AIR QUALITY AND GREENHOUSE GAS EMISSIONS IMPACT ANALYSIS

MONITORING WELL OCWD-M43R AT ORANGE COAST COLLEGE PROJECT

CITY OF COSTA MESA

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ACRONYMS AND ABBREVIATIONS

AB	Assembly Bill
Air Basin	South Coast Air Basin
AQMP	Air Quality Management Plan
BACT	Best Available Control Technology
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
CAT	Climate Action Team
CCAA	California Clean Air Act
CEC	California Energy Commission
CEQA	California Environmental Quality Act
CFCs	chlorofluorocarbons
Cf_4	tetrafluoromethane
C_2F_6	hexafluoroethane
C_2H_6	ethane
CH_4	Methane
City	City of Costa Mesa
CO	Carbon monoxide
CO_2	Carbon dioxide
CO_2e	Carbon dioxide equivalent
CPUC	California Public Utilities Commission
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

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
MSAT	Mobile Source Air Toxics
MWh	Megawatt-hour
NAAQS	National Ambient Air Quality Standards
NO_x	Nitrogen oxides
NO_2	Nitrogen dioxide
O_3	Ozone
OPR	Office of Planning and Research
Pb	Lead
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
RTIP	Regional Transportation Improvement Plan
RTP	Regional Transportation Plan
SAR	Second Assessment Report
SB	Senate Bill
SCAQMD	South Coast Air Quality Management District
SCAG	Southern California Association of Governments
SCS	Sustainable communities strategy
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 and Greenhouse Gas Emissions Impact Analysis has been completed to determine the air quality and greenhouse gas (GHG) emissions impacts associated with the proposed Monitoring Well OCWD-M43R at Orange Coast College project (proposed project). The following is provided in this report:

- A description of the proposed project;
- A description of the atmospheric setting;
- A description of the criteria pollutants and GHGs;
- A description of the air quality regulatory framework;
- A description of the air quality and GHG emissions thresholds including the California Environmental Quality Act (CEQA) significance thresholds;
- An analysis of the short-term construction related and long-term operational air quality and GHG emissions impacts;
- An analysis of the conformity of the proposed project with the South Coast Air Quality Management District (SCAQMD) Air Quality Management Plan (AQMP); and
- An analysis of the conformity of the proposed project with all applicable GHG emissions reduction plans and policies.

1.2 Proposed Project Description

The proposed project involves the construction and operation of a multi-depth monitoring well named OCWD-M43R that will be located on the Orange Coast College (OCC) campus in the City of Costa Mesa (City). The project regional location is shown in Figure 1. The proposed 5-casing nested monitoring well would replace existing well OCWD-M43 that is currently maintained by the Orange County Water District (OCWD). The purpose of the Well is to monitor potential seawater intrusion and groundwater flow beneath the Newport Mesa. The existing monitoring well (OCWD-M43) is located within the planned footprint development of a future student housing construction project and would be removed by OCC as part of the student housing project.

1.3 Proposed Well Site Location

As shown in Figure 2, the planned replacement monitoring well OCWD-M43R would be located on the northern end of the OCC campus, next to the OCC Recycling Center, approximately 275 feet south of Adams Avenue centerline and approximately 1,065 feet west of Fairview Road. The well site is located on the USGS Newport Beach Quadrangle Map, Township 6 South, Range 10 West and Section 3.

Sensitive Receptors in Project Vicinity

The nearest sensitive receptors to the proposed well site are the Orange Coast College athletic fields that are located adjacent to east side of the proposed well site. Other nearby sensitive receptors include multi-family residential uses located as near as 390 feet to the north, a church located as near as 985 feet to the east, and Costa Mesa High School that is located as near as 1,670 feet to the southeast.

1.4 Monitoring Well Construction Assumptions

Monitoring Wells Construction Phases

The proposed construction activities of the proposed monitoring wells will occur in four construction phases. Phase 1 involves surveying the site for possible underground utilities, installation of temporary noise panels, and installation of a six-foot high protective chain link fence around the perimeter of the well site and construction work area. Phase 2 involves drilling and well construction activities that would be a 24-hour operation until the well casing and the annular materials are installed. Phase 3 involves well development. Phase 4 involves site clean-up and vault installation.

Monitoring Wells Construction Equipment Assumptions

The following provides the anticipated construction equipment to be utilized for each phase of construction.

Phase 1: Noise Panel and Protective Fencing Installation / Utility Clearance

Phase 1 of the proposed project involves installation of the temporary noise barrier, protective fencing, utility clearance of the well site. The equipment mix for Phase 1 is shown in Table A.

Table A – Phase 1 Noise Panel/Protective Fencing/Utility Clearance Equipment Mix

Activity	Equipment	Pieces of Equipment	Hours of Operation	Days of Operation	Horsepower
Delivery of Fencing	Support Truck	1	10	1	550
Utility Clearance	Vacuum Truck	1	10	1	550
Install Fencing	No Equipment	--	--	--	--

Construction Trips: 1 round trip mobilizing, 1 round trip demobilizing. All round trips assumed 50 miles.
Source: OCWD.

Phase 2: Monitor Well Drilling and Construction

Phase 2 of construction involves the drilling and construction of the monitoring well. The proposed monitoring well would be drilled by using flooded reverse circulation rotary drilling method. To reduce the risk of a borehole collapse during the drilling and well construction phase, a 24-hour operation of activities will be required. The monitoring well would include up to five 4-inch diameter PVC casings installed into a single 24-inch diameter wide borehole to an approximate depth of 560 feet below ground surface (bgs). Once the borehole drilling is completed, the well would then be constructed. The depth of the borehole and depth of each of the five well casings and associated screened intervals would be determined based on the lithology observed during drilling and the acquired borehole geophysical logs. The well would have a 2 foot by 3-foot concrete apron with a 2-foot by 3-foot traffic-rated subgrade protective vault. The equipment mix for Phase 2 is shown in Table B.

