renewed cap-and-trade program extends the declining cap on emissions from utilities and industries and the carbon allowance auctions. The auctions will continue to fund investments in clean energy and efficiency, particularly in disadvantaged communities.
- Cleaner Fuels: The Low Carbon Fuel Standard will drive further development of cleaner, renewable transportation fuels to replace fossil fuels.
- Smart Community Planning: Local communities will continue developing plans which will further link transportation and housing policies to create sustainable communities.
- Improved Agriculture and Forests: The Scoping Plan also outlines innovative programs to account for and reduce emissions from agriculture, as well as forests and other natural lands.

The 2017 Scoping Plan also evaluates reductions of smog-causing pollutants through California's climate programs.

SB 32, Pavley. California Global Warming Solutions Act of 2006

(1) The California Global Warming Solutions Act of 2006 designates the State Air Resources Board as the state agency charged with monitoring and regulating sources of emissions of greenhouse gases. The state board is required to approve a statewide greenhouse gas emissions limit equivalent to the statewide greenhouse gas emissions level in 1990 to be achieved by 2020 and to adopt rules and regulations in an open public process to achieve the maximum, technologically feasible, and cost-effective greenhouse gas emissions reductions. This bill would require the state board to ensure that statewide greenhouse gas emissions are reduced to 40% below the 1990 level by 2030.
(2) This bill would become operative only if AB 197 of the 2015–16 Regular Session is enacted and becomes effective on or before January 1, 2017. AB 197 requires that the California Air Resources Board, which

[15] California Air Resources Board, California's 2017 Climate Change Scoping Plan, November 2017, https://www.arb.ca.gov/cc/scopingplan/scoping_plan_2017.pdf

directs implementation of emission-reduction programs, should target direct reductions at both stationary and mobile sources. AB 197 of the 2015-2016 Regular Session was approved on September 8, 2016.

Executive Order S-1-07

Executive Order S-1-07 was issued in 2007 and proclaims that the transportation sector is the main source of GHG emissions in the State, since it generates more than 40 percent of the State's GHG emissions. It establishes a goal to reduce the carbon intensity of transportation fuels sold in the State by at least ten percent by 2020. This Order also directs the CARB to determine whether this Low Carbon Fuel Standard (LCFS) could be adopted as a discrete early-action measure as part of the effort to meet the mandates in AB 32.

On April 23, 2009, the CARB approved the proposed regulation to implement the low carbon fuel standard. The low carbon fuel standard is anticipated to reduce GHG emissions by about 16 MMT per year by 2020. The low carbon fuel standard is designed to provide a framework that uses market mechanisms to spur the steady introduction of lower carbon fuels. The framework establishes performance standards that fuel producers and importers must meet each year beginning in 2011. Separate standards are established for gasoline and diesel fuels and the alternative fuels that can replace each. The standards are "back-loaded", with more reductions required in the last five years, than during the first five years. This schedule allows for the development of advanced fuels that are lower in carbon than today's fuels and the market penetration of plug-in hybrid electric vehicles, battery electric vehicles, fuel cell vehicles, and flexible fuel vehicles. It is anticipated that compliance with the low carbon fuel standard will be based on a combination of both lower carbon fuels and more efficient vehicles.

Reformulated gasoline mixed with corn-derived ethanol at ten percent by volume and low sulfur diesel fuel represent the baseline fuels. Lower carbon fuels may be ethanol, biodiesel, renewable diesel, or blends of these fuels with gasoline or diesel as appropriate. Compressed natural gas and liquefied natural gas also may be low carbon fuels. Hydrogen and electricity, when used in fuel cells or electric vehicles are also considered as low carbon fuels for the low carbon fuel standard.

Senate Bill 97

Senate Bill 97 (SB 97) was adopted August 2007 and acknowledges that climate change is a prominent environmental issue that requires analysis under CEQA. SB 97 directed the Governor's Office of Planning and Research (OPR), which is part of the State Natural Resources Agency, to prepare, develop, and transmit to the CARB guidelines for the feasible mitigation of GHG emissions or the effects of GHG emissions, as required by CEQA, by July 1, 2009. The Natural Resources Agency was required to certify and adopt those guidelines by January 1, 2010.

Pursuant to the requirements of SB 97 as stated above, on December 30, 2009, the Natural Resources Agency adopted amendments to the state CEQA guidelines that address GHG emissions. The CEQA Guidelines Amendments changed 14 sections of the CEQA Guidelines and incorporate GHG language throughout the Guidelines. However, no GHG emissions thresholds of significance were provided and no specific mitigation measures were identified. The GHG emission reduction amendments went into effect on March 18, 2010, and are summarized below:

- Climate action plans and other greenhouse gas reduction plans can be used to determine whether a project has significant impacts, based upon its compliance with the plan.
- Local governments are encouraged to quantify the greenhouse gas emissions of proposed projects, noting that they have the freedom to select the models and methodologies that best meet their needs and circumstances. The section also recommends consideration of several qualitative factors that may be used in the determination of significance, such as the extent to which the given project complies with state, regional, or local GHG reduction plans and policies. OPR does not set or dictate specific thresholds of

significance. Consistent with existing CEQA Guidelines, OPR encourages local governments to develop and publish their own thresholds of significance for GHG impacts assessment.

- When creating their own thresholds of significance, local governments may consider the thresholds of significance adopted or recommended by other public agencies, or recommended by experts.
- New amendments include guidelines for determining methods to mitigate the effects of greenhouse gas emissions in Appendix F of the CEQA Guidelines.
- OPR is clear to state that "to qualify as mitigation, specific measures from an existing plan must be identified and incorporated into the project; general compliance with a plan, by itself, is not mitigation".
- OPR's emphasizes the advantages of analyzing GHG impacts on an institutional, programmatic level. OPR therefore approves tiering of environmental analyses and highlights some benefits of such an approach.
- Environmental impact reports (EIRs) must specifically consider a project's energy use and energy efficiency potential.

Senate Bill 100

Senate Bill 100 (SB 100) requires 100 percent of total retail sales of electricity in California to come from eligible renewable energy resources and zero-carbon resources by December 31, 2045. SB 100 was adopted September 2018.

The interim thresholds from prior Senate Bills and Executive Orders would also remain in effect. These include Senate Bill 1078 (SB 1078), which requires retail sellers of electricity, including investor-owned utilities and community choice aggregators, to provide at least 20 percent of their supply from renewable sources by 2017. Senate Bill 107 (SB 107) which changed the target date to 2010. Executive Order S-14-08, which was signed on November 2008 and expanded the State's Renewable Energy Standard to 33 percent renewable energy by 2020. Executive Order S-21-09 directed the CARB to adopt regulations by July 31, 2010 to enforce S-14-08. Senate Bill X1-2 codifies the 33 percent renewable energy requirement by 2020.

Senate Bill 375

Senate Bill 375 (SB 375) was adopted September 2008 and aligns regional transportation planning efforts, regional GHG emission reduction targets, and land use and housing allocation. SB 375 requires Metropolitan Planning Organizations (MPO) to adopt a sustainable communities strategy (SCS) or alternate planning strategy (APS) that will prescribe land use allocation in that MPOs Regional Transportation Plan (RTP). The CARB, in consultation with each MPO, will provide each affected region with reduction targets for GHGs emitted by passenger cars and light trucks in the region for the years 2020 and 2035. These reduction targets will be updated every eight years but can be updated every four years if advancements in emissions technologies affect the reduction strategies to achieve the targets. The CARB is also charged with reviewing each MPO's sustainable communities strategy or alternate planning strategy for consistency with its assigned targets.

The proposed project is located within the Southern California Association of Governments (SCAG) jurisdiction, which has authority to develop the SCS or APS. For the SCAG region, the targets set by the CARB are at eight percent below 2005 per capita GHG emissions levels by 2020 and 19 percent below 2005 per capita GHG emissions levels by 2035. These reduction targets became effective October 2018.

Senate Bill X7-7

Senate Bill X7-7 (SB X7-7), enacted on November 9, 2009, mandates water conservation targets and efficiency improvements for urban and agricultural water suppliers. SB X7-7 requires the Department of Water Resources (DWR) to develop a task force and technical panel to develop alternative best management practices for the water sector. In addition SB X7-7 required the DWR to develop criteria for baseline uses for residential, commercial, and industrial uses for both indoor and landscaped area uses. The DWR was also required to develop targets and regulations that achieve a statewide 20 percent reduction in water usage.

Assembly Bill 939 and Senate Bill 1374

Assembly Bill 939 (AB 939) requires that each jurisdiction in California to divert at least 50 percent of its waste away from landfills, whether through waste reduction, recycling or other means. Senate Bill 1374 (SB 1374) requires the California Integrated Waste Management Board to adopt a model ordinance by March 1, 2004, suitable for adoption by any local agency to require 50 to 75 percent diversion of construction and demolition of waste materials from landfills.

California Code of Regulations (CCR) Title 24, Part 6

CCR Title 24, Part 6: California's Energy Efficiency Standards for Residential and Nonresidential Buildings (Title 24) were first established in 1978 in response to a legislative mandate to reduce California's energy consumption. The standards are updated periodically to allow consideration and possible incorporation of new energy efficiency technologies and methods. Although it was not originally intended to reduce GHG emissions, electricity production by fossil fuels results in GHG emissions and energy efficient buildings require less electricity. Therefore, increased energy efficiency results in decreased GHG emissions.

The Energy Commission adopted 2008 Standards on April 23, 2008, and Building Standards Commission approved them for publication on September 11, 2008. These updates became effective on August 1, 2009. CalEEMod modeling defaults to 2008 standards. 2013 Standards were approved and have been effective since July 1, 2014. 2019 standards were published July 1, 2019 and became effective January 1, 2020.

California Code of Regulations (CCR) Title 24, Part 11

CCR Title 24, Part 6: California's Energy Efficiency Standards for Residential and Nonresidential Buildings (Title 24) were first established in 1978 in response to a legislative mandate to reduce California's energy consumption. The standards are updated periodically to allow consideration and possible incorporation of new energy efficiency technologies and methods. Although it was not originally intended to reduce GHG emissions, electricity production by fossil fuels results in GHG emissions and energy efficient buildings require less electricity. Therefore, increased energy efficiency results in decreased GHG emissions.

The Energy Commission adopted 2008 Standards on April 23, 2008, and Building Standards Commission approved them for publication on September 11, 2008. These updates became effective on August 1, 2009. 2013 Standards were approved and were effective July 1, 2014. 2016 Standards were adopted January 1, 2017. 2019 standards were published July 1, 2019 and became effective January 1, 2020. All buildings for which an application for a building permit is submitted on or after January 1, 2020 must follow the 2019 standards. Single-family homes built with the 2019 standards will use about 7 percent less energy due to energy efficiency measures versus those built under the 2016 standards. Once rooftop solar electricity generation is factored in, homes built under the 2019 standards will use about 53 percent less energy than those under the 2016 standards. This will reduce greenhouse gas emissions by 700,000 metric tons over three years, equivalent to taking 115,000 fossil fuel cars off the road. Nonresidential buildings will use about 30 percent less energy due mainly to lighting upgrades[16].

On January 12, 2010, the State Building Standards Commission unanimously adopted updates to the California Green Building Standards Code, which went into effect on January 1, 2011. 2016 CALGreen Code: During the 2016-2017 fiscal year, the Department of Housing and Community Development (HCD) updated CALGreen through the 2015 Triennial Code Adoption Cycle.

HCD adopted three new definitions related to electric vehicle charging regulations. These definitions provided clarity to the code user as to the differences between an electric vehicle charging space and an electric vehicle charging station. HCD replaced the term "electric vehicle charging stations" with "electric vehicle charging

[16] https://ww2.energy.ca.gov/title24/2019standards/documents/2018_Title_24_2019_Building_Standards_FAQ.pdf

spaces" since the term "electric vehicle charging space" better describes a space available for future installation of electric vehicle supply equipment, but with no electric vehicle charger installed.

HCD also increased the required construction waste reduction from 50 percent to 65 percent of the total building site waste. This increase aids in meeting CalRecycle's statewide solid waste recycling goal of 75 percent for 2020 as stated in Chapter 476, Statutes of 2011 (AB 341). HCD adopted new regulations requiring recycling areas for multifamily projects of five or more dwelling units. This regulation requires developers to provide readily accessible areas adequate in size to accommodate containers for depositing, storage and collection of non-hazardous materials (including organic waste) for recycling. This requirement assists businesses that were required as of April 1, 2016, to meet the requirements of Chapter 727, Statutes of 2014 (AB 1826).

HCD adopted new regulations to require information on photovoltaic systems and electric vehicle chargers to be included in operation and maintenance manuals. Currently, CALGreen section 4.410.1 Item 2(a) requires operation and maintenance instructions for equipment and appliances. Photovoltaic systems and electric vehicle chargers are systems that play an important role in many households in California, and their importance is increasing every day. HCD incorporated these two terms in the existing language in order to provide clarity to code users as to additional systems requiring operation and maintenance instructions.

HCD updated the reference to Clean Air Standards of the United States Environmental Protection Agency applicable to woodstoves and pellet stoves. HCD also adopted a new requirement for woodstoves and pellet stoves to have a permanent label indicating they are certified to meet the emission limits. This requirement provides clarity to the code user and is consistent with the United States Environmental Protection Agency's New Source Performance Standards. HCD updated the list of standards which can be used for verification of compliance for exterior grade composite wood products. This list now includes four standards from the Canadian Standards Association (CSA): CSA O121, CSA O151, CSA O153 and CSA O325. HCD updated heating and air-conditioning system design references to the ANSI/ACCA 2 Manual J, ANSI/ACCA 1 Manual D, and ANSI/ACCA 3 Manual S to the most recent versions approved by ANSI. HCD adopted a new elective measure for hot water recirculation systems for water conservation. The United States Department of Energy estimates that 3,600 to 12,000 gallons of water per year can be saved by the typical household (with four points of hot water use) if a hot water recirculation system is installed.

2019 CALGReen Code: During the 2019-2020 fiscal year, the Department of Housing and Community Development (HCD) updated CALGreen through the 2019 Triennial Code Adoption Cycle.

HCD modified the best management practices for stormwater pollution prevention adding Section 5.106.2 for projects that disturb one or more acres of land. This section requires projects that disturb one acre or more of land or less than one acre of land but are part of a larger common plan of development or sale must comply with the postconstruction requirement detailed in the applicable National Pollutant Discharge Elimination System (NPDES) General Permit for Stormwater Discharges Associated with Construction and Land Disturbance Activities issued by the State Water Resources Control Board. The NPDES permits require postconstruction runoff (post-project hydrology) to match the preconstruction runoff pre-project hydrology) with installation of postconstruction stormwater management measures.

HCD added sections 5.106.4.1.3 and 5.106.4.1.5 in regards to bicycle parking. Section 5.106.4.1.3 requires new buildings with tenant spaces that have 10 or more tenant-occupants, provide secure bicycle parking for 5 percent of the tenant-occupant vehicular parking spaces with a minimum of one bicycle parking facility. In addition, Section 5.106.4.1.5 states that acceptable bicycle parking facility for Sections 5.106.4.1.2 through 5.106.4.1.4 shall be convenient from the street and shall meeting one of the following: (1) covered, lockable enclosures with permanently anchored racks for bicycles; (2) lockable bicycle rooms with permanently anchored racks; or (3) lockable, permanently anchored bicycle lockers.

HCD amended section 5.106.5.3.5 allowing future charging spaces to qualify as designated parking for clean air vehicles.

HCD updated section 5.303.3.3 in regards to showerhead flow rates. This update reduced the flow rate to 1.8 GPM.

HCD amended section 5.304.1 for outdoor potable water use in landscape areas and repealed sections 5.304.2 and 5.304.3. The update requires nonresidential developments to comply with a local water efficient landscape ordinance or the current California Department of Water Resource's' Model Water Efficient Landscape Ordinance (MWELO), whichever is more stringent. Some updates were also made in regards to the outdoor potable water use in landscape areas for public schools and community colleges.

HCD updated Section 5.504.5.3 in regards to the use of MERV filters in mechanically ventilated buildings. This update changed the filter use from MERV 8 to MERV 13. MERV 13 filters are to be installed prior to occupancy, and recommendations for maintenance with filters of the same value shall be included in the operation and maintenance manual.

Executive Order B-30-15

On April 29, 2015, Governor Brown issued Executive Order B-30-15. Therein, the Governor directed the following:

- Established a new interim statewide reduction target to reduce GHG emissions to 40 percent below 1990 levels by 2030.
- Ordered all state agencies with jurisdiction over sources of GHG emissions to implement measures to achieve reductions of GHG emissions to meet the 2030 and 2050 reduction targets.
- Directed CARB to update the Climate Change Scoping Plan to express the 2030 target in terms of million metric tons of carbon dioxide equivalent.

Executive Order B-29-15

Executive Order B-29-15, mandates a statewide 25 percent reduction in potable water usage. EO B-29-15 signed into law on April 1, 2015.

Executive Order B-37-16

Executive Order B-37-16, continuing the State's adopted water reductions, was signed into law on May 9, 2016. The water reductions build off the mandatory 25 percent reduction called for in EO B-29-15.

SBX1 2

Signed into law in April 2011, SBX1 2, requires one-third of the State's electricity to come from renewable sources. The legislation increases California's current 20 percent renewables portfolio standard target in 2010 to a 33 percent renewables portfolio standard by December 31, 2020.

Senate Bill 350

Signed into law October 7, 2015, SB 350 increases California's renewable electricity procurement goal from 33 percent by 2020 to 50 percent by 2030. This will increase the use of Renewables Portfolio Standard (RPS) eligible resources, including solar, wind, biomass, geothermal, and others. In addition, SB 350 requires the state to double statewide energy efficiency savings in electricity and natural gas end uses by 2030. To help ensure these goals are met and the greenhouse gas emission reductions are realized, large utilities will be required to develop and submit Integrated Resource Plans (IRPs). These IRPs will detail how each entity will meet their customers resource needs, reduce greenhouse gas emissions and ramp up the deployment of clean energy resources.

Energy Sector and CEQA Guidelines Appendix F

The CEC first adopted Energy Efficiency Standards for Residential and Nonresidential Buildings (CCR, Title 24, Part 6) in 1978 in response to a legislative mandate to reduce energy consumption in the state. Although not originally intended to reduce GHG emissions, increased energy efficiency and reduced consumption of electricity, natural gas, and other fuels would result in fewer GHG emissions from residential and nonresidential buildings subject to the standard. The standards are updated periodically (typically every three years) to allow for the consideration and inclusion of new energy efficiency technologies and methods. The 2016 update to the Energy Efficiency Standards for Residential and Nonresidential Buildings focuses on several key areas to improve the energy efficiency of renovations and addition to existing buildings as well as newly constructed buildings and renovations and additions to existing buildings. The major efficiency improvements to the residential Standards involve improvements for attics, walls, water heating, and lighting, whereas the major efficiency improvements to the nonresidential Standards include alignment with the American Society of Heating, Refrigerating and Air-Conditioning Engineers (ASHRAE) 90.1-2013 national standards. Furthermore, the 2016 update requires that enforcement agencies determine compliance with CCR, Title 24, Part 6 before issuing building permits for any construction.[17]

Part 11 of the Title 24 Building Energy Efficiency Standards is referred to as the California Green Building Standards (CALGreen) Code. The purpose of the CALGreen Code is to "improve public health, safety and general welfare by enhancing the design and construction of buildings through the use of building concepts having a reduced negative impact or positive environmental impact and encouraging sustainable construction practices in the following categories: (1) Planning and design; (2) Energy efficiency; (3) Water efficiency and conservation; (4) Material conservation and resource efficiency; and (5) Environmental air quality."18 As of January 1, 2011, the CALGreen Code is mandatory for all new buildings constructed in the state. The CALGreen Code establishes mandatory measures for new residential and non-residential buildings. Such mandatory measures include energy efficiency, water conservation, material conservation, planning and design, and overall environmental quality. The CALGreen Code was most recently updated in 2016 to include new mandatory measures for residential and nonresidential uses; the new measures took effect on January 1, 2017.

Regional – South Coast Air Quality Management District

The project is within the South Coast Air Basin, which is under the jurisdiction of the South Coast Air Quality Management District (SCAQMD).

SCAQMD Regulation XXVII, Climate Change

SCAQMD Regulation XXVII currently includes three rules:

- The purpose of Rule 2700 is to define terms and post global warming potentials.
- The purpose of Rule 2701, SoCal Climate Solutions Exchange, is to establish a voluntary program to encourage, quantify, and certify voluntary, high quality certified greenhouse gas emission reductions in the SCAQMD.
- Rule 2702, Greenhouse Gas Reduction Program, was adopted on February 6, 2009. The purpose of this rule is to create a Greenhouse Gas Reduction Program for greenhouse gas emission reductions in the SCAQMD. The SCAQMD will fund projects through contracts in response to requests for proposals or purchase reductions from other parties.

[17] California Energy Commission, 2016 Building Energy Efficiency Standards, June 2015, http://www.energy.ca.gov/2015publications/CEC-400-2015-037/CEC-400-2015-037-CMF.pdf
[18] California Building Standards Commission, 2010 California Green Building Standards Code, (2010).

A variety of agencies have developed greenhouse gas emission thresholds and/or have made recommendations for how to identify a threshold. However, the thresholds for projects in the jurisdiction of the SCAQMD remain in flux. The California Air Pollution Control Officers Association explored a variety of threshold approaches, but did not recommend one approach (2008). The ARB recommended approaches for setting interim significance thresholds (California Air Resources Board 2008b), in which a draft industrial project threshold suggests that non-transportation related emissions under 7,000 MTCO2e per year would be less than significant; however, the ARB has not approved those thresholds and has not published anything since then. The SCAQMD is in the process of developing thresholds, as discussed below.

SCAQMD Threshold Development

On December 5, 2008, the SCAQMD Governing Board adopted an interim greenhouse gas significance threshold for stationary sources, rules, and plans where the SCAQMD is lead agency (SCAQMD permit threshold). The SCAQMD permit threshold consists of five tiers. However, the SCAQMD is not the lead agency for this project. Therefore, the five permit threshold tiers do not apply to the proposed project.

The SCAQMD is in the process of preparing recommended significance thresholds for greenhouse gases for local lead agency consideration ("SCAQMD draft local agency threshold"); however, the SCAQMD Board has not approved the thresholds as of the date of the Notice of Preparation. The current draft thresholds consist of the following tiered approach:

- Tier 1 consists of evaluating whether or not the project qualifies for any applicable exemption under CEQA.
- Tier 2 consists of determining whether the project is consistent with a greenhouse gas reduction plan. If a project is consistent with a qualifying local greenhouse gas reduction plan, it does not have significant greenhouse gas emissions.
- Tier 3 consists of screening values, which the lead agency can choose, but must be consistent with all projects within its jurisdiction. A project's construction emissions are averaged over 30 years and are added to a project's operational emissions. If a project's emissions are under one of the following screening thresholds, then the project is less than significant:
  - All land use types: 3,000 MTCO2e per year
  - Based on land use type: residential: 3,500 MTCO2e per year; commercial: 1,400 MTCO2e per year; or mixed use: 3,000 MTCO2e per year.
  - Based on land type: Industrial (where SCAQMD is the lead agency), 10,000 MTCO2e per year.
- Tier 4 has the following options:
  - Option 1: Reduce emissions from business as usual (BAU) by a certain percentage; this percentage is currently undefined.
  - Option 2: Early implementation of applicable AB 32 Scoping Plan measures.
  - Option 3, 2020 target for service populations (SP), which includes residents and employees: 4.8 MTCO2e/SP/year for projects and 6.6 MTCO2e/SP/year for plans;
  - Option 3, 2035 target: 3.0 MTCO2e/SP/year for projects and 4.1 MTCO2e/SP/year for plans.
- Tier 5 involves mitigation offsets to achieve target significance threshold.

The SCAQMD's draft threshold uses the Executive Order S-3-05 goal as the basis for the Tier 3 screening level. Achieving the Executive Order's objective would contribute to worldwide efforts to cap carbon dioxide concentrations at 450 ppm, thus stabilizing global climate. Specifically, the Tier 3 screening level for stationary sources is based on an emission capture rate of 90 percent for all new or modified projects. A 90 percent emission capture rate means that 90 percent of total emissions from all new or modified stationary source projects would be subject to a CEQA analysis, including a negative declaration, a mitigated negative declaration, or an environmental impact report, which includes analyzing feasible alternatives and imposing feasible mitigation measures. A GHG significance threshold based on a 90 percent emission capture rate may be more appropriate to address the long-term adverse impacts associated with global climate change because most projects will be required to implement GHG reduction measures. Further, a 90 percent emission capture rate sets the emission threshold low enough to capture a substantial fraction of future stationary source projects that will be constructed to accommodate future statewide population and economic growth, while setting the emission threshold high enough to exclude small projects that will in aggregate contribute a relatively small fraction of the cumulative statewide GHG emissions. This assertion is based on the fact that staff estimates that these GHG emissions would account for slightly less than one percent of future 2050 statewide GHG emissions target (85 MMTCO2eq/year). In addition, these small projects may be subject to future applicable GHG control regulations that would further reduce their overall future contribution to the statewide GHG inventory. Finally, these small sources are already subject to BACT for criteria pollutants and are more likely to be single-permit facilities, so they are more likely to have few opportunities readily available to reduce GHG emissions from other parts of their facility.

SCAQMD Working Group

Since neither the CARB nor the OPR has developed GHG emissions threshold, the SCAQMD formed a Working Group to develop significance thresholds related to GHG emissions. At the September 28, 2010 Working Group meeting, the SCAQMD released its most current version of the draft GHG emissions thresholds, which recommends a tiered approach that provides a quantitative annual thresholds of 10,000 MTCO2e for industrial uses.

Local – City of La Verne

The City of La Verne does not currently have a Climate Action Plan.

SIGNIFICANCE THRESHOLDS

Appendix G of State CEQA Guidelines

The CEQA Guidelines recommend that a lead agency consider the following when assessing the significance of impacts from GHG emissions on the environment:

- The extent to which the project may increase (or reduce) GHG emissions as compared to the existing environmental setting;
- Whether the project emissions exceed a threshold of significance that the lead agency determines applies to the project;
- The extent to which the project complies with regulations or requirements adopted to implement an adopted statewide, regional, or local plan for the reduction or mitigation of GHG emissions[19].

Thresholds of Significance for this Project

To determine whether the project's GHG emissions are significant, this analysis uses the SCAQMD draft local agency tier 3 screening threshold of 3,000 MTCO2e per year for all land uses.

METHODOLOGY

The proposed project is anticipated to generate GHG emissions from area sources, energy usage, mobile sources, waste, water, and construction equipment. The following provides the methodology used to calculate the project-related GHG emissions and the project impacts.

[19] The Governor's Office of Planning and Research recommendations include a requirement that such a plan must be adopted through a public review process and include specific requirements that reduce or mitigate the project's incremental contribution of GHG emissions. If there is substantial evidence that the possible effects of a particular project are still cumulatively considerable, notwithstanding compliance with the adopted regulations or requirements, an EIR must be prepared for the project.

CalEEMod Version 2016.3.2 was used to calculate the GHG emissions from the proposed project. The CalEEMod Annual Output for year 2023 is available in Appendix C. Each source of GHG emissions is described in greater detail below.

Area Sources

Area sources include emissions from consumer products, landscape equipment and architectural coatings. No changes were made to the default area source emissions.

Energy Usage

Energy usage includes emissions from the generation of electricity and natural gas used on-site. No changes were made to the default energy usage parameters.

Mobile Sources

Mobile sources include emissions from the additional vehicle miles generated from the proposed project. The vehicle trips associated with the proposed project have been analyzed by inputting the project-generated vehicular trips from the Trip Generation Analysis into the CalEEMod Model. The program then applies the emission factors for each trip which is provided by the EMFAC2014 model to determine the vehicular traffic pollutant emissions. See Section 2 for details.

Waste

Waste includes the GHG emissions generated from the processing of waste from the proposed project as well as the GHG emissions from the waste once it is interred into a landfill. AB 341 requires that 75 percent of waste be diverted from landfills by 2020, reductions for this are shown in the mitigated CalEEMod output values. No other changes were made to the default waste parameters.

Water

Water includes the water used for the interior of the building as well as for landscaping and is based on the GHG emissions associated with the energy used to transport and filter the water. No changes were made to the default water usage parameters.

Construction

The construction-related GHG emissions were also included in the analysis and were based on a 30 year amortization rate as recommended in the SCAQMD GHG Working Group meeting on November 19, 2009. The construction-related GHG emissions were calculated by CalEEMod and detailed above in Section 6.

PROJECT GREENHOUSE GAS EMISSIONS

The GHG emissions have been calculated based on the parameters described above. A summary of the results are shown below in Table 11 and the CalEEMod Model run for the proposed project is provided in Appendix C. Table 11 shows that the total for the proposed project's emissions would be 167.66 MTCO2e per year. According to the thresholds of significance established above, a cumulative global climate change impact would occur if the GHG emissions created from the on-going operations of the proposed project would exceed the SCAQMD draft threshold of 3,000 $MTCO_2e$ per year for all land uses. Therefore, the proposed project would not exceed the draft screening threshold of 3,000 MTCO2e per year for all land uses and operation of the proposed project would not create a significant cumulative impact to global climate change.

Table 11
Project-Related Greenhouse Gas Emissions

Category	Greenhouse Gas Emissions (Metric Tons/Year)					
	Bio-CO2	NonBio-CO_2	CO_2	CH_4	N_2O	CO_2e
Area Sources[1]	0.00	1.63	1.63	0.00	0.00	1.64
Energy Usage[2]	0.00	28.57	28.57	0.00	0.00	28.70
Mobile Sources[3]	0.00	92.65	92.65	0.00	0.00	92.77
Waste[4]	1.66	0.00	1.66	0.10	0.00	4.12
Water[5]	0.14	2.91	3.05	0.02	0.00	3.54
Construction[6]	0.00	36.76	36.76	0.01	0.00	36.89
Total Emissions	1.81	162.53	164.34	0.12	0.00	167.66
SCAQMD Draft Screening Threshold						**3,000**
Exceeds Threshold?						No

Notes:
Source: CalEEMod Version 2016.3.2 for Opening Year 2023.

(1) Area sources consist of GHG emissions from consumer products, architectural coatings, and landscape equipment.

(2) Energy usage consist of GHG emissions from electricity and natural gas usage.

(3) Mobile sources consist of GHG emissions from vehicles.

(4) Solid waste includes the CO_2 and CH_4 emissions created from the solid waste placed in landfills.

(5) Water includes GHG emissions from electricity used for transport of water and processing of wastewater.

(6) Construction GHG emissions CO2e based on a 30 year amortization rate.

CONSISTENCY WITH APPLICABLE GREENHOUSE GAS REDUCTION PLANS AND POLICIES

The proposed project would have the potential to conflict with any applicable plan, policy or regulation of an agency adopted for the purpose of reducing the emissions of greenhouse gases. As stated previously, the City of La Verne does not currently have a Climate Action Plan; therefore, the project has been compared to the goals of the CARB Scoping Plan.

Scoping Plan

Emission reductions in California alone would not be able to stabilize the concentration of greenhouse gases in the earth's atmosphere. However, California's actions set an example and drive progress towards a reduction in greenhouse gases elsewhere. If other states and countries were to follow California's emission reduction targets, this could avoid medium or higher ranges of global temperature increases. Thus, severe consequences of climate change could also be avoided.

The ARB Board approved a Climate Change Scoping Plan in December 2008. The Scoping Plan outlines the State's strategy to achieve the 2020 greenhouse gas emissions limit. The Scoping Plan "proposes a comprehensive set of actions designed to reduce overall greenhouse gas emissions in California, improve our environment, reduce our dependence on oil, diversify our energy sources, save energy, create new jobs, and enhance public health" (California Air Resources Board 2008). The measures in the Scoping Plan have been in place since 2012.

This Scoping Plan calls for an "ambitious but achievable" reduction in California's greenhouse gas emissions, cutting approximately 30 percent from business-as-usual emission levels projected for 2020, or about 10 percent from today's levels. On a per-capita basis, that means reducing annual emissions of 14 tons of carbon dioxide for every man, woman and child in California down to about 10 tons per person by 2020.

In May 2014, CARB released its *First Update to the Climate Change Scoping Plan* (CARB 2014). This *Update* identifies the next steps for California's leadership on climate change. While California continues on its path to meet the near-term 2020 greenhouse gas limit, it must also set a clear path toward long-term, deep GHG emission reductions. This report highlights California's success to date in reducing its GHG emissions and lays the foundation for establishing a broad framework for continued emission reductions beyond 2020, on the path to 80 percent below 1990 levels by 2050.

In November 2017, CARB release the 2017 Scoping Plan. This Scoping Plan incorporates, coordinates, and leverages many existing and ongoing efforts and identifies new policies and actions to accomplish the State's climate goals, and includes a description of a suite of specific actions to meet the State's 2030 GHG limit. In addition, Chapter 4 provides a broader description of the many actions and proposals being explored across the sectors, including the natural resources sector, to achieve the State's mid and long-term climate goals.

Guided by legislative direction, the actions identified in the 2017 Scoping Plan reduce overall GHG emissions in California and deliver policy signals that will continue to drive investment and certainty in a low carbon economy. The 2017 Scoping Plan builds upon the successful framework established by the Initial Scoping Plan and First Update, while identifying new, technologically feasible, and cost-effective strategies to ensure that California meets its GHG reduction targets in a way that promotes and rewards innovation, continues to foster economic growth, and delivers improvements to the environment and public health, including in disadvantaged communities. The Plan includes policies to require direct GHG reductions at some of the State's largest stationary sources and mobile sources. These policies include the use of lower GHG fuels, efficiency regulations, and the Cap-and Trade Program, which constrains and reduces emissions at covered sources.

As the latest, 2017 Scoping Plan builds upon previous versions, project consistency with applicable strategies of both the 2008 and 2017 Plan are assessed in Table 12. As shown in Table 12, the project is consistent with the applicable strategies and would result in a less than significant impact.

Therefore, the project would not conflict with any applicable plan, policy or regulation of an agency adopted for the purpose of reducing the emissions of greenhouse gases. Furthermore, the project will also comply with applicable Green Building Standards and City of La Verne's policies regarding sustainability (as dictated by the City's General Plan).

Table 12
Project Consistency with CARB Scoping Plan Policies and Measures[1]

2008 Scoping Plan Measures to Reduce Greenhouse Gas Emissions	Project Compliance with Measure
California Light-Duty Vehicle Greenhouse Gas Standards – Implement adopted standards and planned second phase of the program. Align zero-emission vehicle, alternative and renewable fuel and vehicle technology programs with long-term climate change goals.	Consistent. These are CARB enforced standards; vehicles that access the proposed project (that are required to comply with the standards) will comply with the strategy.
Energy Efficiency – Maximize energy efficiency building and appliance standards; pursue additional efficiency including new technologies, policy, and implementation mechanisms. Pursue comparable investment in energy efficiency from all retail providers of electricity in California.	Consistent. The proposed project will be compliant with the current Title 24 standards.
Low Carbon Fuel Standard – Develop and adopt the Low Carbon Fuel Standard.	Consistent. These are CARB enforced standards; vehicles that access the proposed project (that are required to comply with the standards) will comply with the strategy.
Vehicle Efficiency Measures – Implement light-duty vehicle efficiency measures.	Consistent. These are CARB enforced standards; vehicles that access the proposed project (that are required to comply with the standards) will comply with the strategy.
Medium/Heavy-Duty Vehicles – Adopt medium and heavy-duty vehicle efficiency measures.	Consistent. These are CARB enforced standards; vehicles that access the proposed project (that are required to comply with the standards) will comply with the strategy.
Green Building Strategy – Expand the use of green building practices to reduce the carbon footprint of California's new and existing inventory of buildings.	Consistent. The California Green Building Standards Code (proposed Part 11, Title 24) was adopted as part of the California Building Standards Code in the CCR. Part 11 establishes voluntary standards, that are mandatory in the 2019 edition of the Code, on planning and design for sustainable site development, energy efficiency (in excess of the California Energy Code requirements), water conservation, material conservation, and internal air contaminants. The proposed project will be subject to these mandatory standards.
High Global Warming Potential Gases – Adopt measures to reduce high global warming potential gases.	Consistent. CARB identified five measures that reduce HFC emissions from vehicular and commercial refrigeration systems; vehicles that access the proposed project (that are required to comply with the measures) will comply with the strategy.
Recycling and Waste – Reduce methane emissions at landfills. Increase waste diversion, composting, and commercial recycling. Move toward zero-waste.	Consistent. The state is currently developing a regulation to reduce methane emissions from municipal solid waste landfills. The proposed project will be required to comply with City programs, such as City's recycling and waste reduction program, which comply, with the 75 percent reduction required by 2020 per AB 341.
Water – Continue efficiency programs and use cleaner energy sources to move and treat water.	Consistent. The proposed project will comply with all applicable City ordinances and CAL Green requirements.

2017 Scoping Plan Recommended Actions to Reduce Greenhouse Gas Emissions	Project Compliance with Recommended Action
Implement Mobile Source Strategy: Further increase GHG stringency on all light-duty vehicles beyond existing Advanced Clean Car regulations.	Consistent. These are CARB enforced standards; vehicles that access the proposed project (that are required to comply with the standards) will comply with the strategy.
Implement Mobile Source Strategy: At least 1.5 million zero emission and plug-in hybrid light-duty electric vehicles by 2025 and at least 4.2 million zero emission and plug-in hybrid light-duty electric vehicles by 2030.	Consistent. These are CARB enforced standards; vehicles that access the proposed project (that are required to comply with the standards) will comply with the strategy.
Implement Mobile Source Strategy: Innovative Clean Transit: Transition to a suite of to-be-determined innovative clean transit options. Assumed 20 percent of new urban buses purchased beginning in 2018 will be zero emission buses with the penetration of zero-emission technology ramped up to 100 percent of new sales in 2030. Also, new natural gas buses, starting in 2018, and diesel buses, starting in 2020, meet the optional heavy-duty low-NOX standard.	Consistent. These are CARB enforced standards; vehicles that access the proposed project (that are required to comply with the standards) will comply with the strategy.
Implement Mobile Source Strategy: Last Mile Delivery: New regulation that would result in the use of low NOX or cleaner engines and the deployment of increasing numbers of zero-emission trucks primarily for class 3-7 last mile delivery trucks in California. This measure assumes ZEVs comprise 2.5 percent of new Class 3–7 truck sales in local fleets starting in 2020, increasing to 10 percent in 2025 and remaining flat through 2030.	Consistent. These are CARB enforced standards; vehicles that access the proposed project (that are required to comply with the standards) will comply with the strategy.
Implement SB 350 by 2030: Establish annual targets for statewide energy efficiency savings and demand reduction that will achieve a cumulative doubling of statewide energy efficiency savings in electricity and natural gas end uses by 2030.	Consistent. The proposed project will be compliant with the current Title 24 standards.
By 2019, develop regulations and programs to support organic waste landfill reduction goals in the SLCP and SB 1383.	Consistent. The proposed project will be required to comply with City programs, such as City's recycling and waste reduction program, which comply, with the 75 percent reduction required by 2020 per AB 341.

Notes:

(1) Source: CARB Scoping Plan (2008 and 2017)

CUMULATIVE GREENHOUSE GAS IMPACTS

Although the project is expected to emit GHGs, the emission of GHGs by a single project into the atmosphere is not itself necessarily an adverse environmental effect. Rather, it is the increased accumulation of GHG from more than one project and many sources in the atmosphere that may result in global climate change. Therefore, in the case of global climate change, the proximity of the project to other GHG emission generating activities is not directly relevant to the determination of a cumulative impact because climate change is a global condition. According to CAPCOA, "GHG impacts are exclusively cumulative impacts; there are no non-cumulative GHG emission impacts from a climate change perspective."[20] The resultant consequences of that climate change can cause adverse environmental effects. A project's GHG emissions typically would be very small in comparison to state or global GHG emissions and, consequently, they would, in isolation, have no significant direct impact on climate change.

The state has mandated a goal of reducing statewide emissions to 1990 levels by 2020, even though statewide population and commerce are predicted to continue to expand. In order to achieve this goal, CARB is in the process of establishing and implementing regulations to reduce statewide GHG emissions. Consistent with CEQA Guidelines Section 15064h(3),[21] the City, as lead agency, has determined that the project's contribution to cumulative GHG emissions and global climate change would be less than significant if the project is consistent with the applicable regulatory plans and policies to reduce GHG emissions.

As discussed in the Consistency With Applicable Greenhouse Gas Reduction Plans and Policies section above, the project is consistent with the goals and objectives of the CARB Scoping Plan.

Thus, given the project's consistency with the goals and measures of the CARB Scoping Plan and SCAQMD's 3,000 MTCO2e per year threshold, the project would not conflict with any applicable plan, policy, or regulation of an agency adopted for the purpose of reducing the emissions of GHGs. Given this consistency, it is concluded that the project's incremental contribution to greenhouse gas emissions and their effects on climate change would not be cumulatively considerable.

[20] Source: California Air Pollution Control Officers Association, CEQA & Climate change: Evaluating and Addressing Greenhouse Gas Emissions from Projects Subject to the California Environmental Quality Act, (2008).

[21] The State CEQA Guidelines were amended in response to SB 97. In particular, the State CEQA Guidelines were amended to specify that compliance with a GHG emissions reduction program renders a cumulative impact insignificant. Per State CEQA Guidelines Section 15064(h)(3), a project's incremental contribution to a cumulative impact can be found not cumulatively considerable if the project will comply with an approved plan or mitigation program that provides specific requirements that will avoid or substantially lessen the cumulative problem within the geographic area of the project. To qualify, such a plan or program must be specified in law or adopted by the public agency with jurisdiction over the affected resources through a public review process to implement, interpret, or make specific the law enforced or administered by the public agency. Examples of such programs include a "water quality control plan, air quality attainment or maintenance plan, integrated waste management plan, habitat conservation plan, natural community conservation plan, [and] plans or regulations for the reduction of greenhouse gas emissions."

5. ENERGY ANALYSIS

EXISTING CONDITIONS

This section provides an overview of the existing energy conditions in the project area and region.

Overview

California's estimated annual energy use as of 2018 included:

- Approximately 194,842 gigawatt hours of electricity;[22]
- Approximately 2,110,829 million cubic feet of natural gas per year[23]; and
- Approximately 23.2 billion gallons of transportation fuel (for the year 2015)[24]

As of 2016, the year of most recent data currently available by the United States Energy Information Administration (EIA), energy use in California by demand sector was:

- Approximately 39.8 percent transportation;
- Approximately 23.7 percent industrial;
- Approximately 17.7 percent residential; and
- Approximately 18.9 percent commercial.[25]

California's electricity in-state generation system generates approximately 194,842 gigawatt-hours each year. In 2018, California produced approximately 68 percent of the electricity it uses; the rest was imported from the Pacific Northwest (approximately 14 percent) and the U.S. Southwest (approximately 18 percent). Natural gas is the main source for electricity generation at approximately 46.54 percent of the total in-state electric generation system power as shown in Table 13.

A summary of and context for energy consumption and energy demands within the State is presented in "U.S. Energy Information Administration, California State Profile and Energy Estimates, Quick Facts" excerpted below:

- Excluding federal offshore areas, California was the fourth-largest producer of crude oil among the 50 states in 2017, after Texas, North Dakota, and Alaska, and, as of January 2018, third in oil refining capacity after Texas and Louisiana.
- In 2016, California accounted for one-fifth of the nation's jet fuel consumption.
- California's total energy consumption is the second-highest in the nation, but, in 2016, the State's per capita energy consumption ranked 48th, due in part to its mild climate and its energy efficiency programs.
- In 2017, California ranked second in the nation in conventional hydroelectric generation and first as a producer of electricity from solar, geothermal, and biomass resources.
- In 2017, solar PV and solar thermal installations provided about 16 percent of California's net electricity generation[26].

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[22] California Energy Commission. Energy Almanac. Total Electric Generation. [Online] June 24, 2019. http://www.energy.ca.gov/almanac/electricity_data/total_system_power.html.
[23] Natural Gas Consumption by End Use . U.S. Energy Information Administration. [Online] March 29, 2019. https://www.eia.gov/dnav/ng/ng_cons_sum_dcu_SCA_a.htm.
[24] California Energy Commission. Revised Transportation Energy Demand Forecast 2018-2030. [Online] April 19, 2018. https://www.energy.ca.gov/assessments/
[25] U.S. Energy Information Administration. California Energy Consumption by End-Use Sector. California State Profile and Energy Estimates.[Online] November 15, 2018 https://www.eia.gov/state/?sid=CA#tabs-2
[26] State Profile and Energy Estimates. Independent Statistics and Analysis. [Online] [Cited: November 15, 2018.] http://www.eia.gov/state/?sid=CA#tabs2.

As indicated above, California is one of the nation's leading energy-producing states, and California per capita energy use is among the nation's most efficient. Given the nature of the proposed project, the remainder of this discussion will focus on the three sources of energy that are most relevant to the project—namely, electricity and natural gas for project uses, and transportation fuel for vehicle trips associated with the proposed project.

Electricity

Electricity would be provided to the project by Southern California Edison (SCE). SCE provides electric power to more than 15 million persons, within a service area encompassing approximately 50,000 square miles.[27] SCE derives electricity from varied energy resources including: fossil fuels, hydroelectric generators, nuclear power plants, geothermal power plants, solar power generation, and wind farms.

Table 14 identifies SCE's specific proportional shares of electricity sources in 2018. As shown in Table 14, the 2018 SCE Power Mix has renewable energy at 36 percent of the overall energy resources, of which biomass and waste is at 1 percent, geothermal is at 8 percent, eligible hydroelectric is at 1 percent, solar energy is at 13 percent, and wind power is at 13 percent; other energy sources include large hydroelectric at 4 percent, natural gas at 17 percent, nuclear at 6 percent and unspecified sources at 37 percent.

Natural Gas

Natural gas would be provided to the project by Southern California Gas (SoCalGas). The following summary of natural gas resources and service providers, delivery systems, and associated regulation is excerpted from information provided by the California Public Utilities Commission (CPUC).

The CPUC regulates natural gas utility service for approximately 10.8 million customers that receive natural gas from Pacific Gas and Electric (PG&E), Southern California Gas (SoCalGas), San Diego Gas & Electric (SDG&E), Southwest Gas, and several smaller investor-owned natural gas utilities. The CPUC also regulates independent storage operators Lodi Gas Storage, Wild Goose Storage, Central Valley Storage and Gill Ranch Storage.

The vast majority of California's natural gas customers are residential and small commercial customers, referred to as "core" customers, who accounted for approximately 32 percent of the natural gas delivered by California utilities in 2012. Large consumers, like electric generators and industrial customers, referred to as "noncore" customers, accounted for approximately 68 percent of the natural gas delivered by California utilities in 2012.

The PUC regulates the California utilities' natural gas rates and natural gas services, including in-state transportation over the utilities' transmission and distribution pipeline systems, storage, procurement, metering and billing.

Most of the natural gas used in California comes from out-of-state natural gas basins. In 2012, California customers received 35 percent of their natural gas supply from basins located in the Southwest, 16 percent from Canada, 40 percent from the Rocky Mountains, and 9 percent from basins located within California. California gas utilities may soon also begin receiving biogas into their pipeline systems."[28]

Transportation Energy Resources

The project would attract additional vehicle trips with resulting consumption of energy resources, predominantly gasoline and diesel fuel. Gasoline (and other vehicle fuels) are commercially-provided commodities and would be available to the project patrons and employees via commercial outlets.

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[27] https://www.sce.com/about-us/who-we-are/leadership/our-service-territory
[28] California Public Utilities Commission. Natural Gas and California. http://www.cpuc.ca.gov/natural_gas/

The most recent data available (2016) shows the transportation sector emits 41 percent of the total greenhouse gases in the state and about 84 percent of smog-forming oxides of nitrogen (NOx).[29,30] Petroleum comprises about 92 percent of all transportation energy use, excluding fuel consumed for aviation and most marine vessels.[31]

REGULATORY BACKGROUND

Federal and state agencies regulate energy use and consumption through various means and programs. On the federal level, the United States Department of Transportation, the United States Department of Energy, and the United States Environmental Protection Agency are three federal agencies with substantial influence over energy policies and programs. On the state level, the PUC and the California Energy Commissions (CEC) are two agencies with authority over different aspects of energy. Relevant federal and state energy-related laws and plans are summarized below.

Federal Regulations

Corporate Average Fuel Economy (CAFE) Standards

First established by the U.S. Congress in 1975, the Corporate Average Fuel Economy (CAFE) standards reduce energy consumption by increasing the fuel economy of cars and light trucks. The National Highway Traffic Safety Administration (NHTSA) and U.S. Environmental Protection Agency (USEPA) jointly administer the CAFE standards. The U.S. Congress has specified that CAFE standards must be set at the "maximum feasible level" with consideration given for: (1) technological feasibility; (2) economic practicality; (3) effect of other standards on fuel economy; and (4) need for the nation to conserve energy.[32]

Intermodal Surface transportation Efficiency Act of 1991 (ISTEA)

The Intermodal Surface Transportation Efficiency Act of 1991 (ISTEA) promoted the development of inter-modal transportation systems to maximize mobility as well as address national and local interests in air quality and energy. ISTEA contained factors that Metropolitan Planning Organizations (MPOs) were to address in developing transportation plans and programs, including some energy-related factors. To meet the new ISTEA requirements, MPOs adopted explicit policies defining the social, economic, energy, and environmental values guiding transportation decisions.

The Transportation Equity Act of the 21st Century (TEA-21)

The Transportation Equity Act for the 21st Century (TEA-21) was signed into law in 1998 and builds upon the initiatives established in the ISTEA legislation, discussed above. TEA-21 authorizes highway, highway safety, transit, and other efficient surface transportation programs. TEA-21 continues the program structure established for highways and transit under ISTEA, such as flexibility in the use of funds, emphasis on measures to improve the environment, and focus on a strong planning process as the foundation of good transportation decisions. TEA-21 also provides for investment in research and its application to maximize the performance of the transportation system through, for example, deployment of Intelligent Transportation Systems, to help improve operations and management of transportation systems and vehicle safety.

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[29] CARB. California Greenhouse Gas Emissions Inventory – 2018 Edition. . https://www.arb.ca.gov/cc/inventory/data/data.htm
[30] CARB. 2016 SIP Emission Projection Data. https://www.arb.ca.gov/app/emsinv/2017/emseic1_query.php?F_DIV=-4&F_YR=2012&F_SEASON=A&SP=SIP105ADJ&F_AREA=CA
[31] US Energy Information Administration. Use of Energy in the United States Explained: Energy Use for Transportation. https://www.eia.gov/energyexplained/?page=us_energy_transportation
[32] https://www.nhtsa.gov/lawsregulations/corporate-average-fuel-economy.

State Regulations

Integrated Energy Policy Report (IEPR)

Senate Bill 1389 requires the California Energy Commission (CEC) to prepare a biennial integrated energy policy report that assesses major energy trends and issues facing the State's electricity, natural gas, and transportation fuel sectors and provides policy recommendations to conserve resources; protect the environment; ensure reliable, secure, and diverse energy supplies; enhance the state's economy; and protect public health and safety. The Energy Commission prepares these assessments and associated policy recommendations every two years, with updates in alternate years, as part of the Integrated Energy Policy Report.

The recently-approved 2017 Integrated Energy Policy Report Updated (2017 IEPR) was published in April 2018, and continues to work towards improving electricity, natural gas, and transportation fuel energy use in California. The 2016 IEPR focuses on a variety of topics such as implementation of Senate Bill 350, integrated resource planning, distributed energy resources, transportation electrification, solutions to increase resiliency in the electricity sector, energy efficiency, transportation electrification, barriers faced by disadvantaged communities, demand response, transmission and landscape-scale planning, the California Energy Demand Preliminary Forecast, the preliminary transportation energy demand forecast, renewable gas (in response to Senate Bill 1383), updates on Southern California electricity reliability, natural gas outlook, and climate adaptation and resiliency.[33]

State of California Energy Plan

The CEC is responsible for preparing the State Energy Plan, which identifies emerging trends related to energy supply, demand, conservation, public health and safety, and the maintenance of a healthy economy. The Plan calls for the state to assist in the transformation of the transportation system to improve air quality, reduce congestion, and increase the efficient use of fuel supplies with the least environmental and energy costs. To further this policy, the plan identifies a number of strategies, including assistance to public agencies and fleet operators and encouragement of urban designs that reduce vehicle miles traveled and accommodate pedestrian and bicycle access.

California Building Standards Code (Title 24)

The California Building Standards Code Title 24 was previously discussed in Section 2 Air Quality Management of this report.

California Building Energy Efficiency Standards (Title 24, Part 6)

The California Building Energy Efficiency Standards for Residential and Nonresidential Buildings (California Code of Regulations, Title 24, Part 6) were adopted to ensure that building construction and system design and installation achieve energy efficiency and preserve outdoor and indoor environmental quality. The current California Building Energy Efficiency Standards (Title 24 standards) are the 2019 Title 24 standards, which became effective on January 1, 2020. The 2019 Title 24 standards include efficiency improvements to the lighting and efficiency improvements to the non-residential standards include alignment with the American Society of Heating and Air-Conditioning Engineers. For example, window operation is no longer a method allowed to meet ventilation requirements, continuous operation of central forced air system handlers used in central fan integrated ventilation system is not a permissible method of providing the dwelling unit ventilation airflow, and central ventilation systems that serve multiple dwelling units must be balanced to provide ventilation airflow to each dwelling unit. In addition, requirements for kitchen range hoods were also provided in the updated Section 120.1. Ventilation and Indoor Air Quality included both additions and revisions in the

[33] California Energy Commission. Final 2017 Integrated Energy Policy Report. April 16, 2018. https://www.energy.ca.gov/2017_energypolicy/

2019 Code. This section now requires nonresidential and hotel/motel buildings to have air filtration systems that use forced air ducts to supply air to occupiable spaces to have air filters. Further, the air filter efficiency must be either MERV 13 or use a particle size efficiency rating specific in the Energy Code AND be equipped with air filters with a minimum 2 inch depth or minimum 1 inch depth if sized according to the equation 120.1-A. If natural ventilation is to be used the space must also use mechanical unless ventilation openings are either permanently open or controlled to stay open during occupied times.

New regulation were also adopted under Section 130.1 Indoor Lighting Controls. These included new exceptions being added for restrooms, the exception for classrooms being removed, as well as exceptions in regards to sunlight provided through skylights and overhangs.

All buildings for which an application for a building permit is submitted on or after January 1, 2020 must follow the 2019 standards. The 2016 residential standards were estimated to be approximately 28 percent more efficient than the 2013 standards, whereas the 2019 residential standards are estimated to be approximately 7 percent more efficient than the 2016 standards. Furthermore, once rooftop solar electricity generation is factored in, 2019 residential standards are estimated to be approximately 53 percent more efficient than the 2016 standards. Under the 2019 standards, nonresidential buildings are estimated to be approximately 30 percent more efficient than the 2016 standards . Energy efficient buildings require less electricity; therefore, increased energy efficiency reduces fossil fuel consumption and decreases greenhouse gas emissions.

California Building Energy Efficiency Standards (Title 24, Part 11)

The 2019 California Green Building Standards Code (California Code of Regulations, Title 24, Part 11), commonly referred to as the CALGreen Code, went into effect on January 1, 2020. The 2019 CALGreen Code includes mandatory measures for non-residential development related to site development; energy efficiency; water efficiency and conservation; material conservation and resource efficiency; and environmental quality.

As previously discussed in Section 3 of this report, the Department of Housing and Community Development (HCD) updated CALGreen through the 2019 Triennial Code Adoption Cycle. HCD modified the best management practices for stormwater pollution prevention adding Section 5.106.2 for projects that disturb one or more acres of land. This section requires projects that disturb one acre or more of land or less than one acre of land but are part of a larger common plan of development or sale must comply with the postconstruction requirement detailed in the applicable National Pollutant Discharge Elimination System (NPDES) General Permit for Stormwater Discharges Associated with Construction and Land Disturbance Activities issued by the State Water Resources Control Board. The NPDES permits require postconstruction runoff (post-project hydrology) to match the preconstruction runoff pre-project hydrology) with installation of postconstruction stormwater management measures.

HCD added sections 5.106.4.1.3 and 5.106.4.1.5 in regards to bicycle parking. Section 5.106.4.1.3 requires new buildings with tenant spaces that have 10 or more tenant-occupants, provide secure bicycle parking for 5 percent of the tenant-occupant vehicular parking spaces with a minimum of one bicycle parking facility. In addition, Section 5.106.4.1.5 states that acceptable bicycle parking facility for Sections 5.106.4.1.2 through 5.106.4.1.4 shall be convenient from the street and shall meeting one of the following: (1) covered, lockable enclosures with permanently anchored racks for bicycles; (2) lockable bicycle rooms with permanently anchored racks; or (3) lockable, permanently anchored bicycle lockers.

HCD amended section 5.106.5.3.5 allowing future charging spaces to qualify as designated parking for clean air vehicles.

HCD updated section 5.303.3.3 in regards to showerhead flow rates. This update reduced the flow rate to 1.8 GPM.

HCD amended section 5.304.1 for outdoor potable water use in landscape areas and repealed sections 5.304.2 and 5.304.3. The update requires nonresidential developments to comply with a local water efficient landscape ordinance or the current California Department of Water Resource's' Model Water Efficient Landscape Ordinance (MWELO), whichever is more stringent. Some updates were also made in regards to the outdoor potable water use in landscape areas for public schools and community colleges.

HCD updated Section 5.504.5.3 in regards to the use of MERV filters in mechanically ventilated buildings. This update changed the filter use from MERV 8 to MERV 13. MERV 13 filters are to be installed prior to occupancy, and recommendations for maintenance with filters of the same value shall be included in the operation and maintenance manual.

Senate Bill 350

As previously discussed in Section 4 of this report, Senate Bill 350 (SB 350) was signed into law October 7, 2015, SB 350 increases California's renewable electricity procurement goal from 33 percent by 2020 to 50 percent by 2030. This will increase the use of Renewables Portfolio Standard (RPS) eligible resources, including solar, wind, biomass, geothermal, and others. In addition, SB 350 requires the state to double statewide energy efficiency savings in electricity and natural gas end uses by 2030. To help ensure these goals are met and the greenhouse gas emission reductions are realized, large utilities will be required to develop and submit Integrated Resource Plans (IRPs). These IRPs will detail how each entity will meet their customers resource needs, reduce greenhouse gas emissions and ramp up the deployment of clean energy resources.

Assembly Bill 32

As discussed in Section 4 of this report, in 2006 the California State Legislature adopted Assembly Bill 32 (AB 32), the California Global Warming Solutions Act of 2006. AB 32 requires CARB, to adopt rules and regulations that would achieve GHG emissions equivalent to statewide levels in 1990 by 2020 through an enforceable statewide emission cap which will be phased in starting in 2012. Emission reductions shall include carbon sequestration projects that would remove carbon from the atmosphere and best management practices that are technologically feasible and cost effective. Please see Section 4 for further detail on AB 32.

Assembly Bill 1493/Pavley Regulations

As discussed Section 4 of this report, California Assembly Bill 1493 enacted on July 22, 2002, required CARB to develop and adopt regulations that reduce GHGs emitted by passenger vehicles and light duty trucks. In 2005, the CARB submitted a "waiver" request to the EPA from a portion of the federal Clean Air Act in order to allow the State to set more stringent tailpipe emission standards for CO_2 and other GHG emissions from passenger vehicles and light duty trucks. On December 19, 2007 the EPA announced that it denied the "waiver" request. On January 21, 2009, CARB submitted a letter to the EPA administrator regarding the State's request to reconsider the waiver denial. The EPA approved the waiver on June 30, 2009.

Executive Order S-1-07/Low Carbon Fuel Standard

As discussed Section 4 of this report, Executive Order S-1-07 was issued in 2007 and proclaims that the transportation sector is the main source of GHG emissions in the State, since it generates more than 40 percent of the State's GHG emissions. It establishes a goal to reduce the carbon intensity of transportation fuels sold in the State by at least ten percent by 2020. This Order also directs CARB to determine whether this Low Carbon Fuel Standard (LCFS) could be adopted as a discrete early-action measure as part of the effort to meet the mandates in AB 32.

On April 23, 2009 CARB approved the proposed regulation to implement the low carbon fuel standard. The low carbon fuel standard is anticipated to reduce GHG emissions by about 16 MMT per year by 2020. The low carbon fuel standard is designed to provide a framework that uses market mechanisms to spur the steady introduction of lower carbon fuels. The framework establishes performance standards that fuel producers and importers must meet each year beginning in 2011. Separate standards are established for gasoline and diesel fuels and the alternative fuels that can replace each. The standards are "back-loaded", with more reductions required in the last five years, than during the first five years. This schedule allows for the development of advanced fuels that are lower in carbon than today's fuels and the market penetration of plug-in hybrid electric vehicles, battery electric vehicles, fuel cell vehicles, and flexible fuel vehicles. It is anticipated that compliance with the low carbon fuel standard will be based on a combination of both lower carbon fuels and more efficient vehicles.

Reformulated gasoline mixed with corn-derived ethanol at ten percent by volume and low sulfur diesel fuel represent the baseline fuels. Lower carbon fuels may be ethanol, biodiesel, renewable diesel, or blends of these fuels with gasoline or diesel as appropriate. Compressed natural gas and liquefied natural gas also may be low carbon fuels. Hydrogen and electricity, when used in fuel cells or electric vehicles are also considered as low carbon fuels for the low carbon fuel standard.

California Air Resources Board

CARB's Advanced Clean Cars Program

Closely associated with the Pavley regulations, the Advanced Clean Cars emissions control program was approved by CARB in 2012. The program combines the control of smog, soot, and GHGs with requirements for greater numbers of zero-emission vehicles for model years 2015–2025.15 The components of the Advanced Clean Cars program include the Low-Emission Vehicle (LEV) regulations that reduce criteria pollutants and GHG emissions from light- and medium-duty vehicles, and the Zero-Emission Vehicle (ZEV) regulation, which requires manufacturers to produce an increasing number of pure ZEVs (meaning battery electric and fuel cell electric vehicles), with provisions to also produce plug-in hybrid electric vehicles (PHEV) in the 2018 through 2025 model years.[34]

Airborne Toxic Control Measure to Limit Diesel-Fueled Commercial Motor Vehicle Idling

The Airborne Toxic Control Measure to Limit Diesel-Fueled Commercial Motor Vehicle Idling (Title 13, California Code of Regulations, Division 3, Chapter 10, Section 2435) was adopted to reduce public exposure to diesel particulate matter and other air contaminants by limiting the idling of diesel-fueled commercial motor vehicles. This section applies to diesel-fueled commercial motor vehicles with gross vehicular weight ratings of greater than 10,000 pounds that are or must be licensed for operation on highways. Reducing idling of diesel-fueled commercial motor vehicles reduces the amount of petroleum-based fuel used by the vehicle.

Regulation to Reduce Emissions of Diesel Particulate Matter, Oxides of Nitrogen, and other Criteria Pollutants, form In-Use Heavy-Duty Diesel-Fueled Vehicles

The Regulation to Reduce Emissions of Diesel Particulate Matter, Oxides of Nitrogen and other Criteria Pollutants, from In-Use Heavy-Duty Diesel-Fueled Vehicles (Title 13, California Code of Regulations, Division 3, Chapter 1, Section 2025) was adopted to reduce emissions of diesel particulate matter, oxides of nitrogen (NOX) and other criteria pollutants from in-use diesel-fueled vehicles. This regulation is phased, with full implementation by 2023. The regulation aims to reduce emissions by requiring the installation of diesel soot filters and encouraging the retirement, replacement, or repower of older, dirtier engines with newer emission-controlled models. The newer emission controlled models would use petroleum-based fuel in a more efficient manner.

[34] California Air Resources Board, California's Advanced Clean Cars Program, January 18, 2017. www.arb.ca.gov/msprog/acc/acc.htm.

Sustainable Communities Strategy

The Sustainable Communities and Climate Protection Act of 2008, or Senate Bill 375 (SB 375), coordinates land use planning, regional transportation plans, and funding priorities to help California meet the GHG reduction mandates established in AB 32.

As previously stated in Section 2 Air Quality Management of this report, Senate Bill 375 (SB 375) was adopted September 2008 and aligns regional transportation planning efforts, regional GHG emission reduction targets, and land use and housing allocation. SB 375 requires Metropolitan Planning Organizations (MPO) to adopt a sustainable communities strategy (SCS) or alternate planning strategy (APS) that will prescribe land use allocation in that MPOs Regional Transportation Plan (RTP). CARB, in consultation with each MPO, will provide each affected region with reduction targets for GHGs emitted by passenger cars and light trucks in the region for the years 2020 and 2035. These reduction targets will be updated every eight years but can be updated every four years if advancements in emissions technologies affect the reduction strategies to achieve the targets. CARB is also charged with reviewing each MPO's sustainable communities strategy or alternate planning strategy for consistency with its assigned targets.

The proposed project is located within the Southern California Association of Governments (SCAG) jurisdiction, which has authority to develop the SCS or APS. For the SCAG region, the targets set by CARB are at eight percent below 2005 per capita GHG emissions levels by 2020 and 19 percent below 2005 per capita GHG emissions levels by 2035. These reduction targets became effective October 2018.

PROJECT ENERGY DEMANDS AND ENERGY EFFICIENCY MEASURES

Evaluation Criteria

In compliance with Appendix G of the State CEQA Guidelines, this report analyzes the project's anticipated energy use to determine if the project would:

- Result in potentially significant environmental impact due to wasteful, inefficient, or unnecessary consumption of energy resources, during project construction or operation; or
- Conflict with or obstruct a state or local plan for renewable energy or energy efficiency.

In addition, Appendix F of the State CEQA Guidelines states that the means of achieving the goal of energy conservation includes the following:

- Decreasing overall per capita energy consumption;
- Decreasing reliance on fossil fuels such as coal, natural gas and oil; and
- Increasing reliance on renewable energy sources.

Methodology

Information from the CalEEMod 2016.3.2 Daily and Annual Outputs contained in Appendix B and C, utilized for air quality and greenhouse gas analyses in Sections 2 and 4 of this report, were also utilized for this analysis. The CalEEMod outputs detail project related construction equipment, transportation energy demands, and facility energy demands.

Construction Energy Demands

The construction schedule is anticipated to occur between October 2021 and April 2023 and be completed in one phase. Staging of construction vehicles and equipment will occur on-site. The approximately eighteen-month schedule is relatively short and the project site is approximately 15.11 net acres.

Construction Equipment Electricity Usage Estimates

As stated previously, Electrical service will be provided by Southern California Edison. The focus within this section is the energy implications of the construction process, specifically the power cost from on-site electricity consumption during construction of the proposed project. Based on the 2017 National Construction Estimator, Richard Pray (2017)[35], the typical power cost per 1,000 square feet of building construction per month is estimated to be $2.32. The project plans to develop the site with seven single-family residential dwelling units. Based on Table 15, the total power cost of the on-site electricity usage during the construction of the proposed project is estimated to be approximately $1,479.56

Construction Equipment Fuel Estimates

Fuel consumed by construction equipment would be the primary energy resource expended over the course of project construction. Fuel consumed by construction equipment was evaluated with the following assumptions:

- Construction schedule of 18 months
- All construction equipment was assumed to run on diesel fuel
- Typical daily use of 8 hours, with some equipment operating from ~7 hours
- Aggregate fuel consumption rate for all equipment was estimated at 18.5 hp-hr/day (from CARB's 2017 Emissions Factors Tables and fuel consumption rate factors as shown in Table D-21 of the Moyer Guidelines: (https://www.arb.ca.gov/msprog/moyer/guidelines/2017gl/2017_gl_appendix_d.pdf).
- Diesel fuel would be the responsibility of the equipment operators/contractors and would be sources within the region.
- Project construction represents a "single-event" for diesel fuel demand and would not require on-going or permanent commitment of diesel fuel resources during long term operation.

Using the CalEEMod data input for the air quality and greenhouse gas analyses (Sections 2 and 4 of this report), the project's construction phase would consume electricity and fossil fuels as a single energy demand, that is, once construction is completed their use would cease. CARB's 2014 Emissions Factors Tables show that on average aggregate fuel consumption (gasoline and diesel fuel) would be approximately 18.5 hp-hr-gal. Table 16 shows the results of the analysis of construction equipment.

As presented in Table 16, project construction activities would consume an estimated 51,329 gallons of diesel fuel. As stated previously, project construction would represent a "single-event" diesel fuel demand and would not require on-going or permanent commitment of diesel fuel resources for this purpose.

Construction Worker Fuel Estimates

It is assumed that all construction worker trips are from light duty autos (LDA) along area roadways. With respect to estimated VMT, the construction worker trips would generate an estimated 1,016,564 VMT. Data regarding project related construction worker trips were based on CalEEMod 2016.3.2 model defaults.

Vehicle fuel efficiencies for construction workers were estimated in the air quality and greenhouse gas analyses (Sections 2 and 4 of this report) using information generated using CARB's EMFAC model. An aggregate fuel efficiency of 28.57 miles per gallon (mpg) was used to calculate vehicle miles traveled for construction worker trips. Table 17 shows that an estimated 35,582 gallons of fuel would be consumed for construction worker trips.

[35] Pray, Richard. 2017 National Construction Estimator. Carlsbad : Craftsman Book Company, 2017.

Construction Vendor/Hauling Fuel Estimates

Tables 18 and 19 show the estimated fuel consumption for vendor and hauling during building construction and architectural coating. With respect to estimated VMT, the vendor and hauling trips would generate an estimated 175,950 VMT. Data regarding project related construction worker trips were based on CalEEMod 2016.3.2 model defaults.

For the architectural coatings it is assumed that the contractors would be responsible for bringing coatings and equipment with them in their light duty vehicles. Therefore, vendors delivering construction material or hauling debris from the site during grading would use medium to heavy duty vehicles with an average fuel consumption of 8.5 mpg. Tables 18 and 19 show that an estimated 20,700 gallons of fuel would be consumed for vendor and hauling trips.

Construction Energy Efficiency/Conservation Measures

Construction equipment used over the approximately eighteen-month construction phase would conform to CARB regulations and California emissions standards and is evidence of related fuel efficiencies. There are no unusual project characteristics or construction processes that would require the use of equipment that would be more energy intensive than is used for comparable activities; or equipment that would not conform to current emissions standards (and related fuel efficiencies). Equipment employed in construction of the project would therefore not result in inefficient wasteful, or unnecessary consumption of fuel.

The project would utilize construction contractors which practice compliance with applicable CARB regulation regarding retrofitting, repowering, or replacement of diesel off-road construction equipment. Additionally, CARB has adopted the Airborne Toxic Control Measure to limit heavy-duty diesel motor vehicle idling in order to reduce public exposure to diesel particulate matter and other Toxic Air Contaminants. Compliance with these measures would result in a more efficient use of construction-related energy and would minimize or eliminate wasteful or unnecessary consumption of energy. Idling restrictions and the use of newer engines and equipment would result in less fuel combustion and energy consumption.

Additionally, as required by California Code of Regulations Title 13, Motor Vehicles, section 2449(d)(3) Idling, limits idling times of construction vehicles to no more than five minutes, thereby minimizing or eliminating unnecessary and wasteful consumption of fuel due to unproductive idling of construction equipment. Enforcement of idling limitations is realized through periodic site inspections conducted by City building officials, and/or in response to citizen complaints.

Operational Energy Demands

Energy consumption in support of or related to project operations would include transportation energy demands (energy consumed by employee and patron vehicles accessing the project site) and facilities energy demands (energy consumed by building operations and site maintenance activities).

Transportation Fuel Consumption

Using the CalEEMod output from the air quality and greenhouse gas analyses (Sections 2 and 4 of this report), it is assumed that an average trip for autos and light trucks was assumed to be 14.7 miles and 3- 4-axle trucks were assumed to travel an average of 8.7 miles[36]. To present a worst-case scenario, it was assumed that vehicles would operate 365 days per year rather than the more likely 253 days (excluding weekends and up to 8 holidays). Table 20 shows the estimated annual fuel consumption for all classes of vehicles from autos to heavy-heavy trucks.

[36] CalEEMod default distance for H-W (home-work) or C-W (commercial-work) is 16.6 miles; 6.9 miles for H-O (home-other) or C-O (commercial-other).

The proposed project would generate 66 trips per day. The vehicle fleet mix was used from the CalEEMod output. Table 20 shows that an estimated 18,230 gallons of fuel would be consumed per year for the operation of the proposed project.

Facility Energy Demands (Electricity and Natural Gas)

Building operation and site maintenance (including landscape maintenance) would result in the consumption of electricity (provided by Southern California Edison) and natural gas (provided by Southern California Gas Company). The annual natural gas and electricity demands were provided per the CalEEMod output from the air quality and greenhouse gas analyses (Sections 2 and 4 of this report) and are provided in Table 21.

Energy use in buildings is divided into energy consumed by the built environment and energy consumed by uses that are independent of the construction of the building such as in plug-in appliances. In California, the California Building Standards Code Title 24 governs energy consumed by the built environment, mechanical systems, and some types of fixed lighting. Non-building energy use, or "plug-in" energy use can be further subdivided by specific end-use (refrigeration, cooking, appliances, etc.).

RENEWABLE ENERGY AND ENERGY EFFICIENCY PLAN CONSISTENCY

Regarding federal transportation regulations, the project site is located in an already developed area. Access to/from the project site is from existing roads. These roads are already in place so the project would not interfere with, nor otherwise obstruct intermodal transportation plans or projects that may be proposed pursuant to the ISTEA because SCAG is not planning for intermodal facilities in the project area.

Regarding the State's Energy Plan and compliance with Title 24 CCR energy efficiency standards, the applicant is required to comply with the California Green Building Standard Code requirements for energy efficient buildings and appliances as well as utility energy efficiency programs implemented by Southern California Edison and Southern California Gas Company.

Regarding Pavley (AB 1493) regulations, an individual project does not have the ability to comply or conflict with these regulations because they are intended for agencies and their adoption of procedures and protocols for reporting and certifying GHG emission reductions from mobile sources.

Regarding the State's Renewable Energy Portfolio Standards, the project would be required to meet or exceed the energy standards established in the California Green Building Standards Code, Title 24, Part 11 (CALGreen). CalGreen Standards require that new buildings reduce water consumption, employ building commissioning to increase building system efficiencies, divert construction waste from landfills, and install low pollutant-emitting finish materials.

As shown in Section 4 above and Table 12, the proposed project is consistent with the CARB Scoping Plan measures.

CONCLUSIONS

As supported by the preceding analyses, project construction and operations would not result in the inefficient, wasteful or unnecessary consumption of energy. Further, the energy demands of the project can be accommodated within the context of available resources and energy delivery systems. The project would therefore not cause or result in the need for additional energy producing or transmission facilities. The project would not engage in wasteful or inefficient uses of energy and aims to achieve energy conservations goals within the State of California. Notwithstanding, the project proposes residential uses and will not have any long-term effects on an energy provider's future energy development or future energy conservation strategies.

Table 13
Total Electricity System Power (California 2018)

Fuel Type	California In-State Generation (GWh)	Percent of California In-State Generation	Northwest Imports (GWh)	Southwest Imports (GWh)	California Power Mix (GWh)	Percent California Power Mix
Coal	294	0.15%	399	8,740	9,433	3.30%
Large Hydro	22,096	11.34%	7,418	985	30,499	10.68%
Natural Gas	90,691	46.54%	49	8,904	99,644	34.91%
Nuclear	18,268	9.38%	0	7,573	25,841	9.05%
Oil	35	0.02%	0	0	35	0.01%
Other (Petroleum Coke/Waste Heat)	430	0.22%	0	9	439	0.15%
Renewables	63,028	32.35%	14,074	12,400	89,502	31.36%
Biomass	5,909	3.03%	772	26	6,707	2.35%
Geothermal	11,528	5.92%	171	1269	12,968	4.54%
Small Hydro	4,248	2.18%	334	1	4,583	1.61%
Solar	27,265	13.99%	174	5,094	32,533	11.40%
Wind	14,078	7.23%	12,623	6,010	32,711	11.46%
Unspecified Sources of Power	N/A	N/A	17,576	12,519	30,095	10.54%
Total	194,842	100.00%	39,517	51,130	285,488	100.00%

Notes:
Source: California Energy Commission. Total System electric Generation, June 24, 2019.
https://www.energy.ca.gov/almanac/electricity_data/total_system_power.html

Table 14
SCE 2018 Power Content Mix

Energy Resources	2017 SCE Power Mix
Eligible Renewable	36%
Biomass & Waste	1%
Geothermal	8%
Eligible Hydroelectric	1%
Solar	13%
Wind	13%
Coal	0%
Large Hydroelectric	4%
Natural Gas	17%
Nuclear	6%
Other	0%
Unspecified Sources of power*	37%
Total	100%

Notes:

(1) Source: https://www.sce.com/sites/default/files/inline-files/2018SCEPCL.pdf

* Unspecified sources of power means electricity from transactions that are not traceable to specific generation sources.

Table 15
Project Construction Power Cost and Electricity Usage

Power Cost (per 1,000 square foot of building per month of construction)	Total Building Size (1,000 Square Foot)	Construction Duration (months)	Total Project Construction Power Cost
$2.32	35.430	18	$1,479.56

Table 16
Construction Equipment Fuel Consumption Estimates

Phase	Number of Days	Offroad Equipment Type	Amount	Usage Hours	Horse Power	Load Factor	HP hrs/day	Total Fuel Consumption (gal diesel fuel)[1]
Site Preparation	33	Tractors/Loaders/Backhoes	1	8	97	0.37	287	512
	33	Rubber Tired Dozers	1	8	247	0.4	790	1,410
Grading	98	Excavators	1	8	158	0.38	480	2,544
	98	Scraper	1	8	367	0.48	1,409	7,465
	98	Tractors/Loaders/Backhoes	1	8	97	0.37	287	1,521
Building Construction	255	Cranes	1	7	231	0.29	469	6,464
	255	Forklifts	3	8	89	0.2	427	5,888
	255	Generator Sets	1	8	84	0.74	497	6,854
	255	Tractors/Loaders/Backhoes	4	7	97	0.37	1,005	13,852
	255	Welders	1	8	46	0.45	166	2,283
Paving	20	Pavers	2	8	130	0.42	874	944
	20	Paving Equipment	2	8	132	0.36	760	822
	20	Rollers	2	8	80	0.38	486	526
Architectural Coating	20	Air Compressors	1	6	78	0.48	225	243
CONSTRUCTION FUEL DEMAND (gallons of diesel fuel)								51,329

Notes:

(1) Using Carl Moyer Guidelines Table D-21 Fuel consumption rate factors (bhp-hr/gal) for engines less than 750 hp.
(Source: https://www.arb.ca.gov/msprog/moyer/guidelines/2017gl/2017_gl_appendix_d.pdf)

Table 17
Construction Worker Fuel Consumption Estimates

Phase	Number of Days	Worker Trips/Day	Trip Length (miles)	Vehicle Miles Traveled	Average Vehicle Fuel Economy (mpg)	Estimated Fuel Consumption (gallons)
Site Preparation	33	18	14.7	8,732	28.57	306
Grading	98	20	14.7	28,812	28.57	1,008
Building Construction	255	256	14.7	959,616	28.57	33,588
Paving	20	15	14.7	4,410	28.57	154
Architectural Coating	20	51	14.7	14,994	28.57	525
Total Construction Worker Fuel Consumption						35,582

Notes:

(1) Assumptions for the worker trip length and vehicle miles traveled are consistent with CalEEMod 2016.3.2 defaults.

Table 18
Construction Vendor Fuel Consumption Estimates (MHD Trucks)[1]

Phase	Number of Days	Vendor Trips/Day	Trip Length (miles)	Vehicle Miles Traveled	Average Vehicle Fuel Economy (mpg)	Estimated Fuel Consumption (gallons)
Site Preparation	33	0	6.9	0	8.5	0
Grading	98	0	6.9	0	8.5	0
Building Construction	255	100	6.9	175,950	8.5	20,700
Paving	20	0	6.9	0	8.5	0
Architectural Coating	20	0	6.9	0	8.5	0
Total Construction Worker Fuel Consumption						20,700

Notes:
(1) Assumptions for the vendor trip length and vehicle miles traveled are consistent with CalEEMod 2016.3.2 defaults.

Table 19
Construction Hauling Fuel Consumption Estimates (HHD Trucks)[1]

Phase	Number of Days	Hauling Trips/Day	Trip Length (miles)	Vehicle Miles Traveled	Average Vehicle Fuel Economy (mpg)	Estimated Fuel Consumption (gallons)
Site Preparation	33	0	20	0	8.5	0
Grading	98	0	20	0	8.5	0
Building Construction	255	0	20	0	8.5	0
Paving	20	0	20	0	8.5	0
Architectural Coating	20	0	20	0	8.5	0
Total Construction Worker Fuel Consumption						0

Notes:
(1) Assumptions for the hauling trip length and vehicle miles traveled are consistent with CalEEMod 2016.3.2 defaults.

Table 20
Estimated Vehicle Operations Fuel Consumption

Vehicle Type	Vehicle Mix	Number of Vehicles	Average Trip (miles)[1]	Daily VMT	Average Fuel Economy (mpg)	Total Gallons per Day	Total Annual Fuel Consumption (gallons)
Light Auto	Automobile	36	14.7	529	28.57	18.52	6,761
Light Truck	Automobile	3	14.7	44	14.08	3.13	1,143
Light Truck	Automobile	14	14.7	206	14.08	14.62	5,335
Medium Truck	Automobile	8	8.7	70	8.5	8.19	2,989
Light Heavy Truck	2-Axle Truck	1	8.7	9	8.5	1.02	374
Light Heavy Truck 10,000 lbs +	2-Axle Truck	0	8.7	0	8.5	0.00	0
Medium Heavy Truck	3-Axle Truck	1	8.7	9	5.85	1.49	543
Heavy Heavy Truck	4-Axle Truck	2	8.7	17	5.85	2.97	1,086
Total		66	--	884	11.74	49.94	--
Total Annual Fuel Consumption							18,230

Notes:
(1) Based on the size of the site and relative location, trips were assumed to be local rather than regional.

Table 21

Project Annual Operational Energy Demand Summary[1]

Natural Gas Demand	kBTU/year
Single-Family Housing	192,322
Total	192,322

Electricity Demand	kWh/year
Single-Family Housing	57,458
Total	57,458

Notes:

(1) Taken from the CalEEMod 2016.3.2 annual output (Appendix D of this report).

6. EMISSIONS REDUCTION MEASURES

CONSTRUCTION MEASURES

Adherence to SCAQMD Rule 403 is required.

No construction mitigation is required.

OPERATIONAL MEASURES

No operational mitigation is required.

7. REFERENCES

California Air Pollution Control Officers Association

2009 Health Risk Assessments for Proposed Land Use Projects

California Air Resources Board

2008 Resolution 08-43

2008 Recommended Approaches for Setting Interim Significance Thresholds for Greenhouse Gases under the California Environmental Quality Act

2008 ARB Recommended Interim Risk Management Policy for Inhalation-Based Residential Cancer Risk – Frequently Asked Questions

2008 Climate Change Scoping Plan, a framework for change.

2011 Supplement to the AB 32 Scoping Plan Functional Equivalent Document

2013 Almanac of Emissions and Air Quality.
Source: https://www.arb.ca.gov/aqd/almanac/almanac13/almanac13.htm

2014 First Update to the Climate Change Scoping Plan, Building on the Framework Pursuant to AB32, the California Global Warming Solutions Act of 2006. May.

2017 California's 2017 Climate Change Scoping Plan. November.

2020 Historical Air Quality, Top 4 Summary

City of La Verne

1998 The City of La Verne General Plan. December 7.

2018 City of La Verne General Plan Update Existing Conditions Report. June.

Ganddini Group, Inc.

2020 500 East Baseline Road Residential Project, Trip Generation Analysis. April 15.

Governor's Office of Planning and Research

2008 CEQA and Climate: Addressing Climate Change Through California Environmental Quality Act (CEQA) Review

2018 CEQA Guideline Sections to be Added or Amended

Intergovernmental Panel on Climate Change (IPCC)

2014 IPCC Fifth Assessment Report, Climate Change 2014: Synthesis Report

Office of Environmental Health Hazard Assessment

2015 Air Toxics Hot Spots Program Risk Assessment Guidelines

South Coast Air Quality Management District

1993 CEQA Air Quality Handbook

2003 Health Risk Assessment Guidance for Analyzing Cancer Risks from Mobile Source Diesel Idling Emissions for CEQA Air Quality Analysis

2005 Rule 403 Fugitive Dust

2007 2007 Air Quality Management Plan

2008 Final Localized Significance Threshold Methodology, Revised

2012 Final 2012 Air Quality Management Plan

2015 Final MATES-IV Multiple Air Toxics Exposure Study in the South Coast Air Basin. May.

2016 2016 Air Quality Management Plan

2018 Historical Data by Year. 2013, 2014 and 2015 Air Quality Data Tables.
Source: http://www.aqmd.gov/home/library/air-quality-data-studies/historical-data-by-year

Southern California Association of Governments

2016 2016-2040 Regional Transportation Plan/Sustainable Communities Strategy

U.S. Environmental Protection Agency (EPA)

2017 Understanding Global Warming Potentials
(Source: https://www.epa.gov/ghgemissions/understanding-global-warming-potentials)

U.S. Geological Survey

2011 Reported Historic Asbestos Mines, Historic Asbestos Prospects, and Other Natural Occurrences of Asbestos in California

APPENDICES

APPENDIX A

GLOSSARY OF TERMS

AQMP	Air Quality Management Plan
BACT	Best Available Control Technologies
CAAQS	California Ambient Air Quality Standards
CalEPA	California Environmental Protection Agency
CARB	California Air Resources Board
CCAA	California Clean Air Act
CCAR	California Climate Action Registry
CEQA	California Environmental Quality Act
CFCs	Chlorofluorocarbons
CH_4	Methane
CNG	Compressed natural gas
CO	Carbon monoxide
CO_2	Carbon dioxide
CO_2e	Carbon dioxide equivalent
DPM	Diesel particulate matter
EPA	U.S. Environmental Protection Agency
GHG	Greenhouse gas
GWP	Global warming potential
HIDPM	Hazard Index Diesel Particulate Matter
HFCs	Hydrofluorocarbons
IPCC	International Panel on Climate Change
LCFS	Low Carbon Fuel Standard
LST	Localized Significant Thresholds
$MTCO_2e$	Metric tons of carbon dioxide equivalent
$MMTCO_2e$	Million metric tons of carbon dioxide equivalent
MPO	Metropolitan Planning Organization
NAAQS	National Ambient Air Quality Standards
NOx	Nitrogen Oxides
NO_2	Nitrogen dioxide
N_2O	Nitrous oxide
O_3	Ozone
OPR	Governor's Office of Planning and Research
PFCs	Perfluorocarbons
PM	Particle matter
PM10	Particles that are less than 10 micrometers in diameter
PM2.5	Particles that are less than 2.5 micrometers in diameter
PMI	Point of maximum impact
PPM	Parts per million
PPB	Parts per billion
RTIP	Regional Transportation Improvement Plan
RTP	Regional Transportation Plan
SANBAG	San Bernardino Association of Governments
SCAB	South Coast Air Basin
SCAG	Southern California Association of Governments
SCAQMD	South Coast Air Quality Management District
SSAB	Salton Sea Air Basin
SF_6	Sulfur hexafluoride
SIP	State Implementation Plan
SOx	Sulfur Oxides
TAC	Toxic air contaminants
VOC	Volatile organic compounds

APPENDIX B

CALEEMOD MODEL DAILY EMISSIONS PRINTOUTS

19232 500 East Residential Road Project

Los Angeles-South Coast County, Summer

1.0 Project Characteristics

1.1 Land Usage

Land Uses	Size	Metric	Lot Acreage	Floor Surface Area	Population
Single Family Housing	7.00	Dwelling Unit	5.58	35,430.00	20
Other Asphalt Surfaces	1.10	Acre	1.10	47,916.00	0
Other Non-Asphalt Surfaces	12.76	Acre	12.76	555,825.60	0

1.2 Other Project Characteristics

Urbanization Urban | **Wind Speed (m/s)** 2.2 | **Precipitation Freq (Days)** 33

Climate Zone 9 | **Operational Year** 2023

Utility Company Southern California Edison

CO2 Intensity (lb/MWhr) 702.44 | **CH4 Intensity (lb/MWhr)** 0.029 | **N2O Intensity (lb/MWhr)** 0.006

1.3 User Entered Comments & Non-Default Data

Project Characteristics -

Land Use - 19.44 ac w/ 7 SFD (houses total 35,430 sf & residential lots total 243,130 sf (~5.58 ac)), paving of ~1.1 ac for roadways/driveways, & rmdr ~12.75 ac open space (includes Lot 8 Debri Basin & Lot 9 ~10.75ac open space)

Construction Phase - Per applicant, site prep/grading from Oct 2021 to April 2022 and building construction from April 2022 to April 2023. Site Vacant, no demo.

Off-road Equipment - CalEEMod default building construction timing decreased by ~15%; therefore, ~15% more equipment needed.

Off-road Equipment - Timing for site preparation phase increased to ~3x the amount of days provided by CalEEMod default; therefore, approximatley 1/3 of the default equipment needed.

Off-road Equipment - Timing for grading phase increased to ~3x the amount of days provided by CalEEMod default; therefore, approximatley 1/3 of the default equipment needed.

Grading - Site to balance. Site prep of ~3.74 acres (per Development Calculations Figure) to remove existing vegetation/trees.

Vehicle Trips - Per Trip Gen Analysis, 9.44 trips/DU/day.

Woodstoves - SCAQMD Rule 445 prohibits the installation of wood burning devices in new developments.

Sequestration - At least 16 trees to be planted.

Construction Off-road Equipment Mitigation -

Mobile Land Use Mitigation - Site is ~1.53 miles NE downtown portion of La Verne & ~0.65 miles NE of Foothill Transit Rtes 187/690 stop Foothill Blvd & Fruit St W.

Energy Mitigation - EnergyStar appliances.

Water Mitigation - 20% indoor water reduction per CalGreen Standards.

Waste Mitigation - AB 341 requires each jurisdiction in CA to divert at least 75% of their waste away from landfills by 2020.

Table Name	Column Name	Default Value	New Value
tblConstDustMitigation	WaterUnpavedRoadVehicleSpeed	0	15
tblConstructionPhase	NumDays	300.00	255.00
tblConstructionPhase	NumDays	30.00	98.00
tblConstructionPhase	NumDays	10.00	33.00
tblConstructionPhase	PhaseEndDate	3/16/2023	4/1/2023
tblConstructionPhase	PhaseEndDate	1/19/2023	3/25/2023
tblConstructionPhase	PhaseEndDate	11/25/2021	4/1/2022
tblConstructionPhase	PhaseEndDate	2/16/2023	3/3/2023
tblConstructionPhase	PhaseEndDate	10/14/2021	11/16/2021

tblConstructionPhase	PhaseStartDate	2/17/2023	3/4/2023
tblConstructionPhase	PhaseStartDate	11/26/2021	4/2/2022
tblConstructionPhase	PhaseStartDate	10/15/2021	11/17/2021
tblConstructionPhase	PhaseStartDate	1/20/2023	2/4/2023
tblFireplaces	NumberGas	5.95	6.30
tblFireplaces	NumberWood	0.35	0.00
tblGrading	AcresOfGrading	0.00	3.74
tblLandUse	LandUseSquareFeet	12,600.00	35,430.00
tblLandUse	LotAcreage	2.27	5.58
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	2.00	1.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	1.00	0.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	3.00	4.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	1.00	0.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	2.00	1.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	4.00	1.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	3.00	1.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	2.00	1.00
tblSequestration	NumberOfNewTrees	0.00	16.00
tblTripsAndVMT	WorkerTripNumber	5.00	18.00
tblTripsAndVMT	WorkerTripNumber	8.00	20.00
tblVehicleTrips	ST_TR	9.91	9.44
tblVehicleTrips	SU_TR	8.62	9.44
tblVehicleTrips	WD_TR	9.52	9.44
tblWoodstoves	NumberCatalytic	0.35	0.00
tblWoodstoves	NumberNoncatalytic	0.35	0.00

2.0 Emissions Summary

2.1 Overall Construction (Maximum Daily Emission)

Unmitigated Construction

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Year	lb/day										lb/day					
2021	1.4317	14.8109	13.3423	0.0257	6.3435	0.6459	6.9893	3.3766	0.5942	3.9708	0.0000	2,496.7575	2,496.7575	0.7406	0.0000	2,515.2714
2022	3.1635	26.9962	30.2361	0.0834	3.5017	0.9276	4.4293	0.9432	0.8709	1.8141	0.0000	8,355.4801	8,355.4801	0.9312	0.0000	8,378.7599
2023	22.7457	33.5785	44.2234	0.1059	4.0718	1.3074	4.9768	1.0944	1.2178	2.2055	0.0000	10,534.2340	10,534.2340	1.6198	0.0000	10,574.7298
Maximum	**22.7457**	**33.5785**	**44.2234**	**0.1059**	**6.3435**	**1.3074**	**6.9893**	**3.3766**	**1.2178**	**3.9708**	**0.0000**	**10,534.2340**	**10,534.2340**	**1.6198**	**0.0000**	**10,574.7298**

Mitigated Construction

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Year	lb/day										lb/day					
2021	1.4317	14.8109	13.3423	0.0257	2.5967	0.6459	3.2425	1.3494	0.5942	1.9436	0.0000	2,496.7575	2,496.7575	0.7406	0.0000	2,515.2713
2022	3.1635	26.9962	30.2361	0.0834	3.5017	0.9276	4.4293	0.9432	0.8709	1.8141	0.0000	8,355.4801	8,355.4801	0.9312	0.0000	8,378.7599
2023	22.7457	33.5785	44.2234	0.1059	4.0718	1.3074	4.9768	1.0944	1.2178	2.2055	0.0000	10,534.2340	10,534.2340	1.6198	0.0000	10,574.7298
Maximum	**22.7457**	**33.5785**	**44.2234**	**0.1059**	**4.0718**	**1.3074**	**4.9768**	**1.3494**	**1.2178**	**2.2055**	**0.0000**	**10,534.2340**	**10,534.2340**	**1.6198**	**0.0000**	**10,574.7298**

	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**	**26.92**	**0.00**	**22.85**	**37.44**	**0.00**	**25.37**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**

2.2 Overall Operational

Unmitigated Operational

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Area	1.0519	0.1112	0.6235	7.0000e-004		0.0117	0.0117		0.0117	0.0117	0.0000	134.4547	134.4547	3.5600e-003	2.4500e-003	135.2727
Energy	5.6800e-003	0.0486	0.0207	3.1000e-004		3.9300e-003	3.9300e-003		3.9300e-003	3.9300e-003		61.9894	61.9894	1.1900e-003	1.1400e-003	62.3578
Mobile	0.1090	0.4514	1.5056	5.7100e-003	0.4802	4.1600e-003	0.4843	0.1285	3.8700e-003	0.1324		581.2714	581.2714	0.0276		581.9622
Total	**1.1665**	**0.6111**	**2.1498**	**6.7200e-003**	**0.4802**	**0.0197**	**0.4999**	**0.1285**	**0.0195**	**0.1480**	**0.0000**	**777.7155**	**777.7155**	**0.0324**	**3.5900e-003**	**779.5927**

Mitigated Operational

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Area	1.0519	0.1112	0.6235	7.0000e-004		0.0117	0.0117		0.0117	0.0117	0.0000	134.4547	134.4547	3.5600e-003	2.4500e-003	135.2727
Energy	5.6800e-003	0.0486	0.0207	3.1000e-004		3.9300e-003	3.9300e-003		3.9300e-003	3.9300e-003		61.9894	61.9894	1.1900e-003	1.1400e-003	62.3578
Mobile	0.0904	0.3598	1.0149	3.6700e-003	0.2989	2.7300e-003	0.3016	0.0800	2.5400e-003	0.0825		373.7173	373.7173	0.0186		374.1811
Total	**1.1480**	**0.5196**	**1.6591**	**4.6800e-003**	**0.2989**	**0.0183**	**0.3172**	**0.0800**	**0.0181**	**0.0981**	**0.0000**	**570.1614**	**570.1614**	**0.0233**	**3.5900e-003**	**571.8116**

	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	1.59	14.98	22.82	30.36	37.75	7.24	36.54	37.75	6.84	33.69	0.00	26.69	26.69	28.04	0.00	26.65

3.0 Construction Detail

Construction Phase

Phase Number	Phase Name	Phase Type	Start Date	End Date	Num Days Week	Num Days	Phase Description
1	Site Preparation	Site Preparation	10/1/2021	11/16/2021	5	33	
2	Grading	Grading	11/17/2021	4/1/2022	5	98	
3	Building Construction	Building Construction	4/2/2022	3/25/2023	5	255	
4	Paving	Paving	2/4/2023	3/3/2023	5	20	
5	Architectural Coating	Architectural Coating	3/4/2023	4/1/2023	5	20	

Acres of Grading (Site Preparation Phase): 3.74

Acres of Grading (Grading Phase): 98

Acres of Paving: 13.86

Residential Indoor: 71,746; Residential Outdoor: 23,915; Non-Residential Indoor: 0; Non-Residential Outdoor: 0; Striped Parking Area: 36,224 (Architectural Coating – sqft)

OffRoad Equipment

Phase Name	Offroad Equipment Type	Amount	Usage Hours	Horse Power	Load Factor
Architectural Coating	Air Compressors	1	6.00	78	0.48
Grading	Excavators	1	8.00	158	0.38
Building Construction	Cranes	1	7.00	231	0.29
Building Construction	Forklifts	3	8.00	89	0.20
Building Construction	Generator Sets	1	8.00	84	0.74
Paving	Pavers	2	8.00	130	0.42
Paving	Rollers	2	8.00	80	0.38
Grading	Rubber Tired Dozers	0	8.00	247	0.40
Building Construction	Tractors/Loaders/Backhoes	4	7.00	97	0.37
Grading	Graders	0	8.00	187	0.41
Grading	Tractors/Loaders/Backhoes	1	8.00	97	0.37
Paving	Paving Equipment	2	8.00	132	0.36
Site Preparation	Tractors/Loaders/Backhoes	1	8.00	97	0.37
Site Preparation	Rubber Tired Dozers	1	8.00	247	0.40
Grading	Scrapers	1	8.00	367	0.48
Building Construction	Welders	1	8.00	46	0.45

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
Site Preparation	2	18.00	0.00	0.00	14.70	6.90	20.00	LD_Mix	HDT_Mix	HHDT
Grading	3	20.00	0.00	0.00	14.70	6.90	20.00	LD_Mix	HDT_Mix	HHDT
Building Construction	10	256.00	100.00	0.00	14.70	6.90	20.00	LD_Mix	HDT_Mix	HHDT
Paving	6	15.00	0.00	0.00	14.70	6.90	20.00	LD_Mix	HDT_Mix	HHDT
Architectural Coating	1	51.00	0.00	0.00	14.70	6.90	20.00	LD_Mix	HDT_Mix	HHDT

3.1 Mitigation Measures Construction

Water Exposed Area

Reduce Vehicle Speed on Unpaved Roads

3.2 Site Preparation - 2021

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Fugitive Dust					6.1423	0.0000	6.1423	3.3232	0.0000	3.3232			0.0000			0.0000
Off-Road	1.2336	12.8671	6.2980	0.0116		0.6442	0.6442		0.5927	0.5927		1,128.252 3	1,128.252 3	0.3649		1,137.374 8
Total	**1.2336**	**12.8671**	**6.2980**	**0.0116**	**6.1423**	**0.6442**	**6.7865**	**3.3232**	**0.5927**	**3.9159**		**1,128.252 3**	**1,128.252 3**	**0.3649**		**1,137.374 8**

3.2 Site Preparation - 2021

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
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
Worker	0.0772	0.0530	0.7250	2.0600e-003	0.2012	1.6300e-003	0.2028	0.0534	1.5000e-003	0.0549		204.9786	204.9786	6.0400e-003		205.1296
Total	**0.0772**	**0.0530**	**0.7250**	**2.0600e-003**	**0.2012**	**1.6300e-003**	**0.2028**	**0.0534**	**1.5000e-003**	**0.0549**		**204.9786**	**204.9786**	**6.0400e-003**		**205.1296**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Fugitive Dust					2.3955	0.0000	2.3955	1.2961	0.0000	1.2961			0.0000			0.0000
Off-Road	1.2336	12.8671	6.2980	0.0116		0.6442	0.6442		0.5927	0.5927	0.0000	1,128.2523	1,128.2523	0.3649		1,137.3748
Total	**1.2336**	**12.8671**	**6.2980**	**0.0116**	**2.3955**	**0.6442**	**3.0397**	**1.2961**	**0.5927**	**1.8887**	**0.0000**	**1,128.2523**	**1,128.2523**	**0.3649**		**1,137.3748**

3.2 Site Preparation - 2021

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
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
Worker	0.0772	0.0530	0.7250	2.0600e-003	0.2012	1.6300e-003	0.2028	0.0534	1.5000e-003	0.0549		204.9786	204.9786	6.0400e-003		205.1296
Total	**0.0772**	**0.0530**	**0.7250**	**2.0600e-003**	**0.2012**	**1.6300e-003**	**0.2028**	**0.0534**	**1.5000e-003**	**0.0549**		**204.9786**	**204.9786**	**6.0400e-003**		**205.1296**

3.3 Grading - 2021

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Fugitive Dust					1.0605	0.0000	1.0605	0.1145	0.0000	0.1145			0.0000			0.0000
Off-Road	1.3459	14.7520	12.5367	0.0234		0.6326	0.6326		0.5820	0.5820		2,269.003 6	2,269.003 6	0.7338		2,287.349 6
Total	**1.3459**	**14.7520**	**12.5367**	**0.0234**	**1.0605**	**0.6326**	**1.6931**	**0.1145**	**0.5820**	**0.6965**		**2,269.003 6**	**2,269.003 6**	**0.7338**		**2,287.349 6**

3.3 Grading - 2021

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
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
Worker	0.0857	0.0589	0.8056	2.2900e-003	0.2236	1.8100e-003	0.2254	0.0593	1.6600e-003	0.0610		227.7540	227.7540	6.7100e-003		227.9217
Total	**0.0857**	**0.0589**	**0.8056**	**2.2900e-003**	**0.2236**	**1.8100e-003**	**0.2254**	**0.0593**	**1.6600e-003**	**0.0610**		**227.7540**	**227.7540**	**6.7100e-003**		**227.9217**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Fugitive Dust					0.4136	0.0000	0.4136	0.0447	0.0000	0.0447			0.0000			0.0000
Off-Road	1.3459	14.7520	12.5367	0.0234		0.6326	0.6326		0.5820	0.5820	0.0000	2,269.003 6	2,269.003 6	0.7338		2,287.349 6
Total	**1.3459**	**14.7520**	**12.5367**	**0.0234**	**0.4136**	**0.6326**	**1.0462**	**0.0447**	**0.5820**	**0.6267**	**0.0000**	**2,269.003 6**	**2,269.003 6**	**0.7338**		**2,287.349 6**

3.3 Grading - 2021

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
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
Worker	0.0857	0.0589	0.8056	2.2900e-003	0.2236	1.8100e-003	0.2254	0.0593	1.6600e-003	0.0610		227.7540	227.7540	6.7100e-003		227.9217
Total	**0.0857**	**0.0589**	**0.8056**	**2.2900e-003**	**0.2236**	**1.8100e-003**	**0.2254**	**0.0593**	**1.6600e-003**	**0.0610**		**227.7540**	**227.7540**	**6.7100e-003**		**227.9217**

3.3 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	lb/day										lb/day					
Fugitive Dust					1.0605	0.0000	1.0605	0.1145	0.0000	0.1145			0.0000			0.0000
Off-Road	1.1864	12.3961	11.8689	0.0235		0.5252	0.5252		0.4832	0.4832		2,271.5481	2,271.5481	0.7347		2,289.9147
Total	**1.1864**	**12.3961**	**11.8689**	**0.0235**	**1.0605**	**0.5252**	**1.5857**	**0.1145**	**0.4832**	**0.5977**		**2,271.5481**	**2,271.5481**	**0.7347**		**2,289.9147**

3.3 Grading - 2022

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
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
Worker	0.0803	0.0532	0.7432	2.2100e-003	0.2236	1.7500e-003	0.2253	0.0593	1.6100e-003	0.0609		219.7425	219.7425	6.0600e-003		219.8941
Total	**0.0803**	**0.0532**	**0.7432**	**2.2100e-003**	**0.2236**	**1.7500e-003**	**0.2253**	**0.0593**	**1.6100e-003**	**0.0609**		**219.7425**	**219.7425**	**6.0600e-003**		**219.8941**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Fugitive Dust					0.4136	0.0000	0.4136	0.0447	0.0000	0.0447			0.0000			0.0000
Off-Road	1.1864	12.3961	11.8689	0.0235		0.5252	0.5252		0.4832	0.4832	0.0000	2,271.5481	2,271.5481	0.7347		2,289.9147
Total	**1.1864**	**12.3961**	**11.8689**	**0.0235**	**0.4136**	**0.5252**	**0.9388**	**0.0447**	**0.4832**	**0.5278**	**0.0000**	**2,271.5481**	**2,271.5481**	**0.7347**		**2,289.9147**

3.3 Grading - 2022

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
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
Worker	0.0803	0.0532	0.7432	2.2100e-003	0.2236	1.7500e-003	0.2253	0.0593	1.6100e-003	0.0609		219.7425	219.7425	6.0600e-003		219.8941
Total	**0.0803**	**0.0532**	**0.7432**	**2.2100e-003**	**0.2236**	**1.7500e-003**	**0.2253**	**0.0593**	**1.6100e-003**	**0.0609**		**219.7425**	**219.7425**	**6.0600e-003**		**219.8941**

3.4 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	lb/day										lb/day					
Off-Road	1.8504	17.0818	18.3216	0.0297		0.8879	0.8879		0.8337	0.8337		2,817.9177	2,817.9177	0.6972		2,835.3475
Total	**1.8504**	**17.0818**	**18.3216**	**0.0297**		**0.8879**	**0.8879**		**0.8337**	**0.8337**		**2,817.9177**	**2,817.9177**	**0.6972**		**2,835.3475**

3.4 Building Construction - 2022

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Vendor	0.2853	9.2330	2.4015	0.0255	0.6402	0.0174	0.6576	0.1843	0.0166	0.2009		2,724.858 9	2,724.858 9	0.1564		2,728.768 1
Worker	1.0279	0.6813	9.5130	0.0282	2.8615	0.0224	2.8839	0.7589	0.0206	0.7795		2,812.703 5	2,812.703 5	0.0776		2,814.644 3
Total	**1.3132**	**9.9143**	**11.9145**	**0.0537**	**3.5017**	**0.0398**	**3.5415**	**0.9432**	**0.0372**	**0.9804**		**5,537.562 4**	**5,537.562 4**	**0.2340**		**5,543.412 4**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Off-Road	1.8504	17.0818	18.3216	0.0297		0.8879	0.8879		0.8337	0.8337	0.0000	2,817.917 7	2,817.917 7	0.6972		2,835.347 5
Total	**1.8504**	**17.0818**	**18.3216**	**0.0297**		**0.8879**	**0.8879**		**0.8337**	**0.8337**	**0.0000**	**2,817.917 7**	**2,817.917 7**	**0.6972**		**2,835.347 5**

3.4 Building Construction - 2022

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Vendor	0.2853	9.2330	2.4015	0.0255	0.6402	0.0174	0.6576	0.1843	0.0166	0.2009		2,724.858 9	2,724.858 9	0.1564		2,728.768 1
Worker	1.0279	0.6813	9.5130	0.0282	2.8615	0.0224	2.8839	0.7589	0.0206	0.7795		2,812.703 5	2,812.703 5	0.0776		2,814.644 3
Total	**1.3132**	**9.9143**	**11.9145**	**0.0537**	**3.5017**	**0.0398**	**3.5415**	**0.9432**	**0.0372**	**0.9804**		**5,537.562 4**	**5,537.562 4**	**0.2340**		**5,543.412 4**

3.4 Building Construction - 2023

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Off-Road	1.7052	15.7286	18.1964	0.0297		0.7661	0.7661		0.7195	0.7195		2,819.089 4	2,819.089 4	0.6932		2,836.419 1
Total	**1.7052**	**15.7286**	**18.1964**	**0.0297**		**0.7661**	**0.7661**		**0.7195**	**0.7195**		**2,819.089 4**	**2,819.089 4**	**0.6932**		**2,836.419 1**

3.4 Building Construction - 2023

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Vendor	0.2116	7.0057	2.1688	0.0246	0.6402	8.0900e-003	0.6483	0.1843	7.7300e-003	0.1921		2,639.0743	2,639.0743	0.1386		2,642.5385
Worker	0.9653	0.6164	8.7607	0.0272	2.8615	0.0218	2.8832	0.7589	0.0200	0.7789		2,709.7139	2,709.7139	0.0700		2,711.4638
Total	**1.1769**	**7.6221**	**10.9295**	**0.0518**	**3.5017**	**0.0299**	**3.5316**	**0.9432**	**0.0278**	**0.9710**		**5,348.7882**	**5,348.7882**	**0.2086**		**5,354.0023**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Off-Road	1.7052	15.7286	18.1964	0.0297		0.7661	0.7661		0.7195	0.7195	0.0000	2,819.0894	2,819.0894	0.6932		2,836.4191
Total	**1.7052**	**15.7286**	**18.1964**	**0.0297**		**0.7661**	**0.7661**		**0.7195**	**0.7195**	**0.0000**	**2,819.0894**	**2,819.0894**	**0.6932**		**2,836.4191**

3.4 Building Construction - 2023

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Vendor	0.2116	7.0057	2.1688	0.0246	0.6402	8.0900e-003	0.6483	0.1843	7.7300e-003	0.1921		2,639.0743	2,639.0743	0.1386		2,642.5385
Worker	0.9653	0.6164	8.7607	0.0272	2.8615	0.0218	2.8832	0.7589	0.0200	0.7789		2,709.7139	2,709.7139	0.0700		2,711.4638
Total	**1.1769**	**7.6221**	**10.9295**	**0.0518**	**3.5017**	**0.0299**	**3.5316**	**0.9432**	**0.0278**	**0.9710**		**5,348.7882**	**5,348.7882**	**0.2086**		**5,354.0023**

3.5 Paving - 2023

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Off-Road	1.0327	10.1917	14.5842	0.0228		0.5102	0.5102		0.4694	0.4694		2,207.5841	2,207.5841	0.7140		2,225.4336
Paving	0.1441					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Total	**1.1768**	**10.1917**	**14.5842**	**0.0228**		**0.5102**	**0.5102**		**0.4694**	**0.4694**		**2,207.5841**	**2,207.5841**	**0.7140**		**2,225.4336**

3.5 Paving - 2023

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
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
Worker	0.0566	0.0361	0.5133	1.5900e-003	0.1677	1.2800e-003	0.1689	0.0445	1.1700e-003	0.0456		158.7723	158.7723	4.1000e-003		158.8748
Total	**0.0566**	**0.0361**	**0.5133**	**1.5900e-003**	**0.1677**	**1.2800e-003**	**0.1689**	**0.0445**	**1.1700e-003**	**0.0456**		**158.7723**	**158.7723**	**4.1000e-003**		**158.8748**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Off-Road	1.0327	10.1917	14.5842	0.0228		0.5102	0.5102		0.4694	0.4694	0.0000	2,207.5841	2,207.5841	0.7140		2,225.4336
Paving	0.1441					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Total	**1.1768**	**10.1917**	**14.5842**	**0.0228**		**0.5102**	**0.5102**		**0.4694**	**0.4694**	**0.0000**	**2,207.5841**	**2,207.5841**	**0.7140**		**2,225.4336**

3.5 Paving - 2023

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
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
Worker	0.0566	0.0361	0.5133	1.5900e-003	0.1677	1.2800e-003	0.1689	0.0445	1.1700e-003	0.0456		158.7723	158.7723	4.1000e-003		158.8748
Total	**0.0566**	**0.0361**	**0.5133**	**1.5900e-003**	**0.1677**	**1.2800e-003**	**0.1689**	**0.0445**	**1.1700e-003**	**0.0456**		**158.7723**	**158.7723**	**4.1000e-003**		**158.8748**

3.6 Architectural Coating - 2023

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Archit. Coating	19.4796					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Off-Road	0.1917	1.3030	1.8111	2.9700e-003		0.0708	0.0708		0.0708	0.0708		281.4481	281.4481	0.0168		281.8690
Total	**19.6713**	**1.3030**	**1.8111**	**2.9700e-003**		**0.0708**	**0.0708**		**0.0708**	**0.0708**		**281.4481**	**281.4481**	**0.0168**		**281.8690**

3.6 Architectural Coating - 2023

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
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
Worker	0.1923	0.1228	1.7453	5.4200e-003	0.5701	4.3400e-003	0.5744	0.1512	3.9900e-003	0.1552		539.8258	539.8258	0.0139		540.1744
Total	**0.1923**	**0.1228**	**1.7453**	**5.4200e-003**	**0.5701**	**4.3400e-003**	**0.5744**	**0.1512**	**3.9900e-003**	**0.1552**		**539.8258**	**539.8258**	**0.0139**		**540.1744**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Archit. Coating	19.4796					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Off-Road	0.1917	1.3030	1.8111	2.9700e-003		0.0708	0.0708		0.0708	0.0708	0.0000	281.4481	281.4481	0.0168		281.8690
Total	**19.6713**	**1.3030**	**1.8111**	**2.9700e-003**		**0.0708**	**0.0708**		**0.0708**	**0.0708**	**0.0000**	**281.4481**	**281.4481**	**0.0168**		**281.8690**

3.6 Architectural Coating - 2023

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
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
Worker	0.1923	0.1228	1.7453	5.4200e-003	0.5701	4.3400e-003	0.5744	0.1512	3.9900e-003	0.1552		539.8258	539.8258	0.0139		540.1744
Total	**0.1923**	**0.1228**	**1.7453**	**5.4200e-003**	**0.5701**	**4.3400e-003**	**0.5744**	**0.1512**	**3.9900e-003**	**0.1552**		**539.8258**	**539.8258**	**0.0139**		**540.1744**

4.0 Operational Detail - Mobile

4.1 Mitigation Measures Mobile

Improve Destination Accessibility

Increase Transit Accessibility

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Mitigated	0.0904	0.3598	1.0149	3.6700e-003	0.2989	2.7300e-003	0.3016	0.0800	2.5400e-003	0.0825		373.7173	373.7173	0.0186		374.1811
Unmitigated	0.1090	0.4514	1.5056	5.7100e-003	0.4802	4.1600e-003	0.4843	0.1285	3.8700e-003	0.1324		581.2714	581.2714	0.0276		581.9622

4.2 Trip Summary Information

	Average Daily Trip Rate			Unmitigated	Mitigated
Land Use	Weekday	Saturday	Sunday	Annual VMT	Annual VMT
Other Asphalt Surfaces	0.00	0.00	0.00		
Other Non-Asphalt Surfaces	0.00	0.00	0.00		
Single Family Housing	66.08	66.08	66.08	225,805	140,568
Total	66.08	66.08	66.08	225,805	140,568

4.3 Trip Type Information

	Miles			Trip %			Trip Purpose %		
Land Use	H-W or C-W	H-S or C-C	H-O or C-NW	H-W or C-W	H-S or C-C	H-O or C-NW	Primary	Diverted	Pass-by
Other Asphalt Surfaces	16.60	8.40	6.90	0.00	0.00	0.00	0	0	0
Other Non-Asphalt Surfaces	16.60	8.40	6.90	0.00	0.00	0.00	0	0	0
Single Family Housing	14.70	5.90	8.70	40.20	19.20	40.60	86	11	3

4.4 Fleet Mix

Land Use	LDA	LDT1	LDT2	MDV	LHD1	LHD2	MHD	HHD	OBUS	UBUS	MCY	SBUS	MH
Other Asphalt Surfaces	0.545842	0.044768	0.205288	0.119317	0.015350	0.006227	0.020460	0.031333	0.002546	0.002133	0.005184	0.000692	0.000862
Other Non-Asphalt Surfaces	0.545842	0.044768	0.205288	0.119317	0.015350	0.006227	0.020460	0.031333	0.002546	0.002133	0.005184	0.000692	0.000862
Single Family Housing	0.545842	0.044768	0.205288	0.119317	0.015350	0.006227	0.020460	0.031333	0.002546	0.002133	0.005184	0.000692	0.000862

5.0 Energy Detail

Historical Energy Use: N

5.1 Mitigation Measures Energy

Install Energy Efficient Appliances

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
NaturalGas Mitigated	5.6800e-003	0.0486	0.0207	3.1000e-004		3.9300e-003	3.9300e-003		3.9300e-003	3.9300e-003		61.9894	61.9894	1.1900e-003	1.1400e-003	62.3578
NaturalGas Unmitigated	5.6800e-003	0.0486	0.0207	3.1000e-004		3.9300e-003	3.9300e-003		3.9300e-003	3.9300e-003		61.9894	61.9894	1.1900e-003	1.1400e-003	62.3578

5.2 Energy by Land Use - NaturalGas

Unmitigated

	NaturalGas Use	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Land Use	kBTU/yr	lb/day										lb/day					
Other Asphalt Surfaces	0	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000
Other Non-Asphalt Surfaces	0	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000
Single Family Housing	526.91	5.6800e-003	0.0486	0.0207	3.1000e-004		3.9300e-003	3.9300e-003		3.9300e-003	3.9300e-003		61.9894	61.9894	1.1900e-003	1.1400e-003	62.3578
Total		**5.6800e-003**	**0.0486**	**0.0207**	**3.1000e-004**		**3.9300e-003**	**3.9300e-003**		**3.9300e-003**	**3.9300e-003**		**61.9894**	**61.9894**	**1.1900e-003**	**1.1400e-003**	**62.3578**

Mitigated

	NaturalGas Use	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Land Use	kBTU/yr	lb/day										lb/day					
Other Asphalt Surfaces	0	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000
Other Non-Asphalt Surfaces	0	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000
Single Family Housing	0.52691	5.6800e-003	0.0486	0.0207	3.1000e-004		3.9300e-003	3.9300e-003		3.9300e-003	3.9300e-003		61.9894	61.9894	1.1900e-003	1.1400e-003	62.3578
Total		**5.6800e-003**	**0.0486**	**0.0207**	**3.1000e-004**		**3.9300e-003**	**3.9300e-003**		**3.9300e-003**	**3.9300e-003**		**61.9894**	**61.9894**	**1.1900e-003**	**1.1400e-003**	**62.3578**

6.0 Area Detail

6.1 Mitigation Measures Area

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Mitigated	1.0519	0.1112	0.6235	7.0000e-004		0.0117	0.0117		0.0117	0.0117	0.0000	134.4547	134.4547	3.5600e-003	2.4500e-003	135.2727
Unmitigated	1.0519	0.1112	0.6235	7.0000e-004		0.0117	0.0117		0.0117	0.0117	0.0000	134.4547	134.4547	3.5600e-003	2.4500e-003	135.2727

6.2 Area by SubCategory

Unmitigated

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
SubCategory	lb/day										lb/day					
Architectural Coating	0.1067					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Consumer Products	0.9154					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Hearth	0.0122	0.1045	0.0445	6.7000e-004		8.4500e-003	8.4500e-003		8.4500e-003	8.4500e-003	0.0000	133.4118	133.4118	2.5600e-003	2.4500e-003	134.2046
Landscaping	0.0175	6.6700e-003	0.5791	3.0000e-005		3.2000e-003	3.2000e-003		3.2000e-003	3.2000e-003		1.0429	1.0429	1.0100e-003		1.0681
Total	**1.0519**	**0.1112**	**0.6235**	**7.0000e-004**		**0.0117**	**0.0117**		**0.0117**	**0.0117**	**0.0000**	**134.4547**	**134.4547**	**3.5700e-003**	**2.4500e-003**	**135.2727**

6.2 Area by SubCategory

Mitigated

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
SubCategory	lb/day										lb/day					
Architectural Coating	0.1067					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Consumer Products	0.9154					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Hearth	0.0122	0.1045	0.0445	6.7000e-004		8.4500e-003	8.4500e-003		8.4500e-003	8.4500e-003	0.0000	133.4118	133.4118	2.5600e-003	2.4500e-003	134.2046
Landscaping	0.0175	6.6700e-003	0.5791	3.0000e-005		3.2000e-003	3.2000e-003		3.2000e-003	3.2000e-003		1.0429	1.0429	1.0100e-003		1.0681
Total	**1.0519**	**0.1112**	**0.6235**	**7.0000e-004**		**0.0117**	**0.0117**		**0.0117**	**0.0117**	**0.0000**	**134.4547**	**134.4547**	**3.5700e-003**	**2.4500e-003**	**135.2727**

7.0 Water Detail

7.1 Mitigation Measures Water

Apply Water Conservation Strategy

8.0 Waste Detail

8.1 Mitigation Measures Waste

Institute Recycling and Composting Services

9.0 Operational Offroad

Equipment Type	Number	Hours/Day	Days/Year	Horse Power	Load Factor	Fuel Type

10.0 Stationary Equipment

Fire Pumps and Emergency Generators

Equipment Type	Number	Hours/Day	Hours/Year	Horse Power	Load Factor	Fuel Type

Boilers

Equipment Type	Number	Heat Input/Day	Heat Input/Year	Boiler Rating	Fuel Type

User Defined Equipment

Equipment Type	Number

11.0 Vegetation

19232 500 East Residential Road Project

Los Angeles-South Coast County, Winter

1.0 Project Characteristics

1.1 Land Usage

Land Uses	Size	Metric	Lot Acreage	Floor Surface Area	Population
Single Family Housing	7.00	Dwelling Unit	5.58	35,430.00	20
Other Asphalt Surfaces	1.10	Acre	1.10	47,916.00	0
Other Non-Asphalt Surfaces	12.76	Acre	12.76	555,825.60	0

1.2 Other Project Characteristics

Urbanization Urban **Wind Speed (m/s)** 2.2 **Precipitation Freq (Days)** 33

Climate Zone 9 **Operational Year** 2023

Utility Company Southern California Edison

CO2 Intensity (lb/MWhr) 702.44 **CH4 Intensity (lb/MWhr)** 0.029 **N2O Intensity (lb/MWhr)** 0.006

1.3 User Entered Comments & Non-Default Data

Project Characteristics -

Land Use - 19.44 ac w/ 7 SFD (houses total 35,430 sf & residential lots total 243,130 sf (~5.58 ac)), paving of ~1.1 ac for roadways/driveways, & rmdr ~12.75 ac open space (includes Lot 8 Debri Basin & Lot 9 ~10.75ac open space)

Construction Phase - Per applicant, site prep/grading from Oct 2021 to April 2022 and building construction from April 2022 to April 2023. Site Vacant, no demo.

Off-road Equipment - CalEEMod default building construction timing decreased by ~15%; therefore, ~15% more equipment needed.

Off-road Equipment - Timing for site preparation phase increased to ~3x the amount of days provided by CalEEMod default; therefore, approximatley 1/3 of the default equipment needed.

Off-road Equipment - Timing for grading phase increased to ~3x the amount of days provided by CalEEMod default; therefore, approximatley 1/3 of the default equipment needed.

Grading - Site to balance. Site prep of ~3.74 acres (per Development Calculations Figure) to remove existing vegetation/trees.

Vehicle Trips - Per Trip Gen Analysis, 9.44 trips/DU/day.

Woodstoves - SCAQMD Rule 445 prohibits the installation of wood burning devices in new developments.

Sequestration - At least 16 trees to be planted.

Construction Off-road Equipment Mitigation -

Mobile Land Use Mitigation - Site is ~1.53 miles NE downtown portion of La Verne & ~0.65 miles NE of Foothill Transit Rtes 187/690 stop Foothill Blvd & Fruit St W.

Energy Mitigation - EnergyStar appliances.

Water Mitigation - 20% indoor water reduction per CalGreen Standards.

Waste Mitigation - AB 341 requires each jurisdiction in CA to divert at least 75% of their waste away from landfills by 2020.

Table Name	Column Name	Default Value	New Value
tblConstDustMitigation	WaterUnpavedRoadVehicleSpeed	0	15
tblConstructionPhase	NumDays	300.00	255.00
tblConstructionPhase	NumDays	30.00	98.00
tblConstructionPhase	NumDays	10.00	33.00
tblConstructionPhase	PhaseEndDate	3/16/2023	4/1/2023
tblConstructionPhase	PhaseEndDate	1/19/2023	3/25/2023
tblConstructionPhase	PhaseEndDate	11/25/2021	4/1/2022
tblConstructionPhase	PhaseEndDate	2/16/2023	3/3/2023
tblConstructionPhase	PhaseEndDate	10/14/2021	11/16/2021

tblConstructionPhase	PhaseStartDate	2/17/2023	3/4/2023
tblConstructionPhase	PhaseStartDate	11/26/2021	4/2/2022
tblConstructionPhase	PhaseStartDate	10/15/2021	11/17/2021
tblConstructionPhase	PhaseStartDate	1/20/2023	2/4/2023
tblFireplaces	NumberGas	5.95	6.30
tblFireplaces	NumberWood	0.35	0.00
tblGrading	AcresOfGrading	0.00	3.74
tblLandUse	LandUseSquareFeet	12,600.00	35,430.00
tblLandUse	LotAcreage	2.27	5.58
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	2.00	1.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	1.00	0.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	3.00	4.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	1.00	0.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	2.00	1.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	4.00	1.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	3.00	1.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	2.00	1.00
tblSequestration	NumberOfNewTrees	0.00	16.00
tblTripsAndVMT	WorkerTripNumber	5.00	18.00
tblTripsAndVMT	WorkerTripNumber	8.00	20.00
tblVehicleTrips	ST_TR	9.91	9.44
tblVehicleTrips	SU_TR	8.62	9.44
tblVehicleTrips	WD_TR	9.52	9.44
tblWoodstoves	NumberCatalytic	0.35	0.00
tblWoodstoves	NumberNoncatalytic	0.35	0.00

2.0 Emissions Summary

2.1 Overall Construction (Maximum Daily Emission)

Unmitigated Construction

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Year	lb/day										lb/day					
2021	1.4413	14.8172	13.2733	0.0256	6.3435	0.6459	6.9893	3.3766	0.5942	3.9708	0.0000	2,483.4538	2,483.4538	0.7402	0.0000	2,501.9576
2022	3.2964	27.0438	29.6622	0.0810	3.5017	0.9282	4.4299	0.9432	0.8715	1.8147	0.0000	8,116.1183	8,116.1183	0.9367	0.0000	8,139.5344
2023	22.8943	33.6161	43.5911	0.1035	4.0718	1.3078	4.9772	1.0944	1.2182	2.2059	0.0000	10,295.1994	10,295.1994	1.6233	0.0000	10,335.7813
Maximum	**22.8943**	**33.6161**	**43.5911**	**0.1035**	**6.3435**	**1.3078**	**6.9893**	**3.3766**	**1.2182**	**3.9708**	**0.0000**	**10,295.1994**	**10,295.1994**	**1.6233**	**0.0000**	**10,335.7813**

Mitigated Construction

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Year	lb/day										lb/day					
2021	1.4413	14.8172	13.2733	0.0256	2.5967	0.6459	3.2425	1.3494	0.5942	1.9436	0.0000	2,483.4538	2,483.4538	0.7402	0.0000	2,501.9576
2022	3.2964	27.0438	29.6622	0.0810	3.5017	0.9282	4.4299	0.9432	0.8715	1.8147	0.0000	8,116.1183	8,116.1183	0.9367	0.0000	8,139.5344
2023	22.8943	33.6161	43.5911	0.1035	4.0718	1.3078	4.9772	1.0944	1.2182	2.2059	0.0000	10,295.1993	10,295.1993	1.6233	0.0000	10,335.7813
Maximum	**22.8943**	**33.6161**	**43.5911**	**0.1035**	**4.0718**	**1.3078**	**4.9772**	**1.3494**	**1.2182**	**2.2059**	**0.0000**	**10,295.1993**	**10,295.1993**	**1.6233**	**0.0000**	**10,335.7813**

	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**	**26.92**	**0.00**	**22.85**	**37.44**	**0.00**	**25.37**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**

2.2 Overall Operational

Unmitigated Operational

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Area	1.0519	0.1112	0.6235	7.0000e-004		0.0117	0.0117		0.0117	0.0117	0.0000	134.4547	134.4547	3.5600e-003	2.4500e-003	135.2727
Energy	5.6800e-003	0.0486	0.0207	3.1000e-004		3.9300e-003	3.9300e-003		3.9300e-003	3.9300e-003		61.9894	61.9894	1.1900e-003	1.1400e-003	62.3578
Mobile	0.1056	0.4631	1.4236	5.4300e-003	0.4802	4.1800e-003	0.4843	0.1285	3.8900e-003	0.1324		553.4636	553.4636	0.0275		554.1511
Total	**1.1631**	**0.6228**	**2.0678**	**6.4400e-003**	**0.4802**	**0.0198**	**0.4999**	**0.1285**	**0.0195**	**0.1480**	**0.0000**	**749.9077**	**749.9077**	**0.0323**	**3.5900e-003**	**751.7815**

Mitigated Operational

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Area	1.0519	0.1112	0.6235	7.0000e-004		0.0117	0.0117		0.0117	0.0117	0.0000	134.4547	134.4547	3.5600e-003	2.4500e-003	135.2727
Energy	5.6800e-003	0.0486	0.0207	3.1000e-004		3.9300e-003	3.9300e-003		3.9300e-003	3.9300e-003		61.9894	61.9894	1.1900e-003	1.1400e-003	62.3578
Mobile	0.0875	0.3657	0.9791	3.4800e-003	0.2989	2.7500e-003	0.3017	0.0800	2.5600e-003	0.0825		355.2911	355.2911	0.0186		355.7572
Total	**1.1450**	**0.5255**	**1.6233**	**4.4900e-003**	**0.2989**	**0.0183**	**0.3172**	**0.0800**	**0.0181**	**0.0981**	**0.0000**	**551.7352**	**551.7352**	**0.0234**	**3.5900e-003**	**553.3877**

	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	1.55	15.63	21.49	30.28	37.75	7.24	36.54	37.75	6.83	33.68	0.00	26.43	26.43	27.47	0.00	26.39

3.0 Construction Detail

Construction Phase

Phase Number	Phase Name	Phase Type	Start Date	End Date	Num Days Week	Num Days	Phase Description
1	Site Preparation	Site Preparation	10/1/2021	11/16/2021	5	33	
2	Grading	Grading	11/17/2021	4/1/2022	5	98	
3	Building Construction	Building Construction	4/2/2022	3/25/2023	5	255	
4	Paving	Paving	2/4/2023	3/3/2023	5	20	
5	Architectural Coating	Architectural Coating	3/4/2023	4/1/2023	5	20	

Acres of Grading (Site Preparation Phase): 3.74

Acres of Grading (Grading Phase): 98

Acres of Paving: 13.86

Residential Indoor: 71,746; Residential Outdoor: 23,915; Non-Residential Indoor: 0; Non-Residential Outdoor: 0; Striped Parking Area: 36,224 (Architectural Coating – sqft)

OffRoad Equipment

Phase Name	Offroad Equipment Type	Amount	Usage Hours	Horse Power	Load Factor
Architectural Coating	Air Compressors	1	6.00	78	0.48
Grading	Excavators	1	8.00	158	0.38
Building Construction	Cranes	1	7.00	231	0.29
Building Construction	Forklifts	3	8.00	89	0.20
Building Construction	Generator Sets	1	8.00	84	0.74
Paving	Pavers	2	8.00	130	0.42
Paving	Rollers	2	8.00	80	0.38
Grading	Rubber Tired Dozers	0	8.00	247	0.40
Building Construction	Tractors/Loaders/Backhoes	4	7.00	97	0.37
Grading	Graders	0	8.00	187	0.41
Grading	Tractors/Loaders/Backhoes	1	8.00	97	0.37
Paving	Paving Equipment	2	8.00	132	0.36
Site Preparation	Tractors/Loaders/Backhoes	1	8.00	97	0.37
Site Preparation	Rubber Tired Dozers	1	8.00	247	0.40
Grading	Scrapers	1	8.00	367	0.48
Building Construction	Welders	1	8.00	46	0.45

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
Site Preparation	2	18.00	0.00	0.00	14.70	6.90	20.00	LD_Mix	HDT_Mix	HHDT
Grading	3	20.00	0.00	0.00	14.70	6.90	20.00	LD_Mix	HDT_Mix	HHDT
Building Construction	10	256.00	100.00	0.00	14.70	6.90	20.00	LD_Mix	HDT_Mix	HHDT
Paving	6	15.00	0.00	0.00	14.70	6.90	20.00	LD_Mix	HDT_Mix	HHDT
Architectural Coating	1	51.00	0.00	0.00	14.70	6.90	20.00	LD_Mix	HDT_Mix	HHDT

3.1 Mitigation Measures Construction

Water Exposed Area

Reduce Vehicle Speed on Unpaved Roads

3.2 Site Preparation - 2021

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Fugitive Dust					6.1423	0.0000	6.1423	3.3232	0.0000	3.3232			0.0000			0.0000
Off-Road	1.2336	12.8671	6.2980	0.0116		0.6442	0.6442		0.5927	0.5927		1,128.2523	1,128.2523	0.3649		1,137.3748
Total	**1.2336**	**12.8671**	**6.2980**	**0.0116**	**6.1423**	**0.6442**	**6.7865**	**3.3232**	**0.5927**	**3.9159**		**1,128.2523**	**1,128.2523**	**0.3649**		**1,137.3748**

3.2 Site Preparation - 2021

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
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
Worker	0.0858	0.0587	0.6629	1.9400e-003	0.2012	1.6300e-003	0.2028	0.0534	1.5000e-003	0.0549		193.0052	193.0052	5.6800e-003		193.1472
Total	**0.0858**	**0.0587**	**0.6629**	**1.9400e-003**	**0.2012**	**1.6300e-003**	**0.2028**	**0.0534**	**1.5000e-003**	**0.0549**		**193.0052**	**193.0052**	**5.6800e-003**		**193.1472**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Fugitive Dust					2.3955	0.0000	2.3955	1.2961	0.0000	1.2961			0.0000			0.0000
Off-Road	1.2336	12.8671	6.2980	0.0116		0.6442	0.6442		0.5927	0.5927	0.0000	1,128.2523	1,128.2523	0.3649		1,137.3748
Total	**1.2336**	**12.8671**	**6.2980**	**0.0116**	**2.3955**	**0.6442**	**3.0397**	**1.2961**	**0.5927**	**1.8887**	**0.0000**	**1,128.2523**	**1,128.2523**	**0.3649**		**1,137.3748**

3.2 Site Preparation - 2021

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
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
Worker	0.0858	0.0587	0.6629	1.9400e-003	0.2012	1.6300e-003	0.2028	0.0534	1.5000e-003	0.0549		193.0052	193.0052	5.6800e-003		193.1472
Total	**0.0858**	**0.0587**	**0.6629**	**1.9400e-003**	**0.2012**	**1.6300e-003**	**0.2028**	**0.0534**	**1.5000e-003**	**0.0549**		**193.0052**	**193.0052**	**5.6800e-003**		**193.1472**

3.3 Grading - 2021

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Fugitive Dust					1.0605	0.0000	1.0605	0.1145	0.0000	0.1145			0.0000			0.0000
Off-Road	1.3459	14.7520	12.5367	0.0234		0.6326	0.6326		0.5820	0.5820		2,269.0036	2,269.0036	0.7338		2,287.3496
Total	**1.3459**	**14.7520**	**12.5367**	**0.0234**	**1.0605**	**0.6326**	**1.6931**	**0.1145**	**0.5820**	**0.6965**		**2,269.0036**	**2,269.0036**	**0.7338**		**2,287.3496**

3.3 Grading - 2021

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
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
Worker	0.0954	0.0652	0.7365	2.1500e-003	0.2236	1.8100e-003	0.2254	0.0593	1.6600e-003	0.0610		214.4502	214.4502	6.3100e-003		214.6080
Total	**0.0954**	**0.0652**	**0.7365**	**2.1500e-003**	**0.2236**	**1.8100e-003**	**0.2254**	**0.0593**	**1.6600e-003**	**0.0610**		**214.4502**	**214.4502**	**6.3100e-003**		**214.6080**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Fugitive Dust					0.4136	0.0000	0.4136	0.0447	0.0000	0.0447			0.0000			0.0000
Off-Road	1.3459	14.7520	12.5367	0.0234		0.6326	0.6326		0.5820	0.5820	0.0000	2,269.0036	2,269.0036	0.7338		2,287.3496
Total	**1.3459**	**14.7520**	**12.5367**	**0.0234**	**0.4136**	**0.6326**	**1.0462**	**0.0447**	**0.5820**	**0.6267**	**0.0000**	**2,269.0036**	**2,269.0036**	**0.7338**		**2,287.3496**

3.3 Grading - 2021

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
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
Worker	0.0954	0.0652	0.7365	2.1500e-003	0.2236	1.8100e-003	0.2254	0.0593	1.6600e-003	0.0610		214.4502	214.4502	6.3100e-003		214.6080
Total	**0.0954**	**0.0652**	**0.7365**	**2.1500e-003**	**0.2236**	**1.8100e-003**	**0.2254**	**0.0593**	**1.6600e-003**	**0.0610**		**214.4502**	**214.4502**	**6.3100e-003**		**214.6080**

3.3 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	lb/day										lb/day					
Fugitive Dust					1.0605	0.0000	1.0605	0.1145	0.0000	0.1145			0.0000			0.0000
Off-Road	1.1864	12.3961	11.8689	0.0235		0.5252	0.5252		0.4832	0.4832		2,271.5481	2,271.5481	0.7347		2,289.9147
Total	**1.1864**	**12.3961**	**11.8689**	**0.0235**	**1.0605**	**0.5252**	**1.5857**	**0.1145**	**0.4832**	**0.5977**		**2,271.5481**	**2,271.5481**	**0.7347**		**2,289.9147**

3.3 Grading - 2022

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
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
Worker	0.0896	0.0589	0.6784	2.0800e-003	0.2236	1.7500e-003	0.2253	0.0593	1.6100e-003	0.0609		206.9139	206.9139	5.7000e-003		207.0563
Total	**0.0896**	**0.0589**	**0.6784**	**2.0800e-003**	**0.2236**	**1.7500e-003**	**0.2253**	**0.0593**	**1.6100e-003**	**0.0609**		**206.9139**	**206.9139**	**5.7000e-003**		**207.0563**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Fugitive Dust					0.4136	0.0000	0.4136	0.0447	0.0000	0.0447			0.0000			0.0000
Off-Road	1.1864	12.3961	11.8689	0.0235		0.5252	0.5252		0.4832	0.4832	0.0000	2,271.5481	2,271.5481	0.7347		2,289.9147
Total	**1.1864**	**12.3961**	**11.8689**	**0.0235**	**0.4136**	**0.5252**	**0.9388**	**0.0447**	**0.4832**	**0.5278**	**0.0000**	**2,271.5481**	**2,271.5481**	**0.7347**		**2,289.9147**

3.3 Grading - 2022

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
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
Worker	0.0896	0.0589	0.6784	2.0800e-003	0.2236	1.7500e-003	0.2253	0.0593	1.6100e-003	0.0609		206.9139	206.9139	5.7000e-003		207.0563
Total	**0.0896**	**0.0589**	**0.6784**	**2.0800e-003**	**0.2236**	**1.7500e-003**	**0.2253**	**0.0593**	**1.6100e-003**	**0.0609**		**206.9139**	**206.9139**	**5.7000e-003**		**207.0563**

3.4 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	lb/day										lb/day					
Off-Road	1.8504	17.0818	18.3216	0.0297		0.8879	0.8879		0.8337	0.8337		2,817.917 7	2,817.917 7	0.6972		2,835.347 5
Total	**1.8504**	**17.0818**	**18.3216**	**0.0297**		**0.8879**	**0.8879**		**0.8337**	**0.8337**		**2,817.917 7**	**2,817.917 7**	**0.6972**		**2,835.347 5**

3.4 Building Construction - 2022

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Vendor	0.2996	9.2079	2.6577	0.0248	0.6402	0.0179	0.6582	0.1843	0.0171	0.2015		2,649.7028	2,649.7028	0.1665		2,653.8660
Worker	1.1465	0.7540	8.6829	0.0266	2.8615	0.0224	2.8839	0.7589	0.0206	0.7795		2,648.4978	2,648.4978	0.0729		2,650.3210
Total	**1.4460**	**9.9620**	**11.3406**	**0.0514**	**3.5017**	**0.0403**	**3.5420**	**0.9432**	**0.0378**	**0.9810**		**5,298.2006**	**5,298.2006**	**0.2395**		**5,304.1869**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Off-Road	1.8504	17.0818	18.3216	0.0297		0.8879	0.8879		0.8337	0.8337	0.0000	2,817.9177	2,817.9177	0.6972		2,835.3475
Total	**1.8504**	**17.0818**	**18.3216**	**0.0297**		**0.8879**	**0.8879**		**0.8337**	**0.8337**	**0.0000**	**2,817.9177**	**2,817.9177**	**0.6972**		**2,835.3475**

3.4 Building Construction - 2022

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Vendor	0.2996	9.2079	2.6577	0.0248	0.6402	0.0179	0.6582	0.1843	0.0171	0.2015		2,649.702 8	2,649.702 8	0.1665		2,653.866 0
Worker	1.1465	0.7540	8.6829	0.0266	2.8615	0.0224	2.8839	0.7589	0.0206	0.7795		2,648.497 8	2,648.497 8	0.0729		2,650.321 0
Total	**1.4460**	**9.9620**	**11.3406**	**0.0514**	**3.5017**	**0.0403**	**3.5420**	**0.9432**	**0.0378**	**0.9810**		**5,298.200 6**	**5,298.200 6**	**0.2395**		**5,304.186 9**

3.4 Building Construction - 2023

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Off-Road	1.7052	15.7286	18.1964	0.0297		0.7661	0.7661		0.7195	0.7195		2,819.089 4	2,819.089 4	0.6932		2,836.419 1
Total	**1.7052**	**15.7286**	**18.1964**	**0.0297**		**0.7661**	**0.7661**		**0.7195**	**0.7195**		**2,819.089 4**	**2,819.089 4**	**0.6932**		**2,836.419 1**

3.4 Building Construction - 2023

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Vendor	0.2226	6.9739	2.3616	0.0240	0.6402	8.5100e-003	0.6488	0.1843	8.1300e-003	0.1925		2,567.4131	2,567.4131	0.1466		2,571.0781
Worker	1.0801	0.6820	7.9812	0.0256	2.8615	0.0218	2.8832	0.7589	0.0200	0.7789		2,551.6047	2,551.6047	0.0657		2,553.2463
Total	**1.3027**	**7.6558**	**10.3428**	**0.0496**	**3.5017**	**0.0303**	**3.5320**	**0.9432**	**0.0282**	**0.9714**		**5,119.0178**	**5,119.0178**	**0.2123**		**5,124.3244**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Off-Road	1.7052	15.7286	18.1964	0.0297		0.7661	0.7661		0.7195	0.7195	0.0000	2,819.0894	2,819.0894	0.6932		2,836.4191
Total	**1.7052**	**15.7286**	**18.1964**	**0.0297**		**0.7661**	**0.7661**		**0.7195**	**0.7195**	**0.0000**	**2,819.0894**	**2,819.0894**	**0.6932**		**2,836.4191**

3.4 Building Construction - 2023

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Vendor	0.2226	6.9739	2.3616	0.0240	0.6402	8.5100e-003	0.6488	0.1843	8.1300e-003	0.1925		2,567.4131	2,567.4131	0.1466		2,571.0781
Worker	1.0801	0.6820	7.9812	0.0256	2.8615	0.0218	2.8832	0.7589	0.0200	0.7789		2,551.6047	2,551.6047	0.0657		2,553.2463
Total	**1.3027**	**7.6558**	**10.3428**	**0.0496**	**3.5017**	**0.0303**	**3.5320**	**0.9432**	**0.0282**	**0.9714**		**5,119.0178**	**5,119.0178**	**0.2123**		**5,124.3244**

3.5 Paving - 2023

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Off-Road	1.0327	10.1917	14.5842	0.0228		0.5102	0.5102		0.4694	0.4694		2,207.5841	2,207.5841	0.7140		2,225.4336
Paving	0.1441					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Total	**1.1768**	**10.1917**	**14.5842**	**0.0228**		**0.5102**	**0.5102**		**0.4694**	**0.4694**		**2,207.5841**	**2,207.5841**	**0.7140**		**2,225.4336**

3.5 Paving - 2023

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
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
Worker	0.0633	0.0400	0.4677	1.5000e-003	0.1677	1.2800e-003	0.1689	0.0445	1.1700e-003	0.0456		149.5081	149.5081	3.8500e-003		149.6043
Total	**0.0633**	**0.0400**	**0.4677**	**1.5000e-003**	**0.1677**	**1.2800e-003**	**0.1689**	**0.0445**	**1.1700e-003**	**0.0456**		**149.5081**	**149.5081**	**3.8500e-003**		**149.6043**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Off-Road	1.0327	10.1917	14.5842	0.0228		0.5102	0.5102		0.4694	0.4694	0.0000	2,207.5841	2,207.5841	0.7140		2,225.4336
Paving	0.1441					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Total	**1.1768**	**10.1917**	**14.5842**	**0.0228**		**0.5102**	**0.5102**		**0.4694**	**0.4694**	**0.0000**	**2,207.5841**	**2,207.5841**	**0.7140**		**2,225.4336**

3.5 Paving - 2023

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
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
Worker	0.0633	0.0400	0.4677	1.5000e-003	0.1677	1.2800e-003	0.1689	0.0445	1.1700e-003	0.0456		149.5081	149.5081	3.8500e-003		149.6043
Total	**0.0633**	**0.0400**	**0.4677**	**1.5000e-003**	**0.1677**	**1.2800e-003**	**0.1689**	**0.0445**	**1.1700e-003**	**0.0456**		**149.5081**	**149.5081**	**3.8500e-003**		**149.6043**

3.6 Architectural Coating - 2023

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Archit. Coating	19.4796					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Off-Road	0.1917	1.3030	1.8111	2.9700e-003		0.0708	0.0708		0.0708	0.0708		281.4481	281.4481	0.0168		281.8690
Total	**19.6713**	**1.3030**	**1.8111**	**2.9700e-003**		**0.0708**	**0.0708**		**0.0708**	**0.0708**		**281.4481**	**281.4481**	**0.0168**		**281.8690**

3.6 Architectural Coating - 2023

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
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
Worker	0.2152	0.1359	1.5900	5.1000e-003	0.5701	4.3400e-003	0.5744	0.1512	3.9900e-003	0.1552		508.3275	508.3275	0.0131		508.6545
Total	**0.2152**	**0.1359**	**1.5900**	**5.1000e-003**	**0.5701**	**4.3400e-003**	**0.5744**	**0.1512**	**3.9900e-003**	**0.1552**		**508.3275**	**508.3275**	**0.0131**		**508.6545**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Archit. Coating	19.4796					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Off-Road	0.1917	1.3030	1.8111	2.9700e-003		0.0708	0.0708		0.0708	0.0708	0.0000	281.4481	281.4481	0.0168		281.8690
Total	**19.6713**	**1.3030**	**1.8111**	**2.9700e-003**		**0.0708**	**0.0708**		**0.0708**	**0.0708**	**0.0000**	**281.4481**	**281.4481**	**0.0168**		**281.8690**

3.6 Architectural Coating - 2023

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
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
Worker	0.2152	0.1359	1.5900	5.1000e-003	0.5701	4.3400e-003	0.5744	0.1512	3.9900e-003	0.1552		508.3275	508.3275	0.0131		508.6545
Total	**0.2152**	**0.1359**	**1.5900**	**5.1000e-003**	**0.5701**	**4.3400e-003**	**0.5744**	**0.1512**	**3.9900e-003**	**0.1552**		**508.3275**	**508.3275**	**0.0131**		**508.6545**

4.0 Operational Detail - Mobile

4.1 Mitigation Measures Mobile

Improve Destination Accessibility

Increase Transit Accessibility

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Mitigated	0.0875	0.3657	0.9791	3.4800e-003	0.2989	2.7500e-003	0.3017	0.0800	2.5600e-003	0.0825		355.2911	355.2911	0.0186		355.7572
Unmitigated	0.1056	0.4631	1.4236	5.4300e-003	0.4802	4.1800e-003	0.4843	0.1285	3.8900e-003	0.1324		553.4636	553.4636	0.0275		554.1511

4.2 Trip Summary Information

	Average Daily Trip Rate			Unmitigated	Mitigated
Land Use	Weekday	Saturday	Sunday	Annual VMT	Annual VMT
Other Asphalt Surfaces	0.00	0.00	0.00		
Other Non-Asphalt Surfaces	0.00	0.00	0.00		
Single Family Housing	66.08	66.08	66.08	225,805	140,568
Total	66.08	66.08	66.08	225,805	140,568

4.3 Trip Type Information

	Miles			Trip %			Trip Purpose %		
Land Use	H-W or C-W	H-S or C-C	H-O or C-NW	H-W or C-W	H-S or C-C	H-O or C-NW	Primary	Diverted	Pass-by
Other Asphalt Surfaces	16.60	8.40	6.90	0.00	0.00	0.00	0	0	0
Other Non-Asphalt Surfaces	16.60	8.40	6.90	0.00	0.00	0.00	0	0	0
Single Family Housing	14.70	5.90	8.70	40.20	19.20	40.60	86	11	3

4.4 Fleet Mix

Land Use	LDA	LDT1	LDT2	MDV	LHD1	LHD2	MHD	HHD	OBUS	UBUS	MCY	SBUS	MH
Other Asphalt Surfaces	0.545842	0.044768	0.205288	0.119317	0.015350	0.006227	0.020460	0.031333	0.002546	0.002133	0.005184	0.000692	0.000862
Other Non-Asphalt Surfaces	0.545842	0.044768	0.205288	0.119317	0.015350	0.006227	0.020460	0.031333	0.002546	0.002133	0.005184	0.000692	0.000862
Single Family Housing	0.545842	0.044768	0.205288	0.119317	0.015350	0.006227	0.020460	0.031333	0.002546	0.002133	0.005184	0.000692	0.000862

5.0 Energy Detail

Historical Energy Use: N

5.1 Mitigation Measures Energy

Install Energy Efficient Appliances

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
NaturalGas Mitigated	5.6800e-003	0.0486	0.0207	3.1000e-004		3.9300e-003	3.9300e-003		3.9300e-003	3.9300e-003		61.9894	61.9894	1.1900e-003	1.1400e-003	62.3578
NaturalGas Unmitigated	5.6800e-003	0.0486	0.0207	3.1000e-004		3.9300e-003	3.9300e-003		3.9300e-003	3.9300e-003		61.9894	61.9894	1.1900e-003	1.1400e-003	62.3578

5.2 Energy by Land Use - NaturalGas

Unmitigated

	NaturalGas Use	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Land Use	kBTU/yr	lb/day										lb/day					
Other Asphalt Surfaces	0	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000
Other Non-Asphalt Surfaces	0	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000
Single Family Housing	526.91	5.6800e-003	0.0486	0.0207	3.1000e-004		3.9300e-003	3.9300e-003		3.9300e-003	3.9300e-003		61.9894	61.9894	1.1900e-003	1.1400e-003	62.3578
Total		**5.6800e-003**	**0.0486**	**0.0207**	**3.1000e-004**		**3.9300e-003**	**3.9300e-003**		**3.9300e-003**	**3.9300e-003**		**61.9894**	**61.9894**	**1.1900e-003**	**1.1400e-003**	**62.3578**

Mitigated

	NaturalGas Use	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Land Use	kBTU/yr	lb/day										lb/day					
Other Asphalt Surfaces	0	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000
Other Non-Asphalt Surfaces	0	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000
Single Family Housing	0.52691	5.6800e-003	0.0486	0.0207	3.1000e-004		3.9300e-003	3.9300e-003		3.9300e-003	3.9300e-003		61.9894	61.9894	1.1900e-003	1.1400e-003	62.3578
Total		**5.6800e-003**	**0.0486**	**0.0207**	**3.1000e-004**		**3.9300e-003**	**3.9300e-003**		**3.9300e-003**	**3.9300e-003**		**61.9894**	**61.9894**	**1.1900e-003**	**1.1400e-003**	**62.3578**

6.0 Area Detail

6.1 Mitigation Measures Area

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Mitigated	1.0519	0.1112	0.6235	7.0000e-004		0.0117	0.0117		0.0117	0.0117	0.0000	134.4547	134.4547	3.5600e-003	2.4500e-003	135.2727
Unmitigated	1.0519	0.1112	0.6235	7.0000e-004		0.0117	0.0117		0.0117	0.0117	0.0000	134.4547	134.4547	3.5600e-003	2.4500e-003	135.2727

6.2 Area by SubCategory

Unmitigated

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
SubCategory	lb/day										lb/day					
Architectural Coating	0.1067					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Consumer Products	0.9154					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Hearth	0.0122	0.1045	0.0445	6.7000e-004		8.4500e-003	8.4500e-003		8.4500e-003	8.4500e-003	0.0000	133.4118	133.4118	2.5600e-003	2.4500e-003	134.2046
Landscaping	0.0175	6.6700e-003	0.5791	3.0000e-005		3.2000e-003	3.2000e-003		3.2000e-003	3.2000e-003		1.0429	1.0429	1.0100e-003		1.0681
Total	**1.0519**	**0.1112**	**0.6235**	**7.0000e-004**		**0.0117**	**0.0117**		**0.0117**	**0.0117**	**0.0000**	**134.4547**	**134.4547**	**3.5700e-003**	**2.4500e-003**	**135.2727**

6.2 Area by SubCategory

Mitigated

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
SubCategory	lb/day										lb/day					
Architectural Coating	0.1067					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Consumer Products	0.9154					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Hearth	0.0122	0.1045	0.0445	6.7000e-004		8.4500e-003	8.4500e-003		8.4500e-003	8.4500e-003	0.0000	133.4118	133.4118	2.5600e-003	2.4500e-003	134.2046
Landscaping	0.0175	6.6700e-003	0.5791	3.0000e-005		3.2000e-003	3.2000e-003		3.2000e-003	3.2000e-003		1.0429	1.0429	1.0100e-003		1.0681
Total	**1.0519**	**0.1112**	**0.6235**	**7.0000e-004**		**0.0117**	**0.0117**		**0.0117**	**0.0117**	**0.0000**	**134.4547**	**134.4547**	**3.5700e-003**	**2.4500e-003**	**135.2727**

7.0 Water Detail

7.1 Mitigation Measures Water

Apply Water Conservation Strategy

8.0 Waste Detail

8.1 Mitigation Measures Waste

Institute Recycling and Composting Services

9.0 Operational Offroad

Equipment Type	Number	Hours/Day	Days/Year	Horse Power	Load Factor	Fuel Type

10.0 Stationary Equipment

Fire Pumps and Emergency Generators

Equipment Type	Number	Hours/Day	Hours/Year	Horse Power	Load Factor	Fuel Type

Boilers

Equipment Type	Number	Heat Input/Day	Heat Input/Year	Boiler Rating	Fuel Type

User Defined Equipment

Equipment Type	Number

11.0 Vegetation

APPENDIX C

CALEEMOD MODEL ANNUAL EMISSIONS PRINTOUTS

GANDDINI GROUP, INC.
550 Parkcenter Drive, Suite 202, Santa Ana, CA 92705
714.795.3100 | www.ganddini.com

19232 500 East Residential Road Project

Los Angeles-South Coast County, Annual

1.0 Project Characteristics

1.1 Land Usage

Land Uses	Size	Metric	Lot Acreage	Floor Surface Area	Population
Single Family Housing	7.00	Dwelling Unit	5.58	35,430.00	20
Other Asphalt Surfaces	1.10	Acre	1.10	47,916.00	0
Other Non-Asphalt Surfaces	12.76	Acre	12.76	555,825.60	0

1.2 Other Project Characteristics

Urbanization	Urban	**Wind Speed (m/s)**	2.2	**Precipitation Freq (Days)**	33
Climate Zone	9			**Operational Year**	2023
Utility Company	Southern California Edison				
CO2 Intensity (lb/MWhr)	702.44	**CH4 Intensity (lb/MWhr)**	0.029	**N2O Intensity (lb/MWhr)**	0.006

1.3 User Entered Comments & Non-Default Data

Project Characteristics -

Land Use - 19.44 ac w/ 7 SFD (houses total 35,430 sf & residential lots total 243,130 sf (~5.58 ac)), paving of ~1.1 ac for roadways/driveways, & rmdr ~12.75 ac open space (includes Lot 8 Debri Basin & Lot 9 ~10.75ac open space)

Construction Phase - Per applicant, site prep/grading from Oct 2021 to April 2022 and building construction from April 2022 to April 2023. Site Vacant, no demo.

Off-road Equipment - CalEEMod default building construction timing decreased by ~15%; therefore, ~15% more equipment needed.

Off-road Equipment - Timing for site preparation phase increased to ~3x the amount of days provided by CalEEMod default; therefore, approximatley 1/3 of the default equipment needed.

Off-road Equipment - Timing for grading phase increased to ~3x the amount of days provided by CalEEMod default; therefore, approximatley 1/3 of the default equipment needed.

Grading - Site to balance. Site prep of ~3.74 acres (per Development Calculations Figure) to remove existing vegetation/trees.

Vehicle Trips - Per Trip Gen Analysis, 9.44 trips/DU/day.

Woodstoves - SCAQMD Rule 445 prohibits the installation of wood burning devices in new developments.

Sequestration - At least 16 trees to be planted.

Construction Off-road Equipment Mitigation -

Mobile Land Use Mitigation - Site is ~1.53 miles NE downtown portion of La Verne & ~0.65 miles NE of Foothill Transit Rtes 187/690 stop Foothill Blvd & Fruit St W.

Energy Mitigation - EnergyStar appliances.

Water Mitigation - 20% indoor water reduction per CalGreen Standards.

Waste Mitigation - AB 341 requires each jurisdiction in CA to divert at least 75% of their waste away from landfills by 2020.

