APPENDIX B

AIR QUALITY AND GREENHOUSE GAS ASSESSMENT

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AIR QUALITY, ENERGY, AND GREENHOUSE GAS EMISSIONS IMPACT ANALYSIS

PORTUGUESE BEND LANDSLIDE REMEDIATION PROJECT

CITY OF RANCHO PALOS VERDES

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ACRONYMS AND ABBREVIATIONS

AB	Assembly Bill
AQMP	Air Quality Management Plan
BACT	Best Available Control Technology
BSFC	Brake Specific Fuel Consumption
CAAQS	California Ambient Air Quality Standards
CalEEMod	California Emissions Estimator Model
CalEPA	California Environmental Protection Agency
CAPCOA	California Air Pollution Control Officers Association
CARB	California Air Resources Board
CEC	California Energy Commission
CEQA	California Environmental Quality Act
CFCs	chlorofluorocarbons
Cf_4	tetrafluoromethane
C_2F_6	hexafluoroethane
CH_4	Methane
City	City of Rancho Palos Verdes
CO	Carbon monoxide
CO_2	Carbon dioxide
CO_2e	Carbon dioxide equivalent
DPM	Diesel particulate matter
EPA	Environmental Protection Agency
ºF	Fahrenheit
FTIP	Federal Transportation Improvement Program
GHG	Greenhouse gas
GWP	Global warming potential
HAP	Hazardous Air Pollutants
HFCs	Hydrofluorocarbons
IPCC	International Panel on Climate Change
kWhr	kilowatt-hour
LCFS	Low Carbon Fuel Standard
LST	Localized Significant Thresholds

MATES	Multiple Air Toxics Exposure Study
$MMTCO_2e$	Million metric tons of carbon dioxide equivalent
MPO	Metropolitan Planning Organization
MWh	Megawatt-hour
NAAQS	National Ambient Air Quality Standards
NO_x	Nitrogen oxides
NO_2	Nitrogen dioxide
OPR	Office of Planning and Research
Pfc	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
PPM	Parts per million
PPB	Parts per billion
PPT	Parts per trillion
RSP	Renaissance Specific Plan
RTIP	Regional Transportation Improvement Plan
RTP/SCS	Regional Transportation Plan/Sustainable Communities Strategy
SB	Senate Bill
SCAQMD	South Coast Air Quality Management District
SCAG	Southern California Association of Governments
SF_6	Sulfur Hexafluoride
SIP	State Implementation Plan
SO_x	Sulfur oxides
TAC	Toxic air contaminants
UNFCCC	United Nations' Framework Convention on Climate Change
VOC	Volatile organic compounds

1.0 INTRODUCTION

1.1 Purpose of Analysis and Study Objectives

This Air Quality, Energy, and Greenhouse Gas (GHG) Emissions Impact Analysis has been completed to determine the air quality, energy, and GHG emissions impacts associated with the proposed Portuguese Bend Landslide Remediation project (proposed project). The following is provided in this report:

- A description of the proposed project;
- A description of the criteria pollutants and GHGs;
- A description of the air quality regulatory framework;
- A description of the energy conservation regulatory framework;
- A description of the GHG emissions regulatory framework;
- A description of the atmospheric setting;
- A description of the air quality, energy, and GHG emissions thresholds including the California Environmental Quality Act (CEQA) significance thresholds;
- An analysis of the conformity of the proposed project with the South Coast Air Quality Management District (SCAQMD) Air Quality Management Plan (AQMP);
- A quantitative analysis of the short-term construction related air quality impacts;
- A qualitative diesel emissions health risk assessment (HRA);
- A qualitative analysis of odor emissions;
- An analysis of the short-term energy of energy resources;
- An analysis of the conformity of the proposed project with the applicable energy reduction plans and policies;
- A quantitative analysis of the short-term construction GHG emissions; and
- An analysis of the conformity of the proposed project with the applicable GHG reduction plans and policies.

1.2 Project Location and Study Area

The project site is located along the south section of the Palos Verdes Peninsula within the City of Rancho Palos Verdes (City). The project site consists of approximately 206 acres within the landslide complex, however the overall area of land which contributes to the landslide instability is much larger, at approximately 750 acres in size. The project site includes approximately 104 acres of land located within the City-owned Palos Verdes Nature Preserve (Preserve) and specifically within the Portuguese Bend and Abalone Cove Reserves.

Surrounding the project site are residential uses that include the Portuguese Bend Beach Club to the south, the Portuguese Bend Community Association to the west, and the Seaview neighborhood to the east. East of the project site is Klondike Canyon and directly north is the Portuguese Bend Reserve followed by additional residential uses. The southern portion of the project site can be accessed via Yacht

Harbor Drive/Seawall Road, a private road within the Portuguese Bend Beach Club community. The Pacific Ocean is located to the south of the project site. Several residences exist adjacent to the northwestern boundary of the project site. Many neighborhoods are affected by this landslide such as the Portuguese Bend Community Association and Portuguese Bend Beach Club. The project study area is shown in Figure 1.

1.3 Project Description

The proposed project is intended to minimize movement in the existing landslide area by implementing a series of recommended geotechnical engineering solutions that will include relief of artesian pressure below the landslide basal surface and minimize storm water infiltration into the subsurface. Thus, the proposed improvements would include infilling surface fractures to reduce the infiltration of surface water into the ground, constructing surface swales and retention areas to collect, slow down, and convey surface water to the ocean, and installing a subsurface water extraction system (hydraugers) by means of directional drilling to alleviate artesian pressure and also lower groundwater levels within landslide mass. The proposed project consists of the following three construction components.

- Construction Component I: Surface fracturing infilling;
- Construction Component II: Surface water improvements; and
- Construction Component III: Hydraugers.

Each component could be constructed in any order and the timing of each would depend on a number of factors such as funding, permitting, etc. The overall staging, access and hydrauger locations are shown in Figure 1. Although the project site includes approximately 104 acres of land, it is anticipated that permanent improvements would be located on 15.08 acres of land and an additional 22 acres would be temporarily impacted during construction activities. For a total of 37.08 acres that would be potentially disturbed as part of the proposed project. Descriptions of each construction component are provided below.

Construction Component I: Surface Fracture Infilling

Multiple fractures are present, and most are observable throughout the project site. A surface fracture can be defined as a long, narrow crack opening observable at the ground surface. Surface fractures are induced by landslide movement and once formed can be extended and eroded by stormwater runoff. They can be hazardous to people living on or near the affected surfaces and damaging to property and infrastructure, as well as to the general public visiting the area and utilizing the trails in the Preserve. The existing surface fractures within the project site are a few feet wide and some are as deep as 15 or more feet. These fractures collect stormwater runoff that discharges into the ground. The stormwater runoff enters the fractures where it percolates into the ground and becomes a part of the groundwater which exacerbates landslide movement. The surface fracture infilling will control stormwater runoff infiltrating the ground and will help in solving one aspect of the landslide movement.

The fractures would be infilled with appropriate materials such as bentonite chips. This type of infill has been used successfully at other sites impacted by landslides such as cut slopes at the Sunshine Canyon Landfill in Los Angeles. A key advantage of this material is its ability to deform and maintain a seal if a crack continues to develop after infilling. After the initial fracture infilling event, periodic monitoring of the filled fractures will be performed to observe if repaired fractures open in the future at these locations due to ongoing landslide movement. Fractures identified during the field periodic monitoring inspection

visits should be infilled again if needed as part of post-construction maintenance that will be implemented by the City.

Construction Component II: Surface Water Improvements

The proposed project would include installing new surface water improvements and refurbishing existing pipes to minimize soil erosion loss and stormwater ponding and infiltration that contributes to landslide movement. These improvements are described below:

- Engineered Swales: Swales are designed to manage surface stormwater runoff and can be described as shallow channels with gently sloping sides. The Proposed Project would install a network of engineered swales that extend south from Burma Road and traverse through the Project Site. The engineered swales would convey surface runoff from the northern limits of the Project Site, connecting to a new flow reduction area, and travel south underneath Palos Verdes Drive South to the Pacific Ocean. The surface swales would be designed to be visually complimentary to the surrounding setting of the Preserve and lined with context-sensitive vegetation instead of concrete. The designs will be consistent with restoration requirements outlined in the City's Natural Community Conservation Plan and Habitat Conservation Plan (NCCP/HCP) and other resource/regulatory review requirements.
- Flow Reduction Area: A flow reduction area is a detention basin that helps manage the flow of excess stormwater runoff. These areas allow large flows of water to enter but limit the outflow through a small opening. The Proposed Project would install one permanent bentonite-lined flow detention basin that would be approximately 10 acres in size. It would be located approximately 250 feet north of Palos Verdes Drive South within the project limits and connect to the engineered surface swales. The flow reduction area would primarily prevent percolation but will release stormwater at a gradual rate slowing the flow and allowing fine particles of soil to settle within the flow reduction area resulting in sediment-free water to exit the flow reduction area, routing the water through an existing 60-inch pipe that runs under Palos Verdes Drive South, before conveying the water into the Pacific Ocean. It will be designed to use gravity flow only and no pumps are planned. It is anticipated that stormwater would accumulate in the detention basin only for a period of several hours or less than one day once rain stops. Due to its short duration, the additional weight would not have a substantial effect on landslide stability, however regular maintenance would be needed to remove fine soil particles.
- Underground pipes: Installation, replacement, and refurbishment of underground piping to properly convey stormwater runoff will be required throughout the Project Site. This includes installing a new durable 36-inch-diameter pipe located below Burma Road; replacing an existing and deteriorating 36-inch-diameter plastic pipe located south of Palos Verdes Drive South; and refurbishing an existing 60-inch-diameter pipe below Palos Verdes Drive South. The intent of this environmentally sensitive solution is to utilize the footprint of the existing pipes and adding pipes with the least impact on the affected areas.

Construction Component III: Hydraugers

A groundwater extraction system of pipes, or "hydraugers", would be installed to alleviate artesian water pressure below the PBL which is believed to be the main contributor to landslide movement. Where possible, hydraugers would be installed below the slide plane (to avoid shearing off by landslide movement). Water will exit by controlled pressure flow and/or gravity flow. It will be routed through a storm drain system into the Pacific Ocean. The hydraugers will be installed sequentially, in fan-shaped

patterns. They will extend within City-owned right-of-way or property. The ultimate size of hydraugers would depend on field conditions (groundwater yield); Depending on site conditions, hydrauger length might reach up to 1,200 feet with a diameter of up to 6 inches. The hydrauger depth will vary, with deepest points reaching up to 400 feet below ground surface.

All five (5) hydrauger systems will initially include above ground water storage tanks. Depending on water quality, including sediment load, these tanks will be either blended into the environment or removed so water directly discharges to the ocean or to the sewer system. The hydrauger systems will be constructed in three sub-phases. The sub-phases generally consist of the following:

(i) Preparatory work, including commissioning of more frequent monitoring of landslide movement, installation of vibrating wire piezometers, and development/implementation of remote sensing system. This step is necessary to adequately monitor the progress of landslide mitigation and to develop and implement corrections, if required. Duration: 6 months.

(ii) Grading of access points and work platforms for up-gradient hydraugers (hydraugers at the top of PBL). Installation of up-gradient hydraugers using horizontal drilling technique. Monitoring of the impact of this system on the overall performance of the PBL. If successful, this system will prevent buildup of artesian pressure at the toe of the PBL, i.e., will minimize the impact of the most destabilizing force on the landslide. Duration: 1.5 years (including 1 year of monitoring following the construction).

(iii) Grading of access points and work platforms for down-gradient hydraugers (hydraugers at the bottom of PBL). Installation of these hydraugers will be directional (i.e., they will be drilled below the sliding plane to relieve artesian pressure at the point it acts on the PBL. Duration 1.5 years (including 1 year of monitoring). Expected to occur concurrently with (ii), depending on funding.

The pace and sequence of construction within each sub-phase is likely to require adjustment based on field observations. An attempt will be made to use the existing access routes for construction equipment, including for drilling rigs. Minimal grading, if any, will be required for placement of aboveground water storage tanks. Drilling mud will be collected and disposed of offsite. Flow (and release water pressure at downstream) from hydraugers will be controlled by (pressure-control) valves. Collected water will be conveyed to tanks through 4-inch diameter pipes. Both horizontal and directional drilling operations will last 1 – 2 weeks. Depending on the water yield, drillers may return to ream (i.e., increase diameter) of the hydraugers, or properly close the drilling location(s) if achieved yield is deemed too low.

Construction Timing

It is anticipated that the duration of Construction Component I – Surface Fracturing Infilling would consist of up to six months of active construction that would be followed by 6 months of monitoring. Construction Component II – Surface Water Improvements would consist of a year of active construction. Construction Component III – Hydraugers would consist of 6 months of active construction that would be followed by a year of monitoring for a total duration of 1.5 years. Construction of Components I, II, and III, including monitoring of vibrating-wire piezometers and survey, would occur between the hours of 7:00 a.m. and 6:00 p.m. Monday through Friday and between the hours of 9:00 a.m. and 5:00 p.m. on Saturday with no construction occurring on Sundays and federal holidays, in accordance with City noise standards.

Construction Staging Areas and Access Routes

Three separate staging areas will be utilized to store construction related equipment and materials (such as construction equipment, construction worker vehicles, construction materials and stockpiles).

Contractor access is anticipated to be from Palos Verdes Drive South and the primary staging area for construction equipment and materials will be outside of the Preserve near the proposed detention basin. Construction equipment would primarily utilize existing on-site trails that will accommodate vehicles to access work areas within the Project Site. Access to one project element (Hydrauger A1) for construction and operation/maintenance will either occur via Yacht Harbor Drive/Seawall Road, a private road within the Portuguese Bend Beach Club community or internally within the project site. An easement will be necessary if the Yacht Harbor access is to be used.

1.4 Executive Summary

Standard Air Quality, Energy, and GHG Regulatory Conditions

The proposed project will be required to comply with the following regulatory conditions from the SCAQMD and State of California (State).

South Coast Air Quality Management District Rules

The following lists the SCAQMD rules that are applicable, but not limited to the proposed project.

- Rule 402 Nuisance – Controls the emissions of odors and other air contaminants;
- Rule 403 Fugitive Dust – Controls the emissions of fugitive dust;
- Rules 1108 and 1108.1 Cutback and Emulsified Asphalt – Controls the VOC content in asphalt;
- Rule 1113 Architectural Coatings – Controls the VOC content in paints and solvents; and
- Rule 1143 Paint Thinners – Controls the VOC content in paint thinners.

State of California Rules

The following lists the State of California Code of Regulations (CCR) air quality emission rules that are applicable, but not limited to the proposed project.

- CCR Title 13, Article 4.8, Chapter 9, Section 2449 – In use Off-Road Diesel Vehicles;
- CCR Title 13, Section 2025 – On-Road Diesel Truck Fleets;
- CCR Title 24 Part 6 – California Building Energy Standards; and
- CCR Title 24 Part 11 – California Green Building Standards.

Summary of Analysis Results

The following is a summary of the proposed project's impacts with regard to the State CEQA Guidelines air quality, energy, and GHG emissions checklist questions.

Conflict with or obstruct implementation of the applicable air quality plan?

Less than significant impact.

Result in a cumulatively considerable net increase of any criteria pollutant for which the project region is non-attainment under an applicable Federal or State ambient air quality standard?

Less than significant impact.

Expose sensitive receptors to substantial pollutant concentrations?

Less than significant impact.

Result in other emissions (such as those leading to odors) adversely affecting a substantial number of people?

Less than significant impact.

Result in potentially significant environmental impact due to wasteful, inefficient, or unnecessary consumption of energy resources, during project construction or operation;

Less than significant impact.

Conflict with or obstruct a state or local plan for renewable energy;

Less than significant impact.

Generate GHG emissions, either directly or indirectly, that may have a significant impact on the environment?

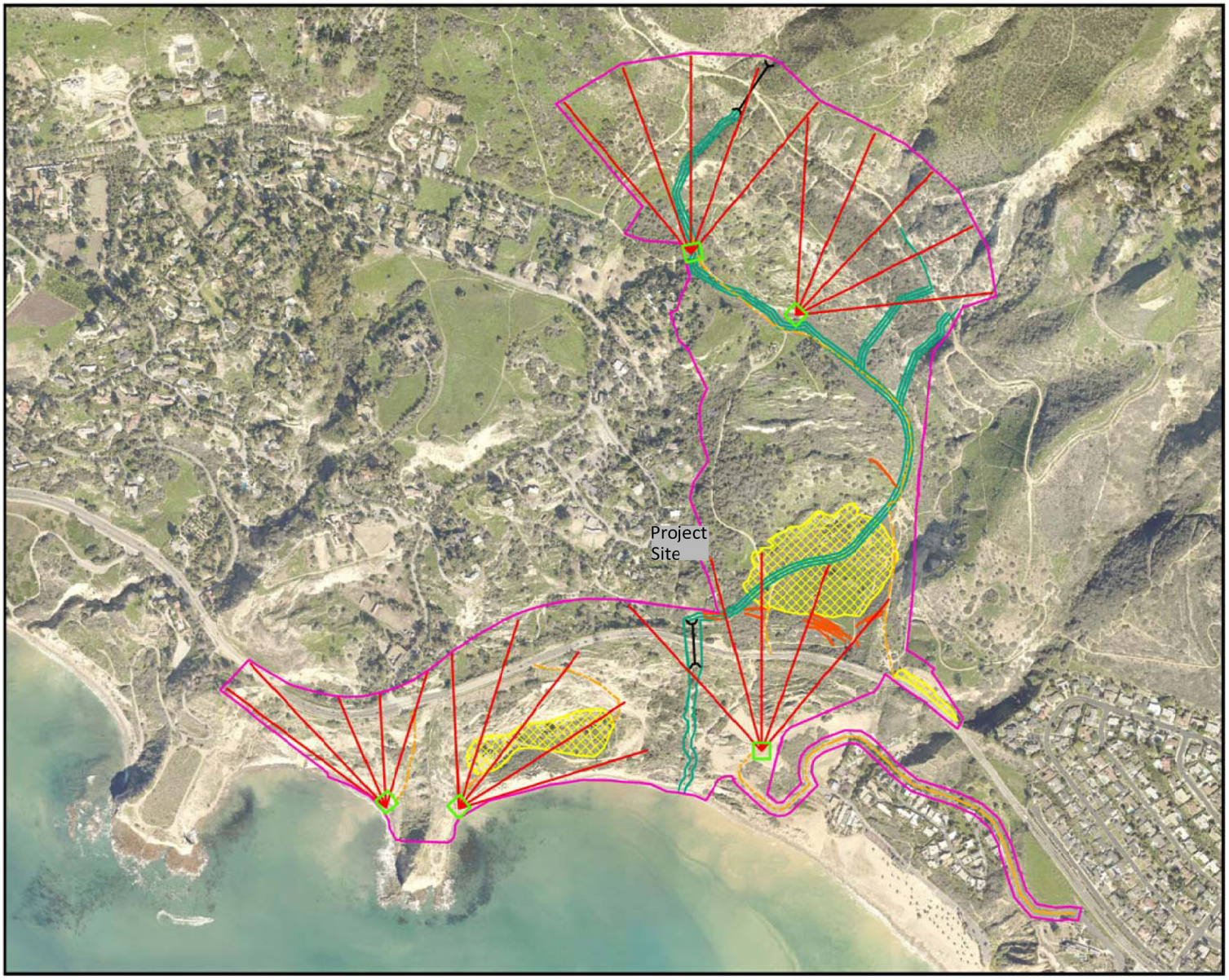
Less than significant impact.

Conflict with any applicable plan, policy or regulation of an agency adopted for the purpose of reducing the emissions of GHGs?

Less than significant impact.

1.5 Mitigation Measures for the Proposed Project

This analysis found that implementation of the State and SCAQMD air quality, energy, and GHG emissions reductions regulations were adequate to limit criteria pollutants, toxic air contaminants, odors, and GHG emissions from the proposed project to less than significant levels. No mitigation measures are required for the proposed project with respect to air quality, energy, and GHG emissions.



SOURCE: Chambers Group, Inc.

VISTA ENVIRONMENTAL

Figure 1
Project Study Area and Access, Staging and Hydrauger Locations

2.0 AIR POLLUTANTS

Air 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.

2.1 Criteria Pollutants and Ozone Precursors

The criteria pollutants consist of: ozone, nitrogen oxides (NOx), CO, sulfur oxides (SOx), lead, and particulate matter (PM). The ozone precursors consist of NO_x and VOC. 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 and ozone precursors.

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

Carbon Monoxide

Carbon monoxide (CO) is a colorless, odorless gas that is formed when carbon in fuel is not burned completely. It is a component of motor vehicle exhaust, which contributes approximately 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 Oxides

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

Lead

Lead 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

PM is the term for a mixture of solid particles and liquid droplets found in the air. PM 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) that are also known as *Respirable Particulate Matter* 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) that are also known as *Fine Particulate Matter* 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.

Volatile Organic Compounds

Hydrocarbons are organic gases that are formed from hydrogen and carbon and sometimes other elements. Hydrocarbons that contribute to formation of ozone are referred to and regulated as VOCs (also

referred to as reactive organic gases). Combustion engine exhaust, oil refineries, and fossil-fueled power plants are the sources of hydrocarbons. Other sources of hydrocarbons include evaporation from petroleum fuels, solvents, dry cleaning solutions, and paint.

VOC is not classified as a criteria pollutant, since VOCs by themselves are not a known source of adverse health effects. The primary health effects of VOCs result from the formation of ozone and its related health effects. High levels of VOCs in the atmosphere can interfere with oxygen intake by reducing the amount of available oxygen through displacement. Carcinogenic forms of hydrocarbons, such as benzene, are considered TACs. There are no separate health standards for VOCs as a group.

2.2 Other Pollutants of Concern

Toxic Air Contaminants

In addition to the above-listed criteria pollutants, TACs are another group of pollutants of concern. TACs is a term that is defined under the California Clean Air Act and consists of the same substances that are defined as Hazardous Air Pollutants (HAPs) in the Federal Clean Air Act. There are over 700 hundred different types of TACs with varying degrees of toxicity. 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 40 different toxic air contaminants. 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 California Almanac of Emissions and Air Quality 2013 Edition*, the majority of the estimated health risk from TACs can be attributed to relatively few compounds, the most important of which is DPM. DPM is a subset of PM2.5 because the size of diesel particles are typically 2.5 microns and smaller. The identification of DPM 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 DPM 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 DPM as a toxic air contaminant was based on its potential to cause cancer, premature deaths, and other health problems. Exposure to DPM 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 CARB and as a HAP 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. The nearest likely locations of naturally occurring asbestos, as identified in the *General Location Guide for Ultramafic Rocks in California*, prepared by the California Division of Mines and Geology, is located in Santa Barbara County. The nearest historic asbestos mine to the project site, as identified in the *Reported Historic Asbestos Mines, Historic Asbestos Prospects, and Other Natural Occurrences of Asbestos in California,* prepared by U.S. Geological Survey, is located at Asbestos Mountain, which is approximately 110 miles east of the project site in the San Jacinto Mountains. Due to the distance to the nearest natural occurrences of asbestos, the project site is not likely to contain asbestos.

3.0 GREENHOUSE GASES

3.1 Greenhouse Gases

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

Water Vapor

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

Carbon Dioxide

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) indicates that concentrations were 379 ppm in 2005, an increase of more than 30 percent. Left unchecked, the IPCC projects that concentration of carbon dioxide in the atmosphere is projected to increase to a minimum of 540 ppm by 2100 as a direct result of anthropogenic sources. This

could result in an average global temperature rise of at least two degrees Celsius or 3.6 degrees Fahrenheit.

Methane

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 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

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. N_2O 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 race cars).