Table B – Well Drilling/Construction Equipment Mix

Activity	Equipment	Pieces of Equipment	Hours of Operation	Days of Operation	Horsepower
Well Drilling & Construction	Flood Reverse Circulation Rotary Drilling Rig	1	24	6	550
	Mud Tank	1	24	6	75
	Fork Lift	1	24	6	75

Construction Trips: 1 round trip mobilizing, 1 round trip demobilizing. All round trips assumed 50 miles.
Source: OCWD.

Phase 3: Monitoring Well Development

Phase 3 of construction involves the mechanical and pumping development for each of the five well casings. The equipment mix for well development is shown in Table C.

Table C – Well Development Equipment Mix

Activity	Equipment	Pieces of Equipment	Hours of Operation	Days of Operation	Horsepower
Well Development	Pump Rig	1	10	17	325
	Air Compressor	1	10	17	200
	Electrical Generator	1	10	17	20

Construction Trips: 1 round trip mobilizing, 1 round trip demobilizing. All round trips assumed 50 miles.
Source: OCWD.

Phase 4: Site Cleanup and Traffic-Rated Vault Installation

Phase 4 of the proposed project involves site cleanup and installation of the below ground traffic-rated well vault. The equipment mix for Phase 4 is shown in Table C.

Table D – Subgrade Protective Well Vault Installation Equipment Mix

Activity	Equipment	Pieces of Equipment	Hours of Operation	Days of Operation	Horsepower
Delivery of Installation of Pre-Cast Concrete Vault	Truck	1	8	1	550
	Forklift	1	8	1	75
Install Well Vault	No Equipment	--	--	--	--

Source: OCWD.

1.5 Monitoring Well Long-Term Operation and Maintenance Activities

In general, operation of the monitoring wells would be passive as there would be no permanent equipment installed in the well. Monitoring well operation involves periodically measuring the depth to groundwater and collecting groundwater samples for laboratory analysis. The depth to groundwater would be measured by hand using a battery-powered wire-line sounder. During a groundwater sampling event, a portable submersible pump would be lowered in each of the well casings. Operation of a submersible pump to lift water from the well would require the use of a small portable generator. OCWD staff would collect groundwater samples and record water levels on a semi-annual basis. In total, the 5-casing monitoring well would be visited by OCWD staff up to two times a year. One truck and two workers would access the well site during sampling, assuming a round trip length of 10 miles per trip. One truck and one worker would access the well site during collection of water levels, assuming a round trip length of 10 miles. Every three to five years OCWD would conduct maintenance activities to redevelop the well. A typical monitoring well redevelopment process would be completed in one day. All sampling and redevelopment activities would occur during daylight hours. The mix of construction equipment involved with well sampling, gauging, maintenance/redevelopment is shown in **Error! Reference source not found.**.

Table E – Monitoring Well Sampling and Redevelopment Equipment Mix

Activity	Equipment	Pieces of Equipment	Hours of Operation	Days of Operation	Horsepower
Sampling	Generator	1	9	1	20
Redevelopment	Pump Rig	1	9	1	325
	Air Compressor	1	9	1	200
	Pick-up Truck	1	2	1	300

Sampling & Redevelopment Trips: 1 round trip, all trips assumed 10 miles.
Source: OCWD.

1.6 Executive Summary

Standard Air Quality 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;

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; and

Summary of Analysis Results

The following is a summary of the proposed project's impacts with regard to the State CEQA Guidelines air quality 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.

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

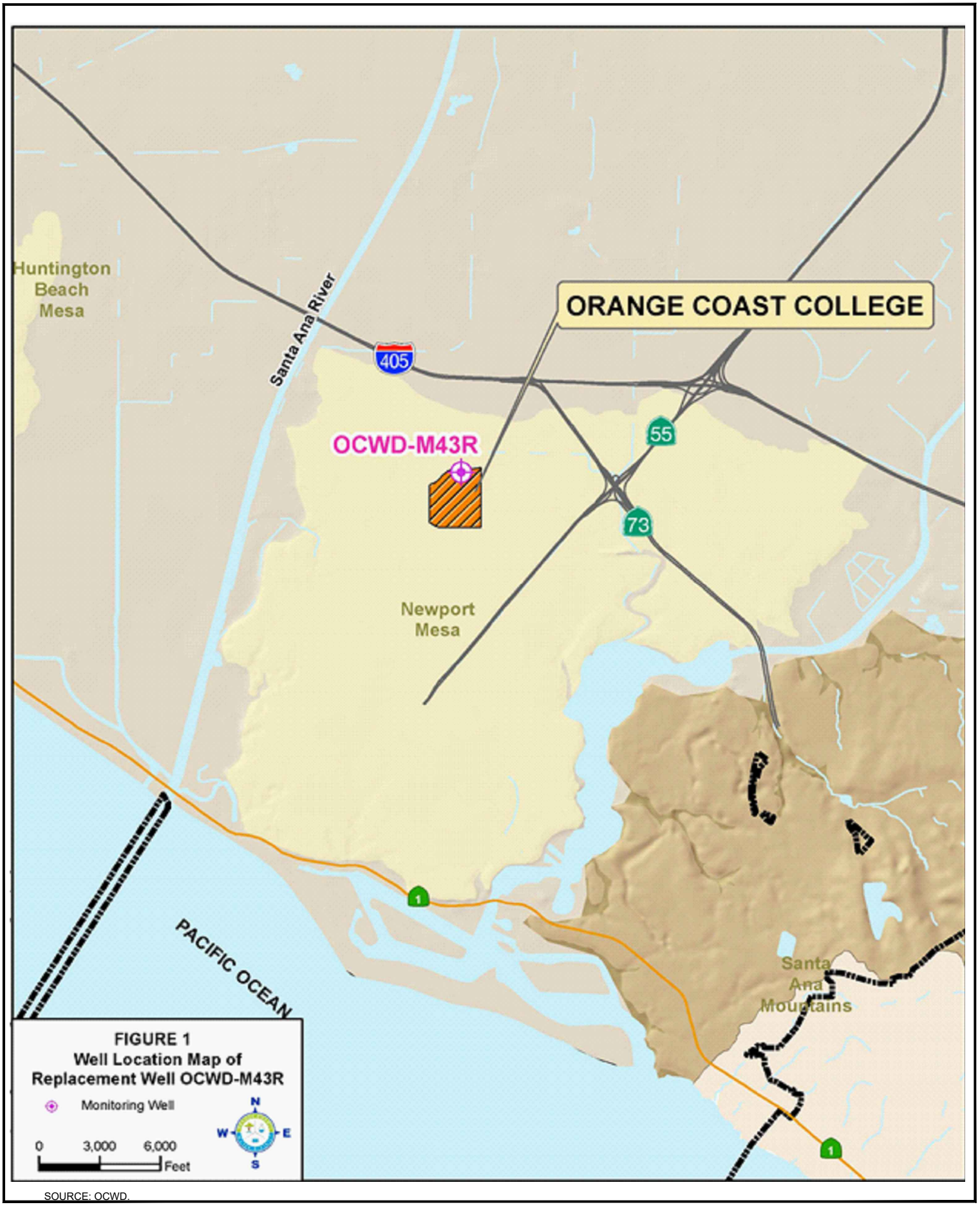
Less than significant impact.