Table Name	Column Name	Default Value	New Value
tblConstDustMitigation	WaterUnpavedRoadVehicleSpeed	0	15
tblConstructionPhase	NumDays	300.00	255.00
tblConstructionPhase	NumDays	30.00	98.00
tblConstructionPhase	NumDays	10.00	33.00
tblConstructionPhase	PhaseEndDate	3/16/2023	4/1/2023
tblConstructionPhase	PhaseEndDate	1/19/2023	3/25/2023
tblConstructionPhase	PhaseEndDate	11/25/2021	4/1/2022
tblConstructionPhase	PhaseEndDate	2/16/2023	3/3/2023
tblConstructionPhase	PhaseEndDate	10/14/2021	11/16/2021

tblConstructionPhase	PhaseStartDate	2/17/2023	3/4/2023
tblConstructionPhase	PhaseStartDate	11/26/2021	4/2/2022
tblConstructionPhase	PhaseStartDate	10/15/2021	11/17/2021
tblConstructionPhase	PhaseStartDate	1/20/2023	2/4/2023
tblFireplaces	NumberGas	5.95	6.30
tblFireplaces	NumberWood	0.35	0.00
tblGrading	AcresOfGrading	0.00	3.74
tblLandUse	LandUseSquareFeet	12,600.00	35,430.00
tblLandUse	LotAcreage	2.27	5.58
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	2.00	1.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	1.00	0.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	3.00	4.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	1.00	0.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	2.00	1.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	4.00	1.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	3.00	1.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	2.00	1.00
tblSequestration	NumberOfNewTrees	0.00	16.00
tblTripsAndVMT	WorkerTripNumber	5.00	18.00
tblTripsAndVMT	WorkerTripNumber	8.00	20.00
tblVehicleTrips	ST_TR	9.91	9.44
tblVehicleTrips	SU_TR	8.62	9.44
tblVehicleTrips	WD_TR	9.52	9.44
tblWoodstoves	NumberCatalytic	0.35	0.00
tblWoodstoves	NumberNoncatalytic	0.35	0.00

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					
2021	0.0453	0.4578	0.3345	6.5000e-004	0.1602	0.0211	0.1813	0.0623	0.0194	0.0817	0.0000	57.0525	57.0525	0.0166	0.0000	57.4682
2022	0.3507	3.0600	3.3113	8.8100e-003	0.3940	0.1076	0.5016	0.0979	0.1007	0.1986	0.0000	798.8017	798.8017	0.1043	0.0000	801.4089
2023	0.2978	0.8222	1.0452	2.7300e-003	0.1103	0.0298	0.1400	0.0297	0.0279	0.0576	0.0000	246.9725	246.9725	0.0313	0.0000	247.7559
Maximum	**0.3507**	**3.0600**	**3.3113**	**8.8100e-003**	**0.3940**	**0.1076**	**0.5016**	**0.0979**	**0.1007**	**0.1986**	**0.0000**	**798.8017**	**798.8017**	**0.1043**	**0.0000**	**801.4089**

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					
2021	0.0453	0.4578	0.3345	6.5000e-004	0.0667	0.0211	0.0878	0.0254	0.0194	0.0448	0.0000	57.0524	57.0524	0.0166	0.0000	57.4682
2022	0.3507	3.0600	3.3113	8.8100e-003	0.3623	0.1076	0.4699	0.0945	0.1007	0.1951	0.0000	798.8014	798.8014	0.1043	0.0000	801.4085
2023	0.2978	0.8222	1.0452	2.7300e-003	0.1103	0.0298	0.1400	0.0297	0.0279	0.0576	0.0000	246.9724	246.9724	0.0313	0.0000	247.7558
Maximum	**0.3507**	**3.0600**	**3.3113**	**8.8100e-003**	**0.3623**	**0.1076**	**0.4699**	**0.0945**	**0.1007**	**0.1951**	**0.0000**	**798.8014**	**798.8014**	**0.1043**	**0.0000**	**801.4085**

	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**	**18.84**	**0.00**	**15.22**	**21.22**	**0.00**	**11.93**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**

Quarter	Start Date	End Date	Maximum Unmitigated ROG + NOX (tons/quarter)	Maximum Mitigated ROG + NOX (tons/quarter)
1	**10-1-2021**	**12-31-2021**	0.5004	0.5004
2	**1-1-2022**	**3-31-2022**	0.4414	0.4414
3	**4-1-2022**	**6-30-2022**	0.9743	0.9743
4	**7-1-2022**	**9-30-2022**	0.9910	0.9910
5	**10-1-2022**	**12-31-2022**	0.9969	0.9969
6	**1-1-2023**	**3-31-2023**	1.1197	1.1197
7	**4-1-2023**	**6-30-2023**	0.0076	0.0076
		Highest	1.1197	1.1197

2.2 Overall Operational

Unmitigated Operational

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Area	0.1889	2.1400e-003	0.0729	1.0000e-005		5.1000e-004	5.1000e-004		5.1000e-004	5.1000e-004	0.0000	1.6311	1.6311	1.4000e-004	3.0000e-005	1.6430
Energy	1.0400e-003	8.8600e-003	3.7700e-003	6.0000e-005		7.2000e-004	7.2000e-004		7.2000e-004	7.2000e-004	0.0000	28.5704	28.5704	9.5000e-004	3.4000e-004	28.6969
Mobile	0.0188	0.0858	0.2631	1.0000e-003	0.0857	7.6000e-004	0.0865	0.0230	7.1000e-004	0.0237	0.0000	92.6541	92.6541	4.5300e-003	0.0000	92.7673
Waste						0.0000	0.0000		0.0000	0.0000	1.6645	0.0000	1.6645	0.0984	0.0000	4.1238
Water						0.0000	0.0000		0.0000	0.0000	0.1447	2.9100	3.0547	0.0150	3.8000e-004	3.5412
Total	**0.2087**	**0.0968**	**0.3399**	**1.0700e-003**	**0.0857**	**1.9900e-003**	**0.0877**	**0.0230**	**1.9400e-003**	**0.0249**	**1.8092**	**125.7657**	**127.5749**	**0.1190**	**7.5000e-004**	**130.7721**

2.2 Overall Operational

Mitigated Operational

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Area	0.1889	2.1400e-003	0.0729	1.0000e-005		5.1000e-004	5.1000e-004		5.1000e-004	5.1000e-004	0.0000	1.6311	1.6311	1.4000e-004	3.0000e-005	1.6430
Energy	1.0400e-003	8.8600e-003	3.7700e-003	6.0000e-005		7.2000e-004	7.2000e-004		7.2000e-004	7.2000e-004	0.0000	28.1955	28.1955	9.4000e-004	3.4000e-004	28.3206
Mobile	0.0155	0.0677	0.1801	6.4000e-004	0.0534	5.0000e-004	0.0539	0.0143	4.6000e-004	0.0148	0.0000	59.5584	59.5584	3.0600e-003	0.0000	59.6348
Waste						0.0000	0.0000		0.0000	0.0000	0.4161	0.0000	0.4161	0.0246	0.0000	1.0310
Water						0.0000	0.0000		0.0000	0.0000	0.1158	2.5315	2.6473	0.0120	3.0000e-004	3.0372
Total	**0.2054**	**0.0787**	**0.2568**	**7.1000e-004**	**0.0534**	**1.7300e-003**	**0.0551**	**0.0143**	**1.6900e-003**	**0.0160**	**0.5319**	**91.9165**	**92.4484**	**0.0407**	**6.7000e-004**	**93.6665**

	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	**1.59**	**18.71**	**24.45**	**33.64**	**37.75**	**13.07**	**37.19**	**37.74**	**12.89**	**35.81**	**70.60**	**26.91**	**27.53**	**65.77**	**10.67**	**28.37**

2.3 Vegetation

Vegetation

	CO2e
Category	MT
New Trees	11.3280
Total	**11.3280**

3.0 Construction Detail

Construction Phase

Phase Number	Phase Name	Phase Type	Start Date	End Date	Num Days Week	Num Days	Phase Description
1	Site Preparation	Site Preparation	10/1/2021	11/16/2021	5	33	
2	Grading	Grading	11/17/2021	4/1/2022	5	98	
3	Building Construction	Building Construction	4/2/2022	3/25/2023	5	255	
4	Paving	Paving	2/4/2023	3/3/2023	5	20	
5	Architectural Coating	Architectural Coating	3/4/2023	4/1/2023	5	20	

Acres of Grading (Site Preparation Phase): 3.74

Acres of Grading (Grading Phase): 98

Acres of Paving: 13.86

Residential Indoor: 71,746; Residential Outdoor: 23,915; Non-Residential Indoor: 0; Non-Residential Outdoor: 0; Striped Parking Area: 36,224 (Architectural Coating – sqft)

OffRoad Equipment

Phase Name	Offroad Equipment Type	Amount	Usage Hours	Horse Power	Load Factor
Architectural Coating	Air Compressors	1	6.00	78	0.48
Grading	Excavators	1	8.00	158	0.38
Building Construction	Cranes	1	7.00	231	0.29
Building Construction	Forklifts	3	8.00	89	0.20
Building Construction	Generator Sets	1	8.00	84	0.74
Paving	Pavers	2	8.00	130	0.42
Paving	Rollers	2	8.00	80	0.38
Grading	Rubber Tired Dozers	0	8.00	247	0.40
Building Construction	Tractors/Loaders/Backhoes	4	7.00	97	0.37
Grading	Graders	0	8.00	187	0.41
Grading	Tractors/Loaders/Backhoes	1	8.00	97	0.37
Paving	Paving Equipment	2	8.00	132	0.36
Site Preparation	Tractors/Loaders/Backhoes	1	8.00	97	0.37
Site Preparation	Rubber Tired Dozers	1	8.00	247	0.40
Grading	Scrapers	1	8.00	367	0.48
Building Construction	Welders	1	8.00	46	0.45

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
Site Preparation	2	18.00	0.00	0.00	14.70	6.90	20.00	LD_Mix	HDT_Mix	HHDT
Grading	3	20.00	0.00	0.00	14.70	6.90	20.00	LD_Mix	HDT_Mix	HHDT
Building Construction	10	256.00	100.00	0.00	14.70	6.90	20.00	LD_Mix	HDT_Mix	HHDT
Paving	6	15.00	0.00	0.00	14.70	6.90	20.00	LD_Mix	HDT_Mix	HHDT
Architectural Coating	1	51.00	0.00	0.00	14.70	6.90	20.00	LD_Mix	HDT_Mix	HHDT

3.1 Mitigation Measures Construction

Water Exposed Area

Reduce Vehicle Speed on Unpaved Roads

3.2 Site Preparation - 2021

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					0.1014	0.0000	0.1014	0.0548	0.0000	0.0548	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	0.0204	0.2123	0.1039	1.9000e-004		0.0106	0.0106		9.7800e-003	9.7800e-003	0.0000	16.8883	16.8883	5.4600e-003	0.0000	17.0249
Total	**0.0204**	**0.2123**	**0.1039**	**1.9000e-004**	**0.1014**	**0.0106**	**0.1120**	**0.0548**	**9.7800e-003**	**0.0646**	**0.0000**	**16.8883**	**16.8883**	**5.4600e-003**	**0.0000**	**17.0249**

3.2 Site Preparation - 2021

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	1.2800e-003	9.9000e-004	0.0112	3.0000e-005	3.2500e-003	3.0000e-005	3.2800e-003	8.6000e-004	2.0000e-005	8.9000e-004	0.0000	2.9371	2.9371	9.0000e-005	0.0000	2.9392
Total	**1.2800e-003**	**9.9000e-004**	**0.0112**	**3.0000e-005**	**3.2500e-003**	**3.0000e-005**	**3.2800e-003**	**8.6000e-004**	**2.0000e-005**	**8.9000e-004**	**0.0000**	**2.9371**	**2.9371**	**9.0000e-005**	**0.0000**	**2.9392**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Fugitive Dust					0.0395	0.0000	0.0395	0.0214	0.0000	0.0214	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	0.0204	0.2123	0.1039	1.9000e-004		0.0106	0.0106		9.7800e-003	9.7800e-003	0.0000	16.8883	16.8883	5.4600e-003	0.0000	17.0248
Total	**0.0204**	**0.2123**	**0.1039**	**1.9000e-004**	**0.0395**	**0.0106**	**0.0502**	**0.0214**	**9.7800e-003**	**0.0312**	**0.0000**	**16.8883**	**16.8883**	**5.4600e-003**	**0.0000**	**17.0248**

3.2 Site Preparation - 2021

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	1.2800e-003	9.9000e-004	0.0112	3.0000e-005	3.2500e-003	3.0000e-005	3.2800e-003	8.6000e-004	2.0000e-005	8.9000e-004	0.0000	2.9371	2.9371	9.0000e-005	0.0000	2.9392
Total	**1.2800e-003**	**9.9000e-004**	**0.0112**	**3.0000e-005**	**3.2500e-003**	**3.0000e-005**	**3.2800e-003**	**8.6000e-004**	**2.0000e-005**	**8.9000e-004**	**0.0000**	**2.9371**	**2.9371**	**9.0000e-005**	**0.0000**	**2.9392**

3.3 Grading - 2021

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					0.0520	0.0000	0.0520	5.6100e-003	0.0000	5.6100e-003	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	0.0222	0.2434	0.2069	3.9000e-004		0.0104	0.0104		9.6000e-003	9.6000e-003	0.0000	33.9637	33.9637	0.0110	0.0000	34.2383
Total	**0.0222**	**0.2434**	**0.2069**	**3.9000e-004**	**0.0520**	**0.0104**	**0.0624**	**5.6100e-003**	**9.6000e-003**	**0.0152**	**0.0000**	**33.9637**	**33.9637**	**0.0110**	**0.0000**	**34.2383**

3.3 Grading - 2021

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	1.4200e-003	1.1100e-003	0.0125	4.0000e-005	3.6200e-003	3.0000e-005	3.6500e-003	9.6000e-004	3.0000e-005	9.9000e-004	0.0000	3.2634	3.2634	1.0000e-004	0.0000	3.2658
Total	**1.4200e-003**	**1.1100e-003**	**0.0125**	**4.0000e-005**	**3.6200e-003**	**3.0000e-005**	**3.6500e-003**	**9.6000e-004**	**3.0000e-005**	**9.9000e-004**	**0.0000**	**3.2634**	**3.2634**	**1.0000e-004**	**0.0000**	**3.2658**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Fugitive Dust					0.0203	0.0000	0.0203	2.1900e-003	0.0000	2.1900e-003	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	0.0222	0.2434	0.2069	3.9000e-004		0.0104	0.0104		9.6000e-003	9.6000e-003	0.0000	33.9637	33.9637	0.0110	0.0000	34.2383
Total	**0.0222**	**0.2434**	**0.2069**	**3.9000e-004**	**0.0203**	**0.0104**	**0.0307**	**2.1900e-003**	**9.6000e-003**	**0.0118**	**0.0000**	**33.9637**	**33.9637**	**0.0110**	**0.0000**	**34.2383**

3.3 Grading - 2021

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	1.4200e-003	1.1100e-003	0.0125	4.0000e-005	3.6200e-003	3.0000e-005	3.6500e-003	9.6000e-004	3.0000e-005	9.9000e-004	0.0000	3.2634	3.2634	1.0000e-004	0.0000	3.2658
Total	**1.4200e-003**	**1.1100e-003**	**0.0125**	**4.0000e-005**	**3.6200e-003**	**3.0000e-005**	**3.6500e-003**	**9.6000e-004**	**3.0000e-005**	**9.9000e-004**	**0.0000**	**3.2634**	**3.2634**	**1.0000e-004**	**0.0000**	**3.2658**

3.3 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					0.0520	0.0000	0.0520	5.6100e-003	0.0000	5.6100e-003	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	0.0386	0.4029	0.3857	7.6000e-004		0.0171	0.0171		0.0157	0.0157	0.0000	66.9732	66.9732	0.0217	0.0000	67.5147
Total	**0.0386**	**0.4029**	**0.3857**	**7.6000e-004**	**0.0520**	**0.0171**	**0.0690**	**5.6100e-003**	**0.0157**	**0.0213**	**0.0000**	**66.9732**	**66.9732**	**0.0217**	**0.0000**	**67.5147**

3.3 Grading - 2022

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	2.6200e-003	1.9700e-003	0.0227	7.0000e-005	7.1200e-003	6.0000e-005	7.1800e-003	1.8900e-003	5.0000e-005	1.9400e-003	0.0000	6.2020	6.2020	1.7000e-004	0.0000	6.2063
Total	**2.6200e-003**	**1.9700e-003**	**0.0227**	**7.0000e-005**	**7.1200e-003**	**6.0000e-005**	**7.1800e-003**	**1.8900e-003**	**5.0000e-005**	**1.9400e-003**	**0.0000**	**6.2020**	**6.2020**	**1.7000e-004**	**0.0000**	**6.2063**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Fugitive Dust					0.0203	0.0000	0.0203	2.1900e-003	0.0000	2.1900e-003	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	0.0386	0.4029	0.3857	7.6000e-004		0.0171	0.0171		0.0157	0.0157	0.0000	66.9731	66.9731	0.0217	0.0000	67.5146
Total	**0.0386**	**0.4029**	**0.3857**	**7.6000e-004**	**0.0203**	**0.0171**	**0.0373**	**2.1900e-003**	**0.0157**	**0.0179**	**0.0000**	**66.9731**	**66.9731**	**0.0217**	**0.0000**	**67.5146**

3.3 Grading - 2022

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	2.6200e-003	1.9700e-003	0.0227	7.0000e-005	7.1200e-003	6.0000e-005	7.1800e-003	1.8900e-003	5.0000e-005	1.9400e-003	0.0000	6.2020	6.2020	1.7000e-004	0.0000	6.2063
Total	**2.6200e-003**	**1.9700e-003**	**0.0227**	**7.0000e-005**	**7.1200e-003**	**6.0000e-005**	**7.1800e-003**	**1.8900e-003**	**5.0000e-005**	**1.9400e-003**	**0.0000**	**6.2020**	**6.2020**	**1.7000e-004**	**0.0000**	**6.2063**

3.4 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	0.1804	1.6655	1.7864	2.8900e-003		0.0866	0.0866		0.0813	0.0813	0.0000	249.2463	249.2463	0.0617	0.0000	250.7879
Total	**0.1804**	**1.6655**	**1.7864**	**2.8900e-003**		**0.0866**	**0.0866**		**0.0813**	**0.0813**	**0.0000**	**249.2463**	**249.2463**	**0.0617**	**0.0000**	**250.7879**

3.4 Building Construction - 2022

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	0.0284	0.9142	0.2468	2.4500e-003	0.0614	1.7200e-003	0.0631	0.0177	1.6400e-003	0.0194	0.0000	238.2232	238.2232	0.0142	0.0000	238.5790
Worker	0.1007	0.0755	0.8697	2.6300e-003	0.2735	2.1800e-003	0.2757	0.0726	2.0100e-003	0.0747	0.0000	238.1570	238.1570	6.5600e-003	0.0000	238.3210
Total	**0.1291**	**0.9897**	**1.1165**	**5.0800e-003**	**0.3349**	**3.9000e-003**	**0.3388**	**0.0904**	**3.6500e-003**	**0.0940**	**0.0000**	**476.3803**	**476.3803**	**0.0208**	**0.0000**	**476.9000**

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	0.1804	1.6655	1.7864	2.8900e-003		0.0866	0.0866		0.0813	0.0813	0.0000	249.2460	249.2460	0.0617	0.0000	250.7876
Total	**0.1804**	**1.6655**	**1.7864**	**2.8900e-003**		**0.0866**	**0.0866**		**0.0813**	**0.0813**	**0.0000**	**249.2460**	**249.2460**	**0.0617**	**0.0000**	**250.7876**

3.4 Building Construction - 2022

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	0.0284	0.9142	0.2468	2.4500e-003	0.0614	1.7200e-003	0.0631	0.0177	1.6400e-003	0.0194	0.0000	238.2232	238.2232	0.0142	0.0000	238.5790
Worker	0.1007	0.0755	0.8697	2.6300e-003	0.2735	2.1800e-003	0.2757	0.0726	2.0100e-003	0.0747	0.0000	238.1570	238.1570	6.5600e-003	0.0000	238.3210
Total	**0.1291**	**0.9897**	**1.1165**	**5.0800e-003**	**0.3349**	**3.9000e-003**	**0.3388**	**0.0904**	**3.6500e-003**	**0.0940**	**0.0000**	**476.3803**	**476.3803**	**0.0208**	**0.0000**	**476.9000**

3.4 Building Construction - 2023

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	0.0512	0.4719	0.5459	8.9000e-004		0.0230	0.0230		0.0216	0.0216	0.0000	76.7231	76.7231	0.0189	0.0000	77.1947
Total	**0.0512**	**0.4719**	**0.5459**	**8.9000e-004**		**0.0230**	**0.0230**		**0.0216**	**0.0216**	**0.0000**	**76.7231**	**76.7231**	**0.0189**	**0.0000**	**77.1947**

3.4 Building Construction - 2023

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	6.4900e-003	0.2125	0.0681	7.3000e-004	0.0189	2.5000e-004	0.0192	5.4500e-003	2.4000e-004	5.6900e-003	0.0000	71.0047	71.0047	3.8700e-003	0.0000	71.1015
Worker	0.0291	0.0210	0.2461	7.8000e-004	0.0842	6.5000e-004	0.0848	0.0224	6.0000e-004	0.0230	0.0000	70.5976	70.5976	1.8200e-003	0.0000	70.6430
Total	**0.0356**	**0.2335**	**0.3142**	**1.5100e-003**	**0.1031**	**9.0000e-004**	**0.1040**	**0.0278**	**8.4000e-004**	**0.0286**	**0.0000**	**141.6023**	**141.6023**	**5.6900e-003**	**0.0000**	**141.7445**

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	0.0512	0.4719	0.5459	8.9000e-004		0.0230	0.0230		0.0216	0.0216	0.0000	76.7230	76.7230	0.0189	0.0000	77.1946
Total	**0.0512**	**0.4719**	**0.5459**	**8.9000e-004**		**0.0230**	**0.0230**		**0.0216**	**0.0216**	**0.0000**	**76.7230**	**76.7230**	**0.0189**	**0.0000**	**77.1946**

3.4 Building Construction - 2023

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	6.4900e-003	0.2125	0.0681	7.3000e-004	0.0189	2.5000e-004	0.0192	5.4500e-003	2.4000e-004	5.6900e-003	0.0000	71.0047	71.0047	3.8700e-003	0.0000	71.1015
Worker	0.0291	0.0210	0.2461	7.8000e-004	0.0842	6.5000e-004	0.0848	0.0224	6.0000e-004	0.0230	0.0000	70.5976	70.5976	1.8200e-003	0.0000	70.6430
Total	**0.0356**	**0.2335**	**0.3142**	**1.5100e-003**	**0.1031**	**9.0000e-004**	**0.1040**	**0.0278**	**8.4000e-004**	**0.0286**	**0.0000**	**141.6023**	**141.6023**	**5.6900e-003**	**0.0000**	**141.7445**

3.5 Paving - 2023

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	0.0103	0.1019	0.1458	2.3000e-004		5.1000e-003	5.1000e-003		4.6900e-003	4.6900e-003	0.0000	20.0269	20.0269	6.4800e-003	0.0000	20.1888
Paving	1.4400e-003					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Total	**0.0118**	**0.1019**	**0.1458**	**2.3000e-004**		**5.1000e-003**	**5.1000e-003**		**4.6900e-003**	**4.6900e-003**	**0.0000**	**20.0269**	**20.0269**	**6.4800e-003**	**0.0000**	**20.1888**

3.5 Paving - 2023

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	5.7000e-004	4.1000e-004	4.8100e-003	2.0000e-005	1.6400e-003	1.0000e-005	1.6600e-003	4.4000e-004	1.0000e-005	4.5000e-004	0.0000	1.3789	1.3789	4.0000e-005	0.0000	1.3798
Total	**5.7000e-004**	**4.1000e-004**	**4.8100e-003**	**2.0000e-005**	**1.6400e-003**	**1.0000e-005**	**1.6600e-003**	**4.4000e-004**	**1.0000e-005**	**4.5000e-004**	**0.0000**	**1.3789**	**1.3789**	**4.0000e-005**	**0.0000**	**1.3798**

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	0.0103	0.1019	0.1458	2.3000e-004		5.1000e-003	5.1000e-003		4.6900e-003	4.6900e-003	0.0000	20.0268	20.0268	6.4800e-003	0.0000	20.1888
Paving	1.4400e-003					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Total	**0.0118**	**0.1019**	**0.1458**	**2.3000e-004**		**5.1000e-003**	**5.1000e-003**		**4.6900e-003**	**4.6900e-003**	**0.0000**	**20.0268**	**20.0268**	**6.4800e-003**	**0.0000**	**20.1888**

3.5 Paving - 2023

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	5.7000e-004	4.1000e-004	4.8100e-003	2.0000e-005	1.6400e-003	1.0000e-005	1.6600e-003	4.4000e-004	1.0000e-005	4.5000e-004	0.0000	1.3789	1.3789	4.0000e-005	0.0000	1.3798
Total	**5.7000e-004**	**4.1000e-004**	**4.8100e-003**	**2.0000e-005**	**1.6400e-003**	**1.0000e-005**	**1.6600e-003**	**4.4000e-004**	**1.0000e-005**	**4.5000e-004**	**0.0000**	**1.3789**	**1.3789**	**4.0000e-005**	**0.0000**	**1.3798**

3.6 Architectural Coating - 2023

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	0.1948					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	1.9200e-003	0.0130	0.0181	3.0000e-005		7.1000e-004	7.1000e-004		7.1000e-004	7.1000e-004	0.0000	2.5533	2.5533	1.5000e-004	0.0000	2.5571
Total	**0.1967**	**0.0130**	**0.0181**	**3.0000e-005**		**7.1000e-004**	**7.1000e-004**		**7.1000e-004**	**7.1000e-004**	**0.0000**	**2.5533**	**2.5533**	**1.5000e-004**	**0.0000**	**2.5571**

3.6 Architectural Coating - 2023

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	1.9300e-003	1.4000e-003	0.0163	5.0000e-005	5.5900e-003	4.0000e-005	5.6300e-003	1.4800e-003	4.0000e-005	1.5200e-003	0.0000	4.6881	4.6881	1.2000e-004	0.0000	4.6911
Total	**1.9300e-003**	**1.4000e-003**	**0.0163**	**5.0000e-005**	**5.5900e-003**	**4.0000e-005**	**5.6300e-003**	**1.4800e-003**	**4.0000e-005**	**1.5200e-003**	**0.0000**	**4.6881**	**4.6881**	**1.2000e-004**	**0.0000**	**4.6911**

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	0.1948					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	1.9200e-003	0.0130	0.0181	3.0000e-005		7.1000e-004	7.1000e-004		7.1000e-004	7.1000e-004	0.0000	2.5533	2.5533	1.5000e-004	0.0000	2.5571
Total	**0.1967**	**0.0130**	**0.0181**	**3.0000e-005**		**7.1000e-004**	**7.1000e-004**		**7.1000e-004**	**7.1000e-004**	**0.0000**	**2.5533**	**2.5533**	**1.5000e-004**	**0.0000**	**2.5571**

3.6 Architectural Coating - 2023

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	1.9300e-003	1.4000e-003	0.0163	5.0000e-005	5.5900e-003	4.0000e-005	5.6300e-003	1.4800e-003	4.0000e-005	1.5200e-003	0.0000	4.6881	4.6881	1.2000e-004	0.0000	4.6911
Total	**1.9300e-003**	**1.4000e-003**	**0.0163**	**5.0000e-005**	**5.5900e-003**	**4.0000e-005**	**5.6300e-003**	**1.4800e-003**	**4.0000e-005**	**1.5200e-003**	**0.0000**	**4.6881**	**4.6881**	**1.2000e-004**	**0.0000**	**4.6911**

4.0 Operational Detail - Mobile

4.1 Mitigation Measures Mobile

Improve Destination Accessibility

Increase Transit Accessibility

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Mitigated	0.0155	0.0677	0.1801	6.4000e-004	0.0534	5.0000e-004	0.0539	0.0143	4.6000e-004	0.0148	0.0000	59.5584	59.5584	3.0600e-003	0.0000	59.6348
Unmitigated	0.0188	0.0858	0.2631	1.0000e-003	0.0857	7.6000e-004	0.0865	0.0230	7.1000e-004	0.0237	0.0000	92.6541	92.6541	4.5300e-003	0.0000	92.7673

4.2 Trip Summary Information

	Average Daily Trip Rate			Unmitigated	Mitigated
Land Use	Weekday	Saturday	Sunday	Annual VMT	Annual VMT
Other Asphalt Surfaces	0.00	0.00	0.00		
Other Non-Asphalt Surfaces	0.00	0.00	0.00		
Single Family Housing	66.08	66.08	66.08	225,805	140,568
Total	66.08	66.08	66.08	225,805	140,568

4.3 Trip Type Information

	Miles			Trip %			Trip Purpose %		
Land Use	H-W or C-W	H-S or C-C	H-O or C-NW	H-W or C-W	H-S or C-C	H-O or C-NW	Primary	Diverted	Pass-by
Other Asphalt Surfaces	16.60	8.40	6.90	0.00	0.00	0.00	0	0	0
Other Non-Asphalt Surfaces	16.60	8.40	6.90	0.00	0.00	0.00	0	0	0
Single Family Housing	14.70	5.90	8.70	40.20	19.20	40.60	86	11	3

4.4 Fleet Mix

Land Use	LDA	LDT1	LDT2	MDV	LHD1	LHD2	MHD	HHD	OBUS	UBUS	MCY	SBUS	MH
Other Asphalt Surfaces	0.545842	0.044768	0.205288	0.119317	0.015350	0.006227	0.020460	0.031333	0.002546	0.002133	0.005184	0.000692	0.000862
Other Non-Asphalt Surfaces	0.545842	0.044768	0.205288	0.119317	0.015350	0.006227	0.020460	0.031333	0.002546	0.002133	0.005184	0.000692	0.000862
Single Family Housing	0.545842	0.044768	0.205288	0.119317	0.015350	0.006227	0.020460	0.031333	0.002546	0.002133	0.005184	0.000692	0.000862

5.0 Energy Detail

Historical Energy Use: N

5.1 Mitigation Measures Energy

Install Energy Efficient Appliances

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Electricity Mitigated						0.0000	0.0000		0.0000	0.0000	0.0000	17.9324	17.9324	7.4000e-004	1.5000e-004	17.9966
Electricity Unmitigated						0.0000	0.0000		0.0000	0.0000	0.0000	18.3074	18.3074	7.6000e-004	1.6000e-004	18.3729
NaturalGas Mitigated	1.0400e-003	8.8600e-003	3.7700e-003	6.0000e-005		7.2000e-004	7.2000e-004		7.2000e-004	7.2000e-004	0.0000	10.2630	10.2630	2.0000e-004	1.9000e-004	10.3240
NaturalGas Unmitigated	1.0400e-003	8.8600e-003	3.7700e-003	6.0000e-005		7.2000e-004	7.2000e-004		7.2000e-004	7.2000e-004	0.0000	10.2630	10.2630	2.0000e-004	1.9000e-004	10.3240

5.2 Energy by Land Use - NaturalGas

Unmitigated

	NaturalGas Use	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Land Use	kBTU/yr	tons/yr										MT/yr					
Other Asphalt Surfaces	0	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Other Non-Asphalt Surfaces	0	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Single Family Housing	192322	1.0400e-003	8.8600e-003	3.7700e-003	6.0000e-005		7.2000e-004	7.2000e-004		7.2000e-004	7.2000e-004	0.0000	10.2630	10.2630	2.0000e-004	1.9000e-004	10.3240
Total		**1.0400e-003**	**8.8600e-003**	**3.7700e-003**	**6.0000e-005**		**7.2000e-004**	**7.2000e-004**		**7.2000e-004**	**7.2000e-004**	**0.0000**	**10.2630**	**10.2630**	**2.0000e-004**	**1.9000e-004**	**10.3240**

Mitigated

	NaturalGas Use	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Land Use	kBTU/yr	tons/yr										MT/yr					
Other Asphalt Surfaces	0	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Other Non-Asphalt Surfaces	0	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Single Family Housing	192322	1.0400e-003	8.8600e-003	3.7700e-003	6.0000e-005		7.2000e-004	7.2000e-004		7.2000e-004	7.2000e-004	0.0000	10.2630	10.2630	2.0000e-004	1.9000e-004	10.3240
Total		**1.0400e-003**	**8.8600e-003**	**3.7700e-003**	**6.0000e-005**		**7.2000e-004**	**7.2000e-004**		**7.2000e-004**	**7.2000e-004**	**0.0000**	**10.2630**	**10.2630**	**2.0000e-004**	**1.9000e-004**	**10.3240**

5.3 Energy by Land Use - Electricity

Unmitigated

	Electricity Use	Total CO2	CH4	N2O	CO2e
Land Use	kWh/yr	MT/yr			
Other Asphalt Surfaces	0	0.0000	0.0000	0.0000	0.0000
Other Non-Asphalt Surfaces	0	0.0000	0.0000	0.0000	0.0000
Single Family Housing	57458	18.3074	7.6000e-004	1.6000e-004	18.3729
Total		**18.3074**	**7.6000e-004**	**1.6000e-004**	**18.3729**

Mitigated

	Electricity Use	Total CO2	CH4	N2O	CO2e
Land Use	kWh/yr	MT/yr			
Other Asphalt Surfaces	0	0.0000	0.0000	0.0000	0.0000
Other Non-Asphalt Surfaces	0	0.0000	0.0000	0.0000	0.0000
Single Family Housing	56281.3	17.9324	7.4000e-004	1.5000e-004	17.9966
Total		**17.9324**	**7.4000e-004**	**1.5000e-004**	**17.9966**

6.0 Area Detail

6.1 Mitigation Measures Area

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Mitigated	0.1889	2.1400e-003	0.0729	1.0000e-005		5.1000e-004	5.1000e-004		5.1000e-004	5.1000e-004	0.0000	1.6311	1.6311	1.4000e-004	3.0000e-005	1.6430
Unmitigated	0.1889	2.1400e-003	0.0729	1.0000e-005		5.1000e-004	5.1000e-004		5.1000e-004	5.1000e-004	0.0000	1.6311	1.6311	1.4000e-004	3.0000e-005	1.6430

6.2 Area by SubCategory

Unmitigated

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
SubCategory	tons/yr										MT/yr					
Architectural Coating	0.0195					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Consumer Products	0.1671					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Hearth	1.5000e-004	1.3100e-003	5.6000e-004	1.0000e-005		1.1000e-004	1.1000e-004		1.1000e-004	1.1000e-004	0.0000	1.5129	1.5129	3.0000e-005	3.0000e-005	1.5219
Landscaping	2.1900e-003	8.3000e-004	0.0724	0.0000		4.0000e-004	4.0000e-004		4.0000e-004	4.0000e-004	0.0000	0.1183	0.1183	1.1000e-004	0.0000	0.1211
Total	**0.1889**	**2.1400e-003**	**0.0729**	**1.0000e-005**		**5.1000e-004**	**5.1000e-004**		**5.1000e-004**	**5.1000e-004**	**0.0000**	**1.6311**	**1.6311**	**1.4000e-004**	**3.0000e-005**	**1.6430**

6.2 Area by SubCategory

Mitigated

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
SubCategory	tons/yr										MT/yr					
Architectural Coating	0.0195					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Consumer Products	0.1671					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Hearth	1.5000e-004	1.3100e-003	5.6000e-004	1.0000e-005		1.1000e-004	1.1000e-004		1.1000e-004	1.1000e-004	0.0000	1.5129	1.5129	3.0000e-005	3.0000e-005	1.5219
Landscaping	2.1900e-003	8.3000e-004	0.0724	0.0000		4.0000e-004	4.0000e-004		4.0000e-004	4.0000e-004	0.0000	0.1183	0.1183	1.1000e-004	0.0000	0.1211
Total	**0.1889**	**2.1400e-003**	**0.0729**	**1.0000e-005**		**5.1000e-004**	**5.1000e-004**		**5.1000e-004**	**5.1000e-004**	**0.0000**	**1.6311**	**1.6311**	**1.4000e-004**	**3.0000e-005**	**1.6430**

7.0 Water Detail

7.1 Mitigation Measures Water

Apply Water Conservation Strategy

	Total CO2	CH4	N2O	CO2e
Category	MT/yr			
Mitigated	2.6473	0.0120	3.0000e-004	3.0372
Unmitigated	3.0547	0.0150	3.8000e-004	3.5412

7.2 Water by Land Use

Unmitigated

	Indoor/Outdoor Use	Total CO2	CH4	N2O	CO2e
Land Use	Mgal	MT/yr			
Other Asphalt Surfaces	0 / 0	0.0000	0.0000	0.0000	0.0000
Other Non-Asphalt Surfaces	0 / 0	0.0000	0.0000	0.0000	0.0000
Single Family Housing	0.456078 / 0.287528	3.0547	0.0150	3.8000e-004	3.5412
Total		**3.0547**	**0.0150**	**3.8000e-004**	**3.5412**

7.2 Water by Land Use

Mitigated

	Indoor/Outdoor Use	Total CO2	CH4	N2O	CO2e
Land Use	Mgal	MT/yr			
Other Asphalt Surfaces	0 / 0	0.0000	0.0000	0.0000	0.0000
Other Non-Asphalt Surfaces	0 / 0	0.0000	0.0000	0.0000	0.0000
Single Family Housing	0.364863 / 0.287528	2.6473	0.0120	3.0000e-004	3.0372
Total		**2.6473**	**0.0120**	**3.0000e-004**	**3.0372**

8.0 Waste Detail

8.1 Mitigation Measures Waste

Institute Recycling and Composting Services

Category/Year

	Total CO2	CH4	N2O	CO2e
	MT/yr			
Mitigated	0.4161	0.0246	0.0000	1.0310
Unmitigated	1.6645	0.0984	0.0000	4.1238

8.2 Waste by Land Use

Unmitigated

	Waste Disposed	Total CO2	CH4	N2O	CO2e
Land Use	tons	MT/yr			
Other Asphalt Surfaces	0	0.0000	0.0000	0.0000	0.0000
Other Non-Asphalt Surfaces	0	0.0000	0.0000	0.0000	0.0000
Single Family Housing	8.2	1.6645	0.0984	0.0000	4.1238
Total		**1.6645**	**0.0984**	**0.0000**	**4.1238**

8.2 Waste by Land Use

Mitigated

	Waste Disposed	Total CO2	CH4	N2O	CO2e
Land Use	tons	MT/yr			
Other Asphalt Surfaces	0	0.0000	0.0000	0.0000	0.0000
Other Non-Asphalt Surfaces	0	0.0000	0.0000	0.0000	0.0000
Single Family Housing	2.05	0.4161	0.0246	0.0000	1.0310
Total		**0.4161**	**0.0246**	**0.0000**	**1.0310**

9.0 Operational Offroad

Equipment Type	Number	Hours/Day	Days/Year	Horse Power	Load Factor	Fuel Type

10.0 Stationary Equipment

Fire Pumps and Emergency Generators

Equipment Type	Number	Hours/Day	Hours/Year	Horse Power	Load Factor	Fuel Type

Boilers

Equipment Type	Number	Heat Input/Day	Heat Input/Year	Boiler Rating	Fuel Type

User Defined Equipment

Equipment Type	Number

11.0 Vegetation

Category	Total CO2	CH4	N2O	CO2e
	MT			
Unmitigated	11.3280	0.0000	0.0000	11.3280

11.2 Net New Trees

Species Class

	Number of Trees	Total CO2	CH4	N2O	CO2e
		MT			
Miscellaneous	16	11.3280	0.0000	0.0000	11.3280
Total		**11.3280**	**0.0000**	**0.0000**	**11.3280**

APPENDIX B: BIOLOGICAL RESOURCES

APPENDIX B.1: BIOLOGICAL RESOURCES ASSESSMENT

SOUTH ENVIRONMENTAL

Biological Resources Assessment

500 East Baseline Project

July 2019

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Appendices

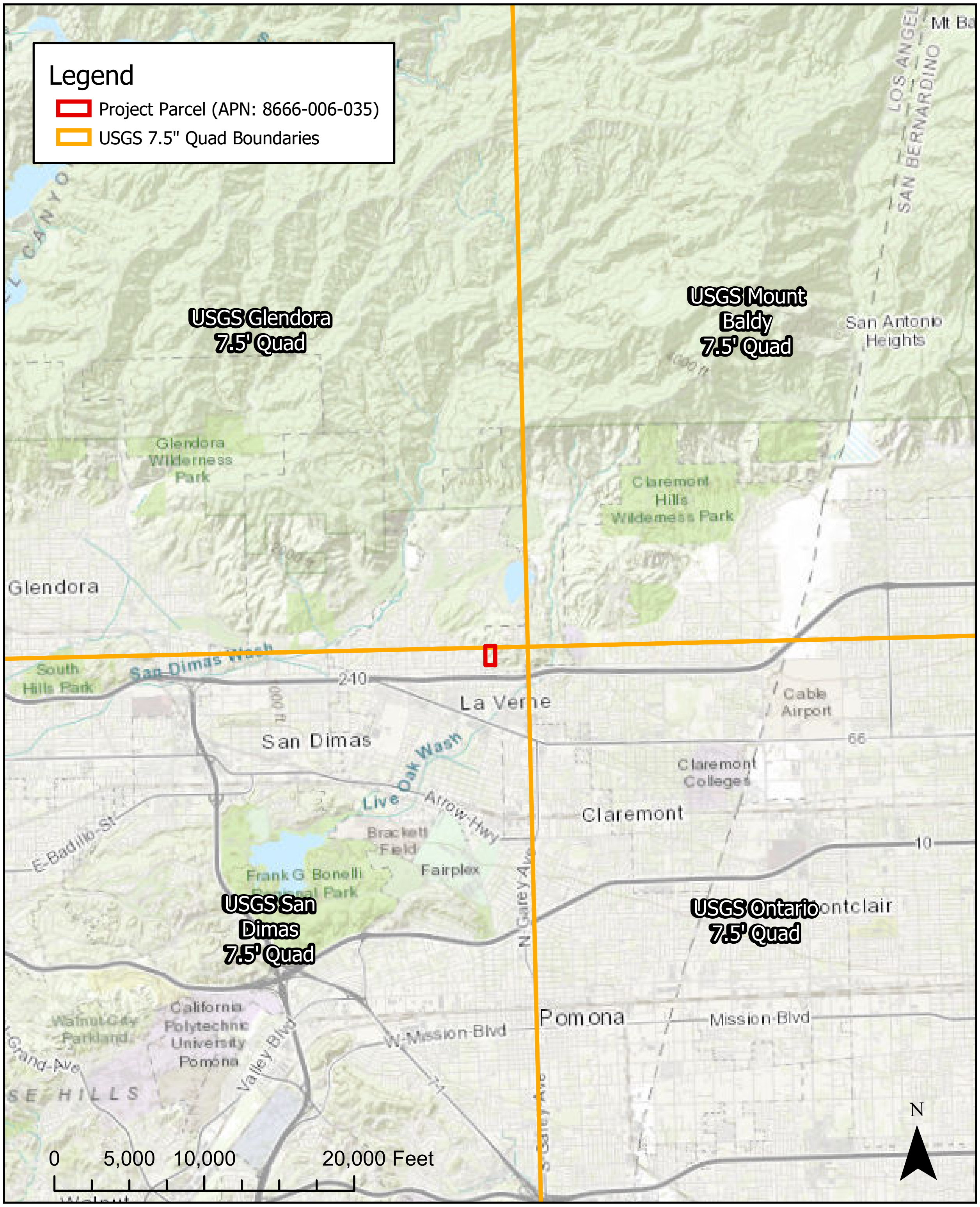
1. Introduction

This report includes the findings of a Biological Resources Assessment (BRA) conducted by South Environmental for a proposed housing development consisting of eight single-family homes that will be located at 500 East Baseline Road in unincorporated Los Angeles County, California. The City of La Verne is annexing the 19.4-acres parcel from the County of Los Angeles. The purpose of this report is to support a Mitigated Negative Declaration that is being prepared by the City of La Verne to both annex the parcel and construct the proposed homes. The scope of this report includes a description of the proposed development, methods used to assess the biological resources, the environmental setting including technical characterizations and maps of vegetation communities, a preliminary evaluation of jurisdictional areas, an assessment of the potential for special-status plants and animals to occur on the parcel, a description of the regulatory setting, an analysis of the potential for the project to impact biological resources according the thresholds in Appendix G of the California Environmental Quality Act (CEQA), and detailed recommendations for avoiding or mitigating impacts. Representative photographs of the parcel are in Appendix A.

Project Description

Location and Setting

The project parcel is immediately adjacent to the north of the City of La Verne (see Figure 1), approximately 500-feet north of Interstate 210 at street address 500 East Baseline Road. The parcel is at the northeast corner of the U.S. Geological Survey (USGS) San Dimas 7.5 Minute Topographical Quadrangle (Glendora, Mt. Baldy, and Ontario are to the north, northeast, and east respectively), and within Section 31 in Township 01 North (01N) and Range 08 West (08W). As shown in Figure 2 below, the parcel is entirely within the San Dimas/San Antonio Wash Los Angeles County Significant Ecological Area (SEA). Urban areas occur adjacent to the west and south and the remaining surrounding areas are undeveloped areas of the SEA. California protected areas Marshall Canyon Conservation Corridor and Live Oak Reservoir and Park occur approximately 2,000-feet north of the parcel, partially within the SEA.



Source: ESRI Basemaps 2019

500 E Baseline - BRA

Figure 1. Regional Location

Section 31 in Township 01N and Range 08W
34.1221330 N, -117.7591424 W

SOUTH ENVIRONMENTAL

Source: ESRI Basemaps 2019

500 E Baseline - BRA

Figure 2. Project Vicinity

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Proposed Development

The property ownership is proposing to divide the parcel into a nine-lot subdivision Vesting Tentative Tract Map to be annexed into the City of La Verne. As shown in Figure 3 below, development is proposed on approximately 8.47-acres in the southern third of the parcel and 0.22-acres will be part of the residential lot in the southeast corner but is not proposed for development. The proposed development includes a 10.75-acre lot on the northern half of the parcel that will remain as undeveloped open space in perpetuity. The development includes:

- A total of seven single-family residences.
- Grading and other stabilizing methods will be used on the home sites and the slopes surrounding the homes and paved areas totaling 3.6-acres of additional area. This includes a debris basin that will capture water from the site natural drainages described in Section 3 below.
- Access to the homes will be from two paved road segments and paved driveways totaling 1.1-acre in area, and includes:
  - A road will be constructed approximately 350-feet long that extends north from Baseline Road and ends in a cul-de-sac, and
  - A road will be constructed approximately 200 feet-long that extends west from Broken Spur Road.
  - A driveway 150-feet long will be constructed parallel to Baseline Road and perpendicular to the east of the 350-foot road described above and will provide access to the south-central homes.
  - A paved driveway leading to the debris basin in the northern part of the proposed development.
- Fuel modification, including vegetation removal and management, is required by the Los Angeles County Fire Department for all areas within 200-feet from buildings. Fuel modification is proposed to occur on a total of 3.7-acres in the areas within 200-feet of the proposed homes.

Source: ESRI Basemaps 2019

500 E Baseline - BRA

Figure 3. Proposed Development

SOUTH ENVIRONMENTAL

2. Methodology

This biological resource assessment is based on information compiled through a field reconnaissance, focused rare plant survey, jurisdictional delineation, and a review of appropriate reference materials and literature regarding the biological resources of the region. A general biological field reconnaissance and separate rare plant survey and jurisdictional delineation was conducted by South Environmental Certified Wildlife Biologist and Certified Arborist Matthew South and the sources and literature referenced in this assessment are provided below in Section 6. Bibliography.

Literature Review

The assessment of the project began with a review of literature relating to the biological resources that are known to occur in the vicinity of the parcel. The California Department of Fish and Wildlife (CDFW) California Natural Diversity Database (CNDDB) was reviewed to identify special-status plants, animals, and natural communities that have previously recorded in the USGS San Dimas 7.5"quad in which the project site is located, and the eight surrounding USGS 7.5"quads: Azusa, Glendora, Mount Baldy, Baldwin Park, Ontario, La Habra, Yorba Linda, and Prado Dam (CDFW 2019a). In addition, queries were conducted of the United States Fish and Wildlife Service (USFWS) Information for Planning and Consultation (IPaC) Environmental Conservation Online System (ECOS) for federally protected species (USFWS 2019a), the USFWS Designated and Proposed Critical Habitat maps (USFWS 2019b), and the California Native Plant Society (CNPS) online Inventory of Rare and Endangered Plants of California (CNPS 2019).

Field Reconnaissance

South Environmental biologist Matthew South conducted a field reconnaissance of the maintenance areas on June 3, 2019. The purpose of the reconnaissance was to record plants and animals observed on the site, characterize and map plant communities and potential jurisdictional features, and identify other locally significant resources such as native trees. The reconnaissance focused largely on identifying those biological resources within the proposed development areas.

Plant Community Mapping

Plant communities were mapped over the entire parcel. The communities were mapped by hand in the field using aerial photographs of the campground at an approximate 1:300' scale by delineating dominant plant types observed in the field. The areas were later digitized using ArcGIS mapping software to calculate acreages and assess impacts from proposed maintenance. Plant community descriptions follow vegetation classifications in the Manual for California Vegetation, 2nd Edition (Sawyer et. al, 2009).

Animal Inventory

All wildlife species observed during the surveys, as well as any diagnostic sign (call, tracks, nests, scat, remains, or other sign), were recorded in field notes. Binoculars and regional field guides were utilized for the identification of wildlife, as necessary. Since common names, except for birds, vary significantly between references, scientific names are included upon initial mention of each species; common names consistent throughout the report are employed thereafter.

Rare Plant Survey

A focused rare plant survey was conducted on June 28, 2019 by biologist Matthew South between the hours of 8am and 12pm. The survey was conducted in areas within the proposed impact zones, including the fuel modification zone within 200-feet of proposed houses. All plant species observed during the survey were either identified in the field or collected and later identified using taxonomic keys. Since common names vary significantly between references, scientific names are included upon initial mention of each species; common names consistent throughout the report are employed thereafter. All plant species observed were recorded in field notes during the survey, and the survey focused heavily on the maintenance areas to identify those flowering species that may be impacted. Due to the steep terrain, dense vegetation, and presence of poison oak the survey was limited in areas that were inaccessible or dangerous and these areas were surveyed using binoculars.

Jurisdictional Delineation

A jurisdictional delineation survey was conducted concurrently with the rare plant survey described above. The survey included a 100% visual coverage of the entire parcel, and a Trimble R1 GPS unit was used to record the centerline of the any drainages or streams that were within the proposed impact areas, including the proposed fuel modification zone. The width of the drainages and the plants that occur along them were recorded. The potential for downstream connection was investigated by using historic aerial photographs from historicaerials.com and Google Earth images to identify potential flows that may have occurred prior to development in the region.

3. Environmental Setting

Physical Characteristics

Geology and Landforms

The campground occurs in the San Gabriel Mountains within the western Transverse Ranges, and specifically occurs within the Quartz Dioritic Plutonic Rocks, which is comprised in late Mesozoic-early Cretaceous geologic units (USGS 2019a, USGS 2019b). The primary rock type in this geologic unit is biotite quartz diorite. Rock types in the southeast consist of Surficial Sediments such as alluvial gravel and sand of valley areas.

Topography and Climate

Generally, the topography on the parcel is steep, southwest facing slopes, and ranges in elevation between 1,200 feet above mean sea level (amsl) in the southwest corner to 1,350 feet amsl in the north central border. Average high and low temperatures are 90F and 60F in the summer and 68F and 42F in the winter. The region receives an average of 19-inches of rain per year and no snow, with rain occurring on an average of 32 days per year. There are 287 sunny days on average per year.

Soils

Two soil complexes occur on the campground and surrounding area and they are shown in Figure 4 below.

- **Padova-Walong complex, 30 to 85 percent slopes** occurs on the majority of the parcel in the steeper sloped areas. This soil complex consists of moderately deep to deep, well drained soils formed in residuum from gneiss and igneous rock and in material weathered from granite rock. These are upland soils that are found on foothills.

- **Urban land-Palmview-Tujunga, gravelly complex, 2 to 9 percent slopes** occurs to the flatter southwest corner of the parcel adjacent to the existing developments. This soil complex consists of very deep, well drained to somewhat excessively drained soils that formed in alluvium from granitic or related rock sources. These are gravely soils that are typically found in alluvial fans and in floodplains.

Source: ESRI Basemaps 2019

500 E Baseline - BRA

Figure 4. Soils

SOUTH ENVIRONMENTAL

Habitat Linkages and Wildlife Migration Corridors

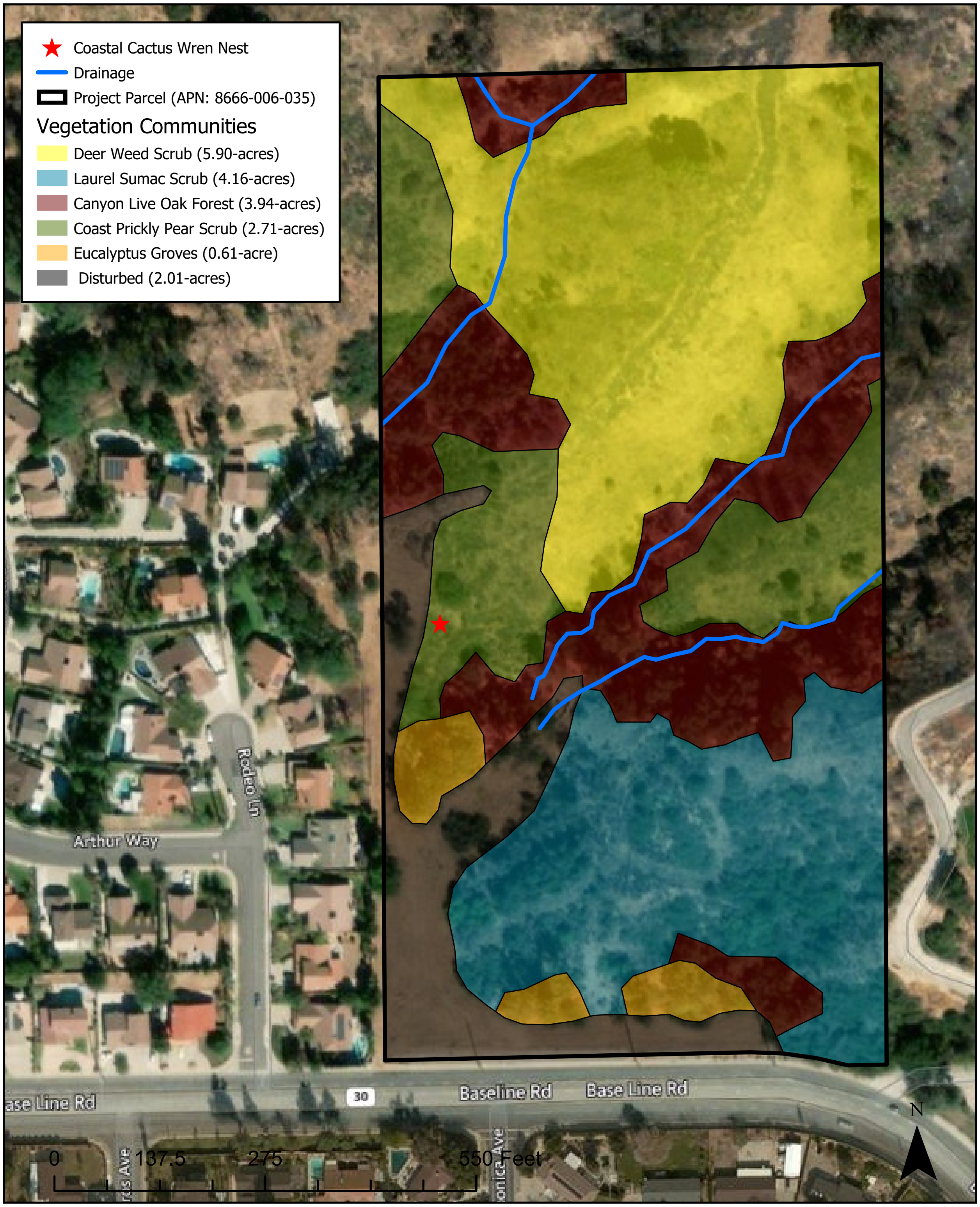
According to the Statewide Essential Habitat Connectivity Project Geospatial Dataset (CDFW 2010), the parcel is adjacent to the southeast of the Sugarloaf Mountain/Keller Peak – San Gabriel/Cucamonga connection, which is an important habitat linkage and wildlife migration corridor in southern California. Streams and drainages like those found in the canyons on the parcel (described below) are frequently used corridors for animal movement, particularly at the urban-wildlands interface. The SEA and the parcel link native habitats surrounding Live Oak Reservoir to the Angeles National Forest. The parcel is contiguous with hundreds of thousands of acres of pristine native habitat and the value from habitat linkage and wildlife movement in the region is expected to be very high as a result. However, large portions of the proposed development have already been impacted by fuel modification associated with the adjacent houses, and these areas are not suitable for wildlife movement and lack native habitats.

Plant Communities

As shown in Figure 5, a total of 6 plant communities were identified on the parcel. The name, global and state statuses, and areas of these plant communities on the parcel are summarized in Table 1 and a detailed description of each is found below. A list of all of the plants identified on the parcel during surveys is found in **Appendix B** Floral Compendium.

Table 1. Summary of Plant Communities

Plant Community	Global/State Rank	Acres
Deer Weed Scrub	G5/S5	5.90
Laurel Sumac Scrub	G4/S4	4.16
Canyon Live Oak Forest	G5/S5	3.94
Coast Prickly Pear Scrub	G4/S3	2.71
Eucalyptus Groves	NR	0.61
Disturbed	NR	2.01
Total		19.33



Source: ESRI Basemaps 2019

500 E Baseline - BRA

Figure 5. Plant Communities and Drainages

SOUTH ENVIRONMENTAL

Coast Prickly Pear Scrub

Coast prickly pear scrub covers 2.6-acres of the parcel in the northern half. According to Sawyer et al., 2009 (the Manual), coast prickly pear scrub occurs on south-facing slopes and is characterized by greater than >30 percent relative cover of coast prickly pear (*Opuntia littoralis*) as a dominant or co-dominant with other coastal sage scrub species. On the parcel, this community is found on the ridges and slopes and is dominated or co-dominated by coast prickly pear in the shrub layer. Other shrubs include deer weed (*Acmispon glaber*), California buckwheat (*Eriogonum fasciculatum*), California sagebrush (*Artemisia californica*), laurel sumac (*Malosma laurina*), white sage (*Salvia apiana*), and tree tobacco (*Nicotiana glauca*). The herb layer is dominated by non-native and invasive plants such as short podded mustard (*Hirschfeldia incana*), slender oat (*Avena barbata*), wild oat (*Avena fatua*), ripgut brome (*Bromus diandrus*), foxtail chess (*Bromus madritensis* ssp *rubens*), tocalote (*Centaurea melitensis*), and bull thistle (*Cirsium vulgare*). Native plants observed in the herb layer include California bluebell (*Phacelia minor*) and island morning glory (*Calystegia macrostegia*). Coast prickly pear scrub has a Global Rank of 4 and State Rank of 3, indicating that this community is apparently secure globally and vulnerable in California due to a restricted range, relatively few populations (typically fewer than 80), and/or recent and widespread declines.

Deer Weed Scrub

Deer weed scrub covers 5.9-acres of the parcel. According to the Manual, deer weed scrub occurs in areas with recent disturbance, such as through clearing, fire, or intermittent flooding and is characterized by dominance or co-dominance of deer weed in an open to intermittent and often two tiered shrub layer, with a sparse herbaceous layer. On the parcel this community is dominated or co-dominated by deer weed and is heavily disturbed by past mowing on the ridge in the northern half of the parcel. This community has a high density of short podded mustard, which is dominant or co-dominant throughout. Other shrubs that occur in this community are sparse and difficult to detect due to the high density of mustard, and include California sagebrush, California buckwheat, and coast prickly pear.

Canyon Live Oak Forest

Canyon live oak forest occurs on 3.9-acres of the parcel. According to the Manual, this community occurs in stream benches and terraces in canyon bottoms near streams and on uplands slopes on steep, shallow, rocky, infertile soils. On the parcel, this community is found in canyons the along edges of ephemeral streams and is dominated by canyon live oak (*Quercus chrysolepis*). Other trees in this community include southern southern black walnut (*Juglans californica*), red gum (*Eucalyptus camaldulensis*), Mexican fan palm (*Washingtonia robusta*), and Peruvian pepper (*Schinus mole*). The shrub layer included mature scrub oak (*Quercus berberidifolia*), San Gabriel leather oak (*Quercus durata*), and blue elderberry (*Sambucus nigra*), and the herb layer included poison oak (*Toxicodendron diversilobum*), golden currant (*Ribes aureum* var. *gracillimum*), California mugwort (*Artemisia douglasiana*), bull thistle, short podded mustard, ripgut brome, wild radish (*Raphanus sativus*), and foxtail chess. Canyon live oak forest has a Global and State Rank of 5 indicating that this community is common, widespread, and abundant in California and throughout its entire range.

Laurel Sumac Scrub

Laurel sumac scrub occurs on 4.1-acres of the parcel in the southern slopes. According to the Manual, this community occurs on slopes, that are often steep, with shallow, fine-textured soils. On the parcel this community is dominated by laurel sumac and has blue elderberry, California sagebrush, Peruvian pepper, coast prickly pear, white sage, short podded mustard, ripgut brome, soft chess, foxtail chess, common eucrypta (*Eucrypta chrysanthemifolia*), and California bluebell. The laurel sumac and blue elderberry at the lowest elevation is extraordinarily large due to the proximity of the stream runoff. Laurel sumac scrub has a Global and State Rank of 4, indicating that this community is apparently secure globally and in California.

Eucalyptus Groves

Eucalyptus groves occur on 0.6-acre of the parcel in two small areas in the southern half. This community is a monoculture of red gum.

Disturbed

Disturbed areas occur on 2.0-acres in the southwest corner of the parcel. These areas were recently tilled at the time of the reconnaissance and was largely bare soil as a result. Plants that were identifiable at the time included Brazilian pepper tree (*Schinus terebinthiolius*), short podded mustard, slender oat, wild oat, ripgut brome, and Bermuda grass (*Cynodon dactylon*).

Common Animals

The following animals were detected on the parcel during the reconnaissance: red-tailed hawk (*Buteo jamaicensis*), Cooper's hawk (*Accipiter cooperii*), Anna's hummingbird (*Calypte anna*), Nuttall's woodpecker (*Picoides nuttallii*), Phainopepla (*Phainopepla nitens*), California scrub-jay (*Aphelocoma californica*), northern mockingbird (*Mimus polyglotto*), spotted towhee (*Pipilo maculatus*), California towhee (*Melozone crissalis*), hooded oriole (*Icterus cucllatus*), house finch (*Haemorhous mexicanus*), oak titmouse (*Baeolophus inornatus*), mourning dove (*Zenaida macroura*), Audubon's cottontail (Sylvilagus audubonii), California ground squirrel

(*Otospermophilus beecheyi*), and coyote (*Canis latrans*). Numerous other animals are anticipated to use the parcel throughout the year.

Special-Status Species and Natural Communities

Special-Status Plants

A total of 73 special-status plants are known to occur in the region and an assessment of their potential to occur on the parcel is in Appendix B. Based on the habitats present and site conditions observed during the reconnaissance, it was determined that twenty special-status plants are likely to occur at the campground, and they are listed in Table 2 below. Nevin's barberry is federal and state endangered species and is the only listed species with the potential to occur on the parcel. Those species with a California Rare Plant Rank of 4.2 or 4.3 are considered watchlist species and are not currently rare or threatened or in need of protection in the state. These species will not be discussed further in this report because impacts to these species would not jeopardize the persistence of the species in the state or throughout the range. Those plants with a California Rare Plant Rank of 1 or 2 are discussed in detail below.

Table 2. Summary of Special-Status Plants Likely to Occur on the Parcel

Species Name	California Rare Plant Rank	Federal/State Status
Nevin's barberry (*Berberis nevinii*)	1B.1	FE/SE
slender mariposa-lily (*Calochortus clavatus* var. *gracilis*)	1B.2	--/--
Parry's spineflower (*Chorizanthe parryi* var. *parryi*)	1B.1	--/--
mesa horkelia (*Horkelia cuneate* var. *puberula*)	1B.1	--/--
Nuttall's scrub oak (*Quercus dumosa*)	1B.1	--/--
San Bernardino aster (*Symphyotrichum defoliatum*)	1B.2	--/--
California satintail (*Imperata brevifolia*)	2B.1	--/--
white-rabbit tobacco (*Pseudognaphalium leucocephalum*)	2B.2	--/--
California androsace (*Androsace elongate* ssp. *acuta*)	4.2	--/--
Catalina mariposa-lily (*Calochortus catalinae*)	4.2	--/--
club-haired mariposa-lily (*Calochortus clavatus var. clavatus*)	4.3	--/--
Plummer's mariposa-lily (*Calochortus plummerae*)	4.2	--/--
peninsular spineflower (*Chorizanthe leptotheca*)	4.2	--/--
*southern California black walnut (*Juglans californica*)	4.2	--/--
Robinson's pepper-grass (*Lepidium virginicum* var. *robinsonii*)	4.3	--/--
ocellated humboldt lily (*Lilium humboldtii* ssp. *ocellatum*)	4.2	--/--
green monardella (*Monardella viridis*)	4.3	--/--
California muhly (*Muhlenbergia californica*)	4.3	--/--
Engelmann oak (*Quercus engelmannii*)	4.2	--/--
Coulter's matilija poppy (*Romneya coulteri*)	4.2	--/--

*present on the parcel
1B.1 – plants rare, threatened, or endangered in California and elsewhere, seriously threatened in California
1B.2 – plants rare, threatened, or endangered in California and elsewhere, fairly threatened in California
2B.1 – plants rare, threatened, or endangered in California, but more common elsewhere; seriously threatened in California
2B.2 – plants rare, threatened, or endangered in California, but more common elsewhere; fairly threatened in California

4.2 – plants of limited distribution; fairly threatened in California (Watchlist plant)
4.3 – plants of limited distribution; not very threatened in California (Watchlist plant)
FE – federal endangered species
SE – California endangered species

Special-Status Animals

A total of 96 special-status animals are known to occur in the region and an assessment of their potential to occur on the parcel is in Appendix B. Based on the species observed during the surveys, CNDDB occurrence records, habitats present and site conditions observed during the reconnaissance, it was determined that twenty special animals occur or are likely to occur on the parcel. The list includes federally threatened coastal California gnatcatcher (*Polioptila californica californica*), but no other federal-listed or state-listed species is anticipated to occur. The gnatcatcher is discussed in detail below. California watchlist species orange-throated whiptail (*Aspidoscelis hyperythra*), Cooper's hawk (*Accipiter cooperii*), southern California rufous crowned sparrow (*Aimophila ruficeps canescens*), merlin (*Falco columbarius*), and prairie falcon (*Falco mexicanus*) are likely to use the parcel at some time during the year, but they will not be discussed further in this report because the project does not pose a threat to the long-term persistence of watchlist species. The other species on the CDFW Special Animals list that are likely to occur at the campground or immediate vicinity include:

- southern California legless lizard (*Anniella stebbinsi*) is a California species of special concern (SSC) and is likely to occur near the drainages on the parcel. The nearest CNDDB occurrence record is from the 1940s and is located 1,000-feet to the east of the parcel.

- California glossy snake (*Arizona elegans occidentalis*) is a SSC and is likely to occur on the scrub habitats on the parcel. The nearest CNDDB occurrence record is from 1946 and is located adjacent to the east of the parcel, likely in Thompson Creek.

- coastal whiptail (*Aspidoscelis tigris stejnegeri*) is a SSC and is likely to occur on the scrub and forest habitats on the parcel. The nearest CNDDB occurrence record is from 2000 and is located approximately 6-miles to the southwest of the parcel at Forest Lawn Memorial Park.

- coast horned lizard (*Phrynosoma blainvillii*) is a SSC and is likely to occur scrub and forest habitats on the parcel. The nearest CNDDB occurrence record is from 1941 and is located approximately 0.5-mile to the east of the parcel in Thompson Creek.

- oak titmouse (*Baeolophus inornatus*) is a federal Bird of Conservation Concern (BCC) and was observed on the parcel during the reconnaissance. The species is likely a nester in the canyon live oak forest.

- coastal cactus wren (*Campylorhynchus brunneicapillus sandiegensis*) is a SSC was observed nesting in the coast prickly pear scrub on the parcel during the rare plant survey in the location shown in Figure 5 above. The nearest CNDDB occurrence record is from 2005 and is located approximately 10 miles southwest of the parcel near Chino Hills State Park.

- white-tailed kite (*Elanus leucurus*) is a fully protected species in California and is likely to occur on the parcel in the forest and scrub habitats. The nearest CNDDB occurrence record is from 2009 and is located approximately 10 miles south of the parcel near Chino Hills State Park.

- loggerhead shrike (*Lanius ludovicianus*) is a SSC and is likely to occur in the scrub and forest habitats on the parcel. The nearest CNDDB occurrence record is from 1994 and is located approximately 15 miles southeast of the parcel at March Air Force Base.

- Lawrence's goldfinch (*Spinus lawrencei*) is a BCC and is likely to occur on the canyon live oak forest on the parcel. The nearest CNDDB occurrence record is from 2015 and is located on the Santa Ana River approximately 25 miles southeast of the parcel.

- pallid bat (*Antrozous pallidus*) is a SSC and is likely to occur as a forager on the parcel. The nearest CNDDB occurrence record is from 1951 and is located approximately 3 miles southwest of the parcel.

- western mastiff bat (*Eumops perotis californicus*) is a SSC and is likely to occur as a forager on the parcel and may roost in the mature trees on the parcel. The nearest CNDDB occurrence record is from 1952 and is located approximately 1-mile southwest of the parcel.

- San Diego black-tailed jackrabbit (*Lepus californicus bennettii*) is a SSC and is likely to occur in the scrub and forest habitats on the parcel. The nearest CNDDB occurrence record is from 2001 and is located approximately 20 miles to the west of the parcel in the Santa Fe flood control basin.

- San Diego desert woodrat (*Neotoma lepida intermedia*) is a SSC and is likely to occur on the scrub habitats on the parcel. The nearest CNDDB occurrence record is from 2001 and is located approximately 2-miles to the east of the parcel.

Coastal California Gnatcatcher

In 1993 Coastal California gnatcatcher was listed as threatened under the Endangered Species Act. According to the 2010 USFWS 5-Year Review for the species, its habitat preferences are closely aligned with coast scrub vegetation along the coast of California from Ventura County to Baja Mexico. The parcel is at the northern edge of its range and has a high-quality habitat for the species due to the dense and mature coast prickly pear scrub and laurel sumac scrub. In addition, the parcel is contiguous with scrub habitats to the north associated with the SEA that provide foraging opportunity and dispersal habitat for juveniles. However, the deer weed scrub does not provide suitable habitat due to the high percentage of invasive mustard. According to the CNDDB coastal California gnatcatcher has been recorded in 1994 approximately 2.5-miles southeast of the parcel at Rancho Santa Ana Botanic Garden, in 2000 approximately 3-miles southwest near Puddingstone Reservoir, and in 2000 approximately 3.5-miles to the west along Foothill Boulevard. There is a high to medium potential that this species occurs on the parcel based on the habitats present and the known occurrences in the region.

Protected Trees

Numerous canyon live oak trees that are protected by the County's Protected Tree Ordinance occur on the parcel and within the proposed impact area. A focused oak tree survey and report (Carlsberg 2019) are currently being completed for the project to determine the specific location and number of trees that occur in the impacted areas.

Hydrology and Jurisdictional Features

According to the USGS National Watershed Boundary Dataset (USGS 2019c), the parcel is located within the San Gabriel watershed (HUC8) and within the Big Dalton Wash sub-watershed (HUC12). As shown in Figure 5 above there were three drainages (Drainages 1-3) identified on the parcel during the Jurisdictional Delineation. Drainage 1 is the northernmost drainage and Drainage 3 is the southernmost. Based on a review of historic aerial photographs it was determined that the drainages on the parcel are isolated because they have no downstream connection now or in the past. Therefore, these drainages would not be considered waters of the US regulated by the US Army Corps of Engineers (USACE) or the Los Angeles Regional Water Quality Control Board. However, the presence of a streambed and bank and areas that showed signs of recent flow (i.e. moist soils and debris flows) indicates that these drainages are under the jurisdiction of the CDFW per Section 1600 of the Fish and Game Code described in Section 5 below. CDFW jurisdiction would likely extend to the surrounding forest. The drainages on the parcel are described in detail below.

1. Drainage 1 is 567-feet long on the parcel and forms a y-shape as two parts form a single drainage that flows north to south and onto an adjacent concrete culvert at the end of driveway off the parcel to the west. The drainage is approximately 8-feet wide as it leaves the parcel and approximately 1.5-feet wide at the northern end. Cayon live oak forest

surrounds the drainage in the southern and northern areas of the parcel but in the middle, it is a drier deer weed scrub community.

2. Drainage 2 is 677-feet long on the parcel and flow toward the southwest and ends on the parcel where tilling and grading have dammed the drainage. The stream is approximately 1.5-2 feet in width throughout its length. It is likely that the drainage would continue toward the southwest into the adjacent coast live oak woodland and eucalyptus groves, but a large soil and vegetation pile at the end of the drainage has severed that connection. The water does continue out onto the tilled area as was evident form soil erosion and debris flows on the tilled areas at the western edge of the laurel sumac scrub. However, there is no defined bed and bank in this area to measure. Vegetation in the southwestern portions of the drainage are denser and moister due to a dense oak canopy that is more sparse and drier as you move up the canyon to the northeast.

3. Drainage 3 is 530-feet on the parcel and flows from east to west and ends in the center of the parcel immediately prior to merging with Drainage 2. In the past the two drainages likely met and continued to the southwest but tilling and grading have severed the downstream connection and no streambed or bank is currently visible in those areas. The streambed is approximately 2-feet width throughout its length and is surrounded by steeper slopes than the other drainages.

4. Impacts Analysis and Recommendations

For the purposes of this report, impacts to protected biological resources are analyzed within the context of the regulatory setting, and more specifically the analysis will follow the questions pertaining to biological resources posed in Appendix G Checklist of the California Environmental Quality Act (CEQA). Below is an overview of the federal, state, and local regulations pertaining to protected biological resources at the campground, and an analysis of impacts to those resources that may occur as a result of the development follows.

Regulatory Setting

Federal Regulations

Endangered Species Act

The Federal Endangered Species Act (FESA) of 1973 defines an endangered species as "any species which is in danger of extinction throughout all or a significant portion of its range." A threatened species is defined as "any species which is likely to become an Endangered species within the foreseeable future throughout all or a significant portion of its range." Under provisions of Section 9(a)(1)(B) of the FESA, unless properly permitted, it is unlawful to "take" any listed species. "Take" is defined in Section 3(18) of FESA: "...harass, harm, pursue, hunt, shoot, wound, kill, trap, capture, or collect, or to attempt to engage in any such conduct." Further, the USFWS, through regulation, has interpreted the terms "harm" and "harass" to include certain types of habitat modification as forms of "take." These interpretations, however, are generally considered and applied on a case-by-case basis and often vary from species to species. In a case where a property owner seeks permission from a federal agency for an action which could affect a federally listed plant or animal species, the property owner and agency are required to consult with USFWS pursuant to Section 7 of the FESA if there is a federal nexus, or pursuant to Section 10 of the FESA. Section 9(a)(2)(b) of the FESA addresses the protections afforded to listed plants.

Migratory Bird Treaty Act

The Migratory Bird Treaty Act (MBTA) protects individuals as well as any part, nest, or eggs of any bird listed as migratory. In practice, federal permits issued for activities that potentially impact migratory birds typically have conditions that require pre-disturbance surveys for nesting birds. In the event nesting is observed, a buffer area with a specified radius must be established, within which no disturbance or intrusion is allowed until the young have fledged and left the nest, or it has been determined that the nest has failed. If not otherwise specified in the permit, the size of the buffer area varies with species and local circumstances (e.g., presence of busy roads, intervening topography, etc.), and is based on the professional judgment of a monitoring biologist. A list of migratory bird species protected under the MBTA is published by USFWS.

California Regulations

California Environmental Quality Act (CEQA)

The California Environmental Quality Act (CEQA) is a statute that requires state and local agencies to identify the significant environmental impacts of their actions and to avoid or mitigate those impacts, if feasible. CEQA applies to certain activities of state and local public agencies. A public agency must comply with CEQA when it undertakes an activity defined by CEQA as a "project." A project is an activity undertaken by a public agency or a private activity which must receive some discretionary approval (meaning that the agency has the authority to deny the requested permit or approval) from a government agency which may cause either a direct physical change in the environment or a reasonably foreseeable indirect change in the environment.

An Initial Study (IS) is prepared when a proposed action is determined to be a "project" under CEQA. The IS is a checklist that asks specific questions about the project's level of environmental impacts in many categories, including biological resources. The checklist includes a series of questions to determine the projects level of potential impacts in each of the categories. Potential level of impact includes: No Impacts, Less Than Significant Impact, Less Than Significant with Mitigation Incorporated, and Potentially Significant Impact. For projects that have no impact or less than significant impact a Negative Declaration is prepared, for those with Less Than Significant with Mitigation Incorporated prepare a Mitigated Negative Declaration, and for those with a Potentially Significant Impact prepare an Environmental Impact Report (EIR).

State of California Fish and Game Code Section 1600

Fish and Game Code Section 1602 outlines the Lake and Streambed Alteration Agreement (LSAA) permitting process, and states:

- An entity shall not substantially divert or obstruct the natural flow of, or substantially change or use any material from the bed, channel, or bank of, any river, stream, or lake*, or deposit or dispose of debris, waste, or other material containing crumbled, flaked, or ground pavement where it may pass into any river, stream, or lake

Fish and Game Code Section 1602 requires any entity (defined as any person, State or local governmental agency, or public utility) to notify the CDFW before beginning any activity that will do one or more of the following:

- substantially divert or obstruct the natural flow of and river, stream, or lake, or

- substantially change or use any material from the bed, channel, or bank of, any river, stream, or lake*, or
- deposit or dispose of debris, waste, or other material containing crumbled, flaked, or ground pavement where it may pass into any river, stream, or lake.

A permit, known as a Lake or Streambed Alteration Agreement, from CDFW is required to conduct any of the activities described above.

State of California Fish and Game Code Section 3500

Section 3503.5 of the California Fish and Game Code states that it is "unlawful to take, possess, or destroy any birds in the order Falconiformes or Strigiformes (birds of prey) or to take, possess, or destroy the nest or eggs of any such bird except as otherwise provided by this code or any regulation adopted pursuant thereto." Activities that result in the abandonment of an active bird of prey nest may also be considered in violation of this code. In addition, California Fish and Game Code, Section 3511 prohibits the taking of any bird listed as fully protected, and California Fish and Game Code, Section 3515 states that is it unlawful to take any non-game migratory bird protected under the MBTA.

Local Regulations

Los Angeles County General Plan Significant Ecological Areas (SEAs)

The Los Angeles County 2035 General Plan provides the policy framework for how and where the unincorporated County will grow through the year 2035, and is designed to guide the long-term physical development and conservation of the County's land and environment in the unincorporated areas, through a framework of goals, policies and implementation programs.

The Significant Ecological Areas Program is a component of General Plan 2035. An SEA is a designation given to land that contains irreplaceable biological resources. The objective of the SEA Program is to preserve the genetic and physical diversity of the County by designing biological resource areas capable of sustaining themselves in the future. The County's current SEAs are regulated by a conditional use permit (CUP) to Significant Ecological Areas Technical Advisory Committee (SEATAC) Review. SEATAC is an advisory committee to the Regional Planning Commission. SEATAC reviews conceptual project designs and carefully evaluates the biologic resources within a project site, considering the surrounding area (e.g., linear features such as streams). This process supports consideration and approval of the CUP for any project that occurs in a SEA.

La Verne Municipal Code Tree Preservation Preservation

The City of La Verne Municipal Code Chapter 18.78 establishes protections and preservation policy for native oak trees within the City. Trees that are considered significant trees, such oak trees (genus *Quercus*) and heritage trees require a permit prior to removal and may require replacement planting based on the removal of significant or heritage trees.

Project Impacts and Recommended Mitigation

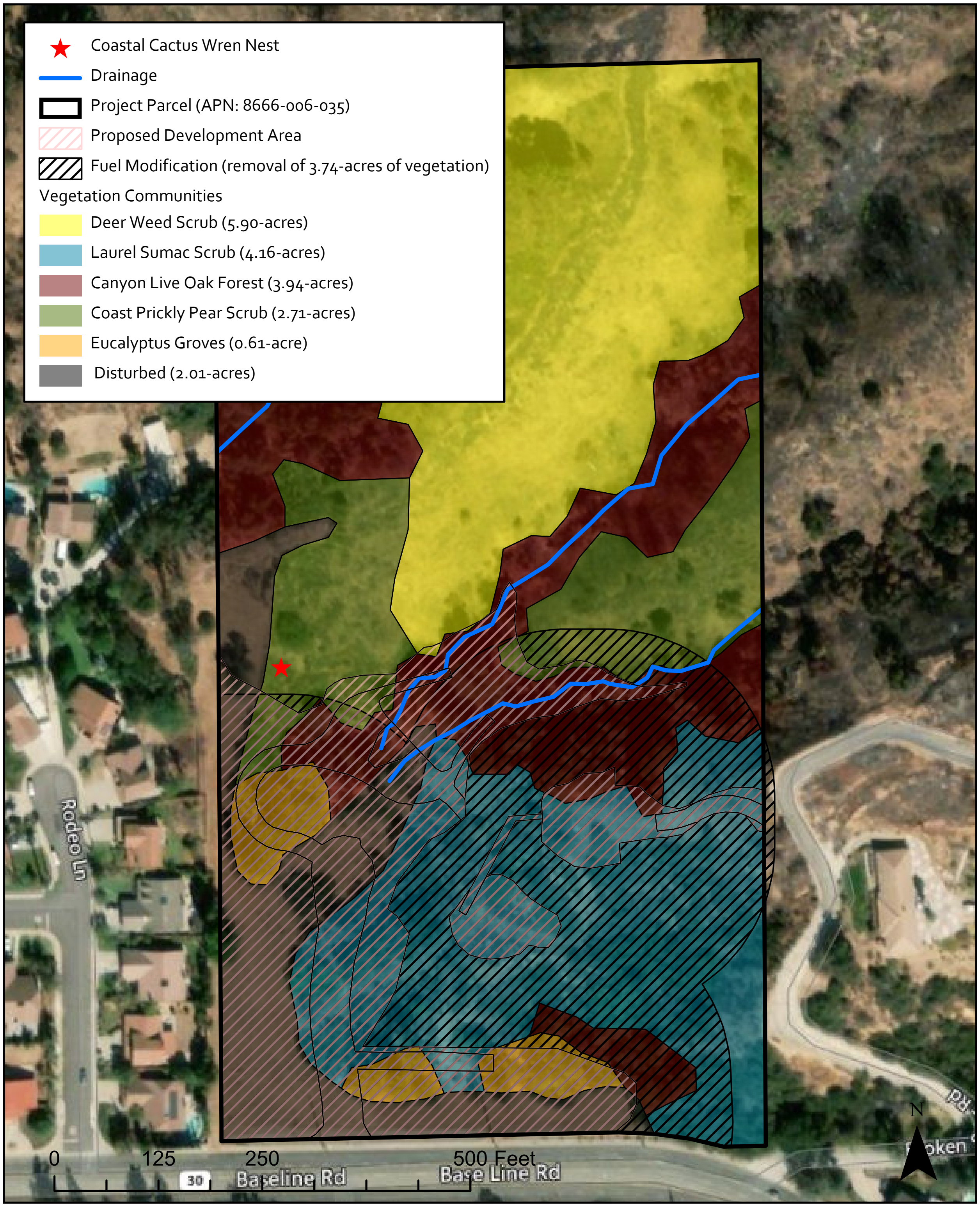
Would the project have a substantial adverse effect, either directly or through habitat modifications, on any species identified as a candidate, sensitive, or special status species in local or regional plans, policies, or regulations, or by the California Department of Fish and Game or U.S. Fish and Wildlife Service?

Habitat Impacts

The impacts to plant communities are summarized in **Table 3** and **Figure 6** and are broken down by impacts from development such as grading and houses, and fuel modification impacts that include vegetation thinning and removal of shrubs and herbaceous plants.

Table 3. Summary of Impacts to Plant Communities

Plant Community	Development Impacts (acres)	Fuel Modification (acres)	Total Impacts (acres)
Laurel Sumac Scrub	1.32	2.62	3.94
Canyon Live Oak Forest	0.86	0.86	1.72
Coast Prickly Pear Scrub	0.24	0.23	0.47
Deer Weed Scrub	0.01	0.00	0.01
Eucalyptus Groves	0.58	0.03	0.61
Disturbed	1.72	0.00	1.72
Total	4.73	3.74	8.47



Source: ESRI Basemaps 2019

500 E Baseline - BRA

Figure 6. Proposed Impacts

SOUTH ENVIRONMENTAL

The development would impact 1.72-acres of areas disturbed by fuel modification for adjacent houses to the west and 3.01-acres of native habitats. The impacts to native plant communities are minimized by siting the development as close to current development and utilizing disturbed areas as much as possible. However, the debris basin has a considerable impact to the canyon live oak forest, and the home and graded pad on elevated area of laurel sumac scrub is sited directly within native habitats and will cause considerable impacts to scrub habitat from development and fuel modification. It is possible that special-status animals occur in these habitats as described below.

Special-Status Plants

Based on the results of the focused rare plant survey, South Environmental believes that no rare or protected plants occur in the impact areas. Therefore, no impacts to special-status plants would result from the project. It is possible that special-status plants occur in areas outside of the impact areas, but these areas would not be directly affected by the development and will be preserved as open space.

Special-Status Animals

Reptiles and Mammals

Four reptiles and four mammals that are SSC are likely to occur in the impact areas: southern California legless lizard may occur in the oak forest near the drainages, California glossy snake may occur in the scrub habitats, coastal whiptail and coast horned lizard may occur in the scrub and forest habitats, pallid bat may occur as a forager on the parcel, western mastiff bat may forage or roost in the mature trees on the parcel, San Diego black-tailed jackrabbit may occur in the scrub or forest habitats, and San Diego desert woodrat may occur in the scrub habitats. If present during construction of the project these species could be killed by construction equipment which could result in a significant impact to these species. With the implementation of preconstruction surveys described below in Mitigation Measure 1 these impacts would be avoided or reduced to a level that is less than significant.

1. **Mitigation Measure 1 - Preconstruction Surveys.**
   Prior to removal of native plant communities a preconstruction survey for reptiles and mammals will be conducted to identify protected species and remove them from the development site. The survey will be conducted by a qualified biologist and any reptiles or mammals relocated will be moved or directed to an area that is at least 100-feet from any future impacts. The survey will be timed to occur immediately prior to the removal of vegetation during initial site preparation prior to construction.

Nesting Birds

Numerous birds have the potential to nest on the parcel and these species and their nests are protected by the MBTA. These include six special-status birds: oak titmouse was observed in the canyon live oak forest, coastal cactus wren was observed nesting in the coastal cactus scrub immediately adjacent to the proposed fuel modification zone, Lawrence's goldfinch may occur in the canyon live oak forest, white-tailed kite and loggerhead shrike may occur in the forest and scrub habitats, and federally threatened coastal California gnatcatcher could occur in the scrub habitats.

Impacts from construction such as death of a bird or loss of a nest, young, or egg of a bird protected by the MBTA would be considered significant. Most adult birds and those that have left the nest are no longer in jeopardy of loss of life from the project because they can fly away from danger. However, nests, eggs, and young that are dependent on the nest are vulnerable to direct loss from construction equipment or removal of vegetation, and indirect loss from abandonment of eggs or nest that may result from noise and vibration from nearby construction equipment. With the implementation of preconstruction nesting bird surveys and monitoring described below in Mitigation Measure 2 these impacts would be avoided or reduced to a level that is less than significant.

2. **Mitigation Measure 2 – Nesting Bird Surveys**
   Construction should be timed to occur between September 1 – January 31 to avoid impacts to nesting birds. If the project occurs between March 1 – August 31 a nesting bird survey should be conducted within area were vegetation will be removed and a surrounding 500-foot buffer. The survey should be conducted by a qualified biologist and should be timed to occur no more than 72-hours prior to removal of vegetation. If active bird nests are identified they should be avoided by a 300-foot no work buffer for passerines and a 500-foot buffer for raptors and other special-status species. No work buffers may be reduced at the discretion of a monitoring biologist, however, if the buffer is reduced the biologist must monitor the nest during all work activities that occur within the reduced buffer area. The no-work buffer may be removed when the nest is determined to no longer be active or the young have left the nest, as determined by a qualified biologist.

Coastal Cactus Wren

Coastal cactus wren is known to nest in the densest areas of coast prickly pear on the parcel and was observed nesting immediately outside of the proposed fuel modification areas. Mitigation Measure 2 described above would ensure that direct impacts to nests during construction of the project would be avoided. However, fuel modification and other development would result in the loss of 1.24-acres of coast prickly pear scrub. Because coastal cactus wren is an obligate nester in cactus scrub the loss of habitat for this species that would result from the project, particularly the loss of the densest areas of coast prickly pear, may be considered a significant impact to the species. Avoidance of the densest areas of coast prickly pear as described in Mitigation Measure 3 below would reduce these impacts to a level that is less than significant.

3. **Mitigation Measure 3 – Coast Prickly Pear Nesting Habitat Avoidance**
   The densest areas of coast prickly pear should be preserved to the extent that is possible. Fuel modification should not remove the areas of dense cactus where coastal cactus wren has been observed nesting in the past. In addition, areas of dense cactus north of that nest should also be preserved to the extent that is possible. These dense cactur areas should be flagged and marked as environmentally sensitive prior to construction or fuel modification that occurs near these areas. However, work that may effect an active nest (including installation or removal of fencing) should be avoided until the nest is no longer active per the guidance in Mitigation Measure 1.

Coastal California Gnatcatcher

The coast prickly pear scrub and laurel sumac scrub within the impact area is suitable for nesting and foraging coastal California gnatcatchers. However, the deer weed scrub is not suitable for the species due to a high percentage of invasive mustard. Since the parcel is adjacent to developments on the west, south, east and unsuitable habitat deer weed scrub occurs north of the proposed development, the potential habitat for gnatcatcher on the parcel is isolated to that found within the impact area and parts of the northern coast prickly pear scrub. Impacts to the coastal California gnatcatcher would occur if the species was nesting within the coast prickly pear scrub or laurel sumac scrub that will be removed. To avoid impacts to coastal California gnatcatcher the preconstruction surveys described in Mitigation Measure 4 below would avoid impacts to the species or reduce potential impacts to a less than significant level. Because the species is a year-round resident of its nesting site and the areas surrounding the impact area largely do not provide nesting habitats, South Environmental believes a single survey would be enough to identify the species if it uses the impact area in any significant way.

4. **Mitigation Measure 4 – Coastal California Gnatcatcher Preconstruction Survey**
   A biologist holding the appropriate survey permits will conduct a single preconstruction presence/absence survey for coastal California gnatcatcher to determine if the species occurs on the parcel. The survey should include the use of callback tapes to entice any local birds to vocalize at the location. The survey should be timed to occur within 30 days of the proposed construction. If coastal California gnatcatcher is identified within the impact areas consultation with the USFWS regarding potential impacts should be completed prior to starting the project. If the species is identified at any time during the project, such as during a preconstruction nesting bird or terrestrial animal survey, the project should seek consultation prior to starting the work.

Would the project have a substantial adverse effect on any riparian habitat or other sensitive natural community identified in local or regional plans, policies, regulations or by the California Department of Fish and Game or US Fish and Wildlife Service?

Protected Drainages and Riparian Habitat

As shown in Figure 6 and summarized below in **Table 4**, grading and fuel modification would have direct impacts to CDFW jurisdictional streambeds and to the surrounding canyon live oak forest that is also under the jurisdiction of CDFW. The canyon live oak forest has the same characteristics as the Canyon Live Oak Ravine Forest designated by the CDFW as a sensitive natural community. These impacts would be considered significant. Obtaining a Streambed Alteration Agreement from the CDFW as described in Mitigation Measure 5 below would reduce potential impacts to a less than significant level.

Table 4. Summary of Impacts to Jurisdictional Resources

Drainage	Streambed (linear feet development)	Streambed (linear feet fuel mod)	Total Streambed (linear feet)	Oak Forest (acres of development)	Oak Forest (acres fuel mod)	Total Forest (acres)
Drainage 2	270	0	270	0.36	0.00	0.36
Drainage 3	336	100	436	0.50	0.63	1.13
Total	606	100	706	0.86	0.63	1.49

5. **Mitigation Measure 5 – Streambed Alteration Agreement**
   A Streambed Alteration Agreement from the CDFW will be received prior to initiating construction of the project.

Would the project have a substantial adverse effect on federally protected wetlands as defined by Section 404 of the Clean Water Act (including, but not limited to, marsh, vernal pool, coastal, etc.) through direct removal, filling, hydrological interruption, or other means?

Based on the lack of waters of the US or other wetlands on the site determined during the jurisdictional delineation the project would have no effect on federally protected wetlands.

Would the project interfere substantially with the movement of any native resident or migratory fish or wildlife species or with established native resident or migratory wildlife corridors, or impede the use of native wildlife nursery sites?

The construction would occur at the urban wildlands interface and within two drainages, all of which provide movement opportunities for large and small animals. The loss of habitat is relatively small compared to surrounding protected areas, nonetheless, night lighting associated with the proposed housing could deter animals from movement if they are pointed at native habitats. Minimizing and directing night lighting away from native habitats as described in Mitigation Measure 6 below would reduce potential impacts to a less than significant level.

6. **Mitigation Measure 6 – Night Lighting**
   Any lighting constructed for the project should be directed away from native habitats and should be shielded from spilling onto adjacent areas.

Would the project conflict with any local policies or ordinances protecting biological resources, such as a tree preservation policy or ordinance?

The project would result in the removal and encroachment into the protected zone of canyon live oaks. An oak tree report per the guidelines in the La Verne Municipal Code is currently being prepared to determine the level of impacts. Obtaining an oak tree permit from the City of La Verne as described in mitigation Measure 7 below would reduce potential impacts to a less than significant level.

7. **Mitigation Measure 7 – Oak Tree Permit**
   An oak tree permit should be received from the City of La Verne prior to initiating construction to mitigate for loss and disturbance of native oaks and oak woodlands.

Would the project conflict with the provisions of an adopted Habitat Conservation Plan, Natural Community Conservation Plan, or other approved local, regional, or state habitat conservation plan?

The parcel is within the San Dimas/San Antonio Wash SEA. Los Angeles County is currently reviewing a Draft SEA Ordinance Implementation Guide that, when enacted, outlines guidelines for developments within designated SEAs. The guidelines include a minimum buffer distance of 100-feet from streams and other sensitive habitats, which the proposed project does not achieve. In addition, the new guidelines would protect additional species of trees within the SEA beyond oak trees, many of which occur on the parcel and may be impacted by the development. However, the issue regarding impacts is nuanced and other considerations must be made. The new SEA guidelines are currently in draft form and current regulations of the SEA in the Los Angeles County General Plan do not have the same restrictions on developments within streams and tree species other than oaks. In addition, the parcel is being annexed into the City of La Verne, which does not have a SEA ordinance or restrictions like those outlined in the new LA County SEA Implementation Guide. Therefore, the proposed project would have a less than significant impact on Los Angeles County SEAs.

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Appendix A

Photograph Log

Image 1: Depicts the northernmost tilled areas that are subject to fuel modification from adjacent developments. Photo taken at the north end of the tilled area facing north.

Image 2: Depicts the dense coast prickly pear where the coastal cactus wren nest is located. Photo taken from the edge of the tilled area facing southeast.

Image 3: Depicts Drainage 2 surrounded by poison oak, non-native grasses, and canyon live oak woodland. Photo was taken at the edge of the tilled area facing northeast.

Image 4: Depicts the coast prickly pear scrub in the foreground and the canyon live oak forest in Drainage 1, which goes to a y-shape in the distance. The photo is taken from the north edge of the coast prickly pear facing northeast.

Image 5: Depicts the deer weed scrub and invasive mustard on the ridge in the center of the parcel. Photo taken from the center of the parcel facing northeast.

Image 6: Depicts diverse areas of the coast prickly pear scrub in full bloom. Photo taken from the ridge in the center of the parcel facing southwest.

Appendix B

Floral Compendium

Angiosperms (Dicotyledons)

Scientific Name	Common Name
Adoxaceae	Moschatel Family
Sambucus nigra ssp. *caerulea*	blue elderberry
Anacardiaceae	Sumac or Cashew Family
Malosma laurina	laurel sumac
*Schinus mole**	Peruvian pepper tree
*Schinus terebinthifolius**	Brazilian pepper tree
Toxicodendron diversilobum	poison oak
Asparagaceae	Asparagus Family
Hesperoyucca whipplei	chaparral yucca
Asteraceae	Sunflower Family
Artemisia californica	California sagebrush
Artemisia douglasiana	California mugwort
*Centaurea melitensis**	tocalote
*Circium vulgare**	bull thistle
Ericameria linerifolia	narrowleaf goldenbush
Helianthus annuus	common sunflower
Pseudognaphalium californicum	ladies’ tobacco
Boraginaceae	Borage Family
Eucrypta chrysanthemifolia	common eucrypta
Phacelia minor	California bluebell
Brassicaceae	Mustard Family
*Brassica nigra**	black mustard
*Hirschfeldia incana**	short podded mustard
*Raphanus sativus**	wild radish
Cactaceae	Cactus Family
Opuntia littoralis	coast prickly pear
Convulvulaceae	Morning Glory Family
Calystegia macrostegia	island morning glory
Fabaceae	Legume Family
Acmispon glaber	deer weed
Fagaceae	Oak Family
Quercus berberidifolia	scrub oak
Quercus chrysolepis	canyon live oak
Quercus durata var. gabrielensis	San Gabriel Mountains leather oak
Geraniaceae	Geranium Family
*Erodium botrys**	big heron bill
Grossulariaceae	Currant Family
Ribes aureum var. gracillimum	golden currant
Juglandaceae	Walnut Family
Juglans californica	southern black walnut

Angiosperms (Dicotyledons)

Scientific Name	Common Name
Lamiaceae	Mint Family
Salvia apiana	white sage
Moraceae	Mulberry Family
*Ficus carica**	edible fig
Myrtaceae	Myrtle Family
*Eucalyptus camaldulensis**	red gum eucalyptus
Phrymaceae	Lopseed Family
Mimulus aurantiacus	orange bush monkeyflower
Plantaginaceae	Plantain Family
Keckiella cordifolia	heart-leaved penstemon
Platanaceae	Plane Tree Family
Platanus racemosa	western sycamore
Polygonaceae	Buckwheat Family
Eriogonum fasciculatum	California buckwheat
Rhamnaceae	Buckthorn Family
Frangula californica	California coffeeberry
Rosaceae	Rose Family
Adenostoma fasciculatum	chamise
Cercocarpus betuloides	Mountain mahogany
Heteromeles arbutifolia	toyon
Rubiaceae	Madder Family
Galium angustifolium	narrow leaved bedstraw
Solanaceae	Nightshade Family
*Nicotiana glauca**	tree tobacco
Solanum americanum	common nightshade

Angiosperms (Monocotyledons)

Arecaceae	Palm Family
*Washingtonia robusta**	Mexican fan palm
Poaceae	Grass Family
*Arundo donax**	giant reed
*Avena barbata**	slender oat
*Avena fatua**	wild oat
*Bromus diandrus**	ripgut brome
*Bromus madritensis**	foxtail chess
*Cynodon dactylon**	Bermuda grass

** non-native species*

Appendix C

Special-Status Species Analysis

Special-Status Species

Special-status species are those plants and animals that, because of their recognized rarity or vulnerability to various causes of habitat loss or population decline, are recognized by federal, state, or other agencies as under threat from human-associated developments. Some of these species receive specific protection that is defined by federal or state endangered species legislation. Others have been designated as special-status based on adopted policies and expertise of state resource agencies or organizations with acknowledged expertise, or policies adopted by local governmental agencies such as counties, cities, and special districts to meet local conservation objectives. Special-status species include:

- Plants or wildlife listed or proposed for listing as threatened or endangered, or are candidates for possible future listing as threatened or endangered, under the federal Endangered Species Act or the California Endangered Species Act;

- Plants or wildlife that meet the definitions of rare or endangered under CEQA Guidelines Section 15380.

- Plants or wildlife covered under an adopted NCCP/HCP;

- Plants considered by the California Native Plant Society (CNPS) to be rare, threatened, or endangered (List 1A, 1B and 2 plants) in California;

- Plants listed by the CNPS as plants in which there is limited information about distribution (List 3);

- Plants listed as rare under the California Native Plant Protection Act (Fish and Game Code 1900 et seq.);

- Wildlife designated by CDFW as species of special concern;

- Wildlife "fully protected" in California (California Fish and Game Code Sections 3511, 4700, and 5050); and

- Wildlife protected by the Migratory Bird Treaty Act (MTBA).

Federally-Protected Status

All references to Federally-protected species in this BRA include the most current published status or candidate category to which each species has been assigned by USFWS. For purposes of this assessment the following acronyms are used for Federal status species, as applicable:

FE Federally-listed as Endangered
FT Federally-listed as Threatened
FPE Federally proposed for listing as Endangered
FPT Federally proposed for listing as Threatened
FPD Federally proposed for delisting
FC Federal candidate species (former C1 species)

State-Protected Status

For the purposes of this BRA, the following acronyms are used for State status species, as applicable:

SE State-listed as Endangered
ST State-listed as Threatened
SR State-listed as Rare
SCE State candidate for listing as Endangered
SCT State candidate for listing as Threatened
SFP State Fully Protected
SSC California Species of Special Concern

California Rare Plant Rank

The CNPS is a private plant conservation organization dedicated to the monitoring and protection of special-status species in California. CNPS has compiled an inventory comprised of the information focusing on geographic distribution and qualitative characterization of Rare, Threatened, or Endangered vascular plant species of California (CNPS 2018). The list serves as the candidate list for listing as Threatened and Endangered by CDFW. CNPS has developed six categories of rarity known as the California Rare Plant Rank (CRPR), of which Ranks 1A, 1B, 2A, and 2B are particularly considered sensitive:

Rank 1A Presumed extinct in California.
Rank 1B Plants Rare, Threatened, or Endangered in California and elsewhere.
Rank 2A Presumed extinct in California, but more common elsewhere.
Rank 2B Plants Rare, Threatened, or Endangered in California, but more common elsewhere.
Rank 3 Plants about which we need more information – a review list.
Rank 4 Plants of limited distribution – a watch list.

The CNPS recently added "threat ranks" which parallel the ranks used by the CNDDB. These ranks are added as a decimal code after the CNPS List (e.g., Rank 1B.1). The threat codes are as follows:

.1 Seriously threatened in California (over 80% of occurrences threatened/high degree and immediacy of threat);

.2 Moderately threatened in California (20-80% occurrences threatened);

.3 Not very threatened in California (<20% of occurrences threatened or no current threats known).

Potential to Occur Assessment

Special-status species that **present** or are **likely** (high or medium potential) to occur within the parcel are a based on one or more of the following:

- the direct observation of the species within the parcel during any field surveys;
- a record reported in the CNDDB; and
- the parcel is within known distribution of a species and contains appropriate habitat.

Special-status species that are **unlikely** (low potential) to occur are based on one of the following:

- the parcel has the general habitat types but lacks necessary habitat elements such as suitable microhabitat or soils; or
- the parcel is outside the known elevation range or distribution of the species, and has otherwise suitable habitats;

Special-status species that have no potential to occur on the parcel are labeled as **none** due to the absence of suitable habitat.

Special-Status Plants

Scientific Name	Common Name	Fed/State /CRPR	General Habitat	Microhabitat	Potential to Occur in the Maintenance Area
Abronia villosa var. aurita	chaparral sand-verbena	--/--/1B.1	Chaparral, coastal scrub, desert dunes.	Sandy areas. -60-1570 m.	**Unlikely**. The parcels lacks sandy areas such as desert dunes that are necessary for this species to occur.
Acanthoscyphus parishii var. parishii	Parish's oxytheca	--/--/4.2	Chaparral, lower montane coniferous forest.	Sandy or gravelly places.1220-2600 m.	**None.** The parcel is below the known elevation for this species.
Amaranthus watsonii	Watson's amaranth	--/--/4.3	Mojavean desert scrub, Sonoran desert scrub.	20-1700 m.	**None.** The parcel lacks desert scrub habitat.
Androsace elongata ssp. acuta	California androsace	--/--/4.2	Chaparral, cismontane woodland, coastal sage scrub, valley and foothill grassland, meadows and seeps, pinyon and juniper woodland.	Highly localized and often overlooked little plant. 150-1200 m.	**Likely.** This species has the potential to occur in the woodland and scrub habitats on the parcel.
Arctostaphylos glandulosa ssp. gabrielensis	San Gabriel manzanita	--/--/1B.2	Chaparral.	Rocky outcrops; can be dominant shrub where it occurs. 960-2015 m.	**None**. The parcel lacks chaparral habitat necessary for this species to occur.
Asplenium vespertinum	western spleenwort	--/--/4.2	Chaparral, cismontane woodland, coastal scrub.	Rocky sites. 180-1000 m.	**Unlikely**. Although coastal scrub habitat occurs on the parcel it lacks rocky sites necessary for this species.
Astragalus bicristatus	crested milk-vetch	--/--/4.3	Lower montane coniferous forest, upper montane coniferous forest.	Rocky ridges, stony sagebrush flats, lake shores, canyon benches, and openings in pine forest. Mostly on carbonate. 1700-2745 m.	**None**. The site lacks coniferous forest and is below the known elevation range for this species.
Astragalus brauntonii	Braunton's milk-vetch	FE/--/1B.1	Chaparral, coastal scrub, valley and foothill grassland.	Recent burns or disturbed areas; usually on sandstone with carbonate layers. Soil specialist; requires shallow soils to defeat pocket gophers and open areas, preferably on hilltops, saddles or bowls between hills. 3-640 m.	**Unlikely.** Although coastal scrub and grassland habitats occur on the parcel it lacks the preferred shallow soils, recent burn or disturbance areas, and sandstone with carbonate layers.
Astragalus tricarinatus	triple-ribbed milk-vetch	FE/--/1B.2	Joshua tree woodland, Sonoran desert scrub.	Hot, rocky slopes in canyons and along edge of boulder-strewn desert washes, with Larrea and Encelia. 455-1525 m.	**None**. The parcel lacks the habitats necessary for this species.
Atriplex coulteri	Coulter's saltbush	--/--/1B.2	Coastal bluff scrub, coastal dunes, coastal scrub, valley and foothill grassland.	Ocean bluffs, ridgetops, as well as alkaline low places. Alkaline or clay soils. 2-460 m.	**None**. The parcel lacks ocean bluffs and alkaline soils preferred by this species.
Atriplex parishii	Parish's brittlescale	--/--/1B.1	Vernal pools, chenopod scrub, playas.	Usually on drying alkali flats with fine soils. 5-1420 m.	**None**. The parcel lacks the necessary vernal pool, chonopod scurb, or playa habitat necessary for this species.

Scientific Name	Common Name	Fed/State /CRPR	General Habitat	Microhabitat	Potential to Occur in the Maintenance Area
Berberis nevinii	Nevin's barberry	FE/SE/1B.1	Chaparral, cismontane woodland, coastal scrub, riparian scrub.	On steep, N-facing slopes or in low grade sandy washes. 290-1575 m.	**Likely**. Woodland and scrub habitats and drainages occur on the parcel and the species is known to occur in approximately 2-miles northeast of the parcel in the Calremont Hills Wilderness Park.
Brodiaea filifolia	thread-leaved brodiaea	FT/SE/1B.1	Chaparral (openings), cismontane woodland, coastal scrub, playas, valley and foothill grassland, vernal pools.	Usually associated with annual grassland and vernal pools; often surrounded by shrubland habitats. Occurs in openings on clay soils. 15-1030 m.	**Unlikely**. Although woodland and scrub habitats with open areas occur on the parcel it lacks the clay soils that this species requires.
California macrophylla	round-leaved filaree	--/--/1B.2	Cismontane woodland, valley and foothill grassland.	Clay soils. 30-1345 m.	**Unlikely**. Although woodland and scrub habitats with open areas occur on the parcel it lacks the clay soils that this species requires.
Calochortus catalinae	Catalina mariposa-lily	--/--/4.2	Valley and foothill grassland, chaparral, coastal scrub, cismontane woodland.	In heavy soils, open slopes, openings in brush. 15-700 m.	**Likely**. The coast prickly pear scrub has open slopes and openings in brush that could support this species.
Calochortus clavatus var. clavatus	club-haired mariposa-lily	--/--/4.3	Chapparal, cismontane woodland, valley and foothill grassland, coastal scrub.	Generally on serpentine clay, rocky soils. 75-1300 m.	**Likely**. The coast prickly pear scrub has open slopes and openings in brush that could support this species.
Calochortus clavatus var. gracilis	slender mariposa-lily	--/--/1B.2	Chaparral, coastal scrub, valley and foothill grassland.	Shaded foothill canyons; often on grassy slopes within other habitat. 210-1815 m.	**Likely**. The coast prickly pear scrub adjacent to the canyon live oak forest has shaded canyon with grassy slopes and openings in brush that could support this species.
Calochortus plummerae	Plummer's mariposa-lily	--/--/4.2	Coastal scrub, chaparral, valley and foothill grassland, cismontane woodland, lower montane coniferous forest.	Occurs on rocky and sandy sites, usually of granitic or alluvial material. Can be very common after fire. 60-2500 m.	**Likely**. The coast prickly pear scrub and canyon live oak woodland have gravelly alluvial soils that could support this species.
Calochortus weedii var. intermedius	intermediate mariposa-lily	--/--/1B.2	Coastal scrub, chaparral, valley and foothill grassland.	Dry, rocky open slopes and rock outcrops. 60-1575 m.	**Unlikely**. The parcel lacks rocky slopes and outcrops that this species prefers.
Calystegia felix	lucky morning-glory	--/--/1B.1	Meadows and seeps, riparian scrub.	Sometimes alkaline, alluvial. 30-215 m.	**Unlikely**. The parcel is above the known elevation range for this species.
Camissoniopsis lewisii	Lewis' evening-primrose	--/--/3	Valley and foothill grassland, coastal bluff scrub, cismontane woodland, coastal dunes, coastal scrub.	Sandy or clay soil. 0-300 m.	**Unlikely**. The parcel lacks typical dune or bluff scrub habitats this species prefers.
Centromadia parryi ssp. australis	southern tarplant	--/--/1B.1	Marshes and swamps (margins), valley and foothill grassland, vernal pools.	Often in disturbed sites near the coast at marsh edges; also in alkaline soils sometimes with saltgrass. Sometimes on vernal pool margins. 0-975 m.	**None.** The parcel lacks marshes, grasslands, and vernal pool habitats.
Centromadia pungens ssp. laevis	smooth tarplant	--/--/1B.1	Valley and foothill grassland, chenopod scrub, meadows and seeps, playas, riparian woodland.	Alkali meadow, alkali scrub; also in disturbed places. 5-1170 m.	**Unlikely.** The canyon live oak forest is along an ephemeral drainage and has some disturbance, but the parcel lacks alkali meadow and scrub that this species prefers.

Scientific Name	Common Name	Fed/State /CRPR	General Habitat	Microhabitat	Potential to Occur in the Maintenance Area
Chorizanthe leptotheca	Peninsular spineflower	--/--/4.2	Chaparral, coastal scrub, lower montane coniferous forest.	On granitic soils, in alluvial fans. 300-1900 m.	**Likely.** The scrub habitats and alluvial areas of the parcel have the potential to support this species, but it is only a medium potential because the parcel is at approximately 300 meters in elevation, which is the lowest known elevation for this species.
Chorizanthe parryi var. parryi	Parry's spineflower	--/--/1B.1	Coastal scrub, chaparral, cismontane woodland, valley and foothill grassland.	Dry slopes and flats; sometimes at interface of 2 vegetation types, such as chaparral and oak woodland. Dry, sandy soils. 90-1220 m.	**Likely.** The parcel has dry slopes at the interface of canyon live oak forest and coast prickly pear and laurel sumac scrubs that this species prefers.
Cladium californicum	California saw-grass	--/--/2B.2	Meadows and seeps, marshes and swamps (alkaline or freshwater).	Freshwater or alkaline moist habitats. -20-2135 m.	**None**. The parcel lacks freshwater or alkaline habitats this species requires.
Convolvulus simulans	small-flowered morning-glory	--/--/4.2	Chaparral, coastal scrub, valley and foothill grassland.	Wet clay, serpentine ridges. 30-700 m.	**Unlikely.** The parcel lacks wet clay soils and serpentine ridges that this species prefers.
Deinandra paniculata	paniculate tarplant	--/--/4.2	Coastal scrub, valley and foothill grassland, vernal pools.	Usually in vernally mesic sites. Sometimes in vernal pools or on mima mounds near them. 25-940 m.	**Unikely.** The parcel lacks vernally mesic scrub or grassland or vernal pool areas that this species prefers.
Dodecahema leptoceras	slender-horned spineflower	FE/SE/1B.1	Chaparral, cismontane woodland, coastal scrub (alluvial fan sage scrub).	Flood deposited terraces and washes; associates include Encelia, Dalea, Lepidospartum, etc. Sandy soils. 200-765 m.	**None.** The parcel lacks flood deposited terraces, developed floodplains, and washes that this species requires.
Dudleya cymosa ssp. crebrifolia	San Gabriel River dudleya	--/--/1B.2	Chaparral.	On granite cliffs and outcrops, surrounded by scrub. 365-1250 m.	**None.** The parcel lacks chaparral habitats and granite cliffs and outcrops necessary for this species.
Dudleya densiflora	San Gabriel Mountains dudleya	--/--/1B.1	Chaparral, coastal scrub, cismontane woodland, lower montane coniferous forest, riparian forest.	In crevices and on decomposed granite on cliffs and canyon walls. 270-1100 m.	**None.** The parcels lacks that granite cliffs and canyon walls that this species requires.
Dudleya multicaulis	many-stemmed dudleya	--/--/1B.2	Chaparral, coastal scrub, valley and foothill grassland.	In heavy, often clayey soils or grassy slopes. 15-790 m.	**Unlikely.** The parcel lacks the clay soils this species prefers.
Eriastrum densifolium ssp. sanctorum	Santa Ana River woollystar	FE/SE/1B.1	Coastal scrub, chaparral.	In sandy soils on river floodplains or terraced fluvial deposits. 180-700 m.	**None.** The parcel lacks developed river floodplains that this species requires.
Fimbristylis thermalis	hot springs fimbristylis	--/--/2B.2	Meadows and seeps (alkaline).	Near hot springs. 115-1585 m.	**None.** The parcel lacks the alkaline meadows and seeps near hot springs that this species requires.
Galium angustifolium ssp. gabrielense	San Antonio Canyon bedstraw	--/--/4.3	Chaparral, lower montane coniferous forest.	Dry rocky or sandy granitic slopes and ridges. 1200-2650 m.	**None.** The parcel lacks the necessary chaparral and coniferous forest habitat and is outside the known range of this species.
Galium grande	San Gabriel bedstraw	--/--/1B.2	Cismontane woodland, chaparral, broadleafed upland	Open chaparral and low, open oak forest; on rocky slopes; probably undercollected due to	**Unlikely.** The parcel is below the known elevation range for this species and lacks rocky slopes that this species prefers.

Scientific Name	Common Name	Fed/State /CRPR	General Habitat	Microhabitat	Potential to Occur in the Maintenance Area
			forest, lower montane coniferous forest.	inaccessible habitat. 425-1450 m.	
Galium jepsonii	Jepson's bedstraw	--/--/4.3	Upper montane coniferous forest, lower montane coniferous forest.	On granite; gravelly hillsides and slopes. 1540-2500 m.	**None.** The parcel lacks the necessary habitats for this species and is below the known elevation range.
Heuchera caespitosa	urn-flowered alumroot	--/--/4.3	Lower montane coniferous forest, upper montane coniferous forest, cismontane woodland, riparian forest.	Rocky sites. 1155-2650 m.	**None.** The parcel lacks the necessary habitats for this species and is below the known elevation range.
Horkelia cuneata var. puberula	mesa horkelia	--/--/1B.1	Chaparral, cismontane woodland, coastal scrub.	Sandy or gravelly sites. 15-1645 m.	**Likely.** The forest and scrub habitats on the parcel provide suitable habitat for this species to occur.
Imperata brevifolia	California satintail	--/--/2B.1	Coastal scrub, chaparral, riparian scrub, mojavean desert scrub, meadows and seeps (alkali), riparian scrub.	Mesic sites, alkali seeps, riparian areas. 3-1495 m.	**Likely.** The parcel has ephemeral drainages where this species has the potential to occur.
Juglans californica	southern California black walnut	--/--/4.2	Chaparral, coastal scrub, cismontane woodland.	Slopes, canyons, alluvial habitats. 50-900 m.	**Present.** This species occurs in the canyon live oak forest on the parcel and was identified during the oak tree survey described above.
Juncus acutus ssp. leopoldii	southwestern spiny rush	--/--/4.2	Salt marshes, alkaline seeps, coastal dunes (mesic sites).	Moist saline places. 3-900 m.	**None.** The parcel lacks moist saline places that this species requires.
Lasthenia glabrata ssp. coulteri	Coulter's goldfields	--/--/1B.1	Coastal salt marshes, playas, vernal pools.	Usually found on alkaline soils in playas, sinks, and grasslands. 1-1375 m.	**None.** The parcel lacks the habitats that this species requires.
Lathyrus splendens	pride-of-California	--/--/4.3	Chaparral.	Sandy to gravelly soils. 200-1525 m.	**None.** The parcel lacks the habitats that this species requires.
Lepechinia fragrans	fragrant pitcher sage	--/--/4.2	Chaparral.	20-1310 m.	**None.** The parcel lacks the habitats that this species requires.
Lepidium virginicum var. robinsonii	Robinson's pepper-grass	--/--/4.3	Chaparral, coastal scrub.	Dry soils, shrubland. 4-1435 m.	**Likely**. The scrub habitats on the parcel provide suitable habitat for this species.
Lilium humboldtii ssp. ocellatum	ocellated humboldt lily	--/--/4.2	Chaparral, coastal scrub, cismontane woodland, lower montane coniferous forest, riparian forest.	Yellow-pine forest or openings, oak canyons. 30-1800 m.	**Likely**. The canyon live oak forest provides suitable habitat for this species.
Lilium parryi	lemon lily	--/--/1B.2	Lower montane coniferous forest, meadows and seeps, riparian forest, upper montane coniferous forest.	Wet, mountainous terrain; generally in forested areas; on shady edges of streams, in open boggy meadows & seeps. 625-2930 m.	**None.** The parcel lacks wet, mountainous terrain and is outside the known elevation range for this species.
Linanthus concinnus	San Gabriel linanthus	--/--/1B.2	Lower montane coniferous forest, upper montane coniferous forest, chapparal.	Dry rocky slopes, often in Jeffrey pine/canyon oak forest. 1310-2560 m.	**None.** The parcel lacks suitable habitats and is outside the known elevation range for this species.
Monardella australis ssp. jokerstii	Jokerst's monardella	--/--/1B.1	Lower montane coniferous forest, chapparal.	Steep scree or talus slopes between breccia. Secondary	**None.** The parcel lacks suitable habitats and is outside the known elevation range for this species.

Scientific Name	Common Name	Fed/State /CRPR	General Habitat	Microhabitat	Potential to Occur in the Maintenance Area
				alluvial benches along drainages and washes. 1350-1750 m.	
Monardella macrantha ssp. hallii	Hall's monardella	--/--/1B.3	Broadleafed upland forest, chaparral, lower montane coniferous forest, cismontane woodland, valley and foothill grassland.	Dry slopes and ridges in openings. 700-1770 m.	**None.** The parcel lacks suitable habitats and is outside the known elevation range for this species.
Monardella saxicola	rock monardella	--/--/4.2	Chaparral, lower montane coniferous forest.	Dry, rocky exposed places within chaparral or yellow pine forest; usually serpentine. May show fire response. 500-1800 m.	**None.** The parcel lacks suitable habitats and is outside the known elevation range for this species.
Monardella viridis	green monardella	--/--/4.3	Broadleafed upland forest, chaparral, cismontane woodland.	100-1010 m.	**Likely.** The canyon live oak forest provides suitable habitat for this species.
Muhlenbergia californica	California muhly	--/--/4.3	Coastal scrub, chaparral, lower montane coniferous forest, meadows and seeps.	Usually found near streams or seeps. 100-2000 m.	**Likely.** The scrub habitats and canyon live oak forest provides suitable habitat for the species.
Navarretia prostrata	prostrate vernal pool navarretia	--/--/1B.1	Coastal scrub, valley and foothill grassland, vernal pools, meadows and seeps.	Alkaline soils in grassland, or in vernal pools. Mesic, alkaline sites. 3-1235 m.	**Unlikely.** The parcel lacks the alkaline soils and vernal pools that this species requires.
Oreonana vestita	woolly mountain-parsley	--/--/1B.3	Subalpine coniferous forest, upper montane coniferous forest, lower montane coniferous forest.	High ridges; on scree, talus, or gravel. 1615-3500 m.	**None.** The parcel lacks suitable habitat and is outside the known range of this species.
Orobanche valida ssp. valida	Rock Creek broomrape	--/--/1B.2	Chaparral, pinyon-juniper woodland.	On slopes of loose decomposed granite; parasitic on various chaparral shrubs. 1250-2000 m.	**None.** The parcel lacks suitable habitat and is outside the known range of this species.
Phacelia hubbyi	Hubby's phacelia	--/--/4.2	Chaparral, coastal scrub, valley and foothill grassland.	Gravelly, rocky areas and talus slopes. 0-1000 m.	**Unlikely.** The parcel lacks gravelly, rocky areas and talus slopes that this species prefers.
Phacelia ramosissima var. austrolitoralis	south coast branching phacelia	--/--/3.2	Chaparral, coastal scrub, coastal dunes, coastal salt marsh.	Sandy, sometimes rocky sites. 5-300 m.	**Unlikely.** The parcel is at the high end of the known elevation range and lacks rocky sites that this species prefers. Also no coastal dunes or salt marsh occurs on the parcel.
Phacelia stellaris	Brand's star phacelia	--/--/1B.1	Coastal scrub, coastal dunes.	Open areas. 3-370 m.	**Unlikely.** Open areas in scrub habitats and coastal dunes are not common on the parcel. This species prefers more open and sandy areas such as dunes.
Pseudognaphalium leucocephalum	white rabbit-tobacco	--/--/2B.2	Riparian woodland, cismontane woodland, coastal scrub, chaparral.	Sandy, gravelly sites. 35-515 m.	**Likely.** The canyon live oak forest and scrub habitats on the parcel provide suitable habitat for this species.
Quercus dumosa	Nuttall's scrub oak	--/--/1B.1	Closed-cone coniferous forest, chaparral, coastal scrub.	Generally on sandy soils near the coast; sometimes on clay loam. 15-640 m.	**Likely.** The scrub habitats on the parcel are suitable for this species to occur.

Scientific Name	Common Name	Fed/State /CRPR	General Habitat	Microhabitat	Potential to Occur in the Maintenance Area
Quercus durata var. gabrielensis	San Gabriel oak	--/--/4.2	Chaparral, cismontane woodland.	450-1000 m.	**None.** The parcel is outside the known range of this species.
Quercus engelmannii	Engelmann oak	--/--/4.2	Cismontane woodland, chaparral, riparian woodland, valley and foothill grassland.	50-1300 m.	**Likely.** The canyon live oak forest on the parcel provides suitable habitat for this species.
Romneya coulteri	Coulter's matilija poppy	--/--/4.2	Coastal scrub, chaparral.	In washes and on slopes; also after burns. 20-1200 m.	**Likely.** The scrub habitats on the parcel provide suitable habitat for this species.
Senecio aphanactis	chaparral ragwort	--/--/2B.2	Chaparral, cismontane woodland, coastal scrub.	Drying alkaline flats. 20-855 m.	**Unlikely.** The parcel lacks drying alkaline flats that this species prefers.
Senecio astephanus	San Gabriel ragwort	--/--/4.3	Chaparral, coastal bluff scrub.	Rocky slopes. 400-1500 m.	**None.** The parcel lacks suitable habitats for this species and is outside the known elevation range.
Sidalcea neomexicana	salt spring checkerbloom	--/--/2B.2	Playas, chaparral, coastal scrub, lower montane coniferous forest, Mojavean desert scrub.	Alkali springs and marshes. 3-2380 m.	**None.** The parcel lacks alkali springs and marshes necessary for this species to occur.
Sidotheca caryophylloides	chickweed oxytheca	--/--/4.3	Lower montane coniferous forest.	Sandy sites. 1115-2600 m.	**None.** The parcel lacks suitable habitats for this species and is outside the known elevation range.
Symphyotrichum defoliatum	San Bernardino aster	--/--/1B.2	Meadows and seeps, cismontane woodland, coastal scrub, lower montane coniferous forest, marshes and swamps, valley and foothill grassland.	Vernally mesic grassland or near ditches, streams and springs; disturbed areas. 2-2040 m.	**Likely.** It is possible that this species occurs on the drainages on the parcel.
Symphyotrichum greatae	Greata's aster	--/--/1B.3	Chaparral, cismontane woodland, broadleafed upland forest, lower montane coniferous forest, riparian woodland.	Mesic canyons. 335-2015 m.	**Unlikely.** The parcel is below the known elevation range for this species.
Thelypteris puberula var. sonorensis	Sonoran maiden fern	--/--/2B.2	Meadows and seeps.	Along streams, seepage areas. 60-930 m.	**Unlikely.** The parcel lacks meadows and seeps habitat that this species requires.
Thysanocarpus rigidus	rigid fringepod	--/--/1B.2	Pinyon and juniper woodland.	Dry, rocky slopes and ridges of oak and pine woodland in arid mountain ranges. 425-2165	**None.** The parcel lacks suitable habitats for this species and is outside the known elevation range.

Special-Status Animals

Scientific Name	Common Name	Federal/ State/Other	General Habitat	Microhabitat	Potential to Occur on the Parcel
Invertebrates					
Anodonta californiensis	California floater	--/--/FS:S	Freshwater lakes and slow-moving streams and rivers. Taxonomy under review by specialists.	Generally in shallow water.	**None**. The parcel lacks suitable habitat for this species.
Atractelmis wawona	Wawona riffle beetle	--/--/--	Aquatic; found in riffles of rapid, small to medium clear mountain streams; 2000-5000 ft elev.	Strong preference for inhabiting submerged aquatic mosses	**None**. The parcel lacks suitable habitat for this species.
Bombus crotchii	Crotch bumble bee	--/--/--	Coastal California east to the Sierra-Cascade crest and south into Mexico.	Food plant genera include Antirrhinum, Phacelia, Clarkia, Dendromecon, Eschscholzia, and Eriogonum.	**Likely.** The parcel has suitable food plants including Phacelia and Eriogonum that this species prefers.
Callophrys mossii hidakupa	San Gabriel Mountains elfin butterfly	--/--/FS:S	San Gabriel and San Bernardino mountains at elevations of 3,000 to approximately 5,500 ft.	Foodplant is Sedum spathulifolium. Type locality is southern mixed evergreen forest.	**None**. The parcel lacks suitable habitat for this species and is outside the known elevation range for this species.
Danaus plexippus pop. 1	monarch - California overwintering population	--/--/FS:S	Winter roost sites extend along the coast from northern Mendocino to Baja California, Mexico.	Roosts located in wind-protected tree groves (eucalyptus, Monterey pine, cypress), with nectar and water sources nearby.	**Unlikely**. The species prefers areas closer to the coast and is unlikely to occur on the parcel.
Diplectrona californica	California diplectronan caddisfly	--/--/--	--	--	
Gonidea angulata	western ridged mussel	--/--/--	Primarily creeks & rivers & less often lakes. Originally in most of state, now extirpated from Central & Southern Calif.	--	**None**. The parcel lacks suitable habitat for this species.
Fishes					
Catostomus santaanae	Santa Ana sucker	FT/--/AFS:TH, IUCN:VU	Endemic to Los Angeles Basin south coastal streams.	Habitat generalists, but prefer sand-rubble-boulder bottoms, cool, clear water, and algae.	**None**. The parcel lacks suitable habitat for this species.
Gila orcuttii	arroyo chub	--/--/AFS:VU, SSC, FS:S	Native to streams from Malibu Creek to San Luis Rey River basin. Introduced into streams in Santa Clara, Ventura, Santa Ynez, Mojave & San Diego river basins.	Slow water stream sections with mud or sand bottoms. Feeds heavily on aquatic vegetation and associated invertebrates.	**None**. The parcel lacks suitable habitat for this species.

Scientific Name	Common Name	Federal/ State/Other	General Habitat	Microhabitat	Potential to Occur on the Parcel
Oncorhynchus mykiss irideus pop. 10	steelhead - southern California DPS	FE/--/AFS:EN	Federal listing refers to populations from Santa Maria River south to southern extent of range (San Mateo Creek in San Diego County).	Southern steelhead likely have greater physiological tolerances to warmer water and more variable conditions.	**None**. The parcel lacks suitable habitat for this species.
Rhinichthys osculus ssp. 3	Santa Ana speckled dace	--/--/AFS:TH, SSC, FS:S	Headwaters of the Santa Ana and San Gabriel rivers. May be extirpated from the Los Angeles River system.	Requires permanent flowing streams with summer water temps of 17-20 C. Usually inhabits shallow cobble and gravel riffles.	**None**. The parcel lacks suitable habitat for this species.
Amphibians					
Anaxyrus californicus	arroyo toad	FE/--/SSC, IUCN:EN	Semi-arid regions near washes or intermittent streams, including valley-foothill and desert riparian, desert wash, etc.	Rivers with sandy banks, willows, cottonwoods, and sycamores; loose, gravelly areas of streams in drier parts of range.	**None**. The parcel lacks suitable habitat for this species.
Batrachoseps gabrieli	San Gabriel slender salamander	--/--/IUCN:DD, FS:S	Known only from the San Gabriel Mtns. Found under rocks, wood, and fern fronds, and on soil at the base of talus slopes.	Most active on the surface in winter and early spring.	**Unlikely**. The parcel lacks talus slopes that this species prefers.
Ensatina klauberi	large-blotched salamander	--/--/WL, FS:S	Found in conifer and woodland associations.	Found in leaf litter, decaying logs and shrubs in heavily forested areas.	**None**. The parcel lacks suitable conifer and associated habitats for this species.
Lithobates pipiens	northern leopard frog	--/--/SSC, IUCN:LC	Native range is east of Sierra Nevada-Cascade Crest. Near permanent or semi-permanent water in a variety of habitats.	Highly aquatic species. Shoreline cover, submerged and emergent aquatic vegetation are important habitat characteristics.	**None**. The parcel lacks suitable aquatic habitat for this species.
Rana boylii	foothill yellow-legged frog	--/SCT/BLM:, SSC, IUCN:NT, FS:S	Partly-shaded, shallow streams and riffles with a rocky substrate in a variety of habitats.	Needs at least some cobble-sized substrate for egg-laying. Needs at least 15 weeks to attain metamorphosis.	**None**. The parcel lacks suitable aquatic habitat for this species.
Rana draytonii	California red-legged frog	Ft/--/SSC, IUCN:VU	Lowlands and foothills in or near permanent sources of deep water with dense, shrubby or emergent riparian vegetation.	Requires 11-20 weeks of permanent water for larval development. Must have access to estivation habitat.	**None**. The parcel lacks suitable aquatic habitat for this species.

Scientific Name	Common Name	Federal/ State/Other	General Habitat	Microhabitat	Potential to Occur on the Parcel
Rana muscosa	southern mountain yellow-legged frog	FE/SE/WL, IUCN:EN, FS:S	Federal listing refers to populations in the San Gabriel, San Jacinto and San Bernardino mountains (southern DPS). Northern DPS was determined to warrant listing as endangered, Apr 2014, effective Jun 30, 2014.	Always encountered within a few feet of water. Tadpoles may require 2 - 4 yrs to complete their aquatic development.	**None**. The parcel lacks suitable aquatic habitat for this species.
Spea hammondii	western spadefoot	--/--/BLM:S, SSC, IUCN:NT	Occurs primarily in grassland habitats, but can be found in valley-foothill hardwood woodlands.	Vernal pools are essential for breeding and egg-laying.	**None**. The parcel lacks suitable vernal pool and associated grassland habitat for this species.
Reptiles					
Anniella stebbinsi	southern California legless lizard	--/--/SSC, FS:S	Generally south of the Transverse Range, extending to northwestern Baja California. Occurs in sandy or loose loamy soils under sparse vegetation. Disjunct populations in the Tehachapi and Piute Mountains in Kern County.	Variety of habitats; generally in moist, loose soil. They prefer soils with a high moisture content.	**Likely**. The parcel has moist areas near the drainages that are suitable habitat for this species.
Arizona elegans occidentalis	California glossy snake	--/--/SSC	Patchily distributed from the eastern portion of San Francisco Bay, southern San Joaquin Valley, and the Coast, Transverse, and Peninsular ranges, south to Baja California.	Generalist reported from a range of scrub and grassland habitats, often with loose or sandy soils.	**Likely**. The parcel has scrub habitats with somewhat sandy soils.
Aspidoscelis hyperythra	orange-throated whiptail	--/--/WL, IUCN:LC, FS:S	Inhabits low-elevation coastal scrub, chaparral, and valley-foothill hardwood habitats.	Prefers washes and other sandy areas with patches of brush and rocks. Perennial plants necessary for its major food: termites.	**Likely**. The scrub and forest habitats on the parcel provide suitable habitat for this species, particularly surrounding the drainages.
Aspidoscelis tigris stejnegeri	coastal whiptail	--/--/SSC	Found in deserts and semi-arid areas with sparse vegetation and open areas. Also found in woodland & riparian areas.	Ground may be firm soil, sandy, or rocky.	**Likely**. The scrub and forest habitats on the parcel provide suitable habitat for this species.
Crotalus ruber	red-diamond rattlesnake	--/--/SSC, FS:S	Chaparral, woodland, grassland, & desert areas from coastal San Diego County to the eastern slopes of the mountains.	Occurs in rocky areas and dense vegetation. Needs rodent burrows, cracks in rocks or surface cover objects.	**Unlikely**. The parcel lacks rocky areas that this species prefers.

Scientific Name	Common Name	Federal/ State/Other	General Habitat	Microhabitat	Potential to Occur on the Parcel
Diadophis punctatus modestus	San Bernardino ringneck snake	--/--/FS:S	Most common in open, relatively rocky areas. Often in somewhat moist microhabitats near intermittent streams.	Avoids moving through open or barren areas by restricting movements to areas of surface litter or herbaceous veg.	**Unlikely**. The parcel lacks rocky areas that this species prefers.
Emys marmorata	western pond turtle	--/--/BLM:S, SSC, IUCN:VU, FS:S	A thoroughly aquatic turtle of ponds, marshes, rivers, streams and irrigation ditches, usually with aquatic vegetation, below 6000 ft elevation.	Needs basking sites and suitable (sandy banks or grassy open fields) upland habitat up to 0.5 km from water for egg-laying.	**None.** The parcel lacks aquatic habitats necessary for this species.
Lampropeltis zonata (parvirubra)	California mountain kingsnake (San Bernardino population)	--/--/BLM:S, WL, IUCN:LC, FS:S	Bigcone spruce & chaparral at lower elevations. Black oak, incense cedar, Jeffrey pine & ponderosa pine at higher elevations.	Well-lit canyons with rocky outcrops or rocky talus.	**None.** The parcel lacks suitable habitats and canyons with rocky outcrops or talus.
Phrynosoma blainvillii	coast horned lizard	--/--/BLM:S SSC IUCN:LC	Frequents a wide variety of habitats, most common in lowlands along sandy washes with scattered low bushes.	Open areas for sunning, bushes for cover, patches of loose soil for burial, and abundant supply of ants and other insects.	**Likely.** The scrub and forest habitats on the parcel provide suitable habitat for this species.
Salvadora hexalepis virgultea	coast patch-nosed snake	--/--/SSC	Brushy or shrubby vegetation in coastal Southern California.	Require small mammal burrows for refuge and overwintering sites.	**Unikely.** The parcel is outside the known range of this species.
Taricha torosa	Coast Range newt	--/--/SSC	Coastal drainages from Mendocino County to San Diego County.	Lives in terrestrial habitats & will migrate over 1 km to breed in ponds, reservoirs & slow moving streams.	**None.** The parcel is not within 1 kilometer of a suitable breeding site.
Thamnophis hammondii	two-striped gartersnake	--/--/BLM:S, SSC, IUCN:LC, FS:S	Coastal California from vicinity of Salinas to northwest Baja California. From sea to about 7,000 ft elevation.	Highly aquatic, found in or near permanent fresh water. Often along streams with rocky beds and riparian growth.	**None.** The parcel lacks suitable aquatic habitat necessary for this species.
Thamnophis sirtalis ssp.	south coast gartersnake	--/--/SSC	Southern California coastal plain from Ventura County to San Diego County, and from sea level to about 850 m.	Marsh and upland habitats near permanent water with good strips of riparian vegetation.	**None.** The parcel and vicinity lacks permanent waters that this species requires.
Birds					

Scientific Name	Common Name	Federal/ State/Other	General Habitat	Microhabitat	Potential to Occur on the Parcel
Accipiter cooperii	Cooper's hawk	--/--/WL, IUCN:LC	Woodland, chiefly of open, interrupted or marginal type.	Nest sites mainly in riparian growths of deciduous trees, as in canyon bottoms on river flood-plains; also, live oaks.	**Present**. This species was observed flying adjacent to the site during the reconnaissance.
Accipiter striatus	sharp-shinned hawk	--/--/WL, IUCN:LC	Ponderosa pine, black oak, riparian deciduous, mixed conifer, and Jeffrey pine habitats. Prefers riparian areas.	North-facing slopes with plucking perches are critical requirements. Nests usually within 275 ft of water.	**Unlikely**. The parcel is not within 275 feet of a suitable water source and the preferred habitats are not on the parcel.
Agelaius tricolor	tricolored blackbird	--/SCE/BLM:S, SSC, IUCN:EN, NABCI:RWL, BCC	Highly colonial species, most numerous in Central Valley & vicinity. Largely endemic to California.	Requires open water, protected nesting substrate, and foraging area with insect prey within a few km of the colony.	**None**. The parcel lacks areas of open water necessary for this species.
Aimophila ruficeps canescens	southern California rufous-crowned sparrow	--/--/WL	Resident in Southern California coastal sage scrub and sparse mixed chaparral.	Frequents relatively steep, often rocky hillsides with grass and forb patches.	**Likely** The scrub habitats on the parcel are suitable for this species.
Ammodramus savannarum	grasshopper sparrow	--/--/SSC, IUCN:LC	Dense grasslands on rolling hills, lowland plains, in valleys and on hillsides on lower mountain slopes.	Favors native grasslands with a mix of grasses, forbs and scattered shrubs. Loosely colonial when nesting.	**Unlikely**. The parcel lacks native grasslands that this species prefers.
Aquila chrysaetos	golden eagle	--/--/BLM:S, CDF:S, FP, WL, IUCN:LC, BCC	Rolling foothills, mountain areas, sage-juniper flats, and desert.	Cliff-walled canyons provide nesting habitat in most parts of range; also, large trees in open areas.	**Unlikely.** The parcel lacks suitable canyons for nesting and the potential foraging areas in the scrub habitats are marginal at best.
Ardea alba	great egret	--/--/CDF:S, IUCN:LC	Colonial nester in large trees.	Rookery sites located near marshes, tide-flats, irrigated pastures, and margins of rivers and lakes.	**None.** The parcel lacks suitable marsh or aquatic habitats.
Ardea herodias	great blue heron	--/--/CDF:S, IUCN:LC	Colonial nester in tall trees, cliffsides, and sequestered spots on marshes.	Rookery sites in close proximity to foraging areas: marshes, lake margins, tide-flats, rivers and streams, wet meadows.	**None.** The parcel lacks suitable marsh or aquatic habitats.
Artemisiospiza belli belli	Bell's sage sparrow	--/--/WL, BCC	Nests in chaparral dominated by fairly dense stands of chamise. Found in coastal sage scrub in south of range.	Nest located on the ground beneath a shrub or in a shrub 6-18 inches above ground. Territories about 50 yds apart.	**Unlikely.** The parcel lacks dense stands of chamise and chaparral habitats that this species prefers.

Scientific Name	Common Name	Federal/ State/Other	General Habitat	Microhabitat	Potential to Occur on the Parcel
Asio otus	long-eared owl	--/--/SSC, IUCN:LC	Riparian bottomlands grown to tall willows and cottonwoods; also, belts of live oak paralleling stream courses.	Require adjacent open land, productive of mice and the presence of old nests of crows, hawks, or magpies for breeding.	**None.** The parcel lacks suitable riparian areas next to more permanent stream courses that this species prefers.
Athene cunicularia	burrowing owl	--/--/BLM:S, SSC, IUCN:LC, BCC	Open, dry annual or perennial grasslands, deserts, and scrublands characterized by low-growing vegetation.	Subterranean nester, dependent upon burrowing mammals, most notably, the California ground squirrel.	**None.** The parcel lacks suitable burrows and areas of low-growing vegetation. Disturbed areas are tilled and unsuitable for burrowing mammals.
Baeolophus inornatus	oak titmouse	--/--/IUCN:LC, NABCI:YWL, BCC	Oak woodlands	Cavity nester	**Present.** This species was observed on the site I the canyon live oak forest.
Branta bernicla	brant	--/--/SSC, IUCN:LC	Requires well-protected, shallow marine waters with intertidal eel-grass beds, primarily within bays and estuaries. At high tide they need sheltered open water or protected beaches for loafing.	Primary food is eel-grass. Distribution is closely tied to abundance of eel-grass. Brant often feed close to mudflats, sandbars or spits used as gritting sites.	**None.** The parcel lacks suitable marine habitats necessary for this species.
Buteo swainsoni	Swainson's hawk	--/ST/BLM:S, IUCN:LC, BCC	Breeds in grasslands with scattered trees, juniper-sage flats, riparian areas, savannahs, & agricultural or ranch lands with groves or lines of trees.	Requires adjacent suitable foraging areas such as grasslands, or alfalfa or grain fields supporting rodent populations.	**None.** The parcel lacks the preferred habitat and large areas of adjacent foraging areas.
Calypte costae	Costa's hummingbird	--/--/IUCN:LC, BCC	Desert riparian, desert and arid scrub foothill habitats.	--	**None.** The parcel lacks desert habitats necessary for this species.
Campylorhynchus brunneicapillus sandiegensis	coastal cactus wren	--/--/SSC, FS:S, BCC	Southern California coastal sage scrub.	Wrens require tall opuntia cactus for nesting and roosting.	**Present.** This species was observed nesting in the coast prickly pear scrub on the parcel during the rare plant survey.
Chaetura vauxi	Vaux's swift	--/--/SSC, IUCN:LC	Redwood, Douglas-fir, & other coniferous forests. Nests in large hollow trees & snags. Often nests in flocks.	Forages over most terrains and habitats but shows a preference for foraging over rivers and lakes.	**None.** The parcel lacks suitable coniferous forest habitat for this species.
Circus cyaneus	northern harrier	--/--/SSC, IUCN:LC	Coastal salt & freshwater marsh. Nest and forage in grasslands, from salt grass in desert sink to mountain cienagas.	Nests on ground in shrubby vegetation, usually at marsh edge; nest built of a large mound of sticks in wet areas.	**None.** The parcel lacks suitable grassland and marsh habitats that this species requires.

Scientific Name	Common Name	Federal/ State/Other	General Habitat	Microhabitat	Potential to Occur on the Parcel
Coccyzus americanus occidentalis	western yellow-billed cuckoo	FT/SE/BLM:S, NABCI:RWL, FS:S, BCC	Riparian forest nester, along the broad, lower flood-bottoms of larger river systems.	Nests in riparian jungles of willow, often mixed with cottonwoods, with lower story of blackberry, nettles, or wild grape.	**None.** The parcel lacks suitable dense riparian forest along large river systems.
Contopus cooperi	olive-sided flycatcher	--/--/SSC , IUCN:NT, NABCI:YWL, BCC	Nesting habitats are mixed conifer, montane hardwood-conifer, Douglas-fir, redwood, red fir & lodgepole pine.	Most numerous in montane conifer forests where tall trees overlook canyons, meadows, lakes or other open terrain.	**None.** The parcel lacks suitable coniferous habitats this species requires.
Coturnicops noveboracensis	yellow rail	--/--/SSC, IUCN:LC, NABCI:RWL, FS:S, BCC	Summer resident in eastern Sierra Nevada in Mono County.	Freshwater marshlands.	**None.** The parcel lacks suitable marsh habitats.
Cypseloides niger	black swift	--/--/SSC, IUCN:LC, NABCI:YWL, BCC	Coastal belt of Santa Cruz and Monterey counties; central & southern Sierra Nevada; San Bernardino & San Jacinto mountains.	Breeds in small colonies on cliffs behind or adjacent to waterfalls in deep canyons and sea-bluffs above the surf; forages widely.	**None.** The parcel lacks cliffs and deep canyons or sea bluff that this species requires.
Egretta thula	snowy egret	--/--/IUCN:LC	Colonial nester, with nest sites situated in protected beds of dense tules.	Rookery sites situated close to foraging areas: marshes, tidal-flats, streams, wet meadows, and borders of lakes.	**None.** The parcel lacks suitable marsh or aquatic habitats necessary for this species.
Elanus leucurus	white-tailed kite	--/--/BLM:S, FP, IUCN:LC	Rolling foothills and valley margins with scattered oaks & river bottomlands or marshes next to deciduous woodland.	Open grasslands, meadows, or marshes for foraging close to isolated, dense-topped trees for nesting and perching.	**Likely.** This species has the potential nest in the canyon live oak forest and forage in the surrounding scrub habitats.
Empidonax traillii	willow flycatcher	--/SE/IUCN:LC, FS:S, BCC	Inhabits extensive thickets of low, dense willows on edge of wet meadows, ponds, or backwaters; 2000-8000 ft elevation.	Requires dense willow thickets for nesting/roosting. Low, exposed branches are used for singing posts/hunting perches.	**None.** The parcel lacks dense willow riparian areas necessary for this species.
Empidonax traillii extimus	southwestern willow flycatcher	FE/SE/ NABCI:RWL	Riparian woodlands in Southern California.	--	**None.** The parcel lacks dense willow riparian areas necessary for this species.
Eremophila alpestris actia	California horned lark	--/--/WL, IUCN:LC	Coastal regions, chiefly from Sonoma County to San Diego County. Also main part of San Joaquin Valley and east to foothills.	Short-grass prairie, ""bald"" hills, mountain meadows, open coastal plains, fallow grain fields, alkali flats.	**Unlikely.** The parcel lacks open areas that this species requires, and the tilled areas are marginal for this species to occur.

Scientific Name	Common Name	Federal/ State/Other	General Habitat	Microhabitat	Potential to Occur on the Parcel
Falco columbarius	merlin	--/--/WL, IUCN:LC	Seacoast, tidal estuaries, open woodlands, savannahs, edges of grasslands & deserts, farms & ranches.	Clumps of trees or windbreaks are required for roosting in open country.	**Likely.** The canyon live oak forest provides suitable roosting habitat for this species.
Falco mexicanus	prairie falcon	--/--/WL, IUCN:LC, BCC	Inhabits dry, open terrain, either level or hilly.	Breeding sites located on cliffs. Forages far afield, even to marshlands and ocean shores.	**Likely.** The parcel lacks suitable cliff breeding sites for this species, but the species could forage on the parcel.
Falco peregrinus anatum	American peregrine falcon	DL/DL/CDF:S, FP, BCC	Near wetlands, lakes, rivers, or other water; on cliffs, banks, dunes, mounds; also, human-made structures.	Nest consists of a scrape or a depression or ledge in an open site.	**None.** The parcel lacks suitable nesting and foraging habitats near water that this species requires.
Haliaeetus leucocephalus	bald eagle	DL/SE/BLM:S, CDF:S, FP, IUCN:LC, FS:S, BCC	Ocean shore, lake margins, and rivers for both nesting and wintering. Most nests within 1 mile of water.	Nests in large, old-growth, or dominant live tree with open branches, especially ponderosa pine. Roosts communally in winter.	**None.** The parcel lacks suitable nesting and foraging habitats near water that this species requires.
Icteria virens	yellow-breasted chat	--/--/SSC, IUCN:LC	Summer resident; inhabits riparian thickets of willow and other brushy tangles near watercourses.	Nests in low, dense riparian, consisting of willow, blackberry, wild grape; forages and nests within 10 ft of ground.	**None.** The parcel lacks dense willow riparian areas necessary for this species.
Lanius ludovicianus	loggerhead shrike	--/--/SSC, IUCN:LC, BCC	Broken woodlands, savannah, pinyon-juniper, Joshua tree, and riparian woodlands, desert oases, scrub & washes.	Prefers open country for hunting, with perches for scanning, and fairly dense shrubs and brush for nesting.	**Likely.** The scrub and forest habitats on the parcel provide suitable habitat for this species.
Larus californicus	California gull	--/--/WL, IUCN:LC	Littoral waters, sandy beaches, waters and shorelines of bays, tidal mud-flats, marshes, lakes, etc.	Colonial nester on islets in large interior lakes, either fresh or strongly alkaline.	**None.** The parcel lacks suitable aquatic habitats for this species.
Laterallus jamaicensis coturniculus	California black rail	--/ST/BLM:S, FP, IUCN:NT, NABCI:RWL, BCC	Inhabits freshwater marshes, wet meadows and shallow margins of saltwater marshes bordering larger bays.	Needs water depths of about 1 inch that do not fluctuate during the year and dense vegetation for nesting habitat.	**None.** The parcel lacks suitable aquatic habitats for this species.
Nycticorax nycticorax	black-crowned night heron	--/--/IUCN:LC	Colonial nester, usually in trees, occasionally in tule patches.	Rookery sites located adjacent to foraging areas: lake margins, mud-bordered bays, marshy spots.	**None.** The parcel lacks suitable aquatic habitats for this species.
Pandion haliaetus	osprey	--/--/CDF:S, WL, IUCN:LC	Ocean shore, bays, freshwater lakes, and larger streams.	Large nests built in tree-tops within 15 miles of a good fish-producing body of water.	**None.** The parcel lacks suitable aquatic habitats for this species.

Scientific Name	Common Name	Federal/ State/Other	General Habitat	Microhabitat	Potential to Occur on the Parcel
Passerculus sandwichensis beldingi	Belding's savannah sparrow	--/SE/--	Inhabits coastal salt marshes, from Santa Barbara south through San Diego County.	Nests in Salicornia on and about margins of tidal flats.	**None.** The parcel lacks suitable salt marsh habitats for this species.
Phalacrocorax auritus	double-crested cormorant	--/--/WL, IUCN:LC	Colonial nester on coastal cliffs, offshore islands, and along lake margins in the interior of the state.	Nests along coast on sequestered islets, usually on ground with sloping surface, or in tall trees along lake margins.	**None.** The parcel lacks suitable aquatic habitats for this species.
Piranga rubra	summer tanager	--/--/SSC, IUCN:LC	Summer resident of desert riparian along lower Colorado River, and locally elsewhere in California deserts.	Requires cottonwood-willow riparian for nesting and foraging; prefers older, dense stands along streams.	**None.** The parcel lacks suitable riparian habitats for this species.
Plegadis chihi	white-faced ibis	--/--/WL, IUCN:LC	Shallow freshwater marsh.	Dense tule thickets for nesting, interspersed with areas of shallow water for foraging.	**None.** The parcel lacks suitable marsh habitats for this species.
Polioptila californica californica	coastal California gnatcatcher	FT/--/SSC, NABCI:YWL	Obligate, permanent resident of coastal sage scrub below 2500 ft in Southern California.	Low, coastal sage scrub in arid washes, on mesas and slopes. Not all areas classified as coastal sage scrub are occupied.	**Likely.** The scrub habitats have the potential to support this species.
Polioptila melanura	black-tailed gnatcatcher	--/--/WL, IUCN:LC	Primarily inhabits wooded desert wash habitats; also occurs in desert scrub habitat, especially in winter.	Nests in desert washes containing mesquite, palo verde, ironwood, acacia; absent from areas where salt cedar introduced.	**None.** The parcel lacks suitable desert habitats.
Riparia riparia	bank swallow	--/ST/BLM:S, IUCN:LC	Colonial nester; nests primarily in riparian and other lowland habitats west of the desert.	Requires vertical banks/cliffs with fine-textured/sandy soils near streams, rivers, lakes, ocean to dig nesting hole.	**None.** The parcel lacks vertical banks and cliffs necessary for this species.
Selasphorus rufus	rufous hummingbird	--/--/IUCN:LC, NABCI:YWL, BCC	Breeds in Transition life zone of northwest coastal area from Oregon border to southern Sonoma County.	Nests in berry tangles, shrubs, and conifers. Favors habitats rich in nectar-producing flowers.	**None.** The parcel is outside the known range of this species.
Setophaga petechia	yellow warbler	--/--/SSC, BCC	Riparian plant associations in close proximity to water. Also nests in montane shrubbery in open conifer forests in Cascades and Sierra Nevada.	Frequently found nesting and foraging in willow shrubs and thickets, and in other riparian plants including cottonwoods, sycamores, ash, and alders.	**None.** The parcel lacks willow riparian areas close to water that this species requires.
Sphyrapicus ruber	red-breasted sapsucker	--/--/--	Breeds in mixed coniferous and mixed deciduous-coniferous forests and woodlands.	Requires standing snags or hollow trees for nesting cavity.	**None.** The parcel lacks conifers that this species requires for habitat.

Scientific Name	Common Name	Federal/ State/Other	General Habitat	Microhabitat	Potential to Occur on the Parcel
Spinus lawrencei	Lawrence's goldfinch	--/--/IUCN:LC, NABCI:YWL, BCC	Nests in open oak or other arid woodland and chaparral, near water. Nearby herbaceous habitats used for feeding.	Closely associated with oaks.	**Likely.** The canyon live oak forest on the parcel provides habitat for this species.
Vireo bellii pusillus	least Bell's vireo	FE/SE/IUCN:NT, NABCI:YWL	Summer resident of Southern California in low riparian in vicinity of water or in dry river bottoms; below 2000 ft.	Nests placed along margins of bushes or on twigs projecting into pathways, usually willow, Baccharis, mesquite.	**None.** The parcel lacks dense riparian areas near water that this species requires.
Xanthocephalus xanthocephalus	yellow-headed blackbird	--/--/SSC, IUCN:LC	Nests in freshwater emergent wetlands with dense vegetation and deep water. Often along borders of lakes or ponds.	Nests only where large insects such as Odonata are abundant, nesting timed with maximum emergence of aquatic insects.	**None.** The parcel lacks freshwater emergent wetlands.
Mammals					
Antrozous pallidus	pallid bat	--/--/BLM:S, SSC, IUCN:LC, FS:S, WBWG:H	Deserts, grasslands, shrublands, woodlands and forests. Most common in open, dry habitats with rocky areas for roosting.	Roosts must protect bats from high temperatures. Very sensitive to disturbance of roosting sites.	**Likely.** The parcels lacks desert habitats and rocky areas that this species requires for roosting. However, is likely to forage on the parcel.
Chaetodipus fallax fallax	northwestern San Diego pocket mouse	--/--/SSC	Coastal scrub, chaparral, grasslands, sagebrush, etc. in western San Diego County.	Sandy, herbaceous areas, usually in association with rocks or coarse gravel.	**Unlikely**. The parcel lacks rock and coarse gravel areas that this species prefers and is outside the known range of the species.
Dipodomys merriami parvus	San Bernardino kangaroo rat	FE/--/SSC	Alluvial scrub vegetation on sandy loam substrates characteristic of alluvial fans and flood plains.	Needs early to intermediate seral stages.	**None**. The parcel lacks developed alluvial fans associated with large floodplains.
Eumops perotis californicus	western mastiff bat	--/--/BLM:S, SSC, WBWG:H	Many open, semi-arid to arid habitats, including conifer & deciduous woodlands, coastal scrub, grasslands, chaparral, etc.	Roosts in crevices in cliff faces, high buildings, trees and tunnels.	**Likely**. The parcel has trees for roosting and scrub and woodland habitats for foraging.
Lasiurus cinereus	hoary bat	--/--/IUCN:LC, WBWG:M	Prefers open habitats or habitat mosaics, with access to trees for cover and open areas or habitat edges for feeding.	Roosts in dense foliage of medium to large trees. Feeds primarily on moths. Requires water.	**Unlikely**. The parcel lacks sufficient water for this species.
Lasiurus xanthinus	western yellow bat	--/--/SSC, IUCN:LC, WBWG:H	Found in valley foothill riparian, desert riparian, desert wash, and palm oasis habitats.	Roosts in trees, particularly palms. Forages over water and among trees.	**None**. The parcel lacks desert habitats that this species requires.

Scientific Name	Common Name	Federal/ State/Other	General Habitat	Microhabitat	Potential to Occur on the Parcel
Lepus californicus bennettii	San Diego black-tailed jackrabbit	--/--/SSC	Intermediate canopy stages of shrub habitats & open shrub / herbaceous & tree / herbaceous edges.	Coastal sage scrub habitats in Southern California.	**Likely**. The scrub and forest habitats are suitable for this species.
Myotis yumanensis	Yuma myotis	--/--/BLM:S, IUCN:LC, WBWG:LM	Optimal habitats are open forests and woodlands with sources of water over which to feed.	Distribution is closely tied to bodies of water. Maternity colonies in caves, mines, buildings or crevices.	**None**. The parcel lacks areas of open water.
Neotoma lepida intermedia	San Diego desert woodrat	--/--/SSC	Coastal scrub of Southern California from San Diego County to San Luis Obispo County.	Moderate to dense canopies preferred. They are particularly abundant in rock outcrops, rocky cliffs, and slopes.	**Likely**. The scrub habitats on the parcel are suitable for this species.
Nyctinomops femorosaccus	pocketed free-tailed bat	--/--/SSC, IUCN:LC, WBWG:M	Variety of arid areas in Southern California; pine-juniper woodlands, desert scrub, palm oasis, desert wash, desert riparian, etc.	Rocky areas with high cliffs.	**None.** The parcel lacks desert habitats and rocky areas with cliffs.
Nyctinomops macrotis	big free-tailed bat	--/--/SSC, IUCN:LC, WBWG:MH	Low-lying arid areas in Southern California.	Need high cliffs or rocky outcrops for roosting sites. Feeds principally on large moths.	**Unlikely.** The parcel lacks desert habitats and rocky areas with cliffs.
Ovis canadensis nelsoni	desert bighorn sheep	--/--/BLM:S, FP, FS:S	Widely distributed from the White Mtns in Mono Co. to the Chocolate Mts in Imperial Co.	Open, rocky, steep areas with available water and herbaceous forage.	**None.** The parcel lacks suitable mountainous, rocky, steep areas that this species requires.
Perognathus longimembris brevinasus	Los Angeles pocket mouse	--/--/SSC	Lower elevation grasslands and coastal sage communities in and around the Los Angeles Basin.	Open ground with fine, sandy soils. May not dig extensive burrows, hiding under weeds and dead leaves instead.	**Unlikely.** The parcel lacks the open ground areas with fine, sandy soils.
Taxidea taxus	American badger	--/--/SSC, IUCN:LC	Most abundant in drier open stages of most shrub, forest, and herbaceous habitats, with friable soils.	Needs sufficient food, friable soils and open, uncultivated ground. Preys on burrowing rodents. Digs burrows.	**Unlikely.** The species prefers more arid habitats than those found on the parcel.

APPENDIX B.2: SIGNIFICANT TREE REPORT

Carlberg ASSOCIATES

Horticulturists and
Registered Consulting
ARBORISTS

SIGINIFICANT TREE REPORT
VESTING TENTATIVE TRACT MAP NO. 082001
500 BASELINE ROAD, LA VERNE
CITY OF LA VERNE

SUBMITTED TO:

RAMZY FAKHOURY
203 REBECCA DRIVE
SAN DIMAS, CA 91773

PREPARED BY:

SCOTT MCALLASTER
ISA CERTIFIED ARBORIST #WE 7011A
ISA QUALIFIED TREE RISK ASSESSOR

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AUGUST 2, 2018

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Carlberg ASSOCIATES
Horticulturists and
Registered Consulting
ARBORISTS

August 2, 2018

Mr. Ramzy Fakhoury
203 Rebecca Drive
San Dimas, California 91773

Re: Vesting Tentative Tract Map No. 082001, 500 Baseline Road – La Verne, California
City of La Verne Significant Tree Report

EXECUTIVE SUMMARY

Construction of seven single-family lots on a vacant property located at 500 Baseline Road in an unincorporated portion of La Verne, California, will result in the removal of four significant trees and the encroachments into the *Tree Safety Zones*[1] of 20 significant trees. Eleven of the inventoried trees are dead. The remaining 85 significant trees will be unaffected by construction. The subject property is within the Sphere of Influence of the City of La Verne and this report has been prepared in accordance with Chapter 18.78 of the City of La Verne Municipal Code. Protective fencing is recommended for trees to remain, and construction as it pertains to protected trees is required by the Municipal Code to be monitored by a professional consulting arborist.

BACKGROUND AND ASSIGNMENT

The developer, Ramzy Fakhoury, is proposing to construct seven single-family lots and associated infrastructure on the 19.44-acre property located at 500 Baseline Road in an unincorporated portion of La Verne. The project includes a debris basin lot and an open space lot. We evaluated all significant trees on the subject property. There are 119 ordinance-sized significant trees located within the property boundaries and one ordinance-size significant tree on the contiguous property to the east.

The inventoried trees were assessed in September and October 2017, and much regeneration may have occurred between then and now. The assessments in this report are based on the condition of the trees at the time of the assessments in 2017.

[1] The **Tree Safety Zone** is a specifically defined area within the dripline of an tree and extending to a point at least 5 feet outside the dripline or 15 feet from the trunk, whichever distance is greater.

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A partial assessment was originally conducted in October 2014, focusing on the southern portion of the property where the development is proposed. A total of 50 trees were included as part of that assessment. In order to keep the tree numbers consistent, this report includes some trees that have died since that inventory. The passage of time, drought conditions and the Rodeo Fire in July 2017, have resulted in significant changes to the project's tree population. The 2017 assessment now includes all the significant trees on the entire property.

We found that three (Trees #28, 30 and 42) of the original 50 trees included in the 2014 inventory died as a result of the Rodeo Fire. One tree (Tree #9) was already dead in 2014. Seven (Trees #92, 105, 106, 111, 114, 117, and 118) trees inventoried for this report were dead at the time of the 2017 inventory. Since the demise of these trees is not project related, none of the 11 dead trees will be included in the overall mitigation count.

OBSERVATIONS

We inventoried 120 ordinance-sized trees, including those off-site trees immediately adjacent to the project boundaries. Eighty-nine (89) of the surveyed trees are coast live oaks (*Quercus agrifolia*), 24 are California sycamores (*Platanus racemosa*), one is a Southern California black walnut (*Juglans californica* var. californica) and six are scrub oak trees (*Quercus berberidifolia*). A majority of the significant trees are located within the drainages on the property. Seven of the significant trees are located at the front of the property, along Baseline Road.

Tree trunks and canopies (driplines) were recorded in the field, from grade, using the Giron Engineers Inc.'s ALTA/ACSM Land Title Survey (dated April 30, 2012) provided to us by Land Design Consultants (LDC). The tree locations depicted on the "Significant Tree Location Exhibit" and "Significant Tree Impact Exhibit and Protection Plan" are estimates and are not instrument surveyed locations. Table 1 summarizes the inventoried trees and their proposed dispositions. Full-sized copies of the "Significant Tree Location Exhibit" and "Significant Tree Impact Exhibit and Protection Plan" are included in back pockets at the end of this report.

Table 1 lists the protected trees and their dispositions based on the current site plan. Canopy spreads and protected zones are graphically represented on the "Significant Tree Impact Exhibit and Protection Plan." Additional details for the trees may be found on the enclosed field data sheets. Reduced copies of the "Significant Tree Location Exhibit" and "Significant Tree Impact Exhibit and Protection Plan" is included as Exhibits 2 and 3.

Many trees can survive fire damage, even when completely charred. The size of the tree influences how much insulation is provided by the bark. Research has shown, for example, that most coast live oaks over six inches in diameter will survive even heavy charring conditions. Trees that are remain after a fire should continue to be evaluated for several years to determine if they in fact have been able to survive the fire's effects.

The immediate effects of the Rodeo Fire are reflected in the overall grade of the trees. The overall grade took into account the fire's effects on the trees health and structure. The tree's health and structure may have changed since 2017, depending on the ability of the trees to survive the fire's effects. Grade definitions are included at the end of the report.

TABLE 1 – SUMMARY OF PROTECTED TREE IMPACTS

No.	Common (Botanical Name)	Trunk Diameter (in inches)	Height (feet)	Canopy Spread (feet) N / E / S / W	Overall Grade	Remove	Encroach	Preserve	Comments
1	Coast live oak (*Quercus agrifolia*)	22	45	12 / 16 / 27 / 26	B		X		Swale within PZ
2	Coast live oak (*Quercus agrifolia*)	23	40	31 / 15 / 15 / 37	B-			X	
3	Coast live oak (*Quercus agrifolia*)	9	40	20 / 15 / 12 / 5	B+			X	
4	Coast live oak (*Quercus agrifolia*)	13	25	10 / 8 / 25 / 17	A			X	
5	Coast live oak (*Quercus agrifolia*)	23 @ 3'	50	17 / 20 / 25 / 18	B-		X		Trunk 13' to daylight; 12' to swale; grading 12' within canopy; possible pruning
6	Coast live oak (*Quercus agrifolia*)	13	25	21 / 15 / 20 / 20	B			X	
7	Coast live oak (*Quercus agrifolia*)	10	20	25 / 5 / 0 / 4	C+			X	
8	Coast live oak (*Quercus agrifolia*)	26	45	25 / 10 / 12 / 30	A-		X		Swale 2' from PZ; potential encroach
9	California sycamore (*Platanus racemosa*)	9	25	0 / 0 / 0 / 0	F		N/A		DEAD
10	Coast live oak (*Quercus agrifolia*)	24	45	25 / 10 / 20 / 26	B		X		Trunk 20' from swale; grading 4' within canopy
11	Coast live oak (*Quercus agrifolia*)	23	40	12 / 25 / 30 / 32	B+		X		Grading for road 1.5' within PZ
12	Coast live oak (*Quercus agrifolia*)	8	25	0 / 20 / 0 / 2	C+			X	
13	Coast live oak (*Quercus agrifolia*)	19	40	24 / 13 / 8 / 25	C+		X		Swale 3' within PZ
14	Coast live oak (*Quercus agrifolia*)	10	30	8 / 18 / 15 / 15	C+			X	
15	Coast live oak (*Quercus agrifolia*)	16	30	25 / 20 / 15 / 25	C		X		Grading for debris basin at edge of PZ; potential encroach
16	Coast live oak (*Quercus agrifolia*)	11	20	10 / 5 / 8 / 30	C-			X	
17	Coast live oak (*Quercus agrifolia*)	15	35	25 / 0 / 10 / 30	B-			X	
18	Coast live oak (*Quercus agrifolia*)	24	35	27 / 7 / 20 / 35	B		X		Grading for debris basin 3' within PZ
19	Coast live oak (*Quercus agrifolia*)	12, 13, 14, 18	30	30 / 18 / 25 / 25	B-		X		Trunk 12' from daylight
20	Coast live oak (*Quercus agrifolia*)	19 @ 3'	35	18 / 25 / 20 / 18	B		X		Trunk 20' to daylight; grading 2' within canopy
21	Coast live oak (*Quercus agrifolia*)	5.5, 8.5, 9	25	10 / 18 / 18 / 0	B-			X	
22	Coast live oak (*Quercus agrifolia*)	14.5, 15.5	35	18 / 25 / 25 / 19	C		X		Trunk 11' to swale; 12' to daylight
23	Coast live oak (*Quercus agrifolia*)	10, 13	30	20 / 16 / 19 / 18	B-			X	

No.	Common (Botanical Name)	Trunk Diameter (in inches)	Height (feet)	Canopy Spread (feet) N / E / S / W	Overall Grade	Remove	Encroach	Preserve	Comments
24	Coast live oak (*Quercus agrifolia*)	10	30	16 / 20 / 8 / 0	B-			X	
25	Scrub oak (*Quercus berberidifolia*)	7, 9.5	20	18 / 16 / 6 / 10	C			X	
26	Scrub oak (*Quercus berberidifolia*)	12 @ 4'	25	16 / 10 / 13 / 16	C+			X	
27	Coast live oak (*Quercus agrifolia*)	14.5	22	15 / 0 / 17 / 21	C-		X		Trunk 6' from daylight
28	California sycamore (*Platanus racemosa*)	N/A	N/A	N/A	N/A		N/A		GONE
29	California sycamore (*Platanus racemosa*)	10, 11	30	15 / 10 / 20 / 20	D		X		Trunk 6' from proposed retaining wall (designed to save tree)
30	California sycamore (*Platanus racemosa*)	N/A	N/A	N/A	N/A		N/A		GONE
31	Scrub oak (*Quercus berberidifolia*)	2, 3, 9	22	10 / 10 / 12 / 12	D		X		Trunk 6' from daylight; grading 5.5' within canopy
32	Coast live oak (*Quercus agrifolia*)	8, 12	30	25 / 6 / 5 / 20	C		X		Debris cone 5' within PZ; potential encroach
33	Coast live oak (*Quercus agrifolia*)	17	45	30 / 15 / 15 / 16	C			X	
34	California sycamore (*Platanus racemosa*)	16	30	0 / 0 / 0 / 30	C-		X		Grading 4' within canopy
35	Coast live oak (*Quercus agrifolia*)	12	30	25 / 18 / 13 / 18	C		X		Grading 4' from PZ; potential encroach
36	Coast live oak (*Quercus agrifolia*)	15.5	30	20 / 16 / 20 / 18	B-			X	
37	Scrub oak (*Quercus berberidifolia*)	5, 7±	22	10 / 4 / 11 / 10	C-			X	
38	Scrub oak (*Quercus berberidifolia*)	1,2,3,3,3, 4,5,7±	18	10 / 10 / 10 / 10	C			X	
39	Coast live oak (*Quercus agrifolia*)	22	40	25 / 18 / 20 / 20	C			X	
40	Coast live oak (*Quercus agrifolia*)	11.5	20	17 / 7 / 13 / 15	C			X	
41	Coast live oak (*Quercus agrifolia*)	28 @ 2'	40	30 / 25 / 23 / 15	C			X	
42	Coast live oak (*Quercus agrifolia*)	N/A	N/A	N/A	N/A		N/A		GONE
43	Coast live oak (*Quercus agrifolia*)	16, 18	35	25 / 15 / 23 / 22	B		X		Grading 3' from PZ; potential encroach
44	Coast live oak (*Quercus agrifolia*)	13	25	20 / 17 / 10 / 18	B		X		Grading at edge of canopy; 5' with PZ
45	Coast live oak (*Quercus agrifolia*)	9	20	25 / 0 / 0 / 0	C+		X		Grading 10' within canopy, 13.5' from trunk
46	Coast live oak (*Quercus agrifolia*)	18.5 @ 3'	35	18 / 12 / 21 / 18	B-	X			Within project grading limits
47	Coast live oak (*Quercus agrifolia*)	18.5 @ 3'	35	22 / 20 / 0 / 0	B-	X			Within project grading limits

No.	Common (Botanical Name)	Trunk Diameter (in inches)	Height (feet)	Canopy Spread (feet) N / E / S / W	Overall Grade	Remove	Encroach	Preserve	Comments
48	Coast live oak (*Quercus agrifolia*)	27	35	35 / 30 / 22 / 35	A	X			Within project grading limits
49	California sycamore (*Platanus racemosa*)	9	30	2 / 2 / 2 / 2	D	X			Within project grading limits
50	Coast live oak (*Quercus agrifolia*)	15	30	13 / 14 / 20 / 11	B			X	
51	Coast live oak (*Quercus agrifolia*)	20 @ 2’	40	12 / 12 / 20 / 14	D			X	
52	Coast live oak (*Quercus agrifolia*)	24 @ 2’	30	20 / 6 / 22 / 42	D			X	
53	Coast live oak (*Quercus agrifolia*)	1.5, 5.5, 22.5	50	20 / 22 / 22 / 38	C			X	
54	California sycamore (*Platanus racemosa*)	22	30	15 / 18 / 8 / 0	D			X	
55	Coast live oak (*Quercus agrifolia*)	10	35	12 / 6 / 15 / 16	D			X	
56	California sycamore (*Platanus racemosa*)	23	45	36 / 12 / 14 / 15	D			X	
57	Coast live oak (*Quercus agrifolia*)	9	40	6 / 20 / 14 / 10	D			X	
58	California sycamore (*Platanus racemosa*)	11, 12.5	50	35 / 2 / 20 / 30	C			X	
59	Coast live oak (*Quercus agrifolia*)	7, 7, 8.5, 9.5	30	15 / 15 / 17 / 22	B+			X	
60	Coast live oak (*Quercus agrifolia*)	9	35	0 / 15 / 13 / 10	C			X	
61	So. Cal. black walnut (*Juglans californica* var. californica)	4, 4, 6, 6 (cum = 10”)	30	6 / 6 / 10 / 8	C			X	
62	Scrub oak (*Quercus berberidifolia*)	5, 5, 7.5 (cum = 10”)	20	18 / 10 / 0 / 14	C			X	
63	Coast live oak (*Quercus agrifolia*)	5, 9, 13	15	13 / 0 / 0 / 15	C			X	
64	Coast live oak (*Quercus agrifolia*)	16	45	20 / 16 / 12 / 12	C			X	
65	Coast live oak (*Quercus agrifolia*)	10, 14.5	35	28 / 14 / 8 / 16	A			X	
66	Coast live oak (*Quercus agrifolia*)	27	45	30 / 28 / 20 / 28	B			X	
67	Coast live oak (*Quercus agrifolia*)	15	40	21 / 22 / 18 / 18	B+			X	
68	California sycamore (*Platanus racemosa*)	8.5	55	35 / 0 / 0 / 0	D			X	
69	Coast live oak (*Quercus agrifolia*)	21	40	22 / 18 / 16 / 9	B-			X	
70	Coast live oak (*Quercus agrifolia*)	18.5	50	28 / 0 / 0 / 22	B			X	
71	Coast live oak (*Quercus agrifolia*)	14	20	16 / 0 / 0 / 16	B-			X	
72	Coast live oak (*Quercus agrifolia*)	18	35	23 / 10 / 12 / 22	B			X	
73	Coast live oak (*Quercus agrifolia*)	16	30	22 / 5 / 20 / 10	B			X	

No.	Common (Botanical Name)	Trunk Diameter (in inches)	Height (feet)	Canopy Spread (feet) N / E / S / W	Overall Grade	Remove	Encroach	Preserve	Comments
74	Coast live oak (*Quercus agrifolia*)	20	55	26 / 12 / 15 / 17	C			X	
75	Coast live oak (*Quercus agrifolia*)	20.5 @ 3'	50	25 / 0 / 28 / 30	B			X	
76	Coast live oak (*Quercus agrifolia*)	17	30	0 / 0 / 30 / 25	B-			X	
77	Coast live oak (*Quercus agrifolia*)	13	25	0 / 0 / 38 / 0	B-			X	
78	Coast live oak (*Quercus agrifolia*)	13 @ 4'	25	16 / 10 / 19 / 20	B-			X	
79	Coast live oak (*Quercus agrifolia*)	11, 19 @ 6'	30	25 / 32 / 0 / 32	C-			X	
80	California sycamore (*Platanus racemosa*)	8.5	30	3 / 3 / 3 / 3	D			X	
81	California sycamore (*Platanus racemosa*)	10	50	15 / 10 / 5 / 10	D			X	
82	California sycamore (*Platanus racemosa*)	9, 10	40	7 / 10 / 7 / 0	D			X	
83	Coast live oak (*Quercus agrifolia*)	7, 11.5	30	10 / 10 / 13 / 15	C-			X	
84	Coast live oak (*Quercus agrifolia*)	29 @ 3'	30	25 / 20 / 20 / 20	B-			X	
85	Coast live oak (*Quercus agrifolia*)	14.5, 22	35	20 / 15 / 25 / 25	C+			X	
86	Coast live oak (*Quercus agrifolia*)	8.5	25	10 / 10 / 13 / 8	C-			X	
87	Coast live oak (*Quercus agrifolia*)	23	25	5 / 8 / 30 / 20	C			X	
88	Coast live oak (*Quercus agrifolia*)	27	40	5 / 10 / 25 / 15	D			X	
89	Coast live oak (*Quercus agrifolia*)	22	35	15 / 25 / 0 / 8	D			X	
90	California sycamore (*Platanus racemosa*)	25	45	0 / 10 / 20 / 25	D			X	
91	Coast live oak (*Quercus agrifolia*)	19	40	13 / 5 / 13 / 30	C			X	
92	Coast live oak (*Quercus agrifolia*)	8	25	N/A	F	N/A			DEAD
93	Coast live oak (*Quercus agrifolia*)	19.5	25	5 / 5 / 5 / 5	D			X	
94	Coast live oak (*Quercus agrifolia*)	25	40	25 / 15 / 10 / 7	D			X	
95	Coast live oak (*Quercus agrifolia*)	16	35	25 / 8 / 0 / 0	D			X	
96	Coast live oak (*Quercus agrifolia*)	26.5	40	10 / 0 / 20 / 30	C-			X	
97	California sycamore (*Platanus racemosa*)	8, 8, 13	35	30 / 0 / 0 / 15	D			X	
98	Coast live oak (*Quercus agrifolia*)	13, 25	40	0 / 20 / 35 / 10	C-			X	
99	California sycamore (*Platanus racemosa*)	8.5	15	3 / 3 / 3 / 3	D			X	
100	Coast live oak (*Quercus agrifolia*)	17	35	10 / 25 / 20 / 20	C			X	

No.	Common (Botanical Name)	Trunk Diameter (in inches)	Height (feet)	Canopy Spread (feet) N / E / S / W	Overall Grade	Remove	Encroach	Preserve	Comments
101	California sycamore (*Platanus racemosa*)	6.5 (dead), 12	35	0 / 0 / 20 / 0	D			X	
102	California sycamore (*Platanus racemosa*)	10.5, 14	40	0 / 0 / 30 / 0	D			X	
103	California sycamore (*Platanus racemosa*)	10 (dead), 11.5	35	15 / 15 / 13 / 25	D			X	
104	California sycamore (*Platanus racemosa*)	13	40	0 / 0 / 10 / 35	D			X	
105	California sycamore (*Platanus racemosa*)	10	35	N/A	F	N/A			DEAD
106	California sycamore (*Platanus racemosa*)	10, 10	30	N/A	F	N/A			DEAD
107	Coast live oak (*Quercus agrifolia*)	22	45	30 / 15 / 20 / 25	B			X	
108	Coast live oak (*Quercus agrifolia*)	20.5	25	30 / 10 / 5 / 20	B			X	
109	Coast live oak (*Quercus agrifolia*)	22.5	20	40 / 10 / 0 / 0	C+			X	
110	Coast live oak (*Quercus agrifolia*)	20	50	40 / 20 / 20 / 15	B			X	
111	Coast live oak (*Quercus agrifolia*)	12.5	10	N/A	F	N/A			DEAD
112	Coast live oak (*Quercus agrifolia*)	19	35	10 / 20 / 10 / 25	B-			X	
113	Coast live oak (*Quercus agrifolia*)	25	50	25 / 5 / 30 / 25	B			X	
114	Coast live oak (*Quercus agrifolia*)	10	30	N/A	F	N/A			DEAD
115	Coast live oak (*Quercus agrifolia*)	21	50	30 / 0 / 15 / 25	B			X	
116	Coast live oak (*Quercus agrifolia*)	20	35	25 / 10 / 10 / 25	C			X	
117	California sycamore (*Platanus racemosa*)	5, 7, 8	35	N/A	F	N/A			DEAD
118	California sycamore (*Platanus racemosa*)	14	35	N/A	F	N/A			DEAD
119	Coast live oak (*Quercus agrifolia*)	14	25	18 / 0 / 10 / 30	B-			X	
OS 120	Coast live oak (*Quercus agrifolia*)	29	45	37 / 25 / 33 / 32	B+			X	
					Totals:	**4**	**20**	**85**	**11 DEAD/GONE**
PZ = Protected zone									

DISCUSSION

There are several potential consequences related to residential construction that may affect trees during and after a typical construction process. They are as follows:

- Excavation/Trenching—Root Severance
- Soil Compaction (During and Post-construction)
- Grading (Cut and/or Fill)
- Alteration of the Water Table/Site Drainage
- Substantial Trimming of Canopy or Roots
- Mechanical Damage
- Irrigation

A. Excavation/Trenching—Root Severance
Trenching can include excavation for irrigation, utility, or drainage lines.
Hand trenching should be done within the protected zone of the tree to expose the location of major roots - those two inches in diameter or greater.

- *When root cutting is permitted, exposed major roots should not be ripped by construction equipment. Instead, they should be cut cleanly behind torn ends, if possible back to a lateral branching root.*
- *When trenching pathways must occur within the Tree Safety Zone, tunneling and bridging should be used to preserve roots two inches in diameter or greater, and wherever possible underground lines should occupy common trenches.*
- *Absorbent tarps or heavy cloth fabric should cover new grade cuts that expose roots and be overlain by compost or woodchip mulch.*

B. Soil Compaction
Soil compaction is a complex set of physical, chemical, and biological constraints on tree growth. Principal components leading to limited growth are the loss of aeration and pore space, poor gas exchange with the atmosphere, lack of available water, and mechanical hindrance of root growth. Soil compaction is considered to be the largest single factor responsible for the decline of trees on construction sites.

C. Changes in Grade
Changes in grade, by the addition or removal of soil (filling or cutting), can be injurious. Lowering the grade around trees can have immediate and long-term effects on trees. The addition of soil and compaction for common engineering practices also results in long-term effects on trees. Typically, the vast majority of the root mass exists within the top three feet of soil, and most of the fine roots active in water and nutrient absorption are in the top 12 inches.

D. Alteration of the Water Table/Site Drainage
The water table is the upper surface of the zone in which soil macropores are saturated with water; water tables may vary seasonally. Rather than a flat, static surface, the water moves down a gradient. Its depth varies, depending on the structure of the soil and rocks through which it flows. A perched water table may form in soils that have impermeable strata. Swamps are created where the water table intersects level ground.

Structures such as footings, basements, subterranean buildings, and retaining walls may intercept impermeable layers in the soil on which water perches. If adequate drainage is not provided, the water table uphill may *gradually rise and interfere with tree roots. This type of damage usually takes a period of time to be recognized and diagnosed.*[2]

Oaks are particularly susceptible to root infections, such as Armillaria and Phytophthora. Both of these fungal diseases can progressively weaken a root system, resulting in dead branches in the canopy of the tree, loss of stability of the entire tree because of decaying roots, and premature death of the tree.
Trees form roots in accordance with existing soil composition and water availability. Minor drainage changes in the winter and spring months are significant to the health of the trees.

E. Canopy and Root Pruning
Leaves perform vital functions for trees. Through photosynthesis, they manufacture sugars that feed the tree and are used to create the building blocks of wood. Leaves help to move water and nutrients up from the roots and around the tree through their vascular system and cool the tree down through transpiration. They moderate temperatures beneath the tree, lessen the drying action of winds, and intercept rainfall, which reduces erosion. On the ground, they moderate soil temperatures, retain moisture, and as they decompose, return their nutrients back to the soil to be recycled and reused by the tree. A healthy canopy of leaves is essential to ensure an adequate food supply for the roots to perform their important functions.

Typically, root systems extend outward past the dripline, two to four times the diameter of the average tree's crown. Main root functions include water and mineral conduction, food and water storage, and anchorage of the tree to the soil. Root systems consist of short-lived, fine-textured, feeder roots and larger, woody, perennial roots. Feeder roots, while averaging only 1/16 inch in diameter, constitute the major portion of the root system's surface area. Feeder roots act like sponges, growing predominantly outward and upward from the large roots near the soil surface where minerals, water and oxygen are usually abundant. Larger, woody roots and their subordinates tend to annually increase in diameter and grow horizontally. Predominantly located in the top 6 to 24 inches of the soil, these structural and storage roots usually do not grow deeper than three to seven feet. Root growth is generally inhibited by soil compaction and temperature. As the depth increases, soil compaction increases, and the availability of water, minerals, oxygen, and soil temperature all decrease.

Removal of significant amounts of the canopy and/or root system can lead to both immediate and long-term detrimental effects on trees. Effects can be physiological, structural, or both.

F. Protection Against Mechanical Damage/Fencing
Fencing is a temporary enclosure erected around a tree to enclose as much of its safety zone as possible. Fences are critical to (1) prevent direct contact and damage to the canopy, branches, and trunk, (2) preserve roots and soil in an intact and non-compacted state, and (3) identify the Tree Safety Zone. Fencing must be in place before demolition or the initiation of construction, and remain until adjacent construction activity no longer threatens tree health.

