

APPENDIX FOR
DRAFT INITIAL STUDY/ MITIGATED NEGATIVE DECLARATION CARANCHO
PUMP STATION EXPANSION PROJECT
RIVERSIDE COUNTY, CALIFORNIA

JULY 2, 2024

PREPARED FOR:

RANCHO CALIFORNIA WATER DISTRICT

42135 WINCHESTER ROAD, TEMECULA, CA 92590

Rancho Water

PREPARED BY:

ARDURRA GROUP

ARDURRA

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APPENDX FOR
INITIAL STUDY/
MITIGATED NEGATIVE DECLARATION

Draft

For the proposed:

CARANCHO PUMP STATION EXPANSION PROJECT
RIVERSIDE COUNTY, CALIFORNIA

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RANCHO CALIFORNIA WATER DISTRICT

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Temecula, California, 92590

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APPENDICIES

APPENDIX A: Air Quality and Greenhouse Gas Impact Study/Energy (Ganddini 2024)
APPENDIX B: Biological Resources (ELMT 2024)
APPENDIX C: Cultural/Archaeological/Tribal/ Paleontological Resources Report (BCR Consulting 2024)
APPENDIX D: Soils and Geotechnical (Leighton, Inc. 2020)
APPENDIX E: Paint Sample Analysis (CSI Services, 2024)
APPENDIX F: Noise Study (Ganddini 2024)

APPENDIX A

Air Quality and Greenhouse Gas Impact Study/Energy (Ganddini 2024)

CARANCHO PUMP STATION PROJECT AIR QUALITY, GLOBAL CLIMATE CHANGE, AND ENERGY IMPACT ANALYSIS

County of Riverside

March 27, 2024



Traffic Engineering ● Transportation Planning ● Parking ● Noise & Vibration
Air Quality ● Global Climate Change ● Health Risk Assessment

CARANCHO PUMP STATION PROJECT AIR QUALITY, GLOBAL CLIMATE CHANGE, AND ENERGY IMPACT ANALYSIS

County of Riverside

March 27, 2024

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Project No. 19704

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EXECUTIVE SUMMARY

The purpose of this air quality, global climate change, and energy impact analysis is to provide an assessment of the impacts resulting from development of the proposed Carancho Pump Station 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).

Given the temporary and short-term construction schedule, the project would not result in a long-term (i.e., lifetime or 30-year) exposure to TACs 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 and the nearest sensitive receptors to the project site are located approximately 50 feet (~15 meters) southeast and adjacent to the north/northwest of the project site. Therefore, impacts from TACs during construction would be less than significant.

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

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 or toxic air contaminant (TAC) impacts 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). The Diesel Emissions Health Risk Assessment conducted for this project showed that DPM emissions from project-related truck trips will not cause a significantly elevated cancer risk or significant non-cancer-related health risk to nearby receptors. 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 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 greenhouse gas (GHG) emissions would not exceed the County of Riverside Climate Action Plan (CAP) Update screening threshold of 3,000 metric tons of carbon dioxide equivalents (MTCO2e) per year.

Furthermore, as the proposed project would not exceed the screening threshold of 3,000 metric tons of carbon dioxide equivalents (MTCO2e) per year, the project would not conflict with the goals of AB-32, SB-32, or the County of Riverside CAP Update; 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

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 applicable 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 infrastructure 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. Impacts are considered to be less than significant.

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
- analysis of the project's energy use during construction and operation
- recommendations for mitigation measures

The County of Riverside is the lead agency for this air quality and GHG analysis, in accordance with the CEQA authorizing legislation. Although this is a technical report, effort has been made to write the report clearly and concisely. A glossary is provided in Appendix A to assist the reader with technical terms related to air quality and global climate change.

PROJECT LOCATION

The 6.56-acre project site is located at Assessor Parcel Number (APN) 933-050-036 approximately 0.3 miles north of the unsignalized intersection of El Calamar Road and Carancho Road in the unincorporated County of Riverside, California. The project site is currently developed with two water tanks (Carancho Reservoir #1 & #2) and a pump station. Access to the site is via a driveway on El Calamar Road. The site includes mostly impervious surfaces and natural landscape setbacks/buffers with developed portions consisting of paved driveways, tanks, and ground-mounted equipment. A vicinity map showing the project location is provided on Figure 1.

PROJECT DESCRIPTION

The Carancho Pump Station was originally built in 1987 with a total of two (2) 1,500 gallons per minute (gpm) design capacity pumps and two (2) empty pump cans. Although one pump is intended as the primary pump with the other as backup, both pumps are often operating together to meet requirements of high-water demand periods. Rancho California Water District (RCWD, District) identified the need to upsize the Carancho Pump Station in their 5-year CIP Plan to maintain efficiency of the District's 2550 Pressure Zone, which is also served by the Tenaja and Baldaray Pump Stations, in addition to the Carancho Pump Station. Due to the existing configuration, the Tenaja Pump Station cannot provide multiple, maximum day redundancy for the Baldaray Pump Station until the Carancho Pump Station is expanded. The project site has been in use as a pump station facility and for water storage for over 30 years; however, the two existing tanks have been out of service since the 1990's.

The project involves the demolition of both existing Carancho Nos. 1 and 2 Tanks, permanent stabilization of the tank pad, replacement of two existing pumps (350 Hp) and addition of two new pumps (350 Hp) for a total of 4 new pumps on the pump station pad. Project implementation will result in 3 duty pumps, 350 HP; 1 standby pump, 350 HP) to meet the desired capacity of 4,400 gpm; installation of two new surge tanks;

installation of new electrical conduits; new transformer; new 1,500 kW emergency power generation with automatic transfer switch that meets Tier 2 emission standards[1]; and the installation of approximately 600 linear feet of 24-inch diameter potable water pipeline from the eastern end of the main driveway of Carancho Pump Station to the proposed location of the pump station improvements on the lower pad. The pump station will be installed on areas of previous disturbance within APN 933-050-036 southwest of the Carancho Tanks. The existing pump station contains space for four pumps and was initially intended to provide 6,000 gpm (with all four pumps running), thus the upgrades planned for the Project fall within the scope and configuration of the original pump station.

Construction activities will involve approximately 4 to 8 crew members[2] at any one time and up to two inspectors and construction staff for a total not exceeding 10 people working on the job daily during active construction. Construction will occur in one phase with five distinct sets of activities: Mobilization, 2) Demolition, 3) Site Preparation, 4) Construction and 5) Final Site Work and the following activities are proposed:

- Pre-Construction: Review material submittals and order equipment (two to twelve months)
- Mobilization: Install construction trailer (one week).
- Demolition: Remove two existing steel tanks, concrete foundations, and remove miscellaneous piping, valves, and portions of existing pavement (two months).
- Site Preparation & Pipeline Installation: Perform grading for a small retaining wall and minor grading to maintain existing drainage patterns and join new surfaces to match existing grades and elevations, install 24-inch diameter pipeline in existing driveway and remove approximately 250 cubic yards of materials (three months).
- Pump Station Construction: Concrete work, reconstruct access, and appurtenances, install new equipment (nine months).
- Final Site Work: Paving, clean up, and site restoration (one month).

The following types and quantities of equipment will be in use at the project site during portions of the construction activities listed above. However, it should be noted that, the construction equipment listed below will only be in use for a portion of the anticipated duration for each project activity.

- Mobilization: Field office trailer, backhoe for potholing, two service trucks (one week)
- Demolition: Cat 235 Excavator with demolition hammer attachment, Front End Loader, two 15 cubic-yard dump trucks, two service trucks, crane, two chain saws, two scrapers, one tractor. There will be no more than 65 total truck trips during demolition which includes removal of the tank, and the reservoirs pipe and appurtenances. This estimate is based on 1,000 tons of steel from the tanks, removed in 40-ton capacity trucks (approximately two months duration).
- Site Preparation: Pug Mill Mixer, Bulldozer, one Front End Loader and one Cat 235 Excavator, two service trucks and haulers. Material handling equipment. Four pumps and two skid steer loaders, this phase will include up to 24 truck trips using haulers to import 350 tons of base material for soils stabilization at 40 tons per truck (approximately three months).
- Pump Station Construction: One Crane, Cat 235 Excavator, paving equipment, up to 13 Trucks per day maximum over an approximate 9- month duration, two service trucks.

The project is anticipated to be operational for a minimum of 30 years from completion of initial construction. The District will operate and manage the project similarly with existing conditions since the project will require the expansion of the pump station within the site's existing footprint. Therefore, the District does not anticipate additional staffing needs for long-term operation and maintenance of the proposed project. Monthly worker trips over the lifetime of the Project will be required to conduct routine inspections and ensure proper

[1] Tier 2 emission standards are established by the U.S. EPA for Stationary Emergency Use Only and apply to nonroad diesel engines. Engines of various sizes need to meet preestablished thresholds for smoke (PM); and Nitrous Oxide (NOx) (US EPA, 2022).

[2] The number of construction crew members is an assumption based on the scale of the Proposed Project and type of infrastructure being implemented.

maintenance. Long-term maintenance does not anticipate deviating from existing operations or contribute to additional worker trips upon the competition of project construction.

Figure 2 illustrates the proposed site plan.

Phasing and Timing

The proposed project is anticipated to be operational in 2026. Project construction is anticipated to begin in late 2024 and conclude in mid- 2026 with a duration of approximately eighteen months. Construction activities will occur between 7:30AM and 5:00 PM, Monday through Friday; weekend and night work is not proposed.

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 uses with property lines located approximately 50 feet (~15 meters) southeast and adjacent to the north/northwest 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

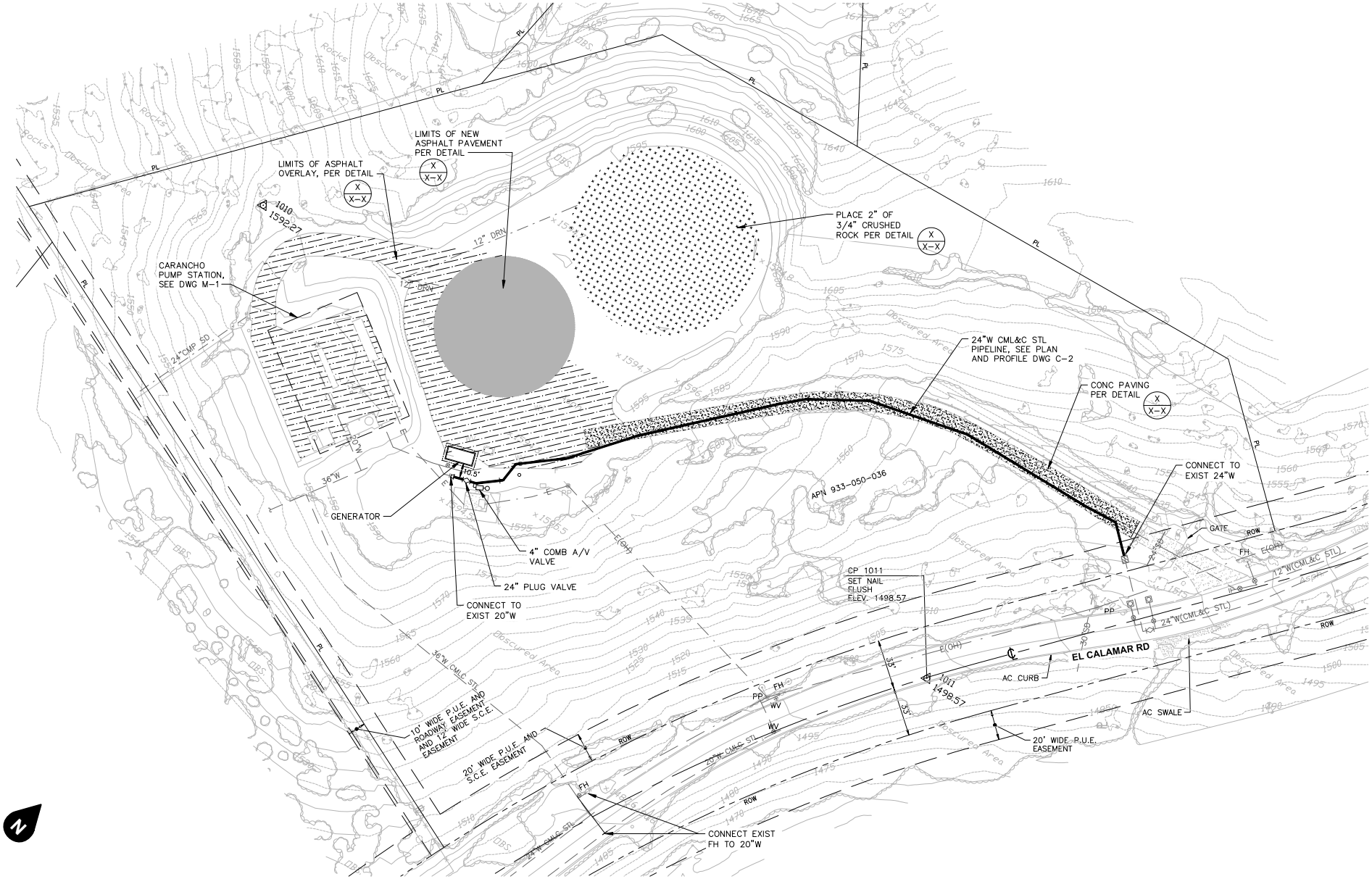


Figure 2
Site Plan

2. AIR QUALITY ANALYSIS

EXISTING AIR QUALITY CONDITIONS

Local Air Quality

The project is located within the portion of Riverside County that lies within the South Coast Air Basin (Basin). The project area is under the jurisdiction of the SCAQMD. The Basin is a 6,600-square-mile coastal plain bounded by the Pacific Ocean to the southwest and the San Gabriel, San Bernardino, and San Jacinto Mountains to the north and east. The Basin includes the non-desert portions of Los Angeles, Riverside, and San Bernardino counties, and all of Orange County.

The ambient concentrations of air pollutants are determined by the amount of emissions released by sources and the atmosphere's ability to transport and dilute such emissions. Natural factors that affect transport and dilution include terrain, wind, atmospheric stability, and sunlight. Therefore, existing air quality conditions in the area are determined by such natural factors as topography, meteorology, and climate, in addition to the amount of emissions released by existing air pollutant sources.

Atmospheric conditions such as wind speed, wind direction, and air temperature gradients interact with the physical features of the landscape to determine the movement and dispersal of air pollutants. The topography and climate of southern California combine to make the Basin an area of high air pollution potential. The Basin is a coastal plain with connecting broad valleys and low hills, bounded by the Pacific Ocean to the west and high mountains around the rest of the perimeter. The general region lies in the semi-permanent high-pressure zone of the eastern Pacific, resulting in a mild climate tempered by cool sea breezes with light average wind speeds.

The usually mild climatological pattern is disrupted occasionally by periods of extremely hot weather, winter storms, or Santa Ana winds. During the summer months, a warm air mass frequently descends over the cool, moist marine layer produced by the interaction between the ocean's surface and the lowest layer of the atmosphere. The warm upper layer forms a cap over the cool marine layer and inhibits the pollutants in the marine layer from dispersing upward. In addition, light winds during the summer further limit ventilation. Furthermore, sunlight triggers the photochemical reactions that produce ozone. The region experiences more days of sunlight than any other major urban area in the nation except Phoenix (SCAQMD, 2007).

The temperature and precipitation levels for the City of Lake Elsinore, the closest station with updated data, are shown below in Table 1. Table 1 shows that August is typically the warmest month and December is typically the coolest month. Rainfall in the project area varies considerably in both time and space. 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	66.0	67.7	72.3	77.7	83.8	91.0	97.7	98.6	93.4	83.4	70.4	65.8
Avg. Min. Temperature	38.9	40.9	43.4	47.0	52.5	56.5	61.0	62.5	58.9	52.0	42.1	38.5
Avg. Total Precipitation (in.)	2.56	2.68	1.77	0.67	0.20	0.05	0.16	0.05	0.17	0.59	0.90	2.11

Source: https://wrcc.dri.edu/cgi-bin/cliMAIN.pl?ca2805
Data from the Elsinore, CA station (042805).

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 O_3. Ground-level O_3 is the primary constituent of smog. Sunlight and hot weather cause ground-level O_3 to form with the greatest concentrations usually occurring downwind from urban areas. O_3 is subsequently considered a regional pollutant. Ground-level O_3 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 O_3 precursors, the health effects associated with O_3 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 [SO_2]) are formed when fuel containing sulfur, such as coal and oil is burned, and from the refining of gasoline. SOx dissolve 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 O_3. VOCs are transformed into organic aerosols in the atmosphere, which contribute to higher PM10 and lower visibility.

Other Pollutants of Concern

Toxic Air Contaminants (TACs)

In addition to the above-listed criteria pollutants, TACs are another group of pollutants of concern. Sources of TACs 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 TACs. The most important of these TACs, in terms of health risk, are diesel particulates, benzene, formaldehyde, 1,3-butadiene, and acetaldehyde. Public exposure to TACs can result from emissions from normal operations as well as from accidental releases. Health effects of TACs include cancer, birth defects, neurological damage, and death.

TACs 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 TACs with varying degrees of toxicity. Sources of TACs 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 TACs 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 TAC 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 TAC 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 CARB 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 as Asbestos Mountain in the San Jacinto Valley; approximately 48 miles east of the site. 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 (USEPA) is responsible for setting and enforcing the 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 NAAQS pollutants were identified using medical evidence and are shown below in Table 2.

The EPA and the 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 O_3 and PM2.5. Currently, the Basin is in maintenance/attainment with the ambient air quality standards for CO, lead, SO_2, suspended PM-10, and NO_2.

State – California Air Resources Board

The CARB, which is 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, the CARB conducts research, sets the CAAQS, compiles emission inventories, develops suggested control measures, provides oversight of local programs, and prepares the State Implementation Plan (SIP). The 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. Furthermore, the motor vehicle emission standards established by CARB include compliance with the Safer Affordable Fuel Efficient Vehicles (SAFE) Rule, issued by NHTSA and EPA in March 2020 (published on April 30, 2020 and effective after June 29, 2020). The SAFE Rule sets fuel economy and carbon dioxide standards that increase 1.5 percent in stringency each year from model years 2021 through 2026, and apply to both passenger cars and light trucks. CARB 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, SO_2, NO_2, 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 $\mu g/m^3$ and established an annual average standard for PM2.5 of 12 $\mu g/m^3$. 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 TACs. 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 TACs for use by certain categories of stationary sources. The bill requires those stationary sources to report their annual emissions of criteria air pollutants and TACs, 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 TACs 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.

Air Quality Management Plan

In May 2022, the SCAQMD completed the 2022 Draft AQMP. The 2022 Draft AQMP is focused on attaining the 2015 8-hour ozone standard (70 ppb) for the South Coast Air Basin and Coachella Valley. The Draft 2022 AQMP builds upon measures already in place from previous AQMPs. It also includes a variety of additional strategies such as regulation, accelerated deployment of available cleaner technologies (e.g., zero emission

technologies, when cost-effective and feasible, and low NOx technologies in other applications), best management practices, co-benefits from existing programs (e.g., climate and energy efficiency), incentives, and other CAA measures to achieve the 2015 8-hour ozone standard. The 2022 AQMP was adopted December 2, 2022, by SCAQMD Governing Board. The 2022 AQMP was approved and adopted by CARB on January 26, 2023. The 2022 AQMP strategy includes the following:[3]

- Wide adoption of zero emissions technologies anywhere available.
- Low NOx technologies where zero emissions aren't feasible.
- Federal Action.
- Zero emissions technologies for residential and industrial sources such as water and space heaters in buildings and homes regionwide.
- Incentive funding in environmental justice areas.
- Prioritize benefits on the most disadvantaged communities.

SCAQMD Rules and Regulations

During construction and operation, the project must comply with applicable rules and regulations. The following are rules the project may 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.

[3] SCAQMD 2022 AQMP Infographic. http://www.aqmd.gov/home/air-quality/clean-air-plans/air-quality-mgt-plan/2022-aqmp-infographic

- 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 TACs.

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.

SCAQMD Rule 2305

The Warehouse Actions and Investments to Reduce Emissions (WAIRE) Program aims to reduce nitrogen oxide and diesel emissions associated with warehouses, help meet federal standards and improve public health. The WAIRE Program is an indirect source rule that regulates warehouse facilities to reduce emissions from the goods movement industry. Owners and operators of warehouses that have 100,000 square feet or more of indoor floor space in a single building must comply with the WAIRE Program. WAIRE is a menu-based point system in which warehouse operators are required to earn a specific number of points every year. The yearly number of points required is based on the number of trucks trips made to and from the warehouse each year, with larger trucks such as tractors or tractor-trailers multiplied by 2.5. Warehouse operators may be exempt from parts of the rule if they operate less than 50,000 square feet of warehousing activities, if the number of points required is less than 10, or if the WAIRE menu action chosen under performs due to circumstances beyond the operator's control, such as a manufacturer defect. SCAQMD Rule 316 establishes fees to fund Rule 2305 compliance activities.

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 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[4]. 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 metropolitan planning organization (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.

On September 3, 2020, SCAG's Regional Council unanimously voted to approve and fully adopt Connect SoCal (2020–2045 Regional Transportation Plan/Sustainable Communities Strategy), and the addendum to the Connect SoCal Program Environmental Impact Report. Connect SoCal is a long-range visioning plan that builds upon and expands land use and transportation strategies established over several planning cycles to increase mobility options and achieve a more sustainable growth pattern. Connect SoCal outlines more than $638 billion in transportation system investments through 2045. It 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.

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

Local – County of Riverside

Local jurisdictions, such as the County of Riverside, have the authority and responsibility to reduce air pollution through its police power and decision-making authority. Specifically, the County is responsible for the assessment and mitigation of air emissions resulting from its land use decisions. The County is also responsible for the implementation of transportation control measures as outlined in the 2022 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 County 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 County 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 Air Quality Element of the County of Riverside General Plan summarizes air quality issues in the Basin, air quality-related plans and programs administered by federal, state, and special purpose agencies, and establishes goals and policies to improve air quality. These goals and policies in the Air Quality Element that relate to the proposed project include:

Multi-jurisdictional Cooperation:

AQ 1.1 Promote and participate with regional and local agencies, both public and private, to protect and improve air quality. (AI 111)

AQ 1.2 Support the Southern California Association of Government's (SCAG) Regional Growth Management Plan by developing intergovernmental agreements with appropriate governmental entities such as the Western Riverside Council of Governments (WRCOG), the Coachella Valley Association of Governments (CVAG), sanitation districts, water districts, and those subregional entities identified in the Regional Growth Management Plan. (AI 111)

AQ 1.3 Participate in the development and update of those regional air quality management plans required under federal and state law, and meet all standards established for clean air in these plans. (AI 110)

AQ 1.4 Coordinate with the SCAQMD and MDAQMD to ensure that all elements of air quality plans regarding reduction of air pollutant emissions are being enforced. (AI 111)

AQ 1.5 Establish and implement air quality, land use and circulation measures that improve not only the County's environment but the entire regions. (AI 111)

AQ 1.6 Establish a level playing field by working with local jurisdictions to simultaneously adopt policies similar to those in this Air Quality Element.

AQ 1.7 Support legislation which promotes cleaner industry, clean fuel vehicles and more efficient burning engines and fuels. (AI 113)

AQ 1.8 Support the introduction of federal, state or regional enabling legislation to permit the County to promote inventive air quality programs, which otherwise could not be implemented. (AI 113)

AQ 1.9 Encourage, publicly recognize and reward innovative approaches that improve air quality. (AI 113)

AQ 1.10 Work with regional and local agencies to evaluate the feasibility of implementing a system of charges (e.g., pollution charges, user fees, congestion pricing and toll roads) that requires individuals who undertake polluting activities to bear the economic cost of their actions where possible. (AI 111)

AQ 1.11 Involve environmental groups, the business community, special interests, and the general public in the formulation and implementation of programs that effectively reduce airborne pollutants.

Sensitive Receptors:

AQ 2.1 The County land use planning efforts shall assure that sensitive receptors are separated and protected from polluting point sources to the greatest extent possible.

AQ 2.2 Require site plan designs to protect people and land uses sensitive to air pollution through the use of barriers and/or distance from emissions sources when possible.

AQ 2.3 Encourage the use of pollution control measures such as landscaping, vegetation and other materials, which trap particulate matter or control pollution.

Mobile Pollution Sources:

AQ 3.2 Seek new cooperative relationships between employers and employees to reduce vehicle miles traveled.

AQ 3.3 Encourage large employers and commercial/industrial complexes to create Transportation Management Associations.

Stationary Pollution Sources:

AQ 4.1 Encourage the use of building materials/methods which reduce emissions.

AQ 4.2 Require the use of all feasible efficient heating equipment and other appliances, such as water heaters, swimming pool heaters, cooking equipment, refrigerators, furnaces and boiler units.

AQ 4.3 Require centrally heated facilities to utilize automated time clocks or occupant sensors to control heating where feasible.

AQ 4.5 Require stationary pollution sources to minimize the release of toxic pollutants through:

- Design features;
- Operating procedures;
- Preventive maintenance;
- Operator training; and
- Emergency response planning

AQ 4.6 Require stationary air pollution sources to comply with applicable air district rules and control measures.

AQ 4.7 To the greatest extent possible, require every project to mitigate any of its anticipated emissions which exceed allowable emissions as established by the SCAQMD, MDAQMD, SOCAB, the Environmental Protection Agency and the California Air Resources Board.

AQ 4.8 Expand, as appropriate, measures contained in the County's Fugitive Dust Reduction Program for the Coachella Valley to the entire County.

AQ 4.9 Require compliance with SCAQMD Rules 403 and 403.1, and support appropriate future measures to reduce fugitive dust emanating from construction sites.

AQ 4.10 Coordinate with the SCAQMD and MDAQMD to create a communications plan to alert those conducting grading operations in the County of first, second, and third stage smog alerts, and when wind speeds exceed 25 miles per hour. During these instances all grading operations should be suspended. (AI 111)

Energy Efficiency and Conservation:

AQ 5.1 Utilize source reduction, recycling and other appropriate measures to reduce the amount of solid waste disposed of in landfills.

AQ 5.4 Encourage the incorporation of energy-efficient design elements, including appropriate site orientation and the use of shade and windbreak trees to reduce fuel consumption for heating and cooling.

Particulate Matter:

AQ 15.1 Identify and monitor sources, enforce existing regulations, and promote stronger controls to reduce particulate matter.

Multi-jurisdictional Cooperation:

AQ 16.1 Cooperate with local, regional, state and federal jurisdictions to better control particulate matter.

Control Measures:

AQ 17.1 Reduce particulate matter from agriculture, construction, demolition, debris hauling, street cleaning, utility maintenance, railroad rights-of-way, and off-road vehicles to the extent possible. (AI 123)

AQ 17.3 Identify and create a control plan for areas within the County prone to wind erosion of soil.

AQ 17.4 Adopt incentives, regulations and/or procedures to manage paved and unpaved roads and parking lots so they produce the minimum practicable level of particulates. (AI 111)

AQ 17.5 Adopt incentives and/or procedures to limit dust from agricultural lands and operations, where applicable. (AI 123)

AQ 17.6 Reduce emissions from building materials and methods that generate excessive pollutants, through incentives and/or regulations.

Table 2
State and Federal Criteria Pollutant Standards

Air Pollutant	Concentration / Averaging Time		Most Relevant Effects
	California Standards	Federal Primary Standards	
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 µg/m^3/24-hour 20 µg/m^3/annual	150 µg/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 µg/m^3 / annual	35 µg/m^3/24-hour 12 µg/m^3/annual	
Sulfates	25 µg/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 µg/m^3/30-day	0.15 µg/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: https://ww2.arb.ca.gov/sites/default/files/2020-07/aaqs2.pdf

Table 3
South Coast Air Basin Attainment Status

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

Source (Federal and State Status): California Air Resources Board (2022) https://ww2.arb.ca.gov/resources/documents/maps-state-and-federal-area-designations & SCAQMD 2022 Air Quality Management Plan (December 2022) http://www.aqmd.gov/docs/default-source/clean-air-plans/air-quality-management-plans/2022-air-quality-management-plan/final-2022-aqmp/final-2022-aqmp.pdf?sfvrsn=16.

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 2022 Air Quality Management Plan prepared by SCAQMD (December 2022) indicate that collectively, mobile sources account for 46 percent of the VOC, 85 percent of the NOx emissions, 89 percent of the CO emissions and 29 percent of directly emitted PM2.5, with another 18 percent of PM2.5 from road dust.

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 Lake Elsinore Air Monitoring Area (Area 25). The nearest air monitoring station to the project site is the Lake Elsinore-W Flint Street Monitoring Station (Lake Elsinore Station) located approximately 12.9 miles northwest of the project site at 506 W Flint Street, Lake Elsinore. Table 4 presents the monitored pollutant levels from the Lake Elsinore Station. 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 2020 through 2022 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 and particulate matter (PM10) standards.

Ozone

During the 2020 to 2022 monitoring period, the State 1-hour concentration standard for ozone was exceeded between 17 and 18 days each year at the Lake Elsinore Station. The State 8-hour ozone standard has been exceeded between 37 and 55 days each year over the past three years at the Lake Elsinore Station. The Federal 8-hour ozone standard was exceeded between 37 and 54 days each year over the past three years at the Lake Elsinore 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 Lake Elsinore Station did not record an exceedance of the state or federal 8-hour CO standard for the last three years.

Nitrogen Dioxide

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

Particulate Matter

During the 2020 to 2022 monitoring period, there was insufficient data for the State 24-hour concentration standards for PM10 at the Lake Elsinore Station. Over the past three years, the Federal 24-hour standards for PM10 were exceeded by only one day in 2020 at the Lake Elsinore Station.

During the 2020 to 2022 monitoring period, there was insufficient data for the Federal 24-hour standard for PM2.5 at the Lake Elsinore 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]		Year		
		2020	2021	2022
Ozone:	Maximum 1-Hour Concentration (ppm)	0.130	0.118	0.121
	Days > CAAQS (0.09 ppm)	**18**	**18**	**17**
	Maximum 8-Hour Concentration (ppm)	0.100	0.098	0.092
	Days > NAAQS (0.070 ppm)	**54**	**44**	**37**
	Days > CAAQS (0.070 ppm)	**55**	**46**	**37**
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)	0.044	0.044	0.037
	Days > CAAQS (0.18 ppm)	0	0	0
Inhalable Particulates (PM10):	Maximum 24-Hour Concentration ($\mu g/m^3$)	192.4	90.0	91.8
	Days > NAAQS (150 $\mu g/m^3$)	**1**	0	0
	Days > CAAQS (50 $\mu g/m^3$)	*	*	*
	Annual Average ($\mu g/m^3$)	23.7	22.4	20.3
Ultra-Fine Particulates (PM2.5):	Maximum 24-Hour Concentration ($\mu g/m^3$)	41.6	28.8	16.2
	Days > NAAQS (35 $\mu g/m^3$)	*	*	*
	Annual Average ($\mu g/m^3$)	7.2	6.9	5.8

Notes:

Source: http://www.arb.ca.gov/adam/topfour/topfour1.php. Data from the Lake Elsinore - W Flint Street Monitoring Station.

(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.

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.[5] 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.
- Cause the emission of TACs

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

[5] 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.

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 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.[6]

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 Significance Thresholds (LSTs) to assess the project-related air emissions in the project vicinity. The SCAQMD has also provided Final Localized Significance Thresholds Methodology (LST Methodology), revised July 2008, which details the methodology to analyze local air emission impacts. The Localized Significance Thresholds Methodology found that the primary emissions of concern are NO_2, CO, PM10, and PM2.5. Under the LST methodology, local air quality emissions from the project were analyzed using the SCAQMD's Mass Rate Localized Significance Thresholds Look-up Tables.

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 Significance 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)[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. "Individual Cancer Risk" is the likelihood that a person exposed to

[6] 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.

[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.

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 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

The project is that of a water infrastructure project. Therefore, the project is not anticipated to be a source of toxic air contaminants and sensitive receptors would not be exposed to toxic sources of air pollution.

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[1]		
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 (TACs), Odor and GHG Thresholds	
TACs (including carginogens and non-carcinogens)	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 South Coast AQMD Rule 402
GHG	10,000 MT/yr CO2e for industrial facilities

Ambient Air Quality Standards for Criteria Pollutants[2]	
NO2	South Coast AQMD is in attainment; project is significant if it causes or contributes to an exceedance of the following attainment standards:
1-hour average	0.18 ppm (state)
annual arithmetic mean	0.03 ppm (state) & 0.0534 ppm (federal)
PM10	
24-hour average	10.4 µg/m^3 (construction)[3] & 2.5 ug/m^3 (operation)
annual average	1.0 ug/m^3
PM2.5	
24-hour average	10.4 µg/m^3 (construction)[3] & 2.5 µg/m^3 (operation)
SO2	
1-hour average	0.25 ppm (state) & 0.075 ppm (federal – 99th percentile)
24-hour average	0.04 ppm (state)
Sulfate	
24-hour average	25 µg/m^3 (state)
CO	South Coast AQMD is in attainment; project is significant if it causes or contributes to an exceedance of the following attainment standards:
1-hour average	20 ppm (state) & 35 ppm (federal)
8-hour average	9 ppm (state/federal)
Lead	
30-day average	1.5 µg/m^3 (state)
Rolling 3-month average	0.15 µg/m^3 (federal)

Notes:

Source: http://www.aqmd.gov/home/rules-compliance/ceqa/air-quality-analysis-handbook

(1) Source: South Coast AQMD CEQA Handbook (South Coast AQMD, 1993)

(2) Ambient air quality thresholds for criteria pollutants based on South Coast AQMD Rule 1303, Table A-2 unless otherwise stated.

(3) Ambient air quality threshold based on South Coast AQMD Rule 403.

SHORT-TERM CONSTRUCTION EMISSIONS

Construction activities associated with the proposed project would have the potential to generate air emissions, TAC 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: demolition of two existing steel tanks, concrete foundations, miscellaneous piping and valves, and portions of existing pavement; site preparation/pipeline installation which includes grading a portion of the site for the retaining wall, drainage, and grade/elevation and installation of a 24-inch diameter pipeline; construction of the pump station; and final site work which includes paving, clean up, and site restoration. See Appendix B for more details. Site preparation/pipeline installation will include export of approximately 250 cubic yards of material and import of approximately 350 tons of material.

Per the project applicant equipment per phase includes: for mobilization one (1) backhoe and two (2) service trucks; for demolition one (1) CAT 235 excavator with demolition hammer attachment, one (1) front end loader, two (2) 15 cubic-yard dump trucks, two (2) service trucks, one (1) crane, two (2) chain saws, two (2) scrapers, one (1) tractor; for site preparation/pipeline installation one (1) Pug Mill Mixer, one (1) bulldozer, one (1) front end loader and one (1) Cat 235 Excavator, two (2) service trucks and haulers, one (1) material handling equipment, four (4) pumps, and two (2) skid steer loaders; and for construction one (1) crane, one (1) CAT 235 excavator, one (1) paving equipment, and two (2) service trucks. The demolition phase will include no more than 65 total truck trips which includes removal of the tank, reservoirs, pipe, and appurtenances (estimate based on 1,000 tons of steel from the tanks, removed in 40-ton capacity truck during approximately two month duration), the site preparation/pipeline installation phase will include up to 24 truck trips using haulers (estimate based on 40 tons per truck over a duration of approximately three months), and the construction phase will include up to 13 trucks per day maximum (over a duration of approximate 9 months).

The proposed project is anticipated to start construction no sooner than late 2024 and be completed by mid-2026, with a duration of approximately 18 months. The project is anticipated to be operational in 2026.

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 2022.1.1.22) 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.[9]

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 EMFAC2021 computer program to calculate the emission rates specific for the western portion of Riverside County for construction-related employee vehicle trips and the OFFROAD2017 computer program to calculate emission rates for heavy truck operations. EMFAC2021 and OFFROAD2017 are computer programs generated by CARB that calculates composite emission rates for vehicles. Emission

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

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 Notification Form to SCAQMD. Based on the size of the Project area (approximately 6.56 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 is 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 included in the CalEEMod modeling for the proposed project.

Per SCAQMD Rule 1113 as amended on February 5, 2016, the architectural coatings that would be applied after January 1, 2014 will be limited to an average of 50 grams per liter or less of VOCs for building coatings and 100 grams per liter or less of VOCs for traffic coatings.

The phases of the construction activities which have been analyzed below for each phase are: (1) mobilization, (2) demolition, (3) site preparation/pipeline installation, (4) pump station construction, and (5) final site work. 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 maximum summer or winter criteria pollutant emissions from the proposed project's construction-related criteria pollutant emissions 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 TACs; and from construction-related odor impacts.

Local Air Quality Impacts from Construction

CalEEMod calculates construction emissions based on the number of equipment hours and the maximum daily disturbance activity possible for each piece of equipment. The Appendix A Calculation Details for CalEEMod prepared by CAPCOA (October 2017) provides equipment-specific grading rates. 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 shows the equipment used for this analysis.

As shown in Table 7, the maximum number of acres disturbed in a day would be 3 acres during demolition. The local air quality emissions from construction were analyzed using the SCAQMD's Mass Rate Localized Significance Thresholds 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 Lake Elsinore source receptor area (SRA) 25 and a disturbance value of two acres 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 uses with property lines located approximately 50 feet (~15 meters) southeast and adjacent to the north/northwest of the project site; therefore, to be conservative, 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 Health Impacts

Regarding health effects related to criteria pollutant emissions, the applicable significance thresholds are established for regional compliance with the state and federal ambient air quality standards, which are intended to protect public health from both acute and long-term health impacts, depending on the potential effects of the pollutant. Because regional and local emissions of criteria pollutants during construction of the project would be below the applicable thresholds, it would not contribute to long-term health impacts related to nonattainment of the ambient air quality standards. Therefore, significant adverse acute health impacts as a result of project construction are not anticipated.

Construction-Related Toxic Air Contaminant Impacts

The greatest potential for TAC 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)[10] and the SCAQMD *Health Risk Assessment Guidance for Analyzing Cancer Risks from Mobile Source Diesel Idling Emissions for CEQA Air Quality Analysis* (August 2003),[11] 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

[10] 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.

[11] 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.

construction. Furthermore, construction-based particulate matter (PM) emissions (including diesel exhaust emissions) do not exceed any local or regional thresholds and the nearest sensitive receptors to the project site are the existing single-family detached residential uses with property lines located approximately 50 feet (~15 meters) southeast and adjacent to the north/northwest of the project site.

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 demolition 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 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.

Table 6
Construction-Related Regional Pollutant Emissions

Activity	Pollutant Emissions (pounds/day)					
	ROG	NOx	CO	SO_2	PM10	PM2.5
Maximum Daily Emissions[1,2]	4.41	37.70	33.40	0.10	3.57	2.18
SCAQMD Thresholds	75	100	550	150	150	55
Exceeds Thresholds?	No	No	No	No	No	No

Notes:

Source: CalEEMod Version 2022.1.1.22.

(1) On-site demolition and site preparation PM-10 and PM-2.5 emissions show mitigated values for fugitive dust for compliance with SCAQMD Rule 403.

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

Table 7
Maximum Number of Acres Disturbed Per Day

Activity	Equipment	Number	Acres/8hr-day	Total Acres
Mobilization	Crawler Tractors[1]	1	0.5	0.5
Total for phase		-	-	0.5
Demolition	Scrapers	2	1	2
	Crawler Tractors[1]	2	0.5	1
Total for phase		-	-	3
Site Preparation & Pipeline Installation	Rubber Tired Dozers	1	0.5	0.5
	Crawler Tractors[1]	1	0.5	0.5
Total for phase		-	-	1

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
Mobilization	4.90	5.67	0.20	0.18
Demolition	37.60	32.90	1.72	1.35
Site Preparation & Pipeline Installation	23.40	25.40	3.48	2.15
Pump Station Construction	8.57	9.36	0.36	0.33
Final Site Work	3.56	4.97	0.16	0.15
Total emissions of overlapping phases[1]	12.13	14.33	0.52	0.48
SCAQMD Thresholds[2]	234	1,100	7	4
Exceeds Threshold?	No	No	No	No

Notes:

Source: Calculated from CalEEMod and SCAQMD's Mass Rate Look-up Tables for 2 acres, to be conservative, at a distance of 25 meters in SRA 25 Lake Elsinore.

(1) Pump Station Construction and Final Site Work phases may overlap.

(2) The nearest sensitive receptors are the existing single-family detached residential uses with property lines located approximately 50 feet (~15 meters) southeast and adjacent to the north/northwest of the project site; therefore, the 25 meter threshold was used.

Note: The project will disturb up to a maximum of 3 acres a day during demolition (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 2026, which is the anticipated opening year for the proposed project. The operations 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.

It should be noted that mobile sources were not included in the analysis. Additional staffing needs for long-term operation and maintenance of the proposed project are not anticipated and only a minimal number of daily worker trips are anticipated to conduct routine inspections and ensure proper long-term maintenance. Therefore, the additional vehicle trips from the existing operations associated with the operation of the proposed project would be minimal.

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. The proposed pump station is to include four 350 horsepower pumps with three being duty pumps and one a standby pump. The pumps were assumed to utilize approximately 6,898,500 kWh per year.[12] As operation of the site is that of pumps and generators (discussed below) only, it was assumed that natural gas would not be utilized by the proposed project.

[12] Per the project design, a maximum of three pumps are to be running at a time at the project site. Therefore, for modeling purposes and to provide a conservative scenario, it was assumed that three of the 350-HP pumps will be in operation 24/7 or ~8,760 hours per year per pump. The total hours of operation would be 26,280 hours per year for all three pumps. Energy use calculations for the pumps include: as 1-HP = 0.75 kW a 350-HP pump = 262.5 kW and 262.5 kw x 26,280 hours/year = 6,898,500 kWh/yr. Total of ~6,898,500 kWh/year of electricity used by the proposed pumps. Operation of project is that of the electric pumps and generators only, no natural gas anticipated to be used.

Stationary Sources

The project includes one 1,500 kW emergency diesel generator (which equates to approximately 2,000 horsepower).[13] The generator is anticipated to run up to approximately 12 hours per year.[14] As described above under Energy Usage, the proposed project also includes four pumps; however, as CalEEMod does not have this type of pump as an option under stationary sources, the electrical usage was calculated and added to the project's total electricity usage.

Project Impacts

The maximum daily 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 the 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.

To determine if the proposed project could cause emission levels in excess of the CO standards discussed above, 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 AQMP and the 1992 Federal Attainment Plan for Carbon Monoxide (1992 CO Plan). As discussed in the 1992 CO Plan, peak CO 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

[13] 1-HP=0.75 kW

[14] Per Rancho California Water District (RCWD) the generator is anticipated to be exercised for 30 mins on the first and third Tuesday of every month, for a total of approximately 12 hours per year.

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.

As stated previously, additional staffing needs for long-term operation and maintenance of the proposed project are not anticipated and only a minimal number of daily worker trips will be needed to conduct routine inspections and ensure proper long-term maintenance. Therefore, additional vehicle trips associated with the operation of the proposed project would be minima and generate negligible emissions.

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 project operational trips would be minimal and only for routine inspections and long-term maintenance, 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 Air Basin. The nearest sensitive receptors include the existing single-family detached residential uses with property lines located approximately 50 feet (~15 meters) southeast and adjacent to the north/northwest 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 the development of the site with water supply infrastructure and does not include such uses. Therefore, due the lack of stationary source emissions[15], no long-term localized significance threshold analysis is warranted.

Operations-Related Health Impacts

Regarding health effects related to criteria pollutant emissions, the applicable significance thresholds are established for regional compliance with the state and federal ambient air quality standards, which are intended to protect public health from both acute and long-term health impacts, depending on the potential effects of the pollutant. Because regional and local emissions of criteria pollutants during operation of the project would be below the applicable thresholds, it would not contribute to long-term health impacts related to nonattainment of the ambient air quality standards. Therefore, significant adverse acute health impacts as a result of project operation are not anticipated.

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.

[15] The emergency backup generator will only run for 12 hours per year.

Table 9
Regional Operational Pollutant Emissions

Activity	Pollutant Emissions (pounds/day)					
	ROG	NOx	CO	SO2	PM10	PM2.5
Maximum Daily Emissions	0.10	0.44	0.25	0.01	0.01	0.01
SCAQMD Thresholds	55	55	550	150	150	55
Exceeds Threshold?	No	No	No	No	No	No

Notes:

Source: CalEEMod Version 2022.1.1.22; the higher of either summer or winter emissions.

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;[16] 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, PM10, and PM2.5. 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. This applies to TACs as well, as the SCAQMD does not have any cumulative TAC thresholds; therefore, projects that do not exceed the SCAQMD TAC threshold 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. The project will not be a source of significant TACs and will not cause significant cancer or non-cancer-related health risks. 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, or TACs. 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

[16] 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.

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.

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 2022 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 2020-2045 Regional Transportation/Sustainable Communities Strategy prepared by SCAG (2020) 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 County of Riverside Land Use Plan defines the assumptions that are represented in the AQMP.

The project site has an existing County of Riverside Land Use Designation of Rural Mountainous on the Southwest Area Plan Land Use Plan and a Zoning Designation of Rural Agriculture (R-A-20). The County's General Plan states that the Rural Mountainous land use designation allows single family residential uses, limited animal-keeping and agricultural uses (with a maximum residential density of 1 dwelling unit per 10 acres), limited recreational uses, compatible resource development (which may include the extraction of mineral resources with approval of a surface mining permit) and associated uses, and governmental uses are allowed within this designation. In addition, neighborhood-serving small-scale commercial uses that are compatible with the surrounding uses are allowed. The project site is already developed with the existing Carancho Pump Station and the proposed project includes improvements to this existing use. Therefore, the proposed project would be consistent with the County's existing land use and zoning designations. Therefore, the proposed project is not anticipated to 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. GLOBAL CLIMATE CHANGE ANALYSIS

EXISTING GREENHOUSE GAS ENVIRONMENT

Constituent gases of the Earth's atmosphere, called atmospheric GHGs, 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 GHGs 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 GHGs 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 GHG emissions, followed by electricity generation. Emissions of CO_2 and nitrous oxide (NOx) are byproducts of fossil fuel combustion. Methane, a potent GHG, 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 GHGs 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	(100 Year Horizon)
Carbon Dioxide (CO_2)	-- [2]	1
Methane (CH_4)	12	28-36
Nitrous Oxide (N2O)	114	265-298
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 GHG 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.

Federal

The EPA 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 EPA 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 GHGs, 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 GHGs 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 EPA has statutory authority under Section 202 of the federal Clean Air Act (CAA) to regulate GHGs. The court did not hold that the EPA 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 EPA Administrator signed two distinct findings regarding GHGs under Section 202(a) of the CAA. The EPA 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 EPA can regulate GHG emissions under Section 202(a)(1) of the CAA consistently with the United States Supreme Court decision. The EPA also adopted a Cause or Contribute Finding in which the EPA 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 EPA 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.[17]

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 EPA, 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 GHG 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)[18] 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 EPA 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 EPA, a model year 2025 vehicle would emit one-half of the GHG emissions from a model year 2010 vehicle.[19] In 2017, the EPA recommended no change to the GHG standards for light-duty vehicles for model years 2022-2025.

In December 2021, the EPA finalized federal GHG emissions standards for passenger cars and light trucks for model years 2023 through 2026. The updated standards will result in avoiding more than 3 billion tons of GHG emissions through 2050. These standards set the light-duty vehicle GHG program on track to provide a strong launch point for the agency's next phase of standards for model year 2027 and beyond.[20] On April 12, 2023, EPA announced new, more ambitious proposed standards to further reduce harmful air pollutant emissions from light-duty and medium-duty vehicles starting with model year 2027. The proposal builds upon EPA's final standards for federal greenhouse gas emissions standards for passenger cars and light trucks for model years 2023 through 2026 and leverages advances in clean car technology to unlock benefits to Americans ranging from reducing climate pollution, to improving public health, to saving drivers money through reduced fuel and maintenance costs. The proposed standards would phase in over model years 2027 through 2032.[21]

Issued by NHTSA and EPA in March 2020 (published on April 30, 2020 and effective after June 29, 2020), the Safer Affordable Fuel-Efficient Vehicles Rule would maintain the CAFE and CO2 standards applicable in

[17] 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.

[18] 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.

[19] 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.

[20] United States Environmental Protection Agency (EPA), Regulations for Emissions from Vehicles and Engines, Final Rule to Revise Existing National GHG Emissions Standards for Passenger Cars and Light Trucks Through Model Year 2026. https://www.epa.gov/regulations-emissions-vehicles-and-engines/final-rule-revise-existing-national-ghg-emissions

[21] United States Environmental Protection Agency (EPA), Regulations for Emissions from Vehicles and Engines, Proposed Rule: Multi-Pollutant Emissions Standards for Model Years 2027 and Later Light-Duty and Medium-Duty Vehicles. https://www.epa.gov/regulations-emissions-vehicles-and-engines/proposed-rule-multi-pollutant-emissions-standards-model

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. This Rule also excludes CO2- equivalent emission improvements associated with air conditioning refrigerants and leakage (and, optionally, offsets for nitrous oxide and methane emissions) after model year 2020.[22]

On May 12, 2021, the National Highway Traffic Safety Administration (NHTSA) published a notice of proposed rulemaking in the Federal Register, proposing to repeal "The Safer Affordable Fuel-Efficient (SAFE) Vehicles Rule Part One: One National Program," published Sept. 27, 2019 (SAFE I Rule), in which NHTSA codified regulatory text and made additional pronouncements regarding the preemption of state and local laws related to fuel economy standards. Specifically, this document proposed to fully repeal the regulatory text and appendices promulgated in the SAFE I Rule. In addition, this document proposed to repeal and withdraw the interpretative statements made by the Agency in the SAFE I Rule preamble, including those regarding the preemption of particular state Greenhouse Gas (GHG) Emissions standards or Zero Emissions Vehicle (ZEV) mandates. As such, this document proposed to establish a clean slate with respect to NHTSA's regulations and interpretations concerning preemption under the Energy Policy and Conservation Act (EPCA).[23] This action is effective as of January 28, 2022.[24]

State of California

California Air Resources Board

CARB, a part of the 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 (CAAQS), compiles emission inventories, develops suggested control measures, and provides oversight of 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 CARB adopted an Airborne Toxic Control Measure to limit heavy-duty diesel motor vehicle idling in order to reduce public exposure to DPM and other TACs (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. While these regulations primarily target reductions in criteria air pollutant emission, they have co-benefits of minimizing GHG emissions due to improved engine efficiencies.

[22] National Highway Traffic Safety Administration (NHTSA) and U.S. Environmental Protection Agency (EPA), 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.

[23] https://www.federalregister.gov/documents/2021/05/12/2021-08758/corporate-average-fuel-economy-cafe-preemption

[24] https://www.federalregister.gov/documents/2021/05/12/2021-08758/corporate-average-fuel-economy-cafe-preemption

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. After adopting these initial greenhouse gas standards for passenger vehicles, CARB adopted continuing standards for future model years.

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 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 $MMTCO_2e$ 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 $MMTCO_2e$ (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 $MMTCO_2e$.

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 $MMTCO_2e$. 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 $MMTCO_2e$.

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."[25] 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:

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

- 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.

2022 Climate Change Scoping Plan

CARB adopted the 2022 Scoping Plan for Achieving Carbon Neutrality on November 16, 2022. The 2022 Scoping Plan lays out the sector-by-sector roadmap for California, the world's fifth largest economy, to achieve carbon neutrality by 2045 or earlier, outlining a technologically feasible, cost-effective, and equity-focused path to achieve the state's climate target. The Plan addresses recent legislation and direction from Governor Newsom and extends and expands upon earlier plans with a target of reducing anthropogenic emissions to 85 percent below 1990 levels by 2045. The plan also takes the unprecedented step of adding carbon neutrality as a science-based guide and touchstone for California's climate work. Specifically, this plan:

- Identifies a path to keep California on track to meet its SB 32 GHG reduction target of at least 40 percent below 1990 emissions by 2030.
- Identifies a technologically feasible, cost-effective path to achieve carbon neutrality by 2045 and a reduction in anthropogenic emissions by 85 percent below 1990 levels.
- Focuses on strategies for reducing California's dependency on petroleum to provide consumers with clean energy options that address climate change, improve air quality, and support economic growth and clean sector jobs.
- Integrates equity and protecting California's most impacted communities as driving principles throughout the document.
- Incorporates the contribution of natural and working lands (NWL) to the state's GHG emissions, as well as their role in achieving carbon neutrality.
- Relies on the most up-to-date science, including the need to deploy all viable tools to address the existential threat that climate change presents, including carbon capture and sequestration, as well as direct air capture.
- Evaluates the substantial health and economic benefits of taking action.
- Identifies key implementation actions to ensure success.

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 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 CARB approved the proposed regulation to implement the low carbon fuel standard and began implementation on January 1, 2011. The low carbon fuel standard is anticipated to reduce GHG emissions by about 16 MMT per year by 2020. CARB approved some amendments to the LCFS in December 2011, which were implemented on January 1, 2013. In September 2015, the Board approved the re-adoption of the LCFS, which became effective on January 1, 2016, to address procedural deficiencies in the way the original regulation was adopted. In 2018, the Board approved amendments to the regulation, which included strengthening and smoothing the carbon intensity benchmarks through 2030 in-line with California's 2030 GHG emission reduction target enacted through SB 32, adding new crediting opportunities to promote zero emission vehicle adoption, alternative jet fuel, carbon capture and sequestration, and advanced technologies to achieve deep decarbonization in the transportation sector.

The LCFS is designed to encourage the use of cleaner low-carbon transportation fuels in California, encourage the production of those fuels, and therefore, reduce GHG emissions and decrease petroleum dependence in the transportation sector. 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 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. 2016 Standards were adopted January 1, 2017. 2019 standards were published July 1, 2019 and became effective January 1, 2020. 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 GHG emissions.

Per Section 100 Scope, the 2019 Title 24, Part 6 Building Code now requires healthcare facilities, such as assisted living facilities, hospitals, and nursing homes, to meet documentation requirements of Title 24, Part 1 Chapter 7 – Safety Standards for Health Facilities. A healthcare facility is defined as any building or portion thereof licensed pursuant to California Health and Safety Code Division 2, Chapter 1, Section 1204 or Chapter 2, Section 1250.

Section 120.1 Ventilation and Indoor Air Quality included both additions and revisions in the 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. The 2019 version of the Code also completely revised the minimum ventilation requirements including DVC airflow rates within Section 120.1 Table 120.1–A. Table 120.1-A now includes air classification and recirculation limitations, these are based on either the number of occupants or the CFM/ft^2 (cubic feet per minute per square foot), whichever is greater.

Section 120.1 Ventilation and Indoor Air Quality also included additions for high-rise residential buildings. Requirements include that mechanical systems must provide air filters that and that air filters must be MERV 13 or use a particle size efficiency rating specified in the Energy Code. 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.

Per Section 120.1(a) healthcare facilities must be ventilated in accordance with Chapter 4 of the California Mechanical Code and are NOT required to meet the ventilations requirements of Title 24, Part 6.

Section 140.4 Space Conditioning Systems included both additions and revisions within the 2019 Code. The changes provided new requirements for cooling tower efficiency, new chilled water-cooling system requirements, as well as new formulas for calculating allowed fan power. Section 140.4(n) also provide a new exception for mechanical system shut-offs for high-rise multifamily dwelling units, while Section 140.4(o) added new requirements for conditioned supply air being delivered to space with mechanical exhaust.

Section 120.6 Covered Processes added information in regards to adiabatic chiller requirements that included that all condenser fans for air-cooled converseness, evaporative-cooled condensers, adiabatic condensers, gas coolers, air or water fluid coolers or cooling towers must be continuously variable speed, with the speed of all fans serving a common condenser high side controlled in unison .Further, the mid-condensing setpoint must be 70 degrees Fahrenheit for all of the above mentioned systems.

New regulations 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 regard to sunlight provided through skylights and overhangs.

Section 130.2 Outdoor Lighting Controls and Equipment added automatic scheduling controls which included that outdoor lighting power must be reduced by 50 to 90 percent, turn the lighting off during unoccupied times and have at least two scheduling options for each luminaire independent from each other and with a 2-hour override function. Furthermore, motion sensing controls must have the ability to reduce power within 15 minutes of area being vacant and be able to come back on again when occupied. An exception allows for lighting subject to a health or life safety statute, ordinance, or regulation may have a minimum time-out period longer than 15 minutes or a minimum dimming level above 50% when necessary to comply with the applicable law.

The 2022 Building Energy Efficiency Standards became effective on January 1, 2023. [26] All buildings for which an application for a building permit is submitted on or after January 1, 2023 must follow the 2022 standards. The core focus of the building standards has been efficiency, but the 2019 Energy Code ventured into onsite generation by requiring solar PV on new homes, providing significant GHG savings. The 2022 update builds off this progress with expanded solar standards and the move to onsite energy storage that will help Californians save on utility bills while bolstering the grid. The 2022 Energy Code update focuses on four key areas in new construction of homes and businesses:

[26] California Energy Commission (CEC). 2022. Building Energy Efficiency Standards. https://www.energy.ca.gov/programs-and-topics/programs/building-energy-efficiency-standards/2022-building-energy-efficiency.

- Encouraging electric heat pump technology and use, which consumes less energy and produces fewer emissions than traditional HVACs and water heaters.
- Establishing electric-ready requirements when natural gas is installed, which positions owners to use cleaner electric heating, cooking and electric vehicle (EV) charging options whenever they choose to adopt those technologies.
- Expanding solar photovoltaic (PV) system and battery storage standards to make clean energy available onsite and complement the state's progress toward a 100 percent clean electricity grid.
- Strengthening ventilation standards to improve indoor air quality.

The 2022 Energy Code affects homes by establishing energy budgets based on efficient heat pumps for space or water heating to encourage builders to install heat pumps over gas-fueled HVAC units; requiring homes to be electric-ready, with dedicated 240-volt outlets and space (with plumbing for water heaters) so electric appliances can eventually replace installed gas appliances; increasing minimum kitchen ventilation requirements so that fans over cooktops have higher airflow or capture efficiency to better exhaust pollution from gas cooking and improve indoor air quality; and allowing exceptions to existing solar PV standards when roof area is not available (such as for smaller homes). In addition, the effect on businesses includes establishing combined solar PV and battery standards for select businesses with systems being sized to maximize onsite use of solar energy and avoid electricity demand during times when the grid must use gas-powered plants; establishing new efficiency standards for commercial greenhouses (primarily cannabis growing); and improving efficiency standards for building envelope, various internal.

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

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: The 2016 residential standards were estimated to be approximately 28 percent more efficient than the 2013 standards. Energy efficient buildings require less electricity; therefore, increased energy efficiency reduces fossil fuel consumption and decreases GHG emissions. During the 2016-2017 fiscal year, the Department of Housing and Community Development (HCD) updated CALGreen through the 2015 Triennial Code Adoption Cycle.

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 USEPA 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 USEPA'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. The 2019 version of the California Green Building Standards became effective January 1, 2020.

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 regard 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 regard 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 regard to the outdoor potable water use in landscape areas for public schools and community colleges.

HCD updated Section 5.504.5.3 in regard 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.

The 2022 California Green Building Standards Code became effective on January 1, 2023.[27]

HCD amended Section 5.106.5.3 in regard to increasing the EV capable space percentages and adding a new requirement for installed Level 2 DCFC chargers.

[27] California Building Standards Commission (CBSC). 2022. California Green Building Standards. Website: https://codes.iccsafe.org/content/CAGBC2022P1.

HCD under Section 5.106.5.4 added new regulation for electric vehicle charging readiness requirements for new construction of warehouse, grocery stores, and retail stores with planned off-street loading spaces. [28]

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.

Executive Order N-79-20

Executive Order N-79-20 was signed into law on September 23, 2020 and mandates 100 percent of in-state sales of new passenger cars and trucks be zero-emission by 2035; 100 percent of medium- and heavy-duty vehicles in the state be zero-emission vehicles by 2045 for all operations where feasible and by 2035 for drayage trucks; and to transition to 100 percent zero-emission off-road vehicles and equipment by 2035 where feasible.

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.

[28] https://www.dgs.ca.gov/BSC/Resources/2022-Title-24-California-Code-Changes

Governor Newsom's September 2022 Climate Legislation

On September 16, 2022, California enacted some of the nation's most aggressive climate measures in history as Governor Gavin Newsom signed a sweeping package of legislation to cut pollution, protect Californians from big polluters, and accelerate the state's transition to clean energy. The Governor partnered with legislative leaders to advance groundbreaking measures to achieve carbon neutrality no later than 2045 and 90 percent clean energy by 2035, establish new setback measures protecting communities from oil drilling, capture carbon pollution from the air, advance nature-based solutions, and more.

Over the next two decades, the California Climate Commitment will:

- Create 4 million new jobs
- Cut air pollution by 60 percent
- Reduce state oil consumption by 91 percent
- Save California $23 billion by avoiding the damages of pollution
- Reduce fossil fuel use in buildings and transportation by 92 percent
- Cut refinery pollution by 94 percent[29]

The following describes a few of the many bills signed in through the Governor's climate package.

Assembly Bill 1279

Establishes a clear, legally binding, and achievable goal for California to achieve statewide carbon neutrality as soon as possible, and no later than 2045, and establishes an 85% emissions reduction target as part of that goal.

Senate Bill 1137

Establishes a setback distance of 3,200 feet between any new oil well and homes, schools, parks or businesses open to the public. Ensures comprehensive pollution controls for existing oil wells within 3,200 feet of these facilities.

Senate Bill 1020

Creates clean electricity targets of 90 percent by 2035 and 95 percent by 2040 with the intent of advancing the state's trajectory to the existing 100 percent clean electricity retail sales by 2045 goal.

Senate Bill 905

Establishes a clear regulatory framework for carbon removal and carbon capture, utilization and sequestration. Bans the practice of injecting carbon dioxide for the purpose of enhanced oil recovery.

Assembly Bill 1757

Requires the state to develop an achievable carbon removal target for natural and working lands.

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

[29] https://www.gov.ca.gov/2022/09/16/governor-newsom-signs-sweeping-climate-measures-ushering-in-new-era-of-world-leading-climate-action/

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 required that enforcement agencies determine compliance with CCR, Title 24, Part 6 before issuing building permits for any construction.[30]

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."[31] 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 2022 to include new mandatory measures for residential and nonresidential uses; the new measures took effect on January 1, 2023.

Regional – South Coast Air Quality Management District

The project is within the South Coast Air Basin, which is under the jurisdiction of 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 GHG 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 GHG emission reductions in the SCAQMD. The SCAQMD will fund projects through contracts in response to requests for proposals or purchase reductions from other parties.

A variety of agencies have developed GHG 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 CAPCOA 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 $MTCO_2e$ 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.

[30] 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

[31] California Building Standards Commission, 2010 California Green Building Standards Code, (2010).

SCAQMD Threshold Development

On December 5, 2008, the SCAQMD Governing Board adopted an interim GHG 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 GHGs 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 GHG reduction plan. If a project is consistent with a qualifying local GHG reduction plan, it does not have significant GHG 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 $MTCO_2e$ per year
  - Based on land use type: residential: 3,500 $MTCO_2e$ per year; commercial: 1,400 $MTCO_2e$ per year; or mixed use: 3,000 $MTCO_2e$ per year.
  - Based on land type: Industrial (where SCAQMD is the lead agency), 10,000 $MTCO_2e$ 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 $MTCO_2e$/SP/year for projects and 6.6 $MTCO_2e$/SP/year for plans;
  - Option 3, 2035 target: 3.0 $MTCO_2e$/SP/year for projects and 4.1 $MTCO_2e$/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 $MMTCO_2eq$/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 threshold of 10,000 MTCO2e for industrial uses.

In order to assist local agencies with direction on GHG emissions, the SCAQMD 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.

Local – County of Riverside

The County of Riverside's Climate Action Plan (CAP) Update was completed in November 2019 and approved on December 17, 2019. The 2019 CAP Update refines the County's efforts to meet greenhouse gas (GHG) reduction strategies, specifically for the years 2035 and 2050. The 2019 CAP Update builds upon the GHG reduction strategies in the 2015 Climate Action Plan. The CAP Update describes Riverside County's GHG emissions for the year 2017, projects how these emissions will increase into 2020, 2030, and 2050, and includes strategies to reduce emissions to a level consistent with the State of California's emissions reduction targets. The CAP Update sets a target to reduce community-wide GHG emission emissions by 15 percent from 2008 levels by 2020, 49 percent by 2030, and 83 percent by 2050.

Appendix D of the Riverside County CAP Update also states that project's that do not exceed the CAP's screening threshold of 3,000 $MTCO_2e$ per year are considered to have less than significant GHG emissions and are in compliance with the County's CAP Update. Therefore, to determine whether the project's GHG emissions are significant, this analysis uses the County of Riverside CAP Update screening threshold of 3,000 $MTCO_2e$ per year for all land use types. Projects that do not exceed emissions of 3,000 $MTCO_2e$ per year are also required to include the following efficiency measures:

- Energy efficiency matching or exceeding the Title 24 requirements in effect as of January 2017, and
- Water conservation measures that matches the California Green Building Code in effect as of January 2017.

Projects that exceed emissions of 3,000 $MTCO_2e$ per year are also required to use Screening Tables. Projects that garner at least 100 points will be consistent with the reduction quantities anticipated in the County's CAP Update. Consistent with CEQA Guidelines, such projects would be determined to have a less than significant individual and cumulative impact for GHG emissions. Those projects that do not garner 100 points using the Screening Tables will need to provide additional analysis to determine the significance of GHG emissions.

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[32].

Thresholds of Significance for this Project

To determine whether the project's GHG emissions are significant, this analysis uses the County of Riverside CAP Update screening threshold of 3,000 $MTCO_2e$ 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.

CalEEMod Version 2022.1.1.22 was used to calculate the GHG emissions from the proposed project. The CalEEMod Output for year 2026 is available in Appendix B. Each source of GHG emissions is described in greater detail below.

As stated previously, it should be noted that mobile sources were not included in the analysis. Additional staffing needs for long-term operation and maintenance of the proposed project are not anticipated and only a minimal number of daily worker trips are anticipated to conduct routine inspections and ensure proper long-

[32] 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.

term maintenance. Therefore, the additional vehicle trips from the existing operations associated with the operation of the proposed project would be minimal.

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. The proposed pump station is to include four 350 horsepower pumps with three being duty pumps and one a standby pump. The pumps were assumed to utilize approximately 6,898,500 kWh per year.[33] As operation of the site is that of pumps and generators (discussed below) only, it was assumed that natural gas would not be utilized by the proposed project.

Stationary Sources

The project includes one 1,500 kW emergency diesel generator (which equates to approximately 2,000 horsepower).[34] The generator is anticipated to run up to approximately 12 hours per year.[35] As described above under Energy Usage, the proposed project also includes four pumps; however, as CalEEMod does not have this type of pump as an option under stationary sources, the electrical usage was calculated and added to the project's total electricity usage.

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. No 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 in the manner detailed above in Section 2.

[33] Per the project design, a maximum of three pumps are to be running at a time at the project site. Therefore, for modeling purposes and to provide a conservative scenario, it was assumed that three of the 350-HP pumps will be in operation 24/7 or ~8,760 hours per year per pump. The total hours of operation would be 26,280 hours per year for all three pumps. Energy use calculations for the pumps include: as 1-HP = 0.75 kW a 350-HP pump = 262.5 kW and 262.5 kw x 26,280 hours/year = 6,898,500 kWh/yr. Total of ~6,898,500 kWh/year of electricity used by the proposed pumps. Operation of project is that of the electric pumps and generators only, no natural gas anticipated to be used.

[34] 1-HP=0.75 kW

[35] Per Rancho California Water District (RCWD) the generator is anticipated to be exercised for 30 mins on the first and third Tuesday of every month, for a total of approximately 12 hours per year.

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 B. Table 11 shows that the total for the proposed project's emissions (without credit for any reductions from sustainable design and/or regulatory requirements) would be 1,700.30 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 County of Riverside CAP Update threshold of 3,000 $MTCO_2e$ per year for all land uses. Therefore, as the total emissions for the proposed project would not exceed the screening threshold of 3,000 $MTCO_2e$ per year, operation of the proposed project would not create a significant cumulative impact to global climate change. No mitigation is required.

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
Maximum Annual Operations	1.25	1,676.00	1,678.00	0.23	0.01	1,687.00
Construction[1]	0.00	13.23	13.23	0.00	0.00	13.30
Total Emissions	1.25	1,689.23	1,691.23	0.23	0.01	1,700.30
County of Riverside CAP Update Screening Threshold						3,000
Exceeds Threshold?						No

Notes:

Source: CalEEMod Version 2022.1.1.22 for Opening Year 2026.

(1) 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 GHGs. As stated previously, the County of Riverside has a CAP; therefore, the project and its GHG emissions have been compared to the goals of the County of Riverside CAP Update.

Per the County's CAP Update, the County adopted its first Climate Action Plan (CAP) in 2015 which set a target to reduce emissions back to 1990 levels by the year 2020 as recommended in the AB 32 Scoping Plan. Furthermore, the goals and supporting measures within the County's CAP Update are proposed to reflect and ensure compliance with changes in the local and State policies and regulations such as SB 32 and California's 2017 Climate Change Scoping Plan. Therefore, compliance with the County's CAP in turn reflects consistency with the goals of the CARB Scoping Plan, Assembly Bill (AB) 32 and Senate Bill (SB) 32.

According to the County's CAP Update, projects that do not exceed emissions of 3,000 $MTCO_2e$ per year are also required to include the following efficiency measures:

- Energy efficiency matching or exceeding the Title 24 requirements in effect as of January 2017, and
- Water conservation measures that matches the California Green Building Code in effect as of January 2017.

Per the County of Riverside CAP Update, projects that exceed emissions of 3,000 $MTCO_2e$ per year are also required to use Screening Tables. Projects that garner at least 100 points will be consistent with the reduction quantities anticipated in the County's CAP Update and would be determined to have a less than significant individual and cumulative impact for GHG emissions.

As stated above, the GHG emissions generated by the proposed project would not exceed the County of Riverside CAP Update screening threshold of 3,000 metric tons per year of CO_2e. Furthermore, the proposed project is required to comply with both Title 24 and the California Green Building Code. Therefore, as the project would comply with the goals of the County of Riverside CAP Update, 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.

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."[36] 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.

In 2006, under Assembly Bill 32, the state mandated a goal of reducing statewide emissions to 1990 levels by 2020. In November of 2022, the CARB released the 2022 Scoping Plan. The 2022 Scoping Plan lays out a path to achieve targets for carbon neutrality and reduce anthropogenic GHG emissions by 85 percent below 1990 levels no later than 2045, as directed by Assembly Bill 1279. In order to achieve these goals, CARB is in the process of establishing and implementing regulations to reduce statewide GHG emissions. Currently, the County of Riverside CAP Update's initial screening procedure is to determine if a project will emit 3,000 MTCO2E per year or more. Projects that do not exceed this threshold require no further climate change analysis. Therefore, consistent with CEQA Guidelines Section 15064h(3),[37] the County, 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 GHG Reduction Plans and Policies section above, the project would be consistent with the goals and objectives of the County of Riverside CAP Update.

Thus, given the project's consistency with the County of Riverside CAP Update emission reduction goals, the project's incremental contribution to GHG emissions and their effects on climate change would not be cumulatively considerable.

[36] 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).

[37] 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."

4. 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 2022 included:

- Approximately 287,220 gigawatt hours of electricity;[38]
- Approximately 2,056,267 million cubic feet of natural gas per year;[39] and
- Approximately 23.2 billion gallons of transportation fuel (for the year 2015).[40]

As of 2021, 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 41.2 percent transportation;
- Approximately 23.6 percent industrial;
- Approximately 18.2 percent residential; and
- Approximately 17.1 percent commercial.[41]

California's electricity in-state generation system generates approximately 203,257 gigawatt-hours each year. In 2022, California produced approximately 71 percent of the electricity it uses; the rest was imported from the Pacific Northwest (approximately 12 percent) and the U.S. Southwest (approximately 17 percent). Natural gas is the main source for electricity generation at approximately 47.46 percent of the total in-state electric generation system power as shown in Table 12.

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:

- In 2022, California was the seventh-largest producer of crude oil among the 50 states, and, as of January 2022, the state ranked third in crude oil refining capacity.
- California is the largest consumer of jet fuel and second-largest consumer of motor gasoline among the 50 states.
- In 2020, California was the second-largest total energy consumer among the states, but its per capita energy consumption was less than in all but three other states.
- In 2022, renewable resources, including hydroelectric power and small-scale, customer-sited solar power, accounted for 49% of California's in-state electricity generation. Natural gas fueled another 42%. Nuclear power supplied almost all the rest.

[38] California Energy Commission. Energy Almanac. Total Electric Generation. [Online] 2022. 2022 Total System Electric Generation (ca.gov).

[39] Natural Gas Consumption by End Use. U.S. Energy Information Administration. [Online] 2022. https://www.eia.gov/dnav/ng/ng_cons_sum_dcu_SCA_a.htm.

[40] California Energy Commission. Revised Transportation Energy Demand Forecast 2018-2030. [Online] 2021. https://www.energy.ca.gov/data-reports/planning-and-forecasting

[41] U.S. Energy Information Administration. California Energy Consumption by End-Use Sector, 2021. California State Profile Overview.[Online] January 8, 2023 https://www.eia.gov/state/?sid=CA#tabs-2

- In 2022, California was the fourth-largest electricity producer in the nation. The state was also the nation's third-largest electricity consumer, and additional needed electricity supplies came from out-of-state generators.[42]

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 building 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.[43] SCE derives electricity from varied energy resources including: fossil fuels, hydroelectric generators, nuclear power plants, geothermal power plants, solar power generation, and wind farms. SCE also purchases from independent power producers and utilities, including out-of-state suppliers.[44]

Table 13 identifies SCE's specific proportional shares of electricity sources in 2022. As shown in Table 13, the 2022 SCE Power Mix has renewable energy at 33.2 percent of the overall energy resources, of which biomass and waste is at 0.1 percent, geothermal is at 5.7 percent, eligible hydroelectric is at 0.5 percent, solar energy is at 17 percent, and wind power is at 9.8 percent; other energy sources include large hydroelectric at 3.4 percent, natural gas at 24.7 percent, nuclear at 8.3 percent, other at 0.1 percent, and unspecified sources of power at 30.3 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 11 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. Larger volume gas customers, like electric generators and industrial customers, are called "noncore" customers. Although very small in number relative to core customers, noncore customers consume about 65% of the natural gas delivered by the state's natural gas utilities, while core customers consume about 35%.

The CPUC 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.

[42] State Profile Overview. [Online] [Cited: April 20, 2023.] https://www.eia.gov/state/?sid=CA#tabs-2

[43] https://www.sce.com/about-us/who-we-are/leadership/our-service-territory

[44] California Energy Commission. Utility Energy Supply plans from 2015. https://www.energy.ca.gov/almanac/electricity_data/supply_forms.html

Most of the natural gas used in California comes from out-of-state natural gas basins. In 2017, for example, California utility customers received 38% of their natural gas supply from basins located in the U.S. Southwest, 27% from Canada, 27% from the U.S. Rocky Mountain area, and 8% from production located in California."[45]

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.

The most recent data available shows the transportation sector emits 38 percent of the total greenhouse gases in the state and about 84 percent of smog-forming oxides of nitrogen (NOx).[46,47] About 27 percent of total United States energy consumption in 2022 was for transporting people and goods from one place to another. In 2022, petroleum comprised about 90 percent of all transportation energy use, excluding fuel consumed for aviation and most marine vessels.[48] In 2022, about 135.06 billion gallons (or about 3.22 billion barrels) of finished motor gasoline were consumed in the United States, an average of about 370 million gallons (or about 8.81 million barrels) per day.[49]

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 CPUC 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.[50]

Issued by NHTSA and EPA in March 2020 (published on April 30, 2020 and effective after June 29, 2020), the Safer Affordable Fuel-Efficient Vehicles Rule would 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. This Rule also excludes CO2- equivalent emission improvements

[45] California Public Utilities Commission. Natural Gas and California. http://www.cpuc.ca.gov/natural_gas/

[46] CARB. California Greenhouse Gas Emissions Inventory – 2022 Edition. https://www.arb.ca.gov/cc/inventory/data/data.htm

[47] 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

[48] 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

[49] https://www.eia.gov/tools/faqs/faq.php?id=23&t=10

[50] https://www.nhtsa.gov/lawsregulations/corporate-average-fuel-economy.

associated with air conditioning refrigerants and leakage (and, optionally, offsets for nitrous oxide and methane emissions) after model year 2020.[51]

On May 12, 2021, the National Highway Traffic Safety Administration (NHTSA) published a notice of proposed rulemaking in the Federal Register, proposing to repeal "The Safer Affordable Fuel-Efficient (SAFE) Vehicles Rule Part One: One National Program," published Sept. 27, 2019 (SAFE I Rule), in which NHTSA codified regulatory text and made additional pronouncements regarding the preemption of state and local laws related to fuel economy standards. Specifically, this document proposed to fully repeal the regulatory text and appendices promulgated in the SAFE I Rule. In addition, this document proposed to repeal and withdraw the interpretative statements made by the Agency in the SAFE I Rule preamble, including those regarding the preemption of particular state Greenhouse Gas (GHG) Emissions standards or Zero Emissions Vehicle (ZEV) mandates. As such, this document proposed to establish a clean slate with respect to NHTSA's regulations and interpretations concerning preemption under the Energy Policy and Conservation Act (EPCA). This action is effective as of January 28, 2022. [52]

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.

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.

[51] 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.

[52] https://www.federalregister.gov/documents/2021/05/12/2021-08758/corporate-average-fuel-economy-cafe-preemption

The 2022 Integrated Energy Policy Report (2022 IEPR) was adopted in February 28, 2023. The 2022 IEPR provides updates on a variety of energy issues facing California. These issues will require action if the state is to meet its climate, energy, air quality, and other environmental goals while maintaining reliability and controlling costs. The 2022 IEPR also discusses the California Energy Commission's equity and environmental justice efforts, its development of a more easily navigable online data platform via the California Energy Planning Library, and an update to the California Energy Demand Forecast. The report also provides information on emerging topics related to energy reliability, western electricity integration, hydrogen, gasoline prices, gas transition, and distributed energy resources.[53]

The 2023 Integrated Energy Policy Report (2023 IEPR) was completed in January 2024. The 2023 IEPR discusses speeding connection of clean resources to the electricity grid, the potential use of clean and renewable hydrogen, and the California Energy Demand Forecast to 2040. The report also provides updates on topics such as gas decarbonization, energy efficiency, the Clean Transportation Program, Assembly Bill 1257 (Bocanegra, Chapter 749, Statutes of 2013), and publicly owned utilities' progress toward peak demand reserves and margins.[54]

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 3 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 2022 Title 24 standards, which became effective on January 1, 2023[55] and build upon the 2019 Standards. The core focus of the building standards has been efficiency, but the 2019 Energy Code ventured into onsite generation by requiring solar PV on new homes, providing significant GHG savings. The 2022 update builds off this progress with expanded solar standards and the move to onsite energy storage that will help Californians save on utility bills while bolstering the grid. The 2022 Energy Code update focuses on four key areas in new construction of homes and businesses:

- Encouraging electric heat pump technology and use, which consumes less energy and produces fewer emissions than traditional HVACs and water heaters.

[53] California Energy Commission. Final 2022 Integrated Energy Policy Report. February 2023. https://www.energy.ca.gov/data-reports/reports/integrated-energy-policy-report/2022-integrated-energy-policy-report-update

[54] California Energy Commission. Final 2023 Integrated Energy Policy Report. January 2024. https://www.energy.ca.gov/data-reports/reports/integrated-energy-policy-report/2023-integrated-energy-policy-report

[55] California Energy Commission (CEC). 2022. Building Energy Efficiency Standards. https://www.energy.ca.gov/programs-and-topics/programs/building-energy-efficiency-standards/2022-building-energy-efficiency.

- Establishing electric-ready requirements when natural gas is installed, which positions owners to use cleaner electric heating, cooking and electric vehicle (EV) charging options whenever they choose to adopt those technologies.
- Expanding solar photovoltaic (PV) system and battery storage standards to make clean energy available onsite and complement the state's progress toward a 100 percent clean electricity grid.
- Strengthening ventilation standards to improve indoor air quality.

The 2022 Energy Code affects homes by establishing energy budgets based on efficient heat pumps for space or water heating to encourage builders to install heat pumps over gas-fueled HVAC units; requiring homes to be electric-ready, with dedicated 240-volt outlets and space (with plumbing for water heaters) so electric appliances can eventually replace installed gas appliances; increasing minimum kitchen ventilation requirements so that fans over cooktops have higher airflow or capture efficiency to better exhaust pollution from gas cooking and improve indoor air quality; and allowing exceptions to existing solar PV standards when roof area is not available (such as for smaller homes). In addition, the effect on businesses includes establishing combined solar PV and battery standards for select businesses with systems being sized to maximize onsite use of solar energy and avoid electricity demand during times when the grid must use gas-powered plants; establishing new efficiency standards for commercial greenhouses (primarily cannabis growing); and improving efficiency standards for building envelope, various internal.

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 regard 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 regard 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 regard to the outdoor potable water use in landscape areas for public schools and community colleges.

HCD updated Section 5.504.5.3 in regard 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.

The 2022 California Green Building Standards Code became effective on January 1, 2023 and builds upon the 2019 Standards.[56]

HCD amended Section 5.106.5.3 in regard to increasing the EV capable space percentages and adding a new requirement for installed Level 2 DCFC chargers.

HCD under Section 5.106.5.4 added new regulation for electric vehicle charging readiness requirements for new construction of warehouse, grocery stores, and retail stores with planned off-street loading spaces. [57]

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 350

As previously discussed in Section 3 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 1493/Pavley Regulations

As discussed in Section 3 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

[56] California Building Standards Commission (CBSC). 2022. California Green Building Standards. Website: https://codes.iccsafe.org/content/CAGBC2022P1.

[57] https://www.dgs.ca.gov/BSC/Resources/2022-Title-24-California-Code-Changes

"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. Although aimed at reducing GHG emissions, specifically, a co-benefit of the Pavley standards is an improvement in fuel efficiency and consequently a reduction in fuel consumption.

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

As discussed in Section 3 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.[58]

In addition, the Advanced Clean Cars II was effective as of November 30, 2022. This regulation takes the state's already growing zero-emission vehicle market and robust motor vehicle emission control rules and augments them to meet more aggressive tailpipe emissions standards and ramp up to 100 percent zero-emission vehicles. The Advanced Clean Cars II regulations will rapidly scale down light-duty passenger car, pickup truck and SUV emissions starting with the 2026 model year through 2035. The regulations are two-pronged. First, it amends the Zero-emission Vehicle Regulation to require an increasing number of zero-emission vehicles, and relies on currently available advanced vehicle technologies, including battery-electric,

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

hydrogen fuel cell electric and plug-in hybrid electric-vehicles, to meet air quality and climate change emissions standards. These amendments support Governor Newsom's 2020 Executive Order N-79-20 that requires all new passenger vehicles sold in California to be zero emissions by 2035. Second, the Low-emission Vehicle Regulations were amended to include increasingly stringent standards for gasoline cars and heavier passenger trucks to continue to reduce smog-forming emissions. In October 2023, CARB staff launched a new effort to consider potential amendments to the Advanced Clean Cars II regulations, including updates to the tailpipe greenhouse gas emission standard and limited revisions to the Low-emission Vehicle and Zero-emission Vehicle regulations.[59]

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 DPM 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 DPM, 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 DPM, 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.

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 3 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.

[59] California Air Resources Board, Advanced Clean Cars II. https://ww2.arb.ca.gov/our-work/programs/advanced-clean-cars-program/advanced-clean-cars-ii

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 2022.1.1.22 Output contained in Appendix B, utilized for air quality and greenhouse gas analyses in Sections 2 and 3 respectively, of this report, were also utilized for this analysis. The CalEEMod output details project related construction equipment, transportation energy demands, and facility energy demands.

Construction Energy Demands

Construction is anticipated to occur no sooner than late 2024 and be completed by mid-2026, with a duration of approximately 18 months, 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 6.56 acres.

Construction Equipment Electricity Usage Estimates

As stated previously, Electrical service will be provided by SCE. 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 2021 National Construction Estimator, Richard Pray (2021)[60], the typical power cost per 1,000 square feet of building construction per month is estimated to be $2.37. Project construction involves the demolition of both existing Carancho Nos. 1 and 2 Tanks, permanent stabilization of the tank pad, replacement of two existing pumps (350 Hp), addition of two new pumps (350 Hp), and the installation of approximately 600 linear feet of 24-inch diameter potable water pipeline. Therefore, building construction is minimal and includes only tanks and potential equipment enclosures.

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

[60] Pray, Richard. 2021 National Construction Estimator. Carlsbad: Craftsman Book Company, 2021.

- 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/gallon (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 3 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 2017 Emissions Factors Tables show that on average aggregate fuel consumption (gasoline and diesel fuel) would be approximately 18.5 hp-hr-gal. Table 14 shows the results of the analysis of construction equipment.

As presented in Table 14, project construction activities would consume an estimated 59,876 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 construction worker trips are from light duty autos (LDA), light duty truck 1 (LDT1), and light duty truck 2 (LDT2) at a mix of 25 percent/50 percent/25 percent, respectively, along area roadways.[61] With respect to estimated VMT, the construction worker trips would generate an estimated 42,880 VMT. Data regarding project related construction worker trips were based on CalEEMod 2022.1.1.22 model defaults.

Vehicle fuel efficiencies for construction workers were estimated in the air quality and greenhouse gas analyses (Sections 2 and 3 of this report) using information generated using CARB's 2021 EMFAC model (see Appendix B for details). An aggregate fuel efficiency of 26 miles per gallon (mpg) was used to calculate vehicle miles traveled for construction worker trips. Table 15 shows that an estimated 1,648 gallons of fuel would be consumed for construction worker trips.

Construction Vendor/Hauling Fuel Estimates

Tables 16 and 17 show the estimated fuel consumption for vendor and hauling during mobilization and site preparation and pipeline installation. With respect to estimated VMT, the vendor and hauling trips would generate an estimated 37 VMT. Data regarding project related construction worker trips were based on CalEEMod 2022.1.1.13 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 mobilization and site preparation and pipeline installation would use medium to heavy duty vehicles with an average fuel consumption of 7.75 mpg for medium heavy-duty trucks and 6.05 mpg for heavy heavy duty trucks (see Appendix B for details). [62] Tables 16 and 17 show that an estimated 6 gallons of fuel would be consumed for vendor and hauling trips.

[61] CalEEMod User's Guide Appendix C (April 2022) states that construction work trips are made by a fleet consisting of 25 percent light-duty auto (or passenger car), 50 percent light-duty truck type 1 (LDT1), and 25 percent light duty truck type 2 (LDT2).

[62] CalEEMod User's Guide Appendix C (April 2022) states that vendor trips are made by a fleet consisting of 50 percent medium trucks (MHDT) and 50 percent heavy trucks (HHDT) and that hauling and onsite truck trips are made by a fleet consisting of 100 percent HHDT.

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 DPM and other TACs. 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 County building officials, and/or in response to citizen complaints.

Therefore, as the project's construction is required to comply with CARB regulations and does not include the need of construction processes that would require the use of equipment that is more energy efficient, the proposed project annual construction related fuel consumption would not be considered significant.

Operational Energy Demands

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

Transportation and Operational Fuel Consumption

As stated in the project description, additional staffing needs for long-term operation and maintenance of the proposed project are not anticipated. However, a minimal number of daily worker trips are anticipated to conduct routine inspections and ensure proper long-term maintenance. Therefore, the increase in project generated trips is minimal. However, the proposed project does include a 1,500 kW emergency diesel generator, which will be a source of fuel consumption at the project site. the generator is anticipated to run up to approximately 12 hours per year.[63] At up to 12 hours per year, the one emergency diesel generator would be anticipated to consume up to approximately 4,599.6 gallons of diesel per year.[64] The project's transportation and operational energy consumption would not be considered inefficient, wasteful, or otherwise unnecessary.

[63] Per Rancho California Water District (RCWD) the generator is anticipated to be exercised for 30 mins on the first and third Tuesday of every month, for a total of approximately 12 hours per year.

[64] Per the project applicant, the diesel generator is anticipated to be a CAT 3512C Diesel Generator Set (Standby 1500). Per the manufacturer specifications provided by the project applicant, at 100 percent load, the generator would consume up to approximately 383.3 gallons of fuel per hour. Therefore, to be conservative and provide a worst-case scenario, it was assumed that the generator would be at 100 percent load for all of the anticipated hours per year it is to be running.

Facility Energy Demands (Electricity and Natural Gas)

Project operation and site maintenance (including landscape maintenance) would result in the consumption of electricity (provided by SCE) and natural gas (provided by Southern California Gas Company). As previously stated, the project is that of a water pump station project which includes four new 350 horsepower pumps including three duty pumps and one standby pump and one 1,500 kW emergency diesel generator. Therefore, the main source of electricity consumption for the proposed project is the proposed pumps. As shown in Table 18, the pumps were assumed to utilize approximately 6,898,500 kWh per year.[65] Furthermore, as operation of the site is that of the pumps and generators only, it was assumed that natural gas would not be utilized by the proposed project. Please see the CalEEMod Output in Appendix B for details.

In comparison to the project, in 2022, the non-residential sector of the County of Riverside consumed approximately 8,720 million kWh of electricity and 147 million therms of gas.[66,67] Therefore, the increase in both electricity and natural gas demand from the proposed project is insignificant compared to the County's 2022 non-residential sector demand.

Furthermore, the proposed project energy demands in total would be comparable to other water distribution projects of similar scale and configuration. Therefore, the project facilities' energy demands and energy consumption would not be considered inefficient, wasteful, or otherwise unnecessary.

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 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. However, the vehicles associated with the proposed project would be required to comply with federal and state fuel efficiency standards.

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 this is mainly a construction project, with no buildings being constructed, only construction waste regulations would apply.

As shown in Section 3 above, the proposed project would be consistent with the goals of County of Riverside CAP Update. The CAP includes measures on energy efficiency and clean energy use. The project's consistency with applicable energy-related CAP reduction measures is provided in Table 19. As shown in Table 19, the project is consistent with the applicable energy-related measures.

[65] Per the project design, a maximum of three pumps are to be running at a time at the project site. Therefore, for modeling purposes and to provide a conservative scenario, it was assumed that three of the 350-HP pumps will be in operation 24/7 or ~8,760 hours per year per pump. The total hours of operation would be 26,280 hours per year for all three pumps. Energy use calculations for the pumps include: as 1-HP = 0.75 kW a 350-HP pump = 262.5 kW and 262.5 kw x 26,280 hours/year = 6,898,500 kWh/yr. Total of ~6,898,500 kWh/year of electricity used by the proposed pumps. Operation of project is that of the electric pumps and generators only, no natural gas anticipated to be used.

[66] California Energy Commission, Electricity Consumption by County. https://ecdms.energy.ca.gov/elecbycounty.aspx

[67] California Energy Commission, Gas Consumption by County. http://ecdms.energy.ca.gov/gasbycounty.aspx

CONCLUSIONS

As supported by the preceding analyses, project construction and operations would not result in the inefficient, wasteful or unnecessary consumption of energy. The proposed project does not include any 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 and is a water supply infrastructure project that is not proposing any additional features that would require a larger energy demand than other water supply infrastructure projects of similar scale and configuration.

The US water systems use energy efficiently from a per capita basis. 166,000 drinking water systems incorporate over 1 million miles of pipes, and 16,000 wastewater systems that comprise approximately 740,000 miles of public sewers and 500,000 miles of private lateral sewers.[68] Given the vast water systems, the energy use of public water supply and wastewater treatment, including conveyance and distribution pipelines of both public and private owned systems, was about 138 billion kWh or 4 percent of 2005 national electricity consumption.[69]

The energy demands of the project are anticipated to 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 a water supply infrastructure project and will not have any long-term effects on an energy provider's future energy development or future energy conservation strategies.

[68] EPA. (2014). Innovative rehabilitation technology demonstration and evaluation program. Retrieved April, 2014, from http://cfpub.epa.gov/si/si_public_record_report.cfm?dirEntryId=274536&searchAll=Asbestos&showCriteria=0&SIType=PR&sortBy=pubDateYear&NoArchive=1

[69] Electric power annual 2005: Revised data. Retrieved April, 2014, from http://www.eia.doe.gov/cneaf/electricity/epa/epa_sum.html; Griffiths-Sattenspiel, B., & Wilson, W. (2009). The carbon footprint of water. Retrieved April, 2014, from http://downloads.vertmarkets.com/files/downloads/344da0ba-ce61-4ce7-932a-52b86536628d/carbonfootprintofwater.pdf

Table 12
Total Electricity System Power (California 2022)

Fuel Type	California In-State Generation (GWh)	Percent of California In-State Generation	Northwest Imports (GWh)	Southwest Imports (GWh)	Total Imports (GWh)	Total California Energy Mix (GWh)	Total California Power Mix
Coal	273	0.13%	181	5,716	5,897	6,170	2.15%
Natural Gas	96,457	47.46%	44	7,994	8,038	104,495	36.38%
Oil	65	0.03%	-	-	-	65	0.02%
Other (Waste Heat/Petroleum Coke)	315	0.15%	-	-	-	315	0.11%
Unspecified Sources of Power	-	0.00%	12,485	7,943	20,428	20,428	7.11%
Total Thermal and Unspecified	97,110	47.78%	12,710	21,653	34,363	121,473	45.77%
Nuclear	17,627	8.67%	397	8342	8739	26,366	9.18%
Large Hydro	14,607	7.19%	10,803	1,118	11,921	26,528	9.24%
Biomass	5,366	2.64%	771	25	797	6,162	2.15%
Geothermal	11,110	5.47%	253	2,048	2,301	13,412	4.67%
Small Hydro	3,005	1.48%	211	13	225	3,230	1.12%
Solar	40,494	19.92%	231	8,225	8,456	48,950	17.04%
Wind	13,938	6.86%	8,804	8,357	17,161	31,099	10.83%
Total Non-GHG and Renewables	106,147	52.22%	21,471	28,129	49,599	155,747	54.23%
Total Energy	203,257	100%	34,180	49,782	83,962	287,220	100%

Notes:

(1) Source: California Energy Commission. 2022 Total System Electric Generation. https://www.energy.ca.gov/data-reports/energy-almanac/california-electricity-data/2022-total-system-electric-generation

Table 13
SCE 2022 Power Content Mix

Energy Resources	2022 SCE Power Mix
Eligible Renewable	33.2%
Biomass & Biowaste	*0.1%*
Geothermal	*5.7%*
Eligible Hydroelectric	*0.5%*
Solar	*17.0%*
Wind	*9.8%*
Coal	0.0%
Large Hydroelectric	3.4%
Natural Gas	24.7%
Nuclear	8.3%
Other	0.1%
Unspecified Sources of power*	30.3%
Total	100%

Notes:

(1) https://www.sce.com/sites/default/files/custom-

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

Table 14
Construction Equipment Fuel Consumption Estimates

Phase[1]	Number of Days	Offroad Equipment Type[2]	Amount	Usage Hours	Horse Power	Load Factor	HP hrs/day	Total Fuel Consumption (gal diesel fuel)[3]
Mobilization	6	Tractors/Loaders/Backhoes	1	8	367	0.4	1174	381
	6	Off-Highway Trucks	2	8	36	0.38	219	71
Demolition	44	Excavators	1	8	158	0.38	480	1,142
	44	Tractors/Loaders/Backhoes	2	8	367	0.4	2,349	5,586
	44	Scrapers	2	8	423	0.48	3,249	7,726
	44	Dumpers/Tenders	2	8	16	0.38	97	231
	44	Off-Highway Trucks	2	8	376	0.38	2,286	5,437
	44	Cranes	1	8	367	0.39	1,145	2,723
Site Preparation & Pipeline Installation	65	Excavators	1	8	367	0.4	1,174	4,126
	65	Tractors/Loaders/Backhoes	1	8	84	0.37	249	874
	65	Off-Highway Trucks	2	8	376	0.38	2,286	8,032
	65	Rubber Tired Dozers	1	8	367	0.4	1,174	4,126
	65	Cement and Mortar Mixers	1	8	10	0.56	45	157
	65	Other Material Handling Equipment	1	8	93	0.4	298	1,046
	65	Pumps	4	8	11	0.74	260	915
	65	Skid Steer Loaders	2	8	71	0.37	420	1,477
Pump Station Construction	196	Cranes	1	7	367	0.29	745	7,893
	196	Excavators	1	8	14	0.74	83	878
	196	Off-Highway Trucks	2	8	46	0.45	331	3,509
	196	Paving Equipment	1	8	89	0.36	256	2,716
Final Site Work	24	Pavers	1	8	81	0.42	272	353
	24	Paving Equipment	1	8	89	0.36	256	333
	24	Rollers	1	8	36	0.38	109	142
CONSTRUCTION FUEL DEMAND (gallons of diesel fuel)								59,876

Notes:

(1) Project construction is anticipated to occur in one phase with five distinct sets of activities – 1) Mobilization, 2) Demolition, 3) Site Preparation & Pipeline Installation, 4) Pump Station Construction and 5) Final Site Work. It was was assumed that pump station construction could overlap with the final site work phase in the model.

(2) Per project applicant equipment to include: Mobilization 1 backhoe & 2 service trucks (modeled as off-highway trucks); Demolition 1 excavator, 1 front end loader, 2 dump trucks (modeled as dumpers/tenders), 2 service trucks (modeled as off-highway trucks), 1 crane, 2 chain saws (modeled as concrete/industrial saws), 2 scrapers, & 1 tractor; Site Preparation/Pipeline Installation 1 pug mill mixer (modeled as a concrete mixer), 1 bulldozer, 1 front end loader, 1 excavator, 2 service trucks (modeled as off-highway trucks), 1 material handling equipment, 4 pumps, & 2 skid steer loaders; Pump Station Construction 1 crane, 1 excavator, 1 paving equipment, & 2 service trucks (modeled as off-highway trucks). Specific equipment list was not provided for the final site work phase; however, as this phase is described as including paving in the project description, CalEEMod default equipment for a paving phase was used in the modeling.

(3) 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 15
Construction Worker Fuel Consumption Estimates

Phase	Number of Days	Worker Trips/Day	Trip Length (miles)	Vehicle Miles Traveled	Average Vehicle Fuel Economy (mpg)[2]	Estimated Fuel Consumption (gallons)
Mobilization	6	10	12.8	768	26.0	30
Demolition	44	10	12.8	5,632	26.0	216
Site Preparation & Pipeline Installation	65	10	12.8	8,320	26.0	320
Pump Station Construction	196	10	12.8	25,088	26.0	964
Final Site Work	24	10	12.8	3,072	26.0	118
Total Construction Worker Fuel Consumption						1,648

Notes:

(1) Assumptions for the worker trip length and vehicle miles traveled are consistent with CalEEMod 2022.1.1.22 defaults.

(2) Per CalEEMod User's Guide Appendix C (April 2022), CalEEMod assumes that construction work trips are made by a fleet consisting of 25 percent light-duty auto (or passenger car), 50 percent light-duty truck type 1 (LDT1), and 25 percent light duty truck type 2 (LDT2).

Table 16
Construction Vendor Fuel Consumption Estimates (MHD & HHD Trucks)

Phase	Number of Days	Vendor Trips/Day	Trip Length (miles)[1]	Vehicle Miles Traveled[1]	Average Vehicle Fuel Economy (mpg)[2]	Estimated Fuel Consumption (gallons)
Mobilization	6	0	8.33	0	6.9	0
Demolition	44	0	8.33	0	6.9	0
Site Preparation & Pipeline Installation	65	0	8.33	0	6.9	0
Pump Station Construction	196	0	8.33	0	6.9	0
Final Site Work	24	0	8.33	0	6.9	0
Total Construction Vendor Fuel Consumption						0

Notes:

(1) Assumptions for the vendor trip length and vehicle miles traveled are consistent with CalEEMod 2022.1.1.22 defaults.

(2) Per CalEEMod User's Guide Appendix C (April 2022), CalEEMod assumes vendor trips are made by a fleet consisting of 50 percent medium trucks (MHDT) and 50 percent heavy trucks (HHDT).

Table 17
Construction Hauling Fuel Consumption Estimates (HHD Trucks)

Phase	Number of Days	Total Hauling Trips	Trip Length (miles)[1]	Vehicle Miles Traveled[1]	Average Vehicle Fuel Economy (mpg)[2]	Estimated Fuel Consumption (gallons)
Mobilization	6	1.5	20	30	6.1	5
Demolition	44	0	20	0	6.1	0
Site Preparation & Pipeline Installation	65	0.37	20	7	6.1	1
Pump Station Construction	196	0	20	0	6.1	0
Final Site Work	24	0	20	0	6.1	0
Total Construction Hauling Fuel Consumption						6

Notes:

(1) Assumptions for the hauling trip length and vehicle miles traveled are consistent with CalEEMod Version 2022.1.1.22 defaults.

(2) Per CalEEMod User's Guide Appendix C (April 2022), CalEEMod assumes hauling and onsite truck trips are made by a fleet consisting of 100 percent HHDT.

Table 18
Project Annual Operational Energy Demand Summary

Natural Gas Demand	kBTU/year[1,2]
Proposed Project	0
Total	0

Electricity Demand	kWh/year
Proposed Project[2]	6,898,500
Total	6,898,500

Notes:

(1) Taken from the CalEEMod Version 2022.1.1.22 output (Appendix B of this report).

(2) Operation of project is that of the electric pumps and generators only, no natural gas anticipated to be used. Calculated energy use of ~6,898,500 kWh/year for the pumps.

Table 19
Project Consistency with County of Riverside CAP Energy Reduction Measures

Applicable Energy Related CAP Reduction Measures		Project Compliance with Measure
Energy Efficiency		
R1-EE1: California Building Code Title 24	California's building efficiency standards are updated regularly to incorporate new energy efficiency technologies.	No Conflict. Any applicable portions of the proposed project that is required to comply with the California Building Code Title 24 will comply.
R2-EE6: Energy Efficiency Training, Education and Recognition in the Commercial Sector	Education is at the core of attaining energy efficiency goals. Specific education measures emphasize the critical role of education in achieving energy efficiency. This measure provides County staff with a framework to interact with and educate the community about behavioral and technological changes that can increase energy efficiency in commercial buildings.Potential actions for this measure include: -Post energy-efficiency information or links on websites and/or social media and provide materials at public events -Set up an email list for blasts of new information or training sessions. -Encourage business owners to visit SCE Energy Education Centers for energy efficiency resources. -Promote and manage energy efficiency programs which are not already in the purview of Energy Service Providers. -Invite building inspectors to hold trainings semi-annually on energy efficiency and Title 24.	No Conflict. The proposed project involves improvements to an existing pump station. The proposed project would not hinder the County's energy education and training for the commercial sector.
R2-EE7: Increase Business Participation in Existing Energy Efficiency Programs	There are many energy efficiency opportunities that are low-cost for businesses to initiate that would result in cost-savings over time. SCE and SoCalGas offer many rebates and incentives to purchasing energy-efficient appliances and lights. As many business owners may be unaware that the opportunities exist, this measure would allow for the County to increase the participation of businesses in existing energy-efficiency programs that are low-cost and would provide financial benefits. Potential action for this measure includes: -Partner with SCAG, WRCOG, SCE, and SoCalGas for outreach events.	No Conflict. The proposed project involves improvements to an existing pump station. The proposed project would not hinder the County's partnering with SCAG, WRCOG, SCE, and SoCalGas for outreach events.
R2-EE8: Non-Residential Building Energy Audits	Commercial energy audits are necessary to identify cost-effective opportunities for energy savings and for business owners to take practical actions to increase energy efficiency. The audits can be established or promoted by various existing programs. The potential action for this measure is: -Promote the SCE energy audit program for residents within the SCE service area and the Home Energy Saver Do It Yourself online energy audits for the IID service area.	No Conflict. The proposed project involves improvements to an existing pump station. The proposed project would not hinder the SCE energy audit program.
R2-EE11: Exceed Energy Efficiency Standards in New Commercial Units	County planners have a unique opportunity to inform and encourage developers to apply new energy efficiency opportunities in new development. This measure would educate County staff to encourage and implement energy efficiency beyond that required by current Title 24 standards. This measure would also ensure that as Title 24 standards are updated, County staff would be well informed and could implement updates quickly and effectively. Potential actions for this measure include: -Educate County staff and developers on future Title 24 updates and additional energy efficiency opportunities for new non-residential development. -Promote Tier 1 and Tier 2 Green Building Ratings such as LEED, Build It Green, or Energy Star®- certified buildings. -Establish online permitting to facilitate new non-residential building energy efficiency programs. -Comply with State requirements on new non-residential buildings, such as Net Zero Energy Buildings for all new non-residential development meeting zero net-energy use by 2030.	No Conflict. The proposed project involves improvements to an existing pump station and any applicaple portions of the propsoed project that is required to comply with the California Building Code Title 24 will comply.
Clean Energy		
R1-CE1: Renewable Portfolio Standard	Senate Bills (SBs) 1075 (2002) and 107 (2006) created the State's Renewable Portfolio Standard (RPS), and SB 100 (2018) further requires the energy providers to derive 33 percent, 60 percent, and 100 percent of electricity from qualified renewable sources by 2020, 2030, and 2045, respectively. The RPS is anticipated to lower emission factors (i.e., fewer GHG emissions per kWh used) State-wide. Therefore, reductions from RPS are taken for energy embedded in water, as well as commercial/industrial and residential electricity.	No Conflict. The proposed project involves improvements to an existing pump station and would not hinder energy providers from deriving their electricity from qualified renewable sources.
Advanced Measures		
R2-L1: Tree Planting for Shading and Energy Saving	Trees and vegetation lower surface and air temperatures by providing shade and through evapotranspiration, making vegetation a simple and effective way to reduce urban heat islandsPotential actions for this measure include: -Work with the community to support nonprofit tree-planting groups within the County consisting of volunteers to plant and care for trees correctly and safely. -Develop and promote a County tree-planting program for new development at plan check.	No Conflict. The proposed project involves improvements to an existing pump station. The proposed project would not hinder the County's ability to promote tree-planting programs.
R2-L2: Light Reflecting Surfaces for Energy Saving	Replacing surface areas with light-reflecting materials can decrease heat absorption and lower outside air temperature. Both roofs and pavements are ideal surfaces for taking advantage of this advanced technology. Potential actions for this measure include: -Comply with Title 24 requirements on installing enhanced cool roofs. -Comply with Title 24 requirements on installing cool pavements.	No Conflict. Any applicable portions of the proposed project that is required to comply with the California Building Code Title 24 will comply.

Source: County of Riverside Climate Action Plan Update, November 2019.

5. EMISSIONS REDUCTION MEASURES

CONSTRUCTION MEASURES

Adherence to SCAQMD Rule 403 is required.

No construction mitigation is required.

OPERATIONAL MEASURES

No operational measures are required.

6. REFERENCES

California Air Pollution Control Officers Association

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California Air Resources Board

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APPENDICES

Appendix A Glossary

Appendix B CalEEMod Model Detailed Report & EMFAC Data

APPENDIX A

GLOSSARY

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 Significance 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 DETAILED REPORT & EMFAC DATA

19704 Carancho Pump Station - CONSTRUCTION ANALYSIS ONLY Detailed Report

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3.9. Pump Station Construction (2025) - Unmitigated

3.11. Pump Station Construction (2026) - Unmitigated

3.13. Final Site Work (2026) - Unmitigated

4. Operations Emissions Details

4.10. Soil Carbon Accumulation By Vegetation Type

4.10.1. Soil Carbon Accumulation By Vegetation Type - Unmitigated

4.10.2. Above and Belowground Carbon Accumulation by Land Use Type - Unmitigated

4.10.3. Avoided and Sequestered Emissions by Species - Unmitigated

5. Activity Data

5.1. Construction Schedule

5.2. Off-Road Equipment

5.2.1. Unmitigated

5.3. Construction Vehicles

5.3.1. Unmitigated

5.4. Vehicles

5.4.1. Construction Vehicle Control Strategies

5.5. Architectural Coatings

5.6. Dust Mitigation

5.6.1. Construction Earthmoving Activities

5.6.2. Construction Earthmoving Control Strategies

5.7. Construction Paving

5.8. Construction Electricity Consumption and Emissions Factors

5.18. Vegetation

5.18.1. Land Use Change

5.18.1.1. Unmitigated

5.18.1. Biomass Cover Type

5.18.1.1. Unmitigated

5.18.2. Sequestration

5.18.2.1. Unmitigated

6. Climate Risk Detailed Report

6.1. Climate Risk Summary

6.2. Initial Climate Risk Scores

6.3. Adjusted Climate Risk Scores

6.4. Climate Risk Reduction Measures

7. Health and Equity Details

7.1. CalEnviroScreen 4.0 Scores

7.2. Healthy Places Index Scores

7.3. Overall Health & Equity Scores

7.4. Health & Equity Measures

7.5. Evaluation Scorecard

7.6. Health & Equity Custom Measures

8. User Changes to Default Data

1. Basic Project Information

1.1. Basic Project Information

Data Field	Value
Project Name	19704 Carancho Pump Station - CONSTRUCTION ANALYSIS ONLY
Construction Start Date	11/1/2024
Lead Agency	—
Land Use Scale	Project/site
Analysis Level for Defaults	County
Windspeed (m/s)	1.80
Precipitation (days)	23.4
Location	33.49459337553898, -117.27367899275663
County	Riverside-South Coast
City	Unincorporated
Air District	South Coast AQMD
Air Basin	South Coast
TAZ	5558
EDFZ	11
Electric Utility	Southern California Edison
Gas Utility	Southern California Gas
App Version	2022.1.1.22

1.2. Land Use Types

Land Use Subtype	Size	Unit	Lot Acreage	Building Area (sq ft)	Landscape Area (sq ft)	Special Landscape Area (sq ft)	Population	Description

Other Asphalt Surfaces	6.56	Acre	6.56	0.00	0.00	—	—	~6.56 acres withdemolition of both existing Carancho Nos. 1 and 2 Tanks, permanent stabilization of the tank pad, abandonment in place of existing pipeline, replacement of two existing pumps (350 Hp) and addition of two new pumps (350 Hp) for a total of 4 new pumps within the existing pump station on the pump station (lower) pad and ~600 linear ft of 24-in water pipeline.