Chlorofluorocarbons

CFCs are gases formed synthetically by replacing all hydrogen atoms in methane or ethane 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. They were 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

Hydrofluorocarbons (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

Perfluorocarbons (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

Sulfur Hexafluoride (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.

3.2 Global Warming Potential

GHGs have varying global warming potential (GWP). The GWP is the potential of a gas or aerosol to trap heat in the atmosphere; it is the cumulative radiative forcing effects of a gas over a specified time horizon resulting from the emission of a unit mass of gas relative to the reference gas, CO_2. The GHGs listed by the IPCC and the CEQA Guidelines are discussed in this section in order of abundance in the atmosphere. Water vapor, the most abundant GHG, is not included in this list because its natural concentrations and fluctuations far outweigh its anthropogenic (human-made) sources. To simplify reporting and analysis, GHGs are commonly defined in terms of their GWP. The IPCC defines the GWP of various GHG emissions on a normalized scale that recasts all GHG emissions in terms of CO_2 equivalent (CO_2e). As such, the GWP of CO_2 is equal to 1. The GWP values used in this analysis are based on the 2007 IPCC Fourth Assessment Report, which are used in CARB's 2014 Scoping Plan Update and the CalEEMod Model Version 2020.4.0 and are detailed in Table A. The IPCC has updated the Global Warming Potentials of some gases in their Fifth Assessment Report, however the new values have not yet been incorporated into the CalEEMod model that has been utilized in this analysis.

Table A – Global Warming Potentials, Atmospheric Lifetimes and Abundances of GHGs

Gas	Atmospheric Lifetime (years)[1]	Global Warming Potential (100 Year Horizon)[2]	Atmospheric Abundance
Carbon Dioxide (CO_2)	50-200	1	379 ppm
Methane (CH_4)	9-15	25	1,774 ppb
Nitrous Oxide (N_2O)	114	298	319 ppb
HFC-23	270	14,800	18 ppt
HFC-134a	14	1,430	35 ppt
HFC-152a	1.4	124	3.9 ppt
PFC: Tetrafluoromethane (CF_4)	50,000	7,390	74 ppt
PFC: Hexafluoroethane (C_2F_6)	10,000	12,200	2.9 ppt
Sulfur Hexafluoride (SF_6)	3,200	22,800	5.6 ppt

Notes:

[1] Defined as the half-life of the gas.
[2] Compared to the same quantity of CO_2 emissions and is based on the Intergovernmental Panel On Climate Change (IPCC) 2007 standard, which is utilized in CalEEMod (Version 2020.4.0),that is used in this report (CalEEMod User Guide, May 2021).
Definitions: ppm = parts per million; ppb = parts per billion; ppt = parts per trillion
Source: IPCC 2007, EPA 2015

3.3 Greenhouse Gas Emissions Inventory

According to the Carbon Dioxide Information Analysis Center[1], 9,855 million metric tons of carbon dioxide equivalent ($MMTCO_2e$) emissions were created globally in the year 2014. According to the Environmental Protection Agency (EPA), the breakdown of global GHG emissions by sector consists of: 25 percent from electricity and heat production; 21 percent from industry; 24 percent from agriculture, forestry and other land use activities; 14 percent from transportation; 6 percent from building energy use; and 10 percent from all other sources of energy use[2].

According to *Inventory of U.S. Greenhouse Gas Emissions and Sinks 1990-2019,* prepared by EPA, in 2019 total U.S. GHG emissions were 6,558 million metric tons (MMT) of CO_2e emissions. Total U.S. emissions have increased by 4 percent between 1990 and 2016 and GHG emissions decreased by 13 percent between 2005 and 2019. The recent decrease in GHG emissions was a result of multiple factors, including population, economic growth, energy markets, and technological changes the include energy efficiency and energy fuel choices. Between 2018 and 2019, GHG emissions decreased by almost 2 percent due to multiple factors, including a one percent decrease in total energy use.

According to *California Greenhouse Gas Emissions for 2000 to 2019 Trends of Emissions and Other Indicators*, prepared by CARB, July 28, 2021, the State of California created 418.2 $MMTCO_2e$ in 2019. The 2019 emissions were 7.2 $MMTCO_2e$ lower than 2018 levels and almost 13 $MMTCO_2e$ below the State adopted year 2020 GHG limit of 431 $MMTCO_2e$. The breakdown of California GHG emissions by sector consists of: 39.7 percent from transportation; 21.1 percent from industrial; 14.1 percent from electricity generation; 7.6 percent from agriculture; 10.5 percent from residential and commercial buildings; 4.9 percent from high global warming potential sources, and 2.1 percent from waste.

1 Obtained from: https://cdiac.ess-dive.lbl.gov/trends/emis/tre_glob_2014.html
2 Obtained from: https://www.epa.gov/ghgemissions/global-greenhouse-gas-emissions-data

4.0 AIR QUALITY MANAGEMENT

The air quality at the project site 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.

4.1 Federal – United States Environmental Protection Agency

The Clean Air Act, first passed in 1963 with major amendments in 1970, 1977 and 1990, is the overarching legislation covering regulation of air pollution in the United States. The Clean Air Act has established the mandate for requiring regulation of both mobile and stationary sources of air pollution at the state and federal level. The EPA was created in 1970 in order to consolidate research, monitoring, standard-setting and enforcement authority into a single agency.

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

Table B – 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) Pulmonary function decrements and localized lung injury in humans and animals; (b) asthma exacerbation; (c) chronic obstructive pulmonary disease (COPD) exacerbation; (d) respiratory infection; (e) increased school absences, and hospital admissions and emergency department (ED) visits for combined respiratory diseases; (e) increased mortality; (f) possible metabolic effects. Vegetation damage; 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	Visibility reduction (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) possible impairment of central nervous system functions; (d) possible increased risk to fetuses; (f) possible increased risk of pulmonary disease; (g) possible emergency department visits for respiratory diseases overall and visits for asthma.
Nitrogen Dioxide (NO_2)	0.18 ppm / 1-hour 0.030 ppm / annual	100 ppb / 1-hour 0.053 ppm / annual	Short-term (a) asthma exacerbations (“asthma attacks”) Long-term (a) asthma development; (b) higher risk of all-cause, cardiovascular, and respiratory mortality. Both short and long term NO2 exposure is also associated with chronic obstructive pulmonary disease (COPD) risk. Potential impacts on cardiovascular health, mortality and cancer, aggravate chronic respiratory disease. Contribution to atmospheric discoloration

Air Pollutant	Concentration / Averaging Time		Most Relevant Effects
	California Standards	Federal Primary Standards	
Sulfur Dioxide (SO_2)	0.25 ppm / 1-hour 0.04 ppm / 24-hour	75 ppb / 1-hour	Respiratory symptoms (bronchoconstriction, possible wheezing or shortness of breath) during exercise or physical activity in persons with asthma. Possible allergic sensitization, airway inflammation, asthma development.
Respirable Particulate Matter (PM_{10})	50 µg/m^3 / 24-hour 20 µg/m^3 / annual	150 µg/m^3 / 24-hour	Short -term (a) increase in mortality rates; (b) increase in respiratory infections; (c) increase in number and severity of asthma attacks; (d) COPD exacerbation; (e) increase in combined respiratory-diseases and number of hospital admissions; (f) increased mortality due to cardiovascular or respiratory diseases; (g) increase in hospital admissions for acute respiratory conditions; (h) increase in school absences; (i) increase in lost work days; (j) decrease in respiratory function in children; (k) increase medication use in children and adults with asthma. Long-term (a) reduced lung function growth in children; (b) changes in lung development; (c) development of asthma in children; (d) increased risk of cardiovascular diseases; (e) increased total mortality from lung cancer; (f) increased risk of premature death. Possible link to metabolic, nervous system, and reproductive and developmental effects for short-term and long-term exposure to PM2.5.
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 lung function; (b) aggravation of asthmatic symptoms; (c) vegetation damage; (d) Degradation of visibility; (e) 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 function; (c) cardiovascular effects, including coronary heart disease and hypertension Possible male reproductive system effects
Hydrogen Sulfide	0.03 ppm / 1-hour	No Federal Standards	Exposure to lower ambient concentrations above the standard may result in objectionable odor and may be accompanied by symptoms such as headaches, nausea, dizziness, nasal irritation, cough, and shortness of breath

Source: Draft 2022 AQMP, SCAQMD, 2022.

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 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 SIP. The CARB defines attainment as the category given to an area with no violations in the past three years. As indicated below in Table C, the Air Basin has been designated by EPA for the national standards as a non-attainment area for ozone and PM2.5 and partial non-attainment for lead. Currently, the Air Basin is in attainment with the national ambient air quality standards for CO, PM10, SO_2, and NO_2.

Table C – National Air Quality Standards Attainment Status – South Coast Air Basin

Criteria Pollutant	Averaging Time	Designation[a]	Attainment Date[b]
Ozone	1979 1-Hour (0.12 ppm)	Nonattainment (Extreme)	2/6/2023 (revised deadline)
	2015 8-Hour (0.07 ppm)[d]	Nonattainment (Extreme)	8/3/2038
	2008 8-Hour (0.075 ppm)[d]	Nonattainment (Extreme)	7/20/2032
	1997 8-Hour (0.08 ppm)[d]	Nonattainment (Extreme)	6/15/2024
PM2.5[e]	2006 24-Hour (35 µg/m^3)	Nonattainment (Serious)	12/31/2019
	2012 Annual (12 µg/m^3)	Nonattainment (Serious)	12/31/2021
	1997 Annual (15 µg/m^3)	Attainment (final determination pending)	4/5/2015 (attained 2013)
PM10[f]	1987 24-Hour (150 µg/m^3)	Attainment (Maintenance)	7/26/2013 (attained)
Lead[g]	2008 3-Months Rolling (0.15 µg/m^3)	Nonattainment (Partial) (Attainment determination requested)	12/31/2015
CO	1971 1-Hour (35 ppm)	Attainment (Maintenance)	6/11/2007
	1971 8-Hour (9 ppm)	Attainment (Maintenance)	6/11/2007
NO_2[h]	2010 1-Hour (100 ppb)	Unclassifiable/Attainment	N/A (attained)
	1971 Annual (0.053 ppm)	Attainment (Maintenance)	9/22/1998 (attained)
SO_2[i]	2010 1-Hour (75 ppb)	Unclassifiable/Attainment	1/9/2018
	1971 24-Hour (0.14 ppm)	Unclassifiable/Attainment	3/19/1979

Source: SCAQMD, May 2022

Notes:

a) U.S. EPA often only declares Nonattainment areas; everywhere else is listed as Unclassifiable/Attainment or Unclassifiable.

b) A design value below the NAAQS for data through the full year or smog season prior to the attainment date is typically required for attainment demonstration.

c) The 1979 1-hour ozone NAAQS (0.12 ppm) was revoked, effective June 15, 2005; however, the Basin has not attained this standard and therefore has some continuing obligations with respect to the revoked standard; original attainment date was 11/15/2010; the revised attainment date is 2/6/2023.

d) The 2008 8-hour ozone NAAQS (0.075 ppm) was revised to 0.070 ppm, effective 12/28/20115 with classifications and implementation goals to be finalized by 10/1/2017; the 1997 8-hour ozone NAAQS (0.08 ppm) was revoked in the 2008 ozone implementation rule, effective 4/6/2015; there are continuing obligations under the revoked 1997 and revised 2008 ozone NAAQS until they are attained.

e) The attainment deadline for the 2006 24-Hour PM2.5 NAAQS was 12/31/15 for the former "moderate" classification; the EPA approved reclassification to "serious", effective 2/12/16 with an attainment deadline of 12/31/2019; the 2012 (proposal year) annual PM2.5 NAAQS was revised on 1/15/2013, effective 3/18/2013, from 15 to 12 µg/m^3; new annual designations were final 1/15/2015, effective 4/15/2015; on 7/25/2016 the EPA finalized a determination that the Basin attained the 1997 annual (15.0 µg/m^3) and 24-hour PM2.5 (65 µg/m^3) NAAQS, effective 8/24/2016.

f) The annual PM10 standard was revoked, effective 12/18/2006; the 24-hour PM10 NAAQS deadline was 12/31/2006; the Basin's Attainment Re-designation Request and PM10 Maintenance Plan was approved by the EPA on 6/26/2103, effective 7/26/2013.

g) Partial Nonattainment designation – Los Angeles County portion of the Basin only for near-source monitors; expect to remain in attainment based on current monitoring data; attainment re-designation request pending.

h) New 1-hour NO_2 NAAQS became effective 8/2/2010, with attainment designations 1/20/2012; annual NO_2 NAAQS retained.

i) The 1971 annual and 24-hour SO_2 NAAQS were revoked, effective 8/23/2010.

Despite substantial improvements in air quality over the past few decades, some air monitoring stations in the Air Basin still exceed the NAAQS and frequently record the highest ozone levels in the United States. In 2020, monitoring stations in the Air Basin exceeded the most current federal standards on a total of 181 days (49 percent of the year), including: 8-hour ozone (157 days over the 2015 ozone NAAQS), 24-hour PM2.5 (39 days), PM10 (3 days), and NO_2 (1 day). Nine of the top 10 stations in the nation most frequently exceeding the 2015 8-hour ozone NAAQS in 2020 were located within the Air Basin, including stations in San Bernardino, Riverside, and Los Angeles Counties (SCAQMD, 2022).

PM2.5 levels in the Air Basin have improved significantly in recent years. Since 2015, none of the monitoring stations in the Air Basin have recorded violations of the former 1997 annual PM2.5 NAAQS (15.0 µg/m^3). On July 25, 2016 the U.S. EPA finalized a determination that the Air Basin attained the 1997 annual (15.0 µg/m^3) and 24-hour PM2.5 (65 µg/m^3) NAAQS, effective August 24, 2016. However, the Air Basin does not meet the 2012 annual PM2.5 NAAQS (12.0 µg/m^3), with six monitoring stations having design values above the standard for the 2018-2020 period (SCAQMD, 2022).

4.2 State – California Air Resources Board

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

Table D – California Ambient Air Quality Standards Attainment Status – South Coast Air Basin

Criteria Pollutant	Averaging Time	Level[a]	Designation[b]
Ozone	1-Hour	0.09 ppm	Nonattainment
	8-Hour	0.070 ppm	Nonattainment
PM2.5	Annual	12 µg/m^3	Nonattainment
PM10	24-Hour	50 µg/m^3	Nonattainment
	Annual	20 µg/m^3	Nonattainment
Lead	30-Day Average	1.5 µg/m^3	Attainment
CO	1-Hour	20 ppm	Attainment
	8-Hour	9.0 ppm	Attainment
NO_2	1-Hour	0.18 ppm	Attainment
	Annual	0.030	Nonattainment[c] (CA 60 Near-road portion of San Bernardino, Riverside and Los Angeles Counties) Attainment (remainder of Basin)
SO_2	1-Hour	0.25 ppm	Attainment
	24-Hour	0.04 ppm	Attainment
Sulfates	24-Hour	25 µg/m^3	Attainment
Hydrogen Sulfide	1-Hour	0.03 ppm	Unclassified

Source: SCAQMD, May 2022

Notes:

a) CA State standards, or CAAQS, for ozone, SO_2, NO_2, PM10 and PM2.5 are values not to be exceeded; lead, sulfates and H_2S standards are values not to be equaled or exceeded; CAAQS are listed in the Table of Standards in Section 70200 of Title 17 of the California Code of Regulations.

b) CA State designations shown were updated by CARB in 2019, based on the 2016-2018 3-year period; stated designations are based on a 3-year data period after consideration of outliers and exceptional events.

c) While this region is currently in Nonattainment, the CARB approved a redesignation to attainment to attainment based on 2018-2020 data on February 24, 2022.

As shown in Table D, the Air Basin has been designated by the CARB as a non-attainment area for ozone, PM10 and PM2.5 and partial nonattainment for NO_2. Currently, the Air Basin is in attainment with the ambient air quality standards for lead, CO, SO_2 and sulfates, and is unclassified for Hydrogen Sulfide.

The following lists the State of California Code of Regulations (CCR) air quality emission rules that are applicable, but not limited to earthmoving projects in the State.

Assembly Bill 2588

The Air Toxics "Hot Spots" Information and Assessment Act (Assembly Bill [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 in California. 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.

CARB Regulation for In-Use Off-Road Diesel Vehicles

On July 26, 2007, the CARB adopted California Code of Regulations Title 13, Article 4.8, Chapter 9, Section 2449 to reduce DPM and NOx emissions from in-use off-road heavy-duty diesel vehicles in California. Such vehicles are used in construction, mining, and industrial operations. The regulation limits idling to no more than five consecutive minutes, requires reporting and labeling, and requires disclosure of the regulation upon vehicle sale. Performance requirements of the rule are based on a fleet's average NOx emissions, which can be met by replacing older vehicles with newer, cleaner vehicles or by applying exhaust retrofits. The regulation was amended in 2010 to delay the original timeline of the performance requirement making the first compliance deadline January 1, 2014 for large fleets (over 5,000 horsepower), 2017 for medium fleets (2,501-5,000 horsepower), and 2019 for small fleets (2,500 horsepower or less). Currently, no commercial operation in California may add any equipment to their fleet that has a Tier 0 or Tier 1 engine. By January 1, 2018 medium and large fleets will be restricted from adding Tier 2 engines to their fleets and by January 2023, no commercial operation will be allowed to add Tier 2 engines to their fleets. It should be noted that commercial fleets may continue to use their existing Tier 0 and 1 equipment, if they can demonstrate that the average emissions from their entire fleet emissions meet the NOx emissions targets.

CARB Resolution 08-43 for On-Road Diesel Truck Fleets

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 Final) or latter emission standards. In the interim period, this regulation provides annual interim targets for fleet owners to meet. By January 1, 2014, 50 percent of a truck fleet is required to have installed Best Available Control Technology (BACT) for NOx emissions and 100 percent of a truck fleet installed BACT for PM10 emissions. This regulation also provides a few exemptions including a onetime per year 3-day pass for trucks registered outside of California. All on-road diesel trucks utilized during construction of the proposed project will be required to comply with Resolution 08-43.

4.3 Regional – Southern California

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

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. 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. The *Draft 2022 Air Quality Management Plan*, was prepared May 2022, is currently in the public comment period, and has not yet been adopted. As such the current applicable AQMP is the *Final 2016 Air Quality Management Plan* (2016 AQMP) that was adopted by the SCAQMD Board on March 3, 2016 and was adopted by CARB on March 23, 2017 for inclusion into the SIP. The 2016 AQMP was prepared in order to meet the following standards:

- 8-hour Ozone (75 ppb) by 2032
- Annual PM2.5 (12 µg/m3) by 2021-2025
- 8-hour Ozone (80 ppb) by 2024 (updated from the 2007 and 2012 AQMPs)
- 1-hour Ozone (120 ppb) by 2023 (updated from the 2012 AQMP)
- 24-hour PM2.5 (35 µg/m^3) by 2019 (updated from the 2012 AQMP)

In addition to meeting the above standards, the 2016 AQMP also includes revisions to the attainment demonstrations for the 1997 8-hour ozone NAAQS and the 1979 1-hour ozone NAAQS. The prior 2012 AQMP was prepared in order to demonstrate attainment with the 24-hour PM2.5 standard by 2014 through adoption of all feasible measures. The prior 2007 AQMP demonstrated attainment with the 1997 8-hour ozone (80 ppb) standard by 2023, through implementation of future improvements in control techniques and technologies. These "black box" emissions reductions represent 65 percent of the remaining NOx emission reductions by 2023 in order to show attainment with the 1997 8-hour ozone NAAQS. Given the magnitude of these needed emissions reductions, additional NOx control measures have been provided in the 2012 AQMP even though the primary purpose was to show compliance with 24-hour PM2.5 emissions standards.

The 2016 AQMP provides a new approach that focuses on available, proven and cost effective alternatives to traditional strategies, while seeking to achieve multiple goals in partnership with other entities to promote reductions in GHG emissions and TAC emissions as well as efficiencies in energy use, transportation, and goods movement. The 2016 AQMP recognizes the critical importance of working with other agencies to develop funding and other incentives that encourage the accelerated transition of vehicles, buildings and industrial facilities to cleaner technologies in a manner that benefits not only air quality, but also local businesses and the regional economy.

Although 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 Air Basin. Instead, this is controlled through local jurisdictions in accordance to CEQA. In order to assist local jurisdictions with air quality compliance issues the *CEQA Air Quality Handbook* (SCAQMD CEQA Handbook), prepared by 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 detailed in the AQMPs. 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 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. The SCAQMD intends that by providing this guidance, the air quality impacts of plans and development proposals will be analyzed accurately and consistently throughout the Air Basin, and adverse impacts will be minimized.

The following lists the SCAQMD rules that are applicable but not limited to all earth moving projects in the Air Basin.

Rule 402 - Nuisance

Rule 402 prohibits a person from discharging from any source whatsoever such quantities of air contaminants or other material which causes 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. Compliance with Rule 402 will reduce local air quality and odor impacts to nearby sensitive receptors.

Rule 403- Fugitive Dust

Rule 403 governs emissions of fugitive dust during construction activities and requires that no person shall cause or allow the emissions of fugitive dust such that dust remains visible in the atmosphere beyond the property line or the dust emission exceeds 20 percent opacity, if the dust is from the operation of a motorized vehicle. Compliance with this rule is achieved through application of standard Best Available Control Measures, which include but are not limited to the measures below. Compliance with these rules would reduce local air quality impacts to nearby sensitive receptors.

- Utilize either a pad of washed gravel 50 feet long, 100 feet of paved surface, a wheel shaker, or a wheel washing device to remove material from vehicle tires and undercarriages before leaving project site.
- Do not allow any track out of material to extend more than 25 feet onto a public roadway and remove all track out at the end of each workday.
- Water all exposed areas on active sites at least three times per day and pre-water all areas prior to clearing and soil moving activities.
- Apply nontoxic chemical stabilizers according to manufacturer specifications to all construction areas that will remain inactive for 10 days or longer.
- Pre-water all material to be exported prior to loading, and either cover all loads or maintain at least 2 feet of freeboard in accordance with the requirements of California Vehicle Code Section 23114.
- Replant all disturbed area as soon as practical.
- Suspend all grading activities when wind speeds (including wind gusts) exceed 25 miles per hour.
- Restrict traffic speeds on all unpaved roads to 15 miles per hour or less.

Rules 1108 and 1108.1 – Cutback and Emulsified Asphalt

Rules 1108 and 1108.1 govern the sale, use, and manufacturing of asphalt and limits the VOC content in asphalt. This rule regulates the VOC contents of asphalt used during construction as well as any on-going

maintenance during operations. Therefore, all asphalt used during construction and operation of the proposed project must comply with SCAQMD Rules 1108 and 1108.1.

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 *2020-2045 Regional Transportation Plan/Sustainable Communities Strategy* (Connect SoCal), adopted September 3, 2020and the *2019 Federal Transportation Improvement* Program (2019 FTIP), adopted September 2018, which addresses regional development and growth forecasts. Although the Connect SoCal and 2019 FTIP are primarily planning documents for future transportation projects a key component of these plans are to integrate land use planning with transportation planning that promotes higher density infill development in close proximity to existing transit service. 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 Connect SoCal, 2019 FTIP, and AQMP are based on projections originating within the City and County General Plans.

4.4 Local – City of Rancho Palos Verdes

Local jurisdictions, such as the City of Rancho Palos Verdes, have the authority and responsibility to reduce air pollution through its police power and decision-making authority. Specifically, the City is responsible for the assessment and mitigation of air emissions resulting from its land use decisions. The City is also responsible for the implementation of transportation control measures as outlined in the AQMPs. Examples of such measures include bus turnouts, energy-efficient streetlights, and synchronized traffic signals. In accordance with CEQA requirements and the CEQA review process, the City assesses the air quality impacts of new development projects, requires mitigation of potentially significant air quality impacts by conditioning discretionary permits, and monitors and enforces implementation of such mitigation.