G. Irrigation
Trees that have suffered root loss may not be able to exploit as large a soil volume as before injury. Also, changed patterns of drainage may divert water away from trees. In either case, trees may benefit from supplemental irrigation. The following are general guidelines:

- *The amount of water applied must be appropriate to the species.*
- *Light, infrequent irrigations should be avoided.*

[2] Nelda Matheny and James R. Clark, Trees and Development: A Technical Guide to Preservation of Trees During Land Development, (Champaign, Illinois: International Society of Arboriculture, 1998), pp. 88-89.

- *Excess irrigation from new landscaping should be avoided. Runoff from plantings should be minimized and/or directed away from trees.*
- *Wetting the trunk should be avoided.*[3]

Construction Impacts

Based on the Vesting Tentative Tract Map No. 082001 (dated July 10, 2018) by LDC, a total of four significant trees will require removal due to grading and development of the property. An additional 20 significant trees (Trees #1, 5, 8, 10, 11, 13, 15, 18, 19, 20, 22, 27, 29, 31, 32, 34, 35, 43, 44 and 45) will experience encroachments into their canopies and root zones.

Of the proposed removals, all four are coast live oaks. Of the encroachment trees, 17 are coast live oaks, one is a scrub oak, and two are California sycamores. The future potential debris flows and maintenance activities that may or may not occur within the debris cone, has the potential for encroachments. The Los Angeles County Flood Control District will be responsible for the maintenance of the debris basin. Maintenance may include debris clearance with mechanical equipment in the protected zones of trees. Canopy pruning may be needed for equipment clearance during construction and long-term maintenance activities. In addition, fuel modification requirements for pruning ladder fuels in significant trees may be required over time within 200 feet of the new homes.

Notable impacts to the significant trees are discussed below.

Tree #27 is a mature oak tree in fair structural and physiological condition. The grading limits for the debris basin are proposed within the root protection zone, approximately six feet north of the trunk. Arboricultural research discourages root severance within five times the tree's trunk diameter on any one side of the tree. In this instance, we refer to this area as the 'critical root zone' (CRZ). Since this tree has a trunk diameter of 14.5 inches, the CRZ would extend approximate six feet (radius) from the trunk. The proposed excavation at the outer limits of the CRZ has the potential to impact a portion of the CRZ of this tree. The degree of structural root damage will depend on the actual number and orientation of those larger (greater than 2") roots. Approximately 34 percent of the root zone on the north/northwest side of the tree will likely be severed and removed for the debris basin. With careful excavation, these impacts can be minimized to an acceptable level.

Tree #29 is a mature oak tree in poor structural and physiological condition due to fire impacts. The grading limits for a retaining wall are proposed within the root protection zone, approximately six feet north of the trunk. Since this tree has a cumulative trunk diameter of 15 inches, the CRZ would extend approximate six feet (radius) from the trunk. The proposed excavation at the outer limits of the CRZ has the potential to impact a portion of the CRZ of this tree. The purpose of the retaining wall is to preserve the tree, which would otherwise be removed due to the grading for the adjacent debris basin.

CONCLUSIONS AND RECOMMENDATIONS

Based on the existing conditions and proposed construction of the project, no significant long-term impacts are anticipated for any of the 85 protected trees to remain without encroachment. The distances from proposed improvements associated with the encroachments will not, in my opinion, result in immediate or long-term significant impacts. In my professional opinion, the following recommendations should be adhered to:

[3] See Matheny and Clark, p. 125.

- Any grubbing, demolition, digging, excavating, filling, grading, construction, or trenching within the Tree Safety Zone of any protected tree is monitored by the Arborist of Record.
- Construction monitoring reports shall be submitted to the Community Development Department at appropriate intervals to be determined by those same agencies in the Tree Permit conditions of approval.
- At least 16 replacement (mitigation) trees (species to be determined by community development director) shall be planted on-site in the natural areas of the property. The mitigation trees for the four removals shall be replaced at the mitigation ratio of 4:1. The one 10-inch and under removal tree shall be replaced with four 24-inch box trees. The three 15 - 29-inch removal trees shall be replaced with twelve 48-inch box trees. The mitigation trees should be required on the landscape and irrigation plans and establishment irrigation should be provided for trees planted in the natural areas of the site.
- Monitoring of the mitigation trees should occur as outlined in the Tree Permit conditions of approval. We recommend at least three years of quarterly monitoring.
- If canopy pruning is required and approved for trees #5, 10, 19, 22, 27, 31, 44 and 45, it must be conducted between the most dormant months of July – September. Pruning shall be performed by a qualified ISA Certified Arborist or ISA Certified Tree Worker and in compliance with current ISA Pruning Guidelines, Best Management Practices, and ANSI pruning standards.
- Tree pruning and removals should occur outside of nesting bird season. If pruning and / or removals must occur during nesting bird season, all precautions related to State and Federal laws that protect nesting birds shall be adhered to.
- New homeowners should comply with Fire Code requirements for fuel modification. Requirements may include impacts to the trees through pruning. Residents should comply with City and/or County Fire Codes and permitting requirements for pruning, if any.
- Topography and drainage patterns around trees to remain shall not be altered in a manner that causes water to pond around the base of the trees.
- Unless specified in the Tree Permit, equipment, materials, and vehicles shall not be stored, parked, or operated within the protected zone of any significant tree to remain.
- Equipment with overhead exhaust shall not be placed in such a manner as to scorch overhanging branches or foliage. Alternative equipment may need to be used in such areas as deemed necessary by the monitoring arborist.
- Leaf litter should be allowed to accumulate naturally within the remaining protected zone of all trees to remain.
- Protective fence postholes within the Tree Safety Zone of all significant trees to remain should be dug by hand to allow for avoidance of significant roots that may be encountered. If significant roots are encountered, the post hole shall be moved to avoid root severance.
- Prior to issuance of a demolition or grading permit, the trees authorized for removal will be verified on-site and marked by the project arborist to ensure correct tree removal. Documentation of the verification and markings will be provided to the client, their contractor, and the City Community Development Department.
- Authorized tree removals shall be monitored by the project arborist.
- Trees that appeared 'dead' after to 2017 wildfire will be verified by the project arborist prior to removal.
- The attached Arborist of Record Agreement should be signed and adhered to.

- Five (5) foot high chain link fencing shall be installed as illustrated on a proposed protective fencing plan prior to commencement of demolition and construction activities. The fencing plan shall be reviewed and approved by the Community Development Department prior to issuance of a demolition, grubbing, or grading permit.
- All fencing shall be verified by the Community Development Department prior to commencement of work and shall remain in place until the Community Development Department approves its removal.
- A 'Warning' sign is prominently displayed on each protective enclosure. The sign will be a minimum of 8.5 inches x 11 inches and clearly state the following:

TREE SAFETY ZONE THIS FENCE SHALL NOT BE REMOVED

Please feel welcome to contact me at our Sierra Madre office if you have any questions.

Respectfully submitted,

Scott McAllaster, ISA Certified Arborist

Sierra Madre Office

scott@cycarlberg.com

This report comprises a total of 175 pages and three full-size maps. Unauthorized separation or removal of any portion of this report deems it invalid as a whole.

Conditions represented in this report are limited to the inventory date and time. Risk assessments were not requested nor performed for the purposes of this report. Ratings for health, aesthetics, and structure do not constitute a health or structural guarantee beyond the date and time of the inspection.

EXHIBIT 1 - AERIAL VIEW OF THE SUBJECT PROPERTY
500 BASELINE ROAD, LA VERNE, UNINCORPORATED LOS ANGELES COUNTY
Source: Google Earth
Not to Scale
(Property boundary is representational only)

EXHIBIT 2 - REDUCED COPY OF THE 'SIGNIFICANT TREE LOCATION EXHIBIT'
(NOT TO SCALE)

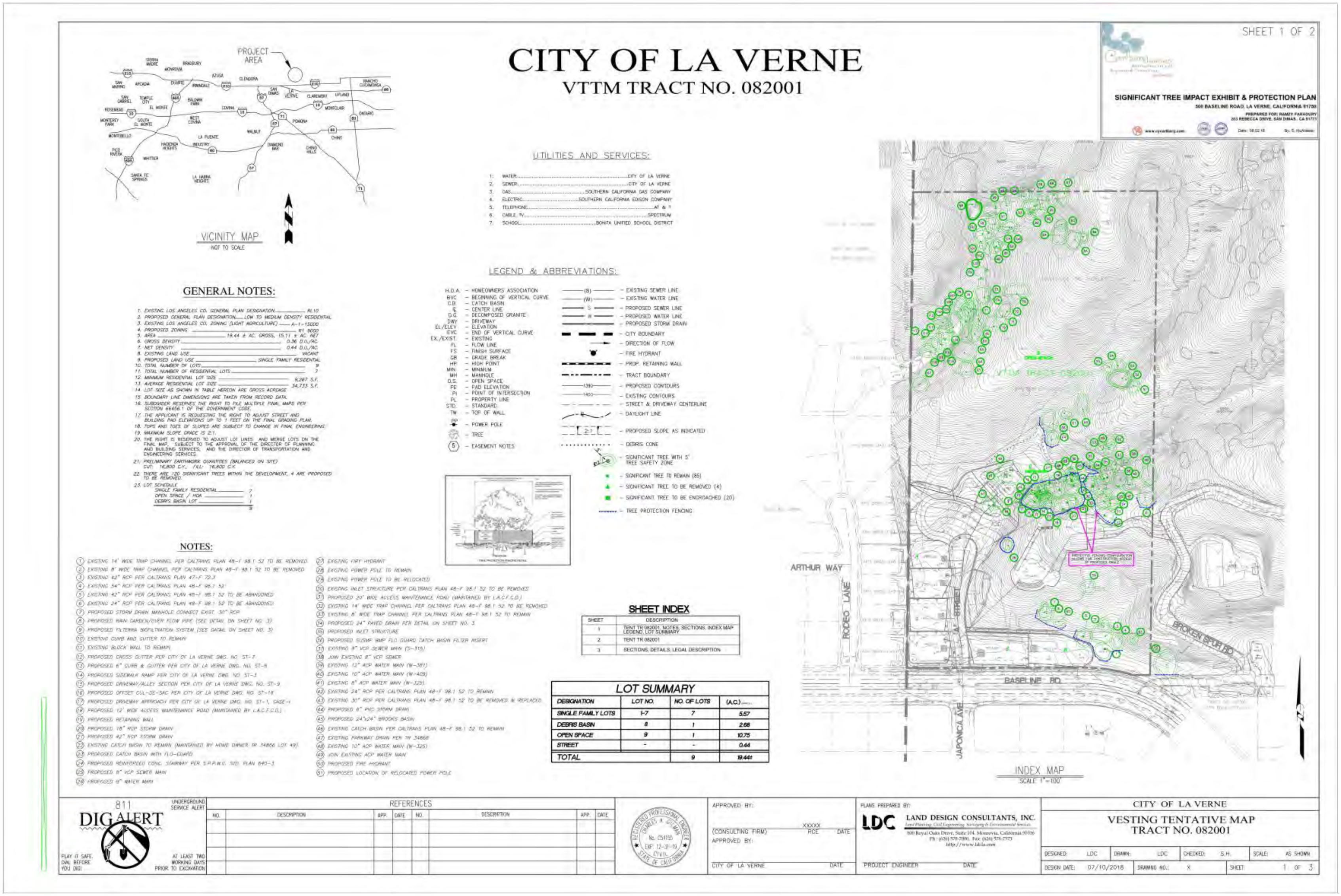
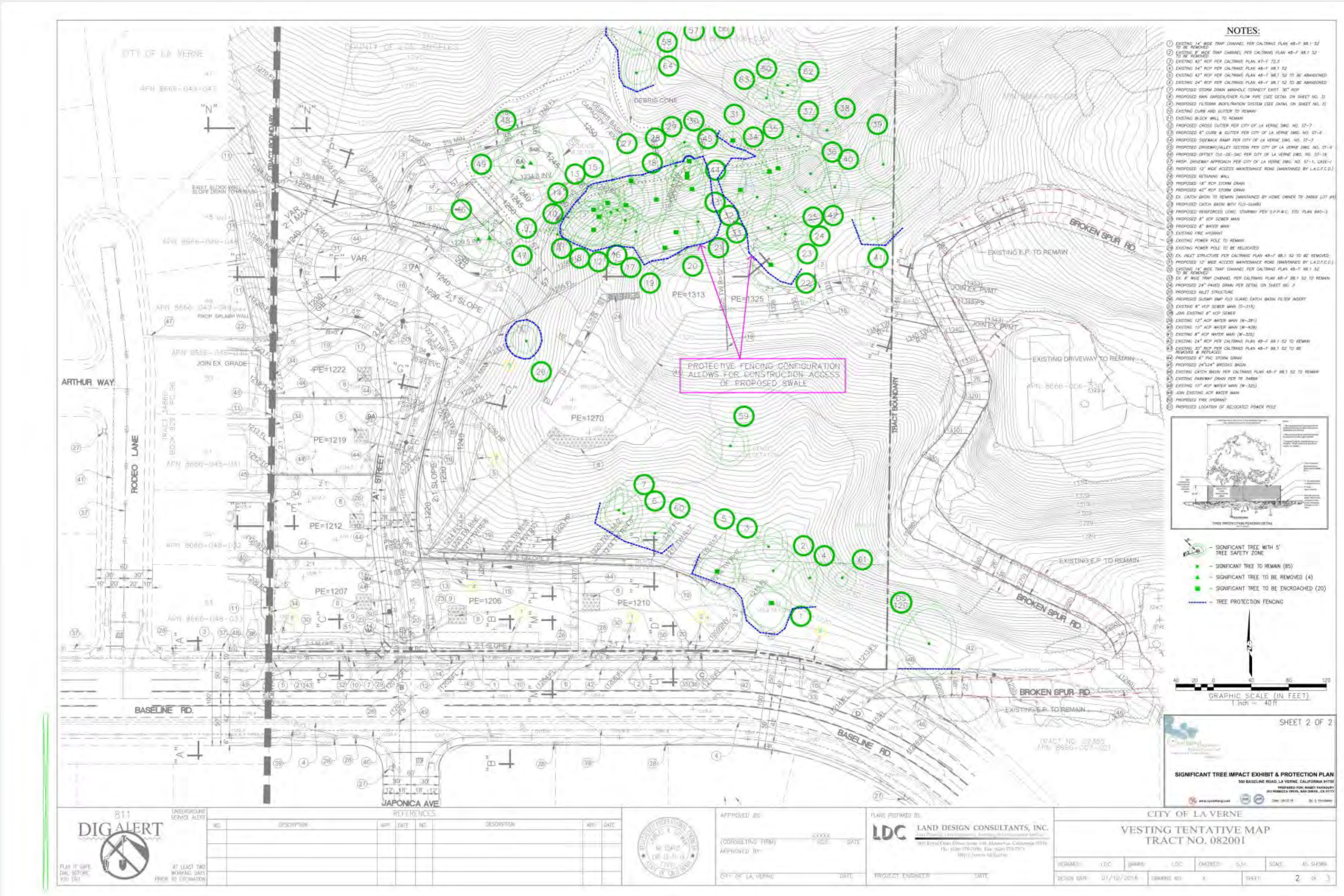


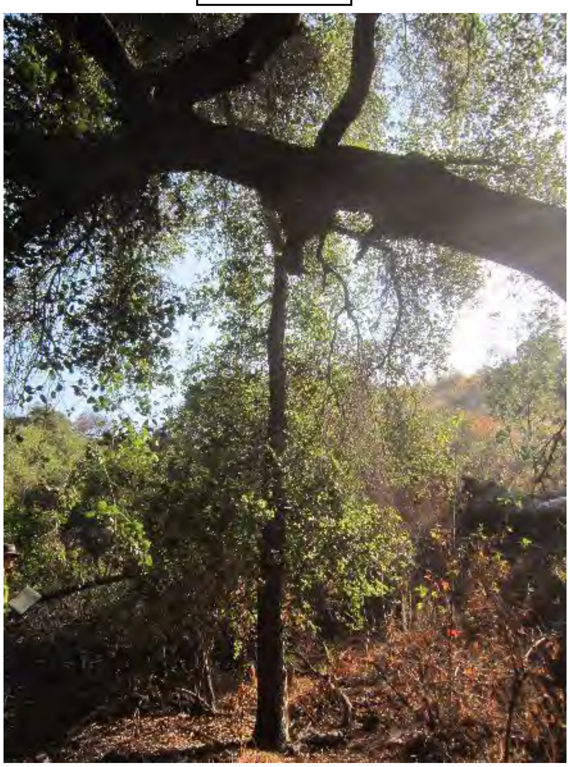
EXHIBIT 3 - REDUCED COPY OF THE 'SIGNIFICANT TREE IMPACT EXHIBIT AND PROTECTION PLAN'
(NOT TO SCALE - 2 SHEETS)


NOTES:
SIGNIFICANT TREE IMPACT EXHIBIT & PROTECTION PLAN
500 BASELINE ROAD, LA VERNE, CALIFORNIA 91750
SHEET 2 OF 2
CITY OF LA VERNE
VESTING TENTATIVE MAP
TRACT NO. 082001
LAND DESIGN CONSULTANTS, INC.
PROTECTIVE FENCING CONFIGURATION ALLOWS FOR CONSTRUCTION ACCESS OF PROPOSED SWALE
SIGNIFICANT TREE WITH 5' TREE SAFETY ZONE
SIGNIFICANT TREE TO REMAIN (85)
SIGNIFICANT TREE TO BE REMOVED (4)
SIGNIFICANT TREE TO BE ENCROACHED (20)
TREE PROTECTION FENCING
GRAPHIC SCALE (IN FEET)
1 inch = 40 ft
BASELINE RD.
BROKEN SPUR RD.
JAPONICA AVE
ARTHUR WAY
RODEO LANE
TRACT BOUNDARY
DEBRIS CONE
EXISTING E.P. TO REMAIN
EXISTING DRIVEWAY TO REMAIN
PE=1313
PE=1325
PE=1270
PE=1222
PE=1219
PE=1212
PE=1207
PE=1206
PE=1210
DIG ALERT
811

CAPTIONED PHOTOGRAPHS

TREE #1

TREE #2



TREE #3

TREE #4

TREE #5

TREES #6(L) & 7(R)

TREE #8

TREE #9

TREE #10

TREE #11

TREE #12

TREE #13

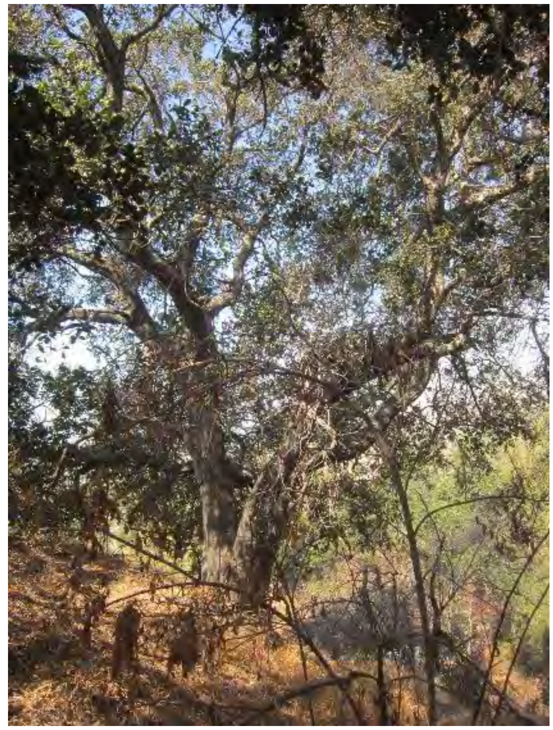
TREE #14

TREE #15

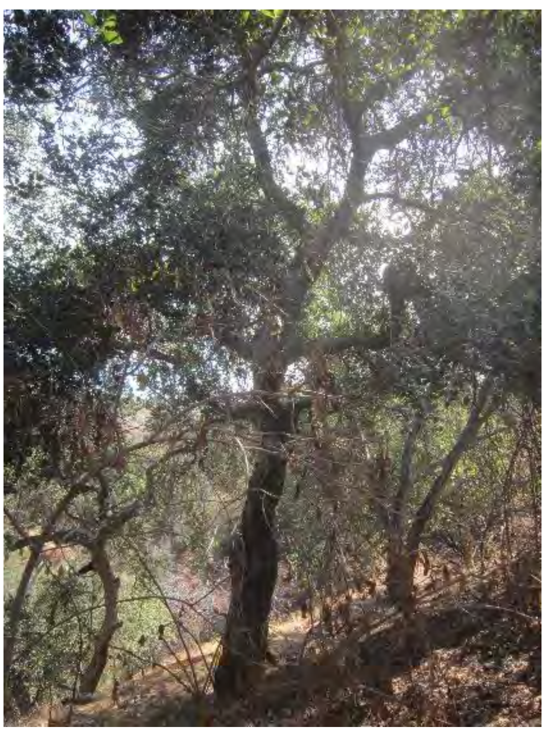
TREE #16

TREE #17

TREE #18



TREE #19



TREE #20

TREE #21

TREE #22

TREE #23

TREE #24

TREE #25

TREE #26

TREE #27

TREE #28
(Gone – due to fire)

TREE #29

TREE #30 (photo from 2014)
(Gone – due to fire)

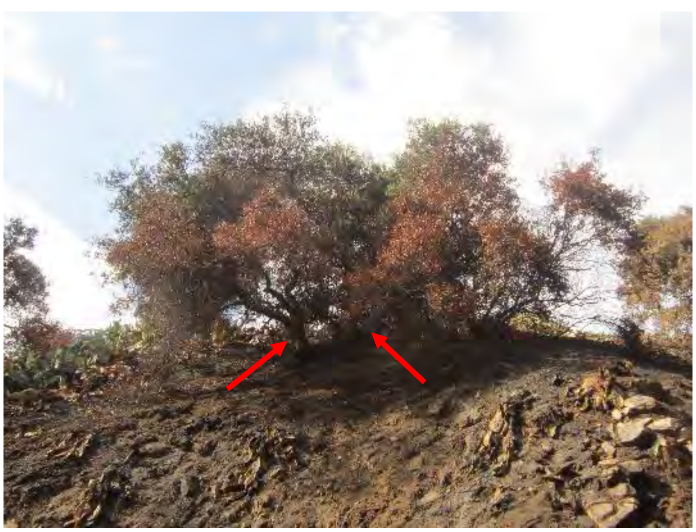
TREE #31

TREE #32

TREE #33

TREES #34(L) & 35(R)

TREE #36



TREES #37(L) & 38(R)

TREE #39
(Photo from 2014)

TREE #40

TREE #41

TREE #42 (photo from 2014)
(Gone – due to fire)

TREE #43

TREE #44

TREE #45

TREES #46(R) & 47(L)

TREES #48(R) & 49(L)

TREE #50

TREE #51

TREES #52(R) & 53(L)

TREES #54(R) & 55(L)

TREE #56

TREE #57

TREE #58

TREE #59

TREE #60

TREE #61

TREE #62

TREE #63

TREE #64

TREE #65

TREE #66

TREE #67

TREE #68

TREE #69

TREE #70

TREES #71(R) & 72(L)

TREES #73(R) & 74(L)

TREE #75

TREES #76(L) & 77(R)

TREE #78

TREE #79

TREE #80

TREE #81

TREE #82

TREE #83

TREE #84

TREE #85

TREE #86

TREE #87(R) & 88(L)

TREE #89

TREE #90

TREE #91

TREE #92

TREE #93

TREE #94

TREE #95

TREE #96

TREE #97

TREE #98

TREE #99

TREE #100

TREE #101

TREE #102

TREE #103

TREE #104

TREE #105 - DEAD

TREE #106 - DEAD

TREE #107

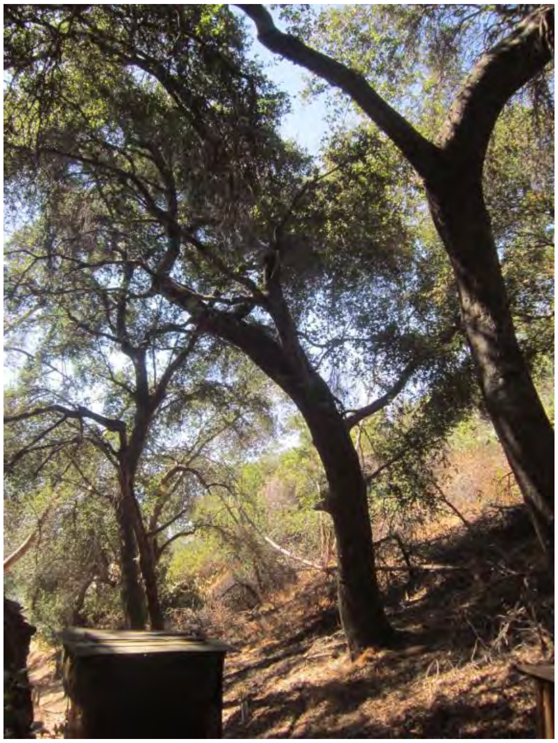
TREE #108

TREE #109

TREE #110

TREE #111 - DEAD

TREE #112



TREE #113

TREE #114 - DEAD

TREE #115

TREE #116

TREE #117 - DEAD

TREE #118 - DEAD

TREE #119

TREE #OS120

OAK TREE FIELD DATA WORKSHEET *Property: 500 Baseline Road, La Verne*

Survey Date: 9/5/2017 **Tree Number: 1**

GENERAL CHARACTERISTICS	
Species: ☒ *Q. agrifolia* ☐ *Q. lobata* ☐ *Other (see below)*	**Health Rating[1]:** ☐A ☒B ☐C ☐D ☐F
	Form: ☐ symmetric ☒ minor asymmetry
Trunk Count: 1 **Height (ft.):** 45	☐ major asymmetry ☐ stump sprout
Trunk DBH (in.): 22	☐ stag-head
Percent Canopy Cover: 70	**Crown Class[2]:** ☒ Decurrent ☐ Excurrent
Existing Terrain: ☐ Flat ☒ Slope	**Age Class:** ☐ immature ☐ semi-mature
Aesthetic Rating[3]: ☐ A ☒ B ☐ C ☐ D ☐ F	☒ mature ☐over-mature/senescent
Overall Grade: ☐ A ☒ B ☐ C ☐ D ☐ F	**Heritage Tree:** ☒ No ☐ Yes

CANOPY CHARACTERISTICS

	Dripline Radius (Feet)	Canopy to Grade (Feet)
N	12	25
NE		
E	16	20
SE		
S	27	5
SW		
W	26	3
NW		

CANOPY SPREAD (FEET): 39 X 42

PROPOSED ACTIONS

Root Collar Inspection:	☐
Monitor for Progress:	☐
Remove Deadwood/Prune :	☐
Risk Assessment	☐
Support Structure:	☐

IMPACTS & MITIGATIONS

In Impacted Area:	☐ Yes ☐ No
Proposed Land Use:	
Impacts:	
Mitigations:	

TREE HEALTH

Wound Wood Development:	☐ Excellent ☒ Average ☐ Poor ☐ None
Foliage Density:	☒ Normal ☐ Sparse
Weak crotches:	☐ No ☒ Yes
Oak Pit Scale:	☒ No ☐ Yes
Mainstem dieback:	☒ No ☐ Yes
Exposed Roots:	☒ No ☐ Yes
Epicormic growth:	☐ No ☒ Yes
Shading Out:	☐ No ☒ Yes
Cavities: ☐ None	☐ Trunk ☒ Branch
Exfoliating Bark:	☒ No ☐ Yes
Water Pocket(s):	☒ No ☐ Yes
Mechanical Damage:	☐ Trunk ☐ Branch ☒ None
Cankers:	☒ No ☐ Yes
Fungus:	☒ No ☐ Yes
Twig/ Branch Dieback:	☐ None ☒ Minor ☐ Moderate ☐Extensive
Vigor:	☐ Excellent ☒Average ☐ Fair ☐ Poor
Borers/ Ants /Termites:	☒ Minor ☐ Moderate ☐Extensive ☐None
Exudations:	☒ No ☐ Yes
Galls:	☒ No ☐ Yes

Comments & Notes: Old tag #22 & 46; old fire damage – scarring mostly on east; good recovery; bows west (unbalanced); nest in canopy; surrounded by poison oak

Photo #4944

[1] Health: A =Outstanding; B = Above Average; C = Average; D = Below Average; F = Dead
[2] Decurrent = Lacking Strong Central Leader. Excurrent = Strong Central Leader.
[3] Aesthetic (compared to standard tree of same species) : A = nearly symmetrical, healthy tree – F = Dead

OAK TREE FIELD DATA WORKSHEET *Property: 500 Baseline Road, La Verne*

Survey Date: 9/5/2017 **Tree Number: 2**

GENERAL CHARACTERISTICS	
Species: ☒*Q. agrifolia* ☐ *Q. lobata* ☐ *Other (see below)*	**Health Rating[4]:** ☐A ☐B ☒C+ ☐D ☐ F
	Form: ☐ symmetric ☒ minor asymmetry
Trunk Count: 1 **Height (ft.)**: 40	☐ major asymmetry ☐ stump sprout
Trunk DBH (in.): 23	☐ stag-head
Percent Canopy Cover: 70	**Crown Class[5]:** ☐ Decurrent ☒ Excurrent
Existing Terrain: ☐ Flat ☒ Slope	**Age Class:** ☐ immature ☐ semi-mature
Aesthetic Rating[6]: ☐ A ☒ B- ☐ C ☐ D ☐ F	☒ mature ☐over-mature/senescent
Overall Grade: ☐ A ☒ B- ☐ C ☐ D ☐ F	**Heritage Tree:** ☒ No ☐ Yes

CANOPY CHARACTERISTICS

	Dripline Radius (Feet)	Canopy to Grade (Feet)
N	31	10
NE		
E	15	15
SE		
S	15	15
SW		
W	37	2
NW		

CANOPY SPREAD (FEET): 46 X 52

PROPOSED ACTIONS

Root Collar Inspection:	☐
Monitor for Progress:	☐
Remove Deadwood/Prune :	☐
Risk Assessment	☐
Support Structure:	☐

IMPACTS & MITIGATIONS

In Impacted Area:	☐ Yes ☐ No
Proposed Land Use:	
Impacts:	
Mitigations:	

TREE HEALTH

Wound Wood Development:	☐ Excellent ☒ Average ☐ Poor ☐ None
Foliage Density:	☒ Normal ☐ Sparse
Weak crotches:	☐ No ☒ Yes
Oak Pit Scale:	☒ No ☐ Yes
Mainstem dieback:	☒ No ☐ Yes
Exposed Roots:	☒ No ☐ Yes
Epicormic growth:	☐ No ☒ Yes
Shading Out:	☐ No ☒ Yes
Cavities: ☐ None	☐ Trunk ☒ Branch
Exfoliating Bark:	☒ No ☐ Yes
Water Pocket(s):	☒ No ☐ Yes
Mechanical Damage:	☐ Trunk ☐ Branch ☒ None
Cankers:	☒ No ☐ Yes
Fungus:	☒ No ☐ Yes
Twig/ Branch Dieback:	☐ None ☒ Minor ☐ Moderate ☐Extensive
Vigor:	☐ Excellent ☒Average ☐ Fair ☐ Poor
Borers/ Ants /Termites:	☐ Minor ☒ Moderate ☐Extensive ☐None
Exudations:	☒ No ☐ Yes
Galls:	☒ No ☐ Yes

Comments & Notes: Old tag #50; old fire damage; leans north; small leaves

Photo #4945

[4] Health: A =Outstanding; B = Above Average; C = Average; D = Below Average; F = Dead
[5] Decurrent = Lacking Strong Central Leader. Excurrent = Strong Central Leader.
[6] Aesthetic (compared to standard tree of same species) : A = nearly symmetrical, healthy tree – F = Dead

OAK TREE FIELD DATA WORKSHEET *Property: 500 Baseline Road, La Verne*

Survey Date: 9/5/2017 **Tree Number: 3**

GENERAL CHARACTERISTICS	
Species: ☒ *Q. agrifolia* ☐ *Q. lobata* ☐ *Other (see below)*	**Health Rating[7]:** ☐A ☒B+ ☐C ☐D ☐F
	Form: ☐ symmetric ☒ minor asymmetry
Trunk Count: 1 **Height (ft.):** 40	☐ major asymmetry ☐ stump sprout
Trunk DBH (in.): 9	☐ stag-head
Percent Canopy Cover: 70	**Crown Class[8]:** ☐ Decurrent ☒ Excurrent
Existing Terrain: ☐ Flat ☒ Slope	**Age Class:** ☒ immature ☐ semi-mature
Aesthetic Rating[9]: ☐ A ☒ B ☐ C ☐ D ☐ F	☐ mature ☐over-mature/senescent
Overall Grade: ☐ A ☒ B+ ☐ C ☐ D ☐ F	**Heritage Tree:** ☒ No ☐ Yes

CANOPY CHARACTERISTICS		
	Dripline Radius (Feet)	Canopy to Grade (Feet)
N	20	20
NE		
E	15	7
SE		
S	12	25
SW		
W	5	20
NW		

CANOPY SPREAD (FEET): 32 X 20

TREE HEALTH	
Wound Wood Development:	☐ Excellent ☒ Average ☐ Poor ☐ None
Foliage Density:	☒ Normal ☐ Sparse
Weak crotches:	☒ No ☐ Yes
Oak Pit Scale:	☒ No ☐ Yes
Mainstem dieback:	☒ No ☐ Yes
Exposed Roots:	☒ No ☐ Yes
Epicormic growth:	☐ No ☒ Yes
Shading Out:	☐ No ☒ Yes
Cavities: ☒ None	☐ Trunk ☐ Branch
Exfoliating Bark:	☒ No ☐ Yes
Water Pocket(s):	☒ No ☐ Yes
Mechanical Damage:	☐ Trunk ☐ Branch ☒ None
Cankers:	☒ No ☐ Yes
Fungus:	☒ No ☐ Yes
Twig/ Branch Dieback:	☐ None ☒ Minor ☐ Moderate ☐Extensive
Vigor:	☐ Excellent ☒Average ☐ Fair ☐ Poor
Borers/ Ants /Termites:	☐ Minor ☐ Moderate ☐Extensive ☒None
Exudations:	☒ No ☐ Yes
Galls:	☒ No ☐ Yes

PROPOSED ACTIONS	
Root Collar Inspection:	☐
Monitor for Progress:	☐
Remove Deadwood/Prune :	☐
Risk Assessment	☐
Support Structure:	☐

IMPACTS & MITIGATIONS

In Impacted Area: ☐ Yes ☐ No

Proposed Land Use:

Impacts:

Mitigations:

Comments & Notes: slight lean NE; shaded out by #2

Photo #4946

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[7] Health: A =Outstanding; B = Above Average; C = Average; D = Below Average; F = Dead
[8] Decurrent = Lacking Strong Central Leader. Excurrent = Strong Central Leader.
[9] Aesthetic (compared to standard tree of same species) : A = nearly symmetrical, healthy tree – F = Dead

OAK TREE FIELD DATA WORKSHEET *Property: 500 Baseline Road, La Verne*

Survey Date: 9/5/2017 **Tree Number: 4**

GENERAL CHARACTERISTICS	
Species: ☒ *Q. agrifolia* ☐ *Q. lobata* ☐ *Other (see below)*	**Health Rating**[10]**:** ☒A ☐B ☐C ☐D ☐F
	Form: ☐ symmetric ☒ minor asymmetry
Trunk Count: 1 **Height (ft.)**: 25	☐ major asymmetry ☐ stump sprout
Trunk DBH (in.): 13	☐ stag-head
Percent Canopy Cover: 80	**Crown Class**[11]**:** ☐ Decurrent ☒ Excurrent
Existing Terrain: ☐ Flat ☒ Slope	**Age Class:** ☐ immature ☒ semi-mature
Aesthetic Rating[12]**:** ☐ A ☒ B ☐ C ☐ D ☐ F	☐ mature ☐over-mature/senescent
Overall Grade: ☐ A ☒ B+ ☐ C ☐ D ☐ F	**Heritage Tree:** ☒ No ☐ Yes

CANOPY CHARACTERISTICS			**TREE HEALTH**	
	Dripline Radius (Feet)	Canopy to Grade (Feet)	**Wound Wood Development:**	☒ Excellent ☐ Average ☐ Poor ☐ None
N	10	15	**Foliage Density:**	☒ Normal ☐ Sparse
NE			**Weak crotches:**	☒ No ☐ Yes
E	8	15	**Oak Pit Scale:**	☒ No ☐ Yes
SE			**Mainstem dieback:**	☒ No ☐ Yes
S	25	10	**Exposed Roots:**	☒ No ☐ Yes
SW			**Epicormic growth:**	☒ No ☐ Yes
W	17	20	**Shading Out:**	☒ No ☐ Yes
NW			**Cavities:** ☒ None	☐ Trunk ☐ Branch
			Exfoliating Bark:	☒ No ☐ Yes
CANOPY SPREAD (FEET): 35 X 25			**Water Pocket(s):**	☒ No ☐ Yes

PROPOSED ACTIONS		**Mechanical Damage:**	☒ Trunk ☒ Branch ☐ None
Root Collar Inspection:	☐	**Cankers:**	☒ No ☐ Yes
Monitor for Progress:	☐	**Fungus:**	☒ No ☐ Yes
Remove Deadwood/Prune :	☐	**Twig/ Branch Dieback:**	☐ None ☒ Minor ☐ Moderate ☐Extensive
Risk Assessment	☐		
Support Structure:	☐		
IMPACTS & MITIGATIONS		**Vigor:**	☐ Excellent ☒Average ☐ Fair ☐ Poor
In Impacted Area: ☐ Yes ☐ No		**Borers/ Ants /Termites:**	☐ Minor ☐ Moderate ☐Extensive ☒None
Proposed Land Use:			
Impacts:		**Exudations:**	☒ No ☐ Yes
Mitigations:		**Galls:**	☒ No ☐ Yes

Comments & Notes: leans south over slope; Surrounded by walnuts – none ordinance size; damage on north to trunk from fallen dead tree adjacent; broken branch

Photo #4947

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[10] Health: A =Outstanding; B = Above Average; C = Average; D = Below Average; F = Dead
[11] Decurrent = Lacking Strong Central Leader. Excurrent = Strong Central Leader.
[12] Aesthetic (compared to standard tree of same species) : A = nearly symmetrical, healthy tree – F = Dead

OAK TREE FIELD DATA WORKSHEET *Property: 500 Baseline Road, La Verne*

Survey Date: 9/5/2017 **Tree Number: 5**

GENERAL CHARACTERISTICS	
Species: ☒*Q. agrifolia* ☐ *Q. lobata* ☐ *Other (see below)*	**Health Rating**[13]**:** ☐A ☒B- ☐C ☐D ☐ F
	Form: ☒ symmetric ☐ minor asymmetry
Trunk Count: 1 **Height (ft.)**: 50	☐ major asymmetry ☐ stump sprout
Trunk DBH (in.): 23 @ 3'	☐ stag-head
Percent Canopy Cover: 65	**Crown Class**[14]**:** ☐ Decurrent ☒ Excurrent
Existing Terrain: ☐ Flat ☒ Slope	**Age Class:** ☐ immature ☐ semi-mature
Aesthetic Rating[15]**:** ☐ A ☒ B- ☐ C ☐ D ☐ F	☒ mature ☐over-mature/senescent
Overall Grade: ☐ A ☒ B- ☐ C ☐ D ☐ F	**Heritage Tree:** ☒ No ☐ Yes

CANOPY CHARACTERISTICS

	Dripline Radius (Feet)	Canopy to Grade (Feet)
N	17	20
NE		
E	20	25
SE		
S	25	10
SW		
W	18	20
NW		

CANOPY SPREAD (FEET): 42 X 38

TREE HEALTH

Wound Wood Development:	☐ Excellent ☒ Average ☐ Poor ☐ None
Foliage Density:	☒ Normal ☐ Sparse
Weak crotches:	☐ No ☒ Yes
Oak Pit Scale:	☒ No ☐ Yes
Mainstem dieback:	☐ No ☒ Yes
Exposed Roots:	☒ No ☐ Yes
Epicormic growth:	☐ No ☒ Yes
Shading Out:	☒ No ☐ Yes
Cavities: ☒ None	☐ Trunk ☐ Branch
Exfoliating Bark:	☒ No ☐ Yes
Water Pocket(s):	☒ No ☐ Yes
Mechanical Damage:	☐ Trunk ☐ Branch ☒ None
Cankers:	☒ No ☐ Yes
Fungus:	☒ No ☐ Yes
Twig/ Branch Dieback:	☐ None ☐ Minor ☒ Moderate ☐Extensive
Vigor:	☐ Excellent ☒Average ☐ Fair ☐ Poor
Borers/ Ants /Termites:	☐ Minor ☒ Moderate ☐Extensive ☐None
Exudations:	☒ No ☐ Yes
Galls:	☒ No ☐ Yes

PROPOSED ACTIONS

Root Collar Inspection:	☐
Monitor for Progress:	☐
Remove Deadwood/Prune :	☐
Risk Assessment	☐
Support Structure:	☐

IMPACTS & MITIGATIONS

In Impacted Area:	☐ Yes ☐ No
Proposed Land Use:	
Impacts:	
Mitigations:	

Comments & Notes: Old tag #24 & 53; old fire damage (mostly lower canopy & south side); woodpecker holes; leans south

Photo #4948

[13] Health: A =Outstanding; B = Above Average; C = Average; D = Below Average; F = Dead
[14] Decurrent = Lacking Strong Central Leader. Excurrent = Strong Central Leader.
[15] Aesthetic (compared to standard tree of same species) : A = nearly symmetrical, healthy tree – F = Dead

OAK TREE FIELD DATA WORKSHEET *Property: 500 Baseline Road, La Verne*

Survey Date: 9/5/2017 **Tree Number: 6**

GENERAL CHARACTERISTICS	
Species: ☒ *Q. agrifolia* ☐ *Q. lobata* ☐ *Other (see below)*	**Health Rating**[16]**:** ☐A ☒B ☐C ☐D ☐F
	Form: ☒ symmetric ☐ minor asymmetry
Trunk Count: 1 **Height (ft.)**: 25	☐ major asymmetry ☐ stump sprout
Trunk DBH (in.): 13	☐ stag-head
Percent Canopy Cover: 75	**Crown Class**[17]**:** ☒ Decurrent ☐ Excurrent
Existing Terrain: ☐ Flat ☒ Slope	**Age Class:** ☐ immature ☒ semi-mature
Aesthetic Rating[18]**:** ☐ A ☒ B ☐ C ☐ D ☐ F	☐ mature ☐over-mature/senescent
Overall Grade: ☐ A ☒ B ☐ C ☐ D ☐ F	**Heritage Tree:** ☒ No ☐ Yes

CANOPY CHARACTERISTICS		
	Dripline Radius (Feet)	Canopy to Grade (Feet)
N	21	10
NE		
E	15	10
SE		
S	20	10
SW		
W	20	20
NW		

CANOPY SPREAD (FEET): 41 X 35

PROPOSED ACTIONS	
Root Collar Inspection:	☐
Monitor for Progress:	☐
Remove Deadwood/Prune :	☐
Risk Assessment	☐
Support Structure:	☐

IMPACTS & MITIGATIONS
In Impacted Area: ☐ Yes ☐ No
Proposed Land Use:
Impacts:
Mitigations:

TREE HEALTH	
Wound Wood Development:	☐ Excellent ☒ Average ☐ Poor ☐ None
Foliage Density:	☒ Normal ☐ Sparse
Weak crotches:	☒ No ☐ Yes
Oak Pit Scale:	☒ No ☐ Yes
Mainstem dieback:	☒ No ☐ Yes
Exposed Roots:	☒ No ☐ Yes
Epicormic growth:	☐ No ☒ Yes
Shading Out:	☒ No ☐ Yes
Cavities: ☐ None	☐ Trunk ☒ Branch
Exfoliating Bark:	☒ No ☐ Yes
Water Pocket(s):	☒ No ☐ Yes
Mechanical Damage:	☐ Trunk ☐ Branch ☒ None
Cankers:	☒ No ☐ Yes
Fungus:	☒ No ☐ Yes
Twig/ Branch Dieback:	☐ None ☒ Minor ☐ Moderate ☐Extensive
Vigor:	☒ Excellent ☐Average ☐ Fair ☐ Poor
Borers/ Ants /Termites:	☐ Minor ☒ Moderate ☐Extensive ☐None
Exudations:	☒ No ☐ Yes
Galls:	☒ No ☐ Yes

Comments & Notes: Old tag #54; old fire damage; leans southwest

Photo #4953-L

[16] Health: A =Outstanding; B = Above Average; C = Average; D = Below Average; F = Dead
[17] Decurrent = Lacking Strong Central Leader. Excurrent = Strong Central Leader.
[18] Aesthetic (compared to standard tree of same species) : A = nearly symmetrical, healthy tree – F = Dead

OAK TREE FIELD DATA WORKSHEET *Property: 500 Baseline Road, La Verne*

Survey Date: 9/5/2017 **Tree Number: 7**

GENERAL CHARACTERISTICS			
Species: ☒ *Q. agrifolia* ☐ *Q. lobata* ☐ *Other (see below)*		**Health Rating**[19]**:** ☐A ☒B ☐C ☐D ☐F	
		Form: ☐ symmetric ☐ minor asymmetry	
Trunk Count: 1 **Height (ft.):** 20		☒ major asymmetry ☐ stump sprout	
Trunk DBH (in.): 10		☐ stag-head	
Percent Canopy Cover: 50		**Crown Class**[20]**:** ☒ Decurrent ☐ Excurrent	
Existing Terrain: ☐ Flat ☒ Slope		**Age Class:** ☒ immature ☐ semi-mature	
Aesthetic Rating[21]**:** ☐ A ☐ B ☒ C ☐ D ☐ F		☐ mature ☐ over-mature/senescent	
Overall Grade: ☐ A ☐ B ☒ C+ ☐ D ☐ F		**Heritage Tree:** ☒ No ☐ Yes	
CANOPY CHARACTERISTICS		**TREE HEALTH**	
	Dripline Radius (Feet) / Canopy to Grade (Feet)	**Wound Wood Development:**	☐ Excellent ☒ Average ☐ Poor ☐ None
N	25 / 0	**Foliage Density:**	☒ Normal ☐ Sparse
NE		**Weak crotches:**	☒ No ☐ Yes
E	5 / 3	**Oak Pit Scale:**	☒ No ☐ Yes
SE		**Mainstem dieback:**	☒ No ☐ Yes
S	0 / 0	**Exposed Roots:**	☒ No ☐ Yes
SW		**Epicormic growth:**	☐ No ☒ Yes
W	4 / 3	**Shading Out:**	☐ No ☒ Yes
NW		**Cavities:** ☒ None	☐ Trunk ☐ Branch
		Exfoliating Bark:	☒ No ☐ Yes
CANOPY SPREAD (FEET): 25 X 9		**Water Pocket(s):**	☒ No ☐ Yes
PROPOSED ACTIONS		**Mechanical Damage:**	☐ Trunk ☐ Branch ☒ None
Root Collar Inspection:	☐	**Cankers:**	☒ No ☐ Yes
Monitor for Progress:	☐	**Fungus:**	☒ No ☐ Yes
Remove Deadwood/Prune :	☐	**Twig/ Branch Dieback:**	☐ None ☒ Minor ☐ Moderate ☐ Extensive
Risk Assessment	☐		
Support Structure:	☐		
IMPACTS & MITIGATIONS		**Vigor:**	☐ Excellent ☒ Average ☐ Fair ☐ Poor
In Impacted Area: ☐ Yes ☐ No		**Borers/ Ants /Termites:**	☐ Minor ☐ Moderate ☐ Extensive ☒ None
Proposed Land Use:			
Impacts:		**Exudations:**	☒ No ☐ Yes
Mitigations:		**Galls:**	☒ No ☐ Yes

Comments & Notes: Old tag #55; leans north; old fire damage; shaded out by #6; interior dieback

Photo #4953-R

[19] Health: A =Outstanding; B = Above Average; C = Average; D = Below Average; F = Dead
[20] Decurrent = Lacking Strong Central Leader. Excurrent = Strong Central Leader.
[21] Aesthetic (compared to standard tree of same species) : A = nearly symmetrical, healthy tree – F = Dead

OAK TREE FIELD DATA WORKSHEET *Property: 500 Baseline Road, La Verne*

Survey Date: 9/5/2017 **Tree Number: 8**

GENERAL CHARACTERISTICS				
Species: ☒ *Q. agrifolia* ☐ *Q. lobata* ☐ *Other (see below)*			**Health Rating**[22]**:** ☒A- ☐B ☐C ☐D ☐ F	
			Form: ☐ symmetric ☒ minor asymmetry	
Trunk Count: 1 **Height (ft.)**: 45			☐ major asymmetry ☐ stump sprout	
Trunk DBH (in.): 26			☐ stag-head	
Percent Canopy Cover: 75			**Crown Class**[23]**:** ☐ Decurrent ☒ Excurrent	
Existing Terrain: ☐ Flat ☒ Slope			**Age Class:** ☐ immature ☐ semi-mature	
Aesthetic Rating[24]**:** ☒ A- ☐ B ☐ C ☐ D ☐ F			☒ mature ☐over-mature/senescent	
Overall Grade: ☒ A- ☐ B ☐ C ☐ D ☐ F			**Heritage Tree:** ☒ No ☐ Yes	
CANOPY CHARACTERISTICS			**TREE HEALTH**	
	Dripline Radius (Feet)	Canopy to Grade (Feet)	**Wound Wood Development:**	☐ Excellent ☒ Average ☐ Poor ☐ None
N	25	25	**Foliage Density:**	☒ Normal ☐ Sparse
NE			**Weak crotches:**	☒ No ☐ Yes
E	10	15	**Oak Pit Scale:**	☒ No ☐ Yes
SE			**Mainstem dieback:**	☒ No ☐ Yes
S	12	10	**Exposed Roots:**	☒ No ☐ Yes
SW			**Epicormic growth:**	☐ No ☒ Yes
W	30	5	**Shading Out:**	☒ No ☐ Yes
NW			**Cavities:** ☒ None	☐ Trunk ☐ Branch
			Exfoliating Bark:	☒ No ☐ Yes
CANOPY SPREAD (FEET): 37 X 40			**Water Pocket(s):**	☒ No ☐ Yes
PROPOSED ACTIONS			**Mechanical Damage:**	☐ Trunk ☐ Branch ☒ None
Root Collar Inspection:	☐		**Cankers:**	☒ No ☐ Yes
Monitor for Progress:	☐		**Fungus:**	☒ No ☐ Yes
Remove Deadwood/Prune :	☐		**Twig/ Branch Dieback:**	☐ None ☒ Minor ☐ Moderate ☐Extensive
Risk Assessment	☐			
Support Structure:	☐			
IMPACTS & MITIGATIONS			**Vigor:**	☐ Excellent ☒Average ☐ Fair ☐ Poor
In Impacted Area: ☐ Yes ☐ No			**Borers/ Ants /Termites:**	☒ Minor ☐ Moderate ☐Extensive ☐None
Proposed Land Use:				
Impacts:			**Exudations:**	☒ No ☐ Yes
Mitigations:			**Galls:**	☒ No ☐ Yes

Comments & Notes: Old tag #56 & 109; old fire damage; tagged on south side; surrounded by poison oak; decay where branches broke off; unbalanced to west

Photo #4981

[22] Health: A =Outstanding; B = Above Average; C = Average; D = Below Average; F = Dead
[23] Decurrent = Lacking Strong Central Leader. Excurrent = Strong Central Leader.
[24] Aesthetic (compared to standard tree of same species) : A = nearly symmetrical, healthy tree – F = Dead

OAK TREE FIELD DATA WORKSHEET *Property: 500 Baseline Road, La Verne*

Survey Date: 9/5/2017 **Tree Number: 9**

GENERAL CHARACTERISTICS			
Species: ☐ *Q. agrifolia* ☐ *Q. lobata* ☒ *Other (see below)*			**Health Rating**[25]**:** ☐A ☐B ☐C ☐D ☒ F
Platanus racemosa (California sycamore)			**Form:** ☐ symmetric ☐ minor asymmetry
Trunk Count: 1 **Height (ft.)**: 25			☒ major asymmetry ☐ stump sprout
Trunk DBH (in.): 9			☐ stag-head
Percent Canopy Cover: 10			**Crown Class**[26]**:** ☒ Decurrent ☐ Excurrent
Existing Terrain: ☐ Flat ☒ Slope			**Age Class:** ☐ immature ☐ semi-mature
Aesthetic Rating[27]**:** ☐ A ☐ B ☐ C ☐ D ☒ F			☒ mature ☐over-mature/senescent
Overall Grade: ☐ A ☐ B ☐ C ☐ D ☒ F			**Heritage Tree:** ☒ No ☐ Yes
CANOPY CHARACTERISTICS			**TREE HEALTH**
	Dripline Radius (Feet)	Canopy to Grade (Feet)	**Wound Wood Development:** ☐ Excellent ☐ Average ☒ Poor ☐ None
N			**Foliage Density:** ☐ Normal ☒ Sparse
NE			**Weak crotches:** ☐ No ☒ Yes
E			**Oak Pit Scale:** ☒ No ☐ Yes
SE	**DEAD**		**Mainstem dieback:** ☐ No ☒ Yes
S			**Exposed Roots:** ☒ No ☐ Yes
SW			**Epicormic growth:** ☒ No ☐ Yes
W			**Shading Out:** ☒ No ☐ Yes
NW			**Cavities:** ☒ None ☐ Trunk ☐ Branch
			Exfoliating Bark: ☒ No ☐ Yes
CANOPY SPREAD (FEET): N/A			**Water Pocket(s):** ☒ No ☐ Yes
PROPOSED ACTIONS			**Mechanical Damage:** ☐ Trunk ☐ Branch ☒ None
Root Collar Inspection:	☐		**Cankers:** ☒ No ☐ Yes
Monitor for Progress:	☐		**Fungus:** ☒ No ☐ Yes
Remove Deadwood/Prune :	☐		**Twig/ Branch Dieback:** ☐ None ☐ Minor ☐ Moderate ☒Extensive
Risk Assessment	☐		
Support Structure:	☐		
IMPACTS & MITIGATIONS			**Vigor:** ☐ Excellent ☐Average ☐ Fair ☒ Poor
In Impacted Area: ☐ Yes ☐ No			**Borers/ Ants /Termites:** ☐ Minor ☐ Moderate ☒Extensive ☐None
Proposed Land Use:			
Impacts:			**Exudations:** ☒ No ☐ Yes
Mitigations:			**Galls:** ☒ No ☐ Yes

Comments & Notes: Fallen DEAD (all trunks)

Photo #4971

[25] Health: A =Outstanding; B = Above Average; C = Average; D = Below Average; F = Dead
[26] Decurrent = Lacking Strong Central Leader. Excurrent = Strong Central Leader.
[27] Aesthetic (compared to standard tree of same species) : A = nearly symmetrical, healthy tree – F = Dead

OAK TREE FIELD DATA WORKSHEET *Property: 500 Baseline Road, La Verne*

Survey Date: 9/5/2017 **Tree Number: 10**

GENERAL CHARACTERISTICS	
Species: ☒ *Q. agrifolia* ☐ *Q. lobata* ☐ *Other (see below)*	**Health Rating[28]:** ☐A ☒B- ☐C ☐D ☐F
	Form: ☐ symmetric ☒ minor asymmetry
Trunk Count: 1 **Height (ft.)**: 45	☐ major asymmetry ☐ stump sprout
Trunk DBH (in.): 24	☐ stag-head
Percent Canopy Cover: 70	**Crown Class[29]:** ☐ Decurrent ☒ Excurrent
Existing Terrain: ☐ Flat ☒ Slope	**Age Class:** ☐ immature ☐ semi-mature
Aesthetic Rating[30]: ☐A ☒B ☐C ☐D ☐F	☒ mature ☐over-mature/senescent
Overall Grade: ☐A ☒B ☐C ☐D ☐F	**Heritage Tree:** ☒ No ☐ Yes

CANOPY CHARACTERISTICS			**TREE HEALTH**	
	Dripline Radius (Feet)	Canopy to Grade (Feet)	**Wound Wood Development:**	☐ Excellent ☒ Average ☐ Poor ☐ None
N	25	20	**Foliage Density:**	☒ Normal ☐ Sparse
NE			**Weak crotches:**	☒ No ☐ Yes
E	10	25	**Oak Pit Scale:**	☒ No ☐ Yes
SE			**Mainstem dieback:**	☒ No ☐ Yes
S	20	20	**Exposed Roots:**	☐ No ☒ Yes
SW			**Epicormic growth:**	☐ No ☒ Yes
W	26	20	**Shading Out:**	☒ No ☐ Yes
NW			**Cavities:** ☒ None	☐ Trunk ☐ Branch
			Exfoliating Bark:	☒ No ☐ Yes
CANOPY SPREAD (FEET): 45 X 36			**Water Pocket(s):**	☒ No ☐ Yes

PROPOSED ACTIONS			
		Mechanical Damage:	☐ Trunk ☐ Branch ☒ None
Root Collar Inspection:	☐	**Cankers:**	☒ No ☐ Yes
Monitor for Progress:	☐	**Fungus:**	☒ No ☐ Yes
Remove Deadwood/Prune :	☐	**Twig/ Branch Dieback:**	☐ None ☒ Minor ☐ Moderate ☐Extensive
Risk Assessment	☐		
Support Structure:	☐		

IMPACTS & MITIGATIONS		
	Vigor:	☐ Excellent ☒Average ☐ Fair ☐ Poor
In Impacted Area: ☐ Yes ☐ No	**Borers/ Ants /Termites:**	☒ Minor ☐ Moderate ☐Extensive ☐None
Proposed Land Use:		
Impacts:	**Exudations:**	☒ No ☐ Yes
Mitigations:	**Galls:**	☒ No ☐ Yes

Comments & Notes: surrounded by poison oak; Old tag #64 & 102; old fire damage; erosion on north with minor exposed roots; recent fire damage to northern canopy – foliage scorched (Rodeo Fire – 7/23/17)

Photo #4972

[28] Health: A =Outstanding; B = Above Average; C = Average; D = Below Average; F = Dead
[29] Decurrent = Lacking Strong Central Leader. Excurrent = Strong Central Leader.
[30] Aesthetic (compared to standard tree of same species) : A = nearly symmetrical, healthy tree – F = Dead

OAK TREE FIELD DATA WORKSHEET *Property: 500 Baseline Road, La Verne*

Survey Date: 9/5/2017 **Tree Number: 11**

GENERAL CHARACTERISTICS	
Species: ☒ *Q. agrifolia* ☐ *Q. lobata* ☐ *Other (see below)*	**Health Rating[31]:** ☐A ☒B ☐C ☐D ☐F
	Form: ☒ symmetric ☐ minor asymmetry
Trunk Count: 1 **Height (ft.):** 40	☐ major asymmetry ☐ stump sprout
Trunk DBH (in.): 23	☐ stag-head
Percent Canopy Cover: 60	**Crown Class[32]:** ☐ Decurrent ☒ Excurrent
Existing Terrain: ☐ Flat ☒ Slope	**Age Class:** ☐ immature ☐ semi-mature
Aesthetic Rating[33]: ☒ A- ☐ B ☐ C ☐ D ☐ F	☒ mature ☐over-mature/senescent
Overall Grade: ☐ A ☒ B+ ☐ C ☐ D ☐ F	**Heritage Tree:** ☒ No ☐ Yes

CANOPY CHARACTERISTICS		
	Dripline Radius (Feet)	Canopy to Grade (Feet)
N	12	10
NE		
E	25	20
SE		
S	30	15
SW		
W	32	20
NW		

CANOPY SPREAD (FEET): 42 X 57

PROPOSED ACTIONS	
Root Collar Inspection:	☐
Monitor for Progress:	☐
Remove Deadwood/Prune :	☐
Risk Assessment	☐
Support Structure:	☐

IMPACTS & MITIGATIONS
In Impacted Area: ☐ Yes ☐ No
Proposed Land Use:
Impacts:
Mitigations:

TREE HEALTH	
Wound Wood Development:	☐ Excellent ☒ Average ☐ Poor ☐ None
Foliage Density:	☒ Normal ☐ Sparse
Weak crotches:	☒ No ☐ Yes
Oak Pit Scale:	☒ No ☐ Yes
Mainstem dieback:	☒ No ☐ Yes
Exposed Roots:	☒ No ☐ Yes
Epicormic growth:	☐ No ☒ Yes
Shading Out:	☒ No ☐ Yes
Cavities: ☒ None	☐ Trunk ☐ Branch
Exfoliating Bark:	☒ No ☐ Yes
Water Pocket(s):	☒ No ☐ Yes
Mechanical Damage:	☐ Trunk ☐ Branch ☒ None
Cankers:	☒ No ☐ Yes
Fungus:	☒ No ☐ Yes
Twig/ Branch Dieback:	☐ None ☒ Minor ☐ Moderate ☐Extensive
Vigor:	☐ Excellent ☒Average ☐ Fair ☐ Poor
Borers/ Ants /Termites:	☒ Minor ☐ Moderate ☐Extensive ☐None
Exudations:	☒ No ☐ Yes
Galls:	☒ No ☐ Yes

Comments & Notes: surrounded by poison oak; old tag #149; slight lean west; old fire damage

Photo #4977

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[31] Health: A =Outstanding; B = Above Average; C = Average; D = Below Average; F = Dead
[32] Decurrent = Lacking Strong Central Leader. Excurrent = Strong Central Leader.
[33] Aesthetic (compared to standard tree of same species) : A = nearly symmetrical, healthy tree – F = Dead

OAK TREE FIELD DATA WORKSHEET *Property: 500 Baseline Road, La Verne*

Survey Date: 9/5/2017 **Tree Number: 12**

GENERAL CHARACTERISTICS	
Species: ☒ *Q. agrifolia* ☐ *Q. lobata* ☐ *Other (see below)*	**Health Rating**[34]**:** ☐A ☒B ☐C ☐D ☐F
	Form: ☐ symmetric ☐ minor asymmetry
Trunk Count: 1 **Height (ft.)**: 25	☒ major asymmetry ☐ stump sprout
Trunk DBH (in.): 8	☐ stag-head
Percent Canopy Cover: 30	**Crown Class**[35]**:** ☒ Decurrent ☐ Excurrent
Existing Terrain: ☐ Flat ☒ Slope	**Age Class:** ☐ immature ☒ semi-mature
Aesthetic Rating[36]**:** ☐ A ☐ B ☒ C ☐ D ☐ F	☐ mature ☐over-mature/senescent
Overall Grade: ☐ A ☐ B ☒ C+ ☐ D ☐ F	**Heritage Tree:** ☒ No ☐ Yes

CANOPY CHARACTERISTICS			**TREE HEALTH**	
	Dripline Radius (Feet)	Canopy to Grade (Feet)	**Wound Wood Development:**	☐ Excellent ☒ Average ☐ Poor ☐ None
N	0	0	**Foliage Density:**	☒ Normal ☐ Sparse
NE			**Weak crotches:**	☒ No ☐ Yes
E	20	6	**Oak Pit Scale:**	☒ No ☐ Yes
SE			**Mainstem dieback:**	☒ No ☐ Yes
S	0	0	**Exposed Roots:**	☒ No ☐ Yes
SW			**Epicormic growth:**	☐ No ☒ Yes
W	2	10	**Shading Out:**	☐ No ☒ Yes
NW			**Cavities:** ☒ None	☐ Trunk ☐ Branch
			Exfoliating Bark:	☒ No ☐ Yes
CANOPY SPREAD (FEET): 0 X 22			**Water Pocket(s):**	☒ No ☐ Yes

PROPOSED ACTIONS		**Mechanical Damage:**	☐ Trunk ☐ Branch ☒ None
Root Collar Inspection:	☐	**Cankers:**	☒ No ☐ Yes
Monitor for Progress:	☐	**Fungus:**	☒ No ☐ Yes
Remove Deadwood/Prune :	☐	**Twig/ Branch Dieback:**	☐ None ☒ Minor ☐ Moderate ☐Extensive
Risk Assessment	☐		
Support Structure:	☐		

IMPACTS & MITIGATIONS	**Vigor:**	☐ Excellent ☒Average ☐ Fair ☐ Poor
In Impacted Area: ☐ Yes ☐ No	**Borers/ Ants /Termites:**	☐ Minor ☐ Moderate ☐Extensive ☒None
Proposed Land Use:		
Impacts:	**Exudations:**	☒ No ☐ Yes
Mitigations:	**Galls:**	☒ No ☐ Yes

Comments & Notes: surrounded by poison oak; heavy lean northeast; old fire damage; old tag #150

Photo #4978

[34] Health: A =Outstanding; B = Above Average; C = Average; D = Below Average; F = Dead
[35] Decurrent = Lacking Strong Central Leader. Excurrent = Strong Central Leader.
[36] Aesthetic (compared to standard tree of same species) : A = nearly symmetrical, healthy tree – F = Dead

OAK TREE FIELD DATA WORKSHEET *Property: 500 Baseline Road, La Verne*

Survey Date: 9/5/2017 **Tree Number: 13**

GENERAL CHARACTERISTICS	
Species: ☒ *Q. agrifolia* ☐ *Q. lobata* ☐ *Other (see below)*	**Health Rating**[37]**:** ☐A ☐B ☒C ☐D ☐F
	Form: ☐ symmetric ☒ minor asymmetry
Trunk Count: 1 **Height (ft.)**: 40	☐ major asymmetry ☐ stump sprout
Trunk DBH (in.): 19	☐ stag-head
Percent Canopy Cover: 65	**Crown Class**[38]**:** ☐ Decurrent ☒ Excurrent
Existing Terrain: ☐ Flat ☒ Slope	**Age Class:** ☐ immature ☐ semi-mature
Aesthetic Rating[39]**:** ☐ A ☒ B- ☐ C ☐ D ☐ F	☒ mature ☐over-mature/senescent
Overall Grade: ☐ A ☐ B ☒ C+ ☐ D ☐ F	**Heritage Tree:** ☒ No ☐ Yes

CANOPY CHARACTERISTICS

	Dripline Radius (Feet)	Canopy to Grade (Feet)
N	24	30
NE		
E	13	10
SE		
S	8	30
SW		
W	25	20
NW		

CANOPY SPREAD (FEET): 32 X 38

PROPOSED ACTIONS

Root Collar Inspection:	☐
Monitor for Progress:	☐
Remove Deadwood/Prune :	☐
Risk Assessment	☐
Support Structure:	☐

IMPACTS & MITIGATIONS

In Impacted Area:	☐ Yes ☐ No
Proposed Land Use:	
Impacts:	
Mitigations:	

TREE HEALTH

Wound Wood Development:	☐ Excellent ☒ Average ☐ Poor ☐ None
Foliage Density:	☒ Normal ☐ Sparse
Weak crotches:	☒ No ☐ Yes
Oak Pit Scale:	☒ No ☐ Yes
Mainstem dieback:	☒ No ☐ Yes
Exposed Roots:	☐ No ☒ Yes
Epicormic growth:	☐ No ☒ Yes
Shading Out:	☒ No ☐ Yes
Cavities: ☒ None	☐ Trunk ☐ Branch
Exfoliating Bark:	☒ No ☐ Yes
Water Pocket(s):	☒ No ☐ Yes
Mechanical Damage:	☐ Trunk ☐ Branch ☒ None
Cankers:	☒ No ☐ Yes
Fungus:	☒ No ☐ Yes
Twig/ Branch Dieback:	☐ None ☐ Minor ☒ Moderate ☐Extensive
Vigor:	☐ Excellent ☒Average ☐ Fair ☐ Poor
Borers/ Ants /Termites:	☒ Minor ☐ Moderate ☐Extensive ☐None
Exudations:	☒ No ☐ Yes
Galls:	☒ No ☐ Yes

Comments & Notes: surrounded by poison oak; leans south; erosion on north with exposed roots; recent fire damage to east canopy – foliage scorched (Rodeo Fire – 7/23/17)

Photo #4976

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[37] Health: A =Outstanding; B = Above Average; C = Average; D = Below Average; F = Dead
[38] Decurrent = Lacking Strong Central Leader. Excurrent = Strong Central Leader.
[39] Aesthetic (compared to standard tree of same species) : A = nearly symmetrical, healthy tree – F = Dead

OAK TREE FIELD DATA WORKSHEET *Property: 500 Baseline Road, La Verne*

Survey Date: 9/5/2017 **Tree Number: 14**

GENERAL CHARACTERISTICS	
Species: ☒*Q. agrifolia* ☐ *Q. lobata* ☐ *Other (see below)*	**Health Rating[40]:** ☐A ☐B ☒C ☐D ☐ F
	Form: ☒ symmetric ☐ minor asymmetry
Trunk Count: 1 **Height (ft.)**: 30	☐ major asymmetry ☐ stump sprout
Trunk DBH (in.): 10	☐ stag-head
Percent Canopy Cover: 60	**Crown Class[41]:** ☐ Decurrent ☒ Excurrent
Existing Terrain: ☐ Flat ☒ Slope	**Age Class:** ☐ immature ☒ semi-mature
Aesthetic Rating[42]: ☐ A ☒ B- ☐ C ☐ D ☐ F	☐ mature ☐over-mature/senescent
Overall Grade: ☐ A ☐ B ☒ C+ ☐ D ☐ F	**Heritage Tree:** ☒ No ☐ Yes

CANOPY CHARACTERISTICS

	Dripline Radius (Feet)	Canopy to Grade (Feet)
N	8	25
NE		
E	18	20
SE		
S	15	10
SW		
W	15	20
NW		

CANOPY SPREAD (FEET): 23 X 33

PROPOSED ACTIONS

Root Collar Inspection:	☐
Monitor for Progress:	☐
Remove Deadwood/Prune :	☐
Risk Assessment	☐
Support Structure:	☐

IMPACTS & MITIGATIONS

In Impacted Area:	☐ Yes ☐ No
Proposed Land Use:	
Impacts:	
Mitigations:	

TREE HEALTH

Wound Wood Development:	☐ Excellent ☒ Average ☐ Poor ☐ None
Foliage Density:	☒ Normal ☐ Sparse
Weak crotches:	☒ No ☐ Yes
Oak Pit Scale:	☒ No ☐ Yes
Mainstem dieback:	☒ No ☐ Yes
Exposed Roots:	☐ No ☒ Yes
Epicormic growth:	☐ No ☒ Yes
Shading Out:	☐ No ☒ Yes
Cavities: ☒ None	☐ Trunk ☐ Branch
Exfoliating Bark:	☒ No ☐ Yes
Water Pocket(s):	☒ No ☐ Yes
Mechanical Damage:	☐ Trunk ☐ Branch ☒ None
Cankers:	☒ No ☐ Yes
Fungus:	☒ No ☐ Yes
Twig/ Branch Dieback:	☐ None ☒ Minor ☐ Moderate ☐Extensive
Vigor:	☐ Excellent ☒Average ☐ Fair ☐ Poor
Borers/ Ants /Termites:	☒ Minor ☐ Moderate ☐Extensive ☐None
Exudations:	☒ No ☐ Yes
Galls:	☒ No ☐ Yes

Comments & Notes: Slope eroding to north; codoms at 10'; brush clearance within dripline to north from recent fire (Rodeo Fire – 7/23/17)

Photo #4969

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[40] Health: A =Outstanding; B = Above Average; C = Average; D = Below Average; F = Dead
[41] Decurrent = Lacking Strong Central Leader. Excurrent = Strong Central Leader.
[42] Aesthetic (compared to standard tree of same species) : A = nearly symmetrical, healthy tree – F = Dead

OAK TREE FIELD DATA WORKSHEET *Property: 500 Baseline Road, La Verne*

Survey Date: 9/5/2017 **Tree Number: 15**

GENERAL CHARACTERISTICS			
Species: ☒ *Q. agrifolia* ☐ *Q. lobata* ☐ *Other (see below)*		**Health Rating**[43]**:** ☐A ☐B ☒C- ☐D ☐F	
		Form: ☐ symmetric ☒ minor asymmetry	
Trunk Count: 1 **Height (ft.)**: 30		☐ major asymmetry ☐ stump sprout	
Trunk DBH (in.): 16		☐ stag-head	
Percent Canopy Cover: 20 (due to fire)		**Crown Class**[44]**:** ☐ Decurrent ☒ Excurrent	
Existing Terrain: ☐ Flat ☒ Slope		**Age Class:** ☐ immature ☒ semi-mature	
Aesthetic Rating[45]**:** ☐ A ☐ B ☒ C- ☐ D ☐ F		☐ mature ☐over-mature/senescent	
Overall Grade: ☐ A ☐ B ☒ C- ☐ D ☐ F		**Heritage Tree:** ☒ No ☐ Yes	
CANOPY CHARACTERISTICS		**TREE HEALTH**	
	Dripline Radius (Feet)	Canopy to Grade (Feet)	**Wound Wood Development:** ☐ Excellent ☒ Average ☐ Poor ☐ None
N	25	35	**Foliage Density:** ☐ Normal ☒ Sparse
NE			**Weak crotches:** ☒ No ☐ Yes
E	20	30	**Oak Pit Scale:** ☒ No ☐ Yes
SE			**Mainstem dieback:** ☐ No ☒ Yes
S	15	15	**Exposed Roots:** ☐ No ☒ Yes
SW			**Epicormic growth:** ☐ No ☒ Yes
W	25	20	**Shading Out:** ☐ No ☒ Yes
NW			**Cavities:** ☒ None ☐ Trunk ☐ Branch
			Exfoliating Bark: ☒ No ☐ Yes
CANOPY SPREAD (FEET): 40 X 45			**Water Pocket(s):** ☒ No ☐ Yes
PROPOSED ACTIONS			**Mechanical Damage:** ☐ Trunk ☐ Branch ☒ None
Root Collar Inspection:	☐		**Cankers:** ☒ No ☐ Yes
Monitor for Progress:	☐		**Fungus:** ☒ No ☐ Yes
Remove Deadwood/Prune :	☐		**Twig/ Branch Dieback:** ☐ None ☐ Minor ☐ Moderate ☒Extensive
Risk Assessment	☐		
Support Structure:	☐		
IMPACTS & MITIGATIONS			**Vigor:** ☐ Excellent ☐Average ☒ Fair ☐ Poor
In Impacted Area: ☐ Yes ☐ No			**Borers/ Ants /Termites:** ☒ Minor ☐ Moderate ☐Extensive ☐None
Proposed Land Use:			
Impacts:			**Exudations:** ☒ No ☐ Yes
Mitigations:			**Galls:** ☒ No ☐ Yes

Comments & Notes: Old tag #172; brush clearance within dripline to west; recent fire damage to north canopy - foliage scorched; (Rodeo Fire – 7/23/17)

Photo #4970

[43] Health: A =Outstanding; B = Above Average; C = Average; D = Below Average; F = Dead
[44] Decurrent = Lacking Strong Central Leader. Excurrent = Strong Central Leader.
[45] Aesthetic (compared to standard tree of same species) : A = nearly symmetrical, healthy tree – F = Dead

OAK TREE FIELD DATA WORKSHEET *Property: 500 Baseline Road, La Verne*

Survey Date: 9/5/2017 **Tree Number: 16**

GENERAL CHARACTERISTICS			
Species: ☒ *Q. agrifolia* ☐ *Q. lobata* ☐ *Other (see below)*		**Health Rating[46]:** ☐A ☐B ☒C ☐D ☐F	
		Form: ☐ symmetric ☐ minor asymmetry	
Trunk Count: 1 **Height (ft.):** 20		☒ major asymmetry ☐ stump sprout	
Trunk DBH (in.): 11		☐ stag-head	
Percent Canopy Cover: 30		**Crown Class[47]:** ☐ Decurrent ☒ Excurrent	
Existing Terrain: ☐ Flat ☒ Slope		**Age Class:** ☐ immature ☒ semi-mature	
Aesthetic Rating[48]: ☐ A ☐ B ☒ C- ☐ D ☐ F		☐ mature ☐over-mature/senescent	
Overall Grade: ☐ A ☐ B ☒ C- ☐ D ☐ F		**Heritage Tree:** ☒ No ☐ Yes	

CANOPY CHARACTERISTICS			**TREE HEALTH**	
	Dripline Radius (Feet)	Canopy to Grade (Feet)	**Wound Wood Development:**	☐ Excellent ☐ Average ☒ Poor ☐ None
N	10	4	**Foliage Density:**	☒ Normal ☐ Sparse
NE			**Weak crotches:**	☒ No ☐ Yes
E	5	0	**Oak Pit Scale:**	☒ No ☐ Yes
SE			**Mainstem dieback:**	☐ No ☒ Yes
S	8	3	**Exposed Roots:**	☐ No ☒ Yes
SW			**Epicormic growth:**	☐ No ☒ Yes
W	30	10	**Shading Out:**	☐ No ☒ Yes
NW			**Cavities:** ☒ None	☐ Trunk ☐ Branch
			Exfoliating Bark:	☒ No ☐ Yes
CANOPY SPREAD (FEET): 18 X 35			**Water Pocket(s):**	☒ No ☐ Yes

PROPOSED ACTIONS		**Mechanical Damage:**	☐ Trunk ☐ Branch ☒ None
Root Collar Inspection:	☐	**Cankers:**	☒ No ☐ Yes
Monitor for Progress:	☐	**Fungus:**	☒ No ☐ Yes
Remove Deadwood/Prune :	☐	**Twig/ Branch Dieback:**	☐ None ☐ Minor ☒ Moderate ☐Extensive
Risk Assessment	☐		
Support Structure:	☐		

IMPACTS & MITIGATIONS	**Vigor:**	☐ Excellent ☐Average ☒ Fair ☐ Poor
In Impacted Area: ☐ Yes ☐ No	**Borers/ Ants /Termites:**	☐ Minor ☒ Moderate ☐Extensive ☐None
Proposed Land Use:		
Impacts:	**Exudations:**	☒ No ☐ Yes
Mitigations:	**Galls:**	☒ No ☐ Yes

Comments & Notes: surrounded by poison oak; has fallen to west but still growing; old fire damage

Photo #4979

[46] Health: A =Outstanding; B = Above Average; C = Average; D = Below Average; F = Dead
[47] Decurrent = Lacking Strong Central Leader. Excurrent = Strong Central Leader.
[48] Aesthetic (compared to standard tree of same species) : A = nearly symmetrical, healthy tree – F = Dead

OAK TREE FIELD DATA WORKSHEET *Property: 500 Baseline Road, La Verne*

Survey Date: 9/5/2017 **Tree Number: 17**

GENERAL CHARACTERISTICS			
Species: ☒*Q. agrifolia* ☐ *Q. lobata* ☐ *Other (see below)*		**Health Rating**[49]**:** ☐A ☒B- ☐C ☐D ☐ F	
		Form: ☐ symmetric ☐ minor asymmetry	
Trunk Count: 1 **Height (ft.):** 35		☒ major asymmetry ☐ stump sprout	
Trunk DBH (in.): 15		☐ stag-head	
Percent Canopy Cover: 70		**Crown Class**[50]**:** ☐ Decurrent ☒ Excurrent	
Existing Terrain: ☐ Flat ☒ Slope		**Age Class:** ☐ immature ☒ semi-mature	
Aesthetic Rating[51]**:** ☐ A ☒ B- ☐ C ☐ D ☐ F		☐ mature ☐over-mature/senescent	
Overall Grade: ☐ A ☒ B- ☐ C ☐ D ☐ F		**Heritage Tree:** ☒ No ☐ Yes	
CANOPY CHARACTERISTICS		**TREE HEALTH**	
	Dripline Radius (Feet)	Canopy to Grade (Feet)	**Wound Wood Development:** ☐ Excellent ☒ Average ☐ Poor ☐ None
N	25	30	**Foliage Density:** ☒ Normal ☐ Sparse
NE			**Weak crotches:** ☒ No ☐ Yes
E	0	0	**Oak Pit Scale:** ☒ No ☐ Yes
SE			**Mainstem dieback:** ☒ No ☐ Yes
S	10	4	**Exposed Roots:** ☒ No ☐ Yes
SW			**Epicormic growth:** ☐ No ☒ Yes
W	30	15	**Shading Out:** ☐ No ☒ Yes
NW			**Cavities:** ☒ None ☐ Trunk ☐ Branch
			Exfoliating Bark: ☒ No ☐ Yes
CANOPY SPREAD (FEET): 35 X 30			**Water Pocket(s):** ☒ No ☐ Yes
PROPOSED ACTIONS			**Mechanical Damage:** ☐ Trunk ☐ Branch ☒ None
Root Collar Inspection:	☐		**Cankers:** ☒ No ☐ Yes
Monitor for Progress:	☐		**Fungus:** ☒ No ☐ Yes
Remove Deadwood/Prune :	☐		**Twig/ Branch Dieback:** ☐ None ☒ Minor ☐ Moderate ☐Extensive
Risk Assessment	☐		
Support Structure:	☐		
IMPACTS & MITIGATIONS			**Vigor:** ☐ Excellent ☒Average ☐ Fair ☐ Poor
In Impacted Area: ☐ Yes ☐ No			**Borers/ Ants /Termites:** ☒ Minor ☐ Moderate ☐Extensive ☐None
Proposed Land Use:			
Impacts:			**Exudations:** ☒ No ☐ Yes
Mitigations:			**Galls:** ☒ No ☐ Yes

Comments & Notes: surrounded by poison oak; old fire damage; leaning west; old tag #107

Photo #4980

[49] Health: A =Outstanding; B = Above Average; C = Average; D = Below Average; F = Dead
[50] Decurrent = Lacking Strong Central Leader. Excurrent = Strong Central Leader.
[51] Aesthetic (compared to standard tree of same species) : A = nearly symmetrical, healthy tree – F = Dead

OAK TREE FIELD DATA WORKSHEET *Property: 500 Baseline Road, La Verne*

Survey Date: 9/5/2017 **Tree Number: 18**

GENERAL CHARACTERISTICS			
Species: ☒ *Q. agrifolia* ☐ *Q. lobata* ☐ *Other (see below)*		**Health Rating**[52]**:** ☐A ☒B ☐C ☐D ☐F	
		Form: ☐ symmetric ☒ minor asymmetry	
Trunk Count: 1 **Height (ft.)**: 35		☐ major asymmetry ☐ stump sprout	
Trunk DBH (in.): 24		☐ stag-head	
Percent Canopy Cover: 70		**Crown Class**[53]**:** ☐ Decurrent ☒ Excurrent	
Existing Terrain: ☐ Flat ☒ Slope		**Age Class:** ☐ immature ☐ semi-mature	
Aesthetic Rating[54]**:** ☐ A ☒ B ☐ C ☐ D ☐ F		☒ mature ☐over-mature/senescent	
Overall Grade: ☐ A ☒ B ☐ C ☐ D ☐ F		**Heritage Tree:** ☒ No ☐ Yes	

CANOPY CHARACTERISTICS			**TREE HEALTH**	
	Dripline Radius (Feet)	Canopy to Grade (Feet)	**Wound Wood Development:**	☐ Excellent ☒ Average ☐ Poor ☐ None
N	27	15	**Foliage Density:**	☒ Normal ☐ Sparse
NE			**Weak crotches:**	☒ No ☐ Yes
E	7	15	**Oak Pit Scale:**	☒ No ☐ Yes
SE			**Mainstem dieback:**	☒ No ☐ Yes
S	20	18	**Exposed Roots:**	☒ No ☐ Yes
SW			**Epicormic growth:**	☐ No ☒ Yes
W	35	15	**Shading Out:**	☐ No ☒ Yes
NW			**Cavities:** ☒ None	☐ Trunk ☐ Branch
			Exfoliating Bark:	☒ No ☐ Yes
CANOPY SPREAD (FEET): 47 X 42			**Water Pocket(s):**	☒ No ☐ Yes

PROPOSED ACTIONS			
		Mechanical Damage:	☐ Trunk ☐ Branch ☒ None
Root Collar Inspection:	☐	**Cankers:**	☒ No ☐ Yes
Monitor for Progress:	☐	**Fungus:**	☒ No ☐ Yes
Remove Deadwood/Prune :	☐	**Twig/ Branch Dieback:**	☐ None ☒ Minor ☐ Moderate ☐Extensive
Risk Assessment	☐		
Support Structure:	☐		

IMPACTS & MITIGATIONS		
	Vigor:	☐ Excellent ☒Average ☐ Fair ☐ Poor
In Impacted Area: ☐ Yes ☐ No	**Borers/ Ants /Termites:**	☒ Minor ☐ Moderate ☐Extensive ☐None
Proposed Land Use:		
Impacts:	**Exudations:**	☒ No ☐ Yes
Mitigations:	**Galls:**	☒ No ☐ Yes

Comments & Notes: Old tag #163; leans west; brush clearance with dripline to north from recent fire (Rodeo Fire – 7/23/17)

Photo #4966

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52 Health: A =Outstanding; B = Above Average; C = Average; D = Below Average; F = Dead
53 Decurrent = Lacking Strong Central Leader. Excurrent = Strong Central Leader.
54 Aesthetic (compared to standard tree of same species) : A = nearly symmetrical, healthy tree – F = Dead

OAK TREE FIELD DATA WORKSHEET *Property: 500 Baseline Road, La Verne*

Survey Date: 9/5/2017 **Tree Number: 19**

GENERAL CHARACTERISTICS			
Species: ☒ *Q. agrifolia* ☐ *Q. lobata* ☐ *Other (see below)*		**Health Rating**[55]**:** ☐A ☒B- ☐C ☐D ☐F	
		Form: ☒ symmetric ☐ minor asymmetry	
Trunk Count: 4 **Height (ft.):** 30		☐ major asymmetry ☐ stump sprout	
Trunk DBH (in.): 12, 13, 14, 18		☐ stag-head	
Percent Canopy Cover: 65		**Crown Class**[56]**:** ☒ Decurrent ☐ Excurrent	
Existing Terrain: ☐ Flat ☒ Slope		**Age Class:** ☐ immature ☐ semi-mature	
Aesthetic Rating[57]**:** ☐ A ☒ B- ☐ C ☐ D ☐ F		☒ mature ☐over-mature/senescent	
Overall Grade: ☐ A ☒ B- ☐ C ☐ D ☐ F		**Heritage Tree:** ☒ No ☐ Yes	

CANOPY CHARACTERISTICS			**TREE HEALTH**	
	Dripline Radius (Feet)	Canopy to Grade (Feet)	**Wound Wood Development:**	☐ Excellent ☒ Average ☐ Poor ☐ None
N	30	25	**Foliage Density:**	☒ Normal ☐ Sparse
NE			**Weak crotches:**	☒ No ☐ Yes
E	18	3	**Oak Pit Scale:**	☒ No ☐ Yes
SE			**Mainstem dieback:**	☒ No ☐ Yes
S	25	10	**Exposed Roots:**	☐ No ☒ Yes
SW			**Epicormic growth:**	☐ No ☒ Yes
W	25	2	**Shading Out:**	☒ No ☐ Yes
NW			**Cavities:** ☒ None	☐ Trunk ☐ Branch
			Exfoliating Bark:	☒ No ☐ Yes
CANOPY SPREAD (FEET): 55 X 43			**Water Pocket(s):**	☒ No ☐ Yes
PROPOSED ACTIONS			**Mechanical Damage:**	☐ Trunk ☐ Branch ☒ None
Root Collar Inspection:	☐		**Cankers:**	☒ No ☐ Yes
Monitor for Progress:	☐		**Fungus:**	☒ No ☐ Yes
Remove Deadwood/Prune :	☐		**Twig/ Branch Dieback:**	☐ None ☐ Minor ☒ Moderate ☐Extensive
Risk Assessment	☐			
Support Structure:	☐			
IMPACTS & MITIGATIONS			**Vigor:**	☐ Excellent ☐Average ☒ Fair ☐ Poor
In Impacted Area: ☐ Yes ☐ No			**Borers/ Ants /Termites:**	☒ Minor ☐ Moderate ☐Extensive ☐None
Proposed Land Use:				
Impacts:			**Exudations:**	☒ No ☐ Yes
Mitigations:			**Galls:**	☒ No ☐ Yes

Comments & Notes: Eroded slope to north (exposed roots); old fire damage (lower branches)

Photo #4955

[55] Health: A =Outstanding; B = Above Average; C = Average; D = Below Average; F = Dead
[56] Decurrent = Lacking Strong Central Leader. Excurrent = Strong Central Leader.
[57] Aesthetic (compared to standard tree of same species) : A = nearly symmetrical, healthy tree – F = Dead

OAK TREE FIELD DATA WORKSHEET *Property: 500 Baseline Road, La Verne*

Survey Date: 9/5/2017 **Tree Number: 20**

GENERAL CHARACTERISTICS	
Species: ☒ *Q. agrifolia* ☐ *Q. lobata* ☐ *Other (see below)*	**Health Rating**[58]**:** ☐A ☒B ☐C ☐D ☐F
	Form: ☒ symmetric ☐ minor asymmetry
Trunk Count: 1 **Height (ft.)**: 35	☐ major asymmetry ☐ stump sprout
Trunk DBH (in.): 19 @ 3'	☐ stag-head
Percent Canopy Cover: 75	**Crown Class**[59]**:** ☐ Decurrent ☒ Excurrent
Existing Terrain: ☐ Flat ☒ Slope	**Age Class:** ☐ immature ☒ semi-mature
Aesthetic Rating[60]**:** ☐ A ☒ B ☐ C ☐ D ☐ F	☐ mature ☐over-mature/senescent
Overall Grade: ☐ A ☒ B ☐ C ☐ D ☐ F	**Heritage Tree:** ☒ No ☐ Yes

CANOPY CHARACTERISTICS		
	Dripline Radius (Feet)	Canopy to Grade (Feet)
N	18	20
NE		
E	25	15
SE		
S	20	15
SW		
W	18	8
NW		
CANOPY SPREAD (FEET): 38 X 43		

TREE HEALTH	
Wound Wood Development:	☐ Excellent ☒ Average ☐ Poor ☐ None
Foliage Density:	☒ Normal ☐ Sparse
Weak crotches:	☒ No ☐ Yes
Oak Pit Scale:	☒ No ☐ Yes
Mainstem dieback:	☒ No ☐ Yes
Exposed Roots:	☐ No ☒ Yes
Epicormic growth:	☒ No ☐ Yes
Shading Out:	☒ No ☐ Yes
Cavities: ☒ None	☐ Trunk ☐ Branch
Exfoliating Bark:	☒ No ☐ Yes
Water Pocket(s):	☒ No ☐ Yes
Mechanical Damage:	☐ Trunk ☐ Branch ☒ None
Cankers:	☒ No ☐ Yes
Fungus:	☒ No ☐ Yes
Twig/ Branch Dieback:	☐ None ☒ Minor ☐ Moderate ☐Extensive
Vigor:	☐ Excellent ☒Average ☐ Fair ☐ Poor
Borers/ Ants /Termites:	☒ Minor ☐ Moderate ☐Extensive ☐None
Exudations:	☒ No ☐ Yes
Galls:	☒ No ☐ Yes

PROPOSED ACTIONS	
Root Collar Inspection:	☐
Monitor for Progress:	☐
Remove Deadwood/Prune :	☐
Risk Assessment	☐
Support Structure:	☐

IMPACTS & MITIGATIONS
In Impacted Area: ☐ Yes ☐ No
Proposed Land Use:
Impacts:
Mitigations:

Comments & Notes: eroded slope to north (exposed roots); slight lean to southeast; old tag #37; old fire damage (lower branches); interior dieback

Photo #4956

[58] Health: A =Outstanding; B = Above Average; C = Average; D = Below Average; F = Dead
[59] Decurrent = Lacking Strong Central Leader. Excurrent = Strong Central Leader.
[60] Aesthetic (compared to standard tree of same species) : A = nearly symmetrical, healthy tree – F = Dead

OAK TREE FIELD DATA WORKSHEET *Property: 500 Baseline Road, La Verne*

Survey Date: 9/5/2017 **Tree Number: 21**

GENERAL CHARACTERISTICS	
Species: ☒ *Q. agrifolia* ☐ *Q. lobata* ☐ *Other (see below)*	**Health Rating**[61]**:** ☐A ☒B ☐C ☐D ☐F
	Form: ☐ symmetric ☒ minor asymmetry
Trunk Count: 3 **Height (ft.):** 25	☐ major asymmetry ☐ stump sprout
Trunk DBH (in.): 5.5, 8.5, 9	☐ stag-head
Percent Canopy Cover: 70	**Crown Class**[62]**:** ☒ Decurrent ☐ Excurrent
Existing Terrain: ☐ Flat ☒ Slope	**Age Class:** ☐ immature ☒ semi-mature
Aesthetic Rating[63]**:** ☐ A ☒ B- ☐ C ☐ D ☐ F	☐ mature ☐over-mature/senescent
Overall Grade: ☐ A ☒ B- ☐ C ☐ D ☐ F	**Heritage Tree:** ☒ No ☐ Yes

CANOPY CHARACTERISTICS

	Dripline Radius (Feet)	Canopy to Grade (Feet)
N	10	15
NE		
E	18	20
SE		
S	18	3
SW		
W	0	0
NW		

CANOPY SPREAD (FEET): 28 X 18

TREE HEALTH

Wound Wood Development:	☐ Excellent ☒ Average ☐ Poor ☐ None
Foliage Density:	☒ Normal ☐ Sparse
Weak crotches:	☒ No ☐ Yes
Oak Pit Scale:	☒ No ☐ Yes
Mainstem dieback:	☒ No ☐ Yes
Exposed Roots:	☐ No ☒ Yes
Epicormic growth:	☒ No ☐ Yes
Shading Out:	☐ No ☒ Yes
Cavities: ☒ None	☐ Trunk ☐ Branch
Exfoliating Bark:	☒ No ☐ Yes
Water Pocket(s):	☒ No ☐ Yes
Mechanical Damage:	☐ Trunk ☐ Branch ☒ None
Cankers:	☒ No ☐ Yes
Fungus:	☒ No ☐ Yes
Twig/ Branch Dieback:	☐ None ☒ Minor ☐ Moderate ☐Extensive
Vigor:	☐ Excellent ☒Average ☐ Fair ☐ Poor
Borers/ Ants /Termites:	☒ Minor ☐ Moderate ☐Extensive ☐None
Exudations:	☒ No ☐ Yes
Galls:	☒ No ☐ Yes

PROPOSED ACTIONS

Root Collar Inspection:	☐
Monitor for Progress:	☐
Remove Deadwood/Prune :	☐
Risk Assessment	☐
Support Structure:	☐

IMPACTS & MITIGATIONS

In Impacted Area:	☐ Yes ☐ No
Proposed Land Use:	
Impacts:	
Mitigations:	

Comments & Notes: Old tag #36, 114; old fire damage; eroded slope to north (exposed roots); leans southeast; interior dieback

Photo #4957

[61] Health: A =Outstanding; B = Above Average; C = Average; D = Below Average; F = Dead
[62] Decurrent = Lacking Strong Central Leader. Excurrent = Strong Central Leader.
[63] Aesthetic (compared to standard tree of same species) : A = nearly symmetrical, healthy tree – F = Dead

OAK TREE FIELD DATA WORKSHEET *Property: 500 Baseline Road, La Verne*

Survey Date: 9/5/2017 **Tree Number: 22**

GENERAL CHARACTERISTICS	
Species: ☒ *Q. agrifolia* ☐ *Q. lobata* ☐ *Other (see below)*	**Health Rating**[64]**:** ☐A ☐B ☒C ☐D ☐F
	Form: ☐ symmetric ☒ minor asymmetry
Trunk Count: 2 **Height (ft.)**: 35	☐ major asymmetry ☐ stump sprout
Trunk DBH (in.): 14.5, 15.5	☐ stag-head
Percent Canopy Cover: 65	**Crown Class**[65]**:** ☒ Decurrent ☐ Excurrent
Existing Terrain: ☐ Flat ☒ Slope	**Age Class:** ☐ immature ☐ semi-mature
Aesthetic Rating[66]**:** ☐ A ☐ B ☒ C+ ☐ D ☐ F	☒ mature ☐over-mature/senescent
Overall Grade: ☐ A ☐ B ☒ C ☐ D ☐ F	**Heritage Tree:** ☒ No ☐ Yes

CANOPY CHARACTERISTICS			**TREE HEALTH**	
	Dripline Radius (Feet)	Canopy to Grade (Feet)	**Wound Wood Development:**	☐ Excellent ☒ Average ☐ Poor ☐ None
N	18	20	**Foliage Density:**	☒ Normal ☐ Sparse
NE			**Weak crotches:**	☒ No ☐ Yes
E	25	16	**Oak Pit Scale:**	☒ No ☐ Yes
SE			**Mainstem dieback:**	☒ No ☐ Yes
S	25	5	**Exposed Roots:**	☒ No ☐ Yes
SW			**Epicormic growth:**	☐ No ☒ Yes
W	19	10	**Shading Out:**	☒ No ☐ Yes
NW			**Cavities:** ☐ None	☒ Trunk ☐ Branch
			Exfoliating Bark:	☒ No ☐ Yes
CANOPY SPREAD (FEET): 43 X 44			**Water Pocket(s):**	☒ No ☐ Yes

PROPOSED ACTIONS		**Mechanical Damage:**	☒ Trunk ☐ Branch ☐ None
Root Collar Inspection:	☐	**Cankers:**	☐ No ☒ Yes
Monitor for Progress:	☐	**Fungus:**	☒ No ☐ Yes
Remove Deadwood/Prune :	☐	**Twig/ Branch Dieback:**	☐ None ☐ Minor ☒ Moderate ☐Extensive
Risk Assessment	☐		
Support Structure:	☐		
IMPACTS & MITIGATIONS		**Vigor:**	☐ Excellent ☒Average ☐ Fair ☐ Poor
In Impacted Area: ☐ Yes ☐ No		**Borers/ Ants /Termites:**	☒ Minor ☐ Moderate ☐Extensive ☐None
Proposed Land Use:			
Impacts:		**Exudations:**	☒ No ☐ Yes
Mitigations:		**Galls:**	☒ No ☐ Yes

Comments & Notes: Old fire damage; seam on north side of 13" trunk; recent fire damage to east canopy (Rodeo Fire – 7/23/17); new mechanical damage on trunk from fire clearance; brush clearance within dripline; small canker on west; scorched foliage; small cavity at base

Photo #4958

[64] Health: A =Outstanding; B = Above Average; C = Average; D = Below Average; F = Dead
[65] Decurrent = Lacking Strong Central Leader. Excurrent = Strong Central Leader.
[66] Aesthetic (compared to standard tree of same species) : A = nearly symmetrical, healthy tree – F = Dead

OAK TREE FIELD DATA WORKSHEET *Property: 500 Baseline Road, La Verne*

Survey Date: 9/5/2017 **Tree Number: 23**

GENERAL CHARACTERISTICS		
Species: ☒ *Q. agrifolia* ☐ *Q. lobata* ☐ *Other (see below)*	**Health Rating**[67]**:** ☐A ☒B- ☐C ☐D ☐ F
	Form: ☒ symmetric ☐ minor asymmetry
Trunk Count: 2 **Height (ft.)**: 30	☐ major asymmetry ☐ stump sprout
Trunk DBH (in.): 10, 13	☐ stag-head
Percent Canopy Cover: 70	**Crown Class**[68]**:** ☒ Decurrent ☐ Excurrent
Existing Terrain: ☐ Flat ☒ Slope	**Age Class:** ☐ immature ☒ semi-mature
Aesthetic Rating[69]**:** ☐ A ☒ B ☐ C ☐ D ☐ F	☐ mature ☐over-mature/senescent
Overall Grade: ☐ A ☒ B- ☐ C ☐ D ☐ F	**Heritage Tree:** ☒ No ☐ Yes

CANOPY CHARACTERISTICS			**TREE HEALTH**	
	Dripline Radius (Feet)	Canopy to Grade (Feet)	**Wound Wood Development:**	☐ Excellent ☒ Average ☐ Poor ☐ None
N	20	15	**Foliage Density:**	☒ Normal ☐ Sparse
NE			**Weak crotches:**	☒ No ☐ Yes
E	16	10	**Oak Pit Scale:**	☒ No ☐ Yes
SE			**Mainstem dieback:**	☒ No ☐ Yes
S	19	10	**Exposed Roots:**	☒ No ☐ Yes
SW			**Epicormic growth:**	☐ No ☒ Yes
W	18	10	**Shading Out:**	☒ No ☐ Yes
NW			**Cavities:** ☒ None	☐ Trunk ☐ Branch
			Exfoliating Bark:	☒ No ☐ Yes
CANOPY SPREAD (FEET): 39 X 34			**Water Pocket(s):**	☒ No ☐ Yes
PROPOSED ACTIONS			**Mechanical Damage:**	☐ Trunk ☐ Branch ☒ None
Root Collar Inspection:	☐		**Cankers:**	☒ No ☐ Yes
Monitor for Progress:	☐		**Fungus:**	☒ No ☐ Yes
Remove Deadwood/Prune :	☐		**Twig/ Branch Dieback:**	☐ None ☐ Minor ☒ Moderate ☐Extensive
Risk Assessment	☐			
Support Structure:	☐			
IMPACTS & MITIGATIONS			**Vigor:**	☐ Excellent ☐Average ☒ Fair ☐ Poor
In Impacted Area: ☐ Yes ☐ No			**Borers/ Ants /Termites:**	☐ Minor ☐ Moderate ☐Extensive ☒None
Proposed Land Use:				
Impacts:			**Exudations:**	☒ No ☐ Yes
Mitigations:			**Galls:**	☒ No ☐ Yes

Comments & Notes: Old tag #27; old fire damage; recent fire damage to southern-most canopy (Rodeo Fire – 7/23/17); codom at base

Photo #4962

[67] Health: A =Outstanding; B = Above Average; C = Average; D = Below Average; F = Dead
[68] Decurrent = Lacking Strong Central Leader. Excurrent = Strong Central Leader.
[69] Aesthetic (compared to standard tree of same species) : A = nearly symmetrical, healthy tree – F = Dead

OAK TREE FIELD DATA WORKSHEET *Property: 500 Baseline Road, La Verne*

Survey Date: 9/5/2017 **Tree Number: 24**

GENERAL CHARACTERISTICS	
Species: ☒*Q. agrifolia* ☐ *Q. lobata* ☐ *Other (see below)*	**Health Rating**[70]**:** ☐A ☒B ☐C ☐D ☐F
	Form: ☐ symmetric ☐ minor asymmetry
Trunk Count: 1 **Height (ft.)**: 30	☒ major asymmetry ☐ stump sprout
Trunk DBH (in.): 10	☐ stag-head
Percent Canopy Cover: 70	**Crown Class**[71]**:** ☐ Decurrent ☒ Excurrent
Existing Terrain: ☐ Flat ☒ Slope	**Age Class:** ☒ immature ☐ semi-mature
Aesthetic Rating[72]**:** ☐ A ☒ B- ☐ C ☐ D ☐ F	☐ mature ☐over-mature/senescent
Overall Grade: ☐ A ☒ B- ☐ C ☐ D ☐ F	**Heritage Tree:** ☒ No ☐ Yes

CANOPY CHARACTERISTICS			**TREE HEALTH**	
	Dripline Radius (Feet)	Canopy to Grade (Feet)	**Wound Wood Development:**	☐ Excellent ☒ Average ☐ Poor ☐ None
N	16	15	**Foliage Density:**	☒ Normal ☐ Sparse
NE			**Weak crotches:**	☒ No ☐ Yes
E	20	16	**Oak Pit Scale:**	☒ No ☐ Yes
SE			**Mainstem dieback:**	☒ No ☐ Yes
S	8	2	**Exposed Roots:**	☒ No ☐ Yes
SW			**Epicormic growth:**	☐ No ☒ Yes
W	0	0	**Shading Out:**	☐ No ☒ Yes
NW			**Cavities:** ☒ None	☐ Trunk ☐ Branch
			Exfoliating Bark:	☒ No ☐ Yes
CANOPY SPREAD (FEET): 24 X 20			**Water Pocket(s):**	☒ No ☐ Yes

PROPOSED ACTIONS		**Mechanical Damage:**	☐ Trunk ☐ Branch ☒ None
Root Collar Inspection:	☐	**Cankers:**	☒ No ☐ Yes
Monitor for Progress:	☐	**Fungus:**	☒ No ☐ Yes
Remove Deadwood/Prune :	☐	**Twig/ Branch Dieback:**	☐ None ☒ Minor ☐ Moderate ☐Extensive
Risk Assessment	☐		
Support Structure:	☐		

IMPACTS & MITIGATIONS	**Vigor:**	☐ Excellent ☒Average ☐ Fair ☐ Poor
In Impacted Area: ☐ Yes ☐ No	**Borers/ Ants /Termites:**	☐ Minor ☐ Moderate ☐Extensive ☒None
Proposed Land Use:		
Impacts:	**Exudations:**	☒ No ☐ Yes
Mitigations:	**Galls:**	☒ No ☐ Yes

Comments & Notes: Old tag #116; leans northeast

Photo #4963

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[70] Health: A =Outstanding; B = Above Average; C = Average; D = Below Average; F = Dead
[71] Decurrent = Lacking Strong Central Leader. Excurrent = Strong Central Leader.
[72] Aesthetic (compared to standard tree of same species) : A = nearly symmetrical, healthy tree – F = Dead

OAK TREE FIELD DATA WORKSHEET *Property: 500 Baseline Road, La Verne*

Survey Date: 9/5/2017 **Tree Number: 25**

GENERAL CHARACTERISTICS	
Species: ☐ *Q. agrifolia* ☐ *Q. lobata* ☒ *Other (see below)*	**Health Rating**[73]**:** ☐A ☐B ☒C- ☐D ☐F
scrub oak (*Quercus berberidifolia*)	**Form:** ☐ symmetric ☐ minor asymmetry
Trunk Count: 2 **Height (ft.):** 20	☒ major asymmetry ☐ stump sprout
Trunk DBH (in.): 7, 9.5	☐ stag-head
Percent Canopy Cover: 25	**Crown Class**[74]**:** ☒ Decurrent ☐ Excurrent
Existing Terrain: ☐ Flat ☒ Slope	**Age Class:** ☐ immature ☒ semi-mature
Aesthetic Rating[75]**:** ☐ A ☐ B ☒ C ☐ D ☐ F	☐ mature ☐over-mature/senescent
Overall Grade: ☐ A ☐ B ☒ C ☐ D ☐ F	**Heritage Tree:** ☒ No ☐ Yes

CANOPY CHARACTERISTICS		
	Dripline Radius (Feet)	Canopy to Grade (Feet)
N	18	10
NE		
E	16	6
SE		
S	6	6
SW		
W	10	10
NW		

CANOPY SPREAD (FEET): 24 X 26

TREE HEALTH	
Wound Wood Development:	☐ Excellent ☐ Average ☒ Poor ☐ None
Foliage Density:	☐ Normal ☒ Sparse
Weak crotches:	☒ No ☐ Yes
Oak Pit Scale:	☒ No ☐ Yes
Mainstem dieback:	☐ No ☒ Yes
Exposed Roots:	☒ No ☐ Yes
Epicormic growth:	☐ No ☒ Yes
Shading Out:	☐ No ☒ Yes
Cavities: ☒ None	☐ Trunk ☐ Branch
Exfoliating Bark:	☒ No ☐ Yes
Water Pocket(s):	☒ No ☐ Yes
Mechanical Damage:	☐ Trunk ☐ Branch ☒ None
Cankers:	☒ No ☐ Yes
Fungus:	☒ No ☐ Yes
Twig/ Branch Dieback:	☐ None ☐ Minor ☐ Moderate ☒Extensive
Vigor:	☐ Excellent ☐Average ☐ Fair ☒ Poor
Borers/ Ants /Termites:	☐ Minor ☒ Moderate ☐Extensive ☐None
Exudations:	☒ No ☐ Yes
Galls:	☒ No ☐ Yes

PROPOSED ACTIONS	
Root Collar Inspection:	☐
Monitor for Progress:	☐
Remove Deadwood/Prune :	☐
Risk Assessment	☐
Support Structure:	☐

IMPACTS & MITIGATIONS
In Impacted Area: ☐ Yes ☐ No
Proposed Land Use:
Impacts:
Mitigations:

Comments & Notes: 7" trunk dead; Old tag #117; leaning north; declining health; heavy dieback

Photo #4964

[73] Health: A =Outstanding; B = Above Average; C = Average; D = Below Average; F = Dead
[74] Decurrent = Lacking Strong Central Leader. Excurrent = Strong Central Leader.
[75] Aesthetic (compared to standard tree of same species) : A = nearly symmetrical, healthy tree – F = Dead

OAK TREE FIELD DATA WORKSHEET *Property: 500 Baseline Road, La Verne*

Survey Date: 9/5/2017 **Tree Number: 26**

GENERAL CHARACTERISTICS	
Species: ☐ *Q. agrifolia* ☐ *Q. lobata* ☒ *Other (see below)*	**Health Rating**[76]**:** ☐A ☒B- ☐C ☐D ☐F
scrub oak (*Quercus berberidifolia*)	**Form:** ☐ symmetric ☒ minor asymmetry
Trunk Count: 1 **Height (ft.):** 25	☐ major asymmetry ☐ stump sprout
Trunk DBH (in.): 12 @ 4'	☐ stag-head
Percent Canopy Cover: 60	**Crown Class**[77]**:** ☒ Decurrent ☐ Excurrent
Existing Terrain: ☐ Flat ☒ Slope	**Age Class:** ☐ immature ☒ semi-mature
Aesthetic Rating[78]**:** ☐ A ☐ B ☒ C+ ☐ D ☐ F	☐ mature ☐over-mature/senescent
Overall Grade: ☐ A ☐ B ☒ C+ ☐ D ☐ F	**Heritage Tree:** ☒ No ☐ Yes

CANOPY CHARACTERISTICS			**TREE HEALTH**	
	Dripline Radius (Feet)	Canopy to Grade (Feet)	**Wound Wood Development:**	☐ Excellent ☒ Average ☐ Poor ☐ None
N	16	3	**Foliage Density:**	☐ Normal ☒ Sparse
NE			**Weak crotches:**	☒ No ☐ Yes
E	10	1	**Oak Pit Scale:**	☒ No ☐ Yes
SE			**Mainstem dieback:**	☐ No ☒ Yes
S	13	4	**Exposed Roots:**	☒ No ☐ Yes
SW			**Epicormic growth:**	☐ No ☒ Yes
W	16	5	**Shading Out:**	☒ No ☐ Yes
NW			**Cavities:** ☐ None	☒ Trunk ☐ Branch
			Exfoliating Bark:	☒ No ☐ Yes
CANOPY SPREAD (FEET): 29 X 26			**Water Pocket(s):**	☒ No ☐ Yes

PROPOSED ACTIONS		**Mechanical Damage:**	☐ Trunk ☐ Branch ☒ None
Root Collar Inspection:	☐	**Cankers:**	☐ No ☒ Yes
Monitor for Progress:	☐	**Fungus:**	☒ No ☐ Yes
Remove Deadwood/Prune :	☐	**Twig/ Branch Dieback:**	☐ None ☐ Minor ☒ Moderate ☐Extensive
Risk Assessment	☐		
Support Structure:	☐		
IMPACTS & MITIGATIONS		**Vigor:**	☐ Excellent ☐Average ☒ Fair ☐ Poor
In Impacted Area: ☐ Yes ☐ No		**Borers/ Ants /Termites:**	☒ Minor ☐ Moderate ☐Extensive ☐None
Proposed Land Use:			
Impacts:		**Exudations:**	☒ No ☐ Yes
Mitigations:		**Galls:**	☒ No ☐ Yes

Comments & Notes: Old tag #111; canker at base; interior deadwood; column of decay on southeast; covered in poison oak

Photo #4954

[76] Health: A =Outstanding; B = Above Average; C = Average; D = Below Average; F = Dead
[77] Decurrent = Lacking Strong Central Leader. Excurrent = Strong Central Leader.
[78] Aesthetic (compared to standard tree of same species) : A = nearly symmetrical, healthy tree – F = Dead

OAK TREE FIELD DATA WORKSHEET *Property: 500 Baseline Road, La Verne*

Survey Date: 9/5/2017 **Tree Number: 27**

GENERAL CHARACTERISTICS			
Species: ☒ *Q. agrifolia* ☐ *Q. lobata* ☐ *Other (see below)*		**Health Rating**[79]**:** ☐A ☐B ☒C- ☐D ☐F	
		Form: ☐ symmetric ☐ minor asymmetry	
Trunk Count: 1 **Height (ft.):** 22		☒ major asymmetry ☐ stump sprout	
Trunk DBH (in.): 14.5		☐ stag-head	
Percent Canopy Cover: 30		**Crown Class**[80]**:** ☐ Decurrent ☒ Excurrent	
Existing Terrain: ☒ Flat ☐ Slope		**Age Class:** ☐ immature ☒ semi-mature	
Aesthetic Rating[81]**:** ☐ A ☐ B ☒ C- ☐ D ☐ F		☐ mature ☐over-mature/senescent	
Overall Grade: ☐ A ☐ B ☒ C- ☐ D ☐ F		**Heritage Tree:** ☒ No ☐ Yes	
CANOPY CHARACTERISTICS		**TREE HEALTH**	
	Dripline Radius (Feet)	Canopy to Grade (Feet)	**Wound Wood Development:**	☐ Excellent ☐ Average ☒ Poor ☐ None
N	15	15	**Foliage Density:**	☐ Normal ☒ Sparse
NE			**Weak crotches:**	☒ No ☐ Yes
E	0	0	**Oak Pit Scale:**	☒ No ☐ Yes
SE			**Mainstem dieback:**	☐ No ☒ Yes
S	17	5	**Exposed Roots:**	☒ No ☐ Yes
SW			**Epicormic growth:**	☐ No ☒ Yes
W	21	13	**Shading Out:**	☐ No ☒ Yes
NW			**Cavities:** ☒ None	☐ Trunk ☐ Branch
			Exfoliating Bark:	☒ No ☐ Yes
CANOPY SPREAD (FEET): 22 X 21			**Water Pocket(s):**	☒ No ☐ Yes
PROPOSED ACTIONS			**Mechanical Damage:**	☐ Trunk ☐ Branch ☒ None
Root Collar Inspection:	☐		**Cankers:**	☒ No ☐ Yes
Monitor for Progress:	☐		**Fungus:**	☒ No ☐ Yes
Remove Deadwood/Prune :	☐		**Twig/ Branch Dieback:**	☐ None ☐ Minor ☒ Moderate ☐Extensive
Risk Assessment	☐			
Support Structure:	☐			
IMPACTS & MITIGATIONS			**Vigor:**	☐ Excellent ☐Average ☒ Fair ☐ Poor
In Impacted Area: ☐ Yes ☐ No			**Borers/ Ants /Termites:**	☒ Minor ☐ Moderate ☐Extensive ☐None
Proposed Land Use:				
Impacts:			**Exudations:**	☒ No ☐ Yes
Mitigations:			**Galls:**	☒ No ☐ Yes

Comments & Notes: Old tag #63; old fire damage; interior deadwood; located adjacent to stream; leaning west; surrounded by poison oak

Photo #4988

[79] Health: A =Outstanding; B = Above Average; C = Average; D = Below Average; F = Dead
[80] Decurrent = Lacking Strong Central Leader. Excurrent = Strong Central Leader.
[81] Aesthetic (compared to standard tree of same species) : A = nearly symmetrical, healthy tree – F = Dead

OAK TREE FIELD DATA WORKSHEET *Property: 500 Baseline Road, La Verne*

Survey Date: 9/5/2017 **Tree Number: 28**

GENERAL CHARACTERISTICS	
Species: ☐ *Q. agrifolia* ☐ *Q. lobata* ☒ *Other (see below)*	**Health Rating**[82]**:** ☐A ☐B ☐C ☐D ☒ F
Platanus racemosa (sycamore)	**Form:** ☐ symmetric ☐ minor asymmetry
Trunk Count: 2 **Height (ft.)**: N/A	☐ major asymmetry ☐ stump sprout
Trunk DBH (in.): 5, 6.5 (REMOVED)	☐ stag-head
Percent Canopy Cover: N/A	**Crown Class**[83]**:** ☐ Decurrent ☐ Excurrent
Existing Terrain: ☐ Flat ☒ Slope	**Age Class:** ☐ immature ☐ semi-mature
Aesthetic Rating[84]**:** ☐ A ☐ B ☐ C ☐ D ☒ F	☐ mature ☐ over-mature/senescent
Overall Grade: ☐ A ☐ B ☐ C ☐ D ☒ F	**Heritage Tree:** ☐ No ☐ Yes

CANOPY CHARACTERISTICS		
eroded slope to north (exposed roots);	Dripline Radius (Feet)	Canopy to Grade (Feet)
N		
NE		
E		
SE	REMOVED	
S		
SW		
W		
NW		
CANOPY SPREAD (FEET): 30		

TREE HEALTH	
Wound Wood Development:	☐ Excellent ☐ Average ☐ Poor ☐ None
Foliage Density:	☐ Normal ☐ Sparse
Weak crotches:	☐ No ☐ Yes
Oak Pit Scale:	☐ No ☐ Yes
Mainstem dieback:	☐ No ☐ Yes
Exposed Roots:	☐ No ☐ Yes
Epicormic growth:	☐ No ☐ Yes
Shading Out:	☐ No ☐ Yes
Cavities: ☐ None	☐ Trunk ☐ Branch
Exfoliating Bark:	☐ No ☐ Yes
Water Pocket(s):	☐ No ☐ Yes
Mechanical Damage:	☐ Trunk ☐ Branch ☐ None
Cankers:	☐ No ☐ Yes
Fungus:	☐ No ☐ Yes
Twig/ Branch Dieback:	☐ None ☐ Minor ☐ Moderate ☐ Extensive
Vigor:	☐ Excellent ☐ Average ☐ Fair ☐ Poor
Borers/ Ants /Termites:	☐ Minor ☐ Moderate ☐ Extensive ☐ None
Exudations:	☐ No ☐ Yes
Galls:	☐ No ☐ Yes

PROPOSED ACTIONS	
Root Collar Inspection:	☐
Monitor for Progress:	☐
Remove Deadwood/Prune :	☐
Risk Assessment	☐
Support Structure:	☐

IMPACTS & MITIGATIONS
In Impacted Area: ☐ Yes ☐ No
Proposed Land Use:
Impacts:
Mitigations:

Comments & Notes: Tree removed during Rodeo Fire (7/23/17); only stump remains; was old tag #65 at time of 2014 inventory

Photo #4975

[82] Health: A =Outstanding; B = Above Average; C = Average; D = Below Average; F = Dead
[83] Decurrent = Lacking Strong Central Leader. Excurrent = Strong Central Leader.
[84] Aesthetic (compared to standard tree of same species) : A = nearly symmetrical, healthy tree – F = Dead

OAK TREE FIELD DATA WORKSHEET *Property: 500 Baseline Road, La Verne*

Survey Date: 9/5/2017 **Tree Number: 29**

GENERAL CHARACTERISTICS	
Species: ☐ *Q. agrifolia* ☐ *Q. lobata* ☒ *Other (see below)*	**Health Rating**[85]**:** ☐A ☐B ☐C ☒D ☐F
Platanus racemosa (sycamore)	**Form:** ☐ symmetric ☒ minor asymmetry
Trunk Count: 2 **Height (ft.)**: 30	☐ major asymmetry ☐ stump sprout
Trunk DBH (in.): 10, 11	☐ stag-head
Percent Canopy Cover: 5	**Crown Class**[86]**:** ☒ Decurrent ☐ Excurrent
Existing Terrain: ☐ Flat ☒ Slope	**Age Class:** ☐ immature ☒ semi-mature
Aesthetic Rating[87]**:** ☐ A ☐ B ☐ C ☒ D ☐ F	☐ mature ☐over-mature/senescent
Overall Grade: ☐ A ☐ B ☐ C ☒ D ☐ F	**Heritage Tree:** ☒ No ☐ Yes

CANOPY CHARACTERISTICS

	Dripline Radius (Feet)	Canopy to Grade (Feet)
N	15	15
NE		
E	10	20
SE		
S	20	20
SW		
W	20	25
NW		

CANOPY SPREAD (FEET): 35 X 30

PROPOSED ACTIONS

Root Collar Inspection:	☐
Monitor for Progress:	☐
Remove Deadwood/Prune :	☐
Risk Assessment	☐
Support Structure:	☐

IMPACTS & MITIGATIONS

In Impacted Area:	☐ Yes ☐ No
Proposed Land Use:	
Impacts:	
Mitigations:	

TREE HEALTH

Wound Wood Development:	☐ Excellent ☐ Average ☒ Poor ☐ None
Foliage Density:	☐ Normal ☒ Sparse
Weak crotches:	☐ No ☒ Yes
Oak Pit Scale:	☒ No ☐ Yes
Mainstem dieback:	☐ No ☒ Yes
Exposed Roots:	☒ No ☐ Yes
Epicormic growth:	☐ No ☒ Yes
Shading Out:	☒ No ☐ Yes
Cavities: ☐ None	☒ Trunk ☐ Branch
Exfoliating Bark:	☐ No ☒ Yes
Water Pocket(s):	☒ No ☐ Yes
Mechanical Damage:	☐ Trunk ☐ Branch ☒ None
Cankers:	☒ No ☐ Yes
Fungus:	☒ No ☐ Yes
Twig/ Branch Dieback:	☐ None ☐ Minor ☐ Moderate ☒Extensive
Vigor:	☐ Excellent ☐Average ☐ Fair ☒ Poor
Borers/ Ants /Termites:	☐ Minor ☒ Moderate ☐Extensive ☐None
Exudations:	☒ No ☐ Yes
Galls:	☒ No ☐ Yes

Comments & Notes: Old tag #66; old fire damage; - 1 trunk broke off; sycamore borer; recent extensive fire damage (Rodeo Fire - 7/23/17); cavity at base; sprouting in canopy (sign of recovery); foliage scorched

Photo #4973-74

[85] Health: A =Outstanding; B = Above Average; C = Average; D = Below Average; F = Dead
[86] Decurrent = Lacking Strong Central Leader. Excurrent = Strong Central Leader.
[87] Aesthetic (compared to standard tree of same species) : A = nearly symmetrical, healthy tree – F = Dead

OAK TREE FIELD DATA WORKSHEET *Property: 500 Baseline Road, La Verne*

Survey Date: 9/5/2017 **Tree Number: 30**

GENERAL CHARACTERISTICS	
Species: ☐*Q. agrifolia* ☐ *Q. lobata* ☒ *Other (see below)*	**Health Rating[88]:** ☐A ☐B ☐C ☐D ☒ F
Platanus racemosa (sycamore)	**Form:** ☐ symmetric ☐ minor asymmetry
Trunk Count: 1 **Height (ft.):** N/A	☐ major asymmetry ☐ stump sprout
Trunk DBH (in.): 5, 22 (base of all trunks) (REMOVED)	☐ stag-head
Percent Canopy Cover: N/A	**Crown Class[89]:** ☐ Decurrent ☐ Excurrent
Existing Terrain: ☐ Flat ☒ Slope	**Age Class:** ☐ immature ☐ semi-mature
Aesthetic Rating[90]: ☐ A ☐ B ☐ C ☐ D ☒ F	☐ mature ☐over-mature/senescent
Overall Grade: ☐ A ☐ B ☐ C ☐ D ☒ F	**Heritage Tree:** ☐ No ☐ Yes

CANOPY CHARACTERISTICS

eroded slope to north (exposed roots);	Dripline Radius (Feet)	Canopy to Grade (Feet)
N		
NE		
E		
SE	REMOVED	
S		
SW		
W		
NW		

CANOPY SPREAD (FEET): 30

PROPOSED ACTIONS

Root Collar Inspection:	☐
Monitor for Progress:	☐
Remove Deadwood/Prune :	☐
Risk Assessment	☐
Support Structure:	☐

IMPACTS & MITIGATIONS

In Impacted Area:	☐ Yes ☐ No
Proposed Land Use:	
Impacts:	
Mitigations:	

TREE HEALTH

Wound Wood Development:	☐ Excellent ☐ Average ☐ Poor ☐ None
Foliage Density:	☐ Normal ☐ Sparse
Weak crotches:	☐ No ☐ Yes
Oak Pit Scale:	☐ No ☐ Yes
Mainstem dieback:	☐ No ☐ Yes
Exposed Roots:	☐ No ☐ Yes
Epicormic growth:	☐ No ☐ Yes
Shading Out:	☐ No ☐ Yes
Cavities: ☐ None	☐ Trunk ☐ Branch
Exfoliating Bark:	☐ No ☐ Yes
Water Pocket(s):	☐ No ☐ Yes
Mechanical Damage:	☐ Trunk ☐ Branch ☐ None
Cankers:	☐ No ☐ Yes
Fungus:	☐ No ☐ Yes
Twig/ Branch Dieback:	☐ None ☐ Minor ☐ Moderate ☐Extensive
Vigor:	☐ Excellent ☐Average ☐ Fair ☐ Poor
Borers/ Ants /Termites:	☐ Minor ☐ Moderate ☐Extensive ☐None
Exudations:	☐ No ☐ Yes
Galls:	☐ No ☐ Yes

Comments & Notes: Tree removed during Rodeo Fire (7/23/17); was old tag #67 at time of 2014 inventory

Photo - NONE

[88] Health: A =Outstanding; B = Above Average; C = Average; D = Below Average; F = Dead
[89] Decurrent = Lacking Strong Central Leader. Excurrent = Strong Central Leader.
[90] Aesthetic (compared to standard tree of same species) : A = nearly symmetrical, healthy tree – F = Dead

OAK TREE FIELD DATA WORKSHEET *Property: 500 Baseline Road, La Verne*

Survey Date: 9/5/2017 **Tree Number: 31**

GENERAL CHARACTERISTICS	
Species: ☐ *Q. agrifolia* ☐ *Q. lobata* ☒ *Other (see below)*	**Health Rating[1]:** ☐A ☐B ☐C ☒D ☐F
Scrub oak (*Quercus berberidifolia*)	**Form:** ☒ symmetric ☐ minor asymmetry
Trunk Count: 3 **Height (ft.):** 22	☐ major asymmetry ☐ stump sprout
Trunk DBH (in.): 2, 3, 9	☐ stag-head
Percent Canopy Cover: 10 (fire)	**Crown Class[2]:** ☒ Decurrent ☐ Excurrent
Existing Terrain: ☐ Flat ☒ Slope	**Age Class:** ☐ immature ☒ semi-mature
Aesthetic Rating[3]: ☐ A ☐ B ☐ C ☒ D ☐ F	☐ mature ☐ over-mature/senescent
Overall Grade: ☐ A ☐ B ☐ C ☒ D ☐ F	**Heritage Tree:** ☒ No ☐ Yes

CANOPY CHARACTERISTICS

	Dripline Radius (Feet)	Canopy to Grade (Feet)
N	10	0
NE		
E	10	10
SE		
S	12	5
SW		
W	12	4
NW		

CANOPY SPREAD (FEET): 22 X 22

PROPOSED ACTIONS

Root Collar Inspection:	☐
Monitor for Progress:	☐
Remove Deadwood/Prune :	☐
Risk Assessment	☐
Support Structure:	☐

IMPACTS & MITIGATIONS

In Impacted Area: ☐ Yes ☐ No
Proposed Land Use:
Impacts:
Mitigations:

TREE HEALTH

Wound Wood Development:	☐ Excellent ☐ Average ☒ Poor ☐ None
Foliage Density:	☐ Normal ☒ Sparse
Weak crotches:	☒ No ☐ Yes
Oak Pit Scale:	☒ No ☐ Yes
Mainstem dieback:	☐ No ☒ Yes
Exposed Roots:	☒ No ☐ Yes
Epicormic growth:	☒ No ☐ Yes
Shading Out:	☒ No ☐ Yes
Cavities: ☒ None	☐ Trunk ☐ Branch
Exfoliating Bark:	☒ No ☐ Yes
Water Pocket(s):	☒ No ☐ Yes
Mechanical Damage:	☐ Trunk ☐ Branch ☒ None
Cankers:	☐ No ☒ Yes
Fungus:	☒ No ☐ Yes
Twig/ Branch Dieback:	☐ None ☐ Minor ☐ Moderate ☒ Extensive
Vigor:	☐ Excellent ☐ Average ☐ Fair ☒ Poor
Borers/ Ants /Termites:	☒ Minor ☐ Moderate ☐ Extensive ☐ None
Exudations:	☒ No ☐ Yes
Galls:	☒ No ☐ Yes

Comments & Notes: surrounded by poison oak; old fire damage; old tag #48 & 68; recent extensive fire damage (Rodeo Fire – 7/23/17); 80% of canopy defoliated; basal sprouts (sign of recovery)

Photo #4983

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[1] Health: A =Outstanding; B = Above Average; C = Average; D = Below Average; F = Dead
[2] Decurrent = Lacking Strong Central Leader. Excurrent = Strong Central Leader.
[3] Aesthetic (compared to standard tree of same species) : A = nearly symmetrical, healthy tree – F = Dead

OAK TREE FIELD DATA WORKSHEET *Property: 500 Baseline Road, La Verne*

Survey Date: 9/5/2017 **Tree Number: 32**

GENERAL CHARACTERISTICS	
Species: ☒*Q. agrifolia* ☐ *Q. lobata* ☐ *Other (see below)*	**Health Rating**[1]**:** ☐A ☐B ☒C ☐D ☐ F
	Form: ☐ symmetric ☐ minor asymmetry
Trunk Count: 2 **Height (ft.)**: 30	☒ major asymmetry ☐ stump sprout
Trunk DBH (in.): 8, 12	☐ stag-head
Percent Canopy Cover: 30	**Crown Class**[2]**:** ☐ Decurrent ☒ Excurrent
Existing Terrain: ☐ Flat ☒ Slope	**Age Class:** ☐ immature ☒ semi-mature
Aesthetic Rating[3]**:** ☐ A ☐ B ☒ C ☐ D ☐ F	☐ mature ☐over-mature/senescent
Overall Grade: ☐ A ☐ B ☒ C ☐ D ☐ F	**Heritage Tree:** ☒ No ☐ Yes

CANOPY CHARACTERISTICS

	Dripline Radius (Feet)	Canopy to Grade (Feet)
N	25	15
NE		
E	6	15
SE		
S	5	7
SW		
W	20	25
NW		

CANOPY SPREAD (FEET): 30 X 26

TREE HEALTH

Wound Wood Development:	☐ Excellent ☒ Average ☐ Poor ☐ None
Foliage Density:	☐ Normal ☒ Sparse
Weak crotches:	☒ No ☐ Yes
Oak Pit Scale:	☒ No ☐ Yes
Mainstem dieback:	☐ No ☒ Yes
Exposed Roots:	☒ No ☐ Yes
Epicormic growth:	☒ No ☐ Yes
Shading Out:	☐ No ☒ Yes
Cavities: ☐ None	☒ Trunk ☐ Branch
Exfoliating Bark:	☒ No ☐ Yes
Water Pocket(s):	☒ No ☐ Yes
Mechanical Damage:	☐ Trunk ☐ Branch ☒ None
Cankers:	☒ No ☐ Yes
Fungus:	☒ No ☐ Yes
Twig/ Branch Dieback:	☐ None ☒ Minor ☐ Moderate ☐Extensive
Vigor:	☐ Excellent ☒Average ☐ Fair ☐ Poor
Borers/ Ants /Termites:	☒ Minor ☐ Moderate ☐Extensive ☐None
Exudations:	☒ No ☐ Yes
Galls:	☒ No ☐ Yes

PROPOSED ACTIONS

Root Collar Inspection:	☐
Monitor for Progress:	☐
Remove Deadwood/Prune :	☐
Risk Assessment	☐
Support Structure:	☐

IMPACTS & MITIGATIONS

In Impacted Area:	☐ Yes ☐ No
Proposed Land Use:	
Impacts:	
Mitigations:	

Comments & Notes: Old tag #69; old fire damage; adjacent to stream (south side); metal debris around trunk; leans west; recent fire damage to north canopy (Rodeo Fire – 7/23/17); pruning on stream side for Fire Department access during fire; column of decay on north side of 8" trunk; foliage scorched; broken branches

Photo #4982

[1] Health: A =Outstanding; B = Above Average; C = Average; D = Below Average; F = Dead
[2] Decurrent = Lacking Strong Central Leader. Excurrent = Strong Central Leader.
[3] Aesthetic (compared to standard tree of same species) : A = nearly symmetrical, healthy tree – F = Dead

OAK TREE FIELD DATA WORKSHEET *Property: 500 Baseline Road, La Verne*

Survey Date: 9/5/2017 **Tree Number: 33**

GENERAL CHARACTERISTICS				
Species: ☒ *Q. agrifolia* ☐ *Q. lobata* ☐ *Other (see below)*			**Health Rating**[1]**:** ☐A ☐B ☒C ☐D ☐F	
			Form: ☐ symmetric ☒ minor asymmetry	
Trunk Count: 1 **Height (ft.):** 45			☐ major asymmetry ☐ stump sprout	
Trunk DBH (in.): 17			☐ stag-head	
Percent Canopy Cover: 40			**Crown Class**[2]**:** ☐ Decurrent ☒ Excurrent	
Existing Terrain: ☐ Flat ☒ Slope			**Age Class:** ☐ immature ☒ semi-mature	
Aesthetic Rating[3]**:** ☐ A ☐ B ☒ C ☐ D ☐ F			☐ mature ☐over-mature/senescent	
Overall Grade: ☐ A ☐ B ☒ C ☐ D ☐ F			**Heritage Tree:** ☒ No ☐ Yes	
CANOPY CHARACTERISTICS			**TREE HEALTH**	
	Dripline Radius (Feet)	Canopy to Grade (Feet)	**Wound Wood Development:**	☐ Excellent ☒ Average ☐ Poor ☐ None
N	30	5	**Foliage Density:**	☐ Normal ☒ Sparse
NE			**Weak crotches:**	☒ No ☐ Yes
E	15	30	**Oak Pit Scale:**	☒ No ☐ Yes
SE			**Mainstem dieback:**	☐ No ☒ Yes
S	15	20	**Exposed Roots:**	☒ No ☐ Yes
SW			**Epicormic growth:**	☐ No ☒ Yes
W	16	30	**Shading Out:**	☒ No ☐ Yes
NW			**Cavities:** ☒ None	☐ Trunk ☐ Branch
			Exfoliating Bark:	☒ No ☐ Yes
CANOPY SPREAD (FEET): 45 X 31			**Water Pocket(s):**	☒ No ☐ Yes
PROPOSED ACTIONS			**Mechanical Damage:**	☐ Trunk ☐ Branch ☒ None
Root Collar Inspection:	☐		**Cankers:**	☒ No ☐ Yes
Monitor for Progress:	☐		**Fungus:**	☒ No ☐ Yes
Remove Deadwood/Prune :	☐		**Twig/ Branch Dieback:**	☐ None ☐ Minor ☐ Moderate ☒Extensive
Risk Assessment	☐			
Support Structure:	☐			
IMPACTS & MITIGATIONS			**Vigor:**	☐ Excellent ☐Average ☐ Fair ☒ Poor
In Impacted Area: ☐ Yes ☐ No			**Borers/ Ants /Termites:**	☐ Minor ☒ Moderate ☐Extensive ☐None
Proposed Land Use:				
Impacts:			**Exudations:**	☒ No ☐ Yes
Mitigations:			**Galls:**	☒ No ☐ Yes

Comments & Notes: Old tag #67, 70; old fire damage; leans north; woodpecker holes; recent fire damage to north canopy (Rodeo Fire – 7/23/17); foliage scorched; broken branches

Photo #4984

[1] Health: A =Outstanding; B = Above Average; C = Average; D = Below Average; F = Dead
[2] Decurrent = Lacking Strong Central Leader. Excurrent = Strong Central Leader.
[3] Aesthetic (compared to standard tree of same species) : A = nearly symmetrical, healthy tree – F = Dead

OAK TREE FIELD DATA WORKSHEET *Property: 500 Baseline Road, La Verne*

Survey Date: 9/5/2017 **Tree Number: 34**

GENERAL CHARACTERISTICS	
Species: ☐ *Q. agrifolia* ☐ *Q. lobata* ☒ *Other (see below)*	**Health Rating[1]:** ☐A ☐B ☒C- ☐D ☐F
Platanus racemosa (sycamore)	**Form:** ☐ symmetric ☐ minor asymmetry
Trunk Count: 1 **Height (ft.):** 30	☒ major asymmetry ☐ stump sprout
Trunk DBH (in.): 16	☐ stag-head
Percent Canopy Cover: 20	**Crown Class[2]:** ☒ Decurrent ☐ Excurrent
Existing Terrain: ☐ Flat ☒ Slope	**Age Class:** ☐ immature ☐ semi-mature
Aesthetic Rating[3]: ☐ A ☐ B ☒ C- ☐ D ☐ F	☒ mature ☐over-mature/senescent
Overall Grade: ☐ A ☐ B ☒ C- ☐ D ☐ F	**Heritage Tree:** ☒ No ☐ Yes

CANOPY CHARACTERISTICS		
	Dripline Radius (Feet)	Canopy to Grade (Feet)
N	0	0
NE		
E	0	0
SE		
S	0	0
SW		
W	30	10
NW	28	1

CANOPY SPREAD (FEET): 0 X 30

TREE HEALTH	
Wound Wood Development:	☐ Excellent ☒ Average ☐ Poor ☐ None
Foliage Density:	☐ Normal ☒ Sparse
Weak crotches:	☒ No ☐ Yes
Oak Pit Scale:	☒ No ☐ Yes
Mainstem dieback:	☐ No ☒ Yes
Exposed Roots:	☐ No ☒ Yes
Epicormic growth:	☐ No ☒ Yes
Shading Out:	☐ No ☒ Yes
Cavities: ☐ None	☒ Trunk ☐ Branch
Exfoliating Bark:	☒ No ☐ Yes
Water Pocket(s):	☒ No ☐ Yes
Mechanical Damage:	☐ Trunk ☐ Branch ☒ None
Cankers:	☒ No ☐ Yes
Fungus:	☒ No ☐ Yes
Twig/ Branch Dieback:	☐ None ☐ Minor ☒ Moderate ☐Extensive
Vigor:	☐ Excellent ☐Average ☒ Fair ☐ Poor
Borers/ Ants /Termites:	☐ Minor ☒ Moderate ☐Extensive ☐None
Exudations:	☒ No ☐ Yes
Galls:	☒ No ☐ Yes

PROPOSED ACTIONS	
Root Collar Inspection:	☐
Monitor for Progress:	☐
Remove Deadwood/Prune :	☐
Risk Assessment	☐
Support Structure:	☐

IMPACTS & MITIGATIONS
In Impacted Area: ☐ Yes ☐ No
Proposed Land Use:
Impacts:
Mitigations:

Comments & Notes: surrounded by poison oak; old tag #73; heavy lean to west; old fire damage; decay at base; eroded slope to south; recent fire damage (Rodeo Fire – 7/23/17); foliage scorched; cavity at base

Photo #4985-L

[1] Health: A =Outstanding; B = Above Average; C = Average; D = Below Average; F = Dead
[2] Decurrent = Lacking Strong Central Leader. Excurrent = Strong Central Leader.
[3] Aesthetic (compared to standard tree of same species) : A = nearly symmetrical, healthy tree – F = Dead

OAK TREE FIELD DATA WORKSHEET *Property: 500 Baseline Road, La Verne*

Survey Date: 9/5/2017 **Tree Number: 35**

GENERAL CHARACTERISTICS				
Species: ☒*Q. agrifolia* ☐ *Q. lobata* ☐ *Other (see below)*			**Health Rating**[1]**:** ☐A ☐B ☒C ☐D ☐ F	
			Form: ☒ symmetric ☐ minor asymmetry	
Trunk Count: 1 **Height (ft.)**: 30			☐ major asymmetry ☐ stump sprout	
Trunk DBH (in.): 12			☐ stag-head	
Percent Canopy Cover: 50			**Crown Class**[2]**:** ☐ Decurrent ☒ Excurrent	
Existing Terrain: ☐ Flat ☒ Slope			**Age Class:** ☐ immature ☒ semi-mature	
Aesthetic Rating[3]**:** ☐ A ☐ B ☒ C ☐ D ☐ F			☐ mature ☐over-mature/senescent	
Overall Grade: ☐ A ☐ B ☒ C ☐ D ☐ F			**Heritage Tree:** ☒ No ☐ Yes	
CANOPY CHARACTERISTICS			**TREE HEALTH**	
	Dripline Radius (Feet)	Canopy to Grade (Feet)	**Wound Wood Development:**	☐ Excellent ☒ Average ☐ Poor ☐ None
N	25	10	**Foliage Density:**	☒ Normal ☐ Sparse
NE			**Weak crotches:**	☒ No ☐ Yes
E	18	20	**Oak Pit Scale:**	☒ No ☐ Yes
SE			**Mainstem dieback:**	☒ No ☐ Yes
S	13	20	**Exposed Roots:**	☐ No ☒ Yes
SW			**Epicormic growth:**	☐ No ☒ Yes
W	18	18	**Shading Out:**	☒ No ☐ Yes
NW			**Cavities:** ☒ None	☐ Trunk ☐ Branch
			Exfoliating Bark:	☒ No ☐ Yes
CANOPY SPREAD (FEET): 38 X 36			**Water Pocket(s):**	☒ No ☐ Yes
PROPOSED ACTIONS			**Mechanical Damage:**	☐ Trunk ☐ Branch ☒ None
Root Collar Inspection:	☐		**Cankers:**	☒ No ☐ Yes
Monitor for Progress:	☐		**Fungus:**	☒ No ☐ Yes
Remove Deadwood/Prune :	☐		**Twig/ Branch Dieback:**	☐ None ☐ Minor ☒ Moderate ☐Extensive
Risk Assessment	☐			
Support Structure:	☐			
IMPACTS & MITIGATIONS			**Vigor:**	☐ Excellent ☐Average ☒ Fair ☐ Poor
In Impacted Area: ☐ Yes ☐ No			**Borers/ Ants /Termites:**	☒ Minor ☐ Moderate ☐Extensive ☐None
Proposed Land Use:				
Impacts:			**Exudations:**	☒ No ☐ Yes
Mitigations:			**Galls:**	☒ No ☐ Yes

Comments & Notes: Old tag #34; tagged on south side at base; eroded slope; recent fire damage to northern canopy (Rodeo Fire – 7/23/17); foliage scorched; roots entertwined with #34

Photo #4985-R

[1] Health: A =Outstanding; B = Above Average; C = Average; D = Below Average; F = Dead
[2] Decurrent = Lacking Strong Central Leader. Excurrent = Strong Central Leader.
[3] Aesthetic (compared to standard tree of same species) : A = nearly symmetrical, healthy tree – F = Dead

OAK TREE FIELD DATA WORKSHEET *Property: 500 Baseline Road, La Verne*

Survey Date: 9/5/2017 **Tree Number: 36**

GENERAL CHARACTERISTICS	
Species: ☒*Q. agrifolia* ☐ *Q. lobata* ☐ *Other (see below)*	**Health Rating[1]:** ☐A ☒B- ☐C ☐D ☐ F
	Form: ☒ symmetric ☐ minor asymmetry
Trunk Count: 1 **Height (ft.)**: 30	☐ major asymmetry ☐ stump sprout
Trunk DBH (in.): 15.5	☐ stag-head
Percent Canopy Cover: 60	**Crown Class[2]:** ☐ Decurrent ☒ Excurrent
Existing Terrain: ☐ Flat ☒ Slope	**Age Class:** ☐ immature ☒ semi-mature
Aesthetic Rating[3]: ☐ A ☒ B- ☐ C ☐ D ☐ F	☐ mature ☐over-mature/senescent
Overall Grade: ☐ A ☒ B- ☐ C ☐ D ☐ F	**Heritage Tree:** ☒ No ☐ Yes

CANOPY CHARACTERISTICS			**TREE HEALTH**	
	Dripline Radius (Feet)	Canopy to Grade (Feet)	**Wound Wood Development:**	☐ Excellent ☒ Average ☐ Poor ☐ None
N	20	15	**Foliage Density:**	☒ Normal ☐ Sparse
NE			**Weak crotches:**	☒ No ☐ Yes
E	16	10	**Oak Pit Scale:**	☒ No ☐ Yes
SE			**Mainstem dieback:**	☒ No ☐ Yes
S	20	6	**Exposed Roots:**	☐ No ☒ Yes
SW			**Epicormic growth:**	☒ No ☐ Yes
W	18	10	**Shading Out:**	☒ No ☐ Yes
NW			**Cavities:** ☒ None	☐ Trunk ☐ Branch
			Exfoliating Bark:	☒ No ☐ Yes
CANOPY SPREAD (FEET): 40 X 34			**Water Pocket(s):**	☒ No ☐ Yes

PROPOSED ACTIONS		**Mechanical Damage:**	☐ Trunk ☐ Branch ☒ None
Root Collar Inspection:	☐	**Cankers:**	☒ No ☐ Yes
Monitor for Progress:	☐	**Fungus:**	☒ No ☐ Yes
Remove Deadwood/Prune :	☐	**Twig/ Branch Dieback:**	☐ None ☒ Minor ☐ Moderate ☐Extensive
Risk Assessment	☐		
Support Structure:	☐		
IMPACTS & MITIGATIONS		**Vigor:**	☐ Excellent ☒Average ☐ Fair ☐ Poor
In Impacted Area: ☐ Yes ☐ No		**Borers/ Ants /Termites:**	☒ Minor ☐ Moderate ☐Extensive ☐None
Proposed Land Use:			
Impacts:		**Exudations:**	☒ No ☐ Yes
Mitigations:		**Galls:**	☒ No ☐ Yes

Comments & Notes: surrounded by poison oak; old tga #35 & 179; leans slightly to north; old fire damage; erosion at base; recent fire damage to north and west canopy (Rodeo Fire – 7/23/17); foliage scorched

Photo #4986

[1] Health: A =Outstanding; B = Above Average; C = Average; D = Below Average; F = Dead
[2] Decurrent = Lacking Strong Central Leader. Excurrent = Strong Central Leader.
[3] Aesthetic (compared to standard tree of same species) : A = nearly symmetrical, healthy tree – F = Dead

OAK TREE FIELD DATA WORKSHEET *Property: 500 Baseline Road, La Verne*

Survey Date: 9/5/2017 **Tree Number: 37**

GENERAL CHARACTERISTICS	
Species: ☐ *Q. agrifolia* ☐ *Q. lobata* ☒ *Other (see below)*	**Health Rating**[1]**:** ☐A ☐B ☒C ☐D ☐F
Q. berberidifolia (scrub oak)	**Form:** ☐ symmetric ☒ minor asymmetry
Trunk Count: 2 **Height (ft.):** 22	☐ major asymmetry ☐ stump sprout
Trunk DBH (in.): 5±, 7±	☐ stag-head
Percent Canopy Cover: 85	**Crown Class**[2]**:** ☒ Decurrent ☐ Excurrent
Existing Terrain: ☐ Flat ☒ Slope	**Age Class:** ☐ immature ☐ semi-mature
Aesthetic Rating[3]**:** ☐ A ☐ B ☒ C ☐ D ☐ F	☒ mature ☐over-mature/senescent
Overall Grade: ☐ A ☐ B ☒ C ☐ D ☐ F	**Heritage Tree:** ☒ No ☐ Yes

CANOPY CHARACTERISTICS

	Dripline Radius (Feet)	Canopy to Grade (Feet)
N	10	0
NE		
E	4	6
SE		
S	11	3
SW		
W	10	2
NW		

CANOPY SPREAD (FEET): 21 X 14

TREE HEALTH

Wound Wood Development:	☐ Excellent ☒ Average ☐ Poor ☐ None
Foliage Density:	☐ Normal ☒ Sparse
Weak crotches:	☒ No ☐ Yes
Oak Pit Scale:	☒ No ☐ Yes
Mainstem dieback:	☐ No ☒ Yes
Exposed Roots:	☒ No ☐ Yes
Epicormic growth:	☐ No ☒ Yes
Shading Out:	☐ No ☒ Yes
Cavities: ☒ None	☐ Trunk ☐ Branch
Exfoliating Bark:	☒ No ☐ Yes
Water Pocket(s):	☒ No ☐ Yes
Mechanical Damage:	☐ Trunk ☐ Branch ☒ None
Cankers:	☒ No ☐ Yes
Fungus:	☒ No ☐ Yes
Twig/ Branch Dieback:	☐ None ☐ Minor ☒ Moderate ☐Extensive
Vigor:	☐ Excellent ☐Average ☒ Fair ☐ Poor
Borers/ Ants /Termites:	☒ Minor ☐ Moderate ☐Extensive ☐None
Exudations:	☒ No ☐ Yes
Galls:	☒ No ☐ Yes

PROPOSED ACTIONS

Root Collar Inspection:	☐
Monitor for Progress:	☐
Remove Deadwood/Prune :	☐
Risk Assessment	☐
Support Structure:	☐

IMPACTS & MITIGATIONS

In Impacted Area: ☐ Yes ☐ No

Proposed Land Use:

Impacts:

Mitigations:

Comments & Notes: Not tagged due to terrain & poison oak; surveyed at distance; old fire damage; interior deadwood; recent fire damage to canopy (scorched)

Photo #4987-L

[1] Health: A =Outstanding; B = Above Average; C = Average; D = Below Average; F = Dead
[2] Decurrent = Lacking Strong Central Leader. Excurrent = Strong Central Leader.
[3] Aesthetic (compared to standard tree of same species) : A = nearly symmetrical, healthy tree – F = Dead

OAK TREE FIELD DATA WORKSHEET *Property: 500 Baseline Road, La Verne*

Survey Date: 9/5/2017 **Tree Number: 38**

GENERAL CHARACTERISTICS	
Species: ☐ *Q. agrifolia* ☐ *Q. lobata* ☒ *Other (see below)*	**Health Rating[1]:** ☐A ☐B ☒C ☐D ☐F
Q. berberidifolia (scrub oak)	**Form:** ☐ symmetric ☒ minor asymmetry
Trunk Count: 8 **Height (ft.):** 18	☐ major asymmetry ☐ stump sprout
Trunk DBH (in.): 1±, 2±, 3±, 3±, 3±, 4±, 5±, 7±	☐ stag-head
Percent Canopy Cover: 70	**Crown Class[2]:** ☒ Decurrent ☐ Excurrent
Existing Terrain: ☐ Flat ☒ Slope	**Age Class:** ☐ immature ☒ semi-mature
Aesthetic Rating[3]: ☐ A ☐ B ☒ C ☐ D ☐ F	☐ mature ☐ over-mature/senescent
Overall Grade: ☐ A ☐ B ☒ C ☐ D ☐ F	**Heritage Tree:** ☒ No ☐ Yes

CANOPY CHARACTERISTICS

	Dripline Radius (Feet)	Canopy to Grade (Feet)
N	10	5
NE		
E	10	5
SE		
S	10	5
SW		
W	10	5
NW		

CANOPY SPREAD (FEET): 20 X 20

TREE HEALTH

Wound Wood Development:	☐ Excellent ☒ Average ☐ Poor ☐ None
Foliage Density:	☐ Normal ☒ Sparse
Weak crotches:	☒ No ☐ Yes
Oak Pit Scale:	☒ No ☐ Yes
Mainstem dieback:	☒ No ☐ Yes
Exposed Roots:	☒ No ☐ Yes
Epicormic growth:	☒ No ☐ Yes
Shading Out:	☒ No ☐ Yes
Cavities: ☒ None	☐ Trunk ☐ Branch
Exfoliating Bark:	☒ No ☐ Yes
Water Pocket(s):	☐ No ☒ Yes
Mechanical Damage:	☐ Trunk ☐ Branch ☒ None
Cankers:	☒ No ☐ Yes
Fungus:	☒ No ☐ Yes
Twig/ Branch Dieback:	☐ None ☒ Minor ☐ Moderate ☐ Extensive
Vigor:	☐ Excellent ☒ Average ☐ Fair ☐ Poor
Borers/ Ants /Termites:	☒ Minor ☐ Moderate ☐ Extensive ☐ None
Exudations:	☒ No ☐ Yes
Galls:	☒ No ☐ Yes

PROPOSED ACTIONS

Root Collar Inspection:	☐
Monitor for Progress:	☐
Remove Deadwood/Prune :	☐
Risk Assessment	☐
Support Structure:	☐

IMPACTS & MITIGATIONS

In Impacted Area: ☐ Yes ☐ No

Proposed Land Use:

Impacts:

Mitigations:

Comments & Notes: Not tagged due to terrain & poison oak; surveyed at distance; old fire damage; northeast of #37; recent fire damage (Rodeo Fire – 7/23/17); foliage scorched; additional scrub oaks surrounding (<8" DBH)

Photo #4987-R

[1] Health: A =Outstanding; B = Above Average; C = Average; D = Below Average; F = Dead
[2] Decurrent = Lacking Strong Central Leader. Excurrent = Strong Central Leader.
[3] Aesthetic (compared to standard tree of same species) : A = nearly symmetrical, healthy tree – F = Dead

OAK TREE FIELD DATA WORKSHEET *Property: 500 Baseline Road, La Verne*

Survey Date: 9/5/2017 **Tree Number: 39**

GENERAL CHARACTERISTICS					
Species: ☒*Q. agrifolia* ☐ *Q. lobata* ☐ *Other (see below)*			**Health Rating**[1]**:** ☐A ☐B ☒C- ☐D ☐F		
			Form: ☐ symmetric ☒ minor asymmetry		
Trunk Count: 1 **Height (ft.)**: 40			☐ major asymmetry ☐ stump sprout		
Trunk DBH (in.): 22			☐ stag-head		
Percent Canopy Cover: 35			**Crown Class**[2]**:** ☐ Decurrent ☒ Excurrent		
Existing Terrain: ☐ Flat ☒ Slope			**Age Class:** ☐ immature ☐ semi-mature		
Aesthetic Rating[3]**:** ☐ A ☐ B ☒ C ☐ D ☐ F			☒ mature ☐over-mature/senescent		
Overall Grade: ☐ A ☐ B ☒ C ☐ D ☐ F			**Heritage Tree:** ☒ No ☐ Yes		
CANOPY CHARACTERISTICS			**TREE HEALTH**		
	Dripline Radius (Feet)	Canopy to Grade (Feet)	**Wound Wood Development:**	☐ Excellent ☒ Average ☐ Poor ☐ None	
N	25	30	**Foliage Density:**	☐ Normal ☒ Sparse	
NE			**Weak crotches:**	☒ No	☐ Yes
E	18	10	**Oak Pit Scale:**	☒ No	☐ Yes
SE			**Mainstem dieback:**	☐ No	☒ Yes
S	20	25	**Exposed Roots:**	☒ No	☐ Yes
SW			**Epicormic growth:**	☐ No	☒ Yes
W	20	25	**Shading Out:**	☒ No	☐ Yes
NW			**Cavities:** ☒ None	☐ Trunk	☐ Branch
			Exfoliating Bark:	☒ No	☐ Yes
CANOPY SPREAD (FEET): 45 X 38			**Water Pocket(s):**	☒ No	☐ Yes
PROPOSED ACTIONS			**Mechanical Damage:**	☐ Trunk ☐ Branch ☒ None	
Root Collar Inspection:	☐		**Cankers:**	☒ No	☐ Yes
Monitor for Progress:	☐		**Fungus:**	☒ No	☐ Yes
Remove Deadwood/Prune :	☐		**Twig/ Branch Dieback:**	☐ None ☐ Minor ☐ Moderate ☒Extensive	
Risk Assessment	☐				
Support Structure:	☐				
IMPACTS & MITIGATIONS			**Vigor:**	☐ Excellent ☐Average ☒ Fair ☐ Poor	
In Impacted Area: ☐ Yes ☐ No			**Borers/ Ants /Termites:**	☐ Minor ☒ Moderate ☐Extensive ☐None	
Proposed Land Use:					
Impacts:			**Exudations:**	☒ No ☐ Yes	
Mitigations:			**Galls:**	☒ No ☐ Yes	

Comments & Notes: Old tag #177; old fire damage; slight lean south; recent fire damage (Rodeo Fire – 7/23/17); foliage scorched; trunk & branches only minor fire damage; dead branches

No Photo available

[1] Health: A =Outstanding; B = Above Average; C = Average; D = Below Average; F = Dead
[2] Decurrent = Lacking Strong Central Leader. Excurrent = Strong Central Leader.
[3] Aesthetic (compared to standard tree of same species) : A = nearly symmetrical, healthy tree – F = Dead

OAK TREE FIELD DATA WORKSHEET *Property: 500 Baseline Road, La Verne*

Survey Date: 9/5/2017 **Tree Number: 40**

GENERAL CHARACTERISTICS			
Species: ☒ *Q. agrifolia* ☐ *Q. lobata* ☐ *Other (see below)*		**Health Rating**[1]**:** ☐A ☐B ☒C ☐D ☐F	
		Form: ☐ symmetric ☒ minor asymmetry	
Trunk Count: 1 **Height (ft.)**: 20		☐ major asymmetry ☐ stump sprout	
Trunk DBH (in.): 11.5		☐ stag-head	
Percent Canopy Cover: 20		**Crown Class**[2]**:** ☒ Decurrent ☐ Excurrent	
Existing Terrain: ☐ Flat ☒ Slope		**Age Class:** ☐ immature ☒ semi-mature	
Aesthetic Rating[3]**:** ☐ A ☐ B ☒ C ☐ D ☐ F		☐ mature ☐over-mature/senescent	
Overall Grade: ☐ A ☐ B ☒ C ☐ D ☐ F		**Heritage Tree:** ☒ No ☐ Yes	

CANOPY CHARACTERISTICS			**TREE HEALTH**	
	Dripline Radius (Feet)	Canopy to Grade (Feet)	**Wound Wood Development:**	☐ Excellent ☒ Average ☐ Poor ☐ None
N	17	10	**Foliage Density:**	☐ Normal ☒ Sparse
NE			**Weak crotches:**	☒ No ☐ Yes
E	7	10	**Oak Pit Scale:**	☒ No ☐ Yes
SE			**Mainstem dieback:**	☐ No ☒ Yes
S	13	10	**Exposed Roots:**	☒ No ☐ Yes
SW			**Epicormic growth:**	☐ No ☒ Yes
W	15	20	**Shading Out:**	☐ No ☒ Yes
NW			**Cavities:** ☒ None	☐ Trunk ☐ Branch
			Exfoliating Bark:	☒ No ☐ Yes
CANOPY SPREAD (FEET): 30 X 22			**Water Pocket(s):**	☒ No ☐ Yes
PROPOSED ACTIONS			**Mechanical Damage:**	☐ Trunk ☐ Branch ☒ None
Root Collar Inspection:	☐		**Cankers:**	☒ No ☐ Yes
Monitor for Progress:	☐		**Fungus:**	☒ No ☐ Yes
Remove Deadwood/Prune :	☐		**Twig/ Branch Dieback:**	☐ None ☐ Minor ☐ Moderate ☒Extensive
Risk Assessment	☐			
Support Structure:	☐			
IMPACTS & MITIGATIONS			**Vigor:**	☐ Excellent ☐Average ☒ Fair ☐ Poor
In Impacted Area: ☐ Yes ☐ No			**Borers/ Ants /Termites:**	☒ Minor ☐ Moderate ☐Extensive ☐None
Proposed Land Use:				
Impacts:			**Exudations:**	☒ No ☐ Yes
Mitigations:			**Galls:**	☒ No ☐ Yes

Comments & Notes: Old tag #33, 165; old fire damage; recent fire damage (Rodeo Fire – 7/23/17); foliage scorched; minimal damage to trunk & branches

Photo #4961

[1] Health: A =Outstanding; B = Above Average; C = Average; D = Below Average; F = Dead
[2] Decurrent = Lacking Strong Central Leader. Excurrent = Strong Central Leader.
[3] Aesthetic (compared to standard tree of same species) : A = nearly symmetrical, healthy tree – F = Dead

OAK TREE FIELD DATA WORKSHEET *Property: 500 Baseline Road, La Verne*

Survey Date: 9/5/2017 **Tree Number: 41**

GENERAL CHARACTERISTICS			
Species: ☒ *Q. agrifolia* ☐ *Q. lobata* ☐ *Other (see below)*		**Health Rating[1]:** ☐A ☐B ☒C ☐D ☐F	
		Form: ☐ symmetric ☒ minor asymmetry	
Trunk Count: 1 **Height (ft.):** 40		☐ major asymmetry ☐ stump sprout	
Trunk DBH (in.): 28 @ 2'		☐ stag-head	
Percent Canopy Cover: 30		**Crown Class[2]:** ☒ Decurrent ☐ Excurrent	
Existing Terrain: ☐ Flat ☒ Slope		**Age Class:** ☐ immature ☐ semi-mature	
Aesthetic Rating[3]: ☐ A ☐ B ☒ C ☐ D ☐ F		☒ mature ☐ over-mature/senescent	
Overall Grade: ☐ A ☐ B ☒ C ☐ D ☐ F		**Heritage Tree:** ☒ No ☐ Yes	

CANOPY CHARACTERISTICS		
	Dripline Radius (Feet)	Canopy to Grade (Feet)
N	30	30
NE		
E	25	5
SE		
S	23	20
SW		
W	15	15
NW		

CANOPY SPREAD (FEET): 53 X 40

TREE HEALTH	
Wound Wood Development:	☐ Excellent ☒ Average ☐ Poor ☐ None
Foliage Density:	☐ Normal ☒ Sparse
Weak crotches:	☒ No ☐ Yes
Oak Pit Scale:	☒ No ☐ Yes
Mainstem dieback:	☐ No ☒ Yes
Exposed Roots:	☒ No ☐ Yes
Epicormic growth:	☐ No ☒ Yes
Shading Out:	☒ No ☐ Yes
Cavities: ☒ None	☐ Trunk ☐ Branch
Exfoliating Bark:	☒ No ☐ Yes
Water Pocket(s):	☒ No ☐ Yes
Mechanical Damage:	☐ Trunk ☐ Branch ☒ None
Cankers:	☒ No ☐ Yes
Fungus:	☒ No ☐ Yes
Twig/ Branch Dieback:	☐ None ☐ Minor ☐ Moderate ☒ Extensive
Vigor:	☐ Excellent ☐ Average ☒ Fair ☐ Poor
Borers/ Ants /Termites:	☐ Minor ☐ Moderate ☐ Extensive ☒ None
Exudations:	☒ No ☐ Yes
Galls:	☒ No ☐ Yes

PROPOSED ACTIONS	
Root Collar Inspection:	☐
Monitor for Progress:	☐
Remove Deadwood/Prune :	☐
Risk Assessment	☐
Support Structure:	☐

IMPACTS & MITIGATIONS
In Impacted Area: ☐ Yes ☐ No
Proposed Land Use:
Impacts:
Mitigations:

Comments & Notes: old fire damage; old tag #119; recent fire damage (Rodeo Fire – 7/23/17); foliage scorched – mostly south canopy; significant dieback; codom @ 6'; significant epicormic growth (sign of recovery)

Photo #4960

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[1] Health: A =Outstanding; B = Above Average; C = Average; D = Below Average; F = Dead
[2] Decurrent = Lacking Strong Central Leader. Excurrent = Strong Central Leader.
[3] Aesthetic (compared to standard tree of same species) : A = nearly symmetrical, healthy tree – F = Dead

OAK TREE FIELD DATA WORKSHEET *Property: 500 Baseline Road, La Verne*

Survey Date: 9/5/2017 **Tree Number: 42**

GENERAL CHARACTERISTICS	
Species: ☒ *Q. agrifolia* ☐ *Q. lobata* ☐ *Other (see below)*	**Health Rating**[1]**:** ☐A ☐B ☐C ☐D ☒ F
	Form: ☐ symmetric ☐ minor asymmetry
Trunk Count: 2 **Height (ft.)**: 35	☐ major asymmetry ☐ stump sprout
Trunk DBH (in.): 15, 15	☐ stag-head
Percent Canopy Cover: 60	**Crown Class**[2]**:** ☐ Decurrent ☐ Excurrent
Existing Terrain: ☐ Flat ☒ Slope	**Age Class:** ☐ immature ☐ semi-mature
Aesthetic Rating[3]**:** ☐ A ☐ B ☐ C ☐ D ☒ F	☐ mature ☐over-mature/senescent
Overall Grade: ☐ A ☐ B ☐ C ☐ D ☒ F	**Heritage Tree:** ☐ No ☐ Yes

CANOPY CHARACTERISTICS

	Dripline Radius (Feet)	Canopy to Grade (Feet)
N		
NE		
E		
SE	REMOVED	
S		
SW		
W		
NW		

CANOPY SPREAD (FEET):

TREE HEALTH

Wound Wood Development:	☐ Excellent ☐ Average ☐ Poor ☐ None
Foliage Density:	☐ Normal ☐ Sparse
Weak crotches:	☐ No ☐ Yes
Oak Pit Scale:	☐ No ☐ Yes
Mainstem dieback:	☐ No ☐ Yes
Exposed Roots:	☐ No ☐ Yes
Epicormic growth:	☐ No ☐ Yes
Shading Out:	☐ No ☐ Yes
Cavities: ☐ None	☐ Trunk ☐ Branch
Exfoliating Bark:	☐ No ☐ Yes
Water Pocket(s):	☐ No ☐ Yes
Mechanical Damage:	☐ Trunk ☐ Branch ☐ None
Cankers:	☐ No ☐ Yes
Fungus:	☐ No ☐ Yes
Twig/ Branch Dieback:	☐ None ☐ Minor ☐ Moderate ☐Extensive
Vigor:	☐ Excellent ☐Average ☐ Fair ☐ Poor
Borers/ Ants /Termites:	☐ Minor ☐ Moderate ☐Extensive ☐None
Exudations:	☐ No ☐ Yes
Galls:	☐ No ☐ Yes

PROPOSED ACTIONS

Root Collar Inspection:	☐
Monitor for Progress:	☐
Remove Deadwood/Prune :	☐
Risk Assessment	☐
Support Structure:	☐

IMPACTS & MITIGATIONS

In Impacted Area: ☐ Yes ☐ No	
Proposed Land Use:	
Impacts:	
Mitigations:	

Comments & Notes: Tree removed during Rodeo Fire (7/23/17); was old tag #34 & 175 at time of 2014 inventory

Photo - NONE

[1] Health: A =Outstanding; B = Above Average; C = Average; D = Below Average; F = Dead
[2] Decurrent = Lacking Strong Central Leader. Excurrent = Strong Central Leader.
[3] Aesthetic (compared to standard tree of same species) : A = nearly symmetrical, healthy tree – F = Dead

OAK TREE FIELD DATA WORKSHEET *Property: 500 Baseline Road, La Verne*

Survey Date: 9/5/2017 **Tree Number: 43**

GENERAL CHARACTERISTICS	
Species: ☒*Q. agrifolia* ☐ *Q. lobata* ☐ *Other (see below)*	**Health Rating**[1]**:** ☐A ☒B ☐C ☐D ☐ F
	Form: ☐ symmetric ☒ minor asymmetry
Trunk Count: 2 **Height (ft.)**: 35	☐ major asymmetry ☐ stump sprout
Trunk DBH (in.): 16, 18	☐ stag-head
Percent Canopy Cover: 70	**Crown Class**[2]**:** ☒ Decurrent ☐ Excurrent
Existing Terrain: ☐ Flat ☒ Slope	**Age Class:** ☐ immature ☐ semi-mature
Aesthetic Rating[3]**:** ☐ A ☒ B ☐ C ☐ D ☐ F	☒ mature ☐over-mature/senescent
Overall Grade: ☐ A ☒ B ☐ C ☐ D ☐ F	**Heritage Tree:** ☒ No ☐ Yes

CANOPY CHARACTERISTICS		
	Dripline Radius (Feet)	Canopy to Grade (Feet)
N	25	15
NE		
E	15	15
SE		
S	23	15
SW		
W	22	14
NW		

CANOPY SPREAD (FEET): 48 X 37

TREE HEALTH	
Wound Wood Development:	☐ Excellent ☒ Average ☐ Poor ☐ None
Foliage Density:	☒ Normal ☐ Sparse
Weak crotches:	☒ No ☐ Yes
Oak Pit Scale:	☒ No ☐ Yes
Mainstem dieback:	☐ No ☒ Yes
Exposed Roots:	☒ No ☐ Yes
Epicormic growth:	☐ No ☒ Yes
Shading Out:	☒ No ☐ Yes
Cavities: ☒ None	☐ Trunk ☐ Branch
Exfoliating Bark:	☒ No ☐ Yes
Water Pocket(s):	☒ No ☐ Yes
Mechanical Damage:	☐ Trunk ☐ Branch ☒ None
Cankers:	☒ No ☐ Yes
Fungus:	☒ No ☐ Yes
Twig/ Branch Dieback:	☐ None ☒ Minor ☐ Moderate ☐Extensive
Vigor:	☐ Excellent ☒Average ☐ Fair ☐ Poor
Borers/ Ants /Termites:	☒ Minor ☐ Moderate ☐Extensive ☐None
Exudations:	☒ No ☐ Yes
Galls:	☒ No ☐ Yes

PROPOSED ACTIONS	
Root Collar Inspection:	☐
Monitor for Progress:	☐
Remove Deadwood/Prune :	☐
Risk Assessment	☐
Support Structure:	☐

IMPACTS & MITIGATIONS

In Impacted Area: ☐ Yes ☐ No

Proposed Land Use:

Impacts:

Mitigations:

Comments & Notes: old fire damage; broken limbs with decay where broke off; codoms

Photo #4965

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[1] Health: A =Outstanding; B = Above Average; C = Average; D = Below Average; F = Dead
[2] Decurrent = Lacking Strong Central Leader. Excurrent = Strong Central Leader.
[3] Aesthetic (compared to standard tree of same species) : A = nearly symmetrical, healthy tree – F = Dead

OAK TREE FIELD DATA WORKSHEET *Property: 500 Baseline Road, La Verne*

Survey Date: 9/5/2017 **Tree Number: 44**

GENERAL CHARACTERISTICS			
Species: ☒ *Q. agrifolia* ☐ *Q. lobata* ☐ *Other (see below)*		**Health Rating[1]:** ☐A ☒B ☐C ☐D ☐F	
		Form: ☐ symmetric ☒ minor asymmetry	
Trunk Count: 1 **Height (ft.):** 25		☐ major asymmetry ☐ stump sprout	
Trunk DBH (in.): 13		☐ stag-head	
Percent Canopy Cover: 75		**Crown Class[2]:** ☒ Decurrent ☐ Excurrent	
Existing Terrain: ☐ Flat ☒ Slope		**Age Class:** ☐ immature ☒ semi-mature	
Aesthetic Rating[3]: ☐ A ☒ B ☐ C ☐ D ☐ F		☐ mature ☐over-mature/senescent	
Overall Grade: ☐ A ☒ B ☐ C ☐ D ☐ F		**Heritage Tree:** ☒ No ☐ Yes	

CANOPY CHARACTERISTICS			**TREE HEALTH**	
	Dripline Radius (Feet)	Canopy to Grade (Feet)	**Wound Wood Development:**	☐ Excellent ☒ Average ☐ Poor ☐ None
N	20	25	**Foliage Density:**	☒ Normal ☐ Sparse
NE			**Weak crotches:**	☒ No ☐ Yes
E	17	6	**Oak Pit Scale:**	☒ No ☐ Yes
SE			**Mainstem dieback:**	☒ No ☐ Yes
S	10	5	**Exposed Roots:**	☐ No ☒ Yes
SW			**Epicormic growth:**	☐ No ☒ Yes
W	18	15	**Shading Out:**	☐ No ☒ Yes
NW			**Cavities:** ☒ None	☐ Trunk ☐ Branch
			Exfoliating Bark:	☒ No ☐ Yes
CANOPY SPREAD (FEET): 37 X 35			**Water Pocket(s):**	☒ No ☐ Yes
PROPOSED ACTIONS			**Mechanical Damage:**	☐ Trunk ☐ Branch ☒ None
Root Collar Inspection:	☐		**Cankers:**	☒ No ☐ Yes
Monitor for Progress:	☐		**Fungus:**	☒ No ☐ Yes
Remove Deadwood/Prune :	☐		**Twig/ Branch Dieback:**	☐ None ☒ Minor ☐ Moderate ☐Extensive
Risk Assessment	☐			
Support Structure:	☐			
IMPACTS & MITIGATIONS			**Vigor:**	☐ Excellent ☒Average ☐ Fair ☐ Poor
In Impacted Area: ☐ Yes ☐ No			**Borers/ Ants /Termites:**	☒ Minor ☐ Moderate ☐Extensive ☐None
Proposed Land Use:				
Impacts:			**Exudations:**	☒ No ☐ Yes
Mitigations:			**Galls:**	☒ No ☐ Yes