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.

1.7 Mitigation Measures Required for the Proposed Project

This analysis found that implementation of the State and SCAQMD air quality 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 and GHG emissions.



SOURCE: OCWD.

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VISTA ENVIRONMENTAL

Figure 1
Regional Location Map

SOURCE: OCWD.

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Figure 2
Proposed Site Map

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, NO_x, CO, SO_x, lead (Pb), 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

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 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 but in the vicinity of ground-level is created by a chemical reaction between NOx and volatile organic compounds (VOC) in the presence of sunlight. Motor vehicle exhaust, industrial emissions, gasoline vapors, chemical solvents as well as natural sources emit NOx and VOC that help form ozone. Ground-level ozone is the primary constituent of smog. Sunlight and hot weather cause ground-level ozone to form with the greatest concentrations usually occurring downwind from urban areas. Ozone is subsequently considered a regional pollutant. Ground-level ozone is a respiratory irritant and an oxidant that increases susceptibility to respiratory infections and can cause substantial damage to vegetation and other materials. Because NOx and VOC are ozone precursors, the health effects associated with ozone are also indirect health effects associated with significant levels of NOx and VOC emissions.

Carbon Monoxide

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

Sulfur Oxide (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 Pb 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

Particle 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) are the particles that generally pass through the throat and nose and enter the lungs. Once inhaled, these particles can affect the heart and lungs and cause serious health effects. Particles that are less than 2.5 micrometers in diameter (PM2.5) have been designated as a subset of PM10 due to their increased negative health impacts and its ability to remain suspended in the air longer and travel further.

Volatile Organic Compounds

Hydrocarbons are organic gases that are formed from hydrogen and carbon and sometimes other elements. Hydrocarbons that contribute to formation of O_3 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 O_3 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 toxic air contaminants (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, toxic air contaminants (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 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 80 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 greenhouse gases (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 (O_3), water vapor, nitrous oxide (N_2O), and chlorofluorocarbons (CFCs). This phenomenon, known as the Greenhouse Effect, is responsible for maintaining a habitable climate. Anthropogenic (caused or produced by humans) emissions of these greenhouse gases in excess of natural ambient concentrations are responsible for the enhancement of the Greenhouse Effect and have led to a trend of unnatural warming of the Earth's natural climate, known as global warming or climate change. Emissions of gases that induce global warming are attributable to human activities associated with industrial/manufacturing, agriculture, utilities, transportation, and residential land uses. Transportation is responsible for 41 percent of the State's greenhouse gas emissions, followed by electricity generation. Emissions of CO_2 and 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 Chlorofluorocarbons (CFCs)). CH_4 has both natural and anthropogenic sources. It is released as part of the biological processes in low oxygen environments, such as in swamplands or in rice production (at the roots of the plants). Over the last 50 years, human activities such as growing rice, raising cattle, using natural gas, and mining coal have added to the atmospheric concentration of methane. Other anthropocentric sources include fossil-fuel combustion and biomass burning.

Nitrous Oxide

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 (C_2H_6) with chlorine and/or fluorine atoms. CFCs are nontoxic, nonflammable, insoluble, and chemically unreactive in the troposphere (the level of air at the Earth's surface). CFCs have no natural source, but were first synthesized in 1928. 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

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_2e. As such, the GWP of CO_2 is equal to 1. The GWP values used in this analysis are based on the IPCC Second Assessment Report (SAR) and United Nations Framework Convention on Climate Change (UNFCCC) reporting guidelines, and are detailed in Table F. The SAR GWPs are used in CARB's California inventory and Assembly Bill (AB) 32 Scoping Plan estimates.

Table F – 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 2016.3.2),that is used in this report (CalEEMod user guide: Appendix A).
Definitions: ppm = parts per million; ppb = parts per billion; ppt = parts per trillion
Source: IPCC 2007, EPA 2015

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 Environmental Protection Agency (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 G on page 14.

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 H on page 15, the Air Basin has been designated by EPA for the national standards as a non-attainment area for ozone (O_3) and suspended particulates (PM10 and PM2.5) and partial non-attainment for lead. Currently, the Air Basin is in attainment with the national ambient air quality standards for carbon monoxide (CO), sulfur dioxide (SO_2), and nitrogen dioxide (NO_2).