1.3. User-Selected Emission Reduction Measures by Emissions Sector

No measures selected

2. Emissions Summary

2.1. Construction Emissions Compared Against Thresholds

Criteria Pollutants (lb/day for daily, ton/yr for annual) and GHGs (lb/day for daily, MT/yr for annual)

Un/Mit.	TOG	ROG	NOx	CO	SO2	PM10E	PM10D	PM10T	PM2.5E	PM2.5D	PM2.5T	BCO2	NBCO2	CO2T	CH4	N2O	R	CO2e
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Unmit.	3.50	2.94	23.5	25.9	0.07	0.92	2.65	3.57	0.84	1.34	2.18	—	7,039	7,039	0.29	0.06	0.41	7,066
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—

Unmit.	5.25	4.41	37.7	33.4	0.10	1.41	2.65	3.57	1.30	1.34	2.18	—	11,112	11,112	0.45	0.11	0.02	11,156
Average Daily (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Unmit.	1.41	1.19	9.22	10.3	0.02	0.37	0.53	0.90	0.34	0.25	0.59	—	2,400	2,400	0.10	0.02	0.12	2,409
Annual (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Unmit.	0.26	0.22	1.68	1.87	< 0.005	0.07	0.10	0.16	0.06	0.05	0.11	—	397	397	0.02	< 0.005	0.02	399

2.2. Construction Emissions by Year, Unmitigated

Criteria Pollutants (lb/day for daily, ton/yr for annual) and GHGs (lb/day for daily, MT/yr for annual)

Year	TOG	ROG	NOx	CO	SO2	PM10E	PM10D	PM10T	PM2.5E	PM2.5D	PM2.5T	BCO2	NBCO2	CO2T	CH4	N2O	R	CO2e
Daily - Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
2025	3.50	2.94	23.5	25.9	0.07	0.92	2.65	3.57	0.84	1.34	2.18	—	7,039	7,039	0.29	0.06	0.41	7,066
Daily - Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
2024	5.25	4.41	37.7	33.4	0.10	1.41	0.42	1.84	1.30	0.08	1.38	—	11,112	11,112	0.45	0.11	0.02	11,156
2025	4.90	4.11	32.9	32.0	0.10	1.22	2.65	3.57	1.12	1.34	2.18	—	11,112	11,112	0.45	0.11	0.01	11,156
2026	1.71	1.45	11.6	14.8	0.02	0.46	0.18	0.64	0.42	0.04	0.46	—	2,676	2,676	0.11	0.03	0.02	2,687
Average Daily	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
2024	0.56	0.47	4.00	3.57	0.01	0.15	0.05	0.20	0.14	0.01	0.15	—	1,181	1,181	0.05	0.01	0.03	1,186
2025	1.41	1.19	9.22	10.3	0.02	0.37	0.53	0.90	0.34	0.25	0.59	—	2,400	2,400	0.10	0.02	0.12	2,409
2026	0.06	0.05	0.41	0.56	< 0.005	0.02	0.01	0.02	0.02	< 0.005	0.02	—	95.0	95.0	< 0.005	< 0.005	0.01	95.4
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
2024	0.10	0.09	0.73	0.65	< 0.005	0.03	0.01	0.04	0.03	< 0.005	0.03	—	196	196	0.01	< 0.005	0.01	196
2025	0.26	0.22	1.68	1.87	< 0.005	0.07	0.10	0.16	0.06	0.05	0.11	—	397	397	0.02	< 0.005	0.02	399

2026	0.01	0.01	0.07	0.10	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	—	15.7	15.7	< 0.005	< 0.005	< 0.005	15.8

3. Construction Emissions Details

3.1. Mobilization (2024) - Unmitigated

Criteria Pollutants (lb/day for daily, ton/yr for annual) and GHGs (lb/day for daily, MT/yr for annual)

Location	TOG	ROG	NOx	CO	SO2	PM10E	PM10D	PM10T	PM2.5E	PM2.5D	PM2.5T	BCO2	NBCO2	CO2T	CH4	N2O	R	CO2e
Onsite	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Off-Road Equipment	0.81	0.68	4.90	5.67	0.02	0.20	—	0.20	0.18	—	0.18	—	1,642	1,642	0.07	0.01	—	1,648
Onsite truck	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00
Average Daily	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Off-Road Equipment	0.01	0.01	0.08	0.09	< 0.005	< 0.005	—	< 0.005	< 0.005	—	< 0.005	—	27.0	27.0	< 0.005	< 0.005	—	27.1
Onsite truck	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Off-Road Equipment	< 0.005	< 0.005	0.01	0.02	< 0.005	< 0.005	—	< 0.005	< 0.005	—	< 0.005	—	4.47	4.47	< 0.005	< 0.005	—	4.49
Onsite truck	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00
Offsite	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—

Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	0.05	0.04	0.04	0.47	0.00	0.00	0.09	0.09	0.00	0.02	0.02	—	91.9	91.9	0.01	< 0.005	0.01	93.1
Vendor	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00
Hauling	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00
Average Daily	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	< 0.005	< 0.005	< 0.005	0.01	0.00	0.00	< 0.005	< 0.005	0.00	< 0.005	< 0.005	—	1.53	1.53	< 0.005	< 0.005	< 0.005	1.55
Vendor	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00
Hauling	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	< 0.005	< 0.005	< 0.005	< 0.005	0.00	0.00	< 0.005	< 0.005	0.00	< 0.005	< 0.005	—	0.25	0.25	< 0.005	< 0.005	< 0.005	0.26
Vendor	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00
Hauling	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00

3.3. Demolition (2024) - Unmitigated

Criteria Pollutants (lb/day for daily, ton/yr for annual) and GHGs (lb/day for daily, MT/yr for annual)

Location	TOG	ROG	NOx	CO	SO2	PM10E	PM10D	PM10T	PM2.5E	PM2.5D	PM2.5T	BCO2	NBCO2	CO2T	CH4	N2O	R	CO2e
Onsite	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Off-Road Equipment	5.20	4.36	37.6	32.9	0.10	1.41	—	1.41	1.30	—	1.30	—	10,915	10,915	0.44	0.09	—	10,952

Demolitio	—	—	—	—	—	—	0.31	0.31	—	0.05	0.05	—	—	—	—	—	—	—
Onsite truck	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00
Average Daily	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Off-Road Equipment	0.54	0.45	3.90	3.42	0.01	0.15	—	0.15	0.13	—	0.13	—	1,132	1,132	0.05	0.01	—	1,136
Demolitio n	—	—	—	—	—	—	0.03	0.03	—	< 0.005	< 0.005	—	—	—	—	—	—	—
Onsite truck	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Off-Road Equipment	0.10	0.08	0.71	0.62	< 0.005	0.03	—	0.03	0.02	—	0.02	—	187	187	0.01	< 0.005	—	188
Demolitio n	—	—	—	—	—	—	0.01	0.01	—	< 0.005	< 0.005	—	—	—	—	—	—	—
Onsite truck	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00
Offsite	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	0.05	0.04	0.04	0.47	0.00	0.00	0.09	0.09	0.00	0.02	0.02	—	91.9	91.9	0.01	< 0.005	0.01	93.1
Vendor	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00
Hauling	< 0.005	< 0.005	0.12	0.03	< 0.005	< 0.005	0.03	0.03	< 0.005	0.01	0.01	—	105	105	< 0.005	0.02	0.01	110
Average Daily	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	< 0.005	< 0.005	< 0.005	0.05	0.00	0.00	0.01	0.01	0.00	< 0.005	< 0.005	—	9.65	9.65	< 0.005	< 0.005	0.02	9.80
Vendor	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00

Hauling	< 0.005	< 0.005	0.01	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	—	10.9	10.9	< 0.005	< 0.005	0.01	11.4
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	< 0.005	< 0.005	< 0.005	0.01	0.00	0.00	< 0.005	< 0.005	0.00	< 0.005	< 0.005	—	1.60	1.60	< 0.005	< 0.005	< 0.005	1.62
Vendor	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00
Hauling	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	—	1.80	1.80	< 0.005	< 0.005	< 0.005	1.89

3.5. Demolition (2025) - Unmitigated

Criteria Pollutants (lb/day for daily, ton/yr for annual) and GHGs (lb/day for daily, MT/yr for annual)

Location	TOG	ROG	NOx	CO	SO2	PM10E	PM10D	PM10T	PM2.5E	PM2.5D	PM2.5T	BCO2	NBCO2	CO2T	CH4	N2O	R	CO2e
Onsite	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Off-Road Equipment	4.85	4.07	32.8	31.6	0.10	1.22	—	1.22	1.12	—	1.12	—	10,919	10,919	0.44	0.09	—	10,956
Demolition	—	—	—	—	—	—	0.31	0.31	—	0.05	0.05	—	—	—	—	—	—	—
Onsite truck	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00
Average Daily	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Off-Road Equipment	0.09	0.07	0.58	0.56	< 0.005	0.02	—	0.02	0.02	—	0.02	—	192	192	0.01	< 0.005	—	193
Demolition	—	—	—	—	—	—	0.01	0.01	—	< 0.005	< 0.005	—	—	—	—	—	—	—
Onsite truck	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—

Off-Road Equipment	0.02	0.01	0.11	0.10	< 0.005	< 0.005	—	< 0.005	< 0.005	—	< 0.005	—	31.8	31.8	< 0.005	< 0.005	—	31.9
Demolition	—	—	—	—	—	—	< 0.005	< 0.005	—	< 0.005	< 0.005	—	—	—	—	—	—	—
Onsite truck	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00
Offsite	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	0.04	0.04	0.04	0.43	0.00	0.00	0.09	0.09	0.00	0.02	0.02	—	90.0	90.0	< 0.005	< 0.005	0.01	91.2
Vendor	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00
Hauling	< 0.005	< 0.005	0.12	0.03	< 0.005	< 0.005	0.03	0.03	< 0.005	0.01	0.01	—	103	103	< 0.005	0.02	0.01	108
Average Daily	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	< 0.005	< 0.005	< 0.005	0.01	0.00	0.00	< 0.005	< 0.005	0.00	< 0.005	< 0.005	—	1.60	1.60	< 0.005	< 0.005	< 0.005	1.63
Vendor	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00
Hauling	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	—	1.82	1.82	< 0.005	< 0.005	< 0.005	1.91
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	< 0.005	< 0.005	< 0.005	< 0.005	0.00	0.00	< 0.005	< 0.005	0.00	< 0.005	< 0.005	—	0.27	0.27	< 0.005	< 0.005	< 0.005	0.27
Vendor	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00
Hauling	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	—	0.30	0.30	< 0.005	< 0.005	< 0.005	0.32

3.7. Site Preparation & Pipeline Installation (2025) - Unmitigated

Criteria Pollutants (lb/day for daily, ton/yr for annual) and GHGs (lb/day for daily, MT/yr for annual)

Location	TOG	ROG	NOx	CO	SO2	PM10E	PM10D	PM10T	PM2.5E	PM2.5D	PM2.5T	BCO2	NBCO2	CO2T	CH4	N2O	R	CO2e
Onsite	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—

Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Off-Road Equipment	3.45	2.89	23.4	25.4	0.07	0.92	—	0.92	0.84	—	0.84	—	6,916	6,916	0.28	0.06	—	6,940
Dust From Material Movement	—	—	—	—	—	—	2.56	2.56	—	1.31	1.31	—	—	—	—	—	—	—
Onsite truck	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Off-Road Equipment	3.45	2.89	23.4	25.4	0.07	0.92	—	0.92	0.84	—	0.84	—	6,916	6,916	0.28	0.06	—	6,940
Dust From Material Movement	—	—	—	—	—	—	2.56	2.56	—	1.31	1.31	—	—	—	—	—	—	—
Onsite truck	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00
Average Daily	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Off-Road Equipment	0.61	0.52	4.17	4.52	0.01	0.16	—	0.16	0.15	—	0.15	—	1,232	1,232	0.05	0.01	—	1,236
Dust From Material Movement	—	—	—	—	—	—	0.46	0.46	—	0.23	0.23	—	—	—	—	—	—	—
Onsite truck	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Off-Road Equipment	0.11	0.09	0.76	0.82	< 0.005	0.03	—	0.03	0.03	—	0.03	—	204	204	0.01	< 0.005	—	205

Dust From Material Movement	—	—	—	—	—	—	0.08	0.08	—	0.04	0.04	—	—	—	—	—	—	—
Onsite truck	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00
Offsite	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	0.05	0.04	0.03	0.56	0.00	0.00	0.09	0.09	0.00	0.02	0.02	—	97.8	97.8	< 0.005	< 0.005	0.36	99.4
Vendor	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00
Hauling	< 0.005	< 0.005	0.03	0.01	< 0.005	< 0.005	0.01	0.01	< 0.005	< 0.005	< 0.005	—	25.5	25.5	< 0.005	< 0.005	0.05	26.8
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	0.04	0.04	0.04	0.43	0.00	0.00	0.09	0.09	0.00	0.02	0.02	—	90.0	90.0	< 0.005	< 0.005	0.01	91.2
Vendor	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00
Hauling	< 0.005	< 0.005	0.03	0.01	< 0.005	< 0.005	0.01	0.01	< 0.005	< 0.005	< 0.005	—	25.5	25.5	< 0.005	< 0.005	< 0.005	26.7
Average Daily	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	0.01	0.01	0.01	0.08	0.00	0.00	0.02	0.02	0.00	< 0.005	< 0.005	—	16.2	16.2	< 0.005	< 0.005	0.03	16.5
Vendor	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00
Hauling	< 0.005	< 0.005	0.01	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	—	4.54	4.54	< 0.005	< 0.005	< 0.005	4.76
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	< 0.005	< 0.005	< 0.005	0.01	0.00	0.00	< 0.005	< 0.005	0.00	< 0.005	< 0.005	—	2.69	2.69	< 0.005	< 0.005	< 0.005	2.73
Vendor	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00
Hauling	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	—	0.75	0.75	< 0.005	< 0.005	< 0.005	0.79

3.9. Pump Station Construction (2025) - Unmitigated

Criteria Pollutants (lb/day for daily, ton/yr for annual) and GHGs (lb/day for daily, MT/yr for annual)

Location	TOG	ROG	NOx	CO	SO2	PM10E	PM10D	PM10T	PM2.5E	PM2.5D	PM2.5T	BCO2	NBCO2	CO2T	CH4	N2O	R	CO2e
Onsite	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Off-Road Equipment	1.31	1.10	8.57	9.36	0.02	0.36	—	0.36	0.33	—	0.33	—	1,744	1,744	0.07	0.01	—	1,750
Onsite truck	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Off-Road Equipment	1.31	1.10	8.57	9.36	0.02	0.36	—	0.36	0.33	—	0.33	—	1,744	1,744	0.07	0.01	—	1,750
Onsite truck	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00
Average Daily	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Off-Road Equipment	0.68	0.57	4.44	4.85	0.01	0.19	—	0.19	0.17	—	0.17	—	905	905	0.04	0.01	—	908
Onsite truck	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Off-Road Equipment	0.12	0.10	0.81	0.89	< 0.005	0.03	—	0.03	0.03	—	0.03	—	150	150	0.01	< 0.005	—	150
Onsite truck	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00
Offsite	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	0.05	0.04	0.03	0.56	0.00	0.00	0.09	0.09	0.00	0.02	0.02	—	97.8	97.8	< 0.005	< 0.005	0.36	99.4

Vendor	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00
Hauling	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	0.04	0.04	0.04	0.43	0.00	0.00	0.09	0.09	0.00	0.02	0.02	—	90.0	90.0	< 0.005	< 0.005	0.01	91.2
Vendor	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00
Hauling	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00
Average Daily	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	0.02	0.02	0.02	0.24	0.00	0.00	0.05	0.05	0.00	0.01	0.01	—	47.3	47.3	< 0.005	< 0.005	0.08	48.0
Vendor	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00
Hauling	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	< 0.005	< 0.005	< 0.005	0.04	0.00	0.00	0.01	0.01	0.00	< 0.005	< 0.005	—	7.82	7.82	< 0.005	< 0.005	0.01	7.94
Vendor	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00
Hauling	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00

3.11. Pump Station Construction (2026) - Unmitigated

Criteria Pollutants (lb/day for daily, ton/yr for annual) and GHGs (lb/day for daily, MT/yr for annual)

Location	TOG	ROG	NOx	CO	SO2	PM10E	PM10D	PM10T	PM2.5E	PM2.5D	PM2.5T	BCO2	NBCO2	CO2T	CH4	N2O	R	CO2e
Onsite	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Off-Road Equipment	1.18	0.99	8.02	9.04	0.02	0.30	—	0.30	0.27	—	0.27	—	1,745	1,745	0.07	0.01	—	1,751

Onsite truck	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00
Average Daily	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Off-Road Equipment	0.03	0.02	0.17	0.19	< 0.005	0.01	—	0.01	0.01	—	0.01	—	37.6	37.6	< 0.005	< 0.005	—	37.7
Onsite truck	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Off-Road Equipment	< 0.005	< 0.005	0.03	0.04	< 0.005	< 0.005	—	< 0.005	< 0.005	—	< 0.005	—	6.22	6.22	< 0.005	< 0.005	—	6.24
Onsite truck	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00
Offsite	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	0.04	0.04	0.03	0.40	0.00	0.00	0.09	0.09	0.00	0.02	0.02	—	88.1	88.1	< 0.005	< 0.005	0.01	89.2
Vendor	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00
Hauling	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00
Average Daily	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	< 0.005	< 0.005	< 0.005	0.01	0.00	0.00	< 0.005	< 0.005	0.00	< 0.005	< 0.005	—	1.92	1.92	< 0.005	< 0.005	< 0.005	1.95
Vendor	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00
Hauling	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	< 0.005	< 0.005	< 0.005	< 0.005	0.00	0.00	< 0.005	< 0.005	0.00	< 0.005	< 0.005	—	0.32	0.32	< 0.005	< 0.005	< 0.005	0.32
Vendor	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00
Hauling	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00

3.13. Final Site Work (2026) - Unmitigated

Criteria Pollutants (lb/day for daily, ton/yr for annual) and GHGs (lb/day for daily, MT/yr for annual)

Location	TOG	ROG	NOx	CO	SO2	PM10E	PM10D	PM10T	PM2.5E	PM2.5D	PM2.5T	BCO2	NBCO2	CO2T	CH4	N2O	R	CO2e
Onsite	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Off-Road Equipment	0.45	0.38	3.56	4.97	0.01	0.16	—	0.16	0.15	—	0.15	—	755	755	0.03	0.01	—	758
Paving	—	0.01	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Onsite truck	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00
Average Daily	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Off-Road Equipment	0.03	0.03	0.23	0.33	< 0.005	0.01	—	0.01	0.01	—	0.01	—	49.7	49.7	< 0.005	< 0.005	—	49.8
Paving	—	< 0.005	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Onsite truck	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Off-Road Equipment	0.01	< 0.005	0.04	0.06	< 0.005	< 0.005	—	< 0.005	< 0.005	—	< 0.005	—	8.22	8.22	< 0.005	< 0.005	—	8.25
Paving	—	< 0.005	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Onsite truck	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00
Offsite	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—

Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	0.04	0.04	0.03	0.40	0.00	0.00	0.09	0.09	0.00	0.02	0.02	—	88.1	88.1	< 0.005	< 0.005	0.01	89.2
Vendor	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00
Hauling	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00
Average Daily	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	< 0.005	< 0.005	< 0.005	0.03	0.00	0.00	0.01	0.01	0.00	< 0.005	< 0.005	—	5.86	5.86	< 0.005	< 0.005	0.01	5.95
Vendor	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00
Hauling	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	< 0.005	< 0.005	< 0.005	0.01	0.00	0.00	< 0.005	< 0.005	0.00	< 0.005	< 0.005	—	0.97	0.97	< 0.005	< 0.005	< 0.005	0.98
Vendor	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00
Hauling	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00

4. Operations Emissions Details

4.10. Soil Carbon Accumulation By Vegetation Type

4.10.1. Soil Carbon Accumulation By Vegetation Type - Unmitigated

Criteria Pollutants (lb/day for daily, ton/yr for annual) and GHGs (lb/day for daily, MT/yr for annual)

Vegetation	TOG	ROG	NOx	CO	SO2	PM10E	PM10D	PM10T	PM2.5E	PM2.5D	PM2.5T	BCO2	NBCO2	CO2T	CH4	N2O	R	CO2e
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Total	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—

Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Total	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Total	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—

4.10.2. Above and Belowground Carbon Accumulation by Land Use Type - Unmitigated

Criteria Pollutants (lb/day for daily, ton/yr for annual) and GHGs (lb/day for daily, MT/yr for annual)

Land Use	TOG	ROG	NOx	CO	SO2	PM10E	PM10D	PM10T	PM2.5E	PM2.5D	PM2.5T	BCO2	NBCO2	CO2T	CH4	N2O	R	CO2e
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Total	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Total	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Total	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—

4.10.3. Avoided and Sequestered Emissions by Species - Unmitigated

Criteria Pollutants (lb/day for daily, ton/yr for annual) and GHGs (lb/day for daily, MT/yr for annual)

Species	TOG	ROG	NOx	CO	SO2	PM10E	PM10D	PM10T	PM2.5E	PM2.5D	PM2.5T	BCO2	NBCO2	CO2T	CH4	N2O	R	CO2e
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Avoided	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Subtotal	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—

Sequest	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Subtotal	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Removed	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Subtotal	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Avoided	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Subtotal	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Sequestered	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Subtotal	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Removed	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Subtotal	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Avoided	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Subtotal	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Sequestered	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Subtotal	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Removed	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Subtotal	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—

5. Activity Data

5.1. Construction Schedule

Phase Name	Phase Type	Start Date	End Date	Days Per Week	Work Days per Phase	Phase Description
Mobilization	Demolition	11/1/2024	11/8/2024	5.00	6.00	—
Demolition	Demolition	11/9/2024	1/9/2025	5.00	44.0	—
Site Preparation & Pipeline Installation	Site Preparation	1/10/2025	4/10/2025	5.00	65.0	—
Pump Station Construction	Building Construction	4/11/2025	1/11/2026	5.00	196	—
Final Site Work	Paving	1/10/2026	2/12/2026	5.00	24.0	—

5.2. Off-Road Equipment

5.2.1. Unmitigated

Phase Name	Equipment Type	Fuel Type	Engine Tier	Number per Day	Hours Per Day	Horsepower	Load Factor
Mobilization	Tractors/Loaders/Backhoes	Diesel	Average	1.00	8.00	367	0.40
Mobilization	Off-Highway Trucks	Diesel	Average	2.00	8.00	36.0	0.38
Demolition	Concrete/Industrial Saws	Diesel	Average	2.00	8.00	33.0	0.73
Demolition	Excavators	Diesel	Average	1.00	8.00	36.0	0.38
Demolition	Tractors/Loaders/Backhoes	Diesel	Average	2.00	8.00	367	0.40
Demolition	Scrapers	Diesel	Average	2.00	8.00	423	0.48
Demolition	Dumpers/Tenders	Diesel	Average	2.00	8.00	16.0	0.38
Demolition	Off-Highway Trucks	Diesel	Average	2.00	8.00	376	0.38
Demolition	Cranes	Diesel	Average	1.00	8.00	367	0.29

Site Preparation & Pipeline Installation	Excavators	Diesel	Average	1.00	8.00	367	0.40
Site Preparation & Pipeline Installation	Tractors/Loaders/Backhoes	Diesel	Average	1.00	8.00	84.0	0.37
Site Preparation & Pipeline Installation	Off-Highway Trucks	Diesel	Average	2.00	8.00	376	0.38
Site Preparation & Pipeline Installation	Rubber Tired Dozers	Diesel	Average	1.00	8.00	367	0.40
Site Preparation & Pipeline Installation	Cement and Mortar Mixers	Diesel	Average	1.00	8.00	10.0	0.56
Site Preparation & Pipeline Installation	Other Material Handling Equipment	Diesel	Average	1.00	8.00	93.0	0.40
Site Preparation & Pipeline Installation	Pumps	Diesel	Average	4.00	8.00	11.0	0.74
Site Preparation & Pipeline Installation	Skid Steer Loaders	Diesel	Average	2.00	8.00	71.0	0.37
Pump Station Construction	Cranes	Diesel	Average	1.00	7.00	367	0.29
Pump Station Construction	Excavators	Diesel	Average	1.00	8.00	14.0	0.74
Pump Station Construction	Off-Highway Trucks	Diesel	Average	2.00	8.00	46.0	0.45
Pump Station Construction	Paving Equipment	Diesel	Average	1.00	8.00	89.0	0.36
Final Site Work	Pavers	Diesel	Average	1.00	8.00	81.0	0.42
Final Site Work	Paving Equipment	Diesel	Average	1.00	8.00	89.0	0.36
Final Site Work	Rollers	Diesel	Average	1.00	8.00	36.0	0.38

5.3. Construction Vehicles

5.3.1. Unmitigated

Phase Name	Trip Type	One-Way Trips per Day	Miles per Trip	Vehicle Mix

Demolition	—	—	—	—
Demolition	Worker	10.0	12.8	LDA,LDT1,LDT2
Demolition	Vendor	—	8.33	HHDT,MHDT
Demolition	Hauling	1.50	20.0	HHDT
Demolition	Onsite truck	—	—	HHDT
Mobilization	—	—	—	—
Mobilization	Worker	10.0	12.8	LDA,LDT1,LDT2
Mobilization	Vendor	—	8.33	HHDT,MHDT
Mobilization	Hauling	0.00	20.0	HHDT
Mobilization	Onsite truck	—	—	HHDT
Pump Station Construction	—	—	—	—
Pump Station Construction	Worker	10.0	12.8	LDA,LDT1,LDT2
Pump Station Construction	Vendor	0.00	8.33	HHDT,MHDT
Pump Station Construction	Hauling	0.00	20.0	HHDT
Pump Station Construction	Onsite truck	—	—	HHDT
Final Site Work	—	—	—	—
Final Site Work	Worker	10.0	12.8	LDA,LDT1,LDT2
Final Site Work	Vendor	—	8.33	HHDT,MHDT
Final Site Work	Hauling	0.00	20.0	HHDT
Final Site Work	Onsite truck	—	—	HHDT
Site Preparation & Pipeline Installation	—	—	—	—
Site Preparation & Pipeline Installation	Worker	10.0	12.8	LDA,LDT1,LDT2
Site Preparation & Pipeline Installation	Vendor	—	8.33	HHDT,MHDT
Site Preparation & Pipeline Installation	Hauling	0.37	20.0	HHDT
Site Preparation & Pipeline Installation	Onsite truck	—	—	HHDT

5.4. Vehicles

5.4.1. Construction Vehicle Control Strategies

Control Strategies Applied	PM10 Reduction	PM2.5 Reduction
Water unpaved roads twice daily	55%	55%
Limit vehicle speeds on unpaved roads to 25 mph	44%	44%

5.5. Architectural Coatings

Phase Name	Residential Interior Area Coated (sq ft)	Residential Exterior Area Coated (sq ft)	Non-Residential Interior Area Coated (sq ft)	Non-Residential Exterior Area Coated (sq ft)	Parking Area Coated (sq ft)

5.6. Dust Mitigation

5.6.1. Construction Earthmoving Activities

Phase Name	Material Imported (Cubic Yards)	Material Exported (Cubic Yards)	Acres Graded (acres)	Material Demolished (Ton of Debris)	Acres Paved (acres)
Demolition	0.00	0.00	0.00	1,000	—
Site Preparation & Pipeline Installation	250	250	32.5	0.00	—
Final Site Work	0.00	0.00	0.00	0.00	0.08

5.6.2. Construction Earthmoving Control Strategies

Control Strategies Applied	Frequency (per day)	PM10 Reduction	PM2.5 Reduction
Water Exposed Area	2	61%	61%
Water Demolished Area	2	36%	36%

5.7. Construction Paving

Land Use	Area Paved (acres)	% Asphalt

Other Asphalt Surfaces	0.08	100%

5.8. Construction Electricity Consumption and Emissions Factors

kWh per Year and Emission Factor (lb/MWh)

Year	kWh per Year	CO2	CH4	N2O
2024	0.00	532	0.03	< 0.005
2025	0.00	532	0.03	< 0.005
2026	0.00	532	0.03	< 0.005

5.18. Vegetation

5.18.1. Land Use Change

5.18.1.1. Unmitigated

Vegetation Land Use Type	Vegetation Soil Type	Initial Acres	Final Acres

5.18.1. Biomass Cover Type

5.18.1.1. Unmitigated

Biomass Cover Type	Initial Acres	Final Acres

5.18.2. Sequestration

5.18.2.1. Unmitigated

Tree Type	Number	Electricity Saved (kWh/year)	Natural Gas Saved (btu/year)

6. Climate Risk Detailed Report

6.1. Climate Risk Summary

Cal-Adapt midcentury 2040–2059 average projections for four hazards are reported below for your project location. These are under Representation Concentration Pathway (RCP) 8.5 which assumes GHG emissions will continue to rise strongly through 2050 and then plateau around 2100.

Climate Hazard	Result for Project Location	Unit
Temperature and Extreme Heat	23.9	annual days of extreme heat
Extreme Precipitation	7.15	annual days with precipitation above 20 mm
Sea Level Rise	—	meters of inundation depth
Wildfire	27.8	annual hectares burned

Temperature and Extreme Heat data are for grid cell in which your project are located. The projection is based on the 98th historical percentile of daily maximum/minimum temperatures from observed historical data (32 climate model ensemble from Cal-Adapt, 2040–2059 average under RCP 8.5). Each grid cell is 6 kilometers (km) by 6 km, or 3.7 miles (mi) by 3.7 mi.
Extreme Precipitation data are for the grid cell in which your project are located. The threshold of 20 mm is equivalent to about ¾ an inch of rain, which would be light to moderate rainfall if received over a full day or heavy rain if received over a period of 2 to 4 hours. Each grid cell is 6 kilometers (km) by 6 km, or 3.7 miles (mi) by 3.7 mi.
Sea Level Rise data are for the grid cell in which your project are located. The projections are from Radke et al. (2017), as reported in Cal-Adapt (Radke et al., 2017, CEC-500-2017-008), and consider inundation location and depth for the San Francisco Bay, the Sacramento-San Joaquin River Delta and California coast resulting different increments of sea level rise coupled with extreme storm events. Users may select from four scenarios to view the range in potential inundation depth for the grid cell. The four scenarios are: No rise, 0.5 meter, 1.0 meter, 1.41 meters
Wildfire data are for the grid cell in which your project are located. The projections are from UC Davis, as reported in Cal-Adapt (2040–2059 average under RCP 8.5), and consider historical data of climate, vegetation, population density, and large (> 400 ha) fire history. Users may select from four model simulations to view the range in potential wildfire probabilities for the grid cell. The four simulations make different assumptions about expected rainfall and temperature are: Warmer/drier (HadGEM2-ES), Cooler/wetter (CNRM-CM5), Average conditions (CanESM2), Range of different rainfall and temperature possibilities (MIROC5). Each grid cell is 6 kilometers (km) by 6 km, or 3.7 miles (mi) by 3.7 mi.

6.2. Initial Climate Risk Scores

Climate Hazard	Exposure Score	Sensitivity Score	Adaptive Capacity Score	Vulnerability Score
Temperature and Extreme Heat	N/A	N/A	N/A	N/A
Extreme Precipitation	N/A	N/A	N/A	N/A
Sea Level Rise	N/A	N/A	N/A	N/A
Wildfire	N/A	N/A	N/A	N/A
Flooding	N/A	N/A	N/A	N/A
Drought	N/A	N/A	N/A	N/A
Snowpack Reduction	N/A	N/A	N/A	N/A
Air Quality Degradation	N/A	N/A	N/A	N/A

The sensitivity score reflects the extent to which a project would be adversely affected by exposure to a climate hazard. Exposure is rated on a scale of 1 to 5, with a score of 5 representing the greatest exposure.
The adaptive capacity of a project refers to its ability to manage and reduce vulnerabilities from projected climate hazards. Adaptive capacity is rated on a scale of 1 to 5, with a score of 5 representing the greatest ability to adapt.
The overall vulnerability scores are calculated based on the potential impacts and adaptive capacity assessments for each hazard. Scores do not include implementation of climate risk reduction measures.

6.3. Adjusted Climate Risk Scores

Climate Hazard	Exposure Score	Sensitivity Score	Adaptive Capacity Score	Vulnerability Score
Temperature and Extreme Heat	N/A	N/A	N/A	N/A
Extreme Precipitation	N/A	N/A	N/A	N/A
Sea Level Rise	N/A	N/A	N/A	N/A
Wildfire	N/A	N/A	N/A	N/A
Flooding	N/A	N/A	N/A	N/A
Drought	N/A	N/A	N/A	N/A
Snowpack Reduction	N/A	N/A	N/A	N/A
Air Quality Degradation	N/A	N/A	N/A	N/A

The sensitivity score reflects the extent to which a project would be adversely affected by exposure to a climate hazard. Exposure is rated on a scale of 1 to 5, with a score of 5 representing the greatest exposure.
The adaptive capacity of a project refers to its ability to manage and reduce vulnerabilities from projected climate hazards. Adaptive capacity is rated on a scale of 1 to 5, with a score of 5 representing the greatest ability to adapt.
The overall vulnerability scores are calculated based on the potential impacts and adaptive capacity assessments for each hazard. Scores include implementation of climate risk reduction measures.

6.4. Climate Risk Reduction Measures

7. Health and Equity Details

7.1. CalEnviroScreen 4.0 Scores

The maximum CalEnviroScreen score is 100. A high score (i.e., greater than 50) reflects a higher pollution burden compared to other census tracts in the state.

Indicator	Result for Project Census Tract
Exposure Indicators	—
AQ-Ozone	69.6

AQ-PM	27.2
AQ-DPM	15.6
Drinking Water	72.4
Lead Risk Housing	2.84
Pesticides	58.2
Toxic Releases	11.0
Traffic	11.7
Effect Indicators	—
CleanUp Sites	7.71
Groundwater	0.00
Haz Waste Facilities/Generators	51.7
Impaired Water Bodies	93.4
Solid Waste	0.00
Sensitive Population	—
Asthma	36.8
Cardio-vascular	91.9
Low Birth Weights	6.89
Socioeconomic Factor Indicators	—
Education	35.9
Housing	4.03
Linguistic	0.00
Poverty	21.0
Unemployment	83.2

7.2. Healthy Places Index Scores

The maximum Health Places Index score is 100. A high score (i.e., greater than 50) reflects healthier community conditions compared to other census tracts in the state.

Indicator	Result for Project Census Tract

Economic	—
Above Poverty	87.96355704
Employed	65.05838573
Median HI	88.65648659
Education	—
Bachelor's or higher	68.86949827
High school enrollment	100
Preschool enrollment	44.69395611
Transportation	—
Auto Access	96.70216861
Active commuting	12.93468497
Social	—
2-parent households	79.62273835
Voting	72.62928269
Neighborhood	—
Alcohol availability	84.0626203
Park access	30.80970101
Retail density	11.15103298
Supermarket access	26.84460413
Tree canopy	30.16809958
Housing	—
Homeownership	76.8766842
Housing habitability	95.17515719
Low-inc homeowner severe housing cost burden	87.3219556
Low-inc renter severe housing cost burden	87.06531503
Uncrowded housing	96.93314513
Health Outcomes	—

Insured adults	93.18619274
Arthritis	53.0
Asthma ER Admissions	72.3
High Blood Pressure	62.1
Cancer (excluding skin)	32.7
Asthma	51.9
Coronary Heart Disease	79.3
Chronic Obstructive Pulmonary Disease	71.2
Diagnosed Diabetes	89.8
Life Expectancy at Birth	48.1
Cognitively Disabled	94.6
Physically Disabled	83.0
Heart Attack ER Admissions	31.5
Mental Health Not Good	67.2
Chronic Kidney Disease	85.5
Obesity	52.4
Pedestrian Injuries	19.6
Physical Health Not Good	78.6
Stroke	84.7
Health Risk Behaviors	—
Binge Drinking	7.0
Current Smoker	60.5
No Leisure Time for Physical Activity	80.2
Climate Change Exposures	—
Wildfire Risk	26.6
SLR Inundation Area	0.0
Children	71.1

Elderly	55.7
English Speaking	98.1
Foreign-born	15.8
Outdoor Workers	71.2
Climate Change Adaptive Capacity	—
Impervious Surface Cover	76.1
Traffic Density	1.6
Traffic Access	23.0
Other Indices	—
Hardship	22.8
Other Decision Support	—
2016 Voting	81.7

7.3. Overall Health & Equity Scores

Metric	Result for Project Census Tract
CalEnviroScreen 4.0 Score for Project Location (a)	26.0
Healthy Places Index Score for Project Location (b)	81.0
Project Located in a Designated Disadvantaged Community (Senate Bill 535)	No
Project Located in a Low-Income Community (Assembly Bill 1550)	No
Project Located in a Community Air Protection Program Community (Assembly Bill 617)	No

a: The maximum CalEnviroScreen score is 100. A high score (i.e., greater than 50) reflects a higher pollution burden compared to other census tracts in the state.
b: The maximum Health Places Index score is 100. A high score (i.e., greater than 50) reflects healthier community conditions compared to other census tracts in the state.

7.4. Health & Equity Measures

No Health & Equity Measures selected.

7.5. Evaluation Scorecard

Health & Equity Evaluation Scorecard not completed.

7.6. Health & Equity Custom Measures

No Health & Equity Custom Measures created.

8. User Changes to Default Data

Screen	Justification
Construction: Construction Phases	Per project description, construction phases include mobilization (~1 week), demolition (~2 months), site preparation & pipeline installation (~3 months), pump station construction (~9 months), & final site work (~1 month). Site prep & pipeline installation phase to include ~250 CY of exported materials & 350 tons (~250 CY) of imported base material. Demolition to include demo/removal of ~1,000 tons of steel from removal of tanks.
Construction: Off-Road Equipment	Per project description, construction equipment to include: Mobilization 1 backhoe & 2 service trucks; Demolition 1 excavator, 1 front end loader, 2 dump trucks, 2 service trucks, 1 crane, 2 chain saws, 2 scrapers, & 1 tractor; Site Preparation/Pipeline Installation 1 pug mill mixer, 1 bulldozer, 1 front end loader, 1 excavator, 2 service trucks, 1 material handling equipment, 4 pumps, & 2 skid steer loaders; Pump Station Construction 1 crane, 1 excavator, 1 paving equipment, & 2 service trucks. Specific equipment list was not provided for the final site work phase; however, as this phase is described as including paving in the PD, used CalEEMod default equipment for a paving phase.
Construction: Demolition	Demolition to include demo/removal of ~1,000 tons of steel from existing tanks.
Construction: Trips and VMT	Per project description, ~4 to 8 crew members & 2 inspectors/construction staff for a total of up to 10 workers at any time during project construction. Demolition phase to include up to 65 total trucks for removal of tank (65 trucks/44 total construction days per phase = ~1.5 hauling trips/day) & site preparation/pipeline installation to include up to 24 total trucks to import base soil (24 trucks/65 total construction days for phase = 0.37 hauling trips/day).
Construction: Paving	Paving consists of the portion of the driveway that will have the new water pipeline. 600 linear ft x ~6 ft = ~3,600 sf or ~0.08 acres of new paving.
Construction: Dust From Material Movement	—

19704 Carancho Pump Station - OPERATIONAL ANALYSIS ONLY Detailed Report

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1. Basic Project Information

1.1. Basic Project Information

Data Field	Value
Project Name	19704 Carancho Pump Station - OPERATIONAL ANALYSIS ONLY
Operational Year	2026
Lead Agency	—
Land Use Scale	Project/site
Analysis Level for Defaults	County
Windspeed (m/s)	1.80
Precipitation (days)	23.4
Location	33.49459337553898, -117.27367899275663
County	Riverside-South Coast
City	Unincorporated
Air District	South Coast AQMD
Air Basin	South Coast
TAZ	5558
EDFZ	11
Electric Utility	Southern California Edison
Gas Utility	Southern California Gas
App Version	2022.1.1.22

1.2. Land Use Types

Land Use Subtype	Size	Unit	Lot Acreage	Building Area (sq ft)	Landscape Area (sq ft)	Special Landscape Area (sq ft)	Population	Description
General Light Industry	6.82	1000sqft	0.16	0.00	0.00	—	—	—

1.3. User-Selected Emission Reduction Measures by Emissions Sector

No measures selected

2. Emissions Summary

2.4. Operations Emissions Compared Against Thresholds

Criteria Pollutants (lb/day for daily, ton/yr for annual) and GHGs (lb/day for daily, MT/yr for annual)

Un/Mit.	TOG	ROG	NOx	CO	SO2	PM10E	PM10D	PM10T	PM2.5E	PM2.5D	PM2.5T	BCO2	NBCO2	CO2T	CH4	N2O	R	CO2e
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Unmit.	0.11	0.10	0.44	0.25	< 0.005	0.01	0.00	0.01	0.01	0.00	0.01	7.57	10,120	10,128	1.39	0.08	0.00	10,188
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Unmit.	0.11	0.10	0.44	0.25	< 0.005	0.01	0.00	0.01	0.01	0.00	0.01	7.57	10,120	10,128	1.39	0.08	0.00	10,188
Average Daily (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Unmit.	0.12	0.11	0.48	0.28	< 0.005	0.02	0.00	0.02	0.02	0.00	0.02	7.57	10,125	10,133	1.39	0.08	0.00	10,193
Annual (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Unmit.	0.02	0.02	0.09	0.05	< 0.005	< 0.005	0.00	< 0.005	< 0.005	0.00	< 0.005	1.25	1,676	1,678	0.23	0.01	0.00	1,687

2.5. Operations Emissions by Sector, Unmitigated

Criteria Pollutants (lb/day for daily, ton/yr for annual) and GHGs (lb/day for daily, MT/yr for annual)

Sector	TOG	ROG	NOx	CO	SO2	PM10E	PM10D	PM10T	PM2.5E	PM2.5D	PM2.5T	BCO2	NBCO2	CO2T	CH4	N2O	R	CO2e
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—

Mobile	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00
Area	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	—	0.00	—	0.00	0.00	0.00	0.00	—	0.00
Energy	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	—	0.00	—	10,054	10,054	0.62	0.08	—	10,093
Water	—	—	—	—	—	—	—	—	—	—	—	3.02	15.6	18.7	0.31	0.01	—	28.6
Waste	—	—	—	—	—	—	—	—	—	—	—	4.55	0.00	4.55	0.46	0.00	—	15.9
Refrig.	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	0.00	0.00
Stationary	0.11	0.10	0.44	0.25	< 0.005	0.01	0.00	0.01	0.01	0.00	0.01	0.00	50.4	50.4	< 0.005	< 0.005	0.00	50.5
Total	0.11	0.10	0.44	0.25	< 0.005	0.01	0.00	0.01	0.01	0.00	0.01	7.57	10,120	10,128	1.39	0.08	0.00	10,188
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Mobile	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00
Area	—	0.00	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Energy	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	—	0.00	—	10,054	10,054	0.62	0.08	—	10,093
Water	—	—	—	—	—	—	—	—	—	—	—	3.02	15.6	18.7	0.31	0.01	—	28.6
Waste	—	—	—	—	—	—	—	—	—	—	—	4.55	0.00	4.55	0.46	0.00	—	15.9
Refrig.	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	0.00	0.00
Stationary	0.11	0.10	0.44	0.25	< 0.005	0.01	0.00	0.01	0.01	0.00	0.01	0.00	50.4	50.4	< 0.005	< 0.005	0.00	50.5
Total	0.11	0.10	0.44	0.25	< 0.005	0.01	0.00	0.01	0.01	0.00	0.01	7.57	10,120	10,128	1.39	0.08	0.00	10,188
Average Daily	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Mobile	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00
Area	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	—	0.00	—	0.00	0.00	0.00	0.00	—	0.00
Energy	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	—	0.00	—	10,054	10,054	0.62	0.08	—	10,093
Water	—	—	—	—	—	—	—	—	—	—	—	3.02	15.6	18.7	0.31	0.01	—	28.6
Waste	—	—	—	—	—	—	—	—	—	—	—	4.55	0.00	4.55	0.46	0.00	—	15.9
Refrig.	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	0.00	0.00

Stationar	0.12	0.11	0.48	0.28	< 0.005	0.02	0.00	0.02	0.02	0.00	0.02	0.00	55.2	55.2	< 0.005	< 0.005	0.00	55.4
Total	0.12	0.11	0.48	0.28	< 0.005	0.02	0.00	0.02	0.02	0.00	0.02	7.57	10,125	10,133	1.39	0.08	0.00	10,193
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Mobile	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00
Area	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	—	0.00	—	0.00	0.00	0.00	0.00	—	0.00
Energy	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	—	0.00	—	1,665	1,665	0.10	0.01	—	1,671
Water	—	—	—	—	—	—	—	—	—	—	—	0.50	2.59	3.09	0.05	< 0.005	—	4.74
Waste	—	—	—	—	—	—	—	—	—	—	—	0.75	0.00	0.75	0.08	0.00	—	2.64
Refrig.	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	0.00	0.00
Stationary	0.02	0.02	0.09	0.05	< 0.005	< 0.005	0.00	< 0.005	< 0.005	0.00	< 0.005	0.00	9.14	9.14	< 0.005	< 0.005	0.00	9.17
Total	0.02	0.02	0.09	0.05	< 0.005	< 0.005	0.00	< 0.005	< 0.005	0.00	< 0.005	1.25	1,676	1,678	0.23	0.01	0.00	1,687

4. Operations Emissions Details

4.1. Mobile Emissions by Land Use

4.1.1. Unmitigated

Criteria Pollutants (lb/day for daily, ton/yr for annual) and GHGs (lb/day for daily, MT/yr for annual)

Land Use	TOG	ROG	NOx	CO	SO2	PM10E	PM10D	PM10T	PM2.5E	PM2.5D	PM2.5T	BCO2	NBCO2	CO2T	CH4	N2O	R	CO2e
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
General Light Industry	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00
Total	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00

Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
General Light Industry	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00
Total	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
General Light Industry	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00
Total	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00

4.2. Energy

4.2.1. Electricity Emissions By Land Use - Unmitigated

Criteria Pollutants (lb/day for daily, ton/yr for annual) and GHGs (lb/day for daily, MT/yr for annual)

Land Use	TOG	ROG	NOx	CO	SO2	PM10E	PM10D	PM10T	PM2.5E	PM2.5D	PM2.5T	BCO2	NBCO2	CO2T	CH4	N2O	R	CO2e
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
General Light Industry	—	—	—	—	—	—	—	—	—	—	—	—	10,054	10,054	0.62	0.08	—	10,093
Total	—	—	—	—	—	—	—	—	—	—	—	—	10,054	10,054	0.62	0.08	—	10,093
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
General Light Industry	—	—	—	—	—	—	—	—	—	—	—	—	10,054	10,054	0.62	0.08	—	10,093
Total	—	—	—	—	—	—	—	—	—	—	—	—	10,054	10,054	0.62	0.08	—	10,093

Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
General Light Industry	—	—	—	—	—	—	—	—	—	—	—	—	1,665	1,665	0.10	0.01	—	1,671
Total	—	—	—	—	—	—	—	—	—	—	—	—	1,665	1,665	0.10	0.01	—	1,671

4.2.3. Natural Gas Emissions By Land Use - Unmitigated

Criteria Pollutants (lb/day for daily, ton/yr for annual) and GHGs (lb/day for daily, MT/yr for annual)

Land Use	TOG	ROG	NOx	CO	SO2	PM10E	PM10D	PM10T	PM2.5E	PM2.5D	PM2.5T	BCO2	NBCO2	CO2T	CH4	N2O	R	CO2e
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
General Light Industry	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	—	0.00	—	0.00	0.00	0.00	0.00	—	0.00
Total	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	—	0.00	—	0.00	0.00	0.00	0.00	—	0.00
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
General Light Industry	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	—	0.00	—	0.00	0.00	0.00	0.00	—	0.00
Total	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	—	0.00	—	0.00	0.00	0.00	0.00	—	0.00
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
General Light Industry	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	—	0.00	—	0.00	0.00	0.00	0.00	—	0.00
Total	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	—	0.00	—	0.00	0.00	0.00	0.00	—	0.00

4.3. Area Emissions by Source

4.3.1. Unmitigated

Criteria Pollutants (lb/day for daily, ton/yr for annual) and GHGs (lb/day for daily, MT/yr for annual)

Source	TOG	ROG	NOx	CO	SO2	PM10E	PM10D	PM10T	PM2.5E	PM2.5D	PM2.5T	BCO2	NBCO2	CO2T	CH4	N2O	R	CO2e
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Consumer Products	—	0.00	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Architectural Coatings	—	0.00	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Landscape Equipment	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	—	0.00	—	0.00	0.00	0.00	0.00	—	0.00
Total	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	—	0.00	—	0.00	0.00	0.00	0.00	—	0.00
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Consumer Products	—	0.00	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Architectural Coatings	—	0.00	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Total	—	0.00	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Consumer Products	—	0.00	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Architectural Coatings	—	0.00	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—

Landsca Equipment	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	—	0.00	—	0.00	0.00	0.00	0.00	—	0.00
Total	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	—	0.00	—	0.00	0.00	0.00	0.00	—	0.00

4.4. Water Emissions by Land Use

4.4.1. Unmitigated

Criteria Pollutants (lb/day for daily, ton/yr for annual) and GHGs (lb/day for daily, MT/yr for annual)

Land Use	TOG	ROG	NOx	CO	SO2	PM10E	PM10D	PM10T	PM2.5E	PM2.5D	PM2.5T	BCO2	NBCO2	CO2T	CH4	N2O	R	CO2e
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
General Light Industry	—	—	—	—	—	—	—	—	—	—	—	3.02	15.6	18.7	0.31	0.01	—	28.6
Total	—	—	—	—	—	—	—	—	—	—	—	3.02	15.6	18.7	0.31	0.01	—	28.6
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
General Light Industry	—	—	—	—	—	—	—	—	—	—	—	3.02	15.6	18.7	0.31	0.01	—	28.6
Total	—	—	—	—	—	—	—	—	—	—	—	3.02	15.6	18.7	0.31	0.01	—	28.6
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
General Light Industry	—	—	—	—	—	—	—	—	—	—	—	0.50	2.59	3.09	0.05	< 0.005	—	4.74
Total	—	—	—	—	—	—	—	—	—	—	—	0.50	2.59	3.09	0.05	< 0.005	—	4.74

4.5. Waste Emissions by Land Use

4.5.1. Unmitigated

Criteria Pollutants (lb/day for daily, ton/yr for annual) and GHGs (lb/day for daily, MT/yr for annual)

Land Use	TOG	ROG	NOx	CO	SO2	PM10E	PM10D	PM10T	PM2.5E	PM2.5D	PM2.5T	BCO2	NBCO2	CO2T	CH4	N2O	R	CO2e
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
General Light Industry	—	—	—	—	—	—	—	—	—	—	—	4.55	0.00	4.55	0.46	0.00	—	15.9
Total	—	—	—	—	—	—	—	—	—	—	—	4.55	0.00	4.55	0.46	0.00	—	15.9
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
General Light Industry	—	—	—	—	—	—	—	—	—	—	—	4.55	0.00	4.55	0.46	0.00	—	15.9
Total	—	—	—	—	—	—	—	—	—	—	—	4.55	0.00	4.55	0.46	0.00	—	15.9
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
General Light Industry	—	—	—	—	—	—	—	—	—	—	—	0.75	0.00	0.75	0.08	0.00	—	2.64
Total	—	—	—	—	—	—	—	—	—	—	—	0.75	0.00	0.75	0.08	0.00	—	2.64

4.6. Refrigerant Emissions by Land Use

4.6.1. Unmitigated

Criteria Pollutants (lb/day for daily, ton/yr for annual) and GHGs (lb/day for daily, MT/yr for annual)

Land Use	TOG	ROG	NOx	CO	SO2	PM10E	PM10D	PM10T	PM2.5E	PM2.5D	PM2.5T	BCO2	NBCO2	CO2T	CH4	N2O	R	CO2e

Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
General Light Industry	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	0.00	0.00
Total	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	0.00	0.00
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
General Light Industry	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	0.00	0.00
Total	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	0.00	0.00
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
General Light Industry	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	0.00	0.00
Total	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	0.00	0.00

4.7. Offroad Emissions By Equipment Type

4.7.1. Unmitigated

Criteria Pollutants (lb/day for daily, ton/yr for annual) and GHGs (lb/day for daily, MT/yr for annual)

Equipment Type	TOG	ROG	NOx	CO	SO2	PM10E	PM10D	PM10T	PM2.5E	PM2.5D	PM2.5T	BCO2	NBCO2	CO2T	CH4	N2O	R	CO2e
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Total	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—

Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Total	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Total	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—

4.8. Stationary Emissions By Equipment Type

4.8.1. Unmitigated

Criteria Pollutants (lb/day for daily, ton/yr for annual) and GHGs (lb/day for daily, MT/yr for annual)

Equipment Type	TOG	ROG	NOx	CO	SO2	PM10E	PM10D	PM10T	PM2.5E	PM2.5D	PM2.5T	BCO2	NBCO2	CO2T	CH4	N2O	R	CO2e
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Emergency Generator	0.11	0.10	0.44	0.25	< 0.005	0.01	0.00	0.01	0.01	0.00	0.01	0.00	50.4	50.4	< 0.005	< 0.005	0.00	50.5
Total	0.11	0.10	0.44	0.25	< 0.005	0.01	0.00	0.01	0.01	0.00	0.01	0.00	50.4	50.4	< 0.005	< 0.005	0.00	50.5
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Emergency Generator	0.11	0.10	0.44	0.25	< 0.005	0.01	0.00	0.01	0.01	0.00	0.01	0.00	50.4	50.4	< 0.005	< 0.005	0.00	50.5
Total	0.11	0.10	0.44	0.25	< 0.005	0.01	0.00	0.01	0.01	0.00	0.01	0.00	50.4	50.4	< 0.005	< 0.005	0.00	50.5
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—

Emergency Generato	0.02	0.02	0.09	0.05	< 0.005	< 0.005	0.00	< 0.005	< 0.005	0.00	< 0.005	0.00	9.14	9.14	< 0.005	< 0.005	0.00	9.17
Total	0.02	0.02	0.09	0.05	< 0.005	< 0.005	0.00	< 0.005	< 0.005	0.00	< 0.005	0.00	9.14	9.14	< 0.005	< 0.005	0.00	9.17

4.9. User Defined Emissions By Equipment Type

4.9.1. Unmitigated

Criteria Pollutants (lb/day for daily, ton/yr for annual) and GHGs (lb/day for daily, MT/yr for annual)

Equipment Type	TOG	ROG	NOx	CO	SO2	PM10E	PM10D	PM10T	PM2.5E	PM2.5D	PM2.5T	BCO2	NBCO2	CO2T	CH4	N2O	R	CO2e
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Total	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Total	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Total	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—

4.10. Soil Carbon Accumulation By Vegetation Type

4.10.1. Soil Carbon Accumulation By Vegetation Type - Unmitigated

Criteria Pollutants (lb/day for daily, ton/yr for annual) and GHGs (lb/day for daily, MT/yr for annual)

Vegetation	TOG	ROG	NOx	CO	SO2	PM10E	PM10D	PM10T	PM2.5E	PM2.5D	PM2.5T	BCO2	NBCO2	CO2T	CH4	N2O	R	CO2e
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—

Total	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Total	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Total	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—

4.10.2. Above and Belowground Carbon Accumulation by Land Use Type - Unmitigated

Criteria Pollutants (lb/day for daily, ton/yr for annual) and GHGs (lb/day for daily, MT/yr for annual)

Land Use	TOG	ROG	NOx	CO	SO2	PM10E	PM10D	PM10T	PM2.5E	PM2.5D	PM2.5T	BCO2	NBCO2	CO2T	CH4	N2O	R	CO2e
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Total	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Total	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Total	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—

4.10.3. Avoided and Sequestered Emissions by Species - Unmitigated

Criteria Pollutants (lb/day for daily, ton/yr for annual) and GHGs (lb/day for daily, MT/yr for annual)

Species	TOG	ROG	NOx	CO	SO2	PM10E	PM10D	PM10T	PM2.5E	PM2.5D	PM2.5T	BCO2	NBCO2	CO2T	CH4	N2O	R	CO2e
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Avoided	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—

Subtotal	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Sequestered	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Subtotal	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Removed	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Subtotal	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Avoided	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Subtotal	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Sequestered	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Subtotal	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Removed	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Subtotal	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Avoided	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Subtotal	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Sequestered	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Subtotal	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Removed	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Subtotal	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—

5. Activity Data

5.9. Operational Mobile Sources

5.9.1. Unmitigated

Land Use Type	Trips/Weekday	Trips/Saturday	Trips/Sunday	Trips/Year	VMT/Weekday	VMT/Saturday	VMT/Sunday	VMT/Year
General Light Industry	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00

5.10. Operational Area Sources

5.10.1. Hearths

5.10.1.1. Unmitigated

5.10.2. Architectural Coatings

Residential Interior Area Coated (sq ft)	Residential Exterior Area Coated (sq ft)	Non-Residential Interior Area Coated (sq ft)	Non-Residential Exterior Area Coated (sq ft)	Parking Area Coated (sq ft)
0	0.00	0.00	0.00	—

5.10.3. Landscape Equipment

Season	Unit	Value
Snow Days	day/yr	0.00
Summer Days	day/yr	250

5.11. Operational Energy Consumption

5.11.1. Unmitigated

Electricity (kWh/yr) and CO2 and CH4 and N2O and Natural Gas (kBTU/yr)

Land Use	Electricity (kWh/yr)	CO2	CH4	N2O	Natural Gas (kBTU/yr)
General Light Industry	6,898,500	532	0.0330	0.0040	0.00

5.12. Operational Water and Wastewater Consumption

5.12.1. Unmitigated

Land Use	Indoor Water (gal/year)	Outdoor Water (gal/year)
General Light Industry	1,575,969	0.00

5.13. Operational Waste Generation

5.13.1. Unmitigated

Land Use	Waste (ton/year)	Cogeneration (kWh/year)
General Light Industry	8.45	—

5.14. Operational Refrigeration and Air Conditioning Equipment

5.14.1. Unmitigated

Land Use Type	Equipment Type	Refrigerant	GWP	Quantity (kg)	Operations Leak Rate	Service Leak Rate	Times Serviced
General Light Industry	Other commercial A/C and heat pumps	R-410A	2,088	0.30	4.00	4.00	18.0

5.15. Operational Off-Road Equipment

5.15.1. Unmitigated

Equipment Type	Fuel Type	Engine Tier	Number per Day	Hours Per Day	Horsepower	Load Factor

5.16. Stationary Sources

5.16.1. Emergency Generators and Fire Pumps

Equipment Type	Fuel Type	Number per Day	Hours per Day	Hours per Year	Horsepower	Load Factor
Emergency Generator	Diesel	1.00	0.03	12.0	2,000	0.73

5.16.2. Process Boilers

Equipment Type	Fuel Type	Number	Boiler Rating (MMBtu/hr)	Daily Heat Input (MMBtu/day)	Annual Heat Input (MMBtu/yr)

5.17. User Defined

Equipment Type	Fuel Type

5.18. Vegetation

5.18.1. Land Use Change

5.18.1.1. Unmitigated

Vegetation Land Use Type	Vegetation Soil Type	Initial Acres	Final Acres

5.18.1. Biomass Cover Type

5.18.1.1. Unmitigated

Biomass Cover Type	Initial Acres	Final Acres

5.18.2. Sequestration

5.18.2.1. Unmitigated

Tree Type	Number	Electricity Saved (kWh/year)	Natural Gas Saved (btu/year)

6. Climate Risk Detailed Report

6.1. Climate Risk Summary

Cal-Adapt midcentury 2040–2059 average projections for four hazards are reported below for your project location. These are under Representation Concentration Pathway (RCP) 8.5 which assumes GHG emissions will continue to rise strongly through 2050 and then plateau around 2100.

Climate Hazard	Result for Project Location	Unit
Temperature and Extreme Heat	23.9	annual days of extreme heat
Extreme Precipitation	7.15	annual days with precipitation above 20 mm
Sea Level Rise	—	meters of inundation depth
Wildfire	27.8	annual hectares burned

Temperature and Extreme Heat data are for grid cell in which your project are located. The projection is based on the 98th historical percentile of daily maximum/minimum temperatures from observed historical data (32 climate model ensemble from Cal-Adapt, 2040–2059 average under RCP 8.5). Each grid cell is 6 kilometers (km) by 6 km, or 3.7 miles (mi) by 3.7 mi.
Extreme Precipitation data are for the grid cell in which your project are located. The threshold of 20 mm is equivalent to about ¾ an inch of rain, which would be light to moderate rainfall if received over a full day or heavy rain if received over a period of 2 to 4 hours. Each grid cell is 6 kilometers (km) by 6 km, or 3.7 miles (mi) by 3.7 mi.
Sea Level Rise data are for the grid cell in which your project are located. The projections are from Radke et al. (2017), as reported in Cal-Adapt (Radke et al., 2017, CEC-500-2017-008), and consider inundation location and depth for the San Francisco Bay, the Sacramento-San Joaquin River Delta and California coast resulting different increments of sea level rise coupled with extreme storm events. Users may select from four scenarios to view the range in potential inundation depth for the grid cell. The four scenarios are: No rise, 0.5 meter, 1.0 meter, 1.41 meters
Wildfire data are for the grid cell in which your project are located. The projections are from UC Davis, as reported in Cal-Adapt (2040–2059 average under RCP 8.5), and consider historical data of climate, vegetation, population density, and large (> 400 ha) fire history. Users may select from four model simulations to view the range in potential wildfire probabilities for the grid cell. The four simulations make different assumptions about expected rainfall and temperature are: Warmer/drier (HadGEM2-ES), Cooler/wetter (CNRM-CM5), Average conditions (CanESM2), Range of different rainfall and temperature possibilities (MIROC5). Each grid cell is 6 kilometers (km) by 6 km, or 3.7 miles (mi) by 3.7 mi.

6.2. Initial Climate Risk Scores

Climate Hazard	Exposure Score	Sensitivity Score	Adaptive Capacity Score	Vulnerability Score
Temperature and Extreme Heat	N/A	N/A	N/A	N/A
Extreme Precipitation	N/A	N/A	N/A	N/A
Sea Level Rise	N/A	N/A	N/A	N/A
Wildfire	N/A	N/A	N/A	N/A

Flooding	N/A	N/A	N/A	N/A
Drought	N/A	N/A	N/A	N/A
Snowpack Reduction	N/A	N/A	N/A	N/A
Air Quality Degradation	N/A	N/A	N/A	N/A

The sensitivity score reflects the extent to which a project would be adversely affected by exposure to a climate hazard. Exposure is rated on a scale of 1 to 5, with a score of 5 representing the greatest exposure.
The adaptive capacity of a project refers to its ability to manage and reduce vulnerabilities from projected climate hazards. Adaptive capacity is rated on a scale of 1 to 5, with a score of 5 representing the greatest ability to adapt.
The overall vulnerability scores are calculated based on the potential impacts and adaptive capacity assessments for each hazard. Scores do not include implementation of climate risk reduction measures.

6.3. Adjusted Climate Risk Scores

Climate Hazard	Exposure Score	Sensitivity Score	Adaptive Capacity Score	Vulnerability Score
Temperature and Extreme Heat	N/A	N/A	N/A	N/A
Extreme Precipitation	N/A	N/A	N/A	N/A
Sea Level Rise	N/A	N/A	N/A	N/A
Wildfire	N/A	N/A	N/A	N/A
Flooding	N/A	N/A	N/A	N/A
Drought	N/A	N/A	N/A	N/A
Snowpack Reduction	N/A	N/A	N/A	N/A
Air Quality Degradation	N/A	N/A	N/A	N/A

The sensitivity score reflects the extent to which a project would be adversely affected by exposure to a climate hazard. Exposure is rated on a scale of 1 to 5, with a score of 5 representing the greatest exposure.
The adaptive capacity of a project refers to its ability to manage and reduce vulnerabilities from projected climate hazards. Adaptive capacity is rated on a scale of 1 to 5, with a score of 5 representing the greatest ability to adapt.
The overall vulnerability scores are calculated based on the potential impacts and adaptive capacity assessments for each hazard. Scores include implementation of climate risk reduction measures.

6.4. Climate Risk Reduction Measures

7. Health and Equity Details

7.1. CalEnviroScreen 4.0 Scores

The maximum CalEnviroScreen score is 100. A high score (i.e., greater than 50) reflects a higher pollution burden compared to other census tracts in the state.

Indicator	Result for Project Census Tract
Exposure Indicators	—
AQ-Ozone	69.6
AQ-PM	27.2
AQ-DPM	15.6
Drinking Water	72.4
Lead Risk Housing	2.84
Pesticides	58.2
Toxic Releases	11.0
Traffic	11.7
Effect Indicators	—
CleanUp Sites	7.71
Groundwater	0.00
Haz Waste Facilities/Generators	51.7
Impaired Water Bodies	93.4
Solid Waste	0.00
Sensitive Population	—
Asthma	36.8
Cardio-vascular	91.9
Low Birth Weights	6.89
Socioeconomic Factor Indicators	—
Education	35.9
Housing	4.03
Linguistic	0.00
Poverty	21.0

Unemployment	83.2

7.2. Healthy Places Index Scores

The maximum Health Places Index score is 100. A high score (i.e., greater than 50) reflects healthier community conditions compared to other census tracts in the state.

Indicator	Result for Project Census Tract
Economic	—
Above Poverty	87.96355704
Employed	65.05838573
Median HI	88.65648659
Education	—
Bachelor's or higher	68.86949827
High school enrollment	100
Preschool enrollment	44.69395611
Transportation	—
Auto Access	96.70216861
Active commuting	12.93468497
Social	—
2-parent households	79.62273835
Voting	72.62928269
Neighborhood	—
Alcohol availability	84.0626203
Park access	30.80970101
Retail density	11.15103298
Supermarket access	26.84460413
Tree canopy	30.16809958
Housing	—
Homeownership	76.8766842

Housing habitability	95.17515719
Low-inc homeowner severe housing cost burden	87.3219556
Low-inc renter severe housing cost burden	87.06531503
Uncrowded housing	96.93314513
Health Outcomes	—
Insured adults	93.18619274
Arthritis	53.0
Asthma ER Admissions	72.3
High Blood Pressure	62.1
Cancer (excluding skin)	32.7
Asthma	51.9
Coronary Heart Disease	79.3
Chronic Obstructive Pulmonary Disease	71.2
Diagnosed Diabetes	89.8
Life Expectancy at Birth	48.1
Cognitively Disabled	94.6
Physically Disabled	83.0
Heart Attack ER Admissions	31.5
Mental Health Not Good	67.2
Chronic Kidney Disease	85.5
Obesity	52.4
Pedestrian Injuries	19.6
Physical Health Not Good	78.6
Stroke	84.7
Health Risk Behaviors	—
Binge Drinking	7.0
Current Smoker	60.5

No Leisure Time for Physical Activity	80.2
Climate Change Exposures	—
Wildfire Risk	26.6
SLR Inundation Area	0.0
Children	71.1
Elderly	55.7
English Speaking	98.1
Foreign-born	15.8
Outdoor Workers	71.2
Climate Change Adaptive Capacity	—
Impervious Surface Cover	76.1
Traffic Density	1.6
Traffic Access	23.0
Other Indices	—
Hardship	22.8
Other Decision Support	—
2016 Voting	81.7

7.3. Overall Health & Equity Scores

Metric	Result for Project Census Tract
CalEnviroScreen 4.0 Score for Project Location (a)	26.0
Healthy Places Index Score for Project Location (b)	81.0
Project Located in a Designated Disadvantaged Community (Senate Bill 535)	No
Project Located in a Low-Income Community (Assembly Bill 1550)	No
Project Located in a Community Air Protection Program Community (Assembly Bill 617)	No

a: The maximum CalEnviroScreen score is 100. A high score (i.e., greater than 50) reflects a higher pollution burden compared to other census tracts in the state.
b: The maximum Health Places Index score is 100. A high score (i.e., greater than 50) reflects healthier community conditions compared to other census tracts in the state.

7.4. Health & Equity Measures

No Health & Equity Measures selected.

7.5. Evaluation Scorecard

Health & Equity Evaluation Scorecard not completed.

7.6. Health & Equity Custom Measures

No Health & Equity Custom Measures created.

8. User Changes to Default Data

Screen	Justification
Land Use	General Industrial Use utilized to calculate the operational energy use/emissions of the proposed pumps and generator only. No project buildings; therefore, in order to model the project, a square footage of ~6,815, which is the approximate footprint of the pump pad and generator area was used for the size of the industrial use.
Operations: Vehicle Data	Mobile sources were not included in the analysis. Additional staffing is not anticipated & only a minimal number of daily worker trips are anticipated to conduct routine inspections/maintenance.
Operations: Energy Use	A maximum of three pumps are to be running at a time at the project site. Therefore, it was assumed that three of the 350-HP pumps will be in operation 24/7 or ~8,760 hours per year per pump. The total hours of operation would be 26,280 hours per year for all three pumps. Energy use calculations for the pumps include: 1-HP=0.75 kW. 350-HP pump = 262.5 kW x (3x8,760 hours/year) = 6,898,500 kWh/yr. Total of ~6,898,500 kWh/year of electricity used by the proposed pumps. Operation of project is that of the electric pumps and generators only, no natural gas anticipated to be used.
Operations: Emergency Generators and Fire Pumps	The project includes one 1,500 kW emergency diesel generator (which equates to approximately 2,000 horsepower). Per Rancho California Water District (RCWD) the generator is anticipated to be exercised for 30 mins on the first and third Tuesday of every month, for a total of approximately 12 hours per year.

Source: EMFAC2021 (v1.0.1) Emissions Inventory
Region Type: Air Basin
Region: South Coast
Calendar Year: 2024
Season: Annual
Vehicle Classification: EMFAC2007 Categories
Units: miles/day for CVMT and EVMT, trips/day for Trips, kWh/day for Energy Consumption, tons/day for Emissions, 1000 gallons/day for Fuel Consumption

Region	Calendar Year	Vehicle Category	Model Year	Speed	Fuel	Population	Trips	Energy Consumption	Fuel Consumption	Fuel Consumption	Total Fuel Consumption	Total VMT	Total VMT	Miles Per Gallon	Vehicle Class
South Coast	2024	HHDT	Aggregate	Aggregate	Gasoline	64.44258918	1289.367324	0	1.014953313	1014.953313	2024777.341	4089.563798	12241163.02	**6.05**	**HHDT**
South Coast	2024	HHDT	Aggregate	Aggregate	Diesel	92441.35478	1412165.896	0	1913.394963	1913394.963		11547992.76			
South Coast	2024	HHDT	Aggregate	Aggregate	Electricity	291.6455699	3957.931048	53675.68637	0	0		29968.60823			
South Coast	2024	HHDT	Aggregate	Aggregate	Natural Gas	10239.41118	65591.6649	0	110.3674239	110367.4239		659112.0885			
South Coast	2024	LDA	Aggregate	Aggregate	Gasoline	5306414.643	24694249.92	0	7344.088111	7344088.111	7477826.02	213709568	234427100.1	**31.35**	**LDA**
South Coast	2024	LDA	Aggregate	Aggregate	Diesel	14576.24539	60769.87324	0	10.8801639	10880.1639		447477.6987			
South Coast	2024	LDA	Aggregate	Aggregate	Electricity	278128.8376	1389682.584	5111363.117	0	0		13239042.59			
South Coast	2024	LDA	Aggregate	Aggregate	Plug-in Hybrid	148523.7719	614145.7966	1077276.451	122.8577446	122857.7446		7031011.891			
South Coast	2024	LDT1	Aggregate	Aggregate	Gasoline	490973.66	2160511.155	0	732.0519082	732051.9082	732790.8073	17788975.08	17880208.77	**24.40**	**LDT1**
South Coast	2024	LDT1	Aggregate	Aggregate	Diesel	178.9755587	511.7069897	0	0.143610092	143.6100917		3350.970633			
South Coast	2024	LDT1	Aggregate	Aggregate	Electricity	1222.38175	5792.038269	19502.00434	0	0		50512.52673			
South Coast	2024	LDT1	Aggregate	Aggregate	Plug-in Hybrid	719.1459798	2973.668627	6252.19918	0.595288961	595.288961		37370.18633			
South Coast	2024	LDT2	Aggregate	Aggregate	Gasoline	2478766.891	11657788.42	0	4349.789244	4349789.244	4378677.328	102696789.3	104694804	**23.91**	**LDT2**
South Coast	2024	LDT2	Aggregate	Aggregate	Diesel	8144.015434	39238.54602	0	11.30594953	11305.94953		354089.2658			
South Coast	2024	LDT2	Aggregate	Aggregate	Electricity	16093.72479	82313.84321	227422.9885	0	0		589052.7755			
South Coast	2024	LDT2	Aggregate	Aggregate	Plug-in Hybrid	21096.29549	87233.18184	170348.4264	17.58213479	17582.13479		1054872.659			
South Coast	2024	LHDT1	Aggregate	Aggregate	Gasoline	200171.2476	2982253.334	0	578.7247685	578724.7685	792458.1109	7891021.12	12336952.39	**15.57**	**LHDT1**
South Coast	2024	LHDT1	Aggregate	Aggregate	Diesel	103884.7559	1306739.542	0	213.7333424	213733.3424		4387648.579			
South Coast	2024	LHDT1	Aggregate	Aggregate	Electricity	772.5188678	10791.59936	32624.15974	0	0		58282.68619			
South Coast	2024	LHDT2	Aggregate	Aggregate	Gasoline	31062.46526	462784.4493	0	96.72139231	96721.39231	208303.4828	1155378.828	3095264.249	**14.86**	**LHDT2**
South Coast	2024	LHDT2	Aggregate	Aggregate	Diesel	45926.82058	577701.627	0	111.5820905	111582.0905		1925592.444			
South Coast	2024	LHDT2	Aggregate	Aggregate	Electricity	199.9520404	2646.759351	8006.869611	0	0		14292.97674			
South Coast	2024	MCY	Aggregate	Aggregate	Gasoline	242059.9929	484119.9858	0	37.44895514	37448.95514	37448.95514	1554780.429	1554780.429	**41.52**	**MCY**
South Coast	2024	MDV	Aggregate	Aggregate	Gasoline	1571312.1	7270009.961	0	3162.700535	3162700.535	3206338.183	60817091.34	62832018.9	**19.60**	**MDV**
South Coast	2024	MDV	Aggregate	Aggregate	Diesel	19826.89781	93051.64962	0	33.54860069	33548.60069		786624.2122			
South Coast	2024	MDV	Aggregate	Aggregate	Electricity	17569.44798	89870.84023	248334.7848	0	0		643216.8322			
South Coast	2024	MDV	Aggregate	Aggregate	Plug-in Hybrid	12690.57185	52475.51459	92596.30611	10.08904803	10089.04803		585086.5214			
South Coast	2024	MH	Aggregate	Aggregate	Gasoline	29244.94397	2925.664195	0	57.51222476	57512.22476	68984.14797	279544.6577	395398.9997	**5.73**	**MH**
South Coast	2024	MH	Aggregate	Aggregate	Diesel	11703.55798	1170.355798	0	11.47192321	11471.92321		115854.342			
South Coast	2024	MHDT	Aggregate	Aggregate	Gasoline	24845.17438	497102.249	0	256.9342026	256934.2026	812250.5213	1326417.556	6295601.951	**7.75**	**MHDT**
South Coast	2024	MHDT	Aggregate	Aggregate	Diesel	114693.757	1409921.86	0	546.7152883	546715.2883		4878223.739			
South Coast	2024	MHDT	Aggregate	Aggregate	Electricity	355.3876422	4781.870526	20310.12518	0	0		19393.49808			
South Coast	2024	MHDT	Aggregate	Aggregate	Natural Gas	1491.278079	13281.28453	0	8.601030453	8601.030453		71567.15805			
South Coast	2024	OBUS	Aggregate	Aggregate	Gasoline	5296.379398	105969.959	0	41.44060197	41440.60197	78066.51924	209991.62	473651.4166	**6.07**	**OBUS**
South Coast	2024	OBUS	Aggregate	Aggregate	Diesel	2997.3176	37996.11149	0	33.30106375	33301.06375		233646.4445			
South Coast	2024	OBUS	Aggregate	Aggregate	Electricity	11.86106715	237.3162316	941.3362619	0	0		895.192351			
South Coast	2024	OBUS	Aggregate	Aggregate	Natural Gas	480.7769521	4278.914873	0	3.324853528	3324.853528		29118.15975			
South Coast	2024	SBUS	Aggregate	Aggregate	Gasoline	2763.091965	11052.36786	0	13.6568139	13656.8139	40972.05843	121721.653	266076.6289	**6.49**	**SBUS**
South Coast	2024	SBUS	Aggregate	Aggregate	Diesel	3283.370627	47543.20668	0	9.104107226	9104.107226		66807.29386			
South Coast	2024	SBUS	Aggregate	Aggregate	Electricity	21.89425828	248.8609268	740.8107178	0	0		640.6727128			
South Coast	2024	SBUS	Aggregate	Aggregate	Natural Gas	3093.465789	44793.38463	0	18.21113731	18211.13731		76907.00926			
South Coast	2024	UBUS	Aggregate	Aggregate	Gasoline	894.3284655	3577.313862	0	13.89822542	13898.22542	201736.9577	96953.45183	696232.1909	**3.45**	**UBUS**
South Coast	2024	UBUS	Aggregate	Aggregate	Diesel	14.32857314	57.31429256	0	0.259550733	259.5507326		1721.679298			
South Coast	2024	UBUS	Aggregate	Aggregate	Electricity	109.3235246	437.2940985	19519.17282	0	0		9364.629999			
South Coast	2024	UBUS	Aggregate	Aggregate	Natural Gas	4918.59249	19674.36996	0	187.5791815	187579.1815		588192.4297			



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APPENDIX B

Biological Resources (ELMT 2024)

March 22, 2024

ARDURRA
Attention: Lori Trottier
3737 Birch Street, Suite 250
Newport Beach, CA 92660

SUBJECT: Biological Resources Report for the Proposed Carancho Pump Station Expansion Project Located in Temecula, Riverside County, California.

Introduction

This report contains the findings of ELMT Consulting's (ELMT) biological resources assessment for the Proposed Carancho Pump Station Project (project site or site) located at 43695 El Calamar Road, Temecula, Riverside County, California. The field investigation was conducted by biologist Rachael A. Lyons on January 29, 2024, to document baseline conditions and assess the potential for special-status[1] plant and wildlife species to occur within the proposed project site that could pose a constraint to implementation of the proposed project. Special attention was given to the suitability of the on-site habitat to support special-status species identified by the California Department of Fish and Wildlife's (CDFW) California Natural Diversity Database (CNDDB) and other electronic databases as potentially occurring on or within the general vicinity of the project site.

The biological resources assessment was conducted for Rancho California Water District, who is not a permittee under the Western Riverside County Multiple Species Habitat Conservation Plan (MSHCP). Although the requirements set forth in the plan need not apply to their projects, the MSHCP provides guidance for analyzing potential impacts to biological resources.

Project Location

The project site is generally located south of the Santa Rosa Plateau, east of the Cleveland National Forest, south of State Route 79, north of Camp Pendleton, and West of Interstate 15 in the City of Temecula, Riverside County, California. The site is depicted on the Fallbrook quadrangle of the United States Geological Survey's (USGS) 7.5-minute topographic map within an unsectioned portion of Township 8 South, Range 4 West. The project is centrally located on developed portions of parcel Assessor Parcel Number (APN) 933-050-036 consisting of 6.56-acres of land that is currently developed with two water tanks (Carancho Reservoir #1 & #2) and a pump station. Access to the site is via one driveway via El Calamar Road. APN 933-050-036 is the Project Site and includes mostly impervious surfaces and natural landscape setbacks/buffers; developed portions of the site consist of paved driveways, tanks, and ground-mounted equipment. The Carancho Pump Station (Project Location) (APN is located approximately 2.3

1 As used in this report, "special-status" refers to plant and wildlife species that are federally, State, and MSHCP listed, proposed, or candidates; plant species that have been designated with a California Native Plant Society Rare Plant Rank; wildlife species that are designated by the CDFW as fully protected, species of special concern, or watch list species; and specially protected natural vegetation communities as designated by the CDFW.

miles west of the Cross Creek Golf Course; and approximately 3 miles southeast from Tenaja Pump Station; and approximately 7.7 miles south from Baldary Pump Station. The existing pump station is located on elevated terrain approximately 1,580 feet above mean sea level (AMSL) in a high valley formed by the Santa Rosa Plateau. Refer to Exhibits 1-3 in Attachment A.

Project Description

The Project involves the demolition of both existing Carancho Nos. 1 and 2 Tanks, permanent stabilization of the tank pad, abandonment in place of existing pipeline, replacement of two existing pumps (350 Hp) and addition of two new pumps (350 Hp) for a total of 4 new pumps within the existing pump station on the pump station (lower) pad. Project implementation will result in 3 duty pumps, 350 HP; 1 standby pump, 350 HP to meet the desired capacity of 4,400 gpm; installation of two new surge tanks; installation of new electrical conduits; new transformer; and new 1,500 kW emergency power generation with automatic transfer switch that meets Tier 2 emission standards ; and the installation of approximately 600 linear feet of 24-inch diameter potable water pipeline from the eastern end of the main driveway of Carancho Pump Station to the proposed location of the pump station improvements on the lower pad along with the proposed potable water pipeline will be installed on areas of previous disturbance within APN 933-050-036 southwest of the Carancho Tanks.

The existing pump station contains space for four pumps and was initially intended to provide 6,000 gpm (with all four pumps running), thus the upgrades planned for the Project fall within the scope and configuration of the original pump station. Refer to Attachment B, *Site Plan*.

Methodology

Literature Review

The first step in determining if a project is consistent with the above listed sections of the MSHCP is to conduct a literature review and records search for special-status biological resources potentially occurring on or within the vicinity of the project site. Previously recorded occurrences of special-status plant and wildlife species and their proximity to the project were determined through a query of the CDFWs CNDDB Rarefind 5, the California Native Plant Society (CNPS) Electronic Inventory of Rare and Endangered Vascular Plants of California, Calflora Database, compendia of special-status species published by CDFW, United States Fish and Wildlife Service (USFWS) species listings, and species covered within the MSHCP and associated technical documents.

All available reports, survey results, and literature detailing the biological resources previously observed on or within the vicinity of the project site were reviewed to understand existing site conditions and note the extent of any disturbances that have occurred on the project site that would otherwise limit the distribution of special-status biological resources. Standard field guides and texts were reviewed for specific habitat requirements of special-status and non-special-status biological resources, as well as the following resources:

- Environmental Protection Agency (EPA) Water Program “My Waters” data layers
- Google Earth Pro historic aerial imagery (1985-2023);

- United States Department of Agriculture (USDA) Natural Resource Conservation Service (NRCS), Soil Survey[2];
- USFWS Critical Habitat designations for Threatened and Endangered Species;
- USFWS National Wetlands Inventory (NWI);
- Stephen's Kangaroo Rat Habitat Conservation Plan;
- Western Riverside County Regional Conservation Authority (RCA) MSHCP Information Map; and
- 2006 Burrowing Owl Survey Instructions for the Western Riverside Multiple Species Habitat Conservation Plan Area.

The literature review provided a baseline from which to inventory the biological resources potentially occurring on the project site. The CNDDB database was used, in conjunction with ArcGIS software, to locate the nearest recorded occurrences of special-status species and determine the distance from the project.

Field Investigation

Following the literature review, biologist Rachael A. Lyons initially inventoried and evaluated the condition of the habitat within the project site on January 29, 2024. Plant communities identified on aerial photographs during the literature review were verified by walking meandering transects through the plant communities and along boundaries between plant communities. In addition, aerial photography was reviewed prior to the site investigation to locate potential natural corridors and linkages that may support the movement of wildlife through the area. These areas identified on aerial photography were then walked during the field survey.

All plant and wildlife species observed, as well as dominant plant species within each plant community, were recorded. Plant species observed during the field survey were identified by visual characteristics and morphology in the field. Unusual and less familiar plant species were photographed during the field survey and identified in the laboratory using taxonomical guides. Wildlife detections were made through observation of scat, trails, tracks, burrows, nests, and/or visual and aural observation. In addition, site characteristics such as soil condition, topography, hydrology, anthropogenic disturbances, indicator species, condition of on-site plant communities, and presence of potential jurisdictional drainage and/or wetland features were noted.

Soil Series Assessment

On-site and adjoining soils were researched prior to the field survey using the USDA NRCS Soil Survey for Temecula, California. In addition, a review of the local geological conditions and historical aerial photographs was conducted to assess the ecological changes that the project site has undergone.

Plant Communities

Plant communities were mapped using 7.5-minute USGS topographic base maps and aerial photography.

2 A soil series is defined as a group of soils with similar profiles developed from similar parent materials under comparable climatic and vegetation conditions. These profiles include major horizons with similar thickness, arrangement, and other important characteristics, which may promote favorable conditions for certain biological resources.

The plant communities were delineated on an aerial photograph, classified in accordance with those described in the MSHCP, and then digitized into GIS Arcview. The Arcview application was used to compute the area of each plant community in acres.

Plants

Common plant species observed during the field survey were identified by visual characteristics and morphology in the field and recorded in a field notebook. Unusual and less-familiar plants were photographed in the field and identified in the laboratory using taxonomic guides. Taxonomic nomenclature used in this study follows the 2012 Jepson Manual (Hickman 2012). In this report, scientific names are provided immediately following common names of plant species (first reference only).

Wildlife

Wildlife species detected during field surveys by sight, calls, tracks, scat, or other sign were recorded during surveys in a field notebook. Field guides were used to assist with identification of wildlife species during the survey included The Sibley Field Guide to the Birds of Western North America (Sibley 2003), A Field Guide to Western Reptiles and Amphibians (Stebbins 2003), and A Field Guide to Mammals of North America (Reid 2006). Although common names of wildlife species are fairly well standardized, scientific names are provided immediately following common names in this report (first reference only).

Jurisdictional Drainages and Wetlands

Aerial photography was reviewed prior to conducting a field investigation in order to locate and inspect any potential natural drainage features, ponded areas, or water bodies that may fall under the jurisdiction of the United States Army Corps of Engineers (Corps), Regional Water Quality Control Board (Regional Board), or CDFW. In general, surface drainage features indicated as blue-line streams on USGS maps that are observed or expected to exhibit evidence of flow are considered potential riparian/riverine habitat and are also subject to state and federal regulatory jurisdiction. In addition, ELMT reviewed jurisdictional waters information through examining historical aerial photographs to gain an understanding of the impact of land-use on natural drainage patterns in the area. The USFWS National Wetland Inventory (NWI) and Environmental Protection Agency (EPA) Water Program "My Waters" data layers were also reviewed to determine whether any hydrologic features and wetland areas have been documented on or within the vicinity of the project site.

Topography and Soils

The project site is diverse in topography with elevations ranging from 1,510 to 1,660 feet above mean sea level. Onsite topography is highly variable with areas of greater topographic relief occurring along the northern boundary. The project site slopes generally from north to south. The middle of the site supports a developed upper and lower terrace. An access road is also present leading from the adjacent road to the upper terrace. Based on the NRCS USDA Web Soil Survey[3], the project site is entirely underlain by Las Posas rocky loam (15 to 50 percent slopes, roughly eroded). Refer to Exhibit 4, *Soils*, in Attachment A. The soils in and immediately surrounding the developed areas and access road are heavily impacted and

3 A soil series is defined as a group of soils with similar profiles developed from similar parent materials under comparable climatic and vegetation conditions. These profiles include major horizons with similar thickness, arrangement, and other important characteristics, which may promote favorable conditions for certain biological resources.

disturbed. The soils on the outer limits of the project site are relatively undisturbed and support native plant communities.

Existing Site Condition

The project site is bordered to the east by El Calamar Road with a winery beyond; to the south by undeveloped, vacant land with Carancho Road beyond; to the west by undeveloped, vacant land; and to the north by undeveloped, vacant land with residential development beyond. At present, the middle of the site supports paved upper and lower terraces with adjacent disturbed areas. The upper terrace supports two inactive water tanks and the lower terrace supports associated water tower equipment. A paved access road is present from El Calamar Road leading to current site development. Surrounding the developed and disturbed areas onsite, there are native plant communities in the eastern, southern, and western portions of the project site. Although all areas were surveyed, proposed development will be restricted to currently developed areas, and no further impacts to onsite communities is projected.

Vegetation

The site consists of developed, disturbed, and vacant, undeveloped land which supports native plant communities. Refer to Attachment C, *Site Photographs*, for representative site photographs. The project site and immediate surrounding areas supports two (2) plant communities: buckwheat scrub, sugarbush scrub. In addition, the site supports two (2) land cover types that would be classified as disturbed and developed. Refer to Exhibit 5, *Vegetation* in Attachment A.

Buckwheat Scrub

The buckwheat scrub plant community was observed along the southern boundary of the project site. This plant community is dominated by representative species such as California buckwheat (*Eriogonum fasciculatum*), deerweed (*Acmispon glaber*), sagebrush (*Artemesia tridentata*), prickly pear (*Opuntia littoralis*), brittlebush (*Encelia 5arinose*), and non-native/ruderal plant species.

Sugarbush Scrub

The sugarbush scrub plant community was observed along the western, northern, and northeastern boundaries. This plant community was dominated by sugar bush (*Rhus ovata*) in addition to other common species such as black sage (*Salvia mellifera*), chamise (*Adenostoma fasciculatum*), coyote bush (*Baccharis pilularis*), scrub oak (*Quercus berberidifolia*), tree tobacco (*Nicotiana glauca*), laurel sumac (*Malosma laurina*), eucalyptus (*Eucalytpus* sp.), and Chaparral yucca (*Hesperoyucca whipplei*).

Disturbed

Disturbed areas supported by the project site vary in vegetative density and primarily supports non-native weedy/early successional species. The disturbed areas primarily occur along developed margins. Plant species observed include purple fountain grass (*Pennisetum Rubrum*), black mustard (*Brassica nigra*), Russian thistle (*Salsola tragus*), horehound (*Marrubium vulgare*), star thistle (*Centaurea solstitialis*), and guineagrass (*Megathyrsus maximus*).

Developed

The project site supports developed land in the form of existing water district infrastructure.

Wildlife

Plant communities provide foraging habitat, nesting/denning sites, and shelter from adverse weather or predation. This section provides a discussion of those wildlife species that were observed or are expected to occur within the project site. The discussion is to be used as a general reference and is limited by the season, time of day, and weather conditions in which the field survey was conducted. Wildlife detections were based on calls, songs, scat, tracks, burrows, and direct observation.

Fish

No fish or hydrogeomorphic features (e.g., perennial creeks, ponds, lakes, reservoirs) that would provide suitable habitat for fish were observed on or within the vicinity of the site. Therefore, no fish are expected to occur and are presumed absent.

Amphibians

No amphibians or hydrogeomorphic features (e.g., perennial creeks, ponds, lakes, reservoirs) that would provide suitable habitat for amphibian species were observed on or within the vicinity of the site. Therefore, no amphibians are expected to occur.

Reptiles

The project site provides suitable habitat for reptile species adapted to a high degree of human disturbance. The only reptilian species observed during the field investigation was common side-blotched lizard (*Uta stansburiana elegans*). Other common reptilian species that could be expected to occur on-site include Great Basin fence lizard (*Sceloporus occidentalis longipes*) and San Diego alligator lizard (*Elgaria multicarinata webbii*).

Birds

The project site provides suitable foraging habitat for bird species adapted to a high degree of routine human disturbance. Bird species detected during the field survey include southern California rufous-crowned sparrow (*Aimophila ruficeps canescens*), house finch (*Haemorhouse mexicanus*), Bewick's wren (*Thryomanes bewickii*), scrub jay (*Aphelocoma californica*), and wrentit (*Chamaea fasciata*).

Mammals

The project site provides suitable habitat for mammalian species adapted to a high degree of human disturbance. No mammalian species were detected during the field investigation. Common mammalian species that could be expected to occur include coyote (*Canis latrans*), possum (*Didelphis virginiana*), and raccoon (*Procyon lotor*). No bats are expected to roost on-site due to lack of roosting opportunities and routine disturbance associated with onsite water district operations.

Nesting Birds and Raptors

No active nests or birds displaying nesting behavior were observed during the field survey, which was conducted at the beginning of the breeding season. Although subjected to routine disturbance, the native habitat present on site has the potential to provide suitable nesting habitat for year-round and seasonal avian residents, as well as migrating songbirds that could occur in the area that are adapted to conditions in western Riverside County.

Nesting birds are protected pursuant to the Migratory Bird Treaty Act (MBTA) and California Fish and Game Code (Sections 3503, 3503.5, 3511, and 3513 prohibit the take, possession, or destruction of birds, their nests or eggs). If construction occurs between February 1st and August 31st, a pre-construction clearance survey for nesting birds should be conducted within three (3) days of the start of any vegetation removal or ground disturbing activities to ensure that no nesting birds will be disturbed during construction.

Migratory Corridors and Linkages

Habitat linkages provide connections between larger habitat areas that are separated by development. Wildlife corridors are similar to linkages but provide specific opportunities for animals to disperse or migrate between areas. A corridor can be defined as a linear landscape feature of sufficient width to allow animal movement between two comparatively undisturbed habitat fragments. Adequate cover is essential for a corridor to function as a wildlife movement area. It is possible for a habitat corridor to be adequate for one species yet still inadequate for others. Wildlife corridors are features that allow for the dispersal, seasonal migration, breeding, and foraging of a variety of wildlife species. Additionally, open space can provide a buffer against both human disturbance and natural fluctuations in resources.

In accordance with the MSHCP, the project site has not been identified as occurring in a wildlife corridor or linkage. The closest wildlife corridor is located approximately 0.7 miles northeast of the project site in association with the Santa Rosa Plateau Ecological Preserve. The proposed project will be confined to existing areas that have been heavily disturbed/developed and no impacts to adjacent land are expected to occur. As such, implementation of the proposed project is not expected to impact wildlife movement opportunities. Therefore, impacts to wildlife corridors or linkages are not expected to occur.

Jurisdictional Areas

There are three key agencies that regulate activities within inland streams, wetlands, and riparian areas in California. The Corps Regulatory Branch regulates discharge of dredge or fill materials into “waters of the United States” pursuant to Section 404 of the Clean Water Act (CWA) and Section 10 of the Rivers and Harbors Act. Of the State agencies, the CDFW regulates alterations to streambed and bank under Fish and Wildlife Code Sections 1600 et seq., and the Regional Board regulates discharges into surface waters pursuant to Section 401 of the CWA and the California Porter-Cologne Water Quality Control Act.

The project site does not support any discernible drainage courses, inundated areas, wetland features, or hydric soils that would be considered jurisdictional by the Corps, Regional Board, or CDFW.

It should be noted that one (1) unnamed drainage/roadside ditch near the entrance to the project site off of El Calamar Road. This roadside ditch begins was created when a concrete lined v-ditch was installed along

the northern boundary of the driveway entering the project site. The flows within this concrete lined v-ditch originate from the northeast of the project site and are consolidated under the access road leading from El Calamar Road to the water district infrastructure within the project site via a 36-inch culvert. Flows from this drainage continue southwest through a channel under the entrance to the project site, where they exit the culvert and flow towards El Calamar Road and are slowed down by reinforced by riprap . Flows are further consolidated through a 24-inch culvert and are redirected southeast under El Calamar Road and southwest of the project site. Refer to Exhibit 6, *Drainage Features*, for a depiction of the drainage.

Project activities are not expected to exceed the current limits of disturbance within the project site and are restricted to areas which support preexisting development. Therefore, project activities will not result in impacts to Corps, Regional Board, or CDFW jurisdictional areas and regulatory approvals will not be required.

Special-Status Biological Resources

The CNDDB was queried for reported locations of special-status plant and wildlife species as well as natural communities of special concern in the *Wildomar* and *Fallbrook* USGS 7.5-minute quadrangle. These quadrangles were used due to on-site conditions, site proximity to quadrangle boundaries, and surrounding development. A search of published records within these quadrangles were conducted using the CNDDB Rarefind 5 online software and the CDFW BIOS database and the CNPS Inventory of Rare and Endangered Plants of California that supplied information regarding the distribution and habitats of vascular plants in the vicinity of the project site. The habitat assessment evaluated the conditions of the habitat(s) within the boundaries of the project site to determine if the existing plant communities, at the time of the survey, have the potential to provide suitable habitat(s) for special-status plant and wildlife species.

The literature search identified fifty-three (53) special-status plant species, seventy-six (76) special-status wildlife species, and four (4) special-status plant communities were identified as having potential to occur within the *Wildomar* and *Fallbrook* quadrangles. Special-status plant and wildlife species were evaluated for their potential to occur within the project site based on habitat requirements, availability and quality of suitable habitat, and known distributions. Species determined to have the potential to occur within the general vicinity are presented in *Table D-1: Potentially Occurring Special-Status Biological Resources*, provided in Attachment D. Refer to Table D-1 for a determination regarding the potential occurrence of special-status plant and wildlife species within the project site.

Special-Status Plants

According to the CNDDB and CNPS, fifty-three (53) special-status plant species have been recorded in the *Wildomar* and *Fallbrook* quadrangles (refer to Attachment D). No special-status plant species were observed on the project site during the field investigation. Based on habitat requirements for specific species and the availability and quality of on-site habitats, it was determined that the project site has a low potential to support chaparral sand-verbena (*Abronia villosa* var. *aurita*) and paniculate tarplant (*Deinandra paniculata*). Neither of these species are federally or state-listed as Threatened or Endangered. It was further determined that the project site does not have the potential to support any additional species, and all are presumed absent.

Proposed project development is restricted to previously developed areas onsite. Therefore, no direct or indirect impacts to special-status plant species are projected through project implementation.

Special-Status Wildlife

According to the CNDDB, seventy-six (76) special-status wildlife species have been reported in the *Wildomar* and *Fallbrook* quadrangles (refer to Attachment D). The only special-status animal species observed in the undisturbed portion of the project site was southern California rufous-crowned sparrow (*Aimophila ruficeps canescens*) which is not state or federally protected. Based on habitat requirements for specific species and the availability and quality of on-site habitats, it was determined that the project site has a high potential to support Cooper's hawk (*Accipiter cooperii*), sharp-shinned hawk (*Accipiter striatus*); a moderate potential to support Costa's hummingbird (*Calypte costae*); and a low potential to support Bell's sage sparrow (*Artemisiospiza belli belli*), orange-throat whiptail (*Aspidoscelis hyperythra*), red-diamond rattlesnake (*Crotalus ruber*), California horned lark (*Eremophila alpestris actia*), San Diego black-tailed jackrabbit (*Lepus californicus bennettii*), pallid bobcat (*Lynx rufus pallescens*), San Diego desert woodrat (*Neotoma lepida intermedia*), and coastal California gnatcatcher (*Polioptila californica californica*). Further, it was determined that no other special-status wildlife species have potential to occur on-site and all are presumed absent.

Of the aforementioned species, coastal California gnatcatcher is federally listed as Threatened. None of the other species are federally or state listed as Threatened or Endangered. Project activities will be limited to the areas of current development and the implementation of the proposed project will not cause any direct or indirect impacts to coastal California gnatcatcher, or any additional special-status species which may occur on the project site.

To ensure that no direct or indirect impacts to the aforementioned species occur through proposed project implementation, a pre-construction nesting bird clearance survey shall be conducted prior to ground disturbance. With implementation of the pre-construction nesting bird clearance survey, impacts to the aforementioned special-status will be less than significant and no mitigation will be required.

Special-Status Plant Communities

The CNDDB lists four (4) special-status plant communities as being identified within the Wildomar and Fallbrook quadrangles: Southern Coast Live Oak Riparian Forest, Southern Interior Basalt Flow Vernal Pool, Southern Sycamore Alder Riparian Woodland, and Valley Needlegrass Grassland. No CDFW special-status plant communities occur within the boundaries of the project site.

Critical Habitat

Under the federal Endangered Species Act, "Critical Habitat" is designated at the time of listing of a species or within one year of listing. Critical Habitat refers to specific areas within the geographical range of a species at the time it is listed that include the physical or biological features that are essential to the survival and eventual recovery of that species. Maintenance of these physical and biological features requires special management considerations or protection, regardless of whether individuals or the species are present or not. All federal agencies are required to consult with the United States Fish and Wildlife Service (USFWS) regarding activities they authorize, fund, or permit which may affect a federally listed species or its

designated Critical Habitat. The purpose of the consultation is to ensure that projects will not jeopardize the continued existence of the listed species or adversely modify or destroy its designated Critical Habitat. The designation of Critical Habitat does not affect private landowners, unless a project they are proposing is on federal lands, uses federal funds, or requires federal authorization or permits (e.g., funding from the Federal Highways Administration or a CWA Permit from the Corps). If a there is a federal nexus, then the federal agency that is responsible for providing the funding or permit would consult with the USFWS.

The project site is not located with federally designated Critical Habitat (refer to Exhibit 7, *Critical Habitat*, in Attachment A). The nearest designated Critical Habitat is located approximately 0.7 miles northwest of the site for thread-leaved brodiaea (*Brodiaea filifolia*). Therefore, the loss or adverse modification of Critical Habitat will not occur as a result of the proposed project and consultation with the USFWS will not be required for implementation of the proposed project.

Stephen's Kangaroo Rat Habitat Conservation Plan

The proposed project site is located within the Fee Area, established by the County in 1996, for protecting the Stephens' Kangaroo Rat (*Dipodomys stephensi*) (SKR), a federally and State listed species that is protected by the SKR Habitat Conservation Plan (SKR HCP) (County Ordinance No. 663.10). However, Section 10(d) of the Ordinance specifically exempts development of any parcel used by local, state or federal entities for governmental purposes (i.e., public works, schools) from payment of mitigation fees. As such, this project is a public works project and EMWD is exempt from fee payment (Section 10(d) of Riverside County Ordinance 663.10).

Conclusion

Based on the literature review and field survey, implementation of the project will have no significant impacts on federally or State listed species known to occur in the general vicinity of the project site. Although the project site has the potential to support coastal California gnatcatcher, a federally Threatened species, proposed development is restricted to previously developed areas within the project site. Therefore, impacts to gnatcatcher, and any other special-status wildlife which has the potential to occur onsite, will be less than significant Additionally, project will have no effect on designated Critical Habitat because none exists within the area. Further, the project site is not located within or adjacent to any criteria cell, and no riparian/riverine resources or vernal pools were found onsite. No further surveys are recommended.

Recommendations

Migratory Bird Treaty Act and Fish and Game Code Compliance

Vegetation within and surrounding the project site has the potential to provide refuge cover from predators, perching sites and favorable conditions for avian nesting that could be impacted by construction activities associated with the project. Nesting birds are protected pursuant to the Migratory Bird Treaty Act (MBTA) and California Fish and Game Code (Sections 3503, 3503.3, 3511, and 3513 of the California Fish and Game Code prohibit the take, possession, or destruction of birds, their nests or eggs). In order to protect migratory bird species, a nesting bird clearance survey should be conducted prior to any ground disturbance or vegetation removal activities that may disrupt the birds during the nesting season. Consequently, if avian nesting behaviors are disrupted, such as nest abandonment and/or loss of reproductive effort, it is considered "take" and is potentially punishable by fines and/or imprisonment.

If construction occurs between February 1st and August 31st, a pre-construction clearance survey for nesting birds should be conducted within three (3) days of the start of any vegetation removal or ground disturbing activities to ensure that no nesting birds will be disturbed during construction. The biologist conducting the clearance survey should document a negative survey with a brief letter report indicating that no impacts to active avian nests will occur. If an active avian nest is discovered during the pre-construction clearance survey, construction activities should stay outside of a no-disturbance buffer. The size of the no-disturbance buffer will be determined by the wildlife biologist and will depend on the level of noise and/or surrounding anthropogenic disturbances, line of sight between the nest and the construction activity, type and duration of construction activity, ambient noise, species habituation, and topographical barriers. These factors will be evaluated on a case-by-case basis when developing buffer distances. Limits of construction to avoid an active nest will be established in the field with flagging, fencing, or other appropriate barriers; and construction personnel will be instructed on the sensitivity of nest areas. A biological monitor should be present to delineate the boundaries of the buffer area and to monitor the active nest to ensure that nesting behavior is not adversely affected by the construction activity. Once the young have fledged and left the nest, or the nest otherwise becomes inactive under natural conditions, construction activities within the buffer area can occur.

Please do not hesitate to contact Tom McGill at (951) 285-6014 or tmcgill@elmtconsulting.com or Travis McGill at (909) 816-1646 or travismcgill@elmtconsulting.com should you have any questions regarding this proposal.

Sincerely,

Thomas J. McGill, Ph.D.
Managing Director

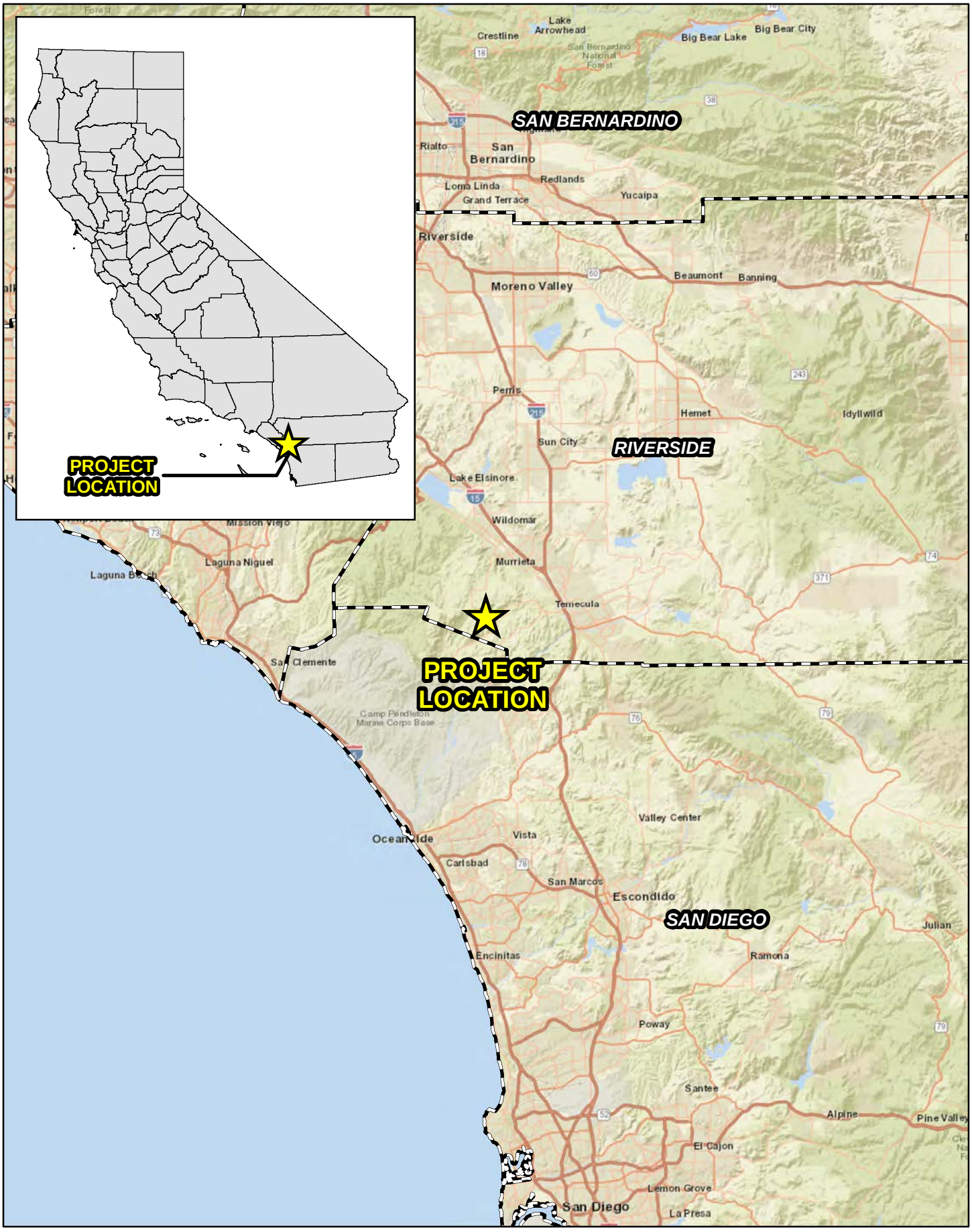
Travis J. McGill
Director

Attachments:

A. *Project Exhibits*
B. *Site Plan*
C. *Site Photographs*
D. *Potentially Occurring Special-Status Biological Resources*
E. *Regulations*

Attachment A

Project Exhibits



ELMT CONSULTING

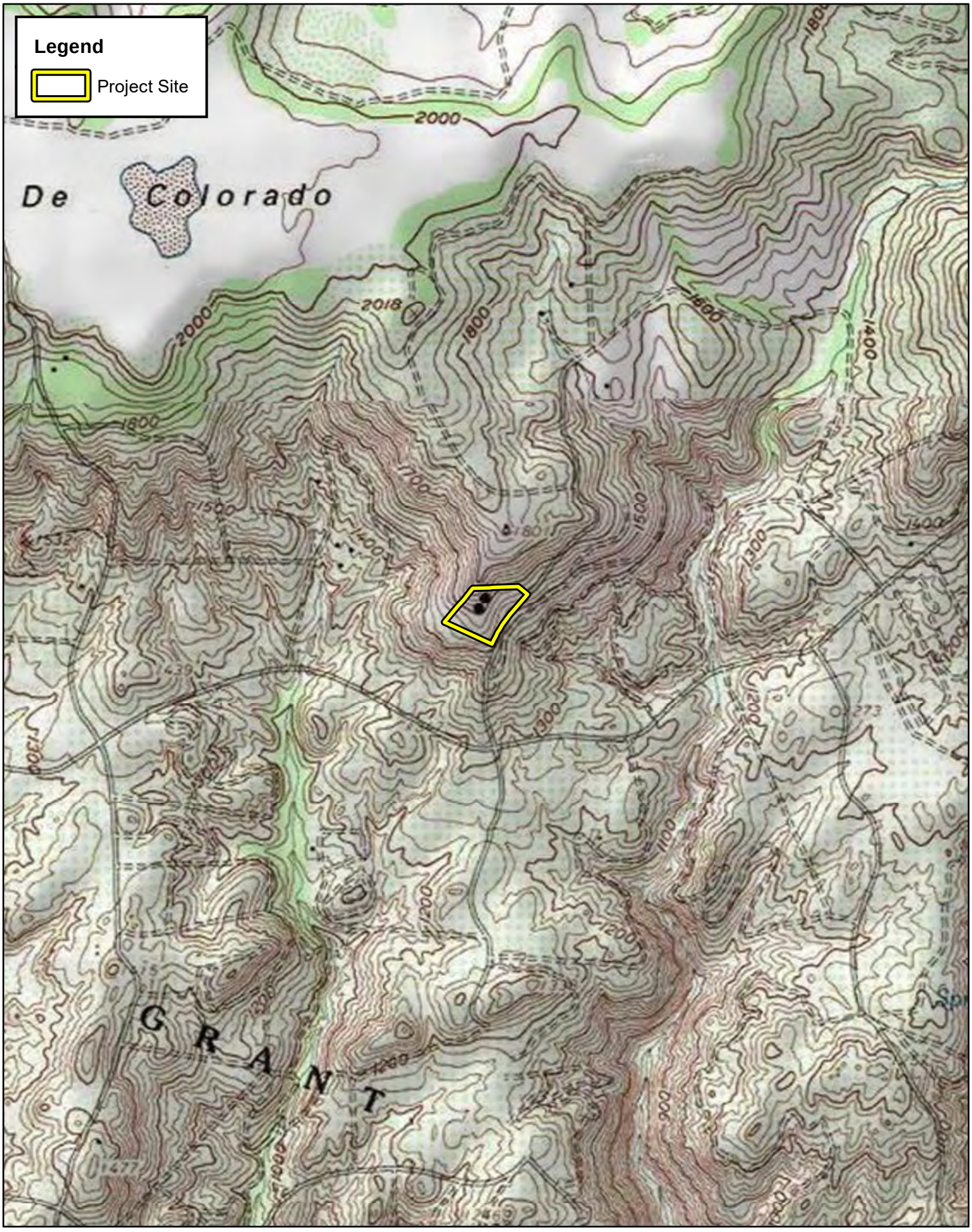
0 2.5 5 10 Miles

Source: World Street Map, Riverside County

CARANCHO PUMP STATION EXPANSION PROJECT

Regional Vicinity

Exhibit 1



ELMT CONSULTING

0 500 1,000 2,000 Feet

Source: USA Topographic Map, Riverside County

CARANCHO PUMP STATION EXPANSION PROJECT

Site Vicinity

Exhibit 2



ELMT CONSULTING

0 62.5 125 250 Feet

Source: ESRI Aerial Imagery, Riverside County

CARANCHO PUMP STATION EXPANSION PROJECT

Project Site

Exhibit 3



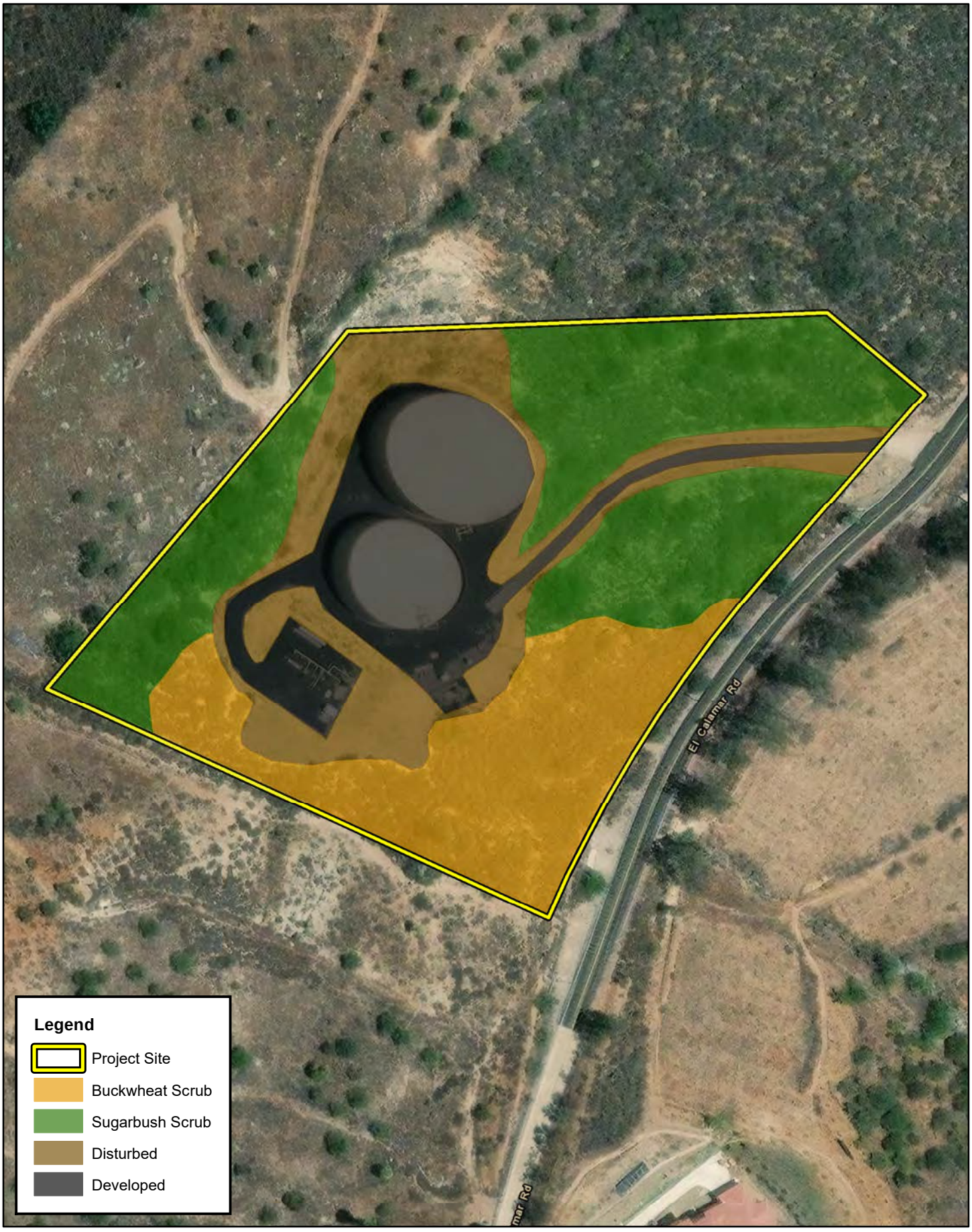
ELMT CONSULTING

CARANCHO PUMP STATION EXPANSION PROJECT

Soils

Source: ESRI Aerial Imagery, Soil Survey Geographic Database, Riverside County

Exhibit 4



ELMT CONSULTING

0 62.5 125 250 Feet

Source: ESRI Aerial Imagery, Riverside County

CARANCHO PUMP STATION EXPANSION PROJECT

Vegetation

Exhibit 5



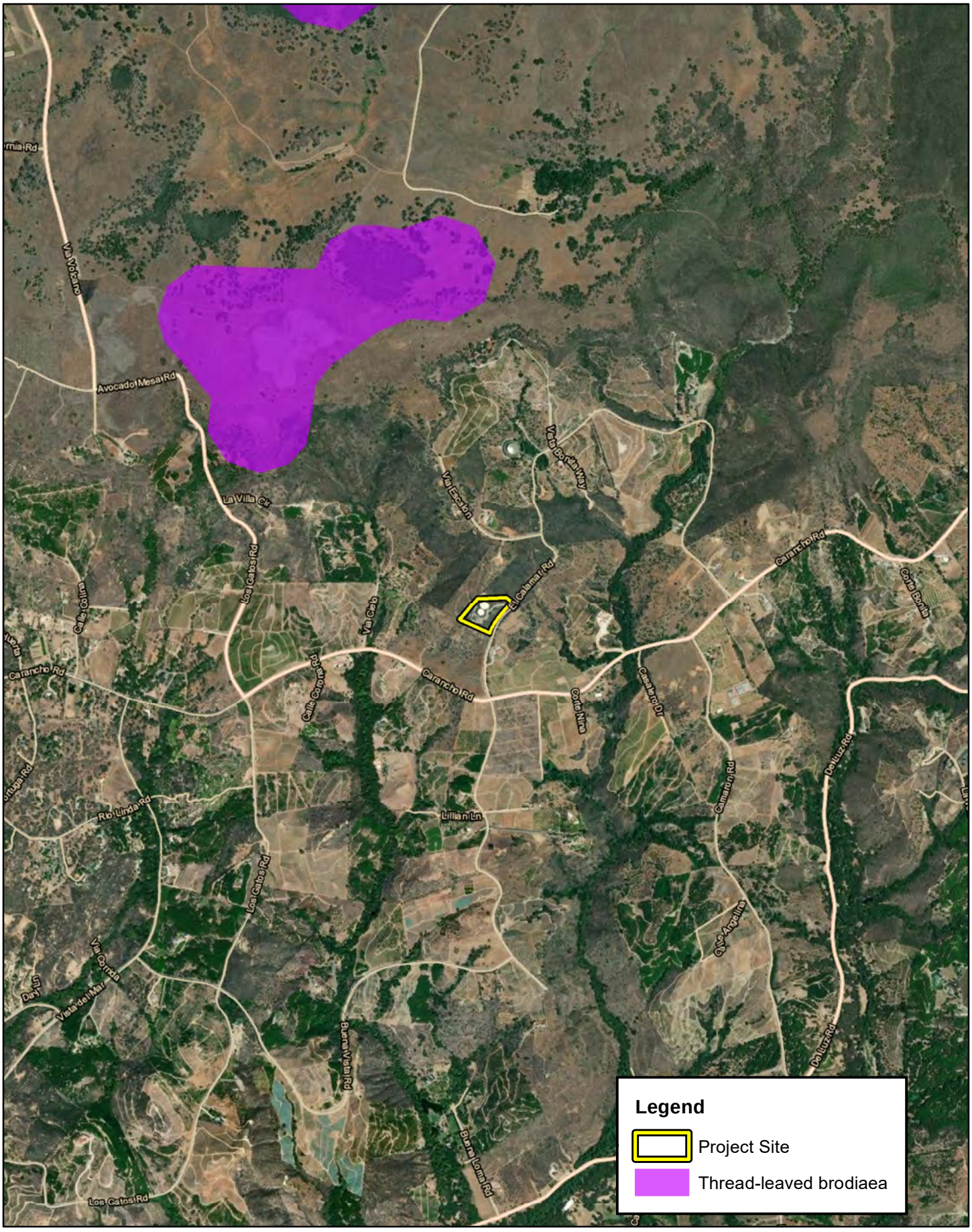
ELMT CONSULTING

Source: ESRI Aerial Imagery, Riverside County

CARANCHO PUMP STATION EXPANSION PROJECT

Drainage Features

Exhibit 6



ELMT CONSULTING

0 1,250 2,500 5,000 Feet

Source: ESRI Aerial Imagery, USFWS Critical Habitat, Riverside County

40475 VISTA MURRIETA

Critical Habitat

Exhibit 6

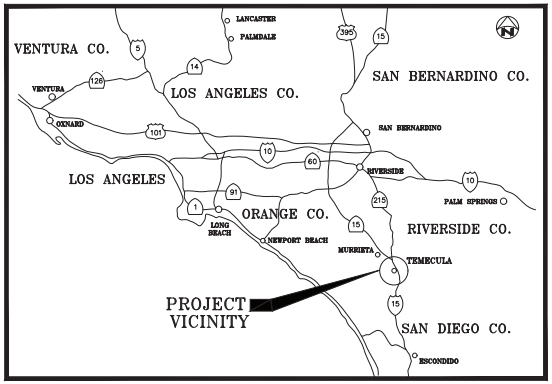
Attachment B

Site Plan

RANCHO CALIFORNIA WATER DISTRICT

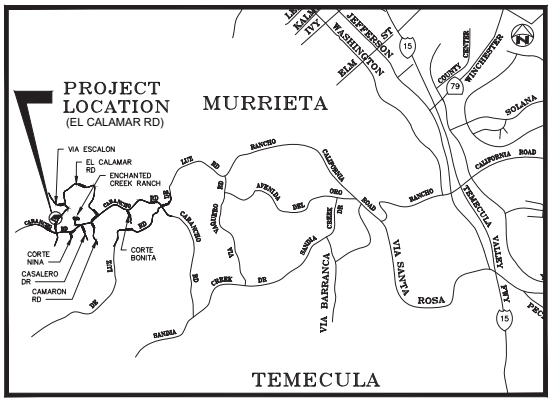
CARANCHO PUMP STATION EXPANSION & IMPROVEMENT

(PROJECT No. D2048)



VICINITY MAP

NOT TO SCALE



LOCATION MAP

NOT TO SCALE

DIG ALERT

Call: TOLL FREE
1-800-227-2600 OR 811
TWO FULL WORKING DAYS BEFORE YOU DIG

PRELIMINARY
NOT FOR CONSTRUCTION

SHEET INDEX

SHEET NO.	DWG NO.	DESCRIPTION
1	G-1	TITLE SHEET
2	G-2	GENERAL NOTES AND EXISTING SITE PLAN
3	D-1	DEMOLITION PLAN 1
4	D-2	DEMOLITION PLAN 2
5	D-3	DEMOLITION DETAILS
6	C-1	PROPOSED SITE PLAN
7	C-2	PROPOSED 24" WATER PLAN AND PROFILE
*8	C-3	*CIVIL DETAILS
9	M-1	PUMP STATION MECHANICAL PLAN
10	M-2	MECHANICAL SECTIONS
*11	M-3	*MECHANICAL DETAILS
12	E-1	ELECTRICAL NOTES AND ABBREVIATIONS
13	E-2	ELECTRICAL GENERAL NOTES
14	E-3	ELECTRICAL SINGLE LINE DIAGRAMS
15	E-4	ELECTRICAL SITE DEMOLITION PLAN
16	E-5	ELECTRICAL SITE PLAN
17	E-6	ELECTRICAL SCHEDULE
18	I-1	LEGEND & ABBREVIATIONS I
19	I-2	LEGEND & ABBREVIATIONS II
20	I-3	PUMP STATION P&ID
21	I-4	SURGE TANKS P&ID
22	I-5	GENERATOR P&ID
23	I-6	NETWORK DIAGRAM

* TO BE PROVIDED AT 100% DESIGN

ABBREVIATIONS (TO BE UPDATED AT 100% DESIGN)

ABAN	ABANDONED
AC	ASPHALT CONCRETE
ASPH	ASPHALT
AV/AR	AIR VACUUM AND AIR RELEASE ASSEMBLY
AWWA	AMERICAN WATER WORKS ASSOCIATION
BC	BEGIN CURVE
BF	BLIND FLANGE
BFV	BUTTERFLY VALVE
BOT	BOTTOM
CHLK	CHAINLINK
C/L, ℄	CENTERLINE
CML&C	CEMENT MORTAR LINED AND COATED
CONC	CONCRETE
CP	CONTROL POINT
CTS	CATHODIC TEST STATION
DEFL	DEFLECTION
DIA	DIAMETER
DI	DUCTILE IRON
DWB	DRAINAGE WASH BOUNDARY
E	EAST
EC	END CURVE
ELEC	ELECTRICAL
ELEV	ELEVATION
ESMT	EASEMENT
(E), EXST	EXISTING
FD	FOUND
FH	FIRE HYDRANT
FL	FLANGE
℄	FLOW LINE
FM	FORCE MAIN
FO	FIBER OPTIC
G	GAS
GA	GAUGE
GB	GRADE BREAK
GTB	GEOTECHNICAL BORING
GV	GATE VALVE
HORZ	HORIZONTAL
HPI	HORIZONTAL POINT OF INTERSECTION
HP	HIGH PRESSURE
INT	INTERSECTION
INV	INVERT
IP	IRON PIN
IRR	IRRIGATION
LF	LINEAR FEET
LT	LEFT
MH	MANHOLE
MIN	MINIMUM
MJ	MECHANICAL JOINT
MWD	METROPOLITAN WATER DISTRICT
N	NORTH
OBS	OBSTRUCTED
OSG	ONSITE GENERATOR
OVH	OVERHEAD ELECTRIC/CABLE
PC	POINT OF CURVATURE
PCC	POINT OF COMPOUND CURVATURE
PE	PLAIN END
PH	POTHOLE
ℙ	PIPELINE
PL	PROPERTY LINE
PT	POINT OF TANGENT
PP	POWER POLE
PVC	POLYVINYL CHLORIDE
PW	POTABLE WATER
RCB	REINFORCED CONCRETE BOX
RCP	REINFORCED CONCRETE PIPE
RCWD	RANCHO CALIFORNIA WATER DISTRICT
RECV	RECEIVING
RT	RIGHT
R/W, ROW	RIGHT-OF-WAY
RD	ROAD
RW	RECYCLED WATER
S	SOUTH, SLOPE
SCE	SOUTHERN CALIFORNIA EDISON
SCH	SCHEDULE
SD	STORM DRAIN
SS	SANITARY SEWER
STA	STATION
STL	STEEL
S/W	SIDEWALK
T	TELEPHONE
T.O.P.	TOP OF PIPE
UNK	UNKNOWN
UNO	UNLESS NOTED OTHERWISE
VERT	VERTICAL
VPI	VERTICAL POINT OF INTERSECTION
W	WEST, WATER
W/	WITH
WSP	WELDED STEEL PIPE

LEGEND (TO BE UPDATED AT 100% DESIGN)

- PROPOSED WATERLINE
- PROPOSED SIDE OUTLET OR TEE
- PROPOSED RESILIENT SEATED GATE/WEDGE VALVE
- PROPOSED CATHODIC PROTECTION TEST STATION
- PROPOSED AIR VACUUM AND AIR RELEASE ASSEMBLY
- PROPOSED FIRE HYDRANT
- PROPOSED BUTTERFLY VALVE
- PROPOSED MANWAY
- PROPOSED AIR VACUUM AND AIR RELEASE ASSEMBLY IN PROFILE
- W — EXISTING WATERLINE/SIZE/MATERIAL
- EXISTING FIRE HYDRANT ASSEMBLY
- G — EXISTING GAS LINE
- CTS No. XXXX — EXISTING CATHODIC PROTECTION TEST STATION
- EXISTING EASEMENT
- EXISTING EDGE OF DIRT ROAD
- EXISTING RIGHT-OF-WAY
- EXISTING PROPERTY LINE
- EXISTING FENCE
- OVH — EXISTING OVERHEAD ELECTRIC LINE
- T — EXISTING UNDERGROUND TELEPHONE LINE
- E — EXISTING UNDERGROUND ELECTRIC LINE
- EXISTING EDGE OF ASPHALT PAVEMENT
- EXISTING SIGN
- EXISTING TREE
- EXISTING GUY WIRE
- EXISTING POWER POLE
- EXISTING WATER VALVE
- EXISTING FIRE HYDRANT
- EXISTING STREET LIGHT
- CONTROL POINT
- GEOTECHNICAL BORING

60% SUBMITTAL
MARCH 2024

R.C.W.D. RECORD DWG NO.