Comments & Notes: 25’ north of #43; leans slightly north; codom at 5’; erosion on north with exposed roots

Photo #4967

[1] Health: A =Outstanding; B = Above Average; C = Average; D = Below Average; F = Dead
[2] Decurrent = Lacking Strong Central Leader. Excurrent = Strong Central Leader.
[3] Aesthetic (compared to standard tree of same species) : A = nearly symmetrical, healthy tree – F = Dead

OAK TREE FIELD DATA WORKSHEET *Property: 500 Baseline Road, La Verne*

Survey Date: 9/5/2017 **Tree Number: 45**

GENERAL CHARACTERISTICS			
Species: ☒*Q. agrifolia* ☐ *Q. lobata* ☐ *Other (see below)*		**Health Rating[1]:** ☐A ☒B ☐C ☐D ☐F	
		Form: ☒ symmetric ☐ minor asymmetry	
Trunk Count: 1 **Height (ft.):** 20		☐ major asymmetry ☐ stump sprout	
Trunk DBH (in.): 9		☐ stag-head	
Percent Canopy Cover: 25		**Crown Class[2]:** ☐ Decurrent ☒ Excurrent	
Existing Terrain: ☐ Flat ☒ Slope		**Age Class:** ☐ immature ☒ semi-mature	
Aesthetic Rating[3]: ☐ A ☐ B ☒ C ☐ D ☐ F		☐ mature ☐over-mature/senescent	
Overall Grade: ☐ A ☐ B ☒ C+ ☐ D ☐ F		**Heritage Tree:** ☒ No ☐ Yes	

CANOPY CHARACTERISTICS			**TREE HEALTH**	
	Dripline Radius (Feet)	Canopy to Grade (Feet)	**Wound Wood Development:**	☐ Excellent ☒ Average ☐ Poor ☐ None
N	25	20	**Foliage Density:**	☒ Normal ☐ Sparse
NE			**Weak crotches:**	☒ No ☐ Yes
E	0	0	**Oak Pit Scale:**	☒ No ☐ Yes
SE			**Mainstem dieback:**	☒ No ☐ Yes
S	0	0	**Exposed Roots:**	☐ No ☒ Yes
SW			**Epicormic growth:**	☒ No ☐ Yes
W	0	0	**Shading Out:**	☐ No ☒ Yes
NW			**Cavities:** ☒ None	☐ Trunk ☐ Branch
			Exfoliating Bark:	☒ No ☐ Yes
CANOPY SPREAD (FEET): 25 X 0			**Water Pocket(s):**	☒ No ☐ Yes
PROPOSED ACTIONS			**Mechanical Damage:**	☐ Trunk ☐ Branch ☒ None
Root Collar Inspection:	☐		**Cankers:**	☒ No ☐ Yes
Monitor for Progress:	☐		**Fungus:**	☒ No ☐ Yes
Remove Deadwood/Prune :	☐		**Twig/ Branch Dieback:**	☐ None ☒ Minor ☐ Moderate ☐Extensive
Risk Assessment	☐			
Support Structure:	☐			
IMPACTS & MITIGATIONS			**Vigor:**	☐ Excellent ☒Average ☐ Fair ☐ Poor
In Impacted Area: ☐ Yes ☐ No			**Borers/ Ants /Termites:**	☒ Minor ☐ Moderate ☐Extensive ☐None
Proposed Land Use:				
Impacts:			**Exudations:**	☒ No ☐ Yes
Mitigations:			**Galls:**	☒ No ☐ Yes

Comments & Notes: Heavy lean north; erosion to north with exposed roots

Photo #4968

[1] Health: A =Outstanding; B = Above Average; C = Average; D = Below Average; F = Dead
[2] Decurrent = Lacking Strong Central Leader. Excurrent = Strong Central Leader.
[3] Aesthetic (compared to standard tree of same species) : A = nearly symmetrical, healthy tree – F = Dead

OAK TREE FIELD DATA WORKSHEET *Property: 500 Baseline Road, La Verne*

Survey Date: 9/12/2017 **Tree Number: 46**

GENERAL CHARACTERISTICS	
Species: ☒*Q. agrifolia* ☐ *Q. lobata* ☐ *Other (see below)*	**Health Rating**[1]**:** ☐A ☐B ☒C+ ☐D ☐F
	Form: ☐ symmetric ☒ minor asymmetry
Trunk Count: 1 **Height (ft.)**: 35	☐ major asymmetry ☐ stump sprout
Trunk DBH (in.): 18.5 @ 3'	☐ stag-head
Percent Canopy Cover: 70	**Crown Class**[2]**:** ☒ Decurrent ☐ Excurrent
Existing Terrain: ☒ Flat ☐ Slope	**Age Class:** ☐ immature ☐ semi-mature
Aesthetic Rating[3]**:** ☐ A ☒ B- ☐ C ☐ D ☐ F	☒ mature ☐over-mature/senescent
Overall Grade: ☐ A ☒ B- ☐ C ☐ D ☐ F	**Heritage Tree:** ☒ No ☐ Yes

CANOPY CHARACTERISTICS		
	Dripline Radius (Feet)	Canopy to Grade (Feet)
N	18	8
NE		
E	12	12
SE		
S	21	7
SW		
W	18	12
NW		

CANOPY SPREAD (FEET): 39 X 30

TREE HEALTH	
Wound Wood Development:	☐ Excellent ☒ Average ☐ Poor ☐ None
Foliage Density:	☒ Normal ☐ Sparse
Weak crotches:	☐ No ☒ Yes
Oak Pit Scale:	☒ No ☐ Yes
Mainstem dieback:	☒ No ☐ Yes
Exposed Roots:	☒ No ☐ Yes
Epicormic growth:	☒ No ☐ Yes
Shading Out:	☒ No ☐ Yes
Cavities: ☐ None	☒ Trunk ☐ Branch
Exfoliating Bark:	☒ No ☐ Yes
Water Pocket(s):	☒ No ☐ Yes
Mechanical Damage:	☐ Trunk ☐ Branch ☒ None
Cankers:	☒ No ☐ Yes
Fungus:	☒ No ☐ Yes
Twig/ Branch Dieback:	☐ None ☒ Minor ☐ Moderate ☐Extensive
Vigor:	☐ Excellent ☒Average ☐ Fair ☐ Poor
Borers/ Ants /Termites:	☐ Minor ☒ Moderate ☐Extensive ☐None
Exudations:	☒ No ☐ Yes
Galls:	☒ No ☐ Yes

PROPOSED ACTIONS	
Root Collar Inspection:	☐
Monitor for Progress:	☐
Remove Deadwood/Prune :	☐
Risk Assessment	☐
Support Structure:	☐

IMPACTS & MITIGATIONS
In Impacted Area: ☐ Yes ☐ No
Proposed Land Use:
Impacts:
Mitigations:

Comments & Notes: old fire damage; cavity below codoms – with good callous; adjacent to stream; interior deadwood; woodpecker holes; low branching; metal pole along base to east

Photo #8176-79, 8183-R

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[1] Health: A =Outstanding; B = Above Average; C = Average; D = Below Average; F = Dead
[2] Decurrent = Lacking Strong Central Leader. Excurrent = Strong Central Leader.
[3] Aesthetic (compared to standard tree of same species) : A = nearly symmetrical, healthy tree – F = Dead

OAK TREE FIELD DATA WORKSHEET *Property: 500 Baseline Road, La Verne*

Survey Date: 9/12/2017 **Tree Number: 47**

GENERAL CHARACTERISTICS	
Species: ☒ *Q. agrifolia* ☐ *Q. lobata* ☐ *Other (see below)*	**Health Rating**[1]**:** ☐A ☒B- ☐C ☐D ☐ F
	Form: ☐ symmetric ☐ minor asymmetry
Trunk Count: 1 **Height (ft.)**: 35	☒ major asymmetry ☐ stump sprout
Trunk DBH (in.): 18.5 @ 3'	☐ stag-head
Percent Canopy Cover: 55	**Crown Class**[2]**:** ☒ Decurrent ☐ Excurrent
Existing Terrain: ☐ Flat ☒ Slope	**Age Class:** ☐ immature ☒ semi-mature
Aesthetic Rating[3]**:** ☐ A ☐ B ☒ C+ ☐ D ☐ F	☐ mature ☐over-mature/senescent
Overall Grade: ☐ A ☒ B- ☐ C ☐ D ☐ F	**Heritage Tree:** ☒ No ☐ Yes

CANOPY CHARACTERISTICS

	Dripline Radius (Feet)	Canopy to Grade (Feet)
N	22	8
NE		
E	20	2
SE	10	10
S	0	0
SW		
W	0	0
NW		

CANOPY SPREAD (FEET): 29

TREE HEALTH

Wound Wood Development:	☐ Excellent ☒ Average ☐ Poor ☐ None
Foliage Density:	☒ Normal ☐ Sparse
Weak crotches:	☐ No ☒ Yes
Oak Pit Scale:	☒ No ☐ Yes
Mainstem dieback:	☐ No ☒ Yes
Exposed Roots:	☒ No ☐ Yes
Epicormic growth:	☐ No ☒ Yes
Shading Out:	☐ No ☒ Yes
Cavities: ☐ None	☒ Trunk ☐ Branch
Exfoliating Bark:	☒ No ☐ Yes
Water Pocket(s):	☒ No ☐ Yes
Mechanical Damage:	☐ Trunk ☐ Branch ☒ None
Cankers:	☒ No ☐ Yes
Fungus:	☒ No ☐ Yes
Twig/ Branch Dieback:	☐ None ☐ Minor ☒ Moderate ☐Extensive
Vigor:	☐ Excellent ☒Average ☐ Fair ☐ Poor
Borers/ Ants /Termites:	☐ Minor ☒ Moderate ☐Extensive ☐None
Exudations:	☒ No ☐ Yes
Galls:	☒ No ☐ Yes

PROPOSED ACTIONS

Root Collar Inspection:	☐
Monitor for Progress:	☐
Remove Deadwood/Prune :	☐
Risk Assessment	☐
Support Structure:	☐

IMPACTS & MITIGATIONS

In Impacted Area: ☐ Yes ☐ No

Proposed Land Use:

Impacts:

Mitigations:

Comments & Notes: poison oak surrounding tree & in canopy; broken main trunk – decay where broke off – with good callous; old fire damage; leans north; adjacent to stream; unbalanced to north

Photo #8180-83(L)

[1] Health: A =Outstanding; B = Above Average; C = Average; D = Below Average; F = Dead
[2] Decurrent = Lacking Strong Central Leader. Excurrent = Strong Central Leader.
[3] Aesthetic (compared to standard tree of same species) : A = nearly symmetrical, healthy tree – F = Dead

OAK TREE FIELD DATA WORKSHEET *Property: 500 Baseline Road, La Verne*

Survey Date: 9/12/2017 **Tree Number: 48**

GENERAL CHARACTERISTICS	
Species: ☒*Q. agrifolia* ☐ *Q. lobata* ☐ *Other (see below)*	**Health Rating**[1]**:** ☒A ☐B ☐C ☐D ☐ F
	Form: ☐ symmetric ☒ minor asymmetry
Trunk Count: 1 **Height (ft.):** 35	☐ major asymmetry ☐ stump sprout
Trunk DBH (in.): 27	☐ stag-head
Percent Canopy Cover: 80	**Crown Class**[2]**:** ☐ Decurrent ☒ Excurrent
Existing Terrain: ☐ Flat ☒ Slope	**Age Class:** ☐ immature ☐ semi-mature
Aesthetic Rating[3]**:** ☒ A ☐ B ☐ C ☐ D ☐ F	☒ mature ☐over-mature/senescent
Overall Grade: ☒ A ☐ B ☐ C ☐ D ☐ F	**Heritage Tree:** ☒ No ☐ Yes

CANOPY CHARACTERISTICS		
	Dripline Radius (Feet)	Canopy to Grade (Feet)
N	35	20
NE		
E	30	20
SE		
S	22	15
SW		
W	35	10
NW		

CANOPY SPREAD (FEET): 70

PROPOSED ACTIONS

Root Collar Inspection:	☐
Monitor for Progress:	☐
Remove Deadwood/Prune :	☐
Risk Assessment	☐
Support Structure:	☐

IMPACTS & MITIGATIONS

In Impacted Area:	☐ Yes ☐ No
Proposed Land Use:	
Impacts:	
Mitigations:	

TREE HEALTH

Wound Wood Development:	☒ Excellent ☐ Average ☐ Poor ☐ None
Foliage Density:	☒ Normal ☐ Sparse
Weak crotches:	☒ No ☐ Yes
Oak Pit Scale:	☒ No ☐ Yes
Mainstem dieback:	☒ No ☐ Yes
Exposed Roots:	☐ No ☒ Yes
Epicormic growth:	☐ No ☒ Yes
Shading Out:	☒ No ☐ Yes
Cavities: ☒ None	☐ Trunk ☐ Branch
Exfoliating Bark:	☒ No ☐ Yes
Water Pocket(s):	☒ No ☐ Yes
Mechanical Damage:	☐ Trunk ☐ Branch ☒ None
Cankers:	☒ No ☐ Yes
Fungus:	☒ No ☐ Yes
Twig/ Branch Dieback:	☐ None ☒ Minor ☐ Moderate ☐Extensive
Vigor:	☐ Excellent ☒Average ☐ Fair ☐ Poor
Borers/ Ants /Termites:	☒ Minor ☐ Moderate ☐Extensive ☐None
Exudations:	☒ No ☐ Yes
Galls:	☒ No ☐ Yes

Comments & Notes: slightly leaning west (self-correcting); surrounded by poison oak; old tag #61 & 100; interior dieback

Photo #7989-R

[1] Health: A =Outstanding; B = Above Average; C = Average; D = Below Average; F = Dead
[2] Decurrent = Lacking Strong Central Leader. Excurrent = Strong Central Leader.
[3] Aesthetic (compared to standard tree of same species) : A = nearly symmetrical, healthy tree – F = Dead

OAK TREE FIELD DATA WORKSHEET *Property: 500 Baseline Road, La Verne*

Survey Date: 9/12/2017 **Tree Number: 49**

GENERAL CHARACTERISTICS			
Species: ☐ *Q. agrifolia* ☐ *Q. lobata* ☒ *Other (see below)*		**Health Rating**[1]**:** ☐A ☐B ☐C ☒D ☐F	
Platanus racemosa (sycamore)		**Form:** ☐ symmetric ☐ minor asymmetry	
Trunk Count: 1 **Height (ft.)**: 30		☒ major asymmetry ☐ stump sprout	
Trunk DBH (in.): 9		☐ stag-head	
Percent Canopy Cover: 5		**Crown Class**[2]**:** ☒ Decurrent ☐ Excurrent	
Existing Terrain: ☐ Flat ☒ Slope		**Age Class:** ☐ immature ☒ semi-mature	
Aesthetic Rating[3]**:** ☐ A ☐ B ☐ C ☒ D ☐ F		☐ mature ☐ over-mature/senescent	
Overall Grade: ☐ A ☐ B ☐ C ☒ D ☐ F		**Heritage Tree:** ☒ No ☐ Yes	
CANOPY CHARACTERISTICS		**TREE HEALTH**	
	Dripline Radius (Feet)	Canopy to Grade (Feet)	**Wound Wood Development:** ☐ Excellent ☐ Average ☒ Poor ☐ None
N	2	5	**Foliage Density:** ☐ Normal ☒ Sparse
NE			**Weak crotches:** ☐ No ☒ Yes
E	2	5	**Oak Pit Scale:** ☒ No ☐ Yes
SE			**Mainstem dieback:** ☐ No ☒ Yes
S	2	5	**Exposed Roots:** ☒ No ☐ Yes
SW			**Epicormic growth:** ☐ No ☒ Yes
W	2	5	**Shading Out:** ☐ No ☒ Yes
NW			**Cavities:** ☒ None ☐ Trunk ☐ Branch
			Exfoliating Bark: ☐ No ☒ Yes
CANOPY SPREAD (FEET): 4 X 4			**Water Pocket(s):** ☒ No ☐ Yes
PROPOSED ACTIONS			**Mechanical Damage:** ☐ Trunk ☐ Branch ☒ None
Root Collar Inspection:	☐		**Cankers:** ☒ No ☐ Yes
Monitor for Progress:	☐		**Fungus:** ☒ No ☐ Yes
Remove Deadwood/Prune :	☐		**Twig/ Branch Dieback:** ☐ None ☐ Minor ☐ Moderate ☒ Extensive
Risk Assessment	☐		
Support Structure:	☐		
IMPACTS & MITIGATIONS			**Vigor:** ☐ Excellent ☐ Average ☐ Fair ☒ Poor
In Impacted Area: ☐ Yes ☐ No			**Borers/ Ants /Termites:** ☐ Minor ☒ Moderate ☐ Extensive ☐ None
Proposed Land Use:			
Impacts:			**Exudations:** ☒ No ☐ Yes
Mitigations:			**Galls:** ☒ No ☐ Yes

Comments & Notes: surrounded by poison oak; shaded out by #48; trunk wrapped around #48 at top; tree dead except basal sprouting

Photo #4989-L

[1] Health: A =Outstanding; B = Above Average; C = Average; D = Below Average; F = Dead
[2] Decurrent = Lacking Strong Central Leader. Excurrent = Strong Central Leader.
[3] Aesthetic (compared to standard tree of same species) : A = nearly symmetrical, healthy tree – F = Dead

OAK TREE FIELD DATA WORKSHEET *Property: 500 Baseline Road, La Verne*

Survey Date: 9/12/2017 **Tree Number: 50**

GENERAL CHARACTERISTICS	
Species: ☒ *Q. agrifolia* ☐ *Q. lobata* ☐ *Other (see below)*	**Health Rating**[1]**:** ☐A ☒B ☐C ☐D ☐F
	Form: ☐ symmetric ☒ minor asymmetry
Trunk Count: 1 **Height (ft.)**: 30	☐ major asymmetry ☐ stump sprout
Trunk DBH (in.): 15	☐ stag-head
Percent Canopy Cover: 70	**Crown Class**[2]**:** ☐ Decurrent ☒ Excurrent
Existing Terrain: ☐ Flat ☒ Slope	**Age Class:** ☐ immature ☒ semi-mature
Aesthetic Rating[3]**:** ☐ A ☒ B+ ☐ C ☐ D ☐ F	☐ mature ☐over-mature/senescent
Overall Grade: ☐ A ☒ B ☐ C ☐ D ☐ F	**Heritage Tree:** ☒ No ☐ Yes

CANOPY CHARACTERISTICS

	Dripline Radius (Feet)	Canopy to Grade (Feet)
N	13	15
NE		
E	14	15
SE		
S	20	18
SW		
W	11	11
NW		

CANOPY SPREAD (FEET): 33 X 25

TREE HEALTH

Wound Wood Development:	☐ Excellent ☒ Average ☐ Poor ☐ None
Foliage Density:	☐ Normal ☒ Sparse
Weak crotches:	☒ No ☐ Yes
Oak Pit Scale:	☒ No ☐ Yes
Mainstem dieback:	☒ No ☐ Yes
Exposed Roots:	☒ No ☐ Yes
Epicormic growth:	☒ No ☐ Yes
Shading Out:	☒ No ☐ Yes
Cavities: ☒ None	☐ Trunk ☐ Branch
Exfoliating Bark:	☒ No ☐ Yes
Water Pocket(s):	☒ No ☐ Yes
Mechanical Damage:	☐ Trunk ☐ Branch ☒ None
Cankers:	☒ No ☐ Yes
Fungus:	☒ No ☐ Yes
Twig/ Branch Dieback:	☐ None ☒ Minor ☐ Moderate ☐Extensive
Vigor:	☐ Excellent ☒Average ☐ Fair ☐ Poor
Borers/ Ants /Termites:	☐ Minor ☐ Moderate ☐Extensive ☒None
Exudations:	☒ No ☐ Yes
Galls:	☒ No ☐ Yes

PROPOSED ACTIONS

Root Collar Inspection:	☐
Monitor for Progress:	☐
Remove Deadwood/Prune :	☐
Risk Assessment	☐
Support Structure:	☐

IMPACTS & MITIGATIONS

In Impacted Area: ☐ Yes ☐ No
Proposed Land Use:
Impacts:
Mitigations:

Comments & Notes: recent fire damage – lower foliage scorched and bark charred (Rodeo Fire – 7/23/17); old tag #77; tagged on east

Photo #8184

[1] Health: A =Outstanding; B = Above Average; C = Average; D = Below Average; F = Dead
[2] Decurrent = Lacking Strong Central Leader. Excurrent = Strong Central Leader.
[3] Aesthetic (compared to standard tree of same species) : A = nearly symmetrical, healthy tree – F = Dead

OAK TREE FIELD DATA WORKSHEET *Property: 500 Baseline Road, La Verne*

Survey Date: 9/12/2017 **Tree Number: 51**

GENERAL CHARACTERISTICS	
Species: ☒ *Q. agrifolia* ☐ *Q. lobata* ☐ *Other (see below)*	**Health Rating[1]:** ☐A ☐B ☐C ☒D ☐F
	Form: ☐ symmetric ☒ minor asymmetry
Trunk Count: 1 **Height (ft.):** 40	☐ major asymmetry ☐ stump sprout
Trunk DBH (in.): 20 @ 2’	☐ stag-head
Percent Canopy Cover: 1% (fire)	**Crown Class[2]:** ☒ Decurrent ☐ Excurrent
Existing Terrain: ☐ Flat ☒ Slope	**Age Class:** ☐ immature ☐ semi-mature
Aesthetic Rating[3]: ☐ A ☐ B ☐ C ☒ D ☐ F	☒ mature ☐over-mature/senescent
Overall Grade: ☐ A ☐ B ☐ C ☒ D ☐ F	**Heritage Tree:** ☒ No ☐ Yes

CANOPY CHARACTERISTICS			**TREE HEALTH**	
	Dripline Radius (Feet)	Canopy to Grade (Feet)	**Wound Wood Development:**	☐ Excellent ☒ Average ☐ Poor ☐ None
N	12	30	**Foliage Density:**	☐ Normal ☒ Sparse
NE			**Weak crotches:**	☐ No ☒ Yes
E	12	20	**Oak Pit Scale:**	☒ No ☐ Yes
SE			**Mainstem dieback:**	☐ No ☒ Yes
S	20	8	**Exposed Roots:**	☒ No ☐ Yes
SW			**Epicormic growth:**	☐ No ☒ Yes
W	14	10	**Shading Out:**	☒ No ☐ Yes
NW			**Cavities:** ☒ None	☐ Trunk ☐ Branch
			Exfoliating Bark:	☐ No ☒ Yes
CANOPY SPREAD (FEET): 32 X 26			**Water Pocket(s):**	☒ No ☐ Yes

PROPOSED ACTIONS		**Mechanical Damage:**	☐ Trunk ☐ Branch ☒ None
Root Collar Inspection:	☐	**Cankers:**	☒ No ☐ Yes
Monitor for Progress:	☐	**Fungus:**	☒ No ☐ Yes
Remove Deadwood/Prune :	☐	**Twig/ Branch Dieback:**	☐ None ☐ Minor ☐ Moderate ☒Extensive
Risk Assessment	☐		
Support Structure:	☐		
IMPACTS & MITIGATIONS		**Vigor:**	☐ Excellent ☐Average ☐ Fair ☒ Poor
In Impacted Area: ☐ Yes ☐ No		**Borers/ Ants /Termites:**	☒ Minor ☐ Moderate ☐Extensive ☐None
Proposed Land Use:			
Impacts:		**Exudations:**	☒ No ☐ Yes
Mitigations:		**Galls:**	☒ No ☐ Yes

Comments & Notes: recent fire damage – 99% defoliated (Rodeo Fire – 7/23/17); sprouting (sign of recovery)

Photo #8188-92

[1] Health: A =Outstanding; B = Above Average; C = Average; D = Below Average; F = Dead
[2] Decurrent = Lacking Strong Central Leader. Excurrent = Strong Central Leader.
[3] Aesthetic (compared to standard tree of same species) : A = nearly symmetrical, healthy tree – F = Dead

OAK TREE FIELD DATA WORKSHEET *Property: 500 Baseline Road, La Verne*

Survey Date: 9/12/2017 **Tree Number: 52**

GENERAL CHARACTERISTICS			
Species: ☒*Q. agrifolia* ☐ *Q. lobata* ☐ *Other (see below)*			**Health Rating**[1]: ☐A ☐B ☐C ☒D ☐F
			Form: ☐ symmetric ☐ minor asymmetry
Trunk Count: 1 **Height (ft.)**: 30			☒ major asymmetry ☐ stump sprout
Trunk DBH (in.): 24 @ 2'			☐ stag-head
Percent Canopy Cover: 1% (fire)			**Crown Class**[2]**:** ☒ Decurrent ☐ Excurrent
Existing Terrain: ☐ Flat ☒ Slope			**Age Class:** ☐ immature ☒ semi-mature
Aesthetic Rating[3]**:** ☐ A ☐ B ☐ C ☒ D ☐ F			☐ mature ☐over-mature/senescent
Overall Grade: ☐ A ☐ B ☐ C ☒ D ☐ F			**Heritage Tree:** ☒ No ☐ Yes
CANOPY CHARACTERISTICS			**TREE HEALTH**
	Dripline Radius (Feet)	Canopy to Grade (Feet)	**Wound Wood Development:** ☐ Excellent ☒ Average ☐ Poor ☐ None
N	20	30	**Foliage Density:** ☐ Normal ☒ Sparse
NE			**Weak crotches:** ☐ No ☒ Yes
E	6	5	**Oak Pit Scale:** ☒ No ☐ Yes
SE			**Mainstem dieback:** ☐ No ☒ Yes
S	22	3	**Exposed Roots:** ☒ No ☐ Yes
SW			**Epicormic growth:** ☐ No ☒ Yes
W	42	3	**Shading Out:** ☐ No ☒ Yes
NW			**Cavities:** ☒ None ☐ Trunk ☐ Branch
			Exfoliating Bark: ☐ No ☒ Yes
CANOPY SPREAD (FEET): 42 X 48			**Water Pocket(s):** ☒ No ☐ Yes
PROPOSED ACTIONS			**Mechanical Damage:** ☐ Trunk ☐ Branch ☒ None
Root Collar Inspection:	☐		**Cankers:** ☐ No ☒ Yes
Monitor for Progress:	☐		**Fungus:** ☒ No ☐ Yes
Remove Deadwood/Prune :	☐		**Twig/ Branch Dieback:** ☐ None ☐ Minor ☐ Moderate ☒Extensive
Risk Assessment	☐		
Support Structure:	☐		
IMPACTS & MITIGATIONS			**Vigor:** ☐ Excellent ☐Average ☐ Fair ☒ Poor
In Impacted Area: ☐ Yes ☐ No			**Borers/ Ants /Termites:** ☒ Minor ☐ Moderate ☐Extensive ☐None
Proposed Land Use:			
Impacts:			**Exudations:** ☒ No ☐ Yes
Mitigations:			**Galls:** ☒ No ☐ Yes

Comments & Notes: recent fire damage – 99% defoliated (Rodeo Fire – 7/23/17); sprouting (sign of recovery); shaded out by #53; leans west (unbalanced); possible foamy canker; low branching

Photo #8193-94

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[1] Health: A =Outstanding; B = Above Average; C = Average; D = Below Average; F = Dead
[2] Decurrent = Lacking Strong Central Leader. Excurrent = Strong Central Leader.
[3] Aesthetic (compared to standard tree of same species) : A = nearly symmetrical, healthy tree – F = Dead

OAK TREE FIELD DATA WORKSHEET *Property: 500 Baseline Road, La Verne*

Survey Date: 9/12/2017 **Tree Number: 53**

GENERAL CHARACTERISTICS	
Species: ☒ *Q. agrifolia* ☐ *Q. lobata* ☐ *Other (see below)*	**Health Rating[1]:** ☐A ☐B ☒C ☐D ☐F
	Form: ☐ symmetric ☒ minor asymmetry
Trunk Count: 3 **Height (ft.):** 50	☐ major asymmetry ☐ stump sprout
Trunk DBH (in.): 1.5, 5.5, 22.5	☐ stag-head
Percent Canopy Cover: 35	**Crown Class[2]:** ☐ Decurrent ☒ Excurrent
Existing Terrain: ☐ Flat ☒ Slope	**Age Class:** ☐ immature ☐ semi-mature
Aesthetic Rating[3]: ☐ A ☐ B ☒ C ☐ D ☐ F	☒ mature ☐ over-mature/senescent
Overall Grade: ☐ A ☐ B ☒ C ☐ D ☐ F	**Heritage Tree:** ☒ No ☐ Yes

CANOPY CHARACTERISTICS

	Dripline Radius (Feet)	Canopy to Grade (Feet)
N	20	40
NE		
E	22	12
SE		
S	22	12
SW		
W	38	20
NW		

CANOPY SPREAD (FEET): 42 X 60

TREE HEALTH

Wound Wood Development:	☐ Excellent ☒ Average ☐ Poor ☐ None
Foliage Density:	☐ Normal ☒ Sparse
Weak crotches:	☐ No ☒ Yes
Oak Pit Scale:	☒ No ☐ Yes
Mainstem dieback:	☐ No ☒ Yes
Exposed Roots:	☒ No ☐ Yes
Epicormic growth:	☐ No ☒ Yes
Shading Out:	☒ No ☐ Yes
Cavities: ☒ None	☐ Trunk ☐ Branch
Exfoliating Bark:	☒ No ☐ Yes
Water Pocket(s):	☒ No ☐ Yes
Mechanical Damage:	☐ Trunk ☐ Branch ☒ None
Cankers:	☒ No ☐ Yes
Fungus:	☒ No ☐ Yes
Twig/ Branch Dieback:	☐ None ☐ Minor ☐ Moderate ☒ Extensive
Vigor:	☐ Excellent ☐ Average ☒ Fair ☐ Poor
Borers/ Ants /Termites:	☒ Minor ☐ Moderate ☐ Extensive ☐ None
Exudations:	☒ No ☐ Yes
Galls:	☒ No ☐ Yes

PROPOSED ACTIONS

Root Collar Inspection:	☐
Monitor for Progress:	☐
Remove Deadwood/Prune :	☐
Risk Assessment	☐
Support Structure:	☐

IMPACTS & MITIGATIONS

In Impacted Area: ☐ Yes ☐ No

Proposed Land Use:

Impacts:

Mitigations:

Comments & Notes: recent fire damage – majority of foliage scorched (mostly lower); barked charred – sloughing off; sprouting (signs of recovery); old fire damage – good callous

Photo #8193-94

[1] Health: A =Outstanding; B = Above Average; C = Average; D = Below Average; F = Dead
[2] Decurrent = Lacking Strong Central Leader. Excurrent = Strong Central Leader.
[3] Aesthetic (compared to standard tree of same species) : A = nearly symmetrical, healthy tree – F = Dead

OAK TREE FIELD DATA WORKSHEET *Property: 500 Baseline Road, La Verne*

Survey Date: 9/12/2017 **Tree Number: 54**

GENERAL CHARACTERISTICS			
Species: ☐ *Q. agrifolia* ☐ *Q. lobata* ☒ *Other (see below)*		**Health Rating**[1]**:** ☐A ☐B ☐C ☒D ☐F	
Platanus racemosa (California sycamore)		**Form:** ☐ symmetric ☐ minor asymmetry	
Trunk Count: 1 **Height (ft.):** 30		☒ major asymmetry ☐ stump sprout	
Trunk DBH (in.): 22		☐ stag-head	
Percent Canopy Cover: 0 (fire)		**Crown Class**[2]**:** ☐ Decurrent ☒ Excurrent	
Existing Terrain: ☐ Flat ☒ Slope		**Age Class:** ☐ immature ☒ semi-mature	
Aesthetic Rating[3]**:** ☐ A ☐ B ☐ C ☒ D ☐ F		☐ mature ☐ over-mature/senescent	
Overall Grade: ☐ A ☐ B ☐ C ☒ D ☐ F		**Heritage Tree:** ☒ No ☐ Yes	

CANOPY CHARACTERISTICS			**TREE HEALTH**	
	Dripline Radius (Feet)	Canopy to Grade (Feet)	**Wound Wood Development:**	☐ Excellent ☐ Average ☒ Poor ☐ None
N	15	15	**Foliage Density:**	☐ Normal ☒ Sparse
NE			**Weak crotches:**	☐ No ☒ Yes
E	18	18	**Oak Pit Scale:**	☒ No ☐ Yes
SE			**Mainstem dieback:**	☐ No ☒ Yes
S	8	18	**Exposed Roots:**	☒ No ☐ Yes
SW			**Epicormic growth:**	☐ No ☒ Yes
W	0	0	**Shading Out:**	☒ No ☐ Yes
NW			**Cavities:** ☐ None	☒ Trunk ☐ Branch
			Exfoliating Bark:	☐ No ☒ Yes
CANOPY SPREAD (FEET): 23 X 18			**Water Pocket(s):**	☒ No ☐ Yes

PROPOSED ACTIONS		**Mechanical Damage:**	☐ Trunk ☐ Branch ☒ None
Root Collar Inspection:	☐	**Cankers:**	☒ No ☐ Yes
Monitor for Progress:	☐	**Fungus:**	☒ No ☐ Yes
Remove Deadwood/Prune :	☐	**Twig/ Branch Dieback:**	☐ None ☐ Minor ☐ Moderate ☒ Extensive
Risk Assessment	☐		
Support Structure:	☐		
IMPACTS & MITIGATIONS		**Vigor:**	☐ Excellent ☐ Average ☐ Fair ☒ Poor
In Impacted Area: ☐ Yes ☐ No		**Borers/ Ants /Termites:**	☐ Minor ☐ Moderate ☒ Extensive ☐ None
Proposed Land Use:			
Impacts:		**Exudations:**	☒ No ☐ Yes
Mitigations:		**Galls:**	☒ No ☐ Yes

Comments & Notes: recent fire damage (Rodeo Fire – 7/23/17) – dead dead with exception of basal sprouting (sign of recovery) - no foliage; extensive damage; bark checking; large cavity at base on west; tagged on east

Photo #8197-R, 8198-R, 8201-02

[1] Health: A =Outstanding; B = Above Average; C = Average; D = Below Average; F = Dead
[2] Decurrent = Lacking Strong Central Leader. Excurrent = Strong Central Leader.
[3] Aesthetic (compared to standard tree of same species) : A = nearly symmetrical, healthy tree – F = Dead

OAK TREE FIELD DATA WORKSHEET *Property: 500 Baseline Road, La Verne*

Survey Date: 9/12/2017 **Tree Number: 55**

GENERAL CHARACTERISTICS	
Species: ☒ *Q. agrifolia* ☐ *Q. lobata* ☐ *Other (see below)*	**Health Rating**[1]**:** ☐A ☐B ☐C ☒D ☐F
	Form: ☐ symmetric ☒ minor asymmetry
Trunk Count: 1 **Height (ft.)**: 35	☐ major asymmetry ☐ stump sprout
Trunk DBH (in.): 10	☐ stag-head
Percent Canopy Cover: 0 (fire)	**Crown Class**[2]**:** ☐ Decurrent ☒ Excurrent
Existing Terrain: ☐ Flat ☒ Slope	**Age Class:** ☐ immature ☒ semi-mature
Aesthetic Rating[3]**:** ☐ A ☐ B ☐ C ☒ D ☐ F	☐ mature ☐over-mature/senescent
Overall Grade: ☐ A ☐ B ☐ C ☒ D ☐ F	**Heritage Tree:** ☒ No ☐ Yes

CANOPY CHARACTERISTICS		
	Dripline Radius (Feet)	Canopy to Grade (Feet)
N	12	4
NE		
E	6	30
SE		
S	15	25
SW		
W	16	0
NW		

CANOPY SPREAD (FEET): 23 X 18

PROPOSED ACTIONS	
Root Collar Inspection:	☐
Monitor for Progress:	☐
Remove Deadwood/Prune :	☐
Risk Assessment	☐
Support Structure:	☐

IMPACTS & MITIGATIONS
In Impacted Area: ☐ Yes ☐ No
Proposed Land Use:
Impacts:
Mitigations:

TREE HEALTH	
Wound Wood Development:	☐ Excellent ☐ Average ☐ Poor ☒ None
Foliage Density:	☐ Normal ☒ Sparse
Weak crotches:	☐ No ☒ Yes
Oak Pit Scale:	☒ No ☐ Yes
Mainstem dieback:	☐ No ☒ Yes
Exposed Roots:	☒ No ☐ Yes
Epicormic growth:	☐ No ☒ Yes
Shading Out:	☒ No ☐ Yes
Cavities: ☒ None	☐ Trunk ☐ Branch
Exfoliating Bark:	☐ No ☒ Yes
Water Pocket(s):	☒ No ☐ Yes
Mechanical Damage:	☐ Trunk ☐ Branch ☒ None
Cankers:	☒ No ☐ Yes
Fungus:	☒ No ☐ Yes
Twig/ Branch Dieback:	☐ None ☐ Minor ☐ Moderate ☒Extensive
Vigor:	☐ Excellent ☐Average ☐ Fair ☒ Poor
Borers/ Ants /Termites:	☒ Minor ☐ Moderate ☐Extensive ☐None
Exudations:	☒ No ☐ Yes
Galls:	☒ No ☐ Yes

Comments & Notes: recent fire damage (Rodeo Fire – 7/23/17) – dead dead with exception of basal sprouting (sign of recovery) - no foliage; extensive damage; bark checking; slight lean north

Photo #8198-L, 8203

[1] Health: A =Outstanding; B = Above Average; C = Average; D = Below Average; F = Dead
[2] Decurrent = Lacking Strong Central Leader. Excurrent = Strong Central Leader.
[3] Aesthetic (compared to standard tree of same species) : A = nearly symmetrical, healthy tree – F = Dead

OAK TREE FIELD DATA WORKSHEET *Property: 500 Baseline Road, La Verne*

Survey Date: 9/12/2017 **Tree Number: 56**

GENERAL CHARACTERISTICS	
Species: ☐ *Q. agrifolia* ☐ *Q. lobata* ☒ *Other (see below)*	**Health Rating**[1]**:** ☐A ☐B ☐C ☒D ☐F
Platanus racemosa (California sycamore)	**Form:** ☐ symmetric ☒ minor asymmetry
Trunk Count: 1 **Height (ft.):** 45	☐ major asymmetry ☐ stump sprout
Trunk DBH (in.): 23	☐ stag-head
Percent Canopy Cover: 0 (fire)	**Crown Class**[2]**:** ☐ Decurrent ☒ Excurrent
Existing Terrain: ☐ Flat ☒ Slope	**Age Class:** ☐ immature ☐ semi-mature
Aesthetic Rating[3]**:** ☐ A ☐ B ☐ C ☒ D ☐ F	☒ mature ☐over-mature/senescent
Overall Grade: ☐ A ☐ B ☐ C ☒ D ☐ F	**Heritage Tree:** ☒ No ☐ Yes

CANOPY CHARACTERISTICS		
	Dripline Radius (Feet)	Canopy to Grade (Feet)
N	36	8
NE		
E	12	20
SE		
S	14	25
SW		
W	15	40
NW		

CANOPY SPREAD (FEET): 50 X 27

TREE HEALTH	
Wound Wood Development:	☐ Excellent ☐ Average ☐ Poor ☒ None
Foliage Density:	☐ Normal ☒ Sparse
Weak crotches:	☐ No ☒ Yes
Oak Pit Scale:	☒ No ☐ Yes
Mainstem dieback:	☐ No ☒ Yes
Exposed Roots:	☒ No ☐ Yes
Epicormic growth:	☐ No ☒ Yes
Shading Out:	☒ No ☐ Yes
Cavities: ☐ None	☒ Trunk ☐ Branch
Exfoliating Bark:	☐ No ☒ Yes
Water Pocket(s):	☒ No ☐ Yes
Mechanical Damage:	☐ Trunk ☐ Branch ☒ None
Cankers:	☒ No ☐ Yes
Fungus:	☒ No ☐ Yes
Twig/ Branch Dieback:	☐ None ☐ Minor ☐ Moderate ☒Extensive
Vigor:	☐ Excellent ☐Average ☐ Fair ☒ Poor
Borers/ Ants /Termites:	☒ Minor ☐ Moderate ☐Extensive ☐None
Exudations:	☒ No ☐ Yes
Galls:	☒ No ☐ Yes

PROPOSED ACTIONS	
Root Collar Inspection:	☐
Monitor for Progress:	☐
Remove Deadwood/Prune :	☐
Risk Assessment	☐
Support Structure:	☐

IMPACTS & MITIGATIONS
In Impacted Area: ☐ Yes ☐ No
Proposed Land Use:
Impacts:
Mitigations:

Comments & Notes: recent fire damage (Rodeo Fire – 7/23/17) – basal sprouting (sign of recovery) – 80% defoliated; extensive damage; beehive in scaffold; bark sloughing off; large cavity at base on north; adjacent to stream; old tears; leans north; tagged on south; 6.5" trunk dead (charred)

Photo #8204-06

[1] Health: A =Outstanding; B = Above Average; C = Average; D = Below Average; F = Dead
[2] Decurrent = Lacking Strong Central Leader. Excurrent = Strong Central Leader.
[3] Aesthetic (compared to standard tree of same species) : A = nearly symmetrical, healthy tree – F = Dead

OAK TREE FIELD DATA WORKSHEET *Property: 500 Baseline Road, La Verne*

Survey Date: 9/12/2017 **Tree Number: 57**

GENERAL CHARACTERISTICS	
Species: ☒ *Q. agrifolia* ☐ *Q. lobata* ☐ *Other (see below)*	**Health Rating[1]:** ☐A ☐B ☐C ☒D ☐F
	Form: ☐ symmetric ☐ minor asymmetry
Trunk Count: 1 **Height (ft.):** 40	☒ major asymmetry ☐ stump sprout
Trunk DBH (in.): 9	☐ stag-head
Percent Canopy Cover: 0 (fire)	**Crown Class[2]:** ☐ Decurrent ☒ Excurrent
Existing Terrain: ☐ Flat ☒ Slope	**Age Class:** ☐ immature ☒ semi-mature
Aesthetic Rating[3]: ☐ A ☐ B ☐ C ☒ D ☐ F	☐ mature ☐over-mature/senescent
Overall Grade: ☐ A ☐ B ☐ C ☒ D ☐ F	**Heritage Tree:** ☒ No ☐ Yes

CANOPY CHARACTERISTICS		
	Dripline Radius (Feet)	Canopy to Grade (Feet)
N	6	35
NE		
E	20	6
SE		
S	14	1
SW		
W	10	12
NW		

CANOPY SPREAD (FEET): 20 X 30

PROPOSED ACTIONS	
Root Collar Inspection:	☐
Monitor for Progress:	☐
Remove Deadwood/Prune :	☐
Risk Assessment	☐
Support Structure:	☐

IMPACTS & MITIGATIONS
In Impacted Area: ☐ Yes ☐ No
Proposed Land Use:
Impacts:
Mitigations:

TREE HEALTH	
Wound Wood Development:	☐ Excellent ☐ Average ☐ Poor ☒ None
Foliage Density:	☐ Normal ☒ Sparse
Weak crotches:	☐ No ☒ Yes
Oak Pit Scale:	☒ No ☐ Yes
Mainstem dieback:	☐ No ☒ Yes
Exposed Roots:	☒ No ☐ Yes
Epicormic growth:	☐ No ☒ Yes
Shading Out:	☐ No ☒ Yes
Cavities: ☒ None	☐ Trunk ☐ Branch
Exfoliating Bark:	☐ No ☒ Yes
Water Pocket(s):	☒ No ☐ Yes
Mechanical Damage:	☐ Trunk ☐ Branch ☒ None
Cankers:	☒ No ☐ Yes
Fungus:	☒ No ☐ Yes
Twig/ Branch Dieback:	☐ None ☐ Minor ☐ Moderate ☒Extensive
Vigor:	☐ Excellent ☐Average ☐ Fair ☒ Poor
Borers/ Ants /Termites:	☒ Minor ☐ Moderate ☐Extensive ☐None
Exudations:	☒ No ☐ Yes
Galls:	☒ No ☐ Yes

Comments & Notes: recent fire damage (Rodeo Fire – 7/23/17); basal sprouting (sign of recovery) – 90% defoliated; extensive damage; leans south; shaded by eucalyptus

Photo #8207

[1] Health: A =Outstanding; B = Above Average; C = Average; D = Below Average; F = Dead
[2] Decurrent = Lacking Strong Central Leader. Excurrent = Strong Central Leader.
[3] Aesthetic (compared to standard tree of same species) : A = nearly symmetrical, healthy tree – F = Dead

OAK TREE FIELD DATA WORKSHEET — *Property: 500 Baseline Road, La Verne*

Survey Date: 9/12/2017 — **Tree Number: 58**

GENERAL CHARACTERISTICS	
Species: ☐*Q. agrifolia* ☐ *Q. lobata* ☒ *Other (see below)*	**Health Rating**[1]**:** ☐A ☐B ☒C ☐D ☐ F
Platanus racemosa (California sycamore)	**Form:** ☐ symmetric ☒ minor asymmetry
Trunk Count: 2 **Height (ft.)**: 50	☐ major asymmetry ☐ stump sprout
Trunk DBH (in.): 11, 12.5	☐ stag-head
Percent Canopy Cover: 20 (fire)	**Crown Class**[2]**:** ☐ Decurrent ☒ Excurrent
Existing Terrain: ☐ Flat ☒ Slope	**Age Class:** ☐ immature ☒ semi-mature
Aesthetic Rating[3]**:** ☐ A ☐ B ☒ C ☐ D ☐ F	☐ mature ☐over-mature/senescent
Overall Grade: ☐ A ☐ B ☒ C ☐ D ☐ F	**Heritage Tree:** ☒ No ☐ Yes

CANOPY CHARACTERISTICS

	Dripline Radius (Feet)	Canopy to Grade (Feet)
N	35	30
NE		
E	2	50
SE		
S	20	20
SW		
W	30	18
NW		

CANOPY SPREAD (FEET): 55 X 32

TREE HEALTH

Wound Wood Development:	☐ Excellent ☒ Average ☐ Poor ☐ None
Foliage Density:	☐ Normal ☒ Sparse
Weak crotches:	☐ No ☒ Yes
Oak Pit Scale:	☒ No ☐ Yes
Mainstem dieback:	☐ No ☒ Yes
Exposed Roots:	☒ No ☐ Yes
Epicormic growth:	☐ No ☒ Yes
Shading Out:	☒ No ☐ Yes
Cavities: ☒ None	☐ Trunk ☐ Branch
Exfoliating Bark:	☐ No ☒ Yes
Water Pocket(s):	☒ No ☐ Yes
Mechanical Damage:	☐ Trunk ☐ Branch ☒ None
Cankers:	☒ No ☐ Yes
Fungus:	☒ No ☐ Yes
Twig/ Branch Dieback:	☐ None ☐ Minor ☐ Moderate ☒Extensive
Vigor:	☐ Excellent ☐Average ☒ Fair ☐ Poor
Borers/ Ants /Termites:	☒ Minor ☐ Moderate ☐Extensive ☐None
Exudations:	☒ No ☐ Yes
Galls:	☒ No ☐ Yes

PROPOSED ACTIONS

Root Collar Inspection:	☐
Monitor for Progress:	☐
Remove Deadwood/Prune :	☐
Risk Assessment	☐
Support Structure:	☐

IMPACTS & MITIGATIONS

In Impacted Area: ☐ Yes ☐ No

Proposed Land Use:

Impacts:

Mitigations:

Comments & Notes: recent fire damage (Rodeo Fire – 7/23/17) – adjacent eucalyptus broke/cut and fell into canopy – some damage; remanents of small metal tank at base; lower foliage scorched with new growth (sign of recovery); codoms at base

Photo #5315

[1] Health: A =Outstanding; B = Above Average; C = Average; D = Below Average; F = Dead
[2] Decurrent = Lacking Strong Central Leader. Excurrent = Strong Central Leader.
[3] Aesthetic (compared to standard tree of same species) : A = nearly symmetrical, healthy tree – F = Dead

OAK TREE FIELD DATA WORKSHEET *Property: 500 Baseline Road, La Verne*

Survey Date: 9/12/2017 **Tree Number: 59**

GENERAL CHARACTERISTICS			
Species: ☒ *Q. agrifolia* ☐ *Q. lobata* ☐ *Other (see below)*		**Health Rating**[1]**:** ☐A ☒B ☐C ☐D ☐F	
		Form: ☒ symmetric ☐ minor asymmetry	
Trunk Count: 4 **Height (ft.):** 30		☐ major asymmetry ☐ stump sprout	
Trunk DBH (in.): 7, 7, 8.5, 9.5		☐ stag-head	
Percent Canopy Cover: 70		**Crown Class**[2]**:** ☒ Decurrent ☐ Excurrent	
Existing Terrain: ☐ Flat ☒ Slope		**Age Class:** ☒ immature ☐ semi-mature	
Aesthetic Rating[3]**:** ☒ A ☐ B ☐ C ☐ D ☐ F		☐ mature ☐ over-mature/senescent	
Overall Grade: ☐ A ☒ B+ ☐ C ☐ D ☐ F		**Heritage Tree:** ☒ No ☐ Yes	

CANOPY CHARACTERISTICS			**TREE HEALTH**	
	Dripline Radius (Feet)	Canopy to Grade (Feet)	**Wound Wood Development:**	☐ Excellent ☐ Average ☐ Poor ☒ None
N	15	15	**Foliage Density:**	☒ Normal ☐ Sparse
NE			**Weak crotches:**	☒ No ☐ Yes
E	15	8	**Oak Pit Scale:**	☒ No ☐ Yes
SE			**Mainstem dieback:**	☒ No ☐ Yes
S	17	10	**Exposed Roots:**	☒ No ☐ Yes
SW			**Epicormic growth:**	☐ No ☒ Yes
W	22	15	**Shading Out:**	☒ No ☐ Yes
NW			**Cavities:** ☒ None	☐ Trunk ☐ Branch
			Exfoliating Bark:	☒ No ☐ Yes
CANOPY SPREAD (FEET): 32 X 37			**Water Pocket(s):**	☒ No ☐ Yes

PROPOSED ACTIONS		**Mechanical Damage:**	☐ Trunk ☐ Branch ☒ None
Root Collar Inspection:	☐	**Cankers:**	☒ No ☐ Yes
Monitor for Progress:	☐	**Fungus:**	☒ No ☐ Yes
Remove Deadwood/Prune :	☐	**Twig/ Branch Dieback:**	☒ None ☐ Minor ☐ Moderate ☐ Extensive
Risk Assessment	☐		
Support Structure:	☐		
IMPACTS & MITIGATIONS		**Vigor:**	☐ Excellent ☒ Average ☐ Fair ☐ Poor
In Impacted Area: ☐ Yes ☐ No		**Borers/ Ants /Termites:**	☒ Minor ☐ Moderate ☐ Extensive ☐ None
Proposed Land Use:			
Impacts:		**Exudations:**	☒ No ☐ Yes
Mitigations:		**Galls:**	☒ No ☐ Yes

Comments & Notes: California pepper adjacent; bows south; poison oak surrounding

Photo #4949

[1] Health: A =Outstanding; B = Above Average; C = Average; D = Below Average; F = Dead
[2] Decurrent = Lacking Strong Central Leader. Excurrent = Strong Central Leader.
[3] Aesthetic (compared to standard tree of same species) : A = nearly symmetrical, healthy tree – F = Dead

OAK TREE FIELD DATA WORKSHEET *Property: 500 Baseline Road, La Verne*

Survey Date: 9/12/2017 **Tree Number: 60**

GENERAL CHARACTERISTICS	
Species: ☒ *Q. agrifolia* ☐ *Q. lobata* ☐ *Other (see below)*	**Health Rating**[1]**:** ☐A ☐B ☒C ☐D ☐F
	Form: ☐ symmetric ☐ minor asymmetry
Trunk Count: 1 **Height (ft.):** 35	☒ major asymmetry ☐ stump sprout
Trunk DBH (in.): 9	☐ stag-head
Percent Canopy Cover: 45	**Crown Class**[2]**:** ☐ Decurrent ☒ Excurrent
Existing Terrain: ☐ Flat ☒ Slope	**Age Class:** ☒ immature ☐ semi-mature
Aesthetic Rating[3]**:** ☐ A ☐ B ☒ C ☐ D ☐ F	☐ mature ☐over-mature/senescent
Overall Grade: ☐ A ☐ B ☒ C ☐ D ☐ F	**Heritage Tree:** ☒ No ☐ Yes

CANOPY CHARACTERISTICS			**TREE HEALTH**	
	Dripline Radius (Feet)	Canopy to Grade (Feet)	**Wound Wood Development:**	☐ Excellent ☐ Average ☒ Poor ☐ None
N	0	0	**Foliage Density:**	☒ Normal ☐ Sparse
NE			**Weak crotches:**	☐ No ☒ Yes
E	15	8	**Oak Pit Scale:**	☒ No ☐ Yes
SE			**Mainstem dieback:**	☒ No ☐ Yes
S	13	5	**Exposed Roots:**	☒ No ☐ Yes
SW			**Epicormic growth:**	☐ No ☒ Yes
W	10	15	**Shading Out:**	☐ No ☒ Yes
NW			**Cavities:** ☐ None	☒ Trunk ☐ Branch
			Exfoliating Bark:	☒ No ☐ Yes
CANOPY SPREAD (FEET): 25 X 13			**Water Pocket(s):**	☒ No ☐ Yes
PROPOSED ACTIONS			**Mechanical Damage:**	☐ Trunk ☐ Branch ☒ None
Root Collar Inspection:	☐		**Cankers:**	☒ No ☐ Yes
Monitor for Progress:	☐		**Fungus:**	☒ No ☐ Yes
Remove Deadwood/Prune :	☐		**Twig/ Branch Dieback:**	☐ None ☒ Minor ☐ Moderate ☐Extensive
Risk Assessment	☐			
Support Structure:	☐			
IMPACTS & MITIGATIONS			**Vigor:**	☐ Excellent ☐Average ☒ Fair ☐ Poor
In Impacted Area: ☐ Yes ☐ No			**Borers/ Ants /Termites:**	☒ Minor ☐ Moderate ☐Extensive ☐None
Proposed Land Use:				
Impacts:			**Exudations:**	☒ No ☐ Yes
Mitigations:			**Galls:**	☒ No ☐ Yes

Comments & Notes: 1 dead trunk (8”) – broken off; old fire damage; surrounded by eucalyptus
Small adjacent oak (DBH – 2, 5, 5”) is 20’ west (photo #4952)

Photo #4950-51

[1] Health: A =Outstanding; B = Above Average; C = Average; D = Below Average; F = Dead
[2] Decurrent = Lacking Strong Central Leader. Excurrent = Strong Central Leader.
[3] Aesthetic (compared to standard tree of same species) : A = nearly symmetrical, healthy tree – F = Dead

OAK TREE FIELD DATA WORKSHEET *Property: 500 Baseline Road, La Verne*

Survey Date: 9/12/2017 **Tree Number: 61**

GENERAL CHARACTERISTICS	
Species: ☐ *Q. agrifolia* ☐ *Q. lobata* ☒ *Other (see below)*	**Health Rating**[1]**:** ☐A ☐B ☒C ☐D ☐F
Southern California black walnut (*Juglans californica* var. californica)	**Form:** ☐ symmetric ☐ minor asymmetry
Trunk Count: 4 **Height (ft.):** 30	☒ major asymmetry ☐ stump sprout
Trunk DBH (in.): 4, 4, 6, 6 (cumulative diameter = 10")	☐ stag-head
Percent Canopy Cover: 40	**Crown Class**[2]**:** ☒ Decurrent ☐ Excurrent
Existing Terrain: ☐ Flat ☒ Slope	**Age Class:** ☒ immature ☐ semi-mature
Aesthetic Rating[3]**:** ☐ A ☐ B ☒ C ☐ D ☐ F	☐ mature ☐ over-mature/senescent
Overall Grade: ☐ A ☐ B ☒ C ☐ D ☐ F	**Heritage Tree:** ☒ No ☐ Yes

CANOPY CHARACTERISTICS

	Dripline Radius (Feet)	Canopy to Grade (Feet)
N	6	2
NE		
E	6	2
SE		
S	10	3
SW		
W	8	4
NW		

CANOPY SPREAD (FEET): 16 X 14

PROPOSED ACTIONS

Root Collar Inspection:	☐
Monitor for Progress:	☐
Remove Deadwood/Prune :	☐
Risk Assessment	☐
Support Structure:	☐

IMPACTS & MITIGATIONS

In Impacted Area:	☐ Yes ☐ No
Proposed Land Use:	
Impacts:	
Mitigations:	

TREE HEALTH

Wound Wood Development:	☐ Excellent ☐ Average ☒ Poor ☐ None
Foliage Density:	☐ Normal ☒ Sparse
Weak crotches:	☐ No ☒ Yes
Oak Pit Scale:	☒ No ☐ Yes
Mainstem dieback:	☐ No ☒ Yes
Exposed Roots:	☒ No ☐ Yes
Epicormic growth:	☐ No ☒ Yes
Shading Out:	☒ No ☐ Yes
Cavities: ☒ None	☐ Trunk ☐ Branch
Exfoliating Bark:	☒ No ☐ Yes
Water Pocket(s):	☒ No ☐ Yes
Mechanical Damage:	☐ Trunk ☐ Branch ☒ None
Cankers:	☐ No ☒ Yes
Fungus:	☒ No ☐ Yes
Twig/ Branch Dieback:	☐ None ☐ Minor ☐ Moderate ☒ Extensive
Vigor:	☐ Excellent ☐ Average ☐ Fair ☒ Poor
Borers/ Ants /Termites:	☐ Minor ☐ Moderate ☒ Extensive ☐ None
Exudations:	☒ No ☐ Yes
Galls:	☒ No ☐ Yes

Comments & Notes: top dieback; 1000 canker disease; significant dieback; canopy mostly epicormic growth; surrounded by sugar bush

Photo #4959

[1] Health: A =Outstanding; B = Above Average; C = Average; D = Below Average; F = Dead
[2] Decurrent = Lacking Strong Central Leader. Excurrent = Strong Central Leader.
[3] Aesthetic (compared to standard tree of same species) : A = nearly symmetrical, healthy tree – F = Dead

OAK TREE FIELD DATA WORKSHEET *Property: 500 Baseline Road, La Verne*

Survey Date: 9/12/2017 **Tree Number: 62**

GENERAL CHARACTERISTICS	
Species: ☐ *Q. agrifolia* ☐ *Q. lobata* ☒ *Other (see below)*	**Health Rating[1]:** ☐A ☐B ☒C ☐D ☐F
Scrub oak *(Quercus berberidifolia)*	**Form:** ☐ symmetric ☐ minor asymmetry
Trunk Count: 3 **Height (ft.):** 20	☒ major asymmetry ☐ stump sprout
Trunk DBH (in.): 5, 5, 7.5 (cumulative diameter = 10")	☐ stag-head
Percent Canopy Cover: 15 (fire)	**Crown Class[2]:** ☒ Decurrent ☐ Excurrent
Existing Terrain: ☐ Flat ☒ Slope	**Age Class:** ☐ immature ☒ semi-mature
Aesthetic Rating[3]: ☐ A ☐ B ☒ C ☐ D ☐ F	☐ mature ☐over-mature/senescent
Overall Grade: ☐ A ☐ B ☒ C ☐ D ☐ F	**Heritage Tree:** ☒ No ☐ Yes

CANOPY CHARACTERISTICS

	Dripline Radius (Feet)	Canopy to Grade (Feet)
N	18	0
NE		
E	10	8
SE		
S	0	0
SW		
W	14	0
NW		

CANOPY SPREAD (FEET): 18 X 24

TREE HEALTH

Wound Wood Development:	☐ Excellent ☐ Average ☒ Poor ☐ None
Foliage Density:	☐ Normal ☒ Sparse
Weak crotches:	☒ No ☐ Yes
Oak Pit Scale:	☒ No ☐ Yes
Mainstem dieback:	☒ No ☐ Yes
Exposed Roots:	☒ No ☐ Yes
Epicormic growth:	☐ No ☒ Yes
Shading Out:	☐ No ☒ Yes
Cavities: ☒ None	☐ Trunk ☐ Branch
Exfoliating Bark:	☒ No ☐ Yes
Water Pocket(s):	☒ No ☐ Yes
Mechanical Damage:	☐ Trunk ☐ Branch ☒ None
Cankers:	☒ No ☐ Yes
Fungus:	☒ No ☐ Yes
Twig/ Branch Dieback:	☐ None ☐ Minor ☒ Moderate ☐Extensive
Vigor:	☐ Excellent ☐Average ☒ Fair ☐ Poor
Borers/ Ants /Termites:	☒ Minor ☐ Moderate ☐Extensive ☐None
Exudations:	☒ No ☐ Yes
Galls:	☒ No ☐ Yes

PROPOSED ACTIONS

Root Collar Inspection:	☐
Monitor for Progress:	☐
Remove Deadwood/Prune :	☐
Risk Assessment	☐
Support Structure:	☐

IMPACTS & MITIGATIONS

In Impacted Area: ☐ Yes ☐ No

Proposed Land Use:

Impacts:

Mitigations:

Comments & Notes: recent fire damage (Rodeo Fire – 7/23/17) – basal sprouting (sign of recovery) – 90% defoliated; old tag #120; shaded out by #50; old broken trunks; jelly mold on trunk; tagged on east

Photo #8185

[1] Health: A =Outstanding; B = Above Average; C = Average; D = Below Average; F = Dead
[2] Decurrent = Lacking Strong Central Leader. Excurrent = Strong Central Leader.
[3] Aesthetic (compared to standard tree of same species) : A = nearly symmetrical, healthy tree – F = Dead

OAK TREE FIELD DATA WORKSHEET *Property: 500 Baseline Road, La Verne*

Survey Date: 9/12/2017 **Tree Number: 63**

GENERAL CHARACTERISTICS	
Species: ☒*Q. agrifolia* ☐ *Q. lobata* ☐ *Other (see below)*	**Health Rating**[1]**:** ☐A ☐B ☒C ☐D ☐ F
	Form: ☐ symmetric ☐ minor asymmetry
Trunk Count: 3 **Height (ft.)**: 15	☒ major asymmetry ☐ stump sprout
Trunk DBH (in.): 5, 9, 13	☐ stag-head
Percent Canopy Cover: 20 (fire)	**Crown Class**[2]**:** ☒ Decurrent ☐ Excurrent
Existing Terrain: ☐ Flat ☒ Slope	**Age Class:** ☐ immature ☒ semi-mature
Aesthetic Rating[3]**:** ☐ A ☐ B ☒ C- ☐ D ☐ F	☐ mature ☐over-mature/senescent
Overall Grade: ☐ A ☐ B ☒ C ☐ D ☐ F	**Heritage Tree:** ☒ No ☐ Yes

CANOPY CHARACTERISTICS

	Dripline Radius (Feet)	Canopy to Grade (Feet)
N	13	0
NE		
E	0	0
SE		
S	0	0
SW		
W	15	2
NW		

CANOPY SPREAD (FEET): 13 X 15

PROPOSED ACTIONS

Root Collar Inspection:	☐
Monitor for Progress:	☐
Remove Deadwood/Prune :	☐
Risk Assessment	☐
Support Structure:	☐

IMPACTS & MITIGATIONS

In Impacted Area:	☐ Yes ☐ No
Proposed Land Use:	
Impacts:	
Mitigations:	

TREE HEALTH

Wound Wood Development:	☐ Excellent ☐ Average ☒ Poor ☐ None
Foliage Density:	☐ Normal ☒ Sparse
Weak crotches:	☐ No ☒ Yes
Oak Pit Scale:	☒ No ☐ Yes
Mainstem dieback:	☐ No ☒ Yes
Exposed Roots:	☒ No ☐ Yes
Epicormic growth:	☐ No ☒ Yes
Shading Out:	☒ No ☐ Yes
Cavities: ☐ None	☒ Trunk ☐ Branch
Exfoliating Bark:	☐ No ☒ Yes
Water Pocket(s):	☒ No ☐ Yes
Mechanical Damage:	☐ Trunk ☒ Branch ☐ None
Cankers:	☒ No ☐ Yes
Fungus:	☒ No ☐ Yes
Twig/ Branch Dieback:	☐ None ☐ Minor ☒ Moderate ☐Extensive
Vigor:	☐ Excellent ☐Average ☒ Fair ☐ Poor
Borers/ Ants /Termites:	☐ Minor ☒ Moderate ☐Extensive ☐None
Exudations:	☒ No ☐ Yes
Galls:	☒ No ☐ Yes

Comments & Notes: recent fire damage (Rodeo Fire – 7/23/17) – cut scaffolds from fire clearance activities; branches and foliage scorched; unbalanced to west; old tag #54 & 121

Photo #8186-87

[1] Health: A =Outstanding; B = Above Average; C = Average; D = Below Average; F = Dead
[2] Decurrent = Lacking Strong Central Leader. Excurrent = Strong Central Leader.
[3] Aesthetic (compared to standard tree of same species) : A = nearly symmetrical, healthy tree – F = Dead

OAK TREE FIELD DATA WORKSHEET *Property: 500 Baseline Road, La Verne*

Survey Date: 9/12/2017 **Tree Number: 64**

GENERAL CHARACTERISTICS	
Species: ☒ *Q. agrifolia* ☐ *Q. lobata* ☐ *Other (see below)*	**Health Rating[1]:** ☐A ☐B ☒C ☐D ☐F
	Form: ☐ symmetric ☒ minor asymmetry
Trunk Count: 1 **Height (ft.)**: 45	☐ major asymmetry ☐ stump sprout
Trunk DBH (in.): 16	☐ stag-head
Percent Canopy Cover: 35 (fire)	**Crown Class[2]:** ☐ Decurrent ☒ Excurrent
Existing Terrain: ☐ Flat ☒ Slope	**Age Class:** ☐ immature ☒ semi-mature
Aesthetic Rating[3]: ☐ A ☐ B ☒ C ☐ D ☐ F	☐ mature ☐over-mature/senescent
Overall Grade: ☐ A ☐ B ☒ C ☐ D ☐ F	**Heritage Tree:** ☒ No ☐ Yes

CANOPY CHARACTERISTICS			**TREE HEALTH**	
	Dripline Radius (Feet)	Canopy to Grade (Feet)	**Wound Wood Development:**	☐ Excellent ☐ Average ☐ Poor ☒ None
N	20	18	**Foliage Density:**	☐ Normal ☒ Sparse
NE			**Weak crotches:**	☐ No ☒ Yes
E	16	1	**Oak Pit Scale:**	☒ No ☐ Yes
SE			**Mainstem dieback:**	☐ No ☒ Yes
S	12	12	**Exposed Roots:**	☒ No ☐ Yes
SW			**Epicormic growth:**	☐ No ☒ Yes
W	12	20	**Shading Out:**	☒ No ☐ Yes
NW			**Cavities:** ☒ None	☐ Trunk ☐ Branch
			Exfoliating Bark:	☐ No ☒ Yes
CANOPY SPREAD (FEET): 32 X 28			**Water Pocket(s):**	☒ No ☐ Yes

PROPOSED ACTIONS		**Mechanical Damage:**	☐ Trunk ☐ Branch ☒ None
Root Collar Inspection:	☐	**Cankers:**	☒ No ☐ Yes
Monitor for Progress:	☐	**Fungus:**	☒ No ☐ Yes
Remove Deadwood/Prune :	☐	**Twig/ Branch Dieback:**	☐ None ☐ Minor ☐ Moderate ☒Extensive
Risk Assessment	☐		
Support Structure:	☐		

IMPACTS & MITIGATIONS	**Vigor:**	☐ Excellent ☐Average ☒ Fair ☐ Poor
In Impacted Area: ☐ Yes ☐ No	**Borers/ Ants /Termites:**	☒ Minor ☐ Moderate ☐Extensive ☐None
Proposed Land Use:		
Impacts:	**Exudations:**	☒ No ☐ Yes
Mitigations:	**Galls:**	☒ No ☐ Yes

Comments & Notes: recent fire damage (Rodeo Fire – 7/23/17) – lower foliage scorched; old tag #124; tagged on south; old fire damage on limbs withgood callous; bark sloughing

Photo #8208-09

[1] Health: A =Outstanding; B = Above Average; C = Average; D = Below Average; F = Dead
[2] Decurrent = Lacking Strong Central Leader. Excurrent = Strong Central Leader.
[3] Aesthetic (compared to standard tree of same species) : A = nearly symmetrical, healthy tree – F = Dead

OAK TREE FIELD DATA WORKSHEET *Property: 500 Baseline Road, La Verne*

Survey Date: 9/26/2017 **Tree Number: 65**

GENERAL CHARACTERISTICS	
Species: ☒*Q. agrifolia* ☐ *Q. lobata* ☐ *Other (see below)*	**Health Rating**[1]**:** ☒A ☐B ☐C ☐D ☐F
	Form: ☐ symmetric ☒ minor asymmetry
Trunk Count: 2 **Height (ft.):** 35	☐ major asymmetry ☐ stump sprout
Trunk DBH (in.): 10, 14.5	☐ stag-head
Percent Canopy Cover: 85	**Crown Class**[2]**:** ☒ Decurrent ☐ Excurrent
Existing Terrain: ☐ Flat ☒ Slope	**Age Class:** ☐ immature ☒ semi-mature
Aesthetic Rating[3]**:** ☒ A ☐ B ☐ C ☐ D ☐ F	☐ mature ☐over-mature/senescent
Overall Grade: ☒ A ☐ B ☐ C ☐ D ☐ F	**Heritage Tree:** ☒ No ☐ Yes

CANOPY CHARACTERISTICS			**TREE HEALTH**	
	Dripline Radius (Feet)	Canopy to Grade (Feet)	**Wound Wood Development:**	☐ Excellent ☒ Average ☐ Poor ☐ None
N	28	10	**Foliage Density:**	☒ Normal ☐ Sparse
NE			**Weak crotches:**	☒ No ☐ Yes
E	14	0	**Oak Pit Scale:**	☒ No ☐ Yes
SE			**Mainstem dieback:**	☒ No ☐ Yes
S	8	2	**Exposed Roots:**	☒ No ☐ Yes
SW			**Epicormic growth:**	☐ No ☒ Yes
W	16	18	**Shading Out:**	☐ No ☒ Yes
NW			**Cavities:** ☒ None	☐ Trunk ☐ Branch
			Exfoliating Bark:	☒ No ☐ Yes
CANOPY SPREAD (FEET): 36 X 30			**Water Pocket(s):**	☒ No ☐ Yes
PROPOSED ACTIONS			**Mechanical Damage:**	☐ Trunk ☐ Branch ☒ None
Root Collar Inspection:	☐		**Cankers:**	☒ No ☐ Yes
Monitor for Progress:	☐		**Fungus:**	☒ No ☐ Yes
Remove Deadwood/Prune :	☐		**Twig/ Branch Dieback:**	☐ None ☒ Minor ☐ Moderate ☐Extensive
Risk Assessment	☐			
Support Structure:	☐			
IMPACTS & MITIGATIONS			**Vigor:**	☐ Excellent ☒Average ☐ Fair ☐ Poor
In Impacted Area: ☐ Yes ☐ No			**Borers/ Ants /Termites:**	☒ Minor ☐ Moderate ☐Extensive ☐None
Proposed Land Use:				
Impacts:			**Exudations:**	☒ No ☐ Yes
Mitigations:			**Galls:**	☒ No ☐ Yes

Comments & Notes: leans north; codom at 3'; shaded by toyon; low branching to ground; old tag #1 & 7; slight erosion on north – root crown exposed; tagged on west

Photo #8253

[1] Health: A =Outstanding; B = Above Average; C = Average; D = Below Average; F = Dead
[2] Decurrent = Lacking Strong Central Leader. Excurrent = Strong Central Leader.
[3] Aesthetic (compared to standard tree of same species) : A = nearly symmetrical, healthy tree – F = Dead

OAK TREE FIELD DATA WORKSHEET *Property: 500 Baseline Road, La Verne*

Survey Date: 9/26/2017 **Tree Number: 66**

GENERAL CHARACTERISTICS	
Species: ☒ *Q. agrifolia* ☐ *Q. lobata* ☐ *Other (see below)*	**Health Rating**[1]**:** ☐A ☒B- ☐C ☐D ☐F
	Form: ☐ symmetric ☒ minor asymmetry
Trunk Count: 1 **Height (ft.)**: 45	☐ major asymmetry ☐ stump sprout
Trunk DBH (in.): 27	☐ stag-head
Percent Canopy Cover: 70	**Crown Class**[2]**:** ☐ Decurrent ☒ Excurrent
Existing Terrain: ☐ Flat ☒ Slope	**Age Class:** ☐ immature ☐ semi-mature
Aesthetic Rating[3]**:** ☐ A ☒ B- ☐ C ☐ D ☐ F	☒ mature ☐over-mature/senescent
Overall Grade: ☐ A ☒ B ☐ C ☐ D ☐ F	**Heritage Tree:** ☒ No ☐ Yes

CANOPY CHARACTERISTICS

	Dripline Radius (Feet)	Canopy to Grade (Feet)
N	30	30
NE		
E	28	6
SE	31	
S	20	6
SW		
W	28	15
NW		

CANOPY SPREAD (FEET): 50 X 56

TREE HEALTH

Wound Wood Development:	☐ Excellent ☒ Average ☐ Poor ☐ None
Foliage Density:	☒ Normal ☐ Sparse
Weak crotches:	☒ No ☐ Yes
Oak Pit Scale:	☒ No ☐ Yes
Mainstem dieback:	☐ No ☒ Yes
Exposed Roots:	☒ No ☐ Yes
Epicormic growth:	☐ No ☒ Yes
Shading Out:	☒ No ☐ Yes
Cavities: ☐ None	☐ Trunk ☒ Branch
Exfoliating Bark:	☒ No ☐ Yes
Water Pocket(s):	☒ No ☐ Yes
Mechanical Damage:	☐ Trunk ☐ Branch ☒ None
Cankers:	☒ No ☐ Yes
Fungus:	☒ No ☐ Yes
Twig/ Branch Dieback:	☐ None ☐ Minor ☒ Moderate ☐Extensive
Vigor:	☐ Excellent ☒Average ☐ Fair ☐ Poor
Borers/ Ants /Termites:	☒ Minor ☐ Moderate ☐Extensive ☐None
Exudations:	☒ No ☐ Yes
Galls:	☒ No ☐ Yes

PROPOSED ACTIONS

Root Collar Inspection:	☐
Monitor for Progress:	☐
Remove Deadwood/Prune :	☐
Risk Assessment	☐
Support Structure:	☐

IMPACTS & MITIGATIONS

In Impacted Area:	☐ Yes ☐ No
Proposed Land Use:	
Impacts:	
Mitigations:	

Comments & Notes: interior dieback; broken branches; tagged on south; codom at 10'; old tag #2; old fire damage; broken sycamore branch hanging at codom

Photo #8254

[1] Health: A =Outstanding; B = Above Average; C = Average; D = Below Average; F = Dead
[2] Decurrent = Lacking Strong Central Leader. Excurrent = Strong Central Leader.
[3] Aesthetic (compared to standard tree of same species) : A = nearly symmetrical, healthy tree – F = Dead

OAK TREE FIELD DATA WORKSHEET *Property: 500 Baseline Road, La Verne*

Survey Date: 9/26/2017 **Tree Number: 67**

GENERAL CHARACTERISTICS	
Species: ☒ *Q. agrifolia* ☐ *Q. lobata* ☐ *Other (see below)*	**Health Rating**[1]**:** ☐A ☒B+ ☐C ☐D ☐F
	Form: ☒ symmetric ☐ minor asymmetry
Trunk Count: 1 **Height (ft.):** 40	☐ major asymmetry ☐ stump sprout
Trunk DBH (in.): 15	☐ stag-head
Percent Canopy Cover: 75	**Crown Class**[2]**:** ☐ Decurrent ☒ Excurrent
Existing Terrain: ☐ Flat ☒ Slope	**Age Class:** ☐ immature ☒ semi-mature
Aesthetic Rating[3]**:** ☐ A ☒ B+ ☐ C ☐ D ☐ F	☐ mature ☐over-mature/senescent
Overall Grade: ☐ A ☒ B+ ☐ C ☐ D ☐ F	**Heritage Tree:** ☒ No ☐ Yes

CANOPY CHARACTERISTICS

	Dripline Radius (Feet)	Canopy to Grade (Feet)
N	21	18
NE		
E	22	4
SE		
S	18	12
SW		
W	18	12
NW		

CANOPY SPREAD (FEET): 39 X 40

TREE HEALTH

Wound Wood Development:	☐ Excellent ☒ Average ☐ Poor ☐ None
Foliage Density:	☒ Normal ☐ Sparse
Weak crotches:	☒ No ☐ Yes
Oak Pit Scale:	☒ No ☐ Yes
Mainstem dieback:	☒ No ☐ Yes
Exposed Roots:	☒ No ☐ Yes
Epicormic growth:	☐ No ☒ Yes
Shading Out:	☒ No ☐ Yes
Cavities: ☒ None	☐ Trunk ☐ Branch
Exfoliating Bark:	☒ No ☐ Yes
Water Pocket(s):	☒ No ☐ Yes
Mechanical Damage:	☐ Trunk ☐ Branch ☒ None
Cankers:	☒ No ☐ Yes
Fungus:	☒ No ☐ Yes
Twig/ Branch Dieback:	☐ None ☒ Minor ☐ Moderate ☐Extensive
Vigor:	☐ Excellent ☒Average ☐ Fair ☐ Poor
Borers/ Ants /Termites:	☒ Minor ☐ Moderate ☐Extensive ☐None
Exudations:	☒ No ☐ Yes
Galls:	☒ No ☐ Yes

PROPOSED ACTIONS

Root Collar Inspection:	☐
Monitor for Progress:	☐
Remove Deadwood/Prune :	☐
Risk Assessment	☐
Support Structure:	☐

IMPACTS & MITIGATIONS

In Impacted Area:	☐ Yes ☐ No
Proposed Land Use:	
Impacts:	
Mitigations:	

Comments & Notes: elderberry growing at base; low branching to ground; old tag #3; included bark on low branch

Photo #8255

[1] Health: A =Outstanding; B = Above Average; C = Average; D = Below Average; F = Dead
[2] Decurrent = Lacking Strong Central Leader. Excurrent = Strong Central Leader.
[3] Aesthetic (compared to standard tree of same species) : A = nearly symmetrical, healthy tree – F = Dead

OAK TREE FIELD DATA WORKSHEET *Property: 500 Baseline Road, La Verne*

Survey Date: 9/26/2017 **Tree Number: 68**

GENERAL CHARACTERISTICS	
Species: ☐ *Q. agrifolia* ☐ *Q. lobata* ☒ *Other (see below)*	**Health Rating[1]:** ☐A ☐B ☐C ☒D ☐F
Platanus racemosa (California sycamore)	**Form:** ☐ symmetric ☐ minor asymmetry
Trunk Count: 4 **Height (ft.):** 55	☒ major asymmetry ☐ stump sprout
Trunk DBH (in.): 8.5 (dead – 4.5, 6, 15)	☐ stag-head
Percent Canopy Cover: 10	**Crown Class[2]:** ☐ Decurrent ☒ Excurrent
Existing Terrain: ☐ Flat ☒ Slope	**Age Class:** ☐ immature ☐ semi-mature
Aesthetic Rating[3]: ☐ A ☐ B ☐ C ☒ D ☐ F	☒ mature ☐ over-mature/senescent
Overall Grade: ☐ A ☐ B ☐ C ☒ D ☐ F	**Heritage Tree:** ☒ No ☐ Yes

CANOPY CHARACTERISTICS			**TREE HEALTH**	
	Dripline Radius (Feet)	Canopy to Grade (Feet)	**Wound Wood Development:**	☐ Excellent ☐ Average ☒ Poor ☐ None
N	35	38	**Foliage Density:**	☐ Normal ☒ Sparse
NE			**Weak crotches:**	☐ No ☒ Yes
E	0	0	**Oak Pit Scale:**	☒ No ☐ Yes
SE			**Mainstem dieback:**	☐ No ☒ Yes
S	0	0	**Exposed Roots:**	☒ No ☐ Yes
SW			**Epicormic growth:**	☐ No ☒ Yes
W	0	0	**Shading Out:**	☐ No ☒ Yes
NW			**Cavities:** ☐ None	☒ Trunk ☐ Branch
			Exfoliating Bark:	☐ No ☒ Yes
CANOPY SPREAD (FEET): 35 X 0			**Water Pocket(s):**	☒ No ☐ Yes
PROPOSED ACTIONS			**Mechanical Damage:**	☐ Trunk ☐ Branch ☒ None
Root Collar Inspection:	☐		**Cankers:**	☐ No ☒ Yes
Monitor for Progress:	☐		**Fungus:**	☒ No ☐ Yes
Remove Deadwood/Prune :	☐		**Twig/ Branch Dieback:**	☐ None ☐ Minor ☐ Moderate ☒ Extensive
Risk Assessment	☐			
Support Structure:	☐			
IMPACTS & MITIGATIONS			**Vigor:**	☐ Excellent ☐ Average ☐ Fair ☒ Poor
In Impacted Area: ☐ Yes ☐ No			**Borers/ Ants /Termites:**	☐ Minor ☒ Moderate ☐ Extensive ☐ None
Proposed Land Use:				
Impacts:			**Exudations:**	☐ No ☒ Yes
Mitigations:			**Galls:**	☒ No ☐ Yes

Comments & Notes: 3 dead trunks; polyphagous shot hole borer (PSHB); old tag #32; past fire damage; large callous on west with beetles

Photo #8256-57

[1] Health: A =Outstanding; B = Above Average; C = Average; D = Below Average; F = Dead
[2] Decurrent = Lacking Strong Central Leader. Excurrent = Strong Central Leader.
[3] Aesthetic (compared to standard tree of same species) : A = nearly symmetrical, healthy tree – F = Dead

OAK TREE FIELD DATA WORKSHEET *Property: 500 Baseline Road, La Verne*

Survey Date: 9/26/2017 **Tree Number: 69**

GENERAL CHARACTERISTICS	
Species: ☒ *Q. agrifolia* ☐ *Q. lobata* ☐ *Other (see below)*	**Health Rating**[1]**:** ☐ A ☒ B- ☐ C ☐ D ☐ F
	Form: ☐ symmetric ☒ minor asymmetry
Trunk Count: 1 **Height (ft.)**: 40	☐ major asymmetry ☐ stump sprout
Trunk DBH (in.): 21	☐ stag-head
Percent Canopy Cover: 70	**Crown Class**[2]**:** ☒ Decurrent ☐ Excurrent
Existing Terrain: ☐ Flat ☒ Slope	**Age Class:** ☐ immature ☐ semi-mature
Aesthetic Rating[3]**:** ☐ A ☒ B- ☐ C ☐ D ☐ F	☒ mature ☐ over-mature/senescent
Overall Grade: ☐ A ☒ B- ☐ C ☐ D ☐ F	**Heritage Tree:** ☒ No ☐ Yes

CANOPY CHARACTERISTICS

	Dripline Radius (Feet)	Canopy to Grade (Feet)
N	22	25
NE		
E	18	18
SE		
S	16	18
SW		
W	9	4
NW		

CANOPY SPREAD (FEET): 38 X 27

TREE HEALTH

Wound Wood Development:	☐ Excellent ☒ Average ☐ Poor ☐ None
Foliage Density:	☒ Normal ☐ Sparse
Weak crotches:	☒ No ☐ Yes
Oak Pit Scale:	☒ No ☐ Yes
Mainstem dieback:	☒ No ☐ Yes
Exposed Roots:	☒ No ☐ Yes
Epicormic growth:	☐ No ☒ Yes
Shading Out:	☒ No ☐ Yes
Cavities: ☐ None	☐ Trunk ☒ Branch
Exfoliating Bark:	☒ No ☐ Yes
Water Pocket(s):	☒ No ☐ Yes
Mechanical Damage:	☐ Trunk ☐ Branch ☒ None
Cankers:	☒ No ☐ Yes
Fungus:	☒ No ☐ Yes
Twig/ Branch Dieback:	☐ None ☐ Minor ☒ Moderate ☐ Extensive
Vigor:	☐ Excellent ☒ Average ☐ Fair ☐ Poor
Borers/ Ants /Termites:	☒ Minor ☐ Moderate ☐ Extensive ☐ None
Exudations:	☒ No ☐ Yes
Galls:	☒ No ☐ Yes

PROPOSED ACTIONS

Root Collar Inspection:	☐
Monitor for Progress:	☐
Remove Deadwood/Prune :	☐
Risk Assessment	☐
Support Structure:	☐

IMPACTS & MITIGATIONS

In Impacted Area:	☐ Yes ☐ No
Proposed Land Use:	
Impacts:	
Mitigations:	

Comments & Notes: Old tag #31 & 89; old fire damage; codom at 8'; exposed root crown on north due to erosion; interior dieback

Photo #8258

[1] Health: A =Outstanding; B = Above Average; C = Average; D = Below Average; F = Dead
[2] Decurrent = Lacking Strong Central Leader. Excurrent = Strong Central Leader.
[3] Aesthetic (compared to standard tree of same species) : A = nearly symmetrical, healthy tree – F = Dead

OAK TREE FIELD DATA WORKSHEET *Property: 500 Baseline Road, La Verne*

Survey Date: 9/26/2017 **Tree Number: 70**

GENERAL CHARACTERISTICS	
Species: ☒ *Q. agrifolia* ☐ *Q. lobata* ☐ *Other (see below)*	**Health Rating**[1]: ☐A ☒B ☐C ☐D ☐F
	Form: ☐ symmetric ☐ minor asymmetry
Trunk Count: 1 **Height (ft.)**: 50	☒ major asymmetry ☐ stump sprout
Trunk DBH (in.): 18.5	☐ stag-head
Percent Canopy Cover: 70	**Crown Class**[2]**:** ☒ Decurrent ☐ Excurrent
Existing Terrain: ☐ Flat ☒ Slope	**Age Class:** ☐ immature ☒ semi-mature
Aesthetic Rating[3]**:** ☐ A ☒ B ☐ C ☐ D ☐ F	☐ mature ☐over-mature/senescent
Overall Grade: ☐ A ☒ B ☐ C ☐ D ☐ F	**Heritage Tree:** ☒ No ☐ Yes

CANOPY CHARACTERISTICS			**TREE HEALTH**	
	Dripline Radius (Feet)	Canopy to Grade (Feet)	**Wound Wood Development:**	☐ Excellent ☒ Average ☐ Poor ☐ None
N	28	20	**Foliage Density:**	☒ Normal ☐ Sparse
NE			**Weak crotches:**	☐ No ☒ Yes
E	0	0	**Oak Pit Scale:**	☒ No ☐ Yes
SE			**Mainstem dieback:**	☐ No ☒ Yes
S	0	0	**Exposed Roots:**	☒ No ☐ Yes
SW			**Epicormic growth:**	☐ No ☒ Yes
W	22	10	**Shading Out:**	☐ No ☒ Yes
NW			**Cavities:** ☒ None	☐ Trunk ☐ Branch
			Exfoliating Bark:	☒ No ☐ Yes
CANOPY SPREAD (FEET): 28 X 22			**Water Pocket(s):**	☒ No ☐ Yes

PROPOSED ACTIONS		**Mechanical Damage:**	☐ Trunk ☐ Branch ☒ None
Root Collar Inspection:	☐	**Cankers:**	☒ No ☐ Yes
Monitor for Progress:	☐	**Fungus:**	☒ No ☐ Yes
Remove Deadwood/Prune :	☐	**Twig/ Branch Dieback:**	☐ None ☐ Minor ☒ Moderate ☐Extensive
Risk Assessment	☐		
Support Structure:	☐		

IMPACTS & MITIGATIONS	**Vigor:**	☐ Excellent ☒Average ☐ Fair ☐ Poor
In Impacted Area: ☐ Yes ☐ No	**Borers/ Ants /Termites:**	☒ Minor ☐ Moderate ☐Extensive ☐None
Proposed Land Use:		
Impacts:	**Exudations:**	☒ No ☐ Yes
Mitigations:	**Galls:**	☒ No ☐ Yes

Comments & Notes: Old tag #9 & 90; old fire damage – callous at base; shaded by toyon; interior dieback; toot collar exposed from erosion on north;

Photo #8259

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[1] Health: A =Outstanding; B = Above Average; C = Average; D = Below Average; F = Dead
[2] Decurrent = Lacking Strong Central Leader. Excurrent = Strong Central Leader.
[3] Aesthetic (compared to standard tree of same species) : A = nearly symmetrical, healthy tree – F = Dead

OAK TREE FIELD DATA WORKSHEET *Property: 500 Baseline Road, La Verne*

Survey Date: 9/26/2017 **Tree Number: 71**

GENERAL CHARACTERISTICS	
Species: ☒ *Q. agrifolia* ☐ *Q. lobata* ☐ *Other (see below)*	**Health Rating[1]:** ☐A ☒B- ☐C ☐D ☐ F
	Form: ☐ symmetric ☐ minor asymmetry
Trunk Count: 1 **Height (ft.):** 20	☒ major asymmetry ☐ stump sprout
Trunk DBH (in.): 14	☐ stag-head
Percent Canopy Cover: 70	**Crown Class[2]:** ☒ Decurrent ☐ Excurrent
Existing Terrain: ☐ Flat ☒ Slope	**Age Class:** ☐ immature ☒ semi-mature
Aesthetic Rating[3]: ☐ A ☒ B- ☐ C ☐ D ☐ F	☐ mature ☐over-mature/senescent
Overall Grade: ☐ A ☒ B- ☐ C ☐ D ☐ F	**Heritage Tree:** ☒ No ☐ Yes

CANOPY CHARACTERISTICS			**TREE HEALTH**	
	Dripline Radius (Feet)	Canopy to Grade (Feet)	**Wound Wood Development:**	☐ Excellent ☒ Average ☐ Poor ☐ None
N	16	12	**Foliage Density:**	☒ Normal ☐ Sparse
NE			**Weak crotches:**	☒ No ☐ Yes
E	0	0	**Oak Pit Scale:**	☒ No ☐ Yes
SE			**Mainstem dieback:**	☒ No ☐ Yes
S	0	0	**Exposed Roots:**	☒ No ☐ Yes
SW			**Epicormic growth:**	☐ No ☒ Yes
W	16	14	**Shading Out:**	☐ No ☒ Yes
NW	22		**Cavities:** ☒ None	☐ Trunk ☐ Branch
			Exfoliating Bark:	☒ No ☐ Yes
CANOPY SPREAD (FEET): 16 X 16			**Water Pocket(s):**	☒ No ☐ Yes

PROPOSED ACTIONS		**Mechanical Damage:**	☐ Trunk ☐ Branch ☒ None
Root Collar Inspection:	☐	**Cankers:**	☒ No ☐ Yes
Monitor for Progress:	☐	**Fungus:**	☒ No ☐ Yes
Remove Deadwood/Prune :	☐	**Twig/ Branch Dieback:**	☐ None ☐ Minor ☒ Moderate ☐Extensive
Risk Assessment	☐		
Support Structure:	☐		

IMPACTS & MITIGATIONS	**Vigor:**	☐ Excellent ☐Average ☒ Fair ☐ Poor
In Impacted Area: ☐ Yes ☐ No	**Borers/ Ants /Termites:**	☒ Minor ☐ Moderate ☐Extensive ☐None
Proposed Land Use:		
Impacts:	**Exudations:**	☒ No ☐ Yes
Mitigations:	**Galls:**	☒ No ☐ Yes

Comments & Notes: old fire damage; old tag #10 & 91; nows northwest; shaded by #72

Photo #8260-R

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[1] Health: A =Outstanding; B = Above Average; C = Average; D = Below Average; F = Dead
[2] Decurrent = Lacking Strong Central Leader. Excurrent = Strong Central Leader.
[3] Aesthetic (compared to standard tree of same species) : A = nearly symmetrical, healthy tree – F = Dead

OAK TREE FIELD DATA WORKSHEET *Property: 500 Baseline Road, La Verne*

Survey Date: 9/26/2017 **Tree Number: 72**

GENERAL CHARACTERISTICS	
Species: ☒ *Q. agrifolia* ☐ *Q. lobata* ☐ *Other (see below)*	**Health Rating[1]:** ☐A ☒B ☐C ☐D ☐F
	Form: ☐ symmetric ☒ minor asymmetry
Trunk Count: 1 **Height (ft.)**: 35	☐ major asymmetry ☐ stump sprout
Trunk DBH (in.): 18	☐ stag-head
Percent Canopy Cover: 70	**Crown Class[2]:** ☒ Decurrent ☐ Excurrent
Existing Terrain: ☐ Flat ☒ Slope	**Age Class:** ☐ immature ☐ semi-mature
Aesthetic Rating[3]: ☐ A ☒ B ☐ C ☐ D ☐ F	☒ mature ☐over-mature/senescent
Overall Grade: ☐ A ☒ B ☐ C ☐ D ☐ F	**Heritage Tree:** ☒ No ☐ Yes

CANOPY CHARACTERISTICS		
	Dripline Radius (Feet)	Canopy to Grade (Feet)
N	23	20
NE		
E	10	14
SE		
S	12	4
SW		
W	22	10
NW		

CANOPY SPREAD (FEET): 35 X 32

PROPOSED ACTIONS	
Root Collar Inspection:	☐
Monitor for Progress:	☐
Remove Deadwood/Prune :	☐
Risk Assessment	☐
Support Structure:	☐

IMPACTS & MITIGATIONS
In Impacted Area: ☐ Yes ☐ No
Proposed Land Use:
Impacts:
Mitigations:

TREE HEALTH	
Wound Wood Development:	☐ Excellent ☒ Average ☐ Poor ☐ None
Foliage Density:	☒ Normal ☐ Sparse
Weak crotches:	☒ No ☐ Yes
Oak Pit Scale:	☒ No ☐ Yes
Mainstem dieback:	☒ No ☐ Yes
Exposed Roots:	☒ No ☐ Yes
Epicormic growth:	☐ No ☒ Yes
Shading Out:	☒ No ☐ Yes
Cavities: ☒ None	☐ Trunk ☐ Branch
Exfoliating Bark:	☒ No ☐ Yes
Water Pocket(s):	☒ No ☐ Yes
Mechanical Damage:	☐ Trunk ☐ Branch ☒ None
Cankers:	☒ No ☐ Yes
Fungus:	☒ No ☐ Yes
Twig/ Branch Dieback:	☐ None ☐ Minor ☒ Moderate ☐Extensive
Vigor:	☐ Excellent ☒Average ☐ Fair ☐ Poor
Borers/ Ants /Termites:	☒ Minor ☐ Moderate ☐Extensive ☐None
Exudations:	☒ No ☐ Yes
Galls:	☒ No ☐ Yes

Comments & Notes: old fire damage; nest in canopy; surrounded by poison oak; tagged on northwest; old tag #11 & 92

Photo #8260-L

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[1] Health: A =Outstanding; B = Above Average; C = Average; D = Below Average; F = Dead
[2] Decurrent = Lacking Strong Central Leader. Excurrent = Strong Central Leader.
[3] Aesthetic (compared to standard tree of same species) : A = nearly symmetrical, healthy tree – F = Dead

OAK TREE FIELD DATA WORKSHEET *Property: 500 Baseline Road, La Verne*

Survey Date: 9/26/2017 **Tree Number: 73**

GENERAL CHARACTERISTICS			
Species: ☒ *Q. agrifolia* ☐ *Q. lobata* ☐ *Other (see below)*		**Health Rating[1]:** ☐A ☒B ☐C ☐D ☐F	
		Form: ☐ symmetric ☒ minor asymmetry	
Trunk Count: 1 **Height (ft.):** 30		☐ major asymmetry ☐ stump sprout	
Trunk DBH (in.): 16		☐ stag-head	
Percent Canopy Cover: 75		**Crown Class[2]:** ☐ Decurrent ☒ Excurrent	
Existing Terrain: ☐ Flat ☒ Slope		**Age Class:** ☐ immature ☒ semi-mature	
Aesthetic Rating[3]: ☐ A ☒ B ☐ C ☐ D ☐ F		☐ mature ☐over-mature/senescent	
Overall Grade: ☐ A ☒ B ☐ C ☐ D ☐ F		**Heritage Tree:** ☒ No ☐ Yes	

CANOPY CHARACTERISTICS			**TREE HEALTH**	
	Dripline Radius (Feet)	Canopy to Grade (Feet)	**Wound Wood Development:**	☐ Excellent ☒ Average ☐ Poor ☐ None
N	22	30	**Foliage Density:**	☒ Normal ☐ Sparse
NE			**Weak crotches:**	☒ No ☐ Yes
E	5	6	**Oak Pit Scale:**	☒ No ☐ Yes
SE			**Mainstem dieback:**	☒ No ☐ Yes
S	20	10	**Exposed Roots:**	☒ No ☐ Yes
SW			**Epicormic growth:**	☐ No ☒ Yes
W	10	20	**Shading Out:**	☒ No ☐ Yes
NW			**Cavities:** ☒ None	☐ Trunk ☐ Branch
			Exfoliating Bark:	☒ No ☐ Yes
CANOPY SPREAD (FEET): 42 X 15			**Water Pocket(s):**	☒ No ☐ Yes
PROPOSED ACTIONS			**Mechanical Damage:**	☐ Trunk ☐ Branch ☒ None
Root Collar Inspection:	☐		**Cankers:**	☒ No ☐ Yes
Monitor for Progress:	☐		**Fungus:**	☒ No ☐ Yes
Remove Deadwood/Prune :	☐		**Twig/ Branch Dieback:**	☐ None ☐ Minor ☒ Moderate ☐Extensive
Risk Assessment	☐			
Support Structure:	☐			
IMPACTS & MITIGATIONS			**Vigor:**	☐ Excellent ☒Average ☐ Fair ☐ Poor
In Impacted Area: ☐ Yes ☐ No			**Borers/ Ants /Termites:**	☒ Minor ☐ Moderate ☐Extensive ☐None
Proposed Land Use:				
Impacts:			**Exudations:**	☒ No ☐ Yes
Mitigations:			**Galls:**	☒ No ☐ Yes

Comments & Notes: brush clearance within dripline; old fire damage; old tag #12 & 93; codom at 8'; tagged on southwest; exposed root collar on north from erosion; recent fire damage (Rodeo Fire – 7/23/17) – foliage scorched

Photo #8261(R-rear) & 8262

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[1] Health: A =Outstanding; B = Above Average; C = Average; D = Below Average; F = Dead
[2] Decurrent = Lacking Strong Central Leader. Excurrent = Strong Central Leader.
[3] Aesthetic (compared to standard tree of same species) : A = nearly symmetrical, healthy tree – F = Dead

OAK TREE FIELD DATA WORKSHEET *Property: 500 Baseline Road, La Verne*

Survey Date: 9/26/2017 **Tree Number: 74**

GENERAL CHARACTERISTICS			
Species: ☒ *Q. agrifolia* ☐ *Q. lobata* ☐ *Other (see below)*		**Health Rating**[1]**:** ☐A ☐B ☒C ☐D ☐F	
		Form: ☐ symmetric ☒ minor asymmetry	
Trunk Count: 1 **Height (ft.):** 55		☐ major asymmetry ☐ stump sprout	
Trunk DBH (in.): 20		☐ stag-head	
Percent Canopy Cover: 80		**Crown Class**[2]**:** ☐ Decurrent ☒ Excurrent	
Existing Terrain: ☐ Flat ☒ Slope		**Age Class:** ☐ immature ☐ semi-mature	
Aesthetic Rating[3]**:** ☐ A ☐ B ☒ C ☐ D ☐ F		☒ mature ☐over-mature/senescent	
Overall Grade: ☐ A ☐ B ☒ C ☐ D ☐ F		**Heritage Tree:** ☒ No ☐ Yes	

CANOPY CHARACTERISTICS			**TREE HEALTH**	
	Dripline Radius (Feet)	Canopy to Grade (Feet)	**Wound Wood Development:**	☐ Excellent ☒ Average ☐ Poor ☐ None
N	26	20	**Foliage Density:**	☐ Normal ☒ Sparse
NE			**Weak crotches:**	☒ No ☐ Yes
E	12	18	**Oak Pit Scale:**	☒ No ☐ Yes
SE			**Mainstem dieback:**	☒ No ☐ Yes
S	15	25	**Exposed Roots:**	☒ No ☐ Yes
SW			**Epicormic growth:**	☐ No ☒ Yes
W	17	15	**Shading Out:**	☐ No ☒ Yes
NW	32		**Cavities:** ☐ None	☐ Trunk ☒ Branch
			Exfoliating Bark:	☒ No ☐ Yes
CANOPY SPREAD (FEET): 37 X 35			**Water Pocket(s):**	☒ No ☐ Yes
PROPOSED ACTIONS			**Mechanical Damage:**	☐ Trunk ☐ Branch ☒ None
Root Collar Inspection:	☐		**Cankers:**	☒ No ☐ Yes
Monitor for Progress:	☐		**Fungus:**	☒ No ☐ Yes
Remove Deadwood/Prune :	☐		**Twig/ Branch Dieback:**	☐ None ☐ Minor ☒ Moderate ☐Extensive
Risk Assessment	☐			
Support Structure:	☐			
IMPACTS & MITIGATIONS			**Vigor:**	☐ Excellent ☒Average ☐ Fair ☐ Poor
In Impacted Area: ☐ Yes ☐ No			**Borers/ Ants /Termites:**	☒ Minor ☐ Moderate ☐Extensive ☐None
Proposed Land Use:				
Impacts:			**Exudations:**	☒ No ☐ Yes
Mitigations:			**Galls:**	☒ No ☐ Yes

Comments & Notes: old tag #13 & 94; brush clearance within dripline from recent fire; foliage scorched (Rodeo Fire – 7/23/17) – mostly eastern canopy; old fire damage; shaded out by #73

Photo #8261(L-front) & 8262

[1] Health: A =Outstanding; B = Above Average; C = Average; D = Below Average; F = Dead
[2] Decurrent = Lacking Strong Central Leader. Excurrent = Strong Central Leader.
[3] Aesthetic (compared to standard tree of same species) : A = nearly symmetrical, healthy tree – F = Dead

OAK TREE FIELD DATA WORKSHEET *Property: 500 Baseline Road, La Verne*

Survey Date: 9/26/2017 **Tree Number: 75**

GENERAL CHARACTERISTICS	
Species: ☒ *Q. agrifolia* ☐ *Q. lobata* ☐ *Other (see below)*	**Health Rating[1]:** ☐A ☒B ☐C ☐D ☐F
	Form: ☐ symmetric ☒ minor asymmetry
Trunk Count: 1 **Height (ft.):** 50	☐ major asymmetry ☐ stump sprout
Trunk DBH (in.): 20.5 @ 3'	☐ stag-head
Percent Canopy Cover: 80	**Crown Class[2]:** ☒ Decurrent ☐ Excurrent
Existing Terrain: ☐ Flat ☒ Slope	**Age Class:** ☐ immature ☐ semi-mature
Aesthetic Rating[3]: ☐ A ☒ B ☐ C ☐ D ☐ F	☒ mature ☐over-mature/senescent
Overall Grade: ☐ A ☒ B ☐ C ☐ D ☐ F	**Heritage Tree:** ☒ No ☐ Yes

CANOPY CHARACTERISTICS			**TREE HEALTH**	
	Dripline Radius (Feet)	Canopy to Grade (Feet)	**Wound Wood Development:**	☐ Excellent ☒ Average ☐ Poor ☐ None
N	25	30	**Foliage Density:**	☒ Normal ☐ Sparse
NE			**Weak crotches:**	☒ No ☐ Yes
E	0	0	**Oak Pit Scale:**	☒ No ☐ Yes
SE			**Mainstem dieback:**	☒ No ☐ Yes
S	28	15	**Exposed Roots:**	☐ No ☒ Yes
SW			**Epicormic growth:**	☐ No ☒ Yes
W	30	20	**Shading Out:**	☒ No ☐ Yes
NW			**Cavities:** ☒ None	☐ Trunk ☐ Branch
			Exfoliating Bark:	☒ No ☐ Yes
CANOPY SPREAD (FEET): 53 X 30			**Water Pocket(s):**	☒ No ☐ Yes
PROPOSED ACTIONS			**Mechanical Damage:**	☐ Trunk ☐ Branch ☒ None
Root Collar Inspection:	☐		**Cankers:**	☒ No ☐ Yes
Monitor for Progress:	☐		**Fungus:**	☒ No ☐ Yes
Remove Deadwood/Prune :	☐		**Twig/ Branch Dieback:**	☐ None ☒ Minor ☐ Moderate ☐Extensive
Risk Assessment	☐			
Support Structure:	☐			
IMPACTS & MITIGATIONS			**Vigor:**	☐ Excellent ☒Average ☐ Fair ☐ Poor
In Impacted Area: ☐ Yes ☐ No			**Borers/ Ants /Termites:**	☒ Minor ☐ Moderate ☐Extensive ☐None
Proposed Land Use:				
Impacts:			**Exudations:**	☒ No ☐ Yes
Mitigations:			**Galls:**	☒ No ☐ Yes

Comments & Notes: old tag #13 & 33; interior dieback; codom @ 5'; tagged on south

Photo #8263

[1] Health: A =Outstanding; B = Above Average; C = Average; D = Below Average; F = Dead
[2] Decurrent = Lacking Strong Central Leader. Excurrent = Strong Central Leader.
[3] Aesthetic (compared to standard tree of same species) : A = nearly symmetrical, healthy tree – F = Dead

OAK TREE FIELD DATA WORKSHEET *Property: 500 Baseline Road, La Verne*

Survey Date: 9/26/2017 **Tree Number: 76**

GENERAL CHARACTERISTICS	
Species: ☒ *Q. agrifolia* ☐ *Q. lobata* ☐ *Other (see below)*	**Health Rating**[1]**:** ☐A ☒B- ☐C ☐D ☐ F
	Form: ☐ symmetric ☐ minor asymmetry
Trunk Count: 1 **Height (ft.):** 30	☒ major asymmetry ☐ stump sprout
Trunk DBH (in.): 17	☐ stag-head
Percent Canopy Cover: 75	**Crown Class**[2]**:** ☐ Decurrent ☒ Excurrent
Existing Terrain: ☐ Flat ☒ Slope	**Age Class:** ☐ immature ☒ semi-mature
Aesthetic Rating[3]**:** ☐ A ☒ B- ☐ C ☐ D ☐ F	☐ mature ☐over-mature/senescent
Overall Grade: ☐ A ☒ B- ☐ C ☐ D ☐ F	**Heritage Tree:** ☒ No ☐ Yes

CANOPY CHARACTERISTICS

	Dripline Radius (Feet)	Canopy to Grade (Feet)
N	0	0
NE		
E	0	0
SE		
S	30	25
SW		
W	25	30
NW		

CANOPY SPREAD (FEET): 30 X 25

TREE HEALTH

Wound Wood Development:	☐ Excellent ☒ Average ☐ Poor ☐ None
Foliage Density:	☒ Normal ☐ Sparse
Weak crotches:	☒ No ☐ Yes
Oak Pit Scale:	☒ No ☐ Yes
Mainstem dieback:	☒ No ☐ Yes
Exposed Roots:	☒ No ☐ Yes
Epicormic growth:	☐ No ☒ Yes
Shading Out:	☐ No ☒ Yes
Cavities: ☒ None	☐ Trunk ☐ Branch
Exfoliating Bark:	☒ No ☐ Yes
Water Pocket(s):	☒ No ☐ Yes
Mechanical Damage:	☐ Trunk ☐ Branch ☒ None
Cankers:	☒ No ☐ Yes
Fungus:	☒ No ☐ Yes
Twig/ Branch Dieback:	☐ None ☒ Minor ☐ Moderate ☐Extensive
Vigor:	☐ Excellent ☒Average ☐ Fair ☐ Poor
Borers/ Ants /Termites:	☒ Minor ☐ Moderate ☐Extensive ☐None
Exudations:	☒ No ☐ Yes
Galls:	☒ No ☐ Yes

PROPOSED ACTIONS

Root Collar Inspection:	☐
Monitor for Progress:	☐
Remove Deadwood/Prune :	☐
Risk Assessment	☐
Support Structure:	☐

IMPACTS & MITIGATIONS

In Impacted Area: ☐ Yes ☐ No

Proposed Land Use:

Impacts:

Mitigations:

Comments & Notes: bows south; interior dieback; old tag #14 & 34; adjacent to stream; old breaks; exposed root crown from erosion on west; old fire damage; tagged on south

Photo #8267-L

[1] Health: A =Outstanding; B = Above Average; C = Average; D = Below Average; F = Dead
[2] Decurrent = Lacking Strong Central Leader. Excurrent = Strong Central Leader.
[3] Aesthetic (compared to standard tree of same species) : A = nearly symmetrical, healthy tree – F = Dead

OAK TREE FIELD DATA WORKSHEET *Property: 500 Baseline Road, La Verne*

Survey Date: 9/26/2017 **Tree Number: 77**

GENERAL CHARACTERISTICS	
Species: ☒ *Q. agrifolia* ☐ *Q. lobata* ☐ *Other (see below)*	**Health Rating[1]:** ☐A ☒B ☐C ☐D ☐F
	Form: ☐ symmetric ☐ minor asymmetry
Trunk Count: 1 **Height (ft.):** 25	☒ major asymmetry ☐ stump sprout
Trunk DBH (in.): 13	☐ stag-head
Percent Canopy Cover: 40	**Crown Class[2]:** ☐ Decurrent ☒ Excurrent
Existing Terrain: ☐ Flat ☒ Slope	**Age Class:** ☐ immature ☒ semi-mature
Aesthetic Rating[3]: ☐ A ☒ B- ☐ C ☐ D ☐ F	☐ mature ☐over-mature/senescent
Overall Grade: ☐ A ☒ B- ☐ C ☐ D ☐ F	**Heritage Tree:** ☒ No ☐ Yes

CANOPY CHARACTERISTICS		
	Dripline Radius (Feet)	Canopy to Grade (Feet)
N	0	0
NE		
E	0	0
SE	25	
S	38	10
SW		
W	0	0
NW		

CANOPY SPREAD (FEET): 38 X 0

TREE HEALTH	
Wound Wood Development:	☐ Excellent ☒ Average ☐ Poor ☐ None
Foliage Density:	☒ Normal ☐ Sparse
Weak crotches:	☐ No ☒ Yes
Oak Pit Scale:	☒ No ☐ Yes
Mainstem dieback:	☒ No ☐ Yes
Exposed Roots:	☒ No ☐ Yes
Epicormic growth:	☐ No ☒ Yes
Shading Out:	☐ No ☒ Yes
Cavities: ☐ None	☐ Trunk ☒ Branch
Exfoliating Bark:	☒ No ☐ Yes
Water Pocket(s):	☒ No ☐ Yes
Mechanical Damage:	☐ Trunk ☐ Branch ☒ None
Cankers:	☒ No ☐ Yes
Fungus:	☒ No ☐ Yes
Twig/ Branch Dieback:	☐ None ☒ Minor ☐ Moderate ☐Extensive
Vigor:	☐ Excellent ☒Average ☐ Fair ☐ Poor
Borers/ Ants /Termites:	☒ Minor ☐ Moderate ☐Extensive ☐None
Exudations:	☒ No ☐ Yes
Galls:	☒ No ☐ Yes

PROPOSED ACTIONS	
Root Collar Inspection:	☐
Monitor for Progress:	☐
Remove Deadwood/Prune :	☐
Risk Assessment	☐
Support Structure:	☐

IMPACTS & MITIGATIONS
In Impacted Area: ☐ Yes ☐ No
Proposed Land Use:
Impacts:
Mitigations:

Comments & Notes: tagged on south; old tag #15 & 35; heavy lean to south; old fire damage; trunk extends south and canopy only at end (Q-tip shape)

Photo #8267-R

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[1] Health: A =Outstanding; B = Above Average; C = Average; D = Below Average; F = Dead
[2] Decurrent = Lacking Strong Central Leader. Excurrent = Strong Central Leader.
[3] Aesthetic (compared to standard tree of same species) : A = nearly symmetrical, healthy tree – F = Dead

OAK TREE FIELD DATA WORKSHEET *Property: 500 Baseline Road, La Verne*

Survey Date: 9/26/2017 **Tree Number: 78**

GENERAL CHARACTERISTICS			
Species: ☒ *Q. agrifolia* ☐ *Q. lobata* ☐ *Other (see below)*		**Health Rating**[1]**:** ☐A ☒B- ☐C ☐D ☐F	
		Form: ☐ symmetric ☒ minor asymmetry	
Trunk Count: 1 **Height (ft.):** 25		☐ major asymmetry ☐ stump sprout	
Trunk DBH (in.): 13 @ 4'		☐ stag-head	
Percent Canopy Cover: 60		**Crown Class**[2]**:** ☐ Decurrent ☒ Excurrent	
Existing Terrain: ☐ Flat ☒ Slope		**Age Class:** ☐ immature ☒ semi-mature	
Aesthetic Rating[3]**:** ☐ A ☐ B ☒ C+ ☐ D ☐ F		☐ mature ☐over-mature/senescent	
Overall Grade: ☐ A ☒ B- ☐ C ☐ D ☐ F		**Heritage Tree:** ☒ No ☐ Yes	

CANOPY CHARACTERISTICS			**TREE HEALTH**	
	Dripline Radius (Feet)	Canopy to Grade (Feet)	**Wound Wood Development:**	☒ Excellent ☐ Average ☐ Poor ☐ None
N	16	25	**Foliage Density:**	☒ Normal ☐ Sparse
NE			**Weak crotches:**	☒ No ☐ Yes
E	10	9	**Oak Pit Scale:**	☒ No ☐ Yes
SE			**Mainstem dieback:**	☒ No ☐ Yes
S	19	14	**Exposed Roots:**	☒ No ☐ Yes
SW			**Epicormic growth:**	☐ No ☒ Yes
W	20	18	**Shading Out:**	☐ No ☒ Yes
NW			**Cavities:** ☐ None	☐ Trunk ☒ Branch
			Exfoliating Bark:	☒ No ☐ Yes
CANOPY SPREAD (FEET): 35 X 30			**Water Pocket(s):**	☒ No ☐ Yes

PROPOSED ACTIONS			
		Mechanical Damage:	☐ Trunk ☐ Branch ☒ None
Root Collar Inspection:	☐	**Cankers:**	☒ No ☐ Yes
Monitor for Progress:	☐	**Fungus:**	☒ No ☐ Yes
Remove Deadwood/Prune :	☐	**Twig/ Branch Dieback:**	☐ None ☐ Minor ☒ Moderate ☐Extensive
Risk Assessment	☐		
Support Structure:	☐		

IMPACTS & MITIGATIONS		
	Vigor:	☐ Excellent ☒Average ☐ Fair ☐ Poor
In Impacted Area: ☐ Yes ☐ No	**Borers/ Ants /Termites:**	☒ Minor ☐ Moderate ☐Extensive ☐None
Proposed Land Use:		
Impacts:	**Exudations:**	☒ No ☐ Yes
Mitigations:	**Galls:**	☒ No ☐ Yes

Comments & Notes: old fire damage; interior dieback; dead sycamore fallen into canopy

Photo #8268-L

[1] Health: A =Outstanding; B = Above Average; C = Average; D = Below Average; F = Dead
[2] Decurrent = Lacking Strong Central Leader. Excurrent = Strong Central Leader.
[3] Aesthetic (compared to standard tree of same species) : A = nearly symmetrical, healthy tree – F = Dead

OAK TREE FIELD DATA WORKSHEET *Property: 500 Baseline Road, La Verne*

Survey Date: 9/26/2017 **Tree Number: 79**

GENERAL CHARACTERISTICS	
Species: ☒*Q. agrifolia* ☐ *Q. lobata* ☐ *Other (see below)*	**Health Rating[1]:** ☐A ☐B ☒C- ☐D ☐F
	Form: ☐ symmetric ☐ minor asymmetry
Trunk Count: 2 **Height (ft.):** 30	☒ major asymmetry ☐ stump sprout
Trunk DBH (in.): 11, 19 @ 6' (due to branch attachment)	☐ stag-head
Percent Canopy Cover: 35	**Crown Class[2]:** ☒ Decurrent ☐ Excurrent
Existing Terrain: ☐ Flat ☒ Slope	**Age Class:** ☐ immature ☐ semi-mature
Aesthetic Rating[3]: ☐ A ☐ B ☒ C- ☐ D ☐ F	☒ mature ☐over-mature/senescent
Overall Grade: ☐ A ☐ B ☒ C- ☐ D ☐ F	**Heritage Tree:** ☒ No ☐ Yes

CANOPY CHARACTERISTICS		
	Dripline Radius (Feet)	Canopy to Grade (Feet)
N	25	2
NE	32	
E	32	0
SE		
S	0	0
SW		
W	32	10
NW		

CANOPY SPREAD (FEET): 25 X 64

TREE HEALTH	
Wound Wood Development:	☐ Excellent ☐ Average ☒ Poor ☐ None
Foliage Density:	☐ Normal ☒ Sparse
Weak crotches:	☐ No ☒ Yes
Oak Pit Scale:	☒ No ☐ Yes
Mainstem dieback:	☐ No ☒ Yes
Exposed Roots:	☐ No ☒ Yes
Epicormic growth:	☐ No ☒ Yes
Shading Out:	☒ No ☐ Yes
Cavities: ☐ None	☒ Trunk ☐ Branch
Exfoliating Bark:	☐ No ☒ Yes
Water Pocket(s):	☒ No ☐ Yes
Mechanical Damage:	☐ Trunk ☒ Branch ☐ None
Cankers:	☒ No ☐ Yes
Fungus:	☒ No ☐ Yes
Twig/ Branch Dieback:	☐ None ☐ Minor ☐ Moderate ☒Extensive
Vigor:	☐ Excellent ☐Average ☒ Fair ☐ Poor
Borers/ Ants /Termites:	☒ Minor ☐ Moderate ☐Extensive ☐None
Exudations:	☒ No ☐ Yes
Galls:	☒ No ☐ Yes

PROPOSED ACTIONS	
Root Collar Inspection:	☐
Monitor for Progress:	☐
Remove Deadwood/Prune :	☐
Risk Assessment	☐
Support Structure:	☐

IMPACTS & MITIGATIONS
In Impacted Area: ☐ Yes ☐ No
Proposed Land Use:
Impacts:
Mitigations:

Comments & Notes: extensive fire damage from recent fire (Rodeo Fire – 7/23/17); 75% defoliated; new sprouting (sign of recovery); pruned for fire clearance; heavy lean east; trunk chared on lower; cavity at underside of east trunk; growth cracks

Photo #8269

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[1] Health: A =Outstanding; B = Above Average; C = Average; D = Below Average; F = Dead
[2] Decurrent = Lacking Strong Central Leader. Excurrent = Strong Central Leader.
[3] Aesthetic (compared to standard tree of same species) : A = nearly symmetrical, healthy tree – F = Dead

OAK TREE FIELD DATA WORKSHEET *Property: 500 Baseline Road, La Verne*

Survey Date: 10/6/2017 **Tree Number: 80**

GENERAL CHARACTERISTICS	
Species: ☐*Q. agrifolia* ☐ *Q. lobata* ☒ *Other (see below)*	**Health Rating**[1]**:** ☐A ☐B ☐C ☒D ☐ F
Platanus racemosa (California sycamore)	**Form:** ☐ symmetric ☐ minor asymmetry
Trunk Count: 1 **Height (ft.):** 30	☒ major asymmetry ☐ stump sprout
Trunk DBH (in.): 8.5	☐ stag-head
Percent Canopy Cover: 0 (fire)	**Crown Class**[2]**:** ☐ Decurrent ☒ Excurrent
Existing Terrain: ☐ Flat ☒ Slope	**Age Class:** ☐ immature ☒ semi-mature
Aesthetic Rating[3]**:** ☐ A ☐ B ☐ C ☒ D ☐ F	☐ mature ☐over-mature/senescent
Overall Grade: ☐ A ☐ B ☐ C ☒ D ☐ F	**Heritage Tree:** ☒ No ☐ Yes

CANOPY CHARACTERISTICS			**TREE HEALTH**	
	Dripline Radius (Feet)	Canopy to Grade (Feet)	**Wound Wood Development:**	☐ Excellent ☐ Average ☒ Poor ☐ None
N	3	0	**Foliage Density:**	☐ Normal ☒ Sparse
NE			**Weak crotches:**	☐ No ☒ Yes
E	3	0	**Oak Pit Scale:**	☒ No ☐ Yes
SE			**Mainstem dieback:**	☐ No ☒ Yes
S	3	0	**Exposed Roots:**	☒ No ☐ Yes
SW			**Epicormic growth:**	☐ No ☒ Yes
W	3	0	**Shading Out:**	☐ No ☒ Yes
NW			**Cavities:** ☒ None	☐ Trunk ☐ Branch
			Exfoliating Bark:	☐ No ☒ Yes
CANOPY SPREAD (FEET): 6 X 6			**Water Pocket(s):**	☒ No ☐ Yes

PROPOSED ACTIONS		**Mechanical Damage:**	☐ Trunk ☐ Branch ☒ None
Root Collar Inspection:	☐	**Cankers:**	☒ No ☐ Yes
Monitor for Progress:	☐	**Fungus:**	☒ No ☐ Yes
Remove Deadwood/Prune :	☐	**Twig/ Branch Dieback:**	☐ None ☐ Minor ☐ Moderate ☒Extensive
Risk Assessment	☐		
Support Structure:	☐		

IMPACTS & MITIGATIONS	**Vigor:**	☐ Excellent ☐Average ☐ Fair ☒ Poor
In Impacted Area: ☐ Yes ☐ No	**Borers/ Ants /Termites:**	☐ Minor ☒ Moderate ☐Extensive ☐None
Proposed Land Use:		
Impacts:	**Exudations:**	☒ No ☐ Yes
Mitigations:	**Galls:**	☒ No ☐ Yes

Comments & Notes: recent fire damage (Rodeo Fire – 7/23/17); all dead except stump sprouts (sign of recovery); leans north

Photo #5270 & 5272

[1] Health: A =Outstanding; B = Above Average; C = Average; D = Below Average; F = Dead
[2] Decurrent = Lacking Strong Central Leader. Excurrent = Strong Central Leader.
[3] Aesthetic (compared to standard tree of same species) : A = nearly symmetrical, healthy tree – F = Dead

OAK TREE FIELD DATA WORKSHEET *Property: 500 Baseline Road, La Verne*

Survey Date: 10/6/2017 **Tree Number: 81**

GENERAL CHARACTERISTICS	
Species: ☐*Q. agrifolia* ☐ *Q. lobata* ☒ *Other (see below)*	**Health Rating**[1]**:** ☐A ☐B ☐C ☒D ☐ F
Platanus racemosa (California sycamore)	**Form:** ☐ symmetric ☒ minor asymmetry
Trunk Count: 1 **Height (ft.)**: 50	☐ major asymmetry ☐ stump sprout
Trunk DBH (in.): 10	☐ stag-head
Percent Canopy Cover: 5 (fire)	**Crown Class**[2]**:** ☐ Decurrent ☒ Excurrent
Existing Terrain: ☐ Flat ☒ Slope	**Age Class:** ☐ immature ☒ semi-mature
Aesthetic Rating[3]**:** ☐ A ☐ B ☐ C ☒ D ☐ F	☐ mature ☐over-mature/senescent
Overall Grade: ☐ A ☐ B ☐ C ☒ D ☐ F	**Heritage Tree:** ☒ No ☐ Yes

CANOPY CHARACTERISTICS		
	Dripline Radius (Feet)	Canopy to Grade (Feet)
N	15	30
NE		
E	10	20
SE		
S	5	20
SW		
W	10	20
NW		

CANOPY SPREAD (FEET): 20 X 20

TREE HEALTH	
Wound Wood Development:	☐ Excellent ☐ Average ☒ Poor ☐ None
Foliage Density:	☐ Normal ☒ Sparse
Weak crotches:	☐ No ☒ Yes
Oak Pit Scale:	☒ No ☐ Yes
Mainstem dieback:	☐ No ☒ Yes
Exposed Roots:	☒ No ☐ Yes
Epicormic growth:	☐ No ☒ Yes
Shading Out:	☒ No ☐ Yes
Cavities: ☐ None	☒ Trunk ☐ Branch
Exfoliating Bark:	☐ No ☒ Yes
Water Pocket(s):	☒ No ☐ Yes
Mechanical Damage:	☐ Trunk ☐ Branch ☒ None
Cankers:	☒ No ☐ Yes
Fungus:	☒ No ☐ Yes
Twig/ Branch Dieback:	☐ None ☐ Minor ☐ Moderate ☒Extensive
Vigor:	☐ Excellent ☐Average ☐ Fair ☒ Poor
Borers/ Ants /Termites:	☐ Minor ☒ Moderate ☐Extensive ☐None
Exudations:	☒ No ☐ Yes
Galls:	☒ No ☐ Yes

PROPOSED ACTIONS	
Root Collar Inspection:	☐
Monitor for Progress:	☐
Remove Deadwood/Prune :	☐
Risk Assessment	☐
Support Structure:	☐

IMPACTS & MITIGATIONS
In Impacted Area: ☐ Yes ☐ No
Proposed Land Use:
Impacts:
Mitigations:

Comments & Notes: recent fire damage (Rodeo Fire – 7/23/17); cavity at base on west (old codom); stump sprouting (sign of recovery); leans east; foliage mostly dead

Photo #5271-72

[1] Health: A =Outstanding; B = Above Average; C = Average; D = Below Average; F = Dead
[2] Decurrent = Lacking Strong Central Leader. Excurrent = Strong Central Leader.
[3] Aesthetic (compared to standard tree of same species) : A = nearly symmetrical, healthy tree – F = Dead

OAK TREE FIELD DATA WORKSHEET *Property: 500 Baseline Road, La Verne*

Survey Date: 10/6/2017 **Tree Number: 82**

GENERAL CHARACTERISTICS			
Species: ☐ *Q. agrifolia* ☐ *Q. lobata* ☒ *Other (see below)*		**Health Rating[1]:** ☐A ☐B ☐C ☒D ☐F	
Platanus racemosa (California sycamore)		**Form:** ☐ symmetric ☒ minor asymmetry	
Trunk Count: 2 **Height (ft.):** 40		☐ major asymmetry ☐ stump sprout	
Trunk DBH (in.): 9, 10		☐ stag-head	
Percent Canopy Cover: 5 (fire)		**Crown Class[2]:** ☐ Decurrent ☒ Excurrent	
Existing Terrain: ☐ Flat ☒ Slope		**Age Class:** ☐ immature ☒ semi-mature	
Aesthetic Rating[3]: ☐ A ☐ B ☐ C ☒ D ☐ F		☐ mature ☐over-mature/senescent	
Overall Grade: ☐ A ☐ B ☐ C ☒ D ☐ F		**Heritage Tree:** ☒ No ☐ Yes	

CANOPY CHARACTERISTICS			**TREE HEALTH**	
	Dripline Radius (Feet)	Canopy to Grade (Feet)	**Wound Wood Development:**	☐ Excellent ☐ Average ☒ Poor ☐ None
N	7	20	**Foliage Density:**	☐ Normal ☒ Sparse
NE			**Weak crotches:**	☐ No ☒ Yes
E	10	20	**Oak Pit Scale:**	☒ No ☐ Yes
SE			**Mainstem dieback:**	☐ No ☒ Yes
S	7	10	**Exposed Roots:**	☒ No ☐ Yes
SW			**Epicormic growth:**	☐ No ☒ Yes
W	0	0	**Shading Out:**	☒ No ☐ Yes
NW			**Cavities:** ☒ None	☐ Trunk ☐ Branch
			Exfoliating Bark:	☐ No ☒ Yes
CANOPY SPREAD (FEET): 14 X 10			**Water Pocket(s):**	☒ No ☐ Yes
PROPOSED ACTIONS			**Mechanical Damage:**	☐ Trunk ☐ Branch ☒ None
Root Collar Inspection:	☐		**Cankers:**	☒ No ☐ Yes
Monitor for Progress:	☐		**Fungus:**	☒ No ☐ Yes
Remove Deadwood/Prune :	☐		**Twig/ Branch Dieback:**	☐ None ☐ Minor ☐ Moderate ☒Extensive
Risk Assessment	☐			
Support Structure:	☐			
IMPACTS & MITIGATIONS			**Vigor:**	☐ Excellent ☐Average ☐ Fair ☒ Poor
In Impacted Area: ☐ Yes ☐ No			**Borers/ Ants /Termites:**	☐ Minor ☒ Moderate ☐Extensive ☐None
Proposed Land Use:				
Impacts:			**Exudations:**	☒ No ☐ Yes
Mitigations:			**Galls:**	☒ No ☐ Yes

Comments & Notes: recent fire damage (Rodeo Fire – 7/23/17); stump sprouting (sign of recovery); old tag #110; epicormic growth on trunk; all foliage dead

Photo #5273

[1] Health: A =Outstanding; B = Above Average; C = Average; D = Below Average; F = Dead
[2] Decurrent = Lacking Strong Central Leader. Excurrent = Strong Central Leader.
[3] Aesthetic (compared to standard tree of same species) : A = nearly symmetrical, healthy tree – F = Dead

OAK TREE FIELD DATA WORKSHEET *Property: 500 Baseline Road, La Verne*

Survey Date: 10/6/2017 **Tree Number: 83**

GENERAL CHARACTERISTICS			
Species: ☒ *Q. agrifolia* ☐ *Q. lobata* ☐ *Other (see below)*		**Health Rating**[1]**:** ☐A ☐B ☒C- ☐D ☐F	
		Form: ☐ symmetric ☒ minor asymmetry	
Trunk Count: 2 **Height (ft.):** 30		☐ major asymmetry ☐ stump sprout	
Trunk DBH (in.): 7, 11.5		☐ stag-head	
Percent Canopy Cover: 25		**Crown Class**[2]**:** ☒ Decurrent ☐ Excurrent	
Existing Terrain: ☐ Flat ☒ Slope		**Age Class:** ☐ immature ☒ semi-mature	
Aesthetic Rating[3]**:** ☐ A ☐ B ☒ C- ☐ D ☐ F		☐ mature ☐over-mature/senescent	
Overall Grade: ☐ A ☐ B ☒ C- ☐ D ☐ F		**Heritage Tree:** ☒ No ☐ Yes	
CANOPY CHARACTERISTICS		**TREE HEALTH**	
	Dripline Radius (Feet)	Canopy to Grade (Feet)	**Wound Wood Development:**	☐ Excellent ☐ Average ☒ Poor ☐ None
N	10	10	**Foliage Density:**	☐ Normal ☒ Sparse
NE			**Weak crotches:**	☐ No ☒ Yes
E	10	15	**Oak Pit Scale:**	☒ No ☐ Yes
SE			**Mainstem dieback:**	☐ No ☒ Yes
S	13	10	**Exposed Roots:**	☒ No ☐ Yes
SW			**Epicormic growth:**	☐ No ☒ Yes
W	15	15	**Shading Out:**	☒ No ☐ Yes
NW			**Cavities:** ☒ None	☐ Trunk ☐ Branch
			Exfoliating Bark:	☐ No ☒ Yes
CANOPY SPREAD (FEET): 23 X 25			**Water Pocket(s):**	☒ No ☐ Yes
PROPOSED ACTIONS			**Mechanical Damage:**	☐ Trunk ☐ Branch ☒ None
Root Collar Inspection:	☐		**Cankers:**	☒ No ☐ Yes
Monitor for Progress:	☐		**Fungus:**	☒ No ☐ Yes
Remove Deadwood/Prune :	☐		**Twig/ Branch Dieback:**	☐ None ☐ Minor ☒ Moderate ☐Extensive
Risk Assessment	☐			
Support Structure:	☐			
IMPACTS & MITIGATIONS			**Vigor:**	☐ Excellent ☐Average ☒ Fair ☐ Poor
In Impacted Area: ☐ Yes ☐ No			**Borers/ Ants /Termites:**	☐ Minor ☒ Moderate ☐Extensive ☐None
Proposed Land Use:				
Impacts:			**Exudations:**	☒ No ☐ Yes
Mitigations:			**Galls:**	☒ No ☐ Yes

Comments & Notes: recent fire damage (Rodeo Fire – 7/23/17); 70% of foliage scorched; old tag #80; 11.5" trunk heavy lean southeast; barked charred; canopy mostly epicormic growth (signs of recovery);

Photo #5274

[1] Health: A =Outstanding; B = Above Average; C = Average; D = Below Average; F = Dead
[2] Decurrent = Lacking Strong Central Leader. Excurrent = Strong Central Leader.
[3] Aesthetic (compared to standard tree of same species) : A = nearly symmetrical, healthy tree – F = Dead

OAK TREE FIELD DATA WORKSHEET *Property: 500 Baseline Road, La Verne*

Survey Date: 10/6/2017 **Tree Number: 84**

GENERAL CHARACTERISTICS			
Species: ☒ *Q. agrifolia* ☐ *Q. lobata* ☐ *Other (see below)*		**Health Rating**[1]**:** ☐A ☒B- ☐C ☐D ☐F	
		Form: ☒ symmetric ☐ minor asymmetry	
Trunk Count: 1 **Height (ft.)**: 30		☐ major asymmetry ☐ stump sprout	
Trunk DBH (in.): 29 @ 3'		☐ stag-head	
Percent Canopy Cover: 80		**Crown Class**[2]**:** ☒ Decurrent ☐ Excurrent	
Existing Terrain: ☐ Flat ☒ Slope		**Age Class:** ☐ immature ☐ semi-mature	
Aesthetic Rating[3]**:** ☐ A ☒ B- ☐ C ☐ D ☐ F		☒ mature ☐over-mature/senescent	
Overall Grade: ☐ A ☒ B- ☐ C ☐ D ☐ F		**Heritage Tree:** ☒ No ☐ Yes	

CANOPY CHARACTERISTICS			**TREE HEALTH**	
	Dripline Radius (Feet)	Canopy to Grade (Feet)	**Wound Wood Development:**	☐ Excellent ☒ Average ☐ Poor ☐ None
N	25	10	**Foliage Density:**	☒ Normal ☐ Sparse
NE			**Weak crotches:**	☒ No ☐ Yes
E	20	10	**Oak Pit Scale:**	☒ No ☐ Yes
SE			**Mainstem dieback:**	☐ No ☒ Yes
S	20	5	**Exposed Roots:**	☒ No ☐ Yes
SW			**Epicormic growth:**	☐ No ☒ Yes
W	20	10	**Shading Out:**	☒ No ☐ Yes
NW			**Cavities:** ☒ None	☐ Trunk ☐ Branch
			Exfoliating Bark:	☒ No ☐ Yes
CANOPY SPREAD (FEET): 45 X 40			**Water Pocket(s):**	☒ No ☐ Yes

PROPOSED ACTIONS			
		Mechanical Damage:	☐ Trunk ☐ Branch ☒ None
Root Collar Inspection:	☐	**Cankers:**	☒ No ☐ Yes
Monitor for Progress:	☐	**Fungus:**	☒ No ☐ Yes
Remove Deadwood/Prune :	☐	**Twig/ Branch Dieback:**	☐ None ☐ Minor ☒ Moderate ☐Extensive
Risk Assessment	☐		
Support Structure:	☐		

IMPACTS & MITIGATIONS		
	Vigor:	☐ Excellent ☒Average ☐ Fair ☐ Poor
In Impacted Area: ☐ Yes ☐ No	**Borers/ Ants /Termites:**	☐ Minor ☒ Moderate ☐Extensive ☐None
Proposed Land Use:		
Impacts:	**Exudations:**	☐ No ☒ Yes minor on trunk
Mitigations:	**Galls:**	☒ No ☐ Yes

Comments & Notes: recent fire damage – mostly lower canopy (Rodeo Fire – 7/23/17); low branching; codom @ 8'; west scaffold along grade; old tag #79

Photo #5275

[1] Health: A =Outstanding; B = Above Average; C = Average; D = Below Average; F = Dead
[2] Decurrent = Lacking Strong Central Leader. Excurrent = Strong Central Leader.
[3] Aesthetic (compared to standard tree of same species) : A = nearly symmetrical, healthy tree – F = Dead

OAK TREE FIELD DATA WORKSHEET *Property: 500 Baseline Road, La Verne*

Survey Date: 10/6/2017 **Tree Number: 85**

GENERAL CHARACTERISTICS			
Species: ☒ *Q. agrifolia* ☐ *Q. lobata* ☐ *Other (see below)*		**Health Rating**[1]**:** ☐A ☐B ☒C ☐D ☐F	
		Form: ☐ symmetric ☒ minor asymmetry	
Trunk Count: 2 **Height (ft.)**: 35		☐ major asymmetry ☐ stump sprout	
Trunk DBH (in.): 14.5, 22		☐ stag-head	
Percent Canopy Cover: 60		**Crown Class**[2]**:** ☒ Decurrent ☐ Excurrent	
Existing Terrain: ☐ Flat ☒ Slope		**Age Class:** ☐ immature ☐ semi-mature	
Aesthetic Rating[3]**:** ☐ A ☐ B ☒ C+ ☐ D ☐ F		☒ mature ☐over-mature/senescent	
Overall Grade: ☐ A ☐ B ☒ C+ ☐ D ☐ F		**Heritage Tree:** ☒ No ☐ Yes	
CANOPY CHARACTERISTICS		**TREE HEALTH**	
	Dripline Radius (Feet)	Canopy to Grade (Feet)	**Wound Wood Development:**	☐ Excellent ☒ Average ☐ Poor ☐ None

	Dripline Radius (Feet)	Canopy to Grade (Feet)		
N	20	10	**Foliage Density:**	☐ Normal ☒ Sparse
NE			**Weak crotches:**	☐ No ☒ Yes
E	15	10	**Oak Pit Scale:**	☒ No ☐ Yes
SE			**Mainstem dieback:**	☐ No ☒ Yes
S	25	15	**Exposed Roots:**	☒ No ☐ Yes
SW			**Epicormic growth:**	☐ No ☒ Yes
W	25	15	**Shading Out:**	☒ No ☐ Yes
NW			**Cavities:** ☒ None	☐ Trunk ☐ Branch
			Exfoliating Bark:	☐ No ☒ Yes
CANOPY SPREAD (FEET): 45 X 40			**Water Pocket(s):**	☒ No ☐ Yes

PROPOSED ACTIONS		**Mechanical Damage:**	☐ Trunk ☐ Branch ☒ None
Root Collar Inspection:	☐	**Cankers:**	☒ No ☐ Yes
Monitor for Progress:	☐	**Fungus:**	☒ No ☐ Yes
Remove Deadwood/Prune :	☐	**Twig/ Branch Dieback:**	☐ None ☐ Minor ☒ Moderate ☐Extensive
Risk Assessment	☐		
Support Structure:	☐		
IMPACTS & MITIGATIONS		**Vigor:**	☐ Excellent ☐Average ☒ Fair ☐ Poor
In Impacted Area: ☐ Yes ☐ No		**Borers/ Ants /Termites:**	☐ Minor ☒ Moderate ☐Extensive ☐None
Proposed Land Use:			
Impacts:		**Exudations:**	☒ No ☐ Yes
Mitigations:		**Galls:**	☒ No ☐ Yes

Comments & Notes: recent fire damage (Rodeo Fire – 7/23/17); foliage scorched, base charred; old tag #21 & 78; interior dieback

Photo #5276

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[1] Health: A =Outstanding; B = Above Average; C = Average; D = Below Average; F = Dead
[2] Decurrent = Lacking Strong Central Leader. Excurrent = Strong Central Leader.
[3] Aesthetic (compared to standard tree of same species) : A = nearly symmetrical, healthy tree – F = Dead

OAK TREE FIELD DATA WORKSHEET *Property: 500 Baseline Road, La Verne*

Survey Date: 10/6/2017 **Tree Number: 86**

GENERAL CHARACTERISTICS			
Species: ☒*Q. agrifolia* ☐ *Q. lobata* ☐ *Other (see below)*		**Health Rating[1]:** ☐A ☐B ☒C- ☐D ☐ F	
		Form: ☒ symmetric ☐ minor asymmetry	
Trunk Count: 1 **Height (ft.):** 25		☐ major asymmetry ☐ stump sprout	
Trunk DBH (in.): 8.5		☐ stag-head	
Percent Canopy Cover: 20 (fire)		**Crown Class[2]:** ☐ Decurrent ☒ Excurrent	
Existing Terrain: ☐ Flat ☒ Slope		**Age Class:** ☒ immature ☐ semi-mature	
Aesthetic Rating[3]: ☐ A ☐ B ☒ C ☐ D ☐ F		☐ mature ☐over-mature/senescent	
Overall Grade: ☐ A ☐ B ☒ C- ☐ D ☐ F		**Heritage Tree:** ☒ No ☐ Yes	

CANOPY CHARACTERISTICS			**TREE HEALTH**	
	Dripline Radius (Feet)	Canopy to Grade (Feet)	**Wound Wood Development:**	☐ Excellent ☐ Average ☒ Poor ☒ None
N	10	8	**Foliage Density:**	☐ Normal ☒ Sparse
NE			**Weak crotches:**	☐ No ☒ Yes
E	10	5	**Oak Pit Scale:**	☒ No ☐ Yes
SE			**Mainstem dieback:**	☐ No ☒ Yes
S	13	8	**Exposed Roots:**	☒ No ☐ Yes
SW			**Epicormic growth:**	☐ No ☒ Yes
W	8	8	**Shading Out:**	☒ No ☐ Yes
NW			**Cavities:** ☒ None	☐ Trunk ☐ Branch
			Exfoliating Bark:	☐ No ☒ Yes
CANOPY SPREAD (FEET): 23 X 18			**Water Pocket(s):**	☒ No ☐ Yes

PROPOSED ACTIONS		**Mechanical Damage:**	☐ Trunk ☐ Branch ☒ None
Root Collar Inspection:	☐	**Cankers:**	☒ No ☐ Yes
Monitor for Progress:	☐	**Fungus:**	☒ No ☐ Yes
Remove Deadwood/Prune :	☐	**Twig/ Branch Dieback:**	☐ None ☐ Minor ☐ Moderate ☒Extensive
Risk Assessment	☐		
Support Structure:	☐		

IMPACTS & MITIGATIONS	**Vigor:**	☐ Excellent ☐Average ☒ Fair ☐ Poor
In Impacted Area: ☐ Yes ☐ No	**Borers/ Ants /Termites:**	☐ Minor ☒ Moderate ☐Extensive ☐None
Proposed Land Use:		
Impacts:	**Exudations:**	☒ No ☐ Yes
Mitigations:	**Galls:**	☒ No ☐ Yes

Comments & Notes: recent fire damage (Rodeo Fire – 7/23/17) – basal sprouting (sign of recovery) – 80% defoliated; trunk base charred; canopy all epicormic growth

Photo #5277

[1] Health: A =Outstanding; B = Above Average; C = Average; D = Below Average; F = Dead
[2] Decurrent = Lacking Strong Central Leader. Excurrent = Strong Central Leader.
[3] Aesthetic (compared to standard tree of same species) : A = nearly symmetrical, healthy tree – F = Dead

OAK TREE FIELD DATA WORKSHEET *Property: 500 Baseline Road, La Verne*

Survey Date: 10/6/2017 **Tree Number: 87**

GENERAL CHARACTERISTICS	
Species: ☒ *Q. agrifolia* ☐ *Q. lobata* ☐ *Other (see below)*	**Health Rating**[1]**:** ☐A ☐B ☒C ☐D ☐F
	Form: ☐ symmetric ☐ minor asymmetry
Trunk Count: 1 **Height (ft.):** 25	☒ major asymmetry ☐ stump sprout
Trunk DBH (in.): 23	☐ stag-head
Percent Canopy Cover: 40 (fire)	**Crown Class**[2]**:** ☒ Decurrent ☐ Excurrent
Existing Terrain: ☐ Flat ☒ Slope	**Age Class:** ☐ immature ☒ semi-mature
Aesthetic Rating[3]**:** ☐ A ☐ B ☒ C ☐ D ☐ F	☐ mature ☐over-mature/senescent
Overall Grade: ☐ A ☐ B ☒ C ☐ D ☐ F	**Heritage Tree:** ☒ No ☐ Yes

CANOPY CHARACTERISTICS			**TREE HEALTH**	
	Dripline Radius (Feet)	Canopy to Grade (Feet)	**Wound Wood Development:**	☐ Excellent ☐ Average ☒ Poor ☐ None
N	5	15	**Foliage Density:**	☐ Normal ☒ Sparse
NE			**Weak crotches:**	☐ No ☒ Yes
E	8	15	**Oak Pit Scale:**	☒ No ☐ Yes
SE			**Mainstem dieback:**	☐ No ☒ Yes
S	30	10	**Exposed Roots:**	☒ No ☐ Yes
SW			**Epicormic growth:**	☐ No ☒ Yes
W	20	25	**Shading Out:**	☐ No ☒ Yes
NW			**Cavities:** ☒ None	☐ Trunk ☐ Branch
			Exfoliating Bark:	☐ No ☒ Yes
CANOPY SPREAD (FEET): 35 X 28			**Water Pocket(s):**	☒ No ☐ Yes

PROPOSED ACTIONS			
		Mechanical Damage:	☐ Trunk ☐ Branch ☒ None
Root Collar Inspection:	☐	**Cankers:**	☒ No ☐ Yes
Monitor for Progress:	☐	**Fungus:**	☒ No ☐ Yes
Remove Deadwood/Prune :	☐	**Twig/ Branch Dieback:**	☐ None ☐ Minor ☒ Moderate ☐Extensive
Risk Assessment	☐		
Support Structure:	☐		

IMPACTS & MITIGATIONS		
	Vigor:	☐ Excellent ☐Average ☒ Fair ☐ Poor
In Impacted Area: ☐ Yes ☐ No	**Borers/ Ants /Termites:**	☐ Minor ☒ Moderate ☐Extensive ☐None
Proposed Land Use:		
Impacts:	**Exudations:**	☒ No ☐ Yes
Mitigations:	**Galls:**	☒ No ☐ Yes

Comments & Notes: recent fire damage (Rodeo Fire – 7/23/17); 60% defoliated; trunk charred; extensive epicormic growth; old tag #79; leans south

Photo #5283

[1] Health: A =Outstanding; B = Above Average; C = Average; D = Below Average; F = Dead
[2] Decurrent = Lacking Strong Central Leader. Excurrent = Strong Central Leader.
[3] Aesthetic (compared to standard tree of same species) : A = nearly symmetrical, healthy tree – F = Dead

OAK TREE FIELD DATA WORKSHEET *Property: 500 Baseline Road, La Verne*

Survey Date: 10/6/2017 **Tree Number: 88**

GENERAL CHARACTERISTICS	
Species: ☒ *Q. agrifolia* ☐ *Q. lobata* ☐ *Other (see below)*	**Health Rating[1]:** ☐A ☐B ☐C ☒D ☐F
	Form: ☐ symmetric ☒ minor asymmetry
Trunk Count: 1 **Height (ft.):** 40	☐ major asymmetry ☐ stump sprout
Trunk DBH (in.): 27	☐ stag-head
Percent Canopy Cover: 30 (fire)	**Crown Class[2]:** ☐ Decurrent ☒ Excurrent
Existing Terrain: ☐ Flat ☒ Slope	**Age Class:** ☐ immature ☒ semi-mature
Aesthetic Rating[3]: ☐ A ☐ B ☐ C ☒ D ☐ F	☐ mature ☐over-mature/senescent
Overall Grade: ☐ A ☐ B ☐ C ☒ D ☐ F	**Heritage Tree:** ☒ No ☐ Yes

CANOPY CHARACTERISTICS

	Dripline Radius (Feet)	Canopy to Grade (Feet)
N	5	30
NE		
E	10	25
SE		
S	25	10
SW		
W	15	20
NW		

CANOPY SPREAD (FEET): 30 X 25

TREE HEALTH

Wound Wood Development:	☐ Excellent ☐ Average ☒ Poor ☐ None
Foliage Density:	☐ Normal ☒ Sparse
Weak crotches:	☐ No ☒ Yes
Oak Pit Scale:	☒ No ☐ Yes
Mainstem dieback:	☐ No ☒ Yes
Exposed Roots:	☒ No ☐ Yes
Epicormic growth:	☐ No ☒ Yes
Shading Out:	☒ No ☒ Yes
Cavities: ☐ None	☒ Trunk ☐ Branch
Exfoliating Bark:	☐ No ☒ Yes
Water Pocket(s):	☒ No ☐ Yes
Mechanical Damage:	☐ Trunk ☐ Branch ☒ None
Cankers:	☒ No ☐ Yes
Fungus:	☒ No ☐ Yes
Twig/ Branch Dieback:	☐ None ☐ Minor ☐ Moderate ☒Extensive
Vigor:	☐ Excellent ☐Average ☐ Fair ☒ Poor
Borers/ Ants /Termites:	☐ Minor ☒ Moderate ☐Extensive ☐None
Exudations:	☒ No ☐ Yes
Galls:	☒ No ☐ Yes

PROPOSED ACTIONS

Root Collar Inspection:	☐
Monitor for Progress:	☐
Remove Deadwood/Prune :	☐
Risk Assessment	☐
Support Structure:	☐

IMPACTS & MITIGATIONS

In Impacted Area:	☐ Yes ☐ No
Proposed Land Use:	
Impacts:	
Mitigations:	

Comments & Notes: recent fire damage (Rodeo Fire – 7/23/17) – 70% defoliated with only epicormic sprouts in canopy (sign of recovery); leans southeast

Photo #5283

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[1] Health: A =Outstanding; B = Above Average; C = Average; D = Below Average; F = Dead
[2] Decurrent = Lacking Strong Central Leader. Excurrent = Strong Central Leader.
[3] Aesthetic (compared to standard tree of same species) : A = nearly symmetrical, healthy tree – F = Dead

OAK TREE FIELD DATA WORKSHEET *Property: 500 Baseline Road, La Verne*

Survey Date: 10/6/2017 **Tree Number: 89**

GENERAL CHARACTERISTICS	
Species: ☒ *Q. agrifolia* ☐ *Q. lobata* ☐ *Other (see below)*	**Health Rating**[1]**:** ☐A ☐B ☐C ☒D ☐F
	Form: ☐ symmetric ☐ minor asymmetry
Trunk Count: 1 **Height (ft.)**: 35	☒ major asymmetry ☐ stump sprout
Trunk DBH (in.): 22	☐ stag-head
Percent Canopy Cover: 15	**Crown Class**[2]**:** ☐ Decurrent ☒ Excurrent
Existing Terrain: ☐ Flat ☒ Slope	**Age Class:** ☐ immature ☒ semi-mature
Aesthetic Rating[3]**:** ☐ A ☐ B ☐ C ☒ D ☐ F	☐ mature ☐over-mature/senescent
Overall Grade: ☐ A ☐ B ☐ C ☒ D ☐ F	**Heritage Tree:** ☒ No ☐ Yes

CANOPY CHARACTERISTICS			**TREE HEALTH**	
	Dripline Radius (Feet)	Canopy to Grade (Feet)	**Wound Wood Development:**	☐ Excellent ☐ Average ☒ Poor ☐ None
N	15	25	**Foliage Density:**	☐ Normal ☒ Sparse
NE			**Weak crotches:**	☐ No ☒ Yes
E	25	15	**Oak Pit Scale:**	☒ No ☐ Yes
SE			**Mainstem dieback:**	☐ No ☒ Yes
S	0	0	**Exposed Roots:**	☒ No ☐ Yes
SW			**Epicormic growth:**	☐ No ☒ Yes
W	8	25	**Shading Out:**	☐ No ☒ Yes
NW			**Cavities:** ☒ None	☐ Trunk ☐ Branch
			Exfoliating Bark:	☐ No ☒ Yes
CANOPY SPREAD (FEET): 15 X 33			**Water Pocket(s):**	☒ No ☐ Yes
PROPOSED ACTIONS			**Mechanical Damage:**	☐ Trunk ☐ Branch ☒ None
Root Collar Inspection:	☐		**Cankers:**	☒ No ☐ Yes
Monitor for Progress:	☐		**Fungus:**	☒ No ☐ Yes
Remove Deadwood/Prune :	☐		**Twig/ Branch Dieback:**	☐ None ☐ Minor ☐ Moderate ☒Extensive
Risk Assessment	☐			
Support Structure:	☐			
IMPACTS & MITIGATIONS			**Vigor:**	☐ Excellent ☐Average ☐ Fair ☒ Poor
In Impacted Area: ☐ Yes ☐ No			**Borers/ Ants /Termites:**	☒ Minor ☐ Moderate ☐Extensive ☐None
Proposed Land Use:				
Impacts:			**Exudations:**	☒ No ☐ Yes
Mitigations:			**Galls:**	☒ No ☐ Yes

Comments & Notes: recent fire damage (Rodeo Fire – 7/23/17); trunk charred; leans northeast; canopy scorched - only epicormic growth; old tag #84

Photo #5284

[1] Health: A =Outstanding; B = Above Average; C = Average; D = Below Average; F = Dead
[2] Decurrent = Lacking Strong Central Leader. Excurrent = Strong Central Leader.
[3] Aesthetic (compared to standard tree of same species) : A = nearly symmetrical, healthy tree – F = Dead

OAK TREE FIELD DATA WORKSHEET *Property: 500 Baseline Road, La Verne*

Survey Date: 10/6/2017 **Tree Number: 90**

GENERAL CHARACTERISTICS			
Species: ☐ *Q. agrifolia* ☐ *Q. lobata* ☒ *Other (see below)*		**Health Rating[1]:** ☐A ☐B ☐C ☒D ☐F	
Platanus racemosa (California sycamore)		**Form:** ☐ symmetric ☒ minor asymmetry	
Trunk Count: 1 **Height (ft.):** 45		☐ major asymmetry ☐ stump sprout	
Trunk DBH (in.): 25		☐ stag-head	
Percent Canopy Cover: 15		**Crown Class[2]:** ☒ Decurrent ☐ Excurrent	
Existing Terrain: ☐ Flat ☒ Slope		**Age Class:** ☐ immature ☐ semi-mature	
Aesthetic Rating[3]: ☐ A ☐ B ☐ C ☒ D ☐ F		☒ mature ☐over-mature/senescent	
Overall Grade: ☐ A ☐ B ☐ C ☒ D ☐ F		**Heritage Tree:** ☒ No ☐ Yes	

CANOPY CHARACTERISTICS			**TREE HEALTH**	
	Dripline Radius (Feet)	Canopy to Grade (Feet)	**Wound Wood Development:**	☐ Excellent ☐ Average ☒ Poor ☐ None
N	0	0	**Foliage Density:**	☐ Normal ☒ Sparse
NE			**Weak crotches:**	☐ No ☒ Yes
E	10	30	**Oak Pit Scale:**	☒ No ☐ Yes
SE			**Mainstem dieback:**	☐ No ☒ Yes
S	20	25	**Exposed Roots:**	☐ No ☒ Yes
SW			**Epicormic growth:**	☐ No ☒ Yes
W	25	30	**Shading Out:**	☒ No ☐ Yes
NW			**Cavities:** ☐ None	☒ Trunk ☐ Branch
			Exfoliating Bark:	☐ No ☒ Yes
CANOPY SPREAD (FEET): 20 X 35			**Water Pocket(s):**	☒ No ☐ Yes

PROPOSED ACTIONS		**Mechanical Damage:**	☐ Trunk ☐ Branch ☒ None
Root Collar Inspection:	☐	**Cankers:**	☒ No ☐ Yes
Monitor for Progress:	☐	**Fungus:**	☒ No ☐ Yes
Remove Deadwood/Prune :	☐	**Twig/ Branch Dieback:**	☐ None ☐ Minor ☐ Moderate ☒Extensive
Risk Assessment	☐		
Support Structure:	☐		
IMPACTS & MITIGATIONS		**Vigor:**	☐ Excellent ☐Average ☐ Fair ☒ Poor
In Impacted Area: ☐ Yes ☐ No		**Borers/ Ants /Termites:**	☐ Minor ☒ Moderate ☐Extensive ☐None
Proposed Land Use:			
Impacts:		**Exudations:**	☒ No ☐ Yes
Mitigations:		**Galls:**	☒ No ☐ Yes

Comments & Notes: recent fire damage (Rodeo Fire – 7/23/17); trunk charred; canopy scorched - only epicormic growth; old tag #90; exposed roots (damaged) on north; northern codom dead; stump sprouts; cavity at old codom

Photo #5285

[1] Health: A =Outstanding; B = Above Average; C = Average; D = Below Average; F = Dead
[2] Decurrent = Lacking Strong Central Leader. Excurrent = Strong Central Leader.
[3] Aesthetic (compared to standard tree of same species) : A = nearly symmetrical, healthy tree – F = Dead

OAK TREE FIELD DATA WORKSHEET *Property: 500 Baseline Road, La Verne*

Survey Date: 10/6/2017 **Tree Number: 91**

GENERAL CHARACTERISTICS			
Species: ☒*Q. agrifolia* ☐ *Q. lobata* ☐ *Other (see below)*		**Health Rating[1]:** ☐A ☐B ☒C ☐D ☐F	
		Form: ☐ symmetric ☐ minor asymmetry	
Trunk Count: 1 **Height (ft.):** 40		☒ major asymmetry ☐ stump sprout	
Trunk DBH (in.): 19		☐ stag-head	
Percent Canopy Cover: 35		**Crown Class[2]:** ☐ Decurrent ☒ Excurrent	
Existing Terrain: ☐ Flat ☒ Slope		**Age Class:** ☐ immature ☒ semi-mature	
Aesthetic Rating[3]: ☐ A ☐ B ☒ C ☐ D ☐ F		☐ mature ☐over-mature/senescent	
Overall Grade: ☐ A ☐ B ☒ C ☐ D ☐ F		**Heritage Tree:** ☒ No ☐ Yes	

CANOPY CHARACTERISTICS			**TREE HEALTH**	
	Dripline Radius (Feet)	Canopy to Grade (Feet)	**Wound Wood Development:**	☐ Excellent ☒ Average ☐ Poor ☐ None
N	13		**Foliage Density:**	☐ Normal ☒ Sparse
NE			**Weak crotches:**	☐ No ☒ Yes
E	5		**Oak Pit Scale:**	☒ No ☐ Yes
SE			**Mainstem dieback:**	☐ No ☒ Yes
S	13		**Exposed Roots:**	☒ No ☐ Yes
SW			**Epicormic growth:**	☐ No ☒ Yes
W	30		**Shading Out:**	☐ No ☒ Yes
NW			**Cavities:** ☒ None	☐ Trunk ☐ Branch
			Exfoliating Bark:	☐ No ☒ Yes
CANOPY SPREAD (FEET): 26 X 35			**Water Pocket(s):**	☒ No ☐ Yes
PROPOSED ACTIONS			**Mechanical Damage:**	☐ Trunk ☐ Branch ☒ None
Root Collar Inspection:	☐		**Cankers:**	☒ No ☐ Yes
Monitor for Progress:	☐		**Fungus:**	☒ No ☐ Yes
Remove Deadwood/Prune :	☐		**Twig/ Branch Dieback:**	☐ None ☐ Minor ☒ Moderate ☐Extensive
Risk Assessment	☐			
Support Structure:	☐			
IMPACTS & MITIGATIONS			**Vigor:**	☐ Excellent ☐Average ☒ Fair ☐ Poor
In Impacted Area: ☐ Yes ☐ No			**Borers/ Ants /Termites:**	☐ Minor ☒ Moderate ☐Extensive ☐None
Proposed Land Use:				
Impacts:			**Exudations:**	☒ No ☐ Yes
Mitigations:			**Galls:**	☒ No ☐ Yes

Comments & Notes: recent fire damage (Rodeo Fire – 7/23/17); canopy scorched - mostly epicormic growth; old tag #85, 91; bows west

Photo #5286

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[1] Health: A =Outstanding; B = Above Average; C = Average; D = Below Average; F = Dead
[2] Decurrent = Lacking Strong Central Leader. Excurrent = Strong Central Leader.
[3] Aesthetic (compared to standard tree of same species) : A = nearly symmetrical, healthy tree – F = Dead

OAK TREE FIELD DATA WORKSHEET *Property: 500 Baseline Road, La Verne*

Survey Date: 10/6/2017 **Tree Number: 92**

GENERAL CHARACTERISTICS	
Species: ☒ *Q. agrifolia* ☐ *Q. lobata* ☐ *Other (see below)*	**Health Rating[1]:** ☐A ☐B ☐C ☐D ☒ F
	Form: ☐ symmetric ☐ minor asymmetry
Trunk Count: 1 **Height (ft.)**: 25	☒ major asymmetry ☐ stump sprout
Trunk DBH (in.): 8	☐ stag-head
Percent Canopy Cover: 0 (fire)	**Crown Class[2]:** ☐ Decurrent ☒ Excurrent
Existing Terrain: ☐ Flat ☒ Slope	**Age Class:** ☒ immature ☐ semi-mature
Aesthetic Rating[3]: ☐ A ☐ B ☐ C ☐ D ☒ F	☐ mature ☐over-mature/senescent
Overall Grade: ☐ A ☐ B ☐ C ☐ D ☒ F	**Heritage Tree:** ☒ No ☐ Yes

CANOPY CHARACTERISTICS			**TREE HEALTH**	
	Dripline Radius (Feet)	Canopy to Grade (Feet)	**Wound Wood Development:**	☐ Excellent ☐ Average ☐ Poor ☐ None
N			**Foliage Density:**	☐ Normal ☐ Sparse
NE			**Weak crotches:**	☐ No ☐ Yes
E			**Oak Pit Scale:**	☐ No ☐ Yes
SE	DEAD		**Mainstem dieback:**	☐ No ☐ Yes
S			**Exposed Roots:**	☐ No ☐ Yes
SW			**Epicormic growth:**	☐ No ☐ Yes
W			**Shading Out:**	☐ No ☐ Yes
NW			**Cavities:** ☐ None	☐ Trunk ☐ Branch
			Exfoliating Bark:	☐ No ☐ Yes
CANOPY SPREAD (FEET):			**Water Pocket(s):**	☐ No ☐ Yes
PROPOSED ACTIONS			**Mechanical Damage:**	☐ Trunk ☐ Branch ☐ None
Root Collar Inspection:	☐		**Cankers:**	☐ No ☐ Yes
Monitor for Progress:	☐		**Fungus:**	☐ No ☐ Yes
Remove Deadwood/Prune :	☐		**Twig/ Branch Dieback:**	☐ None ☐ Minor ☐ Moderate ☐Extensive
Risk Assessment	☐			
Support Structure:	☐			
IMPACTS & MITIGATIONS			**Vigor:**	☐ Excellent ☐Average ☐ Fair ☐ Poor
In Impacted Area: ☐ Yes ☐ No			**Borers/ Ants /Termites:**	☐ Minor ☐ Moderate ☐Extensive ☐None
Proposed Land Use:				
Impacts:			**Exudations:**	☐ No ☐ Yes
Mitigations:			**Galls:**	☐ No ☐ Yes

Comments & Notes: Standing dead – fire damaged

Photo #5287

[1] Health: A =Outstanding; B = Above Average; C = Average; D = Below Average; F = Dead
[2] Decurrent = Lacking Strong Central Leader. Excurrent = Strong Central Leader.
[3] Aesthetic (compared to standard tree of same species) : A = nearly symmetrical, healthy tree – F = Dead

OAK TREE FIELD DATA WORKSHEET *Property: 500 Baseline Road, La Verne*

Survey Date: 10/6/2017 **Tree Number: 93**

GENERAL CHARACTERISTICS			
Species: ☒*Q. agrifolia* ☐ *Q. lobata* ☐ *Other (see below)*		**Health Rating**[1]: ☐A ☐B ☐C ☒D ☐ F	
		Form: ☐ symmetric ☐ minor asymmetry	
Trunk Count: 1 **Height (ft.):** 25		☒ major asymmetry ☐ stump sprout	
Trunk DBH (in.): 19.5		☐ stag-head	
Percent Canopy Cover: 5 (fire)		**Crown Class**[2]: ☐ Decurrent ☒ Excurrent	
Existing Terrain: ☐ Flat ☒ Slope		**Age Class:** ☐ immature ☒ semi-mature	
Aesthetic Rating[3]: ☐ A ☐ B ☐ C ☒ D ☐ F		☐ mature ☐over-mature/senescent	
Overall Grade: ☐ A ☐ B ☐ C ☒ D ☐ F		**Heritage Tree:** ☒ No ☐ Yes	

CANOPY CHARACTERISTICS			**TREE HEALTH**	
	Dripline Radius (Feet)	Canopy to Grade (Feet)	**Wound Wood Development:**	☐ Excellent ☐ Average ☒ Poor ☐ None
N	5	0	**Foliage Density:**	☐ Normal ☒ Sparse
NE			**Weak crotches:**	☐ No ☒ Yes
E	5	0	**Oak Pit Scale:**	☒ No ☐ Yes
SE			**Mainstem dieback:**	☐ No ☒ Yes
S	5	0	**Exposed Roots:**	☒ No ☐ Yes
SW			**Epicormic growth:**	☐ No ☒ Yes
W	5	0	**Shading Out:**	☐ No ☒ Yes
NW			**Cavities:** ☒ None	☐ Trunk ☐ Branch
			Exfoliating Bark:	☐ No ☒ Yes
CANOPY SPREAD (FEET): 10 X 10			**Water Pocket(s):**	☒ No ☐ Yes
PROPOSED ACTIONS			**Mechanical Damage:**	☐ Trunk ☒ Branch ☐ None
Root Collar Inspection:	☐		**Cankers:**	☒ No ☐ Yes
Monitor for Progress:	☐		**Fungus:**	☒ No ☐ Yes
Remove Deadwood/Prune :	☐		**Twig/ Branch Dieback:**	☐ None ☐ Minor ☒ Moderate ☐Extensive
Risk Assessment	☐			
Support Structure:	☐			
IMPACTS & MITIGATIONS			**Vigor:**	☐ Excellent ☐Average ☒ Fair ☐ Poor
In Impacted Area: ☐ Yes ☐ No			**Borers/ Ants /Termites:**	☐ Minor ☒ Moderate ☐Extensive ☐None
Proposed Land Use:				
Impacts:			**Exudations:**	☒ No ☐ Yes
Mitigations:			**Galls:**	☒ No ☐ Yes

Comments & Notes: recent fire damage (Rodeo Fire – 7/23/17); old tag #94; bows south; trunk charred; canopy only minor epicormic growth

Photo #5288

[1] Health: A =Outstanding; B = Above Average; C = Average; D = Below Average; F = Dead
[2] Decurrent = Lacking Strong Central Leader. Excurrent = Strong Central Leader.
[3] Aesthetic (compared to standard tree of same species) : A = nearly symmetrical, healthy tree – F = Dead

OAK TREE FIELD DATA WORKSHEET *Property: 500 Baseline Road, La Verne*

Survey Date: 10/6/2017 **Tree Number: 94**

GENERAL CHARACTERISTICS			
Species: ☒ *Q. agrifolia* ☐ *Q. lobata* ☐ *Other (see below)*		**Health Rating**[1]**:** ☐A ☐B ☐C ☒D ☐F	
		Form: ☐ symmetric ☒ minor asymmetry	
Trunk Count: 1 **Height (ft.):** 40		☐ major asymmetry ☐ stump sprout	
Trunk DBH (in.): 25		☐ stag-head	
Percent Canopy Cover: 10 (fire)		**Crown Class**[2]**:** ☐ Decurrent ☒ Excurrent	
Existing Terrain: ☐ Flat ☒ Slope		**Age Class:** ☐ immature ☐ semi-mature	
Aesthetic Rating[3]**:** ☐ A ☐ B ☐ C ☒ D ☐ F		☒ mature ☐over-mature/senescent	
Overall Grade: ☐ A ☐ B ☐ C ☒ D ☐ F		**Heritage Tree:** ☒ No ☐ Yes	

CANOPY CHARACTERISTICS			**TREE HEALTH**	
	Dripline Radius (Feet)	Canopy to Grade (Feet)	**Wound Wood Development:**	☐ Excellent ☐ Average ☒ Poor ☐ None
N	25	10	**Foliage Density:**	☐ Normal ☒ Sparse
NE			**Weak crotches:**	☐ No ☒ Yes
E	15	15	**Oak Pit Scale:**	☒ No ☐ Yes
SE			**Mainstem dieback:**	☐ No ☒ Yes
S	10	15	**Exposed Roots:**	☒ No ☐ Yes
SW			**Epicormic growth:**	☐ No ☒ Yes
W	7	10	**Shading Out:**	☒ No ☐ Yes
NW			**Cavities:** ☒ None	☐ Trunk ☐ Branch
			Exfoliating Bark:	☐ No ☒ Yes
CANOPY SPREAD (FEET): 35 X 22			**Water Pocket(s):**	☒ No ☐ Yes
PROPOSED ACTIONS			**Mechanical Damage:**	☐ Trunk ☐ Branch ☒ None
Root Collar Inspection:	☐		**Cankers:**	☒ No ☐ Yes
Monitor for Progress:	☐		**Fungus:**	☒ No ☐ Yes
Remove Deadwood/Prune :	☐		**Twig/ Branch Dieback:**	☐ None ☐ Minor ☐ Moderate ☒Extensive
Risk Assessment	☐			
Support Structure:	☐			
IMPACTS & MITIGATIONS			**Vigor:**	☐ Excellent ☐Average ☐ Fair ☒ Poor
In Impacted Area: ☐ Yes ☐ No			**Borers/ Ants /Termites:**	☐ Minor ☒ Moderate ☐Extensive ☐None
Proposed Land Use:				
Impacts:			**Exudations:**	☒ No ☐ Yes
Mitigations:			**Galls:**	☒ No ☐ Yes

Comments & Notes: recent fire damage (Rodeo Fire – 7/23/17); foliage scorched; old tag #82, 85; only epicormic growth; small basal sprouts

Photo #5289

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[1] Health: A =Outstanding; B = Above Average; C = Average; D = Below Average; F = Dead
[2] Decurrent = Lacking Strong Central Leader. Excurrent = Strong Central Leader.
[3] Aesthetic (compared to standard tree of same species) : A = nearly symmetrical, healthy tree – F = Dead

OAK TREE FIELD DATA WORKSHEET *Property: 500 Baseline Road, La Verne*

Survey Date: 10/6/2017 **Tree Number: 95**

GENERAL CHARACTERISTICS	
Species: ☒ *Q. agrifolia* ☐ *Q. lobata* ☐ *Other (see below)*	**Health Rating**[1]**:** ☐A ☐B ☐C ☒D ☐ F
	Form: ☐ symmetric ☐ minor asymmetry
Trunk Count: 1 **Height (ft.)**: 35	☒ major asymmetry ☐ stump sprout
Trunk DBH (in.): 16	☐ stag-head
Percent Canopy Cover: 10	**Crown Class**[2]**:** ☒ Decurrent ☐ Excurrent
Existing Terrain: ☐ Flat ☒ Slope	**Age Class:** ☐ immature ☒ semi-mature
Aesthetic Rating[3]**:** ☐ A ☐ B ☐ C ☒ D ☐ F	☐ mature ☐over-mature/senescent
Overall Grade: ☐ A ☐ B ☐ C ☒ D ☐ F	**Heritage Tree:** ☒ No ☐ Yes

CANOPY CHARACTERISTICS			**TREE HEALTH**	
	Dripline Radius (Feet)	Canopy to Grade (Feet)	**Wound Wood Development:**	☐ Excellent ☐ Average ☒ Poor ☐ None
N	25	15	**Foliage Density:**	☐ Normal ☒ Sparse
NE			**Weak crotches:**	☐ No ☒ Yes
E	8	10	**Oak Pit Scale:**	☒ No ☐ Yes
SE			**Mainstem dieback:**	☐ No ☒ Yes
S	0	0	**Exposed Roots:**	☒ No ☐ Yes
SW			**Epicormic growth:**	☐ No ☒ Yes
W	0	0	**Shading Out:**	☐ No ☒ Yes
NW			**Cavities:** ☒ None	☐ Trunk ☐ Branch
			Exfoliating Bark:	☐ No ☒ Yes
CANOPY SPREAD (FEET): 25 X 8			**Water Pocket(s):**	☒ No ☐ Yes