In accordance with the CEQA requirements, the City does not, however, have the expertise to develop plans, programs, procedures, and methodologies to ensure that air quality within the City and region will meet federal and state standards. Instead, the City relies on the expertise of the SCAQMD and utilizes the SCAQMD CEQA Handbook as the guidance document for the environmental review of plans and development proposals within its jurisdiction.

5.0 ENERGY CONSERVATION MANAGEMENT

The regulatory setting related to energy conservation is primarily addressed through State and City regulations, which are discussed below.

5.1 State

Energy conservation management in the State was initiated by the 1974 Warren-Alquist State Energy Resources Conservation and Development Act that created the California Energy Resource Conservation and Development Commission (currently named California Energy Commission [CEC]), which was originally tasked with certifying new electric generating plants based on the need for the plant and the suitability of the site of the plant. In 1976 the Warren-Alquist Act was expanded to include new restrictions on nuclear generating plants, that effectively resulted in a moratorium of any new nuclear generating plants in the State. The following details specific regulations adopted by the State in order to reduce the consumption of energy.

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

CCR Title 24, Part 11: *California Green Building Standards* (CalGreen Code) was developed in response to continued efforts to reduce GHG emissions associated with energy consumption. The CalGreen Code is also updated every three years and the current version is the 2019 CalGreen Code and the 2022 CalGreen Code will go into effect on January 1, 2023.

The CalGreen Code contains requirements for construction site selection; storm water control during construction; construction waste reduction; indoor water use reduction; material selection; natural resource conservation; site irrigation conservation; and more. The code provides for design options allowing the designer to determine how best to achieve compliance for a given site or building condition. The code also requires building commissioning, which is a process for verifying that all building systems (e.g., heating and cooling equipment and lighting systems) are functioning at their maximum efficiency.

The CalGreen Code provides standards for bicycle parking, carpool/vanpool/electric vehicle spaces, light and glare reduction, grading and paving, energy efficient appliances, renewable energy, graywater systems, water efficient plumbing fixtures, recycling and recycled materials, pollutant controls (including moisture control and indoor air quality), acoustical controls, storm water management, building design, insulation, flooring, and framing, among others. Implementation of the CalGreen Code measures reduces energy consumption and vehicle trips and encourages the use of alternative-fuel vehicles, which reduces pollutant emissions.

Some of the notable changes in the 2022 CalGreen Code over the prior 2019 CalGreen Code for nonresidential development mandatory requirements include repeal of the designated parking spaces for clean air vehicles, an increase in the number of electric vehicle (EV) ready parking spaces and a new requirement for installed Level 2 or DCFC EV charging stations for autos and added EV charging readiness requirements to loading docks, enhanced thermal insulation requirements, and acoustical ceilings are now required.

Executive Order N-79-20

The California Governor issued Executive Order N-79-20 on September 23, 2020 that requires all new passenger cars and trucks and commercial drayage trucks sold in California to be zero-emissions by the year 2035 and all medium- heavy-duty vehicles (commercial trucks) sold in the state to be zero-emission

by 2045 for all operations where feasible. Executive Order N-79-20 also requires all off-road vehicles and equipment to transition to 100 percent zero-emission equipment, where feasible by 2035.

Senate Bill 100

Senate Bill 100 (SB 100) was adopted September 2018 and requires that by December 1, 2045 that 100 percent of retail sales of electricity to be generated from renewable or zero-carbon emission sources of electricity. SB 100 supersedes the renewable energy requirements set by SB 350, SB 1078, SB 107, and SB X1-2. SB 100 codified the interim renewable energy thresholds from the prior Bills of: 33 percent by 2020, 40 percent by December 31, 2024, 45 percent by December 31, 2027, and 50 percent by December 31, 2030.

Executive Order B-48-18 and Assembly Bill 2127

The California Governor issued Executive Order B-48-18 on January 26, 2018 that orders all state entities to work with the private sector to put at least five million zero-emission vehicles on California roads by 2030 and to install 200 hydrogen fueling stations and 250,000 electric vehicle chargers by 2025. Currently there are approximately 350,000 electric vehicles operating in California, which represents approximately 1.5 percent of the 24 million vehicles total currently operating in California. Implementation of Executive Order B-48-18 would result in approximately 20 percent of all vehicles in California to be zero emission electric vehicles. Assembly Bill 2127 (AB 2127) was codified into statute on September 13, 2018 and requires that the California Energy Commission working with the State Air Resources Board prepare biannual assessments of the statewide electric vehicle charging infrastructure needed to support the levels of zero emission vehicle adoption required for the State to meet its goals of putting at least 5 million zero-emission vehicles on California roads by 2030.

Assembly Bill 1493

California Assembly Bill 1493 (also known as the Pavley Bill, in reference to its author Fran Pavley) was enacted on July 22, 2002 and required CARB to develop and adopt regulations that reduce GHGs emitted by passenger vehicles and light duty trucks. In 2004, CARB approved the "Pavley I" regulations limiting the amount of GHGs that may be released from new passenger automobiles that are being phased in between model years 2009 through 2016. These regulations will reduce GHG emissions by 30 percent from 2002 levels by 2016. In June 2009, the EPA granted California the authority to implement GHG emission reduction standards for light duty vehicles, in September 2009, amendments to the Pavley I regulations were adopted by CARB and implementation of the "Pavley I" regulations started in 2009.

The second set of regulations "Pavley II" was developed in 2010, and is being phased in between model years 2017 through 2025 with the goal of reducing GHG emissions by 45 percent by the year 2020 as compared to the 2002 fleet. The Pavley II standards were developed by linking the GHG emissions and formerly separate toxic tailpipe emissions standards previously known as the "LEV III" (third stage of the Low Emission Vehicle standards) into a single regulatory framework. The new rules reduce emissions from gasoline-powered cars as well as promote zero-emissions auto technologies such as electricity and hydrogen, and through increasing the infrastructure for fueling hydrogen vehicles. In 2009, the U.S. EPA granted California the authority to implement the GHG standards for passenger cars, pickup trucks and sport utility vehicles and these GHG emissions standards are currently being implemented nationwide.

The EPA has performed a midterm evaluation of the longer-term standards for model years 2022-2025, and based on the findings of this midterm evaluation, the EPA proposed The Safer Affordable Fuel Efficient (SAFE) Vehicles Proposed Rule for Model Years 2021-2026 that amends the corporate average fuel

economy (CAFE) and GHG emissions standards for light vehicles for model years 2021 through 2026. The SAFE Vehicles Rule was published on April 30, 2020 and made effective on June 29, 2020.

5.2 Local – City of Rancho Palos Verdes

The applicable energy plan for the proposed project is the *City of Rancho Palos Verdes General Plan* (General Plan), adopted September 2018. The applicable energy-related policies from Chapter IV of the General Plan for the proposed project are shown below.

Policy 33: Ensure that the resource companies provide all areas of the City with adequate service, including adequate backup and growth capabilities.

Policy 34: Encourage the use of alternative water and energy generation sources.

Policy 35: Promote, practice, and encourage workable energy and water conservation techniques.

Policy 36: Review any proposed development, major new resource uses, or significant changes to resource systems for impacts to the surrounding neighborhood and community.

Policy 37: Encourage the use of recycled/reclaimed water in the irrigation of large open space areas, including golf courses, open space areas owned by homeowners' associations, and City parks and ballfields.

Policy 38: Encourage the California Water Company to complete a conservation plan that provides for the availability of a recycled water system in the City.

Policy 39: Underground all new power lines and communications cables and implement programs to place existing lines and cables underground, where feasible.

Policy 40: Encourage the establishment of undergrounding assessment districts by homeowners in areas of existing overhead lines.

Policy 41: Investigate funding sources to be used in local undergrounding programs for areas of existing overhead lines.

6.0 GLOBAL CLIMATE CHANGE MANAGEMENT

The regulatory setting related to global climate change is addressed through the efforts of various international, federal, state, regional, and local government agencies. These agencies work jointly, as well as individually, to reduce GHG emissions through legislation, regulations, planning, policy-making, education, and a variety of programs. The agencies responsible for global climate change regulations are discussed below.

6.1 International

In 1988, the United Nations established the 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. The parties of the UNFCCC adopted the Kyoto Protocol, which set binding GHG reduction targets for 37 industrialized countries, the objective of reducing their collective GHG emissions by five percent below 1990 levels by 2012. The Kyoto Protocol has been ratified by 182 countries, but has not been ratified by the United States. It should be noted that Japan and Canada opted out of the Kyoto Protocol and the remaining developed countries that ratified the Kyoto Protocol have not met their Kyoto targets. The Kyoto Protocol expired in 2012 and the amendment for the second commitment period from 2013 to 2020 has not yet entered into legal force. The Parties to the Kyoto Protocol negotiated the Paris Agreement in December 2015, agreeing to set a goal of limiting global warming to less than 2 degrees Celsius compared with pre-industrial levels. The Paris Agreement has been adopted by 195 nations with 147 ratifying it, including the United States by President Obama, who ratified it by Executive Order on September 3, 2016. On June 1, 2017, President Trump announced that the United States is withdrawing from the Paris Agreement and on January 21, 2021 President Biden signed an executive order rejoining the Paris Agreement.

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.

6.2 Federal – United States Environmental Protection Agency

The United States Environmental Protection Agency (EPA) is responsible for implementing federal policy to address global climate change. The Federal government administers a wide array of public-private partnerships to reduce U.S. GHG intensity. These programs focus on energy efficiency, renewable energy, methane, and other non-CO_2 gases, agricultural practices and implementation of technologies to achieve GHG reductions. EPA implements several voluntary programs that substantially contribute to the reduction of GHG emissions.

In Massachusetts v. Environmental Protection Agency (Docket No. 05–1120), argued November 29, 2006 and decided April 2, 2007, the U.S. Supreme Court held that not only did the EPA have authority to regulate greenhouse gases, but the EPA's reasons for not regulating this area did not fit the statutory requirements. As such, the U.S. Supreme Court ruled that the EPA should be required to regulate CO2 and other greenhouse gases as pollutants under the federal Clean Air Act (CAA).

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

On December 7, 2009, the EPA Administrator signed two distinct findings under section 202(a) of the Clean Air Act. One is an endangerment finding that finds concentrations of the six GHGs in the atmosphere threaten the public health and welfare of current and future generations. The other is a cause or contribute finding, that finds emissions from new motor vehicles and new motor vehicle engines contribute to the GHG pollution which threatens public health and welfare. These actions did not impose any requirements on industry or other entities, however, since 2009 the EPA has been providing GHG emission standards for vehicles and other stationary sources of GHG emissions that are regulated by the EPA. On September 13, 2013 the EPA Administrator signed 40 CFR Part 60, that limits emissions from new sources to 1,100 pounds of CO_2 per mega-watt hour (MWh) for fossil fuel-fired utility boilers and 1,000 pounds of CO_2 per MWh for large natural gas-fired combustion units.

On August 3, 2015, the EPA announced the Clean Power Plan, emissions guidelines for U.S. states to follow in developing plans to reduce GHG emissions from existing fossil fuel-fired power plants (Federal Register Vol. 80, No. 205, October 23 2015). On October 11, 2017, the EPA issued a formal proposal to repeal the Clean Power Plan and on June 19, 2019 the EPA replaced the Clean Power Plan with the Affordable Clean Energy rule that is anticipated to lower power sector GHG emissions by 11 million tons by the year 2030.

On April 30, 2020, the EPA and the National Highway Safety Administration published the Final Rule for the *Safer Affordable Fuel-Efficient (SAFE) Vehicles Rule for Model Years 2021-2026 Passenger Cars and Light Trucks* (SAFE Vehicles Rule). Part One of the Rule revokes California's authority to set its own GHG emissions standards and zero-emission vehicle mandates in California, which results in one emission standard to be used nationally for all passenger cars and light trucks that is set by the EPA.

6.3 State

The CARB has the primary responsible for implementing state policy to address global climate change, however there are State regulations related to global climate change that affect a variety of State agencies. CARB, which is a part of the California Environmental Protection Agency, is responsible for the coordination and administration of both the federal and state air pollution control programs within California. In this capacity, the CARB conducts research, sets California Ambient Air Quality Standards (CAAQS), compiles emission inventories, develops suggested control measures, provides oversight of local programs, and prepares the SIP. In addition, the CARB establishes emission standards for motor vehicles sold in California, consumer products (e.g. hairspray, aerosol paints, and barbeque lighter fluid), and various types of commercial equipment. It also sets fuel specifications to further reduce vehicular emissions.

In 2008, CARB approved a Climate Change Scoping Plan that proposes a "comprehensive set of actions designed to reduce overall carbon GHG emissions in California, improve our environment, reduce our dependence on oil, diversify our energy sources, save energy, create new jobs, and enhance public health" (CARB 2008). The Climate Change Scoping Plan has a range of GHG reduction actions which include direct

regulations; alternative compliance mechanisms; monetary and non-monetary incentives; voluntary actions; market-based mechanisms such as a cap-and-trade system. In 2014, CARB approved the First Update to the Climate Change Scoping Plan (CARB, 2014) that identifies additional strategies moving beyond the 2020 targets to the year 2050. On December 14, 2017 CARB adopted the California's 2017 Climate Change Scoping Plan, November 2017 (CARB, 2017) that provides specific statewide policies and measures to achieve the 2030 GHG reduction target of 40 percent below 1990 levels by 2030 and the aspirational 2050 GHG reduction target of 80 percent below 1990 levels by 2050. In addition, the State has passed the following laws directing CARB to develop actions to reduce GHG emissions, which are listed below in chronological order, with the most current first.

Executive Order N-79-20

EO N-79-20 establish targets for when all new vehicles and equipment are zero-emission and is described in more detail above in Section 5.1 under Energy Conservation Management.

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

The CalGreen Building standards have been developed by the CEC primarily for energy conservation and is described in more detail above in Section 5.1 under Energy Conservation Management. It should be noted that implementation of the CalGreen Building standards would also reduce GHG emissions, since as detailed above under Title 24, Part 6, energy usage from buildings creates 9.7 percent of GHG emissions in the State.

Senate Bill 100

SB 100 requires that by December 1, 2045 that 100 percent of retail sales of electricity to be generated from renewable or zero-carbon emission sources of electricity and is described in more detail above in Section 5.1 under Energy Conservation Management.

Executive Order B-48-18 and Assembly Bill 2127

Executive Order B-48-18 and AB 2127 provides measures to put at least five million zero-emission vehicles on California roads by 2030 and to install 200 hydrogen fueling stations and 250,000 electric vehicle chargers by 2025 and is described in more detail above in Section 5.1 under Energy Conservation Management.

Executive Order B-30-15, Senate Bill 32 and Assembly Bill 197

The California Governor issued Executive Order B-30-15 on April 29, 2015 that aims to reduce California's GHG emissions 40 percent below 1990 levels by 2030. This executive order aligns California's GHG reduction targets with those of other international governments, such as the European Union that set the same target for 2030 in October, 2014. This target will make it possible to reach the ultimate goal of reducing GHG emissions 80 percent under 1990 levels by 2050 that is based on scientifically established levels needed in the U.S.A to limit global warming below 2 degrees Celsius – the warming threshold at which scientists say there will likely be major climate disruptions such as super droughts and rising sea levels. Assembly Bill 197 (AB 197) (September 8, 2016) and Senate Bill 32 (SB 32) (September 8, 2016) codified into statute the GHG emissions reduction targets of at least 40 percent below 1990 levels by 2030 as detailed in Executive Order B-30-15. AB 197 also requires additional GHG emissions reporting that is broken down to sub-county levels and requires CARB to consider the social costs of emissions impacting disadvantaged communities.

Executive Order B-29-15

The California Governor issued Executive Order B-29-15 on April 1, 2015 and directed the State Water Resources Control Board to impose restrictions to achieve a statewide 25% reduction in urban water usage and directed the Department of Water Resources to replace 50 million square feet of lawn with drought tolerant landscaping through an update to the State's Model Water Efficient Landscape Ordinance. The Ordinance also requires installation of more efficient irrigation systems, promotion of greywater usage and onsite stormwater capture, and limits the turf planted in new residential landscapes to 25 percent of the total area and restricts turf from being planted in median strips or in parkways unless the parkway is next to a parking strip and a flat surface is required to enter and exit vehicles. Executive Order B-29-15 would reduce GHG emissions associated with the energy used to transport and filter water.

Assembly Bill 341 and Senate Bills 939 and 1374

Senate Bill 939 (SB 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. Assembly Bill 341 (AB 341) was adopted in 2011 and builds upon the waste reduction measures of SB 939 and 1374, and set a new target of a 75 percent reduction in solid waste generated by the year 2020.

Senate Bill 375

Senate Bill 375 (SB 375) was adopted September 2008 in order to support the State's climate action goals to reduce GHG emissions from transportation sources through coordinated regional transportation planning efforts, regional GHG emission reduction targets, and land use and housing allocation. SB 375 requires CARB to set regional targets for GHG emissions reductions from passenger vehicle use. In 2010, CARB established targets for 2020 and 2035 for each Metropolitan Planning Organizations (MPO) within the State. It was up to each MPO to adopt a sustainable communities strategy (SCS) that will prescribe land use allocation in that MPOs Regional Transportation Plan (RTP) to meet CARB's 2020 and 2035 GHG emission reduction targets. These reduction targets are required to be updated every eight years and the most current targets are detailed at: https://ww2.arb.ca.gov/our-work/programs/sustainable-communities-program/regional-plan-targets, which provides GHG emissions reduction targets for SCAG of 8 percent by 2020 and 19 percent by 2035.

The Connect SoCal (SCAG, 2020) provides a 2035 GHG emission reduction target of 19 percent reduction over the 2005 per capita emissions levels. The Connect SoCal include new initiatives of land use, transportation and technology to meet the 2035 new 19 percent GHG emission reduction target for 2035. CARB is also charged with reviewing SCAG's RTP/SCS for consistency with its assigned targets.

City and County land use policies, including General Plans, are not required to be consistent with the RTP and associated SCS. However, new provisions of CEQA incentivize, through streamlining and other provisions, qualified projects that are consistent with an approved SCS and categorized as "transit priority projects."

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 Executive 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.

In 2009 CARB approved the proposed regulation to implement the LCFS. The standard was challenged in the courts, but has been in effect since 2011 and was re-approved by the CARB in 2015. The LCFS is anticipated to reduce GHG emissions by about 16 MMT per year by 2020. The LCFS 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 annually. Reformulated gasoline mixed with corn-derived ethanol 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. 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.

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 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 addresses GHG emissions. The CEQA Guidelines Amendments changed 14 sections of the CEQA Guidelines and incorporated 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 GHG 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 GHG 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 must specifically consider a project's energy use and energy efficiency potential.

Assembly Bill 32

In 2006, the California State Legislature adopted AB 32, the California Global Warming Solutions Act of 2006. AB 32 requires CARB, to adopt rules and regulations that would achieve GHG emissions equivalent to statewide levels in 1990 by 2020 through an enforceable statewide emission cap which will be phased in starting in 2012. Emission reductions shall include carbon sequestration projects that would remove carbon from the atmosphere and utilize best management practices that are technologically feasible and cost effective.

In 2007 CARB released the calculated Year 1990 GHG emissions of 431 $MMTCO_2e$. The 2020 target of 431 $MMTCO_2e$ requires the reduction of 78 $MMTCO_2e$, or approximately 16 percent from the State's projected 2020 business as usual emissions of 509 $MMTCO_2e$ (CARB, 2014). Under AB 32, CARB was required to adopt regulations by January 1, 2011 to achieve reductions in GHGs to meet the 1990 cap by 2020. Early measures CARB took to lower GHG emissions included requiring operators of the largest industrial facilities that emit 25,000 metric tons of CO_2 in a calendar year to submit verification of GHG emissions by December 1, 2010. The CARB Board also approved nine discrete early action measures that include regulations affecting landfills, motor vehicle fuels, refrigerants in cars, port operations and other sources, all of which became enforceable on or before January 1, 2010.

CARB's Scoping Plan that was adopted in 2009, proposes a variety of measures including: strengthening energy efficiency and building standards; targeted fees on water and energy use; a market-based cap-and-trade system; achieving a 33 percent renewable energy mix; and a fee regulation to fund the program. The 2014 update to the Scoping Plan identifies strategies moving beyond the 2020 targets to the year 2050.

The Cap-and-Trade Program established under the Scoping Plan sets a statewide limit on sources responsible for 85 percent of California's GHG emissions, and has established a market for long-term investment in energy efficiency and cleaner fuels since 2012.

Executive Order S-3-05

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

- 2010: Reduce greenhouse gas emissions to 2000 levels;
- 2020: Reduce greenhouse gas emissions to 1990 levels;
- 2050: Reduce greenhouse gas emissions to 80 percent below 1990 levels.

The Executive Order directed the secretary of the California Environmental Protection Agency (CalEPA) to coordinate a multi-agency effort to reduce GHG emissions to the target levels. To comply with the Executive Order, the secretary of CalEPA created the California Climate Action Team (CAT), made up of members from various state agencies and commissions. The team released its first report in March 2006. The report proposed to achieve the targets by building on the voluntary actions of businesses, local governments, and communities and through State incentive and regulatory programs. The State achieved its first goal of reducing GHG emissions to 2000 levels by 2010.

Assembly Bill 1493

AB 1493 or the Pavley Bill sets tailpipe GHG emissions limits for passenger vehicles in California as well as fuel economy standards and is described in more detail above in Section 5.1 under Energy Conservation Management.

6.4 Regional – Southern California

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

South Coast Air Quality Management District

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. SCAQMD is directly responsible for reducing emissions from stationary, mobile, and indirect sources. The SCAQMD is also responsible for GHG emissions for projects where it is the lead agency. However, for other projects in the Air Basin where it is not the lead agency, it is limited to providing resources to other lead agencies in order to assist them in determining GHG emission thresholds and GHG reduction measures. In order to assist local agencies with direction on GHG emissions, the SCAQMD organized a Working Group, which is described below.

SCAQMD Working Group

Since neither 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 either provides a quantitative annual thresholds of 3,500 $MTCO_2e$ for residential uses, 1,400 $MTCO_2e$ for commercial uses, 3,000 $MTCO_2e$ for mixed uses, and 10,000 $MTCO_2e$ for industrial uses.

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 Connect SoCal and 2019 FTIP addresses regional development and growth forecasts. Although the Connect SoCal and 2019 FTIP are primarily planning documents for future transportation projects a key component of these plans are to integrate land use planning with transportation planning that promotes higher density infill development in close proximity to existing transit service. 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 Connect SoCal, 2019 FTIP, and AQMP are based on projections originating within the City and County General Plans.

6.5 Local – City of Rancho Palos Verdes

Local jurisdictions, such as the City of Rancho Palos Verdes, have the authority and responsibility to reduce GHG emissions through their police power and decision-making authority. Specifically, the City is responsible for the assessment and mitigation of GHG emissions resulting from its land use decisions. In accordance with CEQA requirements and the CEQA review process, the City assesses the global climate change potential of new development projects, requires mitigation of potentially significant global climate change impacts by conditioning discretionary permits, and monitors and enforces implementation of such mitigation

7.0 ATMOSPHERIC SETTING

7.1 South Coast Air Basin

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

7.2 Local Climate

The climate of south coastal Los Angeles County is characterized by hot dry summers, mild moist winters with infrequent rainfall, moderate afternoon breezes, and generally fair weather. Occasional periods of strong Santa Ana winds and winter storms interrupt the otherwise mild weather pattern. Although the Air Basin is semi-arid, the air near the surface in south coastal Los Angeles County is typically moist because of the presence of a shallow marine layer. Except for infrequent periods when dry air is brought into the Air Basin by offshore winds, the ocean effect is dominant. Periods of heavy fog are frequent and low stratus clouds, often referred to as "high fog" are a characteristic feature.