REVISIONS			
NO.	DATE	INITIALS	DESCRIPTION

SCALE	N/A
FIELD BOOK	N/A

	INITIALS	DATE
DESIGNED	CE	3/5/2024
DRAWN	JL	3/5/2024
CHECKED	RW	3/5/2024

REGISTERED PROFESSIONAL ENGINEER — ROBERT S. WEBER — No. C059312 — CIVIL — STATE OF CALIFORNIA

ARDURRA

43410 BUSINESS PARK DRIVE
TEMECULA, CA 92590
T 951.396.4980

APPROVED BY ROBERT S. WEBER
REGISTERED ENGINEER No. C059312 DATE 03/05/24

Rancho Water
Rancho California Water District
42135 Winchester Road
Temecula, CA 92590
Phone: (951) 296-6900 Fax: (951) 296-6863

RANCHO CALIFORNIA WATER DISTRICT

APPROVED FOR CONSTRUCTION:

Director of Engineering	Date	Engineering	Date
Contracts & Inspection	Date	Operations & Maintenance	Date

CARANCHO PUMP STATION EXPANSION & IMPROVEMENT (PROJECT NO. D2048)

TITLE SHEET

SHEET

G-1

1 OF X SHEETS

C:\Users\juan.leal\OC\ACCDocs\Ardurra, Inc\2024-0106-001\Project Files\03-Prod\03-Dwgs\ SHT-01-02-03.dwg 03/05/24 9:45

UTILITIES:

1. AT LEAST 48 HOURS BEFORE COMMENCING ANY EXCAVATION, CONTRACTOR SHALL REQUEST UNDERGROUND SERVICE ALERT (*811) AND NONMEMBER COMPANIES, OR UTILITIES TO MARK OR OTHERWISE INDICATE THE LOCATION(S) OF THEIR SUBSURFACE FACILITIES INCLUDING, BUT NOT LIMITED TO, STRUCTURES INCLUDING VAULTS, MAIN CONDUCTORS OR CONDUITS, AND SERVICE CONNECTIONS. CONTRACTOR IS REQUIRED TO POTHOLE UTILITIES THAT MIGHT CONFLICT WITH NEW WORK.
2. PRIOR TO CONSTRUCTION, CONTRACTOR SHALL EXPOSE EXISTING WATERLINES AT PROPOSED CONNECTIONS AND CROSSINGS AND VERIFY ELEVATIONS, LOCATIONS, AND SIZE OF EXISTING FACILITIES.
3. CONTRACTOR SHALL NOT INTERRUPT OR DISTURB ANY UTILITY FACILITY WITHOUT AUTHORITY FROM THE UTILITY COMPANY. WHERE PROTECTION IS REQUIRED TO ENSURE INTEGRITY OF UTILITY FACILITIES (INCLUDING DISTRICT OWNED UTILITIES), CONTRACTOR SHALL FURNISH AND PLACE ALL NECESSARY PROTECTION.

SURVEY CONTROL MONUMENTS				
CP	NORTHING	EASTING	ELEV.	DESCRIPTION
99	2124959.524	6249480.468	1580.28	SET SCRIBED X ON CONC PAD (PROJ BM)
1010	2125021.810	6249397.710	1592.27	SET 1X2 FL w/TGT
1011	2124988.761	6249940.659	1498.57	SET PK NAIL FL w/TGT
1012	2125503.401	6250325.589	1594.06	FD NAIL&REC 11473 ON RCK

NOTIFICATIONS:

NOTE: THE CONTRACTOR SHALL NOTIFY THE FOLLOWING UTILITIES OR AGENCIES FORTY-EIGHT (48) HOURS PRIOR TO STARTING CONSTRUCTION OR EXCAVATION (SEE ALSO SPECIAL CONSTRUCTION PROVISIONS ITEM F OF THE PROJECT SPECIFICATIONS).

RANCHO CALIFORNIA WATER DISTRICT - - - - - - - - - - - - - - - - - 951-296-6900

UNDERGROUND SERVICE ALERT (U.S.A.) - - - - - - - - - - - - - - - - 800-227-2600 OR *811

SOUTHERN CALIFORNIA EDISON COMPANY - - - - - - - - - - - - - - - 800-655-4555

GENERAL NOTES:

1. CONTRACTOR SHALL FURNISH AND INSTALL ALL FACILITIES IN ACCORDANCE WITH RANCHO CALIFORNIA WATER DISTRICT'S (RCWD/DISTRICT) STANDARD SPECIFICATIONS AND STANDARD DRAWINGS FOR WATER AND SANITARY SEWER FACILITIES (LATEST REVISION). THE SPECIFICATIONS AND STANDARD DRAWINGS ARE AVAILABLE FROM THE DISTRICT'S WEBSITE AT WWW.RANCHOWATER.COM. CONTRACTOR SHALL BE IN POSSESSION OF DISTRICT'S SPECIFICATIONS AND STANDARD DRAWINGS ON THE JOB SITE AT ALL TIMES.
2. ALL PERMITS REQUIRED BY LAW SHALL BE ACQUIRED BY THE CONTRACTOR.
3. ALL CONSTRUCTION SHALL CONFORM TO CURRENT CAL OSHA SAFETY REQUIREMENTS.
4. APPROVAL BY RCWD IMPLIES NO PERMISSION OTHER THAN THAT WITHIN THE DISTRICT'S JURISDICTION. REQUIREMENTS OF RCWD SHALL TAKE PRECEDENCE OVER REQUIREMENTS OF OTHER AGENCIES ONLY WHEN RCWD REQUIREMENTS ARE MORE STRINGENT.
5. CONTRACTOR SHALL NOTIFY RCWD'S CONSTRUCTION CONTRACTS MANAGER (951-296-6900) A MINIMUM OF ONE WEEK PRIOR TO STARTING CONSTRUCTION. A PRECONSTRUCTION MEETING WILL NOT BE SCHEDULED UNTIL ALL ITEMS IN THE CONTRACTOR'S INSPECTION PACKAGE HAVE BEEN SUBMITTED TO AND APPROVED BY RCWD. A MINIMUM OF ONE WEEK IS REQUIRED FOR REVIEW AND APPROVAL.
6. CONTRACTOR SHALL PROVIDE WRITTEN NOTIFICATION TO THE RCWD CONSTRUCTION CONTRACTS MANAGER REQUESTING A SYSTEM SHUTDOWN FOR CONNECTIONS TO EXISTING SYSTEM. SAID NOTIFICATION SHALL BE MADE A MINIMUM OF THREE WEEKS PRIOR TO SAID SHUTDOWN.
7. CONTRACTOR SHALL DESIGNATE A QUALIFIED SUPERINTENDENT WITH FULL AUTHORITY TO ACT ON BEHALF OF THE CONTRACTOR. SAID SUPERINTENDENT SHALL BE ON THE JOB SITE AT ALL TIMES.

PIPELINE AND APPURTENANCES:

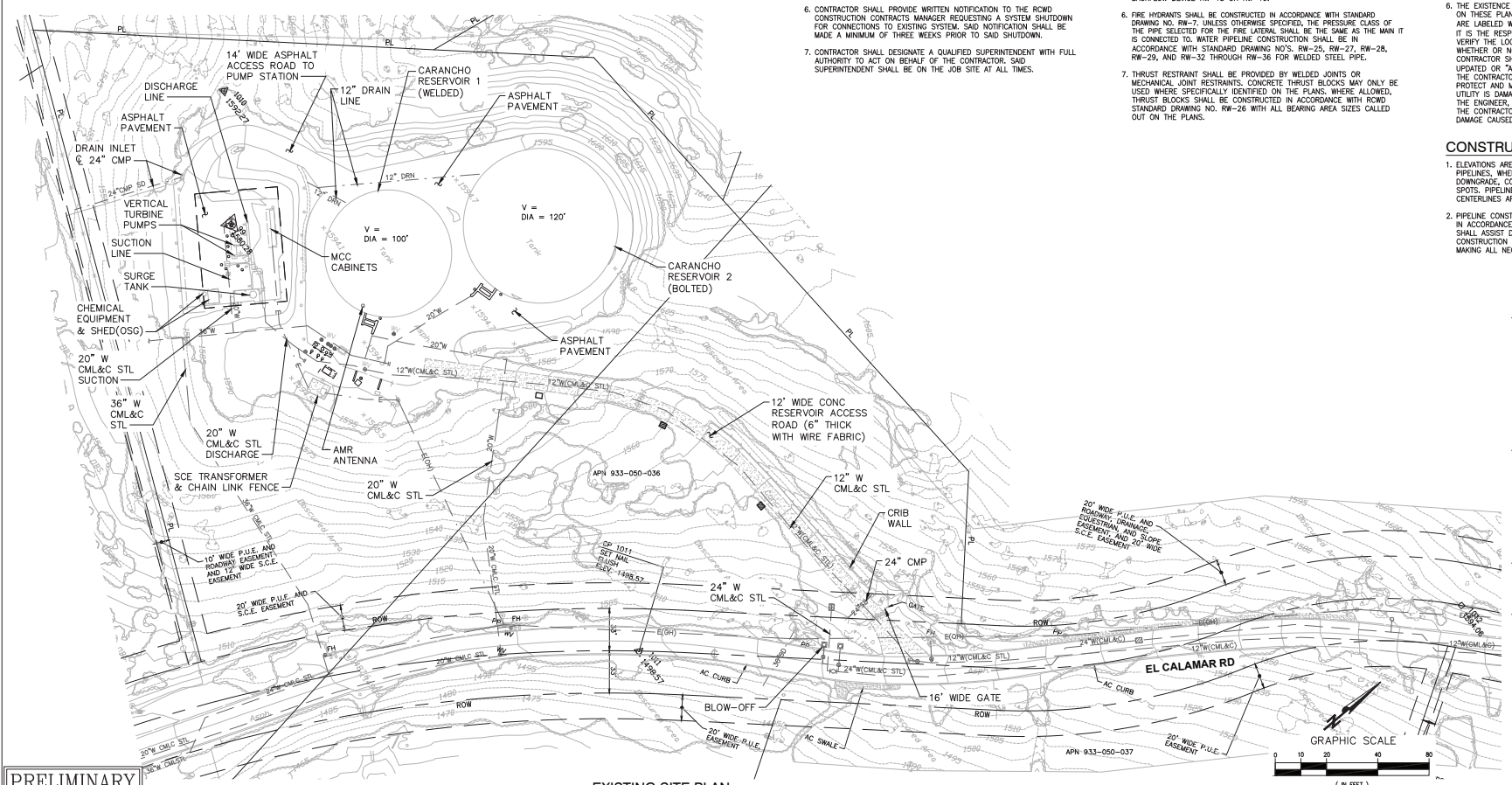
1. ALL VALVES, PIPING, AND APPURTENANCES SHALL BE DESIGNED TO MEET OR EXCEED THE SPECIFIED MINIMUM DESIGN PRESSURE SHOWN ON THE PLAN/PROFILE SHEETS. IN ADDITION, ALL VALVES, PIPING, AND APPURTENANCES SHALL BE TESTED AT A PRESSURE OF 10% OVER SAID MINIMUM DESIGN PRESSURE. VALVES SHALL BE ABLE OF WITHSTANDING SAID TEST PRESSURE IN A CLOSED POSITION.
2. ALL MATERIALS, TESTING, AND INSPECTION SHALL BE IN CONFORMITY WITH THE REQUIREMENTS OF RANCHO CALIFORNIA WATER DISTRICT, RIVERSIDE COUNTY, AND/OR THE AMERICAN WATER WORKS ASSOCIATION STANDARDS. FAILURE TO MEET ANY REQUIREMENTS OF THE ABOVE REFERENCED ENTITIES WILL BE CAUSE FOR REJECTION.
3. VALVES 12" AND SMALLER SHALL BE RESILIENT SEATED GATE VALVES UNLESS OTHERWISE SPECIFIED. VALVES 16" AND LARGER SHALL BE BUTTERFLY VALVES UNLESS OTHERWISE SPECIFIED. VALVES SHALL BE INSTALLED IN ACCORDANCE WITH RCWD STANDARD DRAWING NOS. RW-30 AND RW-31.
4. AIR VACUUM AND AIR RELEASE ASSEMBLIES SHALL BE INSTALLED IN ACCORDANCE WITH RCWD STANDARD DRAWING NO. RW-9, RW-10, OR RW-11.
5. ALL COMMERCIAL, INDUSTRIAL, MULTI-FAMILY, LARGE-LOT, OR LANDSCAPE IRRIGATION METERS SHALL BE INSTALLED WITH A DISTRICT APPROVED BACKFLOW DEVICE RW-18 OR RW-19.
6. FIRE HYDRANTS SHALL BE CONSTRUCTED IN ACCORDANCE WITH STANDARD DRAWING NO. RW-7 UNLESS OTHERWISE SPECIFIED. THE PRESSURE CLASS OF THE PIPE SELECTED FOR THE FIRE LATERAL SHALL BE THE SAME AS THE MAIN IT IS CONNECTED TO. WATER PIPELINE CONSTRUCTION SHALL BE IN ACCORDANCE WITH STANDARD DRAWING NO'S. RW-25, RW-27, RW-28, RW-29, AND RW-32 THROUGH RW-36 FOR WELDED STEEL PIPE.
7. THRUST RESTRAINT SHALL BE PROVIDED BY WELDED JOINTS OR MECHANICAL JOINT RESTRAINTS. CONCRETE THRUST BLOCKS MAY ONLY BE USED WHERE SPECIFICALLY IDENTIFIED ON THE PLANS. WHERE ALLOWED, THRUST BLOCKS SHALL BE CONSTRUCTED IN ACCORDANCE WITH RCWD STANDARD DRAWING NO. RW-26 WITH ALL BEARING AREA SIZES CALLED OUT ON THE PLANS.

CONSTRUCTION DRAWINGS:

1. MINIMUM PIPE COVER SHALL BE 42" FROM FINISHED GROUND SURFACE, UNLESS NOTED OTHERWISE ON PLANS.
2. WATER SYSTEM PROFILE ELEVATIONS ARE TO FLOW LINE OF PIPE.
3. STANDARD UTILITY LOCATIONS SHALL BE PER RIVERSIDE COUNTY STANDARD NO. 817 AND TITLE 22, §64572. FOR PROJECTS THAT CANNOT MEET SEPARATION REQUIREMENTS BETWEEN POTABLE AND NON-POTABLE PIPELINES, RCWD STANDARD DRAWING S-23 AND DEPARTMENT OF HEALTH SERVICES GUIDANCE MEMO NO. 2003-2 MAY BE USED ONLY WITH WRITTEN APPROVAL FROM OWNER AND THE STATE WATER RESOURCES CONTROL BOARD.
4. THE COORDINATES SHOWN ON THESE PLANS ARE IN THE NORTH AMERICAN DATUM 1983, STATE PLANE, CALIFORNIA ZONE 6 COORDINATE SYSTEM.
5. PURSUANT TO 16 CALIFORNIA CODE OF REGULATIONS 404.1, NO FIELD CHANGES TO THE CONSTRUCTION DRAWINGS ARE PERMITTED WITHOUT THE RESPONSIBLE CHARGE OF A REGISTERED CIVIL ENGINEER THROUGH THE PROCESS IDENTIFIED IN SECTION II.D. OF RCWD'S WATER SYSTEM FACILITY REQUIREMENTS AND DESIGN GUIDELINES (LATEST VERSION). RCWD INSPECTION AND ENGINEERING STAFF HAVE NO AUTHORITY TO APPROVE FIELD CHANGES WITHOUT THE PRIOR STAMPED AND SEALED REVISIONS APPROVED BY THE ENGINEER OF RECORD OR A SUCCESSOR ENGINEER. ALL WORK DONE IN VIOLATION OF APPROVED PLANS SHALL BE EXCAVATED AND REMOVED AT THE CONTRACTOR'S SOLE EXPENSE.
6. THE EXISTENCE AND LOCATION OF EXISTING UNDERGROUND UTILITIES SHOWN ON THESE PLANS WERE OBTAINED BY A SEARCH OF AVAILABLE RECORDS AND ARE LABELED WITH THIS MARKER (X) IN THE PLANS TO DEFINE THE UTILITY. IT IS THE RESPONSIBILITY OF THE CONTRACTOR TO DETERMINE AND/OR VERIFY THE LOCATION OF ALL KNOW EXISTING UTILITIES OR STRUCTURES, WHETHER OR NOT SHOWN ON THE PLANS, PRIOR TO CONSTRUCTION. CONTRACTOR SHALL CONTACT APPROPRIATE AGENCIES TO OBTAIN ANY REVISED, UPDATED OR "AS-BUILT" INFORMATION AVAILABLE PRIOR TO CONSTRUCTION. THE CONTRACTOR IS REQUIRED TO TAKE PRECAUTIONARY MEASURES TO PROTECT AND MAINTAIN THE UTILITY LINES SHOWN. IF AN UNDERGROUND UTILITY IS DAMAGED, THE CONTRACTOR SHALL IMMEDIATELY CONTACT RCWD, THE ENGINEER, AND THE USA LOCATING SERVICE TO ARRANGE FOR REPAIRS. THE CONTRACTOR SHALL BE RESPONSIBLE FOR ALL COSTS TO REPAIR THE DAMAGE CAUSED TO UNDERGROUND UTILITIES DURING CONSTRUCTION.

CONSTRUCTION TOLERANCES:

1. ELEVATIONS ARE WITHIN 0.1 FOOT OF DESIGN FLOW LINE ELEVATIONS. PIPELINES, WHEN INSTALLED, SHALL HAVE CONTINUOUS UPGRADE OR DOWNGRADE, CORRESPONDING WITH DESIGN SLOPE, WITHOUT ANY HIGH SPOTS. PIPELINES SHALL BE CONSTRUCTED SO THAT ACTUAL PIPELINE CENTERLINES ARE WITHIN 0.1 FOOT OF DESIGN PIPELINE CENTERLINES.
2. PIPELINE CONSTRUCTION SHALL CONFORM WITH CONSTRUCTION DRAWINGS IN ACCORDANCE WITH THE ABOVE SPECIFIED TOLERANCES. CONTRACTOR SHALL ASSIST DISTRICT AS REQUIRED TO CONFIRM COMPLIANCE WITH CONSTRUCTION TOLERANCES. CONTRACTOR SHALL MAKE OR ASSIST IN MAKING ALL NECESSARY MEASUREMENTS AS DETERMINED BY DISTRICT.



EXISTING SITE PLAN

BASIS OF BEARINGS

THE BASIS OF BEARINGS FOR THIS SURVEY IS THE CALIFORNIA COORDINATE SYSTEM, CCS83, ZONE 6, NAD_83 (2011) (EPOCH: 2010.000) AS DETERMINED LOCALLY BY A LINE BETWEEN K&S CONTROL POINT 592216 AND CONTINUOUS OPERATING REFERENCE STATION (CORS) P474 BEING S07°48'30"E AS DERIVED FROM GEODETIC VALUES PUBLISHED BY NATIONAL GEODETIC SURVEY (NGS) AND A NGS STATIC OPUS SOLUTION BEING:

P474 NORTH: 2,074,324.580 EAST: 6,256,718.860
592216 NORTH: 2,126,317.762 EAST: 6,249,588.921

BASIS OF COORDINATES

COORDINATES SHOWN ARE BASED ON THE CALIFORNIA STATE PLANE COORDINATE SYSTEM, CCS83, ZONE 6, NAD_83 (2011) (EPOCH: 2010.000)

ALL BEARINGS SHOWN ON THIS MAP ARE GRID. ALL DISTANCES SHOWN ARE GRID DISTANCES UNLESS SPECIFIED OTHERWISE. GROUND DISTANCES MAY BE OBTAINED BY MULTIPLYING THE GRID DISTANCE BY A COMBINATION FACTOR OF 1.00009068, CALCULATED AT K&S CP 592216, USING AN ORTHOMETRIC ELEVATION OF 1820.41 SFT.

ELEVATION DATUM

THE ELEVATION DATUM FOR THIS SURVEY IS BASED ON NGVD29. VERTICAL CONTROL WAS ESTABLISHED BASED ON A STATIC GPS MEASUREMENTS TO THE PROJECT BENCHMARK SHOWN HEREON.

BENCHMARK

K&S CP99

SET SCRIBED X ON TOP OF CONCRETE AT THE S.E. CORNER OF THE BOOSTER PUMP BARREL BASE AS SHOWN ON THE CARANCHO PUMP STATION AS-BUILT DWG. NO. PS-7 SH. 4 DATED 05/16/89

ELEVATION = 1580.28 SFT (NGVD29)

R.C.W.D. RECORD DWG NO.

PRELIMINARY
NOT FOR CONSTRUCTION

REVISIONS			
NO.	DATE	INITIALS	DESCRIPTION

SCALE
FIELD BOOK N/A

	INITIALS	DATE
DESIGNED	CE	3/5/2024
DRAWN	JL	3/5/2024
CHECKED	RW	3/5/2024

REGISTERED PROFESSIONAL ENGINEER ROBERT S. WEBER No. C059312 CIVIL STATE OF CALIFORNIA

ARDURRA
43410 BUSINESS PARK DRIVE
TEMECULA, CA 92590
T 951.396.4980

APPROVED BY ROBERT S. WEBER
REGISTERED ENGINEER No. C059312 DATE 03/05/24

Rancho Water
Rancho California Water District
42135 Winchester Road
Temecula, CA 92590
Phone: (951) 296-6900 Fax: (951) 296-6863

RANCHO CALIFORNIA WATER DISTRICT
APPROVED FOR CONSTRUCTION:
Engineering Date

CARANCHO PUMP STATION EXPANSION & IMPROVEMENT (PROJECT NO. D2048)

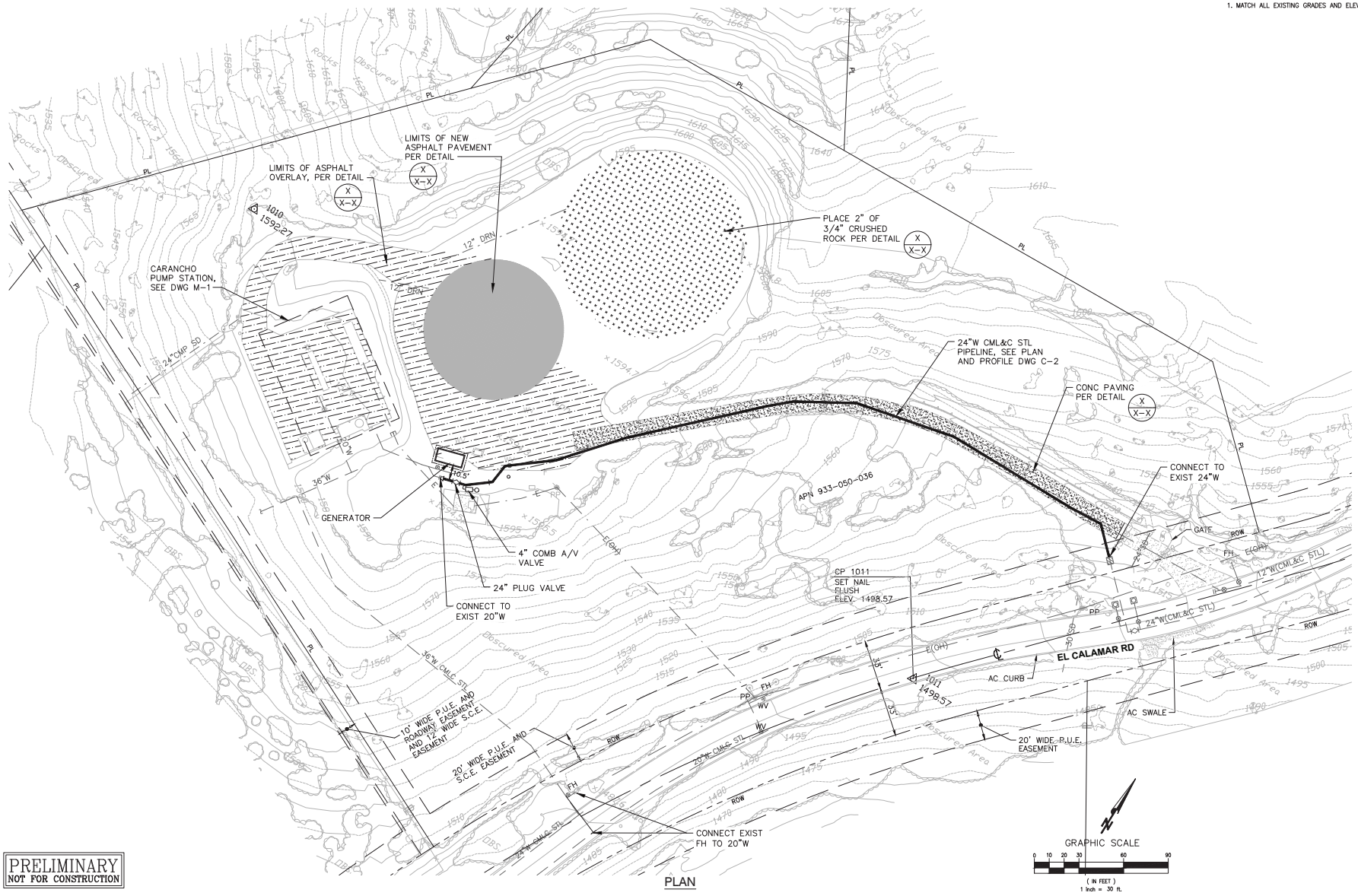
GENERAL NOTES AND EXISTING SITE PLAN

SHEET
G-2
2 OF X SHEETS

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IMPROVEMENT NOTES:

1. MATCH ALL EXISTING GRADES AND ELEVATIONS.



PLAN

PRELIMINARY
NOT FOR CONSTRUCTION

REVISIONS			
NO.	DATE	INITIALS	DESCRIPTION

SCALE	AS SHOWN	
FIELD BOOK	N/A	
	INITIALS	DATE
DESIGNED	CE	3/5/2024
DRAWN	JL	3/5/2024
CHECKED	RW	3/5/2024

REGISTERED PROFESSIONAL ENGINEER ROBERT S. WEBER No. C059312 CIVIL STATE OF CALIFORNIA

ARDURRA
43410 BUSINESS PARK DRIVE
TEMECULA, CA 92590
T 951.396.4980

APPROVED BY ROBERT S. WEBER
REGISTERED ENGINEER No. C059312 DATE 03/05/24

Rancho Water
Rancho California Water District
42135 Winchester Road
Temecula, CA 92590
Phone: (951) 296-6900 Fax: (951) 296-6863

RANCHO CALIFORNIA WATER DISTRICT
APPROVED FOR CONSTRUCTION:

Engineering Date

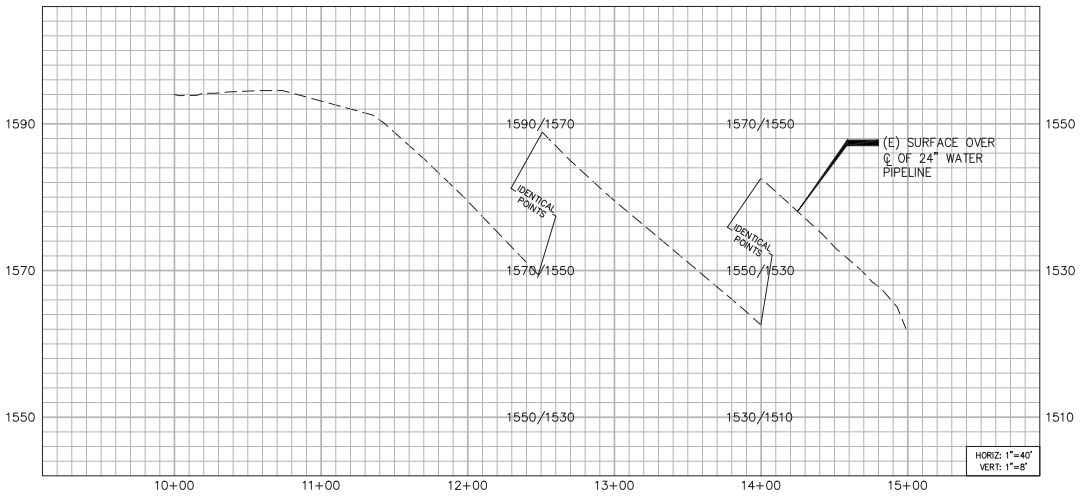
CARANCHO PUMP STATION EXPANSION & IMPROVEMENT (PROJECT NO. D2048)

PROPOSED SITE PLAN

SHEET
C-1
6 OF X SHEETS

R.C.W.D. RECORD DWG NO.

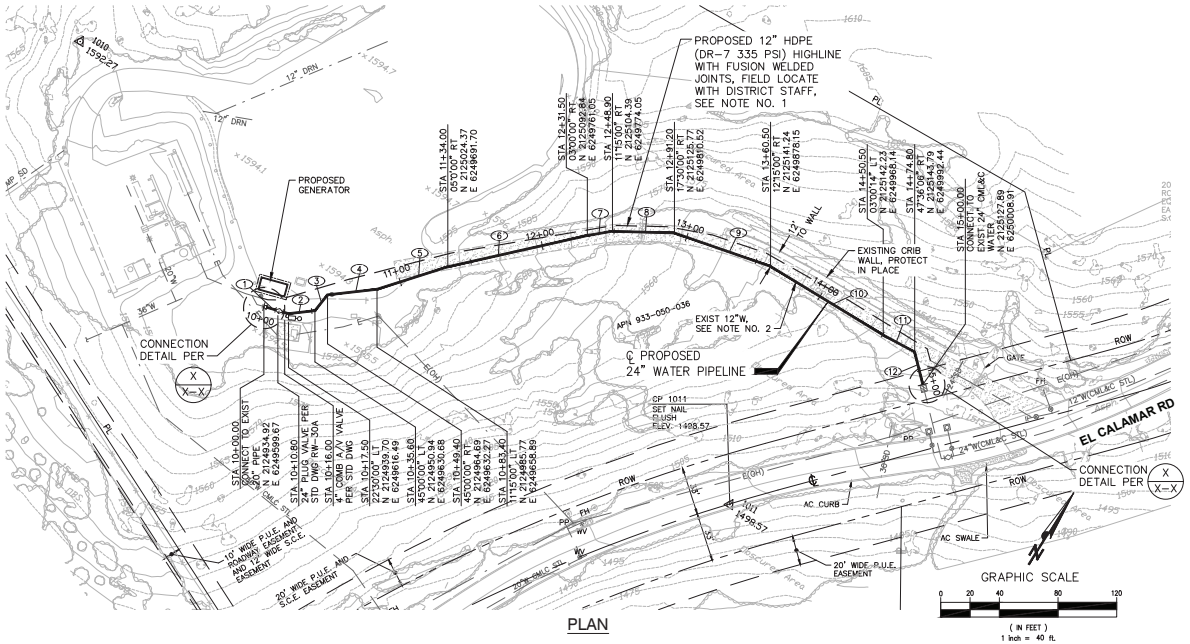
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PROFILE

IMPROVEMENT NOTES:

1. CONTRACTOR TO SUBMIT PROPOSED HIGHLINE PLAN FOR REVIEW AND APPROVAL PRIOR TO CONSTRUCTION. SEE SPECIFICATION 10520.
2. CONTRACTOR SHALL REMOVE AND DISPOSE OF INTERFERING PORTIONS OF EXISTING 12" CML&C PIPELINE FROM STA 10+00 TO 14+80±.
3. SEE SPECIAL CONSTRUCTION PROVISIONS (SECTION G) FOR PIPELINE CONSTRUCTION SEQUENCE.



PLAN

PIPELINE CL DATA				
MARK	BEARING / DELTA	RADIUS	LENGTH	TANGENT
①	N 74°07'03" E	- -	17.48'	- -
②	N 51°37'03" E	- -	18.09'	- -
③	N 06°37'03" E	- -	13.84'	- -
④	N 51°37'03" E	- -	33.95'	- -
⑤	N 40°22'03" E	- -	50.66'	- -
⑥	N 45°22'03" E	- -	97.45'	- -
⑦	N 48°22'03" E	- -	17.39'	- -
⑧	N 59°37'03" E	- -	42.28'	- -
⑨	N 77°07'03" E	- -	69.37'	- -
⑩	N 89°22'03" E	- -	90.00'	- -
⑪	N 86°21'49" E	- -	24.35'	- -
⑫	S 46°02'05" E	- -	22.88'	- -

PRELIMINARY
NOT FOR CONSTRUCTION

REVISIONS			
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SCALE	AS SHOWN	
FIELD BOOK	N/A	
	INITIALS	DATE
DESIGNED	CE	3/5/2024
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RANCHO CALIFORNIA WATER DISTRICT
APPROVED FOR CONSTRUCTION:
Engineering Date

CARANCHO PUMP STATION EXPANSION & IMPROVEMENT (PROJECT NO. D2048)

PROPOSED 24" WATER PLAN AND PROFILE

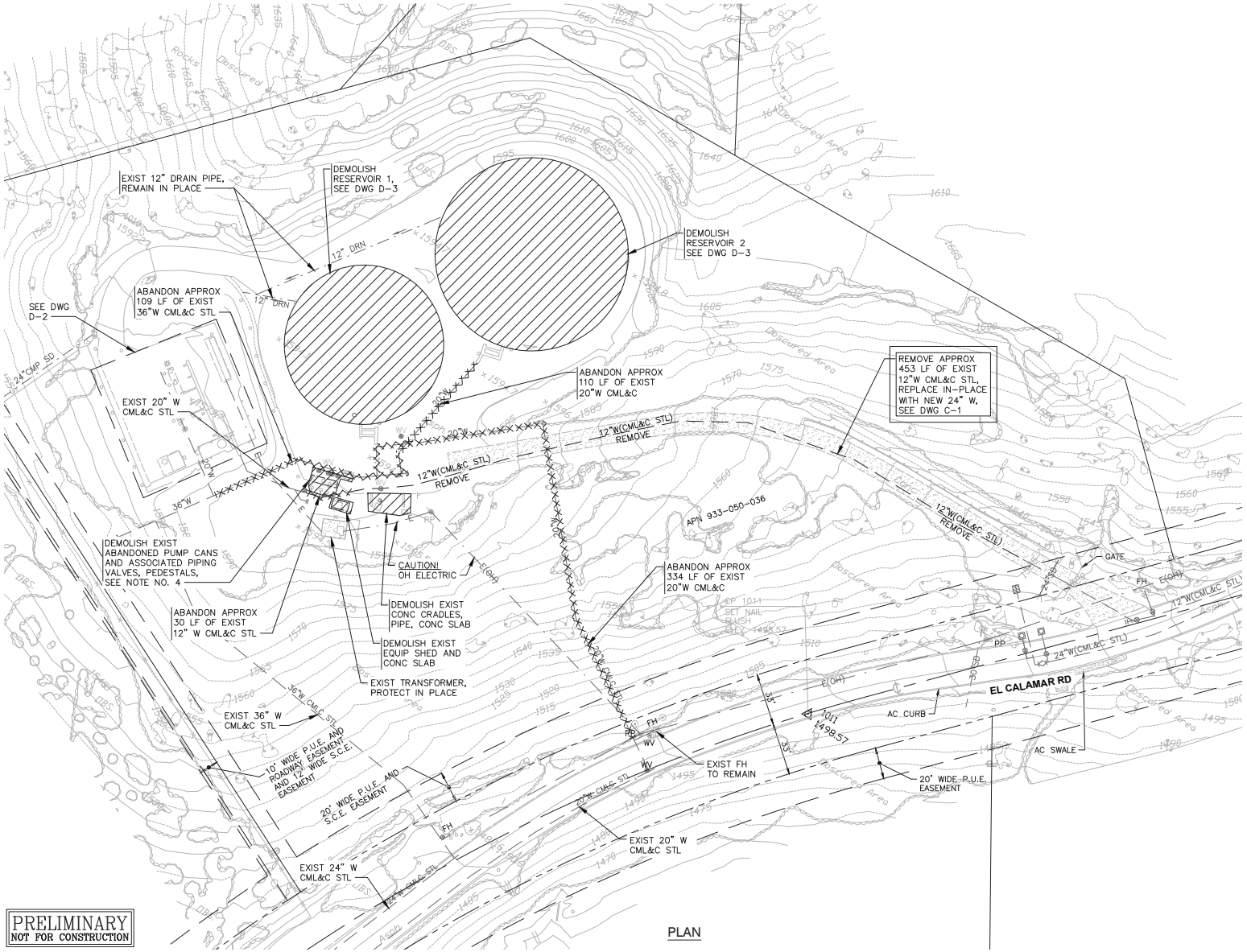
SHEET
C-2
7 OF X SHEETS

R.C.W.D. RECORD DWG NO.

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DEMOLITION NOTES:

1. FOR PIPES TO BE ABANDONED, CONTRACTOR SHALL CUT AT EACH END AND FILL WITH CONCRETE SLURRY AND WELD DISHED HEAD ON EACH END OR OTHERWISE PERMANENTLY CAP.
2. THE ACTUAL LENGTH OF EXISTING PIPING TO BE REMOVED, DEMOLISHED OR ABANDONED IS APPROXIMATED. CONTRACTOR SHALL VERIFY THE EXACT LOCATION, DEPTH AND CONDITION OF PIPING.
3. THE CONTRACTOR SHALL DEMOLISH AND LEGALLY DISPOSE OF ALL ITEMS AND MATERIALS THAT ARE DESIGNATED FOR DEMOLITION BUT NOT SPECIFICALLY DESIGNATED FOR SALVAGE.
4. CUT OFF EXISTING PUMP CANS AND PIPES AT GRADE AND FILL WITH CONCRETE, FLUSH WITH EXISTING CONCRETE PAD.



PLAN

LEGEND

DEMOLISH

ABANDON IN-PLACE

GRAPHIC SCALE

0 10 20 30 60 90

(IN FEET)
1 inch = 30 ft.

PRELIMINARY
NOT FOR CONSTRUCTION

REVISIONS			
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SCALE	AS SHOWN	
FIELD BOOK	N/A	
	INITIALS	DATE
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CHECKED	RW	3/5/2024

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RANCHO CALIFORNIA WATER DISTRICT
APPROVED FOR CONSTRUCTION:

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CARANCHO PUMP STATION EXPANSION & IMPROVEMENT (PROJECT NO. D2048)

DEMOLITION PLAN 1

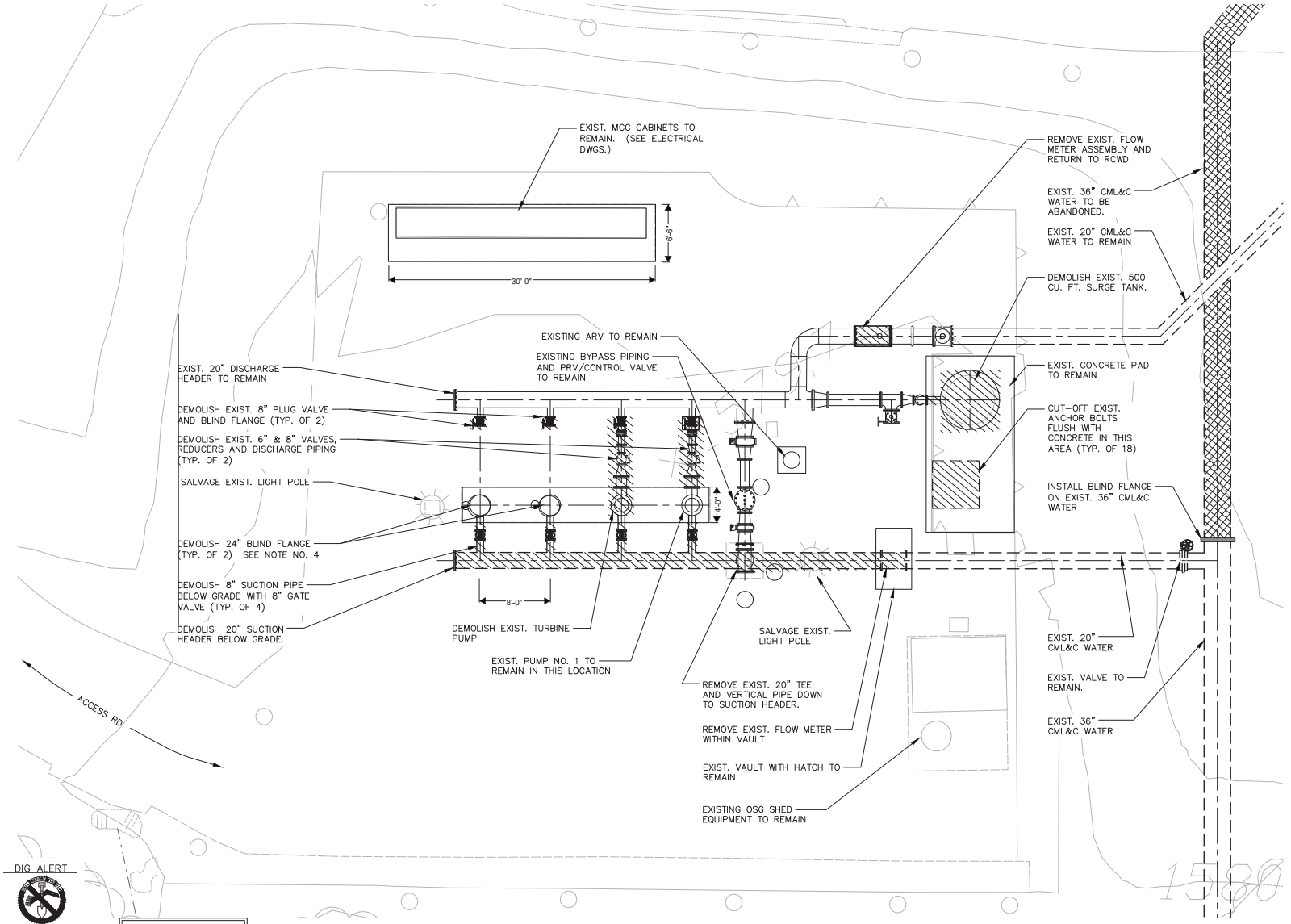
SHEET
D-1
3 OF X SHEETS

R.C.W.D. RECORD DWG NO.

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DEMOLITION NOTES:

1. FOR PIPES TO BE ABANDONED, CONTRACTOR SHALL CUT AT EACH END AND FILL WITH CONCRETE SLURRY AND WELD DISHED HEAD ON EACH END OR OTHERWISE PERMANENTLY CAP.
2. THE ACTUAL LENGTH OF EXISTING PIPING TO BE REMOVED, DEMOLISHED OR ABANDONED IS APPROXIMATED. CONTRACTOR SHALL VERIFY THE EXACT LOCATION, DEPTH AND CONDITION OF PIPING.
3. THE CONTRACTOR SHALL DEMOLISH AND LEGALLY DISPOSE OF ALL ITEMS AND MATERIALS THAT ARE DESIGNATED FOR DEMOLITION BUT NOT SPECIFICALLY DESIGNATED FOR SALVAGE.
4. CUT OFF EXISTING PUMP CANS AND PIPES AT GRADE AND FILL WITH CONCRETE, FLUSH WITH EXISTING CONCRETE PAD.



LEGEND

DEMOLISH

ABANDON IN-PLACE

0 1' 2' 4' 8' 12' 16'
3/16"=1'-0"

DIG ALERT

Call: TOLL FREE
1-800-227-2600 OR 811
TWO FULL WORKING DAYS BEFORE YOU DIG

PRELIMINARY
NOT FOR CONSTRUCTION

PLAN

R.C.W.D. RECORD DWG NO.

REVISIONS			
NO.	DATE	INITIALS	DESCRIPTION

SCALE	3/16" = 1'-0"
FIELD BOOK	N/A

	INITIALS	DATE
DESIGNED	CE	3/5/2024
DRAWN	JK	3/5/2024
CHECKED	RW	3/5/2024

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REGISTERED ENGINEER No. C059312 DATE 03/05/24

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RANCHO CALIFORNIA WATER DISTRICT
APPROVED FOR CONSTRUCTION:

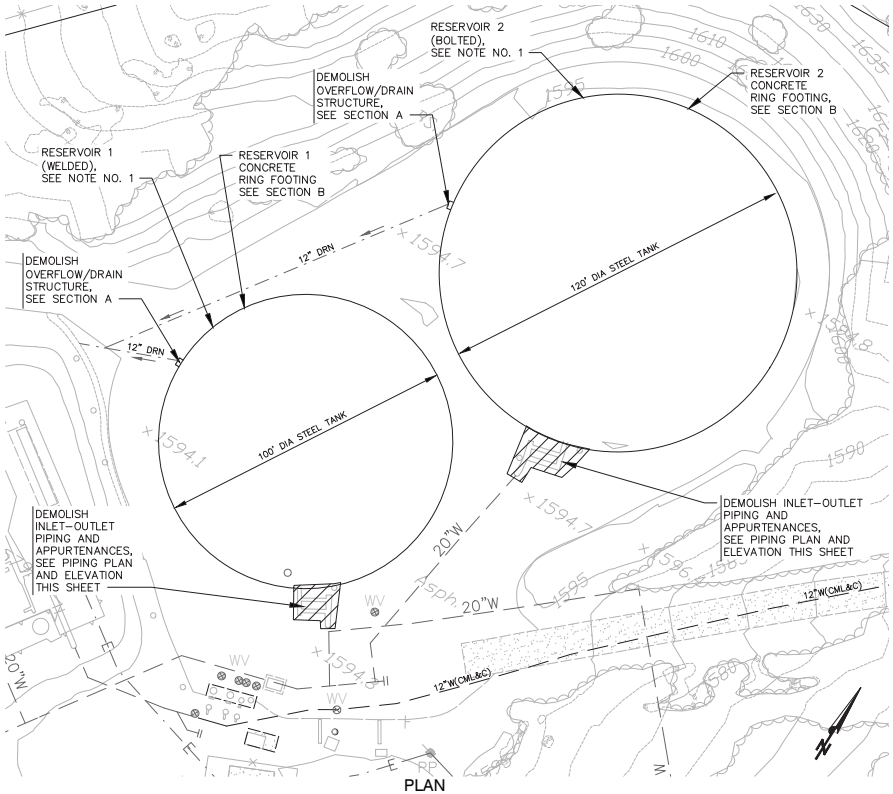
Engineering Date

CARANCHO PUMP STATION EXPANSION & IMPROVEMENT (PROJECT NO. D2048)

DEMOLITION PLAN 2

SHEET
D-2
4 OF X SHEETS

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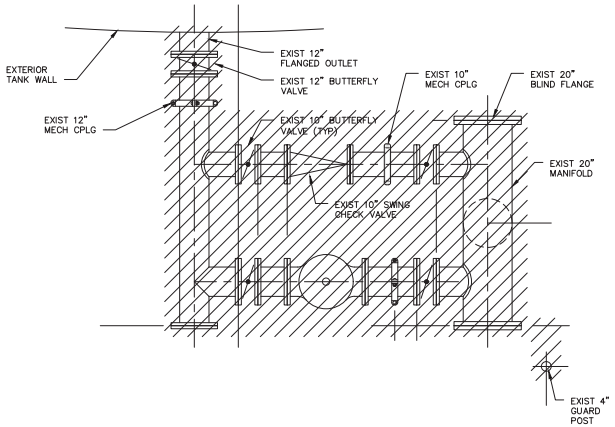


PLAN

SCALE: 1"=20'-0"

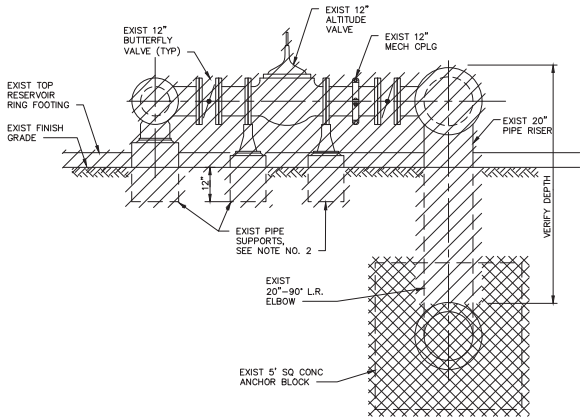
DEMOLITION NOTES:

1. SEE SPECIFICATION X FOR PROPER HANDLING AND DISPOSAL OF LEAD BASED PAINT MATERIAL.
2. DEMOLISH EXISTING PIPE SUPPORTS TO 12" BELOW GRADE AND BACKFILL WITH SOIL, COMPACT TO 90%.
3. REMOVE AND RELOCATE THE AUTOMATED METER READING (AMR) ANTENNA ON RESERVOIR 1 TO A NEW 50-FT TOWER CONSTRUCTED NEXT TO THE GENERATOR AND TRANSFORMER, SEE DRAWING E-5.



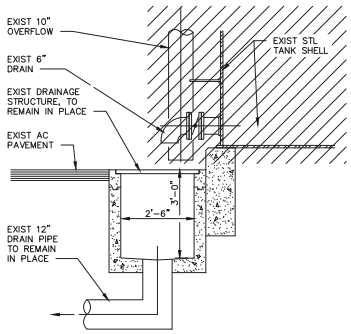
PIPING PLAN

SCALE: 1/2"=1'-0"



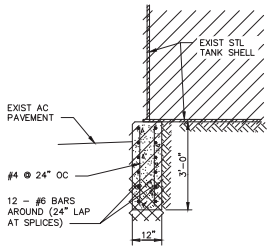
ELEVATION

SCALE: 1/2"=1'-0"



SECTION A

SCALE: 1/2"=1'-0"



SECTION B

SCALE: 1/2"=1'-0"

LEGEND

DEMOLISH

ABANDON IN–PLACE

GRAPHIC SCALE

0 10 20 40 60

(IN FEET)

1 inch = 20 ft.

0 1' 2' 4' 6'

1/2"=1'-0"

PRELIMINARY
NOT FOR CONSTRUCTION

REVISIONS			
NO.	DATE	INITIALS	DESCRIPTION

SCALE	AS SHOWN	
FIELD BOOK	N/A	
	INITIALS	DATE
DESIGNED	CE	3/5/2024
DRAWN	JL	3/5/2024
CHECKED	RW	3/5/2024

REGISTERED PROFESSIONAL ENGINEER ROBERT S. WEBER No. C059312 CIVIL STATE OF CALIFORNIA

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APPROVED BY ROBERT S. WEBER
REGISTERED ENGINEER No. C059312 DATE 03/05/24

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Temecula, CA 92590
Phone: (951) 296-6900 Fax: (951) 296-6863

RANCHO CALIFORNIA WATER DISTRICT

APPROVED FOR CONSTRUCTION:

Engineering Date

CARANCHO PUMP STATION EXPANSION & IMPROVEMENT
(PROJECT NO. D2048)

DEMOLITION DETAILS

SHEET

D-3

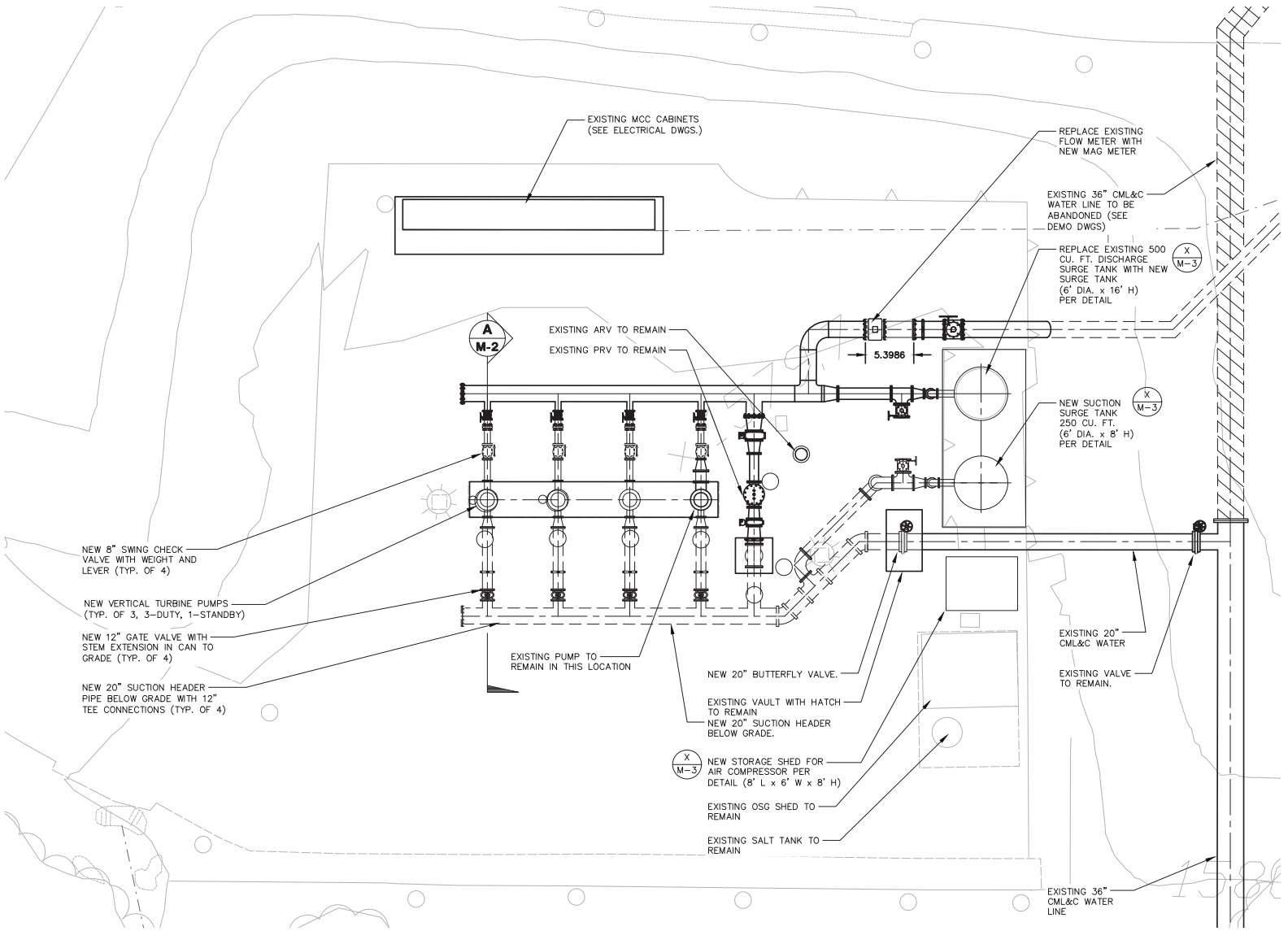
5 OF X SHEETS

R.C.W.D. RECORD DWG NO.

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NOTES:

1. ALL ABOVE GROUND PIPE TO BE CML & PAINTED STEEL.
2. ALL BELOW GROUND PIPE TO BE CML & COATED STEEL.



PLAN

PRELIMINARY
NOT FOR CONSTRUCTION

R.C.W.D. RECORD DWG NO.

REVISIONS			
NO.	DATE	INITIALS	DESCRIPTION

SCALE	AS SHOWN	
FIELD BOOK	N/A	
	INITIALS	DATE
DESIGNED	CE	3/5/2024
DRAWN	JK	3/5/2024
CHECKED	RW	3/5/2024

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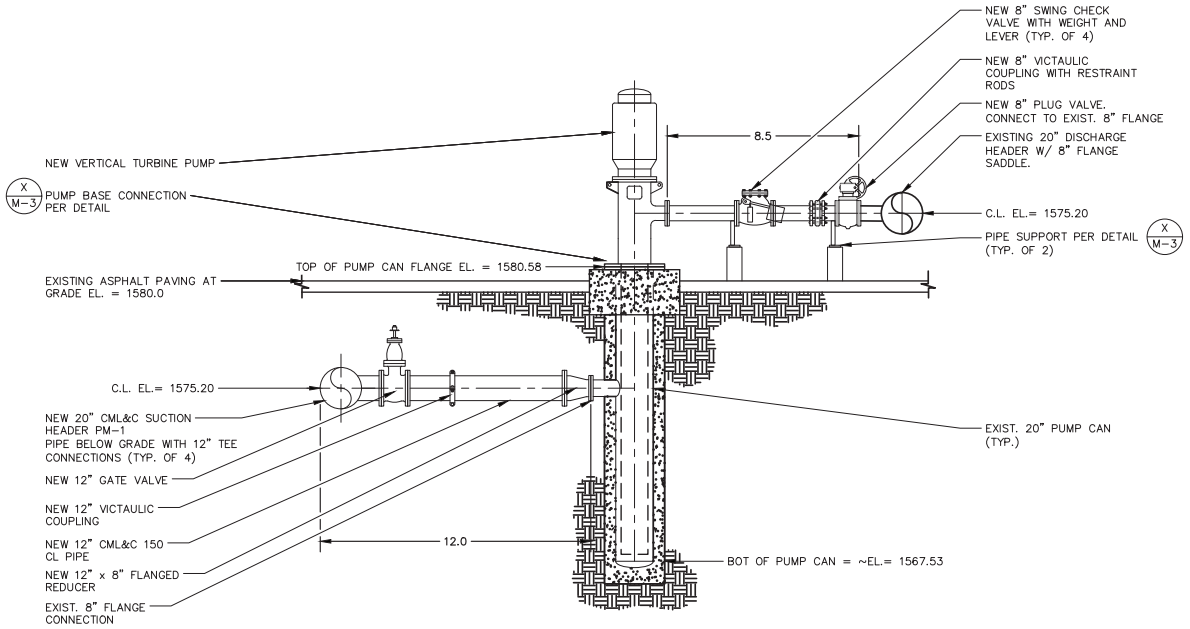
PUMP STATION MECHANICAL PLAN

SHEET
M-1
9 OF X SHEETS

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NOTES:

1. ALL ABOVE GROUND PIPE TO BE CML & PAINTED STEEL.
2. ALL BELOW GROUND PIPE TO BE CML & COATED STEEL.



SECTION 'A'

0 1' 2' 4' 6' 8'
3/8"=1'-0"

PRELIMINARY
NOT FOR CONSTRUCTION

R.C.W.D. RECORD DWG NO.

REVISIONS			
NO.	DATE	INITIALS	DESCRIPTION

SCALE	AS SHOWN		
FIELD BOOK	N/A		
		INITIALS	DATE
DESIGNED	CE		3/5/2024
DRAWN	JK		3/5/2024
CHECKED	RW		3/5/2024

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ARDURRA

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CARANCHO PUMP STATION EXPANSION & IMPROVEMENT
(PROJECT NO. D2048)

MECHANICAL SECTIONS

SHEET
M-2
10 OF X SHEETS

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PLAN SYMBOLS

- HOME RUN TO PANELBOARD. NO. OF ARROWS INDICATE NO. OF CIRCUITS, HASH MARKS INDICATE NO. OF #12 AWG. CONDUCTORS. NO HASH MARKS INDICATE 2#12 CONDUCTORS & 1#12 GND IN 3/4" CONDUIT.
- CONDUIT CONCEALED IN WALL, IN SLAB ABOVE, OR ABOVE CEILING
- CONDUIT CONCEALED IN OR BELOW FLOOR OR UNDERGROUND.
- CONDUIT RUN EXPOSED. RUN PARALLEL OR PERPENDICULAR TO STRUCTURE OR WALL.
- FLEXIBLE CONDUIT WITH EQUIPMENT CONNECTION.
- CONCRETE ENCASED DUCTBANK.
- WALL MOUNTED LIGHTING FIXTURE.
- LED LIGHTING FIXTURE, CEILING MOUNTED.
- EXTERIOR LUMINAIRE AND MOUNTING STANDARD.
- EXISTING EXTERIOR LIGHTING.
- EMERGENCY BATTERY PACK LIGHTING FIXTURE.
- (J) JUNCTION BOX N.E.C. SURFACE MOUNTED UNLESS INDICATED OTHERWISE.
- [J] NEMA 4X 316 STAINLESS STEEL JUNCTION BOX PER N.E.C., RACK MOUNTED UNLESS INDICATED OTHERWISE.
- FLUSH OR SURFACE MOUNTED LIGHTING PANELBOARD.
- FLUSH OR SURFACE MOUNTED POWER PANELBOARD.
- DRY TYPE TRANSFORMER. NO. INDICATES KVA RATING.
- LIQUID FILLED TRANSFORMER, KVA RATING AS SHOWN
- SINGLE RECEPTACLE, RATING AS SHOWN
- 20A, 125V, 3W DUPLEX RECEPTACLE IN FLUSH OUTLET BOX, 18" ABOVE FINISHED FLOOR.
- 20A, 125V, 3W DUPLEX RECEPTACLE IN FLUSH OUTLET BOX, 48" ABOVE FINISHED FLOOR OR 6" ABOVE FINISHED COUNTER AS REQUIRED (AFC)
- 20A, 125V, 3W DUPLEX RECEPTACLE IN FLUSH, FLOOR MOUNTED OUTLET BOX.
- 20A, 125V, 3W DUPLEX RECEPTACLE, SURFACE MOUNTED.
- SURFACE MOUNTED GROUND FAULT DUPLEX WEATHERPROOF RECEPTACLE 20A, 125V, 3W – MOUNTED 48" ABOVE FINISHED GRADE, UNLESS OTHERWISE NOTED.
- 20A, 125, 3W DOUBLE DUPLEX RECEPTACLE IN FLUSH OUTLET BOX.
- FLUSH MOUNTED GROUND FAULT DUPLEX RECEPTACLE 20A, 125V, 3W –MOUNTED 48" ABOVE FINISHED FLOOR.
- DISCONNECT RACK MOUNTED.
- HANDS/OFF/AUTOMATIC & DISCONNECT RACK MOUNTED WITH JUNCTION BOX MOUNTED BELOW OFF/REMOTE, SEE DETAIL
- $ SINGLE POLE SWITCH IN FLUSH OUTLET BOX, 48" ABOVE FINISHED FLOOR, UNLESS OTHERWISE NOTED (TYPICAL).
- $P SINGLE POLE SWITCH, SURFACE MOUNTED.
- $3 THREE–WAY SWITCH IN FLUSH OUTLET BOX.
- $4 FOUR–WAY SWITCH IN FLUSH OUTLET BOX.
- (#) ELECTRIC A.C. MOTOR, NO. INDICATES HORSEPOWER.
- [F] FUSED DISCONNECT SWITCH(30/20: 30=SWITCH RATING, 20=FUSE RATING) 3 POLE–UNLESS NOTED OTHERWISE.
- (M) MOTORIZED VALVE AND GATE
- [T] DUCT SMOKE DETECTOR REMOTE TEST SWITCH AND INDICATING LIGHT
- VFD VARIABLE FREQUENCY DRIVE
- (T) THERMOSTAT
- ELECTRIC HEATER
- FLUSH OUTLET BOX AND TELEPHONE COVER PLATE AND SUITABLE FOR DATA DEVICE CONNECTION 48" ABOVE FINISHED FLOOR.
- FLUSH FLOOR MOUNTED OUTLET BOX AND TELEPHONE COVER PLATE.
- C CONTROL PULLBOX
- P POWER MANHOLE.

PRELIMINARY
NOT FOR CONSTRUCTION

PLAN SYMBOLS (CONTINUED)

- SM MOTOR DUTY, SINGLE PHASE DISCONNECT, NEMA 1
- (FS) FLOW SWITCH
- (FE) FLOW ELEMENT
- (LE) LEVEL ELEMENT
- (ZSC) CHECK VALVE LIMIT SWITCH
- (PS) PRESSURE SWITCH
- (PSH) PRESSURE SWITCH HIGH
- (SV) SOLENOID VALVE
- (LLS) LIQUID LEVEL SWITCH
- (PSL) LOW PRESSURE SWITCH
- (AIT) ANALYZING INDICATING TRANSMITTER
- (FIT) FLOW INDICATING TRANSMITTER
- (LIT) LEVEL INDICATING TRANSMITTER
- (TS) TEMPERATURE SWITCH
- (WSH) TORQUE SWITCH
- (SH) SPACE HEATER
- (AE) ANALYTICAL ELEMENT
- (OOR) ON/OFF/REMOTE
- (HOA) HAND/OFF/AUTO
- (OCA) OPEN/CLOSE/AUTO SWITCH
- (LOS) LOCKOUT SWITCH
- (PDS) PRESSURE DIFFERENTIAL SWITCH
- (HD) HEAT DETECTOR w/ FORM A (SPST) N.O. CONTACTS FOR CONNECTION TO ALARM OUTPUT CIRCUITRY
- (DD) DUCT DETECTOR w/ FORM A (SPST) N.O. CONTACTS FOR CONNECTION TO ALARM OUTPUT CIRCUITRY
- (SD) SMOKE DETECTOR w/ FORM A (SPST) N.O. CONTACTS FOR CONNECTION TO ALARM OUTPUT CIRCUITRY
- (ES) EMERGENCY STOP
- (S/S) START/STOP

SINGLE LINE DIAGRAM SYMBOLS

- COMBINATION MOTOR STARTER, NO. INDICATES STARTER SIZE
- (V) VOLTMETER
- (A) AMMETER
- [ST] SHUNT TRIP
- [PM] PHASE MONITOR
- (GFI) GROUND FAULT INTERRUPTER
- FUSE
- CAPACITOR
- DRAW–OUT CIRCUIT BREAKER
- MOLDED CASE CIRCUIT BREAKER.
- (#) ELECTRIC A.C. MOTOR, NO. INDICATES HORSEPOWER.
- SERVICE OR EQUIPMENT GROUND.
- NON–FUSIBLE DISCONNECT SWITCH, 30A,3P UNLESS OTHERWISE INDICATED.
- NON–FUSIBLE DISCONNECT SWITCH, 30A,3P UNLESS OTHERWISE INDICATED, WITH REMOTE CONTROL STATION AS REQUIRED BY ELEMENTARY DIAGRAMS OR SPECS.
- LIGHTING PANELBOARD
- POWER PANELBOARD
- TRANSFORMER

ABBREVIATIONS

A	AMPERES
ACCU	AIR COOLED CONDENSING UNIT
AFF	ABOVE FINISHED FLOOR
AHU	AIR HANDLING UNIT
AIC	AMPS INTERRUPTING CURRENT
BKR	BREAKER
BLDG	BUILDING
BNR	BIOLOGICAL NUTRIENT REMOVAL
BPCP	BELT FILTER PRESS CONTROL PANEL
BSCP	BAR SCREEN CONTROL PANEL
CCC	CHLORINE CONTACT CHAMBER
CCP	CLARIFIER CONTROL PANEL
CKT	CIRCUIT
CPT	CONTROL POWER TRANSFORMER
CT	CURRENT TRANSFORMER
DH	DATA HIGHWAY
DISC	DISCONNECT
DO	DISSOLVED OXYGEN
EFF	EFFLUENT
EM	EMERGENCY
ENCL	ENCLOSURE
ESB	ENERGY SAVING BALLAST
ETM	ELAPSED TIME METER
EUH	ELECTRIC UNIT HEATER
EXH	EXHAUST
EXIST	EXISTING
FACP	FIRE ALARM CONTROL PANEL
FO	FIBER OPTIC
FOTC	FIBER OPTIC TERMINATION PANEL
FPP	FIBER PATCH PANEL
FVR	FULL VOLTAGE REVERSING
FVNR	FULL VOLTAGE NON–REVERSING
GCP	GRIT CONTROL PANEL
GFR	GROUND FAULT RECEPTACLE
GFI	GROUND FAULT INTERRUPTER
GND	GROUND
GRS	GALVANIZED RIGID STEEL
HOA	HAND–OFF–AUTOMATIC
HOR	HAND–OFF–REMOTE
HCP	HEADWORKS CONTROL PANEL
HP	HORSEPOWER
HPU	HYDRAULIC POWER UNIT
HWY	HIGHWAY
IR	INTERNAL RECYCLE
KVA	KILO VOLT–AMPERES
KW	KILOWATT
LA	LIGHTNING ARRESTOR
LBCP	LOCAL BLOWER CONTROL PANEL
LF	LINEAR FEET
LTG	LIGHTING
MAX	MAXIMUM
MCB	MAIN CIRCUIT BREAKER
MCC	MOTOR CONTROL CENTER
MFR	MANUFACTURER
MIN	MINIMUM
MLO	MAIN LUGS ONLY
MOV	MOTORIZED VALVE
MSC	MANUFACTURER SUPPLIED CABLE
MTD	MOUNTED
MTS	MANUAL TRANSFER SWITCH
NEC	NATIONAL ELECTRICAL CODE
N	NEUTRAL
NC	NORMALLY CLOSED
NO	NORMALLY OPEN
NTS	NOT TO SCALE
OH	OVERHEAD
OOR	ON/OFF REMOTE
P	POLE
PCP	PROCESS CONTROL PANEL
PEC	POWER EQUIPMENT CENTER
PLC	PROGRAMMABLE LOGIC CONTROLLER
PM	PHASE MONITOR
PNL	PANEL
PVC	POLYVINYL CHLORIDE
RIO	REMOTE I/O PANEL
RVSS	REDUCED VOLTAGE SOLID STATE STARTER
SH	SHIELDED
SPD	SURGE PROTECTIVE DEVICE
SS	STAINLESS STEEL
SSS	SOLID STATE STARTER
STR	STARTER
SWGR	SWITCHGEAR
TBR	TO BE REMOVED
TC	TERMINATION CABINET
TYP	TYPICAL
V	VOLT
VFD	VARIABLE FREQUENCY DRIVE
W	WATT
w/	WITH
WP	WEATHERPROOF
XFMR	TRANSFORMER
#	PHASE

EQUIPMENT NOTES

1. ELECTRICAL CONTRACTOR SHALL SUPPLY AND INSTALL ALL NEW ELECTRICAL EQUIPMENT INDICATED.
2. IT IS NOT THE INTENT OF THESE PLANS TO SHOW EVERY MINOR DETAIL OF CONSTRUCTION. THE CONTRACTOR IS EXPECTED TO FURNISH AND INSTALL ALL ITEMS FOR A COMPLETE ELECTRICAL SYSTEM AND PROVIDE ALL REQUIREMENTS NECESSARY FOR THE EQUIPMENT TO BE PLACED IN PROPER WORKING ORDER.
3. ALL MATERIALS SHALL BE NEW AND BEAR UNDERWRITERS' LABELS WHERE APPLICABLE.
4. ALL WORK SHALL BE PERFORMED BY A LICENSED ELECTRICAL CONTRACTOR IN A FIRST CLASS WORKMANLIKE MANNER. THE COMPLETED SYSTEM SHALL BE FULLY OPERATIVE AND ACCEPTED BY ENGINEER/OWNER.
5. CONTRACTOR SHALL GUARANTEE ALL MATERIALS AND WORKMANSHIP FREE FROM DEFECTS FOR A PERIOD OF NOT LESS THAN THREE YEARS FROM DATE OF ACCEPTANCE.
6. CORRECTION OF ANY DEFECTS SHALL BE COMPLETED WITHOUT ADDITIONAL CHARGE AND SHALL INCLUDE REPLACEMENT OR REPAIR OF ANY OTHER PHASE OF THE INSTALLATION WHICH MAY HAVE BEEN DAMAGED.
7. CONTRACTOR SHALL BE RESPONSIBLE FOR ALL CUTTING AND PATCHING REQUIRED OF THEIR WORK.
8. ALL ELECTRICAL WIRING SHALL BE THE RESPONSIBILITY OF THE ELECTRICAL CONTRACTOR.
9. REFER TO THE MECHANICAL DRAWINGS & THE APPROVED MANUFACTURER'S SHOP DRAWINGS FOR THE EXACT LOCATION OF ALL EQUIPMENT.
10. THE PLANS REFLECT SYSTEM VOLTAGE DROPS AS PER THE NATIONAL ELECTRICAL CODE SIZED FOR A MAXIMUM VOLTAGE DROP OF 2 PERCENT AT DESIGN LOAD. BRANCH CIRCUIT CONDUCTORS ARE SIZED FOR A MAXIMUM VOLTAGE DROP OF 3 PERCENT AT DESIGN LOAD.
11. SEE SPECIAL CONSTRUCTION PROVISIONS (SECTION G) FOR SEQUENCE WORK AND SHUTDOWN SCHEDULE.

R.C.W.D. RECORD DWG NO.

REVISIONS			
NO.	DATE	INITIALS	DESCRIPTION

SCALE	AS SHOWN
FIELD BOOK	N/A

	INITIALS	DATE
DESIGNED	SD	2/10/2024
DRAWN	SD	2/22/2024
CHECKED	AR	2/28/2024

REGISTERED PROFESSIONAL ENGINEER — AGATA ANNA RISTOW — No. 23478 — Exp. 06/30/25 — ELECTRICAL — STATE OF CALIFORNIA

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RANCHO CALIFORNIA WATER DISTRICT
APPROVED FOR CONSTRUCTION:
Engineering Date

CARANCHO PUMP STATION EXPANSION & IMPROVEMENT (PROJECT NO. D2048)

ELECTRICAL NOTES AND ABBREVIATIONS

SHEET
E-1
OF X SHEETS

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GENERAL NOTES:

1. ENTIRE INSTALLATION SHALL BE IN ACCORDANCE WITH THE FOLLOWING CODES AND STANDARDS:

1.1. NFPA 70, NATIONAL ELECTRICAL CODE.

1.2. NFPA 101 LIFE SAFETY CODE.

2. ALL ELECTRICAL CIRCUITS SHALL INCLUDE A GREEN GROUNDING CONDUCTOR SIZED PER NEC.

3. CONDUIT AND DEVICE LOCATIONS ARE SHOWN DIAGRAMMATICALLY ONLY, CONTRACTOR SHALL FIELD LOCATE OR ROUTE AS REQUIRED.

4. ALL CONDUIT SHALL BE INSTALLED PARALLEL AND PERPENDICULAR TO BUILDING STRUCTURE.

5. ALL PANEL SCHEDULES SHALL BE RETYPED AND LAMINATED TO REFLECT UP TO DATE CONDITIONS. TRACE EXISTING CIRCUITS. ALL PANEL LEGENDS SHALL INDICATE THE PANELS. SOURCE PANEL AND ITS LOCATION.

6. ELECTRICAL EQUIPMENT AND DEVICES SHALL BE PROVIDED WITH PHENOLIC NAMEPLATES. ALL NAMEPLATES SHALL BE MECHANICALLY FASTENED WITH S.S. SCREWS OR RIVETS. THE USE OF ADHESIVE NAMEPLATES SHALL NOT BE ALLOWED.

7. CONTRACTOR SHALL MAINTAIN A SET OF PRINTS AND MARK-UP DURING CONSTRUCTION TO REFLECT "AS-BUILT" CONDITIONS. PRINTS SHALL BE DELIVERED TO THE ENGINEER UPON COMPLETION OF THE PROJECT AS A COMPLETE SET OF RECORD DRAWINGS. IN ADDITION, THE CONTRACTOR SHALL PROVIDE ELECTRONIC COPIES OF ALL UPDATED "AS-BUILT" DRAWINGS IN AUTOCAD .DWG FORMAT.

8. THE CONTRACTOR SHALL PROVIDE PULL BOXES IN POWER CIRCUIT CONDUIT AS REQUIRED, SO AS TO LIMIT THE NUMBER OF BENDS TO A MAXIMUM OF 270 DEGREES OR THREE 90 DEGREE TURNS.

9. PROVIDE CONDUIT EXPANSION FITTINGS AS CONDUIT CROSSES BUILDING EXPANSION JOINTS.

10. ALL SUPPORTING AND FASTENING DEVICES SHALL BE 316 STAINLESS STEEL.

11. CONTRACTOR MAY COMBINE HOMERUNS TO 120V PANELBOARD CIRCUIT PER NEC. COMBINING MORE THAN THREE 120V CIRCUIT WILL NOT BE ALLOWED WITHOUT SUBMITTING NEC DERATING CALCULATIONS.

12. ALL RECEPTACLE BRANCH CIRCUITS OVER 75' IN LENGTH SHALL USE #10 AWG CONDUCTOR (FOR VOLTAGE DROP).

13. CONTRACTOR SHALL PROVIDE 2 SPARE FUSES FOR EACH FUSE INSTALLED INCLUDING ALL EQUIPMENT AND CONTROLS.

14. CONTROL AND POWER CONDUITS SHALL BE SEPARATED BY 12" MIN. AND SHALL BE IN SEPARATE JUNCTION BOXES AND DUCT BANKS. MAINTAIN 12" SEPARATION BETWEEN DUCT BANKS.

15. INSTALLATION OF THE NEW FACILITIES WILL REQUIRE FILED COORDINATION WITH PLANT OPERATIONS TO PERMIT MAINTENANCE OF OPERATION DURING CONSTRUCTION. DURATION OF POWER OUTAGES SHALL BE MINIMUM REQUIRED FOR SAFE INSTALLATION AND SHALL BE SCHEDULED WITH AND APPROVED BY THE OWNER.

16. THE CONTRACTOR SHALL TAKE PRECAUTIONS TO AVOID EXISTING UNDERGROUND UTILITIES INCLUDING PROCESS PIPING, WATER LINES, CHEMICAL FEED PIPING, ELECTRICAL CONDUITS. HAND EXCAVATION SHALL BE REQUIRED IN CONGESTED AREAS WHERE THE EXACT LOCATION OF ALL UTILITIES IS UNKNOWN. LOCATIONS SHOWN FOR THE EXISTING UNDERGROUND UTILITIES ARE APPROXIMATE ONLY. NOT ALL OF THE EXISTING UNDERGROUND UTILITIES ARE SHOWN. FIELD ADJUST LOCATIONS OF THE NEW FACILITIES TO ACCOMMODATE THE EXISTING SITE CONDITIONS AND UNDERGROUND UTILITIES.

17. CONTRACTOR SHALL COORDINATE WITH THE OWNER TO DETERMINE IF A LIGHTNING PROTECTION SYSTEM IS REQUIRED. IF IT IS DETERMINED THAT A LIGHTNING PROTECTION SYSTEM IS WITHIN THE SCOPE OF THIS PROJECT, PROVIDE A UL 96A MASTER LABEL LIGHTNING PROTECTION SYSTEM INCLUDING GROUND RODS AT EACH LIGHTNING PROTECTION SYSTEM DOWN CONDUCTOR. INTERCONNECT EACH SYSTEMS GROUND RODS WITH A CONTINUOUS #4/0 COPPER TINNED COUNTERPOISE LOOP.

18. CONTRACTOR SHALL PROVIDE A GROUNDING SYSTEM AS REQUIRED BY THE NEC AND IEEE GREEN BOOK. THE INSTALLED GROUNDING SYSTEM SHALL HAVE A RESISTANCE OF LESS THAN 5 OHMS TO GROUND. PROVIDE A CONTINUOUS #4/0 TINNED COPPER GROUNDING SYSTEM.

19. IF ITEM IS PROPOSED FROM OTHER THAN FIRST NAMED MANUFACTURER AND WILL REQUIRE ADDITIONAL ENGINEERING TO INCORPORATE INTO DRAWINGS, I.E., ADDITIONAL I/O, DIFFERENT OR ADDITIONAL BREAKERS, LARGER CONDUCTOR SIZE OR ADDITIONAL CONDUCTORS, LARGER OR ADDITIONAL CONDUIT(S), CONTRACTOR SHALL BE REQUIRED TO PAY FOR ALL ADDITIONAL ENGINEERING CHARGES AND ADDITIONAL EQUIPMENT, MATERIAL COST, ETC.

20. NAMEPLATES ON ELECTRICAL EQUIPMENT SHALL HAVE P&ID TAG NUMBER AS WELL AS DESCRIPTION OF LOAD BEING SERVED AND EQUIPMENT TAG NUMBER AS A MINIMUM. EQUIPMENT BEING SERVED SHALL HAVE IDENTICAL TAG AS ELECTRICAL GEAR AND BREAKER NOTATION WHICH IS SERVING EQUIPMENT.

21. REFER TO HVAC DRAWINGS FOR THE LOCATIONS OF 120 VOLT UNIT HEATER THERMOSTATS AND PROVIDE 3/4-IN C, 2#12 AND 1#12 GND BETWEEN EACH HEATER AND ITS RESPECTIVE CONTROL THERMOSTAT. INTERCONNECTION WIRING BETWEEN HVAC COMPONENTS SHALL BE BY THE HVAC CONTRACTOR.

22. ENCLOSURE AND CONTROL PANELS SHALL BE THE FOLLOWING:

22.1. INDOOR AIR CONDITIONED NON-PROCESS AREAS SHALL BE NEMA 12 WITH NO VENTILATION TO THE OUTSIDE. MAY BE NEMA 1 IN A CLEAN ROOM WITH CARBON FILTERS.

22.2. INDOOR PROCESS AREAS SHALL BE NEMA 4X, 316 STAINLESS STEEL.

22.3. OUTDOOR ENCLOSURE SHALL BE GALVANIZED STEEL.

22.4. ALL CONTROL PANELS SHALL BE UL-508A AND COMPLY WITH ARTICLE 409 OF THE NEC. ALL CONTROL PANELS IN DESIGNATED HAZARDOUS LOCATIONS OR CONTAINING WIRING WHICH IS HAZARDOUS LOCATIONS SHALL BE UL-698A.

22.5. CONNECTIONS TO SCREW TYPE TERMINALS ONLY ALLOWED COMPRESSION TYPE TERMINAL ARE NOT AVAILABLE.

22.6. ALL CONTROL CABINET WIRING TO THE PLC AND CONTROL DEVICES SHALL BE 16 AWG FOR ANALOG AND 16 AWG FOR DIGITAL AND TERMINATED WITH FERRULES.

22.7. ALL CONTROL PANEL SUBMITTALS SHALL CONTAIN SLOTTED HINGED DUCT CALCULATIONS FOR CONDUCTOR FILL. ALL CONTROL PANEL SUBMITTALS SUBMITTED WITHOUT WIRE FILL CALCULATIONS SHALL BE RETURNED INCOMPLETE WITHOUT EVALUATIONS. NO DUCT SHALL CONTAIN MORE THAN 40% FILL BASED ON NEC WIRE FILL STANDARDS. CALCULATIONS SHALL INCLUDE ALL FILED CONDUCTORS DESIGNED TO ENTER THE PANEL IN FIELD TERMINATIONS PORTION OF THE THE PANEL. ALL CONTROL PANELS SHALL CONTAIN DESIGNATED DUCTS FOR INTERNAL WIRING AND A SEPARATE DUCT(S) FOR FIELD WIRING.

22.8. ALL KEY INTERLOCKED SET (KIRK KEY) IF PART OF THE DESIGN, MUST BE INSCRIBED TO INDICATE SET LOCATIONS AND KEYED DIFFERENTLY TO PREVENT UNAUTHORIZED BREAKER COMBINATIONS. SPARE BREAKER INTERLOCKED KEYS MUST BE TIGHTLY CONTROLLED TO PREVENT UNAUTHORIZED BREAKER COMBINATIONS.

22.9. PANEL DRAWINGS SHALL BE LAMINATED, ATTACHED TO THE DOOR AND IN COLOR. DRAWING SHALL BE PRINTED ON 8.5 X 11 IF 11 X17 IS TOO LARGE TO FIT ON THE DOOR. FULL SET OF ELECTRICAL DRAWINGS PRINTED WITH A LASER PRINTER AND IN COLOR SHALL BE INSERTED IN THE DOOR POCKET. INK JET IS NOT ACCEPTED.

22.10. ALL CONTROL PANEL WITH A PLC/HMI/VFD SHALL BE EQUIPPED WITH A PANEL TEMPERATURE SENSOR. TEMPERATURE SENSOR SHALL BE CONNECTED TO SCADA WHERE APPLICABLE.

22.11. ALL EXPOSED CONDUITS LOCATED OUTDOORS SHALL BE GALVANIZED. ALL CONDUITS LOCATED INDOORS IN AIR CONDITIONED NON PROCESS AREA SHALL EMT. ALL UNDERGROUND CONDUITS SHALL BE PVC SCHEDULE 80. BENDS AND CONDUIT STUB UPS SHALL BE PVC COATED GALVANIZED STEEL.

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R.C.W.D. RECORD DWG NO.

REVISIONS			
NO.	DATE	INITIALS	DESCRIPTION

SCALE	AS SHOWN	
FIELD BOOK	N/A	
	INITIALS	DATE
DESIGNED	SD	2/10/2024
DRAWN	SD	2/22/2024
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ELECTRICAL PROFESSIONAL ENGINEER — SANTA ANNA, CALIFORNIA — No. 23478 — Exp. 06/30/25 — STATE OF CALIFORNIA

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REGISTERED ENGINEER No. 23478 DATE 02/29/24

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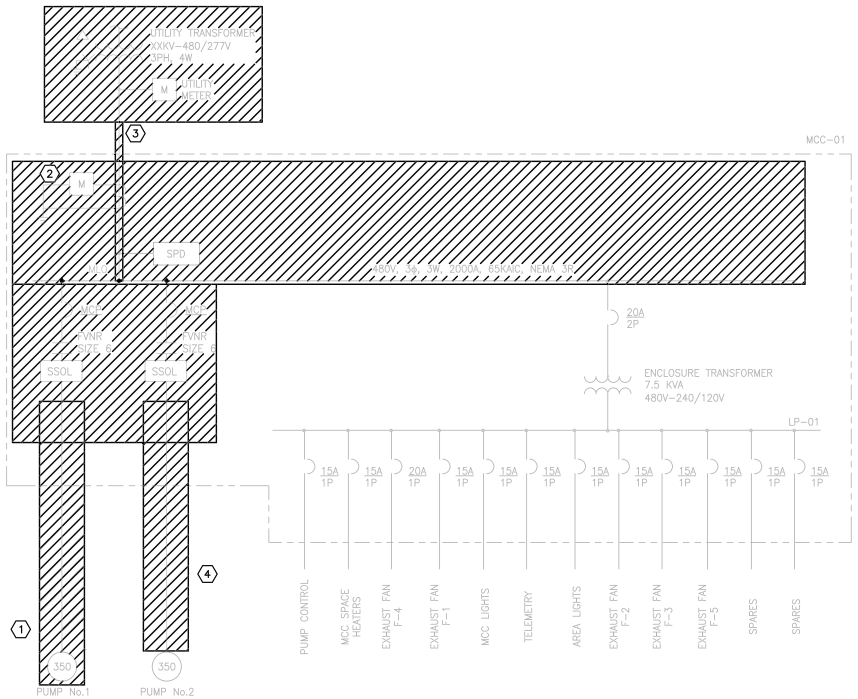
RANCHO CALIFORNIA WATER DISTRICT
APPROVED FOR CONSTRUCTION:
Engineering Date

CARANCHO PUMP STATION EXPANSION & IMPROVEMENT
(PROJECT NO. D2048)

ELECTRICAL GENERAL NOTES

SHEET
E-2
OF X SHEETS

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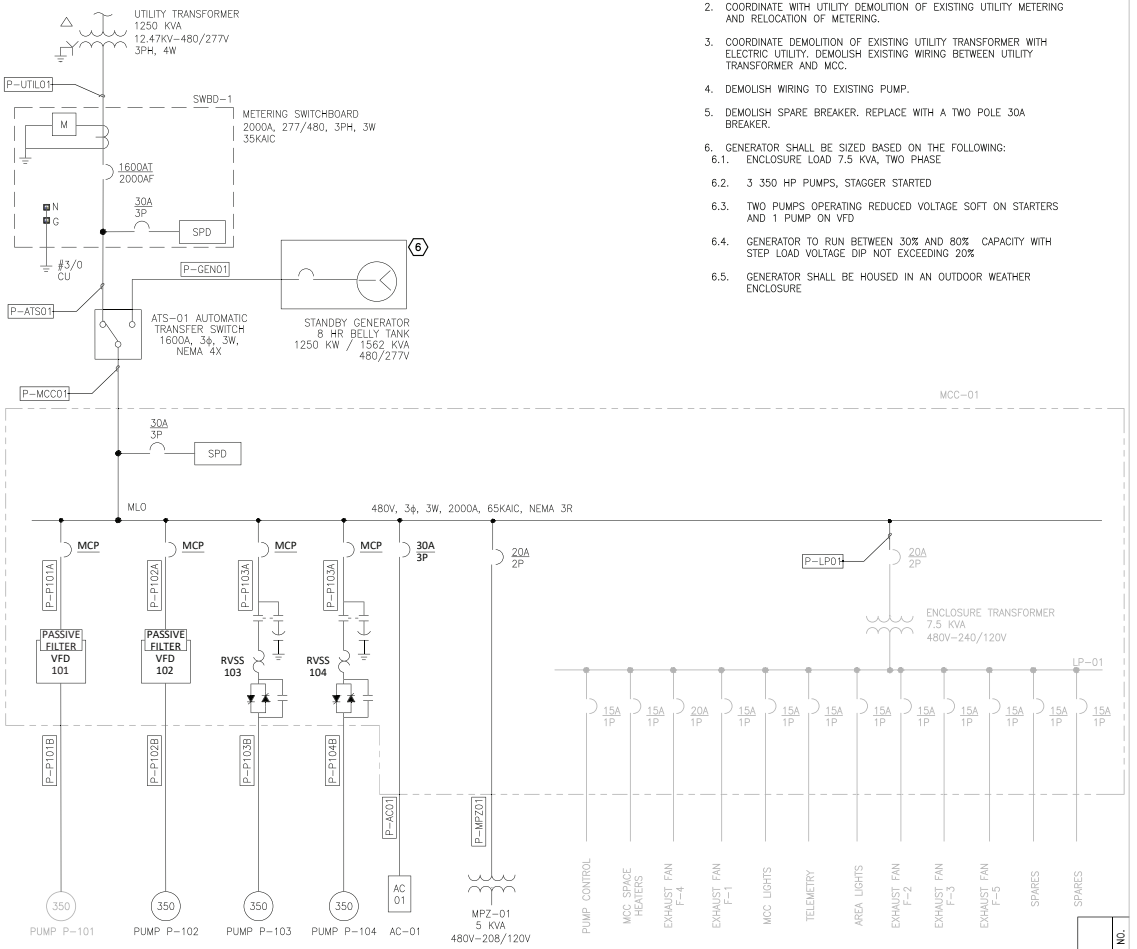
DEMOLITION SINGLE LINE DIAGRAM
SCALE: N.T.S.

SHEET NOTES :

1. REFER TO SHEETS E–6 FOR ELECTRICAL SCHEDULES AND WIRING DIAGRAM.

NOTES BY SYMBOL : ⬡

1. DEMOLISH EXISTING PUMP. DEMOLISH EXISTING WIRING AND CONDUIT TO PUMP. DEMOLISH EXISTING WIRING BETWEEN POWER PANEL AND PUMP.
2. COORDINATE WITH UTILITY DEMOLITION OF EXISTING UTILITY METERING AND RELOCATION OF METERING.
3. COORDINATE DEMOLITION OF EXISTING UTILITY TRANSFORMER WITH ELECTRIC UTILITY. DEMOLISH EXISTING WIRING BETWEEN UTILITY TRANSFORMER AND MCC.
4. DEMOLISH WIRING TO EXISTING PUMP.
5. DEMOLISH SPARE BREAKER. REPLACE WITH A TWO POLE 30A BREAKER.
6. GENERATOR SHALL BE SIZED BASED ON THE FOLLOWING:
   - 6.1. ENCLOSURE LOAD 7.5 KVA, TWO PHASE
   - 6.2. 3 350 HP PUMPS, STAGGER STARTED
   - 6.3. TWO PUMPS OPERATING REDUCED VOLTAGE SOFT ON STARTERS AND 1 PUMP ON VFD
   - 6.4. GENERATOR TO RUN BETWEEN 30% AND 80% CAPACITY WITH STEP LOAD VOLTAGE DIP NOT EXCEEDING 20%
   - 6.5. GENERATOR SHALL BE HOUSED IN AN OUTDOOR WEATHER ENCLOSURE



PROPOSED SINGLE LINE DIAGRAM
SCALE: N.T.S.

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R.C.W.D. RECORD DWG NO.

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SCALE	AS SHOWN	
FIELD BOOK	N/A	
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RANCHO CALIFORNIA WATER DISTRICT
APPROVED FOR CONSTRUCTION:
Engineering Date

CARANCHO PUMP STATION EXPANSION & IMPROVEMENT
(PROJECT NO. D2048)

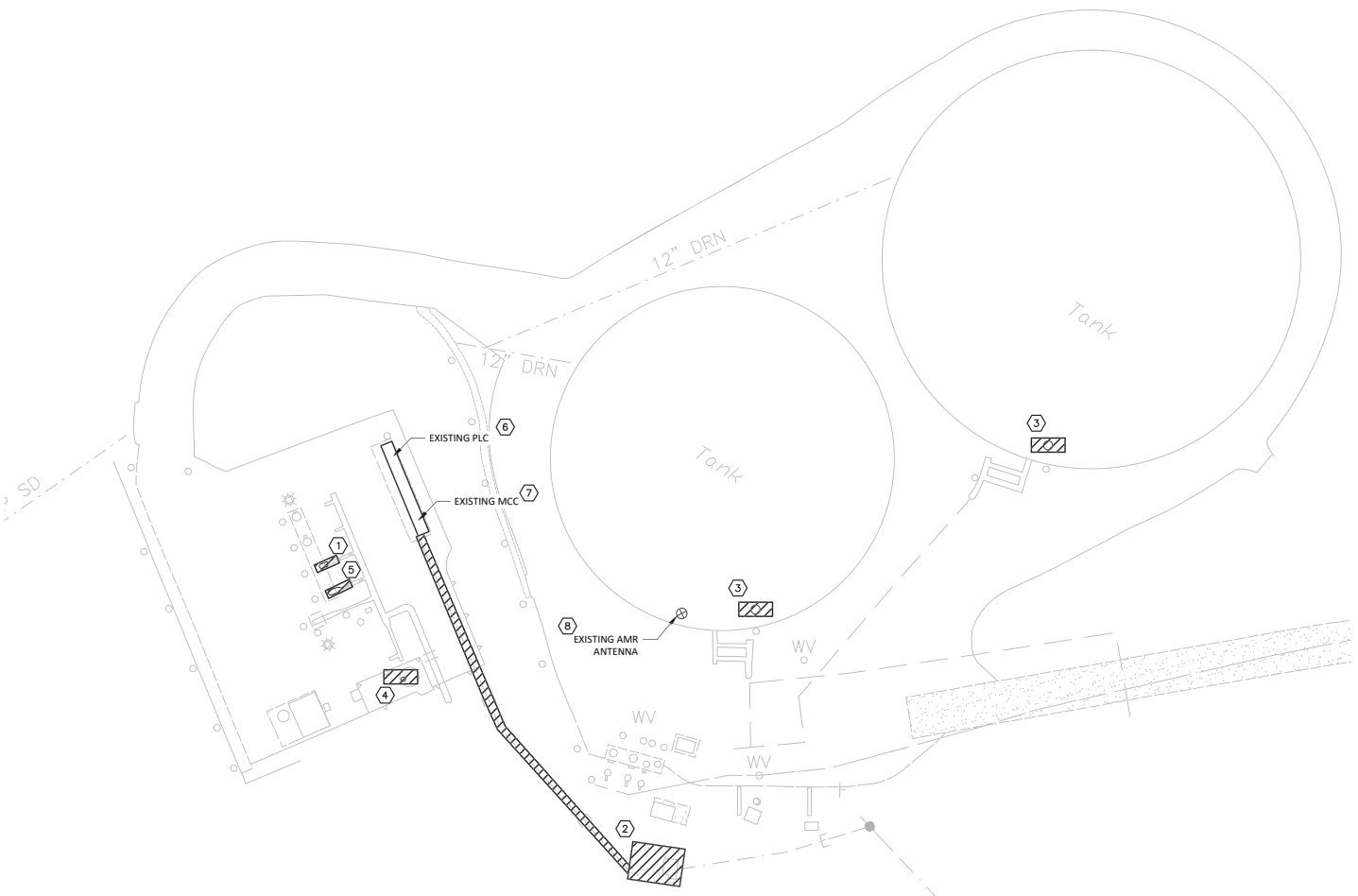
ELECTRICAL SINGLE-LINE DIAGRAMS

SHEET
E-3
OF X SHEETS

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NOTES BY SYMBOL : ⬡

1. DEMOLISH EXISTING PUMP. DEMOLISH EXISTING WIRING AND CONDUIT TO PUMP. DEMOLISH EXISTING WIRING BETWEEN MCC AND PUMP.
2. COORDINATE DEMOLITION OF EXISTING UTILITY TRANSFORMER WITH ELECTRIC UTILITY. DEMOLISH WIRING AND CONDUIT FROM TRANSFORMER TO EXISTING MCC
3. DEMOLISH EXISTING TANK INSTRUMENTATION. DEMOLISH EXISTING WIRING AND CONDUIT TO EXISTING PLC. ABANDON UNDERGROUND CONDUITS AND CAP STUB UPS 6" UNDER FINISHED FLOOR. DEMOLISH EXISTING WIRING BETWEEN PD-01 AND TANK INSTRUMENTATION.
4. DEMOLISH EXISTING SURGE TANK LOW LEVEL SWITCH. REUSE EXISTING WIRING AND CONDUIT TO EXISTING PLC.
5. PUMP MOTOR TO REMAIN. DEMOLISH EXISTING WIRING TO PUMP. REUSE CONDUITS AS NEEDED.
6. EXISTING PLC PANEL TO REMAIN. REFER TO I&C SHEETS FOR MODIFICATIONS.
7. DEMOLISH EXISTING STARTERS AND UTILITY METERING.
8. RELOCATE AMR ANTENNA TO THE LOCATION SHOWN ON PAGE E-5. DEMOLISH WIRING AND CONDUIT TO ANTENNA. CAP AND ABANDON STUB UPS.



ELECTRICAL DEMOLITION PLAN

0 4' 8' 16' 32' 48'
1/16"=1'-0"

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R.C.W.D. RECORD DWG NO.

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NO.	DATE	INITIALS	DESCRIPTION

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ELECTRICALLY PROFESSIONAL ENGINEER — No. 23478 Exp. 06/30/25 — STATE OF CALIFORNIA

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RANCHO CALIFORNIA WATER DISTRICT
APPROVED FOR CONSTRUCTION:

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CARANCHO PUMP STATION EXPANSION & IMPROVEMENT (PROJECT NO. D2048)

ELECTRICAL SITE DEMOLITION PLAN

SHEET
E-4
OF X SHEETS

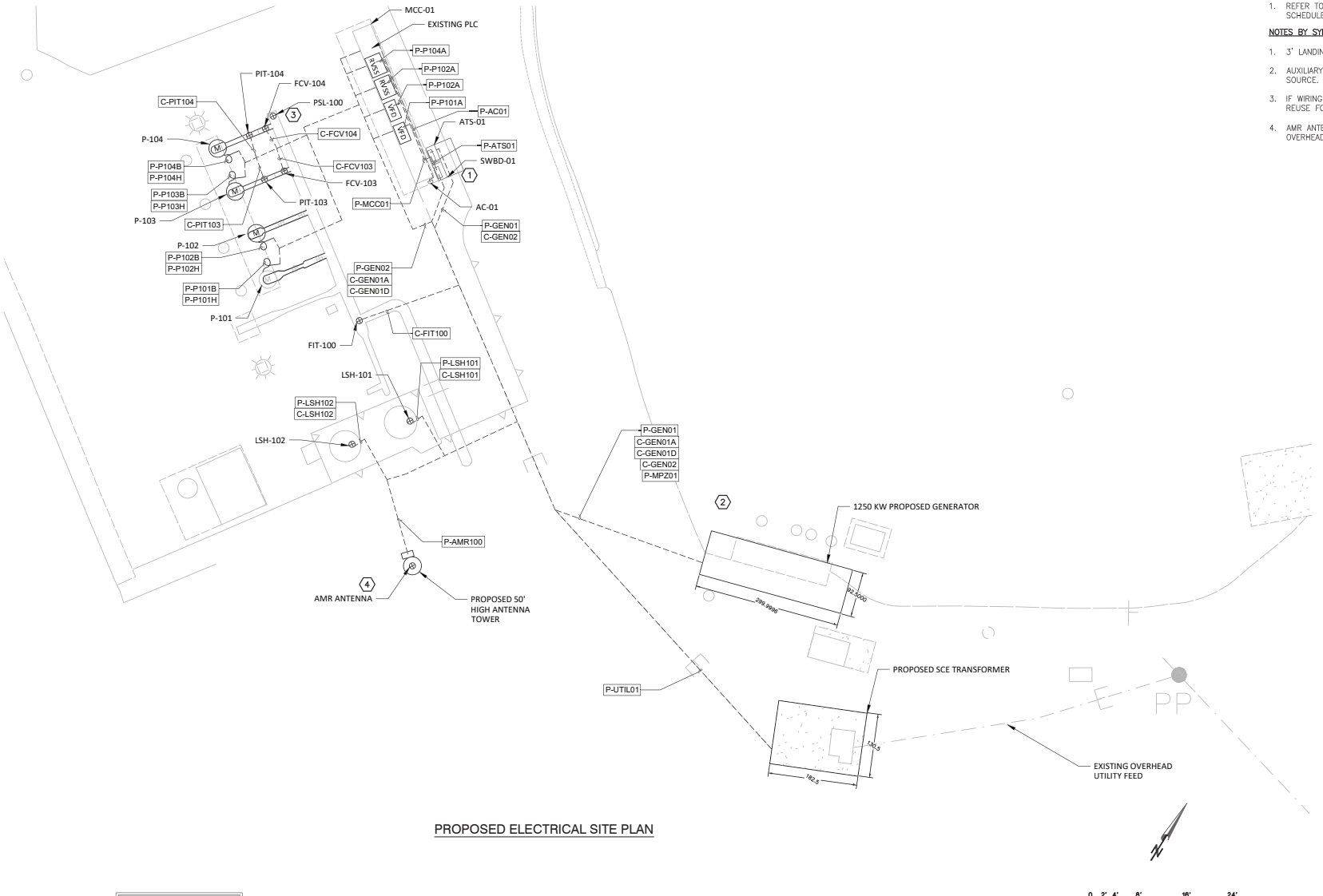
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SHEET NOTES :

1. REFER TO SHEETS E-6 FOR ELECTRICAL SCHEDULES AND WIRING DIAGRAM.

NOTES BY SYMBOL : ⬡

1. 3' LANDING PAD SHALL BE PROVIDED IN FRONT OF PROPOSED ATS.
2. AUXILIARY CIRCUITS TO BE PROVIDED FROM A GFCI PROTECTED SOURCE.
3. IF WIRING AND CONDUIT FOUND TO BE IN ACCEPTABLE CONDITIONS REUSE FOR PSL-100.
4. AMR ANTENNA SHALL HAVE A MINIMUM OF 30' OF DISTANCE FROM OVERHEAD UTILITY FEED.



PROPOSED ELECTRICAL SITE PLAN

0 2' 4' 8' 16' 24'
1/8"=1'-0"

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R.C.W.D. RECORD DWG NO.

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FIELD BOOK	N/A	
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REGISTERED PROFESSIONAL ENGINEER — AGATA ANNA RISTOW — No. 23478 — Exp. 06/30/25 — STATE OF CALIFORNIA — ELECTRICAL

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RANCHO CALIFORNIA WATER DISTRICT
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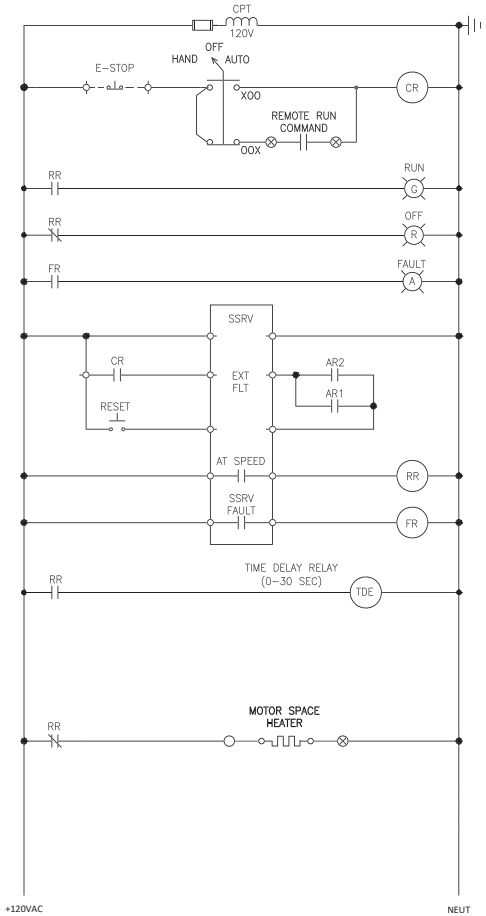
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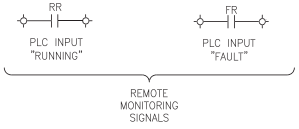
CARANCHO PUMP STATION EXPANSION & IMPROVEMENT (PROJECT NO. D2048)

ELECTRICAL SITE PLAN

SHEET
E-5
OF X SHEETS

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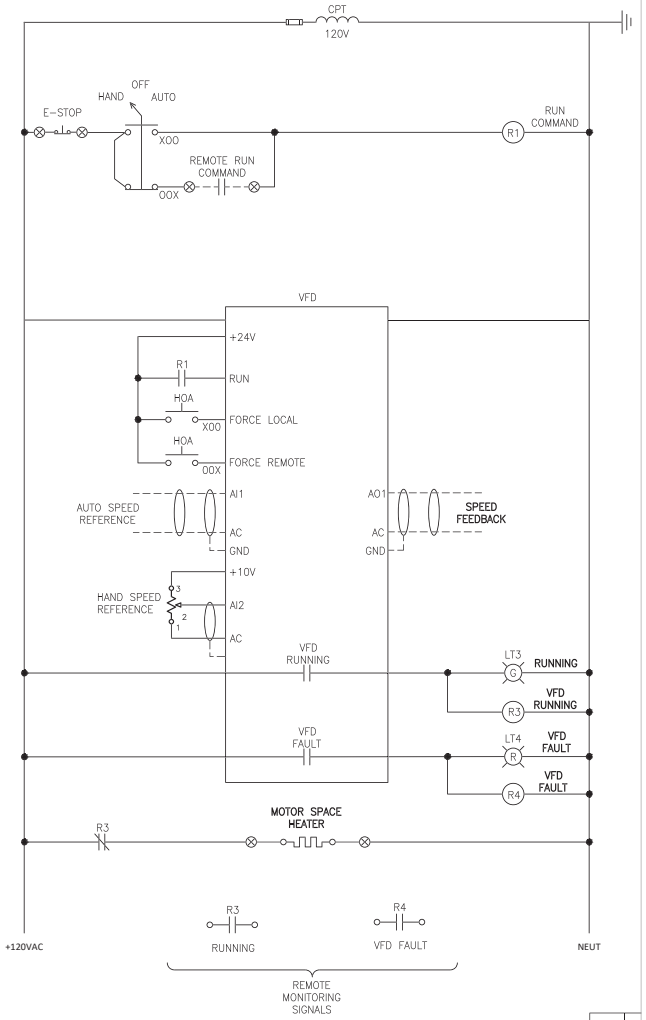




PUMP STARTER CONTROL DIAGRAM
TYP.