Table G – 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 edema in humans and animals; (b) Risk to public health implied by alterations in pulmonary morphology and host defense in animals; (c) Increased mortality risk; (d) Risk to public health implied by altered connective tissue metabolism and altered pulmonary morphology in animals after long-term exposures and pulmonary function decrements in chronically exposed humans; (e) Vegetation damage; and (f) Property damage.
Carbon Monoxide (CO)	20.0 ppm / 1-hour 9.0 ppm / 8-hour	35.0 ppm / 1-hour 9.0 ppm / 8-hour	(a) Aggravation of angina pectoris and other aspects of coronary heart disease; (b) Decreased exercise tolerance in persons with peripheral vascular disease and lung disease; (c) Impairment of central nervous system functions; and (d) Possible increased risk to fetuses.
Nitrogen Dioxide (NO_2)	0.18 ppm / 1-hour 0.030 ppm / annual	100 ppb / 1-hour 0.053 ppm / annual	(a) Potential to aggravate chronic respiratory disease and respiratory symptoms in sensitive groups; (b) Risk to public health implied by pulmonary and extra-pulmonary biochemical and cellular changes and pulmonary structural changes; and (c) Contribution to atmospheric discoloration.
Sulfur Dioxide (SO_2)	0.25 ppm / 1-hour 0.04 ppm / 24-hour	75 ppb / 1-hour 0.14 ppm/annual	(a) Bronchoconstriction accompanied by symptoms which may include wheezing, shortness of breath and chest tightness, during exercise or physical activity in persons with asthma.
Suspended Particulate Matter (PM_{10})	50 µg/m^3 / 24-hour 20 µg/m^3 / annual	150 µg/m^3 / 24-hour	(a) Exacerbation of symptoms in sensitive patients with respiratory or cardiovascular disease; (b) Declines in pulmonary function growth in children; and (c) Increased risk of premature death from heart or lung diseases in elderly.
Suspended Particulate Matter ($PM_{2.5}$)	12 µg/m^3 / annual	35 µg/m^3 / 24-hour 12 µg/m^3 / annual	
Sulfates	25 µg/m^3 / 24-hour	No Federal Standards	(a) Decrease in ventilatory function; (b) Aggravation of asthmatic symptoms; (c) Aggravation of cardio-pulmonary disease; (d) Vegetation damage; (e) Degradation of visibility; and (f) Property damage.
Lead	1.5 µg/m^3 / 30-day	0.15 µg/m^3 /3-month rolling	(a) Learning disabilities; and (b) Impairment of blood formation and nerve conduction.
Visibility Reducing Particles	Extinction coefficient of 0.23 per kilometer - visibility of ten miles or more due to particles when relative humidity is less than 70 percent.	No Federal Standards	Visibility impairment on days when relative humidity is less than 70 percent.

Source: http://www.arb.ca.gov/research/aaqs/aaqs2.pdf .

Table H – South Coast Air Basin Attainment Status

Criteria Pollutant	Standard	Averaging Time	Designation[a)]	Attainment Date[b)]
1-Hour Ozone[c)]	NAAQS	1979 1-Hour (0.12 ppm)	Nonattainment (Extreme)	2/6/2023 (revised deadline)
	CAAQS	1-Hour (0.09 ppm)	Nonattainment	N/A
8-Hour Ozone[d)]	NAAQS	1997 8-Hour (0.08 ppm)	Nonattainment (Extreme)	6/15/2024
	NAAQS	2008 8-Hour (0.075 ppm)	Nonattainment (Extreme)	7/20/2032
	NAAQS	2015 8-Hour (0.070 ppm)	Pending – Expect Nonattainment (Extreme)	Pending (beyond 2032)
	CAAQS	8-Hour (0.070 ppm)	Nonattainment	Beyond 2032
CO	NAAQS	1-Hour (35 ppm) 8-Hour (9 ppm)	Attainment (Maintenance)	6/11/2007 (attained)
	CAAQS	1-Hour (20 ppm) 8-Hour (9 ppm)	Attainment	6/11/2007 (attained)
NO_2[e)]	NAAQS	2010 1-Hour (0.10 ppm)	Unclassifiable/ Attainment	N/A (attained)
	NAAQS	1971 Annual (0.053 ppm)	Attainment (Maintenance)	9/22/1998 (attained)
	CAAQS	1-Hour (0.18 ppm) Annual (0.030 ppm)	Attainment	---
SO_2[f)]	NAAQS	2010 1-Hour (75 ppb)	Designations Pending (expect Unclassifiable/ Attainment)	N/A (attained)
	NAAQS	1971 24-Hour (0.14 ppm) 1971 Annual (0.03 ppm)	Unclassifiable/ Attainment	3/19/1979 (attained)
PM10	NAAQS	1987 24-hour (150 µg/m^3)	Attainment (Maintenance)[g)]	7/26/2013 (attained)
	CAAQS	24-hour (50 µg/m^3) Annual (20 µg/m^3)	Nonattainment	N/A
PM2.5[h)]	NAAQS	2006 24-Hour (35 µg/m^3)	Nonattainment (Serious)	12/31/2019
	NAAQS	1997 Annual (15.0 µg/m^3)	Attainment (final determination pending)	4/5/2015 (attained 2013)
	NAAQS	2012 Annual (12.0 µg/m^3)	Nonattainment (Moderate)	12/31/2021
	CAAQS	Annual (12.0 µg/m^3)	Nonattainment	N/A
Lead[i)]	NAAQS	2008 3-Months Rolling (0.15 µg/m^3)	Nonattainment (Partial) (Attainment determination requested)	12/31/2015

Source: SCAQMD, February 2016

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 O_3 standard (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

d) The 2008 8-hour ozone NAAQS (0.075 ppm) was revised to 0.070 ppm. Effective 12/28/15 with classifications and implementation goals to be finalized by 10/1/17; the 1997 8-hour O_3 NAAQS (0.08 ppm) was revoked in the 2008 O_3 implementation rule, effective 4/6/15;there are continuing obligations under the revoked 1997 and revised 2008 O_3 until they are attained.