PROPOSED ACTIONS		**Mechanical Damage:**	☐ Trunk ☐ Branch ☒ None
Root Collar Inspection:	☐	**Cankers:**	☒ No ☐ Yes
Monitor for Progress:	☐	**Fungus:**	☒ No ☐ Yes
Remove Deadwood/Prune :	☐	**Twig/ Branch Dieback:**	☐ None ☐ Minor ☐ Moderate ☒Extensive
Risk Assessment	☐		
Support Structure:	☐		

IMPACTS & MITIGATIONS	**Vigor:**	☐ Excellent ☐Average ☐ Fair ☒ Poor
In Impacted Area: ☐ Yes ☐ No	**Borers/ Ants /Termites:**	☒ Minor ☐ Moderate ☐Extensive ☐None
Proposed Land Use:		
Impacts:	**Exudations:**	☒ No ☐ Yes
Mitigations:	**Galls:**	☒ No ☐ Yes

Comments & Notes: recent fire damage (Rodeo Fire – 7/23/17); foliage scorched; old tag #86; only epicormic growth; leans north; old fire damage

Photo #5290

[1] Health: A =Outstanding; B = Above Average; C = Average; D = Below Average; F = Dead
[2] Decurrent = Lacking Strong Central Leader. Excurrent = Strong Central Leader.
[3] Aesthetic (compared to standard tree of same species) : A = nearly symmetrical, healthy tree – F = Dead

OAK TREE FIELD DATA WORKSHEET *Property: 500 Baseline Road, La Verne*

Survey Date: 10/6/2017 **Tree Number: 96**

GENERAL CHARACTERISTICS	
Species: ☒ *Q. agrifolia* ☐ *Q. lobata* ☐ *Other (see below)*	**Health Rating[1]:** ☐A ☐B ☒C- ☐D ☐F
	Form: ☐ symmetric ☒ minor asymmetry
Trunk Count: 1 **Height (ft.):** 40	☐ major asymmetry ☐ stump sprout
Trunk DBH (in.): 26.5	☐ stag-head
Percent Canopy Cover: 30	**Crown Class[2]:** ☒ Decurrent ☐ Excurrent
Existing Terrain: ☐ Flat ☒ Slope	**Age Class:** ☐ immature ☐ semi-mature
Aesthetic Rating[3]: ☐ A ☐ B ☒ C ☐ D ☐ F	☒ mature ☐over-mature/senescent
Overall Grade: ☐ A ☐ B ☒ C- ☐ D ☐ F	**Heritage Tree:** ☒ No ☐ Yes

CANOPY CHARACTERISTICS

	Dripline Radius (Feet)	Canopy to Grade (Feet)
N	10	10
NE		
E	0	0
SE		
S	20	30
SW		
W	30	10
NW		

CANOPY SPREAD (FEET): 30 X 30

TREE HEALTH

Wound Wood Development:	☐ Excellent ☐ Average ☒ Poor ☐ None
Foliage Density:	☐ Normal ☒ Sparse
Weak crotches:	☐ No ☒ Yes
Oak Pit Scale:	☒ No ☐ Yes
Mainstem dieback:	☐ No ☒ Yes
Exposed Roots:	☐ No ☒ Yes
Epicormic growth:	☐ No ☒ Yes
Shading Out:	☐ No ☒ Yes
Cavities: ☒ None	☐ Trunk ☐ Branch
Exfoliating Bark:	☒ No ☐ Yes
Water Pocket(s):	☒ No ☐ Yes
Mechanical Damage:	☐ Trunk ☐ Branch ☒ None
Cankers:	☒ No ☐ Yes
Fungus:	☒ No ☐ Yes
Twig/ Branch Dieback:	☐ None ☐ Minor ☐ Moderate ☒Extensive
Vigor:	☐ Excellent ☐Average ☒ Fair ☐ Poor
Borers/ Ants /Termites:	☐ Minor ☒ Moderate ☐Extensive ☐None
Exudations:	☒ No ☐ Yes
Galls:	☒ No ☐ Yes

PROPOSED ACTIONS

Root Collar Inspection:	☐
Monitor for Progress:	☐
Remove Deadwood/Prune :	☐
Risk Assessment	☐
Support Structure:	☐

IMPACTS & MITIGATIONS

In Impacted Area:	☐ Yes ☐ No
Proposed Land Use:	
Impacts:	
Mitigations:	

Comments & Notes: recent fire damage (Rodeo Fire – 7/23/17); majority of foliage scorched; old tag #87; root collar exposed on south (erosion); old fire damage

Photo #5291

[1] Health: A =Outstanding; B = Above Average; C = Average; D = Below Average; F = Dead
[2] Decurrent = Lacking Strong Central Leader. Excurrent = Strong Central Leader.
[3] Aesthetic (compared to standard tree of same species) : A = nearly symmetrical, healthy tree – F = Dead

OAK TREE FIELD DATA WORKSHEET *Property: 500 Baseline Road, La Verne*

Survey Date: 10/6/2017 **Tree Number: 97**

GENERAL CHARACTERISTICS	
Species: ☐*Q. agrifolia* ☐ *Q. lobata* ☒ *Other (see below)*	**Health Rating**[1]**:** ☐A ☐B ☐C ☒D ☐ F
Platanus racemosa (California sycamore)	**Form:** ☐ symmetric ☐ minor asymmetry
Trunk Count: 3 **Height (ft.):** 35	☒ major asymmetry ☐ stump sprout
Trunk DBH (in.): 8, 8, 13	☐ stag-head
Percent Canopy Cover: 5	**Crown Class**[2]**:** ☒ Decurrent ☐ Excurrent
Existing Terrain: ☐ Flat ☒ Slope	**Age Class:** ☐ immature ☒ semi-mature
Aesthetic Rating[3]**:** ☐ A ☐ B ☐ C ☒ D ☐ F	☐ mature ☐over-mature/senescent
Overall Grade: ☐ A ☐ B ☐ C ☒ D ☐ F	**Heritage Tree:** ☒ No ☐ Yes

CANOPY CHARACTERISTICS			**TREE HEALTH**	
	Dripline Radius (Feet)	Canopy to Grade (Feet)	**Wound Wood Development:**	☐ Excellent ☐ Average ☒ Poor ☐ None
N	30	30	**Foliage Density:**	☐ Normal ☒ Sparse
NE			**Weak crotches:**	☐ No ☒ Yes
E	0	0	**Oak Pit Scale:**	☒ No ☐ Yes
SE			**Mainstem dieback:**	☐ No ☒ Yes
S	0	0	**Exposed Roots:**	☐ No ☒ Yes
SW			**Epicormic growth:**	☐ No ☒ Yes
W	15	15	**Shading Out:**	☒ No ☐ Yes
NW	25	30	**Cavities:** ☒ None	☐ Trunk ☐ Branch
			Exfoliating Bark:	☐ No ☒ Yes
CANOPY SPREAD (FEET): 30 X 15			**Water Pocket(s):**	☒ No ☐ Yes
PROPOSED ACTIONS			**Mechanical Damage:**	☐ Trunk ☐ Branch ☒ None
Root Collar Inspection:	☐		**Cankers:**	☒ No ☐ Yes
Monitor for Progress:	☐		**Fungus:**	☒ No ☐ Yes
Remove Deadwood/Prune :	☐		**Twig/ Branch Dieback:**	☐ None ☐ Minor ☐ Moderate ☒Extensive
Risk Assessment	☐			
Support Structure:	☐			
IMPACTS & MITIGATIONS			**Vigor:**	☐ Excellent ☐Average ☐ Fair ☒ Poor
In Impacted Area: ☐ Yes ☐ No			**Borers/ Ants /Termites:**	☒ Minor ☐ Moderate ☐Extensive ☐None
Proposed Land Use:				
Impacts:			**Exudations:**	☒ No ☐ Yes
Mitigations:			**Galls:**	☒ No ☐ Yes

Comments & Notes: recent fire damage (Rodeo Fire – 7/23/17); foliage scorched; old tag #97; only epicormic growth; stump sprouts; dead hangers

Photo #5292

[1] Health: A =Outstanding; B = Above Average; C = Average; D = Below Average; F = Dead
[2] Decurrent = Lacking Strong Central Leader. Excurrent = Strong Central Leader.
[3] Aesthetic (compared to standard tree of same species) : A = nearly symmetrical, healthy tree – F = Dead

OAK TREE FIELD DATA WORKSHEET *Property: 500 Baseline Road, La Verne*

Survey Date: 10/6/2017 **Tree Number: 98**

GENERAL CHARACTERISTICS			
Species: ☒ *Q. agrifolia* ☐ *Q. lobata* ☐ *Other (see below)*		**Health Rating[1]:** ☐A ☐B ☒C- ☐D ☐F	
		Form: ☐ symmetric ☐ minor asymmetry	
Trunk Count: 2 **Height (ft.)**: 40		☒ major asymmetry ☐ stump sprout	
Trunk DBH (in.): 13, 25		☐ stag-head	
Percent Canopy Cover: 25		**Crown Class[2]:** ☒ Decurrent ☐ Excurrent	
Existing Terrain: ☐ Flat ☒ Slope		**Age Class:** ☐ immature ☐ semi-mature	
Aesthetic Rating[3]: ☐ A ☐ B ☒ C- ☐ D ☐ F		☒ mature ☐over-mature/senescent	
Overall Grade: ☐ A ☐ B ☒ C- ☐ D ☐ F		**Heritage Tree:** ☒ No ☐ Yes	

CANOPY CHARACTERISTICS			**TREE HEALTH**	
	Dripline Radius (Feet)	Canopy to Grade (Feet)	**Wound Wood Development:**	☐ Excellent ☐ Average ☒ Poor ☐ None
N	0	0	**Foliage Density:**	☐ Normal ☒ Sparse
NE			**Weak crotches:**	☐ No ☒ Yes
E	20	30	**Oak Pit Scale:**	☒ No ☐ Yes
SE			**Mainstem dieback:**	☐ No ☒ Yes
S	35	25	**Exposed Roots:**	☐ No ☒ Yes
SW			**Epicormic growth:**	☐ No ☒ Yes
W	10	15	**Shading Out:**	☒ No ☐ Yes
NW			**Cavities:** ☒ None	☐ Trunk ☐ Branch
			Exfoliating Bark:	☒ No ☐ Yes
CANOPY SPREAD (FEET): 35 X 30			**Water Pocket(s):**	☒ No ☐ Yes
PROPOSED ACTIONS			**Mechanical Damage:**	☐ Trunk ☐ Branch ☒ None
Root Collar Inspection:	☐		**Cankers:**	☒ No ☐ Yes
Monitor for Progress:	☐		**Fungus:**	☒ No ☐ Yes
Remove Deadwood/Prune :	☐		**Twig/ Branch Dieback:**	☐ None ☐ Minor ☐ Moderate ☒Extensive
Risk Assessment	☐			
Support Structure:	☐			
IMPACTS & MITIGATIONS			**Vigor:**	☐ Excellent ☐Average ☒ Fair ☐ Poor
In Impacted Area: ☐ Yes ☐ No			**Borers/ Ants /Termites:**	☐ Minor ☒ Moderate ☐Extensive ☐None
Proposed Land Use:				
Impacts:			**Exudations:**	☒ No ☐ Yes
Mitigations:			**Galls:**	☒ No ☐ Yes

Comments & Notes: recent fire damage (Rodeo Fire – 7/23/17); foliage scorched (mostly lower canopy); exposed roots on northeast; good response growth

Photo #5293

[1] Health: A =Outstanding; B = Above Average; C = Average; D = Below Average; F = Dead
[2] Decurrent = Lacking Strong Central Leader. Excurrent = Strong Central Leader.
[3] Aesthetic (compared to standard tree of same species) : A = nearly symmetrical, healthy tree – F = Dead

OAK TREE FIELD DATA WORKSHEET *Property: 500 Baseline Road, La Verne*

Survey Date: 10/6/2017 **Tree Number: 99**

GENERAL CHARACTERISTICS			
Species: ☐ *Q. agrifolia* ☐ *Q. lobata* ☒ *Other (see below)*		**Health Rating**[1]**:** ☐ A ☐ B ☐ C ☒ D ☐ F	
Platanus racemosa (California sycamore)		**Form:** ☐ symmetric ☐ minor asymmetry	
Trunk Count: 1 **Height (ft.)**: 15		☒ major asymmetry ☐ stump sprout	
Trunk DBH (in.): 8.5		☐ stag-head	
Percent Canopy Cover: 0		**Crown Class**[2]**:** ☐ Decurrent ☒ Excurrent	
Existing Terrain: ☐ Flat ☒ Slope		**Age Class:** ☒ immature ☐ semi-mature	
Aesthetic Rating[3]**:** ☐ A ☐ B ☐ C ☒ D ☐ F		☐ mature ☐ over-mature/senescent	
Overall Grade: ☐ A ☐ B ☐ C ☒ D ☐ F		**Heritage Tree:** ☒ No ☐ Yes	

CANOPY CHARACTERISTICS			**TREE HEALTH**	
	Dripline Radius (Feet)	Canopy to Grade (Feet)	**Wound Wood Development:**	☐ Excellent ☐ Average ☒ Poor ☐ None
N	3	0	**Foliage Density:**	☐ Normal ☒ Sparse
NE			**Weak crotches:**	☐ No ☒ Yes
E	3	0	**Oak Pit Scale:**	☒ No ☐ Yes
SE			**Mainstem dieback:**	☐ No ☒ Yes
S	3	0	**Exposed Roots:**	☐ No ☒ Yes
SW			**Epicormic growth:**	☐ No ☒ Yes
W	3	0	**Shading Out:**	☐ No ☒ Yes
NW			**Cavities:** ☐ None	☒ Trunk ☐ Branch
			Exfoliating Bark:	☐ No ☒ Yes
CANOPY SPREAD (FEET): 6 X 6			**Water Pocket(s):**	☒ No ☐ Yes

PROPOSED ACTIONS		**Mechanical Damage:**	☐ Trunk ☐ Branch ☒ None
Root Collar Inspection:	☐	**Cankers:**	☒ No ☐ Yes
Monitor for Progress:	☐	**Fungus:**	☒ No ☐ Yes
Remove Deadwood/Prune :	☐	**Twig/ Branch Dieback:**	☐ None ☐ Minor ☐ Moderate ☒ Extensive
Risk Assessment	☐		
Support Structure:	☐		
IMPACTS & MITIGATIONS		**Vigor:**	☐ Excellent ☐ Average ☐ Fair ☒ Poor
In Impacted Area: ☐ Yes ☐ No		**Borers/ Ants /Termites:**	☒ Minor ☐ Moderate ☐ Extensive ☐ None
Proposed Land Use:			
Impacts:		**Exudations:**	☒ No ☐ Yes
Mitigations:		**Galls:**	☒ No ☐ Yes

Comments & Notes: recent fire damage (Rodeo Fire – 7/23/17); heavy lean west; root collar charred; only stump sprouts

Photo #5294

[1] Health: A =Outstanding; B = Above Average; C = Average; D = Below Average; F = Dead
[2] Decurrent = Lacking Strong Central Leader. Excurrent = Strong Central Leader.
[3] Aesthetic (compared to standard tree of same species) : A = nearly symmetrical, healthy tree – F = Dead

OAK TREE FIELD DATA WORKSHEET *Property: 500 Baseline Road, La Verne*

Survey Date: 10/6/2017 **Tree Number: 100**

GENERAL CHARACTERISTICS	
Species: ☒ *Q. agrifolia* ☐ *Q. lobata* ☐ *Other (see below)*	**Health Rating**[1]**:** ☐A ☐B ☒C ☐D ☐F
	Form: ☐ symmetric ☒ minor asymmetry
Trunk Count: 1 **Height (ft.)**: 35	☐ major asymmetry ☐ stump sprout
Trunk DBH (in.): 17	☐ stag-head
Percent Canopy Cover: 40	**Crown Class**[2]**:** ☒ Decurrent ☐ Excurrent
Existing Terrain: ☐ Flat ☒ Slope	**Age Class:** ☐ immature ☒ semi-mature
Aesthetic Rating[3]**:** ☐ A ☐ B ☒ C ☐ D ☐ F	☐ mature ☐over-mature/senescent
Overall Grade: ☐ A ☐ B ☒ C ☐ D ☐ F	**Heritage Tree:** ☒ No ☐ Yes

CANOPY CHARACTERISTICS		
	Dripline Radius (Feet)	Canopy to Grade (Feet)
N	10	10
NE		
E	25	30
SE		
S	20	25
SW		
W	20	10
NW		

CANOPY SPREAD (FEET): 28 X 22

TREE HEALTH	
Wound Wood Development:	☐ Excellent ☒ Average ☐ Poor ☐ None
Foliage Density:	☐ Normal ☒ Sparse
Weak crotches:	☐ No ☒ Yes
Oak Pit Scale:	☒ No ☐ Yes
Mainstem dieback:	☐ No ☒ Yes
Exposed Roots:	☐ No ☒ Yes
Epicormic growth:	☐ No ☒ Yes
Shading Out:	☒ No ☐ Yes
Cavities: ☒ None	☐ Trunk ☐ Branch
Exfoliating Bark:	☒ No ☐ Yes
Water Pocket(s):	☒ No ☐ Yes
Mechanical Damage:	☐ Trunk ☐ Branch ☒ None
Cankers:	☒ No ☐ Yes
Fungus:	☒ No ☐ Yes
Twig/ Branch Dieback:	☐ None ☐ Minor ☐ Moderate ☒Extensive
Vigor:	☐ Excellent ☐Average ☒ Fair ☐ Poor
Borers/ Ants /Termites:	☒ Minor ☐ Moderate ☐Extensive ☐None
Exudations:	☒ No ☐ Yes
Galls:	☒ No ☐ Yes

PROPOSED ACTIONS	
Root Collar Inspection:	☐
Monitor for Progress:	☐
Remove Deadwood/Prune :	☐
Risk Assessment	☐
Support Structure:	☐

IMPACTS & MITIGATIONS
In Impacted Area: ☐ Yes ☐ No
Proposed Land Use:
Impacts:
Mitigations:

Comments & Notes: recent fire damage (Rodeo Fire – 7/23/17); foliage scorched; exposed root collar; old tag #106

Photo #5295

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[1] Health: A =Outstanding; B = Above Average; C = Average; D = Below Average; F = Dead
[2] Decurrent = Lacking Strong Central Leader. Excurrent = Strong Central Leader.
[3] Aesthetic (compared to standard tree of same species) : A = nearly symmetrical, healthy tree – F = Dead

OAK TREE FIELD DATA WORKSHEET *Property: 500 Baseline Road, La Verne*

Survey Date: 10/6/2017 **Tree Number: 101**

GENERAL CHARACTERISTICS			
Species: ☐ *Q. agrifolia* ☐ *Q. lobata* ☒ *Other (see below)*		**Health Rating[1]:** ☐A ☐B ☐C ☒D ☐F	
Platanus racemosa (California sycamore)		**Form:** ☐ symmetric ☐ minor asymmetry	
Trunk Count: 2 **Height (ft.):** 35		☒ major asymmetry ☐ stump sprout	
Trunk DBH (in.): 6.5 (dead), 12		☐ stag-head	
Percent Canopy Cover: 20		**Crown Class[2]:** ☐ Decurrent ☒ Excurrent	
Existing Terrain: ☐ Flat ☒ Slope		**Age Class:** ☐ immature ☒ semi-mature	
Aesthetic Rating[3]: ☐ A ☐ B ☐ C ☒ D ☐ F		☐ mature ☐ over-mature/senescent	
Overall Grade: ☐ A ☐ B ☐ C ☒ D ☐ F		**Heritage Tree:** ☒ No ☐ Yes	

CANOPY CHARACTERISTICS			**TREE HEALTH**	
	Dripline Radius (Feet)	Canopy to Grade (Feet)	**Wound Wood Development:**	☐ Excellent ☐ Average ☒ Poor ☐ None
N	0	0	**Foliage Density:**	☐ Normal ☒ Sparse
NE			**Weak crotches:**	☐ No ☒ Yes
E	0	0	**Oak Pit Scale:**	☒ No ☐ Yes
SE			**Mainstem dieback:**	☐ No ☒ Yes
S	20	25	**Exposed Roots:**	☐ No ☒ Yes
SW			**Epicormic growth:**	☐ No ☒ Yes
W	0	0	**Shading Out:**	☐ No ☒ Yes
NW			**Cavities:** ☐ None	☒ Trunk ☐ Branch
			Exfoliating Bark:	☐ No ☒ Yes
CANOPY SPREAD (FEET): 20 X 0			**Water Pocket(s):**	☒ No ☐ Yes

PROPOSED ACTIONS		**Mechanical Damage:**	☐ Trunk ☐ Branch ☒ None
Root Collar Inspection:	☐	**Cankers:**	☒ No ☐ Yes
Monitor for Progress:	☐	**Fungus:**	☒ No ☐ Yes
Remove Deadwood/Prune :	☐	**Twig/ Branch Dieback:**	☐ None ☐ Minor ☒ Moderate ☐ Extensive
Risk Assessment	☐		
Support Structure:	☐		
IMPACTS & MITIGATIONS		**Vigor:**	☐ Excellent ☐ Average ☒ Fair ☐ Poor
In Impacted Area: ☐ Yes ☐ No		**Borers/ Ants /Termites:**	☒ Minor ☐ Moderate ☐ Extensive ☐ None
Proposed Land Use:			
Impacts:		**Exudations:**	☒ No ☐ Yes
Mitigations:		**Galls:**	☒ No ☐ Yes

Comments & Notes: recent fire damage (Rodeo Fire – 7/23/17); old tag #107; stump sprouts; heavy lean west; basal cavity with decay; shaded out by #100; 6.5" trunk dead; canopy mostly epicormic growth

Photo #5296

[1] Health: A =Outstanding; B = Above Average; C = Average; D = Below Average; F = Dead
[2] Decurrent = Lacking Strong Central Leader. Excurrent = Strong Central Leader.
[3] Aesthetic (compared to standard tree of same species) : A = nearly symmetrical, healthy tree – F = Dead

OAK TREE FIELD DATA WORKSHEET *Property: 500 Baseline Road, La Verne*

Survey Date: 10/6/2017 **Tree Number: 102**

GENERAL CHARACTERISTICS	
Species: ☐*Q. agrifolia* ☐ *Q. lobata* ☒ *Other (see below)*	**Health Rating**[1]**:** ☐A ☐B ☐C ☒D ☐ F
Platanus racemosa (California sycamore)	**Form:** ☐ symmetric ☐ minor asymmetry
Trunk Count: 2 **Height (ft.)**: 40	☒ major asymmetry ☐ stump sprout
Trunk DBH (in.): 10.5 (dead), 14	☐ stag-head
Percent Canopy Cover: 10	**Crown Class**[2]**:** ☐ Decurrent ☒ Excurrent
Existing Terrain: ☐ Flat ☒ Slope	**Age Class:** ☐ immature ☒ semi-mature
Aesthetic Rating[3]**:** ☐ A ☐ B ☐ C ☒ D ☐ F	☐ mature ☐over-mature/senescent
Overall Grade: ☐ A ☐ B ☐ C ☒ D ☐ F	**Heritage Tree:** ☒ No ☐ Yes

CANOPY CHARACTERISTICS

	Dripline Radius (Feet)	Canopy to Grade (Feet)
N	0	0
NE		
E	0	0
SE		
S	30	30
SW		
W	0	0
NW		

CANOPY SPREAD (FEET): 30 X 0

TREE HEALTH

Wound Wood Development:	☐ Excellent ☐ Average ☒ Poor ☐ None
Foliage Density:	☐ Normal ☒ Sparse
Weak crotches:	☐ No ☒ Yes
Oak Pit Scale:	☒ No ☐ Yes
Mainstem dieback:	☐ No ☒ Yes
Exposed Roots:	☐ No ☒ Yes
Epicormic growth:	☐ No ☒ Yes
Shading Out:	☐ No ☒ Yes
Cavities: ☐ None	☒ Trunk ☐ Branch
Exfoliating Bark:	☐ No ☒ Yes
Water Pocket(s):	☒ No ☐ Yes
Mechanical Damage:	☐ Trunk ☐ Branch ☒ None
Cankers:	☒ No ☐ Yes
Fungus:	☒ No ☐ Yes
Twig/ Branch Dieback:	☐ None ☐ Minor ☐ Moderate ☒Extensive
Vigor:	☐ Excellent ☐Average ☐ Fair ☒ Poor
Borers/ Ants /Termites:	☐ Minor ☒ Moderate ☐Extensive ☐None
Exudations:	☒ No ☐ Yes
Galls:	☒ No ☐ Yes

PROPOSED ACTIONS

Root Collar Inspection:	☐
Monitor for Progress:	☐
Remove Deadwood/Prune :	☐
Risk Assessment	☐
Support Structure:	☐

IMPACTS & MITIGATIONS

In Impacted Area: ☐ Yes ☐ No

Proposed Land Use:

Impacts:

Mitigations:

Comments & Notes: recent fire damage (Rodeo Fire – 7/23/17); old tag #108; stump sprouts; base charred with cavity; heavy lean south; 10.5" trunk dead; epicormic growth in canopy of 14" trunk; brush clearance within dripline (fire clearance)

Photo #5297

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[1] Health: A =Outstanding; B = Above Average; C = Average; D = Below Average; F = Dead
[2] Decurrent = Lacking Strong Central Leader. Excurrent = Strong Central Leader.
[3] Aesthetic (compared to standard tree of same species) : A = nearly symmetrical, healthy tree – F = Dead

OAK TREE FIELD DATA WORKSHEET *Property: 500 Baseline Road, La Verne*

Survey Date: 10/6/2017 **Tree Number: 103**

GENERAL CHARACTERISTICS	
Species: ☐ *Q. agrifolia* ☐ *Q. lobata* ☒ *Other (see below)*	**Health Rating[1]:** ☐A ☐B ☐C ☒D ☐F
Platanus racemosa (California sycamore)	**Form:** ☐ symmetric ☐ minor asymmetry
Trunk Count: 2 **Height (ft.):** 35	☒ major asymmetry ☐ stump sprout
Trunk DBH (in.): 10 (dead), 11.5	☐ stag-head
Percent Canopy Cover: 10	**Crown Class[2]:** ☐ Decurrent ☒ Excurrent
Existing Terrain: ☐ Flat ☒ Slope	**Age Class:** ☐ immature ☒ semi-mature
Aesthetic Rating[3]: ☐ A ☐ B ☐ C ☒ D ☐ F	☐ mature ☐ over-mature/senescent
Overall Grade: ☐ A ☐ B ☐ C ☒ D ☐ F	**Heritage Tree:** ☒ No ☐ Yes

CANOPY CHARACTERISTICS		
	Dripline Radius (Feet)	Canopy to Grade (Feet)
N	15	35
NE		
E	15	15
SE		
S	13	20
SW		
W	25	35
NW		

CANOPY SPREAD (FEET): 28 X 40

TREE HEALTH	
Wound Wood Development:	☐ Excellent ☐ Average ☒ Poor ☐ None
Foliage Density:	☐ Normal ☒ Sparse
Weak crotches:	☐ No ☒ Yes
Oak Pit Scale:	☒ No ☐ Yes
Mainstem dieback:	☐ No ☒ Yes
Exposed Roots:	☐ No ☒ Yes
Epicormic growth:	☐ No ☒ Yes
Shading Out:	☒ No ☐ Yes
Cavities: ☒ None	☐ Trunk ☐ Branch
Exfoliating Bark:	☐ No ☒ Yes
Water Pocket(s):	☒ No ☐ Yes
Mechanical Damage:	☐ Trunk ☐ Branch ☒ None
Cankers:	☒ No ☐ Yes
Fungus:	☒ No ☐ Yes
Twig/ Branch Dieback:	☐ None ☐ Minor ☐ Moderate ☒ Extensive
Vigor:	☐ Excellent ☐ Average ☐ Fair ☒ Poor
Borers/ Ants /Termites:	☐ Minor ☒ Moderate ☐ Extensive ☐ None
Exudations:	☒ No ☐ Yes
Galls:	☒ No ☐ Yes

PROPOSED ACTIONS	
Root Collar Inspection:	☐
Monitor for Progress:	☐
Remove Deadwood/Prune :	☐
Risk Assessment	☐
Support Structure:	☐

IMPACTS & MITIGATIONS
In Impacted Area: ☐ Yes ☐ No
Proposed Land Use:
Impacts:
Mitigations:

Comments & Notes: recent fire damage (Rodeo Fire – 7/23/17); old tag #100; only epicormic growth in canopy; exposed roots on northwest; 10" trunk dead – hollow, top broken

Photo #5298

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[1] Health: A =Outstanding; B = Above Average; C = Average; D = Below Average; F = Dead
[2] Decurrent = Lacking Strong Central Leader. Excurrent = Strong Central Leader.
[3] Aesthetic (compared to standard tree of same species) : A = nearly symmetrical, healthy tree – F = Dead

OAK TREE FIELD DATA WORKSHEET *Property: 500 Baseline Road, La Verne*

Survey Date: 10/6/2017 **Tree Number: 104**

GENERAL CHARACTERISTICS			
Species: ☐ *Q. agrifolia* ☐ *Q. lobata* ☒ *Other (see below)*		**Health Rating[1]:** ☐A ☐B ☐C ☒D ☐F	
Platanus racemosa (California sycamore)		**Form:** ☐ symmetric ☐ minor asymmetry	
Trunk Count: 1 **Height (ft.):** 40		☒ major asymmetry ☐ stump sprout	
Trunk DBH (in.): 13		☐ stag-head	
Percent Canopy Cover: 10		**Crown Class[2]:** ☐ Decurrent ☒ Excurrent	
Existing Terrain: ☐ Flat ☒ Slope		**Age Class:** ☐ immature ☒ semi-mature	
Aesthetic Rating[3]: ☐ A ☐ B ☐ C ☒ D ☐ F		☐ mature ☐ over-mature/senescent	
Overall Grade: ☐ A ☐ B ☐ C ☒ D ☐ F		**Heritage Tree:** ☒ No ☐ Yes	

CANOPY CHARACTERISTICS			**TREE HEALTH**	
	Dripline Radius (Feet)	Canopy to Grade (Feet)	**Wound Wood Development:**	☐ Excellent ☐ Average ☒ Poor ☐ None
N	0	0	**Foliage Density:**	☐ Normal ☒ Sparse
NE			**Weak crotches:**	☒ No ☐ Yes
E	0	0	**Oak Pit Scale:**	☒ No ☐ Yes
SE			**Mainstem dieback:**	☐ No ☒ Yes
S	10	20	**Exposed Roots:**	☐ No ☒ Yes
SW			**Epicormic growth:**	☐ No ☒ Yes
W	35	30	**Shading Out:**	☐ No ☒ Yes
NW			**Cavities:** ☐ None	☒ Trunk ☐ Branch
			Exfoliating Bark:	☐ No ☒ Yes
CANOPY SPREAD (FEET): 10 X 35			**Water Pocket(s):**	☒ No ☐ Yes
PROPOSED ACTIONS			**Mechanical Damage:**	☐ Trunk ☐ Branch ☒ None
Root Collar Inspection:	☐		**Cankers:**	☒ No ☐ Yes
Monitor for Progress:	☐		**Fungus:**	☒ No ☐ Yes
Remove Deadwood/Prune :	☐		**Twig/ Branch Dieback:**	☐ None ☐ Minor ☐ Moderate ☒ Extensive
Risk Assessment	☐			
Support Structure:	☐			
IMPACTS & MITIGATIONS			**Vigor:**	☐ Excellent ☐ Average ☐ Fair ☒ Poor
In Impacted Area: ☐ Yes ☐ No			**Borers/ Ants /Termites:**	☐ Minor ☒ Moderate ☐ Extensive ☐ None
Proposed Land Use:				
Impacts:			**Exudations:**	☒ No ☐ Yes
Mitigations:			**Galls:**	☒ No ☐ Yes

Comments & Notes: recent fire damage (Rodeo Fire – 7/23/17); old tag #101; minor epicormic growth in canopy; base charred; stump sprouts; bows west

Photo #5299

[1] Health: A =Outstanding; B = Above Average; C = Average; D = Below Average; F = Dead
[2] Decurrent = Lacking Strong Central Leader. Excurrent = Strong Central Leader.
[3] Aesthetic (compared to standard tree of same species) : A = nearly symmetrical, healthy tree – F = Dead

OAK TREE FIELD DATA WORKSHEET *Property: 500 Baseline Road, La Verne*

Survey Date: 10/6/2017 **Tree Number: 105**

GENERAL CHARACTERISTICS	
Species: ☐ *Q. agrifolia* ☐ *Q. lobata* ☒ *Other (see below)*	**Health Rating**[1]**:** ☐A ☐B ☐C ☐D ☒ F
Platanus racemosa (California sycamore)	**Form:** ☐ symmetric ☐ minor asymmetry
Trunk Count: 1 **Height (ft.)**: 35	☒ major asymmetry ☐ stump sprout
Trunk DBH (in.): 10	☐ stag-head
Percent Canopy Cover: 0	**Crown Class**[2]**:** ☐ Decurrent ☒ Excurrent
Existing Terrain: ☒ Flat ☐ Slope	**Age Class:** ☐ immature ☒ semi-mature
Aesthetic Rating[3]: ☐ A ☐ B ☐ C ☐ D ☒ F	☐ mature ☐over-mature/senescent
Overall Grade: ☐ A ☐ B ☐ C ☐ D ☒ F	**Heritage Tree:** ☒ No ☐ Yes

CANOPY CHARACTERISTICS

	Dripline Radius (Feet)	Canopy to Grade (Feet)
N		
NE		
E		
SE	DEAD	
S		
SW		
W		
NW		

CANOPY SPREAD (FEET):

PROPOSED ACTIONS

Root Collar Inspection:	☐
Monitor for Progress:	☐
Remove Deadwood/Prune :	☐
Risk Assessment	☐
Support Structure:	☐

IMPACTS & MITIGATIONS

In Impacted Area: ☐ Yes ☐ No

Proposed Land Use:

Impacts:

Mitigations:

TREE HEALTH

Wound Wood Development:	☐ Excellent ☐ Average ☐ Poor ☐ None
Foliage Density:	☐ Normal ☐ Sparse
Weak crotches:	☐ No ☐ Yes
Oak Pit Scale:	☐ No ☐ Yes
Mainstem dieback:	☐ No ☐ Yes
Exposed Roots:	☐ No ☐ Yes
Epicormic growth:	☐ No ☐ Yes
Shading Out:	☐ No ☐ Yes
Cavities: ☐ None	☐ Trunk ☐ Branch
Exfoliating Bark:	☐ No ☐ Yes
Water Pocket(s):	☐ No ☐ Yes
Mechanical Damage:	☐ Trunk ☐ Branch ☐ None
Cankers:	☐ No ☐ Yes
Fungus:	☐ No ☐ Yes
Twig/ Branch Dieback:	☐ None ☐ Minor ☐ Moderate ☐Extensive
Vigor:	☐ Excellent ☐Average ☐ Fair ☐ Poor
Borers/ Ants /Termites:	☐ Minor ☐ Moderate ☐Extensive ☐None
Exudations:	☐ No ☐ Yes
Galls:	☐ No ☐ Yes

Comments & Notes: standing dead; fire damage; old #49

Photo #5300

[1] Health: A =Outstanding; B = Above Average; C = Average; D = Below Average; F = Dead
[2] Decurrent = Lacking Strong Central Leader. Excurrent = Strong Central Leader.
[3] Aesthetic (compared to standard tree of same species) : A = nearly symmetrical, healthy tree – F = Dead

OAK TREE FIELD DATA WORKSHEET *Property: 500 Baseline Road, La Verne*

Survey Date: 10/6/2017 **Tree Number: 106**

GENERAL CHARACTERISTICS	
Species: ☐*Q. agrifolia* ☐ *Q. lobata* ☒ *Other (see below)*	**Health Rating**[1]**:** ☐A ☐B ☐C ☐D ☒ F
Platanus racemosa (California sycamore)	**Form:** ☐ symmetric ☐ minor asymmetry
Trunk Count: 2 **Height (ft.)**: 30	☒ major asymmetry ☐ stump sprout
Trunk DBH (in.): 10, 10	☐ stag-head
Percent Canopy Cover: 0	**Crown Class**[2]**:** ☐ Decurrent ☒ Excurrent
Existing Terrain: ☒ Flat ☐ Slope	**Age Class:** ☐ immature ☒ semi-mature
Aesthetic Rating[3]**:** ☐ A ☐ B ☐ C ☐ D ☒ F	☐ mature ☐over-mature/senescent
Overall Grade: ☐ A ☐ B ☐ C ☐ D ☒ F	**Heritage Tree:** ☒ No ☐ Yes

CANOPY CHARACTERISTICS

	Dripline Radius (Feet)	Canopy to Grade (Feet)
N		
NE		
E		
SE	DEAD	
S		
SW		
W		
NW		

CANOPY SPREAD (FEET):

PROPOSED ACTIONS

Root Collar Inspection:	☐
Monitor for Progress:	☐
Remove Deadwood/Prune :	☐
Risk Assessment	☐
Support Structure:	☐

IMPACTS & MITIGATIONS

In Impacted Area:	☐ Yes ☐ No
Proposed Land Use:	
Impacts:	
Mitigations:	

TREE HEALTH

Wound Wood Development:	☐ Excellent ☐ Average ☐ Poor ☐ None
Foliage Density:	☐ Normal ☐ Sparse
Weak crotches:	☐ No ☐ Yes
Oak Pit Scale:	☐ No ☐ Yes
Mainstem dieback:	☐ No ☐ Yes
Exposed Roots:	☐ No ☐ Yes
Epicormic growth:	☐ No ☐ Yes
Shading Out:	☐ No ☐ Yes
Cavities: ☐ None	☐ Trunk ☐ Branch
Exfoliating Bark:	☐ No ☐ Yes
Water Pocket(s):	☐ No ☐ Yes
Mechanical Damage:	☐ Trunk ☐ Branch ☐ None
Cankers:	☐ No ☐ Yes
Fungus:	☐ No ☐ Yes
Twig/ Branch Dieback:	☐ None ☐ Minor ☐ Moderate ☐Extensive
Vigor:	☐ Excellent ☐Average ☐ Fair ☐ Poor
Borers/ Ants /Termites:	☐ Minor ☐ Moderate ☐Extensive ☐None
Exudations:	☐ No ☐ Yes
Galls:	☐ No ☐ Yes

Comments & Notes: dead – one trunk standing, one trunk fallen onto #78

Photo #5301

[1] Health: A =Outstanding; B = Above Average; C = Average; D = Below Average; F = Dead
[2] Decurrent = Lacking Strong Central Leader. Excurrent = Strong Central Leader.
[3] Aesthetic (compared to standard tree of same species) : A = nearly symmetrical, healthy tree – F = Dead

OAK TREE FIELD DATA WORKSHEET *Property: 500 Baseline Road, La Verne*

Survey Date: 10/6/2017 **Tree Number: 107**

GENERAL CHARACTERISTICS	
Species: ☒ *Q. agrifolia* ☐ *Q. lobata* ☐ *Other (see below)*	**Health Rating[1]:** ☐A ☒B ☐C ☐D ☐F
	Form: ☐ symmetric ☒ minor asymmetry
Trunk Count: 1 **Height (ft.):** 45	☐ major asymmetry ☐ stump sprout
Trunk DBH (in.): 22	☐ stag-head
Percent Canopy Cover: 80	**Crown Class[2]:** ☐ Decurrent ☒ Excurrent
Existing Terrain: ☒ Flat ☐ Slope	**Age Class:** ☐ immature ☐ semi-mature
Aesthetic Rating[3]: ☐ A ☒ B ☐ C ☐ D ☐ F	☒ mature ☐over-mature/senescent
Overall Grade: ☐ A ☒ B ☐ C ☐ D ☐ F	**Heritage Tree:** ☒ No ☐ Yes

CANOPY CHARACTERISTICS

	Dripline Radius (Feet)	Canopy to Grade (Feet)
N	30	20
NE		
E	15	8
SE		
S	20	20
SW		
W	25	15
NW		

CANOPY SPREAD (FEET): 50 X 40

TREE HEALTH

Wound Wood Development:	☐ Excellent ☒ Average ☐ Poor ☐ None
Foliage Density:	☒ Normal ☐ Sparse
Weak crotches:	☒ No ☐ Yes
Oak Pit Scale:	☒ No ☐ Yes
Mainstem dieback:	☒ No ☐ Yes
Exposed Roots:	☒ No ☐ Yes
Epicormic growth:	☐ No ☒ Yes
Shading Out:	☒ No ☐ Yes
Cavities: ☒ None	☐ Trunk ☐ Branch
Exfoliating Bark:	☒ No ☐ Yes
Water Pocket(s):	☒ No ☐ Yes
Mechanical Damage:	☐ Trunk ☐ Branch ☒ None
Cankers:	☒ No ☐ Yes
Fungus:	☒ No ☐ Yes
Twig/ Branch Dieback:	☐ None ☒ Minor ☐ Moderate ☐Extensive
Vigor:	☐ Excellent ☒Average ☐ Fair ☐ Poor
Borers/ Ants /Termites:	☒ Minor ☐ Moderate ☐Extensive ☐None
Exudations:	☒ No ☐ Yes
Galls:	☒ No ☐ Yes

PROPOSED ACTIONS

Root Collar Inspection:	☐
Monitor for Progress:	☐
Remove Deadwood/Prune :	☐
Risk Assessment	☐
Support Structure:	☐

IMPACTS & MITIGATIONS

In Impacted Area: ☐ Yes ☐ No

Proposed Land Use:

Impacts:

Mitigations:

Comments & Notes: old fire damage; old tag #17, 37; leans west; adjacent to stream

Photo #5302

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[1] Health: A =Outstanding; B = Above Average; C = Average; D = Below Average; F = Dead
[2] Decurrent = Lacking Strong Central Leader. Excurrent = Strong Central Leader.
[3] Aesthetic (compared to standard tree of same species) : A = nearly symmetrical, healthy tree – F = Dead

OAK TREE FIELD DATA WORKSHEET *Property: 500 Baseline Road, La Verne*

Survey Date: 10/6/2017 **Tree Number: 108**

GENERAL CHARACTERISTICS	
Species: ☒*Q. agrifolia* ☐ *Q. lobata* ☐ *Other (see below)*	**Health Rating**[1]**:** ☐A ☒B ☐C ☐D ☐ F
	Form: ☐ symmetric ☐ minor asymmetry
Trunk Count: 1 **Height (ft.)**: 25	☒ major asymmetry ☐ stump sprout
Trunk DBH (in.): 20.5	☐ stag-head
Percent Canopy Cover: 85	**Crown Class**[2]**:** ☐ Decurrent ☒ Excurrent
Existing Terrain: ☐ Flat ☒ Slope	**Age Class:** ☐ immature ☒ semi-mature
Aesthetic Rating[3]**:** ☐ A ☒ B- ☐ C ☐ D ☐ F	☐ mature ☐over-mature/senescent
Overall Grade: ☐ A ☒ B ☐ C ☐ D ☐ F	**Heritage Tree:** ☒ No ☐ Yes

CANOPY CHARACTERISTICS		
	Dripline Radius (Feet)	Canopy to Grade (Feet)
N	30	5
NE		
E	10	10
SE		
S	5	5
SW		
W	20	5
NW		

CANOPY SPREAD (FEET): 35 X 30

TREE HEALTH	
Wound Wood Development:	☐ Excellent ☒ Average ☐ Poor ☐ None
Foliage Density:	☒ Normal ☐ Sparse
Weak crotches:	☒ No ☐ Yes
Oak Pit Scale:	☒ No ☐ Yes
Mainstem dieback:	☒ No ☐ Yes
Exposed Roots:	☒ No ☐ Yes
Epicormic growth:	☐ No ☒ Yes
Shading Out:	☐ No ☒ Yes
Cavities: ☒ None	☐ Trunk ☐ Branch
Exfoliating Bark:	☒ No ☐ Yes
Water Pocket(s):	☒ No ☐ Yes
Mechanical Damage:	☐ Trunk ☐ Branch ☒ None
Cankers:	☒ No ☐ Yes
Fungus:	☒ No ☐ Yes
Twig/ Branch Dieback:	☐ None ☒ Minor ☐ Moderate ☐Extensive
Vigor:	☐ Excellent ☒Average ☐ Fair ☐ Poor
Borers/ Ants /Termites:	☒ Minor ☐ Moderate ☐Extensive ☐None
Exudations:	☒ No ☐ Yes
Galls:	☒ No ☐ Yes

PROPOSED ACTIONS	
Root Collar Inspection:	☐
Monitor for Progress:	☐
Remove Deadwood/Prune :	☐
Risk Assessment	☐
Support Structure:	☐

IMPACTS & MITIGATIONS
In Impacted Area: ☐ Yes ☐ No
Proposed Land Use:
Impacts:
Mitigations:

Comments & Notes: old fire damage; heavy lean north; shaded out by #107; old tag #18, 38

Photo #5303

[1] Health: A =Outstanding; B = Above Average; C = Average; D = Below Average; F = Dead
[2] Decurrent = Lacking Strong Central Leader. Excurrent = Strong Central Leader.
[3] Aesthetic (compared to standard tree of same species) : A = nearly symmetrical, healthy tree – F = Dead

OAK TREE FIELD DATA WORKSHEET *Property: 500 Baseline Road, La Verne*

Survey Date: 10/6/2017 **Tree Number: 109**

GENERAL CHARACTERISTICS			
Species: ☒ *Q. agrifolia* ☐ *Q. lobata* ☐ *Other (see below)*		**Health Rating**[1]**:** ☐A ☒B- ☒C ☐D ☐F	
		Form: ☐ symmetric ☐ minor asymmetry	
Trunk Count: 1 **Height (ft.):** 20		☒ major asymmetry ☐ stump sprout	
Trunk DBH (in.): 22.5		☐ stag-head	
Percent Canopy Cover: 50		**Crown Class**[2]**:** ☐ Decurrent ☒ Excurrent	
Existing Terrain: ☐ Flat ☒ Slope		**Age Class:** ☐ immature ☐ semi-mature	
Aesthetic Rating[3]**:** ☐ A ☐ B ☒ C ☐ D ☐ F		☒ mature ☐over-mature/senescent	
Overall Grade: ☐ A ☐ B ☒ C+ ☐ D ☐ F		**Heritage Tree:** ☒ No ☐ Yes	

CANOPY CHARACTERISTICS			**TREE HEALTH**	
	Dripline Radius (Feet)	Canopy to Grade (Feet)	**Wound Wood Development:**	☐ Excellent ☒ Average ☐ Poor ☐ None
N	40	5	**Foliage Density:**	☒ Normal ☐ Sparse
NE			**Weak crotches:**	☒ No ☐ Yes
E	10	10	**Oak Pit Scale:**	☒ No ☐ Yes
SE			**Mainstem dieback:**	☒ No ☐ Yes
S	0	0	**Exposed Roots:**	☐ No ☒ Yes
SW			**Epicormic growth:**	☐ No ☒ Yes
W	0	0	**Shading Out:**	☐ No ☒ Yes
NW			**Cavities:** ☐ None	☒ Trunk ☐ Branch
			Exfoliating Bark:	☐ No ☒ Yes
CANOPY SPREAD (FEET): 40 X 10			**Water Pocket(s):**	☒ No ☐ Yes

PROPOSED ACTIONS		**Mechanical Damage:**	☐ Trunk ☐ Branch ☒ None
Root Collar Inspection:	☐	**Cankers:**	☒ No ☐ Yes
Monitor for Progress:	☐	**Fungus:**	☒ No ☐ Yes
Remove Deadwood/Prune :	☐	**Twig/ Branch Dieback:**	☐ None ☒ Minor ☐ Moderate ☐Extensive
Risk Assessment	☐		
Support Structure:	☐		
IMPACTS & MITIGATIONS		**Vigor:**	☐ Excellent ☒Average ☐ Fair ☐ Poor
In Impacted Area: ☐ Yes ☐ No		**Borers/ Ants /Termites:**	☐ Minor ☒ Moderate ☐Extensive ☐None
Proposed Land Use:			
Impacts:		**Exudations:**	☒ No ☐ Yes
Mitigations:		**Galls:**	☒ No ☐ Yes

Comments & Notes: fallen over to north across stream – still alive; exposed base with decay; dead foliage & branches

Photo #5304

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[1] Health: A =Outstanding; B = Above Average; C = Average; D = Below Average; F = Dead
[2] Decurrent = Lacking Strong Central Leader. Excurrent = Strong Central Leader.
[3] Aesthetic (compared to standard tree of same species) : A = nearly symmetrical, healthy tree – F = Dead

OAK TREE FIELD DATA WORKSHEET *Property: 500 Baseline Road, La Verne*

Survey Date: 10/6/2017 **Tree Number: 110**

GENERAL CHARACTERISTICS	
Species: ☒ *Q. agrifolia* ☐ *Q. lobata* ☐ *Other (see below)*	**Health Rating[1]:** ☐A ☒B ☐C ☐D ☐F
	Form: ☐ symmetric ☐ minor asymmetry
Trunk Count: 1 **Height (ft.)**: 50	☒ major asymmetry ☐ stump sprout
Trunk DBH (in.): 20	☐ stag-head
Percent Canopy Cover: 70	**Crown Class[2]:** ☐ Decurrent ☒ Excurrent
Existing Terrain: ☐ Flat ☒ Slope	**Age Class:** ☐ immature ☐ semi-mature
Aesthetic Rating[3]: ☒ A ☐ B ☐ C ☐ D ☐ F	☒ mature ☐over-mature/senescent
Overall Grade: ☐ A ☒ B ☐ C ☐ D ☐ F	**Heritage Tree:** ☒ No ☐ Yes

CANOPY CHARACTERISTICS			**TREE HEALTH**	
	Dripline Radius (Feet)	Canopy to Grade (Feet)	**Wound Wood Development:**	☐ Excellent ☒ Average ☐ Poor ☐ None
N	40	25	**Foliage Density:**	☒ Normal ☐ Sparse
NE			**Weak crotches:**	☐ No ☒ Yes
E	20	30	**Oak Pit Scale:**	☒ No ☐ Yes
SE			**Mainstem dieback:**	☒ No ☐ Yes
S	20	30	**Exposed Roots:**	☒ No ☐ Yes
SW			**Epicormic growth:**	☐ No ☒ Yes
W	15	25	**Shading Out:**	☒ No ☐ Yes
NW			**Cavities:** ☐ None	☐ Trunk ☒ Branch
			Exfoliating Bark:	☒ No ☐ Yes
CANOPY SPREAD (FEET): 60 X 35			**Water Pocket(s):**	☒ No ☐ Yes
PROPOSED ACTIONS			**Mechanical Damage:**	☐ Trunk ☐ Branch ☒ None
Root Collar Inspection:	☐		**Cankers:**	☒ No ☐ Yes
Monitor for Progress:	☐		**Fungus:**	☒ No ☐ Yes
Remove Deadwood/Prune :	☐		**Twig/ Branch Dieback:**	☐ None ☒ Minor ☐ Moderate ☐Extensive
Risk Assessment	☐			
Support Structure:	☐			
IMPACTS & MITIGATIONS			**Vigor:**	☐ Excellent ☒Average ☐ Fair ☐ Poor
In Impacted Area: ☐ Yes ☐ No			**Borers/ Ants /Termites:**	☒ Minor ☐ Moderate ☐Extensive ☐None
Proposed Land Use:				
Impacts:			**Exudations:**	☒ No ☐ Yes
Mitigations:			**Galls:**	☒ No ☐ Yes

Comments & Notes: old tag #10, 28; wooden seat built around trunk at base; nails in trunk; old fire damage; bows northwest; codom @ 15'

Photo #5305

[1] Health: A =Outstanding; B = Above Average; C = Average; D = Below Average; F = Dead
[2] Decurrent = Lacking Strong Central Leader. Excurrent = Strong Central Leader.
[3] Aesthetic (compared to standard tree of same species) : A = nearly symmetrical, healthy tree – F = Dead

OAK TREE FIELD DATA WORKSHEET *Property: 500 Baseline Road, La Verne*

Survey Date: 10/6/2017 **Tree Number: 111**

GENERAL CHARACTERISTICS	
Species: ☒ *Q. agrifolia* ☐ *Q. lobata* ☐ *Other (see below)*	**Health Rating[1]:** ☐A ☐B ☐C ☐D ☒ F
	Form: ☐ symmetric ☐ minor asymmetry
Trunk Count: 1 **Height (ft.):** 10	☒ major asymmetry ☐ stump sprout
Trunk DBH (in.): 12.5	☐ stag-head
Percent Canopy Cover: 0	**Crown Class[2]:** ☐ Decurrent ☒ Excurrent
Existing Terrain: ☒ Flat ☐ Slope	**Age Class:** ☐ immature ☒ semi-mature
Aesthetic Rating[3]: ☐ A ☐ B ☐ C ☐ D ☒ F	☐ mature ☐over-mature/senescent
Overall Grade: ☐ A ☐ B ☐ C ☐ D ☒ F	**Heritage Tree:** ☒ No ☐ Yes

CANOPY CHARACTERISTICS		
	Dripline Radius (Feet)	Canopy to Grade (Feet)
N		
NE		
E		
SE	DEAD	
S		
SW		
W		
NW		
CANOPY SPREAD (FEET):		

TREE HEALTH	
Wound Wood Development:	☐ Excellent ☐ Average ☐ Poor ☐ None
Foliage Density:	☐ Normal ☐ Sparse
Weak crotches:	☐ No ☐ Yes
Oak Pit Scale:	☐ No ☐ Yes
Mainstem dieback:	☐ No ☐ Yes
Exposed Roots:	☐ No ☐ Yes
Epicormic growth:	☐ No ☐ Yes
Shading Out:	☐ No ☐ Yes
Cavities: ☐ None	☐ Trunk ☐ Branch
Exfoliating Bark:	☐ No ☐ Yes
Water Pocket(s):	☐ No ☐ Yes
Mechanical Damage:	☐ Trunk ☐ Branch ☐ None
Cankers:	☐ No ☐ Yes
Fungus:	☐ No ☐ Yes
Twig/ Branch Dieback:	☐ None ☐ Minor ☐ Moderate ☐Extensive
Vigor:	☐ Excellent ☐Average ☐ Fair ☐ Poor
Borers/ Ants /Termites:	☐ Minor ☐ Moderate ☐Extensive ☐None
Exudations:	☐ No ☐ Yes
Galls:	☐ No ☐ Yes

PROPOSED ACTIONS	
Root Collar Inspection:	☐
Monitor for Progress:	☐
Remove Deadwood/Prune :	☐
Risk Assessment	☐
Support Structure:	☐

IMPACTS & MITIGATIONS
In Impacted Area: ☐ Yes ☐ No
Proposed Land Use:
Impacts:
Mitigations:

Comments & Notes: standing dead; old #30; leans south over stream

Photo #5306

[1] Health: A =Outstanding; B = Above Average; C = Average; D = Below Average; F = Dead
[2] Decurrent = Lacking Strong Central Leader. Excurrent = Strong Central Leader.
[3] Aesthetic (compared to standard tree of same species) : A = nearly symmetrical, healthy tree – F = Dead

OAK TREE FIELD DATA WORKSHEET *Property: 500 Baseline Road, La Verne*

Survey Date: 10/6/2017 **Tree Number: 112**

GENERAL CHARACTERISTICS				
Species: ☒ *Q. agrifolia* ☐ *Q. lobata* ☐ *Other (see below)*			**Health Rating[1]:** ☐A ☒B- ☐C ☐D ☐F	
			Form: ☐ symmetric ☒ minor asymmetry	
Trunk Count: 1 **Height (ft.):** 35			☐ major asymmetry ☐ stump sprout	
Trunk DBH (in.): 19			☐ stag-head	
Percent Canopy Cover: 75			**Crown Class[2]:** ☒ Decurrent ☐ Excurrent	
Existing Terrain: ☐ Flat ☒ Slope			**Age Class:** ☐ immature ☒ semi-mature	
Aesthetic Rating[3]: ☐ A ☒ B- ☐ C ☐ D ☐ F			☐ mature ☐ over-mature/senescent	
Overall Grade: ☐ A ☒ B- ☐ C ☐ D ☐ F			**Heritage Tree:** ☒ No ☐ Yes	
CANOPY CHARACTERISTICS			**TREE HEALTH**	
	Dripline Radius (Feet)	Canopy to Grade (Feet)	**Wound Wood Development:**	☐ Excellent ☒ Average ☐ Poor ☐ None
N	10	15	**Foliage Density:**	☒ Normal ☐ Sparse
NE			**Weak crotches:**	☐ No ☒ Yes
E	20	10	**Oak Pit Scale:**	☒ No ☐ Yes
SE			**Mainstem dieback:**	☒ No ☐ Yes
S	10	10	**Exposed Roots:**	☒ No ☐ Yes
SW			**Epicormic growth:**	☐ No ☒ Yes
W	25	10	**Shading Out:**	☒ No ☐ Yes
NW			**Cavities:** ☐ None	☒ Trunk ☐ Branch
			Exfoliating Bark:	☒ No ☐ Yes
CANOPY SPREAD (FEET): 20 X 45			**Water Pocket(s):**	☒ No ☐ Yes
PROPOSED ACTIONS			**Mechanical Damage:**	☐ Trunk ☐ Branch ☒ None
Root Collar Inspection:	☐		**Cankers:**	☒ No ☐ Yes
Monitor for Progress:	☐		**Fungus:**	☒ No ☐ Yes
Remove Deadwood/Prune :	☐		**Twig/ Branch Dieback:**	☐ None ☐ Minor ☒ Moderate ☐ Extensive
Risk Assessment	☐			
Support Structure:	☐			
IMPACTS & MITIGATIONS			**Vigor:**	☐ Excellent ☒ Average ☐ Fair ☐ Poor
In Impacted Area: ☐ Yes ☐ No			**Borers/ Ants /Termites:**	☒ Minor ☐ Moderate ☐ Extensive ☐ None
Proposed Land Use:				
Impacts:			**Exudations:**	☒ No ☐ Yes
Mitigations:			**Galls:**	☒ No ☐ Yes

Comments & Notes: codom @ old tear @ 5'; multiple branch attachments; old tag #27

Photo #5307

[1] Health: A =Outstanding; B = Above Average; C = Average; D = Below Average; F = Dead
[2] Decurrent = Lacking Strong Central Leader. Excurrent = Strong Central Leader.
[3] Aesthetic (compared to standard tree of same species) : A = nearly symmetrical, healthy tree – F = Dead

OAK TREE FIELD DATA WORKSHEET *Property: 500 Baseline Road, La Verne*

Survey Date: 10/6/2017 **Tree Number: 113**

GENERAL CHARACTERISTICS			
Species: ☐ *Q. agrifolia* ☐ *Q. lobata* ☒ *Other (see below)*		**Health Rating**[1]**:** ☐A ☒B ☐C ☐D ☐F	
		Form: ☐ symmetric ☐ minor asymmetry	
Trunk Count: 1 **Height (ft.):** 50		☒ major asymmetry ☐ stump sprout	
Trunk DBH (in.): 25		☐ stag-head	
Percent Canopy Cover: 75		**Crown Class**[2]**:** ☐ Decurrent ☒ Excurrent	
Existing Terrain: ☐ Flat ☒ Slope		**Age Class:** ☐ immature ☐ semi-mature	
Aesthetic Rating[3]**:** ☐ A ☒ B ☐ C ☐ D ☐ F		☒ mature ☐over-mature/senescent	
Overall Grade: ☐ A ☒ B ☐ C ☐ D ☐ F		**Heritage Tree:** ☒ No ☐ Yes	

CANOPY CHARACTERISTICS			**TREE HEALTH**	
	Dripline Radius (Feet)	Canopy to Grade (Feet)	**Wound Wood Development:**	☐ Excellent ☒ Average ☐ Poor ☐ None
N	25	20	**Foliage Density:**	☒ Normal ☐ Sparse
NE			**Weak crotches:**	☒ No ☐ Yes
E	5	15	**Oak Pit Scale:**	☒ No ☐ Yes
SE			**Mainstem dieback:**	☒ No ☐ Yes
S	30	30	**Exposed Roots:**	☒ No ☐ Yes
SW			**Epicormic growth:**	☐ No ☒ Yes
W	25	35	**Shading Out:**	☐ No ☒ Yes
NW			**Cavities:** ☐ None	☐ Trunk ☒ Branch
			Exfoliating Bark:	☒ No ☐ Yes
CANOPY SPREAD (FEET): 55 X 30			**Water Pocket(s):**	☒ No ☐ Yes

PROPOSED ACTIONS		**Mechanical Damage:**	☐ Trunk ☐ Branch ☒ None
Root Collar Inspection:	☐	**Cankers:**	☒ No ☐ Yes
Monitor for Progress:	☐	**Fungus:**	☒ No ☐ Yes
Remove Deadwood/Prune :	☐	**Twig/ Branch Dieback:**	☐ None ☒ Minor ☐ Moderate ☐Extensive
Risk Assessment	☐		
Support Structure:	☐		
IMPACTS & MITIGATIONS		**Vigor:**	☐ Excellent ☒Average ☐ Fair ☐ Poor
In Impacted Area: ☐ Yes ☐ No		**Borers/ Ants /Termites:**	☒ Minor ☐ Moderate ☐Extensive ☐None
Proposed Land Use:			
Impacts:		**Exudations:**	☒ No ☐ Yes
Mitigations:		**Galls:**	☒ No ☐ Yes

Comments & Notes: old tag #8, 25; old fire damage; leans slightly south; codom @ 15'

Photo #5308

[1] Health: A =Outstanding; B = Above Average; C = Average; D = Below Average; F = Dead
[2] Decurrent = Lacking Strong Central Leader. Excurrent = Strong Central Leader.
[3] Aesthetic (compared to standard tree of same species) : A = nearly symmetrical, healthy tree – F = Dead

OAK TREE FIELD DATA WORKSHEET *Property: 500 Baseline Road, La Verne*

Survey Date: 10/6/2017 **Tree Number: 114**

GENERAL CHARACTERISTICS			
Species: ☒ *Q. agrifolia* ☐ *Q. lobata* ☐ *Other (see below)*		**Health Rating**[1]**:** ☐A ☐B ☐C ☐D ☒ F	
		Form: ☐ symmetric ☐ minor asymmetry	
Trunk Count: 1 **Height (ft.)**: 30		☒ major asymmetry ☐ stump sprout	
Trunk DBH (in.): 10		☐ stag-head	
Percent Canopy Cover: 0		**Crown Class**[2]**:** ☐ Decurrent ☒ Excurrent	
Existing Terrain: ☒ Flat ☐ Slope		**Age Class:** ☒ immature ☐ semi-mature	
Aesthetic Rating[3]**:** ☐ A ☐ B ☐ C ☐ D ☒ F		☐ mature ☐ over-mature/senescent	
Overall Grade: ☐ A ☐ B ☐ C ☐ D ☒ F		**Heritage Tree:** ☒ No ☐ Yes	
CANOPY CHARACTERISTICS		**TREE HEALTH**	
	Dripline Radius (Feet)	Canopy to Grade (Feet)	**Wound Wood Development:** ☐ Excellent ☐ Average ☐ Poor ☐ None
N			**Foliage Density:** ☐ Normal ☐ Sparse
NE			**Weak crotches:** ☐ No ☐ Yes
E			**Oak Pit Scale:** ☐ No ☐ Yes
SE	DEAD		**Mainstem dieback:** ☐ No ☐ Yes
S			**Exposed Roots:** ☐ No ☐ Yes
SW			**Epicormic growth:** ☐ No ☐ Yes
W			**Shading Out:** ☐ No ☐ Yes
NW			**Cavities:** ☐ None ☐ Trunk ☐ Branch
			Exfoliating Bark: ☐ No ☐ Yes
CANOPY SPREAD (FEET):			**Water Pocket(s):** ☐ No ☐ Yes
PROPOSED ACTIONS			**Mechanical Damage:** ☐ Trunk ☐ Branch ☐ None
Root Collar Inspection:	☐		**Cankers:** ☐ No ☐ Yes
Monitor for Progress:	☐		**Fungus:** ☐ No ☐ Yes
Remove Deadwood/Prune :	☐		**Twig/ Branch Dieback:** ☐ None ☐ Minor ☐ Moderate ☐ Extensive
Risk Assessment	☐		
Support Structure:	☐		
IMPACTS & MITIGATIONS			**Vigor:** ☐ Excellent ☐ Average ☐ Fair ☐ Poor
In Impacted Area: ☐ Yes ☐ No			**Borers/ Ants /Termites:** ☐ Minor ☐ Moderate ☐ Extensive ☐ None
Proposed Land Use:			
Impacts:			**Exudations:** ☐ No ☐ Yes
Mitigations:			**Galls:** ☐ No ☐ Yes

Comments & Notes: standing dead; old #7, 24; leans southeast

Photo #5309

[1] Health: A =Outstanding; B = Above Average; C = Average; D = Below Average; F = Dead
[2] Decurrent = Lacking Strong Central Leader. Excurrent = Strong Central Leader.
[3] Aesthetic (compared to standard tree of same species) : A = nearly symmetrical, healthy tree – F = Dead

OAK TREE FIELD DATA WORKSHEET *Property: 500 Baseline Road, La Verne*

Survey Date: 10/6/2017 **Tree Number: 115**

GENERAL CHARACTERISTICS	
Species: ☒ *Q. agrifolia* ☐ *Q. lobata* ☐ *Other (see below)*	**Health Rating**[1]**:** ☐A ☒B ☐C ☐D ☐F
	Form: ☐ symmetric ☒ minor asymmetry
Trunk Count: 1 **Height (ft.)**: 50	☒ major asymmetry ☐ stump sprout
Trunk DBH (in.): 21	☐ stag-head
Percent Canopy Cover: 80	**Crown Class**[2]**:** ☐ Decurrent ☒ Excurrent
Existing Terrain: ☐ Flat ☒ Slope	**Age Class:** ☐ immature ☒ semi-mature
Aesthetic Rating[3]**:** ☐ A ☒ B ☐ C ☐ D ☐ F	☐ mature ☐over-mature/senescent
Overall Grade: ☐ A ☒ B ☐ C ☐ D ☐ F	**Heritage Tree:** ☒ No ☐ Yes

CANOPY CHARACTERISTICS			**TREE HEALTH**	
	Dripline Radius (Feet)	Canopy to Grade (Feet)	**Wound Wood Development:**	☐ Excellent ☒ Average ☐ Poor ☐ None
N	30	20	**Foliage Density:**	☒ Normal ☐ Sparse
NE			**Weak crotches:**	☐ No ☒ Yes
E	0	0	**Oak Pit Scale:**	☒ No ☐ Yes
SE			**Mainstem dieback:**	☒ No ☐ Yes
S	15	15	**Exposed Roots:**	☒ No ☐ Yes
SW			**Epicormic growth:**	☐ No ☒ Yes
W	25	30	**Shading Out:**	☒ No ☐ Yes
NW			**Cavities:** ☐ None	☐ Trunk ☒ Branch
			Exfoliating Bark:	☒ No ☐ Yes
CANOPY SPREAD (FEET): 45 X 25			**Water Pocket(s):**	☒ No ☐ Yes

PROPOSED ACTIONS		**Mechanical Damage:**	☒ Trunk ☐ Branch ☐ None
Root Collar Inspection:	☐	**Cankers:**	☒ No ☐ Yes
Monitor for Progress:	☐	**Fungus:**	☒ No ☐ Yes
Remove Deadwood/Prune :	☐	**Twig/ Branch Dieback:**	☐ None ☒ Minor ☐ Moderate ☐Extensive
Risk Assessment	☐		
Support Structure:	☐		
IMPACTS & MITIGATIONS		**Vigor:**	☐ Excellent ☒Average ☐ Fair ☐ Poor
In Impacted Area: ☐ Yes ☐ No		**Borers/ Ants /Termites:**	☒ Minor ☐ Moderate ☐Extensive ☐None
Proposed Land Use:			
Impacts:		**Exudations:**	☒ No ☐ Yes
Mitigations:		**Galls:**	☒ No ☐ Yes

Comments & Notes: old fire damage; nails in trunk; old #6, 23

Photo #5310

[1] Health: A =Outstanding; B = Above Average; C = Average; D = Below Average; F = Dead
[2] Decurrent = Lacking Strong Central Leader. Excurrent = Strong Central Leader.
[3] Aesthetic (compared to standard tree of same species) : A = nearly symmetrical, healthy tree – F = Dead

OAK TREE FIELD DATA WORKSHEET *Property: 500 Baseline Road, La Verne*

Survey Date: 10/6/2017 **Tree Number: 116**

GENERAL CHARACTERISTICS	
Species: ☒ *Q. agrifolia* ☐ *Q. lobata* ☐ *Other (see below)*	**Health Rating[1]:** ☐A ☐B ☒C ☐D ☐F
	Form: ☒ symmetric ☐ minor asymmetry
Trunk Count: 1 **Height (ft.):** 35	☐ major asymmetry ☐ stump sprout
Trunk DBH (in.): 20	☐ stag-head
Percent Canopy Cover: 70	**Crown Class[2]:** ☐ Decurrent ☒ Excurrent
Existing Terrain: ☐ Flat ☒ Slope	**Age Class:** ☐ immature ☒ semi-mature
Aesthetic Rating[3]: ☐ A ☐ B ☒ C ☐ D ☐ F	☐ mature ☐over-mature/senescent
Overall Grade: ☐ A ☐ B ☒ C ☐ D ☐ F	**Heritage Tree:** ☒ No ☐ Yes

CANOPY CHARACTERISTICS			**TREE HEALTH**	
	Dripline Radius (Feet)	Canopy to Grade (Feet)	**Wound Wood Development:**	☐ Excellent ☒ Average ☐ Poor ☐ None
N	25	20	**Foliage Density:**	☐ Normal ☒ Sparse
NE			**Weak crotches:**	☐ No ☒ Yes
E	10	20	**Oak Pit Scale:**	☒ No ☐ Yes
SE			**Mainstem dieback:**	☐ No ☒ Yes
S	10	20	**Exposed Roots:**	☐ No ☒ Yes
SW			**Epicormic growth:**	☐ No ☒ Yes
W	25	10	**Shading Out:**	☐ No ☒ Yes
NW			**Cavities:** ☐ None	☐ Trunk ☒ Branch
			Exfoliating Bark:	☒ No ☐ Yes
CANOPY SPREAD (FEET): 35 X 35			**Water Pocket(s):**	☒ No ☐ Yes

PROPOSED ACTIONS			
		Mechanical Damage:	☒ Trunk ☐ Branch ☐ None
Root Collar Inspection:	☐	**Cankers:**	☒ No ☐ Yes
Monitor for Progress:	☐	**Fungus:**	☒ No ☐ Yes
Remove Deadwood/Prune :	☐	**Twig/ Branch Dieback:**	☐ None ☐ Minor ☒ Moderate ☐Extensive
Risk Assessment	☐		
Support Structure:	☐		

IMPACTS & MITIGATIONS		
	Vigor:	☐ Excellent ☐Average ☒ Fair ☐ Poor
In Impacted Area: ☐ Yes ☐ No	**Borers/ Ants /Termites:**	☐ Minor ☒ Moderate ☐Extensive ☐None
Proposed Land Use:		
Impacts:	**Exudations:**	☒ No ☐ Yes
Mitigations:	**Galls:**	☒ No ☐ Yes

Comments & Notes: old tag #5, 19; exposed root collar on south (erosion); old fire damage; codom at 8'; cavities on branches at old fire scars; nails in trunk

Photo #5311

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[1] Health: A =Outstanding; B = Above Average; C = Average; D = Below Average; F = Dead
[2] Decurrent = Lacking Strong Central Leader. Excurrent = Strong Central Leader.
[3] Aesthetic (compared to standard tree of same species) : A = nearly symmetrical, healthy tree – F = Dead

OAK TREE FIELD DATA WORKSHEET *Property: 500 Baseline Road, La Verne*

Survey Date: 10/6/2017 **Tree Number: 117**

GENERAL CHARACTERISTICS	
Species: ☐*Q. agrifolia* ☐ *Q. lobata* ☒ *Other (see below)*	**Health Rating**[1]**:** ☐A ☐B ☐C ☐D ☒ F
Platanus racemosa (California sycamore)	**Form:** ☐ symmetric ☐ minor asymmetry
Trunk Count: 3 **Height (ft.)**: 35	☒ major asymmetry ☐ stump sprout
Trunk DBH (in.): 5, 7, 8	☐ stag-head
Percent Canopy Cover: 0	**Crown Class**[2]**:** ☒ Decurrent ☐ Excurrent
Existing Terrain: ☐ Flat ☒ Slope	**Age Class:** ☐ immature ☒ semi-mature
Aesthetic Rating[3]**:** ☐ A ☐ B ☐ C ☐ D ☒ F	☐ mature ☐over-mature/senescent
Overall Grade: ☐ A ☐ B ☐ C ☐ D ☒ F	**Heritage Tree:** ☒ No ☐ Yes

CANOPY CHARACTERISTICS		
	Dripline Radius (Feet)	Canopy to Grade (Feet)
N		
NE		
E		
SE	DEAD	
S		
SW		
W		
NW		

CANOPY SPREAD (FEET):

TREE HEALTH	
Wound Wood Development:	☐ Excellent ☐ Average ☐ Poor ☐ None
Foliage Density:	☐ Normal ☐ Sparse
Weak crotches:	☐ No ☐ Yes
Oak Pit Scale:	☐ No ☐ Yes
Mainstem dieback:	☐ No ☐ Yes
Exposed Roots:	☐ No ☐ Yes
Epicormic growth:	☐ No ☐ Yes
Shading Out:	☐ No ☐ Yes
Cavities: ☐ None	☐ Trunk ☐ Branch
Exfoliating Bark:	☐ No ☐ Yes
Water Pocket(s):	☐ No ☐ Yes
Mechanical Damage:	☐ Trunk ☐ Branch ☐ None
Cankers:	☐ No ☐ Yes
Fungus:	☐ No ☐ Yes
Twig/ Branch Dieback:	☐ None ☐ Minor ☐ Moderate ☐Extensive
Vigor:	☐ Excellent ☐Average ☐ Fair ☐ Poor
Borers/ Ants /Termites:	☐ Minor ☐ Moderate ☐Extensive ☐None
Exudations:	☐ No ☐ Yes
Galls:	☐ No ☐ Yes

PROPOSED ACTIONS	
Root Collar Inspection:	☐
Monitor for Progress:	☐
Remove Deadwood/Prune :	☐
Risk Assessment	☐
Support Structure:	☐

IMPACTS & MITIGATIONS
In Impacted Area: ☐ Yes ☐ No
Proposed Land Use:
Impacts:
Mitigations:

Comments & Notes: standing dead; old #22; topped

Photo #5312

[1] Health: A =Outstanding; B = Above Average; C = Average; D = Below Average; F = Dead
[2] Decurrent = Lacking Strong Central Leader. Excurrent = Strong Central Leader.
[3] Aesthetic (compared to standard tree of same species) : A = nearly symmetrical, healthy tree – F = Dead

OAK TREE FIELD DATA WORKSHEET *Property: 500 Baseline Road, La Verne*

Survey Date: 10/6/2017 **Tree Number: 118**

GENERAL CHARACTERISTICS	
Species: ☐ *Q. agrifolia* ☐ *Q. lobata* ☒ *Other (see below)*	**Health Rating**[1]**:** ☐A ☐B ☐C ☐D ☒ F
Platanus racemosa (California sycamore)	**Form:** ☐ symmetric ☐ minor asymmetry
Trunk Count: 1 **Height (ft.):** 35	☒ major asymmetry ☐ stump sprout
Trunk DBH (in.): 14	☐ stag-head
Percent Canopy Cover: 0	**Crown Class**[2]**:** ☐ Decurrent ☒ Excurrent
Existing Terrain: ☐ Flat ☒ Slope	**Age Class:** ☐ immature ☒ semi-mature
Aesthetic Rating[3]**:** ☐ A ☐ B ☐ C ☐ D ☒ F	☐ mature ☐ over-mature/senescent
Overall Grade: ☐ A ☐ B ☐ C ☐ D ☒ F	**Heritage Tree:** ☒ No ☐ Yes

CANOPY CHARACTERISTICS		
	Dripline Radius (Feet)	Canopy to Grade (Feet)
N		
NE		
E		
SE	DEAD	
S		
SW		
W		
NW		
CANOPY SPREAD (FEET):		

TREE HEALTH	
Wound Wood Development:	☐ Excellent ☐ Average ☐ Poor ☐ None
Foliage Density:	☐ Normal ☐ Sparse
Weak crotches:	☐ No ☐ Yes
Oak Pit Scale:	☐ No ☐ Yes
Mainstem dieback:	☐ No ☐ Yes
Exposed Roots:	☐ No ☐ Yes
Epicormic growth:	☐ No ☐ Yes
Shading Out:	☐ No ☐ Yes
Cavities: ☐ None	☐ Trunk ☐ Branch
Exfoliating Bark:	☐ No ☐ Yes
Water Pocket(s):	☐ No ☐ Yes
Mechanical Damage:	☐ Trunk ☐ Branch ☐ None
Cankers:	☐ No ☐ Yes
Fungus:	☐ No ☐ Yes
Twig/ Branch Dieback:	☐ None ☐ Minor ☐ Moderate ☐ Extensive
Vigor:	☐ Excellent ☐ Average ☐ Fair ☐ Poor
Borers/ Ants /Termites:	☐ Minor ☐ Moderate ☐ Extensive ☐ None
Exudations:	☐ No ☐ Yes
Galls:	☐ No ☐ Yes

PROPOSED ACTIONS	
Root Collar Inspection:	☐
Monitor for Progress:	☐
Remove Deadwood/Prune :	☐
Risk Assessment	☐
Support Structure:	☐

IMPACTS & MITIGATIONS
In Impacted Area: ☐ Yes ☐ No
Proposed Land Use:
Impacts:
Mitigations:

Comments & Notes: standing dead; old #18; leans north; large cavity at base; old fire damage

Photo #5313

[1] Health: A =Outstanding; B = Above Average; C = Average; D = Below Average; F = Dead
[2] Decurrent = Lacking Strong Central Leader. Excurrent = Strong Central Leader.
[3] Aesthetic (compared to standard tree of same species) : A = nearly symmetrical, healthy tree – F = Dead

OAK TREE FIELD DATA WORKSHEET *Property: 500 Baseline Road, La Verne*

Survey Date: 10/6/2017 **Tree Number: 119**

GENERAL CHARACTERISTICS	
Species: ☒*Q. agrifolia* ☐ *Q. lobata* ☐ *Other (see below)*	**Health Rating[1]:** ☐A ☒B- ☐C ☐D ☐ F
	Form: ☐ symmetric ☐ minor asymmetry
Trunk Count: 1 **Height (ft.)**: 25	☒ major asymmetry ☐ stump sprout
Trunk DBH (in.): 14	☐ stag-head
Percent Canopy Cover: 75	**Crown Class[2]:** ☒ Decurrent ☐ Excurrent
Existing Terrain: ☐ Flat ☒ Slope	**Age Class:** ☐ immature ☒ semi-mature
Aesthetic Rating[3]: ☐ A ☒ B- ☐ C ☐ D ☐ F	☐ mature ☐over-mature/senescent
Overall Grade: ☐ A ☒ B- ☐ C ☐ D ☐ F	**Heritage Tree:** ☒ No ☐ Yes

CANOPY CHARACTERISTICS		
	Dripline Radius (Feet)	Canopy to Grade (Feet)
N	18	2
NE		
E	0	0
SE		
S	10	10
SW		
W	30	2
NW		

CANOPY SPREAD (FEET): 6 X 6

TREE HEALTH	
Wound Wood Development:	☐ Excellent ☒ Average ☐ Poor ☐ None
Foliage Density:	☒ Normal ☐ Sparse
Weak crotches:	☐ No ☒ Yes
Oak Pit Scale:	☒ No ☐ Yes
Mainstem dieback:	☒ No ☐ Yes
Exposed Roots:	☒ No ☐ Yes
Epicormic growth:	☐ No ☒ Yes
Shading Out:	☐ No ☒ Yes
Cavities: ☐ None	☐ Trunk ☒ Branch
Exfoliating Bark:	☒ No ☐ Yes
Water Pocket(s):	☒ No ☐ Yes
Mechanical Damage:	☐ Trunk ☐ Branch ☒ None
Cankers:	☒ No ☐ Yes
Fungus:	☒ No ☐ Yes
Twig/ Branch Dieback:	☐ None ☐ Minor ☒ Moderate ☐Extensive
Vigor:	☐ Excellent ☐Average ☒ Fair ☐ Poor
Borers/ Ants /Termites:	☒ Minor ☐ Moderate ☐Extensive ☐None
Exudations:	☒ No ☐ Yes
Galls:	☒ No ☐ Yes

PROPOSED ACTIONS	
Root Collar Inspection:	☐
Monitor for Progress:	☐
Remove Deadwood/Prune :	☐
Risk Assessment	☐
Support Structure:	☐

IMPACTS & MITIGATIONS
In Impacted Area: ☐ Yes ☐ No
Proposed Land Use:
Impacts:
Mitigations:

Comments & Notes: heavy lean west; old fire damage; old tag #20

Photo #5314

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[1] Health: A =Outstanding; B = Above Average; C = Average; D = Below Average; F = Dead
[2] Decurrent = Lacking Strong Central Leader. Excurrent = Strong Central Leader.
[3] Aesthetic (compared to standard tree of same species) : A = nearly symmetrical, healthy tree – F = Dead

OAK TREE FIELD DATA WORKSHEET *Property: 500 Baseline Road, La Verne*

Survey Date: 9/5/2017 **Tree Number: OS-120**

GENERAL CHARACTERISTICS	
Species: ☒ *Q. agrifolia* ☐ *Q. lobata* ☐ *Other (see below)*	**Health Rating**[1]**:** ☐A ☒B ☐C ☐D ☐F
	Form: ☐ symmetric ☒ minor asymmetry
Trunk Count: 1 **Height (ft.)**: 45	☐ major asymmetry ☐ stump sprout
Trunk DBH (in.): 29	☐ stag-head
Percent Canopy Cover: 75	**Crown Class**[2]**:** ☐ Decurrent ☒ Excurrent
Existing Terrain: ☐ Flat ☒ Slope	**Age Class:** ☐ immature ☐ semi-mature
Aesthetic Rating[3]**:** ☒ A ☐ B ☐ C ☐ D ☐ F	☒ mature ☐over-mature/senescent
Overall Grade: ☐ A ☒ B+ ☐ C ☐ D ☐ F	**Heritage Tree:** ☒ No ☐ Yes

CANOPY CHARACTERISTICS

	Dripline Radius (Feet)	Canopy to Grade (Feet)
N	37	15
NE		
E	25	20
SE		
S	33	25
SW		
W	32	20
NW		

CANOPY SPREAD (FEET): 70 X 57

PROPOSED ACTIONS

Root Collar Inspection:	☐
Monitor for Progress:	☐
Remove Deadwood/Prune :	☐
Risk Assessment	☐
Support Structure:	☐

IMPACTS & MITIGATIONS

In Impacted Area:	☐ Yes ☐ No
Proposed Land Use:	
Impacts:	
Mitigations:	

TREE HEALTH

Wound Wood Development:	☐ Excellent ☒ Average ☐ Poor ☐ None
Foliage Density:	☒ Normal ☐ Sparse
Weak crotches:	☒ No ☐ Yes
Oak Pit Scale:	☒ No ☐ Yes
Mainstem dieback:	☒ No ☐ Yes
Exposed Roots:	☐ No ☒ Yes
Epicormic growth:	☐ No ☒ Yes
Shading Out:	☒ No ☐ Yes
Cavities: ☒ None	☐ Trunk ☐ Branch
Exfoliating Bark:	☒ No ☐ Yes
Water Pocket(s):	☒ No ☐ Yes
Mechanical Damage:	☐ Trunk ☒ Branch ☐ None
Cankers:	☒ No ☐ Yes
Fungus:	☒ No ☐ Yes
Twig/ Branch Dieback:	☐ None ☒ Minor ☐ Moderate ☐Extensive
Vigor:	☐ Excellent ☒Average ☐ Fair ☐ Poor
Borers/ Ants /Termites:	☐ Minor ☒ Moderate ☐Extensive ☐None
Exudations:	☒ No ☐ Yes
Galls:	☒ No ☐ Yes

Comments & Notes: woodpecker holes; significant erosion of slope on south side of trunk (roots exposed); surrounded by poison oak

Photo #4942-43

[1] Health: A =Outstanding; B = Above Average; C = Average; D = Below Average; F = Dead
[2] Decurrent = Lacking Strong Central Leader. Excurrent = Strong Central Leader.
[3] Aesthetic (compared to standard tree of same species) : A = nearly symmetrical, healthy tree – F = Dead

ARBORIST OF RECORD AGREEMENT

I, ________________________________, agree to retain Carlberg Associates as the arborist of record (AOR) for the project at 500 Baseline Road, La Verne, California (Vesting Tentative Tract Map No. 082001).

In signing this agreement, it is understood that:
1. The applicant must abide by all requirements set forth by Chapter 18.78 of the City of La Verne Municipal Code.
2. The AOR will be notified when the protective fence is installed and at least seventy-two hours before:
- any demolition, digging, excavating, trenching, or building within the *Tree Safety Zone*[4] (TSZ) of the protected trees commences;
- any pruning of any protected trees' canopies or roots;
- commencing of any other potentially injurious activity within the TSZ of any protected tree;

This is based on the City's conditions that all work within the TSZ be directed by the AOR and is intended to allow for advanced scheduling.

3. It is the AOR's responsibility to notify the City of any unsatisfactory conditions or of any non-compliance with the Ordinance. The applicant agrees that the AOR's responsibilities may also include periodic unannounced site visits to monitor compliance. The applicant understands that if the AOR finds items that are in non-compliance, the City may stop their project until such conditions are corrected.

4. A visit by the AOR will be triggered by each of the following activities:

- completion of protective fencing (AOR must approve)
- demolition of structures
- grading
- excavation within the *Tree Safety Zone* of any protected tree
- canopy pruning or limb removal
- root pruning

5. The client agrees to the following landscape conditions:

- That no lawn or new groundcover requiring frequent irrigation is planted within the *Tree Safety Zone* of any protected tree.
- That irrigation adjacent to native oaks is deep and infrequent.
- That no wetting of the trunk or root crown area of any significant tree occurs during irrigation.

[4] The ***Tree Safety Zone*** is the circular area surrounding the trunk with a radius fifteen times the trunk diameter (at 4.5 feet above grade) or the area between the dripline and the trunk, whichever is greater.

The signature below by the client/applicant indicates that they fully understand and agree to full comply with all conditions and requirements of this Arborist of Record agreement.

Client's signature Date

Name (printed) Representing

HEALTH AND STRUCTURE GRADE DEFINITIONS

Health and structure ratings of the trees are based on the archetype tree of the same species through a subjective evaluation of its physiological health, aesthetic quality, and structural integrity.

Overall physiological condition (health) and structural condition were rated A-F:

<u>Health</u>

A. Outstanding – Exceptional trees of good growth form and vigor for their age class; exhibiting very good to excellent health as evidenced by normal to exceptional shoot growth during current season, good bud development and leaf color, lack of leaf, twig or branch dieback throughout the crown, and the absence of decay, bleeding, or cankers. Common leaf and/or twig pests may be noted at very minor levels.
B. Above average – Good to very good trees that exhibit minor necrotic or physiological symptoms of stress and/or disease; shoot growth is less than reasonably expected, leaf color is less than optimal in some areas, the crown may be thinning, minor levels of leaf, twig, and branch dieback may be present, and minor areas of decay, bleeding, or cankers may be manifesting. Minor amounts of epicormic growth may be present. Minor amounts of fire damage or mechanical damage may be present. Still healthy, but with moderately diminished vigor and vitality. No significant decline noted.
C. Average – Average, moderately good trees whose growth habit and physiological or fire-induced symptoms indicate an equal chance to either decline or continue with good health into the near future. Most of these trees exhibit moderate to significant small deadwood in outer crown areas, decreased shoot growth and diminished leaf color and mass. Some stem and branch dieback is usually present and epicormic growth may be moderate to extensive. Cavities, pockets of decay, relatively significant fire damage, bark exfoliation, or cracks may be present. Moderate to significant amounts of insect or disease symptoms may be present; the tree may be shaded or crowded in such a way that it is expected to negatively impact the lifespan of the tree. Tree may be in early decline.
D. Below Average/Poor - trees whose growth habit and physiological or fire-induced symptoms indicate significant, irreversible decline. Most of these trees exhibit significant dieback of wood in the crown, possibly accompanied by significant epicormic sprouting. Shoot growth and leaf color and mass is either significantly diminished or nonexistent throughout the crown. Cavities, pockets of decay, significant fire damage, bark exfoliation, and/or cracks may be present. Significant amounts of insect or disease symptoms may be present; the tree may be shaded or crowded in such a way that it has negatively impacted the lifespan of the tree. Tree appears to be in irreversible decline.
F. Dead or in spiral of decline – this tree exhibits very little to no signs of life.

<u>Structure</u>

A. Outstanding – Trees with outstanding structure for their species exhibit trunk and branch arrangement and orientation that result in a sturdy form or architecture that resists failure under normal circumstances. The spacing, orientation, and size of the branches relative to the trunk are quintessential for the species and free from defects. No outward sign of decay or pathological disease is present. Some trees exhibit naturally inherent branching defects, like multiple, narrow points of attachment from one point on the trunk, which would preclude them from achieving an "A" grade.
B. Above average - Trees with good to very good structure for their species. They exhibit trunk and branch arrangement and orientation that result in a relatively sturdy form or architecture that resists failure under normal circumstances, but may have some mechanical damage, over-pruning, or other minor structural

defects. The spacing, orientation, and size of the branches relative to the trunk are still in the normal range for the species, but they exhibit a minor degree of defects. Minor, sub-critical levels of decay or pathological disease may be present, but the degree of damage is not yet structurally significant. Trees that exhibit naturally inherent branching defects, like multiple, narrow points of attachment from one point on the trunk, would generally fall in to this category. A small percentage of the canopy may be shaded or crowded, but not in such a way that it is expected to negatively impact the structural integrity or lifespan of the tree.

C. Average - Trees with moderately good structure for their species, but with obvious defects. They exhibit trunk and branch arrangement and orientation that result in a less than sturdy form or architecture, which reduces their resistance to failure under normal circumstances. Moderate levels of mechanical damage, over-pruning, or other structural defects may be present. The spacing, orientation, and size of some of the branches relative to the trunk are not in the normal range for the species. Moderate to significant levels of decay or pathological disease may be present that increase the likelihood of structural instability. Influences such as an excessive trunk lean, slope erosion, root pruning, or other growth-inhibiting factors may be present. A moderate to significant percentage of the canopy may be shaded or crowded in such a way that it is expected to negatively impact the structural integrity or lifespan of the tree. Risk of full or partial failure in the near future appears to be moderately elevated.

D. Well Below Average/Poor - Trees poor structure for their species and with obvious defects. They exhibit trunk and branch arrangement and orientation that result in a significantly less than sturdy form or architecture, significantly reducing their resistance to failure under normal circumstances. Significant levels of mechanical damage, over-pruning, or other structural defects may be present. The spacing, orientation, and size of many of the branches relative to the trunk are not in the normal range for the species. Significant levels of decay or pathological disease may be present that increase the likelihood of structural instability. Influences such as an excessive trunk lean, slope erosion, root pruning, or other growth-inhibiting factors may be present. A significant percentage of the canopy may be shaded or crowded in such a way that it is expected to negatively impact the structural integrity or lifespan of the tree. Risk of full or partial failure in the near future appears to be advanced.

F. Severely Compromised – trees with very poor structure and numerous or severe defects due to growing conditions, historical or recent pruning, mechanical damage, history of limb or trunk failures, advanced and irreparable decay, disease, or severe fire damage. Trees with this rating are in severe, irreparable decline, or are barely alive. Risk of full or partial failures in the near future may be severe.

ARBORIST DISCLOSURE STATEMENT

Arborists are tree specialists who use their education, knowledge, training and experience to examine trees, recommend measures to enhance the beauty and health of trees, and attempt to reduce the risk of living near trees. Clients may choose to accept or disregard the recommendations of the arborist, or to seek additional advice.

Arborists cannot detect every condition that could possibly lead to the structural failure of a tree. Trees are living organisms that fail in ways we do not fully understand. Conditions are often hidden within trees and below ground. Arborists cannot guarantee that a tree will be healthy or safe under all circumstances, or for a specified period of time. Likewise, remedial treatments, like any medicine, cannot be guaranteed.

Treatment, pruning and removal of trees may involve considerations beyond the scope of the arborist's services such as property boundaries, property ownership, site lines, disputes between neighbors, and other issues. Arborists cannot take such considerations into account unless complete and accurate information is disclosed to the arborist. An arborist should then be expected to reasonably rely upon the completeness and accuracy of the information provided.

Trees contribute greatly to our enjoyment and appreciation of life. Nonetheless, they are subject to the laws of gravity and physiological decline. Therefore, neither arborists nor tree owners can be reasonably expected to warrant unfailing predictability or elimination of risk.

Trees can be managed, but they cannot be controlled. To live near trees is to accept some degree of risk. The only way to eliminate all risk associated with trees is to eliminate all trees.

Risk assessments were neither requested nor performed on any of the trees for this project.

CERTIFICATION OF PERFORMANCE

I, Scott McAllaster, certify:

- That I have personally inspected the tree(s) and/or the property referred to in this report, and have stated my findings accurately. The extent of the evaluation and appraisal is stated in the attached report and the Terms of Assignment;

- That I have no current or prospective interest in the vegetation or the property that is the subject of this report and have no personal interest or bias with respect to the parties involved;

- That the analysis, opinions, and conclusions stated herein are my own;

- That my analysis, opinions, and conclusions were developed and this report has been prepared according to commonly accepted arboricultural practices;

- That no one provided significant professional assistance to the consultant, except as indicated within the report;

- That my compensation is not contingent upon the reporting of a predetermined conclusion that favors the cause of the client or any other party.

I further certify that I am an International Society of Arboriculture Certified Arborist and have been involved in the practice of arboriculture and the study of trees for over thirteen years.

Signed:

Date: August 2, 2018

Scott McAllaster
Certified Arborist, WE-7011A
Qualified Tree Risk Assessor

SCOTT MCALLASTER

CARLBERG ASSOCIATES
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scott@cycarlberg.com • m: 424.285.3334 • www.cycarlberg.com

Education	B.A., Environmental Studies, University of California, Santa Barbara, 2000
Experience	Project Planner & Senior Arborist, Land Design Consultants, Inc. Pasadena, 1999 – 2014
Certificates	Certified Arborist, WE-7011A, International Society of Arboriculture, 2004 Qualified Tree Risk Assessor, International Society of Arboriculture, 2015

AREAS OF EXPERTISE

Mr. McAllaster is experienced in the following areas of tree management and preservation:

- Tree health & risk assessments
- Inventories & reports for native and non-native trees
- Master planning
- Evaluation of trees for preservation, encroachment, relocation, restoration, and hazards
- Construction monitoring and reporting
- Value assessments (appraisals) for native and non-native trees
- Post-fire inventories, assessments, and valuations for native and non-native trees
- Guidelines for tree preservation, planting, pruning and maintenance specifications
- Tree and landscape resource mapping – GPS, GIS, and AutoCAD
- Planning Commission, City Council, and community meetings representation
- Review of landscape plans for mitigation compliance & fire fuel modification planning
- Performance of long-term mitigation compliance monitoring & reporting

PREVIOUS CONSULTING EXPERIENCE

Mr. McAllaster has performed hundreds of tree inventories, health evaluations, impact analyses, hazard, and value assessments for counties, cities, sanitation districts, and water districts, as well as private developers, architects, engineers, and homeowners. He has over 13 years of experience in arboriculture and is trained in environmental planning, state and federal regulatory permitting, preparation of CEQA analyses, and habitat mitigation planning and implementation. Representative clients include:

City of Pasadena
City of Santa Clarita
City of Glendora
Los Angeles County Fire Department
Los Angeles County Sanitation Districts
Newhall County Water District
Pulte/Centex Homes
Newhall Land and Farming
E & S Ring, Inc.
Hollywood Forever Cemetery
Archdiocese of Los Angeles
St. John's Hospital, Santa Monica
Kovac Architects
Tim Barber, Ltd., Architects
Ojai Valley Community Hospital
The Kibo Group
El Monte Garden Senior Center
IMT Capital, LLC
San Diego Gas & Electric
Corky McMillin Companies
City of South Gate
City of Arcadia
D2 Development
Burrtec, Inc.
The Claremont Colleges
The New Home Company
William Carey University
Claremont Golf Course
Universal Hilton
Gensler Architects
Marmol Radziner, Architects
NAC Architecture
Aurora/Signature Health Services
Monte Vista Grove Homes
Highpointe Communities
Claremont University Center

AFFILIATIONS

Mr. McAllaster serves with the following national and regional professional organizations:

- Member, International Society of Arboriculture, Western Chapter
  Member, Street Tree Seminar, Inc.

CHRISTY CUBA
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christy@cycarlberg.com • o: 626.428.5072 • www.cycarlberg.com

Education	B.A., Environmental Analysis & Design, Cum Laude, University of California, Irvine, 1993 Graduate, International Society of Arboriculture Certification Study Program, April 1998 Graduate, Consulting Academy, American Society of Consulting Arborists, February 2008
Experience	Senior Arborist/Associate, Carlberg Associates, 2011 - Present Director of Environmental Services & Senior Arborist, Land Design Consultants, Pasadena, 1994 – 2011 Park Specialist/Naturalist, City of Monrovia, 1988-1996
Certificates	Certified Arborist, WE-1982A, International Society of Arboriculture, 1998 Registered Consulting Arborist, #502, American Society of Consulting Arborists, 2011 Qualified Tree Risk Assessor, International Society of Arboriculture, 2013

AREAS OF EXPERTISE

Ms. Cuba is experienced in the following areas of tree management and preservation:

- Tree health & risk assessments
- Inventories & reports for native and non-native trees
- Master planning
- Evaluation of trees for preservation, encroachment, relocation, restoration, and hazards
- Value assessments (appraisals) for native and non-native trees
- Post-fire inventories, assessments, and valuations for native and non-native trees
- Guidelines for tree preservation, planting, pruning and maintenance specifications
- Pest and disease identification
- Tree and landscape resource mapping – GPS, GIS, and AutoCAD
- Planning Commission, City Council, and community meetings representation
- Review of landscape plans for mitigation compliance & fire fuel modification planning
- Preparation of native habitat and woodland management plans
- Performance of long-term mitigation compliance monitoring & reporting
- Expert testimony

PREVIOUS CONSULTING EXPERIENCE

Ms. Cuba has performed hundreds of tree inventories, health evaluations, impact analyses, hazard, and value assessments for counties, cities, sanitation districts, and water districts, as well as private developers, architects, engineers, and homeowners. She has over 23 of experience in arboriculture and is trained in environmental planning, state and federal regulatory permitting, preparation of CEQA analyses, and habitat mitigation planning and implementation. Representative clients include:

City of Pasadena	San Diego Gas & Electric
City of Monrovia	Quinn, Emanuel, Urquhart and Sullivan (attorneys at law)
City of Santa Clarita	The New Home Company
City of Glendora	City of South Gate
Los Angeles County Fire Department	City of Sierra Madre
California Institute of Technology	Belzberg Architects
Mia Lehrer + Associates	Occidental College
Pulte/Centex Homes	Rose Bowl Stadium
Newhall Land and Farming	Las Encinas Hospital/Aurora Health Services
KOVAC Design Studio	The Claremont Colleges (Pomona College, Claremont Univ. Consortium, Claremont Graduate University)
EPT Design	Gensler Architects
Pamela Burton & Company	Mesivta of Greater Los Angeles
Chandler School	

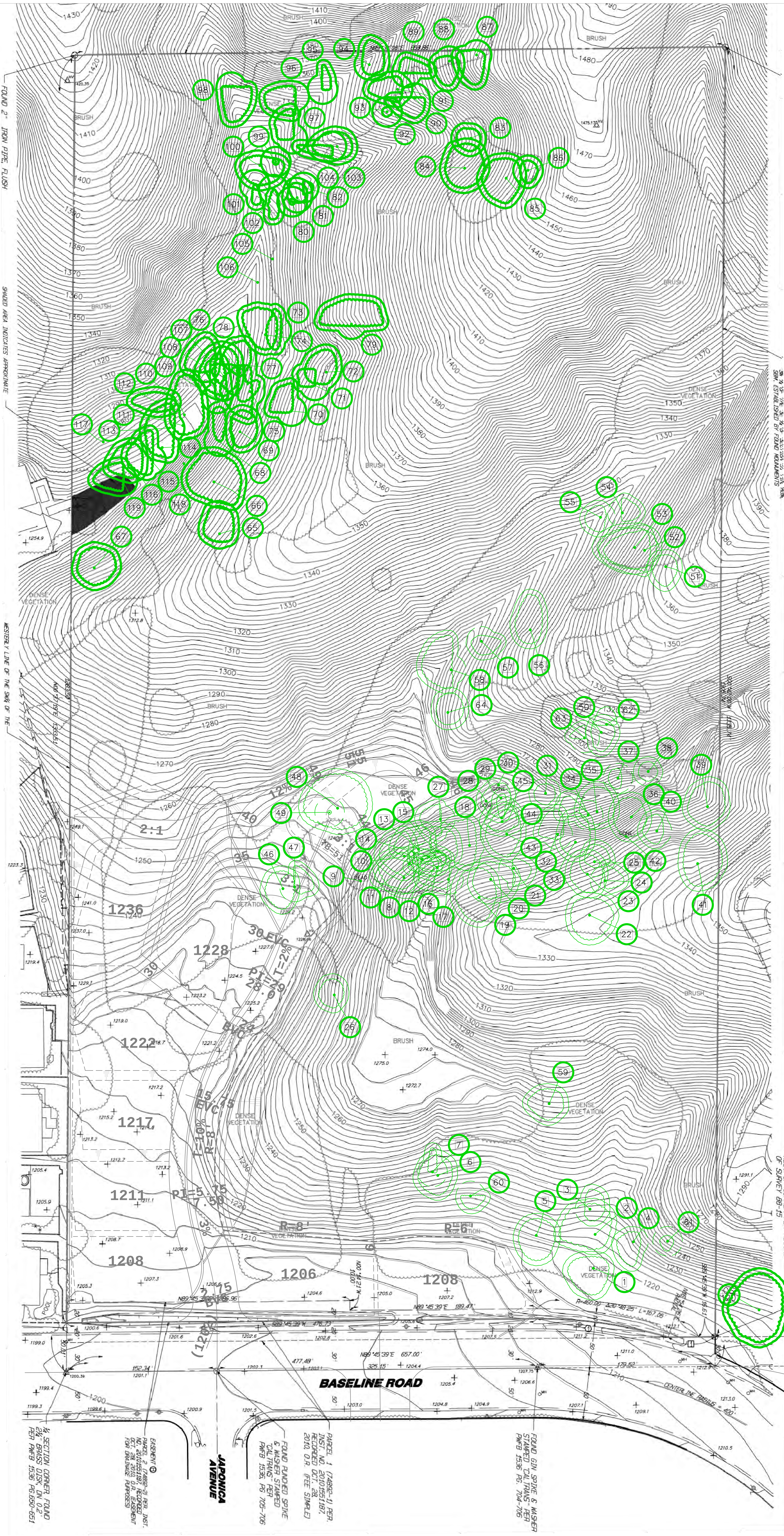
AFFILIATIONS

Ms. Cuba serves with the following national and regional professional organizations:

- Member, American Society of Consulting Arborists
- Member, International Society of Arboriculture, Western Chapter
- Member, Los Angeles Oak Woodland Habitat Conservation Strategic Alliance
  Past President (2015), Street Tree Seminar, Inc.

Map Pockets for Full-size Significant Tree Location Exhibit & Significant Tree Impact Exhibit & Protection Plan

(2 sheets)



SCALE: 1"=50'

LEGEND

– SIGNIFICANT TREE WITH 5' SAFETY ZONE

– SIGNIFICANT TREE TO REMAIN (85)

– SIGNIFICANT TREE TO BE REMOVED (4)

– SIGNIFICANT TREE TO BE ENCROACHED (20)

NOTE:

1. "SAFETY ZONE" OF A SIGNIFICANT TREE EXTENDS 5' FROM THE DRIPLINE OUTWARD, OR A MINIMUM OF 15' FROM THE TRUNK, WHICHEVER DISTANCE IS GREATER

TOPO SOURCE: LAND DESIGN CONSULTANTS

Carlberg ASSOCIATES
Horticulturists and Registered Consulting ARBORISTS

SIGNIFICANT TREE LOCATION EXHIBIT

500 BASELINE ROAD, LA VERNE, CALIFORNIA 91750

PREPARED FOR: RAMZY FAKHOURY
203 REBECCA DRIVE, SAN DIMAS , CA 91773

www.cycarlberg.com

Date: 08.02.18

By: S. McAllaster

SHEET 1 OF 2

Carlberg ASSOCIATES
Horticulturists and Registered Consulting ARBORISTS

SIGNIFICANT TREE IMPACT EXHIBIT & PROTECTION PLAN

500 BASELINE ROAD, LA VERNE, CALIFORNIA 91750

PREPARED FOR: RAMZY FAKHOURY
203 REBECCA DRIVE, SAN DIMAS , CA 91773

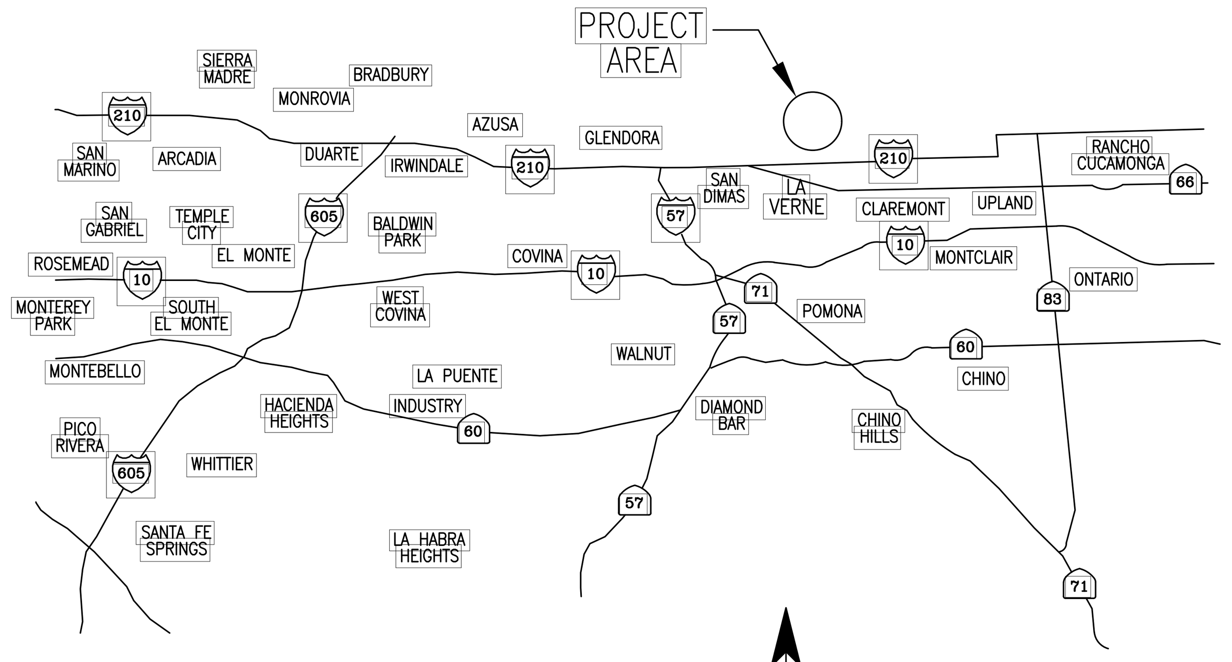
www.cycarlberg.com

Date: 08.02.18

By: S. McAllaster

CITY OF LA VERNE

VTTM TRACT NO. 082001



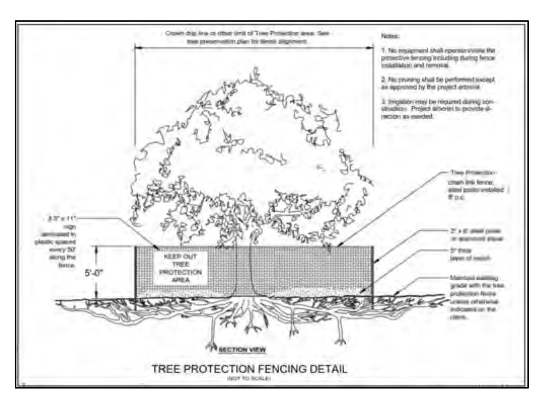
VICINITY MAP
NOT TO SCALE

UTILITIES AND SERVICES:

1. WATER....................CITY OF LA VERNE
2. SEWER....................CITY OF LA VERNE
3. GAS....................SOUTHERN CALIFORNIA GAS COMPANY
4. ELECTRIC....................SOUTHERN CALIFORNIA EDISON COMPANY
5. TELEPHONE....................AT & T
6. CABLE TV....................SPECTRUM
7. SCHOOL....................BONITA UNIFIED SCHOOL DISTRICT

LEGEND & ABBREVIATIONS:

- H.O.A. – HOMEOWNERS ASSOCIATION
- BVC – BEGINNING OF VERTICAL CURVE
- C.B. – CATCH BASIN
- ℄ – CENTER LINE
- D.G. – DECOMPOSED GRANITE
- DWY – DRIVEWAY
- EL/ELEV – ELEVATION
- EVC – END OF VERTICAL CURVE
- EX./EXIST. – EXISTING
- FL – FLOW LINE
- FS – FINISH SURFACE
- GB – GRADE BREAK
- HP – HIGH POINT
- MIN. – MINIMUM
- MH – MANHOLE
- O.S. – OPEN SPACE
- PE – PAD ELEVATION
- PI – POINT OF INTERSECTION
- PL – PROPERTY LINE
- STD. – STANDARD
- TW – TOP OF WALL
- PP – POWER POLE
- – TREE
- 5 – EASEMENT NOTES
- (S) – EXISTING SEWER LINE
- (W) – EXISTING WATER LINE
- S – PROPOSED SEWER LINE
- W – PROPOSED WATER LINE
- – PROPOSED STORM DRAIN
- – CITY BOUNDARY
- – DIRECTION OF FLOW
- – FIRE HYDRANT
- – PROP. RETAINING WALL
- – TRACT BOUNDARY
- 1390 – PROPOSED CONTOURS
- 1400 – EXISTING CONTOURS
- – STREET & DRIVEWAY CENTERLINE
- DL – DAYLIGHT LINE
- 2:1 – PROPOSED SLOPE AS INDICATED
- – DEBRIS CONE
- 5' #12 – SIGNIFICANT TREE WITH 5' TREE SAFETY ZONE
- – SIGNIFICANT TREE TO REMAIN (85)
- – SIGNIFICANT TREE TO BE REMOVED (4)
- – SIGNIFICANT TREE TO BE ENCROACHED (20)
- – TREE PROTECTION FENCING



TREE PROTECTION FENCING DETAIL
(NOT TO SCALE)

GENERAL NOTES:

1. EXISTING LOS ANGELES CO. GENERAL PLAN DESIGNATION ______ RL10
2. PROPOSED GENERAL PLAN DESIGNATION ___ LOW TO MEDIUM DENSITY RESIDENTIAL
3. EXISTING LOS ANGELES CO. ZONING (LIGHT AGRICULTURE) ___ A–1–15000
4. PROPOSED ZONING ______ R1 9000
5. AREA ______ 19.44 ± AC. GROSS, 15.11 ± AC. NET
6. GROSS DENSITY ______ 0.36 D.U./AC.
7. NET DENSITY ______ 0.44 D.U./AC.
8. EXISTING LAND USE ______ VACANT
9. PROPOSED LAND USE ______ SINGLE FAMILY RESIDENTIAL
10. TOTAL NUMBER OF LOTS ______ 9
11. TOTAL NUMBER OF RESIDENTIAL LOTS ______ 7
12. MINIMUM RESIDENTIAL LOT SIZE ______ 9,267 S.F.
13. AVERAGE RESIDENTIAL LOT SIZE ______ 34,733 S.F.
14. LOT SIZE AS SHOWN IN TABLE HEREON ARE GROSS ACREAGE
15. BOUNDARY LINE DIMENSIONS ARE TAKEN FROM RECORD DATA.
16. SUBDIVIDER RESERVES THE RIGHT TO FILE MULTIPLE FINAL MAPS PER SECTION 66456.1 OF THE GOVERNMENT CODE.
17. THE APPLICANT IS REQUESTING THE RIGHT TO ADJUST STREET AND BUILDING PAD ELEVATIONS UP TO 1 FEET ON THE FINAL GRADING PLAN.
18. TOPS AND TOES OF SLOPES ARE SUBJECT TO CHANGE IN FINAL ENGINEERING.
19. MAXIMUM SLOPE GRADE IS 2:1.
20. THE RIGHT IS RESERVED TO ADJUST LOT LINES AND MERGE LOTS ON THE FINAL MAP, SUBJECT TO THE APPROVAL OF THE DIRECTOR OF PLANNING AND BUILDING SERVICES, AND THE DIRECTOR OF TRANSPORTATION AND ENGINEERING SERVICES.
21. PRELIMINARY EARTHWORK QUANTITIES (BALANCED ON SITE)
    CUT: 16,800 C.Y., FILL: 16,800 C.Y.
22. THERE ARE 120 SIGNIFICANT TREES WITHIN THE DEVELOPMENT, 4 ARE PROPOSED TO BE REMOVED.
23. LOT SCHEDULE
    - SINGLE FAMILY RESIDENTIAL ______ 7
    - OPEN SPACE / HOA ______ 1
    - DEBRIS BASIN LOT ______ 1
    - 9

NOTES:

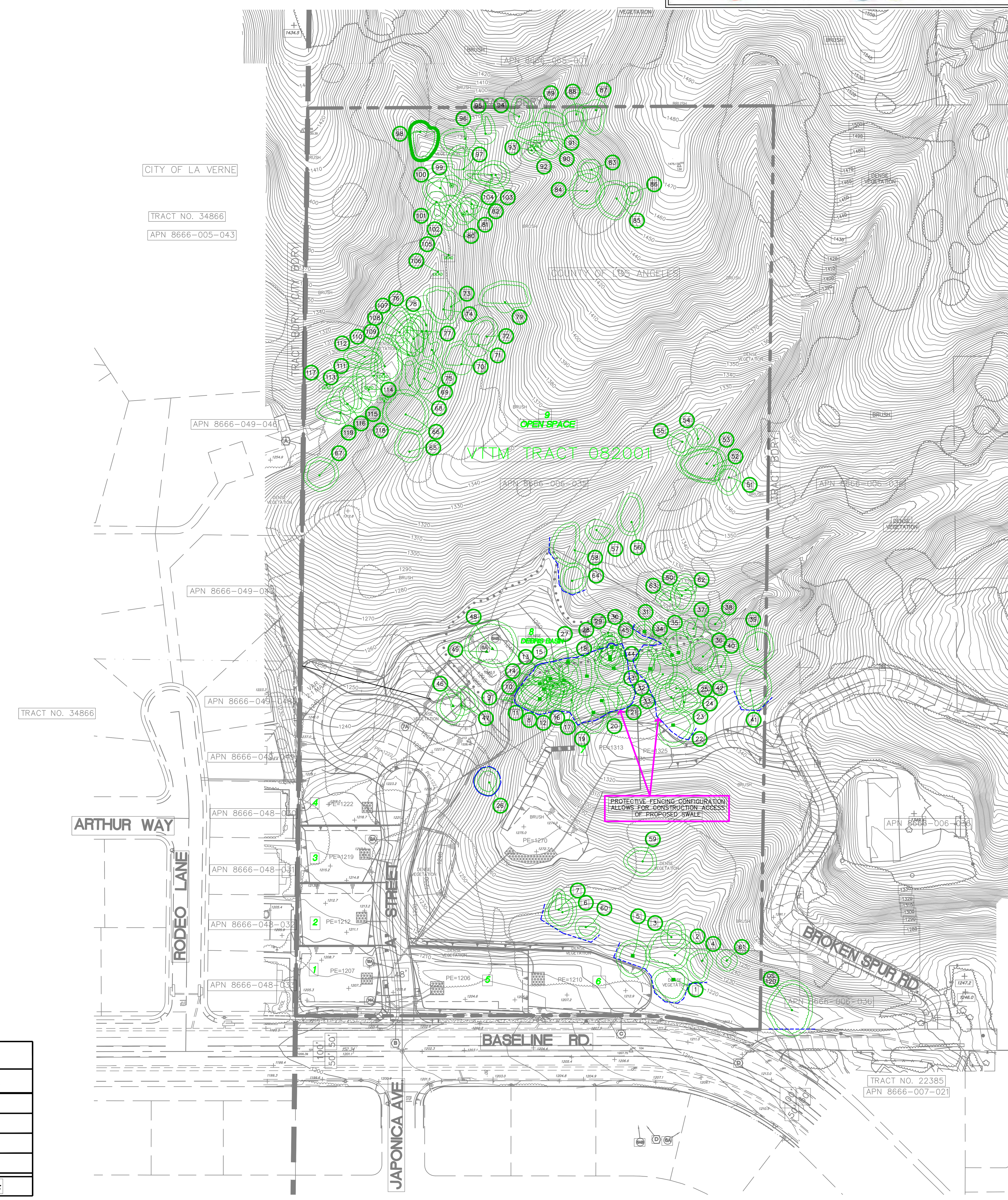
1. EXISTING 14' WIDE TRAP CHANNEL PER CALTRANS PLAN 48–F 98.1 52 TO BE REMOVED
2. EXISTING 8' WIDE TRAP CHANNEL PER CALTRANS PLAN 48–F 98.1 52 TO BE REMOVED
3. EXISTING 42" RCP PER CALTRANS PLAN 47–F 72.3
4. EXISTING 54" RCP PER CALTRANS PLAN 48–F 98.1 52
5. EXISTING 42" RCP PER CALTRANS PLAN 48–F 98.1 52 TO BE ABANDONED
6. EXISTING 24" RCP PER CALTRANS PLAN 48–F 98.1 52 TO BE ABANDONED
7. PROPOSED STORM DRAIN MANHOLE CONNECT EXIST. 30" RCP
8. PROPOSED RAIN GARDEN/OVER FLOW PIPE (SEE DETAIL ON SHEET NO. 3)
9. PROPOSED FILTERRA BIOFILTRATION SYSTEM (SEE DATAIL ON SHEET NO. 3)
10. EXISTING CURB AND GUTTER TO REMAIN
11. EXISTING BLOCK WALL TO REMAIN
12. PROPOSED CROSS GUTTER PER CITY OF LA VERNE DWG. NO. ST–7
13. PROPOSED 6" CURB & GUTTER PER CITY OF LA VERNE DWG. NO. ST–6
14. PROPOSED SIDEWALK RAMP PER CITY OF LA VERNE DWG. NO. ST–3
15. PROPOSED DRIVEWAY/ALLEY SECTION PER CITY OF LA VERNE DWG. NO. ST–9
16. PROPOSED OFFSET CUL–DE–SAC PER CITY OF LA VERNE DWG. NO. ST–16
17. PROPOSED DRIVEWAY APPROACH PER CITY OF LA VERNE DWG. NO. ST–1, CASE–I
18. PROPOSED 12' WIDE ACCESS MAINTENANCE ROAD (MAINTAINED BY L.A.C.F.C.D.)
19. PROPOSED RETAINING WALL
20. PROPOSED 18" RCP STORM DRAIN
21. PROPOSED 42" RCP STORM DRAIN
22. EXISTING CATCH BASIN TO REMAIN (MAINTAINED BY HOME OWNER TR 34866 LOT 49)
23. PROPOSED CATCH BASIN WITH FLO–GUARD
24. PROPOSED REINFORCED CONC. STAIRWAY PER S.P.P.W.C. STD. PLAN 640–3
25. PROPOSED 8" VCP SEWER MAIN
26. PROPOSED 8" WATER MAIN
27. EXISTING FIRY HYDRANT
28. EXISTING POWER POLE TO REMAIN
29. EXISTING POWER POLE TO BE RELOCATED
30. EXISTING INLET STRUCTURE PER CALTRANS PLAN 48–F 98.1 52 TO BE REMOVED
31. PROPOSED 20' WIDE ACCESS MAINTENANCE ROAD (MAINTAINED BY L.A.C.F.C.D.)
32. EXISTING 14' WIDE TRAP CHANNEL PER CALTRANS PLAN 48–F 98.1 52 TO BE REMOVED
33. EXISTING 8' WIDE TRAP CHANNEL PER CALTRANS PLAN 48–F 98.1 52 TO REMAIN
34. PROPOSED 24" PAVED DRAIN PER DETAIL ON SHEET NO. 3
35. PROPOSED INLET STRUCTURE
36. PROPOSED SUSMP BMP FLO GUARD CATCH BASIN FILTER INSERT
37. EXISTING 8" VCP SEWER MAIN (S–315)
38. JOIN EXISTING 8" VCP SEWER
39. EXISTING 12" ACP WATER MAIN (W–381)
40. EXISTING 10" ACP WATER MAIN (W–409)
41. EXISTING 8" ACP WATER MAIN (W–325)
42. EXISTING 24" RCP PER CALTRANS PLAN 48–F 98.1 52 TO REMAIN
43. EXISTING 30" RCP PER CALTRANS PLAN 48–F 98.1 52 TO BE REMOVED & REPLACED
44. PROPOSED 6" PVC STORM DRAIN
45. PROPOSED 24"x24" BROOKS BASIN
46. EXISTING CATCH BASIN PER CALTRANS PLAN 48–F 98.1 52 TO REMAIN
47. EXISTING PARKWAY DRAIN PER TR 34866
48. EXISTING 10" ACP WATER MAIN (W–325)
49. JOIN EXISTING ACP WATER MAIN
50. PROPOSED FIRE HYDRANT
51. PROPOSED LOCATION OF RELOCATED POWER POLE

SHEET INDEX

SHEET	DESCRIPTION
1	TENT TR 082001, NOTES, SECTIONS, INDEX MAP LEGEND, LOT SUMMARY
2	TENT TR 082001
3	SECTIONS, DETAILS, LEGAL DESCRIPTION

LOT SUMMARY

DESIGNATION	LOT NO.	NO. OF LOTS	(A.C.) (APPROX.)
SINGLE FAMILY LOTS	1-7	7	5.57
DEBRIS BASIN	8	1	2.68
OPEN SPACE	9	1	10.75
STREET	–	–	0.44
TOTAL		9	19.44±



INDEX MAP
SCALE 1"=100'

811
DIG ALERT
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PLAY IT SAFE. DIAL BEFORE YOU DIG!
AT LEAST TWO WORKING DAYS PRIOR TO EXCAVATION

REFERENCES

NO.	DESCRIPTION	APP.	DATE	NO.	DESCRIPTION	APP.	DATE

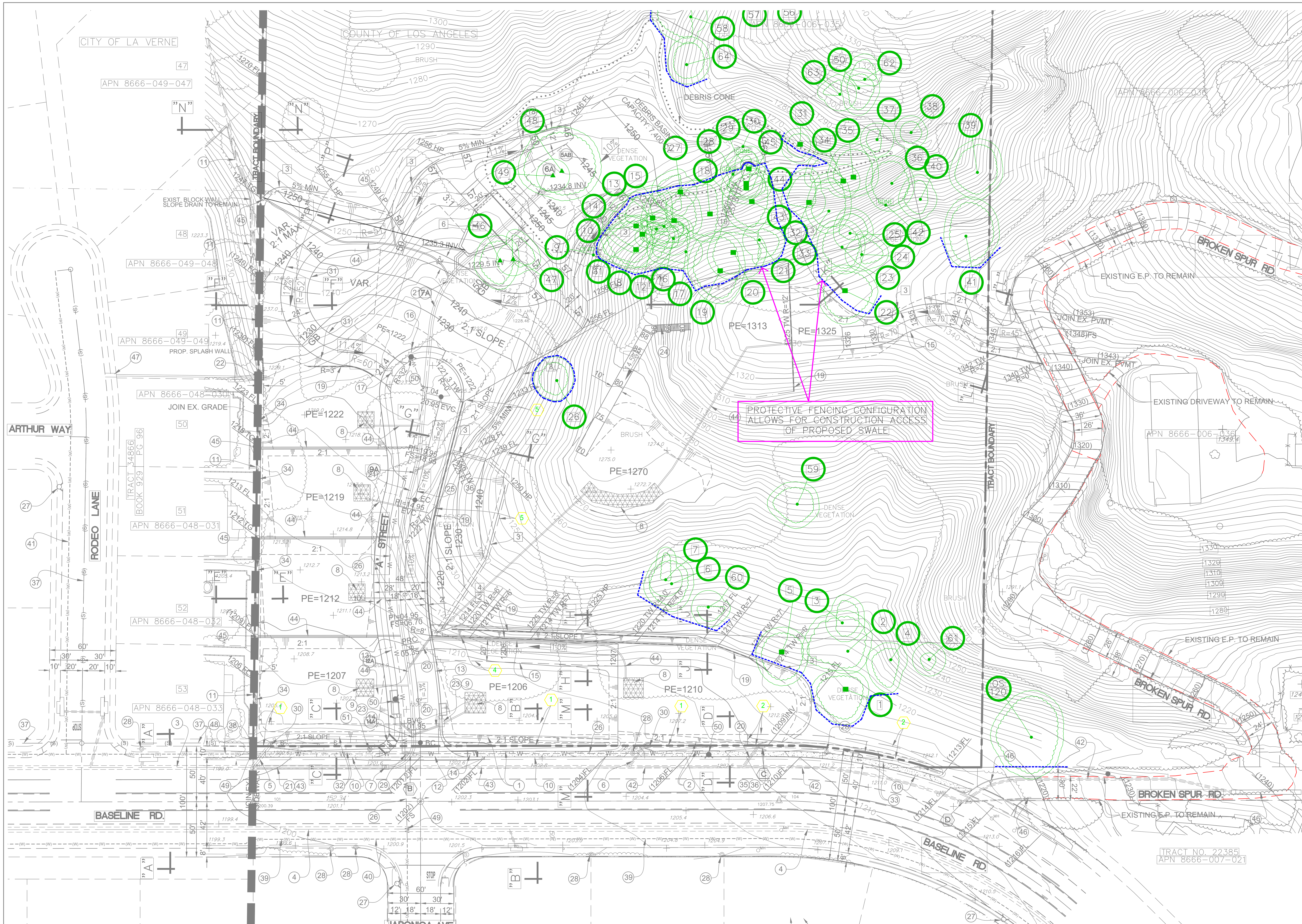
REGISTERED PROFESSIONAL ENGINEER
CHARLES A. GILMAN
No. C54155
EXP. 12-31-19
CIVIL
STATE OF CALIFORNIA

APPROVED BY:
XXXXX
(CONSULTING FIRM) RCE DATE
APPROVED BY:
CITY OF LA VERNE DATE

PLANS PREPARED BY:
LDC
LAND DESIGN CONSULTANTS, INC.
Land Planning, Civil Engineering, Surveying & Environmental Services
800 Royal Oaks Drive, Suite 104, Monrovia, California 91016
Ph.: (626) 578-7000, Fax: (626) 578-7373
http://www.ldcla.com
PROJECT ENGINEER DATE

CITY OF LA VERNE
VESTING TENTATIVE MAP
TRACT NO. 082001

DESIGNED: LDC | DRAWN: LDC | CHECKED: S.H. | SCALE: AS SHOWN
DESIGN DATE: 07/10/2018 | DRAWING NO.: X | SHEET: 1 OF 3



NOTES:

1. EXISTING 14' WIDE TRAP CHANNEL PER CALTRANS PLAN 48–F 98.1 52 TO BE REMOVED
2. EXISTING 8' WIDE TRAP CHANNEL PER CALTRANS PLAN 48–F 98.1 52 TO BE REMOVED
3. EXISTING 42" RCP PER CALTRANS PLAN 47–F 72.3
4. EXISTING 54" RCP PER CALTRANS PLAN 48–F 98.1 52
5. EXISTING 42" RCP PER CALTRANS PLAN 48–F 98.1 52 TO BE ABANDONED
6. EXISTING 24" RCP PER CALTRANS PLAN 48–F 98.1 52 TO BE ABANDONED
7. PROPOSED STORM DRAIN MANHOLE CONNECT EXIST. 30" RCP
8. PROPOSED RAIN GARDEN/OVER FLOW PIPE (SEE DETAIL ON SHEET NO. 3)
9. PROPOSED FILTERRA BIOFILTRATION SYSTEM (SEE DATAIL ON SHEET NO. 3)
10. EXISTING CURB AND GUTTER TO REMAIN
11. EXISTING BLOCK WALL TO REMAIN
12. PROPOSED CROSS GUTTER PER CITY OF LA VERNE DWG. NO. ST–7
13. PROPOSED 6" CURB & GUTTER PER CITY OF LA VERNE DWG. NO. ST–6
14. PROPOSED SIDEWALK RAMP PER CITY OF LA VERNE DWG. NO. ST–3
15. PROPOSED DRIVEWAY/ALLEY SECTION PER CITY OF LA VERNE DWG. NO. ST–9
16. PROPOSED OFFSET CUL–DE–SAC PER CITY OF LA VERNE DWG. NO. ST–16
17. PROP. DRIVEWAY APPROACH PER CITY OF LA VERNE DWG. NO. ST–1, CASE–I
18. PROPOSED 12' WIDE ACCESS MAINTENANCE ROAD (MAINTAINED BY L.A.C.F.C.D.)
19. PROPOSED RETAINING WALL
20. PROPOSED 18" RCP STORM DRAIN
21. PROPOSED 42" RCP STORM DRAIN
22. EX. CATCH BASIN TO REMAIN (MAINTAINED BY HOME OWNER TR 34866 LOT 49)
23. PROPOSED CATCH BASIN WITH FLO–GUARD
24. PROPOSED REINFORCED CONC. STAIRWAY PER S.P.P.W.C. STD. PLAN 640–3
25. PROPOSED 8" VCP SEWER MAIN
26. PROPOSED 8" WATER MAIN
27. EXISTING FIRE HYDRANT
28. EXISTING POWER POLE TO REMAIN
29. EXISTING POWER POLE TO BE RELOCATED
30. EX. INLET STRUCTURE PER CALTRANS PLAN 48–F 98.1 52 TO BE REMOVED
31. PROPOSED 12' WIDE ACCESS MAINTENANCE ROAD (MAINTAINED BY L.A.C.F.C.D.)
32. EXISTING 14' WIDE TRAP CHANNEL PER CALTRANS PLAN 48–F 98.1 52 TO BE REMOVED
33. EX. 8' WIDE TRAP CHANNEL PER CALTRANS PLAN 48–F 98.1 52 TO REMAIN
34. PROPOSED 24" PAVED DRAIN PER DETAIL ON SHEET NO. 3
35. PROPOSED INLET STRUCTURE
36. PROPOSED SUSMP BMP FLO GUARD CATCH BASIN FILTER INSERT
37. EXISTING 8" VCP SEWER MAIN (S–315)
38. JOIN EXISTING 8" VCP SEWER
39. EXISTING 12" ACP WATER MAIN (W–381)
40. EXISTING 10" ACP WATER MAIN (W–409)
41. EXISTING 8" ACP WATER MAIN (W–325)
42. EXISTING 24" RCP PER CALTRANS PLAN 48–F 98.1 52 TO REMAIN
43. EXISTING 30" RCP PER CALTRANS PLAN 48–F 98.1 52 TO BE REMOVED & REPLACED
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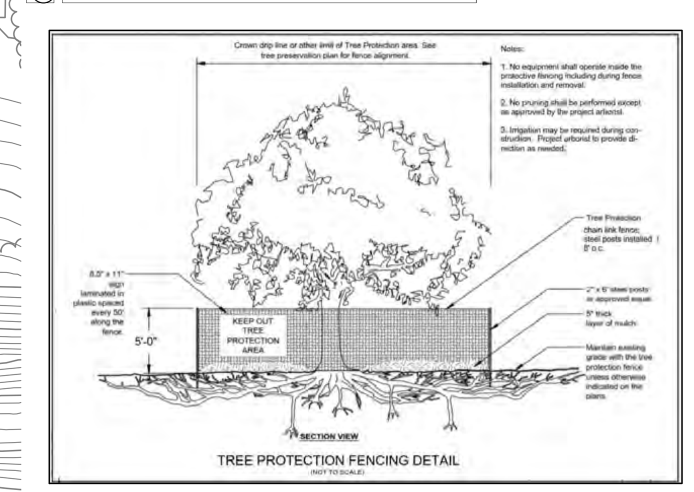

- SIGNIFICANT TREE WITH 5' TREE SAFETY ZONE
- SIGNIFICANT TREE TO REMAIN (85)
- SIGNIFICANT TREE TO BE REMOVED (4)
- SIGNIFICANT TREE TO BE ENCROACHED (20)
- TREE PROTECTION FENCING

GRAPHIC SCALE (IN FEET)
1 inch = 40 ft.

SHEET 2 OF 2

Carlberg Associates

SIGNIFICANT TREE IMPACT EXHIBIT & PROTECTION PLAN

500 BASELINE ROAD, LA VERNE, CALIFORNIA 91750

PREPARED FOR: RAMZY FAKHOURY
203 REBECCA DRIVE, SAN DIMAS , CA 91773

www.cycarlberg.com Date: 08.02.18 By: S. McAllaster

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REFERENCES

NO.	DESCRIPTION	APP.	DATE	NO.	DESCRIPTION	APP.	DATE

APPROVED BY:
(CONSULTING FIRM) XXXXX RCE DATE
APPROVED BY:
CITY OF LA VERNE DATE

PLANS PREPARED BY:
LAND DESIGN CONSULTANTS, INC.
Land Planning, Civil Engineering, Surveying & Environmental Services
800 Royal Oaks Drive, Suite 104, Monrovia, California 91016
Ph.: (626) 578-7000, Fax: (626) 578-7373
http://www.ldcla.com
PROJECT ENGINEER DATE

CITY OF LA VERNE

VESTING TENTATIVE MAP
TRACT NO. 082001

DESIGNED: LDC	DRAWN: LDC	CHECKED: S.H.	SCALE: AS SHOWN
DESIGN DATE: 07/10/2018	DRAWING NO.: X	SHEET: 2 OF 3	

APPENDIX C: GEOTECHNICAL AND PALENONTOLOGICAL RESOURCES

APPENDIX C.1: GEOTECHNICAL REPORT

ASSOCIATED ASE SOILS ENGINEERING, INC.
Consulting Geotechnical Engineers

REPORT OF GEOTECHNICAL DUE DILIGENCE INVESTIGATION

Proposed New Residential Development

500 Baseline Road, LaVerne Area

County of Los Angeles, California

Prepared For:

LaVerne Investments, LLC
2855 East Pacific Coast Highway, Suite 227
Corona del Mar, California 92625

Project No. 6517.14 **December 8, 2014**

ASSOCIATED SOILS ENGINEERING, INC.
Consulting Geotechnical Engineers
2860 WALNUT AVE. - SIGNAL HILL, CALIF. 90755 - PHONE 562/426-7990 - FAX 562/426-1842

December 8, 2014
Project No. 6517.14

LaVerne Investments, LLC
2855 East Pacific Coast Highway, Suite 227
Corona del Mar, California 92625

Attention: Tom Grabiel

Subject: Report of Geotechnical Due Diligence Investigation
Proposed New Residential Development – 8 Lots
500 Baseline Road
LaVerne, County of Los Angeles, California

Ladies & Gentlemen:

Presented herewith is the Report of Geotechnical Due Diligence Investigation (i.e. the "Soils Report") for the proposed residential development consisting of 8 single family residential lots at the subject site. This work has been conducted in accordance with Proposal No. P14-161 of Associated Soils Engineering, Inc. ("ASE"), dated September 17, 2014, which was subsequently authorized by you.

The geotechnical investigation was planned and performed based on information provided by you and an undated Conceptual Site Plan, prepared by Land Design Consultants, Inc. (LDC), regarding the proposed development on site. Pre-job site reconnaissance was conducted by our engineer/geologist to facilitate the understanding of site conditions, and to devise a suitable geotechnical exploration program.

Engineering evaluation of site conditions has been made with regard to the geotechnical aspects of the currently proposed development on site. Our evaluation indicates that the proposed residential development is feasible from a geotechnical viewpoint provided the recommendations presented herein are followed during the planning, design and construction stages of the project.

Presented in this Soils Report are geologic/seismic hazard assessment and geotechnical criteria for site remedial grading and temporary excavation, design and construction recommendations for shallow footings/slab alternatives/pavements/retaining walls, as well as evaluation of soils corrosivity and expansion potential.

We appreciate this opportunity of serving you on this important project, and we look forward to assisting you during site grading and foundation construction.

If you should have any questions regarding the content of this report, or require additional information, please contact the undersigned at (562) 426-7990.

Respectfully submitted,

ASSOCIATED SOILS ENGINEERING, INC.

Edward C. (Ted) Riddell
Engineering Geologist, CEG 1775

Lawrence J.D. Chang, P.E.
Geotechnical Engineer, GE 2881

ECR/LC/tr

Distribution: (4) Addressee

1.0 INTRODUCTION

This Soils Report compiles and presents the findings, results, conclusions and recommendations as part of the geotechnical investigation performed by ASE for the proposed residential development at 500 Baseline Road in the LaVerne area of unincorporated County of Los Angeles, California (i.e. the "Site"). The approximate location of the Site is shown on the Site Location Map (Figure 1). The purpose of this Investigation was to 1) evaluate the geotechnical feasibility of the proposed development with respect to potential geologic/seismic hazard and general subsurface soils conditions at the Site and 2) provide recommendations for site grading and foundation construction. It is during the course of the geotechnical investigation that necessary geotechnical/geologic findings and results were obtained. Pertinent updated geotechnical recommendations were then formulated and assembled for geologic/seismic hazard mitigation, site remedial grading and foundation design and construction.

1.1 SCOPE OF WORK

The following tasks have been performed by ASE as part of the Geotechnical Investigation and the preparation of this Soils Report:

A. Review of readily available background information, including in-house geotechnical data, geotechnical literature, geologic maps, seismic hazard maps, and literature relevant to the subject site.

B. Performance of geotechnical site reconnaissance to observe the general site conditions and surficial soil conditions at the site, followed by identification of suitable locations for ASE's geotechnical exploration program. Underground Service Alert was notified of the planned exploration 72 hours prior to drilling.

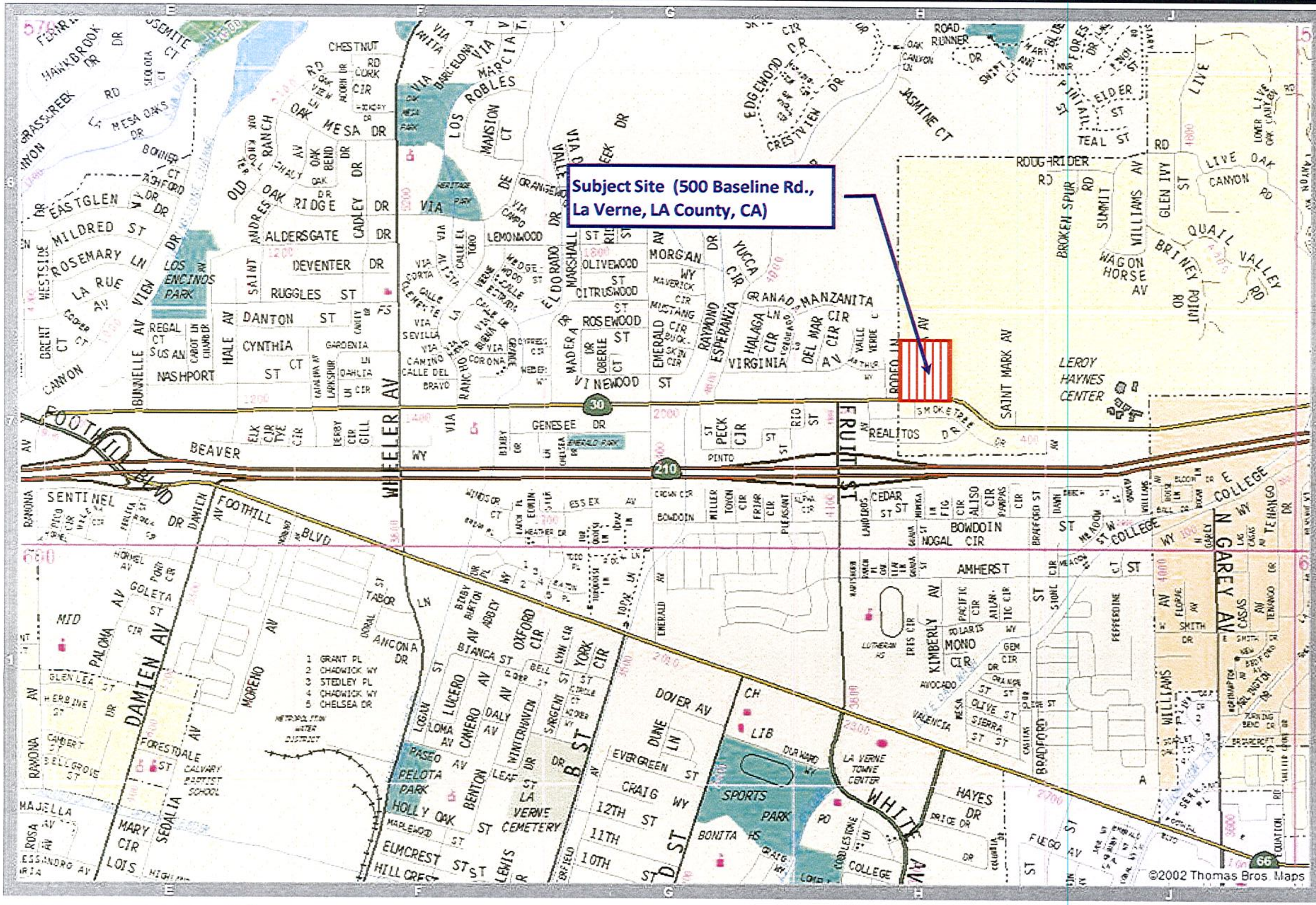
C. Field exploration consisting of excavating nine (9) backhoe test pits to depths varying from five feet to fifteen feet below existing grades, field logging of test pits and obtaining bulk and relatively undisturbed samples of soil and bedrock. Approximate locations of the exploratory test pits on site are shown on the Test Pit Location Map, Plate A (modified from the Conceptual Site Plan prepared by LDC).

D. Field percolation testing at two (2) exploratory boring locations to measure infiltration rate of site soils in facilitation with the evaluation and planning of on-site stormwater/rainwater dispersal/interception system.

E. Performance of laboratory testing on representative soil samples to aid in the classification of materials encountered, and to determine pertinent engineering properties.

F. Performance of engineering analyses of the collected data covering the following aspects:

- Evaluation of general subsurface conditions and description of types, distribution, and engineering characteristics of subsurface materials.
- Assessment of geologic/seismic hazards.



Associated Soils Engineering, Inc. 2860 Walnut Avenue Signal Hill, CA 90755 Tel (562) 426-7990 Fax (562) 426-1842	**Site Location Map**	Proj. Name:	**Prop. Multi-SFD Residential Development** 500 Baseline Road, La Verne, LA County, CA
		Figure 1	Proj. No.: 6517.14
			Date: December, 2014

Associated Soils Engineering, Inc. — Consulting Geotechnical Engineers

- Determination of the seismic design parameters in accordance with Chapters 16 and 18 of the California Building Code, 2013 Edition ("2013 CBC").
- Evaluation of the suitability of on-site soils for foundation support, together with the establishment of qualification criteria for imported fill.
- Recommendations for site remedial grading and subgrade preparation.
- Recommendations for design of foundations including allowable soils bearing capacity, estimated settlement, and lateral resistance.
- Recommendations for subgrade preparation for slab-on-grade support, including design recommendations.
- Recommendations for interior and exterior slab designs.
- Recommendations for temporary excavation and shoring.
- Evaluation of the corrosion and expansion potential of the on-site materials.
- Calculation of percolation and infiltration rates of site soils.

G. Preparation of this Soils Report presenting the work performed and data acquired, as well as summarizing our conclusions and geotechnical recommendations for the design and construction of the proposed residential development.

Please be reminded that ASE's geotechnical exploration did not include any evaluation or assessment of hazardous or toxic materials which may or may not exist on or beneath the site. ASE does not consult in the field of potential site contamination/mitigation.

2.0 SITE DESCRIPTION

The project site is located at the subject address on the north side of Baseline Road, immediately east of the City of La Verne boundary in an unincorporated portion of the County of Los Angeles, California. While the overall property encompasses the surrounding hillsides which rise to elevations of over 1400 feet above mean sea level (amsl), the area of proposed development is limited to the relatively flat portion of the parcel in the southwest corner. The elevation of the proposed developed area of the property varies from roughly 1205 amsl to 1260 amsl.

3.0 PROPOSED DEVELOPMENT

Based on the site plan provide by the Client, it is proposed to utilize typical cut/fill grading techniques to construct 8 level building pads for future single family residential units, associated slopes, streets and parkways. A large retention basin is proposed in the northern reaches of the flat developable area. The proposed residential structures are presumed to be of wood-framed 2 to 3 story structures. ASE has assumed shallow foundation systems consisting of continuous spread footings and isolated pad footings together with concrete slab-on-grade. In the absence of actual loading information, ASE has assumed the new structures impose a maximum concentrated load and a maximum distributed live load (inclusive of both live and dead loads) not exceeding the order of 25 kips and 2000 pounds per square foot ("psf"), respectively. For conventional shallow foundation, the corresponding tolerable total and differential settlements have been assumed to be not exceeding one (1) inch and one-half (½) inch in 40-foot span, respectively, for the purpose of evaluation of required remedial grading and foundation design. Appurtenant improvements are likely to comprise landscaping including both softscape and hardscape, exterior slabs and flatworks, walls, fencing, pavement, driveway and underground utilities.

4.0 SUBSURFACE CONDITIONS

4.1 SUBSURFACE SOILS STRATIGRAPHY

The subsurface soils descriptions provided are interpreted from conditions that were exposed during the field investigation and/or inferred from the reviewed geologic literature. As such, all of the subsurface conditions at the Site may not be captured and represented. More detailed descriptions of subsurface soils encountered and conditions observed during ASE's geotechnical exploration are shown in the Log of Test Pits in Appendix A. Also presented in the logs are the USCS soils classification, depths and types of soil samples, field dry densities and moisture contents, and relevant laboratory tests performed. The following Sections 4.1.1 through 4.1.4 provide general descriptions of the encountered subsurface soil materials.

4.1.1 Artificial Fill (af):

Artificial Fill was encountered in test pits TP-6 and TP-8. Soils observed within this unit generally consist of medium brown, dry, loose silty sand and gravel with construction debris. The material was encountered in the northeastern portion of the proposed development area behind what appears to be an old dam structure that has since been filled in. The dam structure consists of unreinforced concrete and boulders and is in a state of disrepair where exposed.

4.1.2 Alluvium (Qal):

Alluvial soils cover the relatively level portions of the property. The alluvial soils encountered consist predominantly of silty and clayey sands, with increasing density, moisture and quantities of gravel, cobbles and boulders with depth. The upper 4 to 7 feet is generally medium brown, dry to damp, loose to medium dense, slightly porous silty sands with gravel and cobbles. The alluvium below generally consists of medium to dark brown, damp to moist, medium dense to very dense silty to clayey sand with gravel, cobbles and boulders.

4.1.3 Terrace Deposits (Q_t):

Nonmarine Terrace Deposits were encountered in exploratory test pits TP-4 and TP-5. Soils observed within this unit generally consist of reddish brown, dry to damp, very dense clayey sand with gravel and cobbles and caused refusal of the backhoe test pit at depths of 5 feet and 10 feet, respectively.

4.1.4 Quartz Diorite (qd):

Quartz Dioritic Plutonic rocks (Dibblee, 2002) underlies the Alluvial soils and Terrace Deposits and was exposed in test pit TP-9. The bedrock materials encountered were highly weathered in the upper 2 ½ to 5 feet but are generally moderately hard to hard, massive diorite that is light gray and dry to damp. The bedrock becomes very hard below the weathered zone (± 5-7 feet) and may entail excavation difficulties with typical heavy equipment. A Local Geologic Map of the general area, modified from Diblee, 2002, is enclosed as Figure 2.

4.2 GROUNDWATER AND CAVING

During ASE's field exploration, groundwater was not encountered to the maximum explored depth of thirteen (13) feet six (6) inches below existing grade. According to CGS Seismic Hazard Zone Report for the San Dimas 7.5-Minute Quadrangle (1998), the historic high ground water in the general vicinity is over 150 feet. Seasonal and long-term fluctuations in the groundwater may occur as a result of variations in subsurface conditions, rainfall, run-off conditions and other factors. Therefore, variations from our observations may occur.

Caving was not observed in any of ASE's exploratory borings. However, the potential for caving can not be precluded and should be considered in the design and construction.

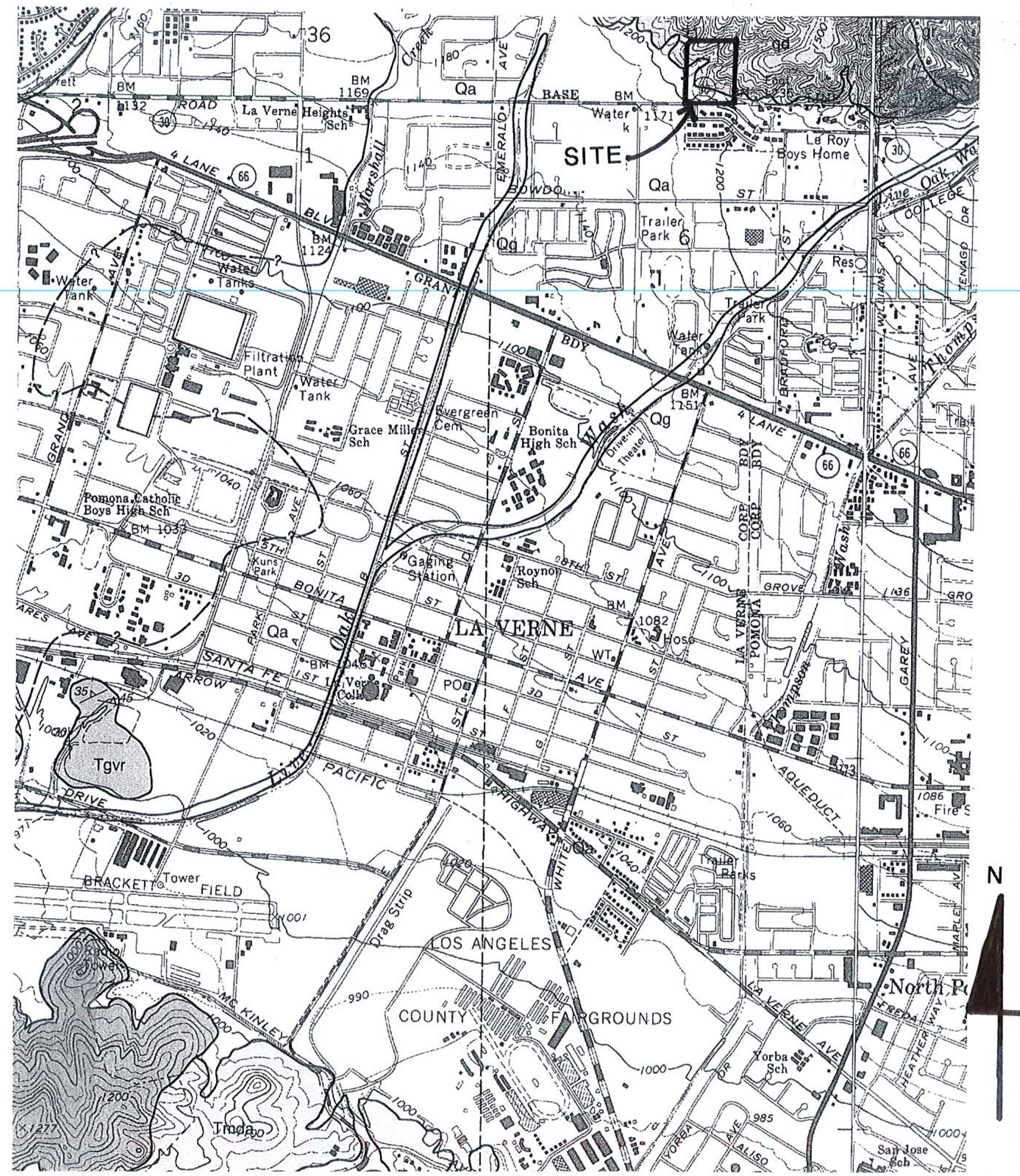
4.3 UTILITIES

Although buried utility or irrigation lines were not encountered during ASE's field subsurface exploration, underground and overhead utility lines were observed on site around the existing buildings and driveway. It is advisable that, in addition to detailed locating of buried/concealed utility lines on site prior to start of site grading/construction, local utility authorities and/or service providers should be consulted for detailed utility locations on or near the Site during planning and construction.

5.0 FAULTING AND SEISMICITY

LaVerne, like the rest of Southern California, is located within a seismically active region as a result of being located near the active margin between the North American and Pacific tectonic plates. The principal source of seismic activity is movement along the northwest-trending regional faults such as the San Andreas, San Jacinto, Newport-Inglewood and Whittier-Elsinore fault zones.

By definition of the State Mining and Geology Board, an active fault is one which has had surface displacement within the Holocene Epoch (roughly the last 11,000 years). The State Mining and Geology Board have defined a potentially active fault as any fault which has been active during the Quaternary Period (approximately the last 2,000,000 years). These definitions are used in delineating Earthquake Fault Zones as mandated by the Alquist-Priolo Geologic Hazard Zones Act of 1972 and as subsequently revised in 1997 as the Alquist-Priolo Earthquake Fault Zones. The intent of the act is to require fault investigations on sites located within Special Studies Zone



MODIFIED FROM DIBLEE, 2002

ASSOCIATED SOILS ENGINEERING, INC.	REGIONAL GEOLOGIC MAP	Project#	Figure
		6517.14	2

to preclude new construction of certain inhabited structures across the trace of active faults. The subject Site is not located within the Alquist-Priolo Earthquake Fault Zone. In addition, the site is not located within a seismic hazard zone per CGS's mapping.

5.1 PROBABILISTIC ANALYSIS

The seismicity of the Site was evaluated utilizing probabilistic analysis available from CGS (www.quake.ca.gov/gmaps/PSHA/psha_interpolator.html). The Maximum Probable Earthquake (MPE) and the Maximum Considered Earthquake (MCE) that carry 10 percent and 2 percent exceedance probabilities, respectively, in 50 years have been considered. Based on a critical damping ratio of 5% and a V_s^{30} value of 354 m/sec, derived from the "Set Site Parameters for Web Services"" function as part of the "Hazard Spectrum Calculator (Local)" application available from the "OPENSHA" website, three spectral acceleration values representing peak ground acceleration (PGA), spectral acceleration for structural period of 0.2 second (Sa – 0.2 sec; typical of low-rise buildings) and spectral acceleration for structural period of 1.0 second (Sa – 1.0 sec; typical of multi-story buildings) have been analyzed and are tabulated below.

Seismic Acceleration Values from CGS's Ground Motion Interpolator (2008)					
Latitude	N 34.1221°	**Longitude**	W 117.7592°	**V_s^{30} (m/sec)**	354
Scenario / **Acceleration (g)**			**PGA**	**Sa – 0.2 sec**	**Sa – 1.0 sec**
MPE (10% exceedance in 50 years)			0.656	1.433	0.759
MCE (2% exceedance in 50 years)			1.117	2.448	1.413

5.3 2013 CBC SEISMIC DESIGN PARAMETERS

The earthquake design requirements listed in 2013 CBC and other governing standards account for faults classified as "active", in accordance with the most recent fault listing as per the United States Geological Survey (USGS) or the CGS. The seismic design of the proposed structures should be implemented in accordance with the applicable provisions stipulated in 2013 CBC unless otherwise specified by the governing authority having jurisdiction over the project.

The 2013 CBC seismic design criteria for the Site based on a Risk Category II and a scenario of Risk-Targeted Maximum Considered Earthquake (MCE_R) that carries a 2% exceedance probability in 50 years had been determined utilizing the U.S. Seismic Design Maps web-application available from the Seismic Design Maps and Tools webpage on the website of Earthquake Hazard Program of USGS (http://earthquake.usgs.gov/hazards/designmaps/usdesign.php). Summaries of the seismic coefficients for the Site are presented in the following table.

2013 CBC SEISMIC DESIGN PARAMETERS					
Site Latitude:	N 34.1221°	**Site Longitude:**	W 117.7592°	**Risk Category** [a]	II
Seismic Parameter				**Recommended Value**	
Site Class [b]				D	
Soil Profile Name [b]				Stiff Soil Profile	
Site Coefficient, Fa [c]				1.0	
Site Coefficient, Fv [d]				1.5	
0.2-Second Spectral Response Acceleration, S_S [e]				2.917g	
1.0-Second Spectral Response Acceleration, S_1 [f]				1.102g	
Adjusted 0.2-Second Spectral Response Acceleration, S_{MS} [g]				2.917g	
Adjusted 1.0-Second Spectral Response Acceleration, S_{M1} [h]				1.653g	
Design 0.2-Second Spectral Response Acceleration, S_{DS} [i]				1.945g	
Design 1.0-Second Spectral Response Acceleration, S_{D1} [j]				1.102g	
Long -Period Transition Period, T_L [k]				8 sec	
Mapped MCE_G Geometric Mean Peak Ground Acceleration, PGA [l]				1.109g	
Site Coefficient, F_{PGA} [m]				1.0	
MCE_G Peak Ground Acceleration adjusted for Site Class Effect, PGA_M [n]				1.109g	
Risk Category			**I or II or III**		**IV**
Seismic Design Category based on SD_1 [o]			E		F

a Per 2013 CBC Table 1604.5
b Per 2013 CBC Section 1613.3.2
c Per 2013 CBC Table 1613.3.3(1)
d Per 2013 CBC Table 1613.3.3(2)
e Per 2013 CBC Figure 1613.3.1(1)
f Per 2013 CBC Figure 1613.3.1(2)
g Per 2013 CBC Equation 16-37
h Per 2013 CBC Equation 16-38
i Per 2013 CBC Equation 16-39
j Per 2013 CBC Equation 16-40
k Per ASCE 7-10 Figure 22-12
l Per ASCE 7-10 Figure 22-7
m Per ASCE 7-10 Table 11.8-1
n Per ASCE 7-10 Equation 11.8-1 = PGA x F_{PGA}
o Per 2013 CBC Table 1613.3.5(2)

Please note that conformance to the 2013 CBC seismic design criteria does not constitute any kind of guarantee or assurance that significant structural damage or ground failure will not take place during the occurrence of a MCE_R event. The primary goal of seismic design is to protect life and not to avoid all damage, since such design may be economically prohibitive. Following a major earthquake, a building may be damaged beyond repair, yet not collapse. The Structural Consultant should review the pertinent parameters to evaluate the seismic design.

6.0 SEISMIC HAZARD ASSESSMENT

6.1 SEISMICALLY-INDUCED LIQUEFACTION

The term "liquefaction" describes a phenomenon in which a saturated cohesionless soil loses strength and acquires a degree of mobility as a result of strong ground shaking during an earthquake. The factors known to influence liquefaction potential include soil type and depth, grain size, relative density, groundwater level, degree of saturation, and both the intensity and duration of ground shaking. Clayey soils are generally not susceptible to liquefaction.

As evidenced in Figure 3, Local Seismic Hazard Map, the subject site is not within an area identified by CGS as having a potential for soil liquefaction when subject to a seismic event resembling the "maximum probable earthquake" (MPE), which carries a 10% exceedance probability in 50 years. As the site is underlain by alluvial soils over hard dioritic bedrock, and historic high groundwater in the vicinity is greater than 150 feet, it is the opinion of ASE that the potential for liquefaction at the site is very low.

6.2 SEISMIC SETTLEMENTS

Ground accelerations generated from a seismic event can cause further densification of loose soils from their present state, thus resulting in settlements in sands or in granular earth materials both above and below the groundwater table. This phenomenon is often referred to as seismic settlement and commonly takes place in relatively clean sands, as well as soils with low plasticity and less fines. As the upper loose granular materials are to be overexcavated and replaced with densely compacted fill, together with the remaining dense to very dense granular native soils and the underlying, even denser formational material, the potential for seismically-induced re-densification of granular soils on site is deemed negligible.

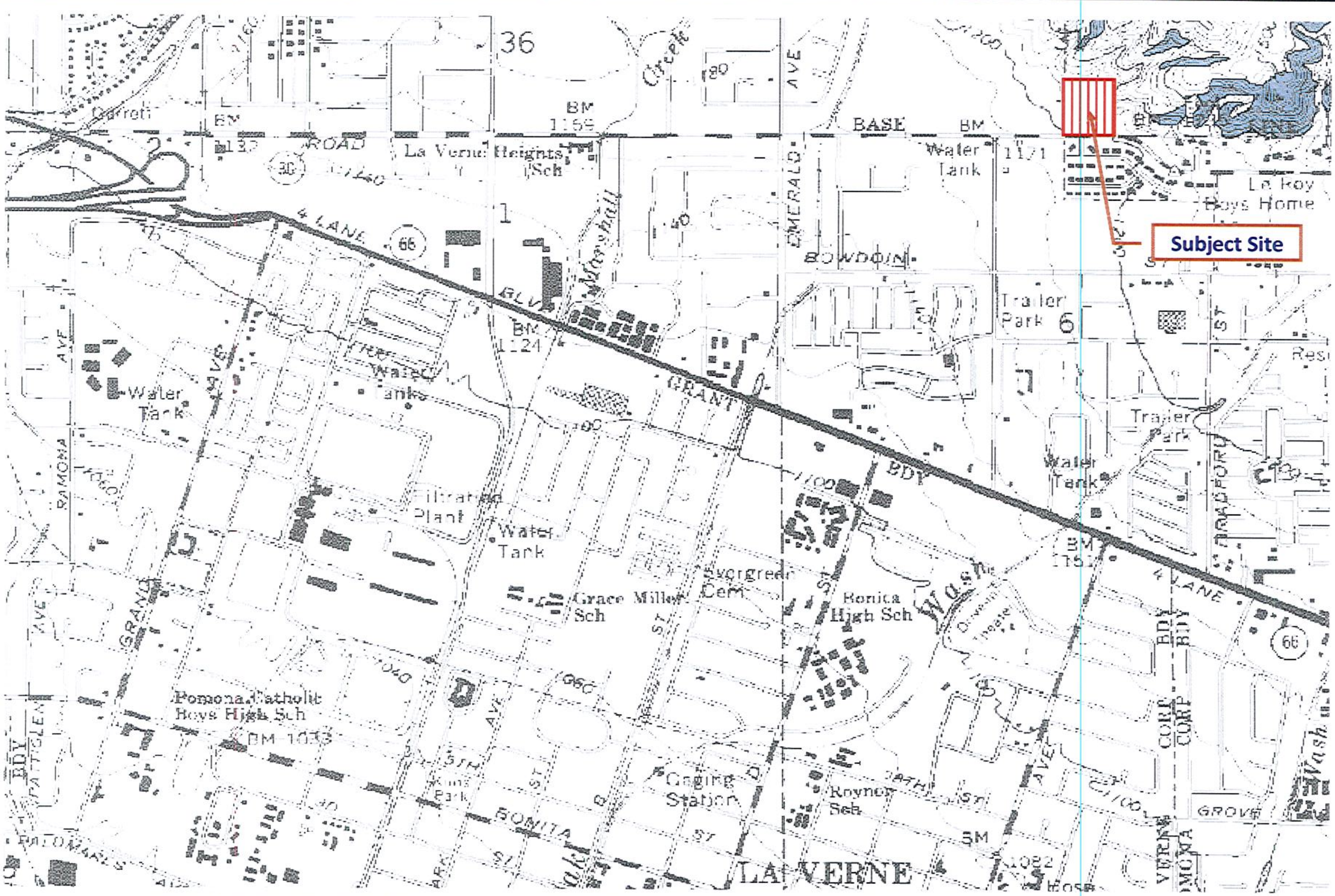
6.3 LANDSLIDING

The natural slopes surrounding the proposed lots ascend to the north and east into the surrounding hills. The natural slopes consist of varying thicknesses of slopewash overlying weathered bedrock, over massive, very hard quartz diorite bedrock. The property has been located on the CGS Seismic Hazards Map for the San Dimas Quadrangle and the Site is not within an area identified by CGS as having a potential for Earthquake-Induced Landslides, as shown on Figure 3, Local Seismic Hazard Map. There is no indication that recent landslides or unstable slope conditions exist on or adjacent to the project Site that would otherwise result in an obvious landslide hazard to the proposed development or adjacent properties. Based on our experience in the general vicinity with the underlying bedrock structure, it is our opinion that the potential for earthquake-induced landslides in the future is considered low.

6.4 TSUNAMIS AND SEICHES

Due to the elevation of the site, hazard from a tsunami is considered nil.

Seiches are rhythmic movements of water within a lake or other enclosed or semi-enclosed body of water, generally caused by earthquakes. There are no known bodies of water nearby that would not adversely affect the proposed development.



(Partial Excerpt of the State of California Seismic Hazard Zones San Dimas Quadrangle Official Map dated March 25, 1999)

LEGEND	
	Approximate Site Location
	Potential Landslide Hazard Area
	Potential Liquefaction Hazard Area

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Project:	Prop. Multi-SFD Residential Development 500 Baseline Road, La Verne, LA County, CA		
Figure 3	Local Seismic Hazard Map		
Proj. No.:	6517.14	Date:	December, 2014

6.5 FLOOD HAZARDS

The subject site is located on the ESRI/FEMA Hazard Awareness site. The subject site is not located within the limits of the 100 or 500 year flood plain.

7.0 GEOTECHNICAL EVALUATION AND RECOMMENDATIONS

Based on the findings of the Investigation, it is ASE's geotechnical opinion that the Site may be developed as planned, provided the site grading and foundation design criteria discussed herein are incorporated into the project plans and specifications and implemented during construction.

The major geotechnical considerations affecting the design and construction of the proposed residential subdivision are deemed to include the following:

1. Soil disturbance as a result of site demolition and clearing operations.
2. Presence of loose, low density soils within the zone of foundation bearing stratum.
3. On-site near surface soils exhibiting some hydro-collapse potential upon saturation (hydro-consolidation) under nominally imposed loading.
4. Presence of over-sized rocks/boulders within the foundation bearing stratum.

It is ASE's opinion that overexcavation and backfilling with properly compacted fill in the building areas, as recommended herein, will be essential to reduce unfavorable foundation displacement as a consequence of settlement of underlying soils, and to provide satisfactory bearing stratum for the new residential buildings. The grading recommendations provided herein should be reviewed when final project concept and grading plans are available. The recommendations provided herein apply to conventional shallow foundations comprising continuous spread footings and isolated pad footings, together with concrete slab-on-grade.

7.1 SITE PREPARATION

7.1.1 Existing Improvements:

Prior to the inception of site grading, it will be necessary to remove existing improvements, if any, including any remaining exposed and buried obstructions, which may be in the areas of proposed construction. All debris generated from site demolition operations should be disposed of off-site. Concrete fragments from site demolition operations may be re-used onsite, provided any reinforcement is removed and it can be broken down to fragments no greater than 4 inches in any dimension.

7.1.2 Surface Vegetation:

Surface vegetation and organics should be stripped from areas of proposed construction. Stripping should penetrate at least six inches into surface soils. Any soil contaminated with organic matter (such as root systems or strippings mixed into the soil) should be disposed of off-site or set aside for future use in non-structural landscaping areas. Removal of trees and shrubs should include rootballs and attendant root systems.

7.1.3 Underground Utilities:

Any underground utilities to be abandoned within the area of proposed construction should be cut off a minimum of 5 feet from the area of the future development. The ends of cut off lines should be plugged a minimum of 5 feet with concrete exhibiting minimum shrinkage characteristics to prevent water migration to or from hollow lines. Capping of lines may also be required should the plug be subject to any line pressure.

Alternatively, deep hollow lines may be left in place, provided they are filled with concrete. No filled line should be permitted closer than 2 feet from the bottom of future foundations.

Local ordinances relative to abandonment of underground utilities, if more restrictive, will supersede the above minimum requirements.

7.2 SITE GRADING

In general, it is the opinion of ASE that proposed new foundations may be made to extend into competent native soils in most cases. In view of reducing the adverse effects resulting from excessive total or differential settlement developing underneath the proposed buildings, as well as to ensure uniform bearing competency supporting the proposed buildings, engineered improvements of on-site soils are recommended in the following sections.

7.2.1 Undocumented Fill / Loose and Disturbed Surficial Soils:

Regardless of areas of cut or fill, any undocumented fill, if uncovered at the time of grading, and loose and disturbed surficial soils encountered within the area of structural improvements during site grading, should be fully excavated and removed. Any native soils disturbed during demolition and clearing operations should also be removed fully. Where possible, lateral extent of the aforementioned removal beyond structure perimeters should be to a minimum distance equal to the depth of loose/disturbed soil removed or three (3) feet, whichever is greater.

The exposed excavation bottoms should be scarified to a minimum 6-inch depth and recompacted to a minimum of 90 percent relative compaction at a minimum of 2 percentage points over optimum moisture content prior to backfilling with approved soils as specified in Section 7.2.6 below. Unless otherwise stated, the measurement of relative compaction in this report should always refer to the latest edition of ASTM D1557 test procedure.

7.2.2 Remedial Grading:

To provide acceptable support for structure foundations and slabs, it is recommended that the native soils within the building pads be overexcavated uniformly to a minimum depth of seven (7) feet below existing grade or two (2) feet below the bottom of the proposed footing and/or slab, whichever is deeper, and replaced with properly compacted fill such that the building footings and slabs are supported on a layer of re-engineered, compacted fill. The overexcavation should extend laterally a minimum of five (5) feet beyond building perimeters, where possible.

The presence of cobbles and boulders, if exposed at the excavation bottom, may leave an uneven surface, which should be backfilled with properly compacted fill. The excavation bottom should then be saturated for a period of at least 24 hours and compacted with heavy mechanical equipment to reduce potential for hydro collapse of site soils.

Soils exposed at excavation bottom to a depth of one (1) foot should be reworked and recompacted to exhibit a minimum of 90 percent relative compaction at a minimum of 2 percentage points over optimum moisture content prior to receiving additional fill placement. It is advised that the Geotechnical Consultant be on-site to inspect actual exposed ground condition and re-evaluate and, if necessary, revise pertinent earthwork/foundation recommendations. The exposed excavation bottom should be observed, tested, and approved by the Geotechnical Consultant prior to placing compacted fill or improvement construction. In case of the presence of localized loose soils, the overexcavation may need to be deepened accordingly to delete the loose soil condition. However, any deepened overexcavation may be terminated when the exposed native, undisturbed soils exhibit a natural relative compaction greater than 85 percent, subject to testing and inspection by the representative of the Geotechnical Consultant.

The Geotechnical Consultant should be provided with appropriate foundation details and staking during grading to verify that depths and/or locations of the recommended overexcavation are adequate. For areas on site that grading recommendations stipulated in both Sections 7.2.1 and 7.2.2 apply, the more stringent grading criteria between the two sections should govern.

The depth of overexcavation should be reviewed by the Geotechnical Consultant during the actual construction. Any subsurface obstruction, buried structural elements, and unsuitable material encountered during grading, should be immediately brought to the attention of the Geotechnical Consultant for proper exposure, removal and processing, as recommended.