IDENTIFIER	MAX CKT VOLTAGE	CONDUIT SIZE (INCHES)	CONDUCTORS	FROM	TO
P-UTIL01	480	3	5 sets of 3 400kcmil, 1 #250kcmil G	UTILITY TRANSFORMER	SWBD-01
P-GEN01	480	3	5 sets of 3 400kcmil, 1 #250kcmil G	STANDBY GENERATOR	ATS-01 (EMERGENCY)
P-GEN02	120	1	4#12, 2#12G	MPZ-01	STANDBY GENERATOR ANCILLARY CIRCUITS
P-ATS01	480	3	5 sets of 3 400kcmil, 1 #250kcmil G	SWBD-01	ATS-01 (NORMAL)
P-MCC01	480	3	5 sets of 3 400kcmil, 1 #250kcmil G	ATS-01	MCC-01
P-P101A	480	3	2 sets of 3 350kcmil, 1 #2G	MCC-01	VFD-101
P-P102A	480	3	2 sets of 3 350kcmil, 1 #2G	MCC-01	VFD-102
P-P103A	480	3	2 sets of 3 350kcmil, 1 #2G	MCC-01	RVSS-103
P-P104A	480	3	2 sets of 3 350kcmil, 1 #2G	MCC-01	RVSS-104
P-P101B	480	3	2 sets of 3 350kcmil, 1 #2G	VFD-101	P-101
P-P102B	480	3	2 sets of 3 350kcmil, 1 #2G	VFD-102	P-102
P-P103B	480	3	2 sets of 3 350kcmil, 1 #2G	RVSS-103	P-103
P-P104B	480	3	2 sets of 3 350kcmil, 1 #2G	RVSS-104	P-104
P-P101H	120	3/4	2#12, 1#12G	VFD-101	P-101 SPACE HEATER
P-P102H	120	3/4	2#12, 1#12G	VFD-102	P-102 SPACE HEATER
P-P103H	120	3/4	2#12, 1#12G	RVSS-103	P-103 SPACE HEATER
P-P104H	120	3/4	2#12, 1#12G	RVSS-104	P-104 SPACE HEATER
C-GEN01D	24	3/4	8#14, 1#14G	PLC-100	STANDBY GENERATOR
C-GEN01A	120	3/4	4PR #16 TSP	PLC-100	STANDBY GENERATOR
C-GEN02	24	3/4	10#14, 1#14G	ATS-01	STANDBY GENERATOR
C-PIT103	120	3/4	1PR #16 TSP	PLC-100	PIT-103
C-FCV103	24	3/4	8#14, 1#14G	PLC-100	FCV-103
C-PIT104	120	3/4	1PR #16 TSP	PLC-100	PIT-104
C-FCV104	24	3/4	8#14, 1#14G	PLC-100	FCV-104
P-LSH101	120	3/4	2#12, 1#12G	PLC-100	LSH-101
C-LSH101	24	3/4	4#14, 1#14G	PLC-100	LSH-101
P-LSH102	120	3/4	2#12, 1#12G	PLC-100	LSH-102
C-LSH102	24	3/4	4#14, 1#14G	PLC-100	LSH-102
C-FIT100	120	3/4	1PR #16 TSP	PLC-100	FIT-100
C-OSG100D	24	3/4	12#14, 1#14G	PLC-100	EXISITNG OSG SYSTEM
C-OSG100A	120	3/4	1PR #16 TSP	PLC-100	EXISITNG OSG SYSTEM
P-AC01	120	3/4	2#12, 1#12G	LP-01	AC-01
P-LP01	480	3/4	2#12, 1#12G	MCC-01	LP-01
P-MPZ01	480	1	2#10, 1#10G	MCC-01	MPZ-01
P-AMR100	120	3/4	2#12, 1#12G	LP-01	AMR-JBOX

PROPOSED CABLE SCHEDULE



PUMP VFD CONTROL DIAGRAM
TYP.

PRELIMINARY
NOT FOR CONSTRUCTION

R.C.W.D. RECORD DWG NO.

REVISIONS			
NO.	DATE	INITIALS	DESCRIPTION

SCALE	AS SHOWN	
FIELD BOOK	N/A	
	INITIALS	DATE
DESIGNED	SD	2/10/2024
DRAWN	SD	2/22/2024
CHECKED	AR	2/28/2024

ARDURRA
43410 BUSINESS PARK DRIVE
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APPROVED BY AGATA A RISTOW
REGISTERED ENGINEER No. 23478 DATE 02/29/24

Rancho Water
Rancho California Water District
42135 Winchester Road
Temecula, CA 92590
Phone: (951) 296-6900 Fax: (951) 296-6863

RANCHO CALIFORNIA WATER DISTRICT
APPROVED FOR CONSTRUCTION:

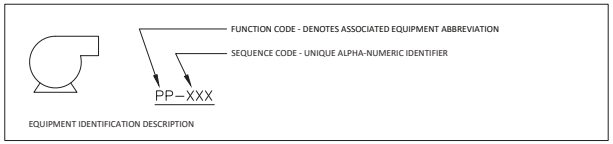
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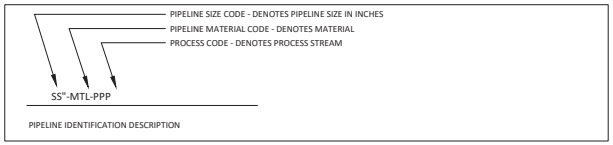
CARANCHO PUMP STATION EXPANSION & IMPROVEMENT
(PROJECT NO. D2048)

ELECTRICAL SCHEDULE

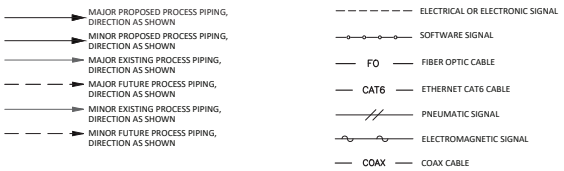
SHEET
E-6
OF X SHEETS

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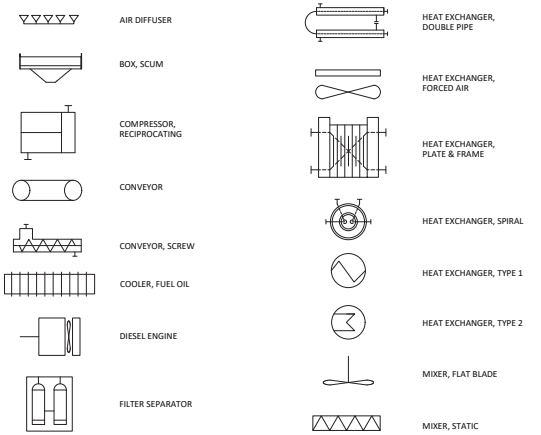




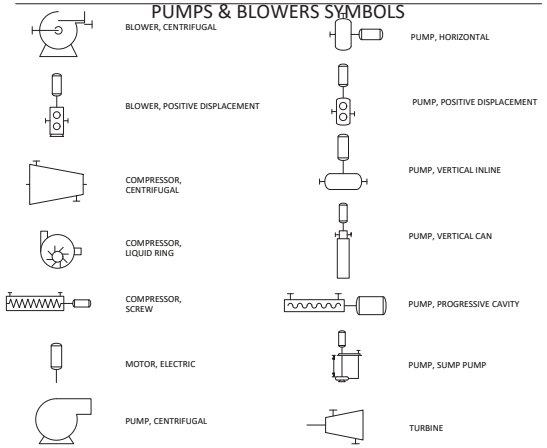
LINE SYMBOLS



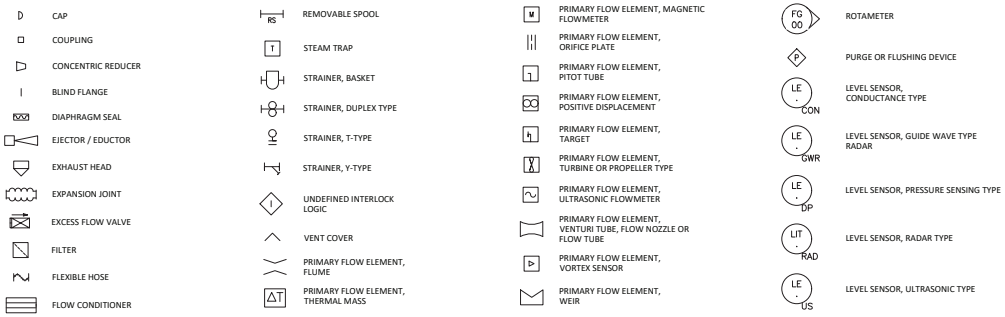
MECHANICAL EQUIPMENT SYMBOLS



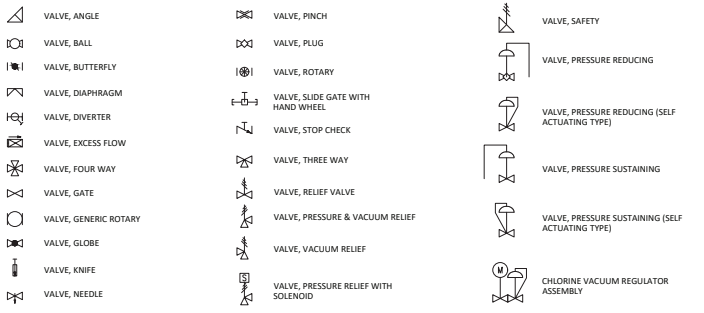
PUMPS & BLOWERS SYMBOLS



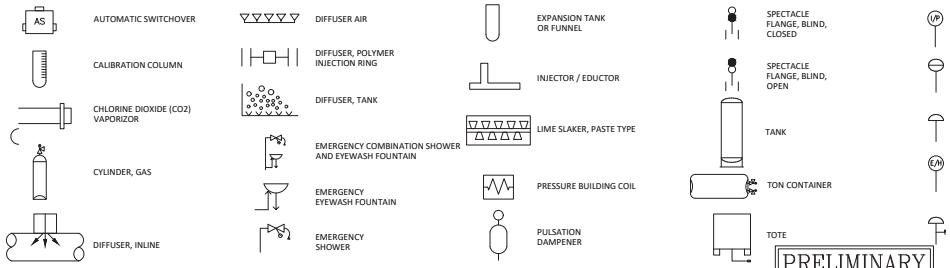
PRIMARY ELEMENTS AND FITTINGS SYMBOLS



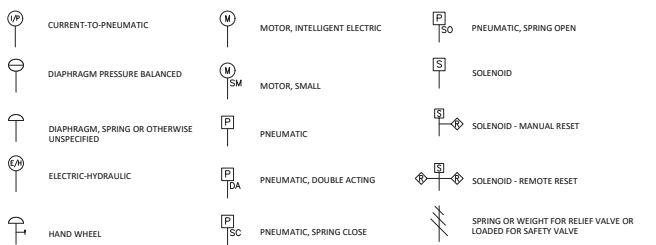
VALVES AND GATE SYMBOLS



CHEMICAL FEED EQUIPMENT SYMBOLS



VALVES AND GATE ACTUATOR SYMBOLS



PRELIMINARY
NOT FOR CONSTRUCTION

GENERAL NOTES:

1. IN GENERAL THE P&ID SYMBOLS AND DEVICE IDENTIFICATIONS ARE BASED ON INTERNATIONAL SOCIETY OF AUTOMATION STANDARD PRACTICE ANSI/ISA-5.1 (2022). SOME MODIFICATIONS, ADDITIONS AND ALTERATIONS HAVE BEEN MADE AS NEEDED TO ACCOMMODATE THE PROJECT REQUIREMENTS.
2. SOME CONTROL AND INTERLOCK REQUIREMENTS WHICH CAN BE MORE CLEARLY ILLUSTRATED ON SCHEMATICS DRAWINGS HAVE BEEN OMITTED FROM THE P&ID DRAWINGS.
3. THIS IS GENERAL LEGEND SHEET. SOME SYMBOLS AND ABBREVIATIONS MAY NOT BE UTILIZED ON THIS SPECIFIC PROJECT.

R.C.W.D. RECORD DWG NO.

REVISIONS			
NO.	DATE	INITIALS	DESCRIPTION

SCALE NTS
FIELD BOOK N/A

	INITIALS	DATE
DESIGNED	CM	3/4/2024
DRAWN	SY	3/4/2024
CHECKED	CM	3/4/2024

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APPROVED BY CHAD E MORRIS
REGISTERED ENGINEER No. 18180 DATE 03/04/24

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RANCHO CALIFORNIA WATER DISTRICT
APPROVED FOR CONSTRUCTION:
Engineering Date

CARANCHO PUMP STATION EXPANSION & IMPROVEMENT (PROJECT NO. D2048)

LEGEND & ABBREVIATIONS I

SHEET
I-1
X OF X SHEETS

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MEANINGS OF IDENTIFICATION LETTERS

THIS TABLE APPLIES TO THE FUNCTIONAL IDENTIFICATION OF INSTRUMENTS

LETTER	FIRST LETTER		SUCCEEDING LETTERS		
	MEASURED OR INITIATING VARIABLE	MODIFIER	READOUT OR PASSIVE FUNCTION	OUTPUT FUNCTION	MODIFIER
A	ANALYSIS		ALARM		
B	BURNER, COMBUSTION		EMERGENCY	USER'S CHOICE	USER'S CHOICE
C	USERS CHOICE		CLEANER	CONTROL	
D	DENSITY (MASS) OR SPECIFIC GRAVITY	DIFFERENTIAL			
E	VOLTAGE (EMF)		PRIMARY ELEMENT		
F	FLOW RATE	RATIO (FRACTION)			
G	GAUGING (DIMENSIONAL)		GLASS		
H	HAND (MANUALLY INITIATED)				HIGH
I	CURRENT (ELECTRICAL)		INDICATE		
J	POWER	SCAN			
K	TIME OR TIME SCHEDULE			CONTROL STATION	
L	LEVEL		LIGHT (PILOT)		LOW
M	USER'S CHOICE	MOMENTARY			MIDDLE OR INTERMEDIATE
N	USER'S CHOICE		USER'S CHOICE	USER'S CHOICE	USER'S CHOICE
O	USER'S CHOICE		ORIFICE (RESTRICTION)		
P	PRESSURE OR VACUUM		POINT (TEST CONNECTION)		
Q	QUANTITY	INTEGRATE OR TOTALIZE			
R	RUN		RECORD		
S	SPEED OR FREQUENCY	SAFETY		SWITCH	
T	TEMPERATURE			TRANSMIT	
U	MULTIVARIABLE		MULTIFUNCTION	MULTIFUNCTION	MULTIFUNCTION
V	VISCOSITY, VIBRATION			VALVE, DAMPER OR LOUVER	
W	WEIGHT OR FORCE		WELL		
X	FAILURE	X AXIS			
Y	EVENT, STATE OR PRESSENCE	Y AXIS		RELAY, COMPUTE, CONVERT	
Z	POSITION, DIMENSION	Z AXIS		DRIVE, ACTUATE OR UNCLASSIFIED CONTROL ELEMENT	

PIPELINE MATERIAL CODE ABBREVIATION

SS-XX1	SECTION 15064, STAINLESS STEEL PIPE AND ALLOY PIPE, TUBING AND ACCESSORIES
PVC-XX	SECTION 15067, MISCELLANEOUS PLASTIC PIPE, TUBING AND ACCESSORIES
CPVC-XX	SECTION 15067, MISCELLANEOUS PLASTIC PIPE, TUBING AND ACCESSORIES
CS	SECTION 02518, STEEL PIPE AND FITTINGS FOR LARGE DIAMETER WATER LINES
CS	SECTION 02502, STEEL PIPE AND FITTINGS FOR 20 INCHES AND SMALLER
DI	SECTION 02501, DUCTILE IRON PIPE AND FITTING
PVC	SECTION 02506, POLYVINYL, CHLORINE PIPE AND FITTING

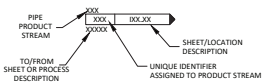
PIPELINE MATERIAL CODE SUFIX

DI	DUCTILE IRON
PVC-40	POLYVINYL CHLORIDE SCHEDULE SCH.40
PVC-80	POLYVINYL CHLORIDE SCHEDULE SCH.40
SS	STAINLESS STEEL

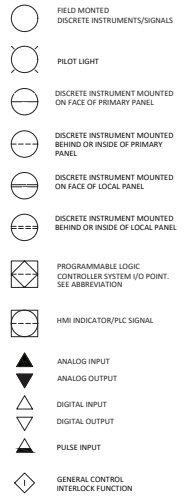
PIPE LINE GROUP SERVICE

CHM	CHEMICAL STREAM	TW	TREATED WATER
DRN	DRAIN	WW	WASTE WATER
FW	FILTERED WATER		
PA	PROCESS AIR		
PW	PROCESS WATER		
RW	RAW WATER		
SL	SLUDGE PROCESS		
SLG	SLUDGE COLLECTOR		
SW	SETTLED WATER		

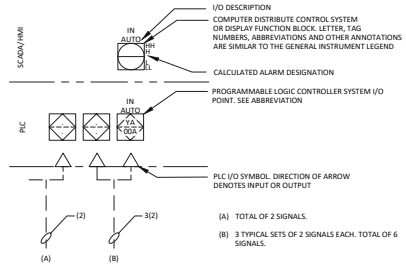
CONNECTOR SYMBOLS & ABBREVIATIONS



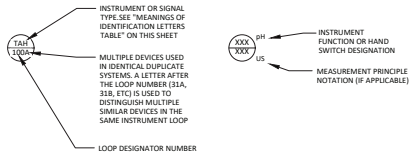
GENERAL INSTRUMENT SYMBOLS



TYPICAL TAG NUMBERS AND DESIGNATION



INSTRUMENTATION SYMBOLOGY AND DESIGNATION



INSTRUMENT AND I/O ABBREVIATION DEFINITION

AAH	ANALYZER ALARM HIGH
AAHH	ANALYZER ALARM HIGH-HIGH
AAL	ANALYZER ALARM LOW
AALL	ANALYZER ALARM LOW-LOW
AAX	ANALYZER HORN
AAL	STROBE ALARM LIGHT
AE	ANALYZER SENSOR
AI	ANALYZER INDICATION
AIT	ANALYZER INDICATING TRANSMITTER
ASH	ANALYZER SWITCH HIGH
ASHH	ANALYZER SWITCH HIGH-HIGH
CB	CONTROL BLOCK REFERENCE (SCADA LEVEL)
FAL	FLOW ALARM LOW
FAH	FLOW ALARM HIGH
FC	FLOW CONTROLLER
FI	FLOW INDICATOR (LED OR SCREEN)
FIC	FLOW INDICATING CONTROLLER
FE	PRIMARY FLOW ELEMENT/SENSOR
FG	FLOW SIGHT GAUGE
FIT	FLOW INDICATING TRANSMITTER
FOG	FLOW TOTALIZING GAUGE
FQIT	FLOW TOTALIZING INDICATING TRANSMITTER
FSL	FLOW SWITCH LOW
FSH	FLOW SWITCH HIGH
FY	FLOW SIGNAL CONVERTER, REPEATER OR ISOLATOR
HIC	HAND INDICATING CONTROLLER
HMS	MOMENTARY PUSHBUTTON OR SELECTOR SWITCH
HS	HAND SWITCH
IE	CURRENT ELEMENT/SENSOR
IAH	CURRENT ALARM HIGH (MOTOR OVERLOAD)
ISH	CURRENT SWITCH HIGH (USED TO DETECT HIGH TORQUE)
JA	POWER FAILURE
JI	POWER INDICATOR
JL	POWER INDICATING LIGHT
JIT	POWER INDICATING TRANSMITTER
KQI	TIME TOTALIZING INDICATOR
LAL	LEVEL ALARM LOW
LALL	LEVEL ALARM LOW-LOW
LAH	LEVEL ALARM HIGH
LAHH	LEVEL ALARM HIGH-HIGH
LE	PRIMARY LEVEL ELEMENT/SENSOR
LG	LEVEL SIGHT GAUGE
LI	LEVEL INDICATOR (LED OR SCREEN)
LIT	LEVEL INDICATING TRANSMITTER
LSL	LEVEL SWITCH LOW
LSLL	LEVEL SWITCH LOW-LOW
LSH	LEVEL SWITCH HIGH
LSHH	LEVEL SWITCH HIGH-HIGH
LY	LEVEL SIGNAL CONVERTER, REPEATER OR ISOLATOR
NI	STROKE POSITION SWITCH
NC	STROKE POSITION COMMAND
OAH	TORQUE ALARM HIGH
OAHH	TORQUE ALARM HIGH-HIGH
OSH	TORQUE SWITCH HIGH
OSHH	TORQUE SWITCH HIGH-HIGH
PAL	PRESSURE ALARM LOW
PALL	PRESSURE ALARM LOW-LOW
PAH	PRESSURE ALARM HIGH
PAHH	PRESSURE ALARM HIGH-HIGH
PDG	DIFFERENTIAL PRESSURE GAUGE
PDI	DIFFERENTIAL PRESSURE INDICATOR (LED OR SCREEN)
PDIT	DIFFERENTIAL PRESSURE INDICATING TRANSMITTER
PDAL	DIFFERENTIAL PRESSURE ALARM LOW
PDALL	DIFFERENTIAL PRESSURE ALARM LOW-LOW
PDAH	DIFFERENTIAL PRESSURE ALARM HIGH
PDAHH	DIFFERENTIAL PRESSURE ALARM HIGH-HIGH
PDSL	DIFFERENTIAL PRESSURE SWITCH LOW
PDSLL	DIFFERENTIAL PRESSURE SWITCH LOW-LOW
PDSH	DIFFERENTIAL PRESSURE SWITCH HIGH
PDSHH	DIFFERENTIAL PRESSURE SWITCH HIGH-HIGH
PE	PRIMARY PRESSURE ELEMENT/SENSOR
PG	PRESSURE GAUGE
PI	PRESSURE INDICATOR
PIT	PRESSURE INDICATING TRANSMITTER
PSL	PRESSURE SWITCH LOW
PSH	PRESSURE SWITCH HIGH
SI	SPEED INDICATION (LED OR SCREEN)
SC	SPEED CONTROL
SIT	SPEED INDICATING TRANSMITTER
SS	START-STOP SWITCH
SSL	SPEED SWITCH LOW
SSH	SPEED SWITCH HIGH
TAL	TEMPERATURE ALARM LOW
TAH	TEMPERATURE ALARM HIGH
TAHH	TEMPERATURE ALARM HIGH-HIGH
TDI	DIFFERENTIAL TEMPERATURE INDICATOR (LED OR SCREEN)
TDIT	DIFFERENTIAL TEMPERATURE TRANSMITTER
TE	TEMPERATURE SENSOR / RESISTANCE TEMPERATURE DETECTOR
TSL	TEMPERATURE SWITCH LOW
TSH	TEMPERATURE SWITCH HIGH
TSHH	TEMPERATURE SWITCH HIGH-HIGH
TG	TEMPERATURE GAUGE
TI	TEMPERATURE INDICATOR (LED OR SCREEN)
TIT	TEMPERATURE INDICATING TRANSMITTER
UA	MULTIVARIABLE/COMMON ALARM/COMMON FAULT
UCR	RUN COMMAND
UCS	STOP COMMAND
VAH	VIBRATION ALARM HIGH
WAH	TORQUE ALARM HIGH
WAHH	TORQUE ALARM HIGH-HIGH
WSH	TORQUE SWITCH HIGH
WSHH	TORQUE SWITCH HIGH-HIGH
WE	PRIMARY WEIGHT SENSOR/LOAD CELL
WG	WEIGHT GAUGE
WIT	WEIGHT INDICATING TRANSMITTER
YA	GENERAL ALARM EVENT
YI	EVENT INDICATION (LED OR SCREEN)
YIR	RUNNING INDICATION
YIS	STOPPED INDICATION
YL	EVENT INDICATING LIGHT
YLR	RUNNING INDICATING LIGHT
YLS	STOPPED INDICATING LIGHT
ZI	POSITION INDICATOR
ZIC	CLOSED INDICATION
ZIO	OPEN INDICATION
ZLC	CLOSED INDICATING LIGHT
ZLO	OPEN INDICATING LIGHT
ZSC	CLOSED POSITION SWITCH
ZSO	OPEN POSITION SWITCH
ZIT	POSITION INDICATING TRANSMITTER
ZT	POSITION TRANSMITTER

PRELIMINARY
NOT FOR CONSTRUCTION

FUNCTION DESIGNATION AND ABBREVIATIONS

MEASUREMENT PRINCIPLE NOTATIONS

CON	CONDUCTANCE
DP	DIFFERENTIAL PRESSURE SENSING
FLN	FLOW NOZZEL
FLT	FLOW TUBE
GWR	GUIDE WAVE
RAD	RADAR
US	ULTRASONIC
VENT	VENTURI TUBE

CALCULATED ALARM DESIGNATION

L	LOW
LL	LOW-LOW
H	HIGH
HH	HIGH-HIGH

INDICATING LIGHT/ALARM DESIGNATION

OVRLD	OVERLOAD
TRQ HI	TORQUE HIGH
TRQ HI-HI	TORQUE HIGH-HIGH

MISCELLANEOUS ABBREVIATION

CTUP	CHEMICAL TRUCK UNLOADING PANEL

INSTRUMENT FUNCTION

K	GAIN OR ATTENUATE (INPUT-OUTPUT)
-K	GAIN AND REVERSE
Σ	ADD OR SUM (ADD AND SUBTRACT)
Δ	SUBTRACT (DIFFERENCE EXTRACT SQUARE)
√—	ROOT
÷	DIVIDE
F(X)	CHARACTERIZE SIGNAL
>	HIGH SELECT
<	LOW SELECT
X	MULTIPLY
∫	INTEGRATE
CH4	METHANE
CL2	CHLORINE RESIDUAL
CO2	CARBON DIOXIDE
DO	DISSOLVE OXYGEN
H2S	HYDROGEN SULFIDE
LEL	LOWER EXPLOSIVE LIMIT
MCC	MOTOR CONTROL CENTER
MLSS	MIXED LIQUOR SUSPENDED SOLID
02	OXYGEN (PURITY)
03	OZONE
ORP	OXIDATION REDUCTION POTENCIAL
pH	pH
TURB	TURBIDITY
TOC	TOTAL ORGANIC CARBON
TCL	TOTAL CHLORINE

HAND SWITCH DESIGNATION

FR	FORWARD-REVERSE
HOA	HAND-OFF-AUTO
HOR	HAND-OFF-REMOTE
LOA	LOCAL-OFF-AUTO
LOR	LOCAL-OFF-REMOTE
LR	LOCAL-REMOTE
OCA	OPEN-CLOSE-AUTO
OOA	OPEN-OFF-AUTO
OOR	OPEN-OFF-REMOTE
OC	OPEN-CLOSE
OO	ON-OFF
OSC	OPEN-STOP-CLOSE
SS	START - STOP

TRANSDUCER & CONVERTER DESIGNATION

E	VOLTAGE
FSK	FREQUENCY SHIFT KEYING
H	HYDRAULIC
I	CURRENT
P	PNEUMATIC PULSE
PD	PULSE DURATION
PF	PULSE FREQUENCY
R	RESISTANCE (ELECTRICAL)

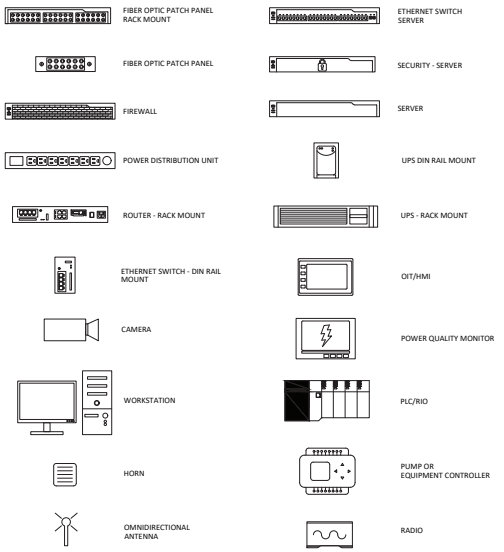
EXAMPLE: I/P CURRENT TO PNEUMATIC TRANSDUCER

POWER SUPPLY ABBREVIATIONS

AS	AIR SUPPPLY
ES	ELECTRIC SUPPLY
GS	GAS SUPPPLY
HS	HYDRAULIC SUPPLY
NS	NITROGEN SUPPLY
SS	STEAM SUPPLPY
WS	WATER SUPPLY
120V	120VAC

120V —— POWER SUPPLY SOURCE LABEL USED ONLY WHERE NECESSARY TO HELP CLARIFY AN INSTRUMENT OR SYSTEM FUNCTION.

CONTROL SYSTEM SYMBOLS



R.C.W.D. RECORD DWG NO.

REVISIONS			
NO.	DATE	INITIALS	DESCRIPTION

SCALE NTS
FIELD BOOK N/A

	INITIALS	DATE
DESIGNED	CM	3/4/2024
DRAWN	SY	3/4/2024
CHECKED	CM	3/4/2024

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43410 BUSINESS PARK DRIVE
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APPROVED BY CHAD E MORRIS
REGISTERED ENGINEER No. 18180 DATE 03/04/24

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42135 Winchester Road
Temecula, CA 92590
Phone: (951) 296-6900 Fax: (951) 296-6863

RANCHO CALIFORNIA WATER DISTRICT
APPROVED FOR CONSTRUCTION:

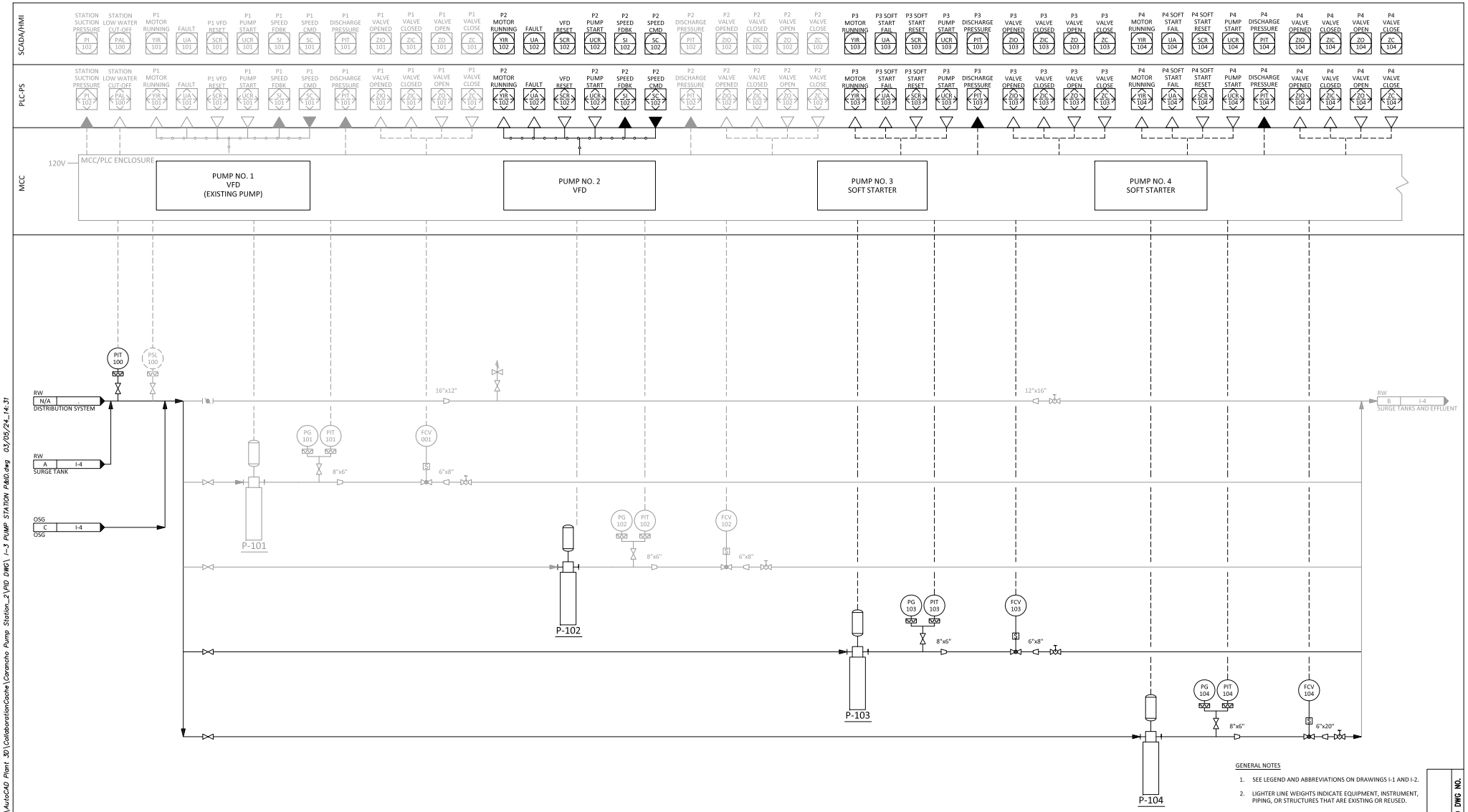
Engineering Date

CARANCHO PUMP STATION EXPANSION & IMPROVEMENT (PROJECT NO. D2048)

LEGENDS & ABBREVIATIONS II

SHEET
I-2
X OF X SHEETS

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GENERAL NOTES

1. SEE LEGEND AND ABBREVIATIONS ON DRAWINGS I-1 AND I-2.
2. LIGHTER LINE WEIGHTS INDICATE EQUIPMENT, INSTRUMENT, PIPING, OR STRUCTURES THAT ARE EXISTING OR REUSED.
3. THIS DRAWING IS SHOWN FOR REFERENCE TO SHOW THE MODIFICATIONS WITHIN THIS PROJECT. OTHER EXISTING EQUIPMENT AND INSTRUMENTATION MAY NOT BE SHOWN.
4. IN CASE OF ANY DISCREPANCIES OR VARIANCES BETWEEN THE P&IDS AND THE MECHANICAL DRAWINGS, THE MECHANICAL DRAWINGS SHALL PREVAIL.

R.C.W.D. RECORD DWG NO.

PRELIMINARY
NOT FOR CONSTRUCTION

REVISIONS			
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FIELD BOOK N/A

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APPROVED BY CHAD E MORRIS
REGISTERED ENGINEER No. 18180 DATE 03/04/24

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RANCHO CALIFORNIA WATER DISTRICT
APPROVED FOR CONSTRUCTION:

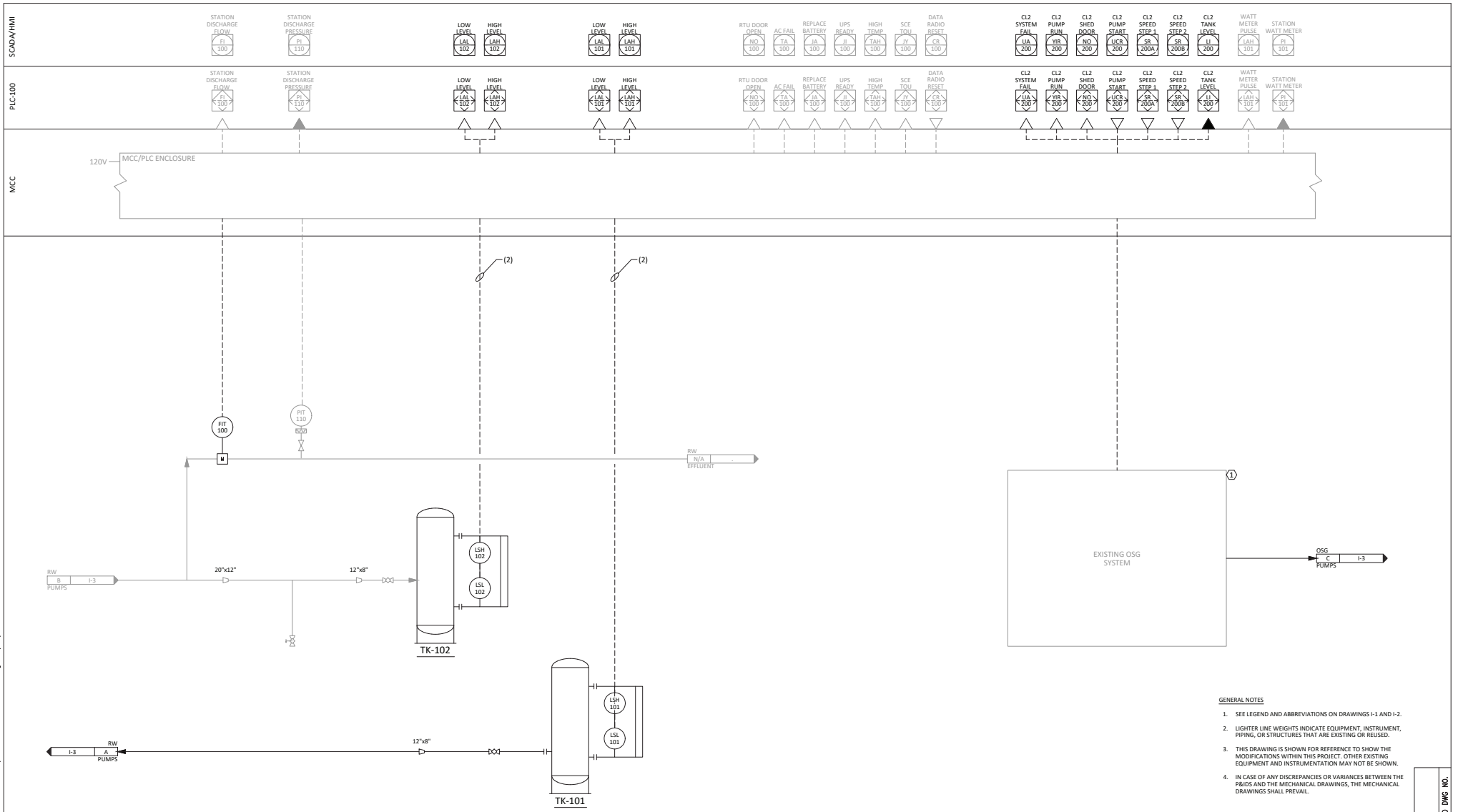
Engineering Date

CARANCHO PUMP STATION EXPANSION & IMPROVEMENT
(PROJECT NO. D2048)

PUMP STATION P&ID

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GENERAL NOTES

1. SEE LEGEND AND ABBREVIATIONS ON DRAWINGS I-1 AND I-2.
2. LIGHTER LINE WEIGHTS INDICATE EQUIPMENT, INSTRUMENT, PIPING, OR STRUCTURES THAT ARE EXISTING OR REUSED.
3. THIS DRAWING IS SHOWN FOR REFERENCE TO SHOW THE MODIFICATIONS WITHIN THIS PROJECT. OTHER EXISTING EQUIPMENT AND INSTRUMENTATION MAY NOT BE SHOWN.
4. IN CASE OF ANY DISCREPANCIES OR VARIANCES BETWEEN THE P&IDS AND THE MECHANICAL DRAWINGS, THE MECHANICAL DRAWINGS SHALL PREVAIL.

KEYED NOTES

(1) CONTRACTOR TO CONNECT EXISTING OSG SYSTEM EQUIPMENT TO SCADA.

R.C.W.D. RECORD DWG NO.

REVISIONS			
NO.	DATE	INITIALS	DESCRIPTION

SCALE NTS
FIELD BOOK N/A

	INITIALS	DATE
DESIGNED	CM	3/4/2024
DRAWN	SY	3/4/2024
CHECKED	CM	3/4/2024

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Temecula, CA 92590
Phone: (951) 296-6900 Fax: (951) 296-6863

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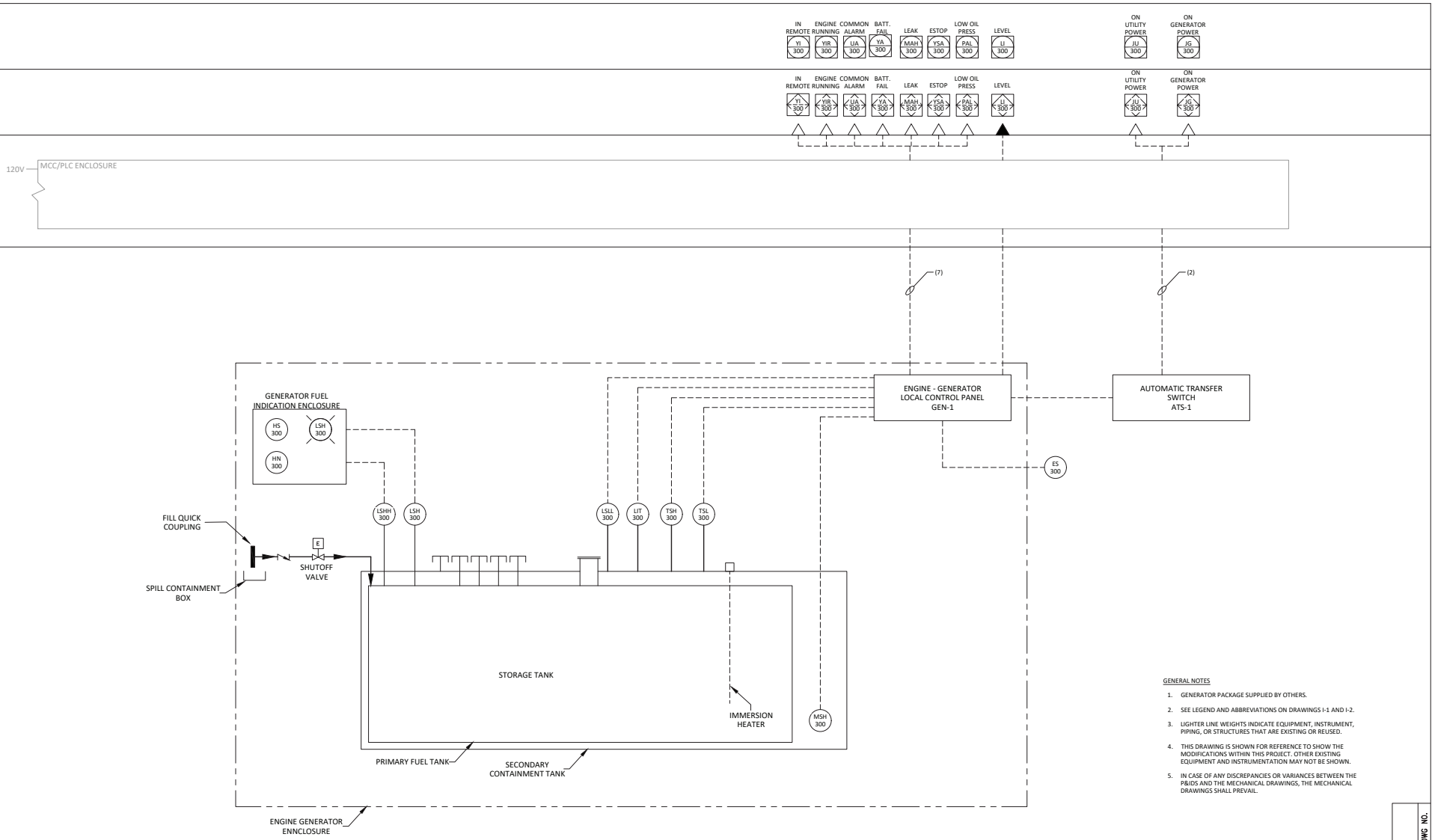
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GENERAL NOTES

1. GENERATOR PACKAGE SUPPLIED BY OTHERS.
2. SEE LEGEND AND ABBREVIATIONS ON DRAWINGS I-1 AND I-2.
3. LIGHTER LINE WEIGHTS INDICATE EQUIPMENT, INSTRUMENT, PIPING, OR STRUCTURES THAT ARE EXISTING OR REUSED.
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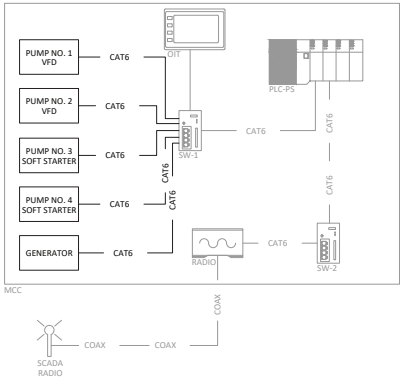
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GENERAL NOTES

1. THIS DRAWING IS FOR REFERENCE AND THE CONTRACTOR AND MANUFACTURER WILL PROVIDE FINAL DATA, DRAWINGS, AND REQUIRED HARDWARE.

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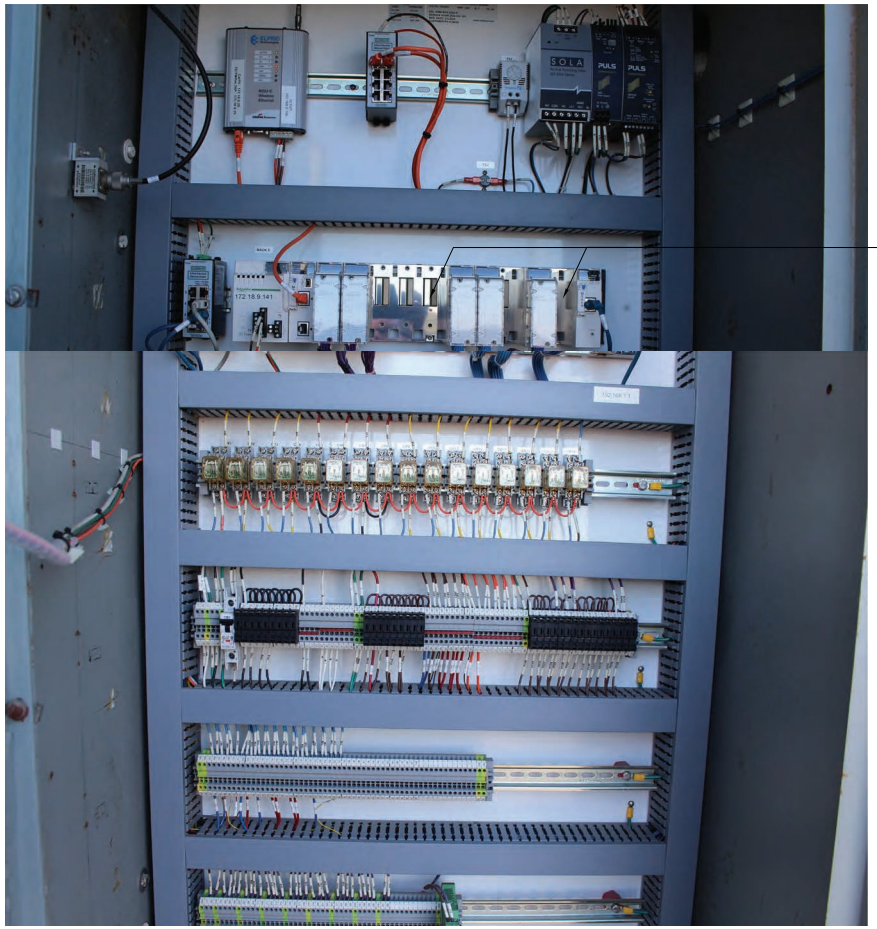
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CARANCHO PUMP STATION EXPANSION & IMPROVEMENT
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SCADA NETWORK DIAGRAM

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GENERAL NOTES

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KEYED NOTES

1. CONTRACTOR TO INSTALL ADDITIONAL DI CARD.
2. CONTRACTOR TO MODIFY EXISTING PLC TO ACCOMMODATE SIGNALS BEING ADDED BY THIS PROJECT.

R.C.W.D. RECORD DWG NO.

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(PROJECT NO. D2048)

PANEL MODIFICATIONS

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GENERAL NOTES

1. THIS DRAWING IS FOR REFERENCE AND THE CONTRACTOR AND MANUFACTURER WILL PROVIDE FINAL DATA, DRAWINGS, AND REQUIRED HARDWARE.

KEYED NOTES

1. RELOCATE EXISTING AMR RADIO AND ANTENNA TO NEW RADIO TOWER. REFERENCE ELECTRICAL SITE PLAN FOR LOCATION.
2. RELOCATE EXISTING WIFI RADIOS TO NEW RADIO TOWER.
3. DEMOLISH EXISTING POWER BOX AND EQUIPMENT.

R.C.W.D. RECORD DWG NO.

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RADIO RELOCATION

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Attachment C

Site Photographs



Photograph 1: From the lower terrace looking northeast toward the associated equipment and upper terrace and water tanks beyond.



Photograph 2: From the northeast portion of the project site looking west along the access road.



Photograph 3: Representative photo of the disturbed land with adjacent buckwheat scrub plant community in the southeastern portion of the site.



Photograph 4: From the upper terrace of the project site looking southeast toward El Calamar Road.



Photograph 5: From the western limits of the developed area of the project site looking east.



Photograph 6: Representative photo of the sugarbush scrub plant community in the southeastern portion of the project site.



Photograph 7: From the southeast corner of the project site looking northeast along El Calamar Road.



Photograph 8: From the eastern limits of the developed portion of the site looking southwest.



Photograph 9: Culvert located along El Calamar Road adjacent to the project site boundary.

Attachment D

Potentially Occurring Special-Status Biological Resources

Table D-1: Potentially Occurring Special-Status Biological Resources

Scientific Name Common Name	**Status**	**Habitat**	**Observed On-site**	**Potential to Occur**
WILDLIFE SPECIES				
Accipiter cooperii Cooper's hawk	Fed: None CA: WL	Generally found in forested areas up to 3,000 feet in elevation, especially near edges and rivers. Prefers hardwood stands and mature forests but can be found in urban and suburban areas where there are tall trees for nesting. Common in open areas during nesting season.	No	**High** Suitable foraging habitat is present within and surrounding the project site. Suitable nesting opportunities occur adjacent to site boundaries.
Accipiter striatus sharp-shinned hawk	Fed: None CA: WL	Found in pine, fir and aspen forests. They can be found hunting in forest interior and edges from sea level to near alpine areas. Can also be found in rural, suburban and agricultural areas, where they often hunt at bird feeders. Typically found in southern California in the winter months.	No	**High** Suitable foraging habitat is present within and surrounding the project site. Suitable nesting opportunities occur adjacent to site boundaries.
Aimophila ruficeps canescens southern California rufous-crowned sparrow	Fed: None CA: WL	Typically found between 3,000 and 6,000 feet in elevation. Breed in sparsely vegetated scrubland on hillsides and canyons. Prefers coastal sage scrub dominated by California sagebrush (*Artemisia californica*), but they can also be found breeding in coastal bluff scrub, low-growing serpentine chaparral, and along the edges of tall chaparral habitats.	Yes	**Present** Species was observed onsite at the time of the investigation.
Ammodramus savannarum grasshopper sparrow	Fed: None CA: SSC	Occurs in grassland, upland meadow, pasture, hayfield, and old field habitats. Optimal habitat contains short- to medium-height bunch grasses interspersed with patches of bare ground, a shallow litter layer, scattered forbs, and few shrubs. May inhabit thickets, weedy lawns, vegetated landfills, fence rows, open fields, or grasslands.	No	**Presumed Absent.** There is no suitable habitat present within the project site.
Anaxyrus californicus arroyo toad	Fed: **END** CA: SSC	Occurs in washes and intermittent streams with a mixture of gravel and sandy substrate. Requires a moderate cover of willows, cottonwoods, mulefat, and sycamore to provide shade over the water, and oaks in the upland area to forage for ants.	No	**Presumed Absent.** There is no suitable habitat present within the project site.
Anniella stebbinsi Southern California legless lizard	Fed: None CA: SSC	Occurs in sparsely vegetated habitat types including coastal sand dunes, chaparral, pine-oak woodland, desert scrub, open grassland, and riparian areas. Requires sandy or loose loamy substrates conducive to burrowing.	No	**Presumed Absent.** There is no suitable habitat present within the project site.
Antrozous pallidus pallid bat	Fed: None CA: SSC	Forest, rocky areas (i.e., inland cliffs, mountain peaks), caves, and subterranean habitats (non-aquatic).	No	**Presumed Absent.** There is no suitable habitat present within the project site.

Scientific Name Common Name	**Status**	**Habitat**	**Observed On-site**	**Potential to Occur**
Aquila chrysaetos golden eagle	Fed: None CA: FP; WL	Occupies nearly all terrestrial habitats of the western states except densely forested areas. Favors secluded cliffs with overhanging ledges and large trees for nesting and cover. Hilly or mountainous country where takeoff and soaring are supported by updrafts is generally preferred to flat habitats. Deeply cut canyons rising to open mountain slopes and crags are ideal habitat.	No	**Presumed Absent.** There is no suitable habitat present within the project site.
Ardea alba great egret	Fed: None CA: None	Yearlong resident throughout California, except for the high mountains and deserts. Feeds and rests in fresh, and saline emergent wetlands, along the margins of estuaries, lakes, and slow-moving streams, on mudflats and salt ponds, and in irrigated croplands and pastures.	No	**Presumed Absent.** There is no suitable habitat present within the project site.
Ardea herodias great blue heron	Fed: None CA: None	Forages along streams, marshes, lakes, and meadows. Nests colonially in tall trees (typically *Eucalyptus* sp.), on cliffsides, or in isolated spots in marshes.	No	**Presumed Absent.** There is no suitable habitat present within the project site.
Arizona elegans occidentalis California glossy snake	Fed: None CA: SSC	Inhabits arid scrub, rocky washes, grasslands, and chaparral habitats.	No	**Presumed Absent.** There is no suitable habitat present within the project site.
Artemisiospiza belli belli Bell's sage sparrow	Fed: None CA: WL	Generally prefers semi-open habitats with evenly spaced shrubs 1 – 2 meters in height. Dry chaparral and coastal sage scrub. Less common in tall dense, old chaparral.	No	**Low.** Marginal nesting and foraging habitat present within the project site.
Asio flammeus short-eared owl	Fed: None CA: SSC	Suitable habitats include salt- and freshwater marshes, irrigated alfalfa or grain fields, and ungrazed grasslands and old pastures. Tule marsh or tall grasslands with cover 30 to 50 cm in height can support nesting pairs.	No	**Presumed Absent.** There is no suitable habitat present within the project site.
Aspidoscelis hyperythra Orange-throat whiptail	Fed: None CA: WL	Semi-arid brushy areas typically with loose soil and rocks, including washes, streamsides, rocky hillsides, and coastal chaparral.	No	**Low.** Marginal nesting and foraging habitat present within the project site.
Aspidoscelis tigris stejnegeri coastal whiptail	Fed: None CA: SSC	Found in a variety of ecosystems, primarily hot and dry open areas with sparse foliage - chaparral, woodland, and riparian areas.	No	**Presumed Absent.** There is no suitable habitat present within the project site.
Athene cunicularia burrowing owl	Fed: None CA: SSC	Occurs in open, annual or perennial grasslands, deserts, and scrublands characterized by low-growing vegetation. Dependent upon fossorial mammals for burrows, most notable ground squirrels.	No	**Presumed Absent.** There is no suitable habitat present within the project site.

Scientific Name Common Name	**Status**		**Habitat**	**Observed On-site**	**Potential to Occur**
Atractelmis wawona Wawona riffle beetle	Fed: CA:	None None	Found in fast-flowing streams and rivers in shallow sections with rapid current and broken water surface.	No	**Presumed Absent.** There is no suitable habitat present within the project site.
Bombus pensylvanicus American bumble bee	Fed: CA:	None None	Found in grasslands, agricultural fields, gardens, and parks with flowering plants present for foraging.	No	**Presumed Absent.** There is no suitable habitat present within the project site.
Branchinecta lynchi vernal pool fairy shrimp	Fed: CA:	**THR** None	Associated with vernal pools. Can be found in association with other ephemeral habits including alkali pools, seasonal drainages, stock ponds, vernal swales, and rock outcrops.	No	**Presumed Absent.** There is no suitable habitat present within the project site.
Branchinecta sandiegonensis San Diego fairy shrimp	Fed: CA:	**END** None	Occurs only in small, shallow vernal pools which range in depth from 2-12 inches and water temperature from 50-68 ˚F.	No	**Presumed Absent.** There is no suitable habitat present within the project site.
Buteo regalis ferruginous hawk	Fed: CA:	None WL	Occurs primarily in open grasslands and fields, but may be found in sagebrush flats, desert scrub, low foothills, or along the edges of pinyon-juniper woodland. Feeds primarily on small mammals and typically found in agricultural or open fields.	No	**Presumed Absent.** There is no suitable habitat present within the project site.
Buteo swainsoni Swainson's hawk	Fed: CA:	None **THR**	Typical habitat is open desert, grassland, or cropland containing scattered, large trees or small groves. Breeds in stands with few trees in juniper-sage flats, riparian areas, and in oak savannah in the Central Valley. Forages in adjacent grassland or suitable grain or alfalfa fields or livestock pastures.	No	**Presumed Absent.** There is no suitable habitat present within the project site.
Calypte costae Costa's hummingbird	Fed: CA:	None None	Desert and semi-desert, arid brushy foothills and chaparral. A desert hummingbird that breeds in the Sonoran and Mojave Deserts. Departs desert heat moving into chaparral, scrub, and woodland habitats.	No	**Moderate.** Suitable foraging habitat present within the project site. Marginal nesting habitat present.
Campylorhynchus brunneicapillus sandiegensis Coastal cactus wren	Fed: CA:	None SSC	Found in arid and semi-arid habitats with a high occurrence of cactus and spiny trees. Nests almost exclusively in prickly pear and cholla cactus.	No	**Presumed Absent.** There is no suitable habitat present within the project site.
Chaetodipus californicus femoralis Dulzura pocket mouse	Fed: CA:	None None	Found most often in grass-chaparral edges but may also be found in coastal scrub or other habitats, primarily in San Diego County.	No	**Presumed Absent.** There is no suitable habitat present within the project site.

Scientific Name Common Name	**Status**	**Habitat**	**Observed On-site**	**Potential to Occur**
Chaetodipus fallax fallax northwestern San Diego pocket mouse	Fed: None CA: None	Occurs in desert and coastal habitats in southern California, Mexico, and northern Baja California, from sea level to at least 1,400 meters. Found in a variety of temperate habitats ranging from chaparral and grasslands to scrub forests and deserts. Requires low growing vegetation or rocky outcroppings, as well as sandy soils for burrowing.	No	**Presumed Absent.** There is no suitable habitat present within the project site.
Circus hudsonius northern harrier	Fed: None CA: SSC	Frequents meadows, grasslands, open rangelands, desert sinks, fresh and saltwater emergent wetlands; seldom found in wooded areas. Mostly found in flat, or hummocky, open areas of tall, dense grasses moist or dry shrubs, and edges for nesting, cover, and feeding.	No	**Presumed Absent.** There is no suitable habitat present within the project site.
Contopus cooperi olive-sided flycatcher	Fed: None CA: SSC	Migrates through coastal southern California. Nests in the mountains in mixed conifer, montane hardwood-conifer, Douglas-fir, redwood, red fir, and lodgepole pine habitats. Most often found in tall montane coniferous forests overlooking open terrain.	No	**Presumed Absent.** There is no suitable habitat present within the project site.
Crotalus ruber red-diamond rattlesnake	Fed: None CA: SSC	It can be found from the desert, through dense chaparral in the foothills (it avoids the mountains above around 4,000 feet), to warm inland mesas and valleys, all the way to the cool ocean shore. It is most commonly associated with heavy brush with large rocks or boulders. Dense chaparral in the foothills, cactus or boulder associated coastal sage scrub, oak and pine woodlands, and desert slope scrub associations are known to carry populations of the northern red-diamond rattlesnake; however, chamise and red shank associations may offer better structural habitat for refuges and food resources for this species than other habitats.	No	**Low.** Marginal habitat present within the project site.
Diadophis punctatus modestus San Bernardino ringneck snake	Fed: None CA: None	Common in open, relatively rocky areas within valley-foothill, mixed chaparral, and annual grass habitats.	No	**Presumed Absent.** There is no suitable habitat present within the project site.
Diadophis punctatus similis San Diego ringneck snake	Fed: None CA: None	Common in open, relatively rocky areas within valley-foothill, mixed chaparral, and annual grass habitats.	No	**Presumed Absent.** There is no suitable habitat present within the project site.
Dipodomys simulans Dulzura kangaroo rat	Fed: None CA: None	Relatively common in chaparral, coastal sage scrub, Riversidean alluvial fan sage scrub, and peninsular juniper woodland habitats.	No	**Presumed Absent.** There is no suitable habitat present within the project site.
Dipodomys stephensi Stephens' kangaroo rat	Fed: **THR** CA: **THR**	Occur in arid and semi-arid habitats with some grass or brush. Prefer open habitats with less than 50% protective cover. Require soft, well-drained substrate for building burrows and are typically found in areas with sandy soil.	No	**Presumed Absent.** There is no suitable habitat present within the project site.

Scientific Name Common Name	**Status**	**Habitat**	**Observed On-site**	**Potential to Occur**
Elanus leucurus white-tailed kite	Fed: None CA: FP	Occurs in low elevation, open grasslands, savannah-like habitats, agricultural areas, wetlands, and oak woodlands. Uses trees with dense canopies for cover.	No	**Presumed Absent.** There is no suitable habitat present within the project site.
Empidonax traillii willow flycatcher	Fed: None CA: **END**	A rare to locally uncommon, summer resident in wet meadow and montane riparian habitats (2,000 to 8,000 ft) in the Sierra Nevada and Cascade Range. Most often occurs in broad, open river valleys or large mountain meadows with lush growth of shrubby willows.	No	**Presumed Absent.** There is no suitable habitat present within the project site.
Empidonax traillii extimus Southwestern willow flycatcher	Fed: **END** CA: **END**	A rare to locally uncommon, summer resident in wet meadow and montane riparian habiats (2,000 to 8,000 ft) in the Sierra Nevada and Cascade Range. Most often occurs in broad, open river valleys or large mountain meadows with lush growth of shrubby willows.	No	**Presumed Absent.** There is no suitable habitat present within the project site.
Emys marmorata western pond turtle	Fed: None CA: SSC	Found in ponds, lakes, rivers, streams, creeks, marshes, and irrigation ditches, with abundant vegetation, either rocky or muddy bottoms, in woodland, forest, and grassland. In streams, prefers pools to shallower areas. Logs, rocks, cattail mats, and exposed banks are required for basking. May enter brackish water and even seawater. Found at elevations from sea level to over 5,900 feet (1,800 m).	No	**Presumed Absent.** There is no suitable habitat present within the project site.
Eremophila alpestris actia California horned lark	Fed: None CA: WL	Generally found in shortgrass prairies, grasslands, disturbed fields, or similar habitat types along the coast or in deserts. Trees are shrubs are usually scarce or absent. Generally rare in montane, coniferous, or chaparral habitats. Forms large flocks outside of the breeding season.	No	**Low.** Marginal nesting and foraging habitat present within the project site.
Eumops perotis californicus western mastiff bat	Fed: None CA: SSC	Primarily a cliff-dwelling species, roost generally under exfoliating rock slabs. Roosts are generally high above the ground, usually allowing a clear vertical drop of at least 3 meters below the entrance for flight. In California, it is most frequently encountered in broad open areas. Its foraging habitat includes dry desert washes, flood plains, chaparral, oak woodland, open ponderosa pine forest, grassland, and agricultural areas.	No	**Presumed Absent.** There is no suitable habitat present within the project site.
Falco columbarius merlin	Fed: None CA: WL	Nest in forested openings, edges, and along rivers across northern North America. Found in open forests, grasslands, and especially coastal areas with flocks of small songbirds or shorebirds.	No	**Presumed Absent.** There is no suitable habitat present within the project site.
Falco mexicanus prairie falcon	Fed: None CA: WL	Commonly occur in arid and semiarid shrubland and grassland community types. Also occasionally found in open parklands within coniferous forests. During the breeding season, they are found commonly in foothills and mountains which provide cliffs and escarpments suitable for nest sites.	No	**Presumed Absent.** There is no suitable habitat present within the project site.

Scientific Name Common Name	**Status**	**Habitat**	**Observed On-site**	**Potential to Occur**
Falco peregrinus anatum American peregrine falcon	Fed: DL CA: DL	Uncommon winter resident of the inland region of southern California. Active nesting sites are known along the coast north of Santa Barbara, in the Sierra Nevada, and in other mountains of northern California. Breeds mostly in woodland, forest, and coastal habitats. Riparian areas and coastal and inland wetlands are important habitats yearlong, especially in nonbreeding seasons.	No	**Presumed Absent.** There is no suitable habitat present within the project site.
Gila orcuttii arroyo chub	Fed: None CA: SSC	Warm streams of the Los Angeles Plain, which are typically muddy torrents during the winter, and clear quiet brooks in the summer, possibly drying up in places. They are found both in slow-moving and fast-moving sections, but generally deeper than 40 cm.	No	**Presumed Absent.** There is no suitable habitat present within the project site.
Icteria virens yellow-breasted chat	Fed: None CA: SSC	Primarily found in tall, dense, relatively wide riparian woodlands and thickets of willows, vine tangles, and dense brush with well-developed understories. Nesting areas are associated with streams, swampy ground, and the borders of small ponds. Breeding habitat must be dense to provide shade and concealment. It winters south the Central America.	No	**Presumed Absent.** There is no suitable habitat present within the project site.
Lanius ludovicianus loggerhead shrike	Fed: None CA: SSC	Often found in broken woodlands, shrublands, and other habitats. Prefers open country with scattered perches for hunting and fairly dense brush for nesting.	No	**Presumed Absent.** There is no suitable habitat present within the project site.
Lasiurus cinereus hoary bat	Fed: None CA: None	Artificial/terrestrial, forest, caves, and subterranean habitats (non-aquatic).	No	**Presumed Absent.** There is no suitable habitat present within the project site.
Lasiurus frantzii western red bat	Fed: None CA: SSC	Inhabit forested areas near water sources and are also found in urban areas, agricultural land, and desert environments. Roost in tree foliage.	No	**Presumed Absent.** There is no suitable habitat present within the project site.
Lasiurus xanthinus western yellow bat	Fed: None CA: SSC	Occurs in valley/foothill riparian, desert riparian, desert wash, and palm oasis habitats. Roosts under palm trees and feeds in, and near, palm oases and riparian habitats.	No	**Presumed Absent.** There is no suitable habitat present within the project site.
Lepus californicus bennettii San Diego black-tailed jackrabbit	Fed: None CA: None	Occurs in diverse habitats, but primarily is found in arid regions supporting shortgrass habitats. Openness of open scrub habitat is preferred over dense chaparral.	No	**Low.** Marginal habitat present within the project site.
Linderiella occidentalis Californica linderiella	Fed: None CA: None	Found in large, fairly clear vernal pools and lakes. Found in a variety of natural, and artificial, seasonally ponded habitat types including: vernal pools, swales, ephemeral drainages, stock ponds, reservoirs, ditches, backhoe pits, and ruts caused by vehicular activities.	No	**Presumed Absent.** There is no suitable habitat present within the project site.

Scientific Name Common Name	**Status**	**Habitat**	**Observed On-site**	**Potential to Occur**
Linderiella santarosae Santa Rosa Plateau fairy shrimp	Fed: None CA: None	Restricted to the Santa Rosa Plateau in Southern Interior Basalt Vernal Pools with cool clear to milky waters that are moderately predictable and remain filled for extended periods of time.	No	**Presumed Absent.** There is no suitable habitat present within the project site.
Lynx rufus pallescens pallid bobcat	Fed: None CA: None	Found on the western edge of the great basin habitat in extreme northeast California. Live in a variety of habitats including forests, deserts, mountains, swamps and farmland.	No	**Low.** Marginal habitat present within the project site.
Myotis ciliolabrum western small-footed myotis	Fed: None CA: None	Occurs in a wide range of habitats, mostly arid wooded and brushy uplands near water. Prefers open stands in forests and woodlands. Roosts in caves, buildings, mines, and crevices.	No	**Presumed Absent.** There is no suitable habitat present within the project site.
Myotis yumanensis Yuma myotis	Fed: None CA: None	Found in forests and woodlands near water. Roosts in caves, buildings, mines, and crevices.	No	**Presumed Absent.** There is no suitable habitat present within the project site.
Neotoma lepida intermedia San Diego desert woodrat	Fed: None CA: SSC	Occurs in coastal scrub communities between San Luis Obispo and San Diego Counties. Prefers moderate to dense canopies, and especially rocky outcrops.	No	**Low.** Marginal habitat present within the project site.
Nyctinomops femorosaccus pocket free-tailed bat	Fed: None CA: SSC	Often found in pinyon-juniper woodlands, desert scrub, desert succulent shrub, desert riparian, desert wash, alkali desert scrub, Joshua tree, and palm oasis.	No	**Presumed Absent.** There is no suitable habitat present within the project site.
Oncorhynchus mykiss irideus pop. 10 steelhead-southern California DPS	Fed: End CA: Candidate	Found in permanent coastal streams from San Diego to the Smith River.	No	**Presumed Absent.** There is no suitable habitat present within the project site.
Pandion haliaetus osprey	Fed: None CA: WL	Remain close to still or slow-moving bodies of water including oceans, rivers, lakes, mangroves, coastal wetlands, lagoons, reefs, estuaries and marshes. Generally nest in high places, such as trees, power poles, or cliffs.	No	**Presumed Absent.** There is no suitable habitat present within the project site.
Perognathus longimembris pacificus Pacific pocket mouse	Fed: **End** CA: SSC	Occurs on loose sandy soils that support sparse coastal sage scrub, grassland, and ruderal habitats.	No	**Presumed Absent.** There is no suitable habitat present within the project site.

Scientific Name Common Name	**Status**	**Habitat**	**Observed On-site**	**Potential to Occur**
Phrynosoma blainvillii coast horned lizard	Fed: None CA: SSC	Occurs in a wide variety of vegetation types including coastal sage scrub, annual grassland, chaparral, oak woodland, riparian woodland and coniferous forest. In inland areas, this species is restricted to areas with pockets of open microhabitat, created by disturbance (i.e. fire, floods, roads, grazing, fire breaks). The key elements of such habitats are loose, fine soils with a high sand fraction; an abundance of native ants or other insects; and open areas with limited overstory for basking and low, but relatively dense shrubs for refuge.	No	**Presumed Absent.** There is no suitable habitat present within the project site.
Piranga rubra summer tanager	Fed: None CA: SSC	Inhabits deciduous and mixed woodlands, edges of forests, and along riverbanks. Occasionally seen in orchards, gardens, and parks.	No	**Presumed Absent.** There is no suitable habitat present within the project site.
Plegadis chihi white-faced ibis	Fed: None CA: WL	Prefers to feed in fresh emergent wetland, shallow lacustrine waters, muddy ground of wet meadows, and irrigated or flooded partures and croplands. Nests in dense, fresh emergent wetland.	No	**Presumed Absent.** T here is no suitable habitat present within the project site.
Plestiodon skiltonianus interparietalis Coronado skink	Fed: None CA: WL	Occurs in grassland, chaparral, pinyon-juniper woodland, juniper sage woodland, pine-oak forests, and pine forests in the Coast Ranges. Prefers early successional stages or open areas and is usually found in rocky areas close to streams or on dry hillsides.	No	**Presumed Absent.** There is no suitable habitat present within the project site.
Polioptila californica californica coastal California gnatcatcher	Fed: **THR** CA: SSC	Obligate resident of sage scrub habitats that are dominated by California sagebrush (*Artemisia californica*). This species generally occurs below 750 feet elevation in coastal regions and below 1,500 feet inland. Ranges from the Ventura County, south to San Diego County and northern Baja California and it is less common in sage scrub with a high percentage of tall shrubs. Prefers habitat with more low-growing vegetation.	No	**Low.** Marginal nesting and foraging habitat present within the project site.
Rana draytonii California red-legged frog	Fed: **THR** CA: SSC	Found mainly near ponds in humid forests, woodlands, grasslands, coastal scrub, and streamsides with plant cover. Most common in lowlands or foothills. Frequently found in woods adjacent to streams. Occurs along the coast ranges from Mendocino County south and in portions of the Sierra Nevada and Cascades ranges.	No	**Presumed Absent.** There is no suitable habitat present within the project site.
Setophaga petechia yellow warbler	Fed: None CA: SSC	Nests over all of California except the Central Valley, the Mojave Desert region, and high altitudes and the eastern side of the Sierra Nevada. Winters along the Colorado River and in parts of Imperial and Riverside Counties. Nests in riparian areas dominated by willows, cottonwoods, sycamores, or alders or in mature chaparral. May also use oaks, conifers, and urban areas near stream courses.	No	**Presumed Absent.** There is no suitable habitat present within the project site.

Scientific Name Common Name	**Status**	**Habitat**	**Observed On-site**	**Potential to Occur**
Spea hammondii western spadefoot	Fed: None CA: SSC	Prefers open areas with sandy or gravelly soils, in a variety of habitats including mixed woodlands, grasslands, coastal sage scrub, chaparral, sandy washed, lowlands, river floodplains, alluvial fans, playas, alkali flats, foothills, and mountains. Rainpools which do not contain bullfrogs, fish, or crayfish are necessary for breeding.	No	**Presumed Absent.** There is no suitable habitat present within the project site.
Spinus lawrencei Lawrence's goldfinch	Fed: None CA: None	Open woodlands, chaparral, and weedy fields. Closely associated with oaks. Nests in open oak or other arid woodland and chaparral near water.	No	**Presumed Absent.** There is no suitable habitat present within the project site.
Streptocephalus woottoni Riverside fairy shrimp	Fed: **END** CA: None	Freshwater crustacean that is found in vernal pools in the coastal California area.	No	**Presumed Absent.** There is no suitable habitat present within the project site.
Taricha torosa Coast Range newt	Fed: None CA: SSC	Resides in coastal areas. Found near small ponds, creeks, and seeps in woodlands and chaparral.	No	**Presumed Absent.** There is no suitable habitat present within the project site.
Taxidea taxus American badger	Fed: None CA: SSC	Primarily occupy grasslands, parklands, farms, tallgrass and shortgrass prairies, meadows, shrub-steppe communities and other treeless areas with sandy loam soils where it can dig more easily for its prey. Occasionally found in open chaparral (with less than 50% plant cover) and riparian zones.	No	**Presumed Absent.** There is no suitable habitat present within the project site.
Thamnophis hammondii two-striped garter snake	Fed: None CA: SSC	Generally found around pools, creeks, cattle tanks, and other water sources, often in rocky areas, in oak woodland, chaparral, brushland, and coniferous forest.	No	**Presumed Absent.** There is no suitable habitat present within the project site.
Vireo bellii pusillus least Bell's vireo	Fed: **END** CA: **END**	Primarily occupy Riverine riparian habitat that typically feature dense cover within 1 -2 meters of the ground and a dense, stratified canopy. Typically it is associated with southern willow scrub, cottonwood-willow forest, mule fat scrub, sycamore alluvial woodlands, coast live oak riparian forest, arroyo willow riparian forest, or mesquite in desert localities. It uses habitat which is limited to the immediate vicinity of water courses, 2,000 feet elevation in the interior.	No	**Presumed Absent.** There is no suitable habitat present within the project site.
PLANT SPECIES				
Abronia villosa* var. *aurita chaparral sand-verbena	Fed: None CA: None CNPS: 1B.1	Grows in sandy soils in coastal sage scrub and in chaparral habitats. Grows in elevation from 262 to 5,249 feet. Blooming period ranges from January to September.	No	**Low**. Marginal habitat is present within the project site.

Scientific Name Common Name	**Status**	**Habitat**	**Observed On-site**	**Potential to Occur**
Allium marvinii Yucaipa onion	Fed: None CA: None CNPS: 1B.2	Grows in chaparral (clay, openings). Found at elevations ranging from 2,495 to 2,595 feet. Blooming period is from March to May.	No	**Presumed absent**. No suitable habitat is present.
Allium munzii Munz's onion	Fed: **END** CA: **THR** CNPS: 1B.1	Found in chaparral, cismontane woodland, coastal scrub, pinyon and juniper woodland, valley and foothill grassland. Found at elevations ranging from 974 to 3,510 feet. Blooming period is from March to May.	No	**Presumed absent**. No suitable habitat is present.
Arctostaphylos rainbowensis rainbow manzanita	Fed: None CA: None CNPS: 1B.1	Habitats include vernally mesic areas, sandy coastal bluff scrub, coastal dunes, and mesic coastal prairie. Found at elevations ranging from 3 to 164 feet. Blooming period is from March to May.	No	**Presumed absent**. No suitable habitat is present.
Ayenia compacta California ayenia	Fed: None CA: None CNPS: 2B.3	Occurs in rocky soils within Mojavean desert scrub and Sonoran desert scrub. Found at elevations ranging from 500 to 3,600 feet. blooming period is from March to April.	No	**Presumed absent**. No suitable habitat is present.
Brodiaea filifolia thread-leaved brodiaea	Fed: **THR** CA: **END** CNPS: 1B.1	Grows in chaparral openings, cismontane woodland, coastal scrub, playas, valley and foothill grassland, and vernal pools, often in clay soils. Found at elevations ranging from 82 to 3,675 feet. Blooming period is from March to June.	No	**Presumed absent**. No suitable habitat is present.
Brodiaea santarosae Santa Rosa basalt brodiaea	Fed: None CA: None CNPS: 1B.2	Occurs primarily in soils derived from the Santa Rosa Basalt rock formation; open areas, grasslands, vernal pool edges. Grows in elevations ranging from 1,854 to 3,428 feet. Blooming period is from May to June.	No	**Presumed absent**. No suitable habitat is present.
Calochortus catalinae Catalina mariposa-lily	Fed: None CA: None CNPS: 4.2	Grows in chaparral, cismontane woodland, coastal scrub, and valley and foothill grassland habitats. Found at elevations ranging from 49 to 2,297 feet. Blooming period is from March to June.	No	**Presumed absent**. No suitable habitat is present.
Camissoniopsis lewisii Lewis evening-primrose	Fed: None CA: None CNPS: 3	Occurs in sandy or clay soils in coastal bluff scrub, cismontane woodland, coastal dunes, coastal scrub, and valley and foothill grasslands. Grows in elevations ranging from 0 to 1,740 feet above msl. Blooming period is from March to June.	No	**Presumed absent**. No suitable habitat is present.
Caulanthus simulans Paysons jewelflower	Fed: None CA: None CNPS: 4.2	Grows in chaparral and coastal scrub habitats. Is commonly found in burned areas or in disturbed sites such as streambeds. Also found on rocky, steep slopes. Prefers sandy, granitic soils. Grows in elevation from 623 to 7,185 feet. Blooming period ranges from March to May.	No	**Presumed absent**. No suitable habitat is present.
Ceanothus pendletonensis Pendleton ceanothus	Fed: None CA: None CNPS: 1B.2	Occurs exclusively on granodiorite-derived soils of the central Santa Margarita Mountains in San Diego County, California. Grows in elevations ranging from 361 to 2,854 feet. Blooming period ranges from March to June.	No	**Presumed absent**. No suitable habitat is present.

Scientific Name Common Name	**Status**	**Habitat**	**Observed On-site**	**Potential to Occur**
Centromadia pungens* ssp. *laevis smooth tarplant	Fed: None CA: None CNPS: 1B.1	Occurs in alkaline soils within chenopod scrub, meadows and seeps, playas, riparian woodland, and valley and foothill grassland habitats. Grows in elevation from 0 to 2,100 feet. Blooming period ranges from April to September.	No	**Presumed absent**. No suitable habitat is present.
Chaenactis glabriuscula var. orcuttiana Orcutts pincushion	Fed: None CA: None CNPS: 1B.1	Occurs in sandy areas within coastal bluff scrub and coastal dunes. Found at elevations ranging from 10 to 328 feet. Blooming period is from January to August.	No	**Presumed absent**. No suitable habitat is present.
Chamaebatia australis southern mountain misery	Fed: None CA: None CNPS: 4.2	Grows on chaparral hillsides. Found at elevations from 984 to 3,346 feet. Blooming period is from November to May.	No	**Presumed absent**. No suitable habitat is present.
Chorizanthe parryi var. parryi Parry's spineflower	Fed: None CA: None CNPS: 1B.1	Occurs on sandy and/or rocky soils in chaparral, coastal sage scrub, and sandy openings within alluvial washes and margins. Found at elevations ranging from 951 to 3,773 feet. Blooming period is from April to June.	No	**Presumed absent**. No suitable habitat is present.
Chorizanthe polygonoides var. longispina long-spined spineflower	Fed: None CA: None CNPS: 1B.2	Typically found on clay lenses which are largely devoid of shrubs. Can be found on the periphery of vernal pool habitat and even on the periphery of montane meadows near vernal seeps. Found at elevations ranging from 98 to 5,020 feet. Blooming period is from April to July.	No	**Presumed absent**. No suitable habitat is present.
Clinopodium chandleri San Miguel savory	Fed: None CA: None CNPS: 1B.2	Grows in chaparral, cismontane woodland, coastal scrub, riparian woodland, and valley and foothill grassland, usually in rocky, gabbroic, or metavolcanic substrate. Found at elevations ranging from 394 to 3,527 feet. Blooming period is from March to July.	No	**Presumed absent**. No suitable habitat is present.
Comarostaphylis diversifolia ssp. diversifolia summer holly	Fed: None CA: None CNPS: 1B.2	Grows on chaparral hillsides, especially around Quercus species. Very fire tolerant. Found at elevations from 328 to 1,804 feet. Blooming period is from May to June.	No	**Presumed absent**. No suitable habitat is present.
Convolvulus simulans small-flowered morning-glory	Fed: None CA: None CNPS: 4.2	Found in clay and serpentinite seeps within chaparral (openings), coastal scrub, valley and foothill grassland. Found at elevations ranging from 98 to 2,297 feet. Blooming period is from March to July.	No	**Presumed absent**. No suitable habitat is present.
Deinandra paniculata paniculate tarplant	Fed: None CA: None CNPS: 4.2	Typically found in vernally mesic, sometimes sandy soils in coastal scrub, valley and foothill grasslands, and vernal pools. Found at elevations ranging from 82 to 3,084 feet. Blooming period is from April to November.	No	**Low.** Marginal habitat present within the boundaries of the project site. Species is adapted to high degrees of disturbance.

Scientific Name Common Name	**Status**	**Habitat**	**Observed On-site**	**Potential to Occur**
Diplacus aridus low bush monkeyflower	Fed: None CA: None CNPS: 4.3	Grows in dry, rocky chaparral. Found at elevations ranging from 2,165 to 3,871 feet. Blooming period is from March to June.	No	**Presumed absent**. No suitable habitat is present.
Dudleya multicaulis many-stemmed dudleya	Fed: None CA: None CNPS: 1B.2	Often occurs on clay soils and around granitic outcrops in chaparral, coastal sage scrub, and grasslands. From 0 to 2,592 feet in elevation. Blooming period is from April to July.	No	**Presumed absent**. No suitable habitat is present.
Dudleya viscida sticky dudleya	Fed: None CA: None CNPS: 1B.2	Found in coastal scrub, coastal bluff scrub, chaparral, and cismontane woodland on north- and south-facing cliffs and banks. Grows at elevations ranging from 33 to 1,804 feet. Blooming period is from May to June.	No	**Presumed absent**. No suitable habitat is present.
Eryngium aristulatum* var. *parishii San Diego button-celery	Fed: **END** CA: **END** CNPS: 1B.1	Occurs in mesic soils in costal scrub and valley and foothill grasslands, and around vernal pools. Found at elevations ranging from 66 to 2,034 feet. Blooming period is from April to June.	No	**Presumed absent**. No suitable habitat is present.
Erythranthe diffusa Palomar monkeyflower	Fed: None CA: None CNPS: 4.3	Occurs in sandy soils in chaparral and lower montane coniferous forests. Found at elevations ranging from 4,002 to 6,004 feet. Blooming period is from April to June.	No	**Presumed absent**. No suitable habitat is present.
Geothallus tuberosus Campbell's liverwort	Fed: None CA: None CNPS: 1B.1	Grows in mesic soils in coastal scrub and vernal pool habitats. Found at elevations ranging from 30 to 2,000 feet. This species does not bloom.	No	**Presumed absent**. No suitable habitat is present.
Harpagonella palmeri Palmer's grapplinghook	Fed: None CA: None CNPS: 4.2	Occurs on clay soils in chaparral, coastal scrub, and valley and foothill grasslands habitats. Grows in elevation from 66 to 3,133 feet. Blooming period ranges from March to May.	No	**Presumed absent**. No suitable habitat is present.
Hesperocyparis forbesii Tecate cypress	Fed None CA: None CNPS: 1B.1	Grows in clay, gabbroic, or metavolcanic soils within closed-cone coniferous forest and chaparral habitats. Found at elevations ranging from 260 to 4,920 feet.	No	**Presumed absent**. No suitable habitat is present.
Holocarpha virgata* ssp. *elongata curving tarplant	Fed: None CA: None CNPS: 4.2	Found in chaparral, coastal scrub, valley and foothill grassland, and cismontane woodland. Found at elevations from 197 to 3,609 feet. Blooming period is from May to November.	No	**Presumed absent**. No suitable habitat is present.
Hordeum intercedens vernal barley	Fed: None CA: None CNPS: 3.2	Found in coastal dunes, coastal scrub, vernal pools, and valley and foothill grassland habitats. Found at elevations ranging from 16 to 3,281 feet. Blooming period is from March to June.	No	**Presumed absent**. No suitable habitat is present.

Scientific Name Common Name	**Status**	**Habitat**	**Observed On-site**	**Potential to Occur**
Horkelia truncate Ramona horkelia	Fed: None CA: None CNPS: 1B.3	Occurs in clay soils in mixed chaparral, vernal streams, and disturbed areas. Found at elevations ranging from 1,312 to 4,265 feet. Blooming period is from May to June.	No	**Presumed absent**. No suitable habitat is present.
Juglans californica southern California black walnut	Fed: None CA: None CNPS: 4.2	Found in chaparral, cismontane woodland, coastal scrub, and riparian woodland habitats. Found at elevations ranging from 164 to 2,953 feet. Blooming period is from March to August.	No	**Presumed absent**. No suitable habitat is present.
Juncus luciensis Santa Lucia dwarf rush	Fed: None CA: None CNPS: 1B.2	Occurs in wet soils in vernal pools, seeps, streambanks, and meadows. Found at elevations randing from 984 to 6,233 feet. Blooming period is from April to July.	No	**Presumed absent**. No suitable habitat is present.
Lepidium virginicum var. robinsonii Robinson's pepper-grass	Fed: None CA: None CNPS: 4.3	Dry soils on chaparral and coastal sage scrub from 66 to 4,396 feet in elevation. Blooming period ranges from January to July.	No	**Presumed absent**. No suitable habitat is present.
Lilium humboldtii ssp. ocellatum ocellated humboldt lily	Fed: None CA: None CNPS: 4.2	Occurs in openings within chaparral, cismontane woodland, coastal scrub, lower montane coniferous forest, and riparian woodland. Found at elevations ranging from 98 to 5,906 feet. Blooming period is from March to August.	No	**Presumed absent**. No suitable habitat is present.
Lilium parryi lemon lily	Fed: None CA: None CNPS: 1B.2	Prefers lower montane coniferous forest, riparian forests, upper montane coniferous forests, meadows and seeps. Found at elevations ranging from 4,003 to 9,006 feet. Blooming period is from July to August.	No	**Presumed absent**. No suitable habitat is present.
Limnanthes alba* ssp. *parishii Parish's meadowfoam	Fed: None CA: **END** CNPS: 1B.2	Grows in vernally mesic soils within lower montane coniferous forest, meadow and seep, and vernal pool habitats. Found at elevations ranging from 1,970 to 6,560 feet. Blooming period is from April to June.	No	**Presumed absent**. No suitable habitat is present.
Microseris douglasii* ssp. *platycarpha small-flowered microseris	Fed: None CA: None CNPS: 4.2	Occurs in clay soils in cismontane woodland, coastal scrub, valley and foothill grasslands, and around vernal pools. Found at elevations ranging from 49 to 3,510 feet. Blooming period is from March to May.	No	**Presumed absent**. No suitable habitat is present.
Monardella hypoleuca* ssp. *intermedia intermediate monardella	Fed: None CA: None CNPS 1B.3	Grows in understories within chaparral, cismontane woodland, and occasionally lower montane coniferous forest habitats. Found at elevations ranging from 1,300 to 4,100 feet. blooming period is from April to September.	No	**Presumed absent**. No suitable habitat is present.
Myosurus minimus* ssp. *Apus little mousetail	Fed: None CA: None CNPS: 3.1	Occurs in areas that have semi-regular inundation in association with vernal pools, alkali vernal pools, and alkali grassland. The species is primarily restricted to clay or alkali soils on alkali vernal floodplains. Found at elevations ranging from 66 to 2,100 feet above msl. Blooming period is from March to June.	No	**Presumed absent**. No suitable habitat is present.

Scientific Name Common Name	**Status**	**Habitat**	**Observed On-site**	**Potential to Occur**
Navarretia fossalis spreading navarretia	Fed: **THR** CA: None CNPS: 1B.1	Grows in chenopod scrub, assorted shallow freshwater marshes and swamps, playas, and vernal pools. Found at elevations ranging from 98 to 2,149 feet. Blooming period is from April to June.	No	**Presumed absent**. No suitable habitat is present.
Navarretia prostrata prostrate vernal pool navarretia	Fed: None CA: None CNPS: 1B.2	Coastal scrub, valley and foothill grasslands, and vernal pools. Grows in elevation from 49 to 2,297 feet in elevation. Blooming period ranges from April to July.	No	**Presumed absent**. No suitable habitat is present.
Orcuttia californica California Orcutt grass	Fed: **END** CA: **END** CNPS: 1B.1	Primarily restricted to the southern basaltic claypan vernal pools at the Santa Rosa Plateau, and alkali vernal pools at Skunk Hollow, and at Salt Creek. Grows in elevations ranging from 45 to 2,165 feet above msl. Blooming period is from April to August.	No	**Presumed absent**. No suitable habitat is present.
Piperia cooperi chaparral rein orchid	Fed: None CA: None CNPS: 4.2	Occurs in dry soils on in heavily vegetated coastal sage scrub, oak woodlands, and chaparral. Found at elevations to 4,921 feet. Blooming period is from March to June.	No	**Presumed absent**. No suitable habitat is present.
Polygala cornuta* var. *fishiae Fish's milkwort	Fed: None CA: None CNPS: 4.3	Occurs in chaparral, cismontane woodland, and riparian woodland. Found at elevations ranging from 328 to 3,281 feet. Blooming period is from May to August.	No	**Presumed absent**. No suitable habitat is present.
Pseudognaphalium leucocephalum white rabbit-tobacco	Fed: None CA: None CNPS: 2B.2	Chaparral, cismontane woodland, coastal scrub, riparian woodlands in sandy gravelly soils. Grows in elevation from 3 to 6,890 feet in elevation. Blooming period ranges from July to December.	No	**Presumed absent**. No suitable habitat is present.
Quercus engelmannii Engelmann oak	Fed: None CA: None CNPS: 4.2	Occurs in chaparral, cismontane woodland, riparian woodland, and valley and foothill grassland. Found at elevations ranging from 164 to 4,265 feet. Blooming period is from March to June.	No	**Presumed absent**. No suitable habitat is present.
Romneya coulteri Coulter's matilija poppy	Fed: None CA: None CNPS: 4.2	Found in recently burned areas within chaparral and coastal scrub habitats. Found at elevations ranging from 66 to 3,937 feet. Blooming period is from March to July.	No	**Presumed absent**. No suitable habitat is present.
Scutellaria bolanderi ssp. austromontana southern mountains skullcap	Fed: None CA: None CNPS: 1B.2	Typically grows on the moist embankments of montane creeks. Found at elevations ranging from 1,936 to 7,841 feet above msl. Blooming period is from June to August.	No	**Presumed absent**. No suitable habitat is present.
Sibaropsis hammittii Hammitt's clay-cress	Fed: None CA: None CNPS: 1B.2	Grows in clay soils within openings of chaparral habitat and valley and foothill grassland habitats. Found at elevations ranging from 2,360 to 3,500 feet. Blooming period is from March to April.	No	**Presumed absent**. No suitable habitat is present.

Scientific Name Common Name	**Status**	**Habitat**	**Observed On-site**	**Potential to Occur**
Sphaerocarpos drewei bottle liverwort	Fed: None CA: None CNPS: 1B.2	Grows in openings within chaparral and coastal scrub habitats. Found at elevations ranging from 200 to 1,970 feet. This species does not bloom.	No	**Presumed absent**. No suitable habitat is present.
Symphyotrichum defoliatum San Bernardino aster	Fed: None CA: None CNPS: 1B.2	Coastal scrub, valley and foothill grasslands, and vernal pools. Grows in elevation from 49 to 2,297 feet in elevation. Blooming period ranges from April to July.	No	**Presumed absent**. No suitable habitat is present.
Tetracoccus dioicus Parrys tetracoccus	Fed: None CA: None CNPS: 1B.2	Occurs on stony, decomposed gabbro soils within chaparral and coastal scrub. Found at elevations ranging from 492 to 3,281 feet. Blooming period is from April to May.	No	**Presumed absent**. No suitable habitat is present.
CDFW SENSITIVE HABITATS				
Southern Coast Live Oak Riparian Forest	CDFW Sensitive Habitat	Open to locally dense evergreen riparian woodlands dominated by *Quercus agrifolia*. This type appears to be richer in herbs and poorer in understory shrubs than other riparian communities. Bottomlands and outer floodplains along larger streams, on fine-grained, rich alluvium. Canyons and valleys of coastal southern California.	No	**Absent**
Southern Interior Basalt Flow Vernal Pool	CDFW Sensitive Habitat	Found only on the Santa Rosa Plateau in Western Riverside County, dominated by native annual plants, with low to moderate levels of perennial herbaceous cover. Concentric rings of flora species often present as the pool evaporates.	No	**Absent**
Southern Sycamore Alder Riparian Woodland	CDFW Sensitive Habitat	Occurs below 2,000 meters in elevation, sycamore and alder often occur along seasonally-flooded banks; cottonwoods and willows are also often present. Poison oak, mugwort, elderberry and wild raspberry may be present in understory.	No	**Absent**
Valley Needlegrass Grassland	CDFW Sensitive Habitat	Occur as patches of native grasslands within valleys. Dominated by perennial bunch grasses with herbaceous annuals intermixed. Supports early successional sub-shrub and suffrutescent species.	No	**Absent**

U.S. Fish and Wildlife Service (Fed) - Federal
END- Federal Endangered
THR- Federal Threatened

California Department of Fish and Wildlife (CA) - California
END- California Endangered
THR- California Threatened
Candidate- Candidate for listing under the California Endangered Species Act
FP- California Fully Protected
SSC- Species of Special Concern
WL- Watch List

California Native Plant Society (CNPS)
California Rare Plant Rank
1B Plants Rare, Threatened, or Endangered in California and Elsewhere
2B Plants Rare, Threatened, or Endangered in California, But More Common Elsewhere
3 Plants About Which More Information is Needed – A Review List
4 Plants of Limited Distribution – A Watch List

CNPS Threat Ranks
0.1- Seriously threatened in California
0.2- Moderately threatened in California
0.3- Not very threatened in California

Attachment E

Regulations

Special status species are native species that have been afforded special legal or management protection because of concern for their continued existence. There are several categories of protection at both federal and state levels, depending on the magnitude of threat to continued existence and existing knowledge of population levels.

Federal Regulations

Endangered Species Act of 1973

Federally listed threatened and endangered species and their habitats are protected under provisions of the Federal Endangered Species Act (ESA). Section 9 of the ESA prohibits "take" of threatened or endangered species. "Take" under the ESA is defined as to "harass, harm, pursue, hunt, shoot, wound, kill, trap, capture, or collect, or to attempt to engage in any of the specifically enumerated conduct." The presence of any federally threatened or endangered species that are in a project area generally imposes severe constraints on development, particularly if development would result in "take" of the species or its habitat. Under the regulations of the ESA, the United States Fish and Wildlife Service (USFWS) may authorize "take" when it is incidental to, but not the purpose of, an otherwise lawful act.

Critical Habitat is designated for the survival and recovery of species listed as threatened or endangered under the ESA. Critical Habitat includes those areas occupied by the species, in which are found physical and biological features that are essential to the conservation of an ESA listed species and which may require special management considerations or protection. Critical Habitat may also include unoccupied habitat if it is determined that the unoccupied habitat is essential for the conservation of the species.

Whenever federal agencies authorize, fund, or carry out actions that may adversely modify or destroy Critical Habitat, they must consult with USFWS under Section 7 of the ESA. The designation of Critical Habitat does not affect private landowners, unless a project they are proposing uses federal funds, or requires federal authorization or permits (e.g., funding from the Federal Highway Administration or a permit from the U.S. Army Corps of Engineers (Corps)).

If USFWS determines that Critical Habitat will be adversely modified or destroyed from a proposed action, the USFWS will develop reasonable and prudent alternatives in cooperation with the federal institution to ensure the purpose of the proposed action can be achieved without loss of Critical Habitat. If the action is not likely to adversely modify or destroy Critical Habitat, USFWS will include a statement in its biological opinion concerning any incidental take that may be authorized and specify terms and conditions to ensure the agency is in compliance with the opinion.

Migratory Bird Treaty Act

The Migratory Bird Treaty Act (MBTA) (16 U.S. Government Code [USC] 703) makes it unlawful to pursue, capture, kill, possess, or attempt to do the same to any migratory bird or part, nest, or egg of any such bird listed in wildlife protection treaties between the United States, Great Britain, Mexico, Japan, and the countries of the former Soviet Union, and authorizes the U.S. Secretary of the Interior to protect and regulate the taking of migratory birds. It establishes seasons and bag limits for hunted species and protects migratory birds, their occupied nests, and their eggs (16 USC 703; 50 CFR 10, 21).

The MBTA covers the taking of any nests or eggs of migratory birds, except as allowed by permit pursuant to 50 CFR, Part 21. Disturbances causing nest abandonment and/or loss of reproductive effort (i.e., killing or abandonment of eggs or young) may also be considered "take." This regulation seeks to protect migratory birds and active nests.

In 1972, the MBTA was amended to include protection for migratory birds of prey (e.g., raptors). Six families of raptors occurring in North America were included in the amendment: Accipitridae (kites, hawks, and eagles); Cathartidae (New World vultures); Falconidae (falcons and caracaras); Pandionidae (ospreys); Strigidae (typical owls); and Tytonidae (barn owls). The provisions of the 1972 amendment to the MBTA protects all species and subspecies of the families listed above. The MBTA protects over 800 species including geese, ducks, shorebirds, raptors, songbirds and many relatively common species.

State Regulations

California Environmental Quality Act (CEQA)

The California Environmental Quality Act (CEQA) provides for the protection of the environment within the State of California by establishing State policy to prevent significant, avoidable damage to the environment through the use of alternatives or mitigation measures for projects. It applies to actions directly undertaken, financed, or permitted by State lead agencies. If a project is determined to be subject to CEQA, the lead agency will be required to conduct an Initial Study (IS); if the IS determines that the project may have significant impacts on the environment, the lead agency will subsequently be required to write an Environmental Impact Report (EIR). A finding of non-significant effects will require either a Negative Declaration or a Mitigated Negative Declaration instead of an EIR. Section 15380 of the CEQA Guidelines independently defines "endangered" and "rare" species separately from the definitions of the California Endangered Species Act (CESA). Under CEQA, "endangered" species of plants or animals are defined as those whose survival and reproduction in the wild are in immediate jeopardy, while "rare" species are defined as those who are in such low numbers that they could become endangered if their environment worsens.

California Endangered Species Act (CESA)

In addition to federal laws, the state of California implements the CESA which is enforced by CDFW. The CESA program maintains a separate listing of species beyond the FESA, although the provisions of each act are similar.

State-listed threatened and endangered species are protected under provisions of the CESA. Activities that may result in "take" of individuals (defined in CESA as; "hunt, pursue, catch, capture, or kill, or attempt to hunt, pursue, catch, capture, or kill") are regulated by CDFW. Habitat degradation or modification is not included in the definition of "take" under CESA. Nonetheless, CDFW has interpreted "take" to include the destruction of nesting, denning, or foraging habitat necessary to maintain a viable breeding population of protected species.

The State of California considers an endangered species as one whose prospects of survival and reproduction are in immediate jeopardy. A threatened species is considered as one present in such small numbers throughout its range that it is likely to become an endangered species in the near future in the

absence of special protection or management. A rare species is one that is considered present in such small numbers throughout its range that it may become endangered if its present environment worsens. State threatened and endangered species are fully protected against take, as defined above.

The CDFW has also produced a species of special concern list to serve as a species watch list. Species on this list are either of limited distribution or their habitats have been reduced substantially, such that a threat to their populations may be imminent. Species of special concern may receive special attention during environmental review, but they do not have formal statutory protection. At the federal level, USFWS also uses the label species of concern, as an informal term that refers to species which might be in need of concentrated conservation actions. As the Species of Concern designated by USFWS do not receive formal legal protection, the use of the term does not necessarily ensure that the species will be proposed for listing as a threatened or endangered species.

Fish and Game Code

Fish and Game Code Sections 3503, 3503.5, 3511, and 3513 are applicable to natural resource management. For example, Section 3503 of the Code makes it unlawful to destroy any birds' nest or any birds' eggs that are protected under the MBTA. Further, any birds in the orders Falconiformes or Strigiformes (Birds of Prey, such as hawks, eagles, and owls) are protected under Section 3503.5 of the Fish and Game Code which makes it unlawful to take, possess, or destroy their nest or eggs. A consultation with CDFW may be required prior to the removal of any bird of prey nest that may occur on a project site. Section 3511 of the Fish and Game Code lists fully protected bird species, where the CDFW is unable to authorize the issuance of permits or licenses to take these species. Pertinent species that are State fully protected by the State include golden eagle (*Aquila chrysaetos*) and white-tailed kite (*Elanus leucurus*). Section 3513 of the Fish and Game Code makes it unlawful to take or possess any migratory nongame bird as designated in the MBTA or any part of such migratory nongame bird except as provided by rules and regulations adopted by the Secretary of the Interior under provisions of the MBTA.

Native Plant Protection Act

Sections 1900–1913 of the Fish and Game Code were developed to preserve, protect, and enhance Rare and Endangered plants in the state of California. The act requires all state agencies to use their authority to carry out programs to conserve Endangered and Rare native plants. Provisions of the Native Plant Protection Act prohibit the taking of listed plants from the wild and require notification of the CDFW at least ten days in advance of any change in land use which would adversely impact listed plants. This allows the CDFW to salvage listed plant species that would otherwise be destroyed.

California Native Plant Society Rare and Endangered Plant Species

Vascular plants listed as rare or endangered by the CNPS, but which have no designated status under FESA or CESA are defined as follows:

California Rare Plant Rank

1A- Plants Presumed Extirpated in California and either Rare or Extinct Elsewhere

1B- Plants Rare, Threatened, or Endangered in California and Elsewhere

2A- Plants Presumed Extirpated in California, But More Common Elsewhere

2B- Plants Rare, Threatened, or Endangered in California, But More Common Elsewhere

3- Plants about Which More Information is Needed - A Review List

4- Plants of Limited Distribution - A Watch List

Threat Ranks

.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 / moderate degree and immediacy of threat)

.3- Not very threatened in California (<20% of occurrences threatened / low degree and immediacy of threat or no current threats known).

There are three key agencies that regulate activities within inland streams, wetlands, and riparian areas in California. The Corps Regulatory Branch regulates activities pursuant to Section 404 of the Federal Clean Water Act (CWA) and Section 10 of the Rivers and Harbors Act. Of the State agencies, the CDFG regulates activities under the Fish and Game Code Section 1600-1616, and the Regional Board regulates activities pursuant to Section 401 of the CWA and the California Porter-Cologne Water Quality Control Act.

Federal Regulations

Section 404 of the Clean Water Act

In accordance with the Revised Definition of "Waters of the United States"; Conforming (September 8, 2023), "waters of the United Sates" are defined as follows:

(a) ***Waters of the United States*** means:

(1) Waters which are:
(i) Currently used, or were used in the past, or may be susceptible to use in interstate or foreign commerce, including all waters which are subject to the ebb and flow of the tide;
(ii) The territorial seas; or
(iii) Interstate waters;

(2) Impoundments of waters otherwise defined as waters of the United States under this definition, other than impoundments of waters identified under paragraph (a)(5) of this section;

(3) Tributaries of waters identified in paragraph (a)(1) or (2) of this section that are relatively permanent, standing or continuously flowing bodies of water;

(4) Wetlands adjacent to the following waters:
(i) Waters identified in paragraph (a)(1) of this section; or
(ii) Relatively permanent, standing or continuously flowing bodies of water identified in paragraph (a)(2) or (a)(3) of this section and with a continuous surface connection to those waters;

(5) Intrastate lakes and ponds not identified in paragraphs (a)(1) through (4) of this section that are relatively permanent, standing or continuously flowing bodies of water with a continuous surface connection to the waters identified in paragraph (a)(1) or (a)(3) of this section

(b) The following are not "waters of the United States" even where they otherwise meet the terms of paragraphs (a)(2) through (5) of this section:

(1) Waste treatment systems, including treatment ponds or lagoons, designed to meet the requirements of the Clean Water Act;

(2) Prior converted cropland designated by the Secretary of Agriculture. The exclusion would cease upon a change of use, which means that the area is no longer available for the production of agricultural commodities. Notwithstanding the determination of an area's status as prior converted

cropland by any other Federal agency, for the purposes of the Clean Water Act, the final authority regarding Clean Water Act jurisdiction remains with EPA;

(3) Ditches (including roadside ditches) excavated wholly in and draining only dry land and that do not carry a relatively permanent flow of water;

(4) Artificially irrigated areas that would revert to dry land if the irrigation ceased;
(5) Artificial lakes or ponds created by excavating or diking dry land to collect and retain water and which are used exclusively for such purposes as stock watering, irrigation, settling basins, or rice growing;
(6) Artificial reflecting or swimming pools or other small ornamental bodies of water created by excavating or diking dry land to retain water for primarily aesthetic reasons;

(7) Waterfilled depressions created in dry land incidental to construction activity and pits excavated in dry land for the purpose of obtaining fill, sand, or gravel unless and until the construction or excavation operation is abandoned and the resulting body of water meets the definition of waters of the United States; and

(8) Swales and erosional features (*e.g.*, gullies, small washes) characterized by low volume, infrequent, or short duration flow.

(c) In this section, the following definitions apply:

(1) ***Wetlands*** means those areas that are inundated or saturated by surface or ground water at a frequency and duration sufficient to support, and that under normal circumstances do support, a prevalence of vegetation typically adapted for life in saturated soil conditions. Wetlands generally include swamps, marshes, bogs, and similar areas.

(2) ***Adjacent*** means having a continuous surface connection

(3) ***High tide line*** means the line of intersection of the land with the water's surface at the maximum height reached by a rising tide. The high tide line may be determined, in the absence of actual data, by a line of oil or scum along shore objects, a more or less continuous deposit of fine shell or debris on the foreshore or berm, other physical markings or characteristics, vegetation lines, tidal gages, or other suitable means that delineate the general height reached by a rising tide. The line encompasses spring high tides and other high tides that occur with periodic frequency but does not include storm surges in which there is a departure from the normal or predicted reach of the tide due to the piling up of water against a coast by strong winds such as those accompanying a hurricane or other intense storm.

(4) ***Ordinary high water mark*** means that line on the shore established by the fluctuations of water and indicated by physical characteristics such as clear, natural line impressed on the bank, shelving, changes in the character of soil, destruction of terrestrial vegetation, the presence of litter and debris, or other appropriate means that consider the characteristics of the surrounding areas.

(5) ***Tidal waters*** means those waters that rise and fall in a predictable and measurable rhythm or cycle due to the gravitational pulls of the moon and sun. Tidal waters end where the rise and fall of the water surface can no longer be practically measured in a predictable rhythm due to masking by hydrologic, wind, or other effects.

Section 401 of the Clean Water Act

Pursuant to Section 401 of the CWA, any applicant for a federal license or permit to conduct any activity which may result in any discharge to waters of the United States must provide certification from the State or Indian tribe in which the discharge originates. This certification provides for the protection of the physical, chemical, and biological integrity of waters, addresses impacts to water quality that may result from issuance of federal permits, and helps insure that federal actions will not violate water quality standards of the State or Indian tribe. In California, there are nine Regional Water Quality Control Boards (Regional Board) that issue or deny certification for discharges to waters of the United States and waters of the State, including wetlands, within their geographical jurisdiction. The State Water Resources Control Board assumed this responsibility when a project has the potential to result in the discharge to waters within multiple Regional Boards.

State Regulations

Fish and Game Code

Fish and Game Code Sections 1600 et. seq. establishes a fee-based process to ensure that projects conducted in and around lakes, rivers, or streams do not adversely impact fish and wildlife resources, or, when adverse impacts cannot be avoided, ensures that adequate mitigation and/or compensation is provided.

Fish and Game Code Section 1602 requires 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:

(1) substantially obstruct or divert the natural flow of a river, stream, or lake;
(2) substantially change or use any material from the bed, channel, or bank of a river, stream, or lake; or
(3) deposit or dispose of debris, waste, or other material containing crumbled, flaked, or ground pavement where it can pass into a river, stream, or lake.

Fish and Game Code Section 1602 applies to all perennial, intermittent, and ephemeral rivers, streams, and lakes in the State. CDFW's regulatory authority extends to include riparian habitat (including wetlands) supported by a river, stream, or lake regardless of the presence or absence of hydric soils and saturated soil conditions. Generally, the CDFW takes jurisdiction to the top of bank of the stream or to the outer limit of the adjacent riparian vegetation (outer drip line), whichever is greater. Notification is generally required for any project that will take place in or in the vicinity of a river, stream, lake, or their tributaries. This includes rivers or streams that flow at least periodically or permanently through a bed or channel with banks that support fish or other aquatic life and watercourses having a surface or subsurface flow that support or have supported riparian vegetation. A Section 1602 Streambed Alteration Agreement would be required if impacts to identified CDFW jurisdictional areas occur.

Porter Cologne Act

The California *Porter-Cologne Water Quality Control Act* gives the State very broad authority to regulate waters of the State, which are defined as any surface water or groundwater, including saline waters. The Porter-Cologne Act has become an important tool in the post SWANCC and Rapanos regulatory environment, with respect to the state's authority over isolated and insignificant waters. Generally, any person proposing to discharge waste into a water body that could affect its water quality must file a Report of Waste Discharge in the event that there is no Section 404/401 nexus. Although "waste" is partially defined as any waste substance associated with human habitation, the Regional Board also interprets this to include fill discharged into water bodies.

APPENDIX C

Cultural/Archaeological/Tribal/ Paleontological Resources Report (BCR Consulting 2024)

PHASE I CULTURAL RESOURCES ASSESSMENT

Carancho Pump Station Design Project

Riverside County, California

Rancho California Water District



BCRCONSULTING LLC

March 22, 2024

PHASE I CULTURAL RESOURCES ASSESSMENT

Carancho Pump Station Design Project

Riverside County, California

Rancho California Water District

Prepared for:

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Principal Investigator
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BCR Consulting LLC
Claremont, California 91711

Project No. ARD2402

Sites Recorded: ARD2402-H-1
Keywords: Intensive Survey of Approximately Six Acres
USGS Quadrangle: 7.5-minute *Fallbrook* (1988) California
Non-Sectioned Township 8 South, Range 4 West, San Bernardino Base and Meridian

BCRCONSULTING LLC

March 22, 2024

MANAGEMENT SUMMARY

BCR Consulting LLC (BCR Consulting) is under contract to Ardurra to conduct a Cultural Resources Assessment of the Carancho Pump Station Design Project (the project) located in Riverside County, California. Tasks completed for the scope of work include a cultural resources records search, an intensive-level pedestrian cultural resources survey, completion of this technical report, a Sacred Lands File search with the Native American Heritage Commission, and a Paleontological Overview. These tasks were performed pursuant to California Environmental Quality Act (CEQA) according to Rancho California Water District requirements.

The cultural resources records search was conducted at the Eastern Information Center (EIC) at the University of California, Riverside. The records search revealed that 10 cultural resource studies have taken place and one cultural resource has been recorded within the research radius. Of these studies, none has assessed the project site for cultural resources and no cultural resources have been identified within the project boundaries. During the field survey, BCR Consulting personnel identified two historic-period steel water tanks, temporarily designated ARD2402-H-1. The two tanks are not recommended eligible for California Register of Historical Resources (California Register) listing and as such are recommended not significant under CEQA. No other cultural resources (including historic-period architectural resources, prehistoric archaeological resources, or historic-period archaeological resources) were identified within the project site boundaries. The site has been subject to severe disturbances related to the installation of the water tanks and access roads. These factors confer low sensitivity for significant buried resources within the project site boundaries. Based on these results, BCR Consulting recommends a finding of no significant adverse effect to historical resources under CEQA. No additional cultural resources work or monitoring is recommended.