e) New NO_2 1-hour standard, effective August 2, 2010; attainment designations January 20, 2012; annual NO_2 standard retained

f) The 1971 annual and 24-hour SO_2 standards were revoked, effective August 23, 2010; however, these 1971 standards will remain in effect until one year after U.S. EPA promulgates area designations for the 2010 SO_2 1-hour standard. Area designations are still pending, with Basin expected to be designated Unclassifiable /Attainment.

g) Annual PM10 standard was revoked, effective December 18, 2006; 24-hour PM10 NAAQS deadline was 12/31/2006; SCAQMD request for attainment redesignation and PM10 maintenance plan was approved by U.S. EPA on June 26, 2013, effective July 26, 2013.

h) The attainment deadline for the 2006 24-Hour PM2.5 NAAQS was 12/31/15 for the former "moderate" classification; EPA approved

reclassification to "serious", effective 2/12/16 with an attainment deadline of 12/31/19; the 2012 (proposal year) annual PM2.5 NAAQS was revised on 1/15/13, effective 3/18/13, from 15 to 12 μg/m^3; new annual designations were final 1/15/15, effective 4/15/15; on July 25, 2016 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 August 24, 2016 i) Partial Nonattainment designation – Los Angeles County portion of Basin only for near-source monitors. Expect to remain in attainment based on current monitoring data; attainment re-designation request pending.

In 2015, one or more stations in the Air Basin exceeded the most current federal standards on a total of 146 days (40 percent of the year), including: 8-hour ozone (113 days over 2015 ozone NAAQS), 24-hour PM2.5 (30 days, including near-road sites; 25 days for ambient sites only), PM10 (2 days), and NO_2 (1 day). Despite substantial improvement in air quality over the past few decades, some air monitoring stations in the Air Basin still exceed the NAAQS for ozone more frequently than any other area in the United States. Seven of the top 10 stations in the nation most frequently exceeding the 2015 8-hour ozone NAAQS in 2015 were located within the Air Basin, including stations in San Bernardino, Riverside, and Los Angeles Counties.

PM2.5 levels in the Air Basin have improved significantly in recent years. By 2013 and again in 2014 and 2015, there were no stations measuring PM2.5 in the Air Basin that violated the former 1997 annual PM2.5 NAAQS (15.0 μg/m^3) for the 3-year design value period. On July 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 August 24, 2016. Of the 17 federal PM2.5 monitors at ambient stations in the Air Basin for the 2013-2015 period, five stations had design values over the current 2012 annual PM2.5 NAAQS (12.0 μg/m^3), including: Mira Loma (Air Basin maximum at 14.1 μg/m^3), Rubidoux, Fontana, Ontario, Central Los Angeles, and Compton. For the 24-hour PM2.5 NAAQS (35.0 μg/m^3) there were 14 stations in the Air Basin in 2015 that had one or more daily exceedances of the standard, with a combined total of 25 days over that standard in the Air Basin. While it was previously anticipated that the Air Basin's 24-hour PM2.5 NAAQS would be attained by 2015, this did not occur based on the data for 2013 through 2015. The higher number of days exceeding the 24-hour PM2.5 NAAQS over what was expected is largely attributed to the severe drought conditions over this period that allowed for more stagnant conditions in the Air Basin with multi-day buildups of higher PM2.5 concentrations. This was caused by the lack of storm-related dispersion and rain-out of PM and its precursors.

The Air Basin is currently in attainment for the federal standards for SO_2, CO, and NO_2. While the concentration level of the 1-hour NO_2 federal standard (100 ppb) was exceeded in the Air Basin for one day in 2015 (Long Beach- Hudson Station), the NAAQS NO_2 design value has not been exceeded. Therefore, the Basin remains in attainment of the NO_2 NAAQS.

Although much of the South Coast Air Basin, including the proposed site location in Orange County, is in attainment for lead, the EPA designated the Los Angeles County portion of the Air Basin as nonattainment for the revised (2008) federal lead standard (0.15 μg/m^3, rolling 3-month average). This was due to the addition of source-specific monitoring under the new federal regulation. This designation was based on two source-specific monitors in Vernon and the City of Industry exceeding the revised standard in the 2007-2009 period of data used. As of the 2009-2011 data period, only one of these stations (Vernon) still exceeded the lead standard. The *2012 Lead State Implementation Plan Los Angeles County*, prepared by SCAQMD and adopted on May 4, 2012, provided measures to meet attainment of lead by December 31, 2015. Current monitoring data shows that lead has been below the standards at all monitoring stations since 2015, and based on this data a re-designation request is pending with the EPA.

4.2 State – California Air Resources Board

The California Air Resources Board (CARB), which is a part of the California Environmental Protection Agency, is responsible for the coordination and administration of both federal and state air pollution control programs within California. In this capacity, the CARB conducts research, sets the California

Ambient Air Quality Standards (CAAQS), compiles emission inventories, develops suggested control measures, provides oversight of local programs, and prepares the SIP. The CAAQS for criteria pollutants are shown above in Table G. In addition, the CARB establishes emission standards for motor vehicles sold in California, consumer products (e.g. hairspray, aerosol paints, and barbeque lighter fluid), and various types of commercial equipment. It also sets fuel specifications to further reduce vehicular emissions.

The Air Basin has been designated by the CARB as a non-attainment area for ozone, PM10, PM2.5 and lead. Currently, the Air Basin is in attainment with the ambient air quality standards for CO, NO_2, SO_2, and sulfates and is unclassified for visibility reducing particles and Hydrogen Sulfide.