Based on the above grading recommendations, no transition between cut and fill should exist at the base of any continuous foundation and slab members or significant improvements subsequent to the grading operation. Utilities may span across subsurface transitions. However, the utility designers should consider the effects of subsurface transitions on settlement sensitive conduits.

7.2.3 Exterior Concrete Slab / Flatwork and AC/PCC Pavement Support:

It is recommended that exterior concrete slabs/flatwork, regardless of areas of cut or fill, be underlain by a minimum eighteen (18) inches of approved compacted fill beneath existing grade or finish grade, whichever is lower, and extend a minimum of eighteen (18) inches beyond the footprint of the exterior slabs. The same subgrade preparation should apply to the support of any planned asphaltic concrete (AC) or Portland Cement Concrete (PCC) pavement area. Approved fill material in areas of exterior concrete slabs/flatwork and AC/PCC pavement should consist of on-site or import suitable material recompacted to a minimum 90 percent relative compaction at a minimum of 2 percentage points above optimum moisture content.

7.2.4 Imported Soils:

Any imported soil required to complete grading operations should consist of suitable soils exhibiting an Expansion Index ("EI") less than 20 per ASTM 04829-03 Test Method, and should be free of debris, particles greater than 4 inches in maximum dimension, organic matter or other deleterious materials. All potential import material must be approved by the Geotechnical Consultant or his representative prior to its arrival on site. However, final acceptance of any imported soil will be based upon review and testing of the soil actually delivered to the site.

7.2.5 Expansive Soils

Laboratory testing of representative on-site soil samples indicates a "Very Low" soil expansion potential (i.e. EI = 5 to 18) as per 2013 CBC. As such, it is our opinion that for site conditions, soil expansion may not be a critical factor in design. The degree of soil expansion should be confirmed by additional tests during or after rough grading operations.

7.2.6 Backfilling and Compaction Requirements:

Existing on-site soils, unless indicated otherwise, are considered suitable for re-use during site grading, provided foundation design and construction recommendations presented in Section 7.3 below are implemented, and for backfilling of utility trenches, provided they are free of debris, particles greater than 4 inches in maximum dimension, organic matter or other deleterious materials, and are to a suitable moisture condition to permit achieving the required compaction.

On-site and import materials approved for use should be placed in horizontal lifts of approximately 8-inches in loose thickness, moisture conditioned to at a minimum of 1 percentage point above optimum moisture contents, and compacted to a minimum 90 percent relative compaction.

7.2.7 Tests and Observations:

All grading, compaction, and backfill operations should be performed under the observation of and testing by the Geotechnical Consultant's representative. An adequate number of field tests should be taken to ensure compliance with this report and local ordinances.

If it is determined during grading that site soils require greater overexcavation in order to achieve sufficient support for the proposed structures, this additional work should be performed in accordance with the recommendations of the Geotechnical Consultant.

7.2.8 Excavation Procedures:

Excavations of site soils 4 feet or deeper should be temporarily shored or sloped in accordance with Cal OSHA requirements.

a) Temporary Slopes:

In areas where excavations deeper than 4 feet are not adjacent to existing structures or public right-of-ways, sloping procedures may be utilized for temporary excavations. It is recommended that temporary slopes in native alluvial soils be graded no steeper than 1:1 for excavations up to 10 feet in depth. For areas The above temporary slope criteria is based on level soil conditions behind temporary slopes with no surcharge loading (structures, traffic) within a lateral distance behind the top of slope equivalent to the slope height.

It is not recommended that excavated soils be placed near and behind the top of slope. A minimum setback distance equivalent to the slope height should be maintained between the top of slope and heavy excavating/grading equipment.

Should running sand conditions be experienced during excavation operations, flattening of cut slope faces, or other special procedures may be required to achieve stable, temporary slopes.

Soil conditions should be reviewed by the Geotechnical Consultant as excavation progresses to verify acceptability of temporary slopes. Final temporary cut slope design will be dependent upon the soil conditions encountered, construction procedures and schedule.

b) Shoring:

Temporary shoring will be required for those excavations where temporary slope cuts as specified above are not feasible.

Temporary cantilever shoring, if used, should be designed to resist an active earth pressure of <u>39</u> pounds per cubic foot ("pcf") equivalent fluid pressure (EFP) having a triangular distribution for level ground conditions behind shoring. The design of cantilevered shoring should also include surcharge loading effects of existing structures and anticipated traffic, including delivery and construction equipment, when loading is within a distance from the shoring equal to the depth of excavation. The lateral contribution of such a uniform surcharge load may be calculated by multiplying the surcharge load by 1/3. In addition, a minimum uniform lateral pressure of 100 pounds per square foot in the upper ten feet of shoring should be incorporated in the design when normal traffic is permitted within ten feet of the shoring. The resultant lateral deflection of shoring element and surficial settlement immediately behind cantilevered shoring could be up to one (1) to one and one half (1½) inches. Should this ground deformation be intolerable to the existing improvements, internal bracing/strutting that is more capable of limiting ground movement associated with excavation should be installed, as per recommended below.

7.3 FOUNDATION DESIGN

It is our opinion that conventional continuous spread footings and isolated pad footings extending into and bearing on approved competent native material may be used to provide support for the proposed Remodeling foundations at the subject site. The design of foundations and slab-on-grade should comply with pertinent criteria/requirements of the 2013 CBC. Presented below are the recommended geotechnical criteria for the design of conventional footings.

7.3.1 Minimum Footing Dimension and Reinforcement:

In order to mobilize sufficient soils bearing capacity supporting the proposed structural improvements, it is recommended that minimum footing embedment and width for continuous spread footings should be 18 inches (for 2-story buildings) or 24 inches (for 3-story buildings) below lowest adjacent finish soil grade and 15 inches, respectively. The dimension for isolated spread footings should be a minimum of 24 inches square and 18 inches (for 2-story buildings) or 24 inches (for 3-story buildings) deep. From geotechnical consideration, all footings should be minimally reinforced with two No. 4 reinforcing bars placed near the top and two No. 4 reinforcing bars placed near the bottom. For isolated pad footings, the minimum reinforcement should be applied bi-axially.

Foundation design details such as concrete strength, reinforcements, etc. should be established by the Structural Consultant.

7.3.2 Allowable Soils Bearing Capacity:

For footings complying with the minimum dimension requirements stipulated in Section 7.3.1, allowable soils bearing capacities inclusive of both dead and live loads on the order of 2000 pounds per square foot ("psf") may be used in the design of continuous footings and isolated pad footings, respectively, when supported on approved native site soils as outlined in Section 7.2. This value may be increased by 250 psf and 100 psf for each additional 12-inch increment of footing depth and width, respectively, to a maximum aggregate design value not to exceed 3000 psf.

The above allowable bearing capacity may be increased by one-third (1/3) when subject to short-term, transient loading induced by wind or seismic activities.

7.3.3 Settlements:

Total settlements for conventional footings designed and constructed in accordance with the above criteria, and supporting a maximum assumed column and wall loads of 25 kips and 2.0 kips per linear foot, respectively, are not anticipated to exceed one (1) inch. A differential settlement on the order of one half (½) inch over a distance of approximately 40 feet. A differential settlement on the same order of magnitude is anticipated between adjacent column and/or wall footings that support the maximum assumed loads.

This office should be contacted for further evaluation and recommendations, as necessary, should final design structural loads exceed the maximum loads used in our analysis by more than 10 percent.

7.3.4 Lateral Resistance:

Resistance to lateral loads can be assumed to be provided by passive earth pressure and by friction acting on structural components in permanent contact with the subgrade soils.

Lateral resistance on the sides of foundations may be computed using a passive lateral earth pressure of 250 pcf EFP for footings embedded into properly compacted fill, or firm, undisturbed formational material, subject to a maximum of 2500 psf. An ultimate coefficient of friction of 0.4 may be assumed with dead load forces between concrete and the supporting soils. The above passive lateral earth pressure may be used in conjunction with the ultimate coefficient of friction in calculating composite lateral resistance, provided the passive lateral earth pressure value is reduced by one-third (1/3).

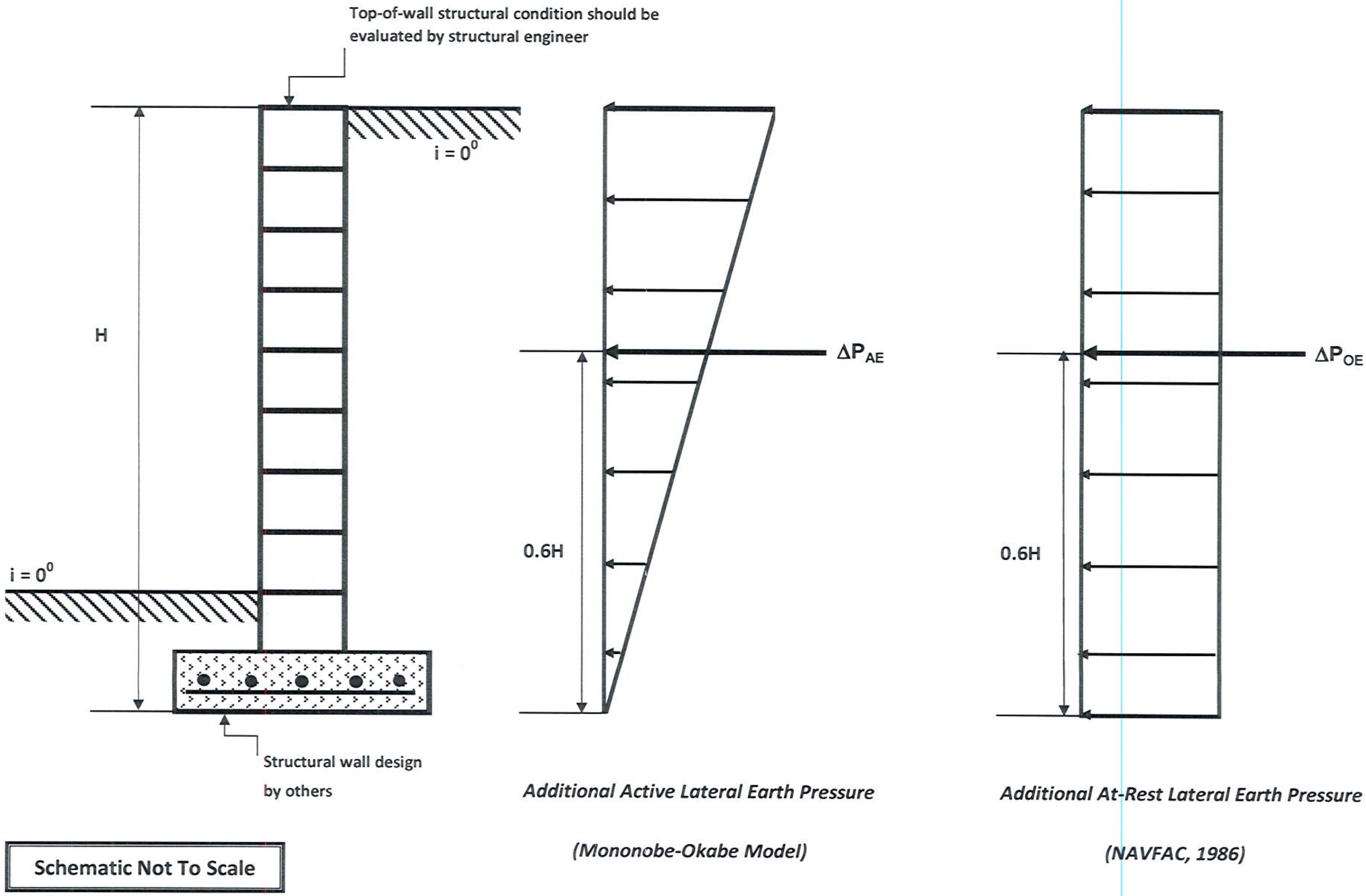
7.3.5 Retaining Walls:

Cantilevered retaining walls with various backfill soil and sloping conditions should be designed to resist "active" lateral earth pressure values shown in the following table. Corresponding values of "at-rest" lateral earth pressure for varying backfill soil and sloping conditions should be used for design of top-restrained retaining walls. For walls retaining greater than six (6) feet, as measured from the heel of the footing, should be further designed to resist seismic forces, as per 2013 CBC. As such, additional lateral earth pressures accounting for a "k_{eq}" value of 0.433g, based on a f_{eq} coefficient of 0.39 derived from Figure 1(b) of CGS's SP117A, and a PGA_M of 1.109g, and corresponding to 2 different wall fixity conditions as shown in the table below and Figure 4, Seismically-Induced Lateral Earth Pressure Diagram, should be considered for retaining wall design.

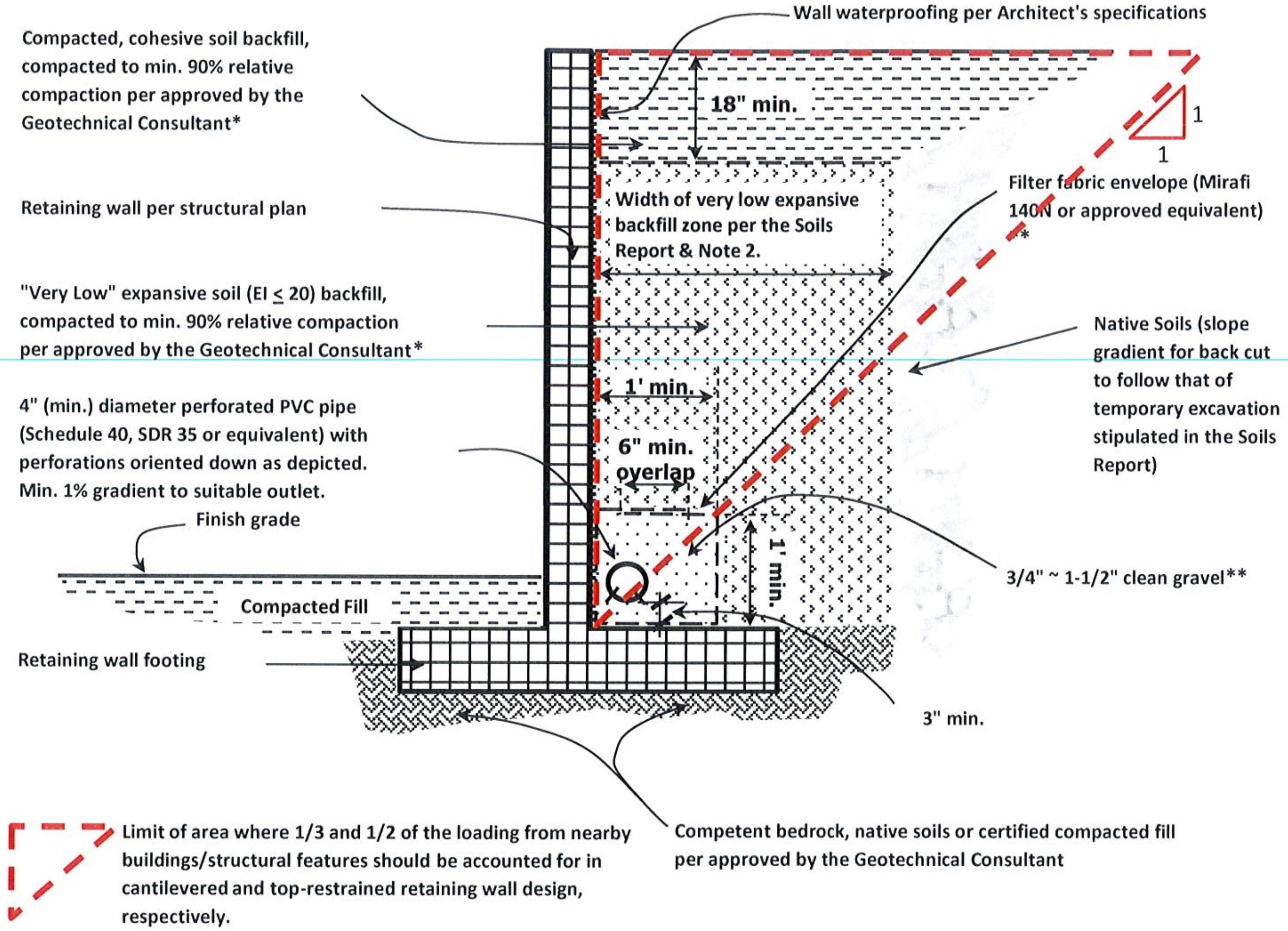
Cantilevered and top-restrained retaining walls subject to uniform surcharge loads should be designed for an additional uniform lateral pressure equal to one-third (1/3) and one-half (1/2) of the anticipated surcharge pressure, respectively, as depicted in Figure 5, Nearby Building Surcharge and Retaining Wall Drainage Details. Footings should be reinforced as recommended by the Structural Consultant with appropriate back drainage provided to avoid excessive build-up of hydrostatic wall pressures.

In order to mobilize sufficient soils bearing capacity supporting the proposed structural improvements, it is recommended that minimum retaining wall footing embedment, width and reinforcement should be as per recommended in the table below. However, final foundation design details such as concrete strength, reinforcements, etc. should be established by the Structural Consultant.

For footings complying with the minimum dimension requirements stipulated in the table below, corresponding values of allowable soils bearing capacity inclusive of both dead and live loads may be used in the design of retaining wall footings, when supported on approved compacted fill soils or firm,



Associated Soils Engineering, Inc. 2860 Walnut Avenue Signal Hill, CA 90755 Tel (562) 426-7990 Fax (562) 426-1842	**Seismically-Induced Lateral Earth Pressure Diagram**	Project Name:	Prop. Multi-SFD Residential Development 500 Baseline Road, La Verne, LA County, CA	
		Figure 4	Project No.:	6517.14
			Date:	December, 2014



SPECIFICATIONS FOR CALTRANS CLASS II PERMEABLE MATERIAL	
U.S. STANDARD SIEVE SIZE	% PASSING
1"	100
3/4"	90 ~ 100
3/8"	40 ~ 100
No. 4	25 ~ 40
No. 8	18 ~ 33
No. 30	5 ~ 15
No. 50	0 ~ 7
No. 200	0 ~ 3
Sand Equivalent > 75	

* Based on ASTM D-1557-02

** If Caltrans Class II permeable material (see gradation to left) is used in place of 3/4" ~ 1-1/2" gravel, filter fabric may be deleted. Caltrans Class 2 permeable material should be compacted to minimum 90 percent relative compaction. Unless otherwise specified, a minimum of 1 cubic foot of gravel should be used for each 1 foot run of drain.

Note 1: Composite drainage products such as Contech C-Drain, Miradrain or J-Drain may be used as alternative to gravel or Class II. Installation should be performed in accordance with manufacturer's specifications.

Note 2: Width of " Very Low" expansion backfill equals 1/2 of retained height, or distance from back of wall to heel of footing, whichever is greater.

Schematic Not To Scale

Associated Soils Engineering, Inc.	Project:	Prop. Multi-SFD Residential Development 500 Baseline Road, La Verne, LA County, CA		
2860 Walnut Avenue Signal Hill, CA 90755	Figure 5	Nearby Building Surcharge Consideration & Retaining Wall Drainage Details		
Tel (562) 426-7990 Fax (562) 426-1842	Proj. No.:	6517.14	Date:	December, 2014

undisturbed native soils. The values of allowable soils bearing capacity may be increased by one-third when subject to short-term, transient loading induced by wind or seismic activities.

Retaining Wall Design Parameters

Design Parameter	*Values*
Allowable Soils Bearing Capacity	2200 psf
Increase in Bearing Capacity for each 12-inch increment in Footing Depth / Width	250 psf / 100 psf[1], subject to composite ceiling value of 3,000 psf
Active Pressure (level / 2H:1V Slope) *On-site Fill (EI ≤ 20)*	39 pcf EFP[2]
At-rest Pressure (level / 2H:1V Slope) *On-site (EI ≤ 20)*	58 pcf EFP[2]
Passive Pressure (per foot of depth)	250 pcf[3], subjected to ceiling value of 2500 psf
Seismic Loading (active-level), ΔP_{AE} [4]	$24 H^2$ lb/ft [5]
Seismic Loading (active-2H:1V), ΔP_{AE} [4]	$40 H^2$ lb/ft [5]
Seismic Loading (at-rest - level), ΔP_{OE} [6]	$32 H^2$ lb/ft [5]
Seismic Loading (at-rest – 2H:1V), ΔP_{OE} [6]	$40 H^2$ lb/ft [5]
Coefficient of Friction	0.4[3]
Minimum Footing Depth	18 inches (2-story); 24 inches (3-story)
Minimum Footing Width	15 inches
Minimum Footing Reinforcement	4 No. 4 rebar; 2 near top and 2 near bottom[2]

(1) Based on compliance with earthwork recommendations in Sections 7.2;

(2) Design values assuming a drained condition with "Very Low" expansive materials (EI less than or equal to 20) within the backfill zone and no surcharge loading conditions;

(3) Passive lateral resistance may be combined with frictional resistance provided the passive lateral resistance value is reduced by one-third (1/3).

(4) Based on 39% of a PGA_M of 1.109g and the Mononobe-Okabe equation. See Figure 4 for pressure distribution diagram.

(5) Height of retaining wall measured from the bottom of retaining wall footing.

(6) Based on 39% of a PGA_M of 1.109g and the NAVFAC equation. See Figure 4 for pressure distribution diagram.

It is preferred that retaining wall backfill should consist of approved "Very Low " expansive material (i.e. EI of 20 or less) and should be compacted to a minimum relative compaction of 90 percent. Flooding or jetting of backfill should not be permitted. Granular backfill should be capped with 18 inches (minimum) of relatively impervious fill to seal the backfill and prevent saturation. Figure 5 illustrates the general configuration and requirements for retaining wall drainage. Other retaining wall drainage alternatives such as CONTECH C-Drain system or MIRADRAIN may be considered but should first be reviewed and approved by the Geotechnical Consultant prior to implementation.

Should the space behind any new retaining wall be too tight to implement the above recommended backfill effort, as an alternative, 2-sack control density fill may be used in lieu of regular soil backfill, provided that the integrity and functionality of wall backdrain is protected and maintained. The Geotechnical Consultant should be on-site during slope cutting and retaining wall construction to inspect the exposed slope conditions, to evaluate the stability of slope cuts and, if necessary, to provide additional remedial or mitigative recommendations.

It should be noted that the use of heavy compaction equipment in close proximity to retaining structures can result in wall pressures exceeding design values and corresponding wall movement greater than that normally associated with the development of active or at-rest conditions. In this regard, the contractor should take appropriate precautions during the backfill placement.

7.3.6 Footing Observation:

All footing excavations should be observed by the Geotechnical Consultant's representative to verify minimum embedment depths and competency of bearing soils. Such observations should be made prior to placement of any reinforcing steel or concrete.

7.4 CONCRETE SLAB-ON-GRADE AND FLATWORK

Concrete floor slabs in buildings and exterior concrete flatwork should be supported on properly compacted soils as recommended in Section 7.2 of this report. The slab subgrade soils should also be proof-rolled just prior to construction to provide a firm, unyielding surface, especially if the subgrade has been disturbed or loosened by the passage of construction traffic. Final compaction and testing of slab subgrade should be performed just prior to placement of concrete.

Interior and exterior slabs should be properly designed and reinforced for the construction and service loading conditions, as well as considering the soil expansion potential. To minimize future slab distress, geotechnically, it would be prudent to provide a minimum actual slab thickness of four (4) inches with minimum reinforcement consisting of No. 3 reinforcing bars spaced maximum 24 inches each way, placed at mid-slab, or equivalent. The structural details, such as slab thickness, concrete strength, amount and type of reinforcements, joint spacing, etc., should be established by the Structural Consultant.

The entire slab within each building should be underlain by an impermeable vapor barrier (minimum 10-mil-thick visqueen) per 2013 California Residential Code, Section R506.2.3. A minimum 12-inch overlap between visqueen sheets should be ensured during placement. All visqueen sheets should be puncture free prior to slab construction. Above the visqueen, the interior slab may be underlain by 2 inches of clean sand with a Sand Equivalent (S.E.) value tested per ASTM D 2419-09 Test Method no less than 30. The visqueen should also be underlain by a minimum 4-inch-thick capillary break layer consisting of aggregate complying with the following criteria:

Sieve Size	Percent Passing
1/2 inch	100
No. 16	50-85
No. 200	<15
Sand Equivalent	>50

Exterior slabs should be properly jointed to limit the number of concrete shrinkage cracks. For long/thin sections, such as sidewalks, expansion or control joints should be provided at spacing intervals equal to the width of the section. Slabs between 5 and 10 feet in minimum dimension should have a control joint at centerline. Slabs greater than 10 feet in minimum dimension should have joints such that unjointed sections do not exceed 10 feet in maximum dimension. Where flatwork adjoins structures, it is recommended that a foam joint or similar expansion material be utilized. Joint depth and spacing should conform to the ACI recommendations. It is, however, cautioned that uneven heaving of exterior slabs may develop in the future when prolonged irrigation or seepage permeates the subgrade soil, especially in areas that expansive soil pockets exist due to inadequate control or inspection of earthwork construction.

7.5 Asphaltic Concrete (AC) Flexural Pavement Design

The finish grade at the subject site is anticipated to be underlain by compacted structural fill consisting of site soils. For preliminary pavement design purposes, an R-Value of 30 has been utilized considering the site soils as subgrade soils. Three (3) traffic indices ("TI") of 4.5, 5.5 and 7.0, together with the tested R-Value, have been utilized for the development of preliminary recommendations for the pavement sections. Analyses performed in accordance with the current edition of the Caltrans Highway Design Manual, and assuming compliance with site preparation recommendations, it is recommended that the AC pavement structural sections tabulated below be considered:

Traffic Index (TI)	Pavement Section Alternatives		Remark
	AC (inches)	AB(1) (inches)	
4.5	3.0	4.0	For Auto Parking Stalls.
5.5	3.0	7.0	For Auto Circulation Aisles.
7.0	4.0	8.0	For Fire Lanes/Truck Traffic Areas/Entry and Exits.

(1) CAB or CMB, Green Book sections 200-2.2 and 200-2.4, respectively, compacted to at least 95% relative compaction.

Please be reminded that the preliminary pavement section recommendations have been established based purely on procedures stipulated in Caltrans Manual. Local government authority should be consulted for minimum pavement section requirements and, if more stringent than that recommended by ASE, be complied with.

It is recommended that R-Value testing be performed on representative soil samples after rough grading operations on the upper 2 feet to confirm/modify applicability of the above pavement sections.

The aggregate base should conform to the Crushed Aggregate Base ("CAB") or Crushed Miscellaneous Base ("CMB") per Sections 200-2.2 and 200-2.4 of the Green Book requirements, respectively. The base course should be compacted to a minimum relative compaction of 95% at a minimum of 1 percentage point above the optimum moisture content. Field testing should be used to verify compaction, aggregate gradation, and compacted thickness.

The asphalt concrete pavement should be compacted to 95% of the unit weight as tested in accordance with the Hveem procedure. The asphalt concrete material shall conform to Type III, Class C2 or C3, of the Green Book. All subgrade and aggregate base materials should be proof-rolled by heavy rubber tire equipment to verify that the subgrade and base grade are in a non-yielding condition.

If the paved areas are to be used during construction, or if the type and frequency of traffic is greater than assumed in the design, the pavement section should be re-evaluated for the anticipated traffic.

7.6 Portland Cement Concrete (PCC) Pavements

The following concrete pavement sections are based on load safety factors of 1.0 and 1.1, and a modulus of subgrade reaction ("k" Value) of 180 pounds per cubic inch for site soils compacted as subgrade material, and the design procedures presented in the Portland Cement Association bulletin "Thickness Design for Concrete Highway and Street Pavements" (EB109.01P), 1984. A design service life of 20 years was assumed for the design of the Portland cement concrete pavement section.

Concrete Flexural Strength (psi) (1)	Pavement Thickness (in) (2), (4)	Pavement Thickness (in) (3), (4)
600	5.5	6.5
650	5.0	6.0

(1) Represents 90-day flexural strength. Based on Figure 10 of Reference 12, concrete with 28-day unconfined compressive strength values of 4000 to 4500 psi typically correlates to 90-day flexural strength values of 600 and 650 psi, respectively.
(2) Load Safety Factor = 1.0 (Auto Parking Stalls)
(3) Load Safety Factor = 1.1 (Fire Lanes/Truck Traffic Areas/Entry and Exits)
(4) Assumes no PCC shoulder or curb.

The Structural Consultant should establish the design details of the concrete pavement section, including reinforcements, concrete strength, and joint and load transfer requirements.

It is recommended that edges of concrete pavements which are not adjacent to existing buildings, or are adjacent to planter areas, be downturned a minimum of 12 inches or be constructed with curbing to prevent water infiltration to subgrade soils. If edges are downturned or curbing is constructed, the above pavement thicknesses should be decreased by 1/2 inch.

The upper one-foot of exposed subgrade soils beneath concrete pavements should be further compacted to a minimum 95 percent relative compaction with a minimum moisture content of one (1) percentage point above optimum moisture content. Subgrade soils should exhibit a firm, unyielding surface in addition to the recommended compaction. Final compaction and testing of pavement subgrade should be performed just prior to placement of aggregate base and/or concreting. Other pertinent subgrade preparation measures stipulated in the "Thickness Design for Concrete Highway and Street Pavements" (EB109.01P), 1984, or required by the jurisdictional municipal authorities should be followed accordingly.

7.7 SOIL CORROSIVITY EVALUATION

Soils corrosivity tests were performed on a representative sample of site soil. These tests were meant to determine the corrosive potential of on-site soils to proposed concrete foundations and underground metal conduits. The soils corrosivity test results are presented in Appendix A.

7.7.1 Concrete Corrosion:

Disintegration of concrete may be attributed to the chemical reaction of soils sulfates and hydrated lime and calcium aluminate with the cement. The severity of the reaction resulting in expansion and disruption of the cement is primarily a function of the concentration of soluble sulfates and the water-cement ratio of the concrete.

Soluble sulfate contents ranging from 0.021 to 0.027% by weight have been recorded from corrosivity testing conducted on on-site soils, as indicated in Appendix A. Per Table 4.2.1 of ACI 318-08, soils exhibiting soluble contents less than 0.1% by weight are classified as having "Not Applicable" sulfate exposure and "S0" sulfate exposure category. As such, for structural features to be in direct contact with on-site soils, the criteria on the type of Portland cement, the minimum 28-day unconfined compressive strength, and the water cement ratio as per stipulated in Table 4.3.1 of ACI 318-08 for the tested "S0" sulfate exposure category should be used for structure and foundation features as part of the renovation to be in contact with site soils.

7.7.2 Metal Corrosion:

In the evaluation of soil corrosivity to metal, the hydrogen ion concentrates (pH) and the electrical resistivity of the site and backfill soils are the principal variables in determining the service life of ferrous metal conduit. The pH of soil and water is a measure of acidity or alkalinity, while the resistivity is a measure of the soils resistance to the flow of electrical current.

Currently available design charts indicate that corrosion rates decrease with increasing resistivities and increasing alkalinities. It can also be noted that for alkaline soils, the corrosion rate is more influenced by resistivity than by pH.

The resistivity values ranging from 2,320 to 3,110 ohm-cm and the pH-values ranging from 7.35 to 7.73 classify on-site soils tested to be moderately corrosive to buried ferrous metals. Based on California Test 643, the year to perforation for 18-gauge steel in contact with soils of similar resistivity and pH-value exceeds 36 years for the moderately corrosive site soils. In lieu of additional testing, alternative piping materials, i.e. plastic piping, may be used instead of metal if longer service life is desired or required for utility pipes and fittings in direct contact with on-site soils. These resistivity values of on-site soils may also have implications to other materials and depths of embedment for steel reinforcement, etc. It may be desirable that a qualified corrosion consultant be engaged to review the building plans.

The tested soluble chloride contents ranging from 136 to 352 ppm recorded in our laboratory tests are considered corrosive to the threshold values of 100 and 200 ppm per Federal Highway Administration Standards (FHWA), 2002 and Caltrans Standards, 1999, respectively. Therefore, pertinent rebar protection measures against chloride corrosion under Exposure Class "C0" stipulated in Tables 4.2.1 and 4.3.1 of ACI 318-08 are applicable.

7.8 UTILITY TRENCHES

All trenches should be backfilled with approved fill material compacted to relative compaction of not less than 90 percent. Care should be taken during backfilling to prevent utility line damage. Should more stringent relative compaction be required by the grading code of the local authority, the later should govern.

The on-site soils may be used for backfilling utility trenches from one foot above the top of pipe to the surface, provided the material is free of organic matter and deleterious substances. Any soft and/or loose materials or fill encountered at pipe invert should be removed and replaced with properly compacted fill or adequate bedding material.

Bedding materials should consist of sand with a Sand Equivalent ("SE", per ASTM Test Method D2419) value not less than 30. On-site soils are not deemed suitable for bedding or shading of utilities. Imported soils for pipe bedding should consist of non-expansive granular soils.

The walls of temporary construction trenches are expected to be stable when excavated nearly vertical, with only minor sloughing provided the total excavation depth does not exceed 4 feet. Shoring of excavation walls or flattening of slopes will be required if greater excavation depths are necessary.

Trenches should be located so as not to impair the bearing capacity of soils or cause settlement under foundations. As a guide, trenches parallel to foundations should be clear of a 45-degree plane extending outward and downward from the edge of the foundations.

All work associated with trenches, excavations and shoring must conform to the State of California Safety Code.

7.9 PLAN REVIEW, OBSERVATIONS AND TESTING

All excavations should be observed by a representative of this office to verify minimum embedment depths, competency of bearing soils and that the excavations are free of loose and disturbed materials. Such observations should be made prior to placement of any fill, reinforcing steel or concrete. All grading and fill compaction should be performed under the observation of and testing by a Geotechnical Consultant or his representative.

As foundation and grading plans are completed, they should be forwarded to the Geotechnical Consultant for review of conformance with the intent of these recommendations.

8.0 FIELD PERCOLATION TEST DATA

Initial seepage rates obtained during the "Sand Soil Criteria Test" after overnight pre-soaking did not qualify on-site soils to be "Sandy Soils". Percolation tests were therefore performed using the "Normal" method (i.e. 6 hour test with 30-minute reading intervals) in accordance with WQMP Technical Guidance Document, Appendix VII procedures modified to test the cross sectional zone of typical soils within the level of anticipated storm water infiltration (e.g. approximately 1 foot to 3 feet below existing grade).

Field percolation tests were conducted on October 13, 2014. Stabilized field percolation test data indicates pre-adjusted percolation test rates of approximately 6.0 and 3.2 minutes per inch (mpi), for clean water in Borings B-1 and B-2, respectively. The minimum acceptable percolation rate for design of leach field type drainage systems for sewage water as per the Uniform Plumbing Code, 1985 Edition, is 60 mpi. Field percolation test data is presented on the attached Plates H-1 and H-2 in Appendix A.

Tabulated below are the results of percolation testing conducted at the locations of Boring B-1 and B-2, including the infiltration rate derived from the Porchet Method of Percolation Rate Conversion.

	Percolation Test Rate	Infiltration Rate*
Boring No.	(Minutes/ Inch)	Inches/ Hour
B-1	6.0	0.35
B-2	3.2	0.72

* Porchet Method Conversion from Percolation Rate.

Please be informed that during installation of on-site storm water dispersal system, the following factors should be noted:

- The degree of compactive effort in the upper 1 to 1.5 feet of soils above any filter material should be between 90 and 92 percent relative compaction. As any greater compactive efforts in the soil strata of water retention system construction may cause the percolation rates to reduce substantially, it is not advisable to impose significant structural loading in these areas, from a geotechnical viewpoint.

The rate of water transmission from the filter material to the soil will be limited the porosity characteristics of the fabric wrap around the filter material.

9.0 CLOSURE

This report has been prepared for the exclusive use of LaVerne Investments, LLC (i.e. the "Owner") and their designated design consultants/representatives relative to the design and construction of the proposed Remodeling at the subject site. The report has not been prepared for use by other parties, and may not contain sufficient information for purposes of other parties.

The Owner or their representatives should make sure that the information and recommendations contained in this report are brought to the attention of the project engineers and architects and incorporated into the plans, and that the necessary steps are taken to confirm that the contractors carry out such recommendations in the field.

This office should be notified should any of the following, pertaining to the final site development, occur:

1. Final plans for site development indicating utilization of areas not originally proposed for construction.
2. Structural loading conditions differ significantly, say, ten (10) percent, from those utilized for evaluation and preparation of this report.
3. The site grading/construction does not start within 12 months following the date of this report.
4. Change of ownership of property that would render the proposed development indicated in this report irrelevant or significantly different.

Should any of the above occur, this office should be notified and provided with finalized plans of site development for our review to enable us to provide the necessary recommendations for additional work and/or updating of the report. Any charges for such review and necessary recommendations would be at the prevailing rate at the time of performing review work.

The findings contained in this report are based upon our evaluation and interpretation of the information obtained for the limited number of test borings and the results of the laboratory testing and engineering analysis. As part of the engineering analysis it has been assumed, and is expected, that the geotechnical conditions which exist across the site are similar to those encountered in the test excavations. However, no warranty is expressed or implied as to the conditions at locations or depths other than those excavated. Should any conditions encountered during construction differ from those described herein, this office should be contacted immediately for recommendations prior to continuation of work.

Our findings and recommendations were obtained in accordance with generally accepted current professional principles and local practice in geotechnical engineering and reflect our best professional judgment. We make no other warranty, either express or implied.

These findings and recommendations are, however, dependent on the above assumption of uniformity and upon proper quality control of fill placed and foundations installed. Geotechnical observations and testing should be provided on a continuous basis during grading at the site to confirm design assumptions and to verify conformance with the intent of our recommendations. If parties other than Associated Soils Engineering, Inc., are engaged to provide services during construction they must be informed that they will be required to assume complete responsibility for the geotechnical phase of the project by concurring with the recommendations in this report or providing alternative recommendations.

This concludes our scope of services as indicated in our proposal dated September 17, 2014, however, our report is subject to review by the controlling authorities for the project. Any further geotechnical services that may be required of our office to respond to questions/comments of the controlling authorities after their review of the report will be performed on a time and expense basis as per our current fee schedule. We would not proceed with any response to report review comments/questions without authorization from your office. We appreciate your business and hope that we can assist you during construction related service.

APPENDIX A SITE EXPLORATION AND LABORATORY TESTING

The following Appendix A presents 1) the description of field exploration program and the loggings of subsurface soils encountered, and 2) substantiating data and laboratory test results, both have been based upon for the performance of engineering evaluations and assembly of recommendations stipulated in this report.

A.1 Site Exploration

ASE's field investigation consisted of advancement of a total of nine (9) exploratory test pits and two (2) exploratory borings on October 10, 2014 at the approximate locations indicated on the attached Boring Location Map, Plate A. The exploratory test pits were excavated by Mike's Geotechnical Backhoe Service, utilizing a rubber tired backhoe with a 24-inch wide bucket. The test pits extended to depths varying from five (5) feet to thirteen (13) feet six (6) inches. The exploratory borings (B-1 and B-2) were drilled by Associated Soils Engineering, Inc. utilizing manually operated drilling equipment with a 6-inch diameter cutting bit. The borings each extended to a depth of 3 feet from the existing grade for the sole purpose of performing percolation testing.

Continuous observations of the materials encountered in the exploratory borings were recorded in the field first during the excavation. The soils were classified in the field by visual and textural examination, and were further examined/re-classified in ASE's laboratory with bulk soil samples obtained from the field. Relatively undisturbed samples of soils were extracted in exploratory borings with Modified California barrel sampler. All samples were secured timely in moisture-resistant bags to minimize the loss of field moisture, followed by prompt delivery to the laboratory for ensuing testing.

Detailed descriptions of the soils and bedrock encountered and conditions observed during the subsurface exploration are shown in the attached Field Log of Test Pits TP-1 through TP-9. The test pit logs also present the USCS classifications of soils encountered, depths and types of soil samples, field dry densities and moisture contents, as well as the corresponding laboratory tests performed.

Upon completion of exploration, all exploratory borings were backfilled with native cutting and manually tamped.

A.2 Laboratory Testing

After samples were visually classified in the laboratory, a testing program aiming at providing sufficient data for the ensuing engineering evaluation and analysis was established, which consisted of:

- **Moisture Content and Density Tests**

  Relatively undisturbed soil samples retained within 2.416-inch inside diameter (I.D.) by one-inch high rings within the Modified California barrel sampler were tested in the laboratory to determine their respective in-place dry densities and moisture contents. The results are presented on the respective Field Logs of Test Pits.

- **Direct Shear Tests**

  In order to determine shear strength parameters of representative soil samples, direct shear tests were performed on relatively undisturbed and remolded ring samples in accordance with ASTM D 3080. The test results are presented on Plate D-1 through D-3.

- **Maximum Dry Density and Optimum Moisture Content Test**

  The following maximum density test was conducted in accordance with ASTM D1557-12, Method A, using 5 equal layers, 25 blows each layer, 10-pound hammer, 18 inch drop in a 1/30 cubic foot mold. The results are as follows:

Boring No.	Depth (ft)	Maximum Dry Density (pcf)	Optimum Moisture Content (%)	Material Classification
TP-2	3 – 5	133.0	8.5	SM
TP-4	2 – 3	131.0	9.0	SC

- **Expansion Test**

  An expansion test was performed on a soil sample to determine the swell characteristics. The expansion test was conducted in accordance with a modification of the California Building Code (2010 Edition) Standard No. 18-2, Expansion Index Test. The expansion sample was remolded to approximately 90 percent relative compaction at near optimum moisture content, subjected to 144 pounds per square foot surcharge load and saturated. The test results are tabulated below:

Sample ID	Tested Expansion Index	Expansion Classification	Material Classification
TP-2 @ 3' - 5'	4	Very Low	SM-SC
TP-4 @ 2 - 4'	18	Very Low	SC

- **Soil Corrosivity Tests**

  Tests of soluble sulfate and chloride contents were performed in accordance with California Test Methods 417 and 422, respectively, to assess the degree of corrosivity of the subgrade soils with regard to concrete and normal grade steel. Resistivity and ph-value tests were performed in accordance with ASTM G57 Test Method and California Test Method 643, respectively, to assess the degree of corrosivity of the subgrade soils with regard to ferrous metal piping. The test results are tabulated below.

Sample ID	Sulfate Content [1] (%)/ Degree of Severity	Chloride Content [2] (ppm) / Degree of Severity	Resistivity [3] (OHM-cm)/ Degree of Corrosivity	pH-value[4]
TP-2 @ 3' - 5'	0.021/Not Applicable	352/Not Applicable	3,110/ Moderately Corrosive	7.73
TP-4 @ 2 - 3'	0.027/Not Applicable	136/Not Applicable	2,320/ Moderately Corrosive	7.35

1. California Test Method 417
2. California Test Method 422
3. ASTM G 57 Test Method
4. California Test Method 643

Proj. No. 6517.14
LaVerne Investments, LLC
500 Baseline Road, LaVerne, CA

LOG OF EXPLORATORY TEST PITS

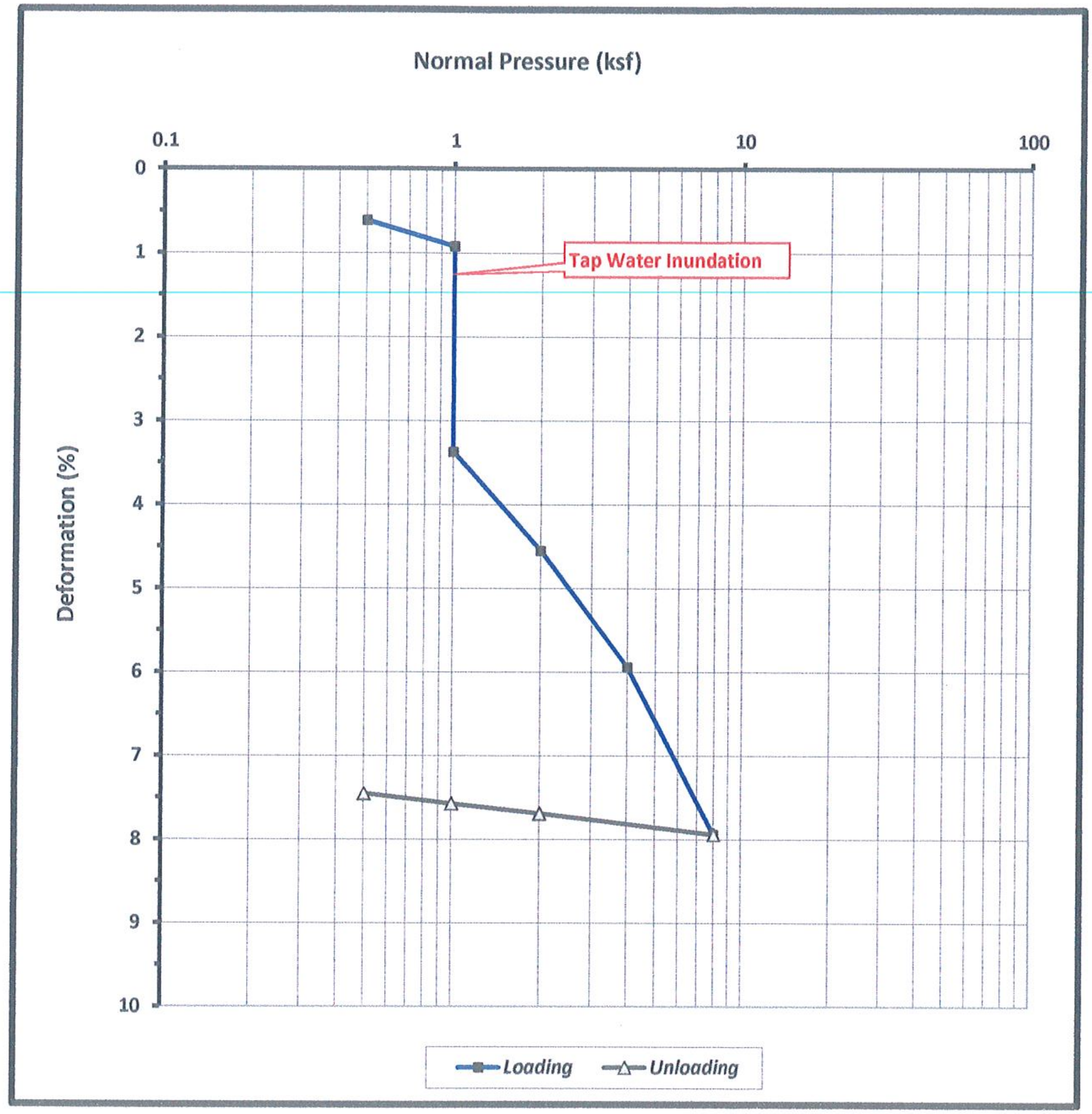
Date logged: 10/10/14
Logged by: TR

Test Pit No.	Depth (ft)	Sample Depth	Dry Den % Moist	GEOTECHNICAL DESCRIPTION
TP-1	0-2	2'	108.6 @3.6	Alluvium (Qal): Silty Sand, medium dense, dry to damp, medium brown, porous
	2-10	6'	113.9 @2.6	Becomes damp @ 2'
		10'	113.0 @2.6	Becomes very cobbly @ 8'
				Total Depth = 10', no caving, test pit backfilled
TP-2	0-5	3'	105.2 @8.1	Alluvium (Qal): Silty Coarse Sand w/ gravel, medium dense, damp, medium brown
		5.5'	116.0 @13.9	Becomes damp to moist @ 3'
	5-12			Clayey Sand, dense, moist, dark reddish brown, pinhole pores, gravel Becomes very cobbly, very dense @ 8'
				Total Depth = 12', slight caving @ 0-3', test pit backfilled
TP-3	0-5	2'	115.2 @2.0	Alluvium (Qal): Silty Coarse Sand w/ gravel, medium dense, dry, medium brown
	5-8	5'	108.3 @4.2	Silty Sand, med. Dense, damp dark brown
	8-13.5	10'	110.3 @6.4	Clayey Coarse Sand, dense, moist, medium brown w/ gravel cobbles &
				Total Depth = 13.5', no caving, test pit backfilled
TP-4	0-2	2'	100.9 @5.3	Alluvium (Qal): Silty Sand, medium dense, dry to damp, medium brown, porous
	2-5			Terrace Deposits (Qt): Clayey Sand, very dense, damp, reddish brown, w/gravel and cobbles Too rocky to sample
				Total Depth = 5', no caving, test pit backfilled

LOG OF EXPLORATORY TEST PITS

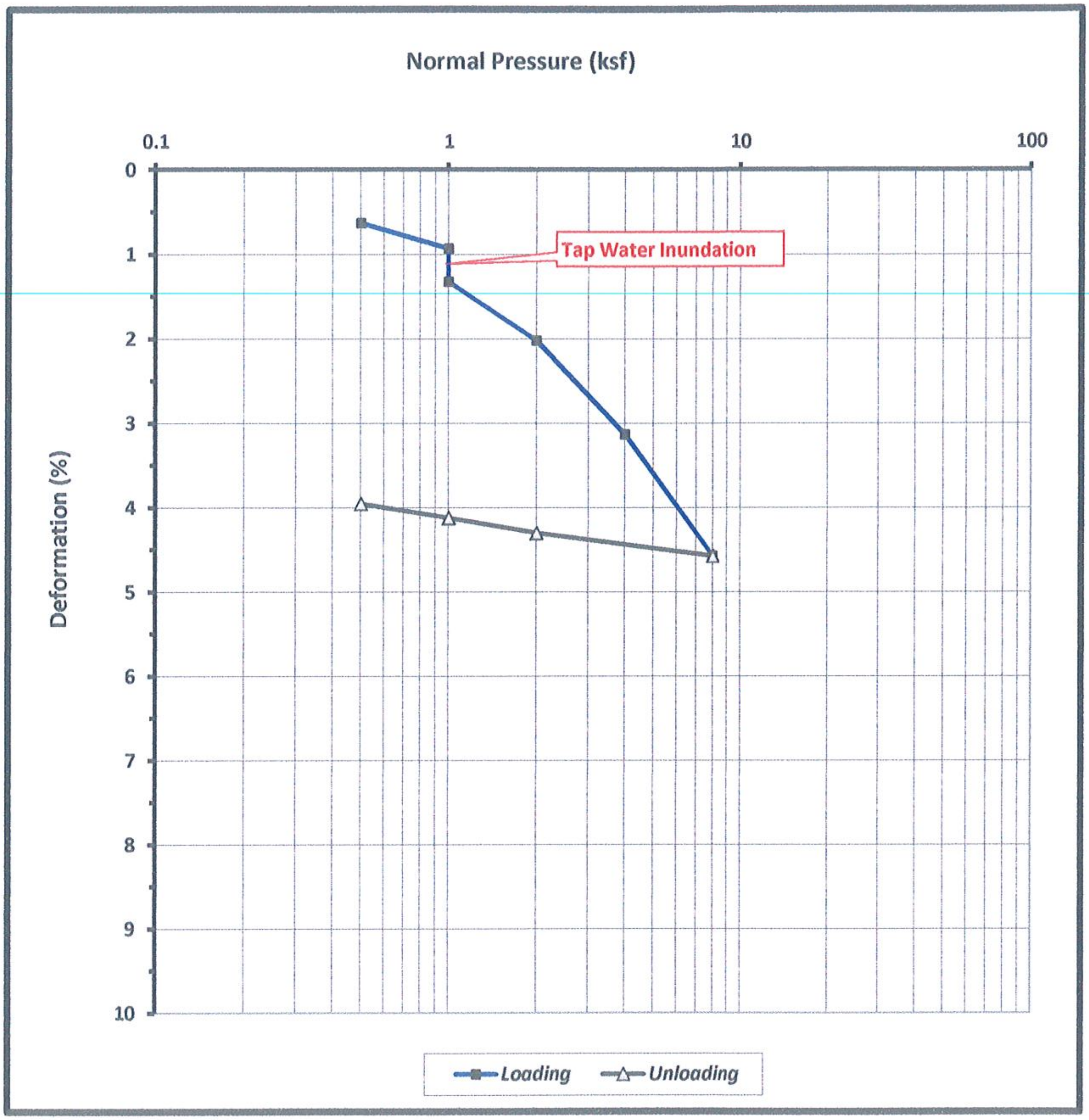
Date logged: 10/10/14
Logged by: TR

TP-5	0-10	1'	109.3 @10.5 112.7 @7.5	Terrace Deposits (Qt): Clayey Sand, very dense, damp, reddish brown, w/gravel Becomes cobbly, very difficult excavating @ 7'
				Total Depth = 10', no caving, test pit backfilled
TP-6	0-2.5			Fill (Af): Silty Sand, loose, dry, medium brown, concrete and pvc fragments
	2.5-11	3'	94.0 @3.1	Alluvium (Qal): Silty Sand, medium dense, dry to damp, medium brown, porous Becomes very cobbly w/ boulders, too rocky to sample @ 5'
				Total Depth = 11', no caving, test pit backfilled
TP-7	0-10	3'	NR @4.2	Alluvium (Qal): Silty Coarse Sand w/ gravel, medium dense, dry, medium brown Becomes damp @ 3' Becomes cobbly w/ boulders, very difficult excavating @ 9'
				Total Depth = 10', no caving, test pit backfilled
TP-8	0-5			Fill (Af): Silty Coarse Sand w/ gravel, loose, dry, medium brown, concrete encountered in south end of pit Becomes cobbly, damp, too rocky to sample @ 2'
	5-12			Alluvium (Qal): Silty Coarse Sand w/ gravel, cobbles & boulders, medium dense, dry, medium brown, too rocky to sample
				Total Depth = 12', no caving, test pit backfilled
TP-9	0-2 2-5 5-6			Slopewash: Silty Sand, medium dense, loose dry, medium brown Weathered Quartz Diorite Bedrock: clayey Sand, dense, moist orange brown Quartz Diorite bedrock (qd): Diorite, light gray, hard, massive, refusal @ 6'
				Total Depth = 6', no caving, test pit backfilled



Sample Location	*B-1 @ 6'*	Dry Density (pcf)	*113.9*
Sample Type	*Undisturbed, Ring*	Moisture (%)	*2.6*
Sample Description	*Yellowish brown fine- to medium-grained silty SAND w/ gravel*		
Remark	*Sample retrieved from Modified California ring sampler*		

Associated Soils Engineering, Inc. 2860 Walnut Avenue Signal Hill, CA 90755 Tel (562) 426-7990 Fax (562) 426-1842	Project:	**Prop. 8-Lot SFD Development** 500 Baseline Rd., La Verne, CA
	Plate C-1	**Uniaxial Consolidation/Swelling of On-Site Soil (ASTM D 2435-11)**
	Proj. No.:	6517.14 — Date: November, 2014



Sample Location	*B-2 @ 3'*	Dry Density (pcf)	*105.2*
Sample Type	*Undisturbed, Ring*	Moisture (%)	*8.1*
Sample Description	*Dark brown fine- to coarse-grained silty SAND w/ trace clay*		
Remark	*Sample retrieved from Modified California ring sampler*		

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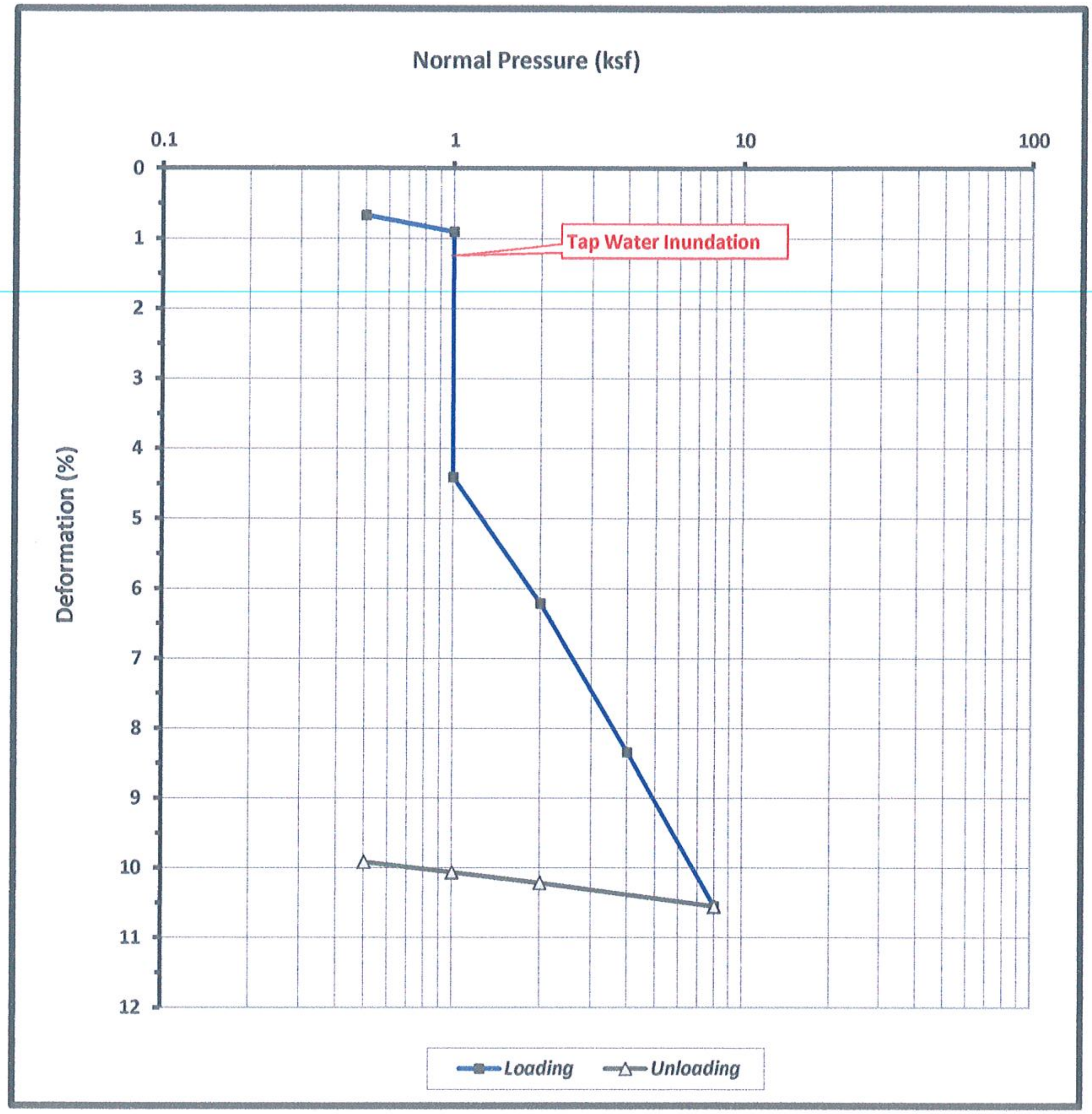
	Proj. No.:	6517.14	Date:	November, 2014



Sample Location	*B-3 @ 5'*	Dry Density (pcf)	*108.3*
Sample Type	*Undisturbed, Ring*	Moisture (%)	*4.2*
Sample Description	*Brown fine- to coarse-grained Silty SAND w/ trace gravel*		
Remark	*Sample retrieved from Modified California ring sampler*		

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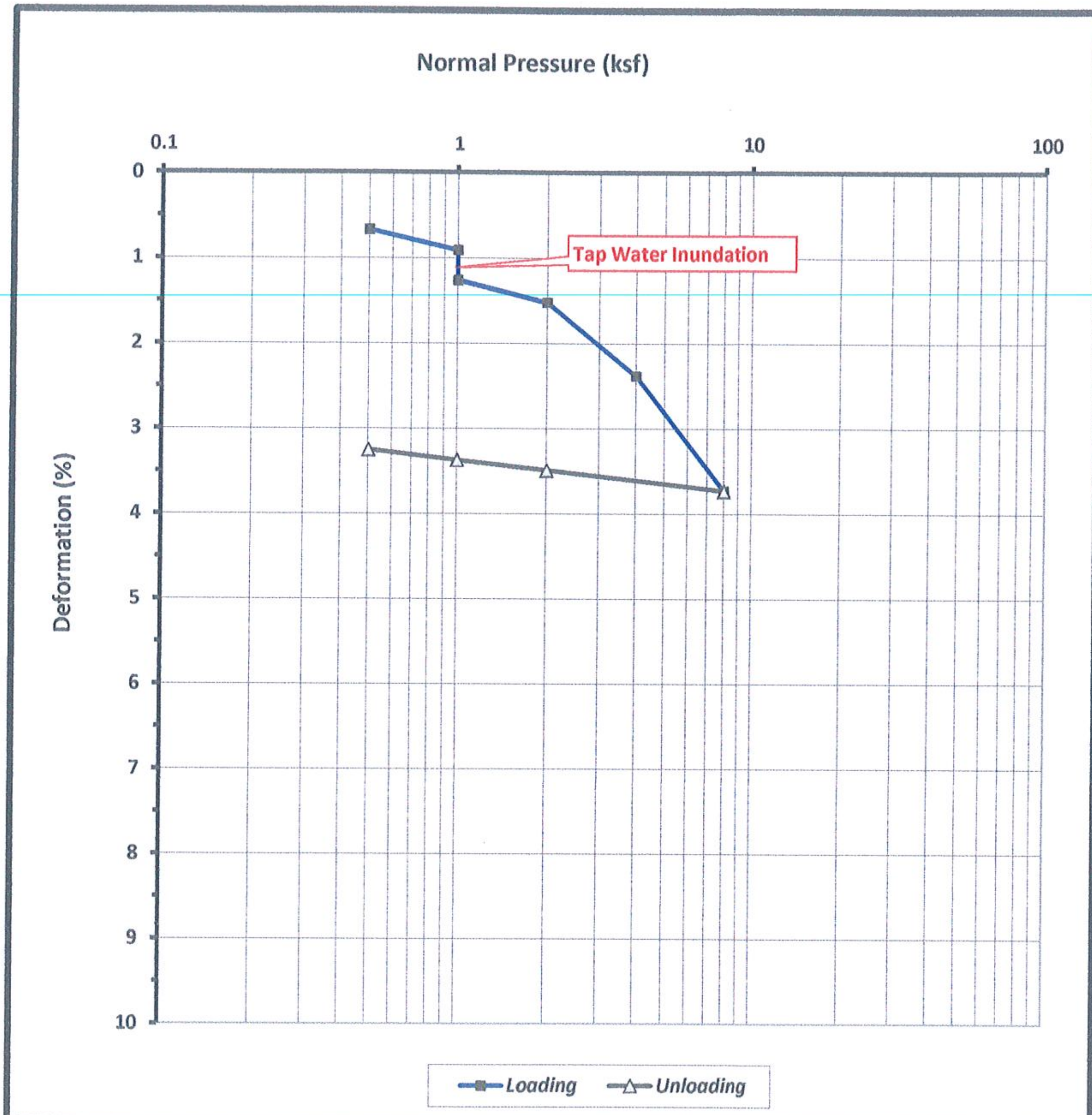
2860 Walnut Avenue **Signal Hill, CA 90755**	**Plate** **C-3**	**Uniaxial Consolidation/Swelling of On-Site Soil (ASTM D 2435-11)**		
Tel (562) 426-7990 Fax (562) 426-1842	Proj. No.:	**6517.14**	Date:	**November, 2014**



Sample Location	*B-3 @ 10'*	Dry Density (pcf)	*110.3*
Sample Type	*Undisturbed, Ring*	Moisture (%)	*6.4*
Sample Description	*Yellowish brown fine- to coarse-grained silty SAND w/ trace clay*		
Remark	*Sample retrieved from Modified California ring sampler*		

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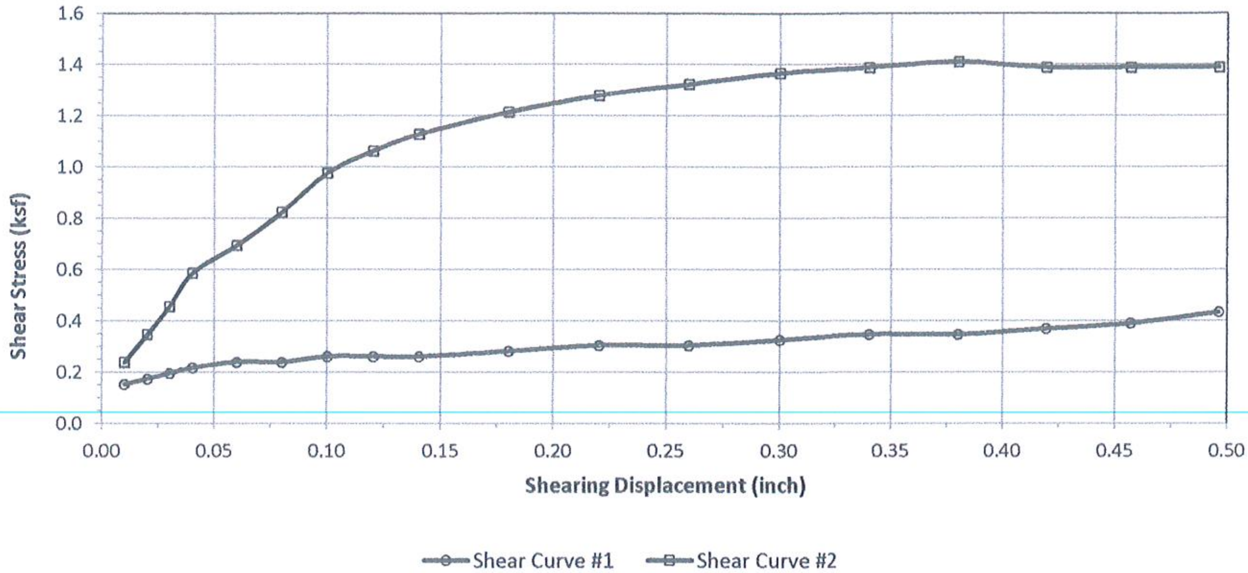
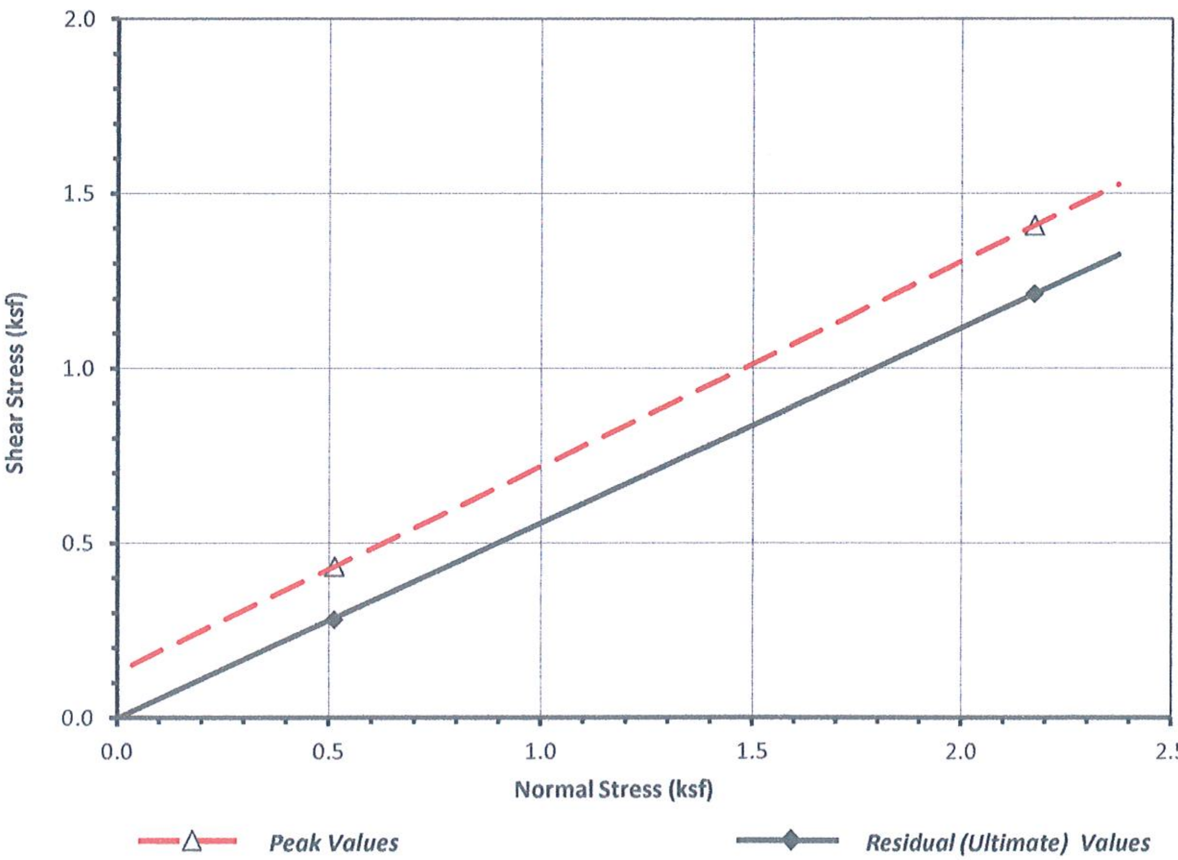
2860 Walnut Avenue Signal Hill, CA 90755	**Plate C-4**	**Uniaxial Consolidation/Swelling of On-Site Soil (ASTM D 2435-11)**
Tel (562) 426-7990 Fax (562) 426-1842	Proj. No.:	6517.14 — Date: November, 2014





Sample	*B-2 @ 5.5'*				
Description	Reddish brown very fine- to medium-grained clayey SAND to sandy CLAY				
ϕ-angle (degree)	*29.3*	Ultimate (Residual)	*30.4*	Peak
Cohesion (ksf)	*0.000*		*0.133*	

Associated Soils Engineering, Inc. 2860 Walnut Avenue Signal Hill, CA 90755 Tel (562) 426-7990 Fax (562) 426-1842	Project:	Prop. 8-Lot SFD Development 500 Baseline Rd., La Verne, CA
	Figure D-1	Direct Shear Test Result (ASTM D-3080-11)
	Proj. No.: 6517.14	Date: November, 2014

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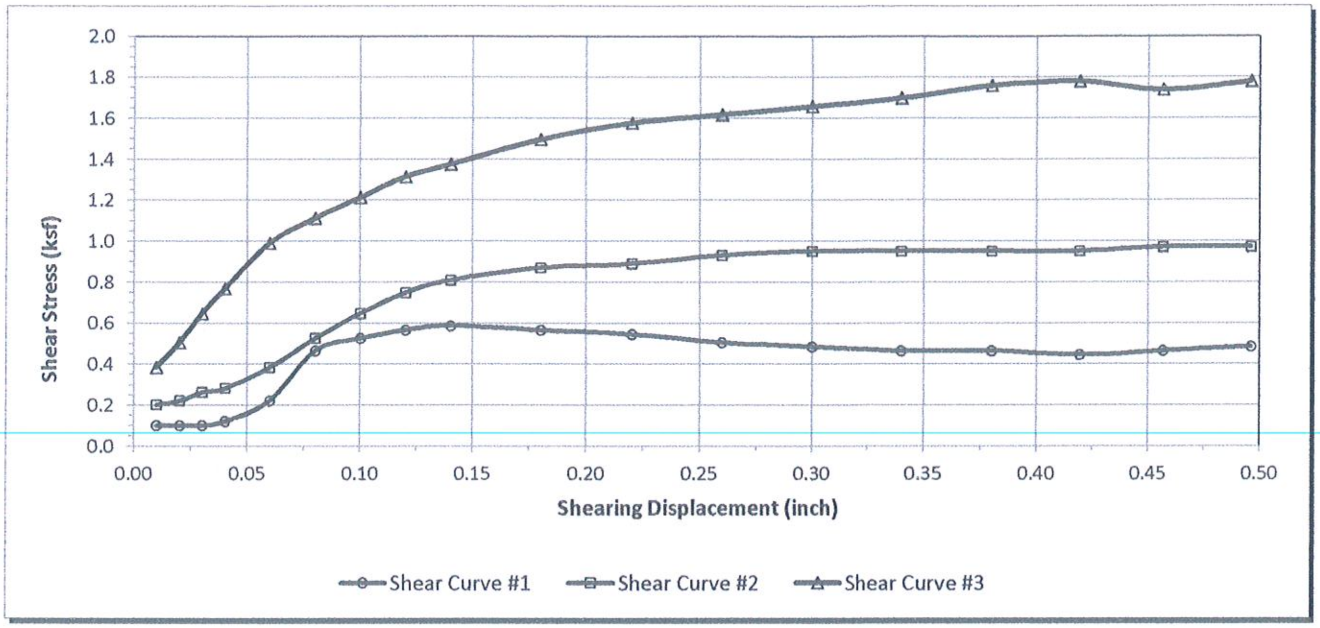

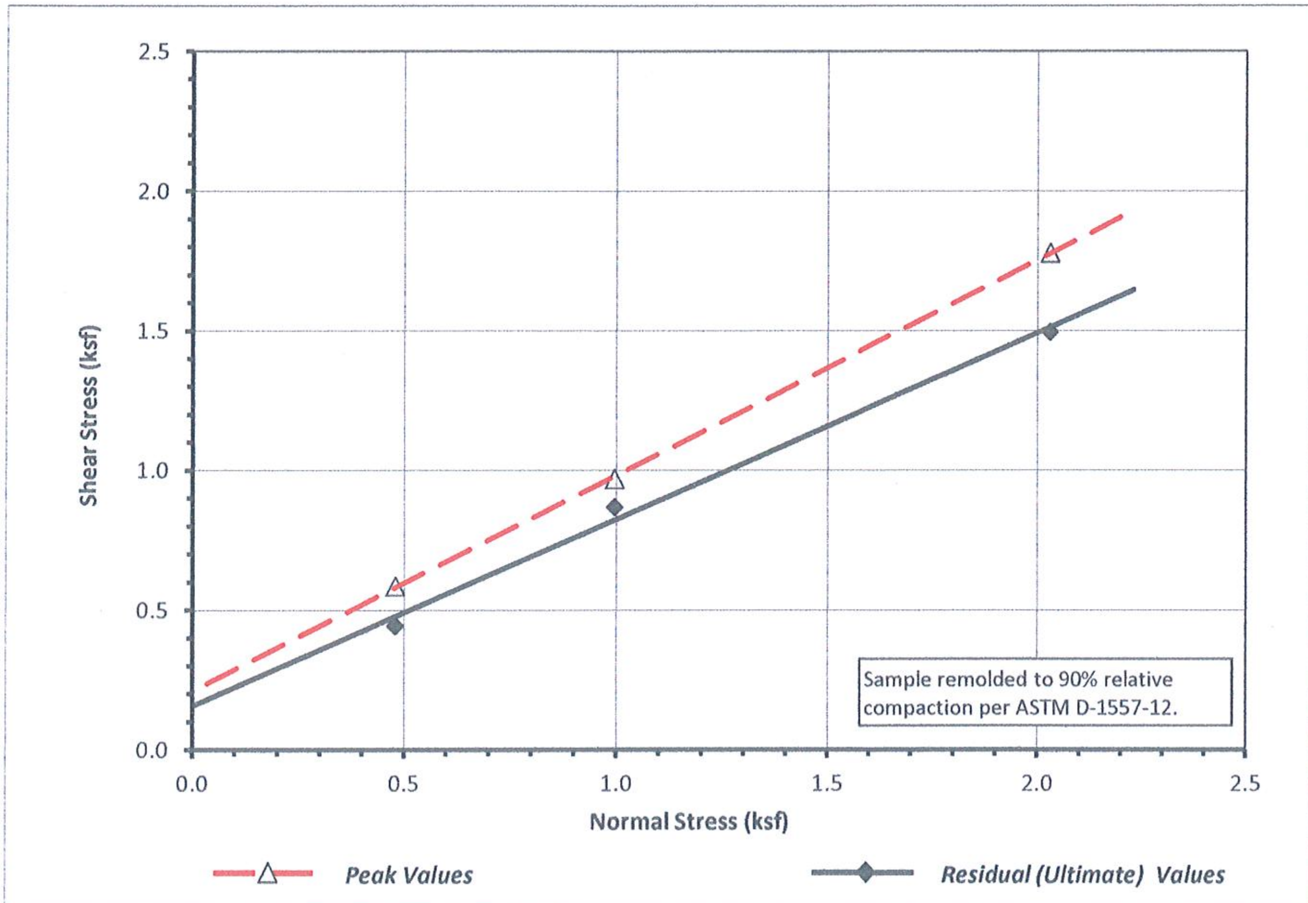

Sample	*B-4 @ 2' ~ 3'*				
Description	Medium to dark reddish brown, very fine- to medium-grained sandy CLAY to clayey SAND				
ϕ-angle (degree)	*33.7*	Ultimate (Residual)	*37.6*	Peak	
Cohesion (ksf)	*0.157*		*0.212*		

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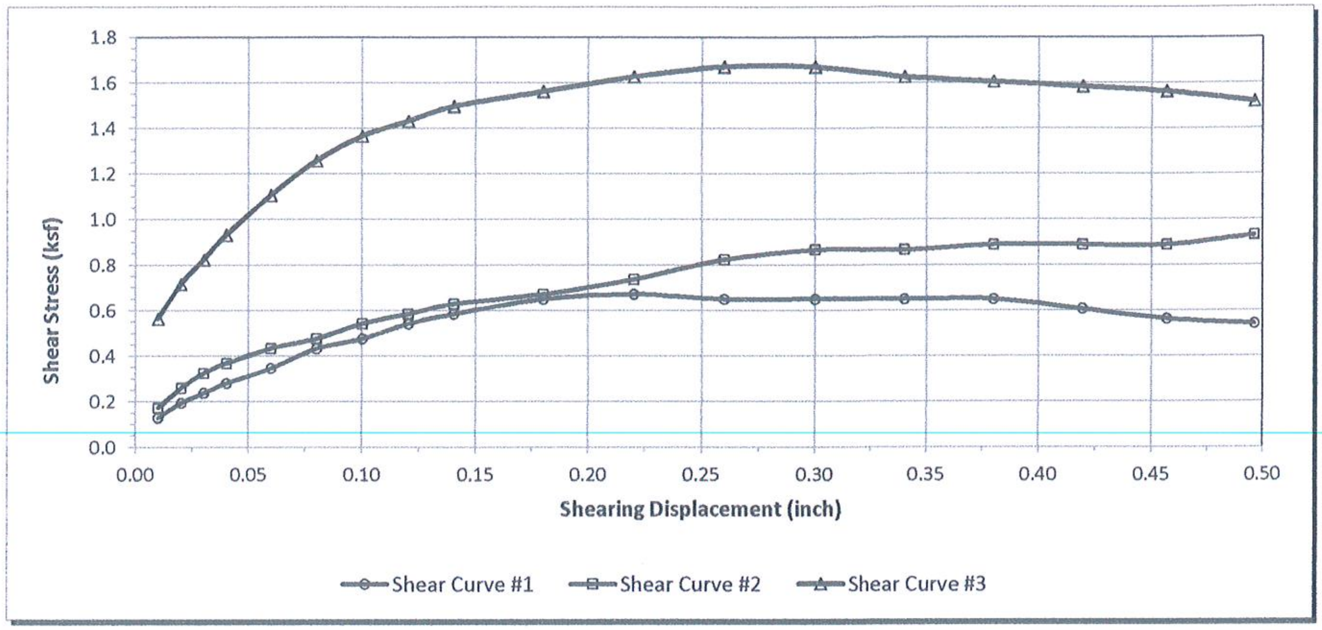
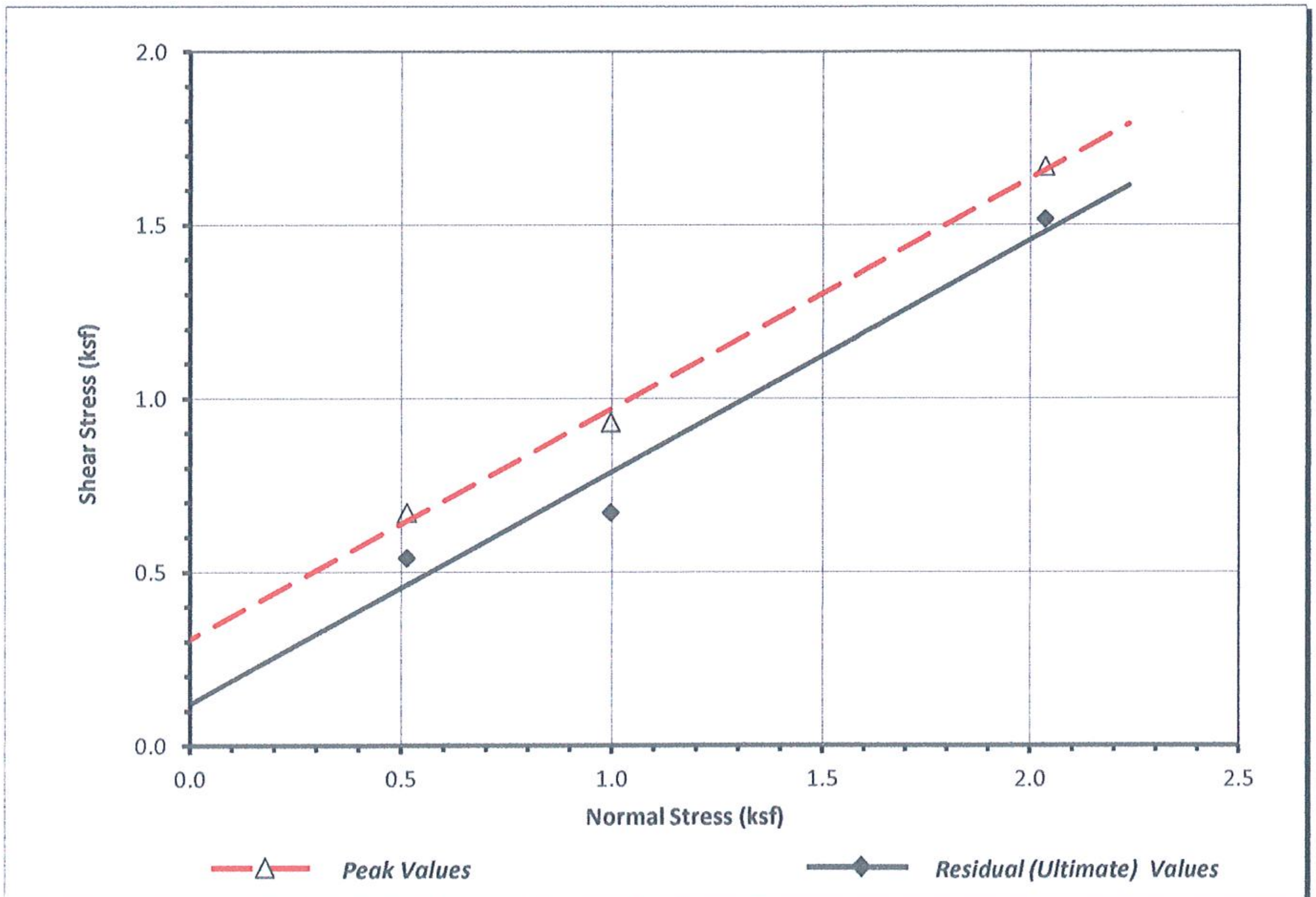
Project:	Prop. 8-Lot SFD Development 500 Baseline Rd., La Verne, CA		
Plate D-2	Direct Shear Test Result (ASTM D-3080-11)		
Proj. No.:	6517.14	Date:	November, 2014





Sample	*B-5 @ 5'*				
Description	Reddish brown w/ very dark grayish brown silty CLAY to clayeye SAND w/ trace gravel				
ϕ-angle (degree)	*33.6*	Ultimate (Residual)	*33.6*	Peak	
Cohesion (ksf)	*0.121*		*0.307*		

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2860 Walnut Avenue Signal Hill, CA 90755	Plate D-3	Direct Shear Test Result (ASTM D-3080-11)		
Tel (562) 426-7990 Fax (562) 426-1842	Proj. No.:	6517.14	Date:	November, 2014

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Consulting Geotechnical Engineers

PERCOLATION DATA SHEET

Project: La Verne Investments, LLC – 500 Baseline Rd. Job No.: 6517.14
Test Hole No.: B-1 Date Excavated: 10/10/14 Depth of Test Hole: 3' 1"
Soil Classification: Silty Coarse SAND w/ Gravel
Check for Sandy Soil Criteria Tested By: Mike Doyle Date: 10/13/2014
Presoak: √ Actual Percolation Tested By: Mike Doyle Date: 10/13/2014

SANDY SOIL CRITERIA TEST

Trial No.	Time	Time Interval (Min.)	Initial Water Level (Inches)	Final Water Level (Inches)	Δ In Water Level (Inches)
1	6:35 AM 7:00	25	-7.0	-18.0	11.0
2	7:00 7:25	25	-7.0	-17.5	10.5

USE NORMAL SANDY (CIRCLE ONE) SOIL CRITERIA

Time	Time Interval (Min.)	Total Elapsed Time (Min.)	Initial Water Level (Inches)	Final Water Level (Inches)	Δ In Water Level (Inches)	Percolation Rate (Min./Inches)
8:45 AM 9:15	30	30	-7.0	-17.0	10.0	3.0
9:15 9:45	30	60	-7.0	-16.0	9.0	3.3
9:45 10:15	30	90	-7.0	-15.5	8.5	3.5
10:15 10:45	30	120	-7.0	-15.0	8.0	3.75
10:45 11:15	30	150	-7.0	-14.5	7.5	4.0
11:15 11:45	30	180	-7.0	-14.0	7.0	4.3
11:45 12:15	30	210	-7.0	-13.5	6.5	4.6
12:15 12:45	30	240	-7.0	-13.5	6.5	4.6
12:45 1:15	30	270	-7.0	-13.0	6.0	5.0
1:15 1:45	30	300	-7.0	-12.0	5.0	6.0
1:45 2:15	30	330	-7.0	-12.0	5.0	6.0
2:15 2:45	30	360	-7.0	-12.0	5.0	6.0

PERCOLATION DATA SHEET

Project: La Verne Investments, LLC, 500 Baseline Rd Job No.: 6517.14
Test Hole No.: B-2 Date Excavated: 10/10/14 Depth of Test Hole: 3' 1"
Soil Classification: Silty Coarse SAND
Check for Sandy Soil Criteria Tested By: Mike Doyle Date: 10/13/2014
Presoak: √ Actual Percolation Tested By: Mike Doyle Date: 10/13/2014

SANDY SOIL CRITERIA TEST

Trial No.	Time	Time Interval (Min.)	Initial Water Level (Inches)	Final Water Level (Inches)	Δ In Water Level (Inches)
1	6:30 AM 6:55	25	-7.0	-21.0	14.0
2	6:55 6:20	25	-7.0	-20.0	13.0

USE NORMAL SANDY (CIRCLE ONE) SOIL CRITERIA

Time	Time Interval (Min.)	Total Elapsed Time (Min.)	Initial Water Level (Inches)	Final Water Level (Inches)	Δ In Water Level (Inches)	Percolation Rate (Min./Inches)
7:30 AM 8:00	30	30	-7.0	-19.0	12.0	2.5
8:00 8:30	30	60	-7.0	-19.0	12.0	2.5
8:30 9:00	30	90	-7.0	-18.0	11.0	2.7
9:00 9:30	30	120	-7.0	-18.0	11.0	2.7
9:30 10:00	30	150	-7.0	-17.5	10.5	2.9
10:00 10:30	30	180	-7.0	-17.0	10.0	3.0
10:30 11:00	30	210	-7.0	-17.0	10.0	3.0
11:00 11:30	30	240	-7.0	-17.0	10.0	3.0
11:30 12:00	30	270	-7.0	-17.0	10.0	3.0
12:00 12:30	30	300	-7.0	-16.5	9.5	3.2
12:30 1:00	30	330	-7.0	-16.5	9.5	3.2
1:00 1:30	30	360	-7.0	-16.5	9.5	3.2

APPENDIX B – REFERENCES

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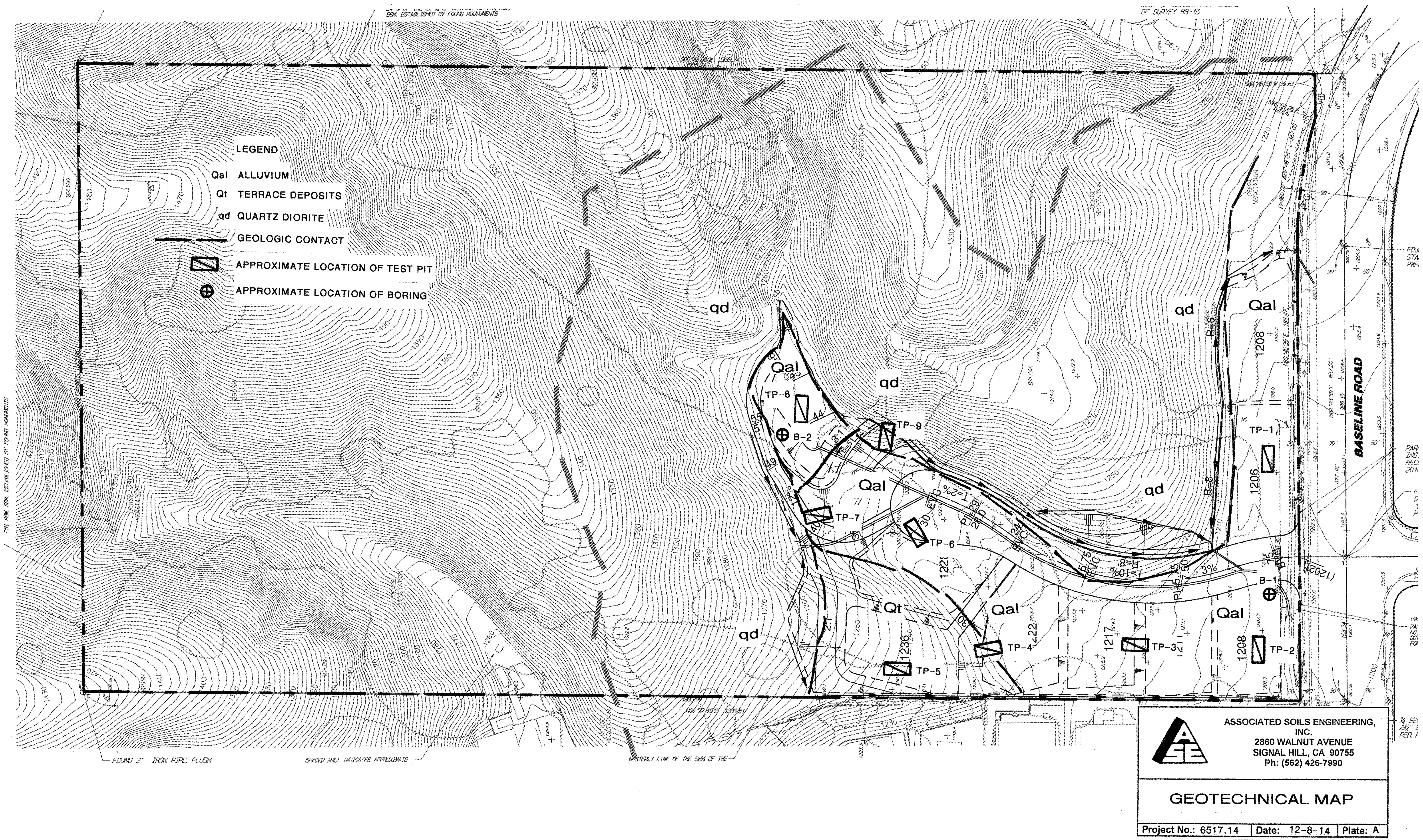
LEGEND
Qal ALLUVIUM
Qt TERRACE DEPOSITS
qd QUARTZ DIORITE
GEOLOGIC CONTACT
APPROXIMATE LOCATION OF TEST PIT
APPROXIMATE LOCATION OF BORING
BASELINE ROAD
TP-1
TP-2
TP-3
TP-4
TP-5
TP-6
TP-7
TP-8
TP-9
B-1
B-2
ASSOCIATED SOILS ENGINEERING, INC.
2860 WALNUT AVENUE
SIGNAL HILL, CA 90755
Ph: (562) 426-7990
GEOTECHNICAL MAP
Project No.: 6517.14
Date: 12-8-14
Plate: A

APPENDIX C.2: PALENONTOLOGICAL RESOURCES RECORDS SEARCH

Natural History Museum
of Los Angeles County
900 Exposition Boulevard
Los Angeles, CA 90007

tel 213.763.DINO
www.nhm.org

NATURAL HISTORY MUSEUM
LOS ANGELES COUNTY

Vertebrate Paleontology Section
Telephone: (213) 763-3325

e-mail: smcleod@nhm.org

24 February 2020

EcoTierra Consulting
633 West 5th Street, 26th Floor
Los Angeles, CA 90071

Attn: Jennifer Johnson, Project Manager

re: Vertebrate Paleontology Records Check for paleontological resources for the proposed Baseline Road SFR and Annex Project, in the City of La Verne, Los Angeles County, project area

Dear Jennifer:

I have conducted a thorough search of our paleontology collection records for the locality and specimen data for the proposed Baseline Road SFR and Annex Project, in the City of La Verne, Los Angeles County, project area as outlined on the portion of the San Dimas USGS topographic quadrangle map that you sent to me via e-mail on 10 February 2020. We do not have any vertebrate fossil localities that lie within the proposed project area boundaries, but we do have localities somewhat nearby from sedimentary deposits similar to those that occur at depth in the proposed project area.

Bedrock in the elevated terrain occupying most of the proposed project area is composed of intrusive igneous rocks that will not contain recognizable vertebrate fossils. In the less elevated terrain in the southwestern portion of the proposed project area surficial material consists of younger Quaternary Alluvium, derived as alluvial fan deposits from the elevated terrain adjacent to the northeast. These younger Quaternary deposits typically do not contain significant vertebrate fossils in the uppermost layers, especially being relatively coarse so close to the source area but they may be underlain by older and possibly someone finer-grained deposits that do contain significant fossil vertebrate remains.

Our closest vertebrate fossil locality in similar deposits is LACM 8014, south-southeast of the proposed project area just southwest of the intersection of the Pomona Freeway (Highway 60) and the Corona Freeway (Highway 71), that produced a fossil specimen of bison, *Bison*. Further to the south and slightly more eastward from locality LACM 8014, our older Quaternary locality LACM 1728, situated in English Canyon southwest of the City of Chino produced fossil specimens of horse, *Equus*, and camel, *Camelops*, at a depth of 15 to 20 feet below the surface. West-southwest of the proposed project area, in Irwindale southeast of the intersection of Arrow Highway and Irwindale Avenue, our vertebrate fossil locality LACM 1807 produced a fossil specimen of mastodon, *Mammut americanum*, from a gravel pit at a depth of 115-120 feet below the surface.

Excavations in the igneous bedrock exposed in the elevated terrain of most of the proposed project area will not uncover any recognizable vertebrate fossils. Shallow excavations in the younger Quaternary Alluvium exposed in the southwestern portion of the proposed project area probably will not encounter significant vertebrate fossils. Deeper excavations in those latter areas that extend down into older and possibly finer-grained Quaternary deposits, however, may well uncover significant vertebrate fossils. Any substantial excavations in the sedimentary deposits exposed in the proposed project area, therefore, should be closely monitored to quickly and professionally collect any specimens without impeding development. Also, sediment samples should be collected and processed to determine the small fossil potential in the proposed project area. Any fossils recovered during mitigation should be deposited in an accredited and permanent scientific institution for the benefit of current and future generations.

This records search covers only the vertebrate paleontology records of the Natural History Museum of Los Angeles County. It is not intended to be a thorough paleontological survey of the proposed project area covering other institutional records, a literature survey, or any potential on-site survey.

Sincerely,

Samuel A. McLeod

Samuel A. McLeod, Ph.D.
Vertebrate Paleontology

enclosure: invoice

APPENDIX D: PHASE I ENVIRONMENTAL SITE ASSESSMENT

APPENDIX D: PHASE I ENVIRONMENTAL SITE ASSESSMENT

PARTNER
Engineering and Science, Inc.

PHASE I ENVIRONMENTAL SITE ASSESSMENT REPORT

500 West Baseline Road
La Verne, California 91711

Report Date: February 18, 2020
Partner Project No. 19-255647.1

Prepared for:

EcoTierra Consulting, Inc.
5776-D Lindero Canyon Road, #414
Westlake Village, California 91362

PARTNER
Engineering and Science, Inc.

February 18, 2020

Mr. Brad Perrine
EcoTierra Consulting, Inc.
5776-D Lindero Canyon Road, #414
Westlake Village, California 91362

Subject: Phase I Environmental Site Assessment
500 West Baseline Road
La Verne, California 91711
Partner Project No. 19-255647.1

Dear Mr. Perrine:

Partner Engineering and Science, Inc. (Partner) is pleased to provide the results of the *Phase I Environmental Site Assessment* (Phase I ESA) report of the abovementioned address (the "subject property"). This assessment was performed in conformance with the scope and limitations as detailed in the ASTM Practice E1527-13 Standard Practice for Environmental Site Assessments: Phase I Environmental Site Assessment Process.

This assessment included a site reconnaissance as well as research and interviews with representatives of the public, property ownership, site manager, and regulatory agencies. An assessment was made, conclusions stated, and recommendations outlined.

We appreciate the opportunity to provide environmental services to you. If you have any questions concerning this report, or if we can assist you in any other matter, please contact me at (310) 615-4500.

Sincerely,

Jenny Redlin
Relationship Manager

EXECUTIVE SUMMARY

Partner Engineering and Science, Inc. (Partner) has performed a Phase I Environmental Site Assessment (ESA) in accordance with the scope of work and limitations of ASTM Standard Practice E1527-13, the Environmental Protection Agency Standards and Practices for All Appropriate Inquiries (AAI) (40 CFR Part 312) and set forth by EcoTierra Consulting, Inc. for the property located at 500 West Baseline Road in La Verne, Los Angeles County, California (the "subject property"). The Phase I Environmental Site Assessment is designed to provide EcoTierra Consulting, Inc. with an assessment concerning environmental conditions (limited to those issues identified in the report) as they exist at the subject property.

Property Description

The subject property is located on the north side of Baseline Road and the east side of Rodeo Lane within a mostly residential area of Los Angeles County. Please refer to the table below for further description of the subject property:

Subject Property Data	
Address(es):	500 West Baseline Road, La Verne, California
Property Use:	Vacant Land
Land Acreage (Ac):	19.44 Ac
Number of Buildings:	None
Assessor's Parcel Number (APN):	8666-006-035
Current Tenants:	None
Site Assessment Performed By:	Ramil Reyes of Partner
Site Assessment Conducted On:	February 12, 2020

The subject property is currently vacant land covered with mostly bare soil, grass, bushes, trees and other native vegetation. The subject property is rectangular in shape with an existing topography that varies due to the subject property's hillside location that includes steep slopes. The subject property is unoccupied and appears to have no current use. Partner did not observe any hazardous chemicals and/or petroleum products stored, generated, or used onsite. With the exception of a concrete-lined storm drainage channel that runs along the southern boundary of the subject property, no other improvements or features, were noted on the subject property during the site reconnaissance.

According to available historical sources, the subject property was formerly undeveloped as early as 1894; consisted of agricultural development (citrus groves) along the southern portion of the subject property with an apparent barn or residential structure between 1928 and 1948; consisted of agricultural development (citrus groves) along the southern portion of the subject property from at least 1953 to circa-1967; and has been vacant land since at least 1972.

The immediately surrounding properties consist of vacant land to the north, northwest and northeast; residential to the south across Baseline Road; a single residence to the east across Broken Spur Road; and residential to the west followed by Rodeo Lane.

Based on a review of groundwater well information obtained from the Los Angeles County Department of Public Works (LACDPW), depth to groundwater in the vicinity of the subject property was reported at a depth of approximately 117 feet below ground surface (bgs) on May 27, 2008 as reported in a groundwater well located approximately 2,000 feet southeast of the subject property (State Well No. 4448A). Groundwater flow in the vicinity of the subject property is inferred towards the southwest consistent with the subject property's topography and surface drainage.

Findings

A *recognized environmental condition (REC)* refers to the presence or likely presence of any hazardous substances or petroleum products in, on, or at a property: due to release to the environment; under conditions indicative of a release to the environment; or under conditions that pose a material threat of a future release to the environment. The following was identified during the course of this assessment:

- Partner did not identify any RECs during the course of this assessment.

A *controlled recognized environmental condition (CREC)* refers to a REC resulting from a past release of hazardous substances or petroleum products that has been addressed to the satisfaction of the applicable regulatory authority, with hazardous substances or petroleum products allowed to remain in place subject to the implementation of required controls. The following was identified during the course of this assessment:

- Partner did not identify any CRECs during the course of this assessment.

A *historical recognized environmental condition (HREC)* refers to a past release of any hazardous substances or petroleum products that has occurred in connection with the property and has been addressed to the satisfaction of the applicable regulatory authority or meeting unrestricted use criteria established by a regulatory authority, without subjecting the property to any required controls. The following was identified during the course of this assessment:

- Partner did not identify any HRECs during the course of this assessment.

An *environmental issue* refers to environmental concerns identified by Partner, which do not qualify as RECs; however, warrant further discussion. The following was identified during the course of this assessment:

- The southern and southwestern portions of the subject property were historically used for agricultural purposes (citrus orchard). There is a potential that agricultural related chemicals such as pesticides, herbicides, and fertilizers, may have been used and stored onsite. During future site development activities, near surface soils (where residual agricultural chemical concentrations would have most likely been present, if at all) will likely be mixed with fill material or disturbed during grading. Also, it is common that engineered fill material is placed over underlying soils as part of the development activities. Furthermore, no evidence of stressed vegetation was observed during the reconnaissance and the subject property has not been utilized for agricultural purposes for at least 50 years. These additional variables serve to further reduce the potential for exposure to residual agricultural chemicals (if any). Based on these reasons, Partner concludes that the possible former use of agricultural chemicals is not expected to represent a significant environmental concern at this time.

Conclusions, Opinions and Recommendations

Partner has performed a Phase I Environmental Site Assessment in conformance with the scope and limitations of ASTM Practice E1527-13 of 500 West Baseline Road in La Verne, Los Angeles County, California (the "subject property"). Any exceptions to, or deletions from, this practice are described in Section 1.5 of this report.

This assessment has revealed no evidence of RECs in connection with the subject property; however, environmental issues were identified. Based on the conclusions of this assessment, Partner recommends no further investigation of the subject property at this time.

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Appendices

1.0 INTRODUCTION

Partner Engineering and Science, Inc. (Partner) has performed a Phase I Environmental Site Assessment (ESA) in conformance with the scope and limitations of ASTM Standard Practice E1527-13 and the Environmental Protection Agency Standards and Practices for All Appropriate Inquiries (AAI) (40 CFR Part 312) for the property located at 500 West Baseline Road in La Verne, Los Angeles County, California (the "subject property"). Any exceptions to, or deletions from, this scope of work are described in the report.

1.1 Purpose

The purpose of this ESA is to identify existing or potential Recognized Environmental Conditions (as defined by ASTM Standard E1527-13) affecting the subject property that: 1) constitute or result in a material violation or a potential material violation of any applicable environmental law; 2) impose any material constraints on the operation of the subject property or require a material change in the use thereof; 3) require clean-up, remedial action or other response with respect to Hazardous Substances or Petroleum Products on or affecting the subject property under any applicable environmental law; 4) may affect the value of the subject property; and 5) may require specific actions to be performed with regard to such conditions and circumstances. The information contained in the ESA Report will be used by Client to: 1) evaluate its legal and financial liabilities for transactions related to foreclosure, purchase, sale, loan origination, loan workout or seller financing; 2) evaluate the subject property's overall development potential, the associated market value and the impact of applicable laws that restrict financial and other types of assistance for the future development of the subject property; and/or 3) determine whether specific actions are required to be performed prior to the foreclosure, purchase, sale, loan origination, loan workout or seller financing of the subject property.

This ESA was performed to permit the *User* to satisfy one of the requirements to qualify for the innocent landowner, contiguous property owner, or bona fide prospective purchaser limitations on scope of Comprehensive Environmental Response, Compensation and Liability Act (CERCLA) (42 U.S.C. §9601) liability (hereinafter, the "*landowner liability protections*," or "*LLPs*"). ASTM Standard E1527-13 constitutes "*all appropriate inquiry* into the previous ownership and uses of the *property* consistent with good commercial or customary practice" as defined at 42 U.S.C. §9601(35)(B).

1.2 Scope of Work

The scope of work for this ESA is in accordance with the requirements of ASTM Standard E1527-13. This assessment included: 1) a property and adjacent site reconnaissance; 2) interviews with key personnel; 3) a review of historical sources; 4) a review of regulatory agency records; and 5) a review of a regulatory database report provided by a third-party vendor. Partner contacted local agencies, such as environmental health departments, fire departments and building departments in order to determine any current and/or former hazardous substances usage, storage and/or releases of hazardous substances on the subject property. Additionally, Partner researched information on the presence of activity and use limitations (AULs) at these agencies. As defined by ASTM E1527-13, AULs are the legal or physical restrictions or limitations on the use of, or access to, a site or facility: 1) to reduce or eliminate potential exposure to hazardous substances or petroleum products in the soil or groundwater on the subject property; or 2) to prevent activities that could interfere with the effectiveness of a response action, in order to ensure maintenance of a condition of no significant risk to public health or the environment. These legal or physical restrictions, which may include institutional and/or engineering controls (IC/ECs), are intended to prevent adverse impacts to individuals or populations that may be exposed to hazardous substances and petroleum products in the soil or groundwater on the property.

If requested by Client, this report may also include the identification, discussion of, and/or limited sampling of asbestos-containing materials (ACMs), lead-based paint (LBP), mold, and/or radon.

1.3 Limitations

Partner warrants that the findings and conclusions contained herein were accomplished in accordance with the methodologies set forth in the Scope of Work. These methodologies are described as representing good commercial and customary practice for conducting an ESA of a property for the purpose of identifying recognized environmental conditions. There is a possibility that even with the proper application of these methodologies there may exist on the subject property conditions that could not be identified within the scope of the assessment or which were not reasonably identifiable from the available information. Partner believes that the information obtained from the record review and the interviews concerning the subject property is reliable. However, Partner cannot and does not warrant or guarantee that the information provided by these other sources is accurate or complete. The conclusions and findings set forth in this report are strictly limited in time and scope to the date of the evaluations. The conclusions presented in the report are based solely on the services described therein, and not on scientific tasks or procedures beyond the scope of agreed-upon services or the time and budgeting restraints imposed by the Client. No other warranties are implied or expressed.

Some of the information provided in this report is based upon personal interviews, and research of available documents, records, and maps held by the appropriate government and private agencies. This report is subject to the limitations of historical documentation, availability, and accuracy of pertinent records, and the personal recollections of those persons contacted.

This practice does not address requirements of any state or local laws or of any federal laws other than the all appropriate inquiry provisions of the LLPs. Further, this report does not intend to address all of the safety concerns, if any, associated with the subject property.

Environmental concerns, which are beyond the scope of a Phase I ESA as defined by ASTM include the following: ACMs, LBP, radon, and lead in drinking water. These issues may affect environmental risk at the subject property and may warrant discussion and/or assessment; however, are considered non-scope issues. If specifically requested by the Client, these non-scope issues are discussed in Section 6.3.

1.4 User Reliance

EcoTierra Consulting, Inc. engaged Partner to perform this assessment in accordance with an agreement governing the nature, scope and purpose of the work as well as other matters critical to the engagement. All reports, both verbal and written, are for the sole use and benefit of EcoTierra Consulting, Inc. Either verbally or in writing, third parties may come into possession of this report or all or part of the information generated as a result of this work. In the absence of a written agreement with Partner granting such rights, no third parties shall have rights of recourse or recovery whatsoever under any course of action against Partner, its officers, employees, vendors, successors or assigns. Any such unauthorized user shall be responsible to protect, indemnify and hold Partner, Client and their respective officers, employees, vendors, successors and assigns harmless from any and all claims, damages, losses, liabilities, expenses (including reasonable attorneys' fees) and costs attributable to such Use. Unauthorized use of this report shall constitute acceptance of and commitment to these responsibilities, which shall be irrevocable and shall apply regardless of the cause of action or legal theory pled or asserted. Additional legal penalties may apply.

1.5 Limiting Conditions

The findings and conclusions contain all of the limitations inherent in these methodologies that are referred to in ASTM E1527-13.

Specific limitations and exceptions to this ESA are more specifically set forth below:

- Interviews with past owners, operators and occupants were not reasonably ascertainable and thus constitute a data gap. Based on information obtained from other historical sources (as discussed in Section 3.0), this data gap is not expected to alter the findings of this assessment.
- Partner requested information relative to deed restrictions and environmental liens, a title search, and completion of a pre-survey questionnaire from the Report User. This information was not provided at the time of the assessment. Based on information obtained from other historical sources (as discussed in Section 3.0), this data gap is not expected to alter the findings of this assessment.
- Partner was unable to determine the property use at 5-year intervals, which constitutes a data gap. Information concerning historical use of the subject property was unavailable from 1955 to 1960. Except for property tax files and recorded land title records, which were not considered to be sufficiently useful, Partner reviewed all standard historical sources and conducted appropriate interviews.
- Partner submitted Freedom of Information Act (FOIA) requests to the Los Angeles County Public Health Investigations (LACPHI) and the California EPA, Office of Environmental Health Hazard Assessment (OEHHA) for information pertaining to hazardous substances, underground storage tanks, releases, inspection records, etc. for the subject property and/or adjacent properties. As of this writing, these agencies have not responded to Partner's request. Based on information obtained from other historical sources, this limitation is not expected to alter the overall findings of this assessment.

2.0 SITE DESCRIPTION

2.1 Site Location and Legal Description

The subject property at 500 West Baseline Road in La Verne, California is located on the north side of Baseline Road and the east side of Rodeo Lane. According to the Los Angeles County Assessor, the subject property is legally described as "W 1/2 OF SW 1/4 OF SE 1/4 EX OF ST OF SEC 31 T1N R8W", and ownership is currently vested in Ramzy Fakhoury since 2017.

Please refer to Figure 1: Site Location Map, Figure 2: Site Plan, Figure 3: Topographic Map, and Appendix A: Site Photographs for the location and site characteristics of the subject property.

2.2 Current Property Use

The subject property is currently vacant land covered with mostly bare soil, grass, bushes, trees and other native vegetation. The subject property is rectangular in shape with an existing topography that varies due to the subject property's hillside location that includes steep slopes. The subject property is unoccupied and appears to have no current use. Partner did not observe any hazardous chemicals and/or petroleum products stored, generated, or used onsite. With the exception of a concrete-lined storm drainage channel that runs along the southern boundary of the subject property, no other improvements or features, were noted on the subject property during the site reconnaissance.

The subject property is proposed for residential development by the City of La Verne and unincorporated Los Angeles County.

The subject property was not identified in the regulatory database report of Section 4.2.

2.3 Current Use of Adjacent Properties

The subject property is located within a residential area of Los Angeles County. During the vicinity reconnaissance, Partner observed the following land use on properties in the immediate vicinity of the subject property:

Immediately Surrounding Properties	
North:	Vacant land
South:	Baseline Road beyond which is single family residential (2401-2439 Smoketree Drive and 601-647 Smoketree Drive)
East:	Vacant land followed by Broken Spur Road and a single residence (521 Baseline Road)
West:	Single family residential (4612-4758 Rodeo Lane) followed by Rodeo Lane

No adjacent properties were identified in the regulatory database report of Section 4.2.

2.4 Physical Setting Sources

2.4.1 Topography

The United States Geological Survey (USGS) *San Dimas, California* Quadrangle 7.5-minute series topographic map was reviewed for this ESA. According to the contour lines on the topographic map, the subject property is located at approximately 1,270 feet above mean sea level (MSL). The contour lines in the area of the subject property indicate the area is sloping moderately toward the southwest. The subject property is depicted on the 1953 map as developed agriculturally.

A copy of the most recent topographic map is included as Figure 3 of this report.

2.4.2 Hydrology

According to topographic map interpretation, the direction of groundwater flow in the vicinity of the subject property is inferred to be toward the southwest. The nearest surface water in the vicinity of the subject property is the Marshall Creek located approximately 0.5 mile and west of the subject property. No settling ponds, lagoons, surface impoundments, wetlands or natural catch basins were observed at the subject property during this assessment.

According to available information, a public water system operated by the City of La Verne Water Division will serve the subject property vicinity once annexed into the City. Local groundwater provides approximately 30 percent of the City of La Verne's water; however, most of the City's supply (70 percent) is purchased from the Three Valleys Municipal Water District (TVMWD), who treats water received from the Metropolitan Water District of Southern California (MWD). MWD provides supplemental water to about 300 cities and unincorporated areas in Southern California, importing water from two separate sources: the Colorado River and the State Water Project. The water the City of La Verne purchases is treated by Three Valleys Municipal Water District at the Miramar Treatment Plant.

Based on a review of groundwater well information obtained from the Los Angeles County Department of Public Works (LACDPW), depth to groundwater in the vicinity of the subject property was reported at a depth of approximately 117 feet below ground surface (bgs) on May 27, 2008 as reported in a groundwater well located approximately 2,000 feet southeast of the subject property (State Well No. 4448A). Groundwater flow in the vicinity of the subject property is inferred towards the southwest consistent with the subject property's topography and surface drainage.

2.4.3 Geology/Soils

The general lithology for the area of the subject property is described as Marine And Nonmarine (Continental) Sedimentary Rocks of the Pleistocene-Holocene Age made up of alluvium, lake, playa and terrace deposits; unconsolidated and semi-consolidated, mostly nonmarine, but also includes marine deposits near the coast.

Based on information obtained from the USDA Natural Resources Conservation Service Web Soil Survey online database, the subject property is mapped as "Urban Land", which generally consists of a soil profile described as variable, ranging from sandy loam, gravelly sandy loam, silt loam to fine sand, gravelly sand, and clay.

2.4.4 Flood Zone Information

Partner performed a review of the Flood Insurance Rate Map, published by the Federal Emergency Management Agency. According to Community Panel Number 06037C1445F, dated September 26, 2008, the subject property appears to be located in Zone D, an area located outside of the 100-year and 500-year flood plains. However, it should be noted that the Zone D designation is used for areas where there are possible but undetermined flood hazards, as no analysis of flood hazards has been conducted. The designation of Zone D is also used when a community incorporates portions of another community's area where no map has been prepared.

3.0 HISTORICAL INFORMATION

Partner obtained historical use information about the subject property from a variety of sources. A chronological listing of the historical data found is summarized in the table below:

Historical Use Information

Period/Date	Source	Description/Use
1894-1904	Aerial Photographs, Topographic Maps	Undeveloped/Native land
1928-1967	Aerial Photographs, Topographic Maps	Agricultural land/Residential
1972-Present	Aerial Photographs, Topographic Maps, City Directories, Onsite Observations	Vacant land

According to available historical sources, the subject property was formerly undeveloped as early as 1894; consisted of agricultural development (citrus groves) along the southern portion of the subject property with an apparent barn or residential structure between 1928 and 1948; consisted of agricultural development (citrus groves) along the southern portion of the subject property from at least 1953 to circa-1967; and has been vacant land since at least 1972.

The southern and southwestern portions of the subject property were historically used for agricultural purposes (citrus orchard). There is a potential that agricultural related chemicals such as pesticides, herbicides, and fertilizers, may have been used and stored onsite. During future site development activities, near surface soils (where residual agricultural chemical concentrations would have most likely been present, if at all) will likely be mixed with fill material or disturbed during grading. Also, it is common that engineered fill material is placed over underlying soils as part of the development activities. Furthermore, no evidence of stressed vegetation was observed during the reconnaissance and the subject property has not been utilized for agricultural purposes for at least 50 years. These additional variables serve to further reduce the potential for exposure to residual agricultural chemicals (if any). Based on these reasons, Partner concludes that the possible former use of agricultural chemicals is not expected to represent a significant environmental concern at this time.

No other potential environmental concerns were identified in association with the current or former use of the subject property.

3.1 Aerial Photograph Review

Partner obtained available aerial photographs of the subject property and surrounding area from Environmental Data Resources (EDR) on February 7, 2020. The following was observed on the subject property and adjacent properties during the aerial photograph review:

Date: 1928	*Scale: 1"=500'*
Subject Property:	Appears to be agricultural land with a possible barn or residence on the southwest and southern portions of the subject property, while the remainder appears to be undeveloped.
North:	Appears to be undeveloped
South:	Appears to be agricultural land across Baseline Road
East:	Appears to be undeveloped
West:	Appears to be agricultural land with undeveloped land to the northwest

Date: 1938, 1948, 1953	Scale: 1"=500'
Subject Property:	No significant changes visible; however, the onsite building in the southeastern corner is no longer visible by 1953
North:	No significant changes visible
South:	No significant changes visible
East:	No significant changes visible
West:	No significant changes visible

Date: 1964, 1966	Scale: 1"=500'
Subject Property:	No significant changes visible
North:	No significant changes visible
South:	Developed with residential across Baseline Road
East:	No significant changes visible with the exception of residential structures to the southeast
West:	No significant changes visible

Date: 1975, 1977	Scale: 1"=500'
Subject Property:	Appears as vacant land; agricultural usage onsite appears have been ceased
North:	No significant changes visible
South:	No significant changes visible
East:	No significant changes visible
West:	Appears as vacant land; agricultural land is present to the southwest

Date: 1983, 1989	Scale: 1"=500'
Subject Property:	No significant changes visible
North:	No significant changes visible
South:	Developed with existing residential properties across Baseline Road
East:	Developed with a mixture of residential properties and vacant land
West:	Developed with existing residential properties including to the southwest

Date: 2003, 2005	Scale: 1"=500'
Subject Property:	No significant changes visible
North:	No significant changes visible
South:	No significant changes visible with the exception of the construction of the 210 Freeway to the farther south across Baseline Road
East:	No significant changes visible
West:	No significant changes visible

Date: 2009, 2012, 2016	Scale: 1"=500'
Subject Property:	No significant changes visible
North:	No significant changes visible with the exception of the construction of a single family residence to the northeast
South:	No significant changes visible
East:	No significant changes visible
West:	No significant changes visible

Copies of select aerial photographs are included in Appendix B of this report.

3.2 Fire Insurance Maps

Partner reviewed the collection of Sanborn Fire insurance maps from Environmental Data Resources (EDR) on February 7, 2020. Sanborn map coverage was not available for the subject property.

Copies of reviewed Sanborn Maps (including no coverage documentation) are included in Appendix B of this report.

3.3 City Directories

Partner reviewed historical city directories obtained from Environmental Data Resources (EDR) on February 10, 2020 for past names and businesses that were listed for the subject property and adjacent properties. The findings are presented in the following table:

City Directory Search for 500 West Baseline Road (Subject Property)	
Year(s)	**Occupant Listed**
1920-2014	No Listings found for subject property (no official address assigned)

Based on the city directory review, no environmentally sensitive listings were identified for the subject property address.

City Directory Search for Adjacent Properties	
Year(s)	**Occupant Listed**
1920-2014	No Listings found (517 Baseline Road)
1965	Archambault Jr Geo (615 Smoketree Drive); DOWNTAIN BILL J (637 Smoketree Drive); KLAMFOTH WILLIAM J (647 Smoketree Drive); HOLLIDAY F N 593 S (667 Smoketree Drive)
1975	JACOBS George C (521 Baseline Road); Archambault Jr Geo (615 Smoketree Drive); Cassingham Terry D Pastr (637 Smoketree Drive); Stewart Ross (667 Smoketree Drive)
1980	Archambault Jr Geo (615 Smoketree Drive)
1985	GELALICH NICHOLAS (4758 Rodeo Lane); Cantlay Richard (4746 Rodeo Lane); WRIGHT JAS (4722 Rodeo Lane); WALTER CARL N (4680 Rodeo Lane)
1990	Archambault Jr Geo (615 Smoketree Drive); BUSTEED D GEO (647 Smoketree Drive); Stewart Ross (667 Smoketree Drive); GELALICH NICHOLAS (4758 Rodeo Lane); Cantlay Richard (4746 Rodeo Lane); WRIGHT JAS (4722 Rodeo Lane); Welsh Colin (4680 Rodeo Lane)
1996	Archambault Jr Geo (615 Smoketree Drive); Brighton David W (637 Smoketree Drive); Stewart Ross (667 Smoketree Drive); Cantlay Richard (4746 Rodeo Lane); Welsh Colin (4680 Rodeo Lane)
2003	Archambault Jr Geo (615 Smoketree Drive); BRIGHTON David (637 Smoketree Drive); FLORES Jeffrey (647 Smoketree Drive); Stewart Ross (667 Smoketree Drive); CORDOVA Marianne (4758 Rodeo Lane); OWANG James (4746 Rodeo Lane); BAKHIT Ivan (4722 Rodeo Lane); JONES James (4680 Rodeo Lane); CHEN Jack (4630 Rodeo Lane); KIRCHGESSLER David (4658 Rodeo Lane)
2010	DISTASO JOANNE PHOTOGRAPH (667 Smoketree Drive); TONY ROMA MANUFACTURING INC/SALS DELI (4630 Rodeo Lane)
2014	SIMPLY SUCCULENT INC/DISTASO JOANNE PHOTOGRAPH (667 Smoketree Drive)

Based on the city directory review, no environmentally sensitive listings were identified for the adjacent property addresses.

Copies of reviewed city directories are included in Appendix B of this report.

3.4 Historical Topographic Maps

Partner reviewed historical topographic maps obtained from Environmental Data Resources (EDR) on February 7, 2020. Please note that no coverage of the subject property was available on the 1933, 1942, 1944, 1954, 1976 and 1995 topographic maps. The following was observed on the subject property and adjacent properties during the topographic map review.

Date:	*1894, 1897, 1898, 1900, 1903, 1904, 1928*
Subject Property:	Undeveloped land
North:	Undeveloped land
South:	Undeveloped land across Baseline Road
East:	Undeveloped land
West:	Undeveloped land

Date:	*1940*
Subject Property:	No significant changes depicted
North:	No significant changes depicted
South:	No significant changes depicted with the exception of one residential dwelling depicted to the southeast
East:	No significant changes depicted
West:	No significant changes depicted with the exception of two residential dwellings depicted to the west-southwest

Date:	*1953, 1954*
Subject Property:	Agricultural land
North:	Vacant land
South:	Developed with residential across Baseline Road
East:	Agricultural land
West:	Agricultural land

Date:	*1972, 1973*
Subject Property:	Vacant land
North:	No significant changes depicted
South:	No significant changes depicted
East:	No significant changes depicted
West:	No significant changes depicted

Date:	*1981, 2012*
Subject Property:	No significant changes depicted
North:	No significant changes depicted
South:	No significant changes depicted
East:	Vacant land
West:	Vacant land and residential

Copies of reviewed topographic maps are included in Appendix B of this report.

4.0 REGULATORY RECORDS REVIEW

4.1 Regulatory Agencies

4.1.1 State Department

Regulatory Agency Data	
Name of Agency:	California EPA, Office of Environmental Health Hazard Assessment (OEHHA)
Point of Contact:	Monet Vela
Agency Address:	1001 I Street, Sacramento, California
Agency Phone Number:	(916) 324-7572
Date of Contact:	February 8, 2020
Method of Communication:	Email
Summary of Communication:	As of the date of this report, Partner has not received a response from the OEHHA for inclusion in this report.
Name of Agency:	California EPA
Point of Contact:	CalEPA Regulated Site Portal
Agency Address:	1001 I Street, Sacramento, California
Agency Phone Number:	(916) 324-7572
Date of Contact:	February 8, 2020
Method of Communication:	Online
Summary of Communication:	The CalEPA Regulated Site Portal is a website that combines data about environmentally regulated sites and facilities in California into a single, searchable database and interactive map. The portal was created to provide a more holistic view of regulated activities statewide. No records were found for the subject property.

Copies of pertinent documents are included in Appendix B of this report.

4.1.2 Health Department

Regulatory Agency Data	
Name of Agency:	Los Angeles County Public Health Investigation (LACPHI), Environmental Health
Point of Contact:	Custodian of Records
Agency Address:	5555 Ferguson Drive, Suite 120-04, Commerce, California
Agency Phone Number:	(323) 890-7806
Date of Contact:	February 8, 2020
Method of Communication:	Email
Summary of Communication:	No records regarding hazardous substance use, storage or releases, or the presence of USTs and AULs on the subject property were on file with the LACPHI.

Copies of pertinent documents are included in Appendix B of this report.

4.1.3 Fire Department

Regulatory Agency Data	
Name of Agency:	Los Angeles County Fire Department (LCFD)
Point of Contact:	UST and Health Hazardous Materials Division (HHMD)
Agency Address:	1320 N. Eastern Ave, Los Angeles, California
Agency Phone Number:	(323) 881-2411
Date of Contact:	February 8, 2020
Method of Communication:	Online
Summary of Communication:	No records regarding hazardous substance use, storage or releases, or the presence of ASTs or USTs and/or AULs on the subject property were on file with the LCFD.

Copies of pertinent documents are included in Appendix B of this report.

4.1.4 Air Pollution Control Agency

Regulatory Agency Data	
Name of Agency:	South Coast Air Quality Management District (SCAQMD)
Point of Contact:	FIND Database
Agency Address:	21865 Copley Drive, Diamond Bar, California
Agency Phone Number:	(909) 396-2000
Date of Contact:	February 8, 2020
Method of Communication:	Online
Summary of Communication:	No Permits to Operate (PTO), Notices of Violation (NOV), or Notices to Comply (NTC) or the presence of AULs, dry cleaning machines, or USTs were on file for the subject property with the SCAQMD.

Copies of pertinent documents are included in Appendix B of this report.

4.1.5 Regional Water Quality Agency

Regulatory Agency Data	
Name of Agency:	Regional Water Quality Control Board (RWQCB)
Point of Contact:	GeoTracker Database
Agency Address:	1001 I Street, Sacramento, California
Agency Phone Number:	(866) 480-1028
Date of Contact:	February 6, 2020
Method of Communication:	Online
Summary of Communication:	No records regarding hazardous substance use, storage or releases, or the presence of USTs and AULs on the subject property were on file with the RWQCB.

Copies of pertinent documents are included in Appendix B of this report.

4.1.6 Department of Toxic Substances Control

Regulatory Agency Data	
Name of Agency:	California Department of Toxic Substances Control (DTSC)
Point of Contact:	Envirostor and Hazardous Waste Tracking System (HWTS) Database
Agency Address:	1001 I Street, Sacramento, California
Agency Phone Number:	(800) 728-6942
Date of Contact:	February 6 and 8, 2020
Method of Communication:	Online
Summary of Communication:	No records regarding hazardous substance use, storage or releases, or the presence of USTs and AULs on the subject property were on file with the DTSC.

Copies of pertinent documents are included in Appendix B of this report.

4.1.7 Building Department

Regulatory Agency Data	
Name of Agency:	La Verne Building and Safety Department (LBSD)
Point of Contact:	Candice Bocock, City Planner
Agency Address:	3660 D Street, La Verne, California
Agency Phone Number:	(909) 596-8726
Date of Contact:	February 10, 2020
Method of Communication:	Email
Summary of Communication:	No building records were available for the subject property as the subject property is currently located within unincorporated Los Angeles County.
Name of Agency:	Los Angeles County Department of Public Works (LACDPW)
Point of Contact:	Building Permit Viewer
Agency Address:	900 S. Fremont Avenue, Alhambra, California
Agency Phone Number:	(626) 458-5100
Date of Contact:	February 11, 2019
Method of Communication:	Online
Summary of Communication:	This web site allows the user to look up permits issued for construction in the unincorporated areas of Los Angeles County. Permits are provided as scanned PDF images of past paper permits and as records in our Development and Permit Tracking System database. No permits or other building records were found for the subject property.

Copies of pertinent documents are included in Appendix B of this report.

4.1.8 Planning Department

Regulatory Agency Data	
Name of Agency:	La Verne Community Development Department
Point of Contact:	Planning Division
Agency Address:	3660 D Street, La Verne, California
Agency Phone Number:	(909) 596-8726
Date of Contact:	February 7, 2020
Method of Communication:	Online
Summary of Communication:	The subject property is located immediately outside and abutting the city boundaries of La Verne; however, still within the City's Sphere of Influence (SOI). The subject property is approximately 19.44 acres and surrounded by the City's zoning designation referred to as Planned Residential (PR3D Single-Family Residential) abutting the west edge of the subject property. The unincorporated areas, which are Los Angeles County, are located on the north, south and east. As part of the proposal of the subject property being annexed into the City, the subject property would make logical zoning designation sense to be zoned PR3D given the proposed subdivision request. The General Plan Designation for the subject property is within the pre-annexation area of the City's SOI, which designates the area as Hillside Residential. Hillside Residential anticipates single-family units built to a density of two dwelling unit per acre. Due to the limited developable area of the subject property because of the steeper slopes, a constraints analysis map was developed, which identified a small area of the subject property which could be developable. The proposed project on the subject property is to construct seven single-family lots and associated infrastructure onsite. The proposed subdivision of seven lots would occupy approximately 5.57 acres of the 19.44-acre parcel. Lot No. 8 would be designated for a debris basin and Lot No. 9 would consist of approximately 10.75 acres dedicated to open space.

Copies of pertinent documents are included in Appendix B of this report.

4.1.9 Oil & Gas Exploration

Regulatory Agency Data	
Name of Agency:	California Division of Oil, Gas and Geothermal Resources (DOGGR)
Point of Contact:	DOGGR Database Search
Agency Address:	801 K Street, MS 12-30, Sacramento, California
Agency Phone Number:	(916) 445-1825
Date of Contact:	February 7, 2020
Method of Communication:	Online
Summary of Communication:	According to DOGGR, no oil or gas wells are located on or adjacent to the subject property.

Copies of pertinent documents are included in Appendix B of this report.

4.1.10 Assessor's Office

Regulatory Agency Data	
Name of Agency:	Los Angeles County Assessor (LACA)
Point of Contact:	Assessor Database
Agency Address:	500 W. Temple Street Room 225, Los Angeles, California
Agency Phone Number:	(213) 974-3211
Date of Contact:	February 6, 2020
Method of Communication:	Online
Summary of Communication:	According to the LACA records reviewed, the subject property is identified as Assessor Parcel Number (APN) 8666-006-035 with no address available. There are no buildings or structures on the subject property and property type is identified as "vacant land". The subject property totals approximately 19.44 acres. The former APN for the subject property is listed as 8666-006-010 with a parcel status listed as "deleted" as of 2003.

Copies of pertinent documents are included in Appendix B of this report.

4.1.11 Los Angeles County Department of Public Works

Regulatory Agency Data	
Name of Agency:	Los Angeles County Department of Public Works (LACDPW)
Point of Contact:	Industrial Waste, UST and Stormwater Database System
Agency Address:	900 S. Fremont Avenue, Alhambra, California
Agency Phone Number:	(626) 458-5100
Date of Contact:	February 8, 2020
Method of Communication:	Online
Summary of Communication:	No records regarding hazardous substance use, storage or releases, or the presence of USTs and AULs on the subject property were on file with the LACDPW.

Copies of pertinent documents are included in Appendix B of this report.

4.2 Mapped Database Records Search

Information from standard federal, state, county, and city environmental record sources was provided by Environmental Data Resources, Inc. (EDR). Data from governmental agency lists are updated and integrated into one database, which is updated as these data are released. The information contained in this report was compiled from publicly available sources and the locations of the sites are plotted utilizing a geographic information system, which geocodes the site addresses. The accuracy of the geocoded locations is approximately +/-300 feet.

Using the ASTM definition of migration, Partner considers the migration of hazardous substances or petroleum products in any form onto the subject property during the evaluation of each site listed on the radius report, which includes solid, liquid, and vapor.

4.2.1 Regulatory Database Summary

Radius Report Data				
Database	Search Radius (mile)	Subject Property	Adjacent Properties	Sites of Concern
Federal NPL or Delisted NPL Site	1.00	N	N	N
Federal CERCLIS Site	0.50	N	N	N
Federal CERCLIS-NFRAP Site	0.50	N	N	N
Federal RCRA CORRACTS Facility	1.00	N	N	N
Federal RCRA TSDF Facility	0.50	N	N	N
Federal RCRA Generators Site (LQG, SQG, CESQG)	0.25	N	N	N
Federal IC/EC Registries	0.50	N	N	N
Federal ERNS Site	Subject Property	N	N	N
State/Tribal Equivalent NPL	1.00	N	N	N
State/Tribal Equivalent CERCLIS	1.00	N	N	N
State/Tribal Landfill/Solid Waste Disposal Site	0.50	N	N	N
State/Tribal Leaking Storage Tank Site	0.50	N	N	N
State/Tribal Registered Storage Tank Sites (UST/AST)	0.25	N	N	N
State/Tribal Voluntary Cleanup Sites (VCP)	0.50	N	N	N
State/Tribal Spills	0.50	N	N	N
Federal Brownfield Sites	0.50	N	N	N
State Brownfield Sites	0.50	N	N	N
EDR MGP	Varies	N	N	N
EDR US Hist Auto Station	Varies	N	N	N
EDR US Hist Cleaners	Varies	N	N	N
RCRA-NonGen/NLR	0.25	N	Y	N

4.2.2 Subject Property Listings

The subject property is not identified in the regulatory database report.

4.2.3 Adjacent Property Listings

The adjacent property to the southwest is identified as a RCRA NonGen/NLR site in the regulatory database report, as discussed below:

- The property, identified as Antoiniette Olmos at 4573 Landeros Avenue, is located adjacent to the southwest and hydraulically down-gradient of the subject property. Based on the RCRA NonGen/NLR database information reviewed, this facility was classified as a "non-generator that does not presently generate hazardous waste" with no violations found on record. Therefore, based on the nature of this database listing, lack of reported violations or releases, and the down-gradient location relative to the subject property, this database listing is not expected to represent an environmental concern to the subject property.

Based on the findings, vapor migration is/is not expected to represent a significant environmental concern at this time.

4.2.4 Sites of Concern Listings

No sites of concern are identified in the regulatory database report. Listed sites within the specified search radius of the subject property which appeared on local, State, or Federally published lists of sites that have had releases of hazardous substances, have been granted regulatory closure, were determined to be of sufficient distance, and/or are situated hydrologically cross- or down-gradient such that impact to the subject property is unlikely. Based on the findings, vapor migration is not expected to represent a significant environmental concern at this time.

4.2.5 Orphan Listings

The EDR database identified one orphan site; however, this does not appear to be within the vicinity of the subject property and therefore, does not constitute a significant environmental concern.

A copy of the regulatory database report is included in Appendix C of this report.

5.0 USER PROVIDED INFORMATION AND INTERVIEWS

In order to qualify for one of the *Landowner Liability Protections (LLPs)* offered by the Small Business Liability Relief and Brownfields Revitalization Act of 2001 (the *Brownfields Amendments*), the *User* must conduct the following inquiries required by 40 CFR 312.25, 312.28, 312.29, 312.30, and 312.31. The *User* should provide the following information to the *environmental professional*. Failure to provide this information could result in a determination that *all appropriate inquiries* is not complete. The *User* is asked to provide information or knowledge of the following:

- Review Title and Judicial Records for Environmental Liens and AULs
- Specialized Knowledge or Experience of the User
- Actual Knowledge of the User
- Reason for Significantly Lower Purchase Price
- Commonly Known or *Reasonably Ascertainable* information
- Degree of Obviousness
- Reason for Preparation of this Phase I ESA

Fulfillment of these user responsibilities is key to qualification for the identified defenses to CERCLA liability. Partner requested our Client to provide information to satisfy User Responsibilities as identified in Section 6 of the ASTM guidance.

Pursuant to ASTM E1527-13, Partner requested the following site information from EcoTierra Consulting, Inc. (User of this report).

User Responsibilities				
Item	**Provided By User**	**Not Provided By User**	**Discussed Below**	**Does Not Apply**
Environmental Pre-Survey Questionnaire			X	
Title Records, Environmental Liens, and AULs			X	
Specialized Knowledge			X	
Actual Knowledge			X	
Valuation Reduction for Environmental Issues			X	
Identification of Key Site Manager	**Section 5.1.3**			
Reason for Performing Phase I ESA	**Section 1.1**			
Prior Environmental Reports		X		
Other		X		

5.1 Interviews

5.1.1 Interview with Owner

The owner of the subject property was not available to be interviewed at the time of the assessment.

5.1.2 Interview with Report User

Please refer to Section 5.2 below for information requested from the Report User.

5.1.3 Interview with Key Site Manager

Mrs. Candice Bocock, key site manager and Principal Planner with the City if La Verne, indicated that she did not have much information for the pre-survey questionnaire provided to her by Partner and did not return a completed questionnaire.

5.1.4 Interviews with Past Owners, Operators and Occupants

Interviews with past owners, operators and occupants were not conducted since information regarding the potential for contamination at the subject property was obtained from other sources.

5.1.5 Interview with Others

As the subject property is not an abandoned property as defined in ASTM 1527-13, interview with others were not performed.

5.2 User Provided Information

5.2.1 Title Records, Environmental Liens, and AULs

Partner was not provided with title records or environmental lien and AUL information for review as part of this assessment.

5.2.2 Specialized Knowledge

No specialized knowledge of environmental conditions associated with the subject property was provided by the User at the time of the assessment.

5.2.3 Actual Knowledge of the User

No actual knowledge of any environmental lien or AULs encumbering the subject property or in connection with the subject property was provided by the User at the time of the assessment.

5.2.4 Valuation Reduction for Environmental Issues

No knowledge of valuation reductions associated with the subject property was provided by the User at the time of the assessment.

5.2.5 Commonly Known or Reasonably Ascertainable Information

The User did not provide information that is commonly known or *reasonably ascertainable* within the local community about the subject property at the time of the assessment.

5.2.6 Previous Reports and Other Provided Documentation

No previous reports or other pertinent documentation was provided to Partner for review during the course of this assessment.

6.0 SITE RECONNAISSANCE

The weather at the time of the site visit was sunny. Refer to Section 1.5 for limitations encountered during the field reconnaissance and Sections 2.1 and 2.2 for subject property operations. The table below provides the site assessment details:

Site Assessment Data	
Site Assessment Performed By:	Ramil Reyes
Site Assessment Conducted On:	February 12, 2020

The table below provides the subject property personnel interviewed during the field reconnaissance:

Site Visit Personnel for 500 West Baseline Road (Subject Property)			
Name	**Title/Role**	**Contact Number**	**Site Walk* Yes/No**
Candice Bocock	Key Site Manager	(909) 596-8706	No

* Accompanied Partner during the field reconnaissance activities and provided information pertaining to the current operations and maintenance of the subject property

No potential environmental concerns were identified during the onsite reconnaissance.

6.1 General Site Characteristics

6.1.1 Solid Waste Disposal

As the subject property is vacant land, no solid waste generation was observed at the subject property. No evidence of illegal dumping of solid waste was observed during the Partner site reconnaissance.

6.1.2 Sewage Discharge and Disposal

There are no sanitary discharges on the subject property as the subject property has not been developed. Once the subject property is annexed, the City of La Verne will service the subject property vicinity. No wastewater treatment facilities or septic systems are observed or reported on the subject property.

6.1.3 Surface Water Drainage

Storm water appears to be absorbed directly into the ground as the subject property has not been developed and is covered primarily by a grass and bare soil with no paved areas onsite. Once the subject property is annexed into the City of La Verne, the subject property will be connected to a municipal owned and maintained sewer system.

The subject property does not appear to be a designated wetland area, based on information obtained from the United States Fish & Wildlife Service; however, a comprehensive wetlands survey would be required in order to formally determine actual wetlands on the subject property. No surface impoundments, wetlands, natural catch basins, settling ponds, or lagoons are located on the subject property. No drywells were identified on the subject property.

6.1.4 Source of Heating and Cooling

There are currently no heating and/or cooling systems on the subject property as the subject property has not been developed and has no buildings or structures.

6.1.5 Wells and Cisterns

No aboveground evidence of wells or cisterns was observed during the site reconnaissance.

6.1.6 Wastewater

Domestic wastewater is not generated at the subject property as the subject property has not been developed. No industrial process is currently performed at the subject property.

6.1.7 Septic Systems

No septic systems were observed or reported on the subject property.

6.1.8 Additional Site Observations

No additional general site characteristics were observed during the site reconnaissance.

6.2 Potential Environmental Hazards

6.2.1 Hazardous Substances and Petroleum Products Used or Stored at the Site

No hazardous substances or petroleum products were observed on the subject property during the site reconnaissance.

6.2.2 Aboveground & Underground Hazardous Substance or Petroleum Product Storage Tanks (ASTs/USTs)

No evidence of current or former ASTs or USTs was observed during the site reconnaissance.

6.2.3 Evidence of Releases

No spills, stains or other indications that a surficial release has occurred at the subject property were observed.

6.2.4 Polychlorinated Biphenyls (PCBs)

Older transformers and other electrical equipment could contain PCBs at a level that subjects them to regulation by the U.S. EPA. PCBs in electrical equipment are controlled by United States Environmental Protection Agency regulations 40 CFR, Part 761. Under the regulations, there are three categories into which electrical equipment can be classified: 1) Less than 50 parts per million (ppm) of PCBs – "*Non-PCB;*" 2) 50 ppm-500 ppm – "*PCB-Contaminated;*" and, 3) Greater than 500 ppm – "*PCB-Containing.*" The manufacture, process, or distribution in commerce or use of any PCB in any manner other than in a totally enclosed manner was prohibited after July 2, 1979.

The on-site reconnaissance addressed indoor and outdoor transformers that may contain PCBs. One pole-mounted transformer was observed along the southern perimeter of the subject property. The transformer is not labeled indicating PCB content. No staining or leakage was observed in the vicinity of the transformer. Based on the good condition of the equipment, the transformer is not expected to represent a significant environmental concern.

Additionally, no other potential PCB-containing equipment (interior transformers, oil-filled switches, hoists, lifts, dock levelers, hydraulic elevators, balers, etc.) was observed on the subject property during Partner's reconnaissance.

6.2.5 Strong, Pungent or Noxious Odors

No strong, pungent or noxious odors were evident during the site reconnaissance.

6.2.6 Pools of Liquid

No pools of liquid were observed on the subject property during the site reconnaissance.

6.2.7 Drains, Sumps and Clarifiers

No drains, sumps, or clarifiers, other than those associated with storm water removal, were observed on the subject property during the site reconnaissance.

6.2.8 Pits, Ponds and Lagoons

No pits, ponds or lagoons were observed on the subject property.

6.2.9 Stressed Vegetation

No stressed vegetation was observed on the subject property.

6.2.10 Additional Potential Environmental Hazards

No additional environmental hazards, including landfill activities or radiological hazards, were observed.

6.3 Non-ASTM Services

6.3.1 Asbestos-Containing Materials (ACMs)

There are no buildings or structures located on the subject property. As such, an asbestos evaluation was not required by the scope of services.

6.3.2 Lead-Based Paint (LBP)

There are no buildings or structures located on the subject property. As such, an LBP evaluation was not required by the scope of services.

6.3.3 Radon

Radon is a colorless, odorless, naturally occurring, radioactive, inert, gaseous element formed by radioactive decay of radium (Ra) atoms. The US EPA has prepared a map to assist National, State, and local organizations to target their resources and to implement radon-resistant building codes. The map divides the country into three Radon Zones, according to the table below:

EPA Radon Zones

EPA Zones	Average Predicted Radon Levels	Potential
Zone 1	Exceed 4.0 pCi/L	Highest
Zone 2	Between 2.0 and 4.0 pCi/L	Moderate
Zone 3	Less than 2.0 pCi/L	Low

It is important to note that the EPA has found homes with elevated levels of radon in all three zones, and the US EPA recommends site-specific testing in order to determine radon levels at a specific location. However, the map does give a valuable indication of the propensity of radon gas accumulation in structures.

Radon sampling was not conducted as part of this assessment. Review of the US EPA Map of Radon Zones places the subject property in Zone 2. Based upon the radon zone classification, radon is not considered to be a significant environmental concern.

6.3.4 Lead in Drinking Water

According to available information, a public water system operated by the City of La Verne Water Division will serve the subject property vicinity once annexed into the City. Local groundwater provides approximately 30 percent of the City of La Verne's water; however, most of the City's supply (70 percent) is purchased from the Three Valleys Municipal Water District (TVMWD), who treats water received from the Metropolitan Water District of Southern California (MWD). MWD provides supplemental water to about 300 cities and unincorporated areas in Southern California, importing water from two separate sources: the Colorado River and the State Water Project. The water the City of La Verne purchases is treated by Three Valleys Municipal Water District at the Miramar Treatment Plant. According to the La Verne and the 2019 Annual Water Quality Report, water supplied to the subject property is in compliance with all State and Federal regulations pertaining to drinking water standards, including lead and copper. Water sampling was not conducted to verify water quality.

6.3.5 Mold

There are no buildings or structures located on the subject property. As such, a mold evaluation was not required by the scope of services.

6.4 Adjacent Property Reconnaissance

The adjacent property reconnaissance consisted of observing the adjacent properties from the subject property premises. No items of environmental concern were identified on the adjacent properties during the site assessment, including hazardous substances, petroleum products, ASTs, USTs, evidence of releases, PCBs, strong or noxious odors, pools of liquids, sumps or clarifiers, pits or lagoons, stressed vegetation, or any other potential environmental hazards.

7.0 FINDINGS AND CONCLUSIONS

Findings

A *recognized environmental condition (REC)* refers to the presence or likely presence of any hazardous substances or petroleum products in, on, or at a property: due to release to the environment; under conditions indicative of a release to the environment; or under conditions that pose a material threat of a future release to the environment. The following was identified during the course of this assessment:

- Partner did not identify any RECs during the course of this assessment.

A *controlled recognized environmental condition (CREC)* refers to a REC resulting from a past release of hazardous substances or petroleum products that has been addressed to the satisfaction of the applicable regulatory authority, with hazardous substances or petroleum products allowed to remain in place subject to the implementation of required controls. The following was identified during the course of this assessment:

- Partner did not identify any CRECs during the course of this assessment.

A *historical recognized environmental condition (HREC)* refers to a past release of any hazardous substances or petroleum products that has occurred in connection with the property and has been addressed to the satisfaction of the applicable regulatory authority or meeting unrestricted use criteria established by a regulatory authority, without subjecting the property to any required controls. The following was identified during the course of this assessment:

- Partner did not identify any HRECs during the course of this assessment.

An *environmental issue* refers to environmental concerns identified by Partner, which do not qualify as RECs; however, warrant further discussion. The following was identified during the course of this assessment:

- The southern and southwestern portions of the subject property were historically used for agricultural purposes (citrus orchard). There is a potential that agricultural related chemicals such as pesticides, herbicides, and fertilizers, may have been used and stored onsite. During future site development activities, near surface soils (where residual agricultural chemical concentrations would have most likely been present, if at all) will likely be mixed with fill material or disturbed during grading. Also, it is common that engineered fill material is placed over underlying soils as part of the development activities. Furthermore, no evidence of stressed vegetation was observed during the reconnaissance and the subject property has not been utilized for agricultural purposes for at least 50 years. These additional variables serve to further reduce the potential for exposure to residual agricultural chemicals (if any). Based on these reasons, Partner concludes that the possible former use of agricultural chemicals is not expected to represent a significant environmental concern at this time.

Conclusions, Opinions and Recommendations

Partner has performed a Phase I Environmental Site Assessment in conformance with the scope and limitations of ASTM Practice E1527-13 of 500 West Baseline Road in La Verne, Los Angeles County, California (the "subject property"). Any exceptions to, or deletions from, this practice are described in Section 1.5 of this report.

This assessment has revealed no evidence of RECs in connection with the subject property; however, environmental issues were identified. Based on the conclusions of this assessment, Partner recommends no further investigation of the subject property at this time.

8.0 SIGNATURES OF ENVIRONMENTAL PROFESSIONALS

Partner has performed a Phase I Environmental Site Assessment of the property located at 500 West Baseline Road in La Verne, Los Angeles County, California in conformance with the scope and limitations of the protocol and the limitations stated earlier in this report. Exceptions to or deletions from this protocol are discussed earlier in this report.

By signing below, Partner declares that, to the best of our professional knowledge and belief, we meet the definition of *Environmental Professional* as defined in §312.10 of 40 CFR §312. Partner has the specific qualifications based on education, training, and experience to assess a *property* of the nature, history, and setting of the subject *property*. Partner has developed and performed the all appropriate inquiries in conformance with the standards and practices set forth in 40 CFR Part 312.

Prepared By:

Ramil G. Reyes, REPA
Environmental Professional

Reviewed By:

David Boyce
Senior Author

9.0 REFERENCES

Reference Documents

American Society for Testing and Materials, Standard Practice for Environmental Site Assessments: Phase I Environmental Site Assessment Process, ASTM Designation: E1527-13.

Environmental Data Resources (EDR), Radius Report, February 2020

Federal Emergency Management Agency, Federal Insurance Administration, National Flood Insurance Program, Flood Insurance Map, accessed via internet, February 2020

United States Department of Agriculture, Natural Resources Conservation Service, accessed via internet, February 2020

United States Department of Agriculture, Natural Resources Conservation Service, Web Soil Survey, accessed via the internet, February 2020

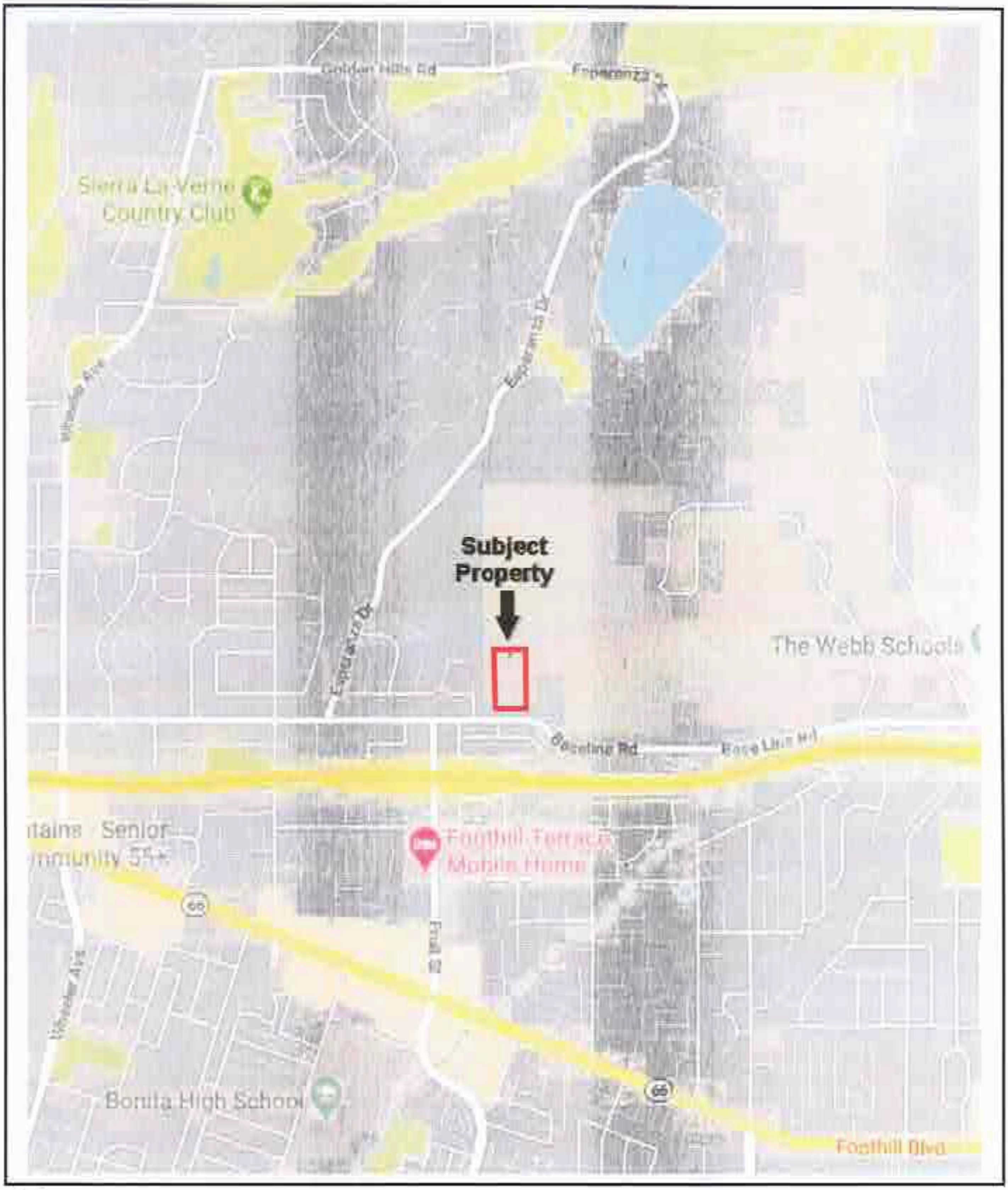
United States Environmental Protection Agency, EPA Map of Radon Zones (Document EPA-402-R-93-071), accessed via the internet, February 2020

United States Geological Survey, accessed via the Internet, February 2020

United States Geological Survey Topographic Map 1995, 7.5 minute series, accessed via internet, February 2020

FIGURES

PARTNER



N

Drawing Not To Scale

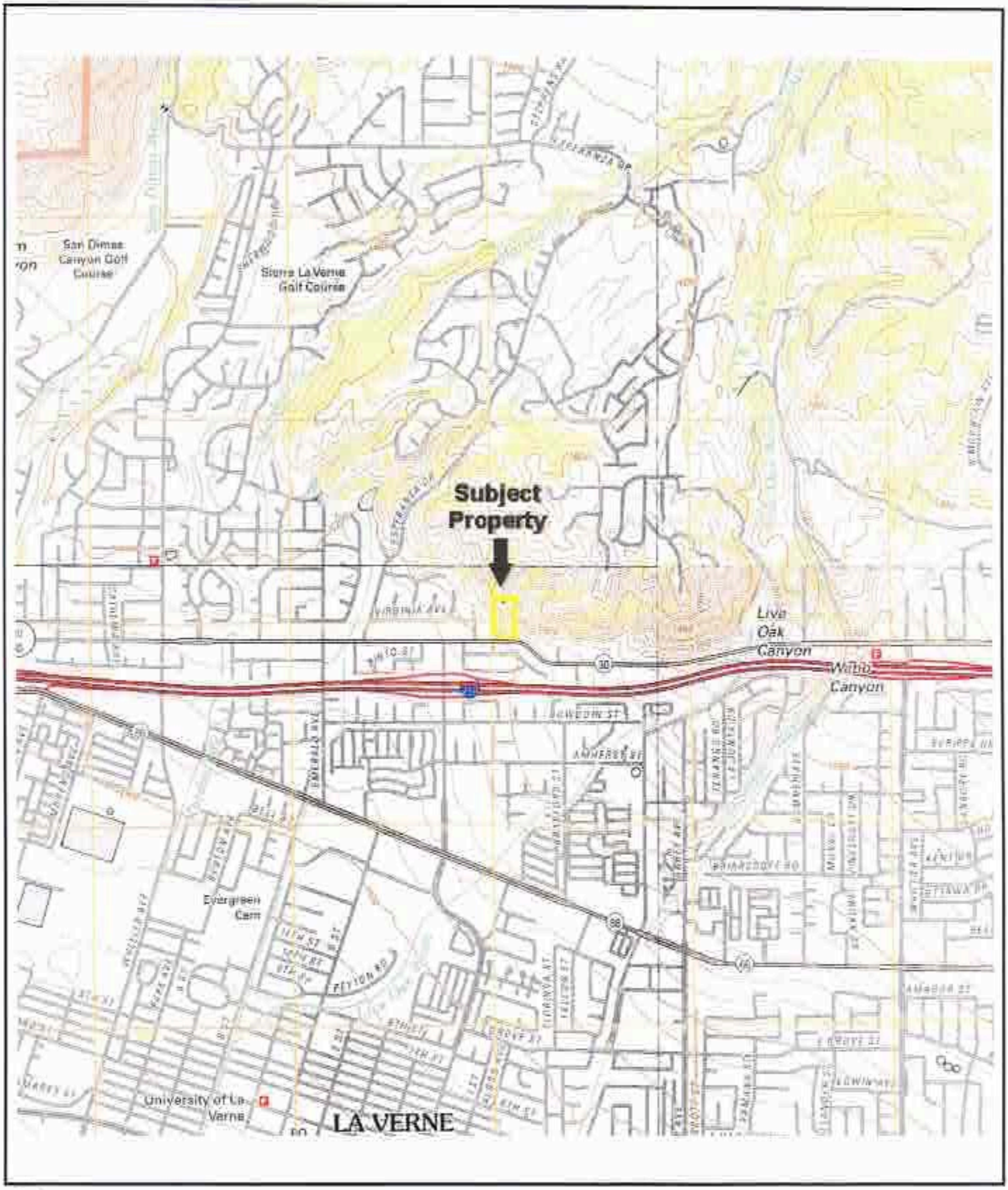
KEY:
Subject Property

FIGURE 1: SITE LOCATION MAP
Project No. 19-255647.1

PARTNER

FIGURE 2: SITE PLAN
Project No. 19-255647.1

PARTNER



USGS 7.5 Minute *San Dimas, California* Quadrangle
Created: 2012/Revised:

KEY:
Subject Property

FIGURE 3: TOPOGRAPHIC MAP
Project No. 19-255647.1

PARTNER

Appendices for this Phase I Environmental Site Assessment prepared by Partner, Engineering and Science, Inc., are available upon request.

APPENDIX E: HYDROLOGY REPORT

HYDROLOGY REPORT

FOR

Tentative Tract No. 82001

500 Baseline, Laverne, CA

PREPARED FOR:

RAMZY FAKHOURY
203 REBECCA DRIVE
SAN DIMAS, CA 91773

DATE:
04/24/2019

LAND DESIGN CONSULTANTS, INC.

Land Planning, Civil Engineering, Surveying & Environmental Services

800 Royal Oaks Drive, Suite 104, Monrovia, CA 91016, Tel. (626) 578-7000 Fax (626) 578-7373

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INTRODUCTION

Tentative Tract No. 82001 is a proposed development of 7 single family house lots, 1 debris basin lot and 1 open space lot on approximately 19.44 acres. The proposed Tract is bounded by single family homes to the west, open space to the north and east and a Caltrans channel to the south along Baseline Road. The project site is located on 500 Baseline Road in the City of La Verne, County of Los Angeles.

The existing site currently is vacant land with shrubs and trees on mountainous terrain from the south to the north. The majority of the existing drainage pattern is surface flow tabled in the south west direction and collected in the Caltrans channel to the south along Baseline Road. A portion of the northerly property drains to a channel at the westerly property line. Large offsite tributary areas to the north and east contribute to these flows as well.

The proposed conditions will have drainage areas of house lots, streets, basin lot draining to side opening catch basins and to a 24" RCP prior to connecting to a extended 42" RCP as part of MTD 799. The large open space area and contributing tributary to the north will discharge to a basin with an elevated inlet structure and spillway structure.

The basin has been sized to provide debris potential volumes to the areas to the north based on LACDPW methods. A reduction of 20 percent of the total debris potential occurs due to 200' setback on the existing slope. The debris potential calculation and tabulation can be found on the Post-development Map.

Downstream of the basin is 320 long, 72" detention system. The system is designed to mitigate flows from the large open space areas. Los Angeles County of Department of Public Works Design Division has a restriction for discharge on developed areas. An "allowable q per acre" analysis was done to determine the flows allowed to connect to storm drain MTD 799. Based on the analysis, only approximately 40 cfs is allowed which makes it nearly impossible to account for given the conditions to develop this Tract. What is being proposed is to at least be equal to or less than the current flows for a 50-yr frequency. This was achievable by proposing the 72" detention system. In addition, the MTD 799 plans clearly show a Q design for the 42" pipe at our point of connection with enough capacity to handle the post-development flows.

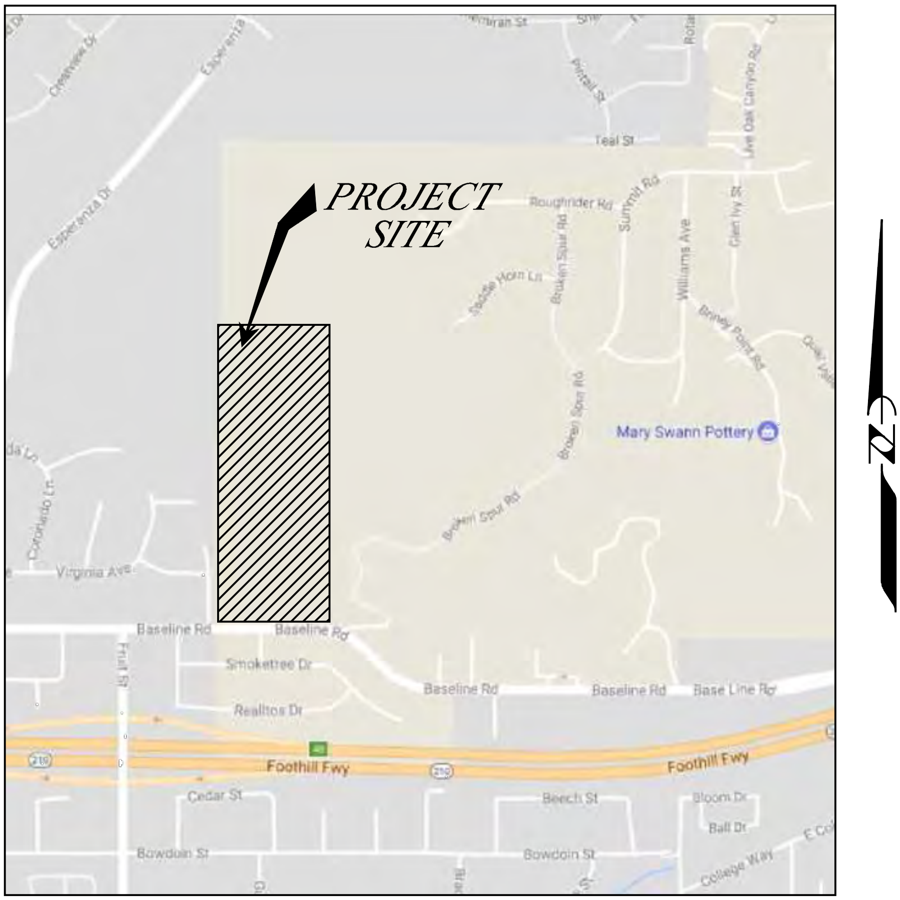
The hydrologic data used in this report is based on the LACDPW's Hydrology and Sedimentation Manual. The manual guidelines require that the developed areas having a sump condition shall be designed for 50-year frequency. For this project, on-site and off-site developed flows are designed for a 50-year frequency. LACDPW's computer program, HydroCalc and LAR04 was utilized to calculate the time of concentration and peak flows. The RETARD program was utilized to size the detention basin for on-site mitigation. Other hydrological parameters are the site soil classification of 088, 007 and 50-year isohyets are 7.4 inches of rainfall.

Per LACDPW's sedimentation manual, the debris producing zone is 2 and the peak bulking factor is 1.81 for the site development areas. The debris production volume rate is 227 CY/acre for DPA Zone 2.

L.I.D. (Low Impact Development) calculations are performed using either 0.75 inches of rainfall or the 85th percentile storm, of which ever is greater. Based on the County's hydrology interactive website, the 85th percentile isohyet is 1.0 and in this case governs.

The Post Development Hydrology Map found in the back of the report shows drainage systems and at the existing connection point, peak flows from the site development shows no increase in flows. The Pre-Development Map along with the site sections and L.I.D. Plan can be found in the back of the report as well.

All of the new on-site proposed drainage facilities are to be privately maintained – which includes the detention basin and related structures, 24" RCP storm drain line and laterals, street catch basins, drainage swales/engineered slopes and 72" in-line detention systems.



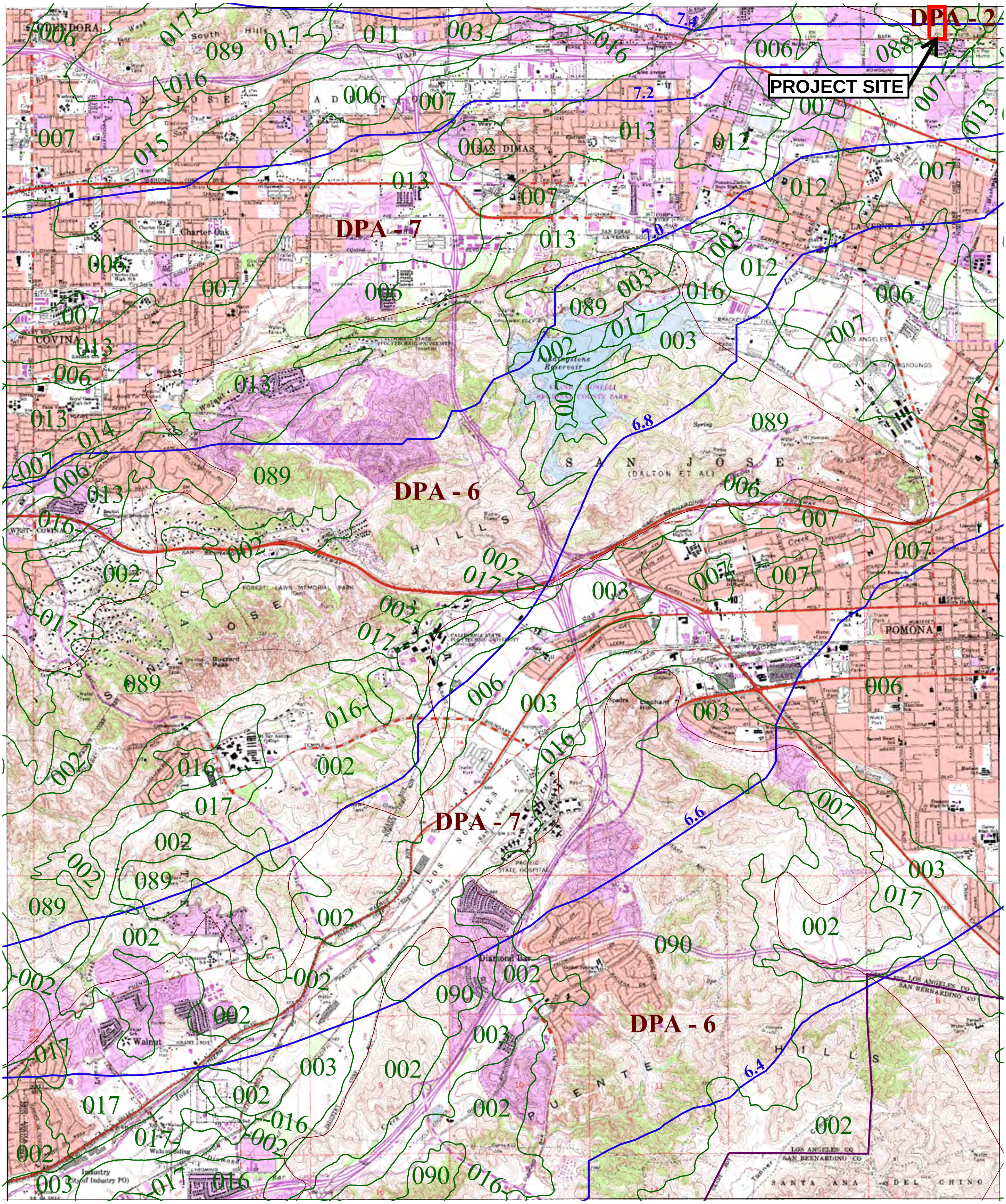
VICINITY MAP

NOT TO SCALE
THOMAS GUIDE
PG. 509 H7

34° 07' 30''

GLENDORA 1-H1.32

-117° 52' 30''



BALDWIN PARK 1-H1.21

ONTARIO 1-H1.23

-117° 45' 00''

YORBA LINDA 1-H1.12

34° 00' 00''

N S W E

016 SOIL CLASSIFICATION AREA

7.2 INCHES OF RAINFALL

DPA - 6 DEBRIS POTENTIAL AREA

1 0 1 2 Miles

25-YEAR 24-HOUR ISOHYET REDUCTION FACTOR: 0.878
10-YEAR 24-HOUR ISOHYET REDUCTION FACTOR: 0.714

SAN DIMAS
50-YEAR 24-HOUR ISOHYET

1-H1.22

LOS ANGELES COUNTY PUBLIC WORKS Public Service That Works

HYDROLOGY INFORMATION

TIME OF CONCENTRATION (Tc)	PER CALCULATION
SOIL TYPE	007, 088
IMPERVIOUSNESS (IMP)	0.01 (UNDEVELOPED AREA) 0.42 (DEVELOPED AREA, SINGLE FAMILY RESIDENTIAL) OR PER CALCULATION
ISOHYET (in)	7.4 (50-YR.)
FREQUENCY	50-YR.
DEBRIS POTENTIAL AREA	DPA-2
BULKING RATE	1.81 (DPA-2)
Qb-BURNED Q	PER CALCULATION
Qbb-BURNED AND BULKED Q	Qbb= 1.81Qb (DPA-2)
DEBRIS POTENTIAL RATE	$227 \frac{cy}{Ac}$ (DPA-2)

Department of Public Works
dpw.lacounty.gov

search our site..

Hydrology Map A GIS viewer application to view the data for the hydrology manual.