Although the current study has not indicated sensitivity for unknown cultural resources within the project boundaries, ground disturbing activities always have the potential to reveal buried deposits not observed on the surface. Prior to the initiation of ground-disturbing activities, field personnel should be alerted to the possibility of buried prehistoric or historic cultural deposits. In the event that field personnel encounter buried cultural materials, work in the immediate vicinity of the find should cease and a qualified archaeologist should be retained to assess the significance of the find. The qualified archaeologist would have the authority to stop or divert construction excavation as necessary. If the qualified archaeologist finds that any cultural resources present meet eligibility requirements for listing on the California Register or the National Register, plans for the treatment, evaluation, and mitigation of impacts to the find will need to be developed. Prehistoric or historic cultural materials that may be encountered during ground-disturbing activities include:

- prehistoric flaked-stone artifacts and debitage (waste material), consisting of obsidian, basalt, and or cryptocrystalline silicates;
- groundstone artifacts, including mortars, pestles, and grinding slabs;
- dark, greasy soil that may be associated with charcoal, ash, bone, shell, flaked stone, groundstone, and fire affected rocks;
- human remains;
- historic-period artifacts such as glass bottles and fragments, cans, nails, ceramic and pottery fragments, and other metal objects;

- historic-period structural or building foundations, walkways, cisterns, pipes, privies, and other structural elements.

Findings were positive during the Sacred Lands File search with the NAHC. The NAHC recommended contacting Pechanga Band of Indians for more information. BCR Consulting has communicated with Pechanga Band of Indians and with Soboba Band of Luiseno Indians regarding the project. Pechanga Band of Indians provided a monitor to accompany BCR Consulting during the field survey. Soboba Band of Luiseno Indians deferred to Pechanga and did not send a monitor. The District will initiate Assembly Bill (AB) 52 Native American Consultation for the project. Since the District will initiate and carry out the required Native American Consultation, the results of the consultation are not provided in this report. However, this report may be used during the consultation process, and BCR Consulting staff is available to answer questions and address concerns as necessary.

According to CEQA Guidelines, projects subject to CEQA must determine whether the project would "directly or indirectly destroy a unique paleontological resource". The Paleontological Overview provided in Appendix B has recommended that:

> The geologic units underlying the project area are mapped as gabbro units from the mid-Cretaceous Holocene epoch (Kennedy, Tan, Bovard, Alvarez, Watson, and Gutierrez 2007). Gabbro units are considered to be of low paleontological value, and the Western Science Center does not have localities within the project area or within a 1 mile radius.
>
> Should excavation activity associated with the development of the project area extend beyond the current project are into surrounding alluvial units, paleontological resources would be possible. However, under current project parameters, and with the geologic units described, it would be unlikely for fossil material to be preserved.

If human remains are encountered during the undertaking, State Health and Safety Code Section 7050.5 states that no further disturbance shall occur until the County Coroner has made a determination of origin and disposition pursuant to Public Resources Code Section 5097.98. The County Coroner must be notified of the find immediately. If the remains are determined to be prehistoric, the Coroner will notify the Native American Heritage Commission (NAHC), which will determine and notify a Most Likely Descendant (MLD). With the permission of the landowner or his/her authorized representative, the MLD may inspect the site of the discovery. The MLD shall complete the inspection within 48 hours of notification by the NAHC.

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INTRODUCTION

BCR Consulting LLC (BCR Consulting) is under contract to Ardurra to conduct a Cultural Resources Assessment of the Carancho Pump Station Design Project (the project) located in Riverside County, California. The project site comprises approximately 6 acres. Carancho Pump Station is located within a non-sectioned area of Township 8 South, Range 4 West, San Bernardino Baseline and Meridian, in Riverside county within the USGS Fallbrook, California (1988) 7.5-minute topographic quadrangle (Figure 1). These efforts are performed pursuant to California Environmental Quality Act (CEQA) according to Rancho California Water District requirements.

Project Description

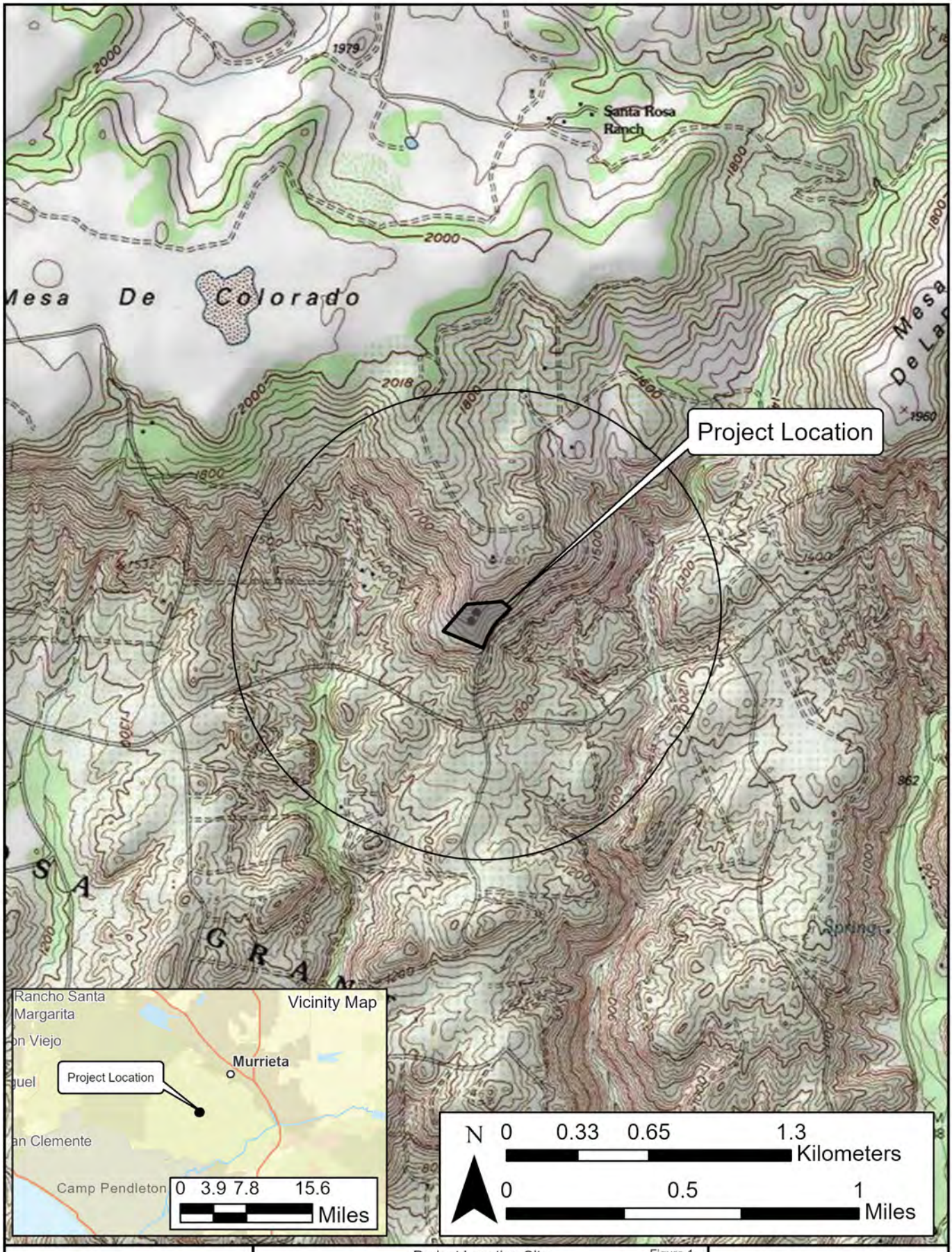
The Project involves the demolition of both existing Carancho Nos. 1 and 2 Tanks, permanent stabilization of the tank pad, abandonment in place of existing pipeline, replacement of two existing pumps and addition of two new pumps for a total of 4 new pumps within the existing pump station on the pump station (lower) pad. Project implementation will result in three duty pumps, one standby pump, installation of two new surge tanks, installation of new electrical conduits, new transformer, and new emergency power generation with automatic transfer switch, and the installation of approximately 600 linear feet of 24-inch diameter potable water pipeline from the eastern end of the main driveway of Carancho Pump Station to the proposed location of the pump station improvements on the lower pad along with the proposed potable water pipeline will be installed on areas of previous disturbance within Assessor Parcel Noumber 933-050-036 southwest of the Carancho Tanks.

Regulatory Setting

The California Environmental Quality Act. CEQA applies to all discretionary projects undertaken or subject to approval by the state's public agencies (California Code of Regulations 14(3), § 15002(i)). Under CEQA, "A project with an effect that may cause a substantial adverse change in the significance of a historical resource is a project that may have a significant effect on the environment" (Cal. Code Regs. tit. 14(3), § 15064.5(b)). State CEQA Guidelines section 15064.5(a) defines a "historical resource" as a resource that meets one or more of the following criteria:

- Listed in, or eligible for listing in, the California Register of Historical Resources (California Register)
- Listed in a local register of historical resources (as defined at Cal. Public Res. Code § 5020.1(k))
- Identified as significant in a historical resource survey meeting the requirements of § 5024.1(g) of the Cal. Public Res. Code
- Determined to be a historical resource by a project's lead agency (Cal. Code Regs. tit. 14(3), § 15064.5(a))

A historical resource consists of "Any object, building, structure, site, area, place, record, or manuscript which a lead agency determines to be historically significant or significant in the architectural, engineering, scientific, economic, agricultural, educational, social, political, military, or cultural annals of California…Generally, a resource shall be considered by the lead agency to be 'historically significant' if the resource meets the criteria for listing in the California Register of Historical Resources" (Cal. Code Regs. tit. 14(3), § 15064.5(a)(3)).



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Project Location Site
Carancho Pump Station Design Project

Figure 1

Reference: ESRI; USGS Quad: Fallbrook, California (1988)

Ardurra

The significance of a historical resource is impaired when a project demolishes or materially alters in an adverse manner those physical characteristics of a historical resource that convey its historical significance and that justify its eligibility for the California Register. If an impact on a historical or archaeological resource is significant, CEQA requires feasible measures to minimize the impact (State CEQA Guidelines § 15126.4 (a)(1)). Mitigation of significant impacts must lessen or eliminate the physical impact that the project will have on the resource.

Section 5024.1 of the Cal. Public Res. Code established the California Register. Generally, a resource is considered by the lead agency to be "historically significant" if the resource meets the criteria for listing in the California Register (Cal. Code Regs. tit. 14(3), § 15064.5(a)(3)). The eligibility criteria for the California Register are similar to those of the National Register of Historic Places (National Register), and a resource that meets one of more of the eligibility criteria of the National Register will be eligible for the California Register.

The California Register program encourages public recognition and protection of resources of architectural, historical, archaeological, and cultural significance, identifies historical resources for state and local planning purposes, determines eligibility for state historic preservation grant funding and affords certain protections under CEQA. Criteria for Designation:

1. Associated with events that have made a significant contribution to the broad patterns of local or regional history or the cultural heritage of California or the United States.
2. Associated with the lives of persons important to local, California or national history.
3. Embodies the distinctive characteristics of a type, period, region or method of construction or represents the work of a master or possesses high artistic values.
4. Has yielded, or has the potential to yield, information important to the prehistory or history of the local area, California or the nation.

In addition to meeting one or more of the above criteria, the California Register requires that sufficient time has passed since a resource's period of significance to "obtain a scholarly perspective on the events or individuals associated with the resources." (CCR 4852 [d][2]). Fifty years is normally considered sufficient time for a potential historical resource, and in order that the evaluation remain valid for a minimum of five years after the date of this report, all resources older than 45 years (i.e. resources from the "historic-period") will be evaluated for California Register listing eligibility, or CEQA significance. The California Register also requires that a resource possess integrity. This is defined as the ability for the resource to convey its significance through seven aspects: location, setting, design, materials, workmanship, feeling, and association.

Assembly Bill 52. California Assembly Bill 52 was approved on September 25, 2014. As stated in Section 11 of AB 52, the act applies only to projects that have a notice of preparation or a notice of negative declaration or mitigated negative declaration filed on or after July 1, 2015.

AB 52 establishes “tribal cultural resources” (TCRs) as a new category of resources under CEQA. As defined under Public Resources Code Section 21074, TCRs are “sites, features, places, cultural landscapes, sacred places, and objects with cultural value to a California Native American Tribe” that are either: (1) included or determined to be eligible for inclusion in the California Register; included in a local register of historical resources as defined in Public Resources Code Section 5020.1(k); or (2) determined by the lead agency to be significant pursuant to the criteria for inclusion in the CRHR set forth in Public Resources Code Section 5024.1(c), if supported by substantial evidence and taking into account the significance of the resource to a California Native American tribe. A “historical resource” as defined in Public Resources Code Section 21084.1, a “unique archaeological resource” as defined in Public Resources Code Section 21083.2(g), or a “nonunique archaeological resource” as defined in Public Resources Code Section 21083.2(h) may also be TCRs.

AB 52 further establishes a new consultation process with California Native American tribes for proposed projects in geographic areas that are traditionally and culturally affiliated with that tribe. Per Public Resources Code Section 21073, “California Native American tribe” includes federally and non-federally recognized tribes on the NAHC contact list. Subject to certain prerequisites, AB 52 requires, among other things, that a lead agency consult with the geographically affiliated tribe before the release of an environmental review document for a proposed project regarding project alternatives, recommended mitigation measures, or potential significant effects, if the tribe so requests in writing. If the tribe and the lead agency agree upon mitigation measures during their consultation, these mitigation measures must be recommended for inclusion in the environmental document (Public Resources Code Sections 21080.3.1, 21080.3.2, 21082.3, 21084.2, and 21084.3). Since the District will initiate and carry out the required AB52 Native American Consultation, the results of the consultation are not provided in this report. However, this report may be used during the consultation process, and BCR Consulting staff is available to answer questions and address comments as necessary.

Paleontological Resources. CEQA provides guidance relative to significant impacts on paleontological resources, indicating that a project would have a significant impact on paleontological resources if it disturbs or destroys a unique paleontological resource or site, or unique geologic feature. Section 5097.5 of the California Public Resources Code specifies that any unauthorized removal of paleontological remains is a misdemeanor. Further, California Penal Code Section 622.5 sets the penalties for damage or removal of paleontological resources. CEQA documentation prepared for projects would be required to analyze paleontological resources as a condition of the CEQA process to disclose potential impacts. Please note that as of January 2018 paleontological resources are considered in the geological rather than cultural category. Therefore, paleontological resources are not summarized in the body of this report. A paleontological overview completed by professional paleontologists from the Western Science Center is provided as Appendix D.

Personnel

David Brunzell, M.A., RPA, acted as Principal Investigator and provided project oversight. BCR Consulting Archaeological Crew Chief Timothy Blood, M.S. compiled the technical report. BCR Consulting Archaeological Field Director Nick Shepetuk, B.A. completed the cultural resources records search at the Eastern Information Center (EIC) at the University of California, Riverside. BCR Consulting Staff Archaeologist John Defachelle, B.A. conducted the field survey with Pechanga Band of Indians Representative Puma Martin.

The Native American Heritage Commission completed the Sacred Lands File search. The Western Science Center completed the paleontological overview.

NATURAL SETTING

Geology

The project site is situated in California's Peninsular Range geologic province that encompasses western Riverside County. Geological material in the area of the subject property is mostly Cretaceous plutonic rock consisting of hornblende diorite to gabbro (Tan 2000). The southern tip of the Northern Peninsular Range has a number of igneous rocks utilized by Native Americans for food (particularly seed) processing (see Brunzell 2007). These include granodiorites, quartz monzonites, and breccias, which are found locally. Metamorphosed sedimentary rocks, such as metamorphosed quartzite, are also found near the project site. Olivine basalt and andesite containing phenocrysts have also been locally utilized for the prehistoric manufacture of chipped stone tools (ibid.).

Hydrology

The region is characterized by a semi-arid climate, with dry, hot summers, and moderate winters. Rainfall ranges from 12 to 16 inches annually (Beck and Haase 1974). Precipitation usually occurs in the form of winter rain, with occasional monsoonal showers in late summer. The nearest water source is Lake Elsinore which is approximately 10 miles to the northwest. Elevation of the project site is approximately 1500 feet above mean sea level (AMSL). As such, it is characterized as lower Sonoran Life Zone, represented in cismontane valleys and low-mountain slopes (Jaeger and Smith 1971).

Vegetation

Coastal sage scrub plant community dominates the local vegetation. Signature plant species within the Coastal Sage Scrub Habitat includes black sage (*Salvia mellifera*), California brittlebush (*Encelia californica*), California buckwheat (*Eriogonum fasciculatum*), California sagebrush (*Artemesia californica*), deerweed (*Lotus scoparius*), golden yarrow (*Eriophyllum confertiflorum*), laurel sumac (*Malosma laurina*), lemonadeberry (*Rhus integrifolia*), poison oak (*Toxicodendron diverilobum*), purple sage (*Salvia leucophyla*), sticky monkeyflower (*Mimulus aurantiacus*), sugar bush (*Rhus ovate*), toyon (*Heteromeles arbutifolia*), white sage (*Salvia apiana*), coastal century plant (*Agave shawii*), coastal cholla (*Opuntia prolifera*), Laguna Beach liveforever (*Dudleya stolonifera*), many-stemmed liveforever (*Dudleya multicaulis*), our Lord's candle (*Yucca whipplei*), prickly pear cactus (*Opuntia* spp.) (Williams et al. 2008:118-119). Signature animal species within Coastal Sage Scrub habitat include the kangaroo rat (*Dipodomys* spp.), California horned lizard (*Phrynosoma coronatum frontale*), orange throated whiptail (*Cnemidophorus hyperthrus*), San Diego horned lizard (*Phrynosoma coronatum blainvillii*), brown-headed cowbird (*Molothrus ater*), California gnatcatcher (*Polioptila californica californica*), California quail (*Callipepla californica*), and San Diego cactus wren (*Campylorhynchus brunnecapillus sandiegensis*) (Williams et al. 2008:118-120).

For details on prehistoric (particularly Luiseño) local use of plant and animal species, see Lightfoot and Parrish (2009), Bean and Shipek (1978:552), and Oxendine (1983:19-29). Sparkman (1908) and Bean and Saubel (1972) have listed the harvesting and processing methods and seasons for edible plants that grow in the above described communities and others).

CULTURAL SETTING

Prehistoric Context

Two primary regional syntheses are commonly utilized in the archaeological literature for southern California. The first was advanced by Wallace in 1955, and defines four cultural horizons, each with characteristic local variations: Early Man Horizon, Milling Stone, Intermediate, and Late Prehistoric. Employing a more ecological approach, Warren (1986) defined five periods in southern California prehistory: Lake Mojave, Pinto, Gypsum, Saratoga Springs, and Protohistoric. Warren viewed cultural continuity and change in terms of various significant environmental shifts, defining the cultural ecological approach for archaeological research of the California deserts and coast. Many changes in settlement patterns and subsistence focus are viewed as cultural adaptations to a changing environment, beginning with the gradual environmental warming in the late Pleistocene, the desiccation of the desert lakes during the early Holocene, the short return to pluvial conditions during the middle Holocene, and the general warming and drying trend, with periodic reversals, that continue to this day (Warren 1986).

Paleoindian (12,000 to 10,000 BP) and Lake Mojave (10,000 to 7000 BP) Periods. Climatic warming characterizes the transition from the Paleoindian Period to the Lake Mojave Period. This transition also marks the end of Pleistocene Epoch and ushers in the Holocene. The Paleoindian Period has been loosely defined by isolated fluted (such as Clovis) projectile points, dated by their association with similar artifacts discovered in-situ in the Great Plains (Sutton 1996:227-228). Some fluted bifaces have been associated with fossil remains of Rancholabrean mammals approximately dated to ca. 13,300-10,800 BP near China Lake in the northern Mojave Desert. The Lake Mojave Period has been associated with cultural adaptations to moist conditions, and resource allocation pointing to more lacustrine environments than previously (Bedwell 1973). Artifacts that characterize this period include stemmed points, flake and core scrapers, choppers, hammerstones, and crescents (Warren and Crabtree 1986:184). Projectile points associated with the period include the Silver Lake and Lake Mojave styles. Lake Mojave sites commonly occur on shorelines of Pleistocene lakes and streams where geological surfaces of that epoch have been identified (Basgall and Hall 1994:69).

Pinto Period (7000 to 4000 BP). The Pinto Period has been largely characterized by desiccation of the southern California region. As formerly rich lacustrine environments began to disappear, the artifact record reveals more sporadic occupation of the drier regions, indicating occupants' recession into the cooler fringes (Warren 1986). Pinto Period sites are rare and are characterized by surface manifestations that usually lack significant in-situ remains. Artifacts from this era include Pinto projectile points and a flake industry similar to the Lake Mojave tool complex (Warren 1986), though use of Pinto projectile points as an index artifact for the era has been disputed (see Schroth 1994). Milling stones have also occasionally been associated with sites of this period (Warren 1986).

Gypsum Period. (4000 to 1500 BP). A temporary return to moister conditions during the Gypsum Period is postulated to have encouraged technological diversification afforded by the abundance of resources available (Warren 1986:419-420; Warren and Crabtree 1986:189). Lacustrine environments reappear and begin to be exploited during this era (Shutler 1961, 1968). Concurrently a more diverse artifact assemblage reflects intensified reliance on plant resources. The new artifacts include milling stones, mortars, pestles, and a proliferation of Humboldt Concave Base, Gypsum Cave, Elko Eared, and Elko Corner-

notched dart points (Warren 1986; Warren and Crabtree 1986). Other artifacts include leaf-shaped projectile points, rectangular-based knives, drills, large scraper planes, choppers, hammerstones, shaft straighteners, incised stone pendants, and drilled slate tubes. The bow and arrow appears around 1500 BP, evidenced by the presence of a smaller type of projectile point, the Rose Spring point (Rogers 1939; Schroeder 1953, 1961; Shutler 1961; Yohe 1992).

Saratoga Springs Period (1500 to 800 BP). During the Saratoga Springs Period regional cultural diversifications of Gypsum Period developments are evident. Influences from Patayan/Yuman assemblages are apparent in the southern inland areas, and include buff and brown wares often associated with Cottonwood and Desert Side-notched projectile points (Warren 1986:423). Obsidian becomes more commonly used throughout southern California and characteristic artifacts of the period include milling stones, mortars, pestles, ceramics, and ornamental and ritual objects. More structured settlement patterns are evidenced by large villages, and three types of identifiable archaeological sites (major habitation, temporary camps, and processing stations) emerge (McGuire and Hall 1988). Diversity of resource exploitation continues to expand, indicating a much more generalized, somewhat less mobile subsistence strategy.

Shoshonean Period (800 BP to Contact). The Shoshonean period is the first to benefit from contact-era ethnography and is subject to its inherent biases. Interviews of living informants allowed anthropologists to match artifact assemblages and particular traditions with linguistic groups, and plot them geographically (see Kroeber 1925; Gifford 1918; Strong 1929). During the Shoshonean Period continued diversification of site assemblages, and reduced Anasazi influence both coincide with the expansion of Numic (Uto-Aztecan language family) speakers across the Great Basin, Takic (Uto-Aztecan language family) speakers into southern California, and the Hopi across the Southwest (Sutton 1996). Hunting and gathering continued to diversify, and the diagnostic arrow points include desert side-notch and cottonwood triangular. Ceramics continue to proliferate, though are more common in southeastern Riverside County during this period (Warren and Crabtree 1986). Trade routes have become well established between coastal and inland groups.

Ethnography

The project site is situated within the traditional boundaries of the Luiseño (Bean and Shipek 1978; Kroeber 1925). Typically, the native culture groups in southern California are named after nearby Spanish missions, and such is the case for this Takic-speaking population. For instance, the term “Luiseño” is applied to the natives inhabiting the region within the “ecclesiastical jurisdiction of Mission San Luis Rey…[and who shared] an ancestral relationship which is evident in their cosmogony, and oral tradition, common language, and reciprocal relationship in ceremonies” (Oxendine 1983:8). The first written accounts of the Luiseño are attributed to the mission fathers. Sparkman (1908), Oxendine (1983) and others produced later documentation. Prior to Spanish occupation, the territory of the Luiseño extended along the coast from Agua Hedionda Creek to the south, Aliso Creek to the northwest, and the Elsinore Valley and Palomar Mountain to the east. These territorial boundaries were somewhat fluid and changed through time. They encompassed a diverse environment that included coastal beaches, lagoons and marshes, inland river valleys and foothills, and mountain groves of oaks and evergreens (Bean and Shipek 1978:551).

Like other Native American groups in southern California, the Luiseño caught and collected seasonally available food resources, and led a semi-sedentary lifestyle. Luiseño villages generally were located in valley bottoms, along streams, or along coastal strands near mountain ranges sheltered in canyons, near a water source, and in a location that was easily defended. Individuals from these villages took advantage of the varied resources available. They also established seasonal camps along the coast and near bays and estuaries to gather shellfish and hunt waterfowl (Kroeber 1925, Bean and Shipek 1978). The Luiseño lived in small communities, which were the focus of family life. Luiseño villages were politically independent, administered by a hereditary chief, and occupied by patrilineally linked extended families (Kroeber 1925; Bean and Shipek 1978). The Luiseño believed in private property, which covered items and land owned by the village, as well as items (houses, gardens, ritual equipment, trade beads, eagle nests, and songs) owned by individuals. Trespass against any property was punished (Bean and Shipek 1978:551). Luiseño subsistence was based primarily on seeds like acorns, grass seed, Manzanita, sunflower, sage, chia, and pine nuts. Seeds were dried and ground to be cooked into a mush. Game animals such as deer, rabbit, jackrabbit, wood rat, mice, antelope, and many types of birds supplemented their vegetal intake (Lightfoot and Parrish 2009:341-362). The Luiseño utilized fire for crop management and communal rabbit drives (ibid.; Bean and Shipek 1978:552).

History

In southern California, the historic era is generally divided into three periods: the Spanish or Mission Period (1769 to 1821), the Mexican or Rancho Period (1821 to 1848), and the American Period (1848 to present).

Spanish Period. The Spanish period (1769-1821) is represented by exploration of the region; establishment of the San Diego Presidio and missions at San Gabriel and San Luis Rey; and the introduction of livestock, agricultural goods, and European architecture and construction techniques. Spanish influence continued to some extent after 1821 due to the continued implementation of the mission system.

Mexican Period. The Mexican period (1821-1848) began with Mexican independence from Spain and continued until the end of the Mexican-American War (Cleland 1951). The Secularization Act of 1834 resulted in the transfer, through land grants (called ranchos) of large mission tracts to politically prominent individuals. Sixteen ranchos were granted in Riverside County. At that time, cattle ranching was a more substantial business than agricultural activities, and trade in hides and tallow increased during the early portion of this period. Until the Gold Rush of 1849, livestock and horticulture dominated California's economy (Beattie and Beattie 1974).

American Period. The American Period, 1848–Present, began with the Treaty of Guadalupe Hidalgo. In 1850, California was accepted into the Union of the United States primarily due to the population increase created by the Gold Rush of 1849. The cattle industry reached its greatest prosperity during the first years of the American Period. Mexican Period land grants had created large pastoral estates in California, and demand for beef during the Gold Rush led to a cattle boom that lasted from 1849–1855. However, beginning about 1855, the demand for beef began to decline due to imports of sheep from New Mexico and cattle from the Mississippi and Missouri Valleys. When the beef market collapsed, many California ranchers lost their ranchos through foreclosure. A series of

disastrous floods in 1861–1862, followed by a significant drought diminished the economic impact of local ranching. This decline combined with ubiquitous agricultural and real estate developments of the late 19th century, set the stage for diversified economic pursuits of the 20th century (Beattie and Beattie 1974; Cleland 1951). Economic and ethnic diversification and growth have resulted in California's most visible 20th century hallmarks. Prior to World War II agriculture, oil, tourism, railroad, and film industries all flourished, and while the great the Great Depression of the 1930s slowed (and in many cases stopped) growth, these all remained important throughout the century. The wartime economy helped alleviate many causes of the Great Depression, and the subsequent years saw further diversification in which the aerospace and electronics industries emerged. During World War II, many people had relocated to California in support of the military industrial complex, and a large number remained post-war in search of employment and to start families. The subsequent population boom coincided with the greatest economic growth in the history of the state, and accompanied large-scale land subdivision, construction of bedroom communities, and development of a comprehensive freeway system and a state system of higher education (Lavender 1972). These factors have all helped reshape California's landscape, economy, and material culture.

METHODS

This work was completed pursuant to the California Environmental Quality Act (CEQA), Public Resources Code (PRC) Chapter 2.6, Section 21083.2, and California Code of Regulations (CCR) Title 14, Chapter 3, Article 5, Section 15064.5. The pedestrian cultural resources survey is intended to locate and document previously recorded or new cultural resources, including archaeological sites, features, isolates, and historic-period buildings, that exceed 45 years in age within defined project boundaries. The project site was examined using 10 to 15 meter transect intervals. The study is intended to determine whether cultural resources are located within the given project boundaries, whether any cultural resources are significant pursuant to the above-referenced regulations and standards, and to develop specific mitigation measures that will address potential impacts to existing or potential resources. Tasks pursued to achieve that end include:

- Sacred Lands File search through the Native American Heritage Commission, and communications with recommended tribes and individuals;
- Cultural resources records search through the Eastern Information Center (EIC) to review any previous studies conducted and the resulting cultural resources recorded within one half-mile of the project site boundaries;
- Systematic pedestrian survey of the entire proposed project site.

Research

Records Search. A cultural resources records search request was conducted at the EIC. The records search included a review of all prerecorded historic-period and prehistoric cultural resources, as well as a review of known cultural resources surveys and excavation reports generated from projects located within one half-mile of the project site. In addition, a review was conducted of the National Register of Historic Places (National Register), the California Register of Historical Resources (California Register), and documents and inventories from the California Office of Historic Preservation (OHP) including the lists of California Historical Landmarks, California Points of Historical Interest, Listing of National Register Properties, and the Inventory of Historic Structures.

Field Survey

An intensive-level cultural resources field survey of the project site was conducted on February 12, 2024. The survey was conducted by walking parallel transects spaced approximately 10-15 meters apart across 100 percent of the accessible project site. Digital photographs were taken at various points within the project boundaries and all soil exposures were carefully examined for evidence of cultural resources.

RESULTS

Research

Records Search. A cultural resource records search was conducted at the EIC at the University of California, Riverside. The records search revealed that 10 cultural resource studies have taken place and one cultural resource was recorded within the research radius. Of these studies none have assessed the project site for cultural resources and no cultural resources have been previously identified within the project boundaries. Tables A and B summarize the disposition of previous studies and cultural resources within one half-mile of the project site. A complete records search bibliography is provided as Appendix A.

Table A. Cultural Resource Studies Summary

USGS 7.5-Minute Quad	Previous Studies
Fallbrook, California (1988)	RI-285, 540, 699, 793, 2584, 2792, 3077, 3197, 3736, 5781

Table B. Cultural Resources Summary

Primary No.	Period	Approximate Distance from Project Site/Description
P-33-5186	Prehistoric	0.40 Miles SW/Bedrock Milling Feature

Additional Land Use Research. A review of aerial photos indicate the project undeveloped until sometime between 1967 and 1978 when the two steel reservoirs that currently occupy the project site were constructed. The area south of the project site has been cultivated as early as 1967 (United States Department of Agriculture 1938, 1947, 1967, 1978).

Field Survey and California Register of Historical Resources Evaluation

During the field survey, BCR Consulting Staff Archaeological John Defachelle and Pechanga Band of Indians Monitor Puma Martin carefully inspected the project site for evidence of cultural resources, using the methods described above. Ground visibility averaged approximately 15 percent within the project site boundaries. Exposed sediment included yellowish-brown, silty sand with poorly sorted gravels and cobbles mixed throughout. The project site has been subject to disturbances associated with steel water tank and access road construction. Two historic-period steel water tanks were recorded. These are described in detail and evaluated for California Register of Historical Resources (California Register) listing eligibility (i.e. CEQA significance) below. The required Department of Park and Recreation (DPR) 523 forms are provided in Appendix B. No other cultural materials (including historic-period or prehistoric archaeological resources or historic-period built environment resources) were identified within the project site.

ARD2402-H-1. This resource consists of two steel water tanks. According to a Pittsburgh-Des Moines Steel Company badge on the south tank, it was constructed in 1975. The south tank has a diameter of 100 feet and an approximate height of 35 feet. According to historic aerial photographs, the north tank was constructed between 1976 and 1978 and has a diameter of 120 feet and an approximate height of 35 feet (United States Department of Agriculture 1976, 1978). The south tank was constructed of riveted steel panels and the north one was constructed of welded steel panels. Both tanks featured steel access ladders and steel pipes which extended from the ground to the roof on the west. Both tanks also have steel hatches near their bases and valve systems connected to their sidewalls near the base. A utility vault and associated electrical junction boxes mounted on an H-frame is located in a connected lot approximately 35 feet southwest of the south tank. In addition to the reservoir, a single wooden utility pole was present, which fed the property electricity from the utility line that runs parallel to El Calamar Road. The pole was inaccessible and could not be checked for inspection date nails.

California Register of Historical Resources. The California Register criteria are based on National Register criteria. For a property to be eligible for inclusion on the California Register, one or more of the following criteria must be met:

1. It is associated with the events that have made a significant contribution to the broad patterns of local or regional history, or the cultural heritage of California or the U.S.;
2. It is associated with the lives of persons important to local, California, or U.S. history;
3. It embodies the distinctive characteristics of a type, period, region, or method of construction, represents the work of a master, possesses high artistic values; and/or
4. It has yielded, or has the potential to yield, information important to the prehistory or history of the local area, California, or the nation.

In addition to meeting one or more of the above criteria, the California Register requires that sufficient time has passed since a resource's period of significance to "obtain a scholarly perspective on the events or individuals associated with the resources." (CCR 4852 [d][2]). The California Register also requires that a resource possess integrity. This is defined as the ability for the resource to convey its significance through seven aspects: location, setting, design, materials, workmanship, feeling, and association.

California Register Evaluation of ARD2401-H-1. The two steel water tanks are historic in age. Although they are associated with water storage and distribution in Riverside County, they are not individually linked to an event that has made a significant contribution to the broad patterns of history. Therefore, the water tanks are not recommended as eligible under Criterion 1. The water tanks are not associated with any individual significant in the past, thus they are not recommended eligible under Criterion 2. The water tanks are of ubiquitous design and as such do not embody any distinctive characteristics of a type, period, or construction method, represent the work of a master, possess high artistic value, or represent a significant entity whose components lack individual distinction. Therefore, the water tanks are not recommended eligible under Criterion 3. Lastly, the steel water tanks have not and are not likely to yield information important to the prehistory or history of the region. Ultimately, these two steel water tanks are not eligible for California Register

consideration under Criterion 4. Based on these results, ARD2401-H-1 is not eligible for California Register listing, and is not recommended a historical resource under CEQA

RECOMMENDATIONS

BCR Consulting conducted a Cultural Resources Assessment of the proposed Carancho Pump Station Design Project, pursuant to CEQA. During the record search and field survey, BCR Consulting personnel identified two historic-period steel water tanks, temporarily designated ARD2402-H-1. The two tanks are not recommended eligible for California Register listing and as such are recommended not significant under CEQA. No other cultural resources (including historic-period architectural resources, prehistoric archaeological resources, or historic-period archaeological resources) were identified within the project site boundaries. The site has been subject to severe disturbances related to the installation of the water tanks and access roads. These factors confer low sensitivity for significant buried resources within the project site boundaries. Based on these results, BCR Consulting recommends a finding of no significant adverse effect to historical resources under CEQA. No additional cultural resources work or monitoring is recommended.

Although the current study has not indicated sensitivity for unknown cultural resources within the project boundaries, ground disturbing activities always have the potential to reveal buried deposits not observed on the surface. Prior to the initiation of ground-disturbing activities, field personnel should be alerted to the possibility of buried prehistoric or historic cultural deposits. In the event that field personnel encounter buried cultural materials, work in the immediate vicinity of the find should cease and a qualified archaeologist should be retained to assess the significance of the find. The qualified archaeologist would have the authority to stop or divert construction excavation as necessary. If the qualified archaeologist finds that any cultural resources present meet eligibility requirements for listing on the California Register or the National Register, plans for the treatment, evaluation, and mitigation of impacts to the find will need to be developed. Prehistoric or historic cultural materials that may be encountered during ground-disturbing activities include:

- prehistoric flaked-stone artifacts and debitage (waste material), consisting of obsidian, basalt, and or cryptocrystalline silicates;
- groundstone artifacts, including mortars, pestles, and grinding slabs;
- dark, greasy soil that may be associated with charcoal, ash, bone, shell, flaked stone, groundstone, and fire affected rocks;
- human remains;
- historic-period artifacts such as glass bottles and fragments, cans, nails, ceramic and pottery fragments, and other metal objects;
- historic-period structural or building foundations, walkways, cisterns, pipes, privies, and other structural elements.

Findings were positive during the Sacred Lands File search with the NAHC. The NAHC recommended contacting Pechanga Band of Indians for more information. BCR Consulting has communicated with Pechanga Band of Indians and with Soboba Band of Luiseno Indians regarding the project. Pechanga Band of Indians provided a monitor to accompany BCR Consulting during the field survey. Soboba Band of Luiseno Indians deferred to

Pechanga and did not send a monitor. The District will initiate Assembly Bill (AB) 52 Native American Consultation for the project. Since the District will initiate and carry out the required Native American Consultation, the results of the consultation are not provided in this report. However, this report may be used during the consultation process, and BCR Consulting staff is available to answer questions and address concerns as necessary.

According to CEQA Guidelines, projects subject to CEQA must determine whether the project would "directly or indirectly destroy a unique paleontological resource". The Paleontological Overview provided in Appendix D has recommended that:

> The geologic units underlying the project area are mapped as gabbro units from the mid-Cretaceous Holocene epoch (Kennedy, Tan, Bovard, Alvarez, Watson, and Gutierrez 2007). Gabbro units are considered to be of low paleontological value, and the Western Science Center does not have localities within the project area or within a 1 mile radius.
>
> Should excavation activity associated with the development of the project area extend beyond the current project are into surrounding alluvial units, paleontological resources would be possible. However, under current project parameters, and with the geologic units described, it would be unlikely for fossil material to be preserved.

If human remains are encountered during the undertaking, State Health and Safety Code Section 7050.5 states that no further disturbance shall occur until the County Coroner has made a determination of origin and disposition pursuant to Public Resources Code Section 5097.98. The County Coroner must be notified of the find immediately. If the remains are determined to be prehistoric, the Coroner will notify the Native American Heritage Commission (NAHC), which will determine and notify a Most Likely Descendant (MLD). With the permission of the landowner or his/her authorized representative, the MLD may inspect the site of the discovery. The MLD shall complete the inspection within 48 hours of notification by the NAHC.

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Williams, Patricia, Leah Messinger, Sarah Johnson
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Yohe, Robert M., II
1992 *A Reevaluation of Western Great Basin Cultural Chronology and Evidence for the Timing of the Introduction of the Bow and Arrow to Eastern California Based on New Excavations at the Rose Spring Site (CA-INY-372).* Unpublished PhD Dissertation, University of California, Riverside.

APPENDIX A

RECORDS SEARCH BIBLIOGRAPHY

Report List

Report No.	Other IDs	Year	Author(s)	Title	Affiliation	Resources
RI-00285	NADB-R - 1080340; Voided - MF-0258	1978	D.M Van Horn and M.J. Aasved	Achaeological Survey Report: Parcels 13 and 15 of Rancho California	Archaeological Associates, Costa Mesa, CA	
RI-00540	NADB-R - 1080580; Other - 0452; Voided - MF-0472	1979	Stephen Bouscaren	Environmental Impact Evaluation: An Archaeological Assessment of Tentative Tract 13304, South of Mesa de Colorado, Riverside County, California	Archaeological Research Unit, UC Riverside	
RI-00699	NADB-R - 1080750; Voided - MF-0622	1979	Roger J. Desautels and Terry Malone	Archaeological Survey Report on Tentative Parcel Map 11896, A 20.4-Acre Parcel of Land Located in the Rancho Santa Rosa Area of Rancho California in Riverside, California	Scientific Resource Surveys, Inc., Santa Ana, CA	
RI-00793	NADB-R - 1080845; Voided - MF-0714	1980	Larry L. Bowles and Jean A. Salpas	An Archaeological Assessment of Parcel 14722	Archaeological Consultants	
RI-02584	NADB-R - 1083064; Voided - MF-2801	1989	KELLER, JEAN S.	AN ARCHAEOLOGICAL ASSESSMENT OF TENTATIVE PARCEL MAP 25181 RIVERSIDE COUNTY, CALIFORNIA.	AUTHOR(S)	
RI-02792	NADB-R - 1083401; Voided - MF-2995	1990	KELLER, JEAN A.	AN ARCHAEOLOGICAL ASSESSMENT OF TENTATIVE PARCEL MAP 25180 RIVERSIDE COUNTY, CALIFORNIA	AUTHOR	
RI-03077	NADB-R - 1083626; Voided - MF-3299	1990	KELLER, JEAN A.	AN ARCHAEOLOGICAL ASSESSMENT OF TENTATIVE PARCEL MAP 25957 RIVERSIDE COUNTY, CALIFORNIA.	AUTHOR	
RI-03197	NADB-R - 1083759; Voided - MF-3415	1991	KELLER, JEAN	AN ARCHAEOLOGICAL ASSESSMENT OF TENTATIVE PARCEL MPA 25454, RIVERSIDE COUNTY, CALIFORNIA	AUTHOR	
RI-03736	NADB-R - 1084552; Voided - MF-4059	1993	WHITE, ROBERT S.	AN ARCHAEOLOGICAL ASSESSMENT OF A 26.32-ACRE PARCEL AS SHOWN ON TPM 27759 LOCATED ADJACENT TO CARANCHO ROAD NEAR TEMECULA, RIVERSIDE COUNTY	ARCHAEOLOGICAL ASSOCIATES	33-005186
RI-05781	NADB-R - 1087144; Submitter - 941	2002	DAHDUL, MARIAM and HARRY QUINN	HISTORICAL/ARCHAEOLOGICAL RESOURCES SURVEY REPORT, SANTA ROSA ROADWAY IMPROVEMENT PROJECT, NEAR THE CITIES OF MURRIETA AND TEMECULA, RIVERSIDE COUNTY, CALIFORNIA	CRM TECH	

Resource List

Primary No.	Trinomial	Other IDs	Type	Age	Attribute codes	Recorded by	Reports
P-33-005186	CA-RIV-005186	Other - V-1	Site	Prehistoric	AP04	1993 (Robert S. White, Archaeological Associates, Sun City, CA.)	RI-03736

APPENDIX B

DEPARTMENT OF PARK AND RECREATION 523 FORMS

State of California — The Resources Agency
DEPARTMENT OF PARKS AND RECREATION

PRIMARY RECORD

Primary #
HRI #
Trinomial
NRHP Status Code

Other Listings
Review Code | Reviewer | Date

 ***Resource Name or #:** ARD2402-H-1

P1. Other Identifier: Carancho Pump Station

***P2. Location:** ☐ **Not for Publication** ☑ **Unrestricted** ***a. County:** Riverside

and (P2b and P2c or P2d. Attach a Location Map as necessary.)

***b. USGS 7.5' Quad:** *Fallbrook, California* **Date:** 1988 **T**8S; **R**4W; Non-sectioned**;** SBBM

c. Address: N/A City: Unincorporated Riverside County Zip: N/A

d. UTM: Zone: 11S 474563 mE/ 3706124 mN (G.P.S.; NAD83) Elevation: 1610' AMSL

e. Other Locational Data: The subject property is located approximately 0.25 miles north of the intersection Carancho Road and El Calamar Road.

***P3a. Description:** This resource consists of two water reservoir tanks. According to a Pittsburgh-Des Moines Steel Company badge on the south tank, it was constructed in 1975. The south tank has a diameter of 100 feet and an approximate height of 35 feet. According to historic aerial photographs, the north tank was constructed between 1976 and 1978 and has a diameter of 120 feet and an approximate height of 35 feet (United States Department of Agriculture 1976, 1978). The south tank was constructed of riveted steel panels and the north one was constructed of welded steel panels. Both tanks featured steel access ladders and steel pipes which extended from the ground to the roof on their west sides. Both tanks also have steel hatches near their bases and valve systems connected to their sidewalls near the base. A utility vault and associated electrical junction boxes mounted on an H-frame is located in a connected lot approximately 35 feet southwest of the south tank. In addition to the reservoir, a single wooden utility pole was present, which fed the property electricity from the utility line that runs parallel to El Calamar Road. The pole inaccessible and could not be checked for inspection date nails.

References:

United States Department of Agriculture. 1967, 1976, 1978. Historic aerial photographs of Riverside County. Electronic document, https://historicaerials.com/viewer, and https://mil.library.ucsb.edu/ap_indexes/FrameFinder/, accessed March 8, 2024.

***P3b. Resource Attributes:** AH5. Wells/cisterns; AH6. Water conveyance system

P5a. Photo or Drawing (Photo required for buildings, structures, and objects.)



***P4. Resources Present:**
☐Building ☑Structure ☐Object ☐Site ☐District ☐Element of District ☐Other

P5b. Description of Photo: (View, date, accession #) Photo 1: Overview (View North)

***P6. Date Constructed/ Age and Sources:** ☑Historic 1967-1978 (see page 2) ☐Prehistoric ☐Both

***P7. Owner and Address:** Riverside County

***P8. Recorded by:**
J. Defachelle
BCR Consulting LLC
Claremont, California 91711

***P9. Date Recorded:** February 12, 2024

***P10. Survey Type:** Intensive.

***P11. Report Citation:** *Phase I Cultural Resources Assessment of the Carancho Pump Station Design Project, Riverside County, California.*

***Attachments:** ☐None ☑Location Map ☐Sketch Map ☐Continuation Sheet ☐Building, Structure, and Object Record ☐Archaeological Record ☐District Record ☐Linear Feature Record ☐Milling Station Record ☐Rock Art Record ☐Artifact Record ☐Photograph Record ☐ Other (List):

State of California - The Resources Agency DEPARTMENT OF PARKS AND RECREATION **LOCATION MAP**	**Primary #:** **HRI #:** **Trinomial:**

***Resource Name or #:** ARD2402-H-1

***Map Name:** *Fallbrook, California* ***Scale:** 1:24,000 ***Date of Map:** 1988



***Required Information**

APPENDIX C

NATIVE AMERICAN HERITAGE COMMISSION SACRED LANDS FILE SEARCH

NATIVE AMERICAN HERITAGE COMMISSION

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NAHC HEADQUARTERS
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West Sacramento,
California 95691
(916) 373-3710
nahc@nahc.ca.gov
NAHC.ca.gov

February 27, 2024

Nicholas Shepetuk
BCR Consulting LLC

Via Email to: BCRLLC2008@gmail.com

Re: Carancho Pump Station Design Project, Riverside County

Dear Mr. Shepetuk:

A record search of the Native American Heritage Commission (NAHC) Sacred Lands File (SLF) was completed for the information submitted for the above referenced project. The results were positive. Please contact the Pechanga Band of Indians on the attached list for information. Please note that tribes do not always record their sacred sites in the SLF, nor are they required to do so. A SLF search is not a substitute for consultation with tribes that are traditionally and culturally affiliated with a project's geographic area. Other sources of cultural resources should also be contacted for information regarding known and recorded sites, such as the appropriate regional California Historical Research Information System (CHRIS) archaeological Information Center for the presence of recorded archaeological 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. Please contact all of those listed; if they cannot supply information, they may 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 the NAHC. 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: Andrew.Green@nahc.ca.gov.

Sincerely,

Andrew Green

Andrew Green
Cultural Resources Analyst

Attachment

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May 10, 2024

VIA E-MAIL: CMADRIGAL@RINCON-NSN.GOV
CRD@RINCON-NSN.GOV

Cheryl Madrigal, Cultural Resources Manager
Rincon Band of Luiseño Mission Indians
Cultural Resources Department
1 West Tribal Road
Valley Center, CA 92082

SUBJECT: AB52 NATIVE AMERICAN CONSULTATION AND PROJECT NOTIFICATION, PROPOSED CARANCHO PUMP STATION EXPANSION AND IMPROVEMENT, TEMECULA, RIVERSIDE COUNTY, CALIFORNIA

Dear Ms. Madrigal:

In accordance with Public Resources Code, section 21080.3.1(d), the Rancho California Water District (Rancho Water/District) hereby notifies you of the proposed Carancho Pump Station Expansion and Improvement located at the existing Carancho Pump Station site, north of the intersection of El Calamar Road and Carancho Road, in the city of Temecula, Riverside County, California. The site address is 43695 El Calamar Road, Temecula, CA 92590.

The Project involves the demolition of both existing Carancho Nos. 1 and 2 Tanks, permanent stabilization of the tank pad, replacement of two (2) existing pumps, and addition of two (2) new pumps for a total of four (4) new pumps on the pump station pad (3 duty pumps, 350 HP; 1 standby pump, 350 HP) to meet the desired capacity of 4,400 GPM; installation of two (2) new surge tanks; installation of new electrical conduits; new transformer; and new 1,500 kW emergency power generation with automatic transfer switch that meets Tier 2 emission standards1. The pump station will be installed on areas of previous disturbance within APN 933-050-036 southwest of the Carancho Tanks.

[1] Tier 2 emission standards are established by the U.S. EPA for Stationary Emergency Use Only and apply to nonroad diesel engines. Engines of various sizes need to meet preestablished thresholds for smoke (PM); and Nitrous Oxide (NOx) (US EPA, 2022).

Rancho California Water District
42135 Winchester Road • Temecula, California 92590-4800 • (951) 296-6900 • FAX (951) 296-6860 • www.ranchowater.com

The District is the lead agency for the proposed project. The lead agency contact person is Director of Engineering Dan Ruiz; contact information is as follows:

Dan Ruiz, Director of Engineering
Rancho California Water District
42135 Winchester Road
Temecula, CA 92590
(951) 296-6989
ruizd@ranchowater.com

You and/or your tribe have previously requested to receive notice of qualifying projects under Public Resources Code, section 21080.3.1. You were identified by the Rincon Band of Luiseño Mission Indians as the Tribe's designated lead contact or tribal representative.

To that end, please take notice that you and your tribe have thirty (30) days from the date of this letter to request consultation on the proposed project pursuant to Public Resources Code, section 21080.3.1.

If you should have any questions or concerns, please contact me at the phone number or email address above.

Sincerely,

RANCHO CALIFORNIA WATER DISTRICT

Dan Ruiz, P.E.
Director of Engineering

cc: Phillip Dauben, Principal Engineer
Greg Brown, Assistant Engineer
Robert Avera, Engineering Manager
Robert S. Grantham, General Manager
Jason Martin, Assistant General Manager
Shuuluk Linton, Coordinator (slinton@rincon-nsn.gov)

24\DR:PD:GB:hab071\F475\D2048

AB52 Notification - Carancho [D2048], Joaquin [D2199]

Heather Buero <bueroh@ranchowater.com>

Fri 5/10/2024 3:09 PM

To:acbci-thpo@aguacaliente.net <acbci-thpo@aguacaliente.net>

2 attachments (311 KB)

069-AB52-D2048-AguaCaliente.pdf; 073-AB52-D2199-AguaCaliente.pdf;

Good afternoon,

Please see the attached correspondence regarding AB52 Native American Consultation and Project Notification for the following Rancho California Water District projects:

- Carancho Pump Station Expansion and Improvement [Project No. D2048]
- Joaquin Ranch Pump Station Disinfection Improvements [Project No. D2199]

Thank you,

Heather

Heather Buero | Senior Engineering Technician

RANCHO WATER | *Working for Our Community*

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May 10, 2024

VIA E-MAIL: ACBCI-THPO@AGUACALIENTE.NET

Patricia Garcia
Director of Tribal Historic Preservation Office
Agua Caliente Band of Cahuilla Indians
5401 Dinah Shore Drive
Palms Springs, CA 92264

SUBJECT: AB52 NATIVE AMERICAN CONSULTATION AND PROJECT NOTIFICATION, PROPOSED CARANCHO PUMP STATION EXPANSION AND IMPROVEMENT, TEMECULA, RIVERSIDE COUNTY, CALIFORNIA

Dear Ms. Garcia:

In accordance with Public Resources Code, section 21080.3.1(d), the Rancho California Water District (Rancho Water/District) hereby notifies you of the proposed Carancho Pump Station Expansion and Improvement located at the existing Carancho Pump Station site, north of the intersection of El Calamar Road and Carancho Road, in the city of Temecula, Riverside County, California. The site address is 43695 El Calamar Road, Temecula, CA 92590.

The Project involves the demolition of both existing Carancho Nos. 1 and 2 Tanks, permanent stabilization of the tank pad, replacement of two (2) existing pumps, and addition of two (2) new pumps for a total of four (4) new pumps on the pump station pad (3 duty pumps, 350 HP; 1 standby pump, 350 HP) to meet the desired capacity of 4,400 GPM; installation of two (2) new surge tanks; installation of new electrical conduits; new transformer; and new 1,500 kW emergency power generation with automatic transfer switch that meets Tier 2 emission standards1. The pump station will be installed on areas of previous disturbance within APN 933-050-036 southwest of the Carancho Tanks.

[1] Tier 2 emission standards are established by the U.S. EPA for Stationary Emergency Use Only and apply to nonroad diesel engines. Engines of various sizes need to meet preestablished thresholds for smoke (PM); and Nitrous Oxide (NOx) (US EPA, 2022).

24\DR:PD:GB:hab069\F475\D2048

The District is the lead agency for the proposed project. The lead agency contact person is Director of Engineering Dan Ruiz; contact information is as follows:

Dan Ruiz, Director of Engineering
Rancho California Water District
42135 Winchester Road
Temecula, CA 92590
(951) 296-6989
ruizd@ranchowater.com

You and/or your tribe have previously requested to receive notice of qualifying projects under Public Resources Code, section 21080.3.1. You were identified by the Agua Caliente Band of Cahuilla Indians as the Tribe's designated lead contact or tribal representative.

To that end, please take notice that you and your tribe have thirty (30) days from the date of this letter to request consultation on the proposed project pursuant to Public Resources Code, section 21080.3.1.

If you should have any questions or concerns, please contact me at the phone number or email address above.

Sincerely,

RANCHO CALIFORNIA WATER DISTRICT

Dan Ruiz, P.E.
Director of Engineering

cc: Phillip Dauben, Principal Engineer
Greg Brown, Assistant Engineer
Robert Avera, Engineering Manager
Robert S. Grantham, General Manager
Jason Martin, Assistant General Manager

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O: (951) 755.5256

C: (951) 663.7570

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From: Heather Buero <bueroh@ranchowater.com>
Sent: Friday, May 10, 2024 3:08 PM
To: Tribal Historic Preservation Office <thpo@morongo-nsn.gov>
Cc: Ann Brierty <ABrierty@morongo-nsn.gov>; Laura Chatterton <lchatterton@morongo-nsn.gov>; Joan Schneider <jschneider@morongo-nsn.gov>
Subject: AB52 Notification - Carancho [D2048], Joaquin [D2199]

Good afternoon,

Please see the attached correspondence regarding AB52 Native American Consultation and Project Notification for the following Rancho California Water District projects:

- Carancho Pump Station Expansion and Improvement [Project No. D2048]
- Joaquin Ranch Pump Station Disinfection Improvements [Project No. D2199]

Thank you,

Heather

Heather Buero | Senior Engineering Technician

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Office: 951-296-6977 | **Fax: 951-296-6863**

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May 10, 2024

VIA E-MAIL: THPO@MORONGO-NSN.GOV

Robert Martin, Tribal Chairman
Morongo Band of Mission Indians
Cultural Resources Department
12700 Pumarra Road
Banning, CA 92220

SUBJECT: AB52 NATIVE AMERICAN CONSULTATION AND PROJECT NOTIFICATION, PROPOSED CARANCHO PUMP STATION EXPANSION AND IMPROVEMENT, TEMECULA, RIVERSIDE COUNTY, CALIFORNIA

Dear Mr. Martin:

In accordance with Public Resources Code, section 21080.3.1(d), the Rancho California Water District (Rancho Water/District) hereby notifies you of the proposed Carancho Pump Station Expansion and Improvement located at the existing Carancho Pump Station site, north of the intersection of El Calamar Road and Carancho Road, in the city of Temecula, Riverside County, California. The site address is 43695 El Calamar Road, Temecula, CA 92590.

The Project involves the demolition of both existing Carancho Nos. 1 and 2 Tanks, permanent stabilization of the tank pad, replacement of two (2) existing pumps, and addition of two (2) new pumps for a total of four (4) new pumps on the pump station pad (3 duty pumps, 350 HP; 1 standby pump, 350 HP) to meet the desired capacity of 4,400 GPM; installation of two (2) new surge tanks; installation of new electrical conduits; new transformer; and new 1,500 kW emergency power generation with automatic transfer switch that meets Tier 2 emission standards1. The pump station will be installed on areas of previous disturbance within APN 933-050-036 southwest of the Carancho Tanks.

[1] Tier 2 emission standards are established by the U.S. EPA for Stationary Emergency Use Only and apply to nonroad diesel engines. Engines of various sizes need to meet preestablished thresholds for smoke (PM); and Nitrous Oxide (NOx) (US EPA, 2022).

24\DR:PD:GB:hab070\F475\D2048

The District is the lead agency for the proposed project. The lead agency contact person is Director of Engineering Dan Ruiz; contact information is as follows:

Dan Ruiz, Director of Engineering
Rancho California Water District
42135 Winchester Road
Temecula, CA 92590
(951) 296-6989
ruizd@ranchowater.com

You and/or your tribe have previously requested to receive notice of qualifying projects under Public Resources Code, section 21080.3.1. You were identified by the Morongo Band of Mission Indians as the Tribe's designated lead contact or tribal representative.

To that end, please take notice that you and your tribe have thirty (30) days from the date of this letter to request consultation on the proposed project pursuant to Public Resources Code, section 21080.3.1.

If you should have any questions or concerns, please contact me at the phone number or email address above.

Sincerely,

RANCHO CALIFORNIA WATER DISTRICT

Dan Ruiz, P.E.
Director of Engineering

cc: Phillip Dauben, Principal Engineer
Greg Brown, Assistant Engineer
Robert Avera, Engineering Manager
Robert S. Grantham, General Manager
Jason Martin, Assistant General Manager
Ann Brierty (abrierty@morongo-nsn.gov)
Laura Chatterton (lchatterton@morongo-nsn.gov)
Joan Schneider (jschneider@morongo-nsn.gov)

24\DR:PD:GB:hab070\F475\D2048

From: Laura Chatterton <lchatterton@morongo-nsn.gov>
Sent: Monday, June 24, 2024 1:32 PM
To: Heather Buero <bueroh@ranchowater.com>; Tribal Historic Preservation Office <thpo@morongo-nsn.gov>
Cc: Ann Brierty <ABrierty@morongo-nsn.gov>; Joan Schneider <jschneider@morongo-nsn.gov>
Subject: [EXTERNAL-SENDER]Re: AB52 Notification - Carancho [D2048], Joaquin [D2199]

The Morongo Band of Mission Indians (Tribe/MBMI) Tribal Historic Preservation Office received your letter regarding the above referenced Project. The proposed Project is not located within the boundaries of the ancestral territory or traditional use area of the Cahuilla and Serrano people of the Morongo Band of Mission Indians.

Thank you for notifying the MBMI about this project. MBMI encourages your consultation with tribes more closely associated with the lands upon which the project is located.

Respectfully,

Laura Chatterton

Cultural Resource Specialist

Tribal Historic Preservation Office

Morongo Band of Mission Indians

12700 Pumarra Road

Banning, CA 92220

May 10, 2024

VIA EMAIL: EOZDIL@PECHANGA-NSN.GOV
JOCHOA@PECHANGA-NSN.GOV

Ebru T. Ozdil, Cultural Analyst
Juan Ochoa, Assistant Tribal Historic Preservation Officer)
Pechanga Band of Luiseño Mission Indians
Cultural Resources Center
Post Office Box 2183
Temecula, CA 92593

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SUBJECT: AB52 NATIVE AMERICAN CONSULTATION AND PROJECT NOTIFICATION, PROPOSED CARANCHO PUMP STATION EXPANSION AND IMPROVEMENT, TEMECULA, RIVERSIDE COUNTY, CALIFORNIA

Dear Ms. Ozdil and Mr. Ochoa:

In accordance with Public Resources Code, section 21080.3.1(d), the Rancho California Water District (Rancho Water/District) hereby notifies you of the proposed Carancho Pump Station Expansion and Improvement located at the existing Carancho Pump Station site, north of the intersection of El Calamar Road and Carancho Road, in the city of Temecula, Riverside County, California. The site address is 43695 El Calamar Road, Temecula, CA 92590.

The Project involves the demolition of both existing Carancho Nos. 1 and 2 Tanks, permanent stabilization of the tank pad, replacement of two (2) existing pumps, and addition of two (2) new pumps for a total of four (4) new pumps on the pump station pad (3 duty pumps, 350 HP; 1 standby pump, 350 HP) to meet the desired capacity of 4,400 GPM; installation of two (2) new surge tanks; installation of new electrical conduits; new transformer; and new 1,500 kW emergency power generation with automatic transfer switch that meets Tier 2 emission standards1. The pump station will be installed on areas of previous disturbance within APN 933-050-036 southwest of the Carancho Tanks.

[1] Tier 2 emission standards are established by the U.S. EPA for Stationary Emergency Use Only and apply to nonroad diesel engines. Engines of various sizes need to meet preestablished thresholds for smoke (PM); and Nitrous Oxide (NOx) (US EPA, 2022).

24\DR:PD:GB:hab068\F475\D2048

The District is the lead agency for the proposed project. The lead agency contact person is Director of Engineering Dan Ruiz; contact information is as follows:

Dan Ruiz, Director of Engineering
Rancho California Water District
42135 Winchester Road
Temecula, CA 92590
(951) 296-6989
ruizd@ranchowater.com

You and/or your tribe have previously requested to receive notice of qualifying projects under Public Resources Code, section 21080.3.1. You were identified by the Pechanga Band of Luiseño Mission Indians as the Tribe's designated lead contact or tribal representative.

To that end, please take notice that you and your tribe have thirty (30) days from the date of this letter to request consultation on the proposed project pursuant to Public Resources Code, section 21080.3.1.

If you should have any questions or concerns, please contact me at the phone number or email address above.

Sincerely,

RANCHO CALIFORNIA WATER DISTRICT

Dan Ruiz, P.E.
Director of Engineering

cc: Phillip Dauben, Principal Engineer
Greg Brown, Assistant Engineer
Robert Avera, Engineering Manager
Robert S. Grantham, General Manager
Jason Martin, Assistant General Manager

24\DR:PD:GB:hab068\F475\D2048

Subject: [EXTERNAL-SENDER]Pechanga Tribe AB52 Request for Consultation on the Proposed Carancho Pump Station Expansion and Improvement

Dear Dan Ruiz,

This letter is written on behalf of the Pechanga Band of Indians (hereinafter, "the Tribe") a federally recognized Indian tribe and sovereign government in response to the AB 52 notice provided by the Rancho California Water District (Ranch Water).

This email serves as the Tribe's formal request to begin consultation under AB 52 for this Project. Per AB 52, we intend to assist the Ranch Water in determining the type of environmental document that should be prepared for this Project (i.e. EIR, MND, ND); with identifying potential tribal cultural resources (TCRs); determining whether potential substantial adverse effects will occur to them; and to develop appropriate preservation, avoidance and/or mitigation measures, as appropriate. CEQA, as amended by AB 52, requires the Ranch Water to avoid damaging effects to the significance of a tribal cultural resource. As such, the preferred TCR mitigation is complete avoidance and the Tribe requests that all efforts to preserve sensitive TCRs be made as early in the development process as possible.

Please add the Tribe to your distribution list(s) for public notices and circulation of all documents, including environmental review documents, archaeological reports, development plans, conceptual grading plans (if available), and all other applicable documents pertaining to this Project. The Tribe further requests to be directly notified of all public hearings and scheduled approvals concerning this Project, and that these comments be incorporated into the record of approval for this Project.

The Pechanga Tribe asserts that the Undertaking is a part of '*Atáaxum* (Luiseño) territory, and therefore the Tribe's aboriginal territory as evidenced by the existence of cultural features associated with religious practice and an extensive artifact record in the vicinity of the Project. This culturally sensitive area is affiliated with the Pechanga Band of Indians because of the Tribe's cultural ties to this area as well as our extensive history with the Ranch Water and other projects within the area.

As you know, the AB 52 consultation process is ongoing and continues until appropriate mitigation has been agreed upon for the TCRs that may be impacted by the Project. As such, under both AB 52 and CEQA, we look forward to working closely with the Ranch Water on ensuring that a full, comprehensive environmental review of the Project's impacts is completed.

In addition to those rights granted to the Tribe under AB 52, the Tribe reserves the right to fully participate in the environmental review process, as well as to provide further comment on the Project's impacts to cultural resources and potential mitigation for such impacts.

The Pechanga Tribe looks forward to working together with the Rancho California Water District in protecting the invaluable Pechanga cultural resources found in the Project area. The formal contact person for this Project will be Ebru Ozdil. Please contact her at 951-770-6313 or at eozdil@pechanga-nsn.gov within 30 days of receiving this consultation request so that we can begin the consultation process. Thank you.

Juan Ochoa, MLIS
Assistant Tribal Historic Preservation Officer
Pechanga Cultural Resources Department
P.O. Box 2183
Temecula, CA 92593
Office:(951)-770-6308
jochoa@pechanga-nsn.gov
CONFIDENTIALITY NOTE: "This message and any documents or files attached to it contains confidential information and may be legally privileged. Recipients should not file copies of this message and/or attachments with publicly accessible records. If you are not the intended recipient or authorized agent for the intended recipient, you have received this message and attachments in error, and any review, dissemination, or reproduction is strictly prohibited. If you are not the intended recipient, please immediately notify us by reply email or by telephone at 951-770-6308, and destroy the original transmission and its attachments without reading them or saving them."

CAUTION: This email originated from outside of the organization. Do not click links or open attachments unless you validate the sender and know the content is safe. Please use the Phish Alert Button if you believe this email is suspicious.

APPENDIX D

PALEONTOLOGICAL OVERVIEW

WESTERN SCIENCE CENTER

March 22nd, 2024

BCR Consulting, LLC
Nick Shepetuk
505 W. 8th St.
Claremont, CA 91711

Dear Mr. Shepetuk,

This letter presents the results of a record search conducted for Carancho Pump Station Design Project located in Riverside County, CA. The project is located on the west side of El Calamar Road on Township 8 South, Range 4 West, on an unsectioned portion of the *Fallbrook, CA* USGS 7.5" quadrangle.

The geologic units underlying the project area are mapped as gabbro units from the mid-Cretaceous Holocene epoch (Kennedy, Tan, Bovard, Alvarez, Watson, and Gutierrez 2007). Gabbro units are considered to be of low paleontological value, and the Western Science Center does not have localities within the project area or within a 1 mile radius.

Should excavation activity associated with the development of the project area extend beyond the current project are into surrounding alluvial units, paleontological resources would be possible. However, under current project parameters, and with the geologic units described, it would be unlikely for fossil material to be preserved.

If you have any questions, or would like further information, please feel free to contact me at bstoneburg@westerncentermuseum.org.

Sincerely,



Brittney Elizabeth Stoneburg, MSc
Collections Manager

Carancho Pump Station Design Project

project area + 1 mile radius

Legend

- 1 Mile Radius
- Carancho Pump Station Design Project
- grMz: Mesozoic granitic rocks , unit 2 (Peninsular Ranges) (Middle Jurassic to Late Cretaceous)

Rancho Santa Rosa Adobes
Santa Rosa Plateau South Trailhead
sa De Colorado
Newton Avocado Manor
Rancho El Marengo
De Luz Rd
Los Gatos Rd
Carancho Rd
Enchanted Creek Ranch
Carancho Rd
Irriscape Construction
Carancho Rd
De Luz Rd
De Luz Rd
Carancho Rd
Rancho Bellasante -
Randhawa Ranch
N
5000 ft
Survey
Google Earth
Image © 2024 Airbus

APPENDIX E

PHOTOGRAPHS

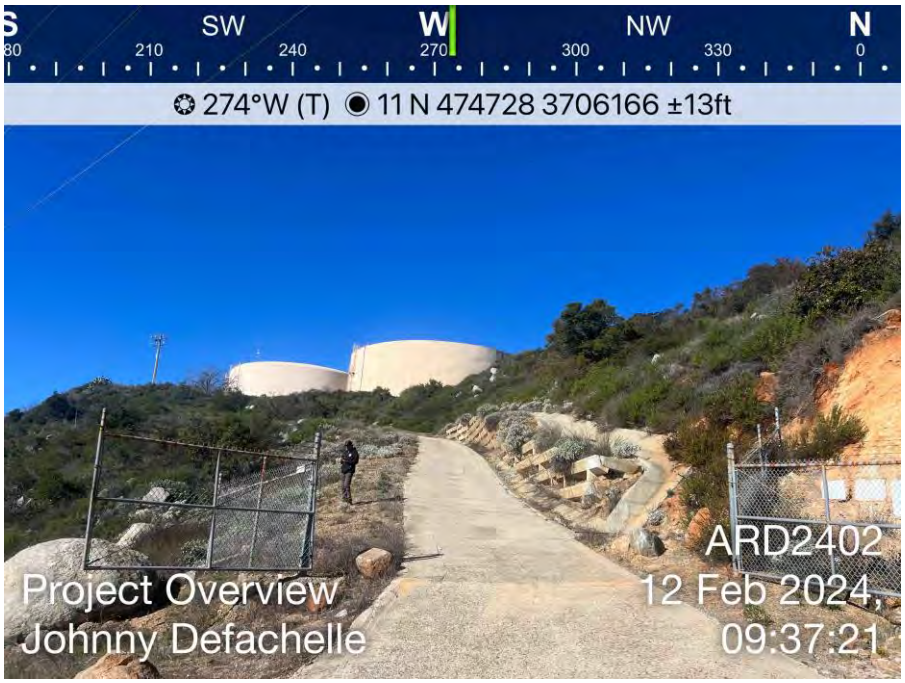

NW
N
NE
E
300
330
0
30
60
90
8°N (T) 11 N 474568 3706081 ±9ft
Project Overview
Johnny Defachelle
ARD2402
12 Feb 2024,
09:21:13


SE
S
SW
W
120
150
180
210
240
270
195°S (T) 11 N 474576 3706077 ±13ft
Project Overview
Johnny Defachelle
ARD2402
12 Feb 2024,
09:22:47


N
NE
E
SE
330
0
30
60
90
120
53°NE (T) 11 N 474606 3706125 ±13ft
Project Overview
Johnny Defachelle
ARD2402
12 Feb 2024,
09:30:19


S
SW
W
NW
50
180
210
270
300
330
243°SW (T) 11 N 474713 3706157 ±9ft
Project Overview
Johnny Defachelle
ARD2402
12 Feb 2024,
09:36:50


SW W NW N
210 240 270 300 330 0 30
300°NW (T) 11 N 474715 3706163 ±13ft
Project Overview
Johnny Defachelle
ARD2402
12 Feb 2024,
09:37:00


S SW W NW N
180 210 240 270 300 330 0
274°W (T) 11 N 474728 3706166 ±13ft
Project Overview
Johnny Defachelle
ARD2402
12 Feb 2024,
09:37:21

APPENDIX D

Soils and Geotechnical (Leighton Consulting, Inc., 2020)

GEOTECHNICAL EXPLORATION
EL CALAMAR ROAD AND VIA ESCALON
24-INCH PW PIPELINE
RANCHO CALIFORNIA WATER DISTRICT (RCWD)
DE LUZ AREA
UNINCORPORATED RIVERSIDE COUNTY
CALIFORNIA

Prepared for

KRIEGER & STEWART, INCORPORATED
3602 University Avenue
Riverside, California 92501

Project No. 12727.001

May 20, 2020

Leighton Consulting, Inc.
A LEIGHTON GROUP COMPANY

Leighton Consulting, Inc.
A LEIGHTON GROUP COMPANY

May 20, 2020
Project No. 12727.001

Krieger & Stewart, Incorporated
3602 University Avenue
Riverside, California 92501

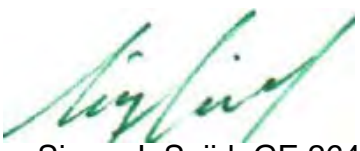
Attention: Mr. Sinisa Saric, PE

Subject: Geotechnical Exploration
El Calamar Road and Via Escalon 24-inch PW Pipeline
Rancho California Water District (RCWD)
De Luz Area, Unincorporated Riverside County, California

In accordance with your authorization, we performed a geotechnical exploration for the subject project. This report presents our findings and provides our geotechnical recommendations for the design and construction of the proposed pipeline. Based on the results of our exploration, the proposed alignment is underlain by a variable layer of overburden soils (alluvial/residual soils) and granitic bedrock. The overburden soils should be considered CalOSHA Type C soils and as such, sloped excavations will be required to protect workers within excavations, if shoring and/or shields are not used. Groundwater was not encountered within the depth explored of 16.5 feet. From a geotechnical perspective, the main constructability concern is the shallow granitic rock that can pose excavation difficulty in some areas using conventional excavation equipment. Our findings and recommendations are discussed further in this report.

The opportunity to be of service is sincerely appreciated. If you should have any questions, please do not hesitate to call our office.

Respectfully submitted,
LEIGHTON CONSULTING, INC.





Simon I. Saiid, GE 2641
Principal Engineer





Robert F. Riha, CEG 1921
Senior Principal Geologist

Distribution: (1) Addressee PDF via email)

41715 Enterprise Circle N., Suite 103 ▪ Temecula, CA 92590-5661
951.296.0530 ▪ Fax 951.296.0534

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Leighton

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1.0 INTRODUCTION

1.1 Alignment Description

The proposed potable water (PW) pipeline is generally located within De Luz Community in the Temecula Area, Unincorporated Riverside County, California (see Figure 1). More specifically, the pipeline will be installed along El Calamar Road and Via Escalon connecting an existing 24-inch outlet located outside RCWD's Carancho Pump Station/Reservoir site to an existing flanged outlet at the end of the cul-de-sac along Via Escalon. Both El Calamar Road and Via Escalon are 2-lane rural roads (one lane in each direction) with minimal shoulders. The majority of the road alignment appears to be in a cut/fill transition subgrade due to mountainous terrain and cutting into existing slopes. Granitic rock is generally exposed along the cut side of the road and boulders are noted on the fill/downhill side of the road.

1.2 Project Description

Based on information provided, we understand that the proposed project consists of constructing a 24-inch CML&C welded steel potable water pipeline for approximately 4,300 linear, of which approximately 3,800 linear feet are within public right-of-way along El Calmar Road and Via Escalon. The new pipeline is expected to be installed at 5 to 7 feet below existing ground surface (BGS) within existing streets right-of-way (ROW).

1.3 Purpose and Scope of Exploration

The purpose of our exploration is to (1) evaluate geotechnical engineering characteristics of the earth materials along the proposed alignment, and (2) provide geotechnical recommendations for design and construction of the proposed improvements. As described in our proposal, the scope of our evaluation included the following tasks:

- Desktop Review: Reviewed available in-house and published geologic reports/maps (USGS, CGS, etc.).
- Permits: Obtained an encroachment permit from the De Luz Community District in order to drill within existing street ROWs. Boring locations were marked and Underground Service Alert (USA) was notified prior to fieldwork, so that known public or registered private underground utilities are identified at the proposed drilling locations.

- Field Exploration: Our field exploration consisted of four (4) hollow stem auger borings drilled along the proposed alignment to provide field data for evaluation. In addition, four (4) seismic refraction traverses were performed along El Calamar Road, Via Escalon, and the driveway for the Carancho pump station for evaluation of bedrock profile and rippability characteristics.
- Geotechnical Laboratory testing: Driven "California" ring-lined samples and bulk soil samples will be collected from our borings, and transported to our in-house geotechnical laboratory for testing. Tests may include insitu moisture/density, sieve analysis, sand equivalent, expansion potential, maximum dry density/ optimum moisture content, and one corrosivity test (pH and resistivity, chloride and soluble sulfate content).
- Report Preparation: Results of this evaluation have been summarized in this report, presenting our findings, conclusions and geotechnical recommendations for the proposed water system improvements.

This report does not address the potential for encountering hazardous materials along this alignment. Important information about limitations of geotechnical reports is presented in Appendix C.

1.4 Field Exploration

Our field exploration consisted of the excavation of four (4) hollow stem auger borings (LB-1 through LB-4) in dirt shoulders or accessible areas within the right-of-ways of El Calamar Road and Via Escalon to minimize impact on on-going traffic. Prior to drilling, we located and marked boring locations for coordination with Underground Service Alert (USA) and obtained required permit. Approximate locations of the borings are depicted on the Boring Location Plan (*Figure 2)*. The exploratory borings were excavated utilizing a truck-mounted, Simco drill rig using an 8-inch hollow-stem flight auger. During the drilling operation, bulk and relatively undisturbed samples were obtained from the borings for laboratory testing and evaluation. Sampling of the borings was conducted by a staff engineer from our office. The collected samples were transported to our laboratory for testing. Borings were backfilled with native soils. The logs of borings are presented in Appendix A.

Our Subconsultant, Southwest Geophysics, performed a seismic refraction survey consisting of four (4) seismic traverses in areas where shallow bedrock was encountered or expected. This seismic P-wave (compression wave) refraction study was performed to evaluate the rippability characteristics of the subsurface materials and to develop subsurface velocity profiles. The seismic refraction method uses first-arrival times of refracted seismic waves to estimate the thicknesses and seismic

velocities of subsurface layers. The resulting velocity models for each seismic line will provide a tomography image of the estimated geologic conditions. Both vertical and lateral velocity information is contained in the tomography model. Changes in layer velocity are revealed as gradients rather than discrete contacts, which typically are more representative of actual conditions. The results of this survey are provided in a report prepared by our sub-consultant Southwest Geophysics included in Appendix C.

1.5 Laboratory Testing

Laboratory tests were performed on representative samples to provide a basis for development of geotechnical design parameters. Selected samples were tested to determine the following parameters: insitu moisture/density, sieve analysis, sand equivalent, expansion potential, maximum dry density/ optimum moisture content, and one corrosivity test (pH and resistivity, chloride and soluble sulfate content). The results of our laboratory testing are presented in Appendix B.

2.0 SUMMARY OF GEOTECHNICAL FINDINGS

A summary of our findings from research of pertinent literature, site-specific field exploration, geotechnical laboratory testing and engineering analysis, is discussed in this section.

2.1 Regional Geology

As shown on Figure 3, *Regional Geology Map*, the alignment is primarily underlain by granitic bedrock (gr).

2.2 Subsurface Conditions

Our field exploration indicates that the subsurface profile along the proposed alignment consists of a relatively thin layer of artificial fill/road pavement and alluvial deposits underlain by granitic rock. Detailed descriptions of the earth materials encountered in each boring are provided on the logs of borings in Appendix A.

2.2.1 Artificial Fill/Pavement

As indicated before in this report, the existing roads were generally constructed by cutting into existing slopes creating cut to fill subgrade condition. As such, depending on which side of the road the pipe is going to be installed, the artificial fill depth may vary but not expected to exceed 2 to 3 feet including existing pavement section (AC/AB).

2.2.2 Topsoil/Alluvial Deposits (Overburden Soils)

Alluvial materials were encountered within the upper 5 to 10 feet in all of our borings, except LB-4 located along the driveway. The alluvium is generally medium dense to dense and consist of silty/clayey sand (SC/SM). Based on the results of our laboratory testing, the alluvium is expected to possess a Sand Equivalent (SE) of less than 20, and an Expansion Index (EI) of less than 21, and slight collapse potential (<3%).

2.2.3 Granitic Bedrock

Granitic bedrock was generally encountered in all of our borings. Depth to bedrock varied from just below the pavement section in LB-4 (driveway) to 10 feet BGS in LB-1. As encountered, the bedrock was severely to highly weathered and generally excavates into silty/clayey sand (SC/SM) to poorly-graded sand with varying amounts of silt and gravel during our drilling operation. Bedrock hardness or rippability characteristics are discussed further in Appendix C.

2.3 Surface and Groundwater

Groundwater was not encountered in any of our borings to the maximum explored depth of 16 feet BGS. Based on historic data from existing wells, groundwater is not expected to be shallower than 100 feet below existing site grades, according to California Water Data Library and regional wells data.

2.4 Faulting and Seismicity

The subject site, 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 on this site is movement along the northwest-trending regional fault systems such as the San Andreas, San Jacinto, and Elsinore. Based on our review of published geologic map, the proposed alignment is not located within an Alquist-Priolo Earthquake Fault Zoning Act or County mapped fault zones.

For the purpose of structural design, seismic coefficients based on the 2019 California Building Code (CBC) are provided below. These seismic coefficients were calculated based on a software program, available on the United States Geological Survey website, which follows the procedures, included in American Society of Civil Engineers (ASCE) Publication ASCE 7-16.

Table 1. 2019 CBC Site Categorization and Seismic Coefficients

Parameters	Proposed Alignment
Site Longitude (decimal degrees)	-117.2709
Site Latitude (decimal degrees)	33.4977
Site Class Definition	**C**
Mapped Spectral Response Acceleration at 0.2s Period, S_s	1.24
Mapped Spectral Response Acceleration at 1s Period, S_1	0.45
Short Period Site Coefficient at 0.2s Period, F_a	1.2
Long Period Site Coefficient at 1s Period, F_v	1.5
Adjusted Spectral Response Acceleration at 0.2s Period, S_{MS}	1.49
Adjusted Spectral Response Acceleration at 1s Period, S_{M1}	0.68
Design Spectral Response Acceleration at 0.2s Period, S_{DS}	**0.99**
Design Spectral Response Acceleration at 1s Period, S_{D1}	**0.45**

2.5 Secondary Seismic Hazards

The potential for secondary hazards such as seiches and tsunamis, landsliding, rockfalls, and lateral spreading, are considered very low for the proposed alignment. However, secondary seismic hazards such as ground rupture and liquefaction are discussed below.

2.5.1 Ground Rupture

The site is not located in any designated earthquake hazard zone per the Alquist Priolo Act or Riverside County Hazard Maps. Chance of ground rupture along the proposed alignment is considered very low.

2.5.2 Dynamic Settlement / Liquefaction

Liquefaction of saturated cohesionless soils can be caused by strong ground motion resulting from earthquakes. Soil liquefaction is a phenomenon in which saturated, cohesionless soils lose their strength due to the build-up of excess pore water pressure during cyclic loading such as that induced by earthquakes. However, the proposed pipeline is generally planned to be installed in dense older alluvium or granitic rock, which are not prone to liquefaction or dynamic settlement.

.

3.0 CONCLUSIONS AND RECOMMENDATIONS

3.1 General

The proposed pipeline appears feasible from a geotechnical viewpoint provided that the following recommendations are incorporated into the design and construction phases of development. Based on the results of this geotechnical exploration, the main geologic/geotechnical concerns that may affect the constructability cost and long-term performance of the proposed pipeline are as follows:

- Conventional cut-and-cover techniques appear feasible. However, existing topsoil and alluvial soils encountered are classified as OSHA soil Type C. Therefore, unshored temporary cut slopes should be no steeper than 1½:1 (horizontal:vertical), for a height no greater than (≤) 20 feet.
- Trench excavation is likely to encounter shallow granitic bedrock. This granitic bedrock will vary in hardness and density depending on depth and location. This bedrock is expected to be highly weathered and generally excavatable within the upper 5 to 10 feet BGS. However, resistant, non-weathered core-stones should still be anticipated within shallower depth, especially in areas where the pipe is installed in the cut portion of the road. The rock hardness is further discussed in Appendix C (Seismic Refraction Survey).
- Transition subgrade from granitic rock to alluvium is likely to occur along this alignment and potentially cause excessive differential settlement. In such case, we recommend that an over-excavation depth of at least 12 inches be performed for a distance of 30 feet (covering 15 feet on each side of the transition line) and replaced by compacted class II aggregate base or properly compacted granular soils approved by the geotechnical consultant.

3.2 Earthwork Considerations

Earthwork associated with the proposed pipelines should be performed in accordance with applicable RCWD Specifications, “Standard Specifications for Public Works Construction” (Greenbook, latest edition) and the recommendations included in the text of this report.

3.2.1 Excavation Characteristics

Based on the results of our exploratory borings, the onsite alluvium should generally be easy to excavate with conventional earthmoving excavation equipment. Excavation should be performed in accordance with the project plans, specifications, and all applicable OSHA requirements. The contractor should be responsible for providing the "competent person" required by OSHA standards. Contractors should be advised that sandy soils (such as

existing, onsite fill/alluvium) could make excavations particularly unsafe, and hence necessary safety precautions should be taken at all times.

Excavation/rippability characteristics of underlying granitic rock is further discussed in Appendix C. Weathered rock with less than 4,000 ft/sec P-wave velocities is typically classified as moderate/rippable if excavated by Caterpillar D-9 dozer with a single shank. This classification is based on published information from the Caterpillar Performance Handbook (Caterpillar, 2011). Although no similar correlations are published for typical trench excavation equipment, a cut-off velocity of ±3,800 ft/sec may be used as a basis for non-rippable trenching using Cat 235 trackhoe (hydraulic excavator with rock bucket). Less weathered core-stones/remnant boulders (i.e. velocities > 3,800 ft/sec) are likely to be encountered within 5 feet BGS as shown on the tomography profile/model for SL-3. As such, difficult excavation should be locally expected and special excavation techniques may be required (rock breaker, etc.).

3.2.2 Pipe Subgrade

Pipe subgrade soils are expected to generally consist of medium dense to dense silty to clayey sand alluvium or granitic rock. In order to reduce the potential for excessive differential settlement at transient subgrade (rock to alluvium), we recommend that an over-excavation of at least 12 inches be performed for a distance of 30 feet (covering 15 feet on each side of the transition line) and replaced by compacted class II aggregate base or properly compacted granular soils approved by the geotechnical consultant.

Elsewhere, the alluvium materials at bottom of trench should be properly compacted to minimum of 90 percent relative compaction per ASTM D1557 or as required per District standard specifications. Where very loose and moist soils are encountered or the subgrade become disturbed due to localized seepage or surface water, the contractor should over-excavate the disturbed or saturated soils to a maximum depth of 2 feet and replace with suitable materials to provide a stable trench bottom. Crushed rock (1-inch maximum size) may be used if found necessary to stabilize bottom of trench prior to placing bedding materials. Placement of filter fabric separation layer may be required due to the granular nature of onsite soils and to provide further stability of the subgrade soils. Any oversize particles larger than 3-inches in largest dimension within the subgrade or where the subgrade is exposing uneven granitic rock surface, at least 6-inch bedding materials should be maintained above highest rock surface to provide uniform bedding/ seating support for the pipe.

3.2.3 Pipe Bedding

Prior to backfilling, pipes should be bedded in and covered with a uniform, granular material that has a Sand Equivalent (SE) of 30 or greater, and a gradation meeting requirements of the pipe manufacturer. Approved pipe bedding material should be water-densified in-place provided appropriate water evacuation is utilized. Onsite soils are expected to be too silty to be considered for bedding material. A minimum cover of 12 inches of bedding material should be provided above the top of the pipe.

3.2.4 Trench Backfill

Native soils are generally considered suitable as backfill materials over the pipe bedding zone. However, oversized materials generated during excavation (i.e. greater than 6 inches) are considered unsuitable for use in trench backfill. In addition, some clayey alluvium is considered too moist to be used as compacted fill without proper dry back. Suitable materials should be placed in thin lifts moisture conditioned, as necessary, and mechanically compacted to a minimum of 90 percent relative compaction per ASTM D 1557 or as required per District standard specifications. The actual lift thickness should depend on the compaction equipment used. For hand-directed mechanical equipment such as vibratory plates or tampers, the maximum lift thickness should not exceed 4 inches. The contractor should not use jetting to compact trench backfill unless approved by RCWD and the jetting procedures and soils requirements comply with the “GreenBook”.

Import soils and/or borrow sites, if needed, should be evaluated by the geotechnical consultant prior to import. Import soils should generally be uncontaminated, granular in nature, free of organic material (loss on ignition less-than 2 percent), have very low expansion potential (with an Expansion Index less than 21) and have a low corrosion impact to the proposed improvements.

3.2.5 Shrinkage and Subsidence

Change in volume of excavated and recompacted soil varies according to initial density, which is a function of soil type and location. This volume change is represented as a percentage increase (bulking) or decrease (shrinkage) in volume of fill after removal and recompaction. Subsidence occurs as natural ground is moisture-conditioned and densified to receive fill. Field and laboratory data used in our calculations included laboratory-measured maximum dry densities for soil types encountered at this site relative to measured, in-place densities of soils sampled. We estimate the following earth volume changes will occur during proper recompaction:

- **Shrinkage**: Shrinkage due to recompaction of soils in the upper 10 feet is estimated to range from 0 to 15 percent.

- **Subsidence:** Subsidence due solely to scarification and recompaction of the exposed bottom of trench over-excavation, is expected to be on the order of 0.1 foot where pipe is underlain by alluvial materials. This should be added to the shrinkage value.

3.3 General Design Criteria

3.3.1 Bearing Capacity

A net allowable bearing capacity of 2,000 psf, or a modulus of subgrade reaction of 150 pci may be used for design of footings of appurtenant structures founded into a minimum of 2 feet of compacted fill or dense alluvium. A minimum base width of 18 inches for continuous footings and a minimum bearing area of 3 square feet (1.75 ft by 1.75 ft) for pad foundations should be used. Additionally, an increase of one-third may be applied when considering short-term live loads (e.g. seismic and wind).

3.3.2 Earth Pressures

Lateral loads on thrust blocks and other appurtenant structures may be resisted by passive soil pressure and friction, in combination. An allowable passive pressure based on an equivalent fluid pressure of 300 pounds-per-cubic-foot (pcf), not to exceed 3,000 pounds per square foot (psf) can be used if the pipe is embedded in dense alluvium or compacted fill (minimum 2 feet embedment). This equivalent fluid pressure may be doubled for isolated thrust blocks. We have not applied a factor-of-safety to these values. A soil-pipeline surface friction of 0.20 for PVC pipes may be applied.

A modulus of soil reaction (E') of 900 psi can be used to estimate the stiffness of the soil bedding backfill at the sides and below buried flexible pipelines, if applicable, for the purpose of evaluating deflection caused by weight of the backfill over the pipe. This value assumes that the proposed pipeline is embedded at least 5 feet below exiting grades and a granular bedding material with an average relative compaction of 90 percent or more (per ASTM D1557) is placed. Higher values may be considered where trench bottom is exposing granitic bedrock.

3.4 Pipeline Design

3.4.1 Soils Parameters

Structural design of pipes requires proper evaluation of possible loads acting on the pipe, including dead and live or transient loads. Stresses and strains induced on a buried pipe depend on many factors, including the type of pipe, depth and width of trench, bedding and embedment conditions, soil density, angle of internal friction, coefficient of passive earth pressure, and coefficient

of friction at the interface between the backfill and in-situ soils. We recommend the following soil parameters for the proposed pipe design:

Table 2. Soil Parameters for Pipe Design

Soil Parameters	Recommended Values
Average Compacted fill moist unit weight, (pcf)	110 to 115
Angle of internal friction of soils (degrees)	30 to 32
Soil cohesion, c (psf)	100
Sliding friction between pipe and native soils	0.20
Coefficient of friction between backfill and native soils	0.40

3.4.2 External Loads on Flexible Pipe by Soil

Structural design of pipes requires proper evaluation of possible loads acting on the pipe, including dead and live or transient loads. Stresses and strains induced on a buried flexible pipe depend on many factors. The magnitude of the load supported depends on the amount of backfill, type of soil, and pipe stiffness. The approximate dead load per unit length can be calculated from the following formula:

$$W = C \gamma B D$$

Where,

W	External soil load on pipe (pounds per foot of pipe)
C	Unit less load coefficient (C = 1.4 for 5 feet deep trench, and 1.8 for 10 feet deep trench, assuming a trench width of 3 feet just above the pipe)
γ	Total unit weight of soil above pipe (pounds-per-cubic-foot)
B	Width of the trench (width just above top of the pipe, in feet)
D	Pipe diameter (feet)

In addition to the load from backfill (above equation), loads due to embankments (if applicable) and other loads (live loads) should be considered.

3.5 Asphalt Paving

The upper 8 inches of trench backfill and aggregate base materials should be compacted to 95-percent of the ASTM D1557 laboratory maximum dry density or as required by City or State Standards. New pavement should at least match existing pavement section or be design based on actual R-value testing and appropriate Traffic Index (TI).

3.6 Corrosivity Evaluation

Sulfate ions in the soil can lower soil resistivity and can be highly aggressive to portland cement concrete by combining chemically with certain constituents of the concrete, principally tricalcium aluminate. This reaction is accompanied by expansion and eventual disruption of the concrete matrix. Potentially high sulfate content could also cause corrosion of the reinforcing steel in concrete. Table below summarizes current standards for concrete exposed to sulfate-containing solutions.

Table 3. Sulfate Concentration and Sulfate Exposure

Sulfate In Water (parts-per-million)	Water-Soluble Sulfate (SO4) in soil (percentage by weight)	Sulfate Exposure
0-150	0.00 - 0.10	Negligible
150-1,500	0.10 - 0.20	Moderate (Seawater)
1,500-10,000	0.20 - 2.00	Severe
>10,000	Over 2.00	Very Severe

The sulfate content was determined in the laboratory for representative onsite soil samples. The results indicate that the water soluble sulfate range is less than 0.2 percent by weight for all sites, which is considered negligible to moderate as per Table above. As such, Type II cement or equivalent may be used for this project.

Many factors can affect corrosion potential of soil including soil moisture content, resistivity, permeability and pH, as well as chloride and sulfate concentration. In general, soil resistivity, which is a measure of how easily electrical current flows through soils, is the most influential factor. Based on the findings of studies presented in ASTM STP 1013 titled “Effects of Soil Characteristics on Corrosion” (February 1989), the approximate relationship between soil resistivity and soil corrosiveness was developed as shown in Table below.

Table 4. Relationship between Soil Resistivity and Soil Corrosivity

Soil Resistivity (ohm-cm)	Classification of Soil Corrosiveness
0 to 900	Very Severely Corrosive
900 to 2,300	Severely Corrosive
2,300 to 5,000	Moderately Corrosive
5,000 to 10,000	Mildly Corrosive
10,000 to >100,000	Very Mildly Corrosive

Acidity is an important factor of soil corrosivity. The lower the pH (the more acidic the environment), the higher the soil corrosivity will be with respect to buried metallic structures and utilities. As soil pH increases above 7 (the neutral value), the soil is increasingly more alkaline and less corrosive to buried steel structures, due to protective surface films, which form on steel in high pH environments. Chloride and sulfate ion concentrations, and pH appear to play secondary roles in affecting corrosion potential. High chloride levels tend to reduce soil resistivity and break down otherwise protective surface deposits, which can result in corrosion of buried steel or reinforced concrete structures. The results of our corrosivity testing on representative onsite soils are provided in table below. The results of the individual tests are included in Appendix B.

Table 5. Summary of Corrosivity Testing

Site Name	Sulfate Content (PPM)	Chloride Content (PPM)	pH	Minimum Resistivity (ohm-cm)	Corrosivity per Table 4 above
LB-1	189	360	8.00	600	Very Severely Corrosive
LB-3	115	60	8.24	1,900	Severely Corrosive
LB-4	123	-	-	-	-

Ferrous pipe can be protected by polyethylene bags, tape or coatings, di-electric fittings, concrete encasement or other means to separate the pipe from wet onsite soils. Further testing of import and possibly site soil corrosivity could be performed and specific recommendations for corrosion protection may need to be provided by a qualified corrosion engineer.

3.7 Temporary Cut Slopes

The contractor is responsible for all temporary slopes and trenches excavated at the site and the design of any required temporary shoring. Shoring, bracing and benching should be performed by the contractor in accordance with the current edition of the *California Construction Safety Orders*, see:

http://www.dir.ca.gov/title8/sb4a6.html

During construction, exposed earth material conditions should be regularly evaluated to verify that conditions are as anticipated. The contractor is responsible for providing the "competent person" required by OSHA standards to evaluate soil conditions. Close coordination between the competent person and geotechnical consultant should be maintained to facilitate construction while providing safe

excavations. Existing artificial fill and alluvial soils encountered are classified as OSHA soil Type C. Therefore, unshored temporary cut slopes should be no steeper than 1½:1 (horizontal:vertical), for a height no-greater-than (≤) 20 feet (*California Construction Safety Orders*, Appendix B to Section 1541.1, Table B-1). Encountered granitic rock may be classified as OSHA soil Type B. Therefore, unshored temporary cut slopes should be no steeper than 1:1, for a height no-greater-than (≤) 20 feet. These recommended temporary cut slopes assume a level ground surface for a distance equal to one-and-a-half (x1.5) the depth of excavation. For steeper temporary slopes, deeper excavations, and/or where slopes terrain exists within close proximity to excavation (<1.5xdepth), appropriate shoring methods or flatter slopes may be required to protect the workers in the excavation and adjacent improvements. Such methods should be implemented by the contractor and approved by the engineer.

3.8 Temporary Shoring

If the sloped open cut excavation is not feasible based on requirements above and due to existing structures, excavations for the proposed pipeline should be supported by a temporary shoring system such as cross-braced hydraulic shoring, conventional shields, sheet piles, soldier piles and wood lagging. The choice should be left to the contractor's judgment since economic considerations and/or the individual contractor's construction experience may determine which method is more economical and/or appropriate. The contractor and shoring designer should also perform additional geotechnical studies as necessary to refine the means-and-methods of shoring construction.

The support of all adjacent existing structures during excavation and construction (including pavements) without distress is the contractor's responsibility. In addition, it should be the contractor's responsibility to undertake a pre-construction survey with benchmarks and photographs of the adjacent properties. Shoring systems should be designed by a California licensed civil or structural engineer. As preliminary design guidelines, we present the following geotechnical parameters for shoring design. The following lateral earth pressures are recommended for temporary shoring supporting encountered alignment soils with level ground behind the shoring. Passive pressure also may be used to compute lateral soil resistance, if necessary, for sheet piles. Earth pressures provided are ultimate values and a safety factor should be applied as appropriate.

Table 6. Static Lateral Earth Pressures

Conditions[1]	Static Equivalent Fluid Weight (pcf)
Active (cantilever)	36
At-Rest (braced)	50
Passive[2]	300

1. For temporary excavations only, with level backfill, not including surcharges
2. Passive equivalent fluid pressure may be doubled for isolated soldier piles spaced at least 2½ diameters on-center. Passive resistance should not exceed 3,000 psf.

Determination of appropriate design conditions (active or at-rest) depends on shoring flexibility. If a rotation of more than 0.001 radian (0.06 degrees) is allowed, active pressure conditions apply; otherwise, at-rest condition governs.

Surcharge loads (dead or live) should be added to the indicated lateral earth pressures and should be applied uniformly, if such loads are within a horizontal distance that is less-than the exposed shoring height. The corresponding lateral earth pressure will approximately be 33-percent of the vertical surcharge for active conditions, and 50-percent for at-rest conditions. Surcharge pressures from concentrated loads should be evaluated after geometric constraints and loading conditions are determined on individual basis.

3.9 Pre-excavation Survey and Settlement Monitoring

A very important geotechnical concern is to avoid damaging any existing improvements adjacent to excavations. It is recommended that the contractor provide settlement monitoring and contingency plans in case of settlement.

3.10 Dewatering during Pipeline Trenching

Based on the results of our exploration, groundwater was not encountered along the proposed pipeline alignment to the maximum depth of 16.5 feet BGS. However, if encountered during excavations (especially at connecting points), groundwater control, such as dewatering, will be required to limit instability of the trench excavation bottom, side and face, and aid foundation construction and soil backfill. Groundwater due to perched saturated conditions can be dewatered utilizing sump-pumps. Dewatering or any other suitable method for stabilizing excavation bottom may be selected by the contractor based on actual groundwater conditions encountered and based on the contractor's chosen means-and-methods of construction. The selected method by the contractor should be able to effectively mitigate for bottom heave or stabilize subgrade soils during construction/ backfilling.

3.11 Additional Geotechnical Services

Recommendations are based on information available at the time our report was prepared and may change as plans are developed, or if supplemental subsurface exploration is authorized. Leighton Consulting, Inc. should review site, grading and foundation plans, when available, and comment further on geotechnical aspects of the project. Geotechnical observation and testing should be conducted during excavation and all phases of grading. Geotechnical conclusions and preliminary recommendations should be reviewed and verified by us (Leighton Consulting, Inc.) during construction, and revised accordingly if geotechnical conditions encountered vary from our findings and interpretations. Geotechnical observation and testing should be provided:

- To observe trench excavation for indications of faulting,
- To approve subgrade soils prior to placing bedding materials,
- During compaction of trench backfill,
- After excavation of all footings and prior to placement of concrete,
- During pavement subgrade and base and/or sub-base preparation, and
- When any unusual conditions are encountered.

4.0 LIMITATIONS

This report was necessarily based in part upon data obtained from a limited number of observances, site visits, soil samples, tests, analyses, histories of occurrences, spaced subsurface explorations and limited information on historical events and observations. Such information is necessarily incomplete. The nature of many sites is such that differing characteristics can be experienced within small distances and under various climatic conditions. Changes in subsurface conditions can and do occur over time. This exploration was performed with the understanding that the project as described in Section 1.2 of this report.

This report was prepared for Krieger & Stewart, Incorporated based on Krieger & Stewart, Incorporated needs, directions, and requirements at the time of our investigation. This report is not authorized for use by, and is not to be relied upon by any party except Krieger & Stewart, Incorporated, and its successors and assigns as owner of the property, with whom Leighton Consulting, Inc. has contracted for the work. Use of or reliance on this report by any other party is at that party's risk. Unauthorized use of or reliance on this report constitutes an agreement to defend and indemnify Leighton Consulting, Inc. from and against any liability which may arise as a result of such use or reliance, regardless of any fault, negligence, or strict liability of Leighton Consulting, Inc.

The client is referred to Appendix C regarding important information provided by the Geoprofessional Business Association (GBA) on geotechnical engineering studies and report and their applicability.

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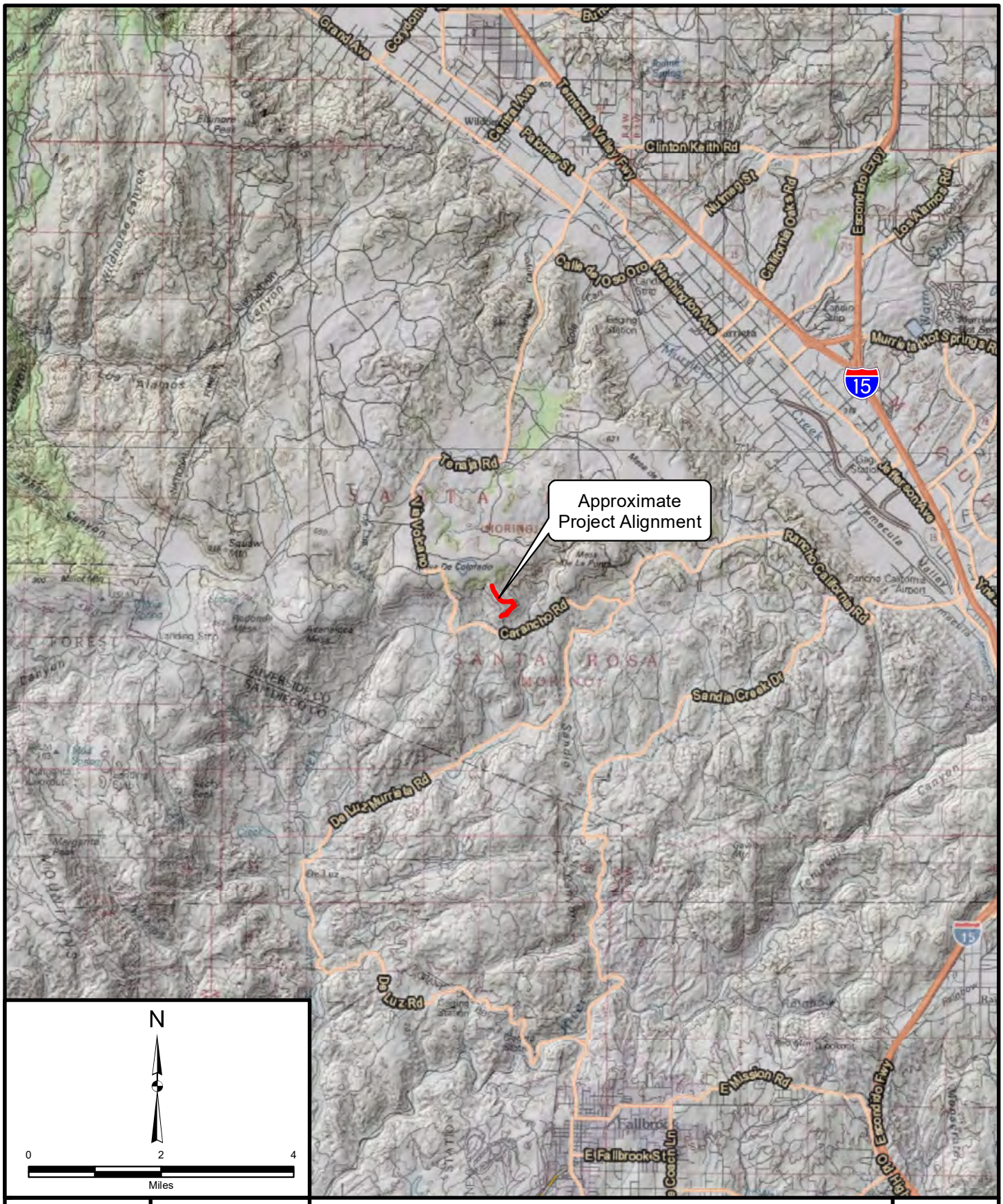
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Project: 12727.001	Eng/Geol: SIS/RFR
Scale: 1 " = 2 miles	Date: April 2020

Base Map: Bing Maps 2020
Thematic Information: Leighton
Author: (mmurphy)

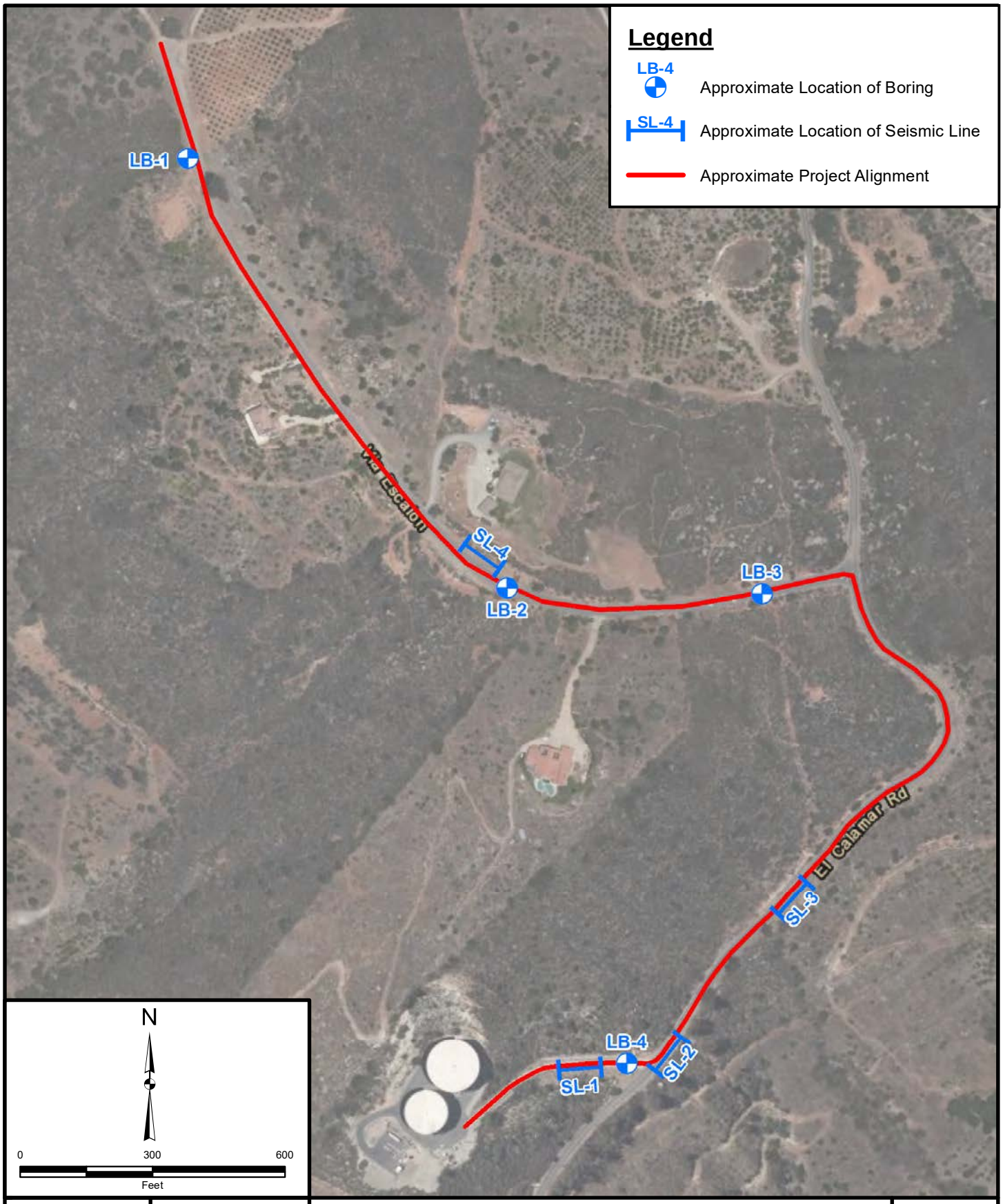
SITE LOCAION MAP

El Calamar Road Pipeline
Rancho California Water District
De Luz Area, Temecula, Califronia

Figure 1

Leighton

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Project: 12727.001	Eng/Geol: SIS/RFR
Scale: 1 " = 300 '	Date: April 2020

Base Map: Bing Maps 2020
Thematic Information: Leighton
Author: (mmurphy)

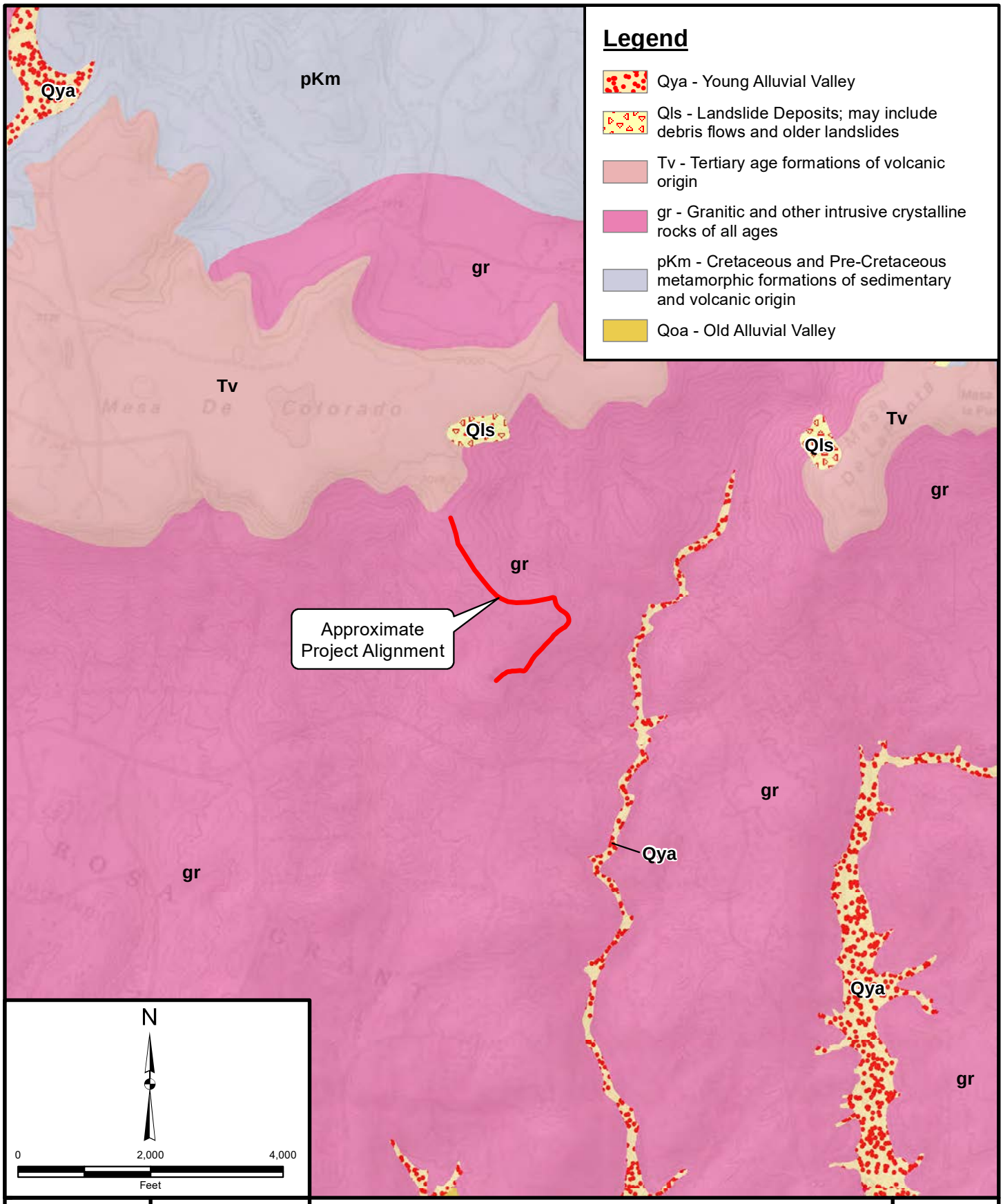
BORING LOCATION MAP

El Calamar Road Pipeline
Rancho California Water District
De Luz Area, Temecula, Califronia

Figure 2

Leighton

Map Saved as P:\Drafting\12727\001\Maps\12727-001_F02_BLM_2020-04-20.mxd on 4/20/2020 3:32:43 PM



Project: 12727.001	Eng/Geol: SIS/RFR
Scale: 1 " = 2,000 '	Date: April 2020
Base Map: Bing Maps 2020 Thematic Information: Leighton Author: (mmurphy)	

REGIONAL GEOLOGY MAP

El Calamar Road Pipeline
Rancho California Water District
De Luz Area, Temecula, Califronia

Figure 3

Leighton

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APPENDIX A

Field Exploration / Logs of Exploratory Borings

Our field exploration consisted of a site reconnaissance and a subsurface exploration program consisting of hollow-stem auger soil borings. Approximate locations of the borings are depicted on the Boring Location Plan (*Figure 2*). Encountered soils were continuously logged in the field by our representative and described in accordance with the Unified Soil Classification System (ASTM D 2488). Logs of these subsurface explorations, as well as a key to the classification of the soil, are included as part of this appendix.