The following lists the State of California Code of Regulations (CCR) air quality emission rules that are applicable, but not limited to all warehouse 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 California Air Resources Board (CARB) adopted California Code of Regulations Title 13, Article 4.8, Chapter 9, Section 2449 to reduce diesel particulate matter (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 *Final 2016 Air Quality Management Plan* (2016 AQMP) was adopted by the SCAQMD Board on March 3, 2016 and was adopted by CARB on March 23, 2017 for inclusion into the California State Implementation Plan (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 $\mu g/m^3$) 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 the California Environmental Quality Act (CEQA). In order to assist local jurisdictions with air quality compliance issues the *CEQA Air Quality Handbook* (SCAQMD CEQA Handbook), prepared by 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 the proposed project.

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 *2016-2040 Regional Transportation Plan/Sustainable Communities Strategy* (RTP/SCS), adopted April, 2016 and the *2015 Federal Transportation Improvement* Program (FTIP), adopted October 2013, which addresses regional development and growth forecasts. Although the RTP/SCS and 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 RTP/SCS, FTIP, and AQMP are based on projections originating within the City and County General Plans.

4.4 Local – City of Costa Mesa

Local jurisdictions, such as the City of Costa Mesa, 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 County 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 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.

5.1 International

In 1988, the United Nations established the Intergovernmental Panel on Climate Change (IPCC) to evaluate the impacts of global climate change and to develop strategies that nations could implement to curtail global climate change. In 1992, the United States joined other countries around the world in signing the United Nations' Framework Convention on Climate Change (UNFCCC) agreement with the goal of controlling GHG emissions. 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, however the Paris Agreement is still legally binding by the other remaining nations.

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.

5.2 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 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 February 9, 2016 the Supreme Court stayed implementation of the Clean Power Plan due to a legal challenge from 29 states and in April 2017, the Supreme Court put the case on a 60 day hold and directed both sides to make arguments for whether it should keep the case on hold indefinitely or close it and remand the issue to the EPA. On October 11, 2017, the EPA issued a formal proposal to repeal the Clean Power Plan and on August 21, 2018 the EPA released the Affordable Clean Energy Rule, which usurps the Clean Power plan and returns most of the decision making authority for power plant emissions back to the States.

5.3 State

The California Air Resources Board (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 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.

Senate Bill 350

Senate Bill 350 (SB 350) was adopted October 2015 in order to implement the goals of Executive Order B-30-15. SB 350 increases the State's renewable electricity procurement goal from 33 percent by 2020 to 50 percent by 2030. In addition SB 350 requires the State to double statewide energy efficiency savings for both electricity and natural gas uses by 2030. SB 350 is being implemented by requiring all large utilities to develop and submit Integrated Resource Plans that detail how they will meet their customers energy needs, reduce GHG emissions and deploy clean energy resources. SB 350 superseded the renewable energy requirements set by SB 1078, SB 107, and SB X1-2.

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 sets 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 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 in June 2017 CARB released *Staff Report Proposed Update to the SB 375 Greenhouse Gas Emission Reduction Target*, which provides recommended GHG emissions reduction targets for SCAG of 8 percent by 2020 and 21 percent by 2035.

The *2016-2040 Regional Transportation Plan/Sustainable Communities Strategy* (RTP/SCS), adopted by SCAG April, 2016 provides a 2020 GHG emission reduction target of 8 percent and a 2035 GHG emission reduction target of 18 percent. SCAG will need to develop additional strategies in its next revision of the RTP/SCS in order to meet CARB's new 21 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 million metric tons of CO2e ($MMTCO_2e$). 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 California's 2017 Climate Change Scoping Plan that was adopted in November 2017, is the second update to the Scoping Plan and provides specific statewide policies and measures to achieve the 2030 GHG reduction targets adopted in AB 197 and SB 32 as well as the aspirational 2050 reduction target provided in Executive Order B-30-15.

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

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. The second set of regulations "Pavley II" is currently in development and will be phased in between model years 2017 through 2025 and will reduce emissions by 45 percent by the year 2020 as compared to the 2002 fleet. The Pavley II standards are being 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. In September 2009, the Pavley I regulations were adopted by CARB.

5.4 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. The SCAQMD is also responsible for GHG emissions for projects where it is the lead agency. However, for other projects in the SCAB 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 and adopted Rules 2700, 2701, and 2702, which are 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, and 3,000 $MTCO_2e$ for mixed uses. An alternative annual threshold of 3,000 $MTCO_2e$ for all land use types is also proposed.

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 2016-2040 Regional Transportation Plan/Sustainable Communities Strategy (RTP/SCS), adopted April, 2016 and the *2015 Federal Transportation Improvement* Program (FTIP), adopted October 2013, which addresses regional development and growth forecasts. Although the RTP/SCS and 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 RTP/SCS, FTIP, and AQMP are based on projections originating within the City and County General Plans.

6.0 ATMOSPHERIC SETTING

6.1 South Coast Air Basin

The project site is located within the central coastal portion of Orange County in the City of Costa Mesa, 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.

6.2 Regional Climate

The general region lies in the semi-permanent high-pressure zone of the eastern Pacific. As a result, the climate is mild, tempered by cool sea breezes. Occasional periods of strong Santa Ana winds and winter storms interrupt the otherwise mild weather pattern.

Although the Air Basin has a semi-arid climate, the air near the surface 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 climate feature.

Winds are an important parameter in characterizing the air quality environment of a project site because they determine the regional pattern of air pollution transport and control the rate of dispersion near a source. Daytime winds in Orange County are usually light breezes from off the coast as air moves regionally onshore from the cool Pacific Ocean. These winds are usually the strongest in the dry summer months. Nighttime winds in Orange County are a result mainly from the drainage of cool air off of the mountains to the east and they occur more often during the winter months and are usually lighter than the daytime winds. Between the periods of dominant airflow, periods of air stagnation may occur, both in the morning and evening hours. Whether such a period of stagnation occurs is one of the critical determinants of air quality conditions on any given day.