Winds are an important parameter in characterizing the air quality environment of a project site because they both determine the regional pattern of air pollution transport and control the rate of dispersion near a source. Daytime winds in south coastal Los Angeles County are usually light breezes from off the coast as air moves regionally onshore from the cool Pacific Ocean to the warm Mojave Desert interior of Southern California. These winds allow for good local mixing, but as discussed above, these coastal winds carry significant amounts of industrial and automobile air pollutants from the densely urbanized western portion of the Air Basin into the interior valleys which become trapped by the mountains that border the eastern and northern edges of the Air Basin.

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

In the winter, light nocturnal winds result mainly from the drainage of cool air off of the mountains toward the valley floor while the air aloft over the valley remains warm. This forms a type of inversion known as a radiation inversion. Such winds are characterized by stagnation and poor local mixing and trap pollutants such as automobile exhaust near their source. While these inversions may lead to air pollution "hot spots" in heavily developed coastal areas of the Air Basin, there is not enough traffic in inland valleys to cause any winter air pollution problems. Despite light wind conditions, especially at night and in the early morning, winter is generally a period of good air quality in the project vicinity.

The temperature and precipitation levels for the San Pedro Monitoring Station, which is the nearest weather station to the project site with historical data is shown below in Table E. Table E shows that September is typically the warmest month and January 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 E – Monthly Climate Data

Month	Average Maximum Temperature (°F)	Average Minimum Temperature (°F)	Average Total Precipitation (inches)
January	62.9	47.2	2.01
February	63.4	48.4	2.37
March	64.7	49.6	1.66
April	66.4	68.3	0.25
May	68.3	55.0	0.25
June	70.6	57.9	0.05
July	73.8	61.1	0.00
August	74.3	61.8	0.02
September	74.4	60.2	0.15
October	71.4	57.1	0.29
November	68.8	52.7	0.95
December	64.7	49.5	2.01
Annual	**68.7**	**54.4**	**10.69**

Source: Western Regional Climate Center (https://wrcc.dri.edu/cgi-bin/cliMAIN.pl?ca7876)

7.3 Monitored Local 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 Air Basin provided in the 2012 AQMP, indicate that collectively, mobile sources account for 59 percent of the VOC, 88 percent of the NOx emissions and 40 percent of directly emitted PM2.5, with another 10 percent of PM2.5 from road dust. The 2016 AQMP found that since 2012 AQMP projections were made stationary source VOC emissions have decreased by approximately 12 percent, but mobile VOC emissions have increased by 5 percent. The percentage of NOx emissions remain unchanged between the 2012 and 2016 projections.

SCAQMD has divided the Air Basin into 38 air-monitoring areas with a designated ambient air monitoring station representative of each area. The project site is located in Air Monitoring Area 3, which covers Southwest Coastal Los Angeles County. Since not all air monitoring stations measure all of the tracked pollutants, the data from the following two monitoring stations, listed in the order of proximity to the project site have been used; South Long Beach Monitoring Station (South Long Beach Station) and Long Beach-Signal Hill Monitoring Station (Signal Hill Station).

The South Long Beach Station is located approximately seven miles east of the project site at 1305 E Pacific Coast Highway, Long Beach, and the Signal Hill Station is located approximately 11 miles east of the project site at 1710 E 20th Street, Signal Hill. The monitoring data is presented in Table F and shows the most recent three years of monitoring data from CARB. PM10 and PM2.5 were measured at the South Long Beach Station and ozone and NO_2 were measured at the Signal Hill Station.

Table F – Local Area Air Quality Monitoring Summary

Pollutant (Standard)	Year 2019	2020	2021
Ozone[1]:			
Maximum 1-Hour Concentration (ppm)	ND	0.105	0.086
Days > CAAQS (0.09 ppm)	ND	**4**	0
Maximum 8-Hour Concentration (ppm)	ND	0.083	0.064
Days > NAAQS (0.070 ppm)	ND	**4**	0
Days > CAAQs (0.070 ppm)	ND	**4**	0
Nitrogen Dioxide[1]:			
Maximum 1-Hour Concentration (ppb)	ND	75.3	59.0
Days > NAAQS (100 ppb)	ND	0	0
Days > CAAQS (180 ppb)	ND	0	0
Inhalable Particulates (PM10)[2]:			
Maximum 24-Hour National Measurement (ug/m^3)	72.7	68.3	48.7
Days > NAAQS (150 ug/m^3)	0	0	0
Days > CAAQS (50 ug/m^3)	**2**	**3**	0
Annual Arithmetic Mean (AAM) (ug/m^3)	21.5	26.9	23.2
Annual > NAAQS (50 ug/m^3)	No	No	No
Annual > CAAQS (20 ug/m^3)	**Yes**	**Yes**	**Yes**
Ultra-Fine Particulates (PM2.5)[2]:			
Maximum 24-Hour California Measurement (ug/m^3)	30.6	63.7	42.9
Days > NAAQS (35 ug/m^3)	0	**10**	**4**
Annual Arithmetic Mean (AAM) (ug/m^3)	10.6	12.1	13.8
Annual > NAAQS and CAAQS (12 ug/m^3)	No	No	**Yes**

Notes: Exceedances are listed in **bold.** CAAQS = California Ambient Air Quality Standard; NAAQS = National Ambient Air Quality Standard; ppm = parts per million; ppb = parts per billion; ND = no data available.

[1] Data obtained from the Long Beach-Signal Hill Station.

[2] Data obtained from the South Long Beach Station.

Source: http://www.arb.ca.gov/adam/

Ozone

During the last three years, the State 1-hour concentration standard for ozone has been exceeded between zero and four days each year at the Signal Hill Station. The State and Federal 8-hour ozone standard has been exceeded between zero and four days each year over the last three years at the Signal Hill 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 Southern California contribute to the ozone levels experienced at this monitoring station, with the more significant areas being those directly upwind.

Nitrogen Dioxide

The Signal Hill Station did not record an exceedance of either the Federal or State 1-hour NO_2 standards for the last three years.

Particulate Matter

The State 24-hour concentration standard for PM10 has been exceeded between zero and three days each year over the past three years at the South Long Beach Station. Over the past three years the Federal 24-hour standard for PM10 has not been exceeded at the South Long Beach Station. The annual PM10 concentration at the South Long Beach Station has exceeded the State standard for the past three years and has not exceeded the Federal standard for the past three years.

Over the past three years the federal 24-hour concentration standard for PM2.5 has been exceeded between zero and ten days each year at the South Long Beach Station. The annual PM2.5 concentrations at the Compton Station has exceeded both the State and Federal standards for one of the past three years. There does not appear to be a noticeable trend for PM10 or PM2.5 in either maximum particulate concentrations or days of exceedances in the area. Particulate levels in the area are due to natural sources, grading operations, and motor vehicles.

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.

7.4 Toxic Air Contaminant Levels in the Air Basin

In order to determine the Air Basin-wide risks associated with major airborne carcinogens, the SCAQMD conducted the Multiple Air Toxics Exposure Study (MATES) studies. According to the MATES V study (SCAQMD, 2021), the southern portion of the project site has an estimated cancer risk of 234 per million persons and the northern portion of the project site has an estimated cancer risk of 237 per million persons chance of cancer in the vicinity of the project site. In comparison, the average cancer risk for the Air Basin is 455 per million persons. The MATES V study that monitored air toxins between May 1, 2018 to April 30, 2019 found that cancer risk from air toxics has declined significantly in the Air Basin with a 40 percent decrease in cancer risk since the monitoring for the MATES IV study that occurred between July 1, 2012 and June 30, 2013 and an 84 percent decrease in cancer risk since the monitoring for the MATES II study that occurred between April 1, 1998 and March 31, 1999.

The MATES V study also analyzed impacts specific to the communities experiencing environmental injustices (EJ communities) that were evaluated using the Senate Bill 535 definition of disadvantaged communities, which found that between MATES IV and MATES V, the cancer risk from air toxics decreased by 57 percent in EJ communities overall, compared to a 53 percent reduction in non-EJ communities. In order to provide a perspective of risk, it is often estimated that the incidence in cancer over a lifetime for the U.S. population ranges around 1 in 3, or a risk of about 300,000 per million persons. The MATES-III study referenced a Harvard Report on Cancer Prevention, which estimated that of cancers associated with known risk factors, about 30 percent were related to tobacco, about 30 percent were related to diet and

obesity, and about 2 percent were associated with environmental pollution related exposures that includes hazardous air pollutants.

8.0 MODELING PARAMETERS AND ASSUMPTIONS

8.1 CalEEMod Model Input Parameters

The criteria air pollution and GHG emissions impacts created by the proposed project have been analyzed through use of CalEEMod Version 2020.4.0. CalEEMod is a computer model published by the SCAQMD for estimating air pollutant emissions. The CalEEMod program uses the EMFAC2017 computer program to calculate the emission rates specific for the South Coast Air Basin portion of Los Angeles County for employee, vendor and haul truck vehicle trips and the OFFROAD2011 computer program to calculate emission rates for heavy equipment operations. EMFAC2017 and OFFROAD2011 are computer programs generated by CARB that calculates composite emission rates for vehicles. Emission rates are reported by the program in grams per trip and grams per mile or grams per running hour.

The project characteristics in the CalEEMod model were set to a project location of the South Coast Air Basin portion of Los Angeles County, a Climate Zone of 8, utility company of Southern California Edison and opening year of 2026 was utilized in this analysis. In addition, the EMFAC off-model adjustment factors for gasoline light duty vehicle to account for the SAFE Vehicle rule was selected in the CalEEMod model run.

Land Use Parameters

The proposed project consists of landslide remediation activities, which are considered as construction activity types, as such no operational emissions would be created from the proposed project. Although the project site includes approximately 104 acres of land, it is anticipated that permanent improvements would be located on 15.08 acres of land and an additional 22 acres would be temporarily impacted during construction activities. For a total of 37.08 acres that would be potentially disturbed as part of the proposed project. As such, a 37.08 acre project site was analyzed in CalEEMod as Other Non-Asphalt Surfaces land use subtype.

Construction Parameters

Construction activities have been modeled as starting in June 2023 and would last until December 2025. It is anticipated that monitoring would continue for at least 1.5 years past this date, however the emissions created from monitoring activities are anticipated to be nominal and as such, were not modeled.

According to the *Transportation Assessment Portuguese Bend Landslide Remediation Project* (Transportation Assessment), prepared by Linscott, Law & Greenspan, January 19, 2023, the project would generate a maximum of 22 daily worker trips and 60 truck trips per day. As such, all analyzed construction phases utilized these construction trip rates. It should be noted that the truck trips would include water truck emissions as well as vendor and haul truck trips to and from the project site. The phases of construction activities that have been analyzed are detailed below and include: 1) Staging Areas & Access Routes; 2) Surface Fracturing Infilling; 3) Surface Water Improvements, and 4) Hydraugers. It is anticipated that the construction phases will occur sequentially, however there is a possibility that some or all of these phases will occur concurrently. As such the calculated daily air emissions from these three phases have been analyzed separately and combined in Section 10.3, below.

The CalEEMod model provides the selection of “mitigation” to account for project conditions that would result in less emissions than a project without these conditions, however it should be noted that this “mitigation” may represent regulatory requirements. This includes the required to adherence to SCAQMD

Rule 403, which requires that the Best Available Control Measures be utilized to reduce fugitive dust emissions.

Staging Areas & Access Routes

The Staging Areas & Access Routes phase would involve access paths, working platforms, and other temporary site features as needed to perform the construction and was modeled in CalEEMod as a Site Preparation construction phase type. This phase has been modeled as starting in June 2023 and occurring over one month. The onsite equipment would consist of three rubber-tired dozers, and four of either tractors, loaders, or backhoes, which is based on the CalEEMod default equipment mix for the Site Preparation phase. The mitigation of water all exposed areas three times per day was chosen in order to account for the fugitive dust reduction that would occur through adhering to SCAQMD Rule 403, which requires that the Best Available Control Measures be utilized to reduce fugitive dust emissions.

Surface Fracturing Infilling

The Surface Fracturing Infilling phase was modeled in CalEEMod as a Grading construction phase type. This phase has been modeled as starting in July 2023 and occurring over six months. The onsite equipment would consist of one excavator, one pump, one rubber-tired dozer, and two of either tractors, loaders, or backhoes. The mitigation of water all exposed areas three times per day was chosen in order to account for the fugitive dust reduction that would occur through adhering to SCAQMD Rule 403, which requires that the Best Available Control Measures be utilized to reduce fugitive dust emissions.

Surface Water Improvements

The Surface Water Improvements phase was modeled in CalEEMod as a Trenching construction phase type. This phase has been modeled as starting in July 2024 and occurring over six months. The onsite equipment would consist of one excavator, one forklift, one pump, and three of either tractors, loaders, or backhoes. The mitigation of water all exposed areas three times per day was chosen in order to account for the fugitive dust reduction that would occur through adhering to SCAQMD Rule 403, which requires that the Best Available Control Measures be utilized to reduce fugitive dust emissions.

Hydraugers

The Hydraugers phase was modeled in CalEEMod as a Building Construction phase type. This phase has been modeled as starting in July 2025 and occurring over six months. The onsite equipment would consist of one bore/drill rig, one forklift, one generator, one pump, one welder, and one of either a tractor, loader, or backhoe. The mitigation of water all exposed areas three times per day was chosen in order to account for the fugitive dust reduction that would occur through adhering to SCAQMD Rule 403, which requires that the Best Available Control Measures be utilized to reduce fugitive dust emissions.

8.2 Energy Use Calculations

The proposed project is anticipated to consume energy during construction of the proposed project. The parameters utilized to calculate energy use from construction of the proposed project are detailed below.

Construction-Related Energy Use

Construction of the proposed project is anticipated to use energy in the forms of petroleum fuel for both off-road equipment as well as from the transport of workers and materials to and from the project site and the calculations for each source are described below.

Off-Road Construction Equipment

The off-road construction equipment fuel usage was calculated through use of the CalEEMod model's default off-road equipment assumptions detailed above in Section 8.1. For each piece of off-road equipment, the fuel usage was calculated through use of the *2017 Off-road Diesel Emission Factors* spreadsheet, prepared by CARB (https://ww3.arb.ca.gov/msei/ordiesel.htm). The Spreadsheet provides the following formula to calculate fuel usage from off-road equipment:

Fuel Used = Load Factor x Horsepower x Total Operational Hours x BSFC / Unit Conversion

Where:

Load Factor - Obtained from CalEEMod default values

Horsepower – Obtained from CalEEMod default values

Total Operational Hours – Calculated by multiplying CalEEMod default daily hours by CalEEMod default number of working days for each phase of construction

BSFC – Brake Specific Fuel Consumption (pounds per horsepower-hour) – If less than 100 Horsepower = 0.408, if greater than 100 Horsepower = 0.367

Unit Conversion – Converts pounds to gallons = 7.109

Table G shows the off-road construction equipment fuel calculations based on the above formula. Table G shows that the off-road equipment utilized during construction of the proposed project would consume 53,154 gallons of diesel fuel.

Table G – Off-Road Equipment and Fuel Consumption from Construction of the Proposed Project

Equipment Type	Equipment Quantity	Horse-power	Load Factor	Operating Hours per Day	Total Operational Hours[1]	Fuel Used (gallons)
Staging Areas & Access Routes						
Rubber-Tired Dozers	3	247	0.4	8	528	2,693
Tractors/Loaders/Backhoes	4	97	0.37	8	704	1,450
Surface Fracturing Infilling						
Excavator	1	158	0.38	8	1,040	3,224
Pump	1	84	0.74	8	1,040	3,710
Rubber-Tired Dozer	1	247	0.4	8	1,040	5,305
Tractors/Loaders/Backhoes	2	97	0.37	8	2,080	4,284
Surface Water Improvements						
Excavator	1	158	0.38	8	1,056	3,273
Forklift	1	89	0.20	8	1,056	1,079
Pump	1	84	0.74	8	1,056	3,767
Tractors/Loaders/Backhoes	3	97	0.37	8	3,168	6,525
Hydraugers						
Bore/Drill Rig	1	221	0.50	8	1,056	6,024
Forklift	1	89	0.20	8	1,056	1,079
Generator	1	84	0.74	8	1,056	3,767
Pump	1	84	0.74	8	1,056	3,767
Tractors/Loaders/ Backhoes	1	97	0.37	8	1,056	2,175
Welder	1	46	0.37	8	1,056	1,032
Total Off-Road Equipment Diesel Fuel Used during Construction (gallons)						**53,154**

Notes:
[1] Based on: 22 days for Staging Areas & Access Routes; 130 days for Surface Fracturing Infilling, 132 days for Surface Water Improvements; 132 days for Hydraugers.
Source: CalEEMod Version 2020.4.0 (see Appendix A); CARB, 2017.

On-Road Construction-Related Vehicle Trips

The on-road construction-related vehicle trips fuel usage was calculated through use of the construction vehicle trip assumptions from the CalEEMod model run as detailed above in Section 8.1. The calculated total construction miles were then divided by the fleet average for the South Coast Air Basin miles per gallon rates for the year 2023 calculated through use of the EMFAC2017 model (https://www.arb.ca.gov/emfac/2017/) and the EMFAC2017 model printouts are shown in Appendix B. The worker trips were based on the entire fleet average miles per gallon rate for gasoline powered vehicles and the vendor trips were based on the Heavy-Heavy Duty Truck (HHDT), Medium Duty Vehicle (MDV), and Medium Heavy Duty Vehicle (MHDV) fleet average miles per gallon rate for diesel-powered vehicles. Table H shows the on-road construction vehicle trips modeled in CalEEMod and the gasoline and diesel fuel usage calculations.

Table H – On-Road Vehicle Trips and Fuel Consumption from Construction of the Proposed Project

Vehicle Trip Types/Fuel Type	Daily Trips	Trip Length (miles)	Total Miles per Day	Total Miles per Phase[1]	Fleet Average Miles per Gallon[2]	Fuel Used (gallons)
Staging Areas & Access Routes						
Worker (Gasoline)	22	14.7	323	4,851	26.8	266
Truck (Diesel)	60	20	1,200	12,120	8.7	3,035
Surface Fracturing Infilling						
Worker (Gasoline)	22	14.7	323	4,851	26.8	1,571
Truck (Diesel)	60	20	1,200	12,120	8.7	17,932
Surface Water Improvements						
Worker (Gasoline)	22	14.7	323	4,851	26.8	1,595
18,208	60	20	1,200	3,180	8.7	18,208
Hydraugers						
Worker (Gasoline)	22	14.7	323	84,128	26.8	1,595
Truck (Diesel)	60	20	1,200	15,394	8.7	18,208
	Total Gasoline Fuel Used from On-Road Construction Vehicles (gallons)					**5,027**
	Total Diesel Fuel Used from On-Road Construction Vehicles (gallons)					**57,384**

Notes:
[1] Based on: 22 days for Staging Areas & Access Routes; 130 days for Surface Fracturing Infilling, 132 days for Surface Water Improvements; 132 days for Hydraugers.
[2] From EMFAC 2017 model (see Appendix B). Worker trips based on entire fleet of gasoline vehicles. Haul truck and vendor truck trips based on only truck fleet of diesel vehicles.
Source: CalEEMod Version 2020.4.0; CARB, 2018.

Table H shows that the on-road construction-related vehicle trips would consume 5,027 gallons of gasoline and 57,384 gallons of diesel fuel. As detailed above, Table G shows that the off-road construction equipment would consume 53,154 gallons of diesel fuel. This would result in the total consumption of 5,027 gallons of gasoline and 110,538 gallons of diesel fuel from construction of the proposed project.

9.0 THRESHOLDS OF SIGNIFICANCE

9.1 Regional Air Quality

Many air quality impacts that derive from dispersed mobile sources, which are the dominate pollution generators in the Air 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, 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 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 I. Since the proposed project is limited to landslide remediation activities, which are considered as construction activity types, only construction-related thresholds have been utilized in this analysis.

Table I – SCAQMD Regional Criteria Pollutant Emission Thresholds of Significance

	Pollutant Emissions (pounds/day)						
	VOC	**NOx**	**CO**	**SOx**	**PM10**	**PM2.5**	**Lead**
Construction	75	100	550	150	150	55	3
Operation	55	55	550	150	150	55	3

Source: http://www.aqmd.gov/docs/default-source/ceqa/handbook/scaqmd-air-quality-significance-thresholds.pdf?sfvrsn=2

9.2 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 Air Basin. In order to assess local air quality impacts the SCAQMD has developed Localized Significant Thresholds (LSTs) to assess the project-related air emissions in the project vicinity. SCAQMD has also provided *Final Localized Significance Threshold Methodology* (LST Methodology), July 2008, which details the methodology to analyze local air emission impacts. The LST Methodology found that the primary emissions of concern are NO_2, CO, PM10, and PM2.5.

The LST Methodology provides Look-Up Tables with different thresholds based on the location and size of the project site and distance to the nearest sensitive receptors. The Look-Up Tables provided in the LST Methodology include project site acreage sizes of 1-acre, 2-acres and 5-acres. As detailed above in Section 8.1, a total of 37.08 acres that would be potentially disturbed as part of the proposed project, however it is unlikely that more than 5 acres would be disturbed in a day. As such, the 5-acre Look-Up Table thresholds were utilized in this analysis.

As detailed above in Section 7.3, the project site is located in Air Monitoring Area 3, which covers Southwest Coastal Los Angeles County. The nearest sensitive receptors are homes located on Peppertree Drive, where construction activities would occur as close as 220 feet (67 meters) to the homes. Table J below shows the LSTs for NOx, CO, PM10 and PM2.5 for both construction and operational activities.

Table J – SCAQMD Local Air Quality Thresholds of Significance

Activity	Allowable Emissions (pounds/day)[1]			
	NOx	CO	PM10	PM2.5
Construction	193	2,197	51	14
Operation	193	2,197	13	4

Notes:

[1] The nearest offsite sensitive receptors are homes located on Peppertree Drive as near as 220 feet (67 meters) from proposed construction activities. As such the 50 meter and 100 meter thresholds were interpolated to 67 meters.

Source: Calculated from SCAQMD's Mass Rate Look-up Tables for five acres in Air Monitoring Area 3, Southwest Coastal Los Angeles County.

9.3 Toxic Air Contaminants

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

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

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

The comprehensive HRA for both construction and operation of the proposed project can be found below in Section 10.4.

9.4 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.

9.5 Energy Conservation

The *2020 CEQA California Environmental Quality Act Statutes & Guidelines* (2020 CEQA Guideline) now include an Energy Section that analyzes the proposed project's energy consumption in order to avoid or reduce inefficient, wasteful or unnecessary consumption of energy. Appendix F of the 2020 CEQA Statute and Guidelines, states the following:

> The goal of conserving energy implies the wise and efficient use of energy. The means of achieving this goal include:
>
> (1) Decreasing overall per capita energy consumption,
>
> (2) Decreasing reliance on fossil fuels such as coal, natural gas and oil, and
>
> (3) Increasing reliance on renewable energy sources.

Since the Energy Section was recently added, no state or local agencies have adopted specific criteria or thresholds to be utilized in an energy impact analysis. However, Appendix F, Subsection II.C of the 2018 CEQA Guidelines provides the following criteria for determining significance.