Relatively undisturbed soil samples were obtained at selected intervals within the borings using a California ring sampler, with 2.42-inch inside diameter brass rings, driven into the soil with a 140-pound hammer free falling 30-inches in general accordance with ASTM Test Method D3550. The numbers of blows required for each 6 inches of drive penetration were noted in the field and are recorded on the boring logs. Unless otherwise indicated, the blows per foot recorded on the boring logs represent the number of blows required to drive 18 inches in 6 inch increments. In addition, disturbed bag (or bulk) samples were also obtained from soil cuttings. Types of samples obtained from each location are shown on the boring logs at corresponding depths. Our borings were backfilled with soil cuttings obtained during the drilling, and with bentonite grout in some cases. Representative earth-material samples obtained from these subsurface explorations were transported to our Temecula geotechnical laboratory for evaluation and appropriate testing.

The attached subsurface exploration logs and related information depict subsurface conditions only at the locations indicated and at the particular date designated on the logs. Subsurface conditions at other locations may differ from conditions occurring at these locations. The passage of time may result in altered subsurface conditions due to environmental changes. In addition, any stratification lines on the logs represent the approximate boundary between soil types and the transition may be gradual.

GEOTECHNICAL BORING LOG LB-1

Project No.	12727.001	**Date Drilled**	4-2-20
Project	RCWD El Calamar Rd Pipeline	**Logged By**	BSS
Drilling Co.	2R Drilling	**Hole Diameter**	8"
Drilling Method	Hollow Stem Auger - 140lb - Autohammer - 30" Drop	**Ground Elevation**	NA'
Location	See Figure 2 - Boring Location Map	**Sampled By**	BSS

Elevation Feet	Depth Feet	Graphic Log	Attitudes	Sample No.	Blows Per 6 Inches	Dry Density pcf	Moisture Content, %	Soil Class. (U.S.C.S.)	SOIL DESCRIPTION	Type of Tests
		N S							*This Soil Description applies only to a location of the exploration at the time of sampling. Subsurface conditions may differ at other locations and may change with time. The description is a simplification of the actual conditions encountered. Transitions between soil types may be gradual.*	
	0			B-1				SC-SM	**TOPSOIL/OLDER ALLUVIUM (Qaol):** CLAYEY SILTY SAND, medium dense, light reddish brown, slightly moist, fine sand	
				B-2						SA, SE, MD, CR
				R-1	9 27 36	97	16	SC	CLAYEY SAND, dense, light reddish brown, slightly moist, very fine sand, some caliche (SA: 42% fines, SE = 11, MD: 113.0 @ 15.8%)	
	5			R-2	11 24 26	94	12		dense, light reddish brown, moist, very fine sand, few caliche (CO = -2.63%)	CO
	10			R-3	16 38 50				**GRANITIC BEDROCK (Kgr)** Highly weathered granitic recovered as: SANDY SILT to SILTY SAND, hard, light gray, slightly moist, very fine sand	
	15			R-4	27 50/6"				recovered as: SILTY SAND, very dense, greenish gray, slightly moist, fine sand	
									Total Depth 16' No Groundwater Encountered Backfilled with soil cuttings	
	20									
	25									
	30									

SAMPLE TYPES:
- B BULK SAMPLE
- C CORE SAMPLE
- G GRAB SAMPLE
- R RING SAMPLE
- S SPLIT SPOON SAMPLE
- T TUBE SAMPLE

TYPE OF TESTS:
- -200 % FINES PASSING
- AL ATTERBERG LIMITS
- CN CONSOLIDATION
- CO COLLAPSE
- CR CORROSION
- CU UNDRAINED TRIAXIAL
- DS DIRECT SHEAR
- EI EXPANSION INDEX
- H HYDROMETER
- MD MAXIMUM DENSITY
- PP POCKET PENETROMETER
- RV R VALUE
- SA SIEVE ANALYSIS
- SE SAND EQUIVALENT
- SG SPECIFIC GRAVITY
- UC UNCONFINED COMPRESSIVE STRENGTH



*** This log is a part of a report by Leighton and should not be used as a stand-alone document. ***

GEOTECHNICAL BORING LOG LB-2

Project No.	12727.001	**Date Drilled**	4-2-20
Project	RCWD El Calamar Rd Pipeline	**Logged By**	BSS
Drilling Co.	2R Drilling	**Hole Diameter**	8"
Drilling Method	Hollow Stem Auger - 140lb - Autohammer - 30" Drop	**Ground Elevation**	NA'
Location	See Figure 2 - Boring Location Map	**Sampled By**	BSS

Elevation Feet	Depth Feet	Graphic Log	Attitudes	Sample No.	Blows Per 6 Inches	Dry Density pcf	Moisture Content, %	Soil Class. (U.S.C.S.)	SOIL DESCRIPTION	Type of Tests
		N S							*This Soil Description applies only to a location of the exploration at the time of sampling. Subsurface conditions may differ at other locations and may change with time. The description is a simplification of the actual conditions encountered. Transitions between soil types may be gradual.*	
	0							SC	**TOPSOIL/OLDER ALLUVIUM (Qaol):** CLAYEY SAND, medium dense, dark reddish brown, moist, fine to medium sand	
				B-1 R-1	50/6"	80	24	SM	SILTY SAND, very dense, light reddish brown, moist, fine to medium sand, some clay and gravel	
	5			R-2	28 50/5"	89	24	SC-SM	CLAYEY SILTY SAND, very dense, light reddish brown, moist, fine to medium sand, few gravel	
	10			R-3	29 50/5"				**GRANITIC BEDROCK (Kgr)** Highly weathered granitic recovered as: SILTY SAND, very dense, light gray, slightly moist, very fine sand	
									difficult drilling	
	15								Refusal at 14' No Groundwater Encountered Backfilled with soil cuttings	
	20									
	25									
	30									

SAMPLE TYPES:

B	BULK SAMPLE
C	CORE SAMPLE
G	GRAB SAMPLE
R	RING SAMPLE
S	SPLIT SPOON SAMPLE
T	TUBE SAMPLE

TYPE OF TESTS:

-200	% FINES PASSING	DS	DIRECT SHEAR	SA	SIEVE ANALYSIS
AL	ATTERBERG LIMITS	EI	EXPANSION INDEX	SE	SAND EQUIVALENT
CN	CONSOLIDATION	H	HYDROMETER	SG	SPECIFIC GRAVITY
CO	COLLAPSE	MD	MAXIMUM DENSITY	UC	UNCONFINED COMPRESSIVE STRENGTH
CR	CORROSION	PP	POCKET PENETROMETER		
CU	UNDRAINED TRIAXIAL	RV	R VALUE		



*** This log is a part of a report by Leighton and should not be used as a stand-alone document. ***

GEOTECHNICAL BORING LOG LB-3

Project No.	12727.001	**Date Drilled**	4-2-20
Project	RCWD El Calamar Rd Pipeline	**Logged By**	BSS
Drilling Co.	2R Drilling	**Hole Diameter**	8"
Drilling Method	Hollow Stem Auger - 140lb - Autohammer - 30" Drop	**Ground Elevation**	NA'
Location	See Figure 2 - Boring Location Map	**Sampled By**	BSS

Elevation Feet	Depth Feet	Graphic Log	Attitudes	Sample No.	Blows Per 6 Inches	Dry Density pcf	Moisture Content, %	Soil Class. (U.S.C.S.)	SOIL DESCRIPTION	Type of Tests
		N S							*This Soil Description applies only to a location of the exploration at the time of sampling. Subsurface conditions may differ at other locations and may change with time. The description is a simplification of the actual conditions encountered. Transitions between soil types may be gradual.*	
	0			B-1					**TOPSOIL/OLDER ALLUVIUM (Qaol):**	SA, CR
				R-1	23 50/6"	95	19	SC-SM	CLAYEY SILTY SAND, very dense, light gray, moist, fine sand, some clay (SA: 33% fines)	
	5								**GRANITIC BEDROCK (Kgr)** Highly weathered granitic recovered as: SILTY SAND, dense, light greenish gray, slightly moist, very fine sand, cemented	
	10			R-2	50/4"				no recovery	
									Refusal at 10.5' No Groundwater Encountered Backfilled with soil cuttings	
	15									
	20									
	25									
	30									

SAMPLE TYPES:

B	BULK SAMPLE
C	CORE SAMPLE
G	GRAB SAMPLE
R	RING SAMPLE
S	SPLIT SPOON SAMPLE
T	TUBE SAMPLE

TYPE OF TESTS:

-200	% FINES PASSING	DS	DIRECT SHEAR	SA	SIEVE ANALYSIS
AL	ATTERBERG LIMITS	EI	EXPANSION INDEX	SE	SAND EQUIVALENT
CN	CONSOLIDATION	H	HYDROMETER	SG	SPECIFIC GRAVITY
CO	COLLAPSE	MD	MAXIMUM DENSITY	UC	UNCONFINED COMPRESSIVE STRENGTH
CR	CORROSION	PP	POCKET PENETROMETER		
CU	UNDRAINED TRIAXIAL	RV	R VALUE		



*** This log is a part of a report by Leighton and should not be used as a stand-alone document. ***

GEOTECHNICAL BORING LOG LB-4

Project No.	12727.001	**Date Drilled**	4-2-20
Project	RCWD El Calamar Rd Pipeline	**Logged By**	BSS
Drilling Co.	2R Drilling	**Hole Diameter**	8"
Drilling Method	Hollow Stem Auger - 140lb - Autohammer - 30" Drop	**Ground Elevation**	NA'
Location	See Figure 2 - Boring Location Map	**Sampled By**	BSS

Elevation Feet	Depth Feet	Graphic Log (N S)	Attitudes	Sample No.	Blows Per 6 Inches	Dry Density pcf	Moisture Content, %	Soil Class. (U.S.C.S.)	SOIL DESCRIPTION	Type of Tests
	0			B-1			18	SC	**TOPSOIL/OLDER ALLUVIUM (Qaol):** CLAYEY SAND, dense, reddish brown, moist, fine to medium sand, some gravel (EI = 15)	EI
									GRANITIC BEDROCK (Kgr)	
	5								Refusal at 2' No Groundwater Encountered Backfilled with soil cuttings	
	10									
	15									
	20									
	25									
	30									

This Soil Description applies only to a location of the exploration at the time of sampling. Subsurface conditions may differ at other locations and may change with time. The description is a simplification of the actual conditions encountered. Transitions between soil types may be gradual.

SAMPLE TYPES:

- B BULK SAMPLE
- C CORE SAMPLE
- G GRAB SAMPLE
- R RING SAMPLE
- S SPLIT SPOON SAMPLE
- T TUBE SAMPLE

TYPE OF TESTS:

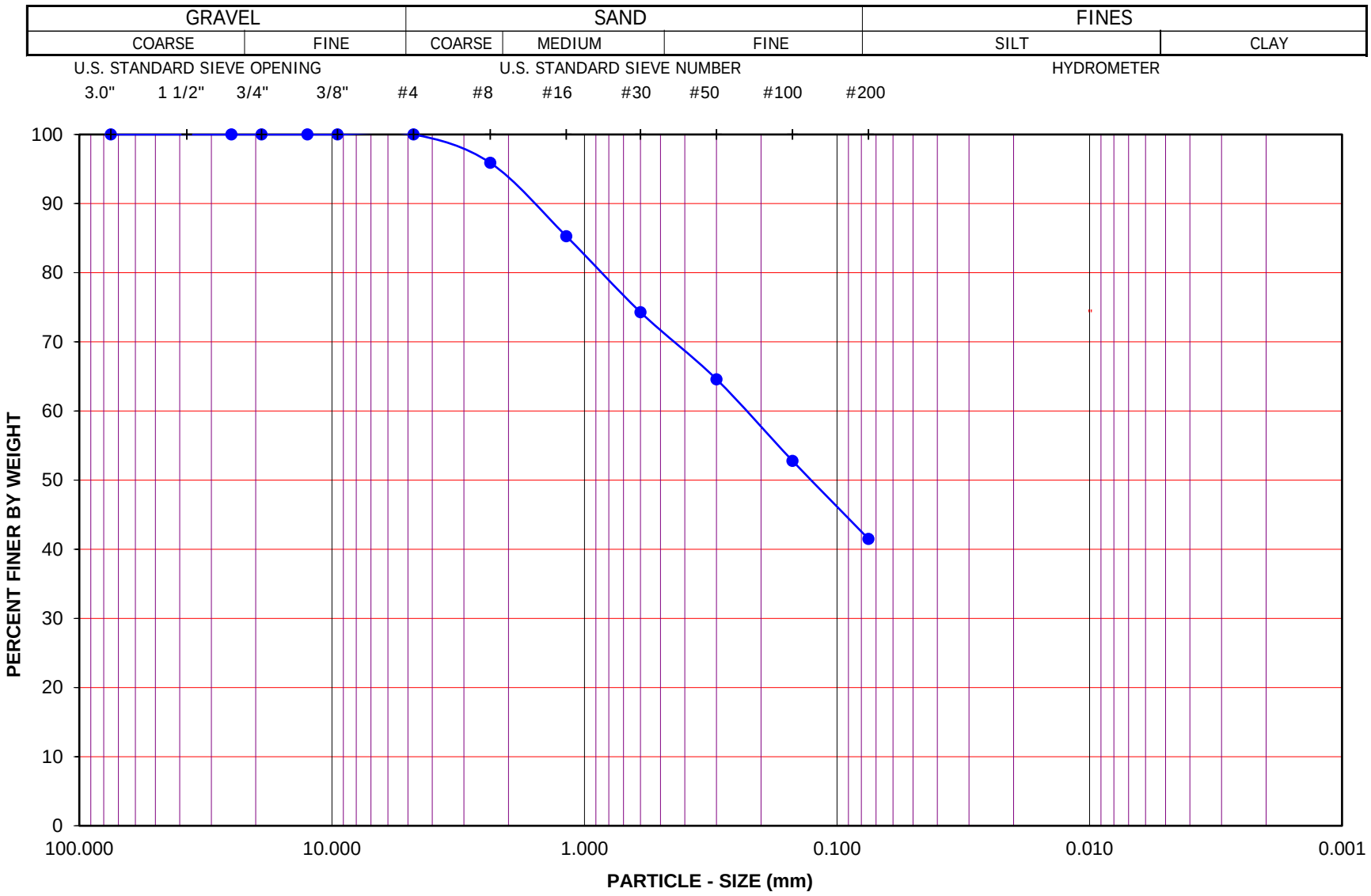
- -200 % FINES PASSING
- AL ATTERBERG LIMITS
- CN CONSOLIDATION
- CO COLLAPSE
- CR CORROSION
- CU UNDRAINED TRIAXIAL
- DS DIRECT SHEAR
- EI EXPANSION INDEX
- H HYDROMETER
- MD MAXIMUM DENSITY
- PP POCKET PENETROMETER
- RV R VALUE
- SA SIEVE ANALYSIS
- SE SAND EQUIVALENT
- SG SPECIFIC GRAVITY
- UC UNCONFINED COMPRESSIVE STRENGTH



*** This log is a part of a report by Leighton and should not be used as a stand-alone document. ***

APPENDIX B

Results of Laboratory Testing



Project Name: RCWD El Calamar Rd Pipeline

Project No.: 12727.001

Boring No.: LB-1 Sample No.: B-2

Depth (feet): 2.0 - 6.0 Soil Type : SC

Soil Identification: Clayey Sand (SC), White

GR:SA:FI : (%) 0 : 58 : 42

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PARTICLE - SIZE DISTRIBUTION ASTM D 6913

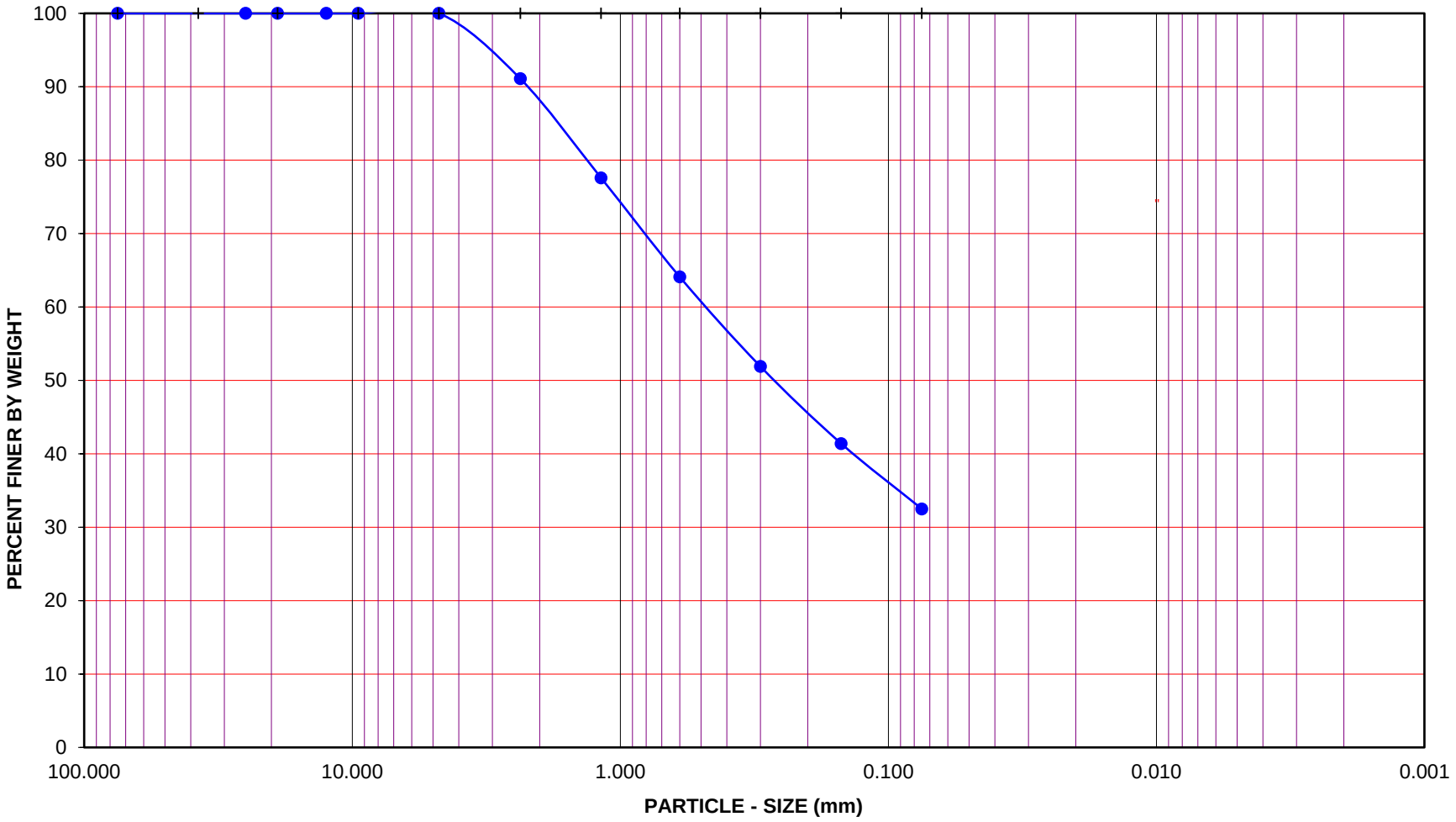
Apr-20

GRAVEL		SAND			FINES	
COARSE	FINE	COARSE	MEDIUM	FINE	SILT	CLAY

U.S. STANDARD SIEVE OPENING: 3.0" 1 1/2" 3/4" 3/8"

U.S. STANDARD SIEVE NUMBER: #4 #8 #16 #30 #50 #100 #200

HYDROMETER



Project Name: RCWD El Calamar Rd Pipeline

Project No.: 12727.001

Boring No.: LB-3 Sample No.: B-1

Depth (feet): 1.0 - 5.0 Soil Type : SC-SM

Soil Identification: Silty, Clayey Sand (SC-SM), White

GR:SA:FI : (%) 0 : 67 : 33

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PARTICLE - SIZE DISTRIBUTION ASTM D 6913

Apr-20

Leighton

SAND EQUIVALENT TEST

ASTM D 2419 / DOT CA Test 217

Project Name:	RCWD El Calamar Rd Pipeline	Tested By:	M. Vinet	Date:	4/13/20
Project No. :	12727.001	Computed By:	M. Vinet	Date:	4/13/20
Client:	Krieger & Stewart, Inc	Checked By:	M. Vinet	Date:	4/14/20

Boring No.	Sample No.	Depth (ft.)	Soil Description	T1	T2	T3	T4	R1	R2	SE	Average SE
LB-1	B-2	2.0 - 6.0	Clayey Sand (SC), White	08:00	08:10	08:12	08:32	13.0	1.4	11	**11**
				08:02	08:12	08:14	08:34	13.0	1.4	11	

T1 = Starting Time

T2 = (T1 + 10 min) Begin Agitation

T3 = Settlement Starting Time

T4 = (T3 + 20 min) Take Clay Reading (R1)

Sand Equivalent = R2 / R1 * 100

Record SE as Next Higher Integer

MODIFIED PROCTOR COMPACTION TEST

ASTM D 1557

Project Name:	RCWD El Calamar Rd Pipeline	Tested By:	F. Mina	Date:	04/13/20
Project No.:	12727.001	Input By:	M. Vinet	Date:	04/14/20
Boring No.:	LB-1	Depth (ft.):	2.0 - 6.0		
Sample No.:	B-2				
Soil Identification:	Clayey Sand (SC), White				

Preparation Method: [X] Moist [ ] Dry

[X] Mechanical Ram [ ] Manual Ram

Mold Volume (ft³) 0.03340 *Ram Weight = 10 lb.; Drop = 18 in.*

TEST NO.	1	2	3	4	5	6
Wt. Compacted Soil + Mold (g)	5446	5528	5563	5541		
Weight of Mold (g)	3567	3567	3567	3567		
Net Weight of Soil (g)	1879	1961	1996	1974		
Wet Weight of Soil + Cont. (g)	1625.3	1687.1	1509.2	1618.7		
Dry Weight of Soil + Cont. (g)	1490.2	1524.0	1350.4	1423.4		
Weight of Container (g)	420.8	420.9	418.8	419.7		
Moisture Content (%)	12.6	14.8	17.0	19.5		
Wet Density (pcf)	124.0	129.4	131.7	130.3		
Dry Density (pcf)	110.1	112.8	112.6	109.1		

Maximum Dry Density (pcf) **113.0** **Optimum Moisture Content (%)** **15.8**

PROCEDURE USED

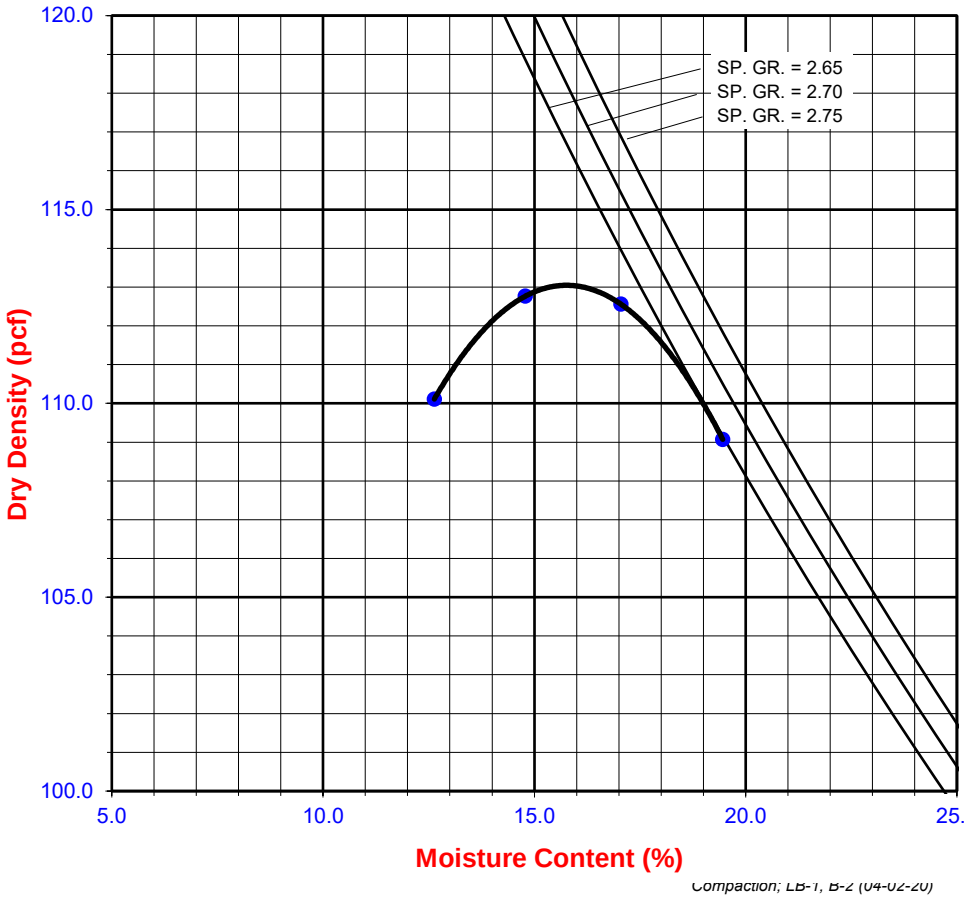
[X] **Procedure A**
Soil Passing No. 4 (4.75 mm) Sieve
Mold : 4 in. (101.6 mm) diameter
Layers : 5 (Five)
Blows per layer : 25 (twenty-five)
May be used if +#4 is 20% or less

[ ] **Procedure B**
Soil Passing 3/8 in. (9.5 mm) Sieve
Mold : 4 in. (101.6 mm) diameter
Layers : 5 (Five)
Blows per layer : 25 (twenty-five)
Use if +#4 is >20% and +3/8 in. is 20% or less

[ ] **Procedure C**
Soil Passing 3/4 in. (19.0 mm) Sieve
Mold : 6 in. (152.4 mm) diameter
Layers : 5 (Five)
Blows per layer : 56 (fifty-six)
Use if +3/8 in. is >20% and +¾ in. is <30%

Particle-Size Distribution:
0:58:42
GR:SA:FI

Atterberg Limits:
LL,PL,PI



Leighton

EXPANSION INDEX of SOILS

ASTM D 4829

Project Name:	RCWD El Calamar Rd Pipeline	Tested By:	M. Vinet	Date:	4/9/20
Project No. :	12727.001	Checked By:	M. Vinet	Date:	4/14/20
Boring No.:	LB-4	Depth:	0 - 2.0		
Sample No. :	B-1	Location:	N/A		
Sample Description:	Clayey Sand (SC), Reddish Brown				

Dry Wt. of Soil + Cont. (gm.)	2526.3
Wt. of Container No. (gm.)	0.0
Dry Wt. of Soil (gm.)	2526.3
Weight Soil Retained on #4 Sieve	127.2
Percent Passing # 4	95.0

MOLDED SPECIMEN	Before Test	After Test
Specimen Diameter (in.)	4.01	4.01
Specimen Height (in.)	1.0000	1.0154
Wt. Comp. Soil + Mold (gm.)	559.0	595.4
Wt. of Mold (gm.)	188.5	188.5
Specific Gravity (Assumed)	2.70	2.70
Container No.	10	10
Wet Wt. of Soil + Cont. (gm.)	628.7	595.4
Dry Wt. of Soil + Cont. (gm.)	594.2	327.9
Wt. of Container (gm.)	328.7	188.5
Moisture Content (%)	13.0	24.1
Wet Density (pcf)	111.8	120.9
Dry Density (pcf)	98.9	97.4
Void Ratio	0.705	0.731
Total Porosity	0.413	0.422
Pore Volume (cc)	85.6	88.7
Degree of Saturation (%) [S meas]	**49.8**	**89.0**

SPECIMEN INUNDATION in distilled water for the period of 24 h or expansion rate < 0.0002 in./h.

Date	Time	Pressure (psi)	Elapsed Time (min.)	Dial Readings (in.)
4/9/20	8:00	1.0	0	0.5000
4/9/20	8:10	1.0	10	0.5000
	Add Distilled Water to the Specimen			
4/10/20	9:00	1.0	1490	0.5154
4/10/20	10:00	1.0	1550	0.5154

Expansion Index (EI meas) = ((Final Rdg - Initial Rdg) / Initial Thick.) x 1000	15.4
Expansion Index (Report) = Nearest Whole Number or Zero (0) if Initial Height is > than Final Heigh	**15**

Rev. 03-08

One-Dimensional Swell or Settlement Potential of Cohesive Soils

(ASTM D 4546) -- Method 'B'

Leighton

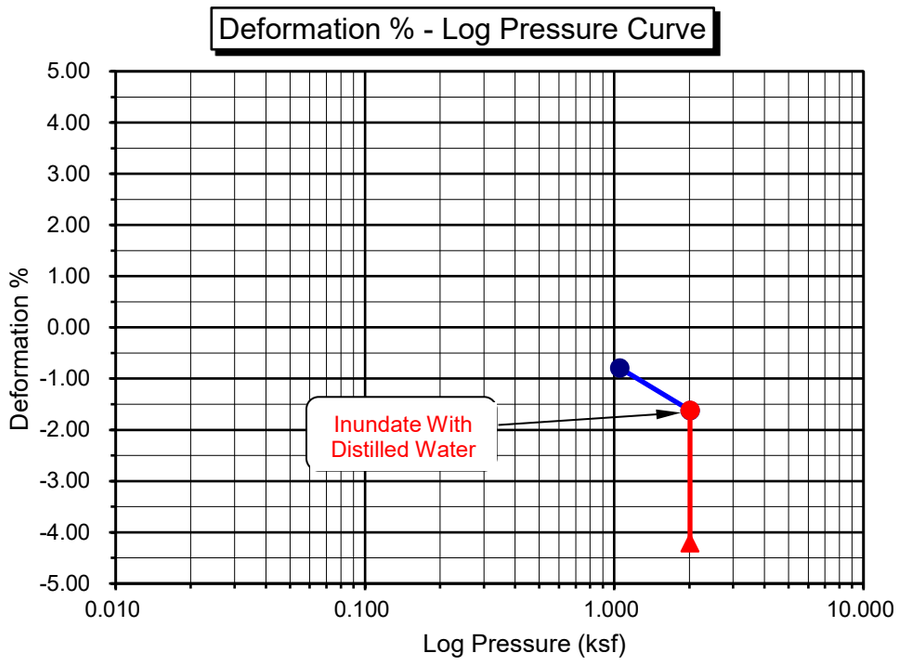
Project Name: RCWD El Calamar Rd Pipeline | Tested By: M. Vinet | Date: 4/13/20
Project No.: 12727.001 | Checked By: M. Vinet | Date: 4/14/20
Boring No.: LB-1 | Sample Type: IN SITU
Sample No.: R-2 | Depth (ft.) 5.0
Sample Description: Silty, Clayey Sand (SC-SM), White
Source and Type of Water Used for Inundation: Arrowhead (Distilled)
** Note: Loading After Wetting (Inundation) not Performed Using this Test Method.

Initial Dry Density (pcf):	84.0
Initial Moisture (%):	13.5
Initial Height (in.):	1.0000
Initial Dial Reading (in):	0.0000
Inside Diameter of Ring (in):	2.416

Final Dry Density (pcf):	87.7
Final Moisture (%) :	32.9
Initial Void ratio:	1.0071
Specific Gravity (assumed):	2.70
Initial Degree of Saturation (%):	36.3

Pressure (p) (ksf)	Final Reading (in)	Apparent Thickness (in)	Load Compliance (%)	Swell (+) Settlement (-) % of Sample Thickness	Void Ratio	Corrected Deformation (%)
1.050	0.0079	0.9921	0.00	-0.79	0.9913	-0.79
2.013	0.0162	0.9838	0.00	-1.62	0.9746	-1.62
H2O	0.0421	0.9579	0.00	-4.21	0.9226	-4.21

Percent Swell / Settlement After Inundation = -2.63



Leighton

SOIL RESISTIVITY TEST

DOT CA TEST 643

Project Name:	RCWD El Calamar Rd Pipeline		Tested By :	MRV/FLM	Date: 04/13/20
Project No. :	12727.001		Data Input By:	M. Vinet	Date: 04/14/20
Boring No.:	LB-1		Depth (ft.) :	2.0 - 6.0	
Sample No. :	B-2				

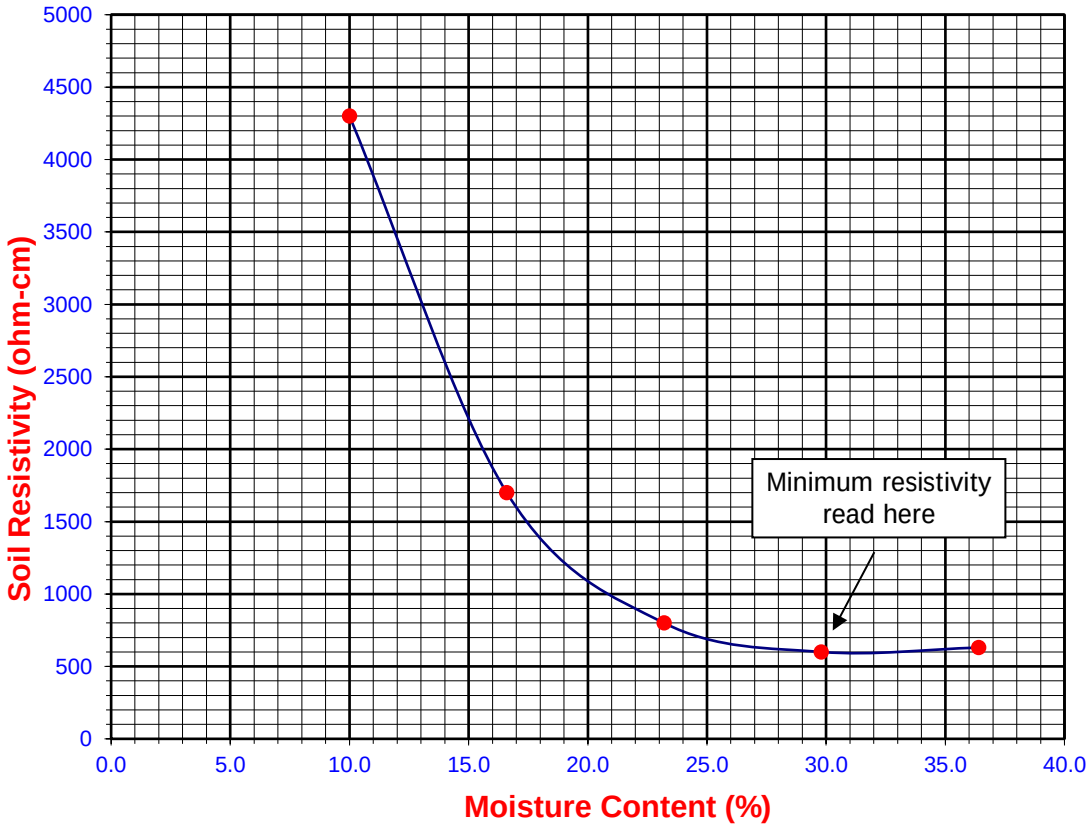
Soil Identification:* Clayey Sand (SC)

*California Test 643 requires soil specimens to consist only of portions of samples passing through the No. 8 US Standard Sieve before resistivity testing. Therefore, this test method may not be representative for coarser materials.

Specimen No.	Water Added (ml) (Wa)	Adjusted Moisture Content (MC)	Resistance Reading (ohm)	Soil Resistivity (ohm-cm)
1	50	10.00	4300	4300
2	83	16.60	1700	1700
3	116	23.20	800	800
4	149	29.80	600	600
5	182	36.40	630	630

Moisture Content (%) (MCi)	0.00
Wet Wt. of Soil + Cont. (g)	100.00
Dry Wt. of Soil + Cont. (g)	100.00
Wt. of Container (g)	0.00
Container No.	A
Initial Soil Wt. (g) (Wt)	500.00
Box Constant	1.000
MC =(((1+Mci/100)x(Wa/Wt+1))-1)x100	

Min. Resistivity (ohm-cm)	Moisture Content (%)	Sulfate Content (ppm)	Chloride Content (ppm)	Soil pH	
				pH	Temp. (°C)
DOT CA Test 643		DOT CA Test 417 Part II	DOT CA Test 422	DOT CA Test 643	
600	**29.8**	**189**	**360**	**8.00**	**21.0**



Leighton

SOIL RESISTIVITY TEST

DOT CA TEST 643

Project Name:	RCWD El Calamar Rd Pipeline		Tested By :	MRV/FLM	Date: 04/13/20
Project No. :	12727.001		Data Input By:	M. Vinet	Date: 04/14/20
Boring No.:	LB-3		Depth (ft.) :	1.0 - 5.0	
Sample No. :	B-1				

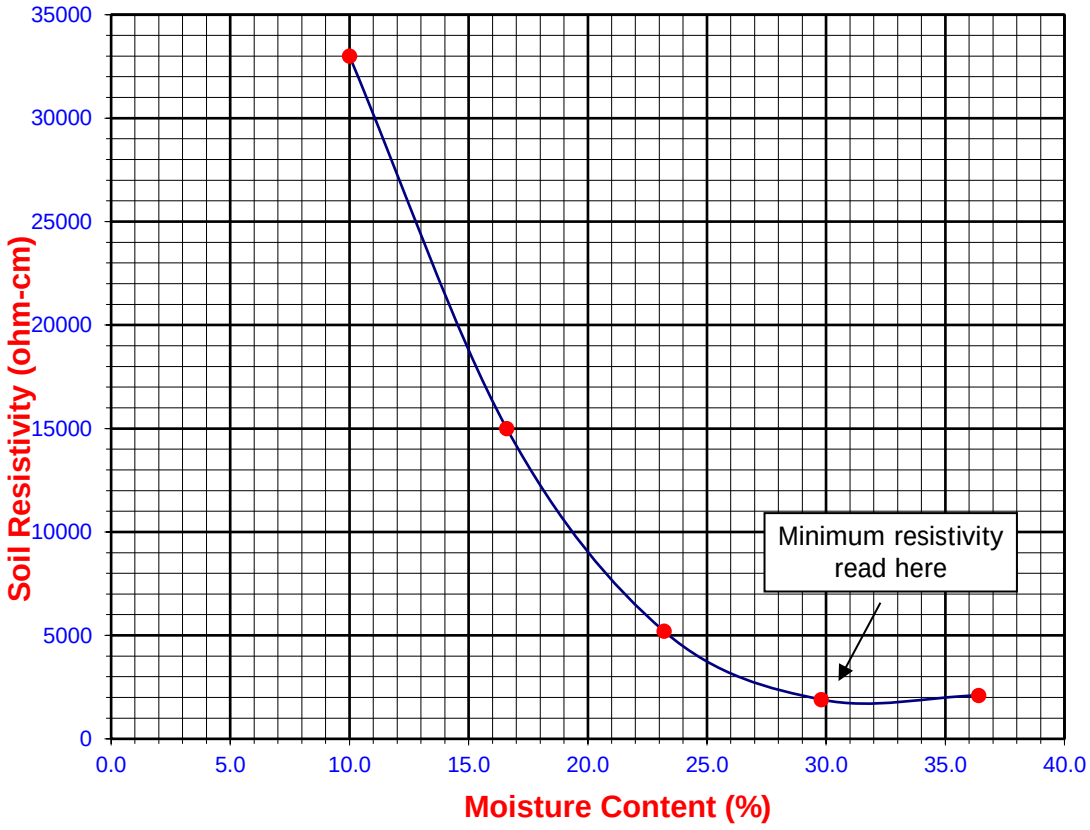
Soil Identification:* Silty, Clayey Sand (SC-SM)

*California Test 643 requires soil specimens to consist only of portions of samples passing through the No. 8 US Standard Sieve before resistivity testing. Therefore, this test method may not be representative for coarser materials.

Specimen No.	Water Added (ml) (Wa)	Adjusted Moisture Content (MC)	Resistance Reading (ohm)	Soil Resistivity (ohm-cm)
1	50	10.00	33000	33000
2	83	16.60	15000	15000
3	116	23.20	5200	5200
4	149	29.80	1900	1900
5	182	36.40	2100	2100

Moisture Content (%) (MCi)	0.00
Wet Wt. of Soil + Cont. (g)	100.00
Dry Wt. of Soil + Cont. (g)	100.00
Wt. of Container (g)	0.00
Container No.	A
Initial Soil Wt. (g) (Wt)	500.00
Box Constant	1.000
MC =(((1+Mci/100)x(Wa/Wt+1))-1)x100	

Min. Resistivity (ohm-cm)	Moisture Content (%)	Sulfate Content (ppm)	Chloride Content (ppm)	Soil pH	
				pH	Temp. (°C)
DOT CA Test 643		DOT CA Test 417 Part II	DOT CA Test 422	DOT CA Test 643	
1900	**29.8**	**115**	**60**	**8.24**	**21.0**



APPENDIX C

Seismic Refraction Survey Report

SEISMIC REFRACTION STUDY

RCWD EL CALAMAR PIPELINE
TEMECULA, CALIFORNIA

PREPARED FOR:

Leighton Group, Inc.
41715 Enterprise Circle North, Suite 103
Temecula, California 92590

PREPARED BY:

Southwest Geophysics, LLC
6280 Riverdale Street, Suite 200
San Diego, California 92120

May 5, 2020
120170SWG

ATLAS
SOUTHWEST GEOPHYSICS LLC
YOUR SUBSURFACE SOLUTION

May 5, 2020 Project No. 120170SWG

Mr. Bashir Saiid, E.I.T.
Leighton Group, Inc.
41715 Enterprise Circle North, Suite 103
Temecula, CA 92590

Subject: SEISMIC REFRACTION STUDY
RCWD EL CALAMAR PIPELINE
TEMECULA, CALIFORNIA

Dear Mr. Saiid:

In accordance with your authorization, we have performed a seismic refraction study pertaining to a portion of the property located near El Calamar Road and Vía Escalon in Temecula, California. Specifically, our evaluation consisted of performing four seismic P-wave refraction traverses at the project site. The purpose of our study was to develop subsurface velocity profiles of the areas studied, and to assess the depth to bedrock and apparent rippability of the subsurface materials. Our field services were conducted on April 2, 2020. This data report presents our methodology, equipment used, analysis, and results.

We appreciate the opportunity to be of service on this project. Should you have any questions please contact the undersigned at your convenience.

Respectfully submitted,
SOUTHWEST GEOPHYSICS, LLC

REGISTERED GEOPHYSICIST
PATRICK F. LEHRMANN
No. 1043
Exp. 1/31/22
STATE OF CALIFORNIA

Stephan A. Callas
Senior Staff Geophysicist

Patrick F. Lehrmann, P.G., P.Gp.
Principal Geologist/Geophysicist

SAC:PFL:ds

Distribution: bsaiid@leightongroup.com

ATLAS SOUTHWEST GEOPHYSICS LLC
YOUR SUBSURFACE SOLUTION

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2. Scope of Services 1
3. Site and Project Description 1
4. Study Methodology 1
5. Data Analysis 3
6. Results and Conclusions 3
7. Limitations 3
8. Selected References 4

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Figure 2a Seismic Line Location Map (SL-1 through SL-3)
Figure 2b Seismic Line Location Map (SL-4)
Figure 3a Site Photographs (SL-1 through SL-4)
Figure 4a P-Wave Profile (SL-1)
Figure 4b P-Wave Profile (SL-2)
Figure 4c P-Wave Profile (SL-3)
Figure 4d P-Wave Profile (SL-4)

1. INTRODUCTION

In accordance with your authorization, we have performed a seismic refraction study pertaining to a portion of the property located near El Calamar Road and Vía Escalon in Temecula, California. (Figure 1). Specifically, our evaluation consisted of performing four seismic P-wave refraction traverses at the project site. The purpose of the study was to develop subsurface velocity profiles of the areas studied, and to assess the depth to bedrock and apparent rippability of the subsurface materials. Our field services were conducted on April 2, 2020.

2. SCOPE OF SERVICES

Our scope of services included:

- Performance of four seismic P-wave refraction traverses at the project site.
- Compilation and analysis of the data collected.
- Preparation of this data report presenting our results and conclusions.

3. SITE AND PROJECT DESCRIPTION

The project site is located near El Calamar Road and Vía Escalon (Figure 1). Three of the study locations (SL-1, SL-2, and SL-3) lie adjacent to El Calamar Road, while the last location (SL-4) rests along Vía Escalon. The general study area is located west of the Interstate 15 Highway. Due to limited working conditions, structural features (such as asphalt, concrete, or base associated with nearby roads) and/or utilities may be present in the area. These obstructions were mitigated to the best of our abilities while in the field. Figures 2a, 2b and 3 depict the general site conditions in the areas of the seismic traverses.

4. STUDY METHODOLOGY

A seismic P-wave (compression wave) refraction study was conducted at a portion of the project site to evaluate the rippability characteristics of the subsurface materials and to develop subsurface velocity profiles of the areas studied. The seismic refraction method uses first-arrival times of refracted seismic waves to estimate the thicknesses and seismic velocities of subsurface layers. Seismic P-waves generated at the surface, using a hammer and plate, are refracted at boundaries separating materials of contrasting velocities. These refracted seismic waves are then detected by a series of surface vertical component 14.5-Hz geophones and recorded with a 24-channel Geometrics Geode Exploration Seismograph. The travel times of the seismic P-waves are used in conjunction with the shot-to-geophone distances to obtain thickness and velocity information on the subsurface materials.

Four seismic lines (SL-1 through SL-4) were conducted at the study area. The general locations and lengths of the lines were pre-determined by you and your office and adjusted where needed to account for surface conditions. The lines were all 100 feet in length. Shot points (signal generation locations) were conducted along the lines at the ends, midpoint, and intermediate points between the ends and the midpoint.

The seismic refraction theory requires that subsurface velocities increase with depth. A layer having a velocity lower than that of the layer above will not generally be detectable by the seismic refraction method and, therefore, could lead to errors in the depth calculations of subsequent layers. In addition, lateral variations in velocity, such as those caused by core stones, intrusions or boulders can also result in the misinterpretation of the subsurface conditions. In general, the effective depth of evaluation for a seismic refraction traverse is approximately one-third to one-fifth the length of the spread.

The seismic P-wave velocity of a material can be correlated to rippability (see Table 1 below), or to some degree "hardness." Table 1 is based on published information from the Caterpillar Performance Handbook (Caterpillar, 2018) as well as our experience with similar materials, and assumes that a Caterpillar D-9 dozer ripping with a single shank is used. We emphasize that the cutoffs in this classification scheme are approximate and that rock characteristics, such as fracture spacing and orientation, play a significant role in determining rock quality or rippability. The rippability of a mass is also dependent on the excavation equipment used and the skill and experience of the equipment operator.

Table 1 – Rippability Classification

Seismic P-wave Velocity	Rippability
0 to 2,000 feet/second	Easy
2,000 to 4,000 feet/second	Moderate
4,000 to 5,500 feet/second	Difficult, Possible Blasting
5,500 to 7,000 feet/second	Very Difficult, Probable Blasting
Greater than 7,000 feet/second	Blasting Generally Required

For trenching operations, the rippability values should be scaled downward. For example, velocities as low as 3,500 feet/second may indicate difficult ripping during trenching operations. In addition, the presence of boulders, which can be troublesome in narrow trenching operations, should be anticipated.

It should be noted that the rippability cutoffs presented in Table 1 are slightly more conservative than those published in the Caterpillar Performance Handbook. Accordingly, the above classification scheme should be used with discretion, and contractors should not be relieved of making their own independent evaluation of the rippability of the on-site materials prior to submitting their bids.

5. DATA ANALYSIS

The collected data were processed using SIPwin (Rimrock Geophysics, 2003), a seismic interpretation program, and analyzed using SeisOpt Pro (Optim, 2008). SeisOpt Pro uses first arrival picks and elevation data to produce subsurface velocity models through a nonlinear optimization technique called adaptive simulated annealing. The resulting velocity model provides a tomography image of the estimated geologic conditions. Both vertical and lateral velocity information is contained in the tomography model. Changes in layer velocity are revealed as gradients rather than discrete contacts, which typically are more representative of actual conditions.

6. RESULTS AND CONCLUSIONS

As previously indicated, four seismic traverses were conducted as part of our study. Figures 4a through 4d present the velocity models generated from our analysis. Based on the results, it appears as though the project site is underlain by low velocity materials (i.e., topsoil, fill, etc.) in the near surface and higher velocity materials, likely bedrock, at depth. Distinct vertical and lateral velocity variations are evident in the models. Moreover, the degree of weathering and the depth to possible bedrock appears to be variable across the study areas.

Based on the refraction results, variability in the excavatability (including depth of rippability) of the subsurface materials should be expected across the project area. Furthermore, blasting may be required depending on the excavation depth, location, equipment used, and desired rate of production. In addition, oversized materials should be expected. A contractor with excavation experience in similar difficult conditions should be consulted for expert advice on excavation methodology, equipment and production rate.

7. LIMITATIONS

The field evaluation and geophysical analyses presented in this report have been conducted in general accordance with current practice and the standard of care exercised by consultants performing similar tasks in the project area. No warranty, express or implied, is made regarding the conclusions, recommendations, and opinions presented in this report. There is no evaluation

detailed enough to reveal every subsurface condition. Variations may exist and conditions not observed or described in this report may be present. Uncertainties relative to subsurface conditions can be reduced through additional subsurface exploration. Additional subsurface evaluations will be performed upon request.

This document is intended to be used only in its entirety. No portion of the document, by itself, is designed to completely represent any aspect of the project described herein. Southwest Geophysics should be contacted if the reader requires additional information or has questions regarding the content, interpretations presented, or completeness of this document. This report is intended exclusively for use by the client. Any use or reuse of the findings, conclusions, and/or recommendations of this report by parties other than the client is undertaken at said parties' sole risk.

8. SELECTED REFERENCES

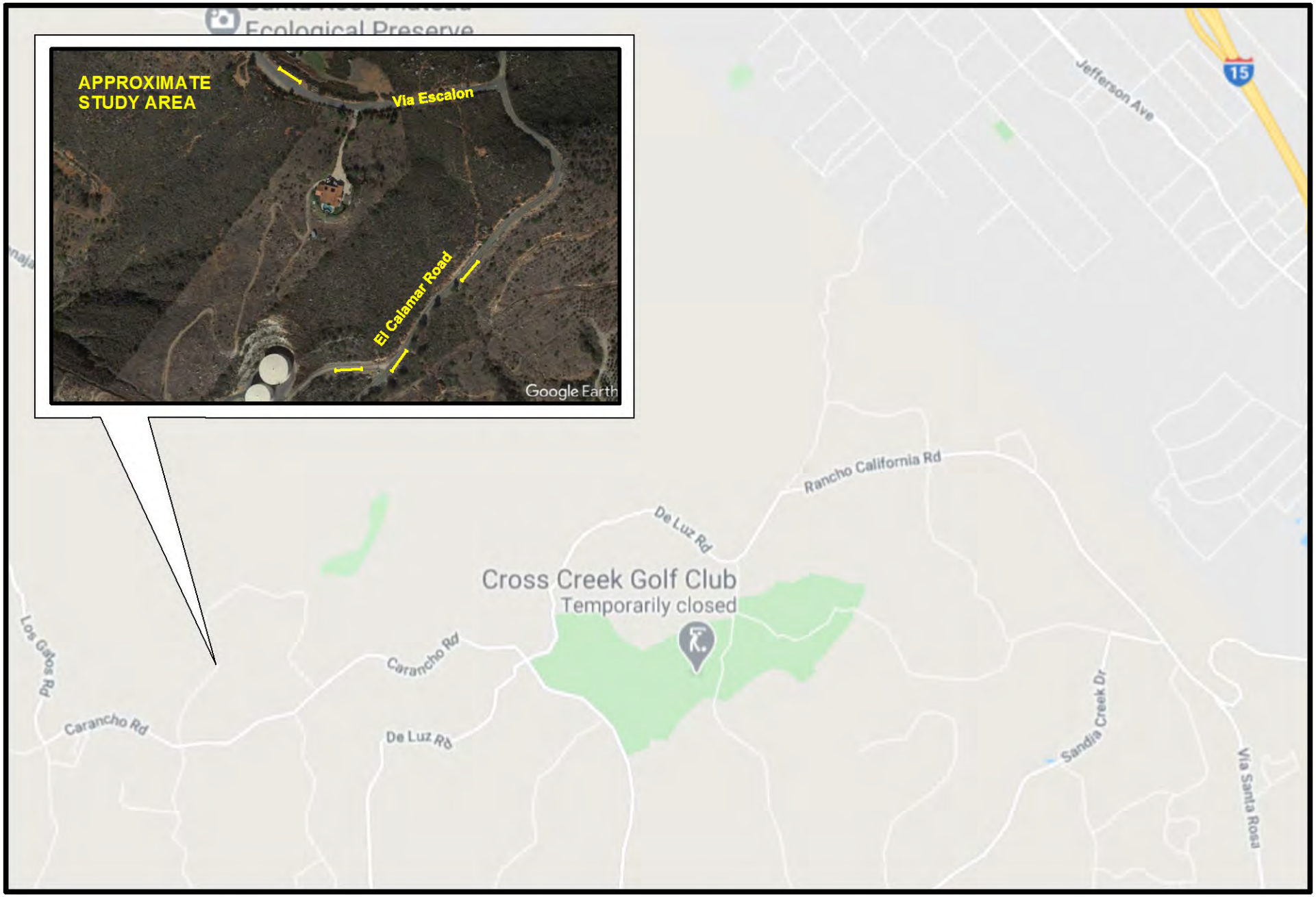
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SITE LOCATION MAP

N

RCWD El Calamar Pipeline
Temecula, California

Project No.: 120170SWG | Date: 05/20

ATLAS SOUTHWEST GEOPHYSICS

Figure 1



SEISMIC LINE LOCATION MAP
(SL-1 THROUGH SL-3)

N

RCWD El Calamar Pipeline
Temecula, California

Project No.: 120170SWG | Date: 05/20

ATLAS
SOUTHWEST GEOPHYSICS

Figure 2a

0 100 200
approximate scale in feet



SEISMIC LINE LOCATION MAP (SL-4)

N

RCWD El Calamar Pipeline
Temecula, California

Project No.: 120170SWG | Date: 05/20

ATLAS SOUTHWEST GEOPHYSICS

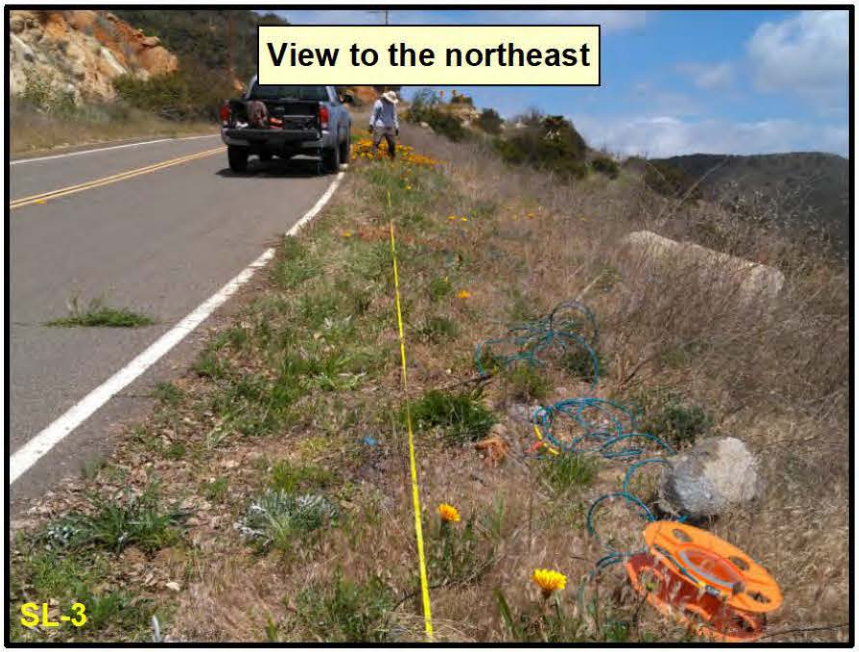
Figure 2b

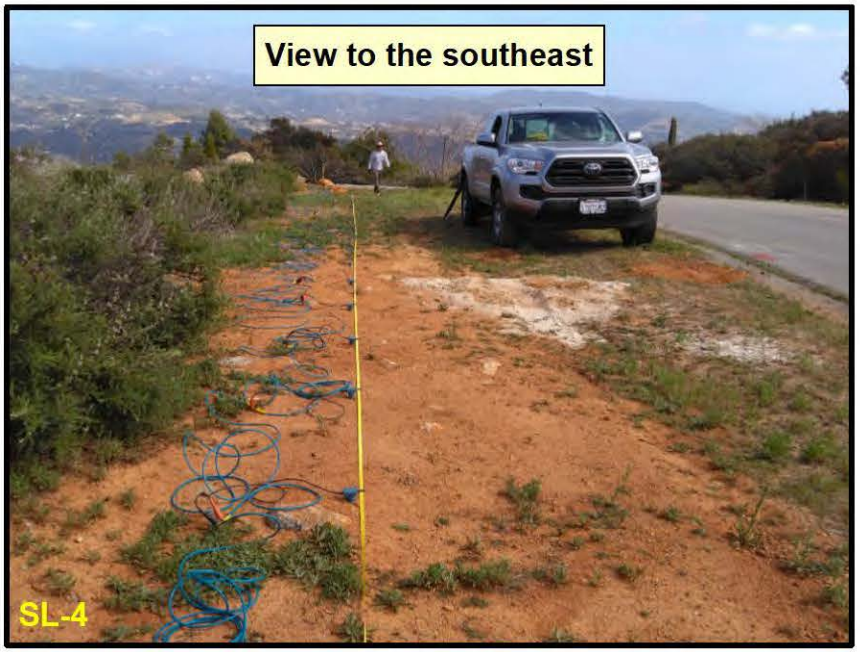
0 100 200

approximate scale in feet









SITE PHOTOGRAPHS

RCWD El Calamar Pipeline
Temecula, California

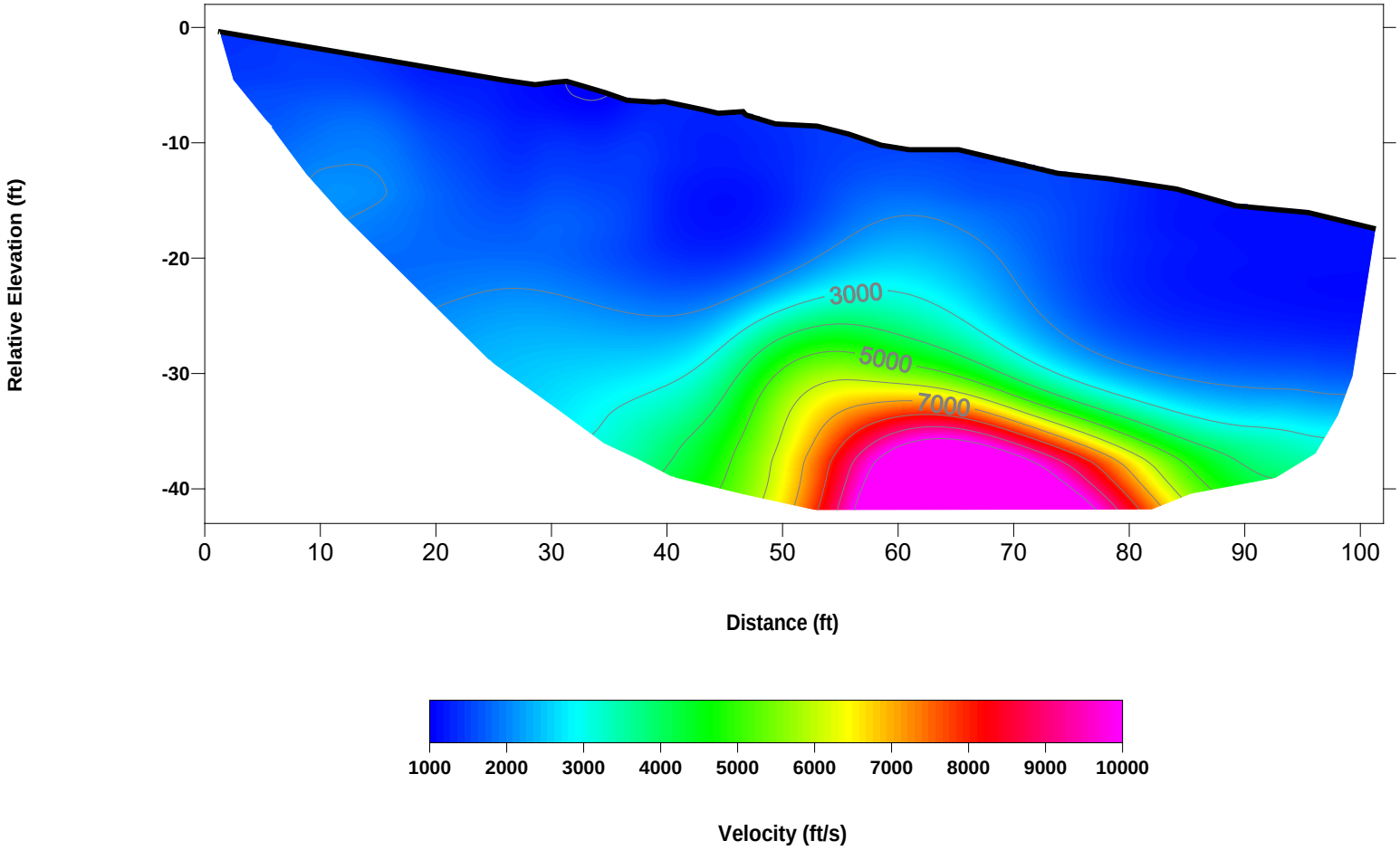
Project No.: 120170SWG | Date: 05/20

ATLAS
SOUTHWEST GEOPHYSICS

Figure 3

TOMOGRAPHY MODEL

SL-1

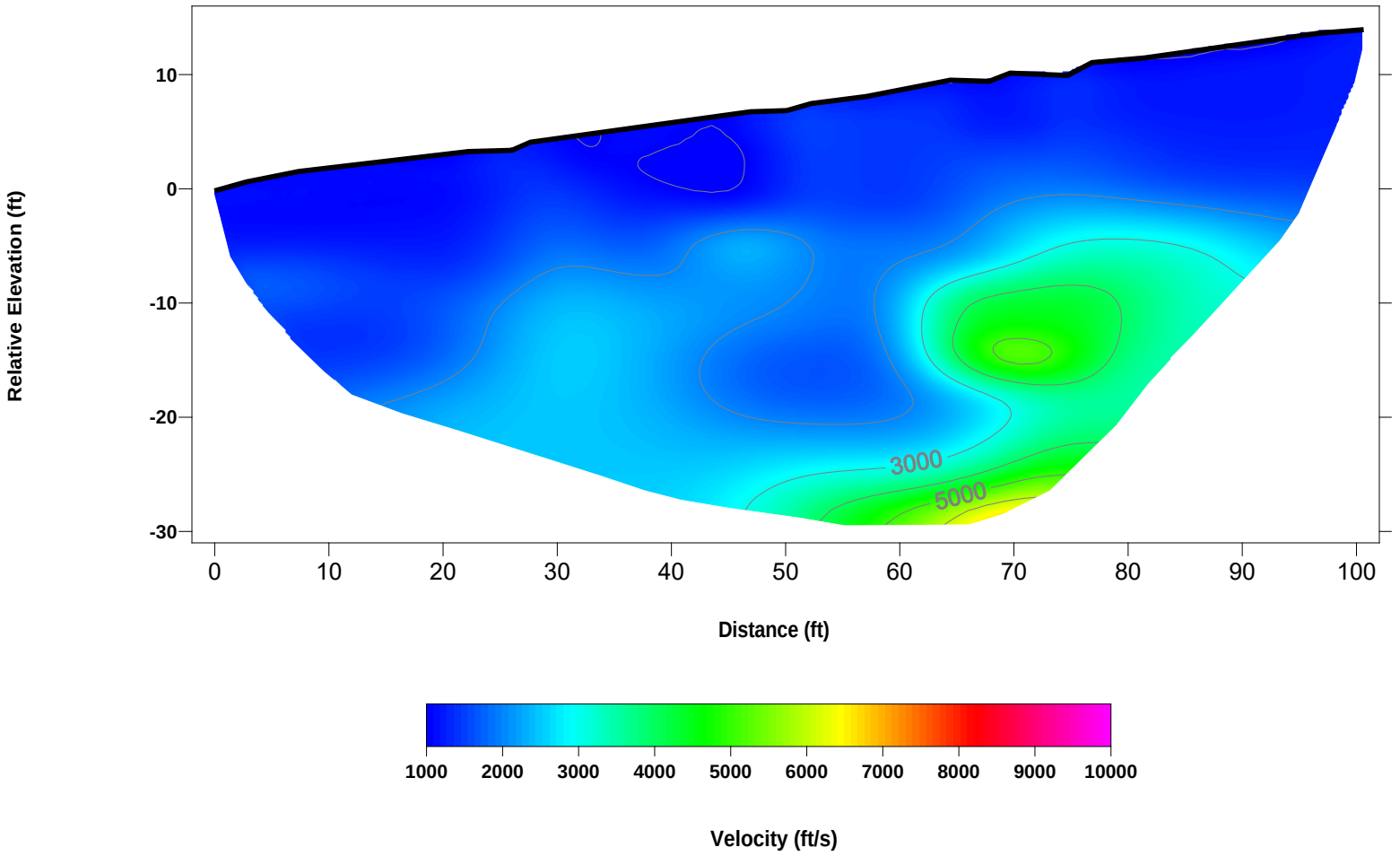


P-WAVE PROFILE SL-1	RCWD El Calamar Pipeline Temecula, California Project No.: 120170SWG | Date: 05/20	Figure 4a

Note: Contour Interval = 1,000 feet per second

TOMOGRAPHY MODEL

SL-2



P-WAVE PROFILE
SL-2

RCWD El Calamar Pipeline
Temecula, California

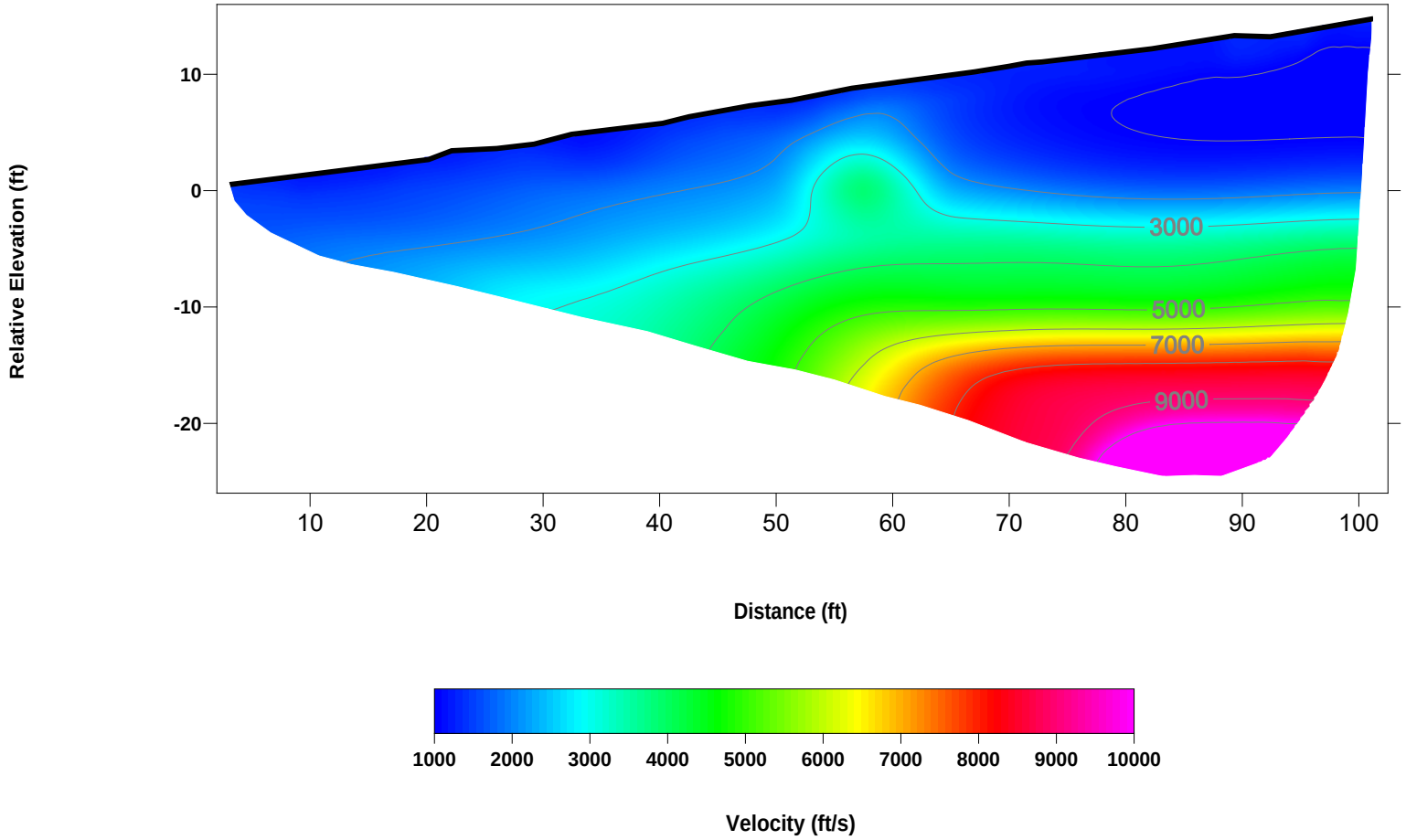
Project No.: 120170SWG | Date: 05/20

Figure 4b

Note: Contour Interval = 1,000 feet per second

TOMOGRAPHY MODEL

SL-3



P-WAVE PROFILE
SL-3

RCWD El Calamar Pipeline
Temecula, California

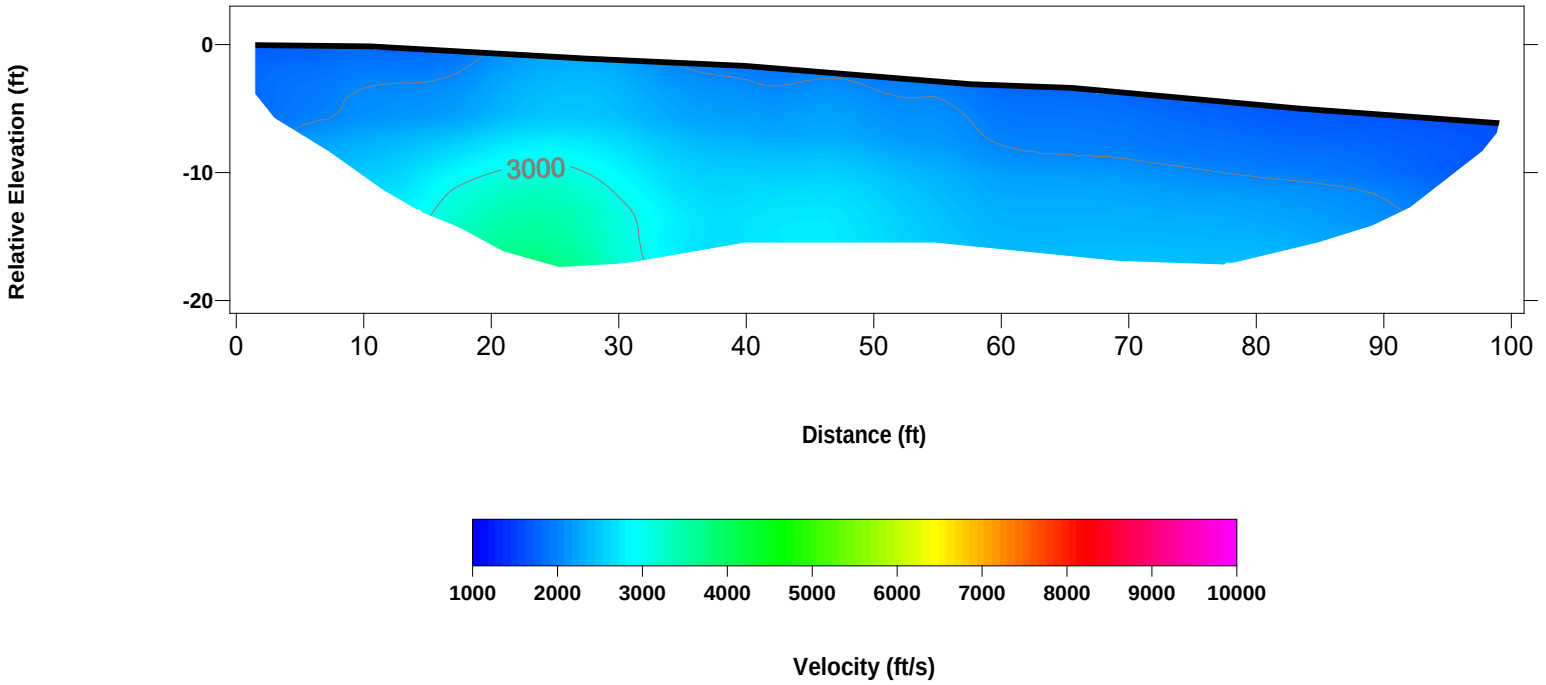
Project No.: 120170SWG | Date: 05/20

Figure 4c

Note: Contour Interval = 1,000 feet per second

TOMOGRAPHY MODEL

SL-4



P-WAVE PROFILE
SL-4

RCWD El Calamar Pipeline
Temecula, California

Project No.: 120170SWG | Date: 05/20

ATLAS SOUTHWEST GEOPHYSICS

Figure 4d

Note: Contour Interval = 1,000 feet per second

APPENDIX D

GBA Important Information About This Geotechnical Report

Important Information about This

Geotechnical-Engineering Report

Subsurface problems are a principal cause of construction delays, cost overruns, claims, and disputes.

While you cannot eliminate all such risks, you can manage them. The following information is provided to help.

The Geoprofessional Business Association (GBA) has prepared this advisory to help you – assumedly a client representative – interpret and apply this geotechnical-engineering report as effectively as possible. In that way, you can benefit from a lowered exposure to problems associated with subsurface conditions at project sites and development of them that, for decades, have been a principal cause of construction delays, cost overruns, claims, and disputes. If you have questions or want more information about any of the issues discussed herein, contact your GBA-member geotechnical engineer. Active engagement in GBA exposes geotechnical engineers to a wide array of risk-confrontation techniques that can be of genuine benefit for everyone involved with a construction project.

Understand the Geotechnical-Engineering Services Provided for this Report

Geotechnical-engineering services typically include the planning, collection, interpretation, and analysis of exploratory data from widely spaced borings and/or test pits. Field data are combined with results from laboratory tests of soil and rock samples obtained from field exploration (if applicable), observations made during site reconnaissance, and historical information to form one or more models of the expected subsurface conditions beneath the site. Local geology and alterations of the site surface and subsurface by previous and proposed construction are also important considerations. Geotechnical engineers apply their engineering training, experience, and judgment to adapt the requirements of the prospective project to the subsurface model(s). Estimates are made of the subsurface conditions that will likely be exposed during construction as well as the expected performance of foundations and other structures being planned and/or affected by construction activities.

The culmination of these geotechnical-engineering services is typically a geotechnical-engineering report providing the data obtained, a discussion of the subsurface model(s), the engineering and geologic engineering assessments and analyses made, and the recommendations developed to satisfy the given requirements of the project. These reports may be titled investigations, explorations, studies, assessments, or evaluations. Regardless of the title used, the geotechnical-engineering report is an engineering interpretation of the subsurface conditions within the context of the project and does not represent a close examination, systematic inquiry, or thorough investigation of all site and subsurface conditions.

Geotechnical-Engineering Services are Performed for Specific Purposes, Persons, and Projects, and At Specific Times

Geotechnical engineers structure their services to meet the specific needs, goals, and risk management preferences of their clients. A geotechnical-engineering study conducted for a given civil engineer will not likely meet the needs of a civil-works constructor or even a different civil engineer. Because each geotechnical-engineering study is unique, each geotechnical-engineering report is unique, prepared *solely* for the client.

Likewise, geotechnical-engineering services are performed for a specific project and purpose. For example, it is unlikely that a geotechnical-engineering study for a refrigerated warehouse will be the same as one prepared for a parking garage; and a few borings drilled during a preliminary study to evaluate site feasibility will not be adequate to develop geotechnical design recommendations for the project.

Do not rely on this report if your geotechnical engineer prepared it:

- for a different client;
- for a different project or purpose;
- for a different site (that may or may not include all or a portion of the original site); or
- before important events occurred at the site or adjacent to it; e.g., man-made events like construction or environmental remediation, or natural events like floods, droughts, earthquakes, or groundwater fluctuations.

Note, too, the reliability of a geotechnical-engineering report can be affected by the passage of time, because of factors like changed subsurface conditions; new or modified codes, standards, or regulations; or new techniques or tools. *If you are the least bit uncertain* about the continued reliability of this report, contact your geotechnical engineer before applying the recommendations in it. A minor amount of additional testing or analysis after the passage of time – if any is required at all – could prevent major problems.

Read this Report in Full

Costly problems have occurred because those relying on a geotechnical-engineering report did not read the report in its entirety. Do not rely on an executive summary. Do not read selective elements only. *Read and refer to the report in full.*

You Need to Inform Your Geotechnical Engineer About Change

Your geotechnical engineer considered unique, project-specific factors when developing the scope of study behind this report and developing the confirmation-dependent recommendations the report conveys. Typical changes that could erode the reliability of this report include those that affect:

- the site's size or shape;
- the elevation, configuration, location, orientation, function or weight of the proposed structure and the desired performance criteria;
- the composition of the design team; or
- project ownership.

As a general rule, *always* inform your geotechnical engineer of project or site changes – even minor ones – and request an assessment of their impact. *The geotechnical engineer who prepared this report cannot accept*

responsibility or liability for problems that arise because the geotechnical engineer was not informed about developments the engineer otherwise would have considered.

Most of the "Findings" Related in This Report Are Professional Opinions

Before construction begins, geotechnical engineers explore a site's subsurface using various sampling and testing procedures. *Geotechnical engineers can observe actual subsurface conditions only at those specific locations where sampling and testing is performed.* The data derived from that sampling and testing were reviewed by your geotechnical engineer, who then applied professional judgement to form opinions about subsurface conditions throughout the site. Actual sitewide-subsurface conditions may differ – maybe significantly – from those indicated in this report. Confront that risk by retaining your geotechnical engineer to serve on the design team through project completion to obtain informed guidance quickly, whenever needed.

This Report's Recommendations Are Confirmation-Dependent

The recommendations included in this report – including any options or alternatives – are confirmation-dependent. In other words, they are not final, because the geotechnical engineer who developed them relied heavily on judgement and opinion to do so. Your geotechnical engineer can finalize the recommendations *only after observing actual subsurface conditions* exposed during construction. If through observation your geotechnical engineer confirms that the conditions assumed to exist actually do exist, the recommendations can be relied upon, assuming no other changes have occurred. *The geotechnical engineer who prepared this report cannot assume responsibility or liability for confirmation-dependent recommendations if you fail to retain that engineer to perform construction observation.*

This Report Could Be Misinterpreted

Other design professionals' misinterpretation of geotechnical-engineering reports has resulted in costly problems. Confront that risk by having your geotechnical engineer serve as a continuing member of the design team, to:

- confer with other design-team members;
- help develop specifications;
- review pertinent elements of other design professionals' plans and specifications; and
- be available whenever geotechnical-engineering guidance is needed.

You should also confront the risk of constructors misinterpreting this report. Do so by retaining your geotechnical engineer to participate in prebid and preconstruction conferences and to perform construction-phase observations.

Give Constructors a Complete Report and Guidance

Some owners and design professionals mistakenly believe they can shift unanticipated-subsurface-conditions liability to constructors by limiting the information they provide for bid preparation. To help prevent the costly, contentious problems this practice has caused, include the complete geotechnical-engineering report, along with any attachments or appendices, with your contract documents, *but be certain to note conspicuously that you've included the material for information purposes only.* To avoid misunderstanding, you may also want to note that "informational purposes" means constructors have no right to rely on the interpretations, opinions, conclusions, or recommendations in the report. Be certain that constructors know they may learn about specific project requirements, including options selected from the report, *only* from the design drawings and specifications. Remind constructors that they may perform their own studies if they want to, and *be sure to allow enough time* to permit them to do so. Only then might you be in a position to give constructors the information available to you, while requiring them to at least share some of the financial responsibilities stemming from unanticipated conditions. Conducting prebid and preconstruction conferences can also be valuable in this respect.

Read Responsibility Provisions Closely

Some client representatives, design professionals, and constructors do not realize that geotechnical engineering is far less exact than other engineering disciplines. This happens in part because soil and rock on project sites are typically heterogeneous and not manufactured materials with well-defined engineering properties like steel and concrete. That lack of understanding has nurtured unrealistic expectations that have resulted in disappointments, delays, cost overruns, claims, and disputes. To confront that risk, geotechnical engineers commonly include explanatory provisions in their reports. Sometimes labeled "limitations," many of these provisions indicate where geotechnical engineers' responsibilities begin and end, to help others recognize their own responsibilities and risks. *Read these provisions closely.* Ask questions. Your geotechnical engineer should respond fully and frankly.

Geoenvironmental Concerns Are Not Covered

The personnel, equipment, and techniques used to perform an environmental study – e.g., a "phase-one" or "phase-two" environmental site assessment – differ significantly from those used to perform a geotechnical-engineering study. For that reason, a geotechnical-engineering report does not usually provide environmental findings, conclusions, or recommendations; e.g., about the likelihood of encountering underground storage tanks or regulated contaminants. *Unanticipated subsurface environmental problems have led to project failures.* If you have not obtained your own environmental information about the project site, ask your geotechnical consultant for a recommendation on how to find environmental risk-management guidance.

Obtain Professional Assistance to Deal with Moisture Infiltration and Mold

While your geotechnical engineer may have addressed groundwater, water infiltration, or similar issues in this report, the engineer's services were not designed, conducted, or intended to prevent migration of moisture – including water vapor – from the soil through building slabs and walls and into the building interior, where it can cause mold growth and material-performance deficiencies. Accordingly, ***proper implementation of the geotechnical engineer's recommendations will not of itself be sufficient to prevent moisture infiltration. Confront the risk of moisture infiltration*** by including building-envelope or mold specialists on the design team. ***Geotechnical engineers are not building-envelope or mold specialists.***

GEOPROFESSIONAL BUSINESS ASSOCIATION

Telephone: 301/565-2733
e-mail: info@geoprofessional.org www.geoprofessional.org

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APPENDIX E

Paint Sample Analysis (CSI Services, 2024)

P. O. Box 801357
Santa Clarita, CA 91380
Phone: 877.274.2422
Fax: 661.775.7628
www.CSIServices.biz

Providing Quality Technical Services to the Coating Industry

January 24, 2024 ***Via Email***

Mr. Ryan Huston, P.E. Email: rhuston@ardurra.com
Client Service Manager
Ardurra
43410 Business Park Drive
Temecula, CA 92590

Subject: **Results - Paint Sample Analysis**

Re: **Carancho PS Rancho CA WD, Project NO. D2048**

Dear Ryan:

Please find attached the results of the analysis performed on the 5 (five) paint samples obtained from the designated area to be disturbed on the above referenced facility.

The samples were collected on January 24, 2024 by Ben Dias of CSI Services, Inc. (CSI) and transmitted to Schneider Laboratories, Richmond, VA using proper chain-of-custody protocol. Each of the paint samples was analyzed for the CAM 17 Metals (CAM 17). The certified laboratory tested each paint sample in accordance with EPA 3050B/Method 6010B. A Summary Data Table and Photo Summary are attached.

Thank you for your confidence in CSI Services, Inc., and please give us a call with any questions.

Sincerely,
CSI Services, Inc.

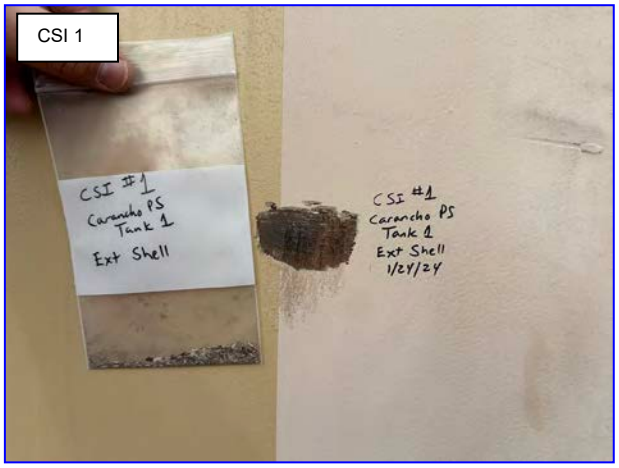
Ben Dias

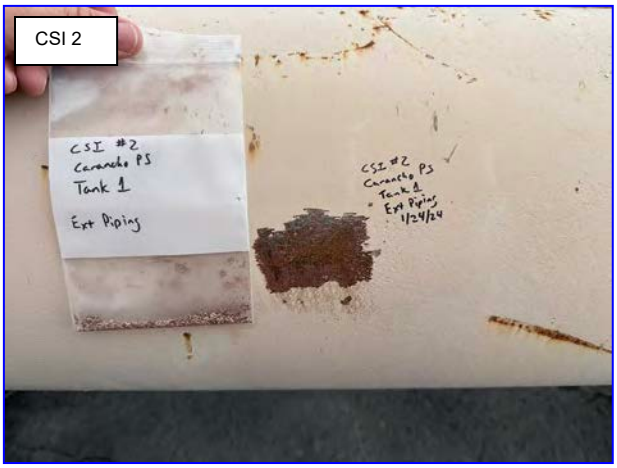
Summary Data Table

Carancho PS Rancho CA WD	CSI 1	CSI 2	CSI 3	CSI 4	CSI 5
	Tank 1 Ext Shell	Tank 1 Ext Piping	Tank 1 Ext Adj Piping	Tank 2 Ext Shell	Tank 2 Ext Piping
Metal Analysis	**Result (mg/kg)**	**Result (mg/kg)**	**Result (mg/kg)**	**Result (mg/kg)**	**Result (mg/kg)**
Antimony	122	<15.3	<9.44	<6.50	<6.54
Arsenic	<6.46	<15.3	28.8	<6.50	<6.54
Barium	21300	25700	2440	12000	12700
Beryllium	<6.46	<15.3	<9.44	<6.50	<6.54
Cadmium	<6.46	<15.3	<9.44	<6.50	<6.54
Chromium	6240	95.7	<23.6	<16.3	<16.4
Cobalt	248	206	107	208	211
Copper	31.4	<38.2	27.7	<16.3	<16.4
Lead	1770	2520	52.2	2230	2740
Mercury	<0.100	<0.123	0.136	<0.118	<0.110
Molybdenum	27.8	2500	<9.44	1190	1250
Nickel	38.1	15.3	189	11.1	<6.54
Selenium	<6.46	<15.3	<9.44	<6.50	<6.54
Silver	<6.46	<15.3	<9.44	<6.50	<6.54
Thallium	<6.46	<15.3	<9.44	<6.50	<6.54
Vanadium	<6.46	<15.3	<9.44	<6.50	<6.54
Zinc	9420	3980	8910	2150.0	2020

Tank 1 Paint Samples



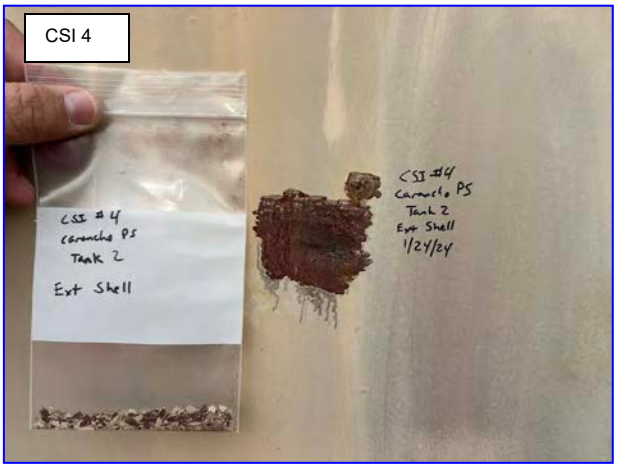


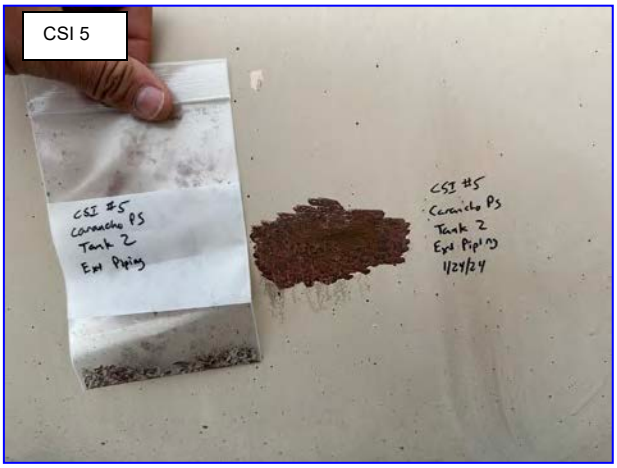




Tank 2 Paint Samples







NOTICE: This report represents the opinion of CSI Services, Inc. This report is issued in conformance with generally acceptable industry practices. While customary precautions were taken to insure that the information gathered and presented is accurate, complete and technically correct, it is based on the information, data, time, and materials afforded.

APPENDIX F

Noise Study (Ganddini 2024)

CARANCHO PUMP STATION NOISE IMPACT ANALYSIS

County of Riverside

March 26, 2024

ganddini

Traffic Engineering ● Transportation Planning ● Parking ● Noise & Vibration
Air Quality ● Global Climate Change ● Health Risk Assessment

CARANCHO PUMP STATION NOISE IMPACT ANALYSIS

County of Riverside

March 26, 2024

prepared by
Roma Stromberg, INCE, MS
Catherine Howe, MS

GANDDINI GROUP INC.
555 Parkcenter Drive, Suite 225
Santa Ana, California 92705
(714) 795-3100 | ganddini.com

Project No. 19704

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EXECUTIVE SUMMARY

The purpose of this report is to provide an assessment of the noise impacts associated with construction of the proposed Carancho Pump Station 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 County of Riverside.

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 technical terms related to noise analysis.

Existing Noise Environment

Sensitive receptors that may be affected by project generated noise include the existing single-family detached residential uses with property lines located approximately 50 southeast and adjacent to the north/northwest of the project site.

Measured short-term ambient noise levels in the project vicinity ranged between 37.5 and 64.7 dBA L_{eq} and measured long-term hourly ambient noise levels ranged from 32.6 to 52.4 dBA L_{eq}. The dominant noise source in the project vicinity was existing pump equipment, residential activity, and vehicle traffic associated with El Calamar Road and other surrounding roadways.

Project Construction Impacts – Onsite Equipment

Modeled construction noise levels are expected to reach up to 87.2 dBA L_{eq} at a distance of 50 feet and up to 73.8 dBA L_{eq} at the nearest sensitive receptor property line and are not expected to exceed the noise level limitations presented in Article 25 of the Rancho California Water District's Specifications - General Provisions document, which prohibits trenchers, pavers, graders, and trucks within 1,000 feet of any residence, business, or other populated area from exceeding 90 dBA at 50 feet as measured under the noisiest operating conditions. For all other equipment, noise levels shall not exceed 85 dBA at 50 feet.

Furthermore, with implementation of the best management practices (BMPs) presented below, the proposed project will be consistent with the applicable ordinances, plans and policies and therefore, will not result in or generate a substantial temporary or permanent increase in ambient noise levels in the vicinity of the project. Impacts would be less than significant, and no mitigation is required.

Construction Noise - Best Management Practices

1. No internal combustion engine will be operated on the project without a muffler of the type recommended by the manufacturer. Should any muffler or other control device sustain damage or be determined to be ineffective or defective, the contractor will promptly remove the equipment and will not return said equipment to the job until the device is repaired or replaced. Said noise and vibration level requirements will apply to all equipment on the job or related to the job including, but not limited to, trucks, transit mixers, or transit equipment that may or may not be owned by the contractor.

2. Maximum noise levels within 1,000 feet of any residence, business, or other populated area for equipment such as trenchers, pavers, graders, and trucks shall not exceed 90 dBA at 50 feet as measured under the noisiest operating conditions. For all other equipment, noise levels shall not exceed 85 dBA at 50 feet.

3. Jack hammers will be equipped with exhaust mufflers and steel muffling sleeves.

4. Air compressors will be of a quiet type such as a "whisperized" compressor.

5. Noise operations will be scheduled to minimize their duration at any given location.

6. Noise equipment will be kept as far as possible from noise-sensitive site boundaries.

7. Construction equipment will not be left idling.

8. Whenever possible, electric power will be used in lieu of internal combustion engine power.

9. Equipment will be properly maintained to reduce noise from excessive vibration, faulty mufflers, or other sources. All engines shall have mufflers.

Project Construction Impacts – Offsite Vehicle Trips

The estimated existing average daily trips along El Calamar Road is up to 96 daily vehicle trips.[1] Project construction is expected to generate a maximum of up to 12 vehicle trips per day during demolition (10 for worker trips and 1.5 for hauling trips). Given the project site's location, it is anticipated that vendor and/or haul truck traffic would take the most direct route to either State Route 79 or the 15 Freeway. Therefore, the addition of project vendor/haul trucks and worker vehicles per day along off-site roadway segments would not be anticipated to result in a doubling of traffic volumes. Off-site project generated construction vehicle trips would result in a negligible noise level increase and would not result in a substantial increase in ambient noise levels. Impacts would be less than significant. No mitigation measures are required.

Operational Noise Impacts – Onsite Sources

Project operational noise with all three pumps operating and the backup generator in operation will result in noise levels ranging between 40 and 51 dBA L_{eq} at nearby properties with habitable dwellings, and project operational noise with three pumps in operation with no backup generator noise will result in noise levels ranging between 30 and 50 dBA L_{eq}.

The County's daytime exterior noise standard of 65 dBA L_{eq} (10-minute) would not be exceeded with concurrent operation of the three 350 hp pumps and the proposed generator or with operation of the pumps alone at any of the affected receptors. The County has written in some discretion regarding application of these standards which states "These are only preferred standards; final decision will be made by the Riverside County Planning Department and Office of Public Health." Taking into consideration this caveat, and the fact that operation of the three 350 hp pumps would result in exterior noise levels of 35 dBA L_{eq} without the backup generator and 36 dBA L_{eq} with the backup generator at the active outdoor residential use areas, the lead agency should consider the impact at Receptor 1 to be to be less than significant with no mitigation required.

The County's nighttime exterior noise standard of 45 dBA L_{eq} (10-minute) would be exceeded at the parcel northwest of the project site with concurrent operation of all three pumps and operation of the generator or with operation of the pumps alone, but would 36 dBA at the active outdoor use area. The nighttime noise standard would not be exceeded at the affected parcel southeast of the project site under either scenario.

Typical residential construction provides 15 dB of exterior to interior noise reduction (assuming a windows open condition), interior noise levels are expected to range between 20 and 21 dBA Leq inside the affected habitable dwellings. This impact would be less than significant. No mitigation is required.

[1] The existing average daily traffic volume was estimated based on the ambient noise measurements (STNM5, see Table 1 and Appendix C). Per the field sheets for STNM5 (see Appendix C), one car passed the noise meter during the 15 minute measurement along El Calamar Road. Therefore, for discussion purposes, it was estimated that up to 96 daily vehicle trips (4 cars every hour for a 24 hour day) could occur along the road segment of El Calamar Road that lies in vicinity of the project site.

Groundborne Vibration Impacts - Architectural Damage

The nearest off-site buildings are the single-family residential dwelling unit located to the southeast of the project site along El Calamar Road, with associated structures located as close as approximately 277 feet from the closest project site property line, and the single-family residential dwelling unit located to the northwest of the project site along Via Escalon, with associated structures located as close as approximately 593 feet from the closest project site property line. At the closest distance to nearby residential structures, approximately 277 feet, the use of a vibratory roller would be expected to generate a PPV of 0.006 in/sec and a bulldozer would be expected to generate a PPV of 0.002 in/sec. Therefore, vibration levels associated with project construction would not exceed the threshold at which there is a risk of "architectural" damage to older residential buildings of a PPV of 0.3 in/sec at any of the surrounding residential structures. Temporary vibration levels associated with project construction would not cause architectural damage to the nearest residential receptors. Impacts from vibration generated damage would be less than significant.

Groundborne Vibration Impacts - Annoyance to Persons

Vibration becomes strongly perceptible to sensitive receptors at a level of 0.1 in/sec PPV. A vibratory roller could generate a PPV of up to 0.1 in/sec at a distance of 41 feet and a large bulldozer at a distance of 24 feet. The closest structures to the boundaries of the project site are at least approximately 277 feet to the southeast along El Calamar Road. Impacts from vibration related annoyance would be less than significant.

Air Traffic Impacts

There are no airports located within the vicinity of the project site. The project would not expose people residing or working in the project area to excessive noise levels associated with airports. This impact would be less than significant. No mitigation is required.

1. INTRODUCTION

This section describes the purpose of this study and the proposed project.

PURPOSE AND OBJECTIVES

The purpose of this study is to provide an assessment of the noise impacts associated with construction of the proposed Carancho Pump Station 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 County of Riverside.

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 technical terms related to noise analysis.

PROJECT LOCATION

The 6.56-acre project site is located at Assessor Parcel Number (APN) 933-050-036 approximately 0.3 miles north of the unsignalized intersection of El Calamar Road and Carancho Road in the unincorporated County of Riverside, California. The project site is currently developed with two water tanks (Carancho Reservoir #1 & #2) and a pump station. Access to the site is via a driveway on El Calamar Road. The site includes mostly impervious surfaces and natural landscape setbacks/buffers with developed portions consisting of paved driveways, tanks, and ground-mounted equipment. A vicinity map showing the project location is provided on Figure 1.

PROJECT DESCRIPTION

The Carancho Pump Station was originally built in 1987 with a total of two (2) 1,500 gallons per minute (gpm) design capacity pumps and two (2) empty pump cans. Although one pump is intended as the primary pump with the other as backup, both pumps are often operating together to meet requirements of high-water demand periods. Rancho California Water District (RCWD, District) identified the need to upsize the Carancho Pump Station in their 5-year CIP Plan to maintain efficiency of the District's 2550 Pressure Zone, which is also served by the Tenaja and Baldaray Pump Stations, in addition to the Carancho Pump Station. Due to the existing configuration, the Tenaja Pump Station cannot provide multiple, maximum day redundancy for the Baldaray Pump Station until the Carancho Pump Station is expanded. The project site has been in use as a pump station facility and for water storage for over 30 years; however, the two existing tanks have been out of service since the 1990's.

The project involves the demolition of both existing Carancho Nos. 1 and 2 Tanks, permanent stabilization of the tank pad, replacement of two existing pumps (350 Hp) and addition of two new pumps (350 Hp) for a total of 4 new pumps on the pump station pad. Project implementation will result tin 3 duty pumps, 350 HP; 1 standby pump, 350 HP) to meet the desired capacity of 4,400 gpm; installation of two new surge tanks; installation of new electrical conduits; new transformer; new 1,500 kW emergency power generation with automatic transfer switch that meets Tier 2 emission standards[2]; and the installation of approximately 600 linear feet of 24-inch diameter potable water pipeline from the eastern end of the main driveway of Carancho Pump Station to the proposed location of the pump station improvements on the lower pad. The pump station will be installed on areas of previous disturbance within APN 933-050-036 southwest of the Carancho Tanks. The existing pump station contains space for four pumps and was initially intended to provide 6,000 gpm (with all four pumps running), thus the upgrades planned for the Project fall within the scope and configuration of the original pump station.

[2] Tier 2 emission standards are established by the U.S. EPA for Stationary Emergency Use Only and apply to nonroad diesel engines. Engines of various sizes need to meet preestablished thresholds for smoke (PM); and Nitrous Oxide (NOx) (US EPA, 2022).

Project construction is anticipated to begin in late 2024 and conclude in mid- 2026 with a duration of approximately eighteen months. Construction activities will occur between 7:30AM and 5:00 PM, Monday through Friday; weekend and night work is not proposed. Construction activities will involve approximately 4 to 8 crew members[3] at any one time and up to two inspectors and construction staff for a total not exceeding 10 people working on the job daily during active construction. Construction will occur in one phase with five distinct sets of activities: Mobilization, 2) Demolition, 3) Site Preparation, 4) Construction and 5) Final Site Work and the following activities are proposed:

- Pre-Construction: Review material submittals and order equipment (two to twelve months)
- Mobilization: Install construction trailer (one week).
- Demolition: Remove two existing steel tanks, concrete foundations, and remove miscellaneous piping, valves, and portions of existing pavement (two months).
- Site Preparation & Pipeline Installation: Perform grading for a small retaining wall and minor grading to maintain existing drainage patterns and join new surfaces to match existing grades and elevations, install 24-inch diameter pipeline in existing driveway and remove approximately 250 cubic yards of materials (three months).
- Pump Station Construction: Concrete work, reconstruct access, and appurtenances, install new equipment (nine months).
- Final Site Work: Paving, clean up, and site restoration (one month).

The following types and quantities of equipment will be in use at the project site during portions of the construction activities listed above. However, it should be noted that, the construction equipment listed below will only be in use for a portion of the anticipated duration for each project activity.

- Mobilization: Field office trailer, backhoe for potholing, two service trucks (one week)
- Demolition: Cat 235 Excavator with demolition hammer attachment, Front End Loader, two 15 cubic-yard dump trucks, two service trucks, crane, two chain saws, two scrapers, one tractor. There will be no more than 65 total truck trips during demolition which includes removal of the tank, and the reservoirs pipe and appurtenances. This estimate is based on 1,000 tons of steel from the tanks, removed in 40-ton capacity trucks (approximately two months duration).
- Site Preparation: Pug Mill Mixer, Bulldozer, one Front End Loader and one Cat 235 Excavator, two service trucks and haulers. Material handling equipment. Four pumps and two skid steer loaders, this phase will include up to 24 truck trips using haulers to import 350 tons of base material for soils stabilization at 40 tons per truck (approximately three months).
- Pump Station Construction: One Crane, Cat 235 Excavator, paving equipment, up to 13 Trucks per day maximum over an approximate 9- month duration, two service trucks.

The project is anticipated to be operational for a minimum of 30 years from completion of initial construction. The District will operate and manage the project similarly with existing conditions since the project will require the expansion of the pump station within the site's existing footprint. Therefore, the District does not anticipate additional staffing needs for long-term operation and maintenance of the proposed project. Monthly worker trips over the lifetime of the Project will be required to conduct routine inspections and ensure proper maintenance. Long-term maintenance does not anticipate deviating from existing operations or contribute to additional worker trips upon the competition of project construction.
The proposed site plan is shown in Figure 2.

Best Management Practices

With implementation of the best management practices (BMPs) presented below, the proposed project will be consistent with the applicable ordinances, plans and policies and therefore, will not result in or generate a substantial temporary or permanent increase in ambient noise levels in the vicinity of the project.

[3] The number of construction crew members is an assumption based on the scale of the Proposed Project and type of infrastructure being implemented.

1. No internal combustion engine will be operated on the project without a muffler of the type recommended by the manufacturer. Should any muffler or other control device sustain damage or be determined to be ineffective or defective, the contractor will promptly remove the equipment and will not return said equipment to the job until the device is repaired or replaced. Said noise and vibration level requirements will apply to all equipment on the job or related to the job including, but not limited to, trucks, transit mixers, or transit equipment that may or may not be owned by the contractor.

2. Maximum noise levels within 1,000 feet of any residence, business, or other populated area for equipment such as trenchers, pavers, graders, and trucks shall not exceed 90 dBA at 50 feet as measured under the noisiest operating conditions. For all other equipment, noise levels shall not exceed 85 dBA at 50 feet.

3. Jack hammers will be equipped with exhaust mufflers and steel muffling sleeves.

4. Air compressors will be of a quiet type such as a "whisperized" compressor.

5. Noise operations will be scheduled to minimize their duration at any given location.

6. Noise equipment will be kept as far as possible from noise-sensitive site boundaries.

7. Construction equipment will not be left idling.

8. Whenever possible, electric power will be used in lieu of internal combustion engine power.

9. Equipment will be properly maintained to reduce noise from excessive vibration, faulty mufflers, or other sources. All engines shall have mufflers.



Figure 1
Project Location Map

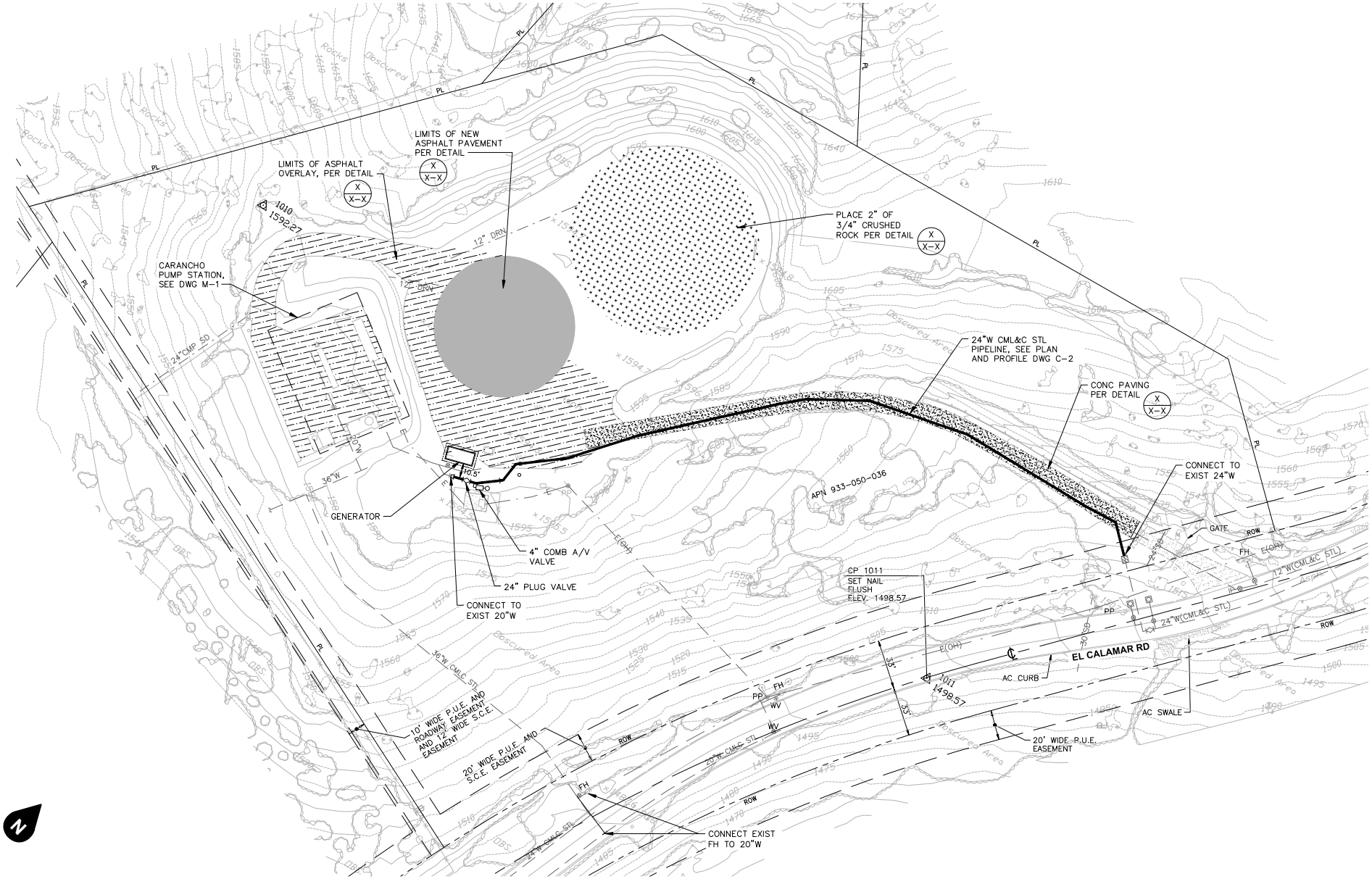


Figure 2
Site Plan

2. NOISE AND VIBRATION FUNDAMENTALS

This section provides an overview of key noise and vibration concepts.

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 Leq, or the equivalent noise level for that period of time. For example, $Leq_{(3\text{-}hr)}$ 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

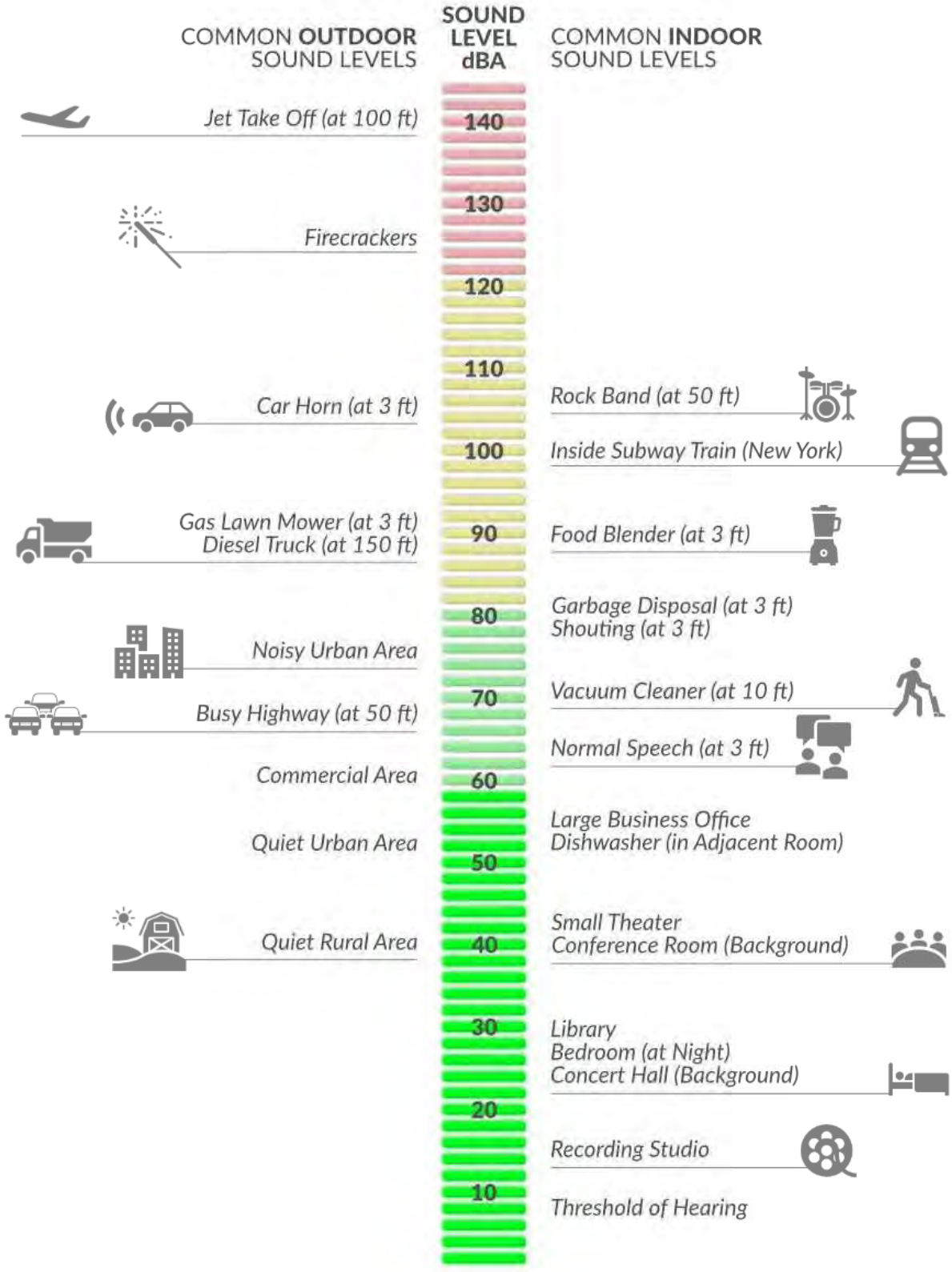
waves travel. There are three main types of vibration propagation: surface, compression and shear waves. Surface waves, or Rayleigh waves, travel along the ground's surface. These waves carry most of their energy along an expanding circular wave front, similar to ripples produced by throwing a rock into 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.

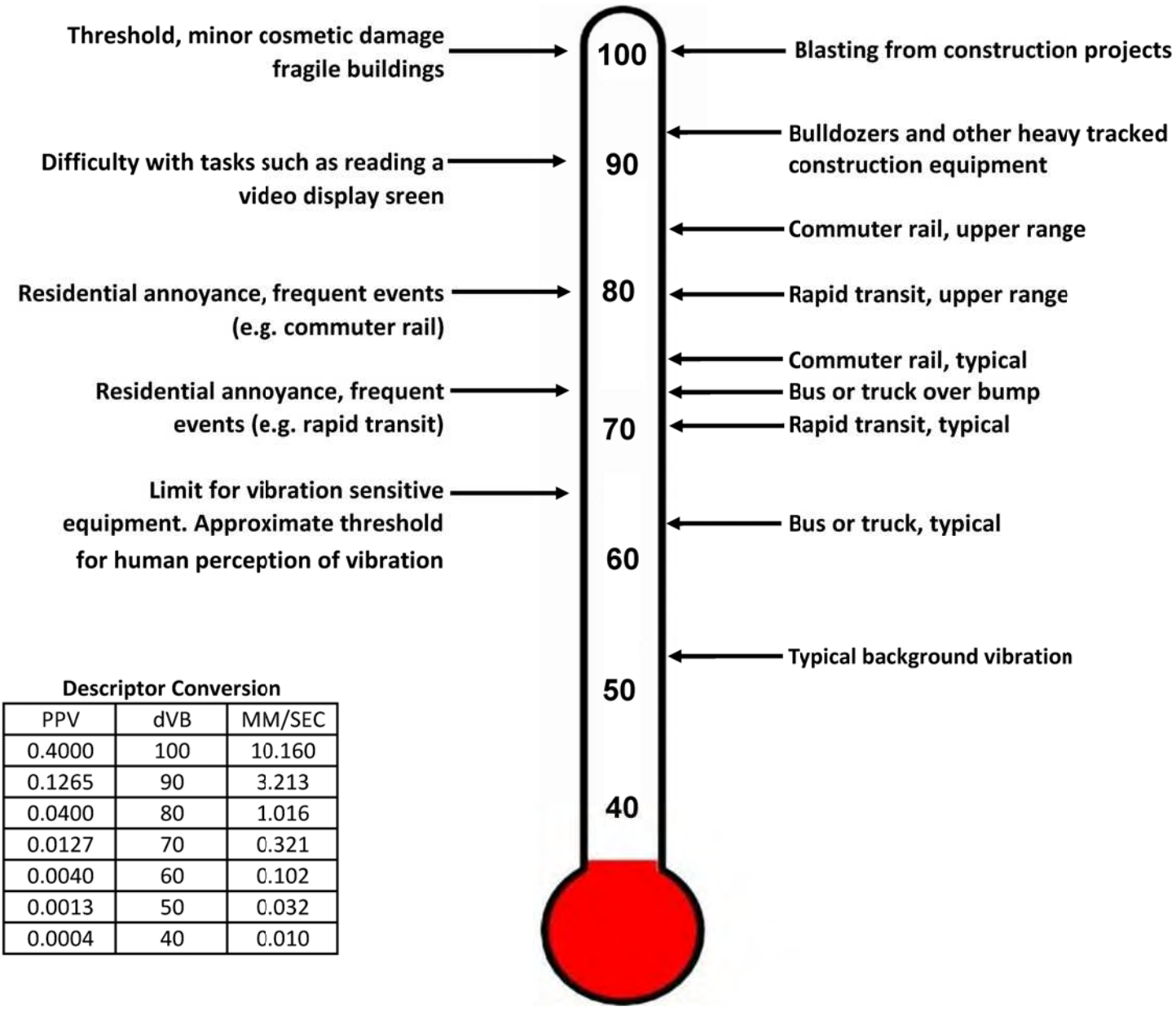
PPV is appropriate for evaluating the potential of building damage and VdB is commonly used to evaluate human response. Decibel notation acts to compress the range of numbers required in measuring vibration. Similar to the noise descriptors, L_{eq} and L_{max} can be used to describe the average vibration 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.