During the winter and fall months, surface high-pressure systems north of the Air Basin combined with other meteorological conditions, can result in very strong winds, called "Santa Ana Winds", from the northeast. These winds normally have durations of a few days before predominant meteorological conditions are reestablished. The highest wind speed typically occurs during the afternoon due to daytime thermal convection caused by surface heating. This convection brings about a downward transfer of momentum from stronger winds aloft. It is not uncommon to have sustained winds of 60 miles per hour with higher gusts during a Santa Ana Wind event.

The temperature and precipitation levels for the Santa Ana Fire Station Monitoring Station, which is the nearest weather station to the project site with historical data are shown below in Table I. Table I shows that August 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 I – Monthly Climate Data

	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
Avg. Max. Temperature	68.1	68.9	70.7	73.1	75.2	78.6	83.5	84.7	83.9	79.4	74.2	68.8
Avg. Min. Temperature	43.1	44.9	46.7	50.0	54.0	57.4	60.9	61.6	59.3	54.5	47.5	43.6
Avg. Total Precipitation (in.)	2.73	3.05	2.21	1.05	0.25	0.06	0.02	0.06	0.22	0.49	1.28	2.28

Source: Source: https://wrcc.dri.edu/cgi-bin/cliMAIN.pl?ca7888

6.3 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. The project site is located in Air Monitoring Area 18, which coverers North Coastal Orange 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; Costa Mesa-Mesa Verde Drive Monitoring Station (Costa Mesa Station) and Anaheim-Pampas Lane Monitoring Station (Anaheim Station).

The Costa Mesa Station is located approximately 0.8 miles west of the project site at 2850 Mesa Verde Drive East, Costa Mesa and the Anaheim Station is located approximately 10.8 miles northeast of the project site 1630 West Pampas Lane, Anaheim. Ozone and NO_2 were measured at the Costa Mesa Station and PM10 and PM2.5 were measured at the Anaheim Station. However, it should be noted that due to the air monitoring station's distance from the project site, recorded air pollution levels at the monitoring stations reflect with varying degrees of accuracy, local air quality.

The monitoring data is presented in Table J and shows the most recent three years of monitoring data from CARB. CO measurements have not been provided, since CO is currently in attainment in the Air Basin and monitoring of CO within the Air Basin ended on March 31, 2013. Table J shows that ozone and particulate matter (PM10 and PM2.5) are the air pollutants of primary concern in the project area, which are detailed below:

Ozone

The State 1-hour concentration standard for ozone has been exceeded one day over the past three years at the Costa Mesa Station. The State 8-hour ozone standard has been exceeded between two and five days each year over the past three years at the Costa Mesa Station. The Federal 8-hour ozone standard has been exceeded between one and four days each year over the past three years at the Costa Mesa 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.

Table J – Local Area Air Quality Monitoring Summary

Pollutant (Standard)	Year 2015	2016	2017
Ozone[1]:			
Maximum 1-Hour Concentration (ppm)	0.099	0.090	0.88
Days > CAAQS (0.09 ppm)	1	0	0
Maximum 8-Hour Concentration (ppm)	0.080	0.069	0.080
Days > NAAQS (0.070 ppm)	**2**	0	**4**
Days > CAAQs (0.070 ppm)	**2**	0	**5**
Nitrogen Dioxide[1]:			
Maximum 1-Hour Concentration (ppb)	52.4	59.8	45.3
Days > NAAQS (100 ppb)	0	0	0
Inhalable Particulates (PM10) [2]:			
Maximum 24-Hour California Measurement (ug/m^3)	59.0	74.0	95.7
Days > NAAQS (150 ug/m^3)	0	0	0
Days > CAAQS (50 ug/m^3)	**2**	ND	ND
Annual Arithmetic Mean (AAM) (ug/m^3)	25.5	27.5	26.9
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 National Measurement (ug/m^3)	53.8	45.5	56.2
Days > NAAQS (35 ug/m^3)	**3**	**1**	**7**
Annual Arithmetic Mean (AAM) (ug/m^3)	14.7	9.4	ND
Annual > NAAQS and CAAQS (12 ug/m^3)	**Yes**	No	No

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 Costa Mesa Station.
[2] Data obtained from the Anaheim Station.
Source: http://www.arb.ca.gov/adam/

Nitrogen Dioxide

The Costa Mesa Station did not record an exceedance of the Federal 1-hour NO_2 standard for the last three years.

Particulate Matter

The State 24-hour concentration standard for PM10 has been exceeded two days in 2015 and no data is available for the years 2016 and 2017 at the Anaheim Station. Over the past three years the Federal 24-hour standard for PM10 has not been exceeded at the Anaheim Station. The annual PM10 concentration at the Anaheim 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 24-hour concentration standard for PM2.5 has been exceeded between one and seven days each year over the past three years at the Anaheim Station. The annual PM2.5 concentration exceeded both the State and Federal standard only one year over the past three years at the Anaheim Station. 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.

6.4 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 SCAQMD's MATES-IV study, the project site has an estimated cancer risk of 750 per million persons chance of cancer. In comparison, the average cancer risk for the Air Basin is 991 per million persons, which is based on the use of age-sensitivity factors detailed in the OEHHA Guidelines (OEHHA, 2015).

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 between 1 in 3 to 4 and 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.

7.0 MODELING PARAMETERS AND ASSUMPTIONS

7.1 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 2016.3.2. CalEEMod is a computer model published by the SCAQMD for estimating air pollutant emissions. The CalEEMod program uses the EMFAC2014 computer program to calculate the emission rates specific for Orange County for employee, vendor and haul truck vehicle trips and the OFFROAD2011 computer program to calculate emission rates for heavy equipment operations. EMFAC2014 and OFFROAD2011 are computer programs generated by CARB that calculates composite emission rates for vehicles. Emission rates are reported by the program in grams per trip and grams per mile or grams per running hour.