1. The project's energy requirements and its energy use efficiencies by amount and fuel type for each stage of the project life cycle including construction, operation, maintenance and/or removal. If appropriate, the energy intensiveness of materials may be discussed.
2. The effects of the project on local and regional energy supplies and on requirement for additional capacity.
3. The effects of the project on peak and base period demands for electricity and other forms of energy.
4. The degree to which the project complies with existing energy standards.
5. The effects of the project on energy resources.
6. The project's projected transportation energy use requirements and its overall use of efficient transportation alternatives.

If the proposed project creates inefficient, wasteful or unnecessary consumption of energy during construction or operation activities or conflicts with a state or local plan for renewable energy or energy efficiency, then the proposed project would create a significant energy impact.

9.6 Greenhouse Gas Emissions

The proposed project is located within the jurisdiction of the SCAQMD. In order to identify significance criteria under CEQA for development projects, SCAQMD initiated a Working Group, which provided detailed methodology for evaluating significance under CEQA. 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 3,000 $MTCO_2e$ for all land use projects. Although the SCAQMD provided substantial evidence supporting the use of the above threshold, the SCAQMD Board has not yet considered or approved the Working Group's thresholds.

It should be noted that SCAQMD's Working Group's thresholds were prepared prior to the issuance of Executive Order B-30-15 on April 29, 2015 that provided a reduction goal of 40 percent below 1990 levels by 2030. This target was codified into statute through passage of AB 197 and SB 32 in September 2016.

However it should be noted that the California Supreme Court's ruling on *Cleveland National Forest Foundation v. San Diego Association of Governments* (Cleveland v. SANDAG), Filed July 13, 2017 stated:

> SANDAG did not abuse its discretion in declining to adopt the 2050 goal as a measure of significance in light of the fact that the Executive Order does not specify any plan or implementation measures to achieve its goal. In its response to comments, the EIR said: "It is uncertain what role regional land use and transportation strategies can or should play in achieving the EO's 2050 emissions reduction target. A recent California Energy Commission report concludes, however, that the primary strategies to achieve this target should be major 'decarbonization' of electricity supplies and fuels, and major improvements in energy efficiency [citation].

Although, the above court case was referencing California's GHG emission targets for the year 2050, at this time it is also unclear what role land use strategies can or should play in achieving the AB 197 and SB 32 reduction goal of 40 percent below 1990 levels by 2030. As such this analysis has relied on the SCAQMD GHG emissions threshold for industrial projects. Therefore, the proposed project would be considered to create a significant cumulative GHG impact if the proposed project would exceed the annual threshold of 3,000 $MTCO_2e$.

The GHG emissions analysis for both construction and operation of the proposed project can be found below in Sections 10.8 and 10.9.

10.0 IMPACT ANALYSIS

10.1 CEQA Thresholds of Significance

Consistent with CEQA and the State CEQA Guidelines, a significant impact related to air quality, energy, and GHG emissions would occur if the proposed project is determined to:

- Conflict with or obstruct implementation of the applicable air quality plan;
- Result in a cumulatively considerable net increase of any criteria pollutant for which the project region is in non-attainment under an applicable federal or state ambient air quality standard;
- Expose sensitive receptors to substantial pollutant concentrations;
- Result in other emissions (such as those leading to odors) adversely affecting a substantial number of people;
- Result in potentially significant environmental impact due to wasteful, inefficient, or unnecessary consumption of energy resources, during project construction or operation;
- Conflict with or obstruct a state or local plan for renewable energy;
- Generate GHG emissions, either directly or indirectly, that may have a significant impact on the environment; or
- Conflict with any applicable plan, policy or regulation of an agency adopted for the purpose of reducing the emissions of GHGs.

10.2 Air Quality Compliance

The proposed project would not conflict with or obstruct implementation of the SCAQMD Air Quality Management Plan (AQMP). The following section discusses the proposed project's consistency with the SCAQMD AQMP.

SCAQMD Air Quality Management Plan

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 AQMP. Therefore, this section discusses any potential inconsistencies of the proposed project with the AQMP.

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

The SCAQMD CEQA Handbook states that "New or amended GP 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 or increments based on the year of project buildout and phase.

Both of these criteria are evaluated in the following sections.

Criterion 1 - Increase in the Frequency or Severity of Violations?

Based on the air quality modeling analysis contained in this report, short-term regional construction air emissions would not result in significant impacts based on SCAQMD regional thresholds of significance discussed above in Section 9.1 or local thresholds of significance discussed above in Section 9.2. Since the proposed project is limited to landslide remediation activities, which are considered as construction activity types, no operational emissions would be created from the proposed project. Therefore, a less than significant long-term impact would occur and no mitigation would be required.

Therefore, based on the information provided above, the proposed project would be consistent with the first criterion.

Criterion 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 2016 AQMP, which is the most current adopted 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 2016 AQMP was developed through use of the planning forecasts provided in the 2016 RTP/SCS and 2015 FTIP. The 2016 RTP/SCS is a major planning document for the regional transportation and land use network within Southern California. The 2016 RTP/SCS is a long-range plan that is required by federal and state requirements placed on SCAG and is updated every four years. The 2015 FTIP provides long-range planning for future transportation improvement projects that are constructed with state and/or federal funds within Southern California. Local governments are required to use these plans as the basis of their plans for the purpose of consistency with applicable regional plans under CEQA. For this project, the City of Rancho Palos Verdes Land Use Plan defines the assumptions that are represented in AQMP.

The General Plan Land Use Element designations within the Project Site consist of Residential (1-2 dwelling unit per acre), Open Space to the north, east, west, and southeast; and Open Space Preservation (OSP) and Open Space Hazard (OSH) to the south and southwest (General Plan Land Use Map 2018). The proposed project is limited to landslide remediation activities, which are allowed uses within all of the above land use designations. In addition, the proposed project would not construct any structures, which would not create any housing nor would it create any long-term jobs, which are the growth factors utilized in the RTP/SCS.

As such, the proposed project is consistent with the current land use designations with respect to the regional forecasts utilized by the AQMPs. 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 in relation to implementation of the AQMP.

Level of Significance

Less than significant impact.

10.3 Cumulative Net Increase in Non-Attainment Pollution

The proposed project would not result in a cumulatively considerable net increase of any criteria pollutant for which the project region is non-attainment under an applicable Federal or State ambient air quality standard.

The SCAQMD has published a report on how to address cumulative impacts from air pollution: White Paper on Potential Control Strategies to Address Cumulative Impacts from Air Pollution (http://www.aqmd.gov/docs/default-source/Agendas/Environmental-Justice/cumulative-impacts-working-group/cumulative-impacts-white-paper.pdf). In this report the AQMD clearly states (Page D-3):

> *"…the AQMD uses the same significance thresholds for project specific and cumulative impacts for all environmental topics analyzed in an Environmental Assessment or Environmental Impact Report (EIR). The only case where the significance thresholds for project specific and cumulative impacts differ is the Hazard Index (HI) significance threshold for TAC emissions. The project specific (project increment) significance threshold is HI > 1.0 while the cumulative (facility- wide) is HI > 3.0. It should be noted that the HI is only one of three TAC emission significance thresholds considered (when applicable) in a CEQA analysis. The other two are the maximum individual cancer risk (MICR) and the cancer burden, both of which use the same significance thresholds (MICR of 10 in 1 million and cancer burden of 0.5) for project specific and cumulative impacts. Projects that exceed the project-specific significance thresholds are considered by the SCAQMD to be cumulatively considerable. This is the reason project-specific and cumulative significance thresholds are the same. Conversely, projects that do not exceed the project-specific thresholds are generally not considered to be cumulatively significant."*

Therefore, this analysis assumes that individual projects that do not generate emissions that exceed the SCAQMD's recommended daily thresholds for project-specific impacts would also not cause a cumulatively considerable increase in emissions for those pollutants for which the Air Basin is in nonattainment, and, therefore, would not be considered to have a significant, adverse air quality impact. Alternatively, individual project-related emissions that exceed SCAQMD thresholds for project-specific impacts would be considered cumulatively considerable. Since the proposed project is limited to landslide remediation activities, which are considered as construction activity types, no operational emissions would be created from the proposed project. The construction emissions have been analyzed for both regional and local air quality impacts.

Regional Criteria Pollutant Emissions

The CalEEMod model has been utilized to calculate the regional criteria pollutant emissions from the proposed project and the input parameters utilized in this analysis have been detailed in Section 8.1. The worst-case summer or winter daily construction-related criteria pollutant emissions from the proposed project for each phase of construction activities are shown below in Table K and the CalEEMod daily printouts are shown in Appendix A. Since it is possible that some or all construction phases may occur

concurrently, Table K also shows the combined regional criteria pollutant emissions created from all phases.

Table K – Construction-Related Regional Criteria Pollutant Emissions

Activity	Pollutant Emissions (pounds/day)[1]					
	VOC	NOx	CO	SO_2	PM10	PM2.5
Staging Areas & Access Routes						
Onsite[2]	2.66	27.52	18.24	0.04	8.93	5.10
Offsite[3]	0.20	8.23	2.89	0.04	1.35	0.40
Total	**2.86**	**35.75**	**21.13**	**0.08**	**10.28**	**5.51**
Surface Fracturing Infilling						
Onsite	1.50	14.50	14.55	0.03	3.24	1.95
Offsite	0.20	8.23	2.89	0.04	1.35	0.40
Total	**1.70**	**22.73**	**17.44**	**0.07**	**4.59**	**2.35**
Surface Water Improvements						
Onsite	1.01	9.20	14.83	0.02	0.44	0.41
Offsite	0.19	8.24	2.87	0.04	1.35	0.40
Total	**1.21**	**17.45**	**17.69**	**0.06**	**1.78**	**0.81**
Hydraugers						
Onsite	1.20	10.18	14.43	0.03	0.40	0.38
Offsite	0.19	8.19	2.85	0.04	1.35	0.40
Total	**1.39**	**18.37**	**17.27**	**0.07**	**1.74**	**0.79**
Combined Emissions from all Phases Occurring Concurrently						
Onsite	6.37	61.41	62.05	0.12	13.00	7.85
Offsite	0.78	32.89	11.49	0.15	5.39	1.61
Total	**7.16**	**94.30**	**73.53**	**0.26**	**18.39**	**9.46**
SCQAMD Thresholds	**75**	**100**	**550**	**150**	**150**	**55**
Exceeds Threshold?	No	No	No	No	No	No

Notes:
[1] Based on adherence to fugitive dust suppression requirements from SCAQMD Rule 403.
[2] Onsite emissions from equipment not operated on public roads.
[3] Offsite emissions from vehicles operating on public roads.
Source: CalEEMod Version 2020.4.0.

Table K shows that none of the analyzed criteria pollutants would exceed the regional emissions thresholds for the construction phases occurring either sequentially or concurrently. Therefore, a less than significant regional air quality impact would occur from construction of the proposed project.

Local Criteria Pollutant 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 Air Basin.

The local air quality emissions from construction were analyzed through utilizing the methodology described in *Localized Significance Threshold Methodology* (LST Methodology), prepared by SCAQMD, revised October 2009. The LST Methodology found the primary criteria pollutant emissions of concern

are NOx, CO, PM10, and PM2.5. In order to determine if any of these pollutants require a detailed analysis of the local air quality impacts, each phase of construction was screened using the SCAQMD's Mass Rate LST Look-up Tables. The Look-up Tables were developed by the SCAQMD in order to readily determine if the daily onsite emissions of CO, NOx, PM10, and PM2.5 from the proposed project could result in a significant impact to the local air quality. Table L shows the onsite emissions from the CalEEMod model for the different construction phases and the calculated localized emissions thresholds that have been detailed above in Section 9.2. Since it is possible that some or all construction phases may occur concurrently, Table L also shows the combined local criteria pollutant emissions from all phases.

Table L – Construction-Related Local Criteria Pollutant Emissions

Construction Phase	Pollutant Emissions (pounds/day)[1]			
	NOx	CO	PM10	PM2.5
Staging Areas & Access Routes	27.72	18.31	8.96	5.11
Surface Fracturing Infilling	14.69	14.62	3.27	1.96
Surface Water Improvements	9.40	14.89	0.47	0.42
Hydraugers	10.38	14.49	0.43	0.39
Combined Emissions from all Phases Occurring Concurrently	**62.19**	**62.32**	**13.13**	**7.89**
SCAQMD Local Construction Thresholds[2]	**193**	**2,197**	**51**	**14**
Exceeds Threshold?	No	No	No	No

Notes:
[1] Based on adherence to fugitive dust suppression requirements from SCAQMD Rule 403. The Pollutant Emissions include 100% of the On-Site emissions (off-road equipment and fugitive dust) and 2.4 percent of the Off-Site emissions (on road trucks and worker vehicles), in order to account for the on-road emissions that occur within a ¼ mile of the project site.
[2] The nearest offsite sensitive receptors are homes located on Peppertree Drive as near as 220 feet (67 meters) from proposed construction activities. As such the 50 meter and 100 meter thresholds were interpolated to 67 meters.
Source: Calculated from SCAQMD's Mass Rate Look-up Tables for five acres in Air Monitoring Area 3, Southwest Coastal Los Angeles County.

The data provided in Table L shows that none of the analyzed criteria pollutants would exceed the local emissions thresholds for the construction phases occurring either sequentially or concurrently. Therefore, a less than significant local air quality impact would occur from construction of the proposed project.

Therefore, the proposed project would not result in a cumulatively considerable net increase of any criteria pollutant.

Level of Significance

Less than significant impact.

10.4 Sensitive Receptors

The proposed project would not expose sensitive receptors to substantial pollutant concentrations. The local concentrations of criteria pollutant emissions produced in the nearby vicinity of the proposed project, which may expose sensitive receptors to substantial concentrations have been calculated above in Section 10.3 for construction, which is discussed below. The discussion below also includes an analysis of the potential impacts from local criteria pollutant and toxic air contaminant emissions. The nearest sensitive receptors are homes located on Peppertree Drive, where construction activities would occur as close as 220 feet to the homes.

Construction activities may expose sensitive receptors to substantial pollutant concentrations of localized criteria pollutant concentrations and from toxic air contaminant emissions created from onsite construction equipment, which are described below.

Local Criteria Pollutant Impacts from Construction

The local air quality impacts from construction of the proposed project have been analyzed above in Section 10.3 and found that the construction of the proposed project would not exceed the local NOx, CO, PM10 and PM2.5 thresholds of significance discussed above in Section 9.2. Therefore, construction of the proposed project would create a less than significant construction-related impact to local air quality and no mitigation would be required.

Toxic Air Contaminants Impacts from Construction

The greatest potential for toxic air contaminant emissions would be related to diesel particulate matter (DPM) emissions associated with heavy equipment operations during construction of the proposed project. According to SCAQMD methodology, health effects from carcinogenic air toxics are usually described in terms of "individual cancer risk". "Individual Cancer Risk" is the likelihood that a person exposed to concentrations of toxic air contaminants over a 70-year lifetime will contract cancer, based on the use of standard risk-assessment methodology. It should be noted that the most current cancer risk assessment methodology recommends analyzing a 30 year exposure period for the nearby sensitive receptors (OEHHA, 2015).

Given the relatively limited number of heavy-duty construction equipment, the varying distances that construction equipment would operate to the nearby sensitive receptors, and the short-term construction schedule (i.e., six to seven months), the proposed project would not result in a long-term (i.e., 30 or 70 years) substantial source of toxic air contaminant emissions and corresponding individual cancer risk. In addition, California Code of Regulations Title 13, Article 4.8, Chapter 9, Section 2449 regulates emissions from off-road diesel equipment in California. This regulation limits idling of equipment to no more than five minutes, requires equipment operators to label each piece of equipment and provide annual reports to CARB of their fleet's usage and emissions. This regulation also requires systematic upgrading of the emission Tier level of each fleet, and currently no commercial operator is allowed to purchase Tier 0 or Tier 1 equipment and by January 2023 no commercial operator is allowed to purchase Tier 2 equipment. In addition to the purchase restrictions, equipment operators need to meet fleet average emissions targets that become more stringent each year between years 2014 and 2023. As of January, 2019, 25 percent or more of all contractors' equipment fleets must be Tier 2 or higher. Therefore, no significant short-term toxic air contaminant impacts from DPM emissions would occur during construction of the proposed project.

As such, the proposed project would result in a less than significant exposure of sensitive receptors to substantial pollutant concentrations.

Level of Significance

Less than significant impact.

10.5 Odor Emissions

The proposed project would not result in other emissions, such as those leading to odors that would adversely affect a substantial number of people. The local concentrations of criteria pollutant emissions,

and TAC emissions that may adversely impact a substantial number of people have been analyzed above in Section 10.4 for both construction and operations, which found that these types of emissions would create less than significant impacts. As such, the following analysis is limited to odors that would have the potential to adversely affect a substantial number of people.

Individual responses to odors are highly variable and can result in a variety of effects. Generally, the impact of an odor results from a variety of factors such as frequency, duration, offensiveness, location, and sensory perception. The frequency is a measure of how often an individual is exposed to an odor in the ambient environment. The intensity refers to an individual's or group's perception of the odor strength or concentration. The duration of an odor refers to the elapsed time over which an odor is experienced. The offensiveness of the odor is the subjective rating of the pleasantness or unpleasantness of an odor. The location accounts for the type of area in which a potentially affected person lives, works, or visits; the type of activity in which he or she is engaged; and the sensitivity of the impacted receptor.

Sensory perception has four major components: detectability, intensity, character, and hedonic tone. The detection (or threshold) of an odor is based on a panel of responses to the odor. There are two types of thresholds: the odor detection threshold and the recognition threshold. The detection threshold is the lowest concentration of an odor that will elicit a response in a percentage of the people that live and work in the immediate vicinity of the project site and is typically presented as the mean (or 50 percent of the population). The recognition threshold is the minimum concentration that is recognized as having a characteristic odor quality, this is typically represented by recognition by 50 percent of the population. The intensity refers to the perceived strength of the odor. The odor character is what the substance smells like. The hedonic tone is a judgment of the pleasantness or unpleasantness of the odor. The hedonic tone varies in subjective experience, frequency, odor character, odor intensity, and duration.

Potential sources that may emit odors during construction activities include the application of coatings such as asphalt pavement and solvents and from emissions from diesel equipment. Standard construction requirements that limit the time of day when construction may occur as well as SCAQMD Rule 1108 that limits VOC content in asphalt and Rule 1113 that limits the VOC content in solvents would minimize odor impacts from construction. As such, the objectionable odors that may be produced during the construction process would be temporary and would not likely be noticeable for extended periods of time beyond the project site's boundaries. Through compliance with the applicable regulations that reduce odors and due to the transitory nature of construction odors, a less than significant odor impact would occur and no mitigation would be required.

Level of Significance

Less than significant impact

10.6 Energy Consumption

The proposed project would impact energy resources during construction. Since the proposed project is limited to landslide remediation activities, which are considered as construction activity types, no operational energy consumption would occur from the proposed project.

Energy resources that would be potentially impacted include electricity and petroleum based fuel supplies and distribution systems. No natural gas would be utilized as part of the proposed project, as such no further analysis is provided on natural gas consumption in this Report. This analysis includes a discussion of the potential energy impacts of the proposed projects, with particular emphasis on avoiding or reducing

inefficient, wasteful, and unnecessary consumption of energy. A general definition of each of these energy resources are provided below.

Electricity, a consumptive utility, is a man-made resource. The production of electricity requires the consumption or conversion of energy resources, including water, wind, oil, gas, coal, solar, geothermal, and nuclear resources, into energy. The delivery of electricity involves a number of system components, including substations and transformers that lower transmission line power (voltage) to a level appropriate for on-site distribution and use. The electricity generated is distributed through a network of transmission and distribution lines commonly called a power grid. Conveyance of electricity through transmission lines is typically responsive to market demands. In 2020, Los Angeles County consumed 65,650 Gigawatt-hours per year of electricity[3].

Petroleum-based fuels currently account for a majority of the California's transportation energy sources and primarily consist of diesel and gasoline types of fuels. However, the state has been working on developing strategies to reduce petroleum use. Over the last decade California has implemented several policies, rules, and regulations to improve vehicle efficiency, increase the development and use of alternative fuels, reduce air pollutants and GHG emissions from the transportation sector, and reduce vehicle miles traveled (VMT). Accordingly, petroleum-based fuel consumption in California has declined. In 2017, 3,659 million gallons of gasoline and 300 million gallons of diesel was sold in Los Angeles County.

The following section calculates the potential energy consumption associated with the construction of the proposed project and provides a determination if any energy utilized by the proposed project is wasteful, inefficient, or unnecessary consumption of energy resources.

Construction Energy

The proposed project would consume energy resources during construction in three (3) general forms:

1. Petroleum-based fuels used to power off-road construction vehicles and equipment on the project site, construction worker travel to and from the project site, as well as delivery and haul truck trips (e.g. hauling of material to disposal facilities);
2. Electricity associated with the conveyance of water that would be used during project construction for dust control (supply and conveyance) and electricity to power any necessary lighting during construction, electronic equipment, or other construction activities necessitating electrical power; and,
3. Energy used in the production of construction materials, such as asphalt, steel, concrete, pipes, and manufactured or processed materials such as lumber and glass.

Construction-Related Electricity

During construction the proposed project would consume electricity implementing the landslide remediation project. Due to the temporary nature of the needs for electricity during construction of the proposed project, all electricity used onsite will be supplied by portable diesel generators that have been analyzed below under petroleum fuel use. Construction activities would include offsite electricity usage provided by Southern California Edison for the conveyance of water that would be used during project construction for dust control (supply and conveyance) and electricity utilized for the production and distribution of materials that will be used during construction of the proposed project. Such electricity

3 Obtained from: http://www.ecdms.energy.ca.gov/elecbycounty.aspx

demand would be temporary, nominal, and would cease upon the completion of construction. Overall, construction activities associated with the proposed project would require limited electricity consumption that would not be expected to have an adverse impact on available electricity supplies and infrastructure. Therefore, the use of electricity during project construction would not be wasteful, inefficient, or unnecessary. Compliance with City's guidelines and requirements would ensure that the proposed project fulfills its responsibilities in coordination of any electrical infrastructure removals or relocations, and limits any impacts associated with construction of the project. Construction of the project's electrical infrastructure is not anticipated to adversely affect the electrical infrastructure serving the surrounding uses or utility system capacity.

Construction-Related Petroleum Fuel Use

Petroleum-based fuel usage represents the highest amount of transportation energy potentially consumed during construction, which would be utilized by both off-road equipment operating on the project site and on-road automobiles transporting workers to and from the project site and on-road trucks transporting equipment and supplies to the project site.

The off-road construction equipment fuel usage was calculated through use of the off-road equipment assumptions and fuel use assumptions shown above in Section 8.2, which found that construction of the proposed project would consume 5,027 gallons of gasoline and 110,538 gallons of diesel fuel. This equates to 0.0001 percent of the gasoline and 0.04 percent of the diesel used annually in Los Angeles County. As such, the construction-related petroleum use would be nominal, when compared to current county-wide petroleum usage rates.

Construction activities associated with the proposed project would be required to adhere to all State and SCAQMD regulations for off-road equipment and on-road trucks, which provide minimum fuel efficiency standards. As such, construction activities for the proposed project would not result in the wasteful, inefficient, and unnecessary consumption of energy resources. Impacts regarding transportation energy would be less than significant. Development of the project would not result in the need to manufacture construction materials or create new building material facilities specifically to supply the proposed project. It is difficult to measure the energy used in the production of construction materials such as asphalt, steel, and concrete, it is reasonable to assume that the production of building materials such as concrete, steel, etc., would employ all reasonable energy conservation practices in the interest of minimizing the cost of doing business.

Therefore, the proposed project would not result in the wasteful, inefficient, or unnecessary consumption of energy resources. Impacts would be less than significant.

Level of Significance

Less than significant impact.