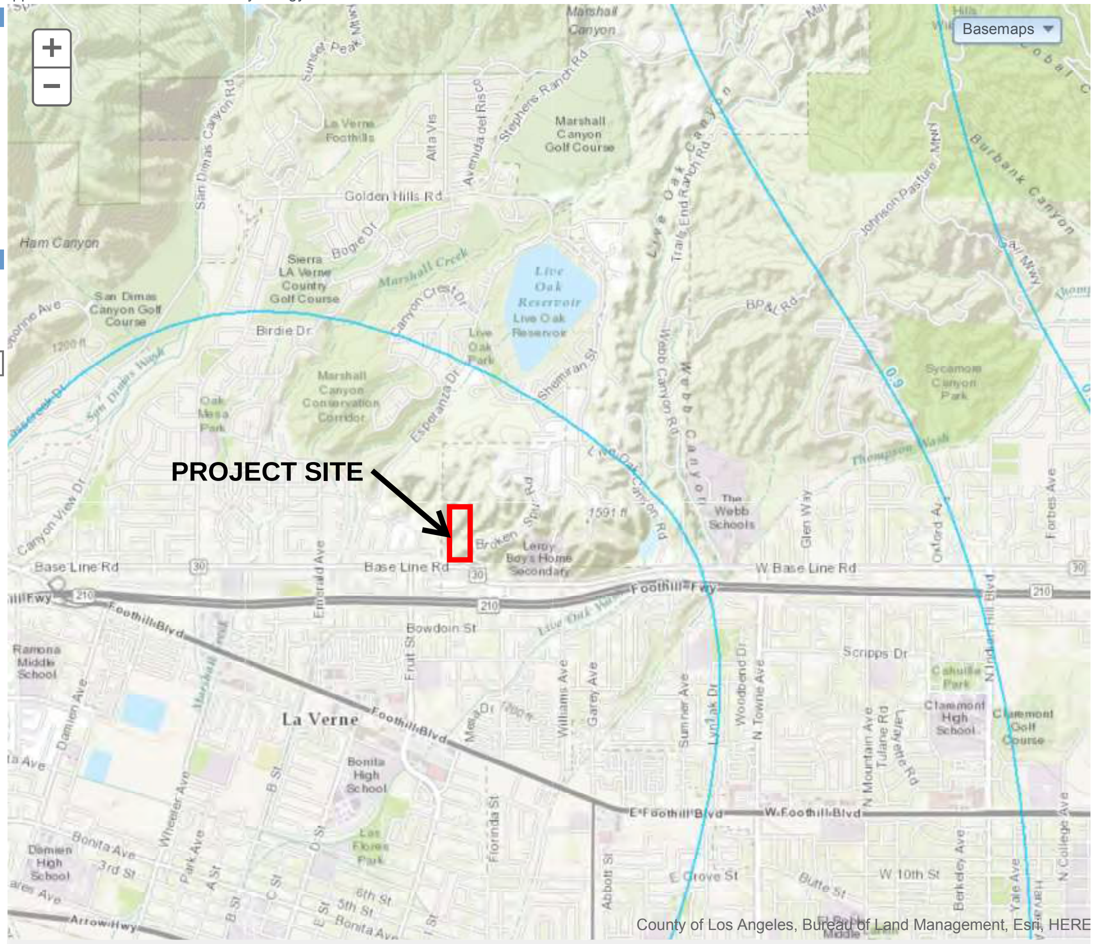
LAYERS

- ☐ 50yr Two Tenths (Rainfall)
- ☐ DPA Zones
- ☐ Soils 2004
- ☑ Final 85th Percentile, 24-hr Rainfall
- ☐ Final 95th Percentile, 24-hr Rainfall
- ☐ 1-year, 1-hour Rainfall Intensity

SEARCH

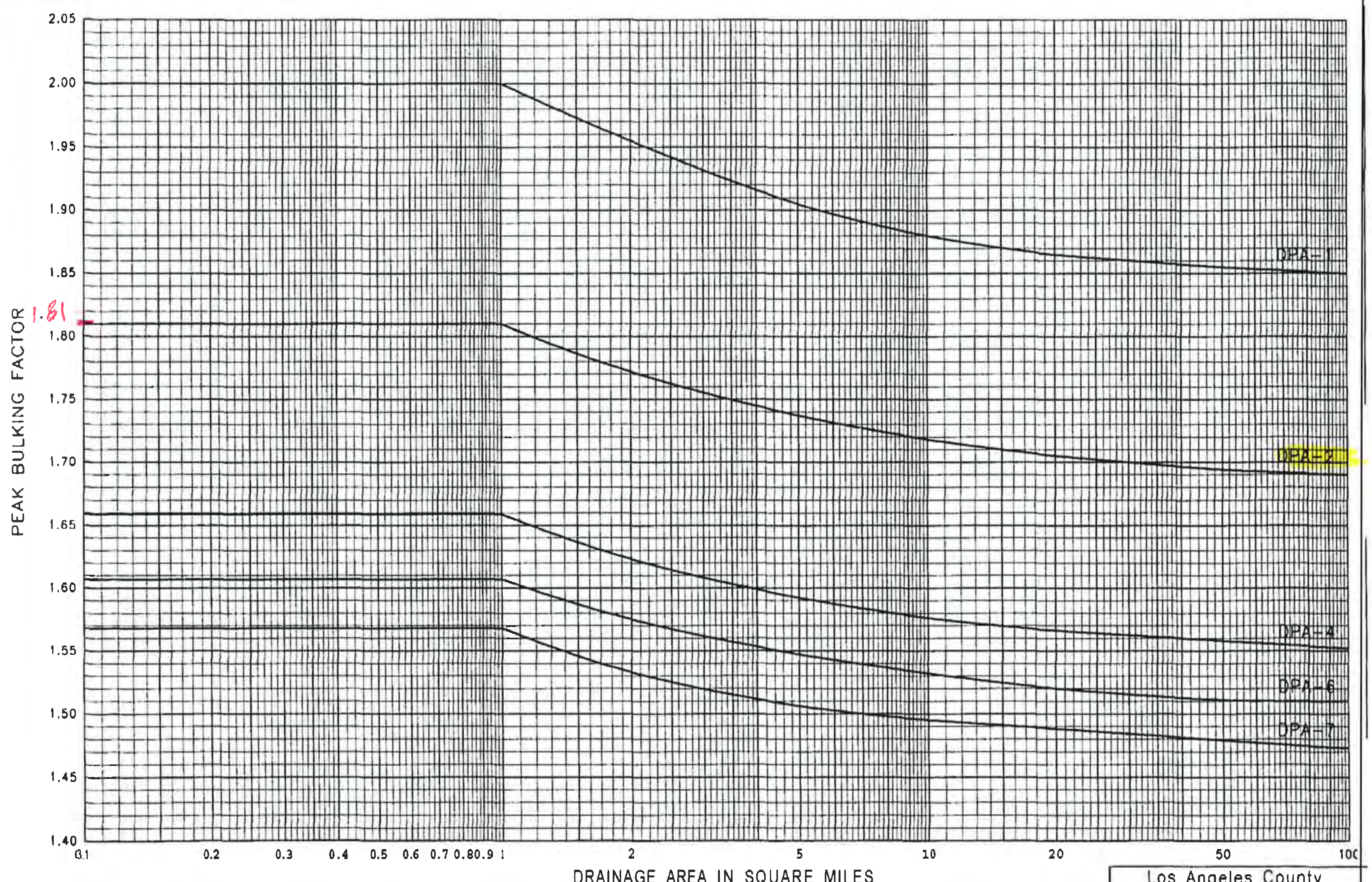
Enter Address, Cross Street, or Parcel No.:
(ex: 900 S. Fremont Ave., Fremont@Valley, 5342005904)

Search



Map Tips

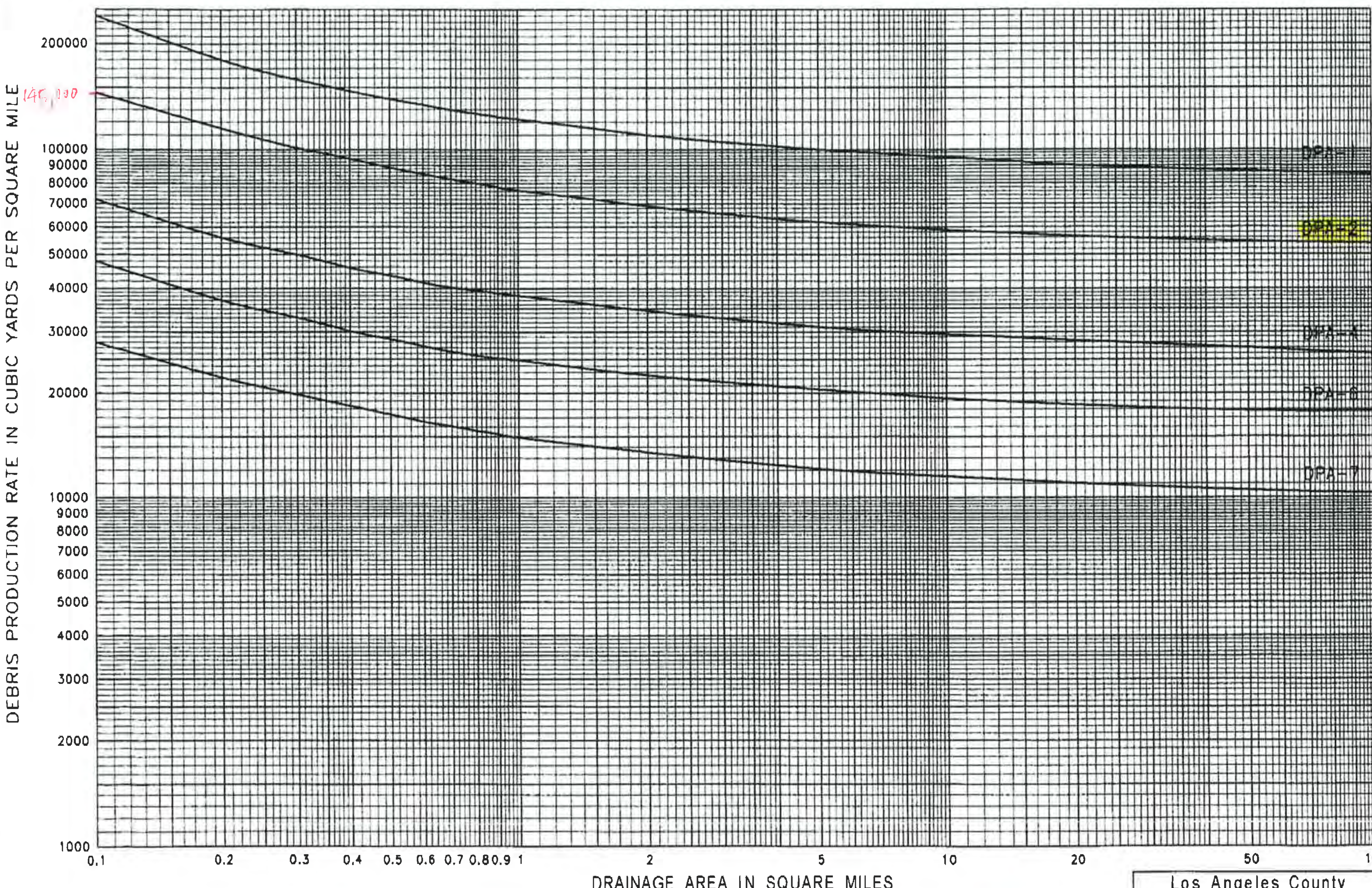
lacounty.gov | Public Works FAQ | Privacy / Terms of Use | Feedback |



Los Angeles County
Department of Public Works

PEAK BULKING FACTORS
for Los Angeles Basin

DPA-2 => PEAK BULKING FACTOR = 1.81



Los Angeles County
Department of Public Works

DEBRIS PRODUCTION RATES
for Los Angeles Basin

DPA - 2 $\quad 145{,}000 \frac{CY}{mi^2} = 145{,}000 \frac{CY}{mi^2}\left(\frac{1\ mi^2}{640\ ac}\right) = 227 \frac{CY}{ac}$

Pre-Development Hydrology Calculations

LAR04 Printouts

Area B

Program Package Serial Number: 2120
07/18/18 FILE: UB1-50 INPUT DATA: English Units RAINFALL SOIL FILE: English (In) OUTPUT DATA: English Units PAGE 1
LOS ANGELES COUNTY FLOOD CONTROL DISTRICT PROG F0601M

MODIFIED RATIONAL METHOD HYDROLOGY - STORM YEAR = 50 SOIL DATA FILE: C:\civild\lar_soilx_71.dat
TRACT 73596 HYDROLOGY, FOR Pre-DEVELOPMENT 50-YEAR STORM STORM DAY 4

LOCATION		SUBAREA AREA(Ac)	SUBAREA Q(CFS)	TOTAL AREA(Ac)	TOTAL Q(CFS)	CONV TYPE	CONV LNGTH(Ft)	CONV SLOPE	CONV SIZE(Ft)	CONV Z	CONTROL Q(CFS)	SOIL NAME	TC	RAIN ZONE	PCT IMPV
2001	1A	14.8	34.73	14.8	34.73	2	836.	.14110	.00	.00	0.	88	9	A37	.10
2001	2A	8.3	25.36	23.1	56.82	2	409.	.09780	.00	.00	0.	7	6	A37	.10
2001	3A	2.2	7.63	25.3	61.06	2	127.	.10240	.00	.00	0.	88	5	A37	.10
2001	4B	11.6	28.48	11.6	28.48	2	127.	.10240	.00	.00	0.	88	8	A37	.01

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* CONFLUENCE Q'S *
* 2001 5A TA 1155 QA 60.82 QAB 88.88 QB 28.06 2001 5B TB 1154 QB 28.48 QBA 86.74 QA 58.26 *
* 2001 5AB TAB 1155 QAB 88.88 QA 60.82 QB 28.06 *
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LOCATION		SUBAREA AREA(Ac)	SUBAREA Q(CFS)	TOTAL AREA(Ac)	TOTAL Q(CFS)	CONV TYPE	CONV LNGTH(Ft)	CONV SLOPE	CONV SIZE(Ft)	CONV Z	CONTROL Q(CFS)	SOIL NAME	TC	RAIN ZONE	PCT IMPV
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2001	6A	1.4	4.79	38.3	92.10	2	491.	.06720	.00	.00	0.	88	5	A37	.01
2001	7A	3.1	10.60	41.4	96.61	4	25.	.06800	2.50	.00	0.	88	5	A37	.01

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                                                   LOS ANGELES COUNTY FLOOD CONTROL DISTRICT                          PROG F0601M

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              LOCATION      AREA(Ac)  Q(CFS)    AREA(Ac)  Q(CFS) TYPE  LNGTH(Ft)  SLOPE  SIZE(Ft)   Z      Q(CFS) NAME  TC  ZONE  IMPV
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              2001    3A      2.2       8.22      25.3     67.97   2      127.   .10240      .00   .00        0.  288   5   A37   .10
              2001    4B     11.6      31.94      11.6     31.94   2      127.   .10240      .00   .00        0.  288   8   A37   .01
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*                                                            CONFLUENCE Q'S                                              *
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*                            2001    5AB TAB 1155 QAB    99.31 QA    67.80 QB    31.51                                     *
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                            SUBAREA   SUBAREA     TOTAL    TOTAL  CONV    CONV     CONV     CONV   CONV   CONTROL SOIL      RAIN  PCT
              LOCATION      AREA(Ac)  Q(CFS)    AREA(Ac)  Q(CFS) TYPE  LNGTH(Ft)  SLOPE  SIZE(Ft)   Z      Q(CFS) NAME  TC  ZONE  IMPV
              2001    5AB    11.6      31.94      36.9     99.31   2        1.   .02000      .00   .00        0.  288   0   A37   .00
              2001    6A      1.4       5.20      38.3    102.94   2      491.   .06720      .00   .00        0.  288   5   A37   .01
              2001    7A      3.1      11.51      41.4    108.80   4       25.   .06800     2.50   .00        0.  288   5   A37   .01
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Pre-Development Hydrology Calculations

HydroCalc Printouts

Area A

Area C

Area D

Peak Flow Hydrologic Analysis

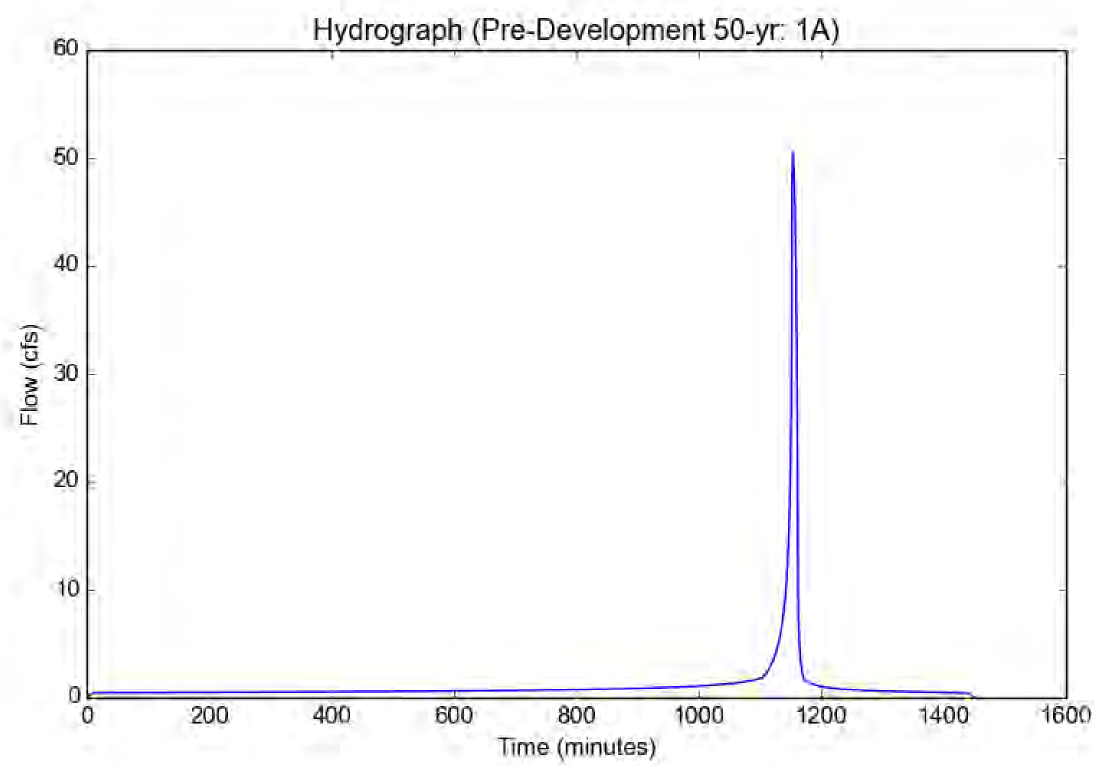
File location: J:/Civil 3D Projects/17008001/Sheet Sets/Hydrology/Hydrology Calcs/Pre-Development 50-yr 1A 1C 1DReport.pdf
Version: HydroCalc 0.3.0-beta

Input Parameters

Project Name	Pre-Development 50-yr
Subarea ID	1A
Area (ac)	23.71
Flow Path Length (ft)	1847.0
Flow Path Slope (vft/hft)	0.2041
50-yr Rainfall Depth (in)	7.4
Percent Impervious	0.01
Soil Type	88
Design Storm Frequency	50-yr
Fire Factor	0.71
LID	False

Output Results

Modeled (50-yr) Rainfall Depth (in)	7.4
Peak Intensity (in/hr)	3.1875
Undeveloped Runoff Coefficient (Cu)	0.6665
Developed Runoff Coefficient (Cd)	0.6688
Time of Concentration (min)	10.0
Clear Peak Flow Rate (cfs)	50.5442
Burned Peak Flow Rate (cfs)	57.6265
24-Hr Clear Runoff Volume (ac-ft)	2.3512
24-Hr Clear Runoff Volume (cu-ft)	102417.3739



Peak Flow Hydrologic Analysis

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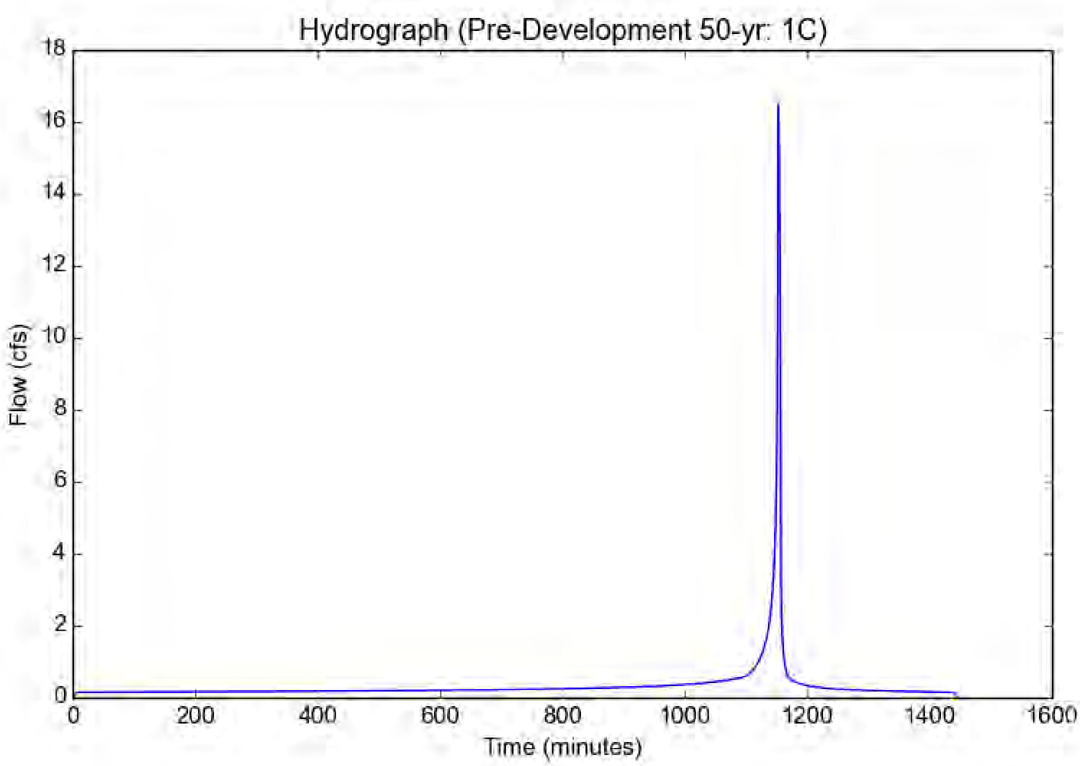
Version: HydroCalc 0.3.0-beta

Input Parameters

Project Name	Pre-Development 50-yr
Subarea ID	1C
Area (ac)	4.76
Flow Path Length (ft)	776.0
Flow Path Slope (vft/hft)	0.2088
50-yr Rainfall Depth (in)	7.4
Percent Impervious	0.1
Soil Type	88
Design Storm Frequency	50-yr
Fire Factor	0.71
LID	False

Output Results

Modeled (50-yr) Rainfall Depth (in)	7.4
Peak Intensity (in/hr)	4.415
Undeveloped Runoff Coefficient (Cu)	0.7715
Developed Runoff Coefficient (Cd)	0.7844
Time of Concentration (min)	5.0
Clear Peak Flow Rate (cfs)	16.4839
Burned Peak Flow Rate (cfs)	17.8294
24-Hr Clear Runoff Volume (ac-ft)	0.6729
24-Hr Clear Runoff Volume (cu-ft)	29312.2594



Peak Flow Hydrologic Analysis

File location: J:/Civil 3D Projects/17008001/Sheet Sets/Hydrology/Hydrology Calcs/Pre-Development 50-yr 1A 1C 1DReport.pdf
Version: HydroCalc 0.3.0-beta

Input Parameters

Project Name	Pre-Development 50-yr
Subarea ID	1D
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Flow Path Length (ft)	903.0
Flow Path Slope (vft/hft)	0.2558
50-yr Rainfall Depth (in)	7.4
Percent Impervious	0.15
Soil Type	88
Design Storm Frequency	50-yr
Fire Factor	0.71
LID	False

Output Results

Modeled (50-yr) Rainfall Depth (in)	7.4
Peak Intensity (in/hr)	4.415
Undeveloped Runoff Coefficient (Cu)	0.7715
Developed Runoff Coefficient (Cd)	0.7908
Time of Concentration (min)	5.0
Clear Peak Flow Rate (cfs)	19.831
Burned Peak Flow Rate (cfs)	21.3886
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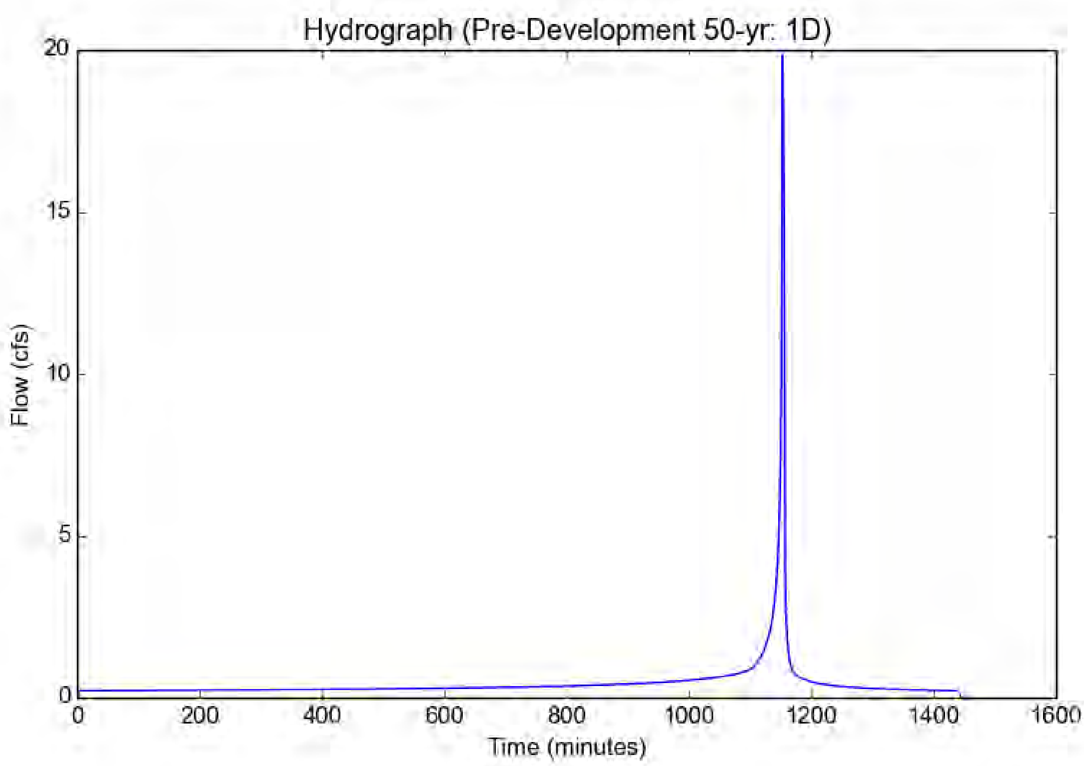
24-Hr Clear Runoff Volume (cu-ft)	40600.2135



Post Development Hydrology Calculations

LAR04 Printouts

Area B

Area C

Area D

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LOS ANGELES COUNTY FLOOD CONTROL DISTRICT PROG F0601M

MODIFIED RATIONAL METHOD HYDROLOGY - STORM YEAR = 50 SOIL DATA FILE: C:\civild\lar_soilx_71.dat

TRACT 82001 HYDROLOGY, FOR Post-DEVELOPMENT 50-YEAR STORM STORM DAY 4

LOCATION		SUBAREA AREA(Ac)	SUBAREA Q(CFS)	TOTAL AREA(Ac)	TOTAL Q(CFS)	CONV TYPE	CONV LNGTH(Ft)	CONV SLOPE	CONV SIZE(Ft)	CONV Z	CONTROL Q(CFS)	SOIL NAME	TC	RAIN ZONE	PCT IMPV
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2001	11B	.1	.60	.6	1.96	4	30.	.03000	2.00	.00	0.	88	5	A37	.01
2001	12B	1.3	4.63	1.9	6.56	4	58.	.03000	2.00	.00	0.	88	5	A37	.27
2001	13B	1.8	6.57	3.7	12.97	4	1.	.03000	2.00	.00	0.	88	5	A37	.42
2001	14C	1.1	4.01	1.1	4.01	4	40.	.12250	2.00	.00	0.	88	5	A37	.42

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*                                                   CONFLUENCE Q'S                                                         *
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*                            2001   15BC TBC 1153 QBC   16.93 QB    12.96 QC     3.96                                      *
****************************************************************************************************************************
```

LOCATION		SUBAREA AREA(Ac)	SUBAREA Q(CFS)	TOTAL AREA(Ac)	TOTAL Q(CFS)	CONV TYPE	CONV LNGTH(Ft)	CONV SLOPE	CONV SIZE(Ft)	CONV Z	CONTROL Q(CFS)	SOIL NAME	TC	RAIN ZONE	PCT IMPV
2001	15BC	1.1	3.96	4.8	16.93	4	1.	.12250	2.00	.00	0.	88	0	A37	.00
2001	16D	5.7	19.93	5.7	19.93	4	202.	.02900	2.00	.00	0.	88	5	A37	.15
2001	17D	3.3	11.47	9.0	30.20	4	320.	.01650	2.00	.00	0.	88	5	A37	.11
2001	18D	38.5	81.00	47.5	106.21	4	20.	.01650	3.25	.00	0.	88	0	A37	.00

```
****************************************************************************************************************************
*                                                   CONFLUENCE Q'S                                                         *
*   2001   19B  TB 1153 QB    16.92 QBD   107.40 QD    90.48    2001    19D  TD 1155 QD   106.04 QDB   118.50 QB    12.46   *
*                            2001   19BD TBD 1155 QBD   118.50 QB    12.46 QD   106.04                                     *
****************************************************************************************************************************
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LOCATION		SUBAREA AREA(Ac)	SUBAREA Q(CFS)	TOTAL AREA(Ac)	TOTAL Q(CFS)	CONV TYPE	CONV LNGTH(Ft)	CONV SLOPE	CONV SIZE(Ft)	CONV Z	CONTROL Q(CFS)	SOIL NAME	TC	RAIN ZONE	PCT IMPV
2001	19BD	47.5	106.04	52.3	118.50	4	1.	.01650	3.50	.00	0.	88	0	A37	.00
2001	20E	.1	.60	.1	.60	4	1.	.02260	2.00	.00	0.	88	5	A37	.01
2001	21BE	.1	.34	52.4	118.73	0	0.	.00000	.00	.00	0.	88	0	A37	.00

Post Development Hydrology Calculations

HydroCalc Printouts

Area A

Peak Flow Hydrologic Analysis

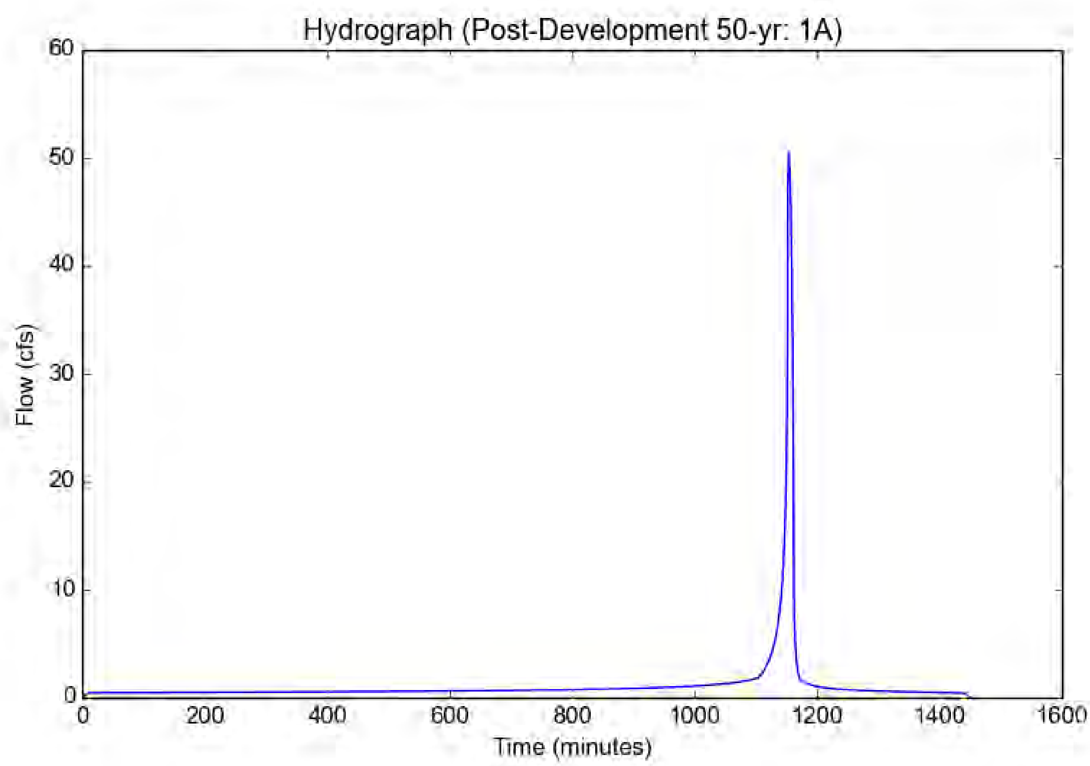
File location: J:/Civil 3D Projects/17008001/Sheet Sets/Hydrology/Hydrology Calcs/Post-Development 50-yr 1A 1C 1D Report.pdf
Version: HydroCalc 0.3.0-beta

Input Parameters

Project Name	Post-Development 50-yr
Subarea ID	1A
Area (ac)	23.71
Flow Path Length (ft)	1847.0
Flow Path Slope (vft/hft)	0.2041
50-yr Rainfall Depth (in)	7.4
Percent Impervious	0.01
Soil Type	88
Design Storm Frequency	50-yr
Fire Factor	0.71
LID	False

Output Results

Modeled (50-yr) Rainfall Depth (in)	7.4
Peak Intensity (in/hr)	3.1875
Undeveloped Runoff Coefficient (Cu)	0.6665
Developed Runoff Coefficient (Cd)	0.6688
Time of Concentration (min)	10.0
Clear Peak Flow Rate (cfs)	50.5442
Burned Peak Flow Rate (cfs)	57.6265
24-Hr Clear Runoff Volume (ac-ft)	2.3512
24-Hr Clear Runoff Volume (cu-ft)	102417.3739



Post Development On-site Detention Calculations

RETARD Printouts

Area B

```
 7  2001    7A    38.5 421156     81.200  4
 8  5   0.      0. 100.      1. 200.      1. 300.      1. 400.      1.
 8 10 500.      1. 600.      1. 700.      1. 800.      2. 900.      2.
 8 151000.      2.1050.      3.1100.      4.1110.      5.1120.      7.
 8 201130.      9.1131.     10.1132.     10.1133.     10.1134.     11.
 8 251135.     12.1136.     12.1137.     13.1138.     14.1139.     15.
 8 301140.     16.1141.     17.1142.     18.1143.     19.1144.     20.
 8 351145.     23.1146.     24.1147.     25.1148.     28.1149.     33.
 8 401150.     39.1151.     47.1152.     56.1153.     65.1154.     73.
 8 451155.     79.1156.     81.1157.     81.1158.     77.1159.     71.
 8 501160.     63.1161.     54.1162.     43.1163.     33.1164.     22.
 8 551165.     11.1166.     11.1167.      8.1168.      8.1169.      6.
 8 601170.      6.1171.      4.1172.      6.1173.      4.1174.      4.
 8 651175.      4.1176.      4.1177.      4.1178.      4.1179.      4.
 8 701180.      2.1181.      4.1182.      2.1183.      4.1184.      2.
 8 751185.      4.1186.      2.1187.      4.1188.      2.1189.      4.
 8 801190.      2.1191.      4.1192.      2.1193.      4.1194.      2.
 8 851195.      4.1196.      2.1197.      4.1198.      2.1199.      4.
 8 901200.      0.1201.      4.1202.      0.1203.      4.1204.      0.
 8 951205.      4.1206.      0.1207.      4.1208.      0.1209.      4.
 81001210.      0.1211.      4.1212.      0.1213.      4.1214.      0.
 81051215.      4.1216.      0.1217.      4.1218.      0.1219.      4.
 81101220.      0.1221.      4.1222.      0.1223.      4.1224.      0.
 81151225.      4.1226.      0.1227.      4.1228.      0.1229.      4.
 81201230.      0.1231.      4.1232.      0.1233.      4.1234.      0.
 81251235.      4.1236.      0.1237.      4.1238.      0.1239.      4.
 81301240.      0.1241.      4.1242.      0.1243.      4.1244.      0.
 81351245.      4.1246.      0.1247.      4.1248.      0.1249.      4.
 81401250.      0.1251.      4.1252.      0.1253.      4.1254.      0.
 81451255.      4.1256.      0.1257.      4.1258.      0.1259.      4.
 81501260.      0.1261.      4.1262.      0.1263.      4.1264.      0.
 81551265.      4.1266.      0.1267.      4.1268.      0.1269.      4.
 81601270.      0.1271.      4.1272.      0.1273.      4.1274.      0.
 81651275.      4.1276.      0.1277.      4.1278.      0.1279.      4.
 81701280.      0.1281.      4.1282.      0.1283.      4.1284.      0.
 81751285.      4.1286.      0.1287.      4.1288.      0.1289.      4.
 81801290.      0.1291.      4.1292.      0.1293.      4.1294.      0.
 81851295.      4.1296.      0.1297.      4.1298.      0.1299.      4.
 81901300.      0.1310.      0.1320.      0.1330.      0.1340.      0.
 81951350.      0.1360.      0.1370.      0.1380.      0.1390.      0.
 82001400.      0.1420.      0.1440.      0.1460.      0.1500.      0.
```

```
        CIVILCADD/CIVILDESIGN  Engineering Software, (c) 1997-2004 Version 6.4
      --------------------------------------------------------------------
      Study Date : 04/15/19 Input hydrograph file name : DA2-50.HIN
      Output hydrograph file name: DET50.hin


      User entry of depth-outflow-storage data
      --------------------------------------------------------------------
      Hydrograph time unit varies
      Initial depth in storage basin =   0.00(Ft.)
      --------------------------------------------------------------------
      --------------------------------------------------------------------
      Initial basin depth =   0.00 (Ft.)
      Initial basin storage =      0.00 (Ac.Ft)
      Initial basin outflow =   0.00 (CFS)
      ---------------------------------------------------------------------
      --------------------------------------------------------------------
      Depth vs. Storage and Depth vs. Discharge data @ 1 Min. Intervals:
       Basin Depth  Storage    Outflow   (S-O*dt/2)   (S+O*dt/2)
           (Ft.)    (Ac.Ft)     (CFS)      (Ac.Ft)    (Ac.Ft)
      ---------------------------------------------------------------------
        0.000      0.000      0.000      0.000        0.000
        0.200      0.000      7.340     -0.005        0.005
        2.600      0.006     24.390     -0.011        0.023
        4.600      0.017     32.440     -0.005        0.039
        6.200      0.027     37.670      0.001        0.053
        9.000      0.045     45.380      0.014        0.076
       11.400      0.061     51.070      0.026        0.096
       13.000      0.071     54.540      0.033        0.109
       14.600      0.082     57.800      0.042        0.122
       16.200      0.092     60.880      0.050        0.134
       17.800      0.103     63.820      0.059        0.147
       19.000      0.110     65.940      0.065        0.155
       20.600      0.121     68.660      0.074        0.168
       22.600      0.134     71.910      0.084        0.184
       24.600      0.147     75.030      0.095        0.199
       26.600      0.160     78.020      0.106        0.214
       29.000      0.175     81.460      0.119        0.231
       32.200      0.196     85.840      0.137        0.255
       34.200      0.204     88.460      0.143        0.265
       37.000      0.208     93.010      0.144        0.272
      --------------------------------------------------------------------
                      Hydrograph Detention Basin Routing
      Hydrograph at 2001 7 A Storm Day: 4 Drainage Area =   38.50
      Total flood hydrograph volume this storm day =    4.80 Ac. Ft.
      ---------------------------------------------------------------------

      Graph values: 'I'= unit inflow; 'O'=outflow at time shown
      ---------------------------------------------------------------------
Time   Inflow  Outflow    Storage                                   Depth
(Min)  (CFS)   (CFS)     (Ac.Ft) .0      23.3    46.5    69.8    93.0 (Ft.)
    0     1.0     0.0      0.000  O       |       |       |       |      0.0
  100     1.0     1.0      0.000  O       |       |       |       |      0.0
  200     1.0     1.0      0.000  O       |       |       |       |      0.0
  300     1.0     1.0      0.000  O       |       |       |       |      0.0
  400     1.0     1.0      0.000  O       |       |       |       |      0.0
  500     1.0     1.0      0.000  O       |       |       |       |      0.0
  600     1.0     1.0      0.000  O       |       |       |       |      0.0
  700     1.0     1.0      0.000  O       |       |       |       |      0.0
  800     2.0     2.0      0.000  O       |       |       |       |      0.1
  900     2.0     2.0      0.000  O       |       |       |       |      0.1
 1000     2.0     2.0      0.000  O       |       |       |       |      0.1
 1050     3.0     3.0      0.000  |O      |       |       |       |      0.1
 1100     4.0     4.0      0.000  |O      |       |       |       |      0.1
 1110     5.0     5.0      0.000  |O      |       |       |       |      0.1
 1120     7.0     7.0      0.000  | O     |       |       |       |      0.2
 1130     9.0     9.0      0.001  |  O    |       |       |       |      0.4
 1131    10.0    10.3      0.001  |  O    |       |       |       |      0.6
 1132    10.0     9.9      0.001  |  O    |       |       |       |      0.6
 1133    10.0    10.0      0.001  |  O    |       |       |       |      0.6
 1134    11.0    11.3      0.001  |  O    |       |       |       |      0.8
 1135    12.0    12.2      0.002  |   O   |       |       |       |      0.9
 1136    12.0    11.9      0.002  |   O   |       |       |       |      0.8
 1137    13.0    13.3      0.002  |   O   |       |       |       |      1.0
 1138    14.0    14.2      0.002  |   O   |       |       |       |      1.2
 1139    15.0    15.3      0.003  |    O  |       |       |       |      1.3
 1140    16.0    16.2      0.003  |    O  |       |       |       |      1.5
 1141    17.0    17.2      0.003  |    O  |       |       |       |      1.6
 1142    18.0    18.2      0.004  |     O |       |       |       |      1.7
 1143    19.0    19.2      0.004  |     O |       |       |       |      1.9
 1144    20.0    20.2      0.005  |     O |       |       |       |      2.0
 1145    22.0    22.6      0.005  |      O|       |       |       |      2.3
 1146    24.0    24.4      0.006  |       O       |       |       |      2.6
 1147    26.0    25.5      0.007  |       O       |       |       |      2.9
```

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1148    29.0    27.8      0.011  |       |O      |       |       |      3.5
1149    35.0    32.6      0.017  |       |  OI   |       |       |      4.6
1150    45.0    39.0      0.030  |       |    O I|       |       |      6.7
1151    57.0    46.9      0.049  |       |       O  I    |       |      9.7
1152    70.0    55.7      0.075  |       |       |  O    I       |     13.6
1153    84.0    65.2      0.107  |       |       |     O |   I   |     18.6
1154    92.0    73.1      0.139  |       |       |       |O     I|     23.4
1155    93.0    78.6      0.163  |       |       |       |  O    I     27.0
1156    89.0    81.4      0.175  |       |       |       |   O I |     29.0
1157    79.0    80.8      0.172  |       |       |       |  O    |     28.5
1158    67.0    77.0      0.156  |       |       |      I| O     |     25.9
1159    56.0    71.1      0.131  |       |       |  I    O       |     22.1
1160    45.0    63.1      0.100  |       |      I|    O  |       |     17.4
1161    35.0    53.6      0.068  |       |   I   | O     |       |     12.5
1162    28.0    43.3      0.040  |       |I    O |       |       |      8.2
1163    22.0    32.9      0.018  |      I|  O    |       |       |      4.7
1164    18.0    21.7      0.005  |     IO|       |       |       |      2.2
1165    14.0    11.5      0.001  |  OI   |       |       |       |      0.8
1166    11.0    10.8      0.001  |  O    |       |       |       |      0.7
1167     9.0     8.4      0.000  | OI    |       |       |       |      0.3
1168     8.0     7.9      0.000  | O     |       |       |       |      0.3
1169     7.0     6.4      0.000  | O     |       |       |       |      0.2
1170     6.0     5.6      0.000  |OI     |       |       |       |      0.2
1171     5.0     4.4      0.000  |O      |       |       |       |      0.1
1172     5.0     5.6      0.000  |O      |       |       |       |      0.2
1173     5.0     4.4      0.000  |O      |       |       |       |      0.1
1174     4.0     3.6      0.000  |O      |       |       |       |      0.1
1175     4.0     4.4      0.000  |O      |       |       |       |      0.1
1176     4.0     3.6      0.000  |O      |       |       |       |      0.1
1177     4.0     4.4      0.000  |O      |       |       |       |      0.1
1178     4.0     3.6      0.000  |O      |       |       |       |      0.1
1179     4.0     4.4      0.000  |O      |       |       |       |      0.1
1180     3.0     1.6      0.000  OI      |       |       |       |      0.0
1181     3.0     4.4      0.000  |O      |       |       |       |      0.1
1182     3.0     1.6      0.000  OI      |       |       |       |      0.0
1183     3.0     4.4      0.000  |O      |       |       |       |      0.1
1184     3.0     1.6      0.000  OI      |       |       |       |      0.0
1185     3.0     4.4      0.000  |O      |       |       |       |      0.1
1186     3.0     1.6      0.000  OI      |       |       |       |      0.0
1187     3.0     4.4      0.000  |O      |       |       |       |      0.1
1188     3.0     1.6      0.000  OI      |       |       |       |      0.0
1189     3.0     4.4      0.000  |O      |       |       |       |      0.1
1190     3.0     1.6      0.000  OI      |       |       |       |      0.0
1191     3.0     4.4      0.000  |O      |       |       |       |      0.1
1192     3.0     1.6      0.000  OI      |       |       |       |      0.0
1193     3.0     4.4      0.000  |O      |       |       |       |      0.1
1194     3.0     1.6      0.000  OI      |       |       |       |      0.0
1195     3.0     4.4      0.000  |O      |       |       |       |      0.1
1196     3.0     1.6      0.000  OI      |       |       |       |      0.0
1197     3.0     4.4      0.000  |O      |       |       |       |      0.1
1198     3.0     1.6      0.000  OI      |       |       |       |      0.0
1199     3.0     4.4      0.000  |O      |       |       |       |      0.1
1200     2.0     0.0      0.000  O       |       |       |       |      0.0
1201     2.0     4.4      0.000  IO      |       |       |       |      0.1
1202     2.0     0.0      0.000  O       |       |       |       |      0.0
1203     2.0     4.4      0.000  IO      |       |       |       |      0.1
1204     2.0     0.0      0.000  O       |       |       |       |      0.0
1205     2.0     4.4      0.000  IO      |       |       |       |      0.1
1206     2.0     0.0      0.000  O       |       |       |       |      0.0
1207     2.0     4.4      0.000  IO      |       |       |       |      0.1
1208     2.0     0.0      0.000  O       |       |       |       |      0.0
1209     2.0     4.4      0.000  IO      |       |       |       |      0.1
1210     2.0     0.0      0.000  O       |       |       |       |      0.0
1211     2.0     4.4      0.000  IO      |       |       |       |      0.1
1212     2.0     0.0      0.000  O       |       |       |       |      0.0
1213     2.0     4.4      0.000  IO      |       |       |       |      0.1
1214     2.0     0.0      0.000  O       |       |       |       |      0.0
1215     2.0     4.4      0.000  IO      |       |       |       |      0.1
1216     2.0     0.0      0.000  O       |       |       |       |      0.0
1217     2.0     4.4      0.000  IO      |       |       |       |      0.1
1218     2.0     0.0      0.000  O       |       |       |       |      0.0
1219     2.0     4.4      0.000  IO      |       |       |       |      0.1
1220     2.0     0.0      0.000  O       |       |       |       |      0.0
1221     2.0     4.4      0.000  IO      |       |       |       |      0.1
1222     2.0     0.0      0.000  O       |       |       |       |      0.0
1223     2.0     4.4      0.000  IO      |       |       |       |      0.1
1224     2.0     0.0      0.000  O       |       |       |       |      0.0
1225     2.0     4.4      0.000  IO      |       |       |       |      0.1
1226     2.0     0.0      0.000  O       |       |       |       |      0.0
1227     2.0     4.4      0.000  IO      |       |       |       |      0.1
1228     2.0     0.0      0.000  O       |       |       |       |      0.0
1229     2.0     4.4      0.000  IO      |       |       |       |      0.1
1230     2.0     0.0      0.000  O       |       |       |       |      0.0
1231     2.0     4.4      0.000  IO      |       |       |       |      0.1
1232     2.0     0.0      0.000  O       |       |       |       |      0.0
1233     2.0     4.4      0.000  IO      |       |       |       |      0.1
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```
1234     2.0     0.0      0.000  O        |       |       |       |        0.0
1235     2.0     4.4      0.000  IO       |       |       |       |        0.1
1236     2.0     0.0      0.000  O        |       |       |       |        0.0
1237     2.0     4.4      0.000  IO       |       |       |       |        0.1
1238     2.0     0.0      0.000  O        |       |       |       |        0.0
1239     2.0     4.4      0.000  IO       |       |       |       |        0.1
1240     2.0     0.0      0.000  O        |       |       |       |        0.0
1241     2.0     4.4      0.000  IO       |       |       |       |        0.1
1242     2.0     0.0      0.000  O        |       |       |       |        0.0
1243     2.0     4.4      0.000  IO       |       |       |       |        0.1
1244     2.0     0.0      0.000  O        |       |       |       |        0.0
1245     2.0     4.4      0.000  IO       |       |       |       |        0.1
1246     2.0     0.0      0.000  O        |       |       |       |        0.0
1247     2.0     4.4      0.000  IO       |       |       |       |        0.1
1248     2.0     0.0      0.000  O        |       |       |       |        0.0
1249     2.0     4.4      0.000  IO       |       |       |       |        0.1
1250     2.0     0.0      0.000  O        |       |       |       |        0.0
1251     2.0     4.4      0.000  IO       |       |       |       |        0.1
1252     2.0     0.0      0.000  O        |       |       |       |        0.0
1253     2.0     4.4      0.000  IO       |       |       |       |        0.1
1254     2.0     0.0      0.000  O        |       |       |       |        0.0
1255     2.0     4.4      0.000  IO       |       |       |       |        0.1
1256     2.0     0.0      0.000  O        |       |       |       |        0.0
1257     2.0     4.4      0.000  IO       |       |       |       |        0.1
1258     2.0     0.0      0.000  O        |       |       |       |        0.0
1259     2.0     4.4      0.000  IO       |       |       |       |        0.1
1260     2.0     0.0      0.000  O        |       |       |       |        0.0
1261     2.0     4.4      0.000  IO       |       |       |       |        0.1
1262     2.0     0.0      0.000  O        |       |       |       |        0.0
1263     2.0     4.4      0.000  IO       |       |       |       |        0.1
1264     2.0     0.0      0.000  O        |       |       |       |        0.0
1265     2.0     4.4      0.000  IO       |       |       |       |        0.1
1266     2.0     0.0      0.000  O        |       |       |       |        0.0
1267     2.0     4.4      0.000  IO       |       |       |       |        0.1
1268     2.0     0.0      0.000  O        |       |       |       |        0.0
1269     2.0     4.4      0.000  IO       |       |       |       |        0.1
1270     2.0     0.0      0.000  O        |       |       |       |        0.0
1271     2.0     4.4      0.000  IO       |       |       |       |        0.1
1272     2.0     0.0      0.000  O        |       |       |       |        0.0
1273     2.0     4.4      0.000  IO       |       |       |       |        0.1
1274     2.0     0.0      0.000  O        |       |       |       |        0.0
1275     2.0     4.4      0.000  IO       |       |       |       |        0.1
1276     2.0     0.0      0.000  O        |       |       |       |        0.0
1277     2.0     4.4      0.000  IO       |       |       |       |        0.1
1278     2.0     0.0      0.000  O        |       |       |       |        0.0
1279     2.0     4.4      0.000  IO       |       |       |       |        0.1
1280     1.0     0.0      0.000  O        |       |       |       |        0.0
1281     1.0     4.4      0.000  IO       |       |       |       |        0.1
1282     1.0     0.0      0.000  O        |       |       |       |        0.0
1283     1.0     4.4      0.000  IO       |       |       |       |        0.1
1284     1.0     0.0      0.000  O        |       |       |       |        0.0
1285     1.0     4.4      0.000  IO       |       |       |       |        0.1
1286     1.0     0.0      0.000  O        |       |       |       |        0.0
1287     1.0     4.4      0.000  IO       |       |       |       |        0.1
1288     1.0     0.0      0.000  O        |       |       |       |        0.0
1289     1.0     4.4      0.000  IO       |       |       |       |        0.1
1290     1.0     0.0      0.000  O        |       |       |       |        0.0
1291     1.0     4.4      0.000  IO       |       |       |       |        0.1
1292     1.0     0.0      0.000  O        |       |       |       |        0.0
1293     1.0     4.4      0.000  IO       |       |       |       |        0.1
1294     1.0     0.0      0.000  O        |       |       |       |        0.0
1295     1.0     4.4      0.000  IO       |       |       |       |        0.1
1296     1.0     0.0      0.000  O        |       |       |       |        0.0
1297     1.0     4.4      0.000  IO       |       |       |       |        0.1
1298     1.0     0.0      0.000  O        |       |       |       |        0.0
1299     1.0     4.4      0.000  IO       |       |       |       |        0.1
1300     1.0     0.0      0.000  O        |       |       |       |        0.0
1310     1.0     0.0      0.000  O        |       |       |       |        0.0
1320     1.0     0.0      0.000  O        |       |       |       |        0.0
1330     1.0     0.0      0.000  O        |       |       |       |        0.0
1340     1.0     0.0      0.000  O        |       |       |       |        0.0
1350     1.0     0.0      0.000  O        |       |       |       |        0.0
1360     1.0     0.0      0.000  O        |       |       |       |        0.0
1370     1.0     0.0      0.000  O        |       |       |       |        0.0
1380     1.0     0.0      0.000  O        |       |       |       |        0.0
1390     1.0     0.0      0.000  O        |       |       |       |        0.0
1400     1.0     0.0      0.000  O        |       |       |       |        0.0
1420     1.0     0.0      0.000  O        |       |       |       |        0.0
1440     1.0     0.0      0.000  O        |       |       |       |        0.0
1460     1.0     0.0      0.000  O        |       |       |       |        0.0
1500     1.0     0.0      0.000  O        |       |       |       |        0.0