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Based on Policy & Guidance from Federal Aviation Administration

Figure 3
A-Weighted Comparative Sound Levels



Descriptor Conversion

PPV	dVB	MM/SEC
0.4000	100	10.160
0.1265	90	3.213
0.0400	80	1.016
0.0127	70	0.321
0.0040	60	0.102
0.0013	50	0.032
0.0004	40	0.010

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

This section describes the existing noise setting in the project vicinity.

EXISTING LAND USES AND SENSITIVE RECEPTORS

The project site is bordered by El Calamar Road to the east, vacant land and agricultural land with a single-family residential use to the north, agricultural land with a single-family residential use to the west, and agricultural land to the south of the project site.

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. Furthermore, the County of Riverside General Plan states that noise sensitive land uses include schools, hospitals, rest homes, long term care facilities, mental care facilities, residential uses, libraries, passive recreation areas, and places of worship.

Existing sensitive land uses in the project area that may be affected by project noise include the existing single-family detached residential uses with property lines located approximately 50 southeast and adjacent to the north/northwest of the project site.

AMBIENT NOISE MEASUREMENTS

An American National Standards Institute (ANSI Section SI.4 2014, Class 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 1:36 PM and 4:46 PM on February 29, 2024. In addition, one (1) long-term 24-hour noise measurement was also taken from February 19, 2024 to March 1, 2024. Figure 5 shows the noise measurement location map. Field worksheets and noise measurement worksheets are provided in Appendix C.

As shown on Figure 5, existing ambient noise measurements were taken at the following locations:

- STNM1: represents the existing noise environment of the existing pumps and other equipment within the project site. The noise meter was placed just south of the existing equipment.
- STNM2: represents the existing noise environment of the western property line of the project site. The noise meter was placed just west of the access road to the existing equipment within the project site.
- STNM3: represents the existing noise environment of the northern property line and the existing water tank area of the project site. The noise meter was placed just northeast of the northernmost existing water tank within the project site.
- STNM4: represents the existing noise environment of the eastern property line of the project site and the entrance/access road to the project site. The noise meter was placed just south of the entrance to the project site just west of Calamar Road.
- STNM5: represents the existing noise environment of the single-family residential use located across El Calamar Road to the southeast of the project site (43650 El Calamar Road, Temecula). The noise meter was placed near the northwestern property line of the residential use just east of El Calamar Road.
- STNM6: represents the existing noise environment of the single-family residential use located to the northwest of the project site (43625 Via Escalon, Temecula). The noise meter was placed near the northern property line of the residential use just south of Via Escalon.

- LTNM1: represents the existing noise environment of the project site. The noise meter was placed near the southeastern edge of the developed portion of the project site near to both the existing equipment and water tanks.

Table 1 provides a summary of the short-term ambient noise data. Table 2 provides hourly interval ambient noise data from the long-term noise measurements. Measured short-term ambient noise levels ranged between 37.5 and 64.7 dBA L_{eq}. Long-term hourly noise measurement ambient noise levels ranged from 32.6 to 52.4 dBA L_{eq}. The dominant noise source in the project vicinity was existing pump equipment, residential activity, and vehicle traffic associated with El Calamar Road and other surrounding roadways.

Table 1
Short-Term Noise Measurement Summary (dBA)

Site Location	Time Started	Leq	Lmax	Lmin	L(2)	L(8)	L(25)	L(50)
STNM1	1:36 PM	64.7	67.9	59.7	67.2	66.4	65.5	64.5
STNM2	2:05 PM	51.7	59.1	48.1	53.5	52.8	52.2	51.6
STNM3	2:34 PM	37.5	51.3	32	43	40.3	37.9	36.1
STNM4	3:07 PM	37.8	50.5	31.5	44	40.7	38.1	36.4
STNM5	3:42 PM	50.4	75	32.3	48.7	43.4	40.3	37.8
STNM6	4:31 PM	40.0	52.5	32.2	48.8	43.7	39.7	36.7

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 29, 2024.

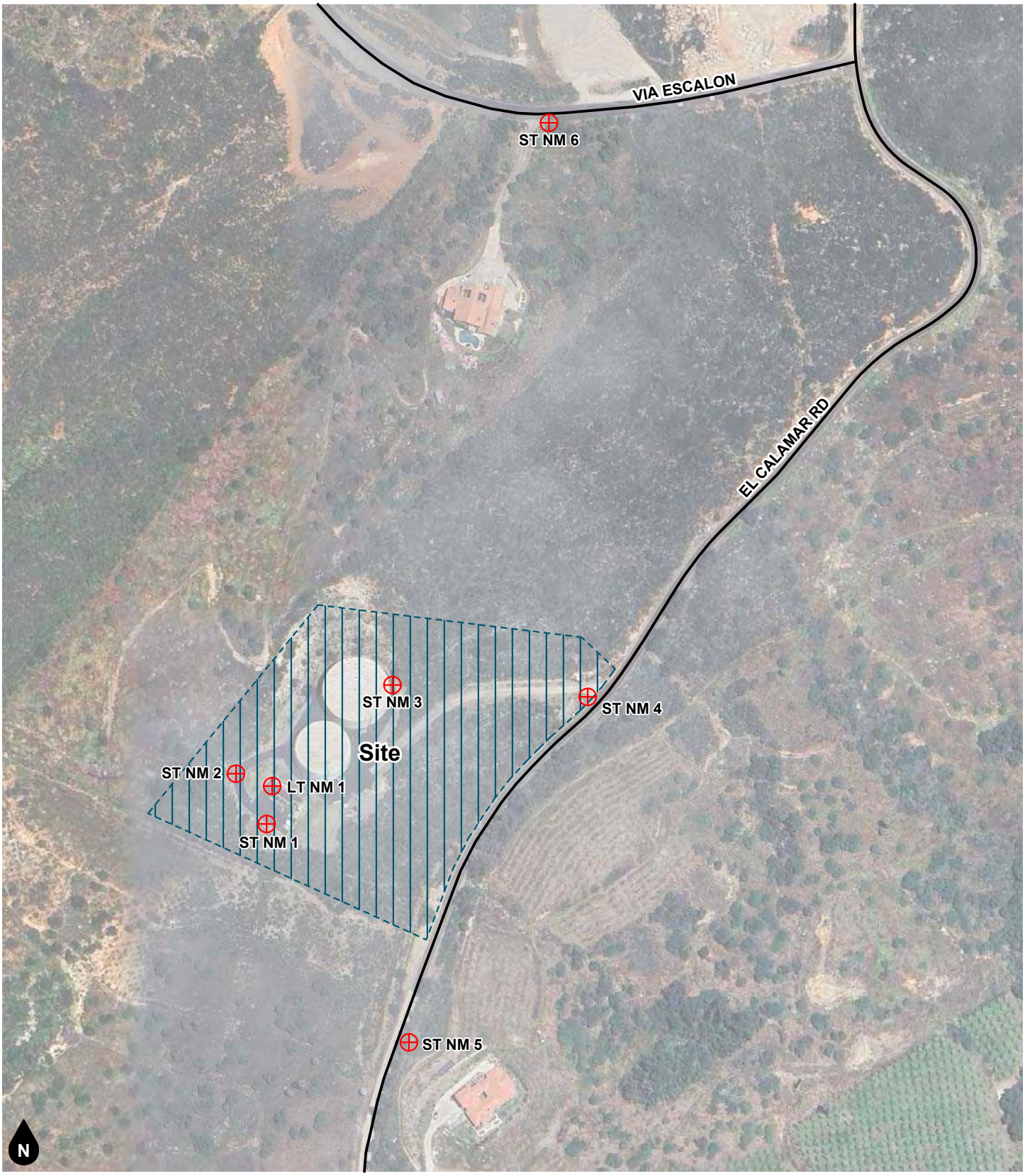
Table 2
Long-Term Noise Measurement Summary (dBA)

24-Hour Ambient Noise[1,2]								
Hourly Measurements	Time Started	Leq	Lmax	Lmin	L(2)	L(8)	L(25)	L(50)
Overall Summary	6:00 PM	45.7	68.6	31.9	53.1	51.8	41.2	36.1
1	6:00 PM	39.1	52.6	33.5	46.9	41.9	38.8	37.1
2	7:00 PM	36.7	46.0	33.2	42.0	39.2	37.1	35.5
3	8:00 PM	36.7	53.7	32.7	42.3	38.8	36.7	35.1
4	9:00 PM	34.9	50.5	32.8	39.6	36.0	34.8	34.2
5	10:00 PM	37.1	56.8	33.5	44.8	37.9	34.4	34.1
6	11:00 PM	35.6	51.3	32.5	42.5	38.4	34.4	33.5
7	12:00 AM	33.6	44.2	32.5	36.2	33.9	33.4	33.3
8	1:00 AM	33.3	42.1	31.9	35.5	34.1	33.4	33.0
9	2:00 AM	34.5	45.1	32.1	38.6	36.6	34.8	33.7
10	3:00 AM	32.6	36.5	32.2	33.1	32.8	32.7	32.6
11	4:00 AM	32.9	40.8	32.0	35.4	34.0	32.9	32.5
12	5:00 AM	33.2	39.8	32.0	36.1	34.6	33.4	32.7
13	6:00 AM	38.2	58.6	32.1	42.0	40.0	38.1	36.3
14	7:00 AM	39.6	56.8	33.2	46.0	42.9	39.7	37.5
15	8:00 AM	37.9	52.7	33.3	43.6	39.8	37.8	36.4
16	9:00 AM	41.2	58.3	33.3	50.6	43.9	39.2	37.0
17	10:00 AM	39.2	56.7	33.9	44.6	41.9	39.4	37.7
18	11:00 AM	42.6	57.4	33.7	52.1	46.4	40.3	38.0
19	12:00 PM	39.6	55.2	34.6	45.4	43.0	39.9	37.7
20	1:00 PM	51.7	65.2	34.5	54.2	53.3	52.5	51.7
21	2:00 PM	52.4	64.1	48.2	56.6	53.8	52.7	52.0
22	3:00 PM	52.4	68.6	46.2	57.9	53.6	52.1	51.2
23	4:00 PM	51.5	66.2	48.1	55.4	52.8	51.7	51.0
24	5:00 PM	51.3	56.9	47.4	52.8	52.4	51.8	51.2

Notes:

(1) See Figure 5 for noise measurement locations. Noise measurement was performed over a 24-hour duration.

(2) Noise measurement performed from Febryary 29, 2023 to March 1, 2024.



Legend

NM 1 Noise Measurement Location

ST NM Short-Term Noise Measurement

LT NM Long-Term Noise Measurement

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 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

California Department of Transportation (Caltrans)

The California Department of Transportation (Caltrans) has developed several publications on groundborne vibration. The *Transportation and Construction Vibration Guidance Manual* (Caltrans, 2020) provides informational content that supplements previous publications with improved knowledge and information relating to groundborne transportation- and construction-induced vibrations. Although the *Transportation and Construction Vibration Guidance Manual* is not an official policy, standard, specification, or regulation, it serves as a useful guide for evaluating vibration impacts.

Table 3 and Table 4 show the guideline criteria for potential damage and annoyance resulting from groundborne vibration. As shown in Table 3, these guidelines recommend that the threshold at which there is a risk of architectural damage is a peak particle velocity (PPV) of 0.25 inches/second (in/sec) for historic buildings, PPV of 0.3 in/sec at older residential structures, and a PPV of 0.5 in/sec at new residential structures and modern commercial/industrial buildings. Table 4 shows that a PPV of 0.4 in/sec is the threshold at which groundborne vibration becomes severe in regard to annoyance (Caltrans, 2020).

LOCAL REGULATIONS

County of Riverside General Plan

The County of Riverside General Plan Policies which apply to the proposed project are presented below.

Policy N 1.1: Protect noise-sensitive land uses from high levels of noise by restricting noise-producing land uses from these areas. If the noise-producing land use cannot be relocated, then noise buffers such as setbacks, landscaping, or block walls shall be used.

Policy N 1.5: Prevent and mitigate the adverse impacts of excessive noise exposure on the residents, employees, visitors, and noise-sensitive uses of Riverside County.

Policy N 2.3: Mitigate exterior and interior noises to the levels listed in Table 5, to the extent feasible, for stationary sources.

Policy N 4.1: Prohibit facility-related noise, received by any sensitive use, from exceeding the following worst-case noise levels:

a. 45 dBA-10-minute L_{eq} between 10:00 PM and 7:00 AM [nighttime standard].
b. 65 dBA-10-minute L_{eq} between 7:00 AM and 10:00 PM [daytime standard].

County staff has clarified[4] that the above standards are to be applied to any surrounding property containing a "habitable dwelling, hospital, school, library or nursing home".

Policy N 4.3: Ensure any use determined to be a potential generator of significant stationary noise impacts be properly analyzed and ensure that the recommended mitigation measures are implemented.

Policy N 4.5: Encourage major stationary noise-generating sources throughout the County of Riverside to install additional noise buffering or reduction mechanisms within their facilities to reduce noise generation levels to the lowest extent practicable prior to the renewal of conditional use permits or business licenses or prior to the approval and/or issuance of new conditional use permits for said facilities.

Policy N 13.1: Minimize the impacts of construction noise on adjacent uses within acceptable practices.

Policy N 13.2: Ensure that construction activities are regulated to establish hours of operation in order to prevent and/or mitigate the generation of excessive or adverse noise impacts on surrounding areas.

Policy N 13.3: Condition subdivision approval adjacent to developed/occupied noise-sensitive land uses (see policy N 1.3) by requiring the developer to submit a construction-related noise mitigation plan to the County for review and approval prior to issuance of a grading permit. The plan must depict the location of construction equipment and how the noise from this equipment will be mitigated during construction of this project, through the use of such methods as:

a. Temporary noise attenuation fences;
b. Preferential location of equipment; and
c. Use of current noise suppression technology and equipment.

Policy N 13.4: Require that all construction equipment utilizes noise reduction features (e.g., mufflers and engine shrouds) that are no less effective than those originally installed by the manufacturer.

Policy N 16.2: Consider the following land uses sensitive to vibration: hospitals, residential areas, concert halls, libraries, sensitive research operations, schools, and offices.

County of Riverside Code

Ordinance 847 exempts construction noise from County noise standards as long as long as it is limited to the hours of 6:00 AM to 6:00 PM during the months of June through September and between the hours of

[4] Riverside County Department of Public Health, *Requirements for determining and mitigating non-transportation noise source impacts to residential properties*. Steven T. Uhlman, COH, JD, Public Health Program Chief. January 15, 2004.

7:00 AM and 6:00 PM during the months of October through May (Sec 2.i.1,2). However, the project is a public work project and would, therefore, be exempt from County Ordinance 847.

Rancho California Water District

Rancho California Water District's Engineering Department maintains several standard specification/guideline and planning documents to assist developers, property owners, contractors, subcontractors, and suppliers with residential, commercial, irrigation, or other development/design projects, as well as construction contracts. Article 25 of the water district's Specifications - General Provisions document includes regulations regarding excessive noise.[5] These specifications are outlined below:

a. Contractor shall use only such equipment on The Work and in such state of repair so that the emission of sound therefrom is within the noise tolerance level of that equipment, as established by CAL-OSHA.

b. Contractor shall comply with the most restrictive of the following: (1) local sound control and noise level rules, regulations, and ordinances, and (2) the requirements contained in these Contract Documents, including hours of operation requirements.

   No internal combustion engine shall be operated on the Project without a muffler of the type recommended by the manufacturer. Should any muffler or other control device sustain damage or be determined to be ineffective or defective, the Contractor shall promptly remove the equipment and shall not return said equipment to the job until the device is repaired or replaced. Said noise and vibration level requirements shall apply to all equipment on the job or related to the job including, but not limited to, trucks, transit mixers, or transit equipment that may or may not be owned by the Contractor.

c. Noise Control Measures. The Contractor shall incorporate the following noise control measures in the performance of The Work:

   1) Maximum Noise Levels within 1,000 feet of any Residence, Business, or Other Populated Area: Noise levels for trenchers, pavers, graders, and trucks shall not exceed 90 dBA at 50 feet as measured under the noisiest operating conditions. For all other equipment, noise levels shall not exceed 85 dBA at 50 feet.

   2) Equipment: Jack hammers shall be equipped with exhaust mufflers and steel muffling sleeves. Air compressors should be of a quiet type such as a "whisperized" compressor.

   3) Operations: Keep noisy equipment as far as possible from noise-sensitive site boundaries. Machines should not be left idling. Use electric power in lieu of internal combustion engine power, wherever possible. Maintain equipment properly to reduce noise from excessive vibration, faulty mufflers, or other sources. All engines shall have mufflers.

   4) Scheduling: Schedule noisy operations so as to minimize their duration at any given location.

   5) Monitoring: To determine whether the above noise limits are being met and whether noise barriers are needed, the Contractor shall use a portable sound level meter meeting the requirements of American National Standards Institute Specification S1.4 for Type 2 sound level meters. If non-complying noise levels are found, the Contractor shall be responsible for monitoring and correction of excessive noise levels at no additional cost to the District.

[5] https://www.ranchowater.com/199/Document-Library

Table 3
Guideline Vibration Damage Potential Threshold Criteria

Structure Condition	Maximum PPV (in/sec)	
	Transient Sources	Continuous/Frequent Intermittent Sources
Extremely fragile historic buildings, ruins, ancient monuments	0.12	0.08
Fragile buildings	0.2	0.1
Historic and some old buildings	0.5	0.25
Older residential structures	0.5	0.3
New residential structures	1.0	0.5
Modern industrial/commercial buildings	2.0	0.5

Source: California Department of Transportation. Transportation and Construction Vibration Guidance Manual, Chapter 7 Table 19, April 2020.

Notes:

(1) Transient sources create a single isolated vibration event, such as blasting or drop balls. Continuous/frequent intermittent sources include impact pile drivers, pogo-stick compactors, crack-and-seat equipment, vibratory pile drivers, and vibratory compaction equipment.

Table 4
Guideline Vibration Annoyance Potential Criteria

Human Response	Maximum PPV (in/sec)	
	Transient Sources	Continuous/Frequent Intermittent Sources
Barely perceptible	0.04	0.01
Distinctly perceptible	0.25	0.04
Strongly perceptible	0.9	0.10
Severe	2.0	0.4

Source: California Department of Transportation. Transportation and Construction Vibration Guidance Manual, Chapter 7 Table 20, April 2020.

Notes:

(1) Transient sources create a single isolated vibration event, such as blasting or drop balls. Continuous/frequent intermittent sources include impact pile drivers, pogo-stick compactors, crack-and-seat equipment, vibratory pile drivers, and vibratory compaction equipment.

Table 5
County of Riverside Stationary Source Land Use Noise Standards

Residential Land Use	Interior Standards	Exterior Standards
10:00 PM to 7:00 AM	40 Leq (10 minute)	45 Leq (10 minute)
7:00 AM to 10:00 PM	55 Leq (10 minute)	65 Leq (10 minute)

Source: County of Riverside General Plan Noise Element.

Notes:

These are only preferred standards; final decision will be made by the Riverside County Planning Department and Office of Public Health.

5. ANALYTICAL METHODOLOGY AND MODEL PARAMETERS

This section discusses the analysis methodologies used to assess noise impacts.

CONSTRUCTION NOISE MODELING

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.

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.

The equipment used to calculate the construction noise levels for each phase were based on the assumptions provided by the project applicant as well as the CalEEMod modeling provided in the Air Quality, Global Climate Change, and Energy Impact Analysis prepared for the proposed project (Ganddini Group Inc., 2024). For construction noise purposes, the distance measured from the project site to sensitive receptors was assumed to be the acoustical center of the construction work area to the property line of residential properties with existing residential buildings. Sound emission levels associated with typical construction equipment as well as typical usage factors provided in Table 6 were utilized for modeling purposes. Construction noise worksheets are provided in Appendix D.

STATIONARY SOURCE/OPERATIONAL NOISE MODELING

The SoundPLAN noise model was utilized to model operational noise levels. The SoundPLAN software utilizes algorithms (based on the inverse square law) to calculate noise level projections. The software allows the user to input specific noise sources, spectral content, sound barriers, building placement, topography, and sensitive receptor locations. Noise modeling input and output assumptions are provided in Appendix E.

Two operational scenarios were modeled. One with the emergency generator in operation and one without the emergency generation in operation. Modeled noise sources include the proposed pumps and the emergency back-up generator. Other on-site noise sources were not considered to be significant. Three of the proposed pumps were assumed to be in operation, as the fourth is considered to be a back up pump. Sound power levels utilized in the SoundPLAN noise model were calibrated using existing on-site noise measurements (Appendix C, Noise Measurement 1) of two existing pumps (65 dBA at a distance of 40 feet) and sound reference level data provided by the generator manufacturer (see Appendix E). The sound pressure level of two pumps at a distance of 40 feet (no intervening buildings or topography) was used to find the sound pressure level of three pumps at a distance of 40 feet (66.8 dBA L_{eq}). A point noise source with a sound power level 96.8 utilized to represent this sound pressure level in the noise model.

Per the generator manufacturer, the sound pressure level with the generator to be used on site will have a sound pressure level of 72 dB at a distance of 21 feet. A sound power level of 72.3 per meter squared, was applied to the walls and roof (area sources) of the generator to represent a sound pressure level of 72 dB at a distance of 21 feet.

GROUNDBORNE VIBRATION MODELING

Groundborne vibration modeling was performed using vibration propagation equations and construction equipment source levels obtained from the FTA *Transit Noise and Vibration Impact Assessment Manual* (2018).

Table 7 shows typical vibration levels associated with commonly used construction equipment based on data from the FTA.

There are several types of construction equipment that can cause vibration levels high enough to annoy people in the vicinity and/or result in architectural or structural damage to nearby structures and improvements. For example, as shown in Table 7, a vibratory roller could generate up to 0.21 in/sec PPV at and operation of a large bulldozer could generate up to 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 in/sec 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. Groundborne vibration calculations are provided in Appendix F.

The fundamental equation used to calculate vibration propagation through average soil conditions and distance is as follows:

$$PPV_{equipment} = PPV_{ref} (25/D_{rec})^{n}$$

Where: PPV_{ref} = *reference PPV at 25ft.*
D_{rec} = *distance from equipment to receiver in ft.*
n = 1.5 (*the value related to the attenuation rate through ground*)

Table 6 (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 6 (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 7
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
	typical	0.644	104
Pile Driver (sonic)	upper range	0.734	105
	typical	0.170	93
clam shovel drop (slurry wall)		0.202	94
Hydromill (slurry wall)	in soil	0.008	66
	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

6. IMPACT ANALYSIS

This section analyzes the significance of project-related noise and groundborne vibration impacts relative to standards established by the County of Riverside and other applicable agencies in the context of CEQA. Appendix G of the California Environmental Quality Act Guidelines (Title 14, Division 6, Chapter 3 of the California Code of Regulations) includes an environmental checklist that identifies issues upon which findings of significance should be made. The CEQA Environmental Checklist Appendix G, XIII. Noise, requires determination if the project would result in:

a) *Generation of a substantial temporary or permanent increase in ambient noise levels in the vicinity of the project in excess of standards established in the local general plan or noise ordinance, or applicable standards of other agencies?*

b) *Generation of excessive groundborne vibration or groundborne noise levels?*

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

NOISE IMPACTS

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?*

Finding: Less Than Significant

In relation to the Environmental Checklist noise issue "a", applicable standards established by the County of Riverside can be categorized into the following areas:

- Construction Noise
- Operational Noise

Project Construction

On-Site Equipment

Construction noise is regulated within County of Riverside Ordinance 847 (see Regulatory Setting section of this report). Accordingly, the project would result in a significant impact if:

- Project construction occurs outside the hours of 6:00 AM to 6:00 PM during the months of June through September; or,
- Project construction occurs outside the hours of 7:00 AM and 6:00 PM during the months of October through May.

Project construction noise levels at nearby sensitive receptors were calculated using the FTA methodology. Construction noise modeling worksheets for each phase are provided in Appendix D. Anticipated noise levels during each construction phase are presented in Table 8.

The single-family residential uses to the northwest and southeast of the project site boundaries 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. Assumptions for the phasing, duration, and required equipment for the construction of the proposed project were obtained from the project applicant.

Construction activities are anticipated to begin late 2024 and be completed by mid-2026, with a duration of approximately 18 months. The construction activities for the proposed project are anticipated to include: demolition of two existing steel tanks, concrete foundations, miscellaneous piping and valves, and portions of existing pavement; site preparation/pipeline installation which includes grading a portion of the site for the retaining wall, drainage, and grade/elevation and installation of a 24-inch diameter pipeline; construction of the pump station; and final site work which includes paving, clean up, and site restoration. Per the project applicant equipment per phase includes: for demolition one (1) CAT 235 excavator with demolition hammer attachment, one (1) front end loader, two (2) 15 cubic-yard dump trucks, two (2) service trucks, one (1) crane, two (2) chain saws, two (2) scrapers, one (1) tractor; for site preparation/pipeline installation one (1) Pug Mill Mixer, one (1) bulldozer, one (1) front end loader and one (1) Cat 235 Excavator, two (2) service trucks and haulers, material handling equipment, four (4) pumps, and two (2) skid steer loaders; for construction one (1) crane, one (1) CAT 235 excavator, paving equipment, and two (2) service trucks. The demolition phase will include no more than 65 total truck trips which includes removal of the tank, reservoirs, pipe, and appurtenances (estimate based on 1,000 tons of steel from the tanks, removed in 40-ton capacity truck during approximately two months duration), the site preparation/pipeline installation phase will include up to 24 truck trips using haulers (estimate based on 40 tons per truck over a duration of approximately three months), and the construction phase will include up to 13 trucks per day maximum (over a duration of approximate 9 months). Site preparation/pipeline installation will include export of approximately 250 cubic yards of material and import of approximately 350 tons of material. To be conservative, it was assumed that all the pieces of construction equipment would be in operation simultaneously for each construction phase.

Modeled construction noise levels are expected to reach up to 87.2 dBA L_{eq} at a distance of 50 feet and up to 73.8 dBA L_{eq} at the nearest sensitive receptor property line and is not expected to exceed the noise level limitations presented in Article 25 of the Rancho California Water District's Specifications - General Provisions document, which prohibits trenchers, pavers, graders, and trucks within 1,000 feet of any residence, business, or other populated area from exceeding 90 dBA at 50 feet as measured under the noisiest operating conditions. For all other equipment, noise levels shall not exceed 85 dBA at 50 feet (see Table 8 and Appendix D).

Furthermore, with implementation of the best management practices (BMPs) presented below, the proposed project will be consistent with the applicable ordinances, plans and policies and therefore, will not result in or generate a substantial temporary or permanent increase in ambient noise levels in the vicinity of the project. Impacts would be less than significant, and no mitigation is required.

Construction Noise - Best Management Practices

1. No internal combustion engine will be operated on the project without a muffler of the type recommended by the manufacturer. Should any muffler or other control device sustain damage or be determined to be ineffective or defective, the contractor will promptly remove the equipment and will not return said equipment to the job until the device is repaired or replaced. Said noise and vibration level requirements will apply to all equipment on the job or related to the job including, but not limited to, trucks, transit mixers, or transit equipment that may or may not be owned by the contractor.

2. Maximum noise levels within 1,000 feet of any residence, business, or other populated area for equipment such as trenchers, pavers, graders, and trucks shall not exceed 90 dBA at 50 feet as

measured under the noisiest operating conditions. For all other equipment, noise levels shall not exceed 85 dBA at 50 feet.

3. Jack hammers will be equipped with exhaust mufflers and steel muffling sleeves.

4. Air compressors will be of a quiet type such as a "whisperized" compressor.

5. Noise operations will be scheduled to minimize their duration at any given location.

6. Noise equipment will be kept as far as possible from noise-sensitive site boundaries.

7. Construction equipment will not be left idling.

8. Whenever possible, electric power will be used in lieu of internal combustion engine power.

9. Equipment will be properly maintained to reduce noise from excessive vibration, faulty mufflers, or other sources. All engines shall have mufflers.

Off-Site Vehicle Trips

Construction truck trips would occur throughout the construction period. According to the FHWA, the traffic volumes need to be doubled in order to increase noise levels by 3 dBA CNEL.[6] The estimated existing average daily trips along El Calamar Road is 96 daily vehicle trips.[7] As shown in the CalEEMod output files provided in the Air Quality, Global Climate Change, and Energy Impact Analysis prepared for the proposed project (Ganddini Group Inc., 2024) the greatest number of construction-related vehicle trips per day would be up to 12 vehicle trips per day during demolition (10 for worker trips and 1.5 for hauling trips). Given the project site's location, it is anticipated that vendor and/or haul truck traffic would take the most direct route to either State Route 79 or the 15 Freeway. Therefore, the addition of project vendor/haul trucks and worker vehicles per day along off-site roadway segments would not be anticipated to result in a doubling of traffic volumes. Off-site project generated construction vehicle trips would result in a negligible noise level increase and would not result in a substantial increase in ambient noise levels. Impacts would be less than significant. No mitigation measures are required.

Project Operational Noise

Onsite Noise Sources

Stationary noise source standards are established within the County of Riverside General Plan Noise Element (see Regulatory Setting section of this report). Accordingly, the project would result in a significant impact if any of the following standards are exceeded at any surrounding property containing a "habitable dwelling, hospital, school, library or nursing home".

- Project operational noise exceeds the County-established exterior noise standard of 45 dBA L_{eq} (10 minute) during the hours of 10:00 PM to 7:00 AM; or,

- Project operational noise exceeds the County-established exterior noise standard of 65 dBA L_{eq} (10 minute) during the hours of 7:00 AM to 10:00 PM at any surrounding property containing a habitable dwelling or,

[6] Federal Highway Administration, Highway Noise Prediction Model, December 1978.

[7] The existing average daily traffic volume was estimated based on the ambient noise measurements (STNM5, see Table 1 and Appendix C). Per the field sheets for STNM5 (see Appendix C), one car passed the noise meter during the 15 minute measurement along El Calamar Road. Therefore, for discussion purposes, it was estimated that up to 96 daily vehicle trips (4 cars every hour for a 24 hour day) could occur along the road segment of El Calamar Road that lies in vicinity of the project site.

- Project operational noise exceeds the County-established interior noise standard of 45 dBA L_{eq} (10 minute) during the hours of 10:00 PM to 7:00 AM at any surrounding property containing a habitable dwelling; or,

- Project operational noise exceeds the County-established interior noise standard of 55 dBA L_{eq} (10 minute) during the hours of 7:00 AM to 10:00 PM at any surrounding property containing a habitable dwelling .

Noise levels associated with operation of the proposed pump station with and without the backup generator were modeled at nearby properties with habitable dwellings using the SoundPLAN acoustical model. SoundPLAN modeling worksheets are provided in Appendix E. Figure 6 and Figure 7 show the anticipated project operational noise levels with operation of three 350-horsepower pumps and the proposed backup generator; and Figure 8 and Figure 9 show the anticipated noise levels with operation of the three pumps without operation of the backup generator.

Exterior Noise Levels

As shown in Table 9, project operational noise with all three pumps operating and the backup generator in operation will result in exterior noise levels ranging between 40 and 51 dBA L_{eq} at nearby properties with habitable dwellings, and project operational noise with three pumps in operation with no backup generator noise will result in exterior noise levels ranging between 30 and 50 dBA L_{eq}.

It should be noted here that the County's noise standards apply at the closest property line of the affected sensitive receptor. Therefore, the receptors considered for compliance at the property line (Receptors 1 and 2) are actually approximately 350-412 feet from what would be considered to be "active residential outdoor use areas" associated with the existing habitable dwellings. Receptor 3 was modeled to show noise levels at the active residential outdoor use area associated with the affected parcel with a habitable dwelling unit to the northwest of the project site for discussion purposes.

As shown in Table 9 the County's daytime exterior noise standard of 65 dBA L_{eq} (10-minute) would not be exceeded at any affected parcel with concurrent operation of the three 350 hp pumps and the proposed generator, or with operation of the pumps alone at any of the affected receptors.

The County's nighttime exterior noise standard of 45 dBA L_{eq} (10-minute) would be exceeded at the parcel northwest of the project site (see Receptor 1 on Figure 6 and Figure 8) with concurrent operation of all three pumps and operation of the generator or with operation of the pumps alone. The County has written in some discretion regarding application of these standards in the footnote of Table N-2 (Table 5 in this report) which states "These are only preferred standards; final decision will be made by the Riverside County Planning Department and Office of Public Health." Taking into consideration this caveat, and the fact that operation of the three 350 hp pumps would result in exterior noise levels of 35 dBA L_{eq} without the backup generator and 36 dBA L_{eq} with the backup generator at the active residential outdoor use area associated with parcel with the affected habitable dwelling northwest of the project site (Receptor 3 of Figures 6 and 8), the lead agency should consider the impact at Receptor 1 to be to be less than significant with no mitigation required.

The nighttime noise standard would not be exceeded at the affected parcel southeast of the project site under either scenario (see Table 9, Figure 6, and Figure 8).

Interior Noise Levels

As mentioned above exterior noise levels due to operation of the three 350 hp pumps with or without operation of the backup generator would fall below the interior noise daytime and nighttime noise standards

of 40 dBA Leq and 55 dBA Leq (10-minute) respectively. Considering that typical residential construction provides 15 dB of exterior to interior noise reduction (assuming a windows open condition), interior noise levels are expected to range between 20 and 21 dBA Leq inside the affected habitable dwellings. This impact would be less than significant. No mitigation is required.

GROUNDBORNE VIBRATION IMPACTS

Would the project result in:

b) Generation of excessive groundborne vibration or groundborne noise levels?

Finding: Less Than Significant

In relation to the Environmental Checklist noise issue "b", County of Riverside has not established thresholds of significance concerning groundborne vibration. In the absence of County-established thresholds, groundborne vibration impacts are based on guidance from the *Transportation and Construction Vibration Guidance Manual* (California Department of Transportation, 2020) (see Regulatory Setting section). Accordingly, the project would result in a significant impact if:

- Groundborne vibration levels generated by the project have the potential to cause architectural damage at nearby buildings by exceeding the following PPV:
  - 0.08 in/sec at extremely fragile historic buildings, ruins, ancient monuments
  - 0.10 in/sec at fragile buildings
  - 0.25 in/sec at historic and some old buildings
  - 0.30 in/sec at older residential structures
  - 0.50 in/sec at new residential structures and modern industrial/commercial buildings.
- Groundborne vibration levels generated by the project have the potential to be strongly perceptible to people living or working in nearby buildings by exceeding a PPV of 0.1 in/sec.

Groundborne vibration modeling worksheets are provided in Appendix F.

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. (California Department of Transportation, 2020)

Table 3 identifies a PPV level of 0.3 in/sec as the threshold at which there is a risk to "architectural" damage to older residential buildings and a PPV level of 0.5 in/sec to commercial buildings.

The nearest off-site buildings are the single-family residential dwelling unit located to the southeast of the project site along El Calamar Road, with associated structures located as close as approximately 277 feet from the closest project site property line, and the single-family residential dwelling unit located to the northwest of the project site along Via Escalon, with associated structures located as close as approximately 593 feet from the closest project site property line. As shown in Table 10, at the closest distance to nearby residential structures, approximately 277 feet, the use of a vibratory roller would be expected to generate a PPV of 0.006 in/sec and a bulldozer would be expected to generate a PPV of 0.002 in/sec. Therefore, vibration levels associated with project construction would not exceed the threshold at which there is a risk of "architectural" damage to older residential buildings of a PPV of 0.3 in/sec at any of the surrounding residential structures.

Therefore, temporary vibration levels associated with project construction would not cause architectural damage to the nearest residential receptors. Impacts from vibration generated damage would be less than significant.

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. (California Department of Transportation, 2020).

As shown in Table 4, vibration becomes strongly perceptible to sensitive receptors at a level of 0.1 in/sec PPV. A vibratory roller could generate a PPV of up to 0.1 in/sec at a distance of 41 feet and a large bulldozer at a distance of 24 feet.

As discussed under architectural damage above, the closest structures to the boundaries of the project site are at least approximately 277 feet to the southeast along El Calamar Road. Impacts from vibration related annoyance would be less than significant.

AIR TRAFFIC IMPACTS

Would the project result in:

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

Finding: No Impact

There are no airports located within the vicinity of the project site. The project would not expose people residing or working in the project area to excessive noise levels associated with airports. This impact would be less than significant. No mitigation is required.

Table 8
Construction Noise Levels (dBA Leq)

Phase	Receptor Location	Closest Measured Ambient Noise Location[2]	Existing Measured Noise Levels (dBA, Leq)[2]	Construction Noise Levels (dBA Leq)[1]
Mobilzation	at 50 Feet	STNM3	37.5	81.5
	Residential to Southeast (43650 El Calamar Road, Temecula)	STNM5	50.4	66.8
	Residential to North/Northwest (443625 Via Escalon, Temecula)	STNM6	40	67.9
	Vacant Agricultural Land to North	STNM3	37.5	65.9
	Vacant Agricultural Land to East/Northeast	STNM4	37.8	64.7
	Vacant Agricultural Land to South	STNM5	50.4	67.8
Demolition	at 50 Feet	STNM3	37.5	87.4
	Residential to Southeast (43650 El Calamar Road, Temecula)	STNM5	50.4	72.7
	Residential to North/Northwest (443625 Via Escalon, Temecula)	STNM6	40	73.8
	Vacant Agricultural Land to North	STNM3	37.5	71.8
	Vacant Agricultural Land to East/Northeast	STNM4	37.8	70.6
	Vacant Agricultural Land to South	STNM5	50.4	73.7
Site Preparation & Pipeline Installation	at 50 Feet	STNM3	37.5	87.2
	Residential to Southeast (43650 El Calamar Road, Temecula)	STNM5	50.4	72.6
	Residential to North/Northwest (443625 Via Escalon, Temecula)	STNM6	40	73.7
	Vacant Agricultural Land to North	STNM3	37.5	71.7
	Vacant Agricultural Land to East/Northeast	STNM4	37.8	70.4
	Vacant Agricultural Land to South	STNM5	50.4	73.5
Pump Station Construction	at 50 Feet	STNM3	37.5	81.3
	Residential to Southeast (43650 El Calamar Road, Temecula)	STNM5	50.4	66.7
	Residential to North/Northwest (443625 Via Escalon, Temecula)	STNM6	40	67.7
	Vacant Agricultural Land to North	STNM3	37.5	65.8
	Vacant Agricultural Land to East/Northeast	STNM4	37.8	64.5
	Vacant Agricultural Land to South	STNM5	50.4	67.6
Final Site Work	at 50 Feet	STNM3	37.5	79.8
	Residential to Southeast (43650 El Calamar Road, Temecula)	STNM5	50.4	65.1
	Residential to North/Northwest (443625 Via Escalon, Temecula)	STNM6	40	66.2
	Vacant Agricultural Land to North	STNM3	37.5	64.2
	Vacant Agricultural Land to East/Northeast	STNM4	37.8	63.0
	Vacant Agricultural Land to South	STNM5	50.4	66.1

Notes:

(1) Construction noise worksheets are provided in Appendix D.

Table 9
Project Operational Noise Levels

Receptor Location[2]	Exceeds Exterior Daytime 65 dBA Leq Standard (Y/N)	Exceeds Exterior Nighttime 45 dBA Leq Standard (Y/N)	Exceeds Interior Daytime 55 dBA Leq Standard (Y/N)	Exceeds Interior Nighttime 40 dBA Leq Standard (Y/N)
Operational Noise Levels (dBA Leq) Pumps and Generator				
1	No	Yes[2]	No	No
2	No	No	No	No
3	No	No	No	No
Operational Noise Levels (dBA Leq) Pumps Only				
1	No	Yes[2]	No	No
2	No	No	No	No
3	No	No	No	No

Notes:

(1) Estimated using short-term and long term noise measurements Figure 5 and Tables 1 and 2.

(2) The County has written in some discretion regarding application of these standards in the footnote of Table N-2 (Table 5 in this report) which states "These are only preferred standards; final decision will be made by the Riverside County Planning Department and Office of Public Health." Taking into consideration this caveat, and the fact that operation of the three 350 hp pumps would result in exterior noise levels of 35 dBA L_{eq} without the backup generator and 36 dBA L_{eq} with the backup generator, the lead agency should consider the impact at Receptor 1 to be to be less than significant with no mitigation required.

Table 10
Construction Vibration Levels at the Nearest Receptors

Receptor Location	Distance to Nearest Structure (feet)	Equipment	Vibration Level (PPV in/sec)	Threshold Exceeded?[1]
Residential (43650 El Calamar Road, Temecula)	277	Vibratory Roller	0.006	No
	33	Large Bulldozer	0.002	No
Residential (43625 Via Escalon, Temecula)	593	Vibratory Roller	0.002	No
	593	Large Bulldozer	0.001	No

Notes:
(1) Caltrans identifies a vibration level of 0.3 in/sec PPV as the threshold at which there is a risk to "architectural" damage to older residential buildings (see Table 6).

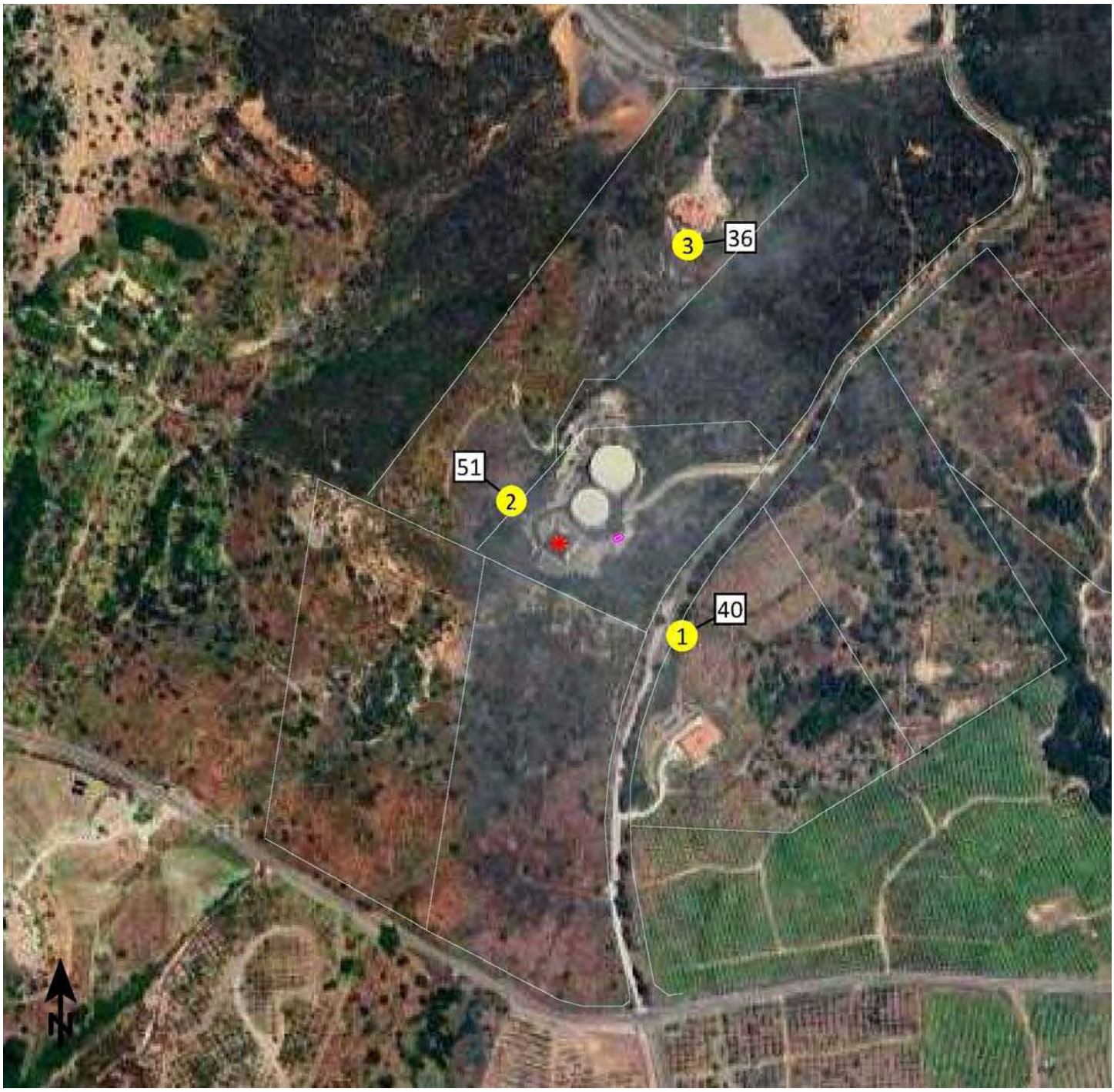


Figure 6
Project Operational Noise Levels - Three 350 HP Pumps and Backup Generator



Figure 7
Project Operational Noise Contours – Three 350 HP Pumps and Backup Generator

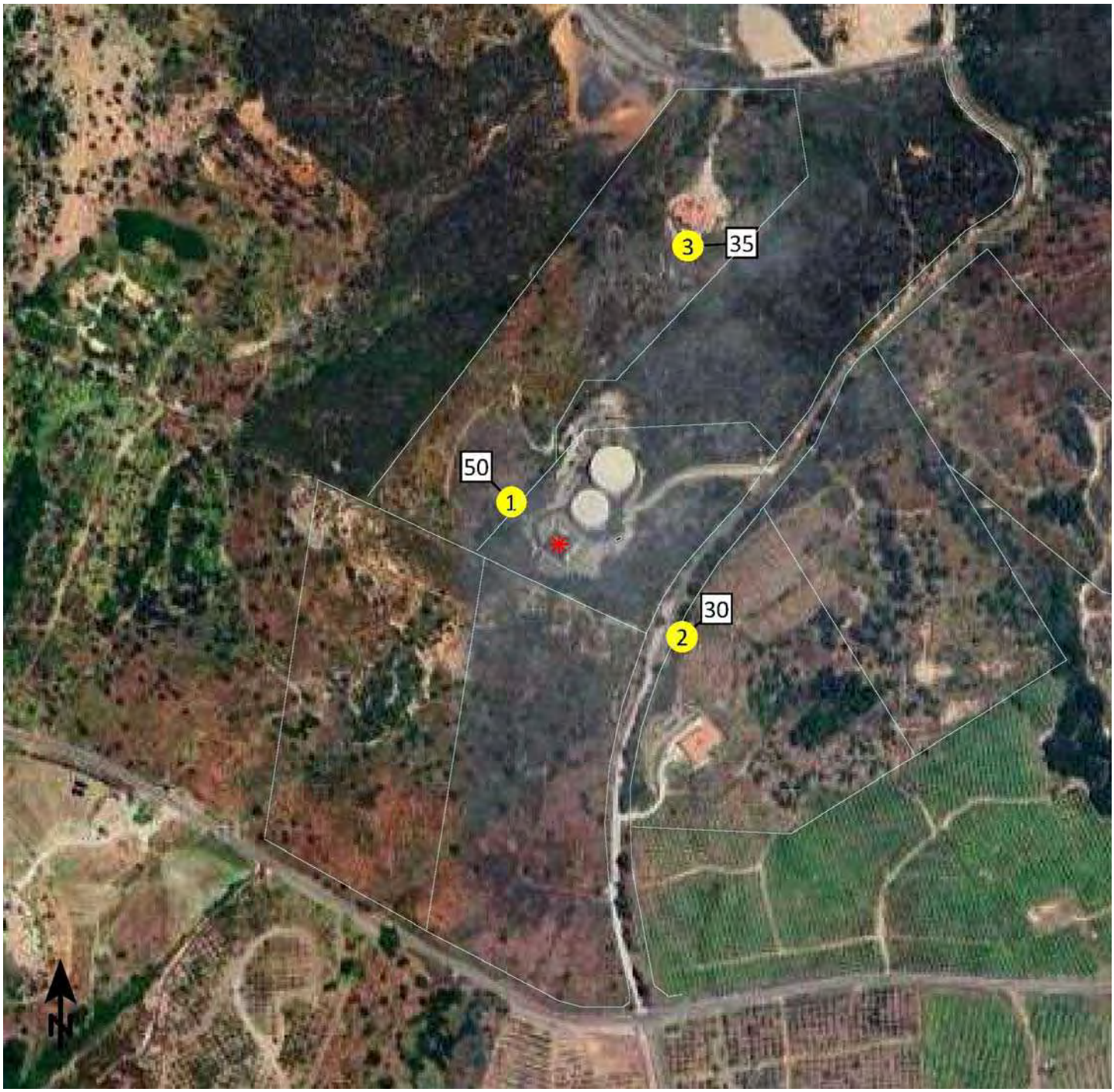


Figure 8
Project Operational Noise Levels – Three 350 HP Pumps Only



Figure 9
Project Operational Noise Level Contours – Three 350 HP Pumps Only

7. REFERENCES

Environmental Protection Agency

1974 "Information on Levels of Environmental Noise Requisite to Protect Public Health And Welfare with an Adequate Margin of Safety," EPA/ONAC 550/9-74-004, March 1974.

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2004 Department of Public Health, *Requirements for determining and mitigating non-transportation noise source impacts to residential properties*. Steven T. Uhlman, COH, JD, Public Health Program Chief. January 15.

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2017 State of California General Plan Guidelines

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2021 Article 25, Rancho Technical Provisions, General Document

U.S. Department of Transportation

2006 FHWA Roadway Construction Noise Model User's Guide. January.

APPENDICES

Appendix A List of Acronyms
Appendix B Glossary
Appendix C Noise Measurement Field Worksheets
Appendix D Construction Noise Modeling
Appendix E SoundPlan Worksheets
Appendix F Vibration Worksheets

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 Leq	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
$Leq_{(x)}$	Equivalent Noise Level for '"x" period of time
Leq	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)
Lp	Sound pressure level
LOS C	Level of Service C
Lw	Sound Power Level
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

GLOSSARY

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, Leq	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}	Lmax 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. Lmin 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 WORKSHEETS

Noise Measurement
Field Data

Project Name: Carancho Pump Station, Temecula **Date:** February 29, 2024

Project #: 19704

Noise Measurement #: STNM1 Run Time: 15 minutes **Technician:** Ian Edward Gallagher

Nearest Address or Cross Street: Carancho Pump Station, 33°29'38.51"N 117°16'26.50"W (No near address or cross street).

Site Description (Type of Existing Land Use and any other notable features): Measurement Site: Within project stie, almost at the top of the hill, just south of the pumps and electrical equipment. Adjacent: Project site surrouding with pumps, electrical equipment, and water tanks to north. Two residences are located ~590' SSE & ~950' NNE of the measurement site. El Calamar Rd (running N-S) to east of site area.

Weather: Cloudy > 50% cloud, filtered sun. Sunset 5:43 PM **Settings:** SLOW FAST

Temperature: 61 deg F **Wind:** 7 mph **Humidity:** 72% **Terrain:** Hilly

Start Time: 1:36 PM **End Time:** 1:51 PM **Run Time:**

Leq:	64.7	dB	**Primary Noise Source:** Steady noise from active water pump ~40' NNE of STNM1 .
Lmax	67.9	dB	
L2	67.2	dB	**Secondary Noise Sources:** Very distant traffic ambiance from other roads. Some bird song.
L8	66.4	dB	Leaf rustle from 7 mph breeze through vegetation.
L25	65.5	dB	
L50	64.5	dB	

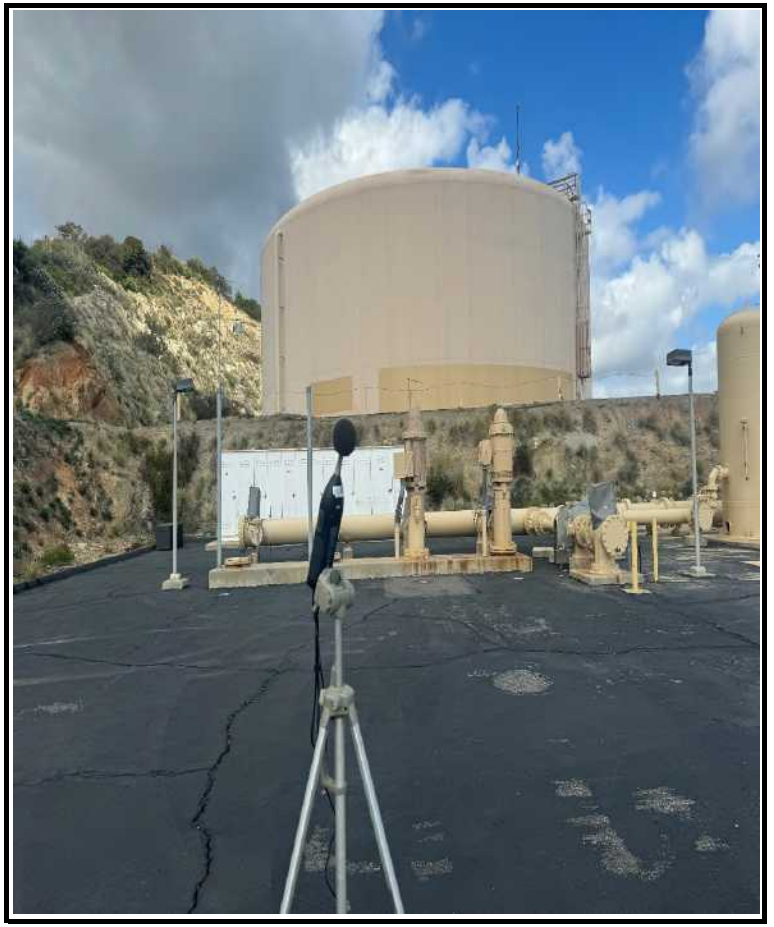
NOISE METER:	SoundTrack LXT Class 1	**CALIBRATOR:**	Larson Davis CA 200
MAKE:	Larson Davis	**MAKE:**	Larson Davis
MODEL:	LXT1	**MODEL:**	CA 200
SERIAL NUMBER:	3855	**SERIAL NUMBER:**	11178
FACTORY CALIBRATION DATE:	3/31/2021	**FACTORY CALIBRATION DATE:**	11/18/2021
FIELD CALIBRATION DATE:	2/29/2024		

Noise Measurement
Field Data

PHOTOS:



STNM1 looking WNW towards access road to equipment & pump area.



STNM1 looking NNE towards pumps, equipment, and the smaller of the water tanks. Pump closest to microphone (~40') is on and is the main noise source, the other pump is off at this time.

Summary	
File Name on Meter	LxT_Data.036.s
File Name on PC	LxT_0003855-20240229 133654-LxT_Data.036.l
Serial Number	0003855
Model	SoundTrack LxT®
Firmware Version	2.404
User	Ian Edward Gallagher
Location	STNM1 33°29'38.51"N 117°16'26.50"W
Job Description	15 minute noise measurement (1 x 15 minutes)
Note	Ganddini Project 19704, Carancho Pump Station, Temecula

Measurement	
Start	2024-02-29 13:36:54
Stop	2024-02-29 13:51:54
Duration	00:15:00.0
Run Time	00:15:00.0
Pause	00:00:00.0
Pre-Calibration	2024-02-29 13:36:19
Post-Calibration	None

Overall Settings	
RMS Weight	A Weighting
Peak Weight	A Weighting
Detector	Slow
Preamplifier	PRMLxT1
Microphone Correction	Off
Integration Method	Linear
OBA Range	Normal
OBA Bandwidth	1/1 and 1/3
OBA Frequency Weighting	A Weighting
OBA Max Spectrum	Bin Max
Overload	145.2 dB

Results			
LAeq	64.7		
LAE	94.2		
EA	293.222	µPa²h	
EA8	9.383	mPa²h	
EA40	46.916	mPa²h	
LApeak (max)	2024-02-29 13:36:57	86.2	dB
LASmax	2024-02-29 13:38:28	67.9	dB
LASmin	2024-02-29 13:43:22	59.7	dB

			Statistics		
LCeq	71.9	dB	**LA2.00**	67.2	dB
LAeq	64.7	dB	**LA8.00**	66.4	dB
LCeq - LAeq	7.3	dB	**LA25.00**	65.5	dB
LAIeq	64.9	dB	**LA50.00**	64.5	dB
LAeq	64.7	dB	**LA66.60**	63.9	dB
LAIeq - LAeq	0.2	dB	**LA90.00**	62.6	dB
Overload Count	0				

easurement ep rt

eport Summary

eter's File Name	LxT_Data.036.s	Computer's File Name	Lx _0003855-20240229 133654-LxT_Data.036.ldbin
eter	LxT1 0003855		
Firmware	2.404		
User	Ian Edward Gallagher	Location	STNM1 33°29'38.51"N 117°16'26.50"W
Job Descrip i n	15 minute noise measurement (1 x 15 minutes)		
Note	Ganddini Project 19704, Carancho Pump Station, Temecula		
Start Time	2024-02-29 13:36:54	Duration	0:15:00.0
End Time	2024-02-29 13:51:54	Run Time	0:15:00.0
Pause Time	0:00:00.0		

Results

Overall Metrics

LA_{eq}	64.7 dB		
LAE	94.2 dB	SEA	--- dB
EA	293.2 µPa²h	LAFTM5	66.1 dB
EA8	9.4 mPa²h		
EA40	46.9 mPa²h		
LA_{peak}	86.2 dB	2024-02-29 13:36:57	
LAS_{max}	67.9 dB	2024-02-29 13:38:28	
LAS_{min}	59.7 dB	2024-02-29 13:43:22	
LA_{eq}	64.7 dB		
LC_{eq}	71.9 dB	LC_{eq} - LA_{eq}	7.3 dB
LAI_{eq}	64.9 dB	LAI_{eq} - LA_{eq}	0.2 dB

Exceedances

	Count	Durati n
LAS > 65.0 dB	20	0:09:07.2
LAS > 85.0 dB	0	0:00:00.0
LApeak > 135.0 dB	0	0:00:00.0
LApeak > 137.0 dB	0	0:00:00.0
LApeak > 140.0 dB	0	0:00:00.0

Community Noise

LDN	LDay	LNight
--- dB	--- dB	0.0 dB

LDEN	LDay	LEve	LNigh
--- dB	--- dB	--- dB	--- dB

Any Data

	A		C		Z	
	Level	Time Stamp	Level	Time Stamp	Level	Time Stamp
L_{eq}	64.7 dB		71.9 dB		--- dB	
$L_{S(max)}$	67.9 dB	2024-02-29 13:38:28	--- dB		--- dB	
$L_{S(min)}$	59.7 dB	2024-02-29 13:43:22	--- dB		--- dB	
$L_{Peak(max)}$	86.2 dB	2024-02-29 13:36:57	--- dB		--- dB	

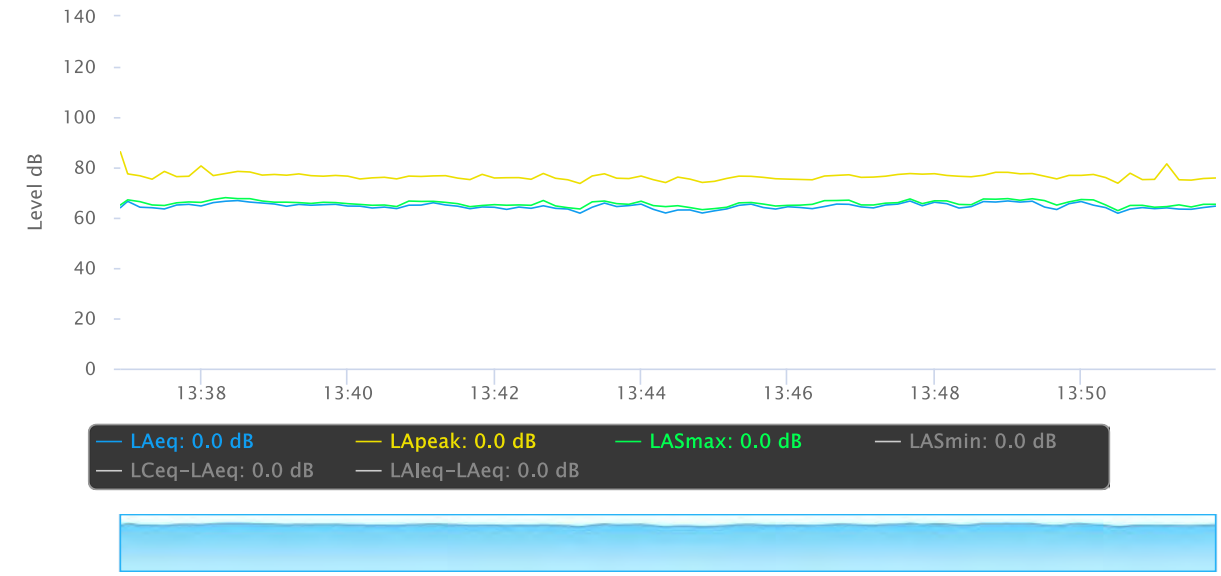
Overloads

Count	Duration	OBA Count	OBA Duration
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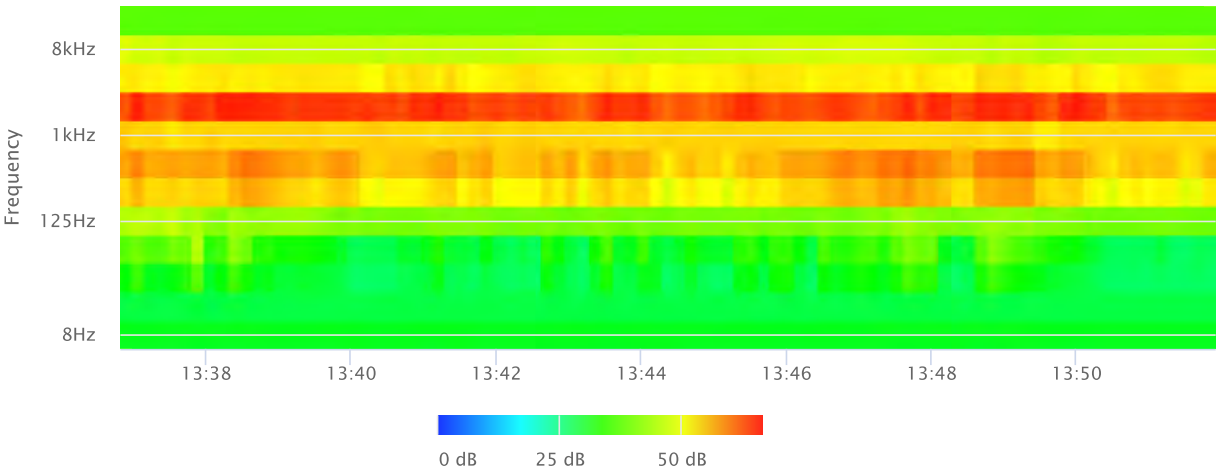
Statistics

LAS 2.0	67.2 dB
LAS 8.0	66.4 dB
LAS 25.0	65.5 dB
LAS 50.0	64.5 dB
LAS 66.6	63.9 dB
LAS 90.0	62.6 dB

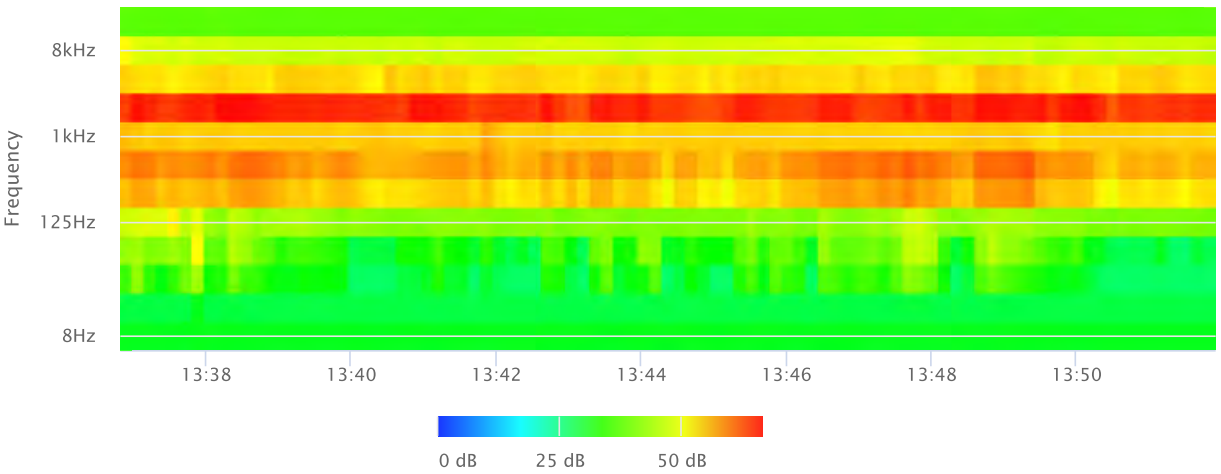
Time History



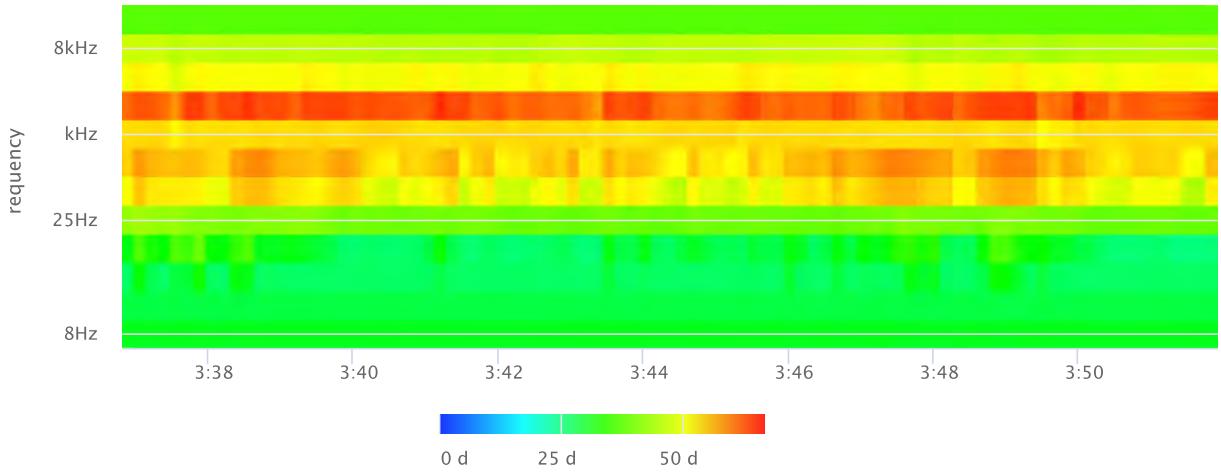
OBA 1/1 Leq



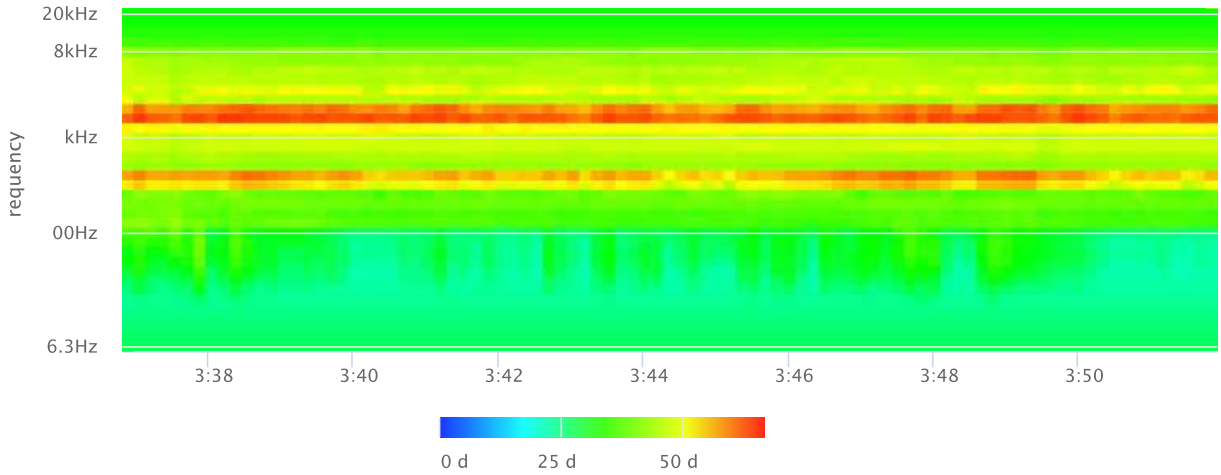
OBA 1/1 Lmax



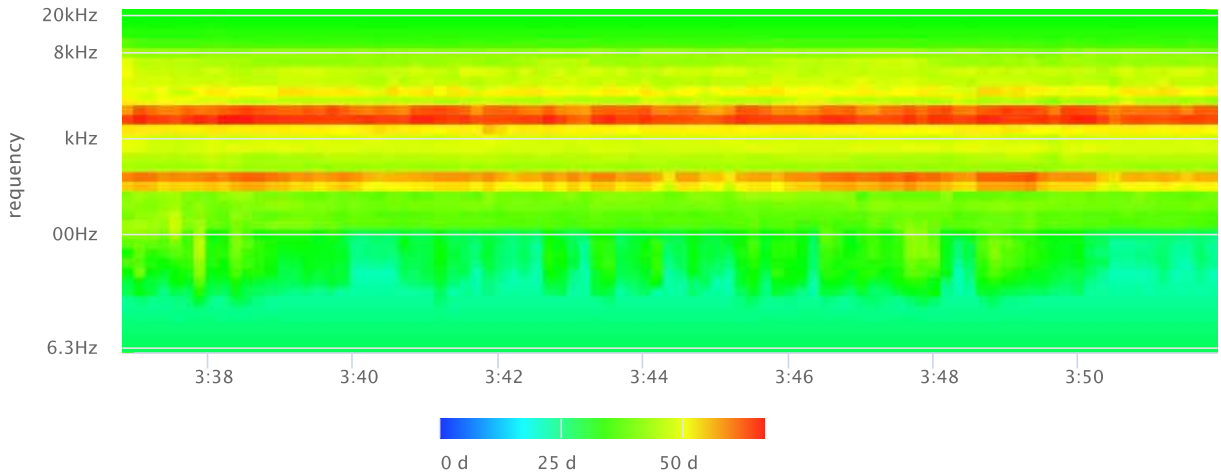
Lmin



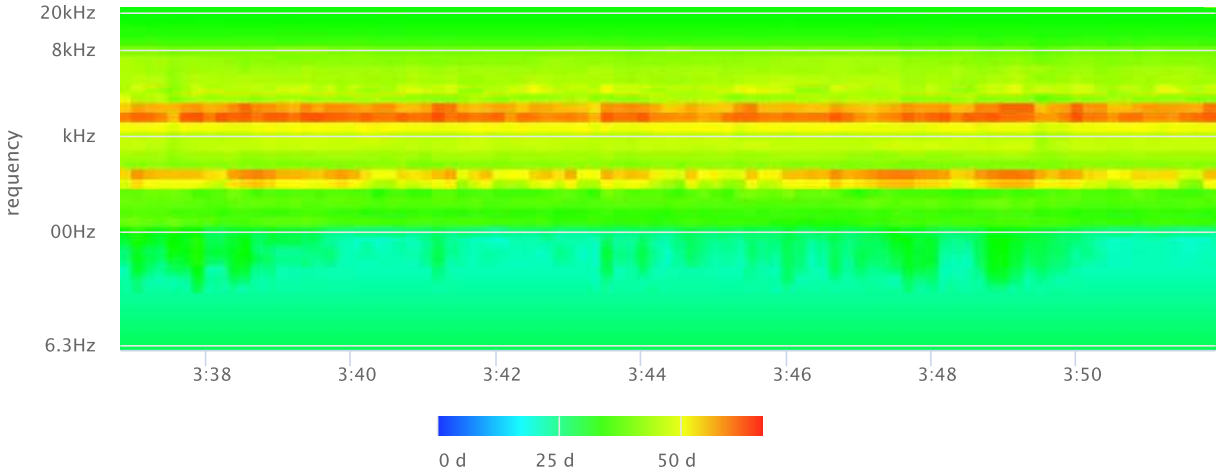
3 Leq



3 Lmax



3 Lmin


20kHz
8kHz
requency
kHz
00Hz
6.3Hz
3:38
3:40
3:42
3:44
3:46
3:48
3:50

0 d
25 d
50 d

Noise Measurement
Field Data

Project Name: Carancho Pump Station, Temecula **Date:** February 29, 2024

Project #: 19704

Noise Measurement #: STNM2 Run Time: 15 minutes **Technician:** Ian Edward Gallagher

Nearest Address or Cross Street: Carancho Pump Station, 33°29'39.45"N 117°16'27.12"W (No near address or cross street).

Site Description (Type of Existing Land Use and any other notable features): Measurement Site: Within project site, almost at the top of the hill, along access road between equipment. Two large water storage tanks to the NE and pumps/electrical equipment to SE. Adjacent: Within project site with pumps to SE, water tanks to NE. Two residences ~695' SSE & ~895' NNE of measurement site. El Calamar Rd (running N-S) to east of project site.

Weather: Cloudy > 50% cloud, filtered sun. Sunset 5:43 PM **Settings:** SLOW FAST

Temperature: 61 deg F **Wind:** 7 mph **Humidity:** 72% **Terrain:** Hilly

Start Time: 2:05 PM **End Time:** 2:20 PM **Run Time:**

Leq:	51.7	dB	**Primary Noise Source:** Steady noise from active water pump ~95' ESE of STNM2.
Lmax	59.1	dB	
L2	53.5	dB	**Secondary Noise Sources:** Very distant traffic ambiance from other roads. Some bird song.
L8	52.8	dB	Leaf rustle from 7 mph breeze through vegetation.
L25	52.2	dB	
L50	51.6	dB	

NOISE METER:	SoundTrack LXT Class 1	**CALIBRATOR:**	Larson Davis CA 200
MAKE:	Larson Davis	**MAKE:**	Larson Davis
MODEL:	LXT1	**MODEL:**	CA 200
SERIAL NUMBER:	3855	**SERIAL NUMBER:**	11178
FACTORY CALIBRATION DATE:	3/31/2021	**FACTORY CALIBRATION DATE:**	11/18/2021
FIELD CALIBRATION DATE:	2/29/2024		

Noise Measurement
Field Data

PHOTOS:



STNM2 looking SE towards water pumps (main noise source).



STNM2 looking ENE towards smaller of the two storage tanks.

Summary	
File Name on Meter	LxT_Data.037.s
File Name on PC	LxT_0003855-20240229 140551-LxT_Data.037.l
Serial Number	3855
Model	SoundTrack LxT®
Firmware Version	2.404
User	Ian Edward Gallagher
Location	STNM2 33°29'39.45"N 117°16'27.12"W
Job Description	15 minute noise measurement (1 x 15 minutes)
Note	Ganddini Project 19704, Carancho Pump Station, Temecula

Measurement	
Start	2024-02-29 14:05:51
Stop	2024-02-29 14:20:51
Duration	00:15:00.0
Run Time	00:15:00.0
Pause	00:00:00.0
Pre-Calibration	2024-02-29 14:05:14
Post-Calibration	None

Overall Settings	
RMS Weight	A Weighting
Peak Weight	A Weighting
Detector	Slow
Preamplifier	PRMLxT1
Microphone Correction	Off
Integration Method	Linear
OBA Range	Normal
OBA Bandwidth	1/1 and 1/3
OBA Frequency Weighting	A Weighting
OBA Max Spectrum	Bin Max
Overload	145.2 dB

Results			
LA_{eq}	51.7		
LAE	81.2		
EA	14.77142	µPa²h	
EA8	472.6853	µPa²h	
EA40	2.363427	mPa²h	
$LA_{peak\ (max)}$	2024-02-29 14:11:46	86.3	dB
LAS_{max}	2024-02-29 14:11:46	59.1	dB
LAS_{min}	2024-02-29 14:19:55	48.1	dB

			Statistics		
LC_{eq}	59.4	dB	**LA2.00**	53.5	dB
LA_{eq}	51.7	dB	**LA8.00**	52.8	dB
LC_{eq} - LA_{eq}	7.7	dB	**LA25.00**	52.2	dB
LAI_{eq}	52.6	dB	**LA50.00**	51.6	dB
LA_{eq}	51.7	dB	**LA66.60**	51.2	dB
LAI_{eq} - LA_{eq}	0.9	dB	**LA90.00**	50.3	dB
Overload Count	0				

Measurement Report

Report Summary

Meter's File Name	LxT_Data.037.s	Computer's File Name	LxT_0003855-20240229 140551-LxT_Data.037.ldbin
Meter	LxT1 0003855		
Firmware	2.404		
User	Ian Edward Gallagher	Location	STNM2 33°29'39.45"N 117°16'27.12"W
Job Description	15 minute noise measurement (1 x 15 minutes)		
Note	Ganddini Project 19704, Carancho Pump Station, Temecula		
Start Time	2024-02-29 14:05:51	Duration	0:15:00.0
End Time	2024-02-29 14:20:51	Run Time	0:15:00.0
Pause Time	0:00:00.0		

Results

Overall Metrics

LA_{eq}	51.7 dB		
LAE	81.2 dB	SEA	--- dB
EA	14.8 µPa²h	LAFTM5	53.4 dB
EA8	472.7 µPa²h		
EA40	2.4 mPa²h		
LA_{peak}	86.3 dB	2024-02-29 14:11:46	
LAS_{max}	59.1 dB	2024-02-29 14:11:46	
LAS_{min}	48.1 dB	2024-02-29 14:19:55	
LA_{eq}	51.7 dB		
LC_{eq}	59.4 dB	LC_{eq} - LA_{eq}	7.7 dB
LAI_{eq}	52.6 dB	LAI_{eq} - LA_{eq}	0.9 dB

Exceedances

	Count	Duration
LAS > 65.0 dB	0	0:00:00.0
LAS > 85.0 dB	0	0:00:00.0
LApeak > 135.0 dB	0	0:00:00.0
LApeak > 137.0 dB	0	0:00:00.0
LApeak > 140.0 dB	0	0:00:00.0

Community Noise

LDN	LDay	LNight
--- dB	--- dB	0.0 dB

LDEN	LDay	LEve	LNight
--- dB	--- dB	--- dB	--- dB

Any Data

	A		C		Z	
	Level	Time Stamp	Level	Time Stamp	Level	Time Stamp
L_{eq}	51.7 dB		59.4 dB		--- dB	
$L_{S(max)}$	59.1 dB	2024-02-29 14:11:46	--- dB		--- dB	
$L_{S(min)}$	48.1 dB	2024-02-29 14:19:55	--- dB		--- dB	
$L_{Peak(max)}$	86.3 dB	2024-02-29 14:11:46	--- dB		--- dB	

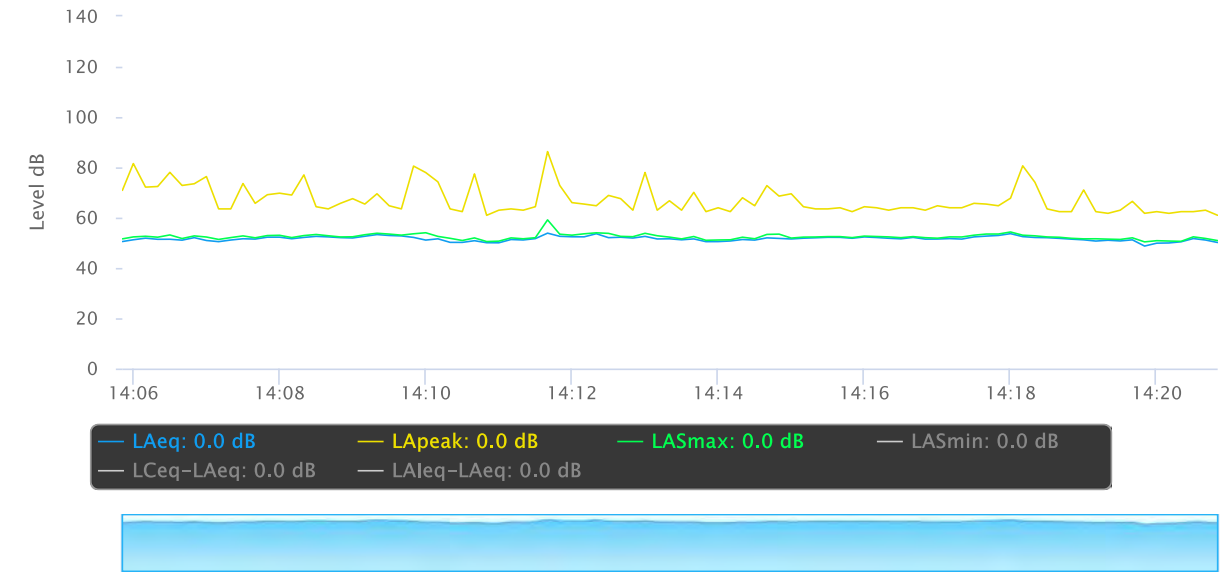
Overloads

Count	Duration	OBA Count	OBA Duration
0	0:00:00.0	0	0:00:00.0

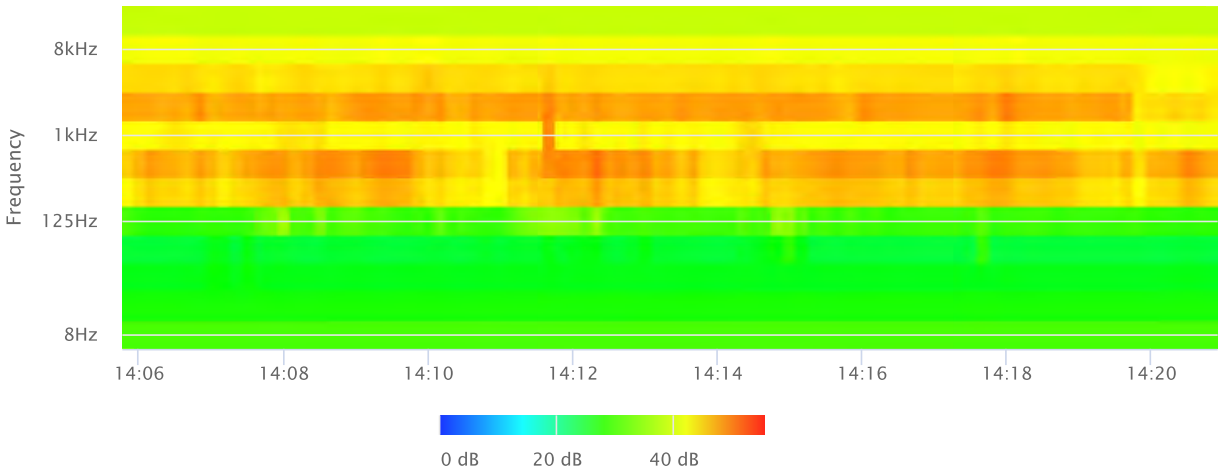
Statistics

LAS 2.0	53.5 dB
LAS 8.0	52.8 dB
LAS 25.0	52.2 dB
LAS 50.0	51.6 dB
LAS 66.6	51.2 dB
LAS 90.0	50.3 dB

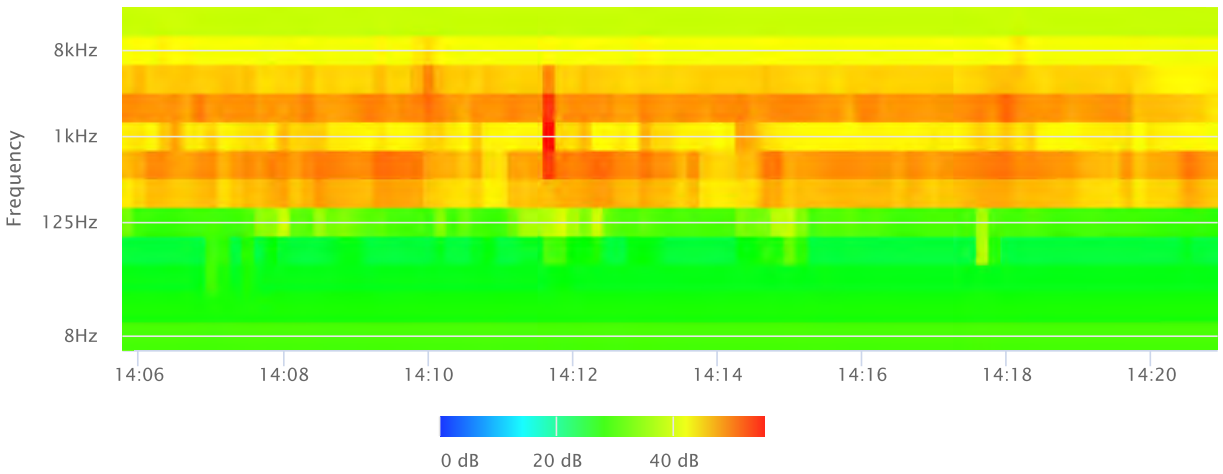
Time History



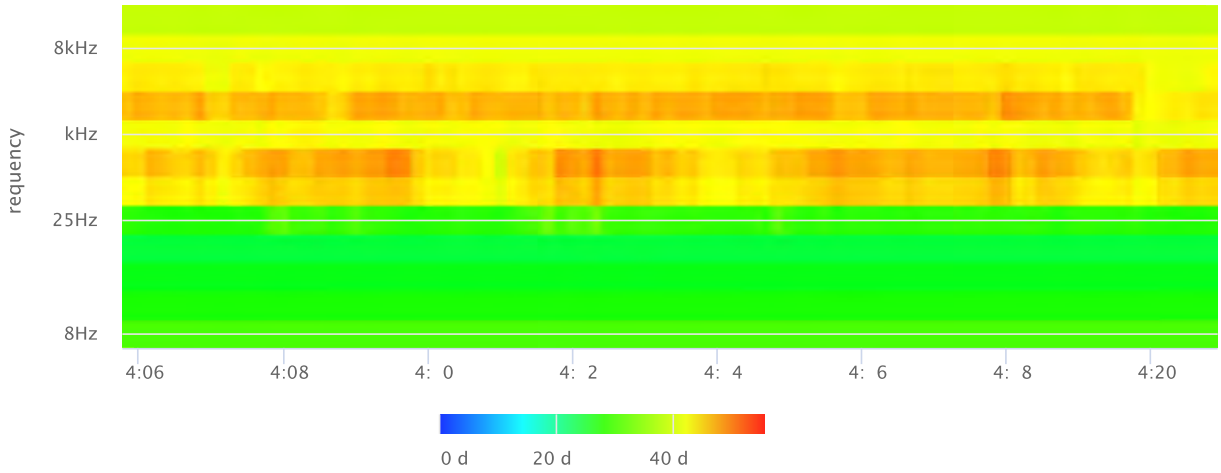
OBA 1/1 Leq



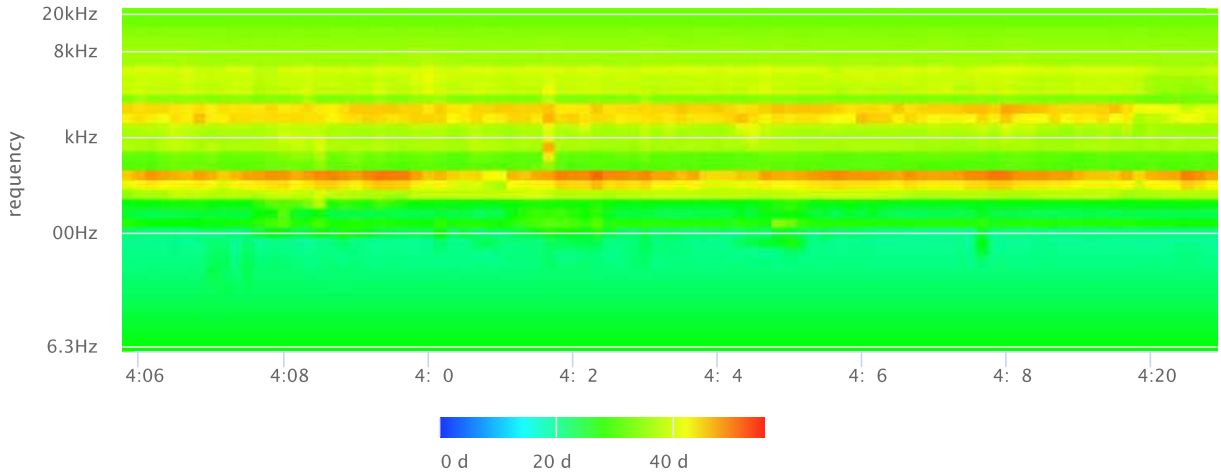
OBA 1/1 Lmax



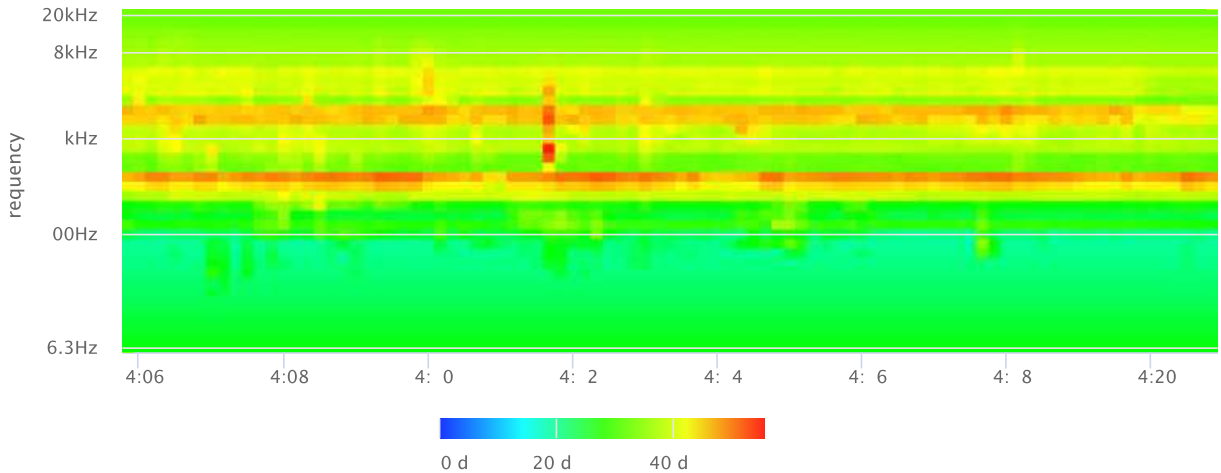
Lmin



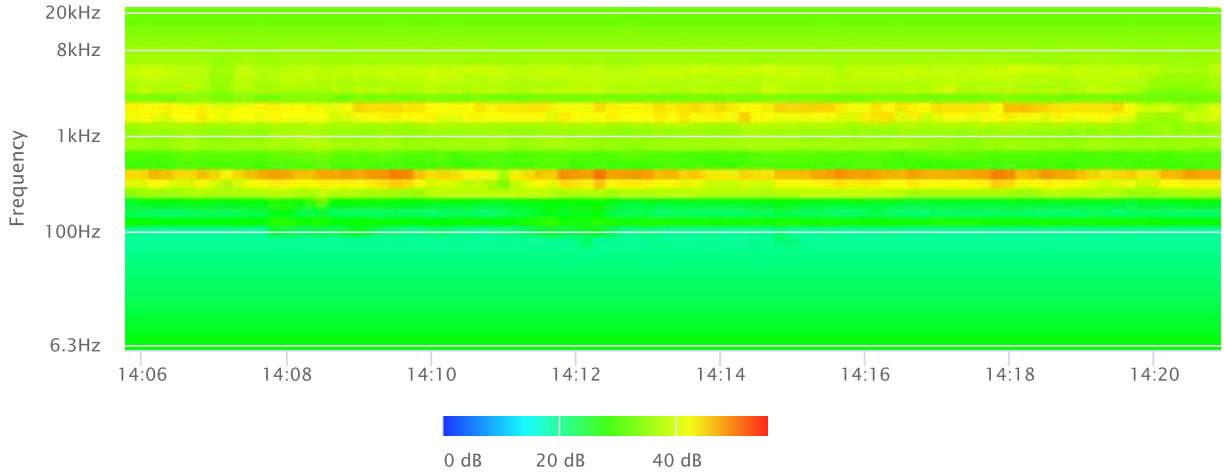
3 Leq



3 Lmax



OBA 1/3 Lmin


20kHz
8kHz
1kHz
100Hz
6.3Hz
Frequency
14:06
14:08
14:10
14:12
14:14
14:16
14:18
14:20
0 dB
20 dB
40 dB

Noise Measurement
Field Data

Project Name: Carancho Pump Station, Temecula **Date:** February 29, 2024

Project #: 19704

Noise Measurement #: STNM3 Run Time: 15 minutes **Technician:** Ian Edward Gallagher

Nearest Address or Cross Street: Carancho Pump Station, 33°29'40.90"N 117°16'23.70"W (No near address or cross street).

Site Description (Type of Existing Land Use and any other notable features): Measurement Site: Within project site, almost at the top of the hill, just northeast of the two large water storage tanks. Adjacent: Within project site with water tanks just south and pumps/electical equipment futher south. Two residences located ~698' SSE & ~649' NNE of measurement site. El Calamar Rd (running N-S) to east of site area.

Weather: Cloudy > 50% cloud, filtered sun. Sunset 5:43 PM **Settings:** SLOW FAST

Temperature: 61 deg F **Wind:** 7 mph **Humidity:** 72% **Terrain:** Hilly

Start Time: 2:34 PM **End Time:** 2:49 PM **Run Time:**

Leq:	37.5	dB	**Primary Noise Source:** Very distant traffic ambiance from surrounding roads. Some bird song.
Lmax	51.3	dB	
L2	43.0	dB	**Secondary Noise Sources:** Steady distant ambiance from active water pump ~300' SW of STNM3.
L8	40.3	dB	Leaf rustle from 7 mph breeze through vegetation.
L25	37.9	dB	
L50	36.1	dB	

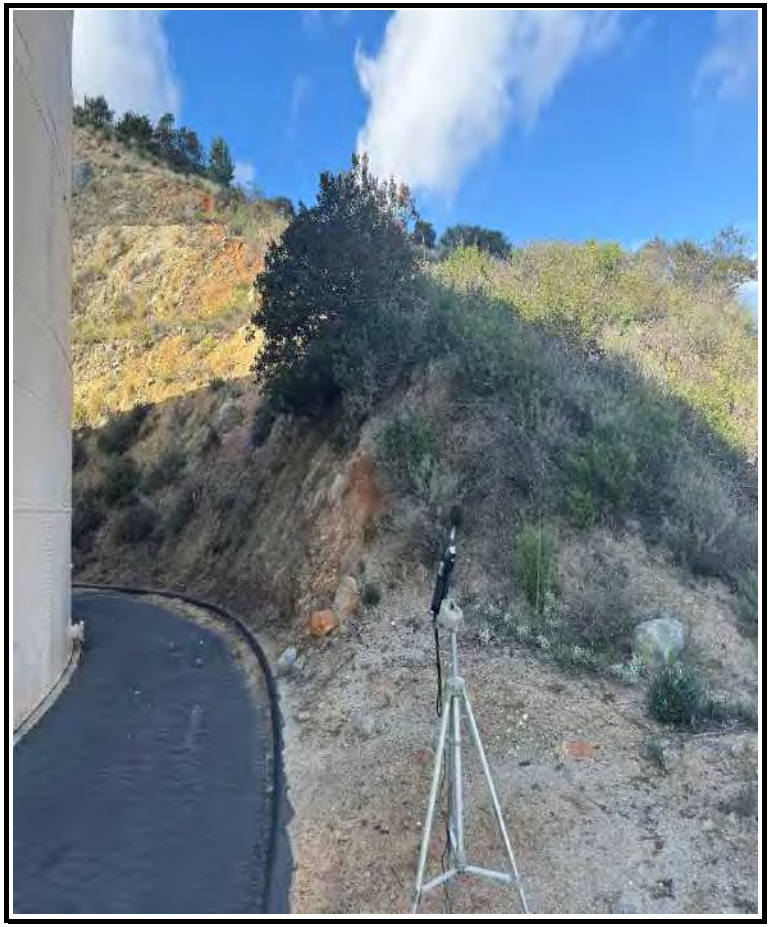
NOISE METER:	SoundTrack LXT Class 1	**CALIBRATOR:**	Larson Davis CA 200
MAKE:	Larson Davis	**MAKE:**	Larson Davis
MODEL:	LXT1	**MODEL:**	CA 200
SERIAL NUMBER:	3855	**SERIAL NUMBER:**	11178
FACTORY CALIBRATION DATE:	3/31/2021	**FACTORY CALIBRATION DATE:**	11/18/2021
FIELD CALIBRATION DATE:	2/29/2024		

Noise Measurement
Field Data

PHOTOS:



STNM3 looking S past larger of the two storage tanks. Access road going down hill to intersect with El Calamar Road about ~140' S of STNM3.



STNM3 looking NW around backside of larger storage tank.

Summary	
File Name on Meter	LxT_Data.038.s
File Name on PC	LxT_0003855-20240229 143449-LxT_Data.038.ldl
Serial Number	3855
Model	SoundTrack LxT®
Firmware Version	2.404
User	Ian Edward Gallagher
Location	STNM3 33°29'40.90"N 117°16'23.70"W
Job Description	15 minute noise measurement (1 x 15 minutes)
Note	Ganddini Project 19704, Carancho Pump Station, Temecula

Measurement	
Start	2024-02-29 14:34:49
Stop	2024-02-29 14:49:49
Duration	00:15:00.0
Run Time	00:15:00.0
Pause	00:00:00.0
Pre-Calibration	2024-02-29 14:34:09
Post-Calibration	None

Overall Settings	
RMS Weight	A Weighting
Peak Weight	A Weighting
Detector	Slow
Preamplifier	PRMLxT1
Microphone Correction	Off
Integration Method	Linear
OBA Range	Normal
OBA Bandwidth	1/1 and 1/3
OBA Frequency Weighting	A Weighting
OBA Max Spectrum	Bin Max
Overload	145.3 dB

Results			
L_{Aeq}	37.5		
LAE	67.0		
EA	0.5588075 µPa²h		
EA8	17.88184 µPa²h		
EA40	89.40919 µPa²h		
$L_{Apeak\ (max)}$	2024-02-29 14:35:46	85.6 dB	
L_{ASmax}	2024-02-29 14:35:46	51.3 dB	
L_{ASmin}	2024-02-29 14:36:16	32.0 dB	

		Statistics	
L_{Ceq}	57.7 dB	**LA2.00**	43.0 dB
L_{Aeq}	37.5 dB	**LA8.00**	40.3 dB
L_{Ceq} - L_{Aeq}	20.3 dB	**LA25.00**	37.9 dB
L_{AIeq}	42.4 dB	**LA50.00**	36.1 dB
L_{Aeq}	37.5 dB	**LA66.60**	35.0 dB
L_{AIeq} - L_{Aeq}	4.9 dB	**LA90.00**	33.7 dB
Overload Count	0		

Measurement Report

Report Summary

Meter's File Name	LxT_Data.038.s	Computer's File Name	LxT_0003855-20240229 143449-LxT_Data.038.ldbin
Meter	LxT1 0003855		
Firmware	2.404		
User	Ian Edward Gallagher	Location	STNM3 33°29'40.90"N 117°16'23.70"W
Job Description	15 minute noise measurement (1 x 15 minutes)		
Note	Ganddini Project 19704, Carancho Pump Station, Temecula		
Start Time	2024-02-29 14:34:49	Duration	0:15:00.0
End Time	2024-02-29 14:49:49	Run Time	0:15:00.0
Pause Time	0:00:00.0		

Results

Overall Metrics

LA_{eq}	37.5 dB		
LAE	67.0 dB	SEA	--- dB
EA	0.6 µPa²h	LAFTM5	43.6 dB
EA8	17.9 µPa²h		
EA40	89.4 µPa²h		
LA_{peak}	85.6 dB	2024-02-29 14:35:46	
LAS_{max}	51.3 dB	2024-02-29 14:35:46	
LAS_{min}	32.0 dB	2024-02-29 14:36:16	
LA_{eq}	37.5 dB		
LC_{eq}	57.7 dB	LC_{eq} - LA_{eq}	20.3 dB
LAI_{eq}	42.4 dB	LAI_{eq} - LA_{eq}	4.9 dB

Exceedances	Count	Duration
LAS > 65.0 dB	0	0:00:00.0
LAS > 85.0 dB	0	0:00:00.0
LApeak > 135.0 dB	0	0:00:00.0
LApeak > 137.0 dB	0	0:00:00.0
LApeak > 140.0 dB	0	0:00:00.0

Community Noise	LDN	LDay	LNight
	--- dB	--- dB	0.0 dB

	LDEN	LDay	LEve	LNight
	--- dB	--- dB	--- dB	--- dB

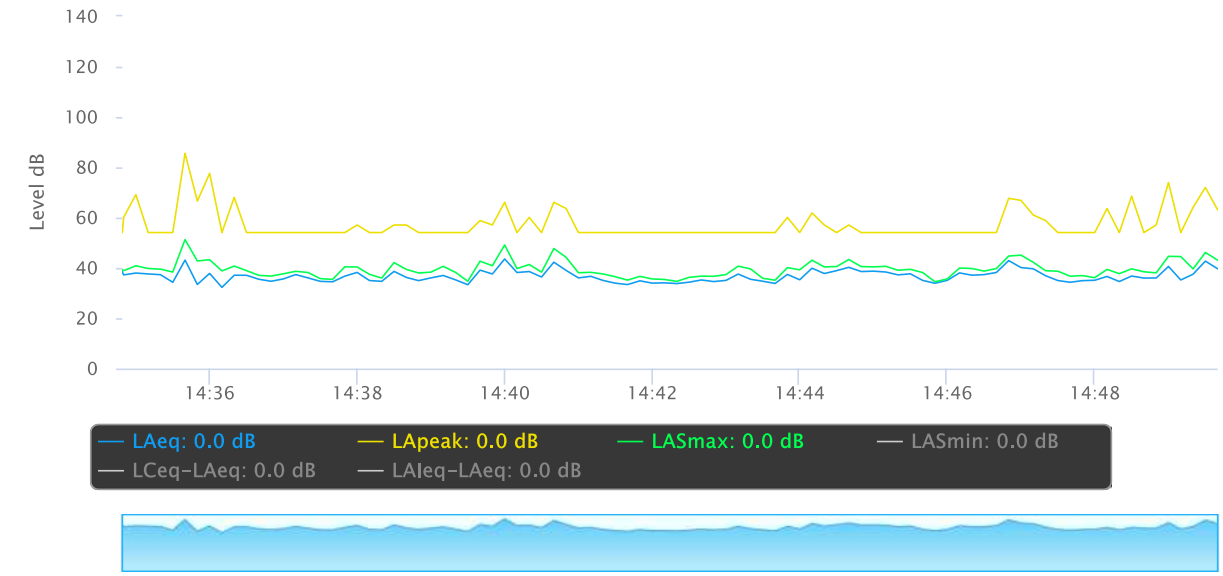
Any Data	A		C		Z	
	Level	Time Stamp	Level	Time Stamp	Level	Time Stamp
L_{eq}	37.5 dB		57.7 dB		--- dB	
$L_{S(max)}$	51.3 dB	2024-02-29 14:35:46	--- dB		--- dB	
$L_{S(min)}$	32.0 dB	2024-02-29 14:36:16	--- dB		--- dB	
$L_{Peak(max)}$	85.6 dB	2024-02-29 14:35:46	--- dB		--- dB	

Overloads	Count	Duration	OBA Count	OBA Duration
	0	0:00:00.0	0	0:00:00.0

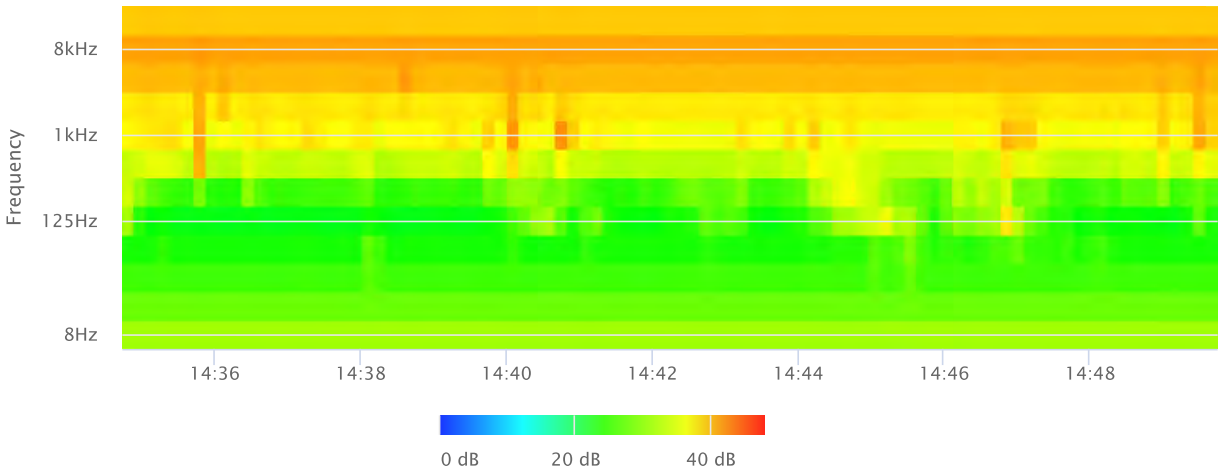
Statistics

LAS 2.0	43.0 dB
LAS 8.0	40.3 dB
LAS 25.0	37.9 dB
LAS 50.0	36.1 dB
LAS 66.6	35.0 dB
LAS 90.0	33.7 dB

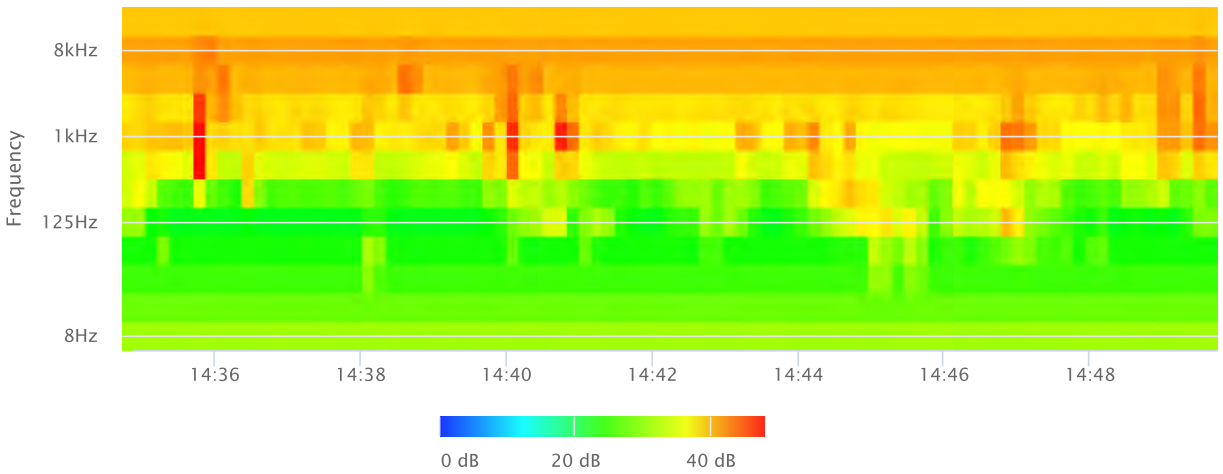
Time History



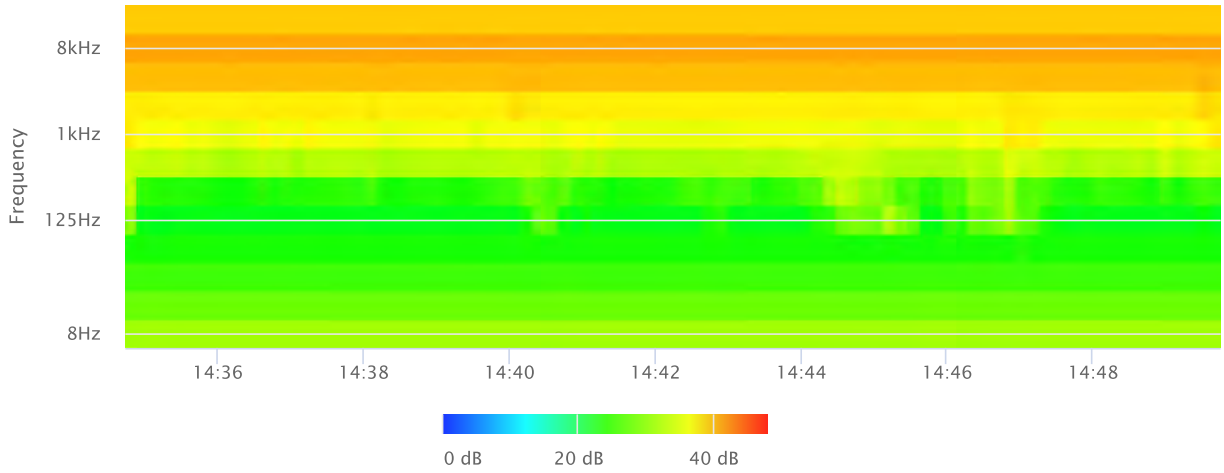
OBA 1/1 Leq



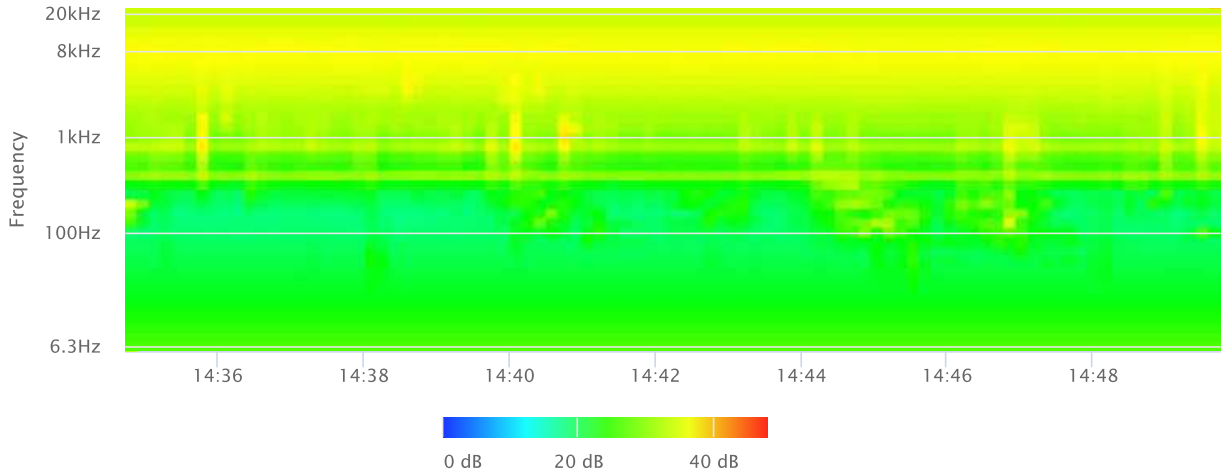
OBA 1/1 Lmax



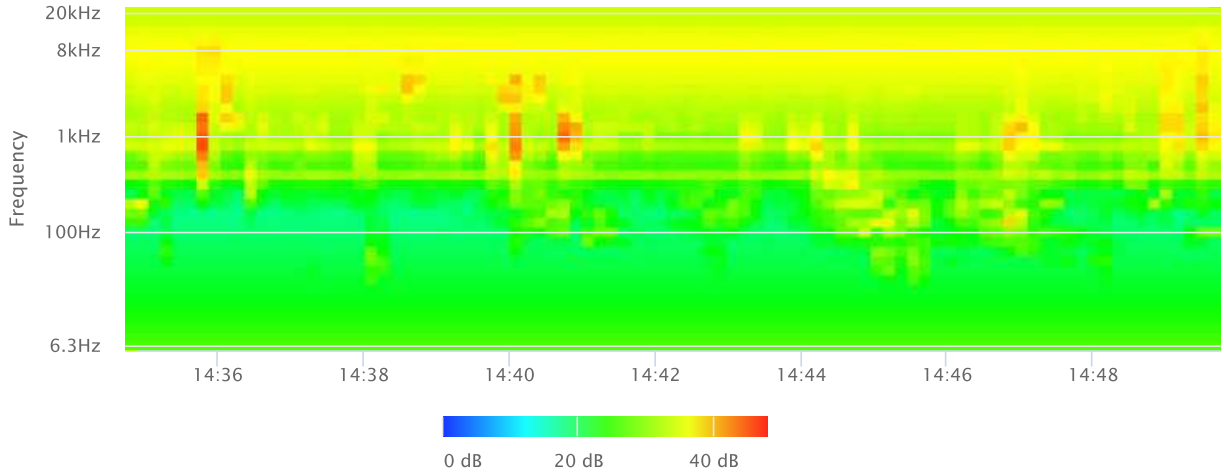
OBA 1/1 Lmin



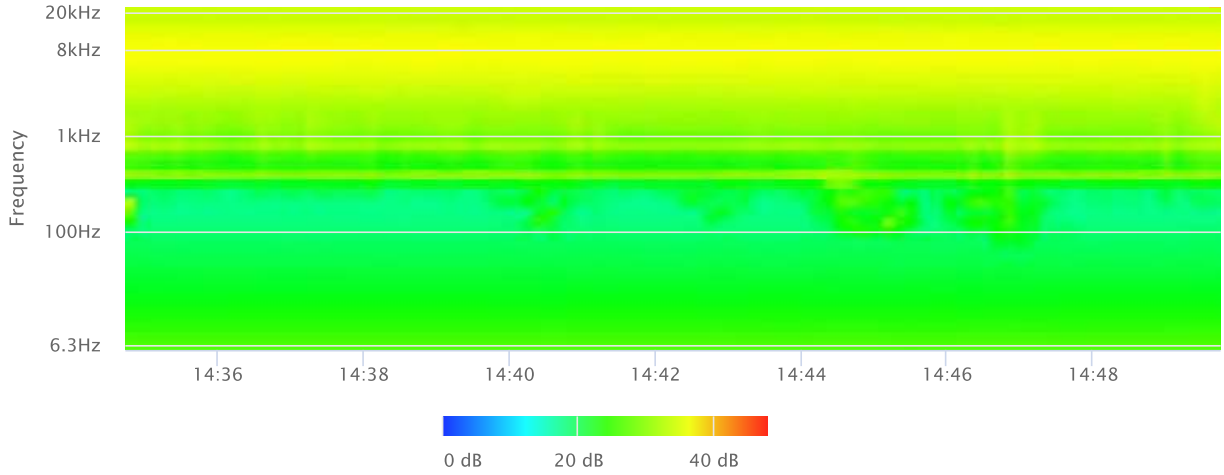
OBA 1/3 Leq



OBA 1/3 Lmax



OBA 1/3 Lmin


20kHz
8kHz
1kHz
100Hz
6.3Hz
Frequency
14:36
14:38
14:40
14:42
14:44
14:46
14:48
0 dB
20 dB
40 dB

Noise Measurement
Field Data

Project Name: Carancho Pump Station, Temecula **Date:** February 29, 2024

Project #: 19704

Noise Measurement #: STNM4 Run Time: 15 minutes **Technician:** Ian Edward Gallagher

Nearest Address or Cross Street: Carancho Pump Station access road & El Calamar Rd, 33°29'40.73"N 117°16'19.77"W

Site Description (Type of Existing Land Use and any other notable features): Measurement Site: At access road entrance to project site just west of El Calamar Road. Adjacent: Project site to west with access road adjacent to north and water tanks and pumps SW. Two residences located ~675' SSE & ~660' NNE of measurement site. El Calamar Rd (running N-S) east of site area.