10.7 Energy Plan Consistency

The proposed project would not conflict with or obstruct a state or local plan for renewable energy or energy efficiency. The applicable energy plan for the proposed project is the *City of Rancho Palos Verdes General Plan* (General Plan), adopted September 2018. The proposed project's consistency with the applicable energy-related policies in the Chapter IV of the General Plan are shown in Table M.

Table M – Proposed Project Compliance with Applicable General Plan Energy Policies

Policy No.	General Plan Policy	Proposed Project Implementation Actions
33	Ensure that the resource companies provide all areas of the City with adequate service, including adequate backup and growth capabilities	**Not Applicable.** This Policy is for the energy resource companies (i.e., California Water Company, Southern California Edison and SoCal Gas) to implement, however it should be noted that the proposed project would not result in any permanent population or employment growth in the City.
34	Encourage the use of alternative water and energy generation sources.	**Consistent.** The water collected through the subsurface drainage system will be collected into water storage tanks. The collected water will be tested for water quality, and if the water tests at acceptable levels will be possibly utilized for landscaping irrigation purposes.
35	Promote, practice, and encourage workable energy and water conservation techniques.	**Consistent.** All construction activities will be required to meet the Title 24 Part 11 CalGreen requirements that require a variety of construction energy reduction measures that include requirements for recycling construction waste and electricity and water conservation measures.
36	Review any proposed development, major new resource uses, or significant changes to resource systems for impacts to the surrounding neighborhood and community.	**Not Applicable.** This Policy is for the City to implement, however the proposed project would not require any changes to the City's resource systems.
37	Encourage the use of recycled/reclaimed water in the irrigation of large open space areas, including golf courses, open space areas owned by homeowners' associations, and City parks and ballfields.	**Consistent.** The water collected through the subsurface drainage system will be collected into water storage tanks. The collected water will be tested for water quality, and if the water tests at acceptable levels will be possibly utilized for landscaping irrigation purposes.
38	Encourage the California Water Company to complete a conservation plan that provides for the availability of a recycled water system in the City.	**Not Applicable.** This Policy is for California Water Company to implement.
39	Underground all new power lines and communications cables and implement programs to place existing lines and cables underground, where feasible.	**Not Applicable.** The proposed project does not include installation of any new power lines or communication cables.
40	Encourage the establishment of undergrounding assessment districts by homeowners in areas of existing overhead lines.	**Not Applicable.** This Policy is for the City to implement. The proposed project does not include installation or relocation of any power lines.
41	Investigate funding sources to be used in local undergrounding programs for areas of existing overhead lines.	**Not Applicable.** This Policy is for the City to implement. The proposed project does not include installation or relocation of any power lines.

Source: City of Rancho Palos Verdes, 2018.

As shown in Table M, the proposed project would be consistent with all applicable energy-related policies from the Chapter IV of the General Plan. Therefore, the proposed project would not conflict with or obstruct a state or local plan for renewable energy or energy efficiency. Impacts would be less than significant.

Level of Significance

Less than significant impact.

10.8 Generation of Greenhouse Gas Emissions

The proposed project would not generate GHG emissions, either directly or indirectly, that may have a significant impact on the environment. Since the proposed project is limited to landslide remediation activities, which are considered as construction activity types, no operational emissions would be created from the proposed project. As such the generation of GHG emissions has been limited to construction emissions. A summary of the construction-related GHG emissions created by the proposed project is shown below in Table N and the CalEEMod model run is provided in Appendix D.

Table N – Construction Related Greenhouse Gas Annual Emissions

	Greenhouse Gas Emissions (Metric Tons per Year)			
Construction Year	**CO_2**	**CH_4**	**N_2O**	**CO_2e**
2023	468.09	0.07	0.04	482.43
2024	370.56	0.04	0.04	382.56
2025	404.80	0.04	0.04	416.58
Total Construction GHG Emissions	1,243.46	0.15	0.11	1,281.56
Total Construction GHG Emissions Amortized over 30 years[1]				**42.72**
SCAQMD Threshold of Significance				**3,000**

Notes:

[1] Construction emissions amortized over 30 years as recommended in the SCAQMD GHG Working Group on November 19, 2009.

Source: CalEEMod Version 2020.4.0.

The data provided in Table N shows that construction of the proposed project would create a total 1,281.56 $MTCO_2e$ or 42.72 $MTCO_2e$ per year, when amortized over a 30 year period. According to the SCAQMD threshold of significance as detailed above in Section 9.6, a cumulative global climate change impact would occur if the proposed project's GHG emissions would exceed 3,000 $MTCO_2e$ per year. Therefore, a less than significant generation of greenhouse gas emissions would occur from implementation of the proposed project. Impacts would be less than significant.

Level of Significance

Less than significant impact.

10.9 Greenhouse Gas Plan Consistency

The proposed project would not conflict with any applicable plan, policy or regulation of an agency adopted for the purpose of reducing GHG emissions. The proposed project is limited to landslide remediation activities and would not result in the creation of any long-term GHG emissions. It should also be noted that the proposed project does not include development of any structures and would not result in any permanent population or employment growth in the City.

As detailed above in Section 10.8, the proposed project is anticipated to create 42.72 $MTCO_2e$ per year, which is well below the SCAQMD's threshold of significance of 3,000 $MTCO_2e$ per year. As detailed above in Section 9.6, the SCAQMD developed this threshold based on substantial evidence supporting the use of this threshold. Therefore, the proposed project would not conflict with any applicable plan, policy or regulation of an agency adopted for the purpose of reducing the emissions of greenhouse gases.

Level of Significance

Less than significant impact.

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APPENDIX A

CalEEMod Model Daily Printouts

Portuguese Bend Landslide Remediation - Los Angeles-South Coast County, Summer

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Applied

Portuguese Bend Landslide Remediation

Los Angeles-South Coast County, Summer

1.0 Project Characteristics

1.1 Land Usage

Land Uses	Size	Metric	Lot Acreage	Floor Surface Area	Population
Other Non-Asphalt Surfaces	37.08	Acre	37.08	1,615,204.80	0

1.2 Other Project Characteristics

Urbanization	Urban	**Wind Speed (m/s)**	2.2	**Precipitation Freq (Days)**	33
Climate Zone	8			**Operational Year**	2026
Utility Company	Southern California Edison				
CO2 Intensity (lb/MWhr)	390.98	**CH4 Intensity (lb/MWhr)**	0.033	**N2O Intensity (lb/MWhr)**	0.004

1.3 User Entered Comments & Non-Default Data

Project Characteristics -

Land Use -

Construction Phase - Construction schedule provided by City

Off-road Equipment - Hydraugers - 1 Bore/Drill Rig, 1 Forklift, 1 Generator, 1 Pump, 1 Tractor/Loader/Backhoe, 1 Welder

Off-road Equipment - Staging Areas & Access Routes - 3 Dozers & 4 Tractors/Loaders/Backhoes

Off-road Equipment - Surface Fracturing Infilling - 1 Excavator, 1 Rubber Tired Dozer, 1 Pump, 2 Tractors/Loaders/Backhoes

Trips and VMT - 22 worker trips per day and 60 truck trips per day

Grading -

Construction Off-road Equipment Mitigation - Water Exposed Areas 3x per day selected to account for water truck emissions

Off-road Equipment - Surface Water Improvements - 1 Excavator, 1 Forklift, 1 Pump, 3 Tractors/Loaders/Backhoes

Portuguese Bend Landslide Remediation - Los Angeles-South Coast County, Summer

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Applied

Table Name	Column Name	Default Value	New Value
tblConstructionPhase	NumDays	740.00	132.00
tblConstructionPhase	NumDays	75.00	130.00
tblConstructionPhase	NumDays	30.00	22.00
tblOffRoadEquipment	OffRoadEquipmentType		Excavators
tblOffRoadEquipment	OffRoadEquipmentType		Forklifts
tblOffRoadEquipment	OffRoadEquipmentType		Pumps
tblOffRoadEquipment	OffRoadEquipmentType		Tractors/Loaders/Backhoes
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	2.00	1.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	3.00	1.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	3.00	1.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	0.00	1.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	0.00	1.00
tblOffRoadEquipment	PhaseName		Hydraugers
tblOffRoadEquipment	PhaseName		Hydraugers
tblOffRoadEquipment	PhaseName		Surface Water Improvements
tblOffRoadEquipment	PhaseName		Surface Water Improvements
tblOffRoadEquipment	PhaseName		Surface Water Improvements
tblOffRoadEquipment	PhaseName		Surface Water Improvements
tblOffRoadEquipment	UsageHours	7.00	8.00
tblTripsAndVMT	HaulingTripNumber	0.00	1,320.00
tblTripsAndVMT	HaulingTripNumber	0.00	7,800.00
tblTripsAndVMT	HaulingTripNumber	0.00	7,920.00
tblTripsAndVMT	HaulingTripNumber	0.00	7,920.00
tblTripsAndVMT	VendorTripNumber	265.00	0.00
tblTripsAndVMT	WorkerTripNumber	18.00	22.00
tblTripsAndVMT	WorkerTripNumber	13.00	22.00
tblTripsAndVMT	WorkerTripNumber	15.00	22.00
tblTripsAndVMT	WorkerTripNumber	678.00	22.00

Portuguese Bend Landslide Remediation - Los Angeles-South Coast County, Summer

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Applied

2.0 Emissions Summary

2.1 Overall Construction (Maximum Daily Emission)

Unmitigated Construction

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Year	lb/day										lb/day					
2023	2.8600	35.4027	21.1313	0.0753	20.9532	1.3169	22.2701	10.4556	1.2134	11.6690	0.0000	7,766.0435	7,766.0435	1.4106	0.6174	7,985.2934
2024	1.2067	17.0968	17.6945	0.0593	1.2962	0.4878	1.7840	0.3532	0.4600	0.8132	0.0000	6,195.7415	6,195.7415	0.7492	0.6086	6,395.8335
2025	1.3902	18.0219	17.2731	0.0658	1.2962	0.4475	1.7437	0.3532	0.4325	0.7857	0.0000	6,767.3735	6,767.3735	0.7317	0.5978	6,963.8030
Maximum	**2.8600**	**35.4027**	**21.1313**	**0.0753**	**20.9532**	**1.3169**	**22.2701**	**10.4556**	**1.2134**	**11.6690**	**0.0000**	**7,766.0435**	**7,766.0435**	**1.4106**	**0.6174**	**7,985.2934**

Mitigated Construction

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Year	lb/day										lb/day					
2023	2.8600	35.4027	21.1313	0.0753	8.9624	1.3169	10.2793	4.2931	1.2134	5.5065	0.0000	7,766.0435	7,766.0435	1.4106	0.6174	7,985.2934
2024	1.2067	17.0968	17.6945	0.0593	1.2962	0.4878	1.7840	0.3532	0.4600	0.8132	0.0000	6,195.7415	6,195.7415	0.7492	0.6086	6,395.8335
2025	1.3902	18.0219	17.2731	0.0658	1.2962	0.4475	1.7437	0.3532	0.4325	0.7857	0.0000	6,767.3735	6,767.3735	0.7317	0.5978	6,963.8030
Maximum	**2.8600**	**35.4027**	**21.1313**	**0.0753**	**8.9624**	**1.3169**	**10.2793**	**4.2931**	**1.2134**	**5.5065**	**0.0000**	**7,766.0435**	**7,766.0435**	**1.4106**	**0.6174**	**7,985.2934**

Portuguese Bend Landslide Remediation - Los Angeles-South Coast County, Summer

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Applied

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio-CO2	Total CO2	CH4	N20	CO2e
Percent Reduction	0.00	0.00	0.00	0.00	50.93	0.00	46.48	55.21	0.00	46.45	0.00	0.00	0.00	0.00	0.00	0.00

3.0 Construction Detail

Construction Phase

Phase Number	Phase Name	Phase Type	Start Date	End Date	Num Days Week	Num Days	Phase Description
1	Staging Areas & Access Routes	Site Preparation	6/1/2023	6/30/2023	5	22	
2	Surface Fracturing Infilling	Grading	7/1/2023	12/31/2023	5	130	
3	Surface Water Improvements	Trenching	7/1/2024	12/31/2024	5	132	
4	Hydraugers	Building Construction	7/1/2025	12/31/2025	5	132	

Acres of Grading (Site Preparation Phase): 33

Acres of Grading (Grading Phase): 65

Acres of Paving: 37.08

Residential Indoor: 0; Residential Outdoor: 0; Non-Residential Indoor: 0; Non-Residential Outdoor: 0; Striped Parking Area: 0 (Architectural Coating –

OffRoad Equipment

Phase Name	Offroad Equipment Type	Amount	Usage Hours	Horse Power	Load Factor
Staging Areas & Access Routes	Rubber Tired Dozers	3	8.00	247	0.40
Staging Areas & Access Routes	Tractors/Loaders/Backhoes	4	8.00	97	0.37
Surface Fracturing Infilling	Excavators	1	8.00	158	0.38
Surface Fracturing Infilling	Pumps	1	8.00	84	0.74
Surface Fracturing Infilling	Rubber Tired Dozers	1	8.00	247	0.40
Surface Fracturing Infilling	Tractors/Loaders/Backhoes	2	8.00	97	0.37

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Applied

Hydraugers	Bore/Drill Rigs	1	8.00	221	0.50
Hydraugers	Forklifts	1	8.00	89	0.20
Hydraugers	Generator Sets	1	8.00	84	0.74
Hydraugers	Pumps	1	8.00	84	0.74
Hydraugers	Tractors/Loaders/Backhoes	1	8.00	97	0.37
Hydraugers	Welders	1	8.00	46	0.45
Surface Water Improvements	Excavators	1	8.00	158	0.38
Surface Water Improvements	Forklifts	1	8.00	89	0.20
Surface Water Improvements	Pumps	1	8.00	84	0.74
Surface Water Improvements	Tractors/Loaders/Backhoes	3	8.00	97	0.37

Trips and VMT

Phase Name	Offroad Equipment Count	Worker Trip Number	Vendor Trip Number	Hauling Trip Number	Worker Trip Length	Vendor Trip Length	Hauling Trip Length	Worker Vehicle Class	Vendor Vehicle Class	Hauling Vehicle Class
Staging Areas & Access Routes	7	22.00	0.00	1,320.00	14.70	6.90	20.00	LD_Mix	HDT_Mix	HHDT
Surface Fracturing Infilling	5	22.00	0.00	7,800.00	14.70	6.90	20.00	LD_Mix	HDT_Mix	HHDT
Hydraugers	6	22.00	0.00	7,920.00	14.70	6.90	20.00	LD_Mix	HDT_Mix	HHDT
Surface Water Improvements	6	22.00	0.00	7,920.00	14.70	6.90	20.00	LD_Mix	HDT_Mix	HHDT

3.1 Mitigation Measures Construction

Water Exposed Area

3.2 Staging Areas & Access Routes - 2023

Unmitigated Construction On-Site

Portuguese Bend Landslide Remediation - Los Angeles-South Coast County, Summer

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Applied

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Fugitive Dust					19.6570	0.0000	19.6570	10.1025	0.0000	10.1025			0.0000			0.0000
Off-Road	2.6595	27.5242	18.2443	0.0381		1.2660	1.2660		1.1647	1.1647		3,687.3081	3,687.3081	1.1926		3,717.1219
Total	**2.6595**	**27.5242**	**18.2443**	**0.0381**	**19.6570**	**1.2660**	**20.9230**	**10.1025**	**1.1647**	**11.2672**		**3,687.3081**	**3,687.3081**	**1.1926**		**3,717.1219**

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.1301	7.8294	2.0897	0.0351	1.0503	0.0494	1.0996	0.2880	0.0473	0.3352		3,855.9606	3,855.9606	0.2125	0.6123	4,043.7450
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000
Worker	0.0705	0.0491	0.7972	2.1800e-003	0.2459	1.4800e-003	0.2474	0.0652	1.3700e-003	0.0666		222.7748	222.7748	5.5500e-003	5.0800e-003	224.4266
Total	**0.2006**	**7.8785**	**2.8869**	**0.0373**	**1.2962**	**0.0509**	**1.3470**	**0.3532**	**0.0486**	**0.4018**		**4,078.7354**	**4,078.7354**	**0.2181**	**0.6174**	**4,268.1715**

Mitigated Construction On-Site

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Applied

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Fugitive Dust					7.6662	0.0000	7.6662	3.9400	0.0000	3.9400			0.0000			0.0000
Off-Road	2.6595	27.5242	18.2443	0.0381		1.2660	1.2660		1.1647	1.1647	0.0000	3,687.3081	3,687.3081	1.1926		3,717.1219
Total	**2.6595**	**27.5242**	**18.2443**	**0.0381**	**7.6662**	**1.2660**	**8.9323**	**3.9400**	**1.1647**	**5.1047**	**0.0000**	**3,687.3081**	**3,687.3081**	**1.1926**		**3,717.1219**

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.1301	7.8294	2.0897	0.0351	1.0503	0.0494	1.0996	0.2880	0.0473	0.3352		3,855.9606	3,855.9606	0.2125	0.6123	4,043.7450
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000
Worker	0.0705	0.0491	0.7972	2.1800e-003	0.2459	1.4800e-003	0.2474	0.0652	1.3700e-003	0.0666		222.7748	222.7748	5.5500e-003	5.0800e-003	224.4266
Total	**0.2006**	**7.8785**	**2.8869**	**0.0373**	**1.2962**	**0.0509**	**1.3470**	**0.3532**	**0.0486**	**0.4018**		**4,078.7354**	**4,078.7354**	**0.2181**	**0.6174**	**4,268.1715**

3.3 Surface Fracturing Infilling - 2023

Unmitigated Construction On-Site

Portuguese Bend Landslide Remediation - Los Angeles-South Coast County, Summer

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Applied

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Fugitive Dust					6.5523	0.0000	6.5523	3.3675	0.0000	3.3675			0.0000			0.0000
Off-Road	1.5039	14.5000	14.5520	0.0265		0.6832	0.6832		0.6393	0.6393		2,553.2939	2,553.2939	0.6528		2,569.6136
Total	**1.5039**	**14.5000**	**14.5520**	**0.0265**	**6.5523**	**0.6832**	**7.2355**	**3.3675**	**0.6393**	**4.0068**		**2,553.2939**	**2,553.2939**	**0.6528**		**2,569.6136**

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.1301	7.8294	2.0897	0.0351	1.0503	0.0494	1.0996	0.2880	0.0473	0.3352		3,855.9606	3,855.9606	0.2125	0.6123	4,043.7450
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000
Worker	0.0705	0.0491	0.7972	2.1800e-003	0.2459	1.4800e-003	0.2474	0.0652	1.3700e-003	0.0666		222.7748	222.7748	5.5500e-003	5.0800e-003	224.4266
Total	**0.2006**	**7.8785**	**2.8869**	**0.0373**	**1.2962**	**0.0509**	**1.3470**	**0.3532**	**0.0486**	**0.4018**		**4,078.7354**	**4,078.7354**	**0.2181**	**0.6174**	**4,268.1715**

Mitigated Construction On-Site

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Applied

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Fugitive Dust					2.5554	0.0000	2.5554	1.3133	0.0000	1.3133			0.0000			0.0000
Off-Road	1.5039	14.5000	14.5520	0.0265		0.6832	0.6832		0.6393	0.6393	0.0000	2,553.2939	2,553.2939	0.6528		2,569.6136
Total	**1.5039**	**14.5000**	**14.5520**	**0.0265**	**2.5554**	**0.6832**	**3.2386**	**1.3133**	**0.6393**	**1.9527**	**0.0000**	**2,553.2939**	**2,553.2939**	**0.6528**		**2,569.6136**

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.1301	7.8294	2.0897	0.0351	1.0503	0.0494	1.0996	0.2880	0.0473	0.3352		3,855.9606	3,855.9606	0.2125	0.6123	4,043.7450
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000
Worker	0.0705	0.0491	0.7972	2.1800e-003	0.2459	1.4800e-003	0.2474	0.0652	1.3700e-003	0.0666		222.7748	222.7748	5.5500e-003	5.0800e-003	224.4266
Total	**0.2006**	**7.8785**	**2.8869**	**0.0373**	**1.2962**	**0.0509**	**1.3470**	**0.3532**	**0.0486**	**0.4018**		**4,078.7354**	**4,078.7354**	**0.2181**	**0.6174**	**4,268.1715**

3.4 Surface Water Improvements - 2024

Unmitigated Construction On-Site

Portuguese Bend Landslide Remediation - Los Angeles-South Coast County, Summer

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Applied

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Off-Road	1.0117	9.2035	14.8258	0.0226		0.4366	0.4366		0.4111	0.4111		2,176.2023	2,176.2023	0.5297		2,189.4457
Total	**1.0117**	**9.2035**	**14.8258**	**0.0226**		**0.4366**	**0.4366**		**0.4111**	**0.4111**		**2,176.2023**	**2,176.2023**	**0.5297**		**2,189.4457**

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.1293	7.8495	2.1267	0.0346	1.0503	0.0498	1.1001	0.2880	0.0476	0.3356		3,801.3566	3,801.3566	0.2145	0.6039	3,986.6726
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000
Worker	0.0657	0.0439	0.7421	2.1200e-003	0.2459	1.4200e-003	0.2473	0.0652	1.3100e-003	0.0665		218.1826	218.1826	5.0200e-003	4.7200e-003	219.7152
Total	**0.1949**	**7.8934**	**2.8687**	**0.0367**	**1.2962**	**0.0512**	**1.3474**	**0.3532**	**0.0489**	**0.4021**		**4,019.5392**	**4,019.5392**	**0.2195**	**0.6086**	**4,206.3878**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Off-Road	1.0117	9.2035	14.8258	0.0226		0.4366	0.4366		0.4111	0.4111	0.0000	2,176.2023	2,176.2023	0.5297		2,189.4457
Total	**1.0117**	**9.2035**	**14.8258**	**0.0226**		**0.4366**	**0.4366**		**0.4111**	**0.4111**	**0.0000**	**2,176.2023**	**2,176.2023**	**0.5297**		**2,189.4457**

Portuguese Bend Landslide Remediation - Los Angeles-South Coast County, Summer

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Applied

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.1293	7.8495	2.1267	0.0346	1.0503	0.0498	1.1001	0.2880	0.0476	0.3356		3,801.3566	3,801.3566	0.2145	0.6039	3,986.6726
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000
Worker	0.0657	0.0439	0.7421	2.1200e-003	0.2459	1.4200e-003	0.2473	0.0652	1.3100e-003	0.0665		218.1826	218.1826	5.0200e-003	4.7200e-003	219.7152
Total	**0.1949**	**7.8934**	**2.8687**	**0.0367**	**1.2962**	**0.0512**	**1.3474**	**0.3532**	**0.0489**	**0.4021**		**4,019.5392**	**4,019.5392**	**0.2195**	**0.6086**	**4,206.3878**

3.5 Hydraugers - 2025

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Off-Road	1.2007	10.1827	14.4262	0.0298		0.3963	0.3963		0.3836	0.3836		2,820.8837	2,820.8837	0.5102		2,833.6382
Total	**1.2007**	**10.1827**	**14.4262**	**0.0298**		**0.3963**	**0.3963**		**0.3836**	**0.3836**		**2,820.8837**	**2,820.8837**	**0.5102**		**2,833.6382**