     Remaining water in basin =     0.00 (Ac.Ft)
     Peak flow out of basin =    81.45(CFS)
     Peak flow time = 1156 Min., time interval # = 42
```

Maximum depth in basin =   28.99(Ft.)

Post Development L.I.D. Hydrology Calculations

HydroCalc Printouts

PEAK MITIGATION, Qm & LID VOLUME CALCULATION TABLE

Subarea	Area (acres)	%imp	Frequency	Soil Type	Length (ft)	Slope (ft/ft)	85th Percentile Storm Isohyet (in.)	Tc-calculated (min.)	Intensity (in./hr)	Cu	Cd	Qm (cfs)	LID Design Volume, SQDV (cu-ft)	Qm, Combined (cfs)	LID Area, Required (sq-ft)	LID Area, Provided (sq-ft)	Qm, Combined Required= 1.5Qm (cfs)	Qm, Combined Provided Qm (cfs)	L.I.D Volume Treatment BMP
2B	0.29	0.34	LID	88	94	0.24	1.0	8	0.48	0.1	0.37	0.05	**388**	**-**	-	-	-	-	388 cu-ft (14 cu-yd) in detention basin
6B1	0.22	0.42	LID	88	88	0.01	1.0	13	0.38	0.1	0.44	0.04	**345**	**-**	**230**	**256**	-	-	Rain Garden (RG1)
6B2	0.2	0.42	LID	88	83	0.01	1.0	12	0.40	0.1	0.44	0.03	**314**	**-**	**209**	**225**	-	-	Rain Garden (RG2)
6B3	0.18	0.42	LID	88	82	0.01	1.0	12	0.40	0.1	0.44	0.03	**283**	-	**189**	**225**	-	-	Rain Garden (RG3)
6B4	0.21	0.42	LID	88	83	0.010	1.0	12	0.40	0.1	0.44	0.04	**330**	-	**220**	**225**	-	-	Rain Garden (RG4)
7B1	0.26	0.90	LID	88	356	0.056	1.0	15	0.36	0.1	0.82	**0.08**	768	**0.1700**	-	-	**0.2550**	**0.2778**	Filterra System - (2) 10'x6'
7B2	0.68	0.30	LID	88	185	0.19	1.0	14	0.38	0.1	0.34	**0.09**	832		-	-			
8B1	0.17	0.95	LID	88	332	0.06	1.0	13	0.38	0.1	0.86	**0.06**	526	**0.0800**	-	-	**0.1200**	**0.1389**	Filterra System - 10'x6'
8B2	0.24	0.17	LID	88	139	0.25	1.0	15	0.36	0.1	0.24	**0.02**	204		-	-			
9B1	0.32	0.42	LID	88	109	0.01	1.0	15	0.36	0.1	0.44	0.05	**502**	-	**335**	**361**	-	-	Rain Garden (RG5)
9B2	0.30	0.42	LID	88	139	0.01	1.0	17	0.34	0.1	0.44	0.04	**471**	-	**314**	**324**	-	-	Rain Garden (RG6)
4B	0.81	0.42	LID	88	198	0.01	1.0	12	0.40	0.1	0.44	0.14	**1271**		**847**	**889**	-	-	Rain Garden (RG7)
Post-Development Σ Mitigated Flows & Volumes:												**0.67**	**6,234**						

NOTE:
1. *MITIGATION STORM WATER RUNOFF & LID VOLUME CALCULATION BY USING 85th PERCENTILE STORM.*
2. *MITIGATION STORM WATER RUNOFF & LID VOLUME CALCULATION BY USING L.A. COUNTY'S HYDROCALC COMPUTER SOFTWARE.*
3. *CATCH BASINS INSERTS ARE USED FOR SUSMP DEVICES & STREET CATCH BASIN INLETS WILL BE MARKED WITH THE 'NO DUMPING - DRAINS TO OCEAN' LOGO.*

Peak Flow Hydrologic Analysis

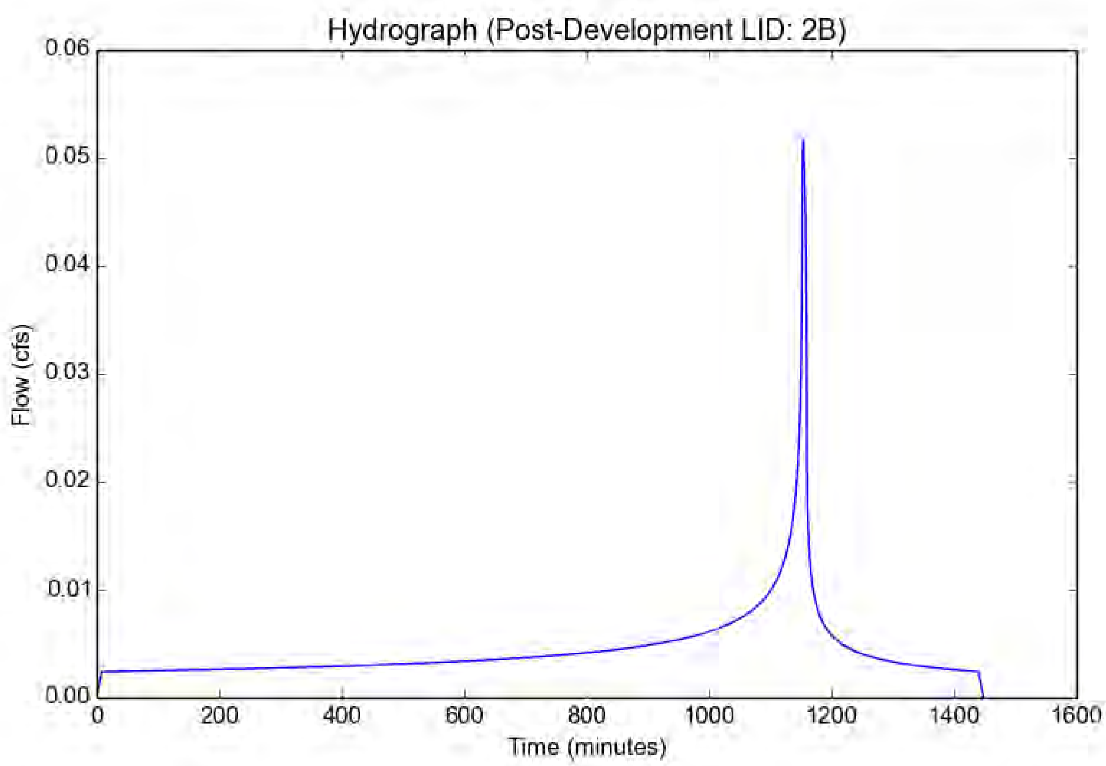
File location: J:/Civil 3D Projects/17008001/Sheet Sets/Hydrology/Hydrology Calcs/Post-Development LID Report.pdf
Version: HydroCalc 0.3.0-beta

Input Parameters

Project Name	Post-Development LID
Subarea ID	2B
Area (ac)	0.29
Flow Path Length (ft)	94.0
Flow Path Slope (vft/hft)	0.24
85th Percentile Rainfall Depth (in)	1.0
Percent Impervious	0.34
Soil Type	88
Design Storm Frequency	85th percentile storm
Fire Factor	0
LID	True

Output Results

Modeled (85th percentile storm) Rainfall Depth (in)	1.0
Peak Intensity (in/hr)	0.4784
Undeveloped Runoff Coefficient (Cu)	0.1
Developed Runoff Coefficient (Cd)	0.372
Time of Concentration (min)	8.0
Clear Peak Flow Rate (cfs)	0.0516
Burned Peak Flow Rate (cfs)	0.0516
24-Hr Clear Runoff Volume (ac-ft)	0.0089
24-Hr Clear Runoff Volume (cu-ft)	388.3683



Peak Flow Hydrologic Analysis

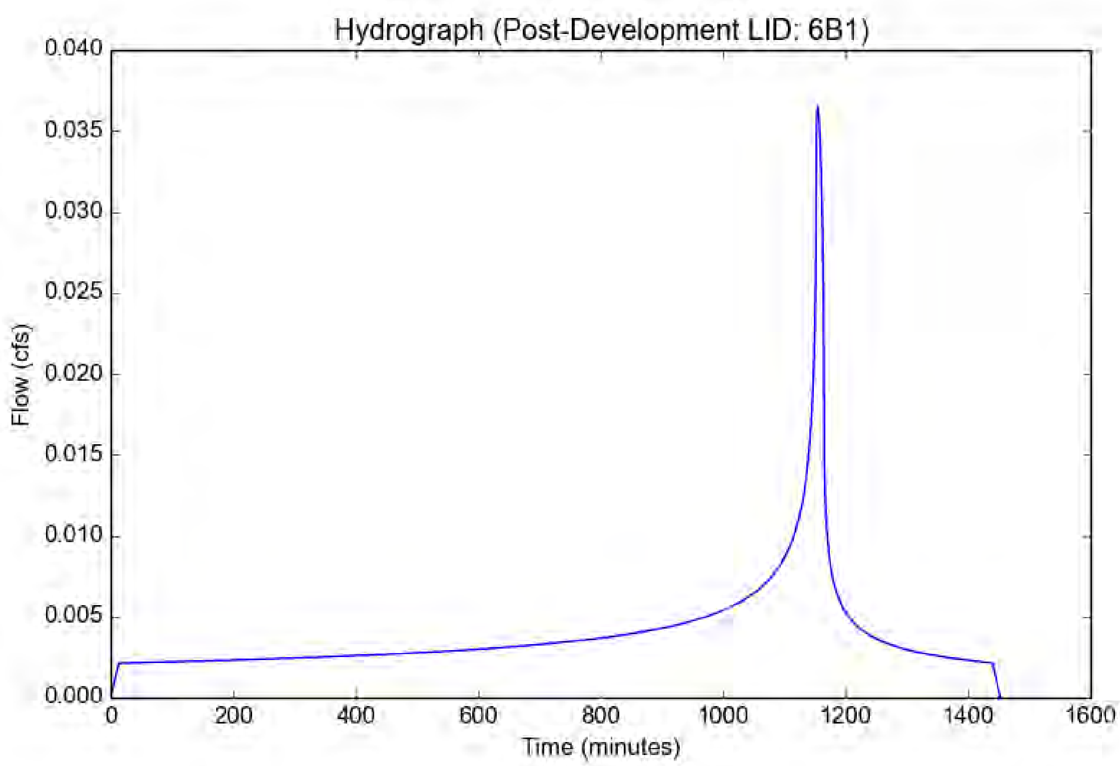
File location: J:/Civil 3D Projects/17008001/Sheet Sets/Hydrology/Hydrology Calcs/Post-Development LID Report.pdf
Version: HydroCalc 0.3.0-beta

Input Parameters

Project Name	Post-Development LID
Subarea ID	6B1
Area (ac)	0.22
Flow Path Length (ft)	88.0
Flow Path Slope (vft/hft)	0.01
85th Percentile Rainfall Depth (in)	1.0
Percent Impervious	0.42
Soil Type	88
Design Storm Frequency	85th percentile storm
Fire Factor	0
LID	True

Output Results

Modeled (85th percentile storm) Rainfall Depth (in)	1.0
Peak Intensity (in/hr)	0.3808
Undeveloped Runoff Coefficient (Cu)	0.1
Developed Runoff Coefficient (Cd)	0.436
Time of Concentration (min)	13.0
Clear Peak Flow Rate (cfs)	0.0365
Burned Peak Flow Rate (cfs)	0.0365
24-Hr Clear Runoff Volume (ac-ft)	0.0079
24-Hr Clear Runoff Volume (cu-ft)	345.3127



Peak Flow Hydrologic Analysis

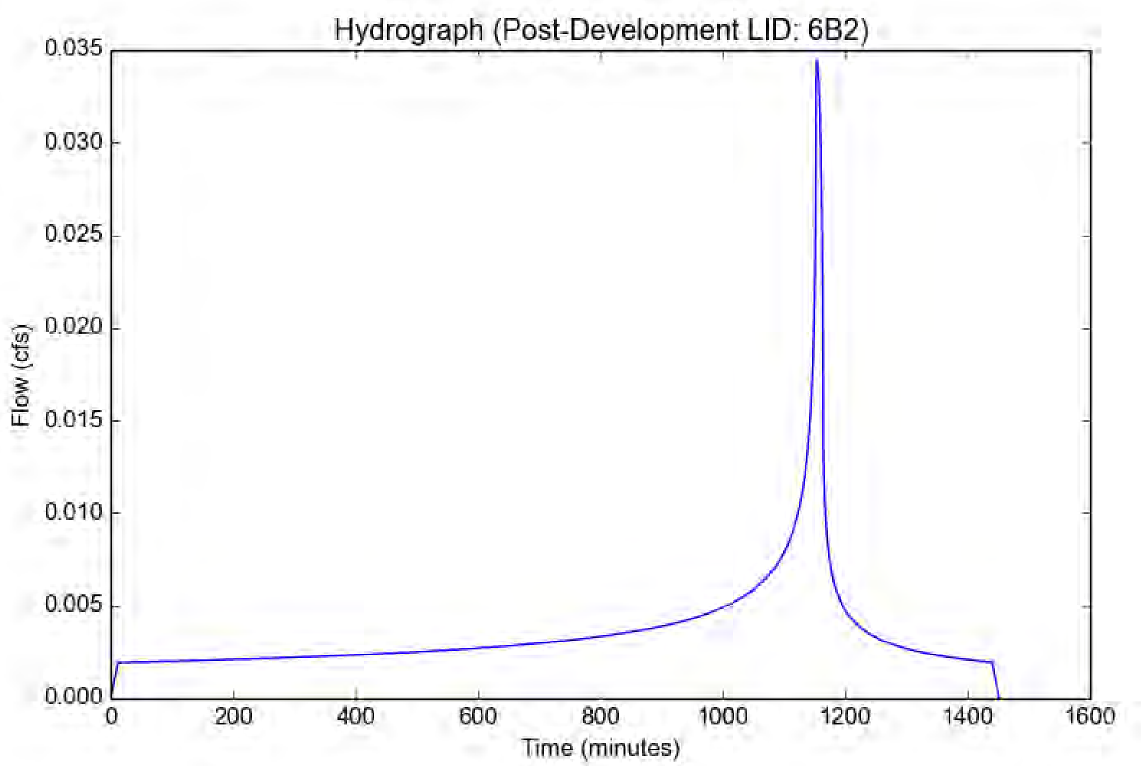
File location: J:/Civil 3D Projects/17008001/Sheet Sets/Hydrology/Hydrology Calcs/Post-Development LID Report.pdf
Version: HydroCalc 0.3.0-beta

Input Parameters

Project Name	Post-Development LID
Subarea ID	6B2
Area (ac)	0.2
Flow Path Length (ft)	83.0
Flow Path Slope (vft/hft)	0.01
85th Percentile Rainfall Depth (in)	1.0
Percent Impervious	0.42
Soil Type	88
Design Storm Frequency	85th percentile storm
Fire Factor	0
LID	True

Output Results

Modeled (85th percentile storm) Rainfall Depth (in)	1.0
Peak Intensity (in/hr)	0.3954
Undeveloped Runoff Coefficient (Cu)	0.1
Developed Runoff Coefficient (Cd)	0.436
Time of Concentration (min)	12.0
Clear Peak Flow Rate (cfs)	0.0345
Burned Peak Flow Rate (cfs)	0.0345
24-Hr Clear Runoff Volume (ac-ft)	0.0072
24-Hr Clear Runoff Volume (cu-ft)	313.9206



Peak Flow Hydrologic Analysis

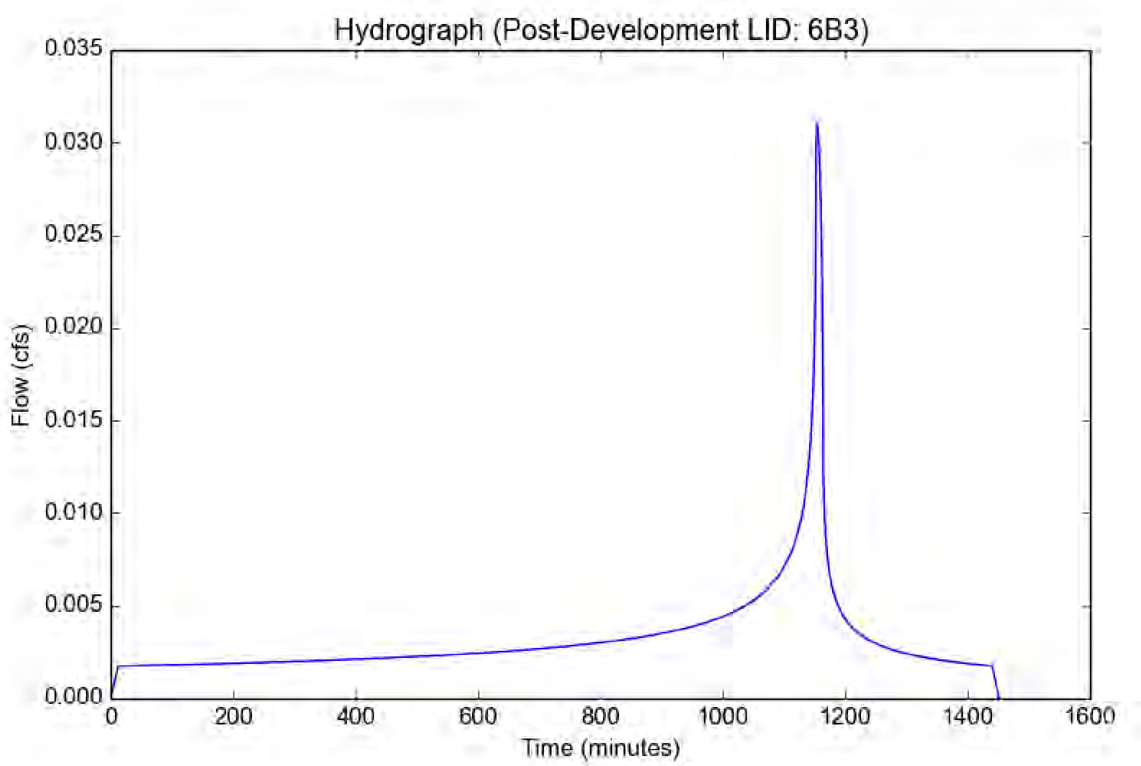
File location: J:/Civil 3D Projects/17008001/Sheet Sets/Hydrology/Hydrology Calcs/Post-Development LID Report.pdf
Version: HydroCalc 0.3.0-beta

Input Parameters

Project Name	Post-Development LID
Subarea ID	6B3
Area (ac)	0.18
Flow Path Length (ft)	82.0
Flow Path Slope (vft/hft)	0.01
85th Percentile Rainfall Depth (in)	1.0
Percent Impervious	0.42
Soil Type	88
Design Storm Frequency	85th percentile storm
Fire Factor	0
LID	True

Output Results

Modeled (85th percentile storm) Rainfall Depth (in)	1.0
Peak Intensity (in/hr)	0.3954
Undeveloped Runoff Coefficient (Cu)	0.1
Developed Runoff Coefficient (Cd)	0.436
Time of Concentration (min)	12.0
Clear Peak Flow Rate (cfs)	0.031
Burned Peak Flow Rate (cfs)	0.031
24-Hr Clear Runoff Volume (ac-ft)	0.0065
24-Hr Clear Runoff Volume (cu-ft)	282.5285



Peak Flow Hydrologic Analysis

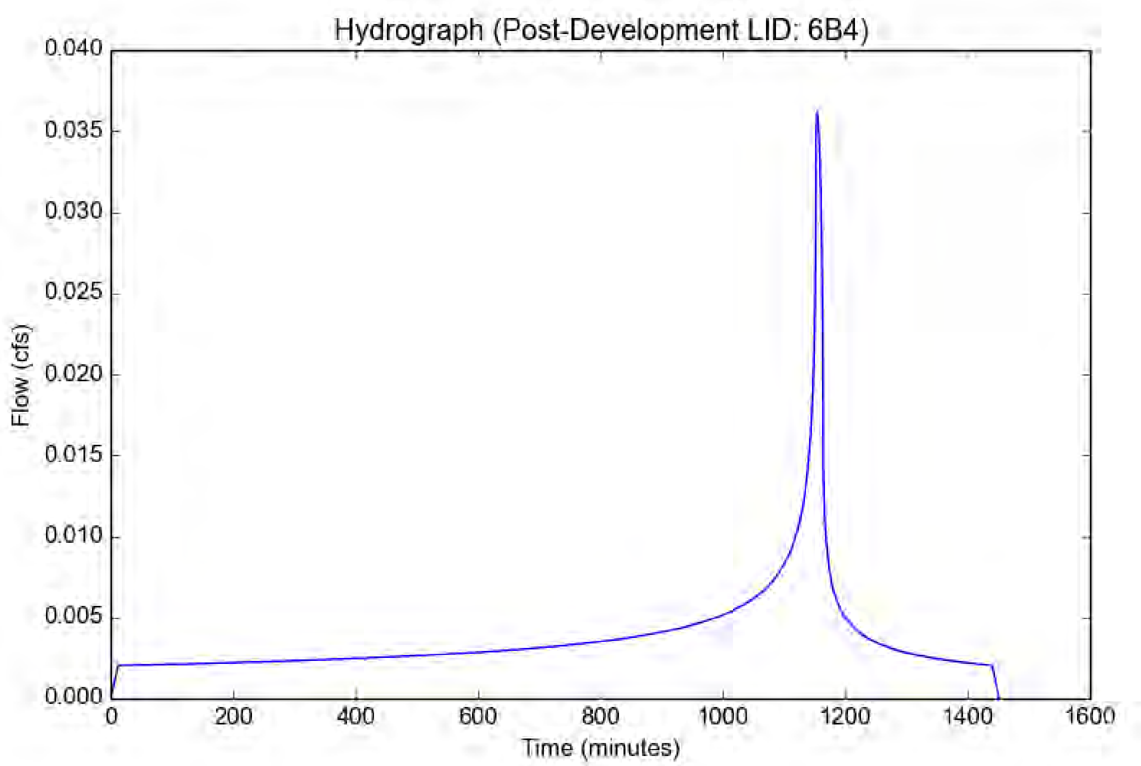
File location: J:/Civil 3D Projects/17008001/Sheet Sets/Hydrology/Hydrology Calcs/Post-Development LID Report.pdf
Version: HydroCalc 0.3.0-beta

Input Parameters

Project Name	Post-Development LID
Subarea ID	6B4
Area (ac)	0.21
Flow Path Length (ft)	83.0
Flow Path Slope (vft/hft)	0.01
85th Percentile Rainfall Depth (in)	1.0
Percent Impervious	0.42
Soil Type	88
Design Storm Frequency	85th percentile storm
Fire Factor	0
LID	True

Output Results

Modeled (85th percentile storm) Rainfall Depth (in)	1.0
Peak Intensity (in/hr)	0.3954
Undeveloped Runoff Coefficient (Cu)	0.1
Developed Runoff Coefficient (Cd)	0.436
Time of Concentration (min)	12.0
Clear Peak Flow Rate (cfs)	0.0362
Burned Peak Flow Rate (cfs)	0.0362
24-Hr Clear Runoff Volume (ac-ft)	0.0076
24-Hr Clear Runoff Volume (cu-ft)	329.6166



Peak Flow Hydrologic Analysis

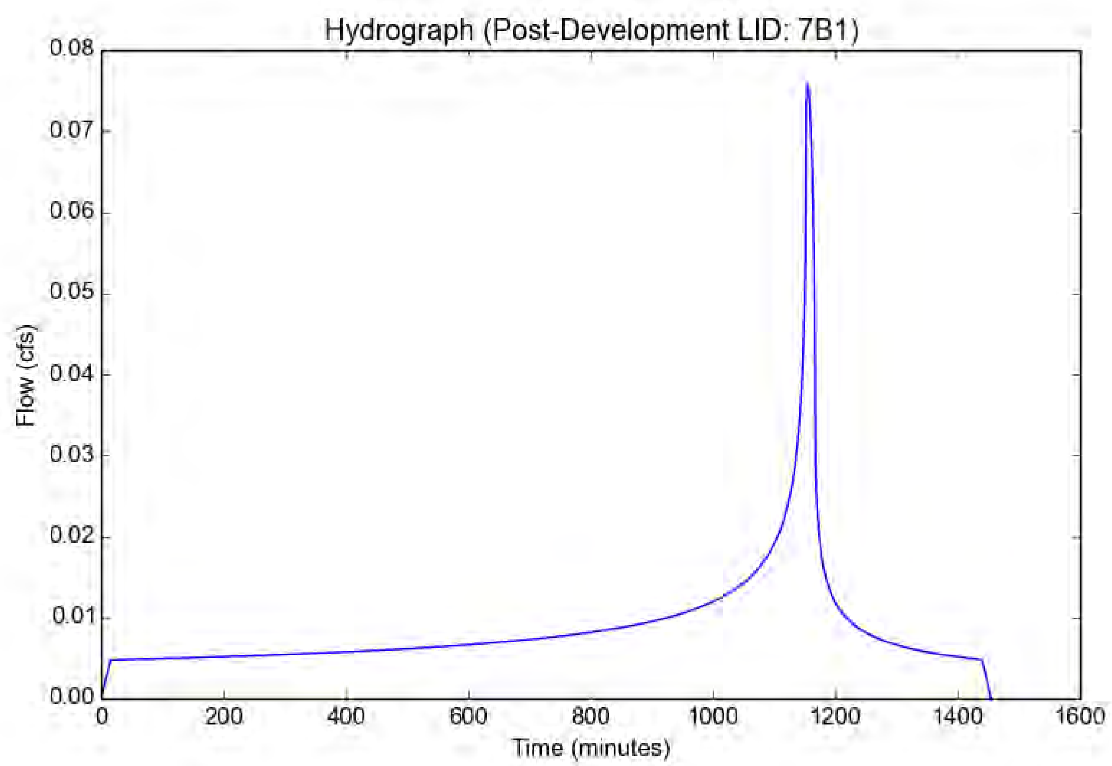
File location: J:/Civil 3D Projects/17008001/Sheet Sets/Hydrology/Hydrology Calcs/Post-Development LID Report.pdf
Version: HydroCalc 0.3.0-beta

Input Parameters

Project Name	Post-Development LID
Subarea ID	7B1
Area (ac)	0.26
Flow Path Length (ft)	356.0
Flow Path Slope (vft/hft)	0.056
85th Percentile Rainfall Depth (in)	1.0
Percent Impervious	0.9
Soil Type	88
Design Storm Frequency	85th percentile storm
Fire Factor	0
LID	True

Output Results

Modeled (85th percentile storm) Rainfall Depth (in)	1.0
Peak Intensity (in/hr)	0.356
Undeveloped Runoff Coefficient (Cu)	0.1
Developed Runoff Coefficient (Cd)	0.82
Time of Concentration (min)	15.0
Clear Peak Flow Rate (cfs)	0.0759
Burned Peak Flow Rate (cfs)	0.0759
24-Hr Clear Runoff Volume (ac-ft)	0.0176
24-Hr Clear Runoff Volume (cu-ft)	767.5222



Peak Flow Hydrologic Analysis

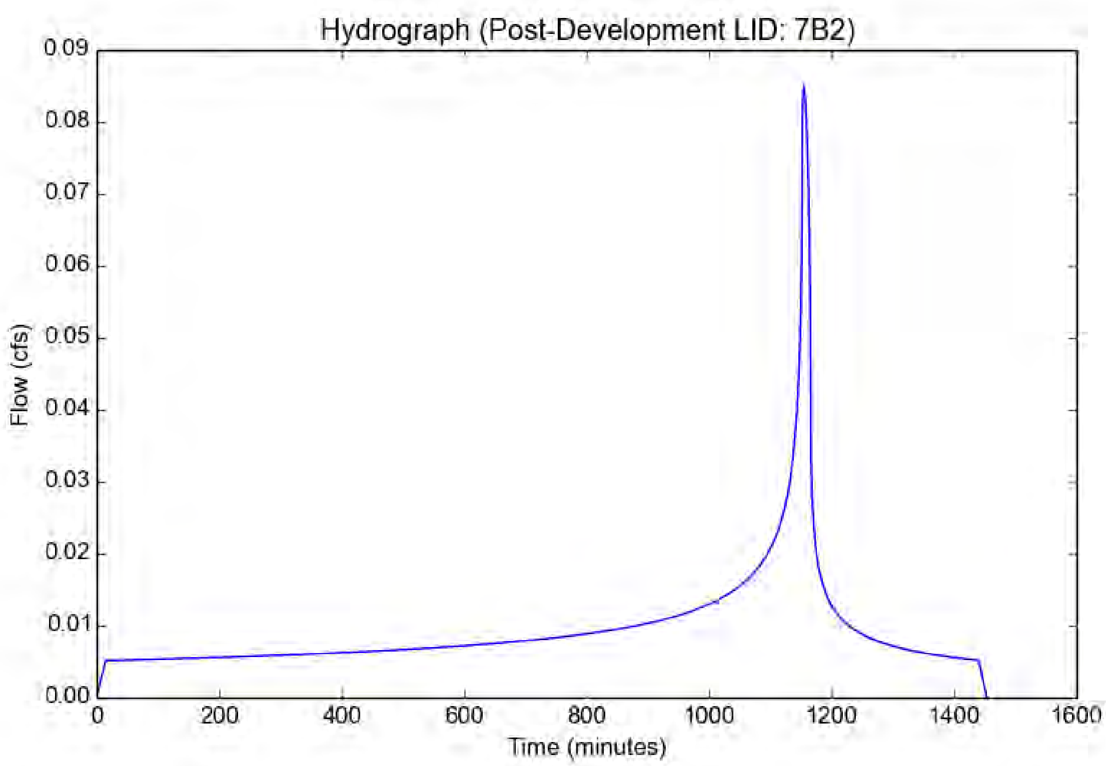
File location: J:/Civil 3D Projects/17008001/Sheet Sets/Hydrology/Hydrology Calcs/Post-Development LID Report.pdf
Version: HydroCalc 0.3.0-beta

Input Parameters

Project Name	Post-Development LID
Subarea ID	7B2
Area (ac)	0.68
Flow Path Length (ft)	185.0
Flow Path Slope (vft/hft)	0.19
85th Percentile Rainfall Depth (in)	1.0
Percent Impervious	0.3
Soil Type	88
Design Storm Frequency	85th percentile storm
Fire Factor	0
LID	True

Output Results

Modeled (85th percentile storm) Rainfall Depth (in)	1.0
Peak Intensity (in/hr)	0.3677
Undeveloped Runoff Coefficient (Cu)	0.1
Developed Runoff Coefficient (Cd)	0.34
Time of Concentration (min)	14.0
Clear Peak Flow Rate (cfs)	0.085
Burned Peak Flow Rate (cfs)	0.085
24-Hr Clear Runoff Volume (ac-ft)	0.0191
24-Hr Clear Runoff Volume (cu-ft)	832.3221



Peak Flow Hydrologic Analysis

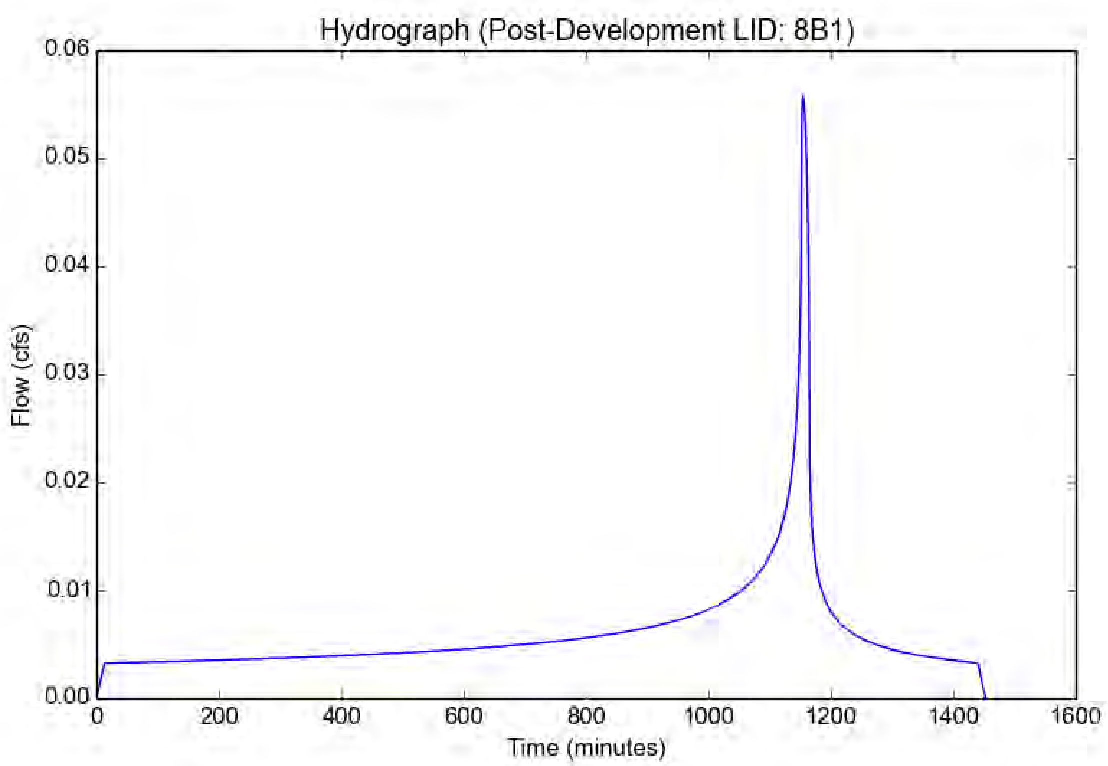
File location: J:/Civil 3D Projects/17008001/Sheet Sets/Hydrology/Hydrology Calcs/Post-Development LID Report.pdf
Version: HydroCalc 0.3.0-beta

Input Parameters

Project Name	Post-Development LID
Subarea ID	8B1
Area (ac)	0.17
Flow Path Length (ft)	332.0
Flow Path Slope (vft/hft)	0.06
85th Percentile Rainfall Depth (in)	1.0
Percent Impervious	0.95
Soil Type	88
Design Storm Frequency	85th percentile storm
Fire Factor	0
LID	True

Output Results

Modeled (85th percentile storm) Rainfall Depth (in)	1.0
Peak Intensity (in/hr)	0.3808
Undeveloped Runoff Coefficient (Cu)	0.1
Developed Runoff Coefficient (Cd)	0.86
Time of Concentration (min)	13.0
Clear Peak Flow Rate (cfs)	0.0557
Burned Peak Flow Rate (cfs)	0.0557
24-Hr Clear Runoff Volume (ac-ft)	0.0121
24-Hr Clear Runoff Volume (cu-ft)	526.3211



Peak Flow Hydrologic Analysis

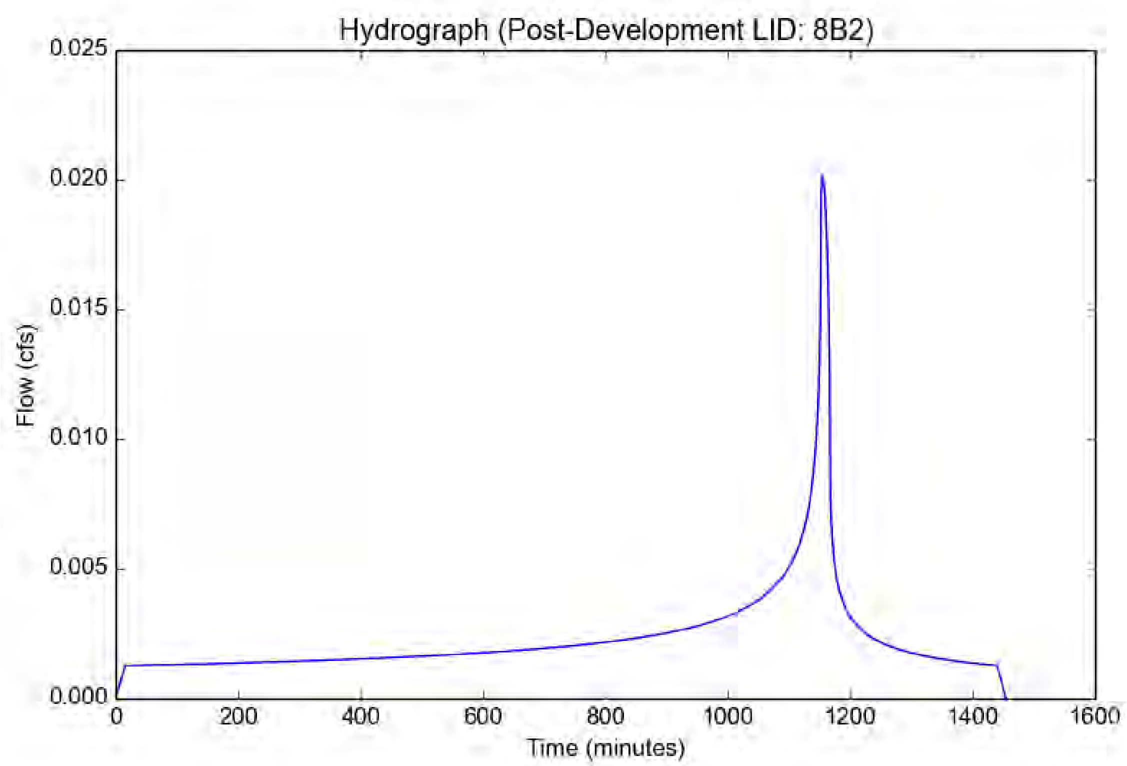
File location: J:/Civil 3D Projects/17008001/Sheet Sets/Hydrology/Hydrology Calcs/Post-Development LID Report.pdf
Version: HydroCalc 0.3.0-beta

Input Parameters

Project Name	Post-Development LID
Subarea ID	8B2
Area (ac)	0.24
Flow Path Length (ft)	139.0
Flow Path Slope (vft/hft)	0.25
85th Percentile Rainfall Depth (in)	1.0
Percent Impervious	0.17
Soil Type	88
Design Storm Frequency	85th percentile storm
Fire Factor	0
LID	True

Output Results

Modeled (85th percentile storm) Rainfall Depth (in)	1.0
Peak Intensity (in/hr)	0.356
Undeveloped Runoff Coefficient (Cu)	0.1
Developed Runoff Coefficient (Cd)	0.236
Time of Concentration (min)	15.0
Clear Peak Flow Rate (cfs)	0.0202
Burned Peak Flow Rate (cfs)	0.0202
24-Hr Clear Runoff Volume (ac-ft)	0.0047
24-Hr Clear Runoff Volume (cu-ft)	203.9046



Peak Flow Hydrologic Analysis

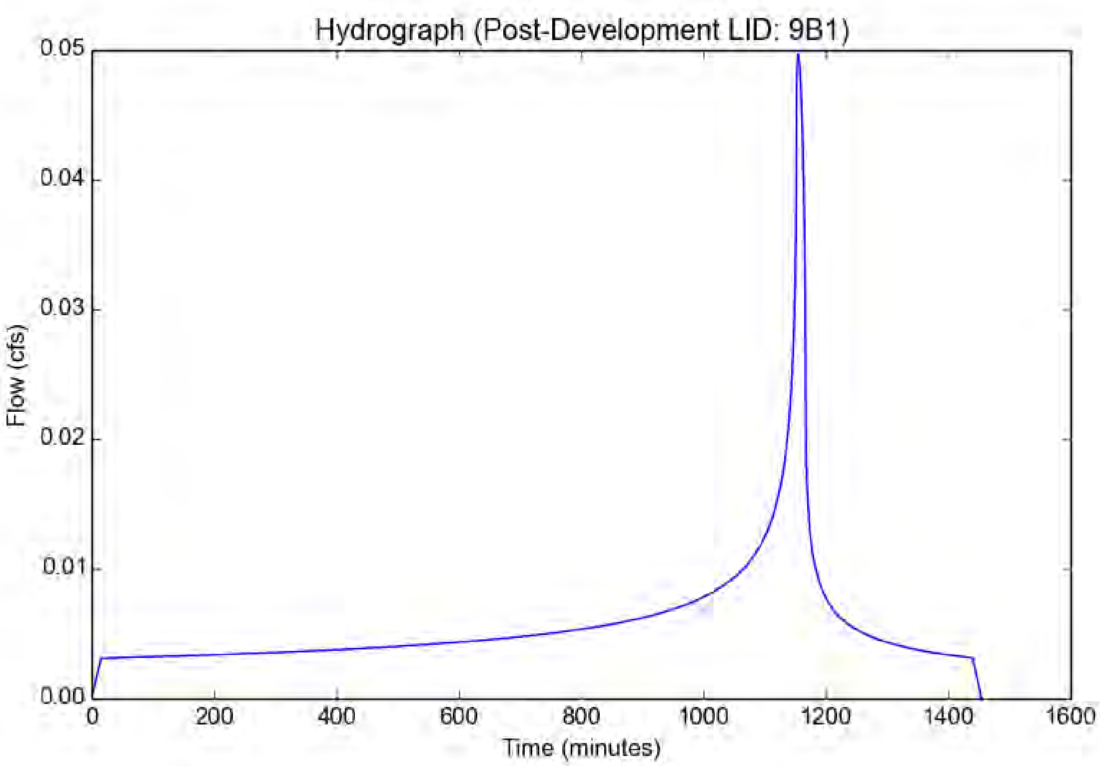
File location: J:/Civil 3D Projects/17008001/Sheet Sets/Hydrology/Hydrology Calcs/Post-Development LID Report.pdf
Version: HydroCalc 0.3.0-beta

Input Parameters

Project Name	Post-Development LID
Subarea ID	9B1
Area (ac)	0.32
Flow Path Length (ft)	109.0
Flow Path Slope (vft/hft)	0.01
85th Percentile Rainfall Depth (in)	1.0
Percent Impervious	0.42
Soil Type	88
Design Storm Frequency	85th percentile storm
Fire Factor	0
LID	True

Output Results

Modeled (85th percentile storm) Rainfall Depth (in)	1.0
Peak Intensity (in/hr)	0.356
Undeveloped Runoff Coefficient (Cu)	0.1
Developed Runoff Coefficient (Cd)	0.436
Time of Concentration (min)	15.0
Clear Peak Flow Rate (cfs)	0.0497
Burned Peak Flow Rate (cfs)	0.0497
24-Hr Clear Runoff Volume (ac-ft)	0.0115
24-Hr Clear Runoff Volume (cu-ft)	502.2734



Peak Flow Hydrologic Analysis

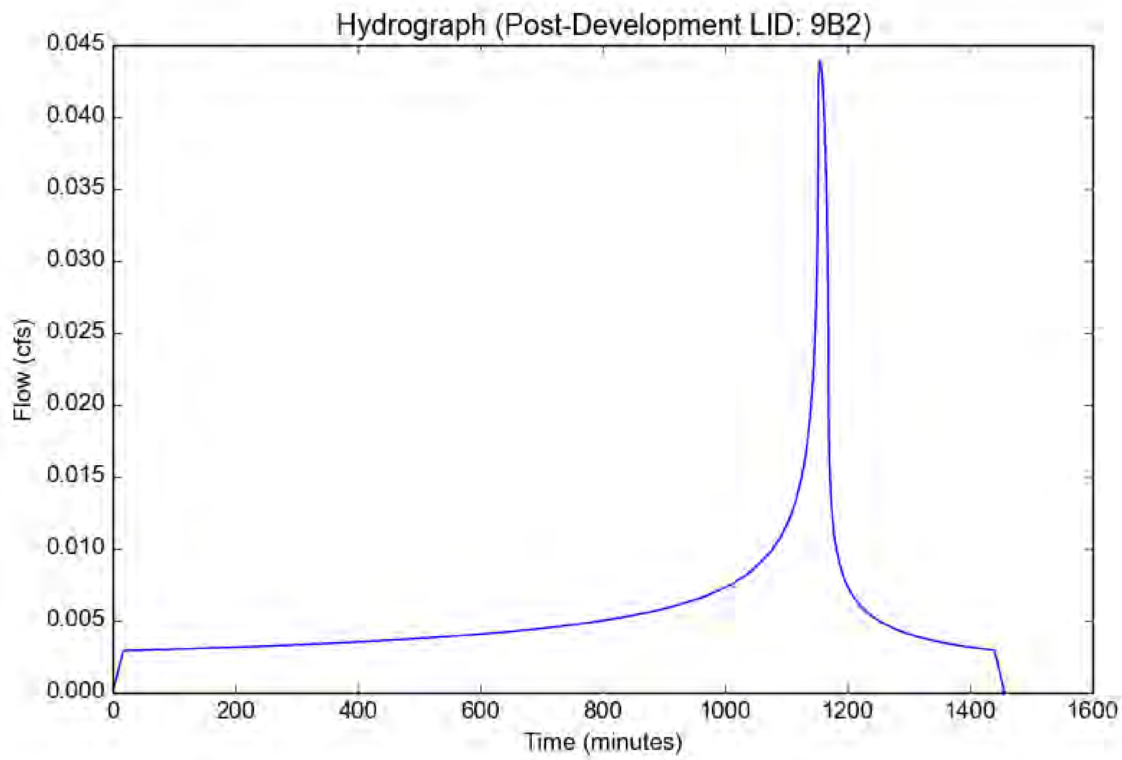
File location: J:/Civil 3D Projects/17008001/Sheet Sets/Hydrology/Hydrology Calcs/Post-Development LID Report.pdf
Version: HydroCalc 0.3.0-beta

Input Parameters

Project Name	Post-Development LID
Subarea ID	9B2
Area (ac)	0.3
Flow Path Length (ft)	139.0
Flow Path Slope (vft/hft)	0.01
85th Percentile Rainfall Depth (in)	1.0
Percent Impervious	0.42
Soil Type	88
Design Storm Frequency	85th percentile storm
Fire Factor	0
LID	True

Output Results

Modeled (85th percentile storm) Rainfall Depth (in)	1.0
Peak Intensity (in/hr)	0.3357
Undeveloped Runoff Coefficient (Cu)	0.1
Developed Runoff Coefficient (Cd)	0.436
Time of Concentration (min)	17.0
Clear Peak Flow Rate (cfs)	0.0439
Burned Peak Flow Rate (cfs)	0.0439
24-Hr Clear Runoff Volume (ac-ft)	0.0108
24-Hr Clear Runoff Volume (cu-ft)	470.8817



Peak Flow Hydrologic Analysis

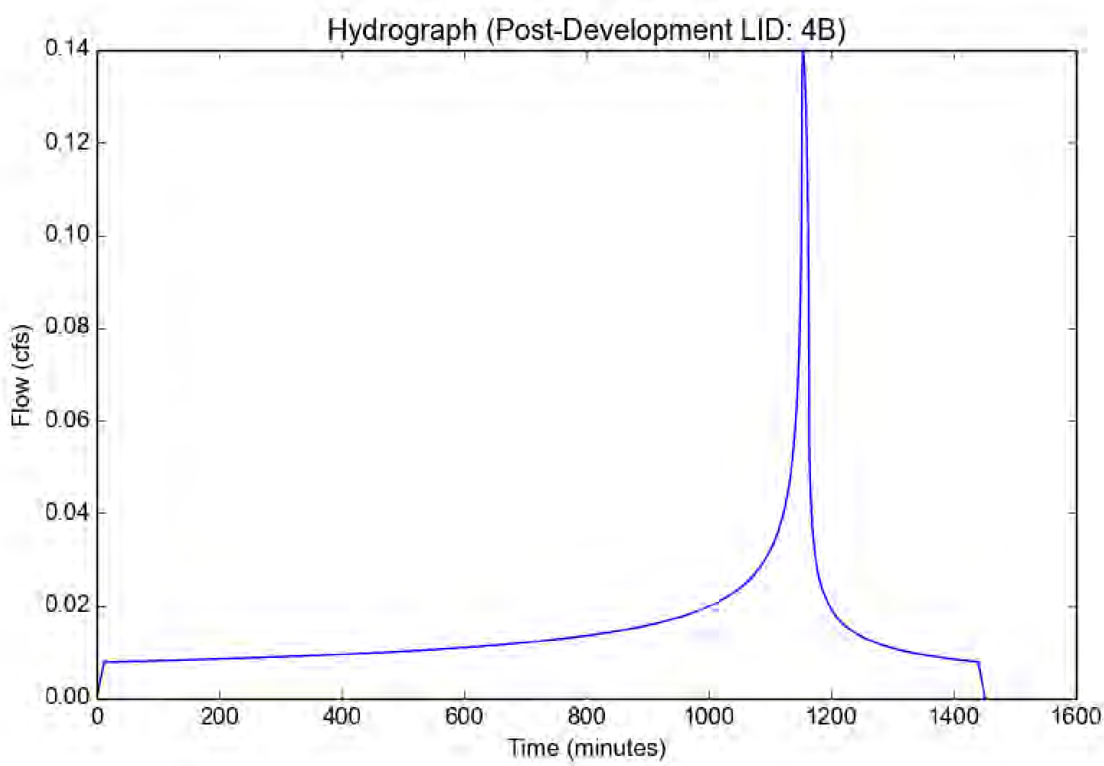
File location: J:/Civil 3D Projects/17008001/Sheet Sets/Hydrology/Hydrology Calcs/Post-Development LID Report.pdf
Version: HydroCalc 0.3.0-beta

Input Parameters

Project Name	Post-Development LID
Subarea ID	4B
Area (ac)	0.81
Flow Path Length (ft)	198.0
Flow Path Slope (vft/hft)	0.22
85th Percentile Rainfall Depth (in)	1.0
Percent Impervious	0.42
Soil Type	88
Design Storm Frequency	85th percentile storm
Fire Factor	0
LID	True

Output Results

Modeled (85th percentile storm) Rainfall Depth (in)	1.0
Peak Intensity (in/hr)	0.3954
Undeveloped Runoff Coefficient (Cu)	0.1
Developed Runoff Coefficient (Cd)	0.436
Time of Concentration (min)	12.0
Clear Peak Flow Rate (cfs)	0.1396
Burned Peak Flow Rate (cfs)	0.1396
24-Hr Clear Runoff Volume (ac-ft)	0.0292
24-Hr Clear Runoff Volume (cu-ft)	1271.3783



Post Development L.I.D. Calculations

Rain Garden (Bio-retention)

BIORETENTION CALCULATIONS:

FORMULAS AND METHODS ARE FROM COUNTY OF LOS ANGELES DEPT. OF PUBLIC WORKS "LOW IMPACT DEVELOPMENT STANDARDS MANUAL" (2014).

TREATMENT VOLUMES (V_B) ARE PER THE "BMP SUMMARY TABLE" ON THE HYDROLOGY MAP & HYDROLOGY L.I.D. CALCULATION (HYDROCALC) SECTION IN THIS REPORT.

REQUIRED RAIN GARDEN AREAS:

1) $d_{\max=} f_{design}/12 \;\; x \; t$

d_{max} = maximum depth of water that can be infiltrated within the required drawdown time

f_{design} = 0.3 in/hr (assuming minimum Infiltraton occurs)

t = max. detention time (96 hrs)

$d_{\max=} 0.3/12 \;\; x \; 96$

$d_{\max=} 2.4 \; ft$

2) $d_{max} \geq d_p$

d_p = ponding depth (max 1.5 ft)

$d_{max} \geq 2.4 \; ft$

USE: $d_p = 1.5 \; ft$

3) $A = Vb/d$

WHERE: $A =$ Bottom surface area of bioretention area (S.F.)

$Vb =$ Bioretention design volume, SWQDv retained on site (C.F.)

$d =$ Ponding depth (1.5’ max)

FOR BMP DESIGNATION, RG1:

Vb (RG1) = 345 CF (Req’d)

$d =$ 1.5’ (depth)

$A = Vb/d$ = 345 CF/1.5’ = 230 SF (Req’d)

BIORETENTION BMP DESIGNATION	Vb REQUIRED (C.F.)	As REQUIRED (S.F)	As PROVIDED (S.F.)	COMMENT
RG1	345	230	256	OK
RG2	314	209	225	OK
RG3	283	189	225	OK
RG4	330	220	225	OK
RG5	502	335	361	OK
RG6	471	314	324	OK
RG7	1271	847	889	OK

Post Development L.I.D. Calculations

Filterra System (Bio-filtration)

Filterra Sizing Spreadsheet
Uniform Intensity Approach
Storm Intensity = 0.20 in/hr

Filterra Infiltration Rate =	100	(in/hr)
Filterra Flow per Square Foot =	0.0023	(ft3/sec/ft2)

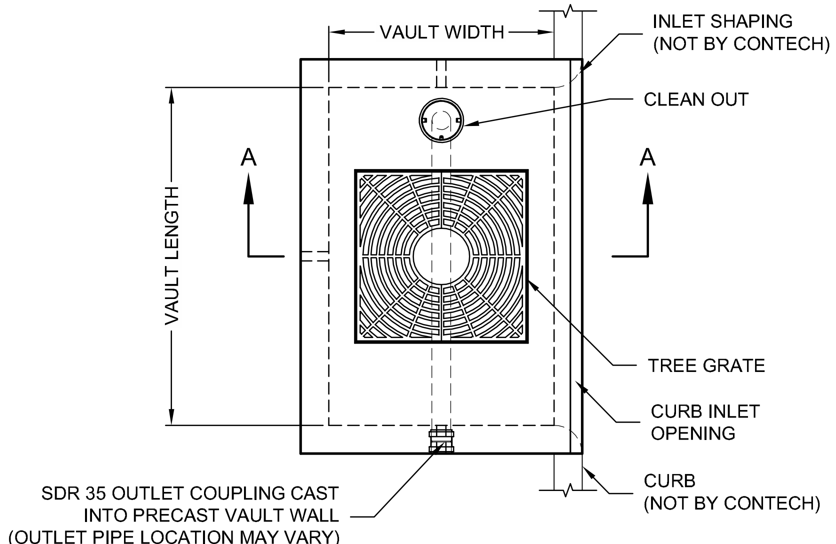
Filterra Flow Rate, Q = 0.0023 ft3/sec x Filterra Surface Area
Rational Method, Q = C x I x A

Site Flowrate, Q = (C x DI x DA x 43560) / (12 x3600)
OR DA = (12 x 3600 x Q) / (C x 43560 x DI)

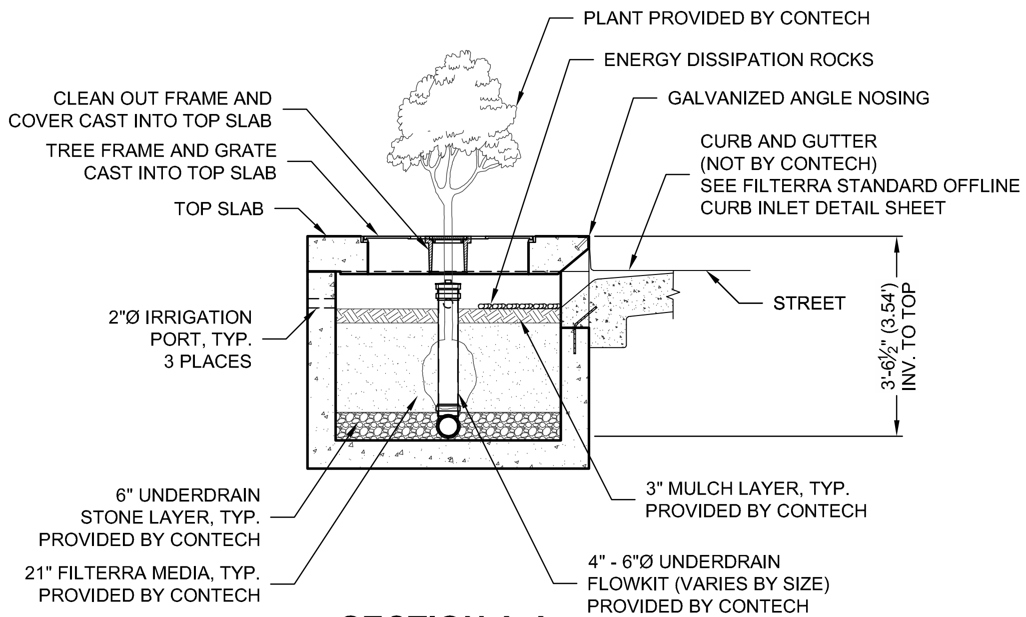
where

Q =	Flow	(ft3/sec)
DA =	Drainage Area	(acres)
DI =	Design Intensity	(in/hr)
C =	Runoff coefficient	(dimensionless)

			DI 0.2	C 1.00	C 0.85	C 0.50
Available Filterra Box Sizes			Filterra	100%	Commercial	Residential
L (ft)	W (ft)	Filterra Surface Area (ft2)	Flow Rate, Q (ft3/sec)	Imperv. DA (acres)	max DA (acres)	max DA (acres)
4	4	16	0.0370	0.184	0.216	0.367
6	4	24	0.0556	0.275	0.324	0.551
6.5	4	26	0.0602	0.298	0.351	0.597
8	4	32	0.0741	0.367	0.432	0.735
12	4	48	0.1111	0.551	0.648	1.102
6	6	36	0.0833	0.413	0.486	0.826
8	6	48	0.1111	0.551	0.648	1.102
10	6	60	0.1389	0.689	0.810	1.377
12	6	72	0.1667	0.826	0.972	1.653
13	7	91	0.2106	1.045	1.229	2.089



PLAN VIEW

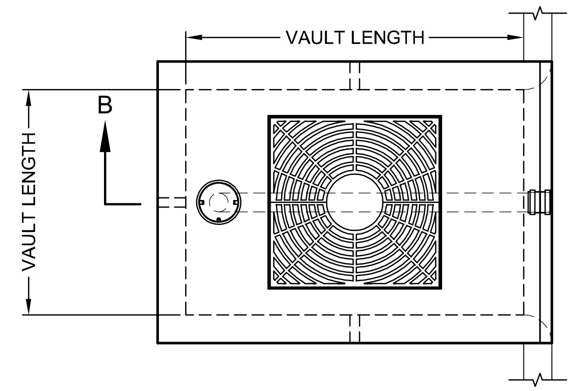


SECTION A-A

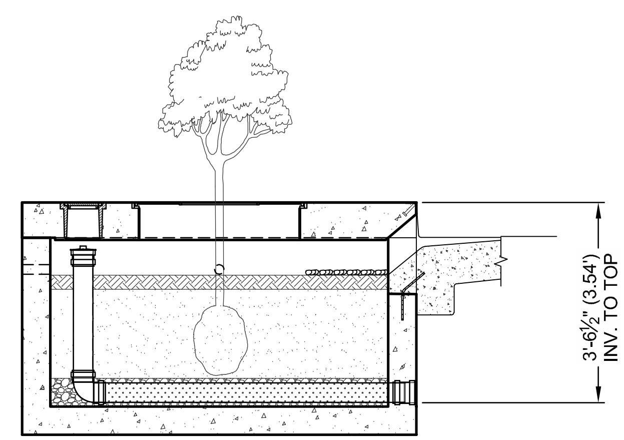
FT LONG SIDE INLET CONFIGURATION

DESIGNATION	AVAILABILITY	MEDIA BAY SIZE	VAULT SIZE (L x W)	OUTLET PIPE DIA	TREE GRATE QTY & SIZE
FT0604	N/A CA	6 x 4	6 x 4	4" SDR 35	(1) 3' x 3'
FT06504	CA ONLY	6.5 x 4	6.5 x 4	4" SDR 35	(1) 3' x 3'
FT078045	MID-ATL ONLY	7.83 x 4.5	7.83 x 4.5	4" SDR 35	(1) 3' x 3'
FT0804	N/A MID-ATL	8 x 4	8 x 4	4" SDR 35	(1) 3' x 3'
FT0806	ALL	8 x 6	8 x 6	4" SDR 35	(1) 4' x 4'
FT1006	ALL	10 x 6	10 x 6	6" SDR 35	(1) 4' x 4'
FT1206	ALL	12 x 6	12 x 6	6" SDR 35	(2) 4' x 4'
FT1307	ALL	13 x 7	13 x 7	6" SDR 35	(2) 4' x 4'
FT1408	CALL CONTECH	14 x 8	14 x 8	6" SDR 35	(2) 4' x 4'
FT1608	CALL CONTECH	16 x 8	16 x 8	6" SDR 35	(2) 4' x 4'
FT1808	CALL CONTECH	18 x 8	18 x 8	6" SDR 35	(2) 4' x 4'
FT2008	CALL CONTECH	20 x 8	20 x 8	6" SDR 35	(3) 4' x 4'
FT2208	CALL CONTECH	22 x 8	22 x 8	6" SDR 35	(3) 4' x 4'

N/A = NOT AVAILABLE



PLAN VIEW

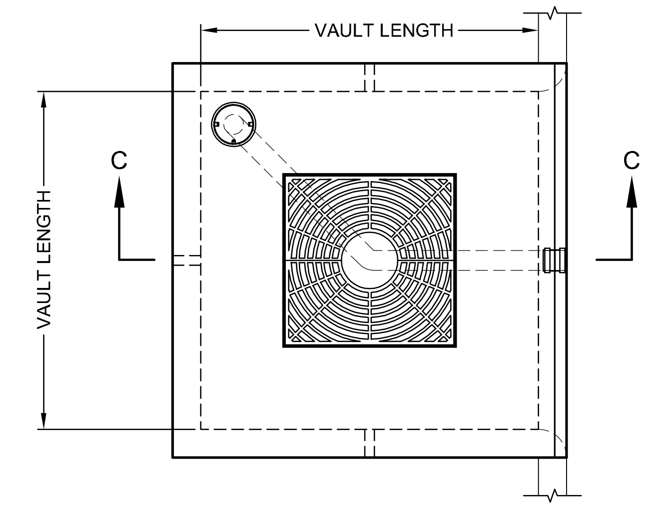


SECTION B-B

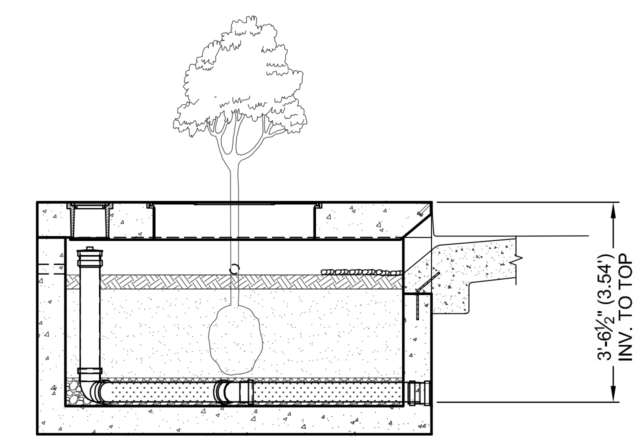
FT SHORT SIDE INLET CONFIGURATION

DESIGNATION	AVAILABILITY	MEDIA BAY SIZE	VAULT SIZE (W x L)	OUTLET PIPE DIA	TREE GRATE QTY & SIZE
FT0406	N/A CA	4 x 6	4 x 6	4" SDR 35	(1) 3' x 3'
FT04065	CA ONLY	4 x 6.5	4 x 6.5	4" SDR 35	(1) 3' x 3'
FT0408	N/A MID-ATL	4 x 8	4 x 8	4" SDR 35	(1) 3' x 3'
FT045078	MID-ATL ONLY	4.5 x 7.83	4.5 x 7.83	4" SDR 35	(1) 3' x 3'
FT0608	ALL	6 x 8	6 x 8	4" SDR 35	(1) 4' x 4'
FT0610	ALL	6 x 10	6 x 10	6" SDR 35	(1) 4' x 4'
FT0612	ALL	6 x 12	6 x 12	6" SDR 35	(2) 4' x 4'
FT0713	ALL	7 x 13	7 x 13	6" SDR 35	(2) 4' x 4'

N/A = NOT AVAILABLE



PLAN VIEW



SECTION C-C

FT SQUARE INLET CONFIGURATION

DESIGNATION	AVAILABILITY	MEDIA BAY SIZE	VAULT SIZE (W x L)	OUTLET PIPE DIA	TREE GRATE QTY & SIZE
FT0404	ALL	4 x 4	4 x 4	4" SDR 35	(1) 3' x 3'
FT0606	ALL	6 x 6	6 x 6	4" SDR 35	(1) 3' x 3'

N/A = NOT AVAILABLE

INTERNAL PIPE CONFIGURATION MAY VARY
DEPENDING UPON OUTLET LOCATION.

filterra®

THIS PRODUCT MAY BE PROTECTED BY ONE OR MORE OF THE FOLLOWING U.S. PATENTS: 6,277,274; 6,569,321; 7,625,485; 7,425,261; 7,833,412; RELATED FOREIGN PATENTS.

CONTECH®
ENGINEERED SOLUTIONS LLC
www.ContechES.com
9025 Centre Pointe Dr., Suite 400, West Chester, OH 45069
800-338-1122 513-645-7000 513-645-7993 FAX

FILTERRA OFFLINE (FT)
CONFIGURATION DETAIL

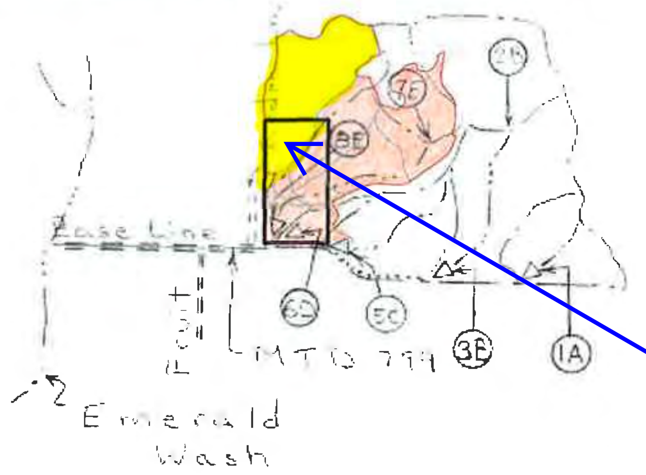
I:\COMMON\CAD\TREATMENT\54 FILTERRA\40 STANDARD DRAWINGS\FT - OFFLINE\LAYOUT DETAILS\DWG\FILTERRA STANDARD OFFLINE CONFIG DTL.DWG 11/1/2017 11:31 AM

Allowable Q Analysis

LDC 12/11/2017

Reach	Q (cfs)
Line A	
1A - Prop.D.B.	180
Prop.D.B.-Line B	95
Line B-Line C	230
Line C-Line D	410
Line D-Line E	410
Line E-MTD 799	540

Reach	Q (cfs)
Line B	
2B - 3B	130
3B - Prop. D.B.	380
Prop.D.B.-Line A	250
Line C	
5C - Prop. D.B.	190
Prop. D.B.-Line A	110
Line D	
6D- Prop. D.B.	45
Prop. D.B.-Line A	25
Line E	
7E - 8E	70
8E - Prop. D.B.	260
Prop.D.B-Line A	140



THIS AREA IS OUTSIDE THE WATERSHED BOUNDARY . IT SHOULD BE EXCLUDED WHEN CALCULATING THE ALLOWABLE Q. SEE THE ORIGINAL WATERSHED BOUNDARY BELOW. IF AREA DRAINS THROUGH PROJECT SITE, FLOW MUST BE DETAINED

Subarea	Clear Q (cfs)	Burned Clear Q (cfs)	Burned & Bulked Q (cfs)	Debris Production (cu.yds.)
1A		95	180	4200
2B	130			
2B+3B		250	380	7500
5C		110	190	3900
6D		25	45	1100
7E	70			
7E+8E		140	260	7300

SUBAREA 2B: $Q_{ALLOWABLE}$ = (130/34) (151.1/540) = 1.07 CFS/ACRE

SUBAREA 5C: $Q_{ALLOWABLE}$ = (110/26) (151.1/540) = 1.18 CFS/ACRE

SUBAREA 6D: $Q_{ALLOWABLE}$ = (25 / 5) (151.1/540) = 1.40 CFS/ACRE

SUBAREA 7E & 8E: $Q_{ALLOWABLE}$ = (140/48) (151.1/540) = 0.82 CFS/ACRE

INFORMATION PROVIDED BY: HMH **DATE:** 12/12/2017

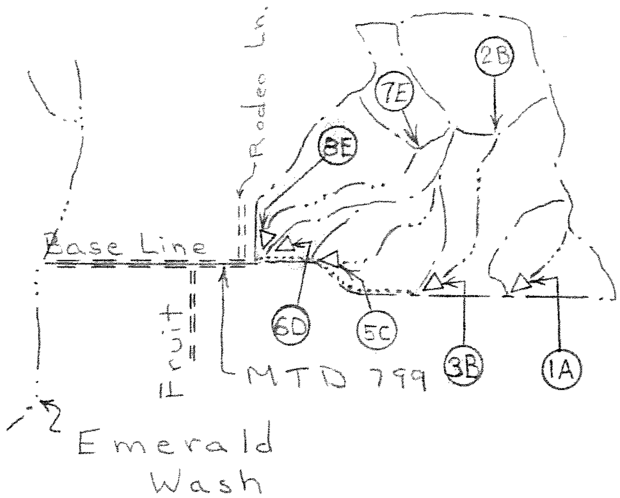
LEGEND

- WATERSHED BOUNDARY
- PROJECT DRAIN
- EXISTING DRAIN
- SUBAREA AND COLLECTION POINT
- PROBABLE FUTURE DRAIN
- STREETS
- ▽ DESILTING BASIN

PREPARED E.D.	LOS ANGELES COUNTY FLOOD CONTROL DISTRICT
DATE 4/30/82	Emerald Wash
SCALE 1"=2000'	MTD 799 Desilting Facility - 50 Yr Hydrol.

Reach	Q (cfs)
Line A	
1A - Prop. D.B.	180
Prop. D.B - Line B	95
Line B - Line C	330
Line C - Line D	410
Line D - Line E	410
Line E - MTD 799	540

Reach	Q (cfs)
Line B	
2B - 3B	130
3B - Prop. D. B.	380
Prop. D.B. - Line A	250
Line C	
5C - Prop. D. B.	190
Prop. D.B. - Line A	110
Line D	
6D - Prop. D.B.	45
Prop. D.B. - Line A	25
Line E	
7E - 8E	70
8E - Prop. D.B.	260
Prop. D.B - Line A	140



Subarea	Clear Q (cfs)	Burned Clear Q (cfs)	Burned & Bulked Q (cfs)	Debris Production (cu. yds.)
1A		95	180	4200
2B	130			
2B+3B		250	380	7500
5C		110	190	3900
6D		25	45	1100
7E	70			
7E+8E		140	260	7300

LEGEND

- WATERSHED BOUNDARY
- PROJECT DRAIN
- EXISTING DRAIN
- SUBAREA AND COLLECTION POINT
- PROBABLE FUTURE DRAIN
- STREETS
- ▽ DESILTING BASIN

PREPARED E.D.	LOS ANGELES COUNTY FLOOD CONTROL DISTRICT
DATE 9/30/82	Emerald Wash MTD 799 Desilting Facility - 50 Yr Hydrol.
SCALE 1" = 2000'	

Los Angeles County Flood Control District
Hydraulic Division

Hydrologic Data

Project Emerald Wash M.T.D. No. T 799

Sheet 1 of 2

Channel Types
4. Pipe 1. Mountain
5. Rectangular 3. Street
6. Trapezoidal

50 Year Frequency Rainfall Date October 28, 1982

Reach or Subarea	Preliminary Channel Length, Feet (Meters)	Type	Size, Feet (Meters)	Slope	Area, Acres (Hectares) Subarea	Total	Q, CFS (CMS) Subarea 1)	Reach 2)
Line A								
Prop. 1A @ D.B.					19 (7.69)		180 (5.10) 3/	
Prop. D.B. - Line B	1000 (304.8)	3	36 (10.97)	.045		19 (7.69)		95 (2.69) 4/
Line B						72 (29.14)	250 (7.08) 4/	
Line B - Line C	1100 (335.28)	4	4.75 (1.45)	.0227		91 (36.83)		330 (9.35) 4/
Line C					26 (10.52)		110 (3.12) 4/	
Line C - Line D	550 (167.64)	4	5.00 (1.52)	.0218		117 (47.35)		410 (11.61) 4/
Line D					5 (2.02)		25 (.71) 4/	
Line D - Line E	100 (30.48)	4	5.25 (1.60)			122 (49.37)		410 (11.61) 4/
Line E						48 (19.43)	140 (3.96) 4/	
Line E - MTD 799						170 (68.80)		540 (15.29) 4/
Line B								
2B					34 (13.76)		130 (3.68) 5/	
2B - 3B	1750 (533.4)	1		.163		34 (13.76)		130 (3.68)
3B					38 (15.38)		310 (8.78) 3/	
Prop. 3B - D.B.						72 (29.14)		380 (10.76) 3/
Prop. D.B. - Line A						72 (29.14)		250 (7.08) 4/

3/ Burned and bulked flows.

4/ Clear flows from a burned watershed.

5/ Subarea 2B and 7E are assumed single-family developed.

1) These Q's are the peak flow rates from the subarea which can be prorated (Q/A) for catch basin design (refer to Design Manual-Hydraulic).
2) Reach Q's are the peak flow rates for the design of drain or channel.

Los Angeles County Flood Control District
Hydraulic Division

Hydrologic Data

Project Emerald Wash M.T.D. No. T 799

Sheet 2 of 2

Channel Types

4. Pipe 1. Mountain
5. ~~Rectangular~~
6. Trapezoidal

50 Year Frequency Rainfall Date October 28, 1982

Reach or Subarea	Preliminary Channel Length, Feet (Meters)	Type	Size, Feet (Meters)	Slope	Area, Acres (Hectares) Subarea	Total	Q, CFS (CMS) Subarea 1)	Reach 2)
Line C								
5C					26 (10.52)		190 (5.38) 3/	
5C - Prop. D.B.						26 (10.52)		190 (5.38) 3/
Prop. D.B. - Line A						26 (10.52)		110 (3.12) 4/
Line D								
6D					5 (2.02)		45 (1.27) 3/	
6D - Prop. D.B.						5 (2.02)		45 (1.27) 3/
Prop. D.B. - Line A								25 (.71) 4/
Line E								
7E					15 (6.07)		70 (1.98)	5/
7E - 8E	2500 (762.25)	1		.108		15 (6.07)		70 (1.98)
8E					33 (13.35)		220 (6.23) 3/	
8E - Prop. D.B.								260 (7.36) 3/
Prop. D.B. - Line A								140 (3.96) 4/

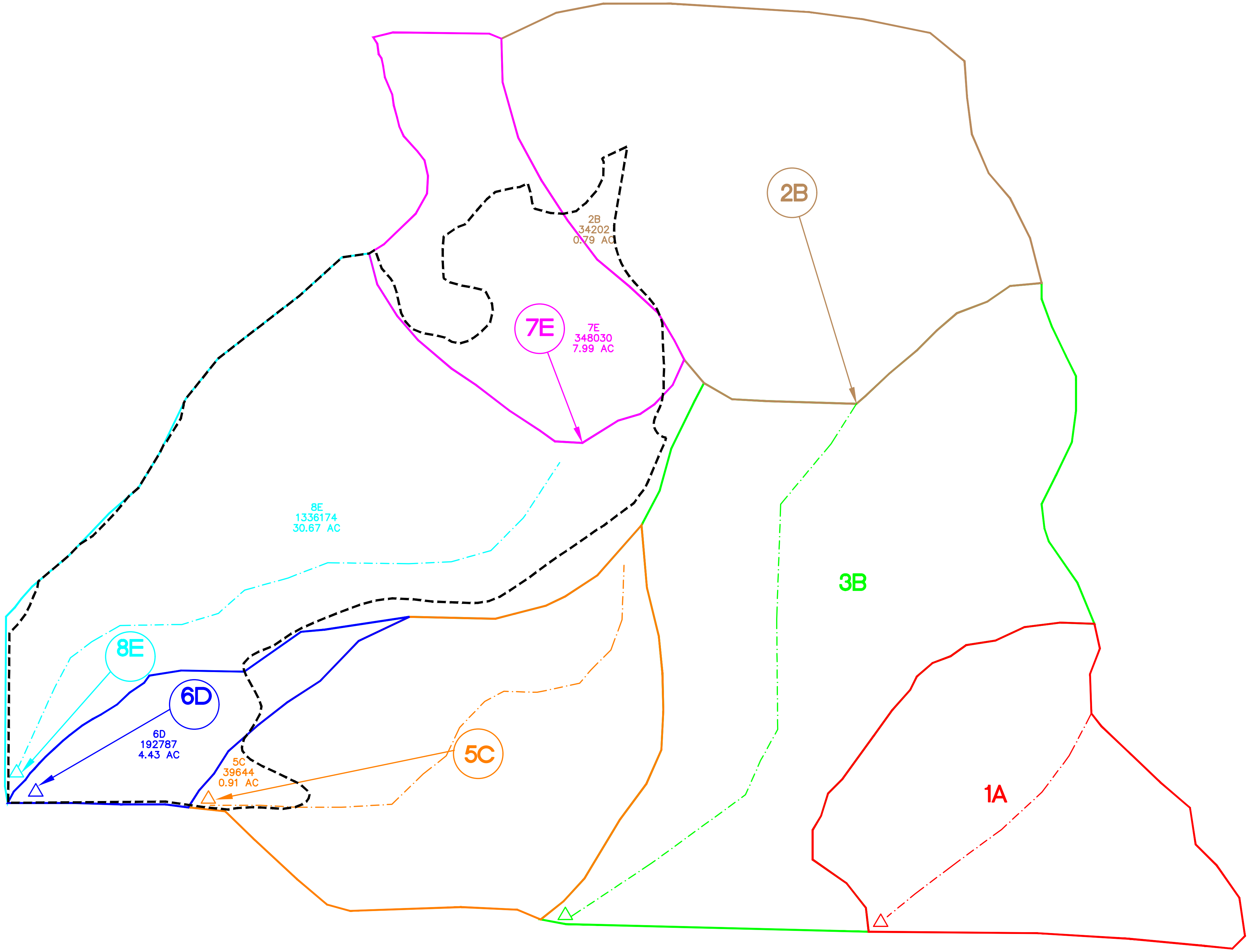
3/ Burned and bulked flows.

4/ Clear flows from a burned watershed.

5/ Subarea 2B and 7E are assumed single-family developed.

1) These Q's are the peak flow rates from the subarea which can be prorated (Q/A) for catch basin design (refer to Design Manual-Hydraulic).

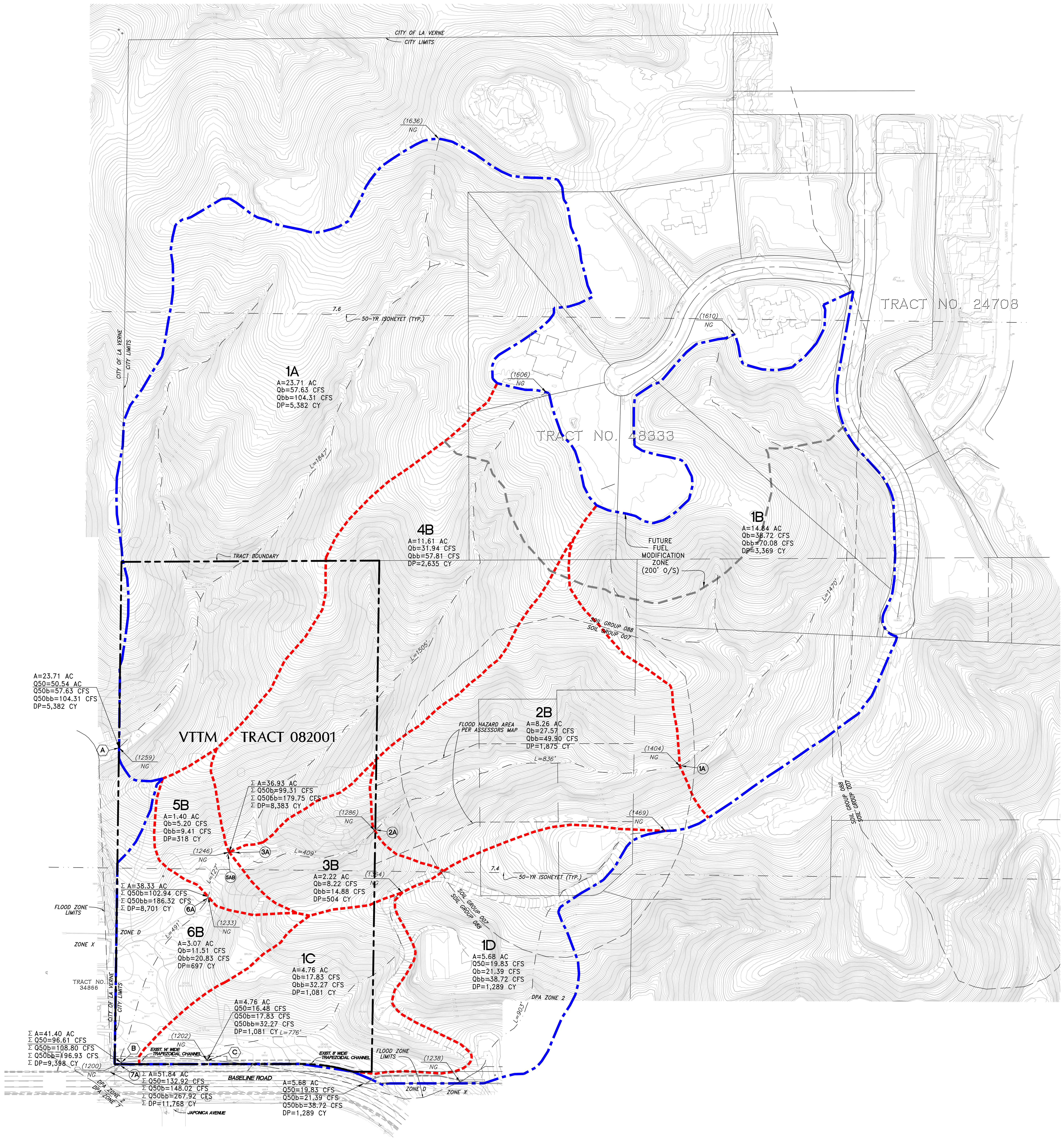
2) Reach Q's are the peak flow rates for the design of drain or channel.



<u>SUBAREA 2B:</u>	Q_{ALLOW} = 1.07 CFS/ACRE	Q_{ALLOW} = (1.07 CFS/ACRE)(0.79 ACRE) = 0.85 CFS
<u>SUBAREA 5C:</u>	Q_{ALLOW} = 1.18 CFS/ACRE	Q_{ALLOW} = (1.18 CFS/ACRE)(0.91 ACRE) = 1.07 CFS
<u>SUBAREA 6D:</u>	Q_{ALLOW} = 1.40 CFS/ACRE	Q_{ALLOW} = (1.40 CFS/ACRE)(4.43 ACRE) = 6.20 CFS
<u>SUBAREA 7E:</u>	Q_{ALLOW} = 0.82 CFS/ACRE	Q_{ALLOW} = (0.82 CFS/ACRE)(7.99 ACRE) = 6.55 CFS
<u>SUBAREA 8E:</u>	Q_{ALLOW} = 0.82 CFS/ACRE	Q_{ALLOW} = (0.82 CFS/ACRE)(30.67 ACRE) = 25.15 CFS

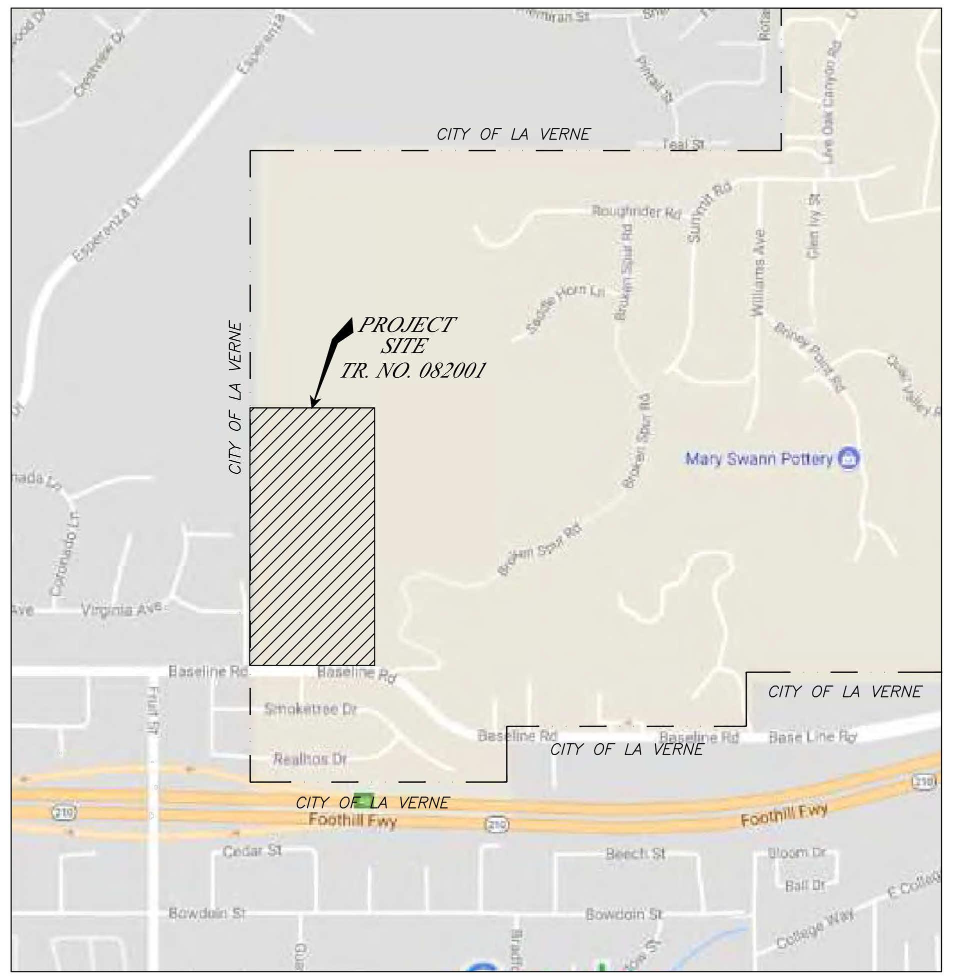
$\sum Q_{ALLOW}$ = 39.82 CFS $\sum A$ = 44.79 CFS

Hydrology Study Maps



LEGEND

- EXISTING CONTOUR LINE
- PROPOSED CONTOUR LINE
- DAYLIGHT LINE
- DIRECTION OF FLOW
- PROPOSED SLOPE AS INDICATED
- STREET CENTERLINE
- TRACT BOUNDARY
- EXIST. STORM DRAIN
- PROP. STORM DRAIN WITH EASEMENT
- PAVED DRAIN AND DOWNDRAIN
- H.P. – HIGH POINT
- L.P. – LOW POINT
- F.L. – FLOW LINE
- N.G. – NATURAL GRADE
- 3% – GRADE SLOPE
- 211.0 – PROPOSED ELEVATION
- C/L – CENTERLINE
- DAYLIGHT
- CITY LIMITS
- DRAINAGE AREA BOUNDARY
- SUB-DRAINAGE BOUNDARY
- FUEL MOD. 300 FOOT SETBACK
- ΣQ – SUM OF Q (c.f.s.)
- ΣA – SUM OF AREA (AC)
- 1A – SUB-AREA ACREAGE
- Qb – BURNED Q (c.f.s.)
- Qbb – BURNED AND BULKED Q (c.f.s.)
- Qd – 50 YR. DEVELOPED Q (c.f.s.)
- Qbk – 50 YR. BULKED Q (c.f.s.)
- Qm – MITIGATED PEAK Q (c.f.s.)
- DP – DEBRIS POTENTIAL (C.Y.)



VICINITY MAP
NOT TO SCALE
THOMAS GUIDE
PG. 509 H7

SHEET INDEX

SHEET	DESCRIPTION
1	PRE-DEVELOPMENT HYDROLOGY MAP
2	POST DEVELOPMENT HYDROLOGY MAP
3	SECTIONS & DETAILS
4	LID - POST DEVELOPMENT HYDROLOGY MAP

HYDROLOGY INFORMATION

TIME OF CONCENTRATION (Tc)	PER CALCULATION
SOIL TYPE	007, 088
IMPERVIOUSNESS (IMP)	0.01 (UNDEVELOPED AREA) 0.42 (DEVELOPED AREA, SINGLE FAMILY RESIDENTIAL)
ISOHYET (in)	7.4 (50–YR.)
FREQUENCY	50–YR. (OFF–SITE, UNDEVELOPED)
DEBRIS POTENTIAL AREA	DPA–2
BULKING RATE	1.81 (DPA–2)
Qb–BURNED Q	PER CALCULATION
Qbb–BURNED AND BULKED Q	Qbb= 1.81Qb (DPA–2)
DEBRIS POTENTIAL RATE	227 $\frac{cy}{Ac}$ (DPA–2)

PRE-DEVELOPMENT FLOWS

OUTLET POINT NO.	CONDITION	50-Year Storm Q50 (cfs)
A	PRE-DEVELOPMENT	50.54
B	PRE-DEVELOPMENT	96.61
C	PRE-DEVELOPMENT	16.48

PRE-DEVELOPMENT HYDROLOGY TABLE:

Subarea	Area (acres)	%imp	Frequency	Soil Type	Length (ft)	Slope (ft/ft)	Isohyet (in.)	Tc-calculated (min.)	Intensity (in./hr)	Cu	Cd	Q50 (cfs)	Qb (cfs)	Qbb (cfs)	D.P. (c.y.)
1A	23.71	0.01	50	88	1847	0.2041	7.4	10	3.19	0.67	0.67	**50.54**	57.63	104.31	5382
1C	4.76	0.1	50	88	776	0.2088	7.4	5	4.42	0.77	0.78	**16.48**	17.83	32.27	1081
1D	5.68	0.15	50	88	903	0.2558	7.4	5	4.42	0.77	0.79	**19.83**	21.39	38.72	1289

PRE-DEVELOPMENT

4/2019

GRAPHIC SCALE (IN FEET)
1 inch = 100 ft.

HYDROLOGY MAP

MAJOR LAND DIVISION
VESTING TENTATIVE TRACT MAP NO.

082001

LOCATED IN THE UNINCORPORATED TERRITORY OF COUNTY OF LOS ANGELES, STATE OF CALIFORNIA.

DRAWN BY R.N.M.
DESIGNED BY R.N.M.
CHECKED BY C.A.G.

DATE CHANGED	CHANGED BY	REVISION

REGISTERED PROFESSIONAL ENGINEER CHARLES A. GILMAN No. 54155 Exp. 12-31-19 CIVIL STATE OF CALIFORNIA

PREPARED BY:
LAND DESIGN CONSULTANTS, INC.
Land Planning, Civil Engineering, Surveying & Environmental Services
800 Royal Oaks Drive, Suite 104, Monrovia, California 91016
Ph.: (626) 578–7000, Fax: (626) 578–7373
http://www.ldcla.com

Charles A. Gilman, R.C.E. No. 54155

04-24-2019
Date

LDC

Proj. No. 17008–001
Sht 1 of 4

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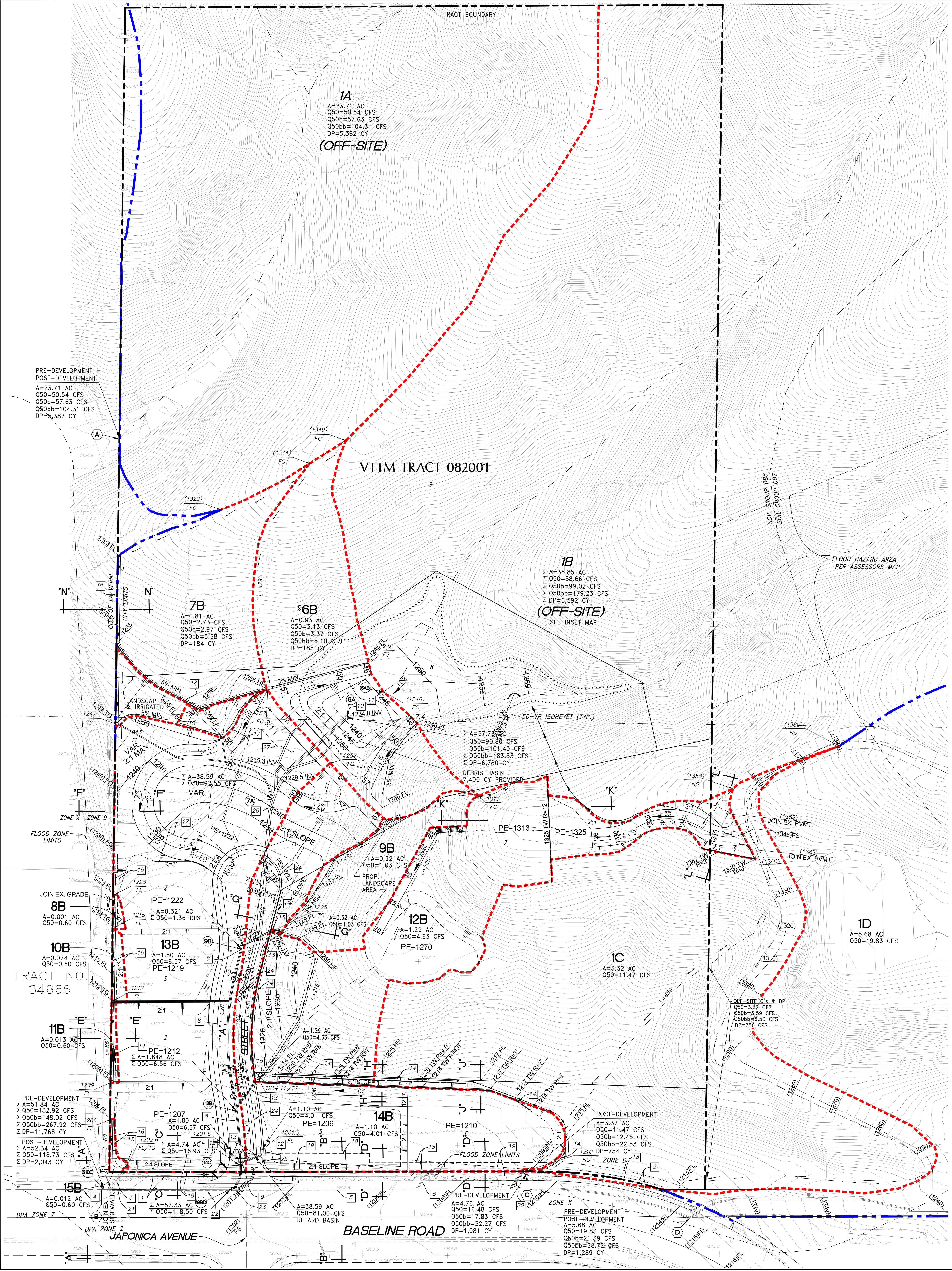

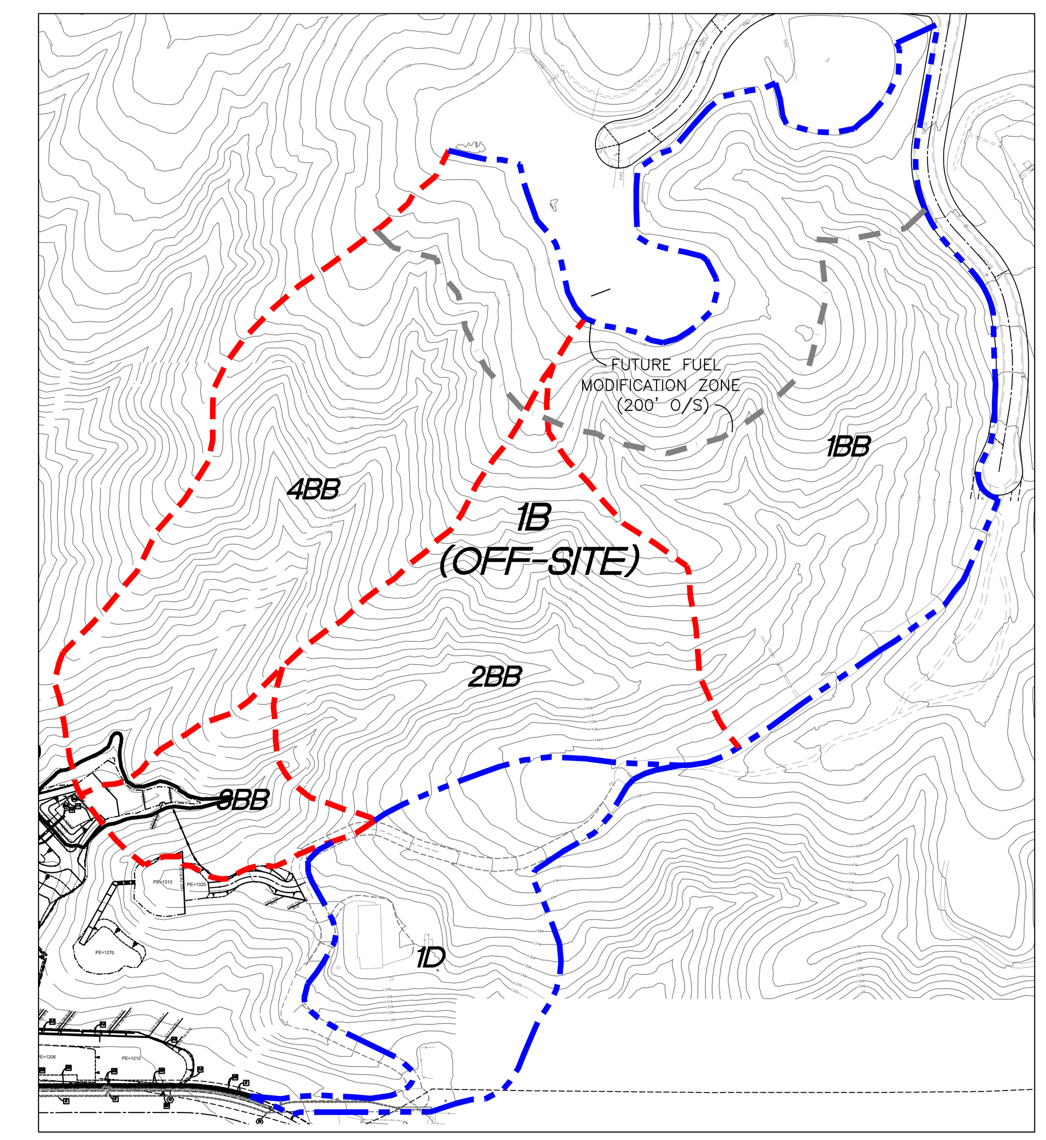

OFF-SITE INSET MAP

LEGEND

- EXISTING CONTOUR LINE
- PROPOSED CONTOUR LINE
- DAYLIGHT LINE
- DIRECTION OF FLOW
- 2:1 – PROPOSED SLOPE AS INDICATED
- STREET CENTERLINE
- TRACT BOUNDARY
- EXIST. STORM DRAIN
- PROP. STORM DRAIN
- PAVED DRAIN AND DOWNDRAIN
- H.P. – HIGH POINT
- L.P. – LOW POINT
- F.L. – FLOW LINE
- N.G. – NATURAL GRADE
- 3% – GRADE SLOPE
- 211.0 – PROPOSED ELEVATION
- C/L – CENTERLINE
- DL – DAYLIGHT
- DRAINAGE AREA BOUNDARY
- PROPOSED SUB-DRAINAGE BOUNDARY
- ΣQ – SUM OF Q (c.f.s.)
- ΣA – SUM OF AREA (AC)
- 1A – SUB-AREA ACREAGE
- Qb – BURNED Q (c.f.s.)
- Qbb – BURNED AND BULKED Q (c.f.s.)
- Qd – 50 YR. DEVELOPED Q (c.f.s.)
- Qbk – 50 YR. BULKED Q (c.f.s.)
- Qm – MITIGATED PEAK Q (c.f.s.)
- DP – DEBRIS POTENTIAL (C.Y.)

HYDROLOGY INFORMATION

TIME OF CONCENTRATION (Tc)	PER CALCULATION
SOIL TYPE	007, 088
IMPERVIOUSNESS (IMP)	0.01 (UNDEVELOPED AREA) 0.42 (DEVELOPED AREA, SINGLE FAMILY RESIDENTIAL) OR PER CALCULATION
ISOHYET (in)	7.4 (50–YR.)
FREQUENCY	50–YR.
DEBRIS POTENTIAL AREA	DPA–2
BULKING RATE	1.81 (DPA–2)
Qb–BURNED Q	PER CALCULATION
Qbb–BURNED AND BULKED Q	Qbb= 1.81Qb (DPA–2)
DEBRIS POTENTIAL RATE	$227 \frac{cy}{Ac}$ (DPA–2)

POST-DEVELOPMENT (OFF-SITE) DEBRIS POTENTIAL VOLUME TABLE:

Area (Off-site)	Subarea (Off-site)	Area (acres)	*D.P. (c.y.)	**Area (acres)	**D.P. (c.y.)
1B	1BB	14.84	3369	9.12	2070
	2BB	8.26	1875	8.22	1866
	3BB	2.14	486	2.14	486
	4BB	11.61	2635	9.56	2170
	TOTAL:	36.85	8365	29.04	6592

NOTE: *The Debris Production of 8,365 CY is based on LA County Public Works methods.

** Debris Potential for Areas 1BB, 2BB and 4BB will be reduced to a 200' setback for fuel modification on the existing slope.

** Debris Potential for off-sites areas are 6,592 CY.

PRE AND POST-DEVELOPMENT FLOWS

OUTLET POINT NO.	CONDITION	50-Year Storm Q50 (cfs)
A	PRE-DEVELOPMENT POST-DEVELOPMENT	50.54 50.54
B	PRE-DEVELOPMENT POST-DEVELOPMENT	132.92 118.73
C	PRE-DEVELOPMENT POST-DEVELOPMENT	16.48 11.52

POST-DEVELOPMENT HYDROLOGY TABLE

Subarea	Area (acres)	%imp	Frequency	Soil Type	Length (ft)	Slope (ft/ft)	Isohyet (in.)	Tc-calculated (min.)	Intensity (in./hr)	Cu	Cd	Q50 (cfs)	Qb (cfs)	Qbb (cfs)	D.P. (c.y.)
1A	23.71	0.01	50	88	1847	0.2041	7.4	10	3.19	0.67	0.67	**50.54**	57.63	104.31	5382

DRAINAGE NOTES:

1. EXISTING 14' WIDE TRAPEZOIDAL CHANNEL & INLET STRUCTURE PER CALTRANS PLAN 48–F 98.1 52 TO BE REMOVED
2. EXISTING 8' WIDE TRAPEZOIDAL CHANNEL PER CALTRANS PLAN 48–F 98.1 52 TO REMAIN
3. EXISTING 42" RCP PER CALTRANS PLAN 47–F 72.3
4. EXISTING 42" RCP PER MTD 799
5. EXISTING 30" RCP PER CALTRANS PLAN 48–F 98.1 52
6. EXISTING 24" RCP PER CALTRANS PLAN 48–F 98.1 52 TO BE ABANDONED, PLUG INLET
7. EXISTING 30" PCP PER CALTRANS PLAN 48–F 98.1 52 TO BE REMOVED
8. PROPOSED 24" RCP MAIN TO BE PRIVATELY MAINTAINED
9. PROPOSED STORM DRAIN JUNCTION STRUCTURE TO BE PRIVATELY MAINTAINED
10. PROPOSED ELEVATED INLET STRUCTURE TO BE PRIVATELY MAINTAINED
11. PROPOSED DEBRIS BASIN TO BE PRIVATELY MAINTAINED
12. PROPOSED CURB OPENING CATCH BASIN TO BE PRIVATELY MAINTAINED
13. PROPOSED 18" RCP TO BE PRIVATELY MAINTAINED
14. PROPOSED 3' WIDE CONCRETE SWALE TO BE PRIVATELY MAINTAINED
15. PROPOSED DROP INLET CATCH BASIN TO BE PRIVATELY MAINTAINED
16. 5' WIDE ACCESS EASEMENT FOR DRAINAGE PURPOSES DEDICATED TO HOA
17. ROAD ACCESS EASEMENT FOR DRAINAGE PURPOSES DEDICATED TO HOA
18. EXIST. SLOPE AND CHANNEL EASEMENT
19. EXISTING TRAPEZOIDAL CHANNEL PER CALTRANS PLAN 48–F 98.1 52 TO REMOVED
20. PROPOSED 24" RCP CONNECTION W/INLET STRUCTURE
21. EXISTING 30" RCP PER CALTRANS PLAN 48–F 98.1 52 TO BE REMOVED
22. PROPOSED 42" RCP MAIN TO BE PUBLICLY MAINTAINED
23. PROPOSED STORM DRAIN JUNCTION STRUCTURE TO BE PUBLICLY MAINTAINED
24. PROPOSED 72" DETENTION STORAGE PIPE TO BE PRIVATELY MAINTAINED
25. PROPOSED 27" RESTRICTED OUTLET PIPE TO BE PRIVATELY MAINTAINED
26. PROPOSED 42" RCP MAIN TO BE PRIVATELY MAINTAINED
27. PROPOSED STORM DRAIN SPILLWAY TO BE PRIVATELY MAINTAINED

NOTE:

EROSION CONTROL MEASURES ARE REQUIRED AT PROTECTED GRADED SLOPES BY INSTALLING SANDBAGS BARRIERS DURING CONSTRUCTION AND PLANTING VEGETATION ARE FULLY MATURED.

NOTE: NOT WITHIN COUNTY ADOPTED FLOODWAY.
NOTE: NOT WITHIN FEMA FLOOD ZONE "A".

40 20 0 40 80 120
GRAPHIC SCALE (IN FEET)
1 inch = 40 ft.

POST-DEVELOPMENT (ON-SITE)

4/2019

DRAWN BY R.N.M.			
DESIGNED BY R.N.M.			
CHECKED BY C.A.G.	DATE CHANGED	CHANGED BY	REVISION

REGISTERED PROFESSIONAL ENGINEER CHARLES A. GILMAN No. 54155 Exp. 12-31-19 CIVIL STATE OF CALIFORNIA

HYDROLOGY MAP

MAJOR LAND DIVISION
VESTING TENTATIVE TRACT MAP NO.
082001

LOCATED IN THE UNINCORPORATED TERRITORY OF COUNTY OF LOS ANGELES, STATE OF CALIFORNIA.

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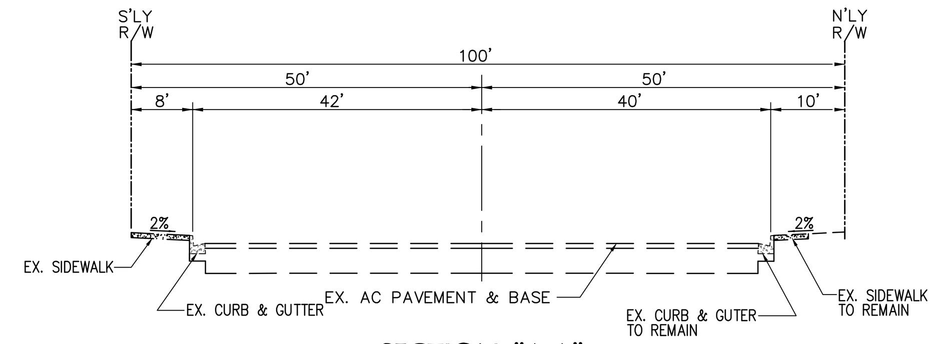
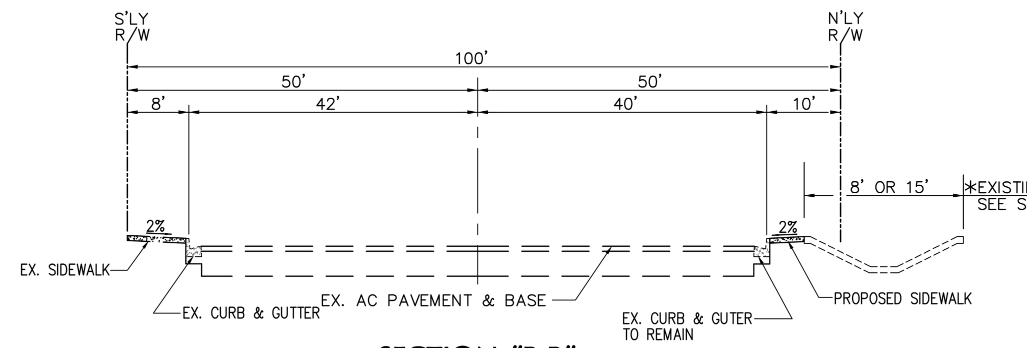
Charles A. Gilman, R.C.E. No. 54155

04-24-2019
Date

Proj. No. 17008-001
Sht 2 of 4

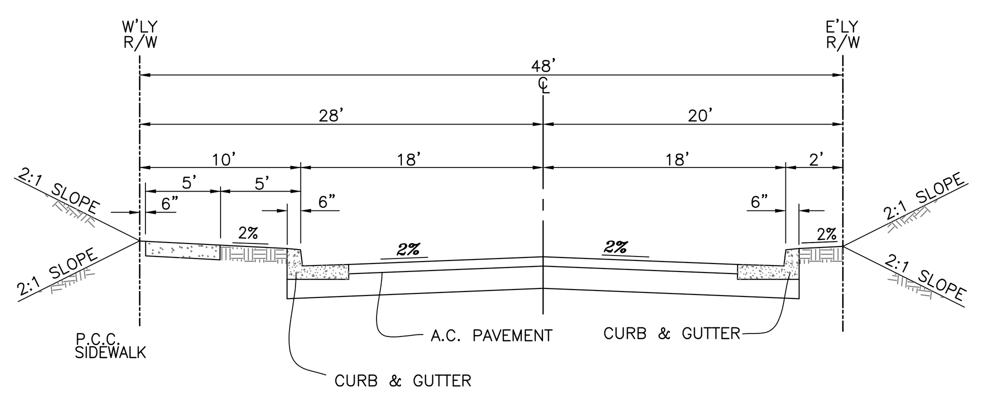


SECTION "A-A"
EXISTING BASELINE ROAD
NOT TO SCALE

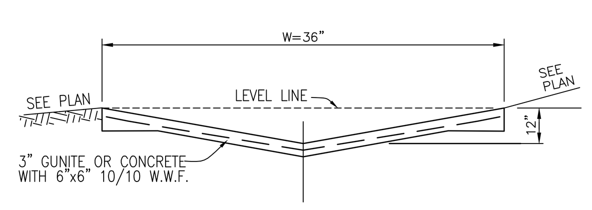


SECTION "B-B"
EXISTING BASELINE ROAD
NOT TO SCALE

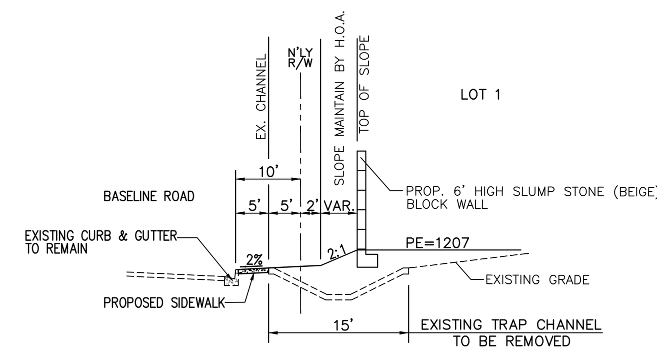
✱ PER CALTRANS PLAN 48-F 98.1 52



TYPICAL SECTION 48' R/W
NOT TO SCALE
"A" STREET



36" PAVED DRAIN
NOT TO SCALE



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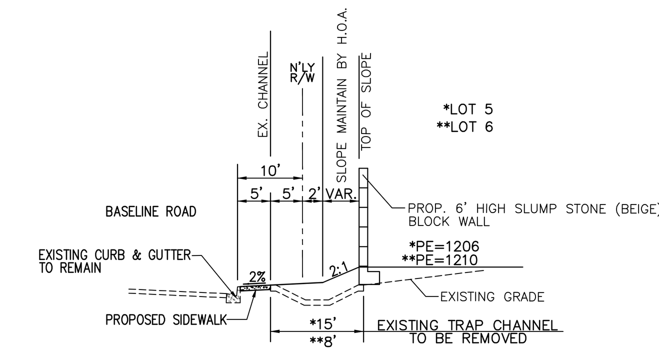
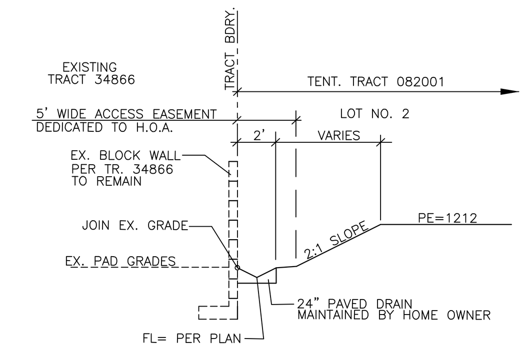
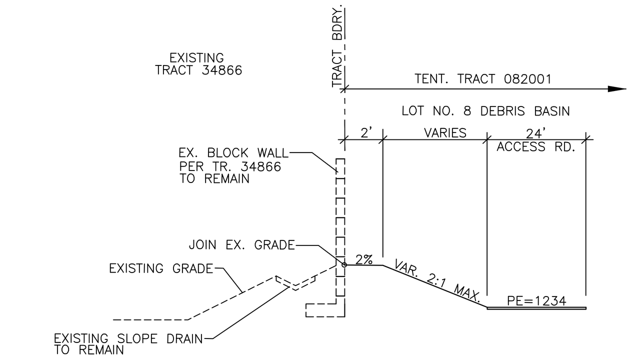
NOT TO SCALE



SECTION "D-D"
NOT TO SCALE



SECTION "E-E"
N.T.S.



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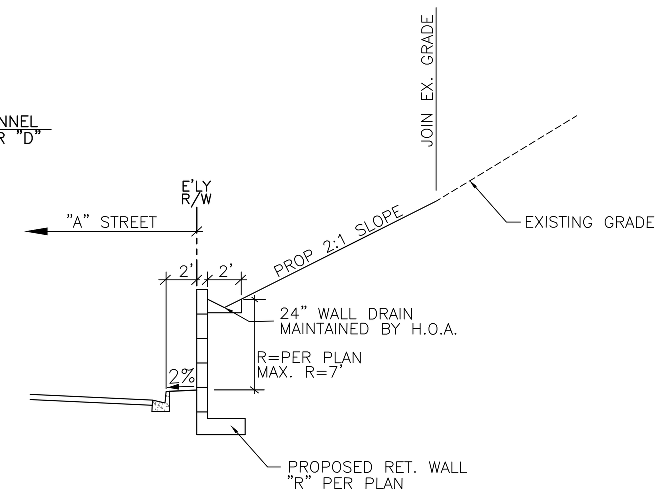
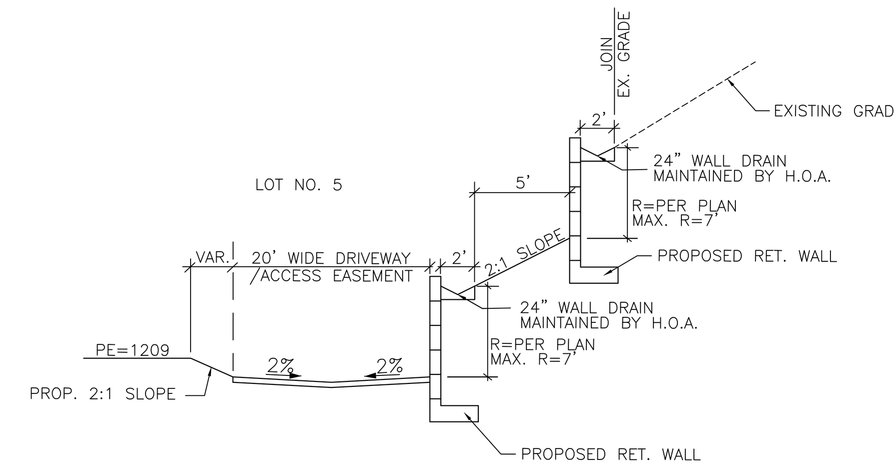


SECTION "G-G"
N.T.S.



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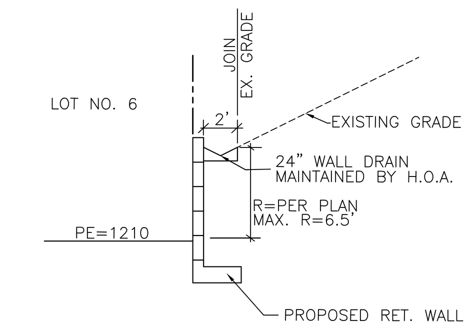

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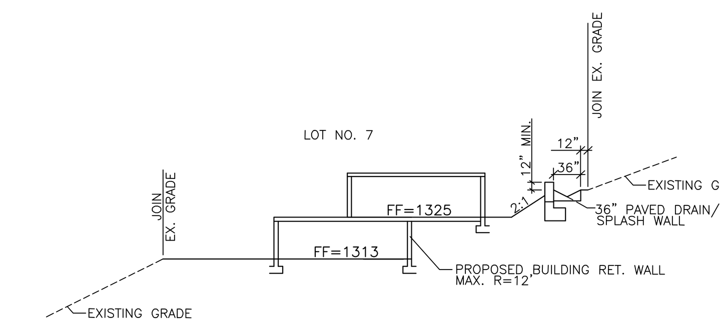

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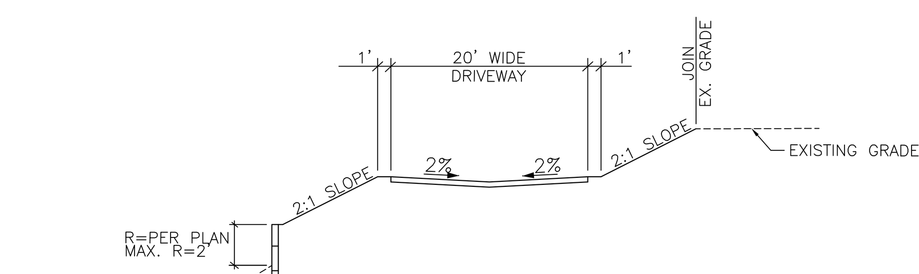

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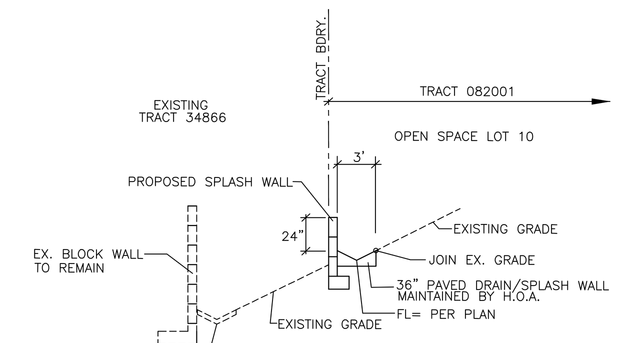

SECTION "N-N"
N.T.S.

SECTIONS AND DETAILS
4/2019

HYDROLOGY MAP

MAJOR LAND DIVISION
VESTING TENTATIVE TRACT MAP NO.

082001

LOCATED IN THE UNINCORPORATED TERRITORY OF COUNTY OF LOS ANGELES, STATE OF CALIFORNIA.

DRAWN BY R.N.M.			
DESIGNED BY R.N.M.			
CHECKED BY C.A.G.			
	DATE CHANGED	CHANGED BY	REVISION

REGISTERED PROFESSIONAL ENGINEER
CHARLES A. GILLMAN
No. 54155
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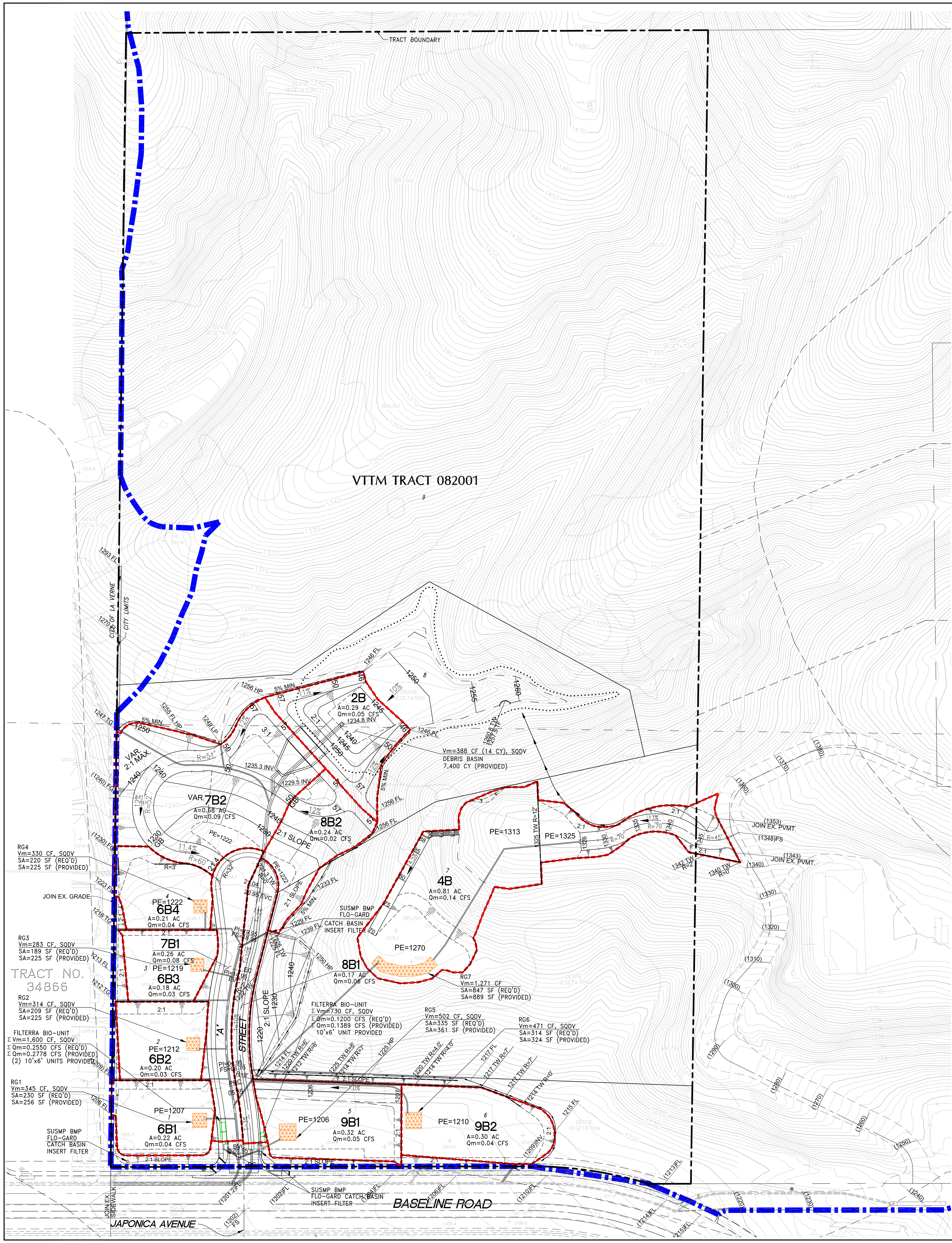
04-24-2019
Date

LDC

Proj. No. 17008-001
Sht 3 of 4

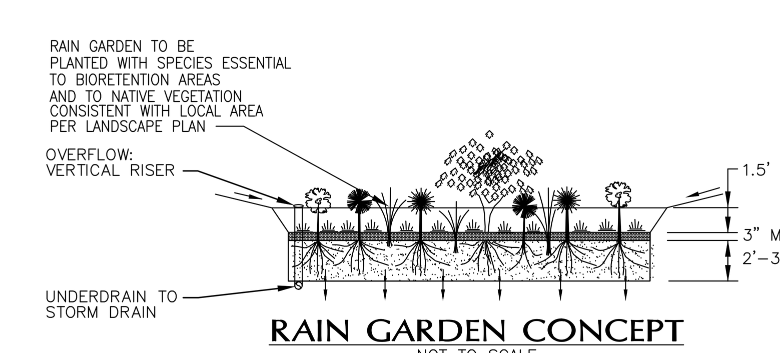


LEGEND

- EXISTING CONTOUR LINE
- PROPOSED CONTOUR LINE
- DAYLIGHT LINE
- DIRECTION OF FLOW
- PROPOSED SLOPE AS INDICATED
- STREET CENTERLINE
- TRACT BOUNDARY
- EXIST. STORM DRAIN
- PROP. STORM DRAIN
- PAVED DRAIN AND DOWNDRAIN
- H.P. – HIGH POINT
- L.P. – LOW POINT
- F.L. – FLOW LINE
- N.G. – NATURAL GRADE
- 3% – GRADE SLOPE
- 211.0 – PROPOSED ELEVATION
- C/L – CENTERLINE
- DL – DAYLIGHT
- DRAINAGE AREA BOUNDARY
- PROPOSED LID SUB-DRAINAGE BOUNDARY
- ΣQ – SUM OF Q (c.f.s.)
- ΣA – SUM OF AREA (AC)
- 1A – SUB-AREA ACREAGE
- Qb – BURNED Q (c.f.s.)
- Qbb – BURNED AND BULKED Q (c.f.s.)
- Qd – 50 YR. DEVELOPED Q (c.f.s.)
- Qbk – 50 YR. BULKED Q (c.f.s.)
- Qm – L.I.D. MITIGATED PEAK Q (c.f.s.)
- Vm – L.I.D. MITIGATED VOLUME (c.f.s.)
- DP – DEBRIS POTENTIAL (C.Y.)
- SA – SQUARE FOOT AREA (L.I.D.)
- RG1 – RAIN GARDEN DESIGNATION (L.I.D.)
- RAIN GARDEN (L.I.D.)
- FILTERRA BIORETENTION SYSTEM (L.I.D.)

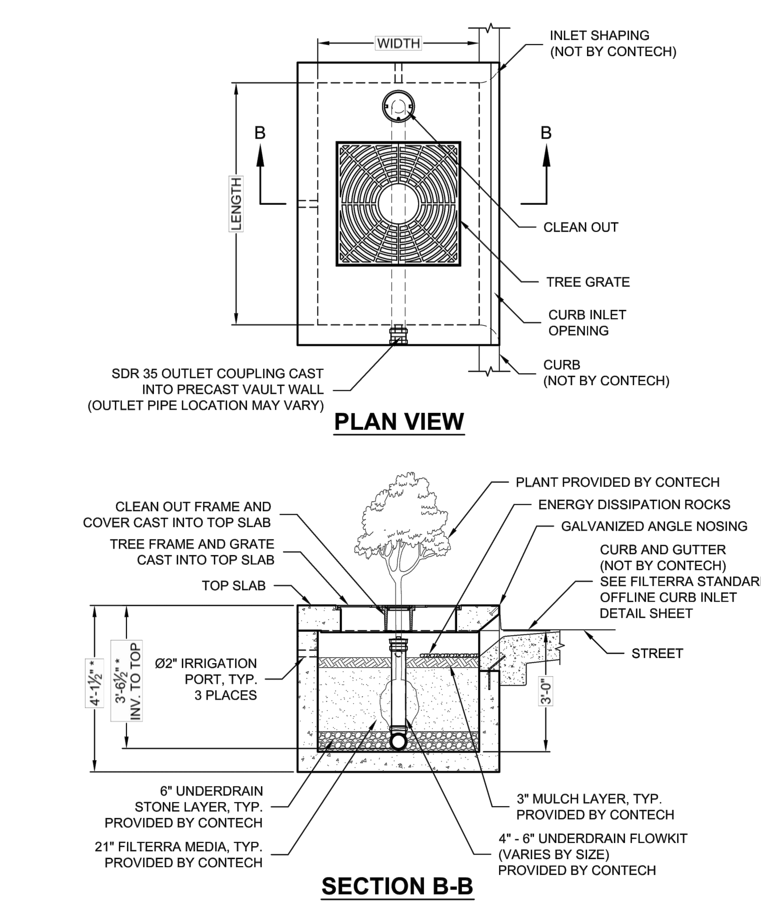
HYDROLOGY INFORMATION

TIME OF CONCENTRATION (Tc)	PER CALCULATION
SOIL TYPE	007, 088
IMPERVIOUSNESS (IMP)	0.01 (UNDEVELOPED AREA) 0.42 (DEVELOPED AREA, SINGLE FAMILY RESIDENTIAL) OR PER CALCULATION
ISOHYET (in)	7.4 (50-YR.)
FREQUENCY	50-YR.
DEBRIS POTENTIAL AREA	DPA-2
BULKING RATE	1.81 (DPA-2)
Qb-BURNED Q	PER CALCULATION
Qbb-BURNED AND BULKED Q	Qbb= 1.81Qb (DPA-2)
DEBRIS POTENTIAL RATE	$227 \frac{cy}{Ac}$ (DPA-2)



RAIN GARDEN CONCEPT
NOT TO SCALE

NOTE: FINAL L.I.D. BMP TO CONFORM TO LOS ANGELES COUNTY "LOW IMPACT DEVELOPMENT STANDARDS MANUAL" (2014)



SECTION VIEW
FILTERRA BIOFILTRATION SYSTEM

PEAK MITIGATION, Qm & LID VOLUME CALCULATION TABLE

Subarea	Area (acres)	%imp	Frequency	Soil Type	Length (ft)	Slope (ft/ft)	85th Percentile Storm Isohyet (in.)	Tc-calculated (min.)	Intensity (in./hr)	Cu	Cd	Qm (cfs)	LID Design Volume, SQDV (cu-ft)	Qm, Combined (cfs)	LID Area, Required (sq-ft)	LID Area, Provided (sq-ft)	Qm, Combined Required= 1.5Qm (cfs)	Qm, Combined Provided Qm (cfs)	L.I.D Volume Treatment BMP
2B	0.29	0.34	LID	88	94	0.24	1.0	8	0.48	0.1	0.37	0.05	388	-	-	-	-	-	388 cu-ft (14 cu-yd) in detention basin
6B1	0.22	0.42	LID	88	88	0.01	1.0	13	0.38	0.1	0.44	0.04	345	-	230	256	-	-	Rain Garden (RG1)
6B2	0.2	0.42	LID	88	83	0.01	1.0	12	0.40	0.1	0.44	0.03	314	-	209	225	-	-	Rain Garden (RG2)
6B3	0.18	0.42	LID	88	82	0.01	1.0	12	0.40	0.1	0.44	0.03	283	-	189	225	-	-	Rain Garden (RG3)
6B4	0.21	0.42	LID	88	83	0.010	1.0	12	0.40	0.1	0.44	0.04	330	-	220	225	-	-	Rain Garden (RG4)
7B1	0.26	0.90	LID	88	356	0.056	1.0	15	0.36	0.1	0.82	0.08	768	0.1700	-	-	0.2550	0.2778	Filterra System - (2) 10'x6'
7B2	0.68	0.30	LID	88	185	0.19	1.0	14	0.38	0.1	0.34	0.09	832		-	-			
8B1	0.17	0.95	LID	88	332	0.06	1.0	13	0.38	0.1	0.86	0.06	526	0.0800	-	-	0.1200	0.1389	Filterra System - 10'x6'
8B2	0.24	0.17	LID	88	139	0.25	1.0	15	0.36	0.1	0.24	0.02	204		-	-			
9B1	0.32	0.42	LID	88	109	0.01	1.0	15	0.36	0.1	0.44	0.05	502	-	335	361	-	-	Rain Garden (RG5)
9B2	0.30	0.42	LID	88	139	0.01	1.0	17	0.34	0.1	0.44	0.04	471	-	314	324	-	-	Rain Garden (RG6)
4B	0.81	0.42	LID	88	198	0.01	1.0	12	0.40	0.1	0.44	0.14	1271		847	889	-	-	Rain Garden (RG7)
Post-Development Σ Mitigated Flows & Volumes:												0.67	6,234						

NOTE:
1. MITIGATION STORM WATER RUNOFF & LID VOLUME CALCULATION BY USING 85th PERCENTILE STORM.
2. MITIGATION STORM WATER RUNOFF & LID VOLUME CALCULATION BY USING L.A. COUNTY'S HYDROCALC COMPUTER SOFTWARE.
3. CATCH BASINS INSERTS ARE USED FOR SUSMP DEVICES & STREET CATCH BASIN INLETS WILL BE MARKED WITH THE 'NO DUMPING - DRAINS TO OCEAN' LOGO.

LID - POST DEVELOPMENT (ON-SITE)

GRAPHIC SCALE (IN FEET)
1 inch = 40 ft.

DRAWN BY	R.N.M.
DESIGNED BY	R.N.M.
CHECKED BY	C.A.G.

DATE CHANGED	CHANGED BY	REVISION

REGISTERED PROFESSIONAL ENGINEER CHARLES A. GILMAN No. 54155 Exp. 12-31-19 CIVIL STATE OF CALIFORNIA

HYDROLOGY MAP

MAJOR LAND DIVISION
VESTING TENTATIVE TRACT MAP NO.
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LOCATED IN THE UNINCORPORATED TERRITORY OF COUNTY OF LOS ANGELES, STATE OF CALIFORNIA.

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04-24-2019
Date

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Proj. No. 17008-001

Sht 4 of 4

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APPENDIX F: NOISE REPORT

500 EAST BASELINE ROAD RESIDENTIAL PROJECT NOISE IMPACT ANALYSIS

City of La Verne

April 23, 2020

ganddini

Traffic Engineering ● Transportation Planning ● Parking ● Noise & Vibration
Air Quality ● Global Climate Change ● Health Risk Assessment

500 EAST BASELINE ROAD RESIDENTIAL PROJECT NOISE IMPACT ANALYSIS

City of La Verne

April 23, 2020

prepared by
Roma Stromberg INCE, MS
Catherine Howe, MS

GANDDINI GROUP INC
550 Parkcenter Drive, Suite 202
Santa Ana, CA 92705
(714) 795-3100 | www.ganddini.com

19232

TABLE OF CONTENTS

LIST OF TABLES

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EXECUTIVE SUMMARY

The purpose of this report is to provide an assessment of the noise impacts associated with development and operation of the proposed 500 East Baseline Road Residential project and to identify mitigation measures that may be necessary to reduce those impacts. The noise issues related to the proposed land use and development have been evaluated in light of applicable federal, state and local policies, including those of the City of La Verne.

Although this is a technical report, effort has been made to write the report clearly and concisely. A list of acronyms and glossary are provided in Appendix A and Appendix B of this report to assist the reader with terms related to noise analysis.

PROJECT LOCATION

The proposed project is located at 500 East Baseline Road, near the northeast corner of Rodeo Lane and Baseline Road, in an unincorporated portion of Los Angeles County. The project proposes to annex the site into the City of La Verne. A vicinity map showing the project location is provided on Figure 1.

PROJECT DESCRIPTION

The proposed project involves the development of the site with seven dwelling units of detached single-family residential housing. Figure 2 illustrates the proposed site plan.

PROJECT IMPACTS

Construction Impacts

Modeled unmitigated construction noise levels when combined with existing measured noise levels could reach 70.4 dBA L_{eq} at the nearest single-family residential property line adjacent to the west.

In accordance with Section 12.08.440 of the Los Angeles County Code as adopted by reference in the City of La Verne, the City prohibits construction between the weekday hours of 7:00 PM and 7:00 AM, or at any time on Sundays or holidays. In addition, the City has both working hours and maximum noise levels that are allowable from both mobile and stationary equipment defined by land use. Per Section 12.08.440 of the Los Angeles County Code, the City's maximum construction noise level at single-family residential structures, due to mobile equipment, is 75 dBA between the hours of 7:00 AM and 8:00 PM.

Therefore, project construction would not be anticipated to exceed the City construction noise standards for single-family residential uses. In addition, construction is anticipated to occur during the allowed times as stated in Section 12.08.440 of the Los Angeles County Code as adopted by reference in the City of La Verne. Impacts related to construction noise will be further minimized with adherence to applicable City Municipal Ordinances and implementation of the measures presented in Section 7 of this report. Impacts would be less than significant.

Noise Impacts to Off-Site Receptors Due to Project Generated Trips

Existing and Existing Plus Project noise levels along East Baseline Road and other roadway segments affected by project generated vehicle trips were modeled utilizing the FHWA Traffic Noise Prediction Model FHWA-RD-77-108 in order to quantify the proposed project's contribution to increases in ambient noise levels. P

Per the City's General Plan, and for purposes of this analysis, increases in noise levels associated with project generated vehicle traffic will be considered substantial if they cause an increase of five or more dB.

Per the noise modeling, all of the modeled roadway segments are anticipated to change the noise a nominal amount (approximately 0.03 dBA CNEL). Therefore, a change in noise level would not be audible and would be considered less than significant.

Transportation Noise Impacts to the Proposed Project

Per the City of La Verne General Plan, noise levels of up to 60 dBA CNEL are considered “normally acceptable” and noise levels of up to 70 dBA CNEL are considered “conditionally acceptable” for single-family residential uses. Further, new construction or development should be undertaken in areas where future noise levels are expected to range between 60 and 70 dBA CNEL, only after a detailed analysis of the noise reduction requirements are made and needed noise insulation features in the design are determined. Conventional construction, with closed windows and fresh air supply systems or air conditioning, will normally suffice.

Both the City of La Verne General Plan and the Existing Conditions Report for the City of La Verne General Plan Update (June 2018) identify Baseline Road as a Major Arterial roadway. Future traffic noise levels associated with Baseline Road were modeled using the SoundPLAN noise model.

Future buildout traffic noise levels could reach up to approximately 65 dBA CNEL at proposed single-family residential yards and up to 63.9 dBA CNEL at proposed single-family residential dwelling units. New residential construction typically provides at least 20 dB of exterior to interior noise reduction. Therefore, as long as fresh air supplies or air conditioning is provided, allowing a closed-window condition, no additional mitigation is required to achieve interior noise levels that do not exceed 45 dBA CNEL due to future traffic noise levels. Impacts related to future traffic noise impacts to the project would be less than significant with mitigation requiring fresh air systems or air conditioning.

Groundborne Vibration Impacts

Existing residential structures are located as close as approximately 25 feet from the western project boundary. Caution should be utilized if vibratory equipment is utilized within one foot of the western project boundary, adjacent to existing residential structures. With incorporation of mitigation, temporary vibration levels associated with project construction would be less than significant.

CONSTRUCTION NOISE REDUCTION MEASURES

In addition to adherence to the City of La Verne Municipal Code, which limits the construction hours of operation, the following measures are recommended to reduce construction noise and vibrations, emanating from the proposed project:

1. During all project site excavation and grading on-site, construction contractors shall equip all construction equipment, fixed or mobile, with properly operating and maintained mufflers, consistent with manufacturer standards.

2. The contractor shall place all stationary construction equipment so that emitted noise is directed away from the noise sensitive receptors nearest the project site.

3. Equipment shall be shut off and not left to idle when not in use.

4. The contractor shall locate equipment staging in areas that will create the greatest distance between construction-related noise/vibration sources and sensitive receptors nearest the project site during all project construction.

5. Jackhammers, pneumatic equipment and all other portable stationary noise sources shall be shielded and noise shall be directed away from sensitive receptors.

6. Caution should be utilized if a vibratory roller or other similar vibratory equipment is utilized within one foot of the western property line of the proposed project, adjacent to existing residential structures.

BUILDING MITIGATION MEASURES

1. Fresh air supplies and/or air conditioning shall be provided in all proposed residential dwelling units.

1. INTRODUCTION

This section describes the purpose of this noise impact analysis, project location, proposed development, and study area. Figure 1 shows the project location map and Figure 2 illustrates the project site plan.

PURPOSE AND OBJECTIVES

The purpose of this report is to provide an assessment of the noise impacts resulting from development of the proposed 500 East Baseline Road Residential project and to identify mitigation measures that may be necessary to reduce those impacts. The noise issues related to the proposed land use and development have been evaluated in light of applicable federal, state and local policies, including those of the City of La Verne.

Although this is a technical report, effort has been made to write the report clearly and concisely. A list of acronyms and glossary are provided in Appendix A and Appendix B of this report to assist the reader with terms related to noise analysis.

PROJECT DESCRIPTION

The proposed project involves the development of the site with seven dwelling units of detached single-family residential housing. Figure 2 illustrates the proposed site plan.

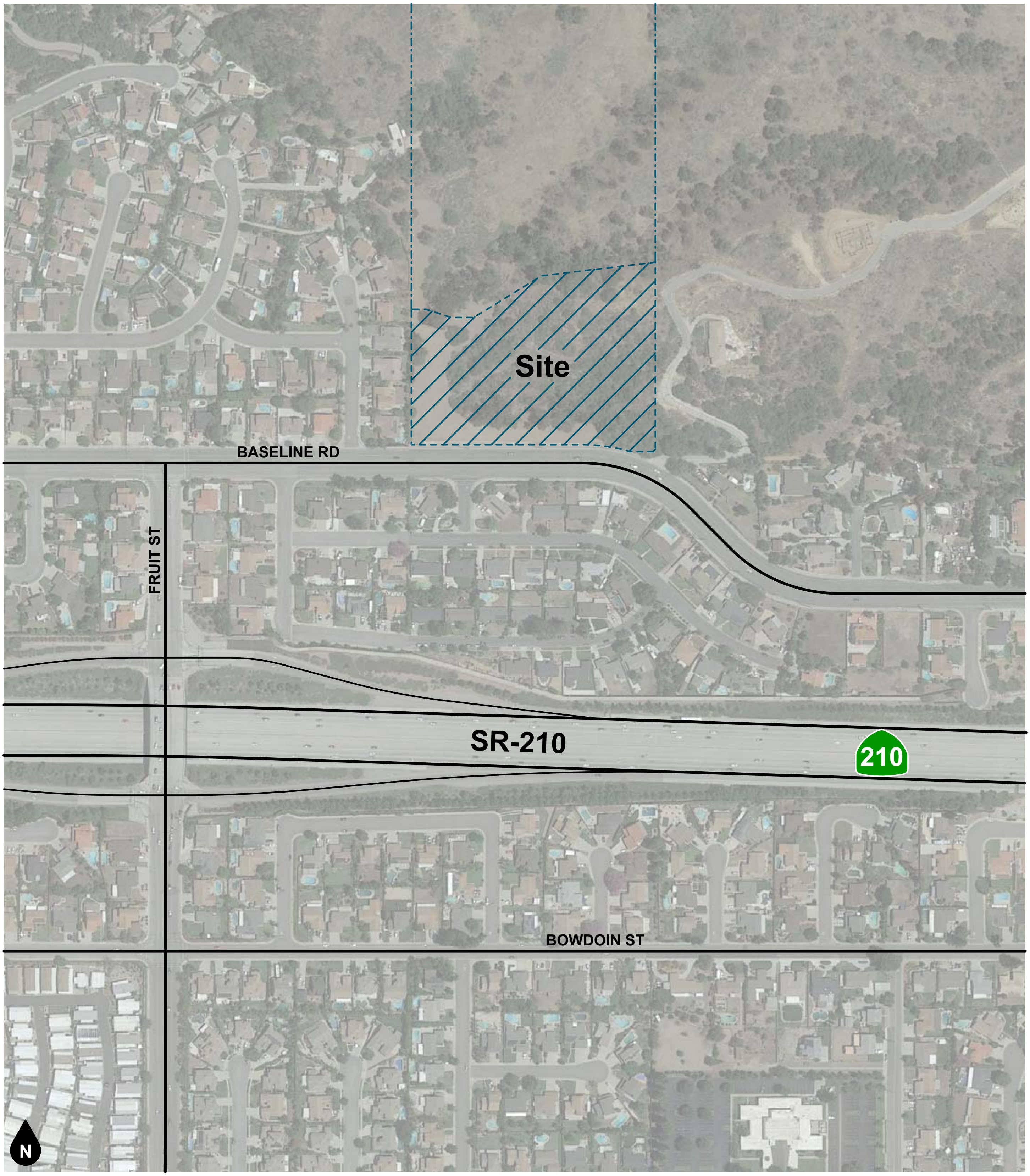


Figure 1
Project Location Map

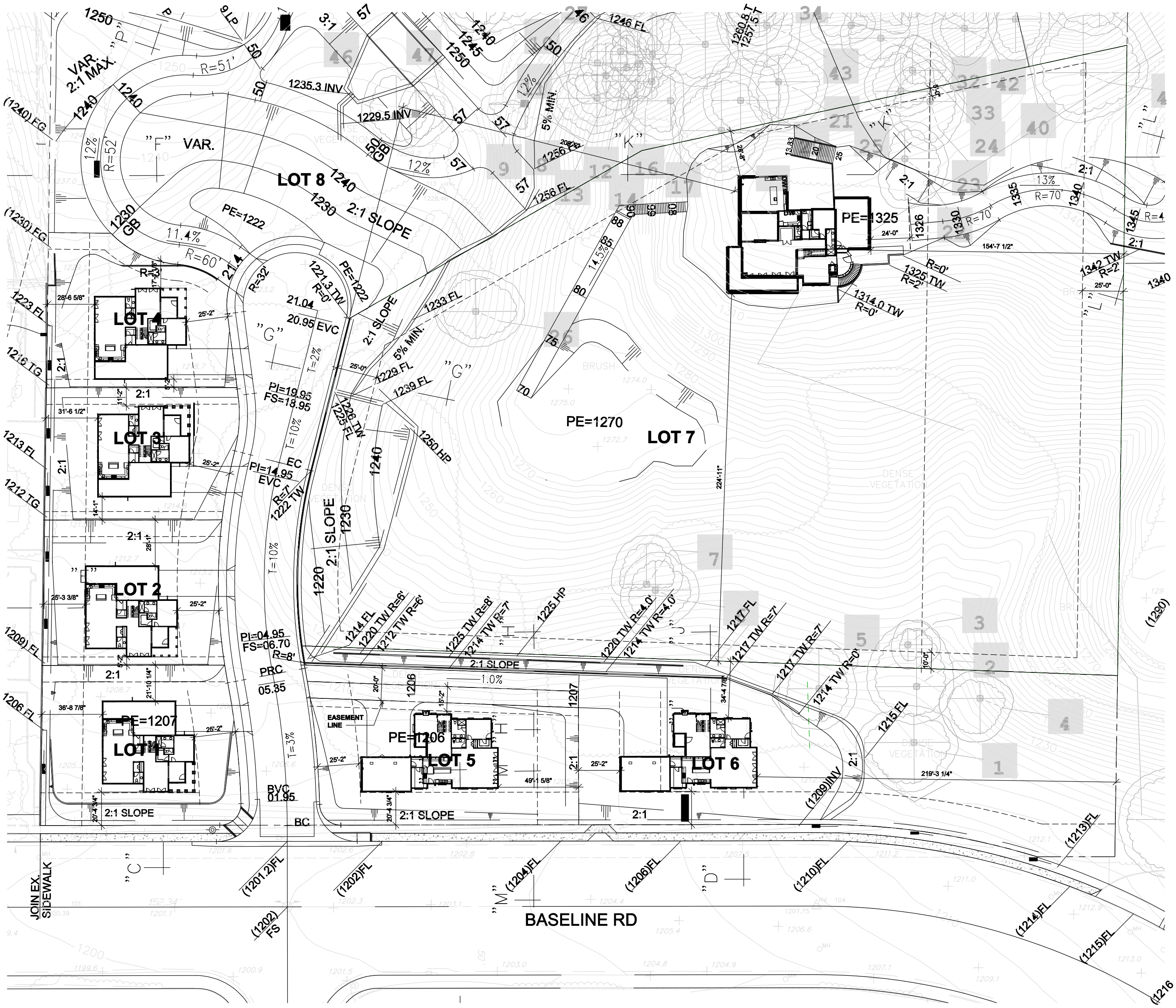


Figure 2
Site Plan

2. NOISE AND VIBRATION FUNDAMENTALS

NOISE FUNDAMENTALS

Sound is a pressure wave created by a moving or vibrating source that travels through an elastic medium such as air. Noise is defined as unwanted or objectionable sound. The effects of noise on people can include general annoyance, interference with speech communication, sleep disturbance, and in extreme circumstances, hearing impairment.

Commonly used noise terms are presented in Appendix B. The unit of measurement used to describe a noise level is the decibel (dB). The human ear is not equally sensitive to all frequencies within the sound spectrum. Therefore, the "A-weighted" noise scale, which weights the frequencies to which humans are sensitive, is used for measurements. Noise levels using A-weighted measurements are written dB(A) or dBA.

From the noise source to the receiver, noise changes both in level and frequency spectrum. The most obvious is the decrease in noise as the distance from the source increases. The manner in which noise reduces with distance depends on whether the source is a point or line source as well as ground absorption, atmospheric effects and refraction, and shielding by natural and manmade features. Sound from point sources, such as air conditioning condensers, radiates uniformly outward as it travels away from the source in a spherical pattern. The noise drop-off rate associated with this geometric spreading is 6 dBA per each doubling of the distance (dBA/DD). Transportation noise sources such as roadways are typically analyzed as line sources, since at any given moment the receiver may be impacted by noise from multiple vehicles at various locations along the roadway. Because of the geometry of a line source, the noise drop-off rate associated with the geometric spreading of a line source is 3 dBA/DD.

Decibels are measured on a logarithmic scale, which quantifies sound intensity in a manner similar to the Richter scale used for earthquake magnitudes. Thus, a doubling of the energy of a noise source, such as a doubled traffic volume, would increase the noise levels by 3 dBA; halving of the energy would result in a 3 dBA decrease. Figure 3 shows the relationship of various noise levels to commonly experienced noise events.

Average noise levels over a period of minutes or hours are usually expressed as dBA L_{eq}, or the equivalent noise level for that period of time. For example, $L_{eq(3)}$ would represent a 3-hour average. When no period is specified, a one-hour average is assumed.

Noise standards for land use compatibility are stated in terms of the Community Noise Equivalent Level (CNEL) and the Day-Night Average Noise Level (DNL). CNEL is a 24-hour weighted average measure of community noise. CNEL is obtained by adding five decibels to sound levels in the evening (7:00 PM to 10:00 PM), and by adding ten decibels to sound levels at night (10:00 PM to 7:00 AM). This weighting accounts for the increased human sensitivity to noise during the evening and nighttime hours. DNL is a very similar 24-hour average measure that weights only the nighttime hours.

It is widely accepted that the average healthy ear can barely perceive changes of 3 dBA; that a change of 5 dBA is readily perceptible, and that an increase (decrease) of 10 dBA sounds twice (half) as loud. This definition is recommended by the California Department of Transportation's Technical Noise Supplement to the Traffic Noise Analysis Protocol (2013).

VIBRATION FUNDAMENTALS

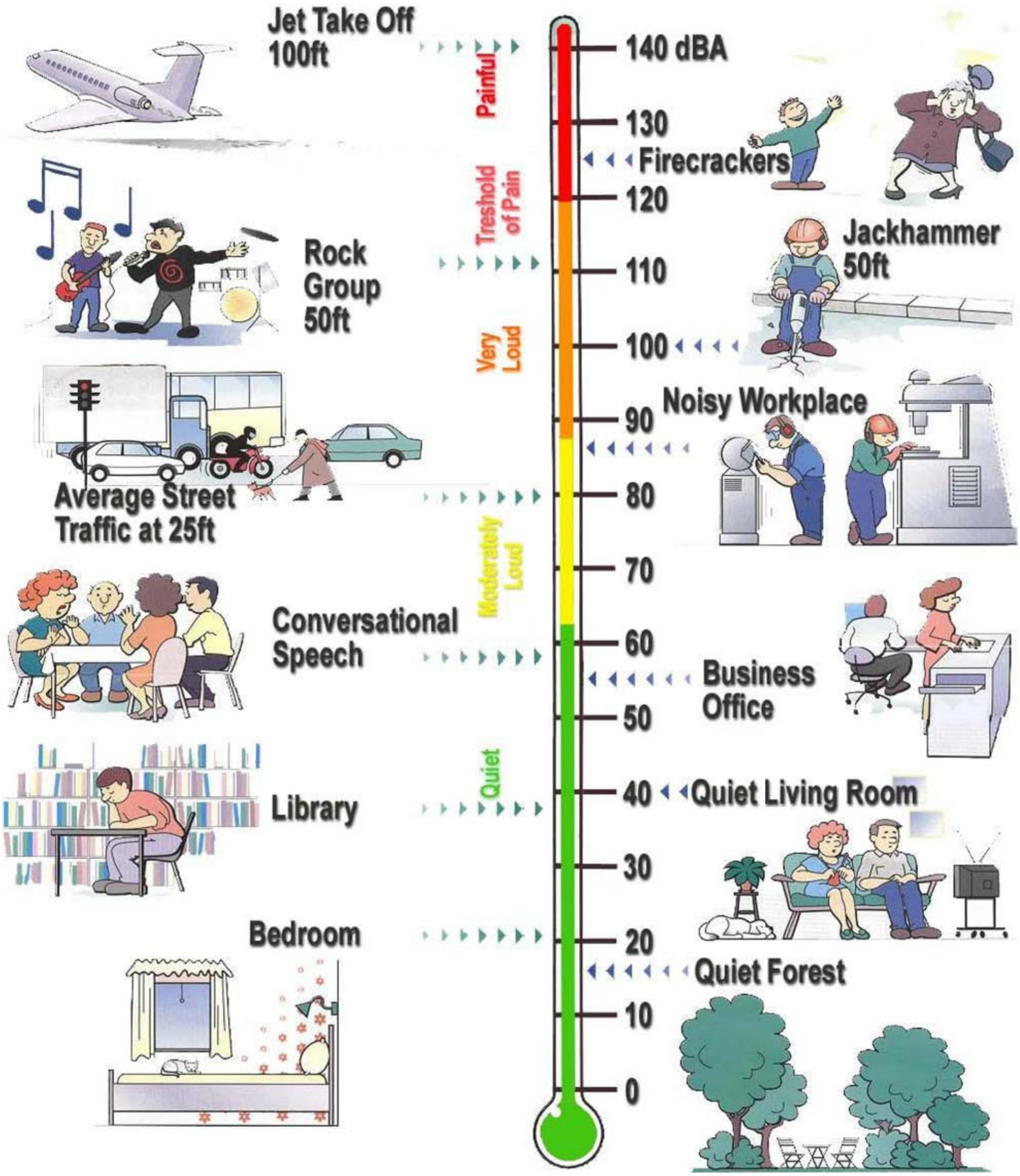
The way in which vibration is transmitted through the earth is called propagation. Propagation of earthborn vibrations is complicated and difficult to predict because of the endless variations in the soil through which waves travel. There are three main types of vibration propagation: surface, compression and shear waves. Surface waves, or Raleigh waves, travel along the ground's surface. These waves carry most of their energy along an expanding circular wave front, similar to ripples produced by throwing a rock into a pool of water.

Compression waves, or P-waves, are body waves that carry their energy along an expanding spherical wave front. The particle motion in these waves is longitudinal (i.e., in a "push-pull" fashion). P-waves are analogous to airborne sound waves. Shear waves, or S-waves, are also body waves that carry energy along an expanding spherical wave front. However, unlike P-waves, the particle motion is transverse or "side-to-side and perpendicular to the direction of propagation".

As vibration waves propagate from a source, the energy is spread over an ever-increasing area such that the energy level striking a given point is reduced with the distance from the energy source. This geometric spreading loss is inversely proportional to the square of the distance. Wave energy is also reduced with distance as a result of material damping in the form of internal friction, soil layering, and void spaces. The amount of attenuation provided by material damping varies with soil type and condition as well as the frequency of the wave.

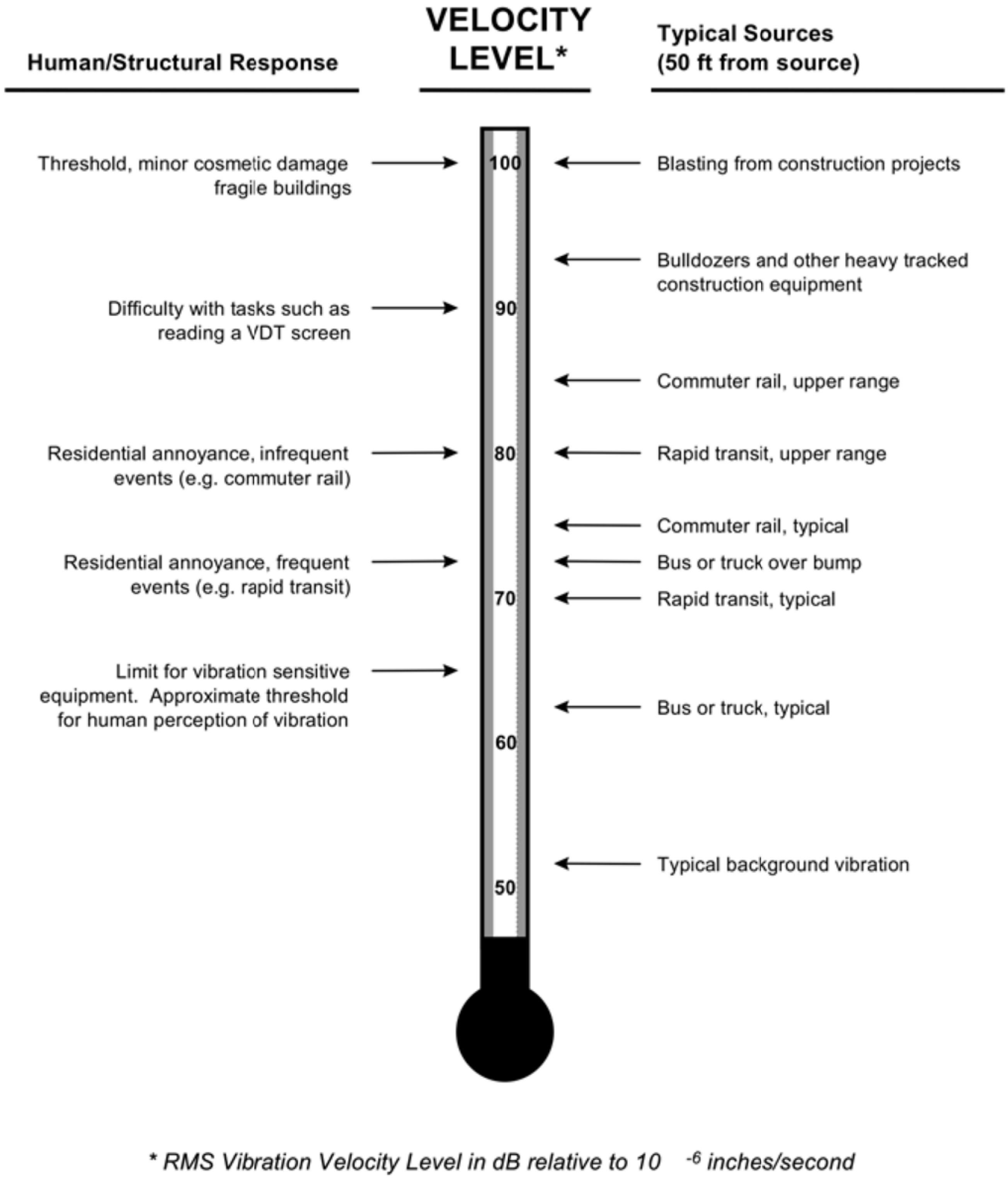
Vibration amplitudes are usually expressed as either peak particle velocity (PPV) or the root mean square (RMS) velocity. The PPV is defined as the maximum instantaneous peak of the vibration signal in inches per second. The RMS of a signal is the average of the squared amplitude of the signal in vibration decibels (VdB), ref one micro-inch per second. The Federal Railroad Administration uses the abbreviation "VdB" for vibration decibels to reduce the potential for confusion with sound decibel.

PPV is appropriate for evaluating the potential of building damage and VdB is commonly used to evaluate human response. Decibel notation acts to compress the range of numbers required in measuring vibration. Similar to the noise descriptors, L_{eq} and L_{max} can be used to describe the average vibration and the maximum vibration level observed during a single vibration measurement interval. Figure 4 illustrates common vibration sources and the human and structural responses to ground-borne vibration. As shown in the figure, the threshold of perception for human response is approximately 65 VdB; however, human response to vibration is not usually substantial unless the vibration exceeds 70 VdB. Vibration tolerance limits for sensitive instruments such as magnetic resonance imaging (MRI) or electron microscopes could be much lower than the human vibration perception threshold.



Source: Bruel & Kjaer 2001

Figure 3
Weighted Sound Levels and Human Response



Source: FRA, 2012. Federal Railroad Administration High-Speed Ground Transportation Noise and Vibration Impact Assessment. Office of Railroad Policy Development, Washington, D.C. DOT/FRA/ORD-12/15. September.

Figure 4
Typical Levels of Groundborne Vibration

3. EXISTING NOISE ENVIRONMENT

EXISTING LAND USES AND SENSITIVE RECEPTORS

The project site is bordered by single-family residential uses and vacant land to the west, Baseline Road to the south, Broken Spur Road single-family residential uses, and vacant land to the east, and vacant land to the north.

The State of California defines sensitive receptors as those land uses that require serenity or are otherwise adversely affected by noise events or conditions. Schools, libraries, churches, hospitals, single and multiple-family residential, including transient lodging, motels and hotel uses make up the majority of these areas. Sensitive land uses that may be affected by project noise include the existing single-family detached residential dwelling units located adjacent to the west, approximately 30 feet southeast (across Broken Spur Road), approximately 90 feet east (across Broken Spur Road), approximately 100 feet south (across Baseline Road), and approximately 450 feet northeast of the project site.

AMBIENT NOISE MEASUREMENTS

An American National Standards Institute (ANSI Section SI4 1979, Type 1) Larson Davis model LxT sound level meter was used to document existing ambient noise levels. In order to document existing ambient noise levels in the project area, four (4) 15-minute daytime noise measurements were taken between 12:15 PM and 3:02 PM on February 24, 2020. Field worksheets and noise measurement output data are included in Appendix C.

As shown on Figure 5, the noise measurements were taken to the south of the project site near the residential uses located along Smoketree Drive (NM1), to the east of the project site near the residential use located along Broken Spur Road (NM2), to the northeast of the project site near the residential uses located along Saddle Horn Lane (NM3), and to the west of the project site near the residential uses located along Rodeo Lane (NM4). the Interstate 210 freeway.

Table 1 provides a summary of the short-term ambient noise data. Short-term ambient noise levels were measured between 48 and 60.7 dBA L_{eq}. The dominant noise sources were from vehicles traveling along the Interstate 210 freeway.

Table 1
Short-Term Noise Measurement Summary (dBA)

Daytime Measurements[1,2]								
Site Location	Time Started	Leq	Lmax	Lmin	L(2)	L(8)	L(25)	L(50)
NM1	12:15 PM	56.6	70.5	52.2	60.2	58.7	56.9	55.7
NM2	1:31 PM	60.7	69.1	56.8	64.2	61.9	60.9	60.3
NM3	2:47 PM	48.0	62.0	41.4	58.3	50.5	46.3	44.5
NM4	12:52 PM	54.2	60.0	49.7	57.4	56.4	55.1	53.7

Notes:

(1) See Figure 5 for noise measurement locations. Each noise measurement was performed over a 15-minute duration.

(2) Noise measurements performed on February 24, 2020.

Legend
Noise Measurement Location
NM 1

Figure 5
Noise Measurement Location Map

4. REGULATORY SETTING

FEDERAL REGULATION

Federal Noise Control Act of 1972

The U.S. Environmental Protection Agency (EPA) Office of Noise Abatement and Control was originally established to coordinate federal noise control activities. After its inception, EPA's Office of Noise Abatement and Control issued the Federal Noise Control Act of 1972, establishing programs and guidelines to identify and address the effects of noise on public health, welfare, and the environment. In response, the EPA published Information on Levels of Environmental Noise Requisite to Protect Public Health and Welfare with an Adequate Margin of Safety (Levels of Environmental Noise). The Levels of Environmental Noise recommended that the Ldn should not exceed 55 dBA outdoors or 45 dBA indoors to prevent significant activity interference and annoyance in noise-sensitive areas.

In addition, the Levels of Environmental Noise identified five (5) dBA as an "adequate margin of safety" for a noise level increase relative to a baseline noise exposure level of 55 dBA Ldn (i.e., there would not be a noticeable increase in adverse community reaction with an increase of five dBA or less from this baseline level). The EPA did not promote these findings as universal standards or regulatory goals with mandatory applicability to all communities, but rather as advisory exposure levels below which there would be no risk to a community from any health or welfare effect of noise.

In 1981, EPA administrators determined that subjective issues such as noise would be better addressed at lower levels of government. Consequently, in 1982 responsibilities for regulating noise control policies were transferred to State and local governments. However, noise control guidelines and regulations contained in EPA rulings in prior years remain in place by designated Federal agencies, allowing more individualized control for specific issues by designated Federal, State, and local government agencies.

STATE REGULATIONS

State of California General Plan Guidelines 2017

Though not adopted by law, the State of California General Plan Guidelines 2017, published by the California Governor's Office of Planning and Research (OPR) (OPR Guidelines), provides guidance for the compatibility of projects within areas of specific noise exposure. The OPR Guidelines identify the suitability of various types of construction relative to a range of outdoor noise levels and provide each local community some flexibility in setting local noise standards that allow for the variability in community preferences. Findings presented in the Levels of Environmental Noise Document (EPA 1974) influenced the recommendations of the OPR Guidelines, most importantly in the choice of noise exposure metrics (i.e., Ldn or CNEL) and in the upper limits for the normally acceptable outdoor exposure of noise-sensitive uses.

The OPR Guidelines include a Noise and Land Use Compatibility Matrix which identifies acceptable and unacceptable community noise exposure limits for various land use categories. Where the "normally acceptable" range is used, it is defined as the highest noise level that should be considered for the construction of the buildings which do not incorporate any special acoustical treatment or noise mitigation. The "conditionally acceptable" or "normally unacceptable" ranges include conditions calling for detailed acoustical study prior to the construction or operation of the proposed project. The City of La Verne has adopted their own version of the State Land Use Compatibility Guidelines for land use planning and to assess potential transportation noise impacts to proposed land uses (see Table 2).

California Environmental Quality Act

The California Environmental Quality Act Guidelines (Appendix G) establishes thresholds for noise impact analysis. This noise study includes analysis of noise and vibration impacts necessary to assess the project in light of the following Appendix G Checklist Thresholds.

Would the project result in:

a) Generation of a substantial temporary or permanent increase in ambient noise levels in the vicinity of the project in excess of standards established in the local general plan or noise ordinance, or applicable standards of other agencies?

Substantial increases in ambient noise levels are usually associated with project construction noise (temporary) and project operational noise (permanent).

Project Construction Noise: Construction noise sources are regulated within the City of La Verne Municipal Code Section 8.20. Section 8.20.010 of the City's Municipal Code states that Ordinance No. 11,773 of the County of Los Angeles, known as the "noise control ordinance of the County of Los Angeles," is adopted by reference under the authority of Section 50022.9 of the California Government Code.

In Section 12.08.440 of the Los Angeles County Code, the City prohibits operating or causing the operation of any tools or equipment used in construction, drilling, repair, alteration, or demolition work between the weekday hours of 7:00 PM and 7:00 AM, or at any time on Sundays or holidays, such that the sound therefrom creates a noise disturbance across a residential or commercial real-property line (except for public-service utilities emergency work or by variance issued by the health officer). In addition, the City has both working hours and maximum noise levels that are allowable from both mobile and stationary equipment defined by land use, as shown in Table 3. Per Table 3, construction noise at single-family residential structures due to mobile equipment is not to exceed 75 dBA between the hours of 7:00 AM and 8:00 PM. In compliance with the City of La Verne Municipal Code, it is assumed that construction would not occur during the noise-sensitive nighttime hours.

Project Operational Noise (permanent): On-site operational noise is usually only evaluated for commercial and industrial projects. Quantitative analysis of on-site operational noise is typically not conducted for residential projects as they usually do not include stationary noise sources that could result in substantial increases in ambient noise levels resulting in violation of established standards. Therefore, the evaluation of project operational noise in this study is limited to the potential impacts associated with project generated vehicle traffic (off-site noise). Depending upon how many units are proposed and the existing noise environment, project generated vehicle trips could result in substantial increases in noise levels.

Per the City's General Plan and for purposes of this analysis, increases in noise levels associated with project generated vehicle traffic will be considered substantial if they cause an increase of five or more dB.

b) Generate excessive groundborne vibration or groundborne noise levels?

As shown in Table 4, a peak particle velocity (PPV) of 0.20 is the threshold at which there is a risk to "architectural" damage to normal dwellings. It is also the level at which groundborne vibration can become annoying.

California Department of Transportation (Caltrans)

The California Department of Transportation has published one of the seminal works for the analysis of ground-borne noise and vibration relating to transportation- and construction-induced vibrations and although the project is not subject to these regulations, it serves as useful tools to evaluate vibration impacts. These guidelines recommend that a standard of 0.2 inches per section (in/sec) PPV not be exceeded for the protection of normal residential buildings (California Department of Transportation, 2013). This is the appropriate threshold for construction related ground-borne vibration impacts.

LOCAL REGULATIONS

City of La Verne General Plan

The City of La Verne has adopted a modified version of the State of California Noise Land Use Compatibility Matrix (see Table 2). This Matrix establishes standards for outdoor noise levels that are normally acceptable, conditionally acceptable, normally not acceptable, and clearly not acceptable for a variety of land uses. For example, for single-family residential uses, noise levels of up to 60 dBA CNEL are "normally acceptable" and noise levels of up to 70 dBA CNEL are "conditionally acceptable". Additional City of La Verne General Plan goals, policies, and implementation measures which apply to the proposed project are presented below.

Goal 1 Protect our community from excessive noise.

Policy 1.1 Maintain or reduce noise levels citywide.

Implementation Measures:

a. Enforce the noise control ordinance to assure that all new development is consistent with the land use compatibility criteria, exterior and interior noise standards.
f. Consider the noise of a proposed project in both absolute and relative terms. A proposed project will be considered to have a significant adverse impact on the environment if the expected noise increase exceeds 5 dB, even though it may not exceed the standard in Table 2. Sound attenuation measures will be required as a condition of approval.
g. Require stringent mitigation measures to limit construction noise for all new projects. Establish a graduated system of fines for violations that increase in severity with each offense.

Goal 2 Protect our community from freeway noise.

Policy 2.1 Prevent freeway noire from spilling into our neighborhoods.

Policy 2.2 Insulate our neighborhoods against freeway noise.

Implementation Measures:

a. Encourage installation of double glazing, dense landscaping and other noise reduction measures by homeowners along the proposed freeway route. Require such measures in new construction. (Residential construction in areas with an average decibel level greater than 60 dB shall use sound attenuation measures that reduce interior noise levels to a maximum of 45 dB).
b. Require that such measures be taken for all residential construction in the freeway noise impact area, (within 60dB noise level contour parameters), both for entirely new structures and for renovations, remodels and building additions.

Goal 3 Protect our neighborhoods from increased traffic noise.

Policy 3.1 Prevent increase in traffic-related noise.

Implementation Measures:

b. Incorporate sound attenuation measures into building requirements for residential construction if noise increases are significant. These measures will be the same as those for freeway and railroad noise.

City of La Verne Municipal Code

Chapter 8.20 of the City's Municipal Code establishes the City's noise standards and regulations. Section 8.20.010 of the City's Municipal Code states that Ordinance No. 11,773 of the County of Los Angeles, known as the "noise control ordinance of the County of Los Angeles," is adopted by reference under the authority of Section 50022.9 of the California Government Code.

Construction Noise Standards. In accordance with Section 12.08.440 of the Los Angeles County Code as adopted by reference in the City of La Verne, the City prohibits operating or causing the operation of any tools or equipment used in construction, drilling, repair, alteration, or demolition work between the weekday hours of 7:00 PM and 7:00 AM, or at any time on Sundays or holidays, such that the sound therefrom creates a noise disturbance across a residential or commercial real-property line (except for public-service utilities emergency work or by variance issued by the health officer). In addition, the City has both working hours and maximum noise levels that are allowable from both mobile and stationary equipment defined by land use, as shown in Table 3.

Vibration. In accordance with Section 12.08.560 of the Los Angeles County Code as adopted by reference in the City of La Verne, the City prohibits the operation or permitting the operation of any device that creates a vibration level above the vibration perception threshold of any individual at or beyond the property boundary of the source if on private property, or at 150 feet from the source if on a public space or public right-of-way. The perception threshold shall be a motion velocity of 0.01 in/sec over the range of 1 to 100 Hertz. This threshold only applies to groundborne vibrations from long-term operational activities. The City has not adopted any thresholds for construction-related groundborne vibration impacts.

Table 2
City of La Verne Noise/Land Use Compatibility Matrix

Land Use	CNEL, (Decibels)						
	55	60	65	70	75	80	
Single/Multi Family Residential	A	A	B	B	C	D	D
Mobile Home Park	A	A	B	C	C	D	D
Motel, Hotel	A	A	B	B	C	C	D
School, Library, Church, Hospital, Nursing Home	A	A	B	C	C	D	D
Concert/Meeting Hall, Auditorium, Amphitheater	B	B	C	C	D	D	D
Indoor/Outdoor Sports Arena, Amusement Park	A	A	A	B	B	D	D
Playground, Neighborhood Park	A	A	A	B	C	D	D
Golf Course, Riding Stable, Cemetery	A	A	A	A	B	C	C
Office/Professional Building	A	A	A	B	B	C	D
Commercial Retail, Bank, Restaurant, Theater	A	A	A	A	B	B	C
Industrial, Utilities, Manufacturing, Wholesale, Service Station	A	A	A	A	B	B	B
Agriculture	A	A	A	A	A	A	A

Acceptability

A: Normal: Specified land use is satisfactory, based up the assumption that any buildings involved are of normal conventional construction without any special noise insulation requirements.

B: Conditional: New construction or development should be undertaken only after a detailed analysis of the noise reduction requirements are made and needed noise insulation features in the design are determined. Conventional constuction, with closed windows and fresh air supply systems or air conditioning, will normally suffice.

C: Normally Not: New construction or development should generally be discouraged. If new construction or development does proceed, a detailed analysis of noise reduction requirements must be made and needed noise reduction features included in the design.

D: Clearly Not: New construction or development should generally not be undertaken.

Notes:

Source: City of La Verne General Plan Table N-1, 1998.

Table 3
Construction Noise Standards

Allowable Work Dates and Times	At Residential Structures					
	Single-Family		Multi-Family		Semi-Residential/Commercial	
	Mobile Equipment[1]	Stationary Equipment[2]	Mobile Equipment[1]	Stationary Equipment[2]	Mobile Equipment[1]	Stationary Equipment[2]
Daily,[3] 7:00 AM to 8:00 PM	75 dBA	60 dBA	80 dBA	65 dBA	85 dBA	70 dBA
Daily,[4] 8:00 PM to 7:00 AM	60 dBA	50 dBA	64 dBA	55 dBA	70 dBA	60 dBA
Allowable Work Dates and Times	At Business Structures					
Daily, Anytime	85 dBA					

Notes:

Source: County of Los Angeles, Noise Control Ordinance Section 12.08.440.

(1) Represents maximum noise levels for nonscheduled, intermittent, short-term operation (less than 10 days).

(2) Represents maximum noise levels for repetitively scheduled and relatively long-term operation (periods of 10 or more days).

(3) Daily except for Sundays and legal holidays.

(4) Daily and all day on Sundays and legal holidays.

dBA = A-weighted decibels

Table 4
Typical Human Reaction and Effect on Buildings Due to Groundborne Vibration

Vibration Level Peak Particle Velocity (PPV)	Human Reaction	Effect on Buildings
0.006–0.019 in/sec	Threshold of perception, possibility of intrusion	Vibrations unlikely to cause damage of any type
0.08 in/sec	Vibrations readily perceptible	Recommended upper level of vibration to which ruins and ancient monuments should be subjected
0.10 in/sec	Level at which continuous vibration begins to annoy people	Virtually no risk of "architectural" (i.e., not structural) damage to normal buildings
0.20 in/sec	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 in/sec	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

Notes:
(1) Source: California Department of Transportation. Transportation and Construction Vibration Guidance Manual, Chapter 6 Tables 5 and 12, September 2013.

5. ANALYTICAL METHODOLOGY AND MODEL PARAMETERS

This section discusses the analysis methodologies used to assess noise impacts.

CONSTRUCTION NOISE MODELING

Construction noise associated with the proposed project was calculated at the sensitive receptor locations, utilizing methodology presented in the Federal Transit Administration (FTA) Transit Noise and Vibration Impact Assessment Manual (2018) together with several key construction parameters including: distance to each sensitive receiver, equipment usage, percent usage factor, and baseline parameters for the project site. Distances to receptors were based on the acoustical center of the project site. Construction noise levels were calculated for each phase based on assumptions provided in the Air Quality Study prepared for the project (Ganddini 2020). For construction noise purposes, the distance measured from the project site to sensitive receptors was assumed to be the acoustical center of the project site to the property line of residential properties with existing residential buildings. Construction noise worksheets are provided in Appendix D.

FEDERAL HIGHWAY ADMINISTRATION (FHWA) TRAFFIC NOISE PREDICTION MODEL

Existing and Existing Plus project traffic noise levels were modeled for roadways affected by project generated traffic utilizing the FHWA Traffic Noise Prediction Model FHWA-RD-77-108 in order to quantify the proposed project's contribution to increases in ambient noise levels. Future traffic noise levels were modeled to assess potential traffic related impacts to the proposed project.

The FHWA Traffic Noise Prediction Model arrives at a predicted noise level through a series of adjustments to the Reference Energy Mean Emission Level (REMEL). Adjustments are then made to the REMEL to account for: total average daily traffic volumes, roadway classification, width, speed and truck mix, roadway grade and site conditions (hard or soft ground surface). Surfaces adjacent to all modeled roadways were assumed to have a "hard site" to predict worst-case, conservative noise levels. A hard site, such as pavement, is highly reflective and does not attenuate noise as quickly as grass or other soft sites. Possible reductions in noise levels due to intervening topography and buildings were not accounted for in this analysis.

Roadway parameters utilized in the noise model include location, traffic volume, speed and vehicle mix (autos, medium trucks, and heavy trucks). It is important to evaluate potential impacts of the noisiest possible future conditions. Existing daily traffic volumes obtained from counts performed by AimTD on February 19, 2020 and project average daily trips obtained from the project's trip generation analysis (Ganddini Group 2020). Existing Plus Project vehicle mixes were calculated by adding the proposed project trips to existing conditions. FHWA spreadsheets and existing traffic counts are included in Appendix E.

SOUNDPLAN NOISE MODEL

The SoundPLAN noise model was utilized to model future traffic noise impacts to the proposed project. Roadway parameters utilized in the noise model include location, traffic volume, speed and vehicle mix (autos, medium trucks, and heavy trucks). It is important to evaluate potential impacts of the noisiest possible future conditions. These conditions occur when the maximum amount of vehicles pass at the greatest speed. This scenario usually corresponds to Level of Service C (LOS C) Conditions, or about 75% of buildout capacity. Both the City of La Verne General Plan and the Existing Conditions Report for the City of La Verne General Plan Update (June 2018) identify Baseline Road as a Major Arterial roadway. Per the Existing Conditions Report for the City of La Verne General Plan Update, at LOS C, a four-lane divided arterial has a capacity of 30,000 average daily vehicles. Neither the City of La Verne nor the County of Los Angeles have vehicle mix data published for use in noise studies, so vehicle/truck mixes and D/E/N splits for use in acoustical studies published by the Riverside County Department of Industrial Hygiene were utilized for noise modeling. SoundPLAN input and results are provided in Appendix F.

6. IMPACT ANALYSIS

This impact discussion analyzes the potential for noise and/or groundborne vibration impacts to cause the exposure of a person to, or generation of, noise levels in excess of established City of La Verne standards related to: construction, operation, and transportation noise related impacts to, or from, the proposed project.

IMPACTS RELATED TO CONSTRUCTION NOISE

The existing single-family detached residential dwelling units located to the west, northwest, southeast, east, south, and northeast of the portion of the project site that is to be developed may be affected by short-term noise impacts associated with construction noise. Construction noise will vary depending on the construction process, type of equipment involved, location of the construction site with respect to sensitive receptors, the schedule proposed to carry out each task (e.g., hours and days of the week) and the duration of the construction work.

The construction phases for the proposed project are anticipated to include: site preparation, grading, building construction, paving and architectural coating. A summary of noise level data for a variety of construction equipment compiled by the Federal Transit Administration (FTA) is presented in Table 5. Typical operating cycles for these types of construction equipment may involve one or two minutes of full power operation followed by three to four minutes at lower power settings.

As discussed previously, construction noise associated with the proposed project was calculated utilizing methodology presented in the FTA Transit Noise and Vibration Impact Assessment Manual (2018) together with several key construction parameters including: distance to each sensitive receiver, equipment usage, percent usage factor, and baseline parameters for the project site. Distances to receptors were based on the acoustical center of the project site. Construction noise levels were calculated for each phase. Worksheets are included as Appendix D.

Construction noise levels are compared to existing noise levels in Table 1 of this report. NM1 was chosen to represent the residential property lines of properties to the south, NM2 was chosen to represent noise levels at the residential property lines of properties to the east and southeast, NM3 was chosen to represent noise levels at the residential property lines of properties to the northeast, and NM4 was chosen to represent noise levels at the residential property lines of properties to the west and northwest of the portion of the project site that is to be developed. As shown in Table 6, modeled unmitigated construction noise levels when combined with existing measured noise levels could reach 70.4 dBA L_{eq} at the nearest residential property line adjacent to the west of the project site.

In accordance with Section 12.08.440 of the Los Angeles County Code as adopted by reference in the City of La Verne, the City prohibits construction between the weekday hours of 7:00 PM and 7:00 AM, or at any time on Sundays or holidays. The construction equipment associated with the proposed project is associated with intermittent, short-term operation, and therefore is considered to be mobile equipment. Construction noise at single-family residential structures due to mobile equipment is not to exceed 75 dBA between the hours of 7:00 AM and 8:00 PM per Section 12.08.440 of the Los Angeles County Code as adopted by reference in the City of La Verne (see Table 3).

Therefore, project construction is not be anticipated to exceed the City noise standards at the surrounding single-family residential uses. Further, with compliance with the City's Municipal Code, it is assumed that construction would not occur during the noise-sensitive nighttime hours. Impacts related to construction noise will be further minimized with adherence to the above Municipal Ordinances and implementation of the measures presented in Section 7 of this report.

NOISE IMPACTS TO OFF-SITE RECEPTORS DUE TO PROJECT GENERATED TRIPS

Existing and Existing Plus Project traffic noise was modeled utilizing project trip generation information obtained from the Trip Generation Analysis prepared by Ganddini Group, Inc. (April 2020) and existing traffic volume counts provided by AimTD (February 2020).

A worst-case project generated traffic noise level was modeled utilizing the FHWA Traffic Noise Prediction Model - FHWA-RD-77-108. The modeling assumes that all project generated vehicle trips will pass the single-family detached residential neighborhoods along Baseline Road. During operation, the proposed project is expected to generate approximately 66 average daily trips with five (5) trips during the AM peak hour and seven (7) trips during the PM peak hour. Per data collected by AimTD, existing average daily traffic volumes on Baseline Road from Rodeo Lane to Japonica Avenue are approximately 9,658 vehicles per day. Traffic noise levels were calculated at the right-of-way from the centerline of the analyzed roadway. The modeling is theoretical and does not take into account any existing barriers, structures, and/or topographical features that may further reduce noise levels. Therefore, the levels are shown for comparative purposes only to show the difference between with and without project conditions. Roadway input parameters including average daily traffic (ADT) volumes, speeds, and vehicle distribution data is shown in Table 7. The potential off-site noise impacts caused by an increase of traffic from operation of the proposed project on the nearby roadways were calculated for the following scenarios:

Existing Year (without Project): This scenario refers to existing year traffic noise conditions and is demonstrated in Table 7.

Existing Year (with Project): This scenario refers to existing year plus project traffic noise conditions and is demonstrated in Table 8.

As shown in Table 8, the modeled Existing traffic noise level is 72.02 dBA CNEL at the right-of-way of the modeled roadway segment; and the modeled Existing Plus Project traffic noise level is 72.05 dBA CNEL at the right-of-way of the modeled roadway segment. The City's General Plan identifies a potentially substantial increase as any increase of five or more dB.

Table 8 shows that all modeled roadway segments are anticipated to change the noise a nominal amount (approximately 0.03 dBA CNEL). Therefore, a change in noise level would not be audible and would be considered less than significant. No mitigation is required.

TRANSPORTATION NOISE IMPACTS TO THE PROPOSED PROJECT

Per the City of La Verne General Plan, noise levels of up to 60 dBA CNEL are considered "normally acceptable" and noise levels of up to 70 dBA CNEL are considered "conditionally acceptable" for single-family residential uses (see Table 2). Per footnotes provided in Table 2, new construction or development should be undertaken in areas where future noise levels are expected to range between 60 and 70 dBA CNEL, only after a detailed analysis of the noise reduction requirements are made and needed noise insulation features in the design are determined. Conventional construction, with closed windows and fresh air supply systems or air conditioning, will normally suffice.

Both the City of La Verne General Plan and the Existing Conditions Report for the City of La Verne General Plan Update (June 2018) identify Baseline Road as a Major Arterial roadway. Per the Existing Conditions Report for the City of La Verne General Plan Update, a 4-lane divided arterial has a capacity of 30,000 average daily vehicles at LOS C. Future traffic noise levels associated with Baseline Road were modeled using the SoundPLAN noise model. As shown in Figures 6 and 7, future buildout traffic noise levels could reach up to approximately 65 dBA CNEL at proposed single-family residential yards and up to 63.9 dBA CNEL at proposed single-family residential dwelling units. These noise levels exceed the City's normally acceptable land use compatibility criteria of 60 dBA CNEL, but are within the City's conditionally acceptable land use compatibility criteria of 70 dBA CNEL for single-family residential uses.

New residential construction typically provides at least 20 dB of exterior to interior noise reduction. Therefore, as long as fresh air supplies or air conditioning is provided, allowing a closed-window condition, no additional mitigation is required to achieve interior noise levels that do not exceed 45 dBA CNEL due to future traffic noise levels. Modeling spreadsheets are presented in Appendix F. Impacts related to future traffic noise impacts to the project would be less than significant with mitigation requiring fresh air systems or air conditioning.

GROUNDBORNE VIBRATION IMPACTS

There are several types of construction equipment that can cause vibration levels high enough to annoy persons in the vicinity and/or result in architectural or structural damage to nearby structures and improvements. For example, as shown in Table 9, a vibratory roller could generate up to 0.21 PPV at a distance of 25 feet; and operation of a large bulldozer (0.089 PPV) at a distance of 25 feet (two of the most vibratory pieces of construction equipment). Groundborne vibration at sensitive receptors associated with this equipment would drop off as the equipment moves away. For example, as the vibratory roller moves further than 100 feet from the sensitive receptors, the vibration associated with it would drop below 0.0026 PPV. It should be noted that these vibration levels are reference levels and may vary slightly depending upon soil type and specific usage of each piece of equipment.

Annoyance to Persons

The primary effect of perceptible vibration is often a concern. However, secondary effects, such as the rattling of a china cabinet, can also occur, even when vibration levels are well below perception. Any effect (primary perceptible vibration, secondary effects, or a combination of the two) can lead to annoyance. The degree to which a person is annoyed depends on the activity in which they are participating at the time of the disturbance. For example, someone sleeping or reading will be more sensitive than someone who is running on a treadmill. Reoccurring primary and secondary vibration effects often lead people to believe that the vibration is damaging their home, although vibration levels are well below minimum thresholds for damage potential.

As shown in Table 4, vibration can cause annoyance to persons in buildings at a PPV of 0.20.

The closest off-site structures are the existing single-family residential dwelling units located approximately 25 feet west of the project site. Therefore, use of a bulldozer would not be considered annoying at nearby sensitive receptors. Caution should be utilized if a vibratory roller, or other similar vibratory equipment, is utilized within one foot of the western property line of the proposed project, adjacent to existing residential structures.

Architectural Damage

Vibration generated by construction activity generally has the potential to damage structures. This damage could be structural damage, such as cracking of floor slabs, foundations, columns, beams, or wells, or cosmetic architectural damage, such as cracked plaster, stucco, or tile.

Table 4 identifies a PPV level of 0.2 as the threshold at which there is a risk to “architectural” damage to normal dwelling units. Use of a vibratory roller within 26 feet of existing structures could cause architectural damage. As stated above, existing residential dwelling units are located as close as approximately 25 feet to the west of the project site. Therefore, caution should be utilized if a vibratory roller or other similar vibratory equipment is utilized within one foot of the western property line of the proposed project, adjacent to existing residential structures.

Temporary vibration levels associated with project construction would be less than significant with incorporation of the mitigation measures identified in Section 7 of this report. Vibration worksheets are provided in Appendix G.

Table 5 (1 of 2)
CA/T Equipment Noise Emissions and Acoustical Usage Factor Database

Equipment Description	Impact Device?	Acoustical Use Factor (%)	Spec. Lmax @ 50ft (dBA, slow)	Actual Measured Lmax @ 50ft (dBA, slow)	No. of Actual Data Samples (Count)
All Other Equipment > 5 HP	No	50	85	-N/A-	0
Auger Drill Rig	No	20	85	84	36
Backhoe	No	40	80	78	372
Bar Bender	No	20	80	-N/A-	0
Blasting	Yes	-N/A-	94	-N/A-	0
Boring Jack Power Unit	No	50	80	83	1
Chain Saw	No	20	85	84	46
Clam Shovel (dropping)	Yes	20	93	87	4
Compactor (ground)	No	20	80	83	57
Compressor (air)	No	40	80	78	18
Concrete Batch Plant	No	15	83	-N/A-	0
Concrete Mixer Truck	No	40	85	79	40
Concrete Pump Truck	No	20	82	81	30
Concrete Saw	No	20	90	90	55
Crane	No	16	85	81	405
Dozer	No	40	85	82	55
Drill Rig Truck	No	20	84	79	22
Drum Mixer	No	50	80	80	1
Dump Truck	No	40	84	76	31
Excavator	No	40	85	81	170
Flat Bed Truck	No	40	84	74	4
Forklift[2,3]	No	50	n/a	61	n/a
Front End Loader	No	40	80	79	96
Generator	No	50	82	81	19
Generator (<25KVA, VMS signs)	No	50	70	73	74
Gradall	No	40	85	83	70
Grader	No	40	85	-N/A-	0
Grapple (on backhoe)	No	40	85	87	1
Horizontal Boring Hydr. Jack	No	25	80	82	6
Hydra Break Ram	Yes	10	90	-N/A-	0
Impact Pile Driver	Yes	20	95	101	11
Jackhammer	Yes	20	85	89	133
Man Lift	No	20	85	75	23
Mounted Impact hammer (hoe ram)	Yes	20	90	90	212
Pavement Scarafier	No	20	85	90	2
Paver	No	50	85	77	9
Pickup Truck	No	50	85	77	9
Paving Equipment	No	50	85	77	9
Pneumatic Tools	No	50	85	85	90

Table 5 (2 of 2)
CA/T Equipment Noise Emissions and Acoustical Usage Factor Database

Equipment Description	Impact Device?	Acoustical Use Factor (%)	Spec. Lmax @ 50ft (dBA, slow)	Actual Measured Lmax @ 50ft (dBA, slow)	No. of Actual Data Samples (Count)
Pumps	No	50	77	81	17
Refrigerator Unit	No	100	82	73	3
Rivit Buster/chipping gun	Yes	20	85	79	19
Rock Drill	No	20	85	81	3
Roller	No	20	85	80	16
Sand Blasting (Single Nozzle)	No	20	85	96	9
Scraper	No	40	85	84	12
Shears (on backhoe)	No	40	85	96	5
Slurry Plant	No	100	78	78	1
Slurry Trenching Machine	No	50	82	80	75
Soil Mix Drill Rig	No	50	80	-N/A-	0
Tractor	No	40	84	-N/A-	0
Vacuum Excavator (Vac-truck)	No	40	85	85	149
Vacuum Street Sweeper	No	10	80	82	19
Ventilation Fan	No	100	85	79	13
Vibrating Hopper	No	50	85	87	1
Vibratory Concrete Mixer	No	20	80	80	1
Vibratory Pile Driver	No	20	95	101	44
Warning Horn	No	5	85	83	12
Welder/Torch	No	40	73	74	5

Notes:

(1) Source: FHWA Roadway Construction Noise Model User's Guide January 2006.

(2) Warehouse & Forklift Noise Exposure - NoiseTesting.info Carl Stautins, November 4, 2014
http://www.noisetesting.info/blog/carl-strautins/page-3/

(3) Data provided Leq as measured at the operator. Sound Level at 50 feet is calculated using Inverse Square Law.

Table 6
Construction Noise Levels (L_{eq})

Phase	Receptor Location	Existing Ambient Noise Levels[1] (Leq)	Unmitigated Construction Noise Levels[2] (Leq)	Combined Noise Levels	Increase (dB)	Reduction with Mitigation[3] (dB)	Mitigated Construction Noise Levels (Leq)	Mitigated Existing Plus Construction Noise Levels (Leq)	Mitigated Increase in Ambient Noise Levels (Leq)
Site Preparation	East	60.7	65.2	66.5	5.8	10.0	55.2	61.8	1.1
	South	56.6	64.3	65.0	8.4	10.0	54.3	58.6	2.0
	Southeast	60.7	62.9	64.9	4.2	10.0	52.9	61.4	0.7
	West	54.2	66.8	67.0	12.8	10.0	56.8	58.7	4.5
	Northwest	54.2	62.7	63.3	9.1	10.0	52.7	56.5	2.3
	Northeast	48.0	54.5	55.4	7.4	10.0	44.5	49.6	1.6
Grading	East	60.7	67.1	68.0	7.3	10.0	57.1	62.3	1.6
	South	56.6	66.2	66.7	10.1	10.0	56.2	59.4	2.8
	Southeast	60.7	64.8	66.2	5.5	10.0	54.8	61.7	1.0
	West	54.2	68.7	68.9	14.7	10.0	58.7	60.0	5.8
	Northwest	54.2	64.6	65.0	10.8	10.0	54.6	57.4	3.2
	Northeast	48.0	56.4	57.0	9.0	10.0	46.4	50.3	2.3
Building Construction	East	60.7	68.7	69.3	8.6	10.0	58.7	62.8	2.1
	South	56.6	67.8	68.1	11.5	10.0	57.8	60.3	3.7
	Southeast	60.7	66.4	67.4	6.7	10.0	56.4	62.1	1.4
	West	54.2	70.3	70.4	16.2	10.0	60.3	61.3	7.1
	Northwest	54.2	66.2	66.5	12.3	10.0	56.2	58.3	4.1
	Northeast	48.0	58.0	58.4	10.4	10.0	48.0	51.0	3.0
Paving	East	60.7	65.0	66.4	5.7	10.0	55.0	61.7	1.0
	South	56.6	64.1	64.8	8.2	10.0	54.1	58.5	1.9
	Southeast	60.7	62.7	64.8	4.1	10.0	52.7	61.3	0.6
	West	54.2	66.6	66.8	12.6	10.0	56.6	58.6	4.4
	Northwest	54.2	62.5	63.1	8.9	10.0	52.5	56.4	2.2
	Northeast	48.0	54.3	55.2	7.2	10.0	44.3	49.5	1.5
Architectural Coating	East	60.7	57.6	62.4	1.7	10.0	47.6	60.9	0.2
	South	56.6	56.7	59.7	3.1	10.0	46.7	57.0	0.4
	Southeast	60.7	55.4	61.8	1.1	10.0	45.4	60.8	0.1
	West	54.2	59.2	60.4	6.2	10.0	49.2	55.4	1.2
	Northwest	54.2	55.1	57.7	3.5	10.0	45.1	54.7	0.5
	Northeast	48.0	47.0	50.5	2.5	10.0	37.0	48.3	0.3

Notes:

(1) Per measured existing ambient noise levels. NM3 used for receptors to the northeast, NM2 for receptors to the east and southeast, NM1 for receptors to the south, and NM4 for receptors to the west a nd northwest.

(2) Construction noise worksheets are provided in Appendix D.

(3)This reduction can be verified by measuring on-site equipment or by special ordering mufflers to meet reduction requirement, or by providing sheilding/acoustic tent that provides a 20 dB reduction. See Appendix D.

Table 7
Project Average Daily Traffic Volumes and Roadway Parameters

Roadway	Segment	Average Daily Traffic Volume[1]		Posted Travel Speed (MPH)	Site Conditions
		Existing	Existing Plus Project		
Baseline Road	Rodeo Lane to Japonica Avenue	9,658	9,724	40	Hard

Vehicle Distribution (Heavy Mix)[2]			
Motor-Vehicle Type	Daytime % (7 AM - 7 PM)	Evening % (7 PM - 10 PM)	Night % (10 PM - 7 AM)
Automobiles	75.54	14.02	10.43
Medium Trucks	48.00	2.00	50.00
Heavy Trucks	48.00	2.00	50.00

Notes:
(1) Existing daily traffic volumes obtained from counts performed by AimTD on February 19, 2020 and project average daily trips obtained from *500 East Baseline Road Residential Project Trip Generation Analysis* (Ganddini Group, Inc., April 2020).

(2) Existing vehicle percentages are based on the Riverside County Industrial Hygiene Letter for Traffic Noise.

Table 8
Change in Existing Noise Levels Along Roadways as a Result of Project (dBA CNEL)

Roadway	Segment	Distance from roadway centerline to right-of-way (feet)[2]	Modeled Noise Levels (dBA CNEL)[1]				
			Existing Without Project at right-of-way	Existing Plus Project at right-of-way	Change in Noise Level	Exceeds Standards[3]	Increase of 3 dB or More
Baseline Road	Rodeo Lane to Japonica Avenue	50	72.02	72.05	0.03	Yes	No

Notes:

(1) Exterior noise levels calculated 5 feet above pad elevation, perpendicular to subject roadway.

(2) Distance from the roadway centerline to the roadway ROW. ROW distances were estimated based on Google Earth and the information provided for Baseline Road in the Existing Conditions Report for the City of La Verne General Plan Update (June 2018).

(3) Per the City of La Verne normally acceptable standard for single-family detached residential dwelling units (see Table 2).

Table 9
Construction Equipment Vibration Source Levels

Equipment		PPV at 25 ft, in/sec	Approximate Lv* at 25 ft
Pile Driver (impact)	upper range	1.518	112
Pile Driver (impact)	typical	0.644	104
Pile Driver (sonic)	upper range	0.734	105
Pile Driver (sonic)	typical	0.170	93
clam shovel drop (slurry wall)		0.202	94
Hydromill (slurry wall)	in soil	0.008	66
Hydromill (slurry wall)	in rock	0.017	75
Vibratory Roller		0.210	94
Hoe Ram		0.089	87
Large Bulldozer		0.089	87
Caisson Drilling		0.089	87
Loaded Trucks		0.076	86
Jackhammer		0.035	79
Small Bulldozer		0.003	58

Source: Federal Transit Administration: Transit Noise and Vibration Impact Assessment Manual, 2018.

*RMS velocity in decibels, VdB re 1 micro-in/sec

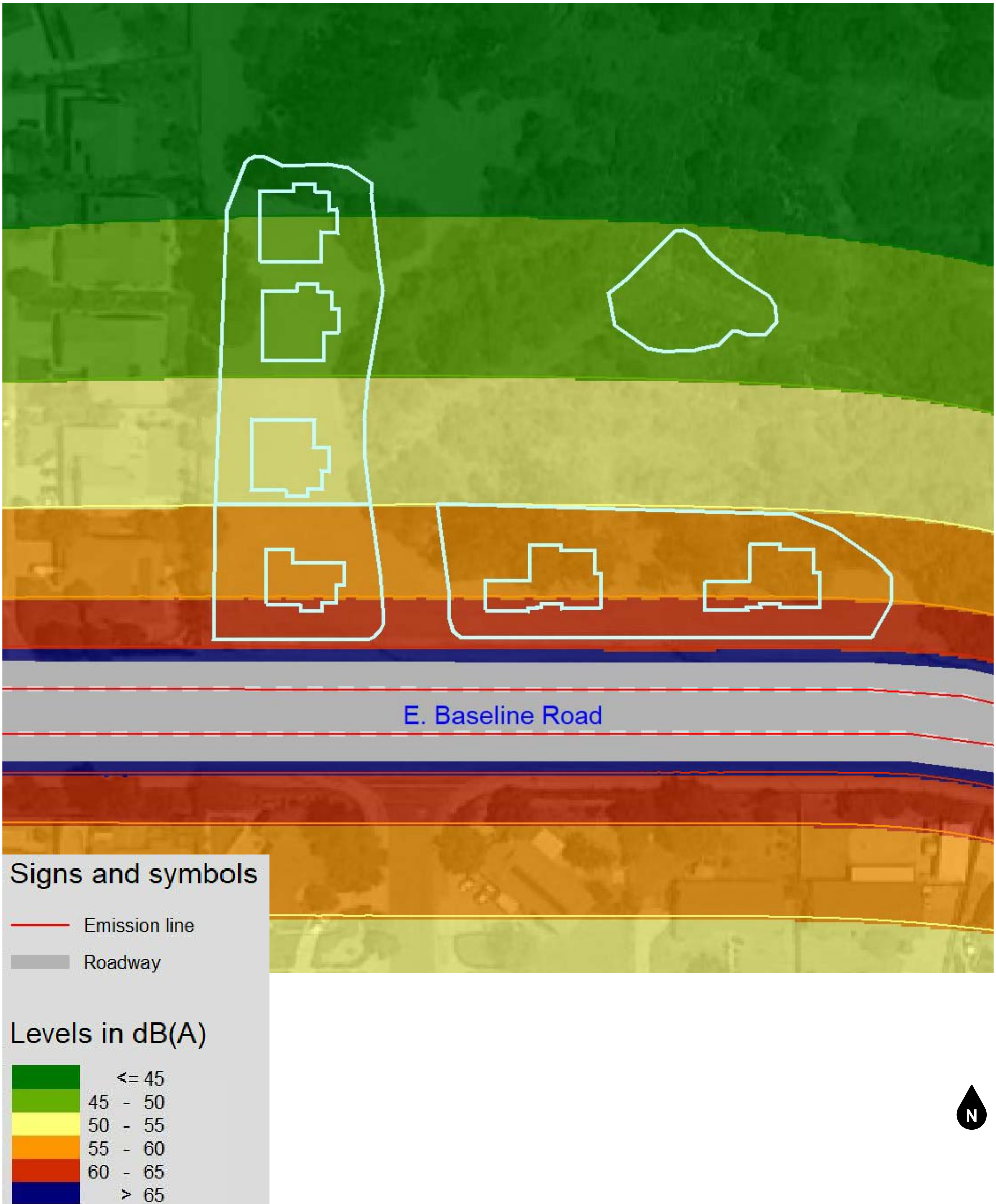


Figure 6
Future Noise Level Contour at the Project Site

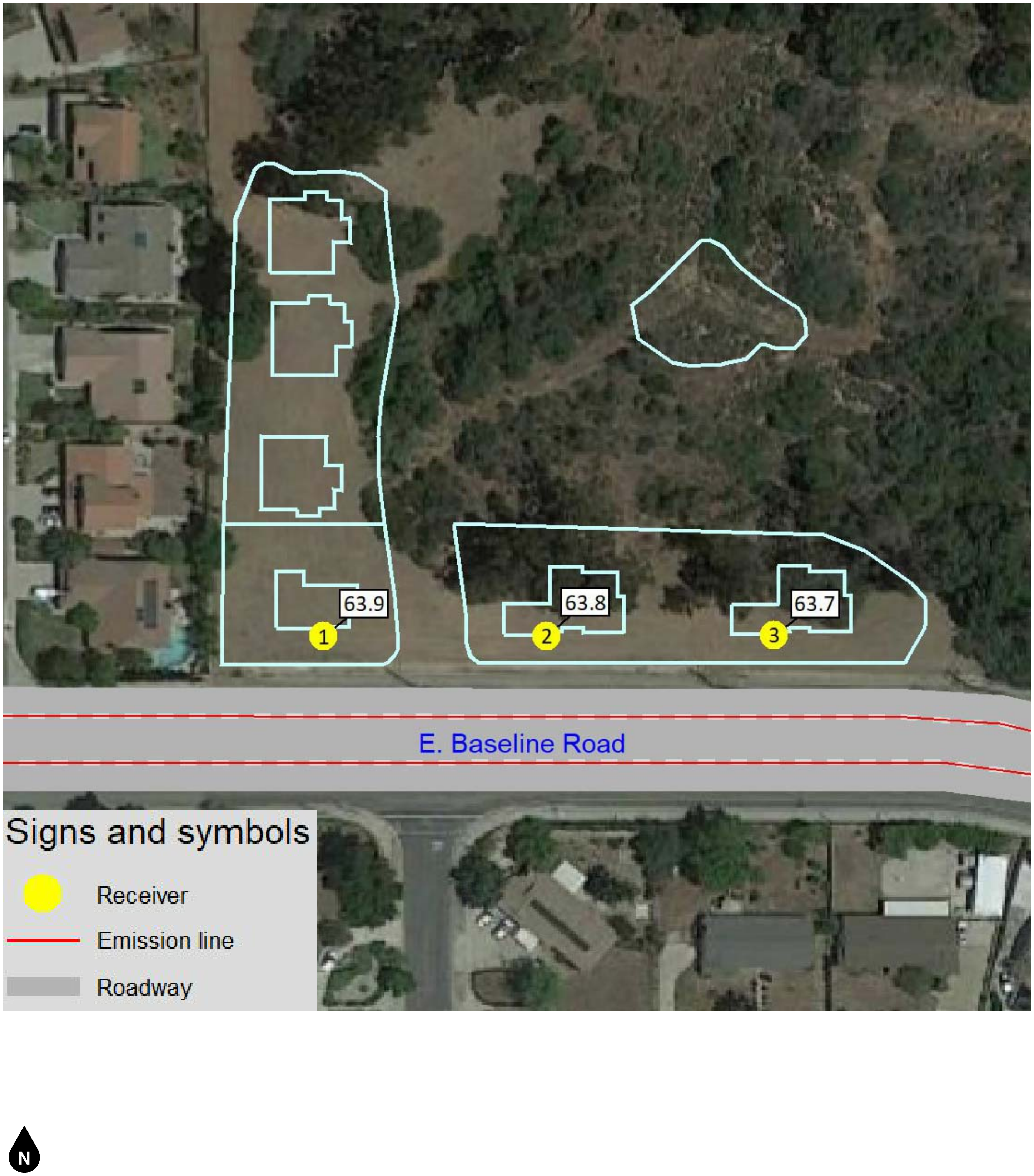


Figure 7
Future Traffic Noise Levels at the Project Site

7. MEASURES TO REDUCE IMPACTS

CONSTRUCTION NOISE REDUCTION MEASURES

In addition to adherence to the City of La Verne Municipal Code, which limits the construction hours of operation, the following measures are recommended to reduce construction noise and vibrations, emanating from the proposed project:

1. During all project site excavation and grading on-site, construction contractors shall equip all construction equipment, fixed or mobile, with properly operating and maintained mufflers, consistent with manufacturer standards.

2. The contractor shall place all stationary construction equipment so that emitted noise is directed away from the noise sensitive receptors nearest the project site.

3. Equipment shall be shut off and not left to idle when not in use.

4. The contractor shall locate equipment staging in areas that will create the greatest distance between construction-related noise/vibration sources and sensitive receptors nearest the project site during all project construction.

5. Jackhammers, pneumatic equipment and all other portable stationary noise sources shall be shielded and noise shall be directed away from sensitive receptors.

6. Caution should be utilized if a vibratory roller or other similar vibratory equipment is utilized within one foot of the western property line of the proposed project, adjacent to existing residential structures.

BUILDING MITIGATION MEASURE

1. Fresh air supplies and/or air conditioning shall be provided in all proposed residential dwelling units.

8. REFERENCES

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APPENDICES

APPENDIX A

LIST OF ACRONYMS

Term	Definition
ADT	Average Daily Traffic
ANSI	American National Standard Institute
CEQA	California Environmental Quality Act
CNEL	Community Noise Equivalent Level
D/E/N	Day / Evening / Night
dB	Decibel
dBA or dB(A)	Decibel "A-Weighted"
dBA/DD	Decibel per Double Distance
dBA L_{eq}	Average Noise Level over a Period of Time
EPA	Environmental Protection Agency
FHWA	Federal Highway Administration
L_{02},L_{08},L_{50},L_{90}	A-weighted Noise Levels at 2 percent, 8 percent, 50 percent, and 90 percent, respectively, of the time period
DNL	Day-Night Average Noise Level
$L_{eq(x)}$	Equivalent Noise Level for '"x" period of time
L_{eq}	Equivalent Noise Level
L_{max}	Maximum Level of Noise (measured using a sound level meter)
L_{min}	Minimum Level of Noise (measured using a sound level meter)
LOS C	Level of Service C
OPR	California Governor's Office of Planning and Research
PPV	Peak Particle Velocities
RCNM	Road Construction Noise Model
REMEL	Reference Energy Mean Emission Level
RMS	Root Mean Square

APPENDIX B

DEFINITIONS OF ACOUSTICAL TERMS

Term	Definition
Ambient Noise Level	The all-encompassing noise environment associated with a given environment, at a specified time, usually a composite of sound from many sources, at many directions, near and far, in which usually no particular sound is dominant.
A-Weighted Sound Level, dBA	The sound level obtained by use of A-weighting. The A-weighting filter de-emphasizes the very low and very high frequency components of the sound in a manner similar to the frequency response of the human ear.
CNEL	Community Noise Equivalent Level. CNEL is a weighted 24-hour noise level that is obtained by adding five decibels to sound levels in the evening (7:00 PM to 10:00 PM), and by adding ten decibels to sound levels at night (10:00 PM to 7:00 AM). This weighting accounts for the increased human sensitivity to noise during the evening and nighttime hours.
Decibel, dB	A logarithmic unit of noise level measurement that relates the energy of a noise source to that of a constant reference level; the number of decibels is 10 times the logarithm (to the base 10) of this ratio.
DNL, Ldn	Day Night Level. The DNL, or Ldn is a weighted 24-hour noise level that is obtained by adding ten decibels to sound levels at night (10:00 PM to 7:00 AM). This weighting accounts for the increased human sensitivity to noise during the nighttime hours.
Equivalent Continuous Noise Level, L_{eq}	A level of steady state sound that in a stated time period, and a stated location, has the same A-weighted sound energy as the time-varying sound.
Fast/Slow Meter Response	The fast and slow meter responses are different settings on a sound level meter. The fast response setting takes a measurement every 100 milliseconds, while a slow setting takes one every second.
Frequency, Hertz	In a function periodic in time, the number of times that the quantity repeats itself in one second (i.e., the number of cycles per second).
L_{02}, L_{08}, L_{50}, L_{90}	The A-weighted noise levels that are equaled or exceeded by a fluctuating sound level, 2 percent, 8 percent, 50 percent, and 90 percent of a stated time period, respectively.
L_{max}, L_{min}	L_{max} is the RMS (root mean squared) maximum level of a noise source or environment measured on a sound level meter, during a designated time interval, using fast meter response. L_{min} is the minimum level.
Offensive/ Offending/ Intrusive Noise	The noise that intrudes over and above the existing ambient noise at a given location. The relative intrusiveness of sound depends on its amplitude, duration, frequency, and time of occurrence, and tonal information content as well as the prevailing ambient noise level.
Root Mean Square (RMS)	A measure of the magnitude of a varying noise source quantity. The name derives from the calculation of the square root of the mean of the squares of the values. It can be calculated from either a series of lone values or a continuous varying function.

APPENDIX C

NOISE MEASUREMENT FIELD WORKSHEET

Noise Measurement
Field Data

Project Name: 500 East Baseline Road Residential Project, City of La Verne **Date:** February 24, 2020

Project #: JN 19232

Noise Measurement #: NM1 Run Time: 15 minutes **Technician:** Ian Gallagher

Nearest Address or Cross Street: 647 Smoketree Drive, La Verne, California

Site Description (Type of Existing Land Use and any other notable features): Project site: Vacant hilly land, with trees and vegetation.
Noise Measurement Site: Single-family residential to north with Baseline Road and Project Site furthe north. Smoke Tree Drive adjacent to south. Single-family residential surrounding.

Weather: <5% white high cloud, sunny. Sunset 5:43 PM **Settings:** SLOW FAST

Temperature: 69 deg F **Wind:** 5-10 mph **Humidity:** 44% **Terrain:** Hilly

Start Time: 12:15 PM **End Time:** 12:30 PM **Run Time:**

Leq:	56.6	dB
Lmax	70.5	dB
L2	60.2	dB
L8	58.7	dB
L25	56.9	dB
L50	55.7	dB

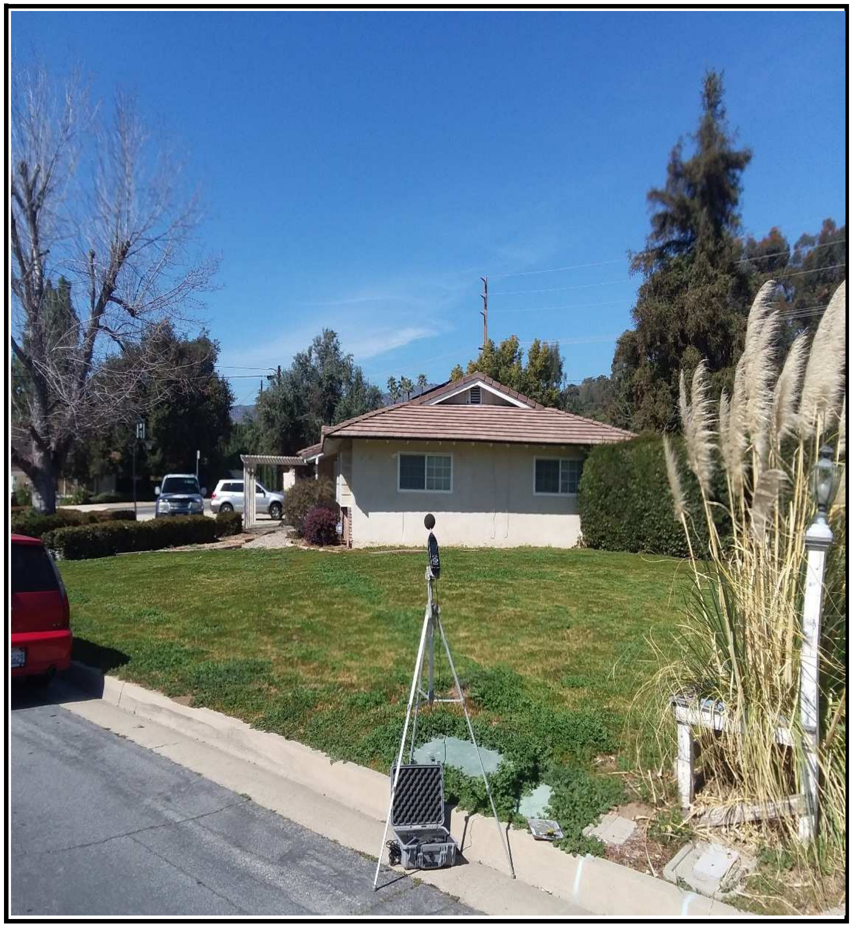
Primary Noise Source: Traffic noise from vehicles traveling along the 210 Freeway, running E-W, about 170 yards south of NM1.

Secondary Noise Sources: Vehicle passed microphone on Smoketree Drive at 12:19 PM. Bird song, leaf rustle as gentle breeze moves through trees and plants.

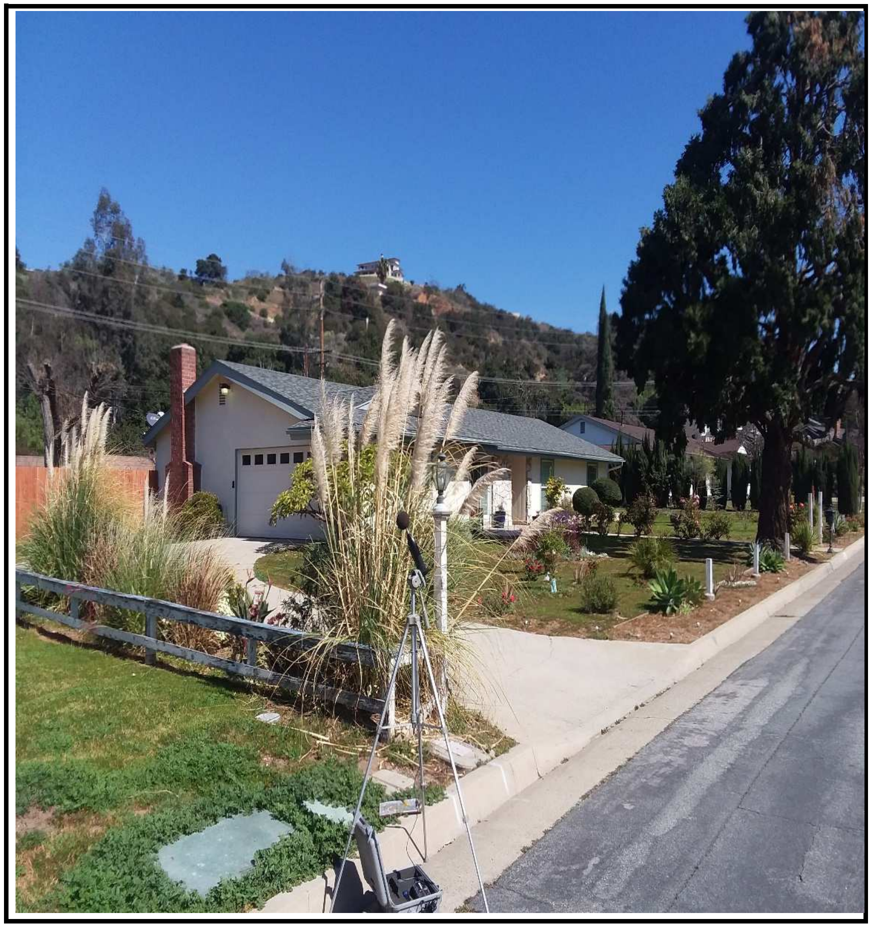
NOISE METER:	SoundTrack LXT Class 1	**CALIBRATOR:**	Larson Davis CAL250
MAKE:	Larson Davis	**MAKE:**	Larson Davis
MODEL:	LXT1	**MODEL:**	Cal 250
SERIAL NUMBER:	3099	**SERIAL NUMBER:**	2733
FACTORY CALIBRATION DATE:	6/23/2017	**FACTORY CALIBRATION DATE:**	8/9/2017
FIELD CALIBRATION DATE:	2/24/2020		

Noise Measurement
Field Data

PHOTOS:



NM1 looking NW from Smoketree Drive towards residence 647 Smoketree Drive.



NM1 looking NE from Smoketree Drive towards residence 637 Smoketree Drive.

Summary	
File Name on Meter	LxT_Data.361
File Name on PC	SLM_0003099_LxT_Data_361.00.ldbin
Serial Number	0003099
Model	SoundTrack LxT®
Firmware Version	2.301
User	Ian Edwasrd Gallagher
Location	NM1 JN 19232, 647 Smoketree Drive 34° 7'16.12"N 117°45'30.44"W
Job Description	15 minute noise measurement (1 x 15 minutes)

Measurement	
Start	2020-02-24 12:15:33
Stop	2020-02-24 12:30:33
Duration	00:15:00.0
Run Time	00:15:00.0
Pause	00:00:00.0
Pre Calibration	2020-02-24 12:15:11
Post Calibration	None

Overall Settings	
RMS Weight	A Weighting
Peak Weight	Z Weighting
Detector	Slow
Preamp	PRMLxT1L
Microphone Correction	Off
Integration Method	Linear
OBA Range	Low
OBA Bandwidth	1/1 and 1/3
OBA Freq. Weighting	Z Weighting
OBA Max Spectrum	Bin Max
Overload	122.6 dB

Results		
LAeq	56.6	
LAE	86.1	
EA	45.650 µPa²h	
EA8	1.461 mPa²h	
EA40	7.304 mPa²h	
LZpeak (max)	2020-02-24 12:20:45	99.3 dB
LASmax	2020-02-24 12:19:47	70.5 dB
LASmin	2020-02-24 12:16:34	52.2 dB
SEA	-99.9 dB	

		Statistics	
LCeq	64.9 dB	**LAI2.00**	60.2 dB
LAeq	56.6 dB	**LAI8.00**	58.7 dB
LCeq - LAeq	8.3 dB	**LAI25.00**	56.9 dB
LAIeq	57.4 dB	**LAI50.00**	55.7 dB
LAeq	56.6 dB	**LAI66.60**	55.2 dB
LAIeq - LAeq	0.8 dB	**LAI90.00**	53.9 dB
# Overloads	0		

Noise Measurement
Field Data

Project Name: 500 East Baseline Road Residential Project, City of La Verne **Date:** February 24, 2020

Project #: JN 19232

Noise Measurement #: NM2 Run Time: 15 minutes **Technician:** Ian Gallagher

Nearest Address or Cross Street: 521 Broken Spur Road, La Verne, California.

Site Description (Type of Existing Land Use and any other notable features): Project site: Vacant hilly land, with trees and vegetation.
Noise Measurement Site: Single-family residential dwelling unit to east/southeast, Broken Spur Road to west/south, project site further west, north has vacant land/Broken Spur Road.

Weather: <5% white high cloud, sunny. Sunset 5:43 PM **Settings:** SLOW FAST

Temperature: 69 deg F **Wind:** 5-10 mph **Humidity:** 44% **Terrain:** Hilly

Start Time: 1:31 PM **End Time:** 1:46 PM **Run Time:**

Leq:	60.7	dB
Lmax	69.1	dB
L2	64.2	dB
L8	61.9	dB
L25	60.9	dB
L50	60.3	dB

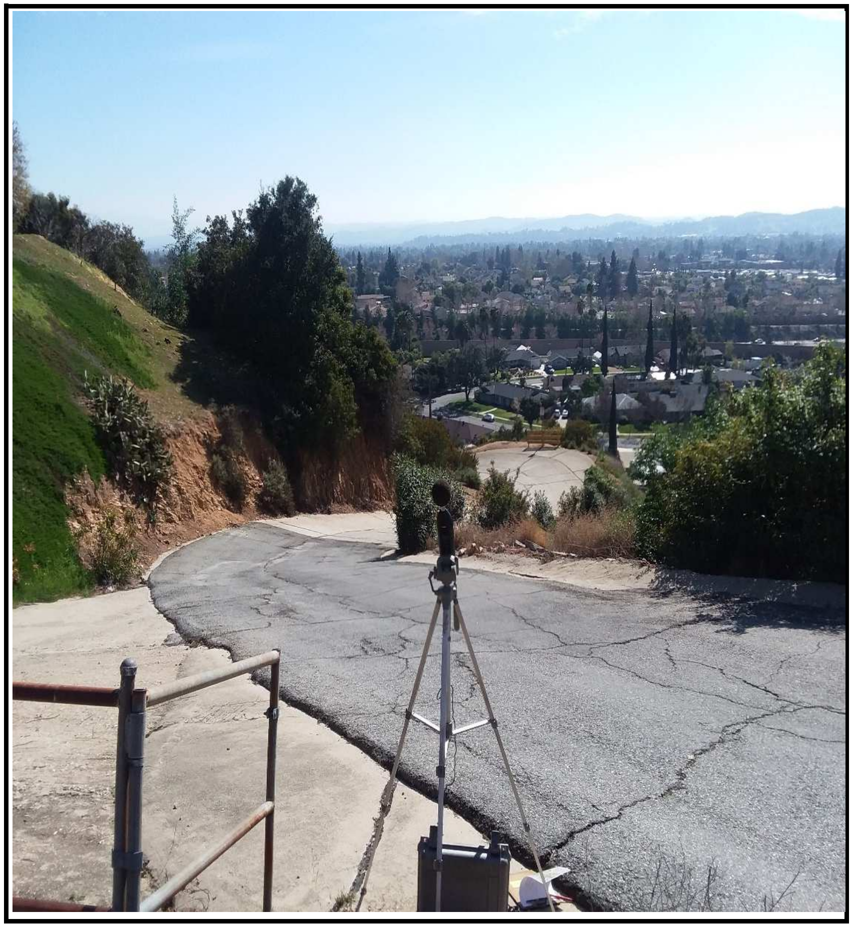
Primary Noise Source: Traffic noise from vehicles traveling along the 210 Freeway, running E-W, about 370 yards south of NM2.

Secondary Noise Sources: Bird song. Breeze causing leaf rustle on vegetation. Overhead aircraft both jet and propeller. Car passes microphone at 1:41 PM. Passing chopper at 1:45 PM.

NOISE METER:	SoundTrack LXT Class 1	**CALIBRATOR:**	Larson Davis CAL250
MAKE:	Larson Davis	**MAKE:**	Larson Davis
MODEL:	LXT1	**MODEL:**	Cal 250
SERIAL NUMBER:	3099	**SERIAL NUMBER:**	2733
FACTORY CALIBRATION DATE:	6/23/2017	**FACTORY CALIBRATION DATE:**	8/9/2017
FIELD CALIBRATION DATE:	2/24/2020		

Noise Measurement
Field Data

PHOTOS:



NM2 looking south down Broken Spur Road towards the 210 Freeway.

NM2 looking north up Broken Spur Road, residence 521 Broken Spur Road on the right.

Summary	
File Name on Meter	LxT_Data.363
File Name on PC	SLM_0003099_LxT_Data_363.00.ldbin
Serial Number	0003099
Model	SoundTrack LxT®
Firmware Version	2.301
User	Ian Edward Gallagher
Location	NM2 JN 19232, 521 Broken Spur Road, 34° 7'21.82"N 117°45'25.10"W
Job Description	15 minute noise measuremnt (1 x 15 minutes)

Measurement	
Start	2020-02-24 13:31:33
Stop	2020-02-24 13:46:33
Duration	00:15:00.0
Run Time	00:15:00.0
Pause	00:00:00.0
Pre Calibration	2020-02-24 13:31:23
Post Calibration	None

Overall Settings	
RMS Weight	A Weighting
Peak Weight	Z Weighting
Detector	Slow
Preamp	PRMLxT1L
Microphone Correction	Off
Integration Method	Linear
OBA Range	Low
OBA Bandwidth	1/1 and 1/3
OBA Freq. Weighting	Z Weighting
OBA Max Spectrum	Bin Max
Overload	122.7 dB

Results		
LAeq	60.7	
LAE	90.2	
EA	116.745 µPa²h	
EA8	3.736 mPa²h	
EA40	18.679 mPa²h	
LZpeak (max)	2020-02-24 13:38:29	103.5 dB
LASmax	2020-02-24 13:46:14	69.1 dB
LASmin	2020-02-24 13:34:28	56.8 dB
SEA	-99.9 dB	

		Statistics	
LCeq	66.7 dB	**LAI2.00**	64.2 dB
LAeq	60.7 dB	**LAI8.00**	61.9 dB
LCeq - LAeq	6.1 dB	**LAI25.00**	60.9 dB
LAIeq	61.9 dB	**LAI50.00**	60.3 dB
LAeq	60.7 dB	**LAI66.60**	60.0 dB
LAIeq - LAeq	1.2 dB	**LAI90.00**	59.0 dB
# Overloads	0		

Noise Measurement
Field Data

Project Name: 500 East Baseline Road Residential Project, City of La Verne **Date:** February 24, 2020

Project #: JN 19232

Noise Measurement #: NM3 Run Time: 15 minutes **Technician:** Ian Gallagher

Nearest Address or Cross Street: 383 Saddle Horn Lane, La Verne, California.

Site Description (Type of Existing Land Use and any other notable features): Project site: Vacant hilly land, with trees and vegetation.
Noise Measurement Site: Saddle Horn Lane to north, a single-family residential dwelling unit to north/northeast, vacant land to south, Saddle Horn Lane to east with a single-family residential dwelling unit further east.

Weather: <5% white high cloud, sunny. Sunset 5:43 PM **Settings:** $\boxed{\text{SLOW}}$ FAST

Temperature: 69 deg F **Wind:** 5-10 mph **Humidity:** 44% **Terrain:** Hilly

Start Time: 2:47 PM **End Time:** 3:02 PM **Run Time:**

Leq: 48 dB **Primary Noise Source:** Traffic noise from vehicles traveling along the 210 Freeway, running E-W, about 840 yards South of NM3.

Lmax 62 dB

L2 58.3 dB **Secondary Noise Sources:** Bird song. Breeze causing leaf rustle on vegetation. Overhead aircraft both jet and propeller.

L8 50.5 dB

L25 46.3 dB

L50 44.5 dB

NOISE METER: SoundTrack LXT Class 1 **CALIBRATOR:** Larson Davis CAL250

MAKE: Larson Davis **MAKE:** Larson Davis

MODEL: LXT1 **MODEL:** Cal 250

SERIAL NUMBER: 3099 **SERIAL NUMBER:** 2733

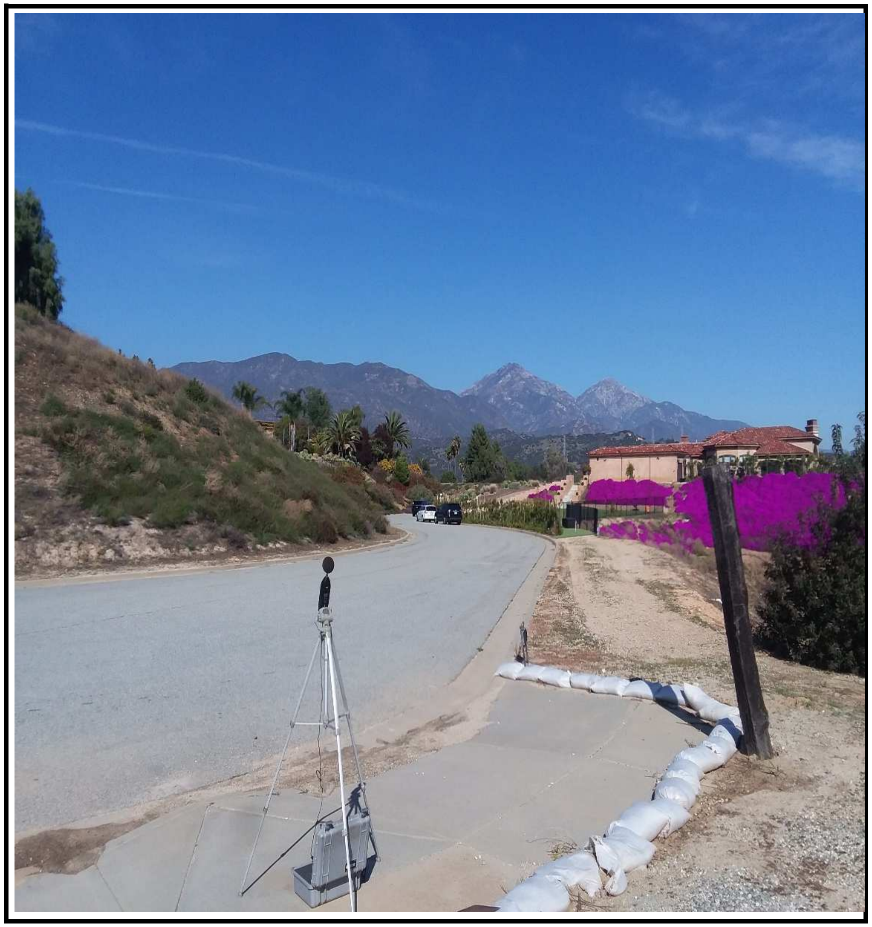
FACTORY CALIBRATION DATE: 6/23/2017 **FACTORY CALIBRATION DATE:** 8/9/2017

FIELD CALIBRATION DATE: 2/24/2020

Noise Measurement
Field Data

PHOTOS:

NM3 looking NW at residence 383 Saddle Horn Lane, La Verne.



NM3 looking NE at residence 328 Saddle Horn Lane, La Verne.

Summary	
File Name on Meter	LxT_Data.365
File Name on PC	SLM_0003099_LxT_Data_365.00.ldbin
Serial Number	0003099
Model	SoundTrack LxT®
Firmware Version	2.301
User	Ian Edward Gallagher
Location	NM3 JN 19232 383 Daddle Horn Lane 34° 7'35.40"N 117°45'18.59"W
Job Description	15 minute noise measurement (1 x 15 minutes)
Measurement	
Start	2020-02-24 14:47:37
Stop	2020-02-24 15:02:37
Duration	00:15:00.0
Run Time	00:15:00.0
Pause	00:00:00.0
Pre Calibration	2020-02-24 14:39:35
Post Calibration	None
Overall Settings	
RMS Weight	A Weighting
Peak Weight	Z Weighting
Detector	Slow
Preamp	PRMLxT1L
Microphone Correction	Off
Integration Method	Linear
OBA Range	Low
OBA Bandwidth	1/1 and 1/3
OBA Freq. Weighting	Z Weighting
OBA Max Spectrum	Bin Max
Overload	122.7 dB

Results		
LAeq	48.0	
LAE	77.5	
EA	6.253 µPa²h	
EA8	200.092 µPa²h	
EA40	1.000 mPa²h	
LZpeak (max)	2020-02-24 14:54:38	101.3 dB
LASmax	2020-02-24 14:52:37	62.0 dB
LASmin	2020-02-24 14:49:54	41.4 dB
SEA	-99.9 dB	

		Statistics	
LCeq	65.7 dB	**LAI2.00**	58.3 dB
LAeq	48.0 dB	**LAI8.00**	50.5 dB
LCeq - LAeq	17.7 dB	**LAI25.00**	46.3 dB
LAIeq	49.7 dB	**LAI50.00**	44.5 dB
LAeq	48.0 dB	**LAI66.60**	43.9 dB
LAIeq - LAeq	1.8 dB	**LAI90.00**	42.9 dB
# Overloads	0		

Noise Measurement
Field Data

Project Name: 500 East Baseline Road Residential Project, City of La Verne **Date:** February 24, 2020

Project #: JN 19232

Noise Measurement #: NM4 Run Time: 15 minutes **Technician:** Ian Gallagher

Nearest Address or Cross Street: 4746 Rodeo Lane, La Verne, California.

Site Description (Type of Existing Land Use and any other notable features): Project site: Vacant hilly land, with trees and vegetation.
Noise Measurement Site: Single-family residential to north and east, Rodeo Lane to west and south with single-family residential further to the west and south. Noise Measurement taken in a residnetial culdesac.

Weather: <5% white high cloud, sunny. Sunset 5:43 PM **Settings:** SLOW FAST

Temperature: 69 deg F **Wind:** 5-10 mph **Humidity:** 44% **Terrain:** Hilly

Start Time: 12:52 PM **End Time:** 1:07 PM **Run Time:**

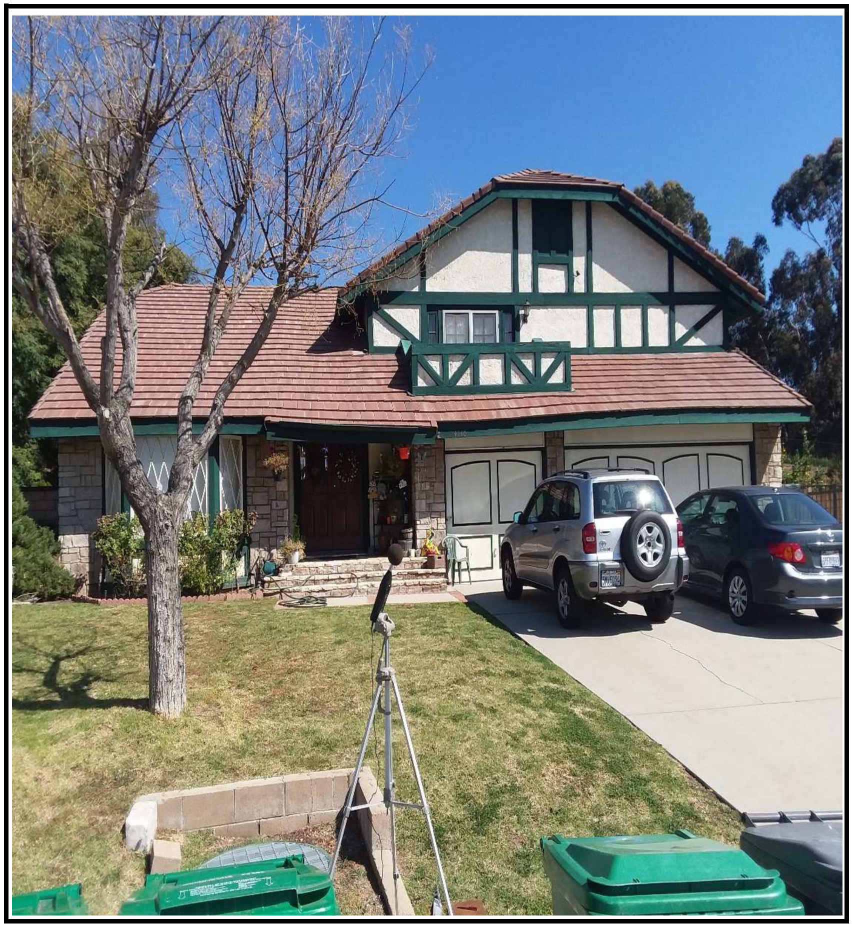
Leq:	54.2	dB
Lmax	60	dB
L2	57.4	dB
L8	56.4	dB
L25	55.1	dB
L50	53.7	dB

Primary Noise Source: Traffic noise from vehicles traveling along the 210 Freeway, running E-W, about 400 yards South of NM4.

Secondary Noise Sources: Bird song. Breeze causing leaf rustle on vegetation. Overhead aircraft both jet and propeller. Wind chime. Car passes microphone on Rodeo Ln at 12:56 PM.

NOISE METER:	SoundTrack LXT Class 1	**CALIBRATOR:**	Larson Davis CAL250
MAKE:	Larson Davis	**MAKE:**	Larson Davis
MODEL:	LXT1	**MODEL:**	Cal 250
SERIAL NUMBER:	3099	**SERIAL NUMBER:**	2733
FACTORY CALIBRATION DATE:	6/23/2017	**FACTORY CALIBRATION DATE:**	8/9/2017
FIELD CALIBRATION DATE:	2/24/2020		

PHOTOS:



NM4 looking east at residence 4746 Rodeo Lane, La Verne.

NM4 looking SW down Rodeo Lane towards Arthur Way intersection.

Summary	
File Name on Meter	LxT_Data.362
File Name on PC	SLM_0003099_LxT_Data_362.00.ldbin
Serial Number	0003099
Model	SoundTrack LxT®
Firmware Version	2.301
User	Ian Edward Gallagher
Location	NM4 JN 19232, 4746 Rodeo Lane 34° 7'22.81"N 117°45'35.73"W
Job Description	15 minute noise measurement (1 x 15 minutes)

Measurement	
Start	2020-02-24 12:52:45
Stop	2020-02-24 13:07:45
Duration	00:15:00.0
Run Time	00:15:00.0
Pause	00:00:00.0
Pre Calibration	2020-02-24 12:52:29
Post Calibration	None

Overall Settings	
RMS Weight	A Weighting
Peak Weight	Z Weighting
Detector	Slow
Preamp	PRMLxT1L
Microphone Correction	Off
Integration Method	Linear
OBA Range	Low
OBA Bandwidth	1/1 and 1/3
OBA Freq. Weighting	Z Weighting
OBA Max Spectrum	Bin Max
Overload	122.8 dB

Results		
LAeq	54.2	
LAE	83.7	
EA	26.235 µPa²h	
EA8	839.520 µPa²h	
EA40	4.198 mPa²h	
LZpeak (max)	2020-02-24 12:52:46	93.4 dB
LASmax	2020-02-24 13:03:50	60.0 dB
LASmin	2020-02-24 12:53:12	49.7 dB
SEA	-99.9 dB	

		Statistics	
LCeq	62.0 dB	**LAI2.00**	57.4 dB
LAeq	54.2 dB	**LAI8.00**	56.4 dB
LCeq - LAeq	7.8 dB	**LAI25.00**	55.1 dB
LAIeq	55.1 dB	**LAI50.00**	53.7 dB
LAeq	54.2 dB	**LAI66.60**	52.9 dB
LAIeq - LAeq	0.9 dB	**LAI90.00**	51.7 dB
# Overloads	0		

APPENDIX D

CONSTRUCTION NOISE CALCULATIONS

Receptor - Residential to East

Construction Phase Equipment Item	# of Items	Item Lmax at 50 feet, dBA[1, 2]	Distance to Receptor[3]	Item Usage Percent	Usage Factor	Receptor Item Leq, dBA	Required Mitigation	Mitigated Noise Level	Reduction (dBA Leq)
Site Preparation									
Tractors/Loaders/Backhoes	1	84	415	40	0.40	61.6	Muffler (10 dB Reduction)	51.6	10.0
Rubber Tired Dozers	1	85	415	40	0.40	62.6	Muffler (10 dB Reduction)	52.6	
						65.2		55.2	
Grading									
Scraper	1	85	415	40	0.40	62.6	Muffler (10 dB Reduction)	52.6	10.0
Excavator	1	85	415	40	0.40	62.6	Muffler (10 dB Reduction)	52.6	
Tractors/Loaders/Backhoes	1	84	415	40	0.40	61.6	Muffler (10 dB Reduction)	51.6	
						67.1		57.1	
Building Construction									
Cranes	1	83	415	16	0.16	56.7	Muffler (10 dB Reduction)	46.7	9.1
Forklifts [2]	3	64	415	40	1.20	46.4	n/a	46.4	
Generator Set	1	81	415	50	0.50	59.6	Enclosure or Acoustic Tent (10 dB Reduction)	49.6	
Welders	1	74	415	40	0.40	51.6	n/a	51.6	
Tractors/Loaders/Backhoes	4	84	415	40	1.60	67.7	Muffler (10 dB Reduction)	57.7	
						68.7		59.6	
Paving									
Pavers	2	77	415	50	1.00	58.6	Muffler (10 dB Reduction)	48.6	
Paving Equipment	2	85	415	20	0.40	62.6	Muffler (10 dB Reduction)	52.6	
Rollers	2	80	415	20	0.40	57.6	Muffler (10 dB Reduction)	47.6	
						65.0		55.0	
Architectural Coating									
Air Compressors	1	80	415	40	0.40	57.6	Enclosure or Acoustic Tent (10 dB Reduction)	47.6	10.0
						57.6		47.6	

Notes:

(1) Source: Referenced noise levels from the Federal Transit Administration (FTA) Transit Noise and Vibration Impact Assessment Manual (September 2018) and the FHWA RoadwayConstruciton Noise Model User's Guide (January 2006)

(2) Source: https://www.google.com/url?q=http://www.noisetesting.info/blog/warehouse-forklift-workplace-noise-levels/&sa=D&source=hangouts&ust=1545259247311000&usg=AFQjCNHFcKKoEKUjv5VZMOtw_KO977Em1A

(3) Distance to receptor calculated from center of site. Construction noise projected from the center of the project site to nearest sensitive use (structure).

Receptor - Residential to South

Construction Phase Equipment Item	# of Items	Item Lmax at 50 feet, dBA[1, 2]	Distance to Receptor[3]	Item Usage Percent	Usage Factor	Receptor Item Leq, dBA	Required Mitigation	Mitigated Noise Level	Reduction (dBA Leq)
Site Preparation									
Tractors/Loaders/Backhoes	1	84	460	40	0.40	60.7	Muffler (10 dB Reduction)	50.7	10.0
Rubber Tired Dozers	1	85	460	40	0.40	61.7	Muffler (10 dB Reduction)	51.7	
						64.3		54.3	
Grading									
Scraper	1	85	460	40	0.40	61.7	Muffler (10 dB Reduction)	51.7	10.0
Excavator	1	85	460	40	0.40	61.7	Muffler (10 dB Reduction)	51.7	
Tractors/Loaders/Backhoes	1	84	460	40	0.40	60.7	Muffler (10 dB Reduction)	50.7	
						66.2		56.2	
Building Construction									
Cranes	1	83	460	16	0.16	55.8	Muffler (10 dB Reduction)	45.8	9.1
Forklifts [2]	3	64	460	40	1.20	45.5	n/a	45.5	
Generator Set	1	81	460	50	0.50	58.7	Enclosure or Acoustic Tent (10 dB Reduction)	48.7	
Welders	1	74	460	40	0.40	50.7	n/a	50.7	
Tractors/Loaders/Backhoes	4	84	460	40	1.60	66.8	Muffler (10 dB Reduction)	56.8	
						67.8		58.7	
Paving									
Pavers	2	77	460	50	1.00	57.7	Muffler (10 dB Reduction)	47.7	
Paving Equipment	2	85	460	20	0.40	61.7	Muffler (10 dB Reduction)	51.7	
Rollers	2	80	460	20	0.40	56.7	Muffler (10 dB Reduction)	46.7	
						64.1		54.1	
Architectural Coating									
Air Compressors	1	80	460	40	0.40	56.7	Enclosure or Acoustic Tent (10 dB Reduction)	46.7	10.0
						56.7		46.7	

Notes:

(1) Source: Referenced noise levels from the Federal Transit Administration (FTA) Transit Noise and Vibration Impact Assessment Manual (September 2018) and the FHWA RoadwayConstruciton Noise Model User's Guide (January 2006)

(2) Source: https://www.google.com/url?q=http://www.noisetesting.info/blog/warehouse-forklift-workplace-noise-levels/&sa=D&source=hangouts&ust=1545259247311000&usg=AFQjCNHFcKKoEKUjv5VZMOtw_KO977Em1A

(3) Distance to receptor calculated from center of site. Construction noise projected from the center of the project site to nearest sensitive use (structure).

Receptor - Residential to Southeast

Construction Phase Equipment Item	# of Items	Item Lmax at 50 feet, dBA[1, 2]	Distance to Receptor[3]	Item Usage Percent	Usage Factor	Receptor Item Leq, dBA	Required Mitigation	Mitigated Noise Level	Reduction (dBA Leq)
Site Preparation									
Tractors/Loaders/Backhoes	1	84	540	40	0.40	59.4	Muffler (10 dB Reduction)	49.4	10.0
Rubber Tired Dozers	1	85	540	40	0.40	60.4	Muffler (10 dB Reduction)	50.4	
						62.9		52.9	
Grading									
Scraper	1	85	540	40	0.40	60.4	Muffler (10 dB Reduction)	50.4	10.0
Excavator	1	85	540	40	0.40	60.4	Muffler (10 dB Reduction)	50.4	
Tractors/Loaders/Backhoes	1	84	540	40	0.40	59.4	Muffler (10 dB Reduction)	49.4	
						64.8		54.8	
Building Construction									
Cranes	1	83	540	16	0.16	54.4	Muffler (10 dB Reduction)	44.4	9.1
Forklifts [2]	3	64	540	40	1.20	44.1	n/a	44.1	
Generator Set	1	81	540	50	0.50	57.3	Enclosure or Acoustic Tent (10 dB Reduction)	47.3	
Welders	1	74	540	40	0.40	49.4	n/a	49.4	
Tractors/Loaders/Backhoes	4	84	540	40	1.60	65.4	Muffler (10 dB Reduction)	55.4	
						66.4		57.3	
Paving									
Pavers	2	77	540	50	1.00	56.3	Muffler (10 dB Reduction)	46.3	
Paving Equipment	2	85	540	20	0.40	60.4	Muffler (10 dB Reduction)	50.4	
Rollers	2	80	540	20	0.40	55.4	Muffler (10 dB Reduction)	45.4	
						62.7		52.7	
Architectural Coating									
Air Compressors	1	80	540	40	0.40	55.4	Enclosure or Acoustic Tent (10 dB Reduction)	45.4	10.0
						55.4		**45.4**	

Notes:

(1) Source: Referenced noise levels from the Federal Transit Administration (FTA) Transit Noise and Vibration Impact Assessment Manual (September 2018) and the FHWA RoadwayConstruciton Noise Model User's Guide (January 2006)

(2) Source: https://www.google.com/url?q=http://www.noisetesting.info/blog/warehouse-forklift-workplace-noise-levels/&sa=D&source=hangouts&ust=1545259247311000&usg=AFQjCNHFcKKoEKUjv5VZMOtw_KO977Em1A

(3) Distance to receptor calculated from center of site. Construction noise projected from the center of the project site to nearest sensitive use (structure).

Receptor - Residential to West

Construction Phase Equipment Item	# of Items	Item Lmax at 50 feet, dBA[1, 2]	Distance to Receptor[3]	Item Usage Percent	Usage Factor	Receptor Item Leq, dBA	Required Mitigation	Mitigated Noise Level	Reduction (dBA Leq)
Site Preparation									
Tractors/Loaders/Backhoes	1	84	345	40	0.40	63.2	Muffler (10 dB Reduction)	53.2	
Rubber Tired Dozers	1	85	345	40	0.40	64.2	Muffler (10 dB Reduction)	54.2	10.0
						66.8		56.8	
Grading									
Scraper	1	85	345	40	0.40	64.2	Muffler (10 dB Reduction)	54.2	
Excavator	1	85	345	40	0.40	64.2	Muffler (10 dB Reduction)	54.2	10.0
Tractors/Loaders/Backhoes	1	84	345	40	0.40	63.2	Muffler (10 dB Reduction)	53.2	
						68.7		58.7	
Building Construction									
Cranes	1	83	345	16	0.16	58.3	Muffler (10 dB Reduction)	48.3	
Forklifts [2]	3	64	345	40	1.20	48.0	n/a	48.0	
Generator Set	1	81	345	50	0.50	61.2	Enclosure or Acoustic Tent (10 dB Reduction)	51.2	9.1
Welders	1	74	345	40	0.40	53.2	n/a	53.2	
Tractors/Loaders/Backhoes	4	84	345	40	1.60	69.3	Muffler (10 dB Reduction)	59.3	
						70.3		61.2	
Paving									
Pavers	2	77	345	50	1.00	60.2	Muffler (10 dB Reduction)	50.2	
Paving Equipment	2	85	345	20	0.40	64.2	Muffler (10 dB Reduction)	54.2	
Rollers	2	80	345	20	0.40	59.2	Muffler (10 dB Reduction)	49.2	
						66.6		56.6	
Architectural Coating									
Air Compressors	1	80	345	40	0.40	59.2	Enclosure or Acoustic Tent (10 dB Reduction)	49.2	10.0
						59.2		49.2	

Notes:

(1) Source: Referenced noise levels from the Federal Transit Administration (FTA) Transit Noise and Vibration Impact Assessment Manual (September 2018) and the FHWA RoadwayConstruciton Noise Model User's Guide (January 2006)

(2) Source: https://www.google.com/url?q=http://www.noisetesting.info/blog/warehouse-forklift-workplace-noise-levels/&sa=D&source=hangouts&ust=1545259247311000&usg=AFQjCNHFcKKoEKUjv5VZMOtw_KO977Em1A

(3) Distance to receptor calculated from center of site. Construction noise projected from the center of the project site to nearest sensitive use (structure).

Receptor - Residential to Northwest

Construction Phase Equipment Item	# of Items	Item Lmax at 50 feet, dBA[1, 2]	Distance to Receptor[3]	Item Usage Percent	Usage Factor	Receptor Item Leq, dBA	Required Mitigation	Mitigated Noise Level	Reduction (dBA Leq)
Site Preparation									
Tractors/Loaders/Backhoes	1	84	555	40	0.40	59.1	Muffler (10 dB Reduction)	49.1	
Rubber Tired Dozers	1	85	555	40	0.40	60.1	Muffler (10 dB Reduction)	50.1	10.0
						62.7		52.7	
Grading									
Scraper	1	85	555	40	0.40	60.1	Muffler (10 dB Reduction)	50.1	
Excavator	1	85	555	40	0.40	60.1	Muffler (10 dB Reduction)	50.1	10.0
Tractors/Loaders/Backhoes	1	84	555	40	0.40	59.1	Muffler (10 dB Reduction)	49.1	
						64.6		54.6	
Building Construction									
Cranes	1	83	555	16	0.16	54.1	Muffler (10 dB Reduction)	44.1	
Forklifts [2]	3	64	555	40	1.20	43.9	n/a	43.9	
Generator Set	1	81	555	50	0.50	57.1	Enclosure or Acoustic Tent (10 dB Reduction)	47.1	9.1
Welders	1	74	555	40	0.40	49.1	n/a	49.1	
Tractors/Loaders/Backhoes	4	84	555	40	1.60	65.1	Muffler (10 dB Reduction)	55.1	
						66.2		57.1	
Paving									
Pavers	2	77	555	50	1.00	56.1	Muffler (10 dB Reduction)	46.1	
Paving Equipment	2	85	555	20	0.40	60.1	Muffler (10 dB Reduction)	50.1	
Rollers	2	80	555	20	0.40	55.1	Muffler (10 dB Reduction)	45.1	
						62.5		52.5	
Architectural Coating									
Air Compressors	1	80	555	40	0.40	55.1	Enclosure or Acoustic Tent (10 dB Reduction)	45.1	10.0
						55.1		45.1	

Notes:

(1) Source: Referenced noise levels from the Federal Transit Administration (FTA) Transit Noise and Vibration Impact Assessment Manual (September 2018) and the FHWA RoadwayConstruciton Noise Model User's Guide (January 2006)

(2) Source: https://www.google.com/url?q=http://www.noisetesting.info/blog/warehouse-forklift-workplace-noise-levels/&sa=D&source=hangouts&ust=1545259247311000&usg=AFQjCNHFcKKoEKUjv5VZMOtw_KO977Em1A

(3) Distance to receptor calculated from center of site. Construction noise projected from the center of the project site to nearest sensitive use (structure).

Receptor - Residential to Northeast

Construction Phase Equipment Item	# of Items	Item Lmax at 50 feet, dBA[1, 2]	Distance to Receptor[3]	Item Usage Percent	Usage Factor	Receptor Item Leq, dBA	Required Mitigation	Mitigated Noise Level	Reduction (dBA Leq)
Site Preparation									
Tractors/Loaders/Backhoes	1	84	1420	40	0.40	51.0	Muffler (10 dB Reduction)	41.0	10.0
Rubber Tired Dozers	1	85	1420	40	0.40	52.0	Muffler (10 dB Reduction)	42.0	
						54.5		44.5	
Grading									10.0
Scraper	1	85	1420	40	0.40	52.0	Muffler (10 dB Reduction)	42.0	
Excavator	1	85	1420	40	0.40	52.0	Muffler (10 dB Reduction)	42.0	
Tractors/Loaders/Backhoes	1	84	1420	40	0.40	51.0	Muffler (10 dB Reduction)	41.0	
						56.4		46.4	
Building Construction									
Cranes	1	83	1420	16	0.16	46.0	Muffler (10 dB Reduction)	36.0	9.1
Forklifts [2]	3	64	1420	40	1.20	35.7	n/a	35.7	
Generator Set	1	81	1420	50	0.50	48.9	Enclosure or Acoustic Tent (10 dB Reduction)	38.9	
Welders	1	74	1420	40	0.40	41.0	n/a	41.0	
Tractors/Loaders/Backhoes	4	84	1420	40	1.60	57.0	Muffler (10 dB Reduction)	47.0	
						58.0		48.9	
Paving									
Pavers	2	77	1420	50	1.00	47.9	Muffler (10 dB Reduction)	37.9	
Paving Equipment	2	85	1420	20	0.40	52.0	Muffler (10 dB Reduction)	42.0	
Rollers	2	80	1420	20	0.40	47.0	Muffler (10 dB Reduction)	37.0	
						54.3		44.3	
Architectural Coating									
Air Compressors	1	80	1420	40	0.40	47.0	Enclosure or Acoustic Tent (10 dB Reduction)	37.0	10.0
						47.0		37.0	

Notes:

(1) Source: Referenced noise levels from the Federal Transit Administration (FTA) Transit Noise and Vibration Impact Assessment Manual (September 2018) and the FHWA RoadwayConstruciton Noise Model User's Guide (January 2006)

(2) Source: https://www.google.com/url?q=http://www.noisetesting.info/blog/warehouse-forklift-workplace-noise-levels/&sa=D&source=hangouts&ust=1545259247311000&usg=AFQjCNHFcKKoEKUjv5VZMOtw_KO977Em1A

(3) Distance to receptor calculated from center of site. Construction noise projected from the center of the project site to nearest sensitive use (structure).

APPENDIX E

PROJECT GENERATED TRIPS FHWA WORKSHEETS

Existing Traffic Noise

1	:Id
Baseline Road	:Road
Rodeo Lane to Japonica Avenue	:Segment

Vehicle Distribution (Heavy Truck Mix)				
Motor-Vehicle Type	Daytime % (7 AM - 7 PM)	Evening % (7 PM - 10 PM)	Night % (10 PM - 7 AM)	Total % of Traffic Flow
Automobiles	75.54	14.02	10.43	92.00
Medium Trucks	48.00	2.00	50.00	3.00
Heavy Trucks	48.00	2.00	50.00	5.00

ADT	9658
Speed	40
Distance	50
Left Angle	-90
Right Angle	90

Noise Parameters	Daytime			Evening			Night		
	Autos	Medium Trucks	Heavy Trucks	Autos	Medium Trucks	Heavy Trucks	Autos	Medium Trucks	Heavy Trucks
INPUT PARAMETERS									
Vehicles per hour	559.33	11.59	19.32	415.24	1.93	3.22	102.97	16.10	26.83
Speed in MPH	40.00	40.00	40.00	40.00	40.00	40.00	40.00	40.00	40.00
Left angle	-90.00	-90.00	-90.00	-90.00	-90.00	-90.00	-90.00	-90.00	-90.00
Right angle	90.00	90.00	90.00	90.00	90.00	90.00	90.00	90.00	90.00
NOISE CALCULATIONS									
Reference levels	67.36	76.31	81.16	67.36	76.31	81.16	67.36	76.31	81.16
ADJUSTMENTS									
Flow	21.15	4.31	6.53	19.86	-3.47	-1.25	13.80	5.74	7.96
Distance	-0.07	-0.07	-0.07	-0.07	-0.07	-0.07	-0.07	-0.07	-0.07
Finite Roadway	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Barrier	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Grade	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Constant	-25.00	-25.00	-25.00	-25.00	-25.00	-25.00	-25.00	-25.00	-25.00
LEQ	63.44	55.56	62.62	62.15	47.78	54.84	56.09	56.98	64.05
	DAY LEQ	66.43		EVENING LEQ	63.02		NIGHT LEQ	65.37	

F	CNEL	72.02
	DAY LEQ	66.43

Day hour	89.00
Absorptive?	no
Use hour?	no
GRADE dB	0.00

Notes:

(1) FHWA Traffic Noise Prediction Model FHWA-RD-77-108

(2) Vehicle percentages based on County of Riverside heavy truck mix.

Existing Plus Project Traffic Noise

1	:Id	
Baseline Road	:Road	
Rodeo Lane to Japonica Avenue	:Segment	

Vehicle Distribution (Heavy Truck Mix)				
Motor-Vehicle Type	Daytime % (7 AM - 7 PM)	Evening % (7 PM - 10 PM)	Night % (10 PM - 7 AM)	Total % of Traffic Flow
Automobiles	75.54	14.02	10.43	92.00
Medium Trucks	48.00	2.00	50.00	3.00
Heavy Trucks	48.00	2.00	50.00	5.00

ADT	9724
Speed	40
Distance	50
Left Angle	-90
Right Angle	90

Noise Parameters	Daytime			Evening			Night		
	Autos	Medium Trucks	Heavy Trucks	Autos	Medium Trucks	Heavy Trucks	Autos	Medium Trucks	Heavy Trucks
INPUT PARAMETERS									
Vehicles per hour	563.16	11.67	19.45	418.08	1.94	3.24	103.68	16.21	27.01
Speed in MPH	40.00	40.00	40.00	40.00	40.00	40.00	40.00	40.00	40.00
Left angle	-90.00	-90.00	-90.00	-90.00	-90.00	-90.00	-90.00	-90.00	-90.00
Right angle	90.00	90.00	90.00	90.00	90.00	90.00	90.00	90.00	90.00
NOISE CALCULATIONS									
Reference levels	67.36	76.31	81.16	67.36	76.31	81.16	67.36	76.31	81.16
ADJUSTMENTS									
Flow	21.18	4.34	6.56	19.89	-3.44	-1.22	13.83	5.77	7.99
Distance	-0.07	-0.07	-0.07	-0.07	-0.07	-0.07	-0.07	-0.07	-0.07
Finite Roadway	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Barrier	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Grade	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Constant	-25.00	-25.00	-25.00	-25.00	-25.00	-25.00	-25.00	-25.00	-25.00
LEQ	63.47	55.59	62.65	62.18	47.80	54.87	56.12	57.01	64.08
	DAY LEQ	66.46		EVENING LEQ	63.05		NIGHT LEQ	65.40	

CNEL	72.05
DAY LEQ	66.46

Day hour	89.00
Absorptive?	no
Use hour?	no
GRADE dB	0.00

Notes:

(1) FHWA Traffic Noise Prediction Model FHWA-RD-77-108

(2) Vehicle percentages based on County of Riverside heavy truck mix.

Wednesday, February 19, 2020 CITY: La Verne PROJECT: SC2523

#N/A **Prepared by AimTD tel. 714 253 7888**

AM Period	NB	SB	EB		WB			PM Period	NB	SB	EB		WB		
0:00			0		0			12:00			47		52		
0:15			0		0			12:15			56		42		
0:30			0		2			12:30			45		52		
0:45			2	2	2	4	6	12:45			53	201	53	199	400
1:00			0		0			13:00			60		43		
1:15			0		0			13:15			63		67		
1:30			0		0			13:30			61		56		
1:45			3	3	0	0	3	13:45			78	262	78	244	506
2:00			0		2			14:00			61		95		
2:15			0		0			14:15			79		76		
2:30			0		2			14:30			79		65		
2:45			0	0	2	6	6	14:45			84	303	63	299	602
3:00			0		0			15:00			94		74		
3:15			2		2			15:15			115		83		
3:30			0		2			15:30			127		66		
3:45			3	5	8	12	17	15:45			107	443	73	296	739
4:00			0		6			16:00			129		58		
4:15			0		5			16:15			133		78		
4:30			4		14			16:30			139		78		
4:45			4	8	17	42	50	16:45			144	545	75	289	834
5:00			3		55			17:00			146		73		
5:15			7		198			17:15			147		94		
5:30			5		313			17:30			152		50		
5:45			14	29	304	870	899	17:45			145	590	61	278	868
6:00			11		194			18:00			139		60		
6:15			15		188			18:15			111		57		
6:30			22		135			18:30			96		52		
6:45			22	70	111	628	698	18:45			76	422	49	218	640
7:00			22		136			19:00			60		35		
7:15			44		146			19:15			76		40		
7:30			78		127			19:30			31		31		
7:45			103	247	119	528	775	19:45			37	204	18	124	328
8:00			67		92			20:00			33		34		
8:15			58		95			20:15			33		28		
8:30			59		61			20:30			37		18		
8:45			43	227	71	319	546	20:45			22	125	17	97	222
9:00			42		67			21:00			38		23		
9:15			40		53			21:15			18		10		
9:30			46		54			21:30			24		20		
9:45			41	169	51	225	394	21:45			26	106	9	62	168
10:00			40		53			22:00			21		18		
10:15			35		51			22:15			17		16		
10:30			42		44			22:30			13		11		
10:45			48	165	50	198	363	22:45			19	70	10	55	125
11:00			54		70			23:00			7		6		
11:15			47		68			23:15			7		3		
11:30			45		48			23:30			7		6		
11:45			49	195	44	230	425	23:45			4	25	4	19	44
Total Vol.				1120		3062	**4182**					3296		2180	**5476**

Daily Totals

NB	SB	EB	WB	Combined
		4416	5242	**9658**

	AM			PM		
	EB	WB		EB	WB	
Split %	26.8%	73.2%	**43.3%**	60.2%	39.8%	**56.7%**
Peak Hour	7:30	5:15	**5:15**	17:00	16:30	**16:30**
Volume	306	1009	**1046**	590	320	**896**
P.H.F.	0.74	0.81	**0.82**	0.97	0.85	**0.93**

cs@aimtd.com Tell. 714 253 7888

APPENDIX F

SOUNDPLAN INPUT AND RESULTS

Noise emissions of road traffic

Statio km	ADT Veh/24	Vehicles type	Vehicle name	day Veh/h	evening Veh/h	night Veh/h	Speed km/h	Contr devic	Cons Spee km/h	Affec veh. %	Road surface	Gradie Min / M %
Westbound Baseline Road						Traffic direction: In entry direction						
0+00(	15427	Total	-	917	653	227	-	none	-	-	Average (of DGAC a	0.0
		Automobiles	-	869	645	160	64					
		Medium trucks	-	18	3	25	64					
		Heavy trucks	-	30	5	42	64					
		Buses	-	-	-	-	-					
		Motorcycles	-	-	-	-	-					
		Auxiliary vehicle	-	-	-	-	-					
0+13(	15427	Total	-	917	653	227	-	none	-	-	Average (of DGAC a	0.0
		Automobiles	-	869	645	160	64					
		Medium trucks	-	18	3	25	64					
		Heavy trucks	-	30	5	42	64					
		Buses	-	-	-	-	-					
		Motorcycles	-	-	-	-	-					
		Auxiliary vehicle	-	-	-	-	-					
Eastbound Baseline Road						Traffic direction: In entry direction						
0+00(	15418	Total	-	916	653	227	-	none	-	-	Average (of DGAC a	0.0
		Automobiles	-	868	645	160	64					
		Medium trucks	-	18	3	25	64					
		Heavy trucks	-	30	5	42	64					
		Buses	-	-	-	-	-					
		Motorcycles	-	-	-	-	-					
		Auxiliary vehicle	-	-	-	-	-					

Ganddini Group Inc. 550 Parkcenter Drive, Suite 202 Santa Ana, CA 92705 USA

Receiver list

No.	Receiver name	Building side	Floor	Limit Lden dB(A)	Level w/o N Lden dB(A)	Level w NP Lden dB(A)	Difference Lden dB	Conflict Day dB	Conflict Evening dB	Conflict Night dB	Conflict Lden dB
1	1	-	GF	-	63.9	0.0	-63.9	-	-	-	-
2	2	-	GF	-	63.8	0.0	-63.8	-	-	-	-
3	3	-	GF	-	63.7	0.0	-63.7	-	-	-	-

Ganddini Group Inc. 550 Parkcenter Drive, Suite 202 Santa Ana, CA 92705 USA

APPENDIX G

VIBRATION WORKSHEETS

GROUNDBORNE VIBRATION ANALYSIS			
Project:	19232 East Baseline Road Residential Project	Date:	2/7/20
Source:	Large Bulldozer		
Scenario:	Unmitigated		
Location:	Project Site		
Address:			
PPV = PPVref(25/D)^n (in/sec)			
INPUT			
Equipment = Type	2	Large Bulldozer	INPUT SECTION IN GREEN
PPVref =	0.089	Reference PPV (in/sec) at 25 ft.	
D =	25.00	Distance from Equipment to Receiver (ft)	
n =	1.50	Vibration attenuation rate through the ground	
Note: Based on reference equations from Vibration Guidance Manual, California Department of Transportation, 2006, pgs 38-43.			
RESULTS			
PPV =	0.089	IN/SEC	OUTPUT IN BLUE

GROUNDBORNE VIBRATION ANALYSIS			
Project:	19232 East Baseline Road Residential Project	Date:	2/7/20
Source:	Vibratory Roller		
Scenario:	Unmitigated		
Location:	Project Site		
Address:			
PPV = PPVref(25/D)^n (in/sec)			
INPUT			
Equipment = Type	1	Vibratory Roller	INPUT SECTION IN GREEN
PPVref =	0.21	Reference PPV (in/sec) at 25 ft.	
D =	25.00	Distance from Equipment to Receiver (ft)	
n =	1.50	Vibration attenuation rate through the ground	
Note: Based on reference equations from Vibration Guidance Manual, California Department of Transportation, 2006, pgs 38-43.			
RESULTS			
PPV =	0.210	IN/SEC	OUTPUT IN BLUE

GROUNDBORNE VIBRATION ANALYSIS			
Project:	19232 East Baseline Road Residential Project	Date:	2/7/20
Source:	Vibratory Roller		
Scenario:	Unmitigated		
Location:	Project Site		
Address:			
PPV = PPVref(25/D)^n (in/sec)			
INPUT			
Equipment = Type	1	Vibratory Roller	INPUT SECTION IN GREEN
PPVref =	0.21	Reference PPV (in/sec) at 25 ft.	
D =	26.00	Distance from Equipment to Receiver (ft)	
n =	1.50	Vibration attenuation rate through the ground	
Note: Based on reference equations from Vibration Guidance Manual, California Department of Transportation, 2006, pgs 38-43.			
RESULTS			
PPV =	0.198	IN/SEC	OUTPUT IN BLUE

GANDDINI GROUP, INC.
550 Parkcenter Drive, Suite 202, Santa Ana, CA 92705
714.795.3100 | www.ganddini.com

APPENDIX G: TRANSPORTATION MEMORANDUM

June 30, 2020

Mr. Curtis Zacuto, Principal
ECOTIERRA CONSULTING
5776-D Lindero Canyon Road #414
Westlake Village, CA 91362

RE: 500 East Baseline Road Residential Project Trip Generation Analysis
19232

Dear Mr. Zacuto:

INTRODUCTION

Ganddini Group, Inc. is pleased to provide this trip generation memorandum for the proposed 500 East Baseline Road Residential Project. The purpose of this trip generation analysis is to document the number of trips forecast to be generated by the proposed project.

PROJECT DESCRIPTION

The 19.4-acre project site is located north of Baseline Road between Rodeo Lane and Broken Spur Road in the County of Los Angeles and adjacent to the City of La Verne eastern boundary. The regional location map and project location map are shown on Figure 1 and Figure 2, respectively.

The proposed project involves annexation from the County of Los Angeles to the City of La Verne with Zone Change from Hillside Residential (2 DU/AC) to Planned Residential (PR3D 3.33 DU/AC), and the construction of residential dwelling units. The proposed development is to consist of seven (7) single-family dwelling units at a density of 1.26 DU/AC with approximately 10.7 acres dedicated to open space. Vehicular project site access is proposed at Baseline Road.

TRIP GENERATION

Table 1 shows the project trip generation forecast based upon trip generation rates obtained from the Institute of Transportation Engineers (ITE) Trip Generation Manual (10th Edition, 2017). Trip generation rates for the ITE Land Use “Single Family Housing - Detached” (Land Use Code 210) were utilized for weekday AM peak hour trips, PM peak hour trips, and daily trips for the proposed land use. The number of trips forecast to be generated by the proposed project is determined by multiplying the trip generation rates by the proposed land use quantity.

As shown in Table 1, the proposed project is forecast to generate approximately 66 daily trips, including 5 trips during the AM peak hour and 7 trips during the PM peak hour.

CRITERIA FOR THE PREPARATION OF TRAFFIC IMPACT ANALYSES

The County of Los Angeles Traffic Impact Analysis Guidelines (December 2013) states a traffic report is generally needed if a project generates over 500 trips per day or where the Department staff is concerned with possible adverse impacts on traffic.

As shown in Table 1, the project trip generation is forecast to generate 66 daily trips; therefore, further traffic analysis is typically not required based on the County of Los Angeles guidelines.

EXISTING CONDITIONS

Baseline Road is an east-west major arterial generally serving the northern residential area of La Verne. There are two travel lanes in each direction, separated by a two-way left-turn median. There are sidewalks on both sides of the street and the posted speed is 40 miles per hour.

Baseline Road currently operates at an acceptable Level of Service per the City of La Verne General Plan Existing Conditions Report based on counts and analysis from November 2017. As shown on Table 2-8 of the report, Baseline Road roadway segment Level of Service A. As shown on Table 2-9 of the report, Baseline Road and Fruit Street intersection Level of Service A during the AM and PM peak hours.

VEHICLES MILES TRAVELLED

Background

California Senate Bill 743 (SB 743) directs the State Office of Planning and Research (OPR) to amend the California Environmental Quality Act (CEQA) Guidelines for evaluating transportation impacts to provide alternatives to Level of Service that "promote the reduction of greenhouse gas emissions, the development of multimodal transportation networks, and a diversity of land uses." In December 2018, the California Natural Resources Agency certified and adopted the updated CEQA Guidelines package. The amended CEQA Guidelines, specifically Section 15064.3, recommend the use of Vehicle Miles Travelled (VMT) as the primary metric for the evaluation of transportation impacts associated with land use and transportation projects. Currently, agencies may opt-in to applying the updated CEQA guidelines for VMT analysis and implementation is required State-wide by July 1, 2020.

The updated CEQA Guidelines allow for lead agency discretion in establishing methodologies and thresholds provided there is substantial evidence to demonstrate that the established procedures promote the intended goals of the legislation. Where quantitative models or methods are unavailable, Section 15064.3 allows agencies to assess VMT qualitatively using factors such as availability of transit and proximity to other destinations. The Technical Advisory on Evaluating Transportation Impacts in CEQA (State of California, December 2018) ["Technical Advisory"] provides technical considerations regarding methodologies and thresholds with a focus on office, residential, and retail developments as these projects tend to have the greatest influence on VMT. Many jurisdictions are currently in the process of developing updated procedures for VMT analysis, however, few have fully implemented the new metric.

Project Assessment

The City of La Verne has recently established VMT analysis procedures that are generally consistent with the guidance from the State's Technical Advisory. The City's guidelines include the following screening criteria for certain land development projects that may be presumed to result in a less than significant VMT impact:

- Retail projects up to 50,000 SF in floor area.
- Projects generating less than 110 daily trips.
- Residential and office projects located in low VMT areas. Low VMT is defined as 15% below the subarea VMT metrics for that area.
- Projects within a Transit Priority Area (TPA). A TPA is defined as locations within ½ mile of a major transit stop or station (e.g. Gold Line or Metrolink), or within ½ mile of a high-quality transit corridor with 15-minute or less headways during peak commute hours.
- Affordable housing developments or affordable housing units within mixed-use developments.

Presumption of Less Than Significant VMT Impact for Small Projects

As noted in the Technical Advisory, CEQA Guidelines § 15301, subdivision (e)(2) provides a categorical exemption for existing facilities, including additions to existing structures of up to 10,000 square feet, so long as the project is in an area where public infrastructure is available to allow for maximum planned development and the project is not in an environmentally sensitive area. Typical project types for which trip generation increases relatively linearly with building footprint (i.e., general office building, single tenant office building, office park, and business park) generate or attract an additional 110-124 trips per 10,000 square feet. Therefore, absent substantial evidence otherwise, it is reasonable to conclude that the addition of 110 or fewer trips could be considered not to lead to a significant impact.

Consistent with State recommendations, the City of La Verne recommends that projects generating less than 110 daily trips may be screened out from VMT analysis.

The proposed development consists of an infill residential development that is forecast to generate 66 daily vehicle trips. Therefore, the proposed project can reasonably be presumed to result in a less than significant VMT impact based on the City-established screening criteria.

CONCLUSION

The proposed project is forecast to generate fewer than 500 daily trips or 50 peak hour trips during the weekday AM and PM peak hours. Additionally, Baseline Road currently operates at Level of Service A in the project vicinity. Therefore, the proposed project is expected to result in a less than significant traffic impact.

The proposed project can reasonably be presumed to result in a less than significant VMT impact based on the City-established screening criteria.

We appreciate the opportunity to assist you on this project. Should you have any questions or if we can be of further assistance, please do not hesitate to call at (714) 795-3100.

Sincerely,

Perrie Ilercil, PE (AZ)
Senior Engineer

REGISTERED PROFESSIONAL ENGINEER
GIANCARLO J. GANDDINI
TR 2663
TRAFFIC
STATE OF CALIFORNIA

Giancarlo Ganddini, TE, PTP
Principal

Table 1
Project Trip Generation

Trip Generation Rates									
			AM Peak Hour			PM Peak Hour			Daily
Land Use	Source[1]	Units[2]	% In	% Out	Rate	% In	% Out	Rate	Rate
Single-Family Detached Housing	ITE 210	DU	25%	75%	0.74	63%	37%	0.99	9.44

Trips Generated									
			AM Peak Hour			PM Peak Hour			
Land Use	Quantity	Units[2]	In	Out	Total	In	Out	Total	Daily
Single-Family Detached Housing	7	DU	1	4	5	4	3	7	66

Notes:
(1) ITE = Institute of Transportation Engineers, Trip Generation Manual, 10th Edition, 2017; ### = Land Use Code.
(2) DU = Dwelling Units

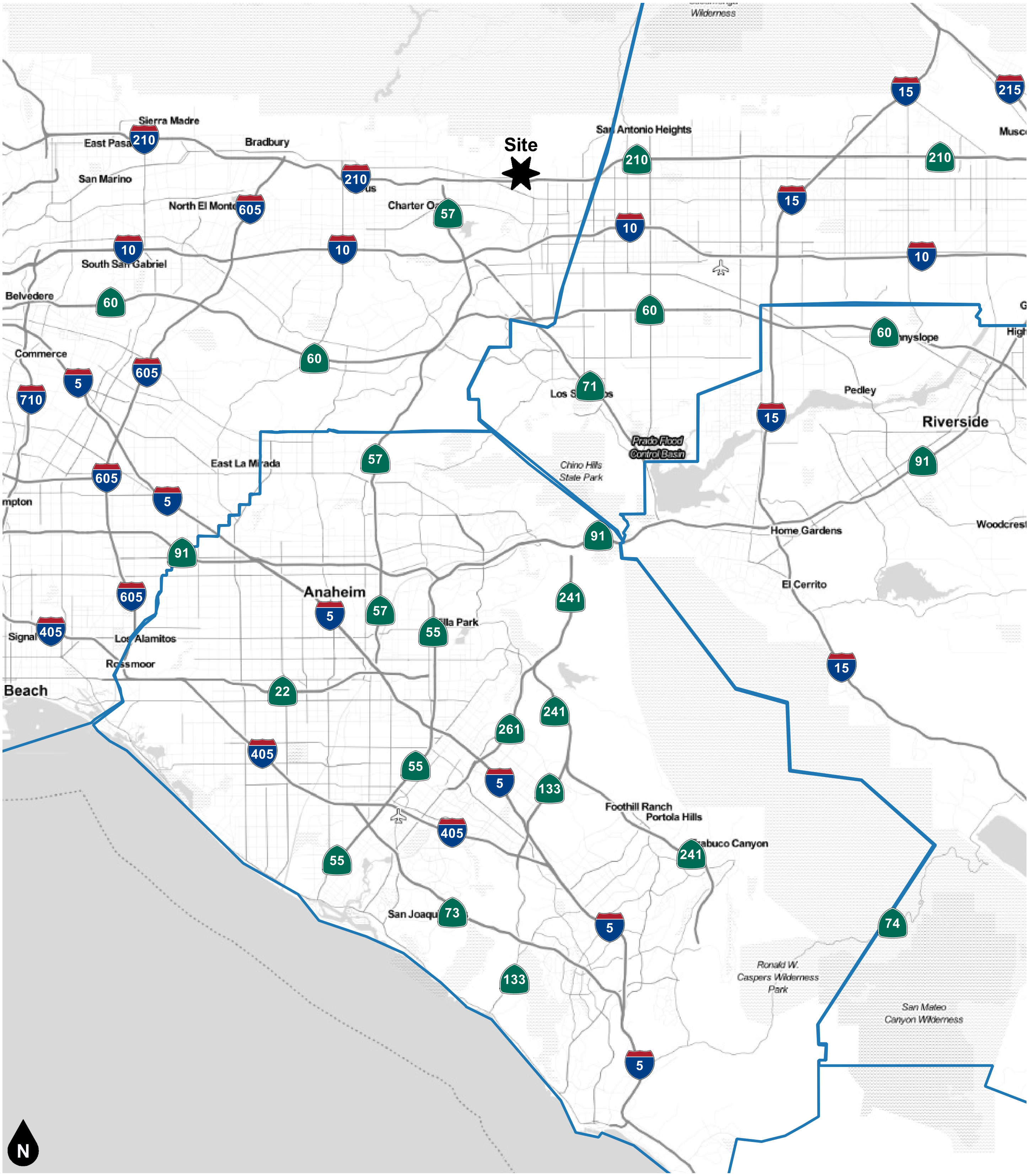


Figure 1
Regional Vicinity

gandini

500 East Baseline Road Residential Project
Trip Generation Analysis
19232

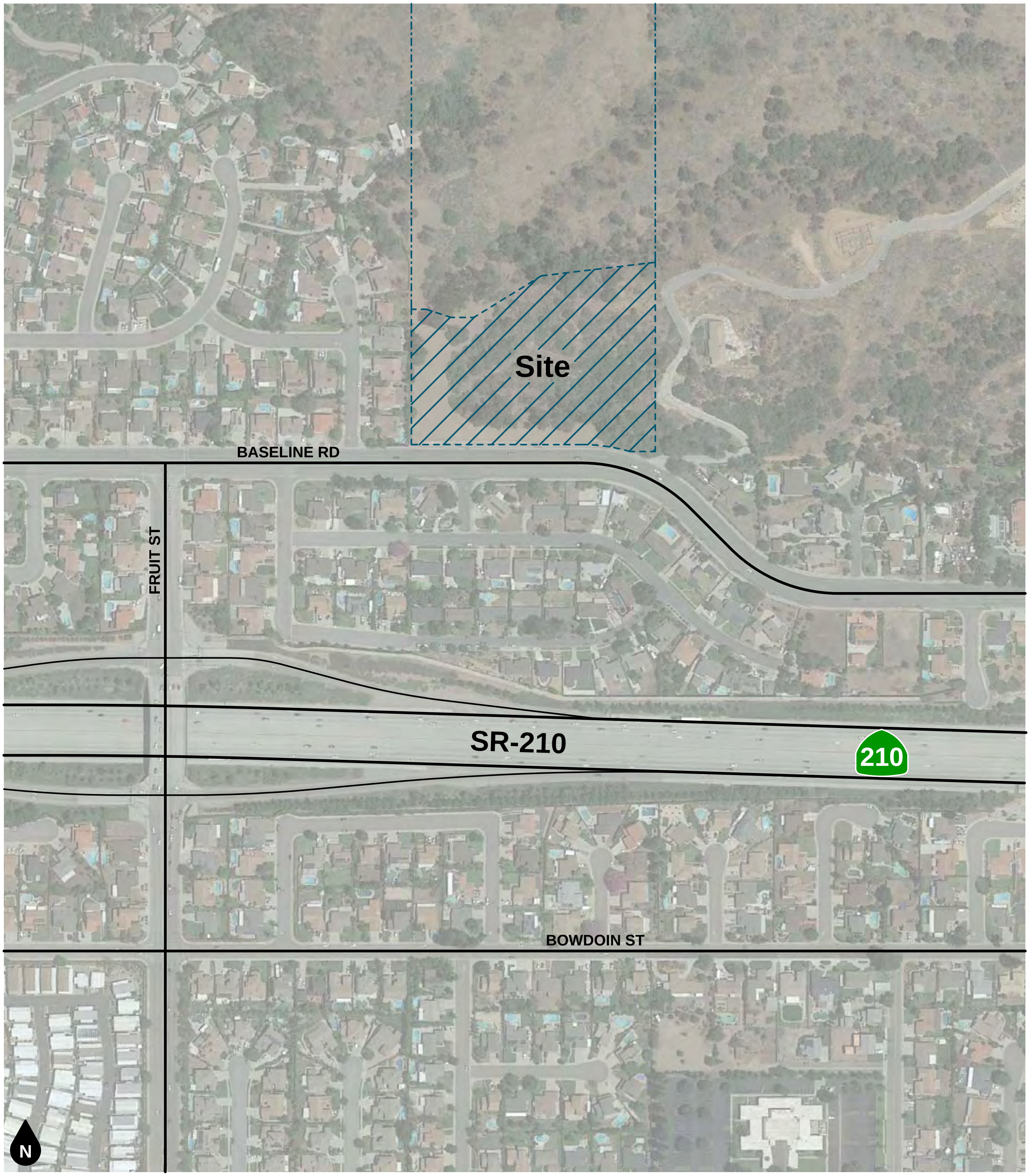


Figure 2
Project Location Map

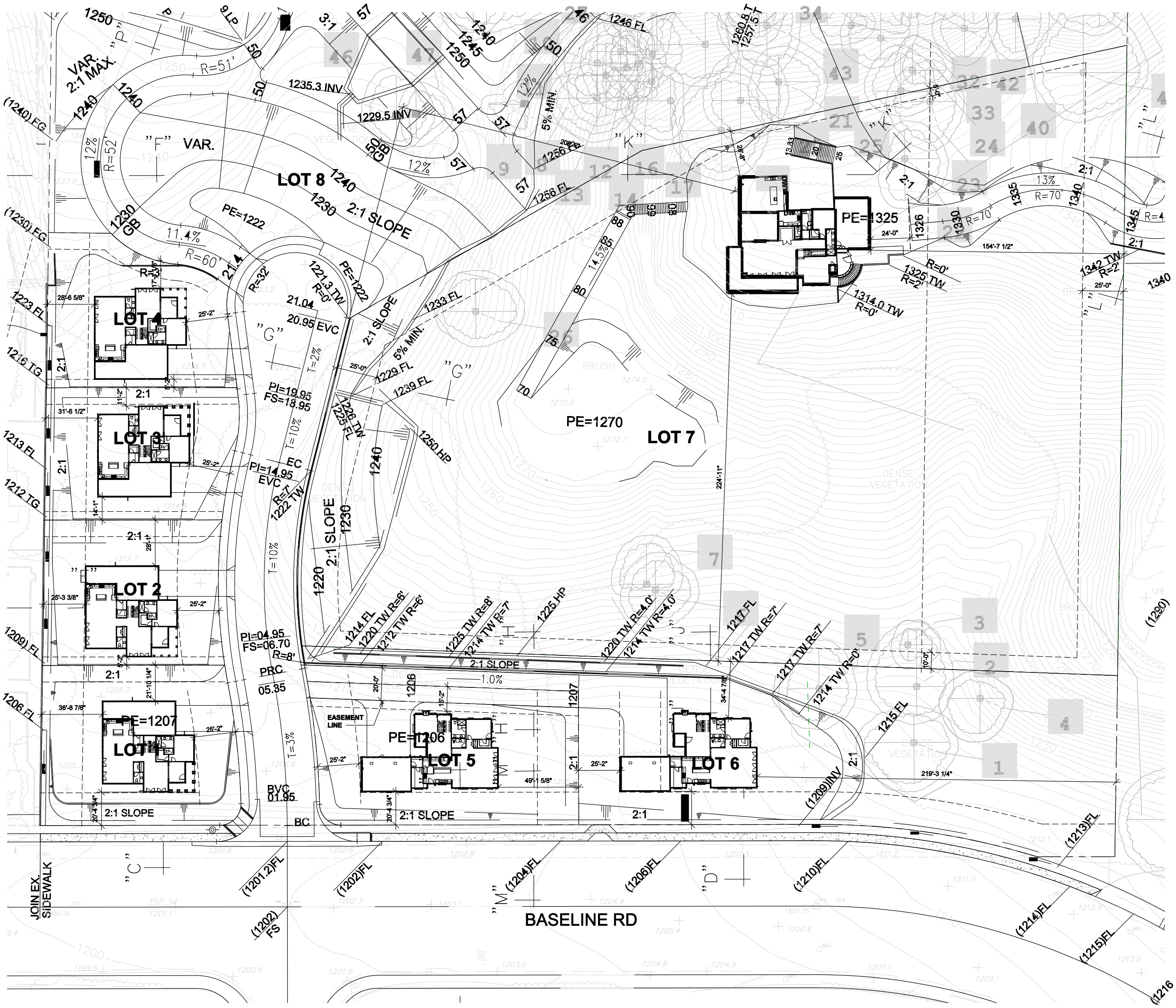


Figure 3
Site Plan

APPENDIX H: TRIBAL CULTURAL RESOURCES

APPENDIX H.1: SACRED LANDS FILE SEARCH

NATIVE AMERICAN HERITAGE COMMISSION

NAHC HEADQUARTERS
1550 Harbor Boulevard
Suite 100
West Sacramento,
California 95691
(916) 373-3710
nahc@nahc.ca.gov
NAHC.ca.gov

February 26, 2020

Jennifer Johnson
EcoTierra Consulting

Via Email to: jennifer@ecotierraconsulting.com

Re: Baseline Road SFR and Annex Project, Los Angeles County

Dear Ms. Johnson:

A record search of the Native American Heritage Commission (NAHC) Sacred Lands File (SLF) was completed for the information you have submitted for the above referenced project. The results were positive. Please contact the Gabrieleno Band of Mission Indians – Kizh Nation on the attached list for more information. Other sources of cultural resources should also be contacted for information regarding known and recorded sites.

Attached is a list of Native American tribes who may also have knowledge of cultural resources in the project area. This list should provide a starting place in locating areas of potential adverse impact within the proposed project area. I suggest you contact all of those indicated; if they cannot supply information, they might recommend others with specific knowledge. By contacting all those listed, your organization will be better able to respond to claims of failure to consult with the appropriate tribe. If a response has not been received within two weeks of notification, the Commission requests that you follow-up with a telephone call or email to ensure that the project information has been received.

If you receive notification of change of addresses and phone numbers from tribes, please notify me. With your assistance, we can assure that our lists contain current information.

If you have any questions or need additional information, please contact me at my email address: steven.quinn@nahc.ca.gov

Sincerely,

Steven Quinn

Steven Quinn
Cultural Resources Analyst

Attachment

Native American Heritage Commission
Native American Contact List
Los Angeles County
2/26/2020

Gabrieleno Band of Mission Indians - Kizh Nation Andrew Salas, Chairperson P.O. Box 393 Covina, CA, 91723 Phone: (626) 926 - 4131 admin@gabrielenoindians.org	Gabrieleno
Gabrieleno/Tongva San Gabriel Band of Mission Indians Anthony Morales, Chairperson P.O. Box 693 San Gabriel, CA, 91778 Phone: (626) 483 - 3564 Fax: (626) 286-1262 GTTribalcouncil@aol.com	Gabrieleno
Gabrielino /Tongva Nation Sandonne Goad, Chairperson 106 1/2 Judge John Aiso St., #231 Los Angeles, CA, 90012 Phone: (951) 807 - 0479 sgoad@gabrielino-tongva.com	Gabrielino
Gabrielino Tongva Indians of California Tribal Council Robert Dorame, Chairperson P.O. Box 490 Bellflower, CA, 90707 Phone: (562) 761 - 6417 Fax: (562) 761-6417 gtongva@gmail.com	Gabrielino
Gabrielino-Tongva Tribe Charles Alvarez, 23454 Vanowen Street West Hills, CA, 91307 Phone: (310) 403 - 6048 roadkingcharles@aol.com	Gabrielino

This list is current only as of the date of this document. Distribution of this list does not relieve any person of statutory responsibility as defined in Section 7050.5 of the Health and Safety Code, Section 5097.94 of the Public Resource Section 5097.98 of the Public Resources Code.

This list is only applicable for contacting local Native Americans with regard to cultural resources assessment for the proposed Baseline Road SFR and Annex Project, Los Angeles County.

APPENDIX H.2: NATIVE AMERICAN TRIBE CONSULTATION REQUEST LETTER

GABRIELENO BAND OF MISSION INDIANS - KIZH NATION
Historically known as The San Gabriel Band of Mission Indians
recognized by the State of California as the aboriginal tribe of the Los Angeles basin

April 15, 2020

Project Name: Baseline Rd Single-Family Residential and Annexation Project Located: West Claremont portion of unincorporated Los Angeles County at 500 E. Baseline Road (project site)

Dear Candice Bowcock,

Thank you for your letter dated April 6,2020 regarding AB52 consultation. The above proposed project location is within our Ancestral Tribal Territory; therefore, our Tribal Government requests to schedule a consultation with you as the lead agency, to discuss the project and the surrounding location in further detail.

Please contact us at your earliest convenience. ***Please Note:AB 52, "consultation" shall have the same meaning as provided in SB 18 (Govt. Code Section 65352.4).***

Thank you for your time,

Andrew Salas, Chairman
Gabrieleno Band of Mission Indians – Kizh Nation
1(844)390-0787

PO Box 393 Covina, CA 91723 admin@gabrielenoindians.org