Weather: Cloudy > 50% cloud, filtered sun. Sunset 5:43 PM **Settings:** SLOW FAST

Temperature: 61 deg F **Wind:** 7 mph **Humidity:** 72% **Terrain:** Hilly

Start Time: 3:07 PM **End Time:** 3:22 PM **Run Time:**

Leq: 37.8 dB **Primary Noise Source:** Very distant traffic ambiance from surrounding roads. Some bird song.

Lmax 50.5 dB

L2 44.0 dB **Secondary Noise Sources:** Leaf rustle from 7 mph breeze through vegetation.

L8 40.7 dB

L25 38.1 dB

L50 36.4 dB

NOISE METER:	SoundTrack LXT Class 1	**CALIBRATOR:**	Larson Davis CA 200
MAKE:	Larson Davis	**MAKE:**	Larson Davis
MODEL:	LXT1	**MODEL:**	CA 200
SERIAL NUMBER:	3855	**SERIAL NUMBER:**	11178
FACTORY CALIBRATION DATE:	3/31/2021	**FACTORY CALIBRATION DATE:**	11/18/2021
FIELD CALIBRATION DATE:	2/29/2024		

Noise Measurement
Field Data

PHOTOS:



STNM4 looking north at gates to access road to Carancho Pump Station.



STNM4 looking S across El Calamar Road.

Summary	
File Name on Meter	LxT_Data.039.s
File Name on PC	LxT_0003855-20240229 150733-LxT_Data.039.ldbi
Serial Number	3855
Model	SoundTrack LxT®
Firmware Version	2.404
User	Ian Edward Gallagher
Location	STNM4 33°29'40.73"N 117°16'19.77"W
Job Description	15 minute noise measurement (1 x 15 minutes)
Note	Ganddini Project 19704, Carancho Pump Station, Temecula

Measurement	
Start	2024-02-29 15:07:33
Stop	2024-02-29 15:22:33
Duration	00:15:00.0
Run Time	00:15:00.0
Pause	00:00:00.0
Pre-Calibration	2024-02-29 15:06:58
Post-Calibration	None

Overall Settings	
RMS Weight	A Weighting
Peak Weight	A Weighting
Detector	Slow
Preamplifier	PRMLxT1
Microphone Correction	Off
Integration Method	Linear
OBA Range	Normal
OBA Bandwidth	1/1 and 1/3
OBA Frequency Weighting	A Weighting
OBA Max Spectrum	Bin Max
Overload	145.1 dB

Results			
L_{Aeq}	37.8		
LAE	67.4		
EA	0.6059903	µPa²h	
EA8	19.39169	µPa²h	
EA40	96.95844	µPa²h	
$L_{Apeak\ (max)}$	2024-02-29 15:17:56	82.5	dB
L_{ASmax}	2024-02-29 15:17:56	50.5	dB
L_{ASmin}	2024-02-29 15:13:11	31.5	dB

			Statistics	
L_{Ceq}	53.0	dB	**LA2.00**	44.0 dB
L_{Aeq}	37.8	dB	**LA8.00**	40.7 dB
L_{Ceq} - L_{Aeq}	15.2	dB	**LA25.00**	38.1 dB
L_{AIeq}	42.9	dB	**LA50.00**	36.4 dB
L_{Aeq}	37.8	dB	**LA66.60**	35.2 dB
L_{AIeq} - L_{Aeq}	5.1	dB	**LA90.00**	32.9 dB
Overload Count	0			

Measurement Report

Report Summary

Meter's File Name	LxT_Data.039.s	Computer's File Name	LxT_0003855-20240229 150733-LxT_Data.039.ldbin
Meter	LxT1 0003855		
Firmware	2.404		
User	Ian Edward Gallagher	Location	STNM4 33°29'40.73"N 117°16'19.77"W
Job Description	15 minute noise measurement (1 x 15 minutes)		
Note	Ganddini Project 19704, Carancho Pump Station, Temecula		
Start Time	2024-02-29 15:07:33	Duration	0:15:00.0
End Time	2024-02-29 15:22:33	Run Time	0:15:00.0
Pause Time	0:00:00.0		

Results

Overall Metrics

LA_{eq}	37.8 dB		
LAE	67.4 dB	SEA	--- dB
EA	0.6 µPa²h	LAFTM5	43.9 dB
EA8	19.4 µPa²h		
EA40	97.0 µPa²h		
LA_{peak}	82.5 dB	2024-02-29 15:17:56	
LAS_{max}	50.5 dB	2024-02-29 15:17:56	
LAS_{min}	31.5 dB	2024-02-29 15:13:11	
LA_{eq}	37.8 dB		
LC_{eq}	53.0 dB	LC_{eq} - LA_{eq}	15.2 dB
LAI_{eq}	42.9 dB	LAI_{eq} - LA_{eq}	5.1 dB

Exceedances

	Count	Duration
LAS > 65.0 dB	0	0:00:00.0
LAS > 85.0 dB	0	0:00:00.0
LApeak > 135.0 dB	0	0:00:00.0
LApeak > 137.0 dB	0	0:00:00.0
LApeak > 140.0 dB	0	0:00:00.0

Community Noise

LDN	LDay	LNight
--- dB	--- dB	0.0 dB

LDEN	LDay	LEve	LNight
--- dB	--- dB	--- dB	--- dB

Any Data

	A		C		Z	
	Level	Time Stamp	Level	Time Stamp	Level	Time Stamp
L_{eq}	37.8 dB		53.0 dB		--- dB	
$L_{S(max)}$	50.5 dB	2024-02-29 15:17:56	--- dB		--- dB	
$L_{S(min)}$	31.5 dB	2024-02-29 15:13:11	--- dB		--- dB	
$L_{Peak(max)}$	82.5 dB	2024-02-29 15:17:56	--- dB		--- dB	

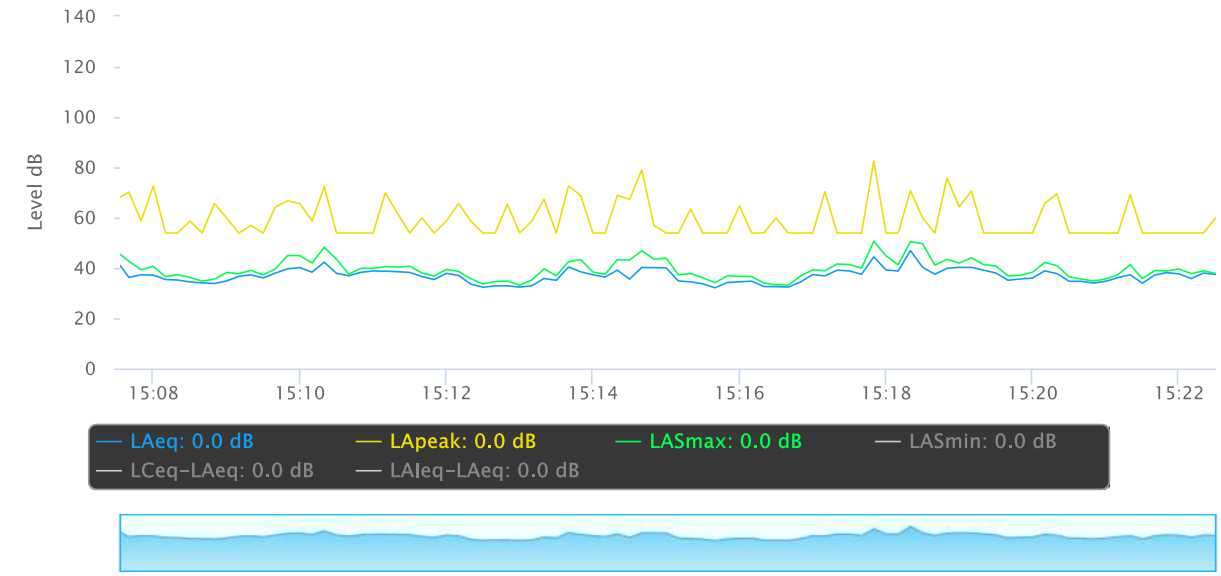
Overloads

Count	Duration	OBA Count	OBA Duration
0	0:00:00.0	0	0:00:00.0

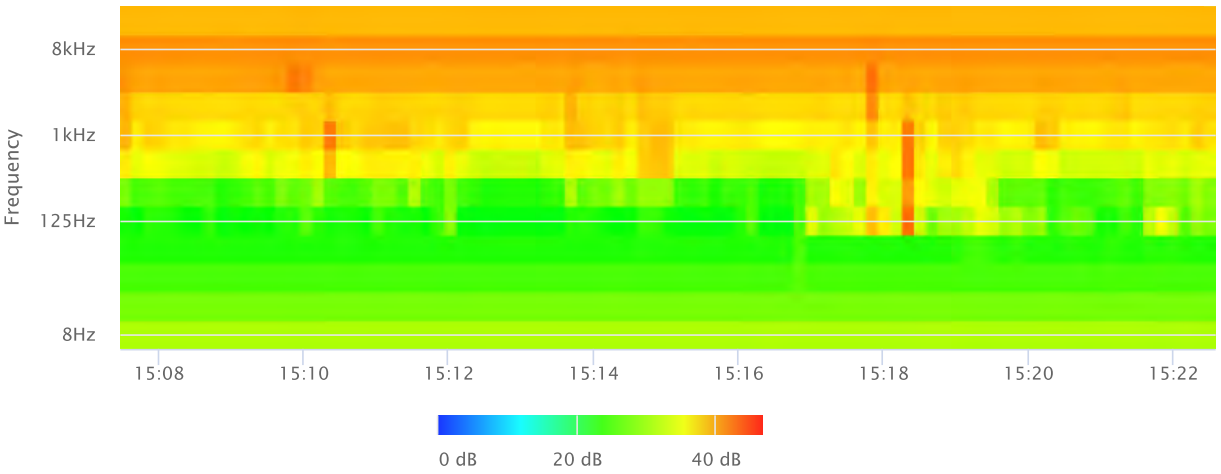
Statistics

LAS 2.0	44.0 dB
LAS 8.0	40.7 dB
LAS 25.0	38.1 dB
LAS 50.0	36.4 dB
LAS 66.6	35.2 dB
LAS 90.0	32.9 dB

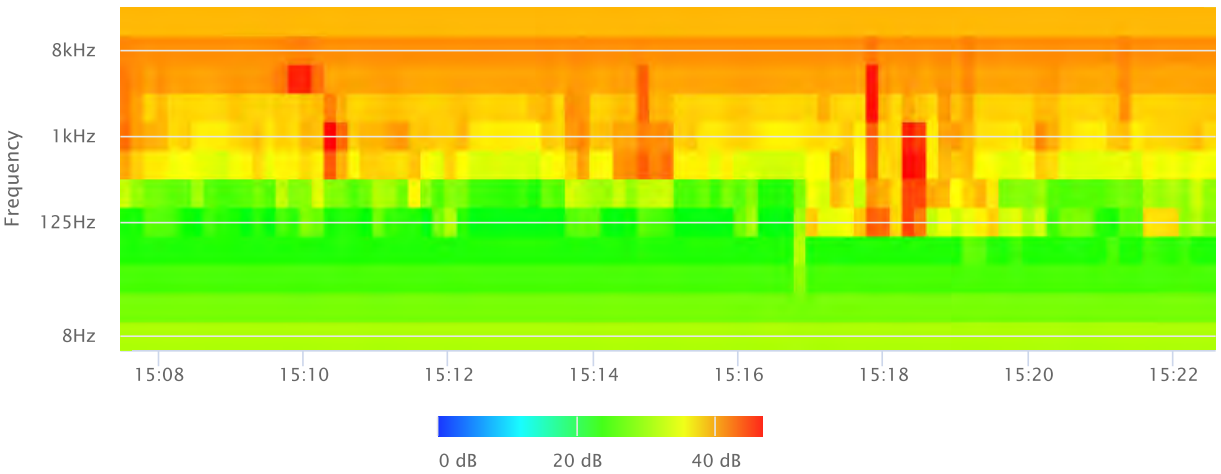
Time History



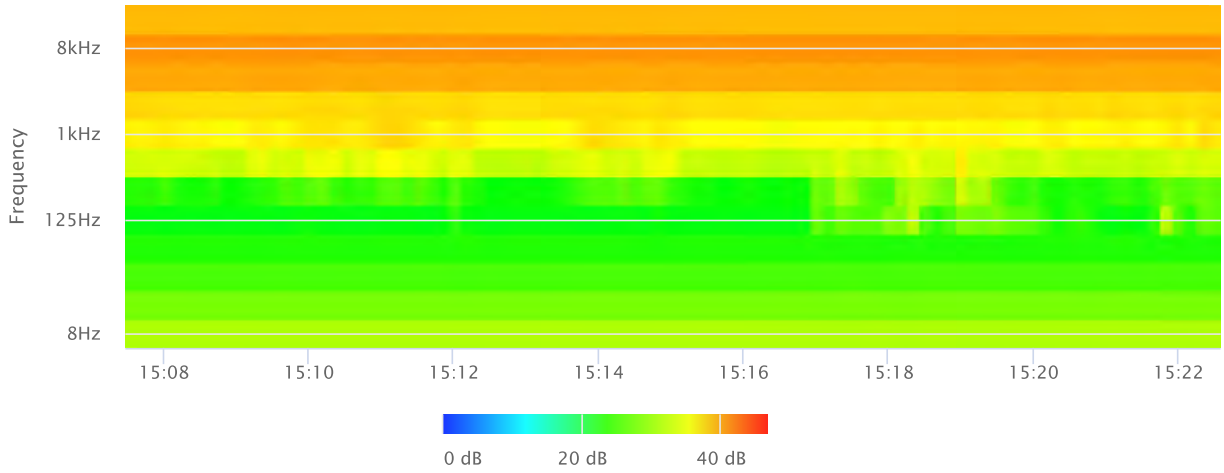
OBA 1/1 Leq



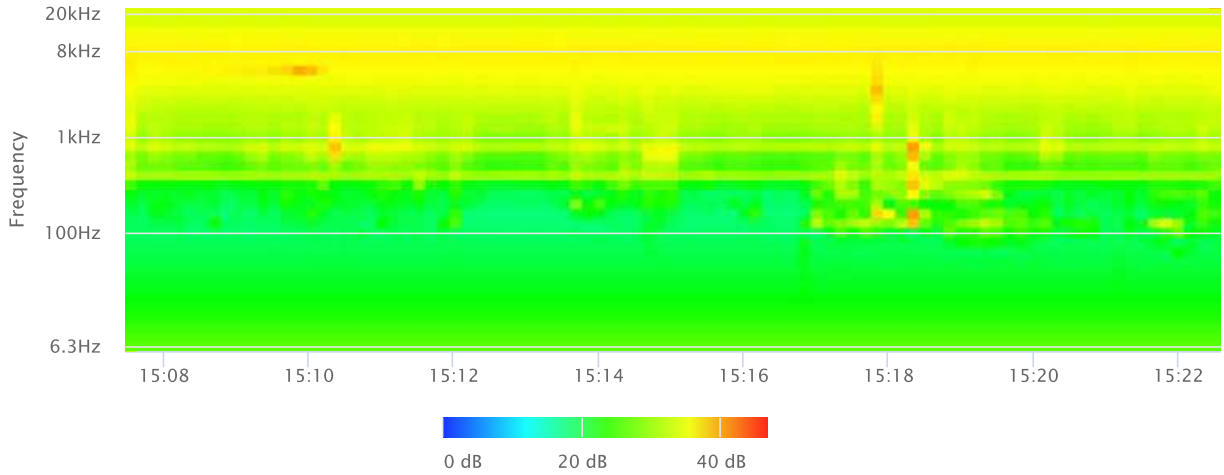
OBA 1/1 Lmax



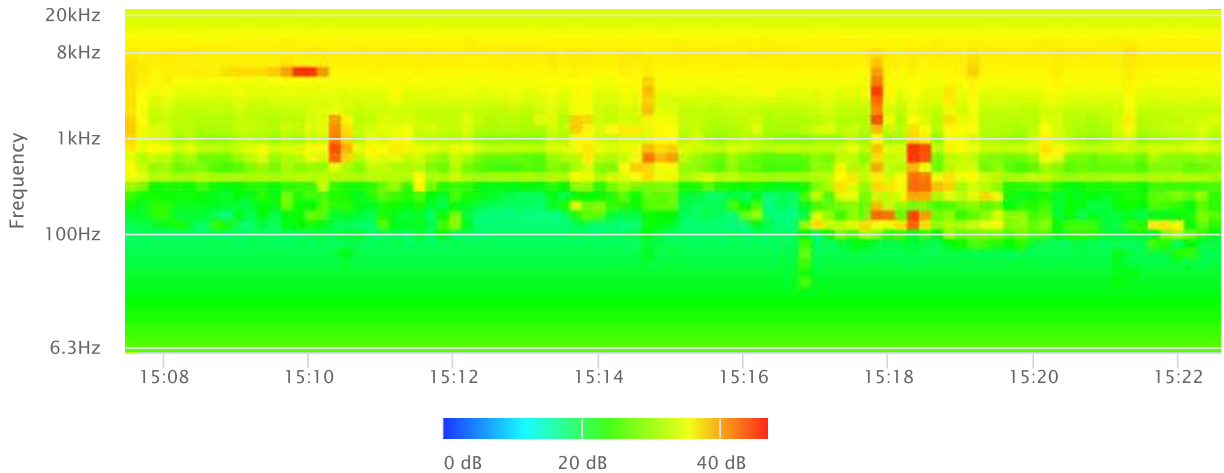
OBA 1/1 Lmin



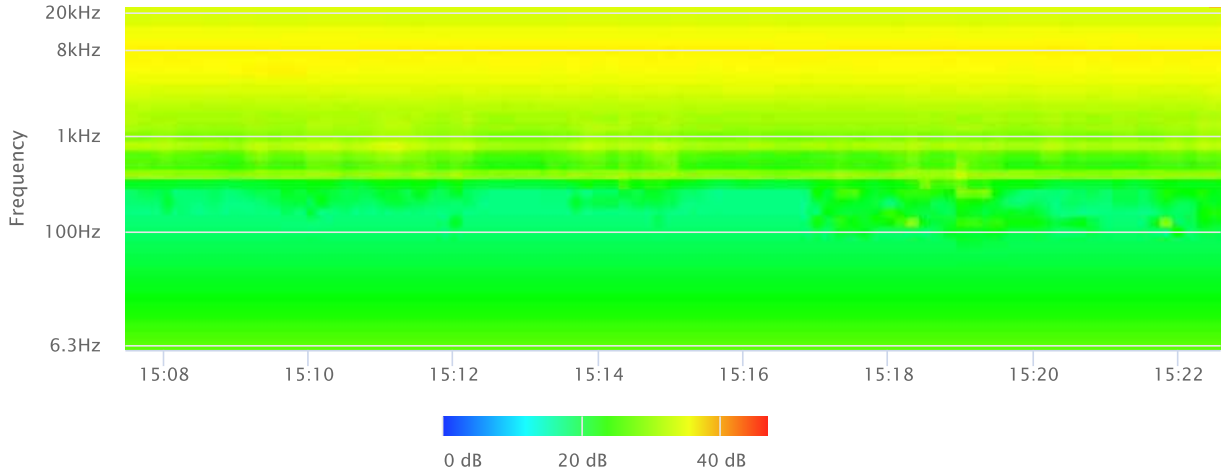
OBA 1/3 Leq



OBA 1/3 Lmax



OBA 1/3 Lmin


20kHz
8kHz
1kHz
100Hz
6.3Hz
Frequency
15:08
15:10
15:12
15:14
15:16
15:18
15:20
15:22
0 dB
20 dB
40 dB

Noise Measurement
Field Data

Project Name: Carancho Pump Station, Temecula **Date:** February 29, 2024

Project #: 19704

Noise Measurement #: STNM5 Run Time: 15 minutes **Technician:** Ian Edward Gallagher

Nearest Address or Cross Street: 43650 El Calamar Road, Temecula, CA 92590

Site Description (Type of Existing Land Use and any other notable features): Measurement Site: Just northeast of residence and east of El Calamar Road.

Adjacent: Residence to south, vacant land to east, El Calamar Raod to west with vacant land further west, and the project site to north with associated pumps/tanks etc.

Weather: Cloudy > 50% cloud, filtered sun. Sunset 5:43 PM **Settings:** SLOW FAST

Temperature: 61 deg F **Wind:** 7 mph **Humidity:** 72% **Terrain:** Hilly

Start Time: 3:42 PM **End Time:** 3:57 PM **Run Time:**

Leq: 50.4 dB **Primary Noise Source:** Very distant traffic ambiance from surrounding roads. Some bird song.

Lmax 75 dB Car passes STNM5 microphone at 3:56PM traveling along El Calamar Road.

L2 48.7 dB **Secondary Noise Sources:** Leaf rustle from 7 mph breeze through vegetation.

L8 43.4 dB

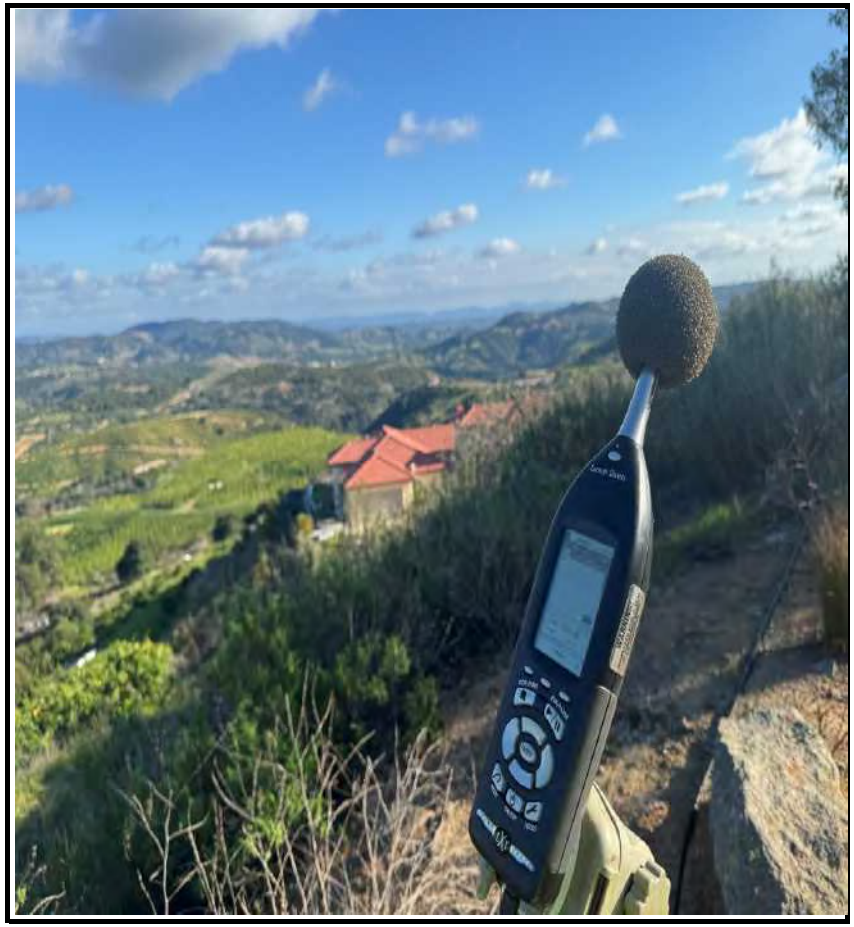
L25 40.3 dB

L50 37.8 dB

NOISE METER:	SoundTrack LXT Class 1	**CALIBRATOR:**	Larson Davis CA 200
MAKE:	Larson Davis	**MAKE:**	Larson Davis
MODEL:	LXT1	**MODEL:**	CA 200
SERIAL NUMBER:	3855	**SERIAL NUMBER:**	11178
FACTORY CALIBRATION DATE:	3/31/2021	**FACTORY CALIBRATION DATE:**	11/18/2021
FIELD CALIBRATION DATE:	2/29/2024		

Noise Measurement
Field Data

PHOTOS:



STNM5 looking SSE towards red roof top of residence 43650 El Calamar Rd, Temecula (~200').



STNM5 looking NNE up El Calamar Rd.

Summary	
File Name on Meter	LxT_Data.040.s
File Name on PC	LxT_0003855-20240229 154205-LxT_Data.040.l
Serial Number	3855
Model	SoundTrack LxT®
Firmware Version	2.404
User	Ian Edward Gallagher
Location	STNM5 33°29'35.74"N 117°16'22.99"W
Job Description	15 minute noise measurement (1 x 15 minutes)
Note	Ganddini Project 19704, Carancho Pump Station, Temecula

Measurement	
Start	2024-02-29 15:42:05
Stop	2024-02-29 15:57:05
Duration	00:15:00.0
Run Time	00:15:00.0
Pause	00:00:00.0
Pre-Calibration	2024-02-29 15:41:09
Post-Calibration	None

Overall Settings	
RMS Weight	A Weighting
Peak Weight	A Weighting
Detector	Slow
Preamplifier	PRMLxT1
Microphone Correction	Off
Integration Method	Linear
OBA Range	Normal
OBA Bandwidth	1/1 and 1/3
OBA Frequency Weighting	A Weighting
OBA Max Spectrum	Bin Max
Overload	145.1 dB

Results			
LAeq		50.4	
LAE		79.9	
EA		10.88066	µPa²h
EA8		348.1813	µPa²h
EA40		1.740906	mPa²h
LApeak (max)	2024-02-29 15:56:18	92.9	dB
LASmax	2024-02-29 15:56:20	75.0	dB
LASmin	2024-02-29 15:46:52	32.3	dB

		Statistics	
LCeq	57.6 dB	**LA2.00**	48.7 dB
LAeq	50.4 dB	**LA8.00**	43.4 dB
LCeq - LAeq	7.2 dB	**LA25.00**	40.3 dB
LAIeq	54.7 dB	**LA50.00**	37.8 dB
LAeq	50.4 dB	**LA66.60**	36.5 dB
LAIeq - LAeq	4.3 dB	**LA90.00**	34.5 dB
Overload Count	0		

Measurement Report

Report Summary

Meter's File Name	LxT_Data.040.s	Computer's File Name	LxT_0003855-20240229 154205-LxT_Data.040.ldbin
Meter	LxT1 0003855		
Firmware	2.404		
User	Ian Edward Gallagher	Location	STNM5 33°29'35.74"N 117°16'22.99"W
Job Description	15 minute noise measurement (1 x 15 minutes)		
Note	Ganddini Project 19704, Carancho Pump Station, Temecula		
Start Time	2024-02-29 15:42:05	Duration	0:15:00.0
End Time	2024-02-29 15:57:05	Run Time	0:15:00.0
Pause Time	0:00:00.0		

Results

Overall Metrics

LA_{eq}	50.4 dB		
LAE	79.9 dB	SEA	--- dB
EA	10.9 µPa²h	LAFTM5	58.4 dB
EA8	348.2 µPa²h		
EA40	1.7 mPa²h		
LA_{peak}	92.9 dB	2024-02-29 15:56:18	
LAS_{max}	75.0 dB	2024-02-29 15:56:20	
LAS_{min}	32.3 dB	2024-02-29 15:46:52	
LA_{eq}	50.4 dB		
LC_{eq}	57.6 dB	LC_{eq} - LA_{eq}	7.2 dB
LAI_{eq}	54.7 dB	LAI_{eq} - LA_{eq}	4.3 dB

Exceedances

	Count	Duration
LAS > 65.0 dB	1	0:00:05.6
LAS > 85.0 dB	0	0:00:00.0
LApeak > 135.0 dB	0	0:00:00.0
LApeak > 137.0 dB	0	0:00:00.0
LApeak > 140.0 dB	0	0:00:00.0

Community Noise

LDN	LDay	LNight
--- dB	--- dB	0.0 dB

LDEN	LDay	LEve	LNight
--- dB	--- dB	--- dB	--- dB

Any Data

	A		C		Z	
	Level	Time Stamp	Level	Time Stamp	Level	Time Stamp
L_{eq}	50.4 dB		57.6 dB		--- dB	
$L_{S(max)}$	75.0 dB	2024-02-29 15:56:20	--- dB		--- dB	
$L_{S(min)}$	32.3 dB	2024-02-29 15:46:52	--- dB		--- dB	
$L_{Peak(max)}$	92.9 dB	2024-02-29 15:56:18	--- dB		--- dB	

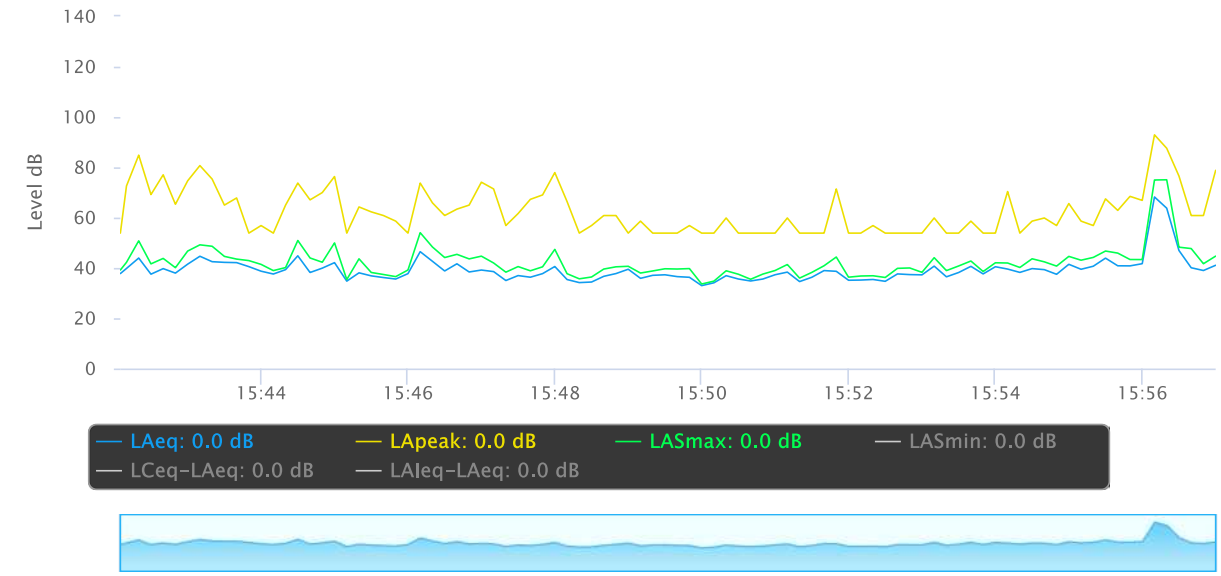
Overloads

Count	Duration	OBA Count	OBA Duration
0	0:00:00.0	0	0:00:00.0

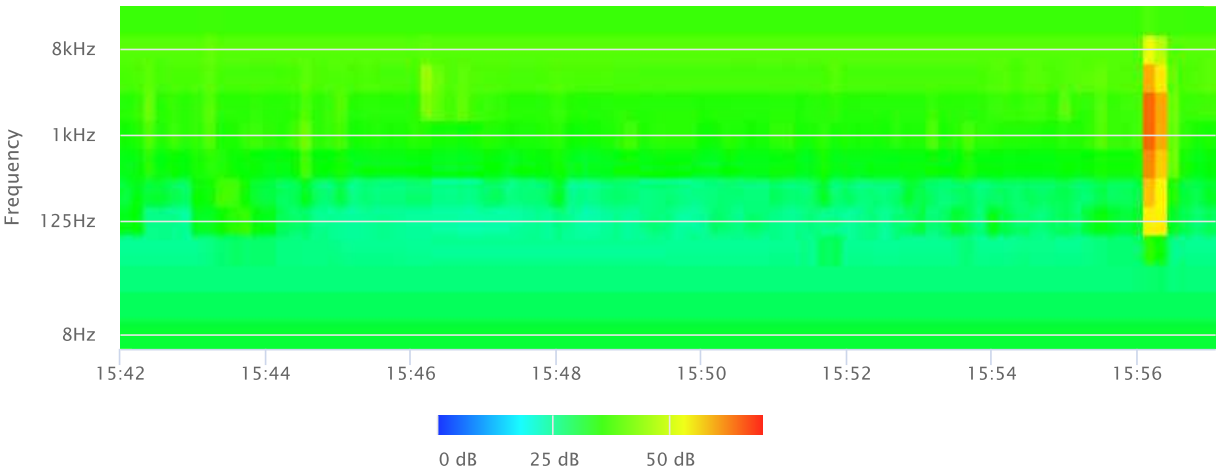
Statistics

LAS 2.0	48.7 dB
LAS 8.0	43.4 dB
LAS 25.0	40.3 dB
LAS 50.0	37.8 dB
LAS 66.6	36.5 dB
LAS 90.0	34.5 dB

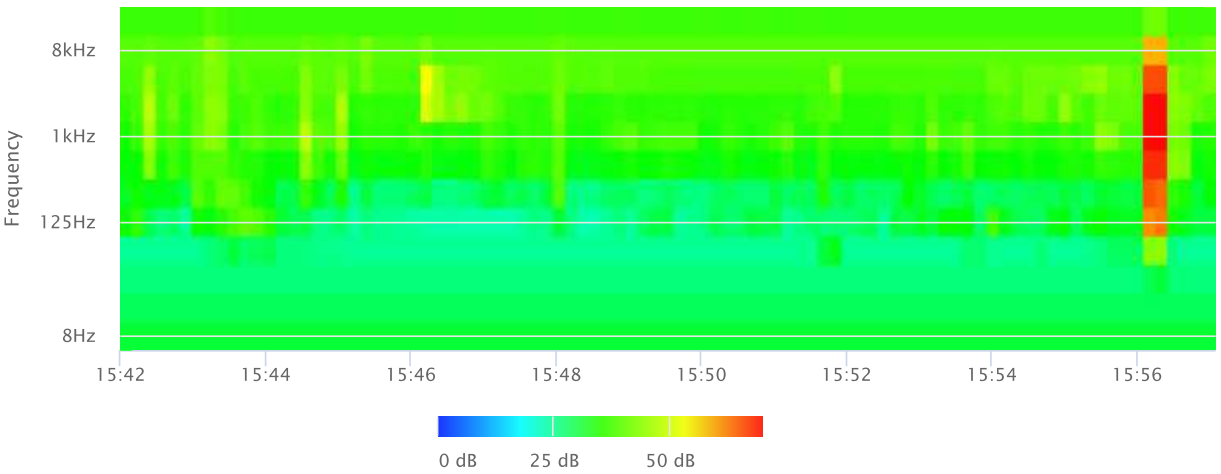
Time History



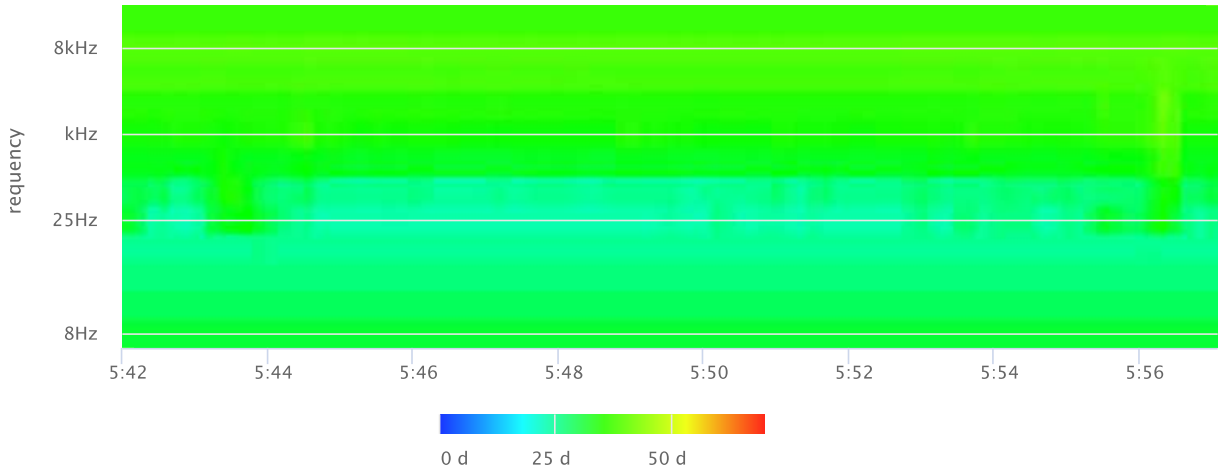
OBA 1/1 Leq



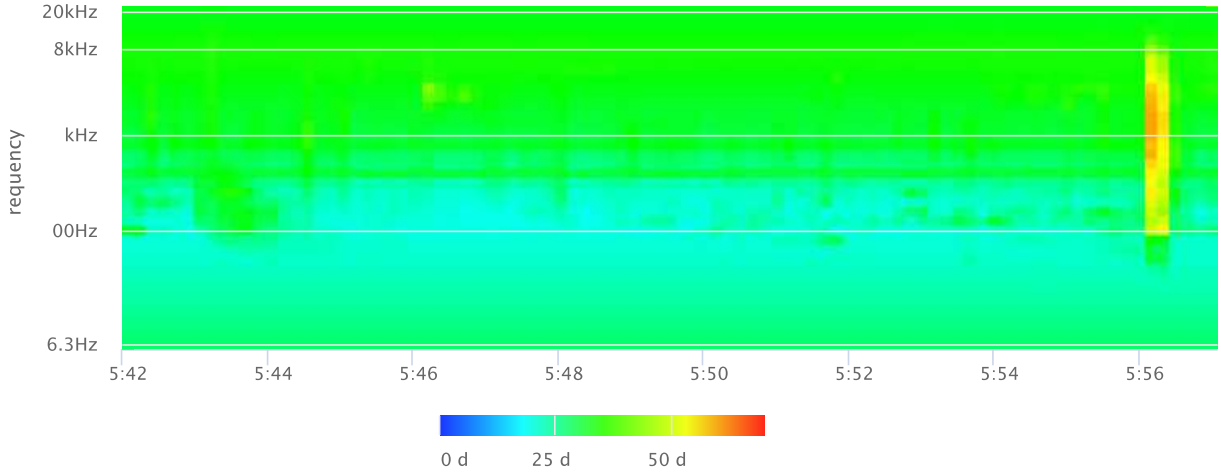
OBA 1/1 Lmax



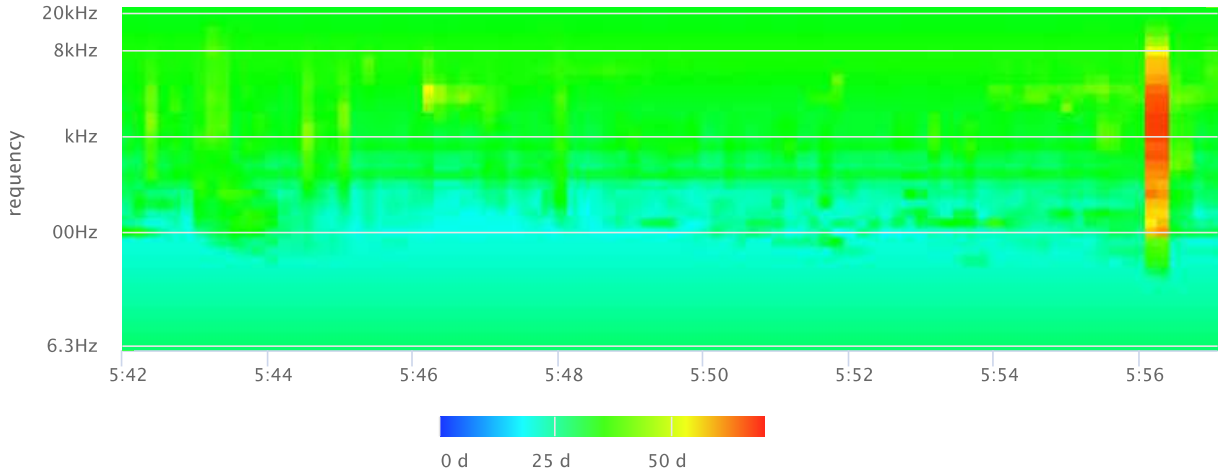
Lmin



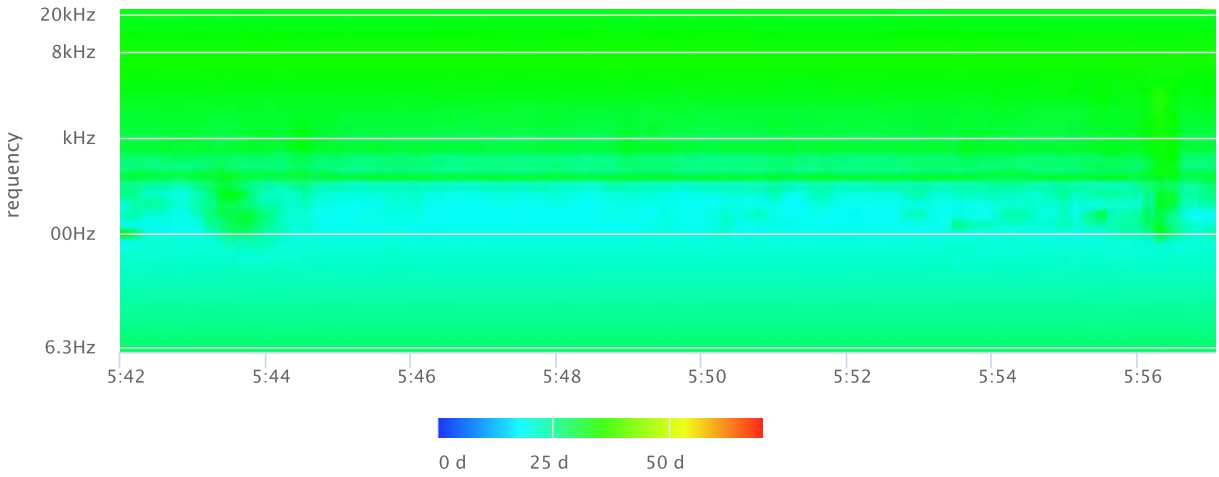
3 Leq



3 Lmax



3 Lmin


20kHz
8kHz
kHz
00Hz
6.3Hz
requency
5:42
5:44
5:46
5:48
5:50
5:52
5:54
5:56
0 d
25 d
50 d

Noise Measurement
Field Data

Project Name: Carancho Pump Station, Temecula **Date:** February 29, 2024

Project #: 19704

Noise Measurement #: STNM5 Run Time: 15 minutes **Technician:** Ian Edward Gallagher

Nearest Address or Cross Street: 43625 Via Escalon, Temecula, CA 92590

Site Description (Type of Existing Land Use and any other notable features): Measurment Site: Just north of residence and south of Via Escalon.

Adjacent: Via Escalon to north with residential further north and single-family residence and vacant land to south with project site further south.

Weather: Cloudy > 50% cloud, filtered sun. Sunset 5:43 PM **Settings:** SLOW FAST

Temperature: 61 deg F **Wind:** 7 mph **Humidity:** 72% **Terrain:** Hilly

Start Time: 4:31 PM **End Time:** 4:46 PM **Run Time:**

Leq: 40 dB **Primary Noise Source:** Very distant traffic ambiance from surrounding roads. Some bird song.

Lmax 52.5 dB Residential ambiance (gardener shoveling gravel about ~150' N of STNM6).

L2 48.8 dB **Secondary Noise Sources:** Leaf rustle from 7 mph breeze through vegetation.

L8 43.7 dB

L25 39.7 dB

L50 36.7 dB

NOISE METER:	SoundTrack LXT Class 1	**CALIBRATOR:**	Larson Davis CA 200
MAKE:	Larson Davis	**MAKE:**	Larson Davis
MODEL:	LXT1	**MODEL:**	CA 200
SERIAL NUMBER:	3855	**SERIAL NUMBER:**	11178
FACTORY CALIBRATION DATE:	3/31/2021	**FACTORY CALIBRATION DATE:**	11/18/2021
FIELD CALIBRATION DATE:	2/29/2024		

Noise Measurement
Field Data

PHOTOS:



STNM6 looking S towards driveway and front yard of residence 43625 Via Escalon, Temecula.



STNM6 looking NW across Via Escalon towards residence 43652 Via Escalon (~340').

Summary	
File Name on Meter	LxT_Data.041.s
File Name on PC	LxT_0003855-20240229 163141-LxT_Data.041.l
Serial Number	3855
Model	SoundTrack LxT®
Firmware Version	2.404
User	Ian Edward Gallagher
Location	STNM6 33°29'50.73"N 117°16'20.69"W
Job Description	15 minute noise measurement (1 x 15 minutes)
Note	Ganddini Project 19704, Carancho Pump Station, Temecula

Measurement	
Start	2024-02-29 16:31:41
Stop	2024-02-29 16:46:41
Duration	00:15:00.0
Run Time	00:15:00.0
Pause	00:00:00.0
Pre-Calibration	2024-02-29 16:31:12
Post-Calibration	None

Overall Settings	
RMS Weight	A Weighting
Peak Weight	A Weighting
Detector	Slow
Preamplifier	PRMLxT1
Microphone Correction	Off
Integration Method	Linear
OBA Range	Normal
OBA Bandwidth	1/1 and 1/3
OBA Frequency Weighting	A Weighting
OBA Max Spectrum	Bin Max
Overload	145.2 dB

Results			
LAeq	40.0		
LAE	69.6		
EA	1.010106	µPa²h	
EA8	32.32339	µPa²h	
EA40	161.6169	µPa²h	
LApeak (max)	2024-02-29 16:36:53	84.0	dB
LASmax	2024-02-29 16:43:02	52.5	dB
LASmin	2024-02-29 16:36:23	32.2	dB

			Statistics		
LCeq	53.7	dB	**LA2.00**	48.8	dB
LAeq	40.0	dB	**LA8.00**	43.7	dB
LCeq - LAeq	13.7	dB	**LA25.00**	39.7	dB
LAleq	46.8	dB	**LA50.00**	36.7	dB
LAeq	40.0	dB	**LA66.60**	35.3	dB
LAleq - LAeq	6.8	dB	**LA90.00**	33.5	dB
Overload Count	0				

Measurement Report

Report Summary

Meter's File Name	LxT_Data.041.s	Computer's File Name	LxT_0003855-20240229 163141-LxT_Data.041.ldbin
Meter	LxT1 0003855		
Firmware	2.404		
User	Ian Edward Gallagher	Location	STNM6 33°29'50.73"N 117°16'20.69"W
Job Description	15 minute noise measurement (1 x 15 minutes)		
Note	Ganddini Project 19704, Carancho Pump Station, Temecula		
Start Time	2024-02-29 16:31:41	Duration	0:15:00.0
End Time	2024-02-29 16:46:41	Run Time	0:15:00.0
Pause Time	0:00:00.0		

Results

Overall Metrics

LA_{eq}	40.0 dB		
LAE	69.6 dB	SEA	--- dB
EA	1.0 µPa²h	LAFTM5	48.1 dB
EA8	32.3 µPa²h		
EA40	161.6 µPa²h		
LA_{peak}	84.0 dB	2024-02-29 16:36:53	
LAS_{max}	52.5 dB	2024-02-29 16:43:02	
LAS_{min}	32.2 dB	2024-02-29 16:36:23	
LA_{eq}	40.0 dB		
LC_{eq}	53.7 dB	LC_{eq} - LA_{eq}	13.7 dB
LAI_{eq}	46.8 dB	LAI_{eq} - LA_{eq}	6.8 dB

Exceedances	Count	Duration
LAS > 65.0 dB	0	0:00:00.0
LAS > 85.0 dB	0	0:00:00.0
LApeak > 135.0 dB	0	0:00:00.0
LApeak > 137.0 dB	0	0:00:00.0
LApeak > 140.0 dB	0	0:00:00.0

Community Noise	LDN	LDay	LNight
	--- dB	--- dB	0.0 dB

	LDEN	LDay	LEve	LNight
	--- dB	--- dB	--- dB	--- dB

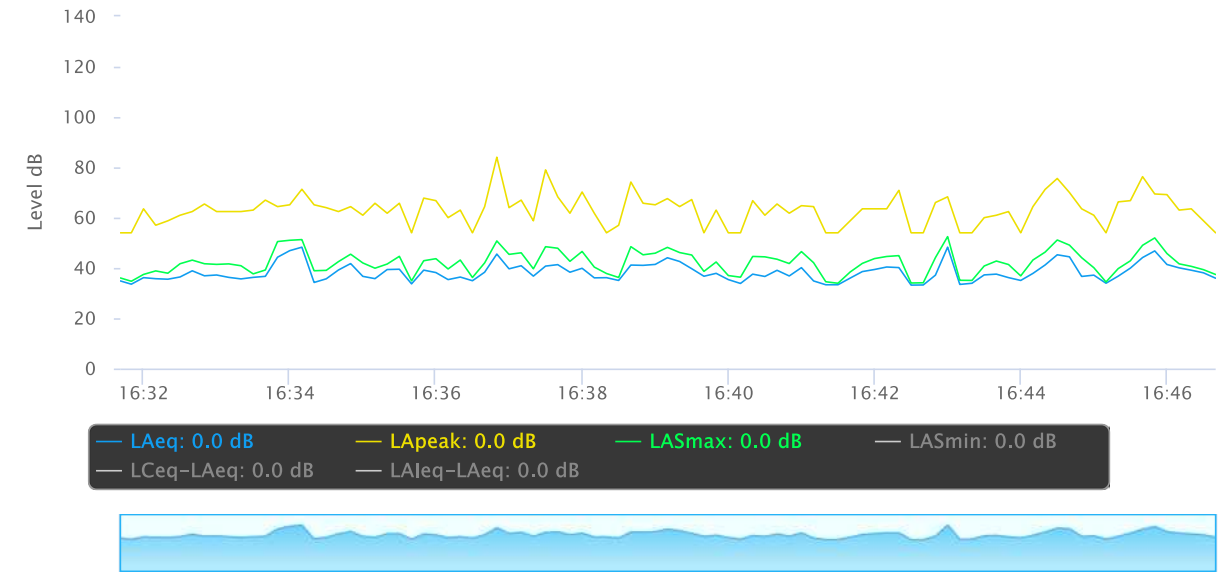
Any Data	A		C		Z	
	Level	Time Stamp	Level	Time Stamp	Level	Time Stamp
L_{eq}	40.0 dB		53.7 dB		--- dB	
$L_{S(max)}$	52.5 dB	2024-02-29 16:43:02	--- dB		--- dB	
$L_{S(min)}$	32.2 dB	2024-02-29 16:36:23	--- dB		--- dB	
$L_{Peak(max)}$	84.0 dB	2024-02-29 16:36:53	--- dB		--- dB	

Overloads	Count	Duration	OBA Count	OBA Duration
	0	0:00:00.0	0	0:00:00.0

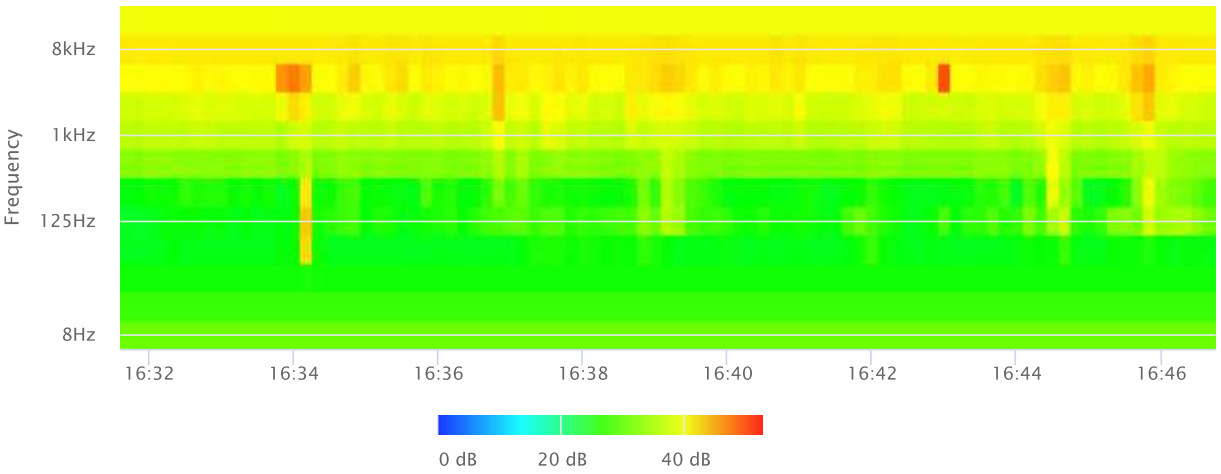
Statistics

LAS 2.0	48.8 dB
LAS 8.0	43.7 dB
LAS 25.0	39.7 dB
LAS 50.0	36.7 dB
LAS 66.6	35.3 dB
LAS 90.0	33.5 dB

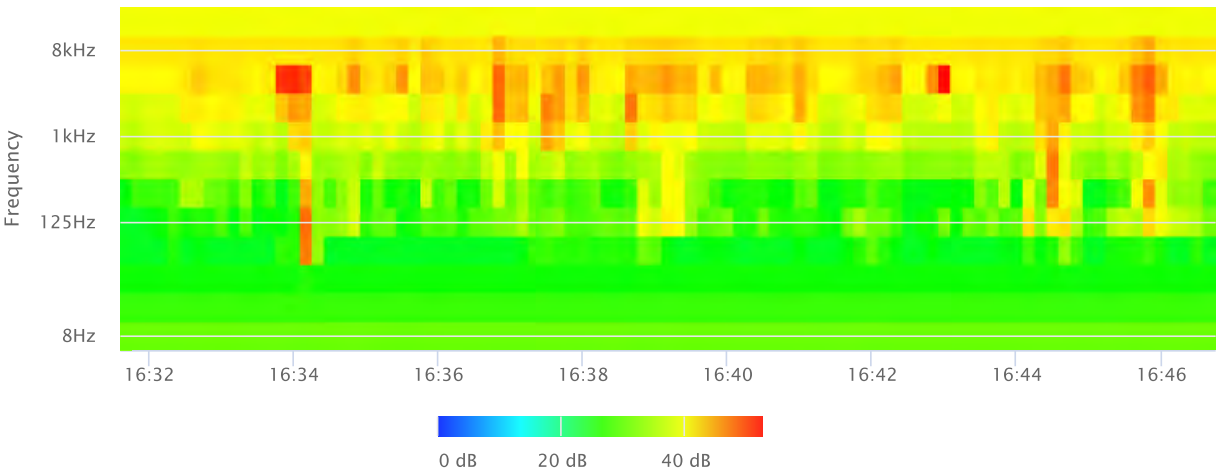
Time History



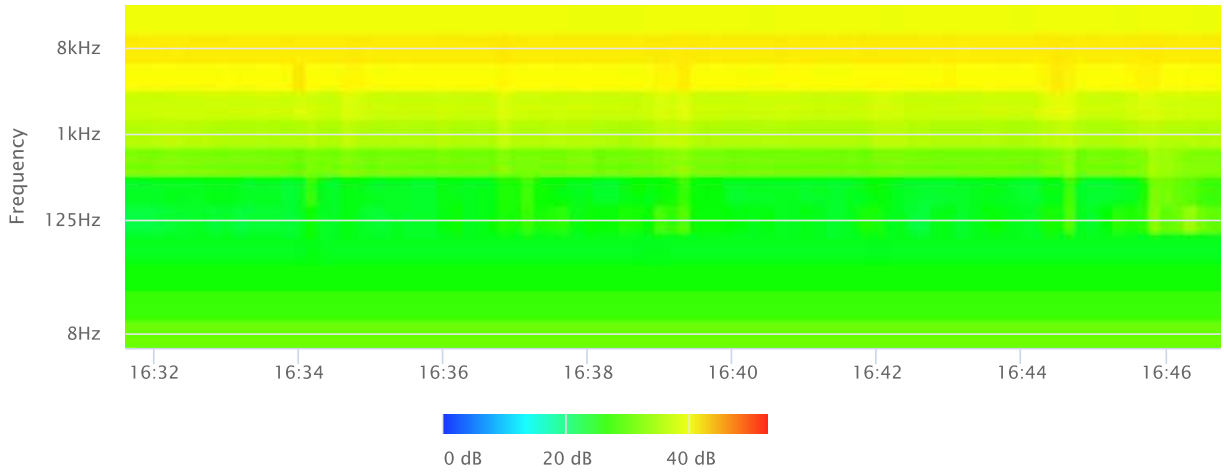
OBA 1/1 Leq



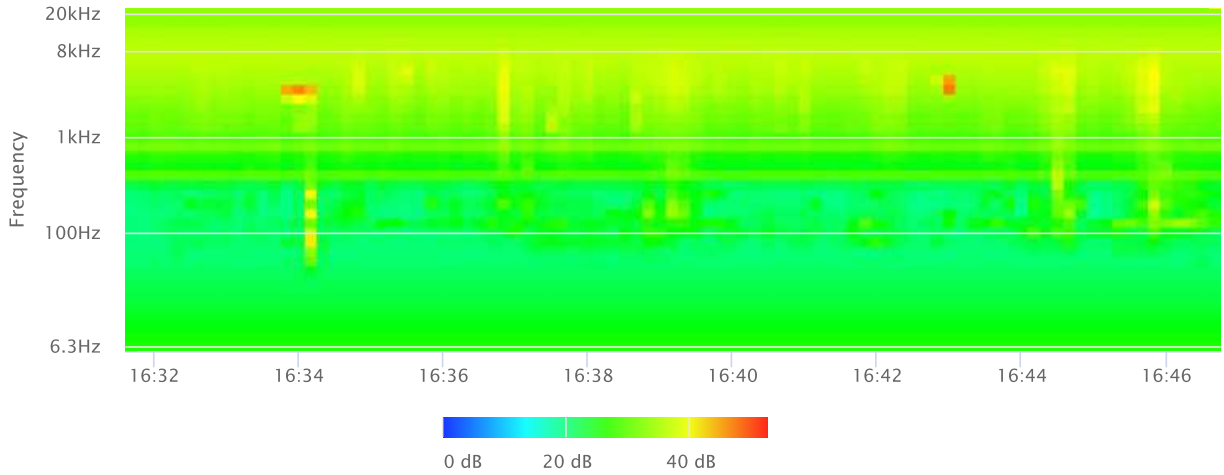
OBA 1/1 Lmax



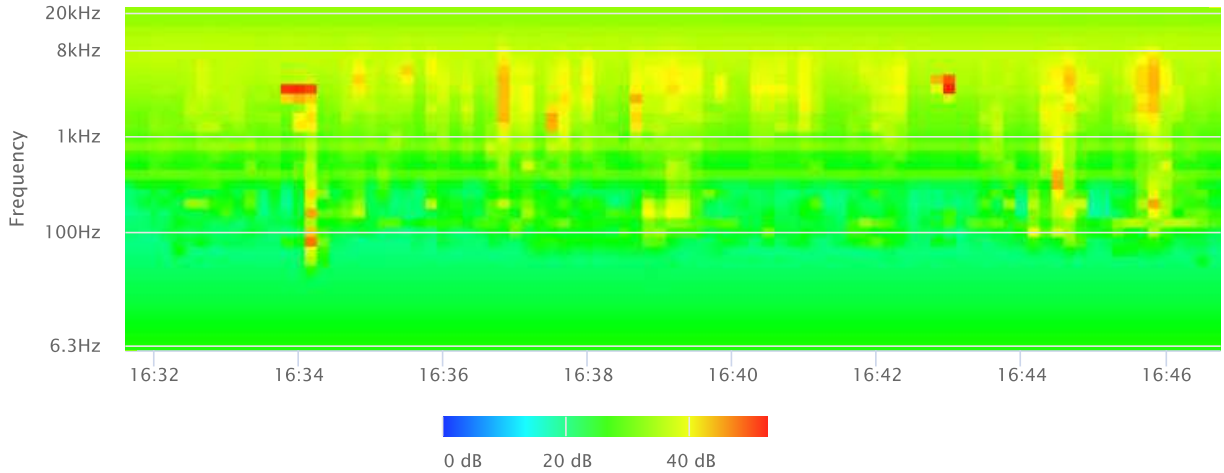
OBA 1/1 Lmin



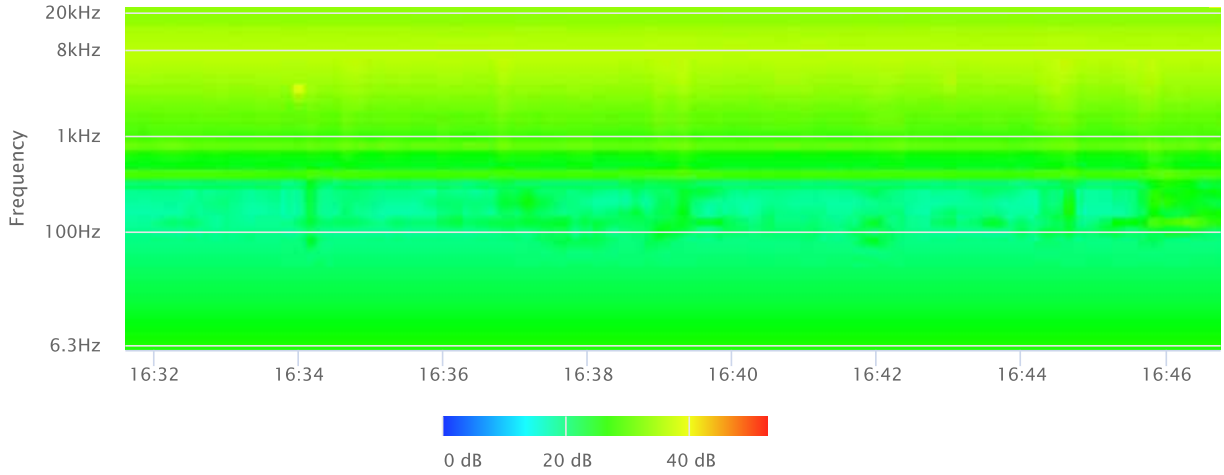
OBA 1/3 Leq



OBA 1/3 Lmax



OBA 1/3 Lmin


20kHz
8kHz
1kHz
100Hz
6.3Hz
Frequency
16:32
16:34
16:36
16:38
16:40
16:42
16:44
16:46

0 dB
20 dB
40 dB

Noise Measurement
Field Data

Project Name: Carancho Pump Station, Temecula **Date:** Feb 29-Mar 01, 2024

Project #: 19704

Noise Measurement #: LTNM1 Run Time: 24 hours (24 x 1 hours) **Technician:** Ian Edward Gallagher

Nearest Address or Cross Street: Carancho Pump Station, 33°29'38.69"N 117°16'24.92"W (No near address or cross street).

Site Description (Type of Existing Land Use and any other notable features): Measurement Site: Within project site, almost at the top of the hill, with the two large water storage tanks to the north and the electrical/electronic equipment, pipework & pumps to the S. Adjacent: Surrouded by pump station and vacant land with El Calamar Rd (running N-S) to E of the project site area and two residences located ~532' SSE & ~900' NNE of the measurement site.

Weather: Cloudy > 50% cloud, filtered sun. Sunset/rise 5:43 PM/6:20AM **Settings:** SLOW FAST

Temperature: 48-61 deg F **Wind:** 2-10 mph **Humidity:** 60-90% **Terrain:** Hilly

Start Time: 6:00 PM **End Time:** 6:00 PM **Run Time:**

Leq: 45.7 dB **Primary Noise Source:** Steady noise from water pumps ~110' WNW of LTNM1 (when pumps are active).

Lmax 68.6 dB

L2 53.1 dB **Secondary Noise Sources:** Very distant traffic ambiance from other roads. Some bird song.

L8 51.8 dB Leaf rustle from breeze through vegetation.

L25 41.2 dB

L50 36.1 dB

NOISE METER:	SoundTrack LXT Class 1	**CALIBRATOR:**	Larson Davis CA 200
MAKE:	Larson Davis	**MAKE:**	Larson Davis
MODEL:	LXT1	**MODEL:**	CA 200
SERIAL NUMBER:	3855	**SERIAL NUMBER:**	11178
FACTORY CALIBRATION DATE:	3/31/2021	**FACTORY CALIBRATION DATE:**	11/18/2021
FIELD CALIBRATION DATE:	2/29/2024		

Noise Measurement
Field Data

PHOTOS:



LTNM1 looking N towards smaller of the two storage tanks.



LTNM1 looking down, showing location of microphone in relation to surrounding area.

Summary	
File Name on Meter	LxT_Data.042.s
File Name on PC	LxT_0003855-20240229 180000-LxT_Data.042.ld
Serial Number	3855
Model	SoundTrack LxT®
Firmware Version	2.404
User	Ian Edward Gallagher
Location	LTNM1 33°29'38.69"N 117°16'24.92"W
Job Description	24 hour noise measurement (24 x 1 hours)
Note	Ganddini Project 19704, Carancho Pump Station, Temecula

Measurement	
Start	2024-02-29 18:00:00
Stop	2024-03-01 18:00:00
Duration	24:00:00.0
Run Time	24:00:00.0
Pause	00:00:00.0
Pre-Calibration	2024-02-29 17:15:39
Post-Calibration	None

Overall Settings	
RMS Weight	A Weighting
Peak Weight	A Weighting
Detector	Slow
Preamplifier	Unknown
Microphone Correction	Off
Integration Method	Linear
OBA Range	Normal
OBA Bandwidth	1/1 and 1/3
OBA Frequency Weighting	A Weighting
OBA Max Spectrum	Bin Max
Overload	145.3 dB

Results			
LAeq	45.7		
LAE	95.0		
EA	352.7626	µPa²h	
EA8	117.5875	µPa²h	
EA40	587.9377	µPa²h	
LApeak (max)	2024-03-01 16:05:41	90.0	dB
LASmax	2024-03-01 15:50:38	68.6	dB
LASmin	2024-03-01 01:50:00	31.9	dB

			Statistics		
LCeq	60.9	dB	**LA2.0(**	53.1	dB
LAeq	45.7	dB	**LA8.0(**	51.8	dB
LCeq - LAeq	15.3	dB	**LA25.(**	41.2	dB
LAIeq	47.9	dB	**LA50.(**	36.1	dB
LAeq	45.7	dB	**LA90.(**	32.7	dB
LAIeq - LAeq	2.3	dB	**LA99.(**	32.2	dB
Overload Count	0				

Record #	Date	Time	Run Duration	Run Time	Pause	LAeq	LASmin	LASmin Time	LASmax	LASmax Time	LAS2.00	LAS8.00	LAS25.00	LAS50.00	LAS90.00	LAS99.00
1	2024-02-29	18:00:00	01:00:00.0	01:00:00.0	00:00:00.0	39.1	33.5	18:57:32	52.6	18:40:34	46.9	41.9	38.8	37.1	34.7	33.8
2	2024-02-29	19:00:00	01:00:00.0	01:00:00.0	00:00:00.0	36.7	33.2	19:44:25	46.0	19:10:19	42.0	39.2	37.1	35.5	34.0	33.6
3	2024-02-29	20:00:00	01:00:00.0	01:00:00.0	00:00:00.0	36.7	32.7	20:51:11	53.7	20:03:20	42.3	38.8	36.7	35.1	33.2	32.8
4	2024-02-29	21:00:00	01:00:00.0	01:00:00.0	00:00:00.0	34.9	32.8	21:02:41	50.5	21:51:21	39.6	36.0	34.8	34.2	33.5	33.1
5	2024-02-29	22:00:00	01:00:00.0	01:00:00.0	00:00:00.0	37.1	33.5	22:50:20	56.8	22:53:37	44.8	37.9	34.4	34.1	33.8	33.7
6	2024-02-29	23:00:00	01:00:00.0	01:00:00.0	00:00:00.0	35.6	32.5	23:11:05	51.3	23:21:37	42.5	38.4	34.4	33.5	33.1	32.7
7	2024-03-01	00:00:00	01:00:00.0	01:00:00.0	00:00:00.0	33.6	32.5	00:15:36	44.2	00:49:08	36.2	33.9	33.4	33.3	33.0	32.7
8	2024-03-01	01:00:00	01:00:00.0	01:00:00.0	00:00:00.0	33.3	31.9	01:50:00	42.1	01:10:33	35.5	34.1	33.4	33.0	32.3	32.0
9	2024-03-01	02:00:00	01:00:00.0	01:00:00.0	00:00:00.0	34.5	32.1	02:00:29	45.1	02:57:48	38.6	36.6	34.8	33.7	32.6	32.2
10	2024-03-01	03:00:00	01:00:00.0	01:00:00.0	00:00:00.0	32.6	32.2	03:02:51	36.5	03:06:52	33.1	32.8	32.7	32.6	32.4	32.3
11	2024-03-01	04:00:00	01:00:00.0	01:00:00.0	00:00:00.0	32.9	32.0	04:29:44	40.8	04:49:40	35.4	34.0	32.9	32.5	32.2	32.1
12	2024-03-01	05:00:00	01:00:00.0	01:00:00.0	00:00:00.0	33.2	32.0	05:03:47	39.8	05:50:25	36.1	34.6	33.4	32.7	32.3	32.1
13	2024-03-01	06:00:00	01:00:00.0	01:00:00.0	00:00:00.0	38.2	32.1	06:00:23	58.6	06:18:05	42.0	40.0	38.1	36.3	34.0	32.5
14	2024-03-01	07:00:00	01:00:00.0	01:00:00.0	00:00:00.0	39.6	33.2	07:01:50	56.8	07:19:22	46.0	42.9	39.7	37.5	35.2	34.2
15	2024-03-01	08:00:00	01:00:00.0	01:00:00.0	00:00:00.0	37.9	33.3	08:30:50	52.7	08:38:19	43.6	39.8	37.8	36.4	34.6	33.8
16	2024-03-01	09:00:00	01:00:00.0	01:00:00.0	00:00:00.0	41.2	33.3	09:16:24	58.3	09:51:11	50.6	43.9	39.2	37.0	34.8	33.9
17	2024-03-01	10:00:00	01:00:00.0	01:00:00.0	00:00:00.0	39.2	33.9	10:12:10	56.7	10:44:37	44.6	41.9	39.4	37.7	35.5	34.5
18	2024-03-01	11:00:00	01:00:00.0	01:00:00.0	00:00:00.0	42.6	33.7	11:34:17	57.4	11:30:51	52.1	46.4	40.3	38.0	35.8	34.7
19	2024-03-01	12:00:00	01:00:00.0	01:00:00.0	00:00:00.0	39.6	34.6	12:30:14	55.2	12:33:46	45.4	43.0	39.9	37.7	35.9	35.1
20	2024-03-01	13:00:00	01:00:00.0	01:00:00.0	00:00:00.0	51.7	34.5	13:00:13	65.2	13:08:22	54.2	53.3	52.5	51.7	39.3	35.5
21	2024-03-01	14:00:00	01:00:00.0	01:00:00.0	00:00:00.0	52.4	48.2	14:49:37	64.1	14:40:39	56.6	53.8	52.7	52.0	50.6	49.5
22	2024-03-01	15:00:00	01:00:00.0	01:00:00.0	00:00:00.0	52.4	46.2	15:05:59	68.6	15:50:38	57.9	53.6	52.1	51.2	49.8	48.8
23	2024-03-01	16:00:00	01:00:00.0	01:00:00.0	00:00:00.0	51.5	48.1	16:31:36	66.2	16:04:49	55.4	52.8	51.7	51.0	49.7	48.8
24	2024-03-01	17:00:00	01:00:00.0	01:00:00.0	00:00:00.0	51.3	47.4	17:12:27	56.9	17:12:55	52.8	52.4	51.8	51.2	49.9	48.9

Measurement Report

Report Summary

Meter's File Name	LxT_Data.042.s	Computer's File Name	LxT_0003855-20240229 180000-LxT_Data.042.ldbin
Meter	LxT1 0003855		
Firmware	2.404		
User	Ian Edward Gallagher	Location	LTNM1 33°29'38.69"N 117°16'24.92"W
Job Description	24 hour noise measurement (24 x 1 hours)		
Note	Ganddini Project 19704, Carancho Pump Station, Temecula		
Start Time	2024-02-29 18:00:00	Duration	24:00:00.0
End Time	2024-03-01 18:00:00	Run Time	24:00:00.0
Pause Time	0:00:00.0		

Results

Overall Metrics

LA_{eq}	45.7 dB		
LAE	95.0 dB	SEA	--- dB
EA	352.8 µPa²h	LAFTM5	49.6 dB
EA8	117.6 µPa²h		
EA40	587.9 µPa²h		
LA_{peak}	90.0 dB	2024-03-01 16:05:41	
LAS_{max}	68.6 dB	2024-03-01 15:50:38	
LAS_{min}	31.9 dB	2024-03-01 01:50:00	
LA_{eq}	45.7 dB		
LC_{eq}	60.9 dB	LC_{eq} - LA_{eq}	15.3 dB
LAI_{eq}	47.9 dB	LAI_{eq} - LA_{eq}	2.3 dB

Exceedances	Count	Duration
LAS > 65.0 dB	9	0:00:14.6
LAS > 85.0 dB	0	0:00:00.0
LApeak > 135.0 dB	0	0:00:00.0
LApeak > 137.0 dB	0	0:00:00.0
LApeak > 140.0 dB	0	0:00:00.0

Community Noise	LDN	LDay	LNight
	--- dB	--- dB	0.0 dB

	LDEN	LDay	LEve	LNight
	--- dB	--- dB	--- dB	--- dB

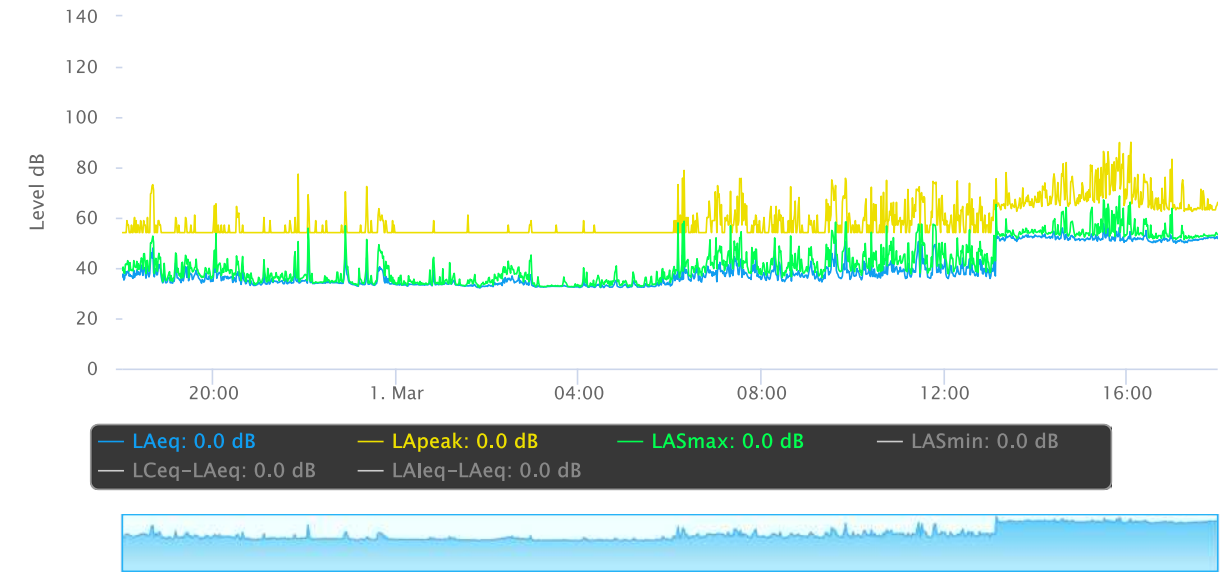
Any Data	A		C		Z	
	Level	Time Stamp	Level	Time Stamp	Level	Time Stamp
L_{eq}	45.7 dB		60.9 dB		--- dB	
$L_{S(max)}$	68.6 dB	2024-03-01 15:50:38	--- dB		--- dB	
$L_{S(min)}$	31.9 dB	2024-03-01 01:50:00	--- dB		--- dB	
$L_{Peak(max)}$	90.0 dB	2024-03-01 16:05:41	--- dB		--- dB	

Overloads	Count	Duration	OBA Count	OBA Duration
	0	0:00:00.0	0	0:00:00.0

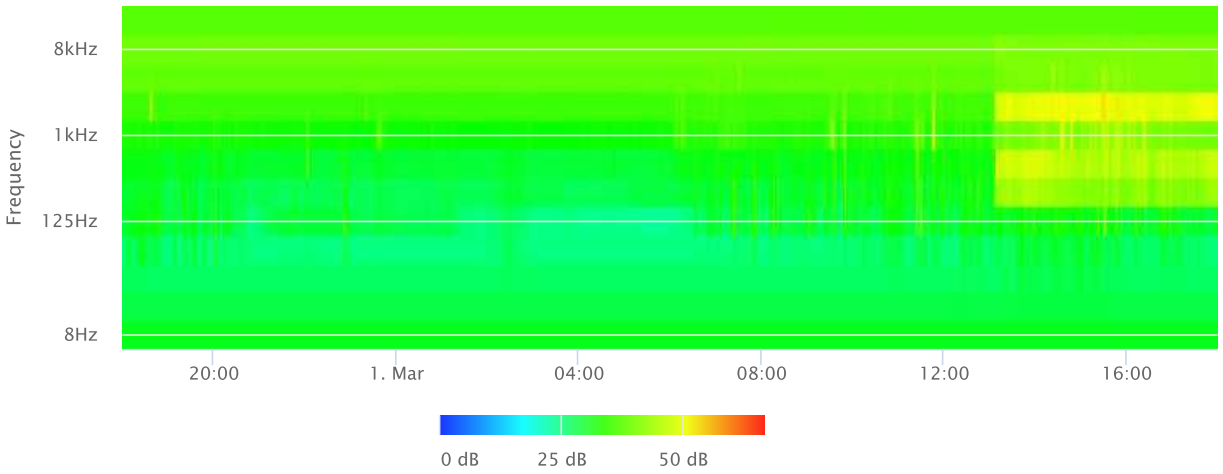
Statistics

LAS 2.0	53.1 dB
LAS 8.0	51.8 dB
LAS 25.0	41.2 dB
LAS 50.0	36.1 dB
LAS 90.0	32.7 dB
LAS 99.0	32.2 dB

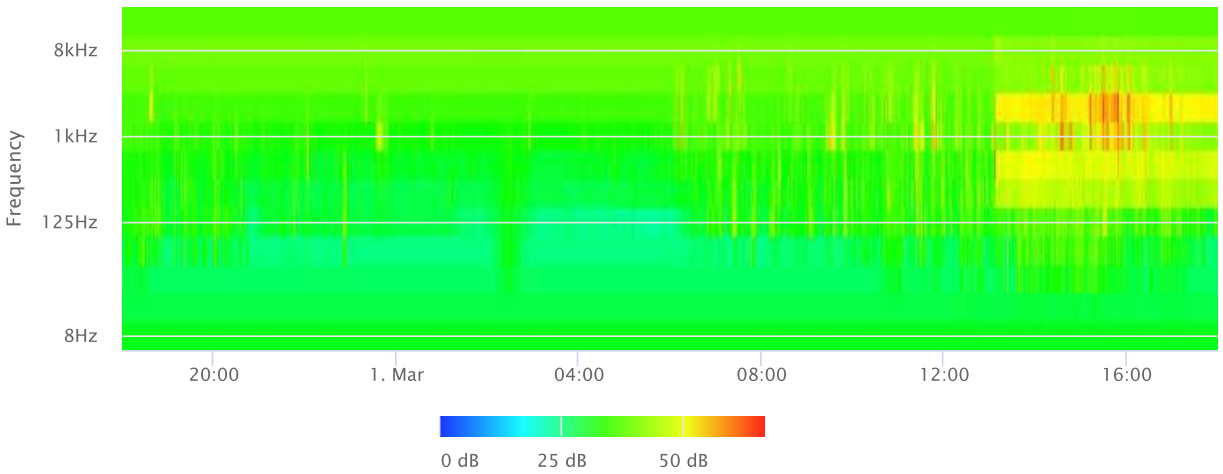
Time History



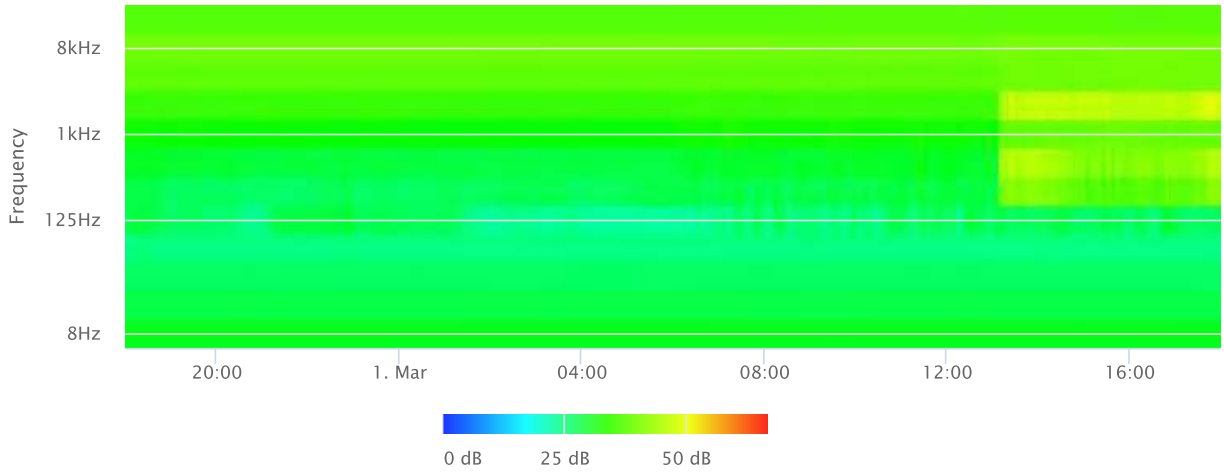
OBA 1/1 Leq



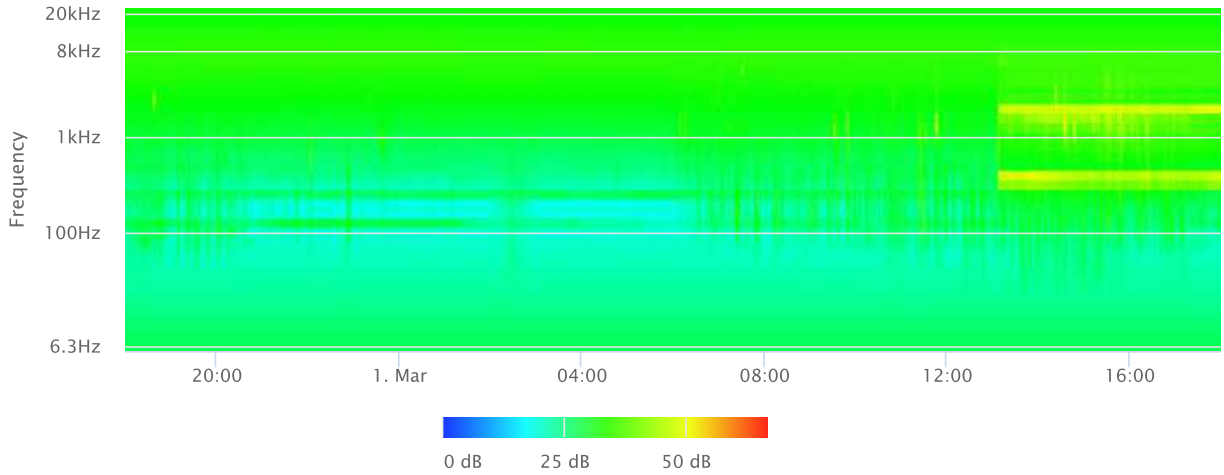
OBA 1/1 Lmax



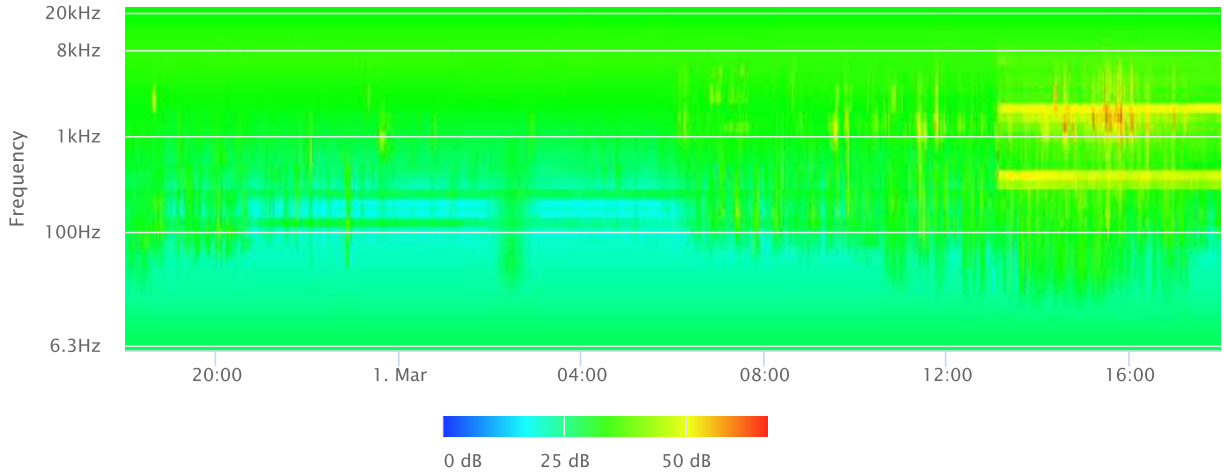
OBA 1/1 Lmin



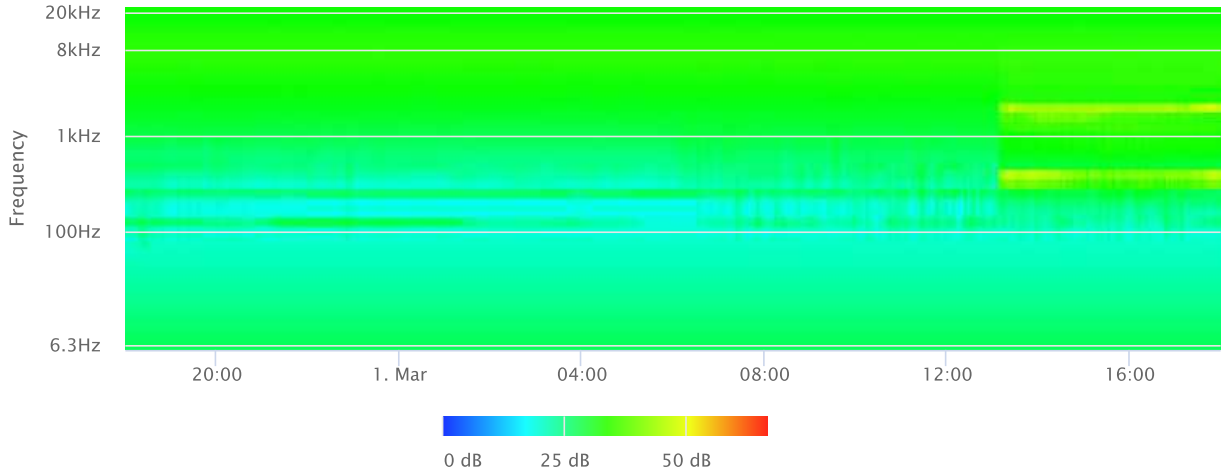
OBA 1/3 Leq



OBA 1/3 Lmax



OBA 1/3 Lmin


20kHz
8kHz
1kHz
100Hz
6.3Hz
Frequency
20:00
1. Mar
04:00
08:00
12:00
16:00
0 dB
25 dB
50 dB

APPENDIX D

CONSTRUCTION NOISE MODELING

Carancho Pump Station - Construction Noise Levels at 50 Feet

Construction Phase Equipment Item	# of Items	Item Lmax at 50 feet, dBA[1]	Distance to Receptor[2]	Item Usage Percent	Usage Factor	Dist. Correction dB	Usage Adj. dB	Receptor Item Lmax, dBA	Receptor Item Leq, dBA
Mobilization									
Tractors/Loaders/Backhoes	1	84	50	40	0.40	0.0	-4.0	84.0	80.0
Off-Highway Trucks	2	76	50	50	1.00	0.0	0.0	76.0	76.0
								Log Sum	81.5
Demolition									
Excavators	1	81	50	40	0.4	0.0	-4.0	81.0	77.0
Tractors/Loaders/Backhoes	2	84	50	40	0.80	0.0	-1.0	84.0	83.0
Scrapers	2	84	50	40	0.80	0.0	-1.0	84.0	83.0
Dump Truck	2	76	50	40	0.80	0.0	-1.0	76.0	75.0
Service Trucks (Off-Highway Trucks)	2	76	50	50	1.00	0.0	0.0	76.0	76.0
Cranes	1	81	50	16	0.16	0.0	-8.0	81.0	73.0
								Log Sum	87.4
Site Preparation & Pipeline Installation									
Excavators	1	81	50	40	0.4	0.0	-4.0	81.0	77.0
Tractors/Loaders/Backhoes	1	84	50	40	0.40	0.0	-4.0	84.0	80.0
Rubber Tired Dozers	1	82	50	40	0.40	0.0	-4.0	82.0	78.0
Cement and Mortar Mixers (Concrete Mixer T	1	79	50	40	0.40	0.0	-4.0	79.0	75.0
Service Trucks (Off-Highway Trucks)	2	76	50	50	1.00	0.0	0.0	76.0	76.0
Pumps	4	81	50	16	0.64	0.0	-1.9	81.0	79.1
Skid Steer Loaders (Front End Loader)	2	79	50	40	0.80	0.0	-1.0	79.0	78.0
Other Material Handling Equipment	1	84	50	40	0.40	0.0	-4.0	84.0	80.0
								Log Sum	87.2
Pump Station Construction									
Excavators	1	81	50	40	0.4	0.0	-4.0	81.0	77.0
Cranes	1	81	50	16	0.16	0.0	-8.0	81.0	73.0
Service Trucks (Off-Highway Trucks)	2	76	50	50	1.00	0.0	0.0	76.0	76.0
Paving Equpment	1	77	50	50	0.50	0.0	-3.0	77.0	74.0
								Log Sum	81.3
Final Site Work									
Pavers	1	81	50	40	0.4	0.0	-4.0	81.0	77.0
Paving Equpment	1	77	50	50	0.50	0.0	-3.0	77.0	74.0
Rollers	1	80	50	20	0.20	0.0	-7.0	80.0	73.0
								Log Sum	79.8

Notes:

(1) Source: Referenced noise levels from the Federal Transit Administration (FTA) Transit Noise and Vibration Impact Assessment Manual (September 2018) and the FHWA Roadway Construction Noise Model User's Guide (January 2006)

(2) Distance to receptor calculated from center of site. Construction noise projected from the center of the project site work area to nearest sensitive use (property line).

Carancho Pump Station - Construction Noise Levels at Residential to Southeast (43650 El Calamar Road, Temecula)

Construction Phase Equipment Item	# of Items	Item Lmax at 50 feet, dBA[1]	Distance to Receptor[2]	Item Usage Percent	Usage Factor	Dist. Correction dB	Usage Adj. dB	Receptor Item Lmax, dBA	Receptor Item Leq, dBA
Mobilization									
Tractors/Loaders/Backhoes	1	84	270	40	0.40	-14.6	-4.0	69.4	65.4
Off-Highway Trucks	2	76	270	50	1.00	-14.6	0.0	61.4	61.4
								Log Sum	66.8
Demolition									
Excavators	1	81	270	40	0.4	-14.6	-4.0	66.4	62.4
Tractors/Loaders/Backhoes	2	84	270	40	0.80	-14.6	-1.0	69.4	68.4
Scrapers	2	84	270	40	0.80	-14.6	-1.0	69.4	68.4
Dump Truck	2	76	270	40	0.80	-14.6	-1.0	61.4	60.4
Service Trucks (Off-Highway Trucks)	2	76	270	50	1.00	-14.6	0.0	61.4	61.4
Cranes	1	81	270	16	0.16	-14.6	-8.0	66.4	58.4
								Log Sum	72.7
Site Preparation & Pipeline Installation									
Excavators	1	81	270	40	0.4	-14.6	-4.0	66.4	62.4
Tractors/Loaders/Backhoes	1	84	270	40	0.40	-14.6	-4.0	69.4	65.4
Rubber Tired Dozers	1	82	270	40	0.40	-14.6	-4.0	67.4	63.4
Cement and Mortar Mixers (Concrete Mixer T	1	79	270	40	0.40	-14.6	-4.0	64.4	60.4
Service Trucks (Off-Highway Trucks)	2	76	270	50	1.00	-14.6	0.0	61.4	61.4
Pumps	4	81	270	16	0.64	-14.6	-1.9	66.4	64.4
Skid Steer Loaders (Front End Loader)	2	79	270	40	0.80	-14.6	-1.0	64.4	63.4
Other Material Handling Equipment	1	84	270	40	0.40	-14.6	-4.0	69.4	65.4
								Log Sum	72.6
Pump Station Construction									
Excavators	1	81	270	40	0.4	-14.6	-4.0	66.4	62.4
Cranes	1	81	270	16	0.16	-14.6	-8.0	66.4	58.4
Service Trucks (Off-Highway Trucks)	2	76	270	50	1.00	-14.6	0.0	61.4	61.4
Paving Equpment	1	77	270	50	0.50	-14.6	-3.0	62.4	59.3
								Log Sum	66.7
Final Site Work									
Pavers	1	81	270	40	0.4	-14.6	-4.0	66.4	62.4
Paving Equpment	1	77	270	50	0.50	-14.6	-3.0	62.4	59.3
Rollers	1	80	270	20	0.20	-14.6	-7.0	65.4	58.4
								Log Sum	65.1

Notes:

(1) Source: Referenced noise levels from the Federal Transit Administration (FTA) Transit Noise and Vibration Impact Assessment Manual (September 2018) and the FHWA Roadway Construction Noise Model User's Guide (January 2006)

(2) Distance to receptor calculated from center of site. Construction noise projected from the center of the project site work area to nearest sensitive use (property line).

Carancho Pump Station - Construction Noise Levels at Residential to North/Northwest (443625 Via Escalon, Temecula)

Construction Phase Equipment Item	# of Items	Item Lmax at 50 feet, dBA[1]	Distance to Receptor[2]	Item Usage Percent	Usage Factor	Dist. Correction dB	Usage Adj. dB	Receptor Item Lmax, dBA	Receptor Item Leq, dBA
Mobilization									
Tractors/Loaders/Backhoes	1	84	239	40	0.40	-13.6	-4.0	70.4	66.4
Off-Highway Trucks	2	76	239	50	1.00	-13.6	0.0	62.4	62.4
								Log Sum	67.9
Demolition									
Excavators	1	81	239	40	0.4	-13.6	-4.0	67.4	63.4
Tractors/Loaders/Backhoes	2	84	239	40	0.80	-13.6	-1.0	70.4	69.4
Scrapers	2	84	239	40	0.80	-13.6	-1.0	70.4	69.4
Dump Truck	2	76	239	40	0.80	-13.6	-1.0	62.4	61.4
Service Trucks (Off-Highway Trucks)	2	76	239	50	1.00	-13.6	0.0	62.4	62.4
Cranes	1	81	239	16	0.16	-13.6	-8.0	67.4	59.5
								Log Sum	73.8
Site Preparation & Pipeline Installation									
Excavators	1	81	239	40	0.4	-13.6	-4.0	67.4	63.4
Tractors/Loaders/Backhoes	1	84	239	40	0.40	-13.6	-4.0	70.4	66.4
Rubber Tired Dozers	1	82	239	40	0.40	-13.6	-4.0	68.4	64.4
Cement and Mortar Mixers (Concrete Mixer T	1	79	239	40	0.40	-13.6	-4.0	65.4	61.4
Service Trucks (Off-Highway Trucks)	2	76	239	50	1.00	-13.6	0.0	62.4	62.4
Pumps	4	81	239	16	0.64	-13.6	-1.9	67.4	65.5
Skid Steer Loaders (Front End Loader)	2	79	239	40	0.80	-13.6	-1.0	65.4	64.4
Other Material Handling Equipment	1	84	239	40	0.40	-13.6	-4.0	70.4	66.4
								Log Sum	73.7
Pump Station Construction									
Excavators	1	81	239	40	0.4	-13.6	-4.0	67.4	63.4
Cranes	1	81	239	16	0.16	-13.6	-8.0	67.4	59.5
Service Trucks (Off-Highway Trucks)	2	76	239	50	1.00	-13.6	0.0	62.4	62.4
Paving Equpment	1	77	239	50	0.50	-13.6	-3.0	63.4	60.4
								Log Sum	67.7
Final Site Work									
Pavers	1	81	239	40	0.4	-13.6	-4.0	67.4	63.4
Paving Equpment	1	77	239	50	0.50	-13.6	-3.0	63.4	60.4
Rollers	1	80	239	20	0.20	-13.6	-7.0	66.4	59.4
								Log Sum	66.2

Notes:

(1) Source: Referenced noise levels from the Federal Transit Administration (FTA) Transit Noise and Vibration Impact Assessment Manual (September 2018) and the FHWA Roadway Construction Noise Model User's Guide (January 2006)

(2) Distance to receptor calculated from center of site. Construction noise projected from the center of the project site work area to nearest sensitive use (property line).

Carancho Pump Station - Construction Noise Levels at Vacant Agricultural Land to North

Construction Phase Equipment Item	# of Items	Item Lmax at 50 feet, dBA[1]	Distance to Receptor[2]	Item Usage Percent	Usage Factor	Dist. Correction dB	Usage Adj. dB	Receptor Item Lmax, dBA	Receptor Item Leq, dBA
Mobilization									
Tractors/Loaders/Backhoes	1	84	300	40	0.40	-15.6	-4.0	68.4	64.5
Off-Highway Trucks	2	76	300	50	1.00	-15.6	0.0	60.4	60.4
								Log Sum	65.9
Demolition									
Excavators	1	81	300	40	0.4	-15.6	-4.0	65.4	61.5
Tractors/Loaders/Backhoes	2	84	300	40	0.80	-15.6	-1.0	68.4	67.5
Scrapers	2	84	300	40	0.80	-15.6	-1.0	68.4	67.5
Dump Truck	2	76	300	40	0.80	-15.6	-1.0	60.4	59.5
Service Trucks (Off-Highway Trucks)	2	76	300	50	1.00	-15.6	0.0	60.4	60.4
Cranes	1	81	300	16	0.16	-15.6	-8.0	65.4	57.5
								Log Sum	71.8
Site Preparation & Pipeline Installation									
Excavators	1	81	300	40	0.4	-15.6	-4.0	65.4	61.5
Tractors/Loaders/Backhoes	1	84	300	40	0.40	-15.6	-4.0	68.4	64.5
Rubber Tired Dozers	1	82	300	40	0.40	-15.6	-4.0	66.4	62.5
Cement and Mortar Mixers (Concrete Mixer T	1	79	300	40	0.40	-15.6	-4.0	63.4	59.5
Service Trucks (Off-Highway Trucks)	2	76	300	50	1.00	-15.6	0.0	60.4	60.4
Pumps	4	81	300	16	0.64	-15.6	-1.9	65.4	63.5
Skid Steer Loaders (Front End Loader)	2	79	300	40	0.80	-15.6	-1.0	63.4	62.5
Other Material Handling Equipment	1	84	300	40	0.40	-15.6	-4.0	68.4	64.5
								Log Sum	71.7
Pump Station Construction									
Excavators	1	81	300	40	0.4	-15.6	-4.0	65.4	61.5
Cranes	1	81	300	16	0.16	-15.6	-8.0	65.4	57.5
Service Trucks (Off-Highway Trucks)	2	76	300	50	1.00	-15.6	0.0	60.4	60.4
Paving Equpment	1	77	300	50	0.50	-15.6	-3.0	61.4	58.4
								Log Sum	65.8
Final Site Work									
Pavers	1	81	300	40	0.4	-15.6	-4.0	65.4	61.5
Paving Equpment	1	77	300	50	0.50	-15.6	-3.0	61.4	58.4
Rollers	1	80	300	20	0.20	-15.6	-7.0	64.4	57.4
								Log Sum	64.2

Notes:

(1) Source: Referenced noise levels from the Federal Transit Administration (FTA) Transit Noise and Vibration Impact Assessment Manual (September 2018) and the FHWA Roadway Construction Noise Model User's Guide (January 2006)

(2) Distance to receptor calculated from center of site. Construction noise projected from the center of the project site work area to nearest sensitive use (property line).

Carancho Pump Station - Construction Noise Levels at Vacant Agricultural Land to East/Northeast

Construction Phase Equipment Item	# of Items	Item Lmax at 50 feet, dBA[1]	Distance to Receptor[2]	Item Usage Percent	Usage Factor	Dist. Correction dB	Usage Adj. dB	Receptor Item Lmax, dBA	Receptor Item Leq, dBA
Mobilization									
Tractors/Loaders/Backhoes	1	84	346	40	0.40	-16.8	-4.0	67.2	63.2
Off-Highway Trucks	2	76	346	50	1.00	-16.8	0.0	59.2	59.2
								Log Sum	64.7
Demolition									
Excavators	1	81	346	40	0.4	-16.8	-4.0	64.2	60.2
Tractors/Loaders/Backhoes	2	84	346	40	0.80	-16.8	-1.0	67.2	66.2
Scrapers	2	84	346	40	0.80	-16.8	-1.0	67.2	66.2
Dump Truck	2	76	346	40	0.80	-16.8	-1.0	59.2	58.2
Service Trucks (Off-Highway Trucks)	2	76	346	50	1.00	-16.8	0.0	59.2	59.2
Cranes	1	81	346	16	0.16	-16.8	-8.0	64.2	56.2
								Log Sum	70.6
Site Preparation & Pipeline Installation									
Excavators	1	81	346	40	0.4	-16.8	-4.0	64.2	60.2
Tractors/Loaders/Backhoes	1	84	346	40	0.40	-16.8	-4.0	67.2	63.2
Rubber Tired Dozers	1	82	346	40	0.40	-16.8	-4.0	65.2	61.2
Cement and Mortar Mixers (Concrete Mixer T	1	79	346	40	0.40	-16.8	-4.0	62.2	58.2
Service Trucks (Off-Highway Trucks)	2	76	346	50	1.00	-16.8	0.0	59.2	59.2
Pumps	4	81	346	16	0.64	-16.8	-1.9	64.2	62.3
Skid Steer Loaders (Front End Loader)	2	79	346	40	0.80	-16.8	-1.0	62.2	61.2
Other Material Handling Equipment	1	84	346	40	0.40	-16.8	-4.0	67.2	63.2
								Log Sum	70.4
Pump Station Construction									
Excavators	1	81	346	40	0.4	-16.8	-4.0	64.2	60.2
Cranes	1	81	346	16	0.16	-16.8	-8.0	64.2	56.2
Service Trucks (Off-Highway Trucks)	2	76	346	50	1.00	-16.8	0.0	59.2	59.2
Paving Equpment	1	77	346	50	0.50	-16.8	-3.0	60.2	57.2
								Log Sum	64.5
Final Site Work									
Pavers	1	81	346	40	0.4	-16.8	-4.0	64.2	60.2
Paving Equpment	1	77	346	50	0.50	-16.8	-3.0	60.2	57.2
Rollers	1	80	346	20	0.20	-16.8	-7.0	63.2	56.2
								Log Sum	63.0

Notes:

(1) Source: Referenced noise levels from the Federal Transit Administration (FTA) Transit Noise and Vibration Impact Assessment Manual (September 2018) and the FHWA Roadway Construction Noise Model User's Guide (January 2006)

(2) Distance to receptor calculated from center of site. Construction noise projected from the center of the project site work area to nearest sensitive use (property line).

Carancho Pump Station - Construction Noise Levels at Vacant Agricultural Land to South

Construction Phase Equipment Item	# of Items	Item Lmax at 50 feet, dBA[1]	Distance to Receptor[2]	Item Usage Percent	Usage Factor	Dist. Correction dB	Usage Adj. dB	Receptor Item Lmax, dBA	Receptor Item Leq, dBA
Mobilization									
Tractors/Loaders/Backhoes	1	84	242	40	0.40	-13.7	-4.0	70.3	66.3
Off-Highway Trucks	2	76	242	50	1.00	-13.7	0.0	62.3	62.3
								Log Sum	67.8
Demolition									
Excavators	1	81	242	40	0.4	-13.7	-4.0	67.3	63.3
Tractors/Loaders/Backhoes	2	84	242	40	0.80	-13.7	-1.0	70.3	69.3
Scrapers	2	84	242	40	0.80	-13.7	-1.0	70.3	69.3
Dump Truck	2	76	242	40	0.80	-13.7	-1.0	62.3	61.3
Service Trucks (Off-Highway Trucks)	2	76	242	50	1.00	-13.7	0.0	62.3	62.3
Cranes	1	81	242	16	0.16	-13.7	-8.0	67.3	59.3
								Log Sum	73.7
Site Preparation & Pipeline Installation									
Excavators	1	81	242	40	0.4	-13.7	-4.0	67.3	63.3
Tractors/Loaders/Backhoes	1	84	242	40	0.40	-13.7	-4.0	70.3	66.3
Rubber Tired Dozers	1	82	242	40	0.40	-13.7	-4.0	68.3	64.3
Cement and Mortar Mixers (Concrete Mixer T	1	79	242	40	0.40	-13.7	-4.0	65.3	61.3
Service Trucks (Off-Highway Trucks)	2	76	242	50	1.00	-13.7	0.0	62.3	62.3
Pumps	4	81	242	16	0.64	-13.7	-1.9	67.3	65.4
Skid Steer Loaders (Front End Loader)	2	79	242	40	0.80	-13.7	-1.0	65.3	64.3
Other Material Handling Equipment	1	84	242	40	0.40	-13.7	-4.0	70.3	66.3
								Log Sum	73.5
Pump Station Construction									
Excavators	1	81	242	40	0.4	-13.7	-4.0	67.3	63.3
Cranes	1	81	242	16	0.16	-13.7	-8.0	67.3	59.3
Service Trucks (Off-Highway Trucks)	2	76	242	50	1.00	-13.7	0.0	62.3	62.3
Paving Equpment	1	77	242	50	0.50	-13.7	-3.0	63.3	60.3
								Log Sum	67.6
Final Site Work									
Pavers	1	81	242	40	0.4	-13.7	-4.0	67.3	63.3
Paving Equpment	1	77	242	50	0.50	-13.7	-3.0	63.3	60.3
Rollers	1	80	242	20	0.20	-13.7	-7.0	66.3	59.3
								Log Sum	66.1

Notes:

(1) Source: Referenced noise levels from the Federal Transit Administration (FTA) Transit Noise and Vibration Impact Assessment Manual (September 2018) and the FHWA Roadway Construction Noise Model User's Guide (January 2006)

(2) Distance to receptor calculated from center of site. Construction noise projected from the center of the project site work area to nearest sensitive use (property line).

APPENDIX E

SOUNDPLAN WORKSHEETS

Noise emissions of industry sources

Source name	Reference	Level			Corrections		
		Day	Evening	Night	Cwall	CI	CT
		dB(A)	dB(A)	dB(A)	dB	dB	dB
Pumps (3)	Lw/unit	96.8	-	-	-	-	-
Generator Enclosure1	Lw/	72.3	-	-	3.0	-	-
Generator Enclosure2	Lw/	72.3	-	-	3.0	-	-
Generator Enclosure3	Lw/	72.3	-	-	3.0	-	-
Generator Enclosure4	Lw/	72.3	-	-	3.0	-	-
Generator Enclosure5	Lw/	72.3	-	-	-	-	-

Receiver list

No.	Receiver name	Building side	Floor	Limit Day dB(A)	Level Day dB(A)	Conflict Day dB
1	2	-	EG	-	50.6	-
2		-	EG	-	39.6	-
3	3	-	EG	-	36.0	-

Contribution levels of the receivers

Source name		Traffic lane	Level Day dB(A)
2	EG		50.6
Generator Enclosure1		-	21.6
Generator Enclosure2		-	18.1
Generator Enclosure3		-	30.4
Generator Enclosure4		-	28.1
Generator Enclosure5		-	28.7
Pumps (3)		-	50.5
2	EG		39.6
Generator Enclosure1		-	36.3
Generator Enclosure2		-	32.8
Generator Enclosure3		-	23.1
Generator Enclosure4		-	29.6
Generator Enclosure5		-	29.0
Pumps (3)		-	30.4
3	EG		36.0
Generator Enclosure1		-	14.8
Generator Enclosure2		-	23.9
Generator Enclosure3		-	27.2
Generator Enclosure4		-	11.8
Generator Enclosure5		-	23.0
Pumps (3)		-	34.7

Noise emissions of industry sources

Source name	Reference	Level			Corrections		
		Day	Evening	Night	Cwall	CI	CT
		dB(A)	dB(A)	dB(A)	dB	dB	dB
Pumps (3)	Lw/unit	96.8	-	-	-	-	-

Contribution levels of the receivers

Source name		Traffic lane	Level Day dB(A)
2	EG		50.5
Pumps (3)		-	50.5
2	EG		30.4
Pumps (3)		-	30.4
3	EG		34.7
Pumps (3)		-	34.7

Contribution levels of the receivers

Source name		Traffic lane	Level Day dB(A)
2	EG		50.5
Pumps (3)		-	50.5
2	EG		30.4
Pumps (3)		-	30.4
3	EG		34.7
Pumps (3)		-	34.7

APPENDIX F

VIBRATION WORKSHEETS

GROUNDBORNE VIBRATION ANALYSIS			
Project:	19704 Carancho Pump Station		Date: 3/12/24
Source:	Vibratory Roller		
Scenario:	Unmitigated		
Location:	Residential to Southeast		
Address:	43650 El Calamar Road, Temecula		
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 =	277.00	Distance from Equipment to Receiver (ft)	
n =	1.50	Vibration attenuation rate through the ground	
Note: Based on reference equations from the Transportation and Construction Vibration Guidance Manual, California Department of Transportation, April 2020, pg 37.			
RESULTS			
PPV =	0.006	IN/SEC	OUTPUT IN BLUE

GROUNDBORNE VIBRATION ANALYSIS			
Project:	19704 Carancho Pump Station		Date: 3/12/24
Source:	Large Bulldozer		
Scenario:	Unmitigated		
Location:	Residential to Southeast		
Address:	43650 El Calamar Road, Temecula		
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 =	277.00	Distance from Equipment to Receiver (ft)	
n =	1.50	Vibration attenuation rate through the ground	
Note: Based on reference equations from the Transportation and Construction Vibration Guidance Manual, California Department of Transportation, April 2020, pg 37.			
RESULTS			
PPV =	0.002	IN/SEC	OUTPUT IN BLUE

GROUNDBORNE VIBRATION ANALYSIS			
Project:	19704 Carancho Pump Station		Date: 3/12/24
Source:	Vibratory Roller		
Scenario:	Unmitigated		
Location:	Residential to Northwest		
Address:	43625 Via Escalon, Temecula		
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 =	593.00	Distance from Equipment to Receiver (ft)	
n =	1.50	Vibration attenuation rate through the ground	
Note: Based on reference equations from the Transportation and Construction Vibration Guidance Manual, California Department of Transportation, April 2020, pg 37.			
RESULTS			
PPV =	0.002	IN/SEC	OUTPUT IN BLUE

GROUNDBORNE VIBRATION ANALYSIS			
Project:	19704 Carancho Pump Station		Date: 3/12/24
Source:	Large Bulldozer		
Scenario:	Unmitigated		
Location:	Residential to Northwest		
Address:	43625 Via Escalon, Temecula		
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 =	593.00	Distance from Equipment to Receiver (ft)	
n =	1.50	Vibration attenuation rate through the ground	
Note: Based on reference equations from the Transportation and Construction Vibration Guidance Manual, California Department of Transportation, April 2020, pg 37.			
RESULTS			
PPV =	0.001	IN/SEC	OUTPUT IN BLUE

GROUNDBORNE VIBRATION ANALYSIS			
Project:	19704 Carancho Pump Station		Date: 3/12/24
Source:	Vibratory Roller		
Scenario:	Unmitigated		
Location:	Annoyance Threshold		
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 =	41.00	Distance from Equipment to Receiver (ft)	
n =	1.50	Vibration attenuation rate through the ground	
Note: Based on reference equations from the Transportation and Construction Vibration Guidance Manual, California Department of Transportation, April 2020, pg 37.			
RESULTS			
PPV =	0.100	IN/SEC	OUTPUT IN BLUE

GROUNDBORNE VIBRATION ANALYSIS			
Project:	19704 Carancho Pump Station		Date: 3/12/24
Source:	Large Bulldozer		
Scenario:	Unmitigated		
Location:	Annoyance Threshold		
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 =	24.00	Distance from Equipment to Receiver (ft)	
n =	1.50	Vibration attenuation rate through the ground	
Note: Based on reference equations from the Transportation and Construction Vibration Guidance Manual, California Department of Transportation, April 2020, pg 37.			
RESULTS			
PPV =	0.095	IN/SEC	OUTPUT IN BLUE



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