Portuguese Bend Landslide Remediation - Los Angeles-South Coast County, Summer

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Applied

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.1281	7.7998	2.1553	0.0339	1.0503	0.0499	1.1002	0.2880	0.0477	0.3357		3,733.6458	3,733.6458	0.2170	0.5934	3,915.8934
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000
Worker	0.0614	0.0394	0.6916	2.0400e-003	0.2459	1.3600e-003	0.2473	0.0652	1.2500e-003	0.0665		212.8440	212.8440	4.5200e-003	4.4100e-003	214.2714
Total	**0.1895**	**7.8392**	**2.8469**	**0.0359**	**1.2962**	**0.0512**	**1.3474**	**0.3532**	**0.0490**	**0.4022**		**3,946.4898**	**3,946.4898**	**0.2215**	**0.5978**	**4,130.1648**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Off-Road	1.2007	10.1827	14.4262	0.0298		0.3963	0.3963		0.3836	0.3836	0.0000	2,820.8837	2,820.8837	0.5102		2,833.6382
Total	**1.2007**	**10.1827**	**14.4262**	**0.0298**		**0.3963**	**0.3963**		**0.3836**	**0.3836**	**0.0000**	**2,820.8837**	**2,820.8837**	**0.5102**		**2,833.6382**

Mitigated Construction Off-Site

Portuguese Bend Landslide Remediation - Los Angeles-South Coast County, Summer

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Applied

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.1281	7.7998	2.1553	0.0339	1.0503	0.0499	1.1002	0.2880	0.0477	0.3357		3,733.6458	3,733.6458	0.2170	0.5934	3,915.8934
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000
Worker	0.0614	0.0394	0.6916	2.0400e-003	0.2459	1.3600e-003	0.2473	0.0652	1.2500e-003	0.0665		212.8440	212.8440	4.5200e-003	4.4100e-003	214.2714
Total	**0.1895**	**7.8392**	**2.8469**	**0.0359**	**1.2962**	**0.0512**	**1.3474**	**0.3532**	**0.0490**	**0.4022**		**3,946.4898**	**3,946.4898**	**0.2215**	**0.5978**	**4,130.1648**

Portuguese Bend Landslide Remediation - Los Angeles-South Coast County, Winter

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Applied

Portuguese Bend Landslide Remediation

Los Angeles-South Coast County, Winter

1.0 Project Characteristics

1.1 Land Usage

Land Uses	Size	Metric	Lot Acreage	Floor Surface Area	Population
Other Non-Asphalt Surfaces	37.08	Acre	37.08	1,615,204.80	0

1.2 Other Project Characteristics

Urbanization	Urban	**Wind Speed (m/s)**	2.2	**Precipitation Freq (Days)**	33
Climate Zone	8			**Operational Year**	2026
Utility Company	Southern California Edison				
CO2 Intensity (lb/MWhr)	390.98	**CH4 Intensity (lb/MWhr)**	0.033	**N2O Intensity (lb/MWhr)**	0.004

1.3 User Entered Comments & Non-Default Data

Project Characteristics -

Land Use -

Construction Phase - Construction schedule provided by City

Off-road Equipment - Hydraugers - 1 Bore/Drill Rig, 1 Forklift, 1 Generator, 1 Pump, 1 Tractor/Loader/Backhoe, 1 Welder

Off-road Equipment - Staging Areas & Access Routes - 3 Dozers & 4 Tractors/Loaders/Backhoes

Off-road Equipment - Surface Fracturing Infilling - 1 Excavator, 1 Rubber Tired Dozer, 1 Pump, 2 Tractors/Loaders/Backhoes

Trips and VMT - 22 worker trips per day and 60 truck trips per day

Grading -

Construction Off-road Equipment Mitigation - Water Exposed Areas 3x per day selected to account for water truck emissions

Off-road Equipment - Surface Water Improvements - 1 Excavator, 1 Forklift, 1 Pump, 3 Tractors/Loaders/Backhoes

Portuguese Bend Landslide Remediation - Los Angeles-South Coast County, Winter

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Applied

Table Name	Column Name	Default Value	New Value
tblConstructionPhase	NumDays	740.00	132.00
tblConstructionPhase	NumDays	75.00	130.00
tblConstructionPhase	NumDays	30.00	22.00
tblOffRoadEquipment	OffRoadEquipmentType		Excavators
tblOffRoadEquipment	OffRoadEquipmentType		Forklifts
tblOffRoadEquipment	OffRoadEquipmentType		Pumps
tblOffRoadEquipment	OffRoadEquipmentType		Tractors/Loaders/Backhoes
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	2.00	1.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	3.00	1.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	3.00	1.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	0.00	1.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	0.00	1.00
tblOffRoadEquipment	PhaseName		Hydraugers
tblOffRoadEquipment	PhaseName		Hydraugers
tblOffRoadEquipment	PhaseName		Surface Water Improvements
tblOffRoadEquipment	PhaseName		Surface Water Improvements
tblOffRoadEquipment	PhaseName		Surface Water Improvements
tblOffRoadEquipment	PhaseName		Surface Water Improvements
tblOffRoadEquipment	UsageHours	7.00	8.00
tblTripsAndVMT	HaulingTripNumber	0.00	1,320.00
tblTripsAndVMT	HaulingTripNumber	0.00	7,800.00
tblTripsAndVMT	HaulingTripNumber	0.00	7,920.00
tblTripsAndVMT	HaulingTripNumber	0.00	7,920.00
tblTripsAndVMT	VendorTripNumber	265.00	0.00
tblTripsAndVMT	WorkerTripNumber	18.00	22.00
tblTripsAndVMT	WorkerTripNumber	13.00	22.00
tblTripsAndVMT	WorkerTripNumber	15.00	22.00
tblTripsAndVMT	WorkerTripNumber	678.00	22.00

Portuguese Bend Landslide Remediation - Los Angeles-South Coast County, Winter

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Applied

2.0 Emissions Summary

2.1 Overall Construction (Maximum Daily Emission)

Unmitigated Construction

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Year	lb/day										lb/day					
2023	2.8569	35.7530	21.0955	0.0753	20.9532	1.3170	22.2702	10.4556	1.2135	11.6691	0.0000	7,758.3630	7,758.3630	1.4102	0.6184	7,977.9038
2024	1.2034	17.4479	17.6636	0.0592	1.2962	0.4879	1.7841	0.3532	0.4601	0.8133	0.0000	6,188.3200	6,188.3200	0.7488	0.6096	6,388.6948
2025	1.3868	18.3709	17.2465	0.0657	1.2962	0.4476	1.7438	0.3532	0.4326	0.7858	0.0000	6,760.2343	6,760.2343	0.7313	0.5987	6,956.9386
Maximum	**2.8569**	**35.7530**	**21.0955**	**0.0753**	**20.9532**	**1.3170**	**22.2702**	**10.4556**	**1.2135**	**11.6691**	**0.0000**	**7,758.3630**	**7,758.3630**	**1.4102**	**0.6184**	**7,977.9038**

Mitigated Construction

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Year	lb/day										lb/day					
2023	2.8569	35.7530	21.0955	0.0753	8.9624	1.3170	10.2794	4.2931	1.2135	5.5066	0.0000	7,758.3630	7,758.3630	1.4102	0.6184	7,977.9038
2024	1.2034	17.4479	17.6636	0.0592	1.2962	0.4879	1.7841	0.3532	0.4601	0.8133	0.0000	6,188.3200	6,188.3200	0.7488	0.6096	6,388.6947
2025	1.3868	18.3709	17.2465	0.0657	1.2962	0.4476	1.7438	0.3532	0.4326	0.7858	0.0000	6,760.2343	6,760.2343	0.7313	0.5987	6,956.9386
Maximum	**2.8569**	**35.7530**	**21.0955**	**0.0753**	**8.9624**	**1.3170**	**10.2794**	**4.2931**	**1.2135**	**5.5066**	**0.0000**	**7,758.3630**	**7,758.3630**	**1.4102**	**0.6184**	**7,977.9038**

Portuguese Bend Landslide Remediation - Los Angeles-South Coast County, Winter

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Applied

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio-CO2	Total CO2	CH4	N20	CO2e
Percent Reduction	0.00	0.00	0.00	0.00	50.93	0.00	46.48	55.21	0.00	46.45	0.00	0.00	0.00	0.00	0.00	0.00

3.0 Construction Detail

Construction Phase

Phase Number	Phase Name	Phase Type	Start Date	End Date	Num Days Week	Num Days	Phase Description
1	Staging Areas & Access Routes	Site Preparation	6/1/2023	6/30/2023	5	22	
2	Surface Fracturing Infilling	Grading	7/1/2023	12/31/2023	5	130	
3	Surface Water Improvements	Trenching	7/1/2024	12/31/2024	5	132	
4	Hydraugers	Building Construction	7/1/2025	12/31/2025	5	132	

Acres of Grading (Site Preparation Phase): 33

Acres of Grading (Grading Phase): 65

Acres of Paving: 37.08

Residential Indoor: 0; Residential Outdoor: 0; Non-Residential Indoor: 0; Non-Residential Outdoor: 0; Striped Parking Area: 0 (Architectural Coating –

OffRoad Equipment

Phase Name	Offroad Equipment Type	Amount	Usage Hours	Horse Power	Load Factor
Staging Areas & Access Routes	Rubber Tired Dozers	3	8.00	247	0.40
Staging Areas & Access Routes	Tractors/Loaders/Backhoes	4	8.00	97	0.37
Surface Fracturing Infilling	Excavators	1	8.00	158	0.38
Surface Fracturing Infilling	Pumps	1	8.00	84	0.74
Surface Fracturing Infilling	Rubber Tired Dozers	1	8.00	247	0.40
Surface Fracturing Infilling	Tractors/Loaders/Backhoes	2	8.00	97	0.37
Hydraugers	Bore/Drill Rigs	1	8.00	221	0.50

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Applied

Hydraugers	Forklifts	1	8.00	89	0.20
Hydraugers	Generator Sets	1	8.00	84	0.74
Hydraugers	Pumps	1	8.00	84	0.74
Hydraugers	Tractors/Loaders/Backhoes	1	8.00	97	0.37
Hydraugers	Welders	1	8.00	46	0.45
Surface Water Improvements	Excavators	1	8.00	158	0.38
Surface Water Improvements	Forklifts	1	8.00	89	0.20
Surface Water Improvements	Pumps	1	8.00	84	0.74
Surface Water Improvements	Tractors/Loaders/Backhoes	3	8.00	97	0.37

Trips and VMT

Phase Name	Offroad Equipment Count	Worker Trip Number	Vendor Trip Number	Hauling Trip Number	Worker Trip Length	Vendor Trip Length	Hauling Trip Length	Worker Vehicle Class	Vendor Vehicle Class	Hauling Vehicle Class
Staging Areas & Access Routes	7	22.00	0.00	1,320.00	14.70	6.90	20.00	LD_Mix	HDT_Mix	HHDT
Surface Fracturing Infilling	5	22.00	0.00	7,800.00	14.70	6.90	20.00	LD_Mix	HDT_Mix	HHDT
Hydraugers	6	22.00	0.00	7,920.00	14.70	6.90	20.00	LD_Mix	HDT_Mix	HHDT
Surface Water Improvements	6	22.00	0.00	7,920.00	14.70	6.90	20.00	LD_Mix	HDT_Mix	HHDT

3.1 Mitigation Measures Construction

Water Exposed Area

3.2 Staging Areas & Access Routes - 2023

Unmitigated Construction On-Site

Portuguese Bend Landslide Remediation - Los Angeles-South Coast County, Winter

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Applied

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Fugitive Dust					19.6570	0.0000	19.6570	10.1025	0.0000	10.1025			0.0000			0.0000
Off-Road	2.6595	27.5242	18.2443	0.0381		1.2660	1.2660		1.1647	1.1647		3,687.3081	3,687.3081	1.1926		3,717.1219
Total	**2.6595**	**27.5242**	**18.2443**	**0.0381**	**19.6570**	**1.2660**	**20.9230**	**10.1025**	**1.1647**	**11.2672**		**3,687.3081**	**3,687.3081**	**1.1926**		**3,717.1219**

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.1217	8.1746	2.1184	0.0351	1.0503	0.0495	1.0998	0.2880	0.0474	0.3353		3,860.0250	3,860.0250	0.2121	0.6130	4,047.9953
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000
Worker	0.0757	0.0543	0.7328	2.0600e-003	0.2459	1.4800e-003	0.2474	0.0652	1.3700e-003	0.0666		211.0299	211.0299	5.6200e-003	5.4200e-003	212.7867
Total	**0.1974**	**8.2288**	**2.8512**	**0.0372**	**1.2962**	**0.0510**	**1.3472**	**0.3532**	**0.0487**	**0.4019**		**4,071.0549**	**4,071.0549**	**0.2177**	**0.6184**	**4,260.7819**

Mitigated Construction On-Site

Portuguese Bend Landslide Remediation - Los Angeles-South Coast County, Winter

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Applied

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Fugitive Dust					7.6662	0.0000	7.6662	3.9400	0.0000	3.9400			0.0000			0.0000
Off-Road	2.6595	27.5242	18.2443	0.0381		1.2660	1.2660		1.1647	1.1647	0.0000	3,687.3081	3,687.3081	1.1926		3,717.1219
Total	**2.6595**	**27.5242**	**18.2443**	**0.0381**	**7.6662**	**1.2660**	**8.9323**	**3.9400**	**1.1647**	**5.1047**	**0.0000**	**3,687.3081**	**3,687.3081**	**1.1926**		**3,717.1219**

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.1217	8.1746	2.1184	0.0351	1.0503	0.0495	1.0998	0.2880	0.0474	0.3353		3,860.0250	3,860.0250	0.2121	0.6130	4,047.9953
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000
Worker	0.0757	0.0543	0.7328	2.0600e-003	0.2459	1.4800e-003	0.2474	0.0652	1.3700e-003	0.0666		211.0299	211.0299	5.6200e-003	5.4200e-003	212.7867
Total	**0.1974**	**8.2288**	**2.8512**	**0.0372**	**1.2962**	**0.0510**	**1.3472**	**0.3532**	**0.0487**	**0.4019**		**4,071.0549**	**4,071.0549**	**0.2177**	**0.6184**	**4,260.7819**

3.3 Surface Fracturing Infilling - 2023

Unmitigated Construction On-Site

Portuguese Bend Landslide Remediation - Los Angeles-South Coast County, Winter

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Applied

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Fugitive Dust					6.5523	0.0000	6.5523	3.3675	0.0000	3.3675			0.0000			0.0000
Off-Road	1.5039	14.5000	14.5520	0.0265		0.6832	0.6832		0.6393	0.6393		2,553.2939	2,553.2939	0.6528		2,569.6136
Total	**1.5039**	**14.5000**	**14.5520**	**0.0265**	**6.5523**	**0.6832**	**7.2355**	**3.3675**	**0.6393**	**4.0068**		**2,553.2939**	**2,553.2939**	**0.6528**		**2,569.6136**

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.1217	8.1746	2.1184	0.0351	1.0503	0.0495	1.0998	0.2880	0.0474	0.3353		3,860.0250	3,860.0250	0.2121	0.6130	4,047.9953
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000
Worker	0.0757	0.0543	0.7328	2.0600e-003	0.2459	1.4800e-003	0.2474	0.0652	1.3700e-003	0.0666		211.0299	211.0299	5.6200e-003	5.4200e-003	212.7867
Total	**0.1974**	**8.2288**	**2.8512**	**0.0372**	**1.2962**	**0.0510**	**1.3472**	**0.3532**	**0.0487**	**0.4019**		**4,071.0549**	**4,071.0549**	**0.2177**	**0.6184**	**4,260.7819**

Mitigated Construction On-Site

Portuguese Bend Landslide Remediation - Los Angeles-South Coast County, Winter

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Applied

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Fugitive Dust					2.5554	0.0000	2.5554	1.3133	0.0000	1.3133			0.0000			0.0000
Off-Road	1.5039	14.5000	14.5520	0.0265		0.6832	0.6832		0.6393	0.6393	0.0000	2,553.2939	2,553.2939	0.6528		2,569.6136
Total	**1.5039**	**14.5000**	**14.5520**	**0.0265**	**2.5554**	**0.6832**	**3.2386**	**1.3133**	**0.6393**	**1.9527**	**0.0000**	**2,553.2939**	**2,553.2939**	**0.6528**		**2,569.6136**

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.1217	8.1746	2.1184	0.0351	1.0503	0.0495	1.0998	0.2880	0.0474	0.3353		3,860.0250	3,860.0250	0.2121	0.6130	4,047.9953
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000
Worker	0.0757	0.0543	0.7328	2.0600e-003	0.2459	1.4800e-003	0.2474	0.0652	1.3700e-003	0.0666		211.0299	211.0299	5.6200e-003	5.4200e-003	212.7867
Total	**0.1974**	**8.2288**	**2.8512**	**0.0372**	**1.2962**	**0.0510**	**1.3472**	**0.3532**	**0.0487**	**0.4019**		**4,071.0549**	**4,071.0549**	**0.2177**	**0.6184**	**4,260.7819**

3.4 Surface Water Improvements - 2024

Unmitigated Construction On-Site

Portuguese Bend Landslide Remediation - Los Angeles-South Coast County, Winter

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Applied

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Off-Road	1.0117	9.2035	14.8258	0.0226		0.4366	0.4366		0.4111	0.4111		2,176.2023	2,176.2023	0.5297		2,189.4457
Total	**1.0117**	**9.2035**	**14.8258**	**0.0226**		**0.4366**	**0.4366**		**0.4111**	**0.4111**		**2,176.2023**	**2,176.2023**	**0.5297**		**2,189.4457**

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.1209	8.1960	2.1551	0.0346	1.0503	0.0499	1.1002	0.2880	0.0478	0.3357		3,805.4189	3,805.4189	0.2140	0.6045	3,990.9205
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000
Worker	0.0708	0.0484	0.6827	2.0000e-003	0.2459	1.4200e-003	0.2473	0.0652	1.3100e-003	0.0665		206.6988	206.6988	5.0900e-003	5.0400e-003	208.3286
Total	**0.1917**	**8.2444**	**2.8378**	**0.0366**	**1.2962**	**0.0513**	**1.3475**	**0.3532**	**0.0491**	**0.4022**		**4,012.1176**	**4,012.1176**	**0.2191**	**0.6096**	**4,199.2491**

Mitigated Construction On-Site

Portuguese Bend Landslide Remediation - Los Angeles-South Coast County, Winter

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Applied

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Off-Road	1.0117	9.2035	14.8258	0.0226		0.4366	0.4366		0.4111	0.4111	0.0000	2,176.2023	2,176.2023	0.5297		2,189.4457
Total	**1.0117**	**9.2035**	**14.8258**	**0.0226**		**0.4366**	**0.4366**		**0.4111**	**0.4111**	**0.0000**	**2,176.2023**	**2,176.2023**	**0.5297**		**2,189.4457**

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.1209	8.1960	2.1551	0.0346	1.0503	0.0499	1.1002	0.2880	0.0478	0.3357		3,805.4189	3,805.4189	0.2140	0.6045	3,990.9205
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000
Worker	0.0708	0.0484	0.6827	2.0000e-003	0.2459	1.4200e-003	0.2473	0.0652	1.3100e-003	0.0665		206.6988	206.6988	5.0900e-003	5.0400e-003	208.3286
Total	**0.1917**	**8.2444**	**2.8378**	**0.0366**	**1.2962**	**0.0513**	**1.3475**	**0.3532**	**0.0491**	**0.4022**		**4,012.1176**	**4,012.1176**	**0.2191**	**0.6096**	**4,199.2491**

3.5 Hydraugers - 2025

Unmitigated Construction On-Site

Portuguese Bend Landslide Remediation - Los Angeles-South Coast County, Winter

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Applied

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Off-Road	1.2007	10.1827	14.4262	0.0298		0.3963	0.3963		0.3836	0.3836		2,820.8837	2,820.8837	0.5102		2,833.6382
Total	**1.2007**	**10.1827**	**14.4262**	**0.0298**		**0.3963**	**0.3963**		**0.3836**	**0.3836**		**2,820.8837**	**2,820.8837**	**0.5102**		**2,833.6382**

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.1197	8.1447	2.1835	0.0339	1.0503	0.0500	1.1003	0.2880	0.0478	0.3358		3,737.6852	3,737.6852	0.2165	0.5940	3,920.1172
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000
Worker	0.0664	0.0435	0.6367	1.9400e-003	0.2459	1.3600e-003	0.2473	0.0652	1.2500e-003	0.0665		201.6654	201.6654	4.6000e-003	4.7100e-003	203.1833
Total	**0.1861**	**8.1882**	**2.8202**	**0.0359**	**1.2962**	**0.0514**	**1.3476**	**0.3532**	**0.0491**	**0.4023**		**3,939.3506**	**3,939.3506**	**0.2211**	**0.5987**	**4,123.3005**

Mitigated Construction On-Site

Portuguese Bend Landslide Remediation - Los Angeles-South Coast County, Winter

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Applied

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Off-Road	1.2007	10.1827	14.4262	0.0298		0.3963	0.3963		0.3836	0.3836	0.0000	2,820.8837	2,820.8837	0.5102		2,833.6382
Total	**1.2007**	**10.1827**	**14.4262**	**0.0298**		**0.3963**	**0.3963**		**0.3836**	**0.3836**	**0.0000**	**2,820.8837**	**2,820.8837**	**0.5102**		**2,833.6382**

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.1197	8.1447	2.1835	0.0339	1.0503	0.0500	1.1003	0.2880	0.0478	0.3358		3,737.6852	3,737.6852	0.2165	0.5940	3,920.1172
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000
Worker	0.0664	0.0435	0.6367	1.9400e-003	0.2459	1.3600e-003	0.2473	0.0652	1.2500e-003	0.0665		201.6654	201.6654	4.6000e-003	4.7100e-003	203.1833
Total	**0.1861**	**8.1882**	**2.8202**	**0.0359**	**1.2962**	**0.0514**	**1.3476**	**0.3532**	**0.0491**	**0.4023**		**3,939.3506**	**3,939.3506**	**0.2211**	**0.5987**	**4,123.3005**

APPENDIX B

EMFAC2017 Model Printouts

EMFAC2017 (v1.0.2) Emissions Inventory
Region Type: Air Basin
Region: SOUTH COAST
Calendar Year: 2023
Season: Annual
Vehicle Classification: EMFAC2007 Categories
Units: miles/day for VMT, trips/day for Trips, tons/day for Emissions, 1000 gallons/day for Fuel Consumption. Note 'day' in the unit is operation day.

Region	Calendar '	Vehicle C	Model Year	Speed	Fuel	Population	VMT	Trips	Fuel Consumption
SOUTH CO	2023	HHDT	Aggregated	Aggregatec	GAS	74.37	8047.23	1487.93	1.89
SOUTH CO	2023	LDA	Aggregated	Aggregatec	GAS	6459700.68	246807537.84	30522037.63	7786.05
SOUTH CO	2023	LDT1	Aggregated	Aggregatec	GAS	737358.38	27059295.05	3407418.81	995.76
SOUTH CO	2023	LDT2	Aggregated	Aggregatec	GAS	2219228.89	82875046.15	10414097.54	3244.21
SOUTH CO	2023	LHDT1	Aggregated	Aggregatec	GAS	170372.50	6057759.01	2538296.34	568.77
SOUTH CO	2023	LHDT2	Aggregated	Aggregatec	GAS	29153.37	1003759.33	434341.71	108.29
SOUTH CO	2023	MCY	Aggregated	Aggregatec	GAS	297600.18	2024753.66	595200.36	55.80
SOUTH CO	2023	MDV	Aggregated	Aggregatec	GAS	1540538.65	53902320.53	7127894.33	2607.45
SOUTH CO	2023	MH	Aggregated	Aggregatec	GAS	33691.87	321144.17	3370.53	61.57
SOUTH CO	2023	MHDT	Aggregated	Aggregatec	GAS	24928.02	1310043.21	498759.85	254.98
SOUTH CO	2023	OBUS	Aggregated	Aggregatec	GAS	5826.42	235991.19	116574.92	46.21
SOUTH CO	2023	SBUS	Aggregated	Aggregatec	GAS	2711.85	107297.31	10847.42	11.68
SOUTH CO	2023	UBUS	Aggregated	Aggregatec	GAS	957.77	89782.63	3831.07	17.62

vehicle miles per day (All Categories)	421802777	15,760	1,000 gall per day
		15,760,271	gallons per day
Fleet Avg Miles per gallon	26.8		

EMFAC2017 (v1.0.2) Emissions Inventory
Region Type: Air Basin
Region: SOUTH COAST
Calendar Year: 2023
Season: Annual
Vehicle Classification: EMFAC2007 Categories
Units: miles/day for VMT, trips/day for Trips, tons/day for Emissions, 1000 gallons/day for Fuel Consumption. Note 'day' in the unit is operation day.

Region	Calendar Ye	Vehicle Cat	Model Year	Speed	Fuel	Population	VMT	Trips	Fuel Consumption
SOUTH COA	2023	HHDT	Aggregated	Aggregatec	DSL	99862.0	12043323.4	1008086.8	1696.5
SOUTH COA	2023	LDA	Aggregated	Aggregatec	DSL	60890.6	2412432.1	289413.5	48.3
SOUTH COA	2023	LDT1	Aggregated	Aggregatec	DSL	352.4	8196.1	1229.5	0.4
SOUTH COA	2023	LDT2	Aggregated	Aggregatec	DSL	15172.5	633608.1	74551.8	17.3
SOUTH COA	2023	LHDT1	Aggregated	Aggregatec	DSL	121835.8	4855937.3	1532540.9	221.8
SOUTH COA	2023	LHDT2	Aggregated	Aggregatec	DSL	48525.6	1881224.0	610391.4	95.2
SOUTH COA	2023	MDV	Aggregated	Aggregatec	DSL	35106.9	1383747.2	171565.7	49.2
SOUTH COA	2023	MH	Aggregated	Aggregatec	DSL	12560.1	119509.1	1256.0	11.2
SOUTH COA	2023	MHDT	Aggregated	Aggregatec	DSL	118681.0	7894095.0	1192353.2	705.1
SOUTH COA	2023	OBUS	Aggregated	Aggregatec	DSL	4158.7	323908.7	40367.2	37.2
SOUTH COA	2023	SBUS	Aggregated	Aggregatec	DSL	6393.3	202053.5	73777.5	26.3
SOUTH COA	2023	UBUS	Aggregated	Aggregatec	DSL	13.0	1416.6	52.0	0.2

Diesel Truck (HHDT, MDV, MHDT) vehicle miles per day	21,321,166	2,451	1,000 gall per day
		2450893.902	gallons per day
Diesel Truck Fleet Avg Miles per gallon	8.7		

APPENDIX C

CalEEMod Model Annual Printouts

Portuguese Bend Landslide Remediation - Los Angeles-South Coast County, Annual

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Applied

Portuguese Bend Landslide Remediation

Los Angeles-South Coast County, Annual

1.0 Project Characteristics

1.1 Land Usage

Land Uses	Size	Metric	Lot Acreage	Floor Surface Area	Population
Other Non-Asphalt Surfaces	37.08	Acre	37.08	1,615,204.80	0

1.2 Other Project Characteristics

Urbanization	Urban	**Wind Speed (m/s)**	2.2	**Precipitation Freq (Days)**	33
Climate Zone	8			**Operational Year**	2026
Utility Company	Southern California Edison				
CO2 Intensity (lb/MWhr)	390.98	**CH4 Intensity (lb/MWhr)**	0.033	**N2O Intensity (lb/MWhr)**	0.004

1.3 User Entered Comments & Non-Default Data

Project Characteristics -

Land Use -

Construction Phase - Construction schedule provided by City

Off-road Equipment - Hydraugers - 1 Bore/Drill Rig, 1 Forklift, 1 Generator, 1 Pump, 1 Tractor/Loader/Backhoe, 1 Welder

Off-road Equipment - Staging Areas & Access Routes - 3 Dozers & 4 Tractors/Loaders/Backhoes

Off-road Equipment - Surface Fracturing Infilling - 1 Excavator, 1 Rubber Tired Dozer, 1 Pump, 2 Tractors/Loaders/Backhoes

Trips and VMT - 22 worker trips per day and 60 truck trips per day

Grading -

Construction Off-road Equipment Mitigation - Water Exposed Areas 3x per day selected to account for water truck emissions

Off-road Equipment - Surface Water Improvements - 1 Excavator, 1 Forklift, 1 Pump, 3 Tractors/Loaders/Backhoes

Date: 10/31/2022 11:12 AM

Portuguese Bend Landslide Remediation - Los Angeles-South Coast County, Annual

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Applied

Table Name	Column Name	Default Value	New Value
tblConstructionPhase	NumDays	740.00	132.00
tblConstructionPhase	NumDays	75.00	130.00
tblConstructionPhase	NumDays	30.00	22.00
tblOffRoadEquipment	OffRoadEquipmentType		Excavators
tblOffRoadEquipment	OffRoadEquipmentType		Forklifts
tblOffRoadEquipment	OffRoadEquipmentType		Pumps
tblOffRoadEquipment	OffRoadEquipmentType		Tractors/Loaders/Backhoes
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	2.00	1.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	3.00	1.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	3.00	1.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	0.00	1.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	0.00	1.00
tblOffRoadEquipment	PhaseName		Hydraugers
tblOffRoadEquipment	PhaseName		Hydraugers
tblOffRoadEquipment	PhaseName		Surface Water Improvements
tblOffRoadEquipment	PhaseName		Surface Water Improvements
tblOffRoadEquipment	PhaseName		Surface Water Improvements
tblOffRoadEquipment	PhaseName		Surface Water Improvements
tblOffRoadEquipment	UsageHours	7.00	8.00
tblTripsAndVMT	HaulingTripNumber	0.00	1,320.00
tblTripsAndVMT	HaulingTripNumber	0.00	7,800.00
tblTripsAndVMT	HaulingTripNumber	0.00	7,920.00
tblTripsAndVMT	HaulingTripNumber	0.00	7,920.00
tblTripsAndVMT	VendorTripNumber	265.00	0.00
tblTripsAndVMT	WorkerTripNumber	18.00	22.00
tblTripsAndVMT	WorkerTripNumber	13.00	22.00
tblTripsAndVMT	WorkerTripNumber	15.00	22.00
tblTripsAndVMT	WorkerTripNumber	678.00	22.00

2.0 Emissions Summary

2.1 Overall Construction

Date: 10/31/2022 11:12 AM

Portuguese Bend Landslide Remediation - Los Angeles-South Coast County, Annual

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Applied

Unmitigated Construction

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Year	tons/yr										MT/yr					
2023	0.1419	1.8765	1.3634	4.9700e-003	0.7389	0.0622	0.8011	0.3564	0.0581	0.4145	0.0000	468.0934	468.0934	0.0654	0.0426	482.4288
2024	0.0794	1.1567	1.1658	3.9100e-003	0.0841	0.0322	0.1163	0.0229	0.0304	0.0533	0.0000	370.5638	370.5638	0.0449	0.0365	382.5564
2025	0.0915	1.2175	1.1382	4.3400e-003	0.0841	0.0295	0.1136	0.0229	0.0286	0.0515	0.0000	404.8026	404.8026	0.0438	0.0358	416.5753
Maximum	**0.1419**	**1.8765**	**1.3634**	**4.9700e-003**	**0.7389**	**0.0622**	**0.8011**	**0.3564**	**0.0581**	**0.4145**	**0.0000**	**468.0934**	**468.0934**	**0.0654**	**0.0426**	**482.4288**

Mitigated Construction

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Year	tons/yr										MT/yr					
2023	0.1419	1.8765	1.3634	4.9700e-003	0.3472	0.0622	0.4094	0.1551	0.0581	0.2132	0.0000	468.0932	468.0932	0.0654	0.0426	482.4286
2024	0.0794	1.1567	1.1658	3.9100e-003	0.0841	0.0322	0.1163	0.0229	0.0304	0.0533	0.0000	370.5637	370.5637	0.0449	0.0365	382.5562
2025	0.0915	1.2175	1.1382	4.3400e-003	0.0841	0.0295	0.1136	0.0229	0.0286	0.0515	0.0000	404.8024	404.8024	0.0438	0.0358	416.5751
Maximum	**0.1419**	**1.8765**	**1.3634**	**4.9700e-003**	**0.3472**	**0.0622**	**0.4094**	**0.1551**	**0.0581**	**0.2132**	**0.0000**	**468.0932**	**468.0932**	**0.0654**	**0.0426**	**482.4286**

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio-CO2	Total CO2	CH4	N20	CO2e
Percent Reduction	**0.00**	**0.00**	**0.00**	**0.00**	**43.19**	**0.00**	**37.99**	**50.04**	**0.00**	**38.77**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**

Portuguese Bend Landslide Remediation - Los Angeles-South Coast County, Annual

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Applied

Quarter	Start Date	End Date	Maximum Unmitigated ROG + NOX (tons/quarter)	Maximum Mitigated ROG + NOX (tons/quarter)
1	6-1-2023	8-31-2023	0.9432	0.9432
2	9-1-2023	11-30-2023	0.7903	0.7903
3	12-1-2023	2-29-2024	0.2705	0.2705
5	6-1-2024	8-31-2024	0.4053	0.4053
6	9-1-2024	11-30-2024	0.6024	0.6024
7	12-1-2024	2-28-2025	0.2065	0.2065
9	6-1-2025	8-31-2025	0.4298	0.4298
10	9-1-2025	9-30-2025	0.2080	0.2080
		Highest	0.9432	0.9432

3.0 Construction Detail

Construction Phase

Phase Number	Phase Name	Phase Type	Start Date	End Date	Num Days Week	Num Days	Phase Description
1	Staging Areas & Access Routes	Site Preparation	6/1/2023	6/30/2023	5	22	
2	Surface Fracturing Infilling	Grading	7/1/2023	12/31/2023	5	130	
3	Surface Water Improvements	Trenching	7/1/2024	12/31/2024	5	132	
4	Hydraugers	Building Construction	7/1/2025	12/31/2025	5	132	

Acres of Grading (Site Preparation Phase): 33

Acres of Grading (Grading Phase): 65

Acres of Paving: 37.08

Residential Indoor: 0; Residential Outdoor: 0; Non-Residential Indoor: 0; Non-Residential Outdoor: 0; Striped Parking Area: 0 (Architectural Coating –

OffRoad Equipment

Phase Name	Offroad Equipment Type	Amount	Usage Hours	Horse Power	Load Factor
Staging Areas & Access Routes	Rubber Tired Dozers	3	8.00	247	0.40
Staging Areas & Access Routes	Tractors/Loaders/Backhoes	4	8.00	97	0.37
Surface Fracturing Infilling	Excavators	1	8.00	158	0.38
Surface Fracturing Infilling	Pumps	1	8.00	84	0.74
Surface Fracturing Infilling	Rubber Tired Dozers	1	8.00	247	0.40
Surface Fracturing Infilling	Tractors/Loaders/Backhoes	2	8.00	97	0.37

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Hydraugers	Bore/Drill Rigs	1	8.00	221	0.50
Hydraugers	Forklifts	1	8.00	89	0.20
Hydraugers	Generator Sets	1	8.00	84	0.74
Hydraugers	Pumps	1	8.00	84	0.74
Hydraugers	Tractors/Loaders/Backhoes	1	8.00	97	0.37
Hydraugers	Welders	1	8.00	46	0.45
Surface Water Improvements	Excavators	1	8.00	158	0.38
Surface Water Improvements	Forklifts	1	8.00	89	0.20
Surface Water Improvements	Pumps	1	8.00	84	0.74
Surface Water Improvements	Tractors/Loaders/Backhoes	3	8.00	97	0.37

Trips and VMT

Phase Name	Offroad Equipment Count	Worker Trip Number	Vendor Trip Number	Hauling Trip Number	Worker Trip Length	Vendor Trip Length	Hauling Trip Length	Worker Vehicle Class	Vendor Vehicle Class	Hauling Vehicle Class
Staging Areas & Access Routes	7	22.00	0.00	1,320.00	14.70	6.90	20.00	LD_Mix	HDT_Mix	HHDT
Surface Fracturing Infilling	5	22.00	0.00	7,800.00	14.70	6.90	20.00	LD_Mix	HDT_Mix	HHDT
Hydraugers	6	22.00	0.00	7,920.00	14.70	6.90	20.00	LD_Mix	HDT_Mix	HHDT
Surface Water Improvements	6	22.00	0.00	7,920.00	14.70	6.90	20.00	LD_Mix	HDT_Mix	HHDT

3.1 Mitigation Measures Construction

Water Exposed Area

3.2 Staging Areas & Access Routes - 2023

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Fugitive Dust					0.2162	0.0000	0.2162	0.1111	0.0000	0.1111	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	0.0293	0.3028	0.2007	4.2000e-004		0.0139	0.0139		0.0128	0.0128	0.0000	36.7958	36.7958	0.0119	0.0000	37.0933
Total	**0.0293**	**0.3028**	**0.2007**	**4.2000e-004**	**0.2162**	**0.0139**	**0.2302**	**0.1111**	**0.0128**	**0.1239**	**0.0000**	**36.7958**	**36.7958**	**0.0119**	**0.0000**	**37.0933**

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EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Applied

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	1.3900e-003	0.0908	0.0231	3.9000e-004	0.0114	5.4000e-004	0.0119	3.1200e-003	5.2000e-004	3.6400e-003	0.0000	38.4958	38.4958	2.1200e-003	6.1100e-003	40.3705
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	7.7000e-004	6.1000e-004	8.2700e-003	2.0000e-005	2.6500e-003	2.0000e-005	2.6700e-003	7.0000e-004	2.0000e-005	7.2000e-004	0.0000	2.1373	2.1373	6.0000e-005	5.0000e-005	2.1551
Total	**2.1600e-003**	**0.0914**	**0.0314**	**4.1000e-004**	**0.0140**	**5.6000e-004**	**0.0146**	**3.8200e-003**	**5.4000e-004**	**4.3600e-003**	**0.0000**	**40.6331**	**40.6331**	**2.1800e-003**	**6.1600e-003**	**42.5256**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Fugitive Dust					0.0843	0.0000	0.0843	0.0433	0.0000	0.0433	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	0.0293	0.3028	0.2007	4.2000e-004		0.0139	0.0139		0.0128	0.0128	0.0000	36.7957	36.7957	0.0119	0.0000	37.0932
Total	**0.0293**	**0.3028**	**0.2007**	**4.2000e-004**	**0.0843**	**0.0139**	**0.0983**	**0.0433**	**0.0128**	**0.0562**	**0.0000**	**36.7957**	**36.7957**	**0.0119**	**0.0000**	**37.0932**

Mitigated Construction Off-Site

Portuguese Bend Landslide Remediation - Los Angeles-South Coast County, Annual

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Applied

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	1.3900e-003	0.0908	0.0231	3.9000e-004	0.0114	5.4000e-004	0.0119	3.1200e-003	5.2000e-004	3.6400e-003	0.0000	38.4958	38.4958	2.1200e-003	6.1100e-003	40.3705
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	7.7000e-004	6.1000e-004	8.2700e-003	2.0000e-005	2.6500e-003	2.0000e-005	2.6700e-003	7.0000e-004	2.0000e-005	7.2000e-004	0.0000	2.1373	2.1373	6.0000e-005	5.0000e-005	2.1551
Total	**2.1600e-003**	**0.0914**	**0.0314**	**4.1000e-004**	**0.0140**	**5.6000e-004**	**0.0146**	**3.8200e-003**	**5.4000e-004**	**4.3600e-003**	**0.0000**	**40.6331**	**40.6331**	**2.1800e-003**	**6.1600e-003**	**42.5256**

3.3 Surface Fracturing Infilling - 2023

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Fugitive Dust					0.4259	0.0000	0.4259	0.2189	0.0000	0.2189	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	0.0978	0.9425	0.9459	1.7200e-003		0.0444	0.0444		0.0416	0.0416	0.0000	150.5601	150.5601	0.0385	0.0000	151.5224
Total	**0.0978**	**0.9425**	**0.9459**	**1.7200e-003**	**0.4259**	**0.0444**	**0.4703**	**0.2189**	**0.0416**	**0.2605**	**0.0000**	**150.5601**	**150.5601**	**0.0385**	**0.0000**	**151.5224**

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	8.2300e-003	0.5363	0.1366	2.2800e-003	0.0671	3.2100e-003	0.0703	0.0184	3.0700e-003	0.0215	0.0000	227.4751	227.4751	0.0125	0.0361	238.5531
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	4.5400e-003	3.6100e-003	0.0489	1.4000e-004	0.0157	1.0000e-004	0.0158	4.1600e-003	9.0000e-005	4.2500e-003	0.0000	12.6294	12.6294	3.3000e-004	3.2000e-004	12.7345
Total	**0.0128**	**0.5399**	**0.1854**	**2.4200e-003**	**0.0828**	**3.3100e-003**	**0.0861**	**0.0226**	**3.1600e-003**	**0.0258**	**0.0000**	**240.1045**	**240.1045**	**0.0129**	**0.0364**	**251.2875**

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EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Applied

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Fugitive Dust					0.1661	0.0000	0.1661	0.0854	0.0000	0.0854	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	0.0978	0.9425	0.9459	1.7200e-003		0.0444	0.0444		0.0416	0.0416	0.0000	150.5599	150.5599	0.0385	0.0000	151.5223
Total	**0.0978**	**0.9425**	**0.9459**	**1.7200e-003**	**0.1661**	**0.0444**	**0.2105**	**0.0854**	**0.0416**	**0.1269**	**0.0000**	**150.5599**	**150.5599**	**0.0385**	**0.0000**	**151.5223**

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	8.2300e-003	0.5363	0.1366	2.2800e-003	0.0671	3.2100e-003	0.0703	0.0184	3.0700e-003	0.0215	0.0000	227.4751	227.4751	0.0125	0.0361	238.5531
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	4.5400e-003	3.6100e-003	0.0489	1.4000e-004	0.0157	1.0000e-004	0.0158	4.1600e-003	9.0000e-005	4.2500e-003	0.0000	12.6294	12.6294	3.3000e-004	3.2000e-004	12.7345
Total	**0.0128**	**0.5399**	**0.1854**	**2.4200e-003**	**0.0828**	**3.3100e-003**	**0.0861**	**0.0226**	**3.1600e-003**	**0.0258**	**0.0000**	**240.1045**	**240.1045**	**0.0129**	**0.0364**	**251.2875**

3.4 Surface Water Improvements - 2024

Unmitigated Construction On-Site

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EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Applied

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Off-Road	0.0668	0.6074	0.9785	1.4900e-003		0.0288	0.0288		0.0271	0.0271	0.0000	130.2984	130.2984	0.0317	0.0000	131.0913
Total	**0.0668**	**0.6074**	**0.9785**	**1.4900e-003**		**0.0288**	**0.0288**		**0.0271**	**0.0271**	**0.0000**	**130.2984**	**130.2984**	**0.0317**	**0.0000**	**131.0913**

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	8.3000e-003	0.5460	0.1411	2.2800e-003	0.0681	3.2900e-003	0.0714	0.0187	3.1500e-003	0.0219	0.0000	227.7052	227.7052	0.0128	0.0362	238.8059
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	4.3000e-003	3.2700e-003	0.0462	1.3000e-004	0.0159	9.0000e-005	0.0160	4.2300e-003	9.0000e-005	4.3100e-003	0.0000	12.5602	12.5602	3.1000e-004	3.1000e-004	12.6592
Total	**0.0126**	**0.5492**	**0.1873**	**2.4100e-003**	**0.0841**	**3.3800e-003**	**0.0874**	**0.0229**	**3.2400e-003**	**0.0262**	**0.0000**	**240.2655**	**240.2655**	**0.0131**	**0.0365**	**251.4651**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Off-Road	0.0668	0.6074	0.9785	1.4900e-003		0.0288	0.0288		0.0271	0.0271	0.0000	130.2982	130.2982	0.0317	0.0000	131.0911
Total	**0.0668**	**0.6074**	**0.9785**	**1.4900e-003**		**0.0288**	**0.0288**		**0.0271**	**0.0271**	**0.0000**	**130.2982**	**130.2982**	**0.0317**	**0.0000**	**131.0911**

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Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	8.3000e-003	0.5460	0.1411	2.2800e-003	0.0681	3.2900e-003	0.0714	0.0187	3.1500e-003	0.0219	0.0000	227.7052	227.7052	0.0128	0.0362	238.8059
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	4.3000e-003	3.2700e-003	0.0462	1.3000e-004	0.0159	9.0000e-005	0.0160	4.2300e-003	9.0000e-005	4.3100e-003	0.0000	12.5602	12.5602	3.1000e-004	3.1000e-004	12.6592
Total	**0.0126**	**0.5492**	**0.1873**	**2.4100e-003**	**0.0841**	**3.3800e-003**	**0.0874**	**0.0229**	**3.2400e-003**	**0.0262**	**0.0000**	**240.2655**	**240.2655**	**0.0131**	**0.0365**	**251.4651**

3.5 Hydraugers - 2025

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Off-Road	0.0792	0.6721	0.9521	1.9700e-003		0.0262	0.0262		0.0253	0.0253	0.0000	168.8981	168.8981	0.0306	0.0000	169.6618
Total	**0.0792**	**0.6721**	**0.9521**	**1.9700e-003**		**0.0262**	**0.0262**		**0.0253**	**0.0253**	**0.0000**	**168.8981**	**168.8981**	**0.0306**	**0.0000**	**169.6618**

Unmitigated Construction Off-Site

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	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	8.2200e-003	0.5425	0.1430	2.2400e-003	0.0681	3.2900e-003	0.0714	0.0187	3.1500e-003	0.0219	0.0000	223.6505	223.6505	0.0130	0.0355	234.5674
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	4.0300e-003	2.9300e-003	0.0431	1.3000e-004	0.0159	9.0000e-005	0.0160	4.2300e-003	8.0000e-005	4.3100e-003	0.0000	12.2540	12.2540	2.8000e-004	2.9000e-004	12.3461
Total	**0.0123**	**0.5455**	**0.1861**	**2.3700e-003**	**0.0841**	**3.3800e-003**	**0.0874**	**0.0230**	**3.2300e-003**	**0.0262**	**0.0000**	**235.9045**	**235.9045**	**0.0133**	**0.0358**	**246.9135**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Off-Road	0.0792	0.6721	0.9521	1.9700e-003		0.0262	0.0262		0.0253	0.0253	0.0000	168.8979	168.8979	0.0306	0.0000	169.6616
Total	**0.0792**	**0.6721**	**0.9521**	**1.9700e-003**		**0.0262**	**0.0262**		**0.0253**	**0.0253**	**0.0000**	**168.8979**	**168.8979**	**0.0306**	**0.0000**	**169.6616**

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	8.2200e-003	0.5425	0.1430	2.2400e-003	0.0681	3.2900e-003	0.0714	0.0187	3.1500e-003	0.0219	0.0000	223.6505	223.6505	0.0130	0.0355	234.5674
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	4.0300e-003	2.9300e-003	0.0431	1.3000e-004	0.0159	9.0000e-005	0.0160	4.2300e-003	8.0000e-005	4.3100e-003	0.0000	12.2540	12.2540	2.8000e-004	2.9000e-004	12.3461
Total	**0.0123**	**0.5455**	**0.1861**	**2.3700e-003**	**0.0841**	**3.3800e-003**	**0.0874**	**0.0230**	**3.2300e-003**	**0.0262**	**0.0000**	**235.9045**	**235.9045**	**0.0133**	**0.0358**	**246.9135**

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