The project characteristics in the CalEEMod were set to a project location of Orange County, a Climate Zone of 8, utility company of Southern California Edison, and an opening year of 2019.

Land Use Parameters

The proposed project would consist of the development of a new monitoring well with a development area of 15,000-square feet. Construction activities were modeled based on the phases, timing, and construction equipment detailed in Section 1.3. The proposed project's land use parameters that were entered into the CalEEMod model are shown in Table K.

Table K – CalEEMod Land Use Parameters

Proposed Land Use	Land Use Subtype in CalEEMod	Land Use Size[1]	Lot Acreage	Building/Paving[2] (square feet)
Monitoring Well	Other Non-Asphalt Surfaces	15,000 TSF	0.34	15,000 TSF

Notes:
[1] AC = Acres
[2] Building/Paving square feet represent area where architectural coatings will be applied.

The construction activities were modeled based on the phases, timing and construction equipment detailed above in Section 1.4. All off-road construction equipment was modeled based on the CalEEMod model's default Tier level emission rates.

Operational Emissions Modeling

In general, operation of the monitoring wells would be passive as there would be no permanent equipment installed in the well. Monitoring well operation involves periodically measuring the depth to groundwater and collecting groundwater samples for laboratory analysis. The depth to groundwater would be measured by hand using a battery-powered wire-line sounder. During a groundwater sampling event, a portable submersible pump would be lowered in each of the well casings. Operation of a submersible pump to lift water from the well would require the use of a small portable generator. OCWD staff would collect groundwater samples and record water levels on a semi-annual basis. In total, the 5-casing monitoring well would be visited by OCWD staff up to two times a year. One truck and two workers would access the well site during sampling, assuming a round trip length of 10 miles per trip. One truck and one worker would access the well site during collection of water levels, assuming a round trip length of 10 miles. Every three to five years OCWD would conduct maintenance activities to redevelop the well. A typical monitoring well redevelopment process would be completed in one day. All sampling and redevelopment activities would occur during daylight hours.

The anticipated timing and construction equipment utilized during well rehabilitation have been discussed above in Section 1.4. The worst-case operational emissions created by the proposed project have been analyzed through use of the CalEEMod model and the parameters detailed in Section 1.3 for the well rehabilitation activities.

8.0 THRESHOLDS OF SIGNIFICANCE

8.1 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 L.

Table L – 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

The regional criteria pollutants analysis for both construction and operation of the proposed project can be found below in Section 9.3.

8.2 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 provide thresholds for 1, 2, and 5-acre project sites. The one-acre project area data was utilized, since that is the closest available size to the proposed well construction site. As detailed above in Section 6.3, the project site is located in Air Monitoring Area 18, which covers North Coastal Orange County. The nearest offsite sensitive receptors to the project site consist of people using the OCC athletic fields that are located adjacent to the east side of the proposed well site. According to LST Methodology, any receptor located closer than 25 meters (82 feet) shall be based on the 25 meter thresholds. Table M below shows the LSTs for NO_2, PM10 and PM2.5 for both construction and operational activities.

Table M – SCAQMD Local Air Quality Thresholds of Significance

Activity	Allowable Emissions (pounds/day)[1]			
	NOx	CO	PM10	PM2.5
Construction	92	647	4	3
Operation	92	647	1	1

Notes:
[1] The nearest sensitive receptors are people using the OCC athletic fields located adjacent to the east side of the proposed well site. According to LST Methodology, all receptors closer than 25 meters are based on the 25 meter threshold.
Source: Calculated from SCAQMD's Mass Rate Look-up Tables for one acre in Air Monitoring Area 18, North Coastal Orange County.

8.3 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 hazardous air pollutant (HAP) should be analyzed through a comprehensive facility-wide health risk assessment (HRA).

The TAC analysis for both construction and operation of the proposed project can be found below in Section 9.4.

8.4 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.

The odor analysis for both construction and operation of the proposed project can be found below in Section 9.5.

8.5 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, as of November 2017, 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, to date no air district or local agency within California has provided guidance on how to address AB 197 and SB 32 with relation to land use projects. In addition, 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 Working Group's recommended thresholds. 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 9.6 and 9.7.

9.0 IMPACT ANALYSIS

9.1 CEQA Thresholds of Significance

Consistent with CEQA and the State Draft CEQA Guidelines, prepared on July 2, 2018, a significant impact related to air quality and global climate change would occur if the proposed project is determined to result in:

- 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.
- 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.

9.2 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 8.1 or local thresholds of significance discussed above in Section 8.2. The ongoing operation of the proposed project would generate air pollutant emissions that are inconsequential on a regional basis and would not result in significant impacts based on SCAQMD thresholds of significance discussed above in Section 8.1. The analysis for long-term local air quality impacts showed that local pollutant concentrations would not be projected to exceed the air quality standards. 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 AQMP. The emphasis of this criterion is to insure that the analyses conducted for the proposed project are based on the same forecasts as the AQMP. The AQMP is developed through use of the planning forecasts provided in the RTP/SCS and FTIP. The RTP/SCS is a major planning document for the regional transportation and land use network within Southern California. The 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 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 Costa Mesa General Plan defines the assumptions that are represented in AQMP.

The proposed project is currently designated as Public/Institutional and is zoned Institutional and Recreational (I&R). Since well drilling is an allowed use in all land use designations, the proposed project is consistent with the current land use designation and would not require a General Plan Amendment or zone change. As such, 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.

9.3 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 project site is located in the South Coast Air Basin, which is currently designated by the EPA for federal standards as a non-attainment area for ozone and PM2.5 and by CARB for the state standards as a non-attainment area for ozone, PM10, and PM2.5. The SCAQMD has developed both regional and local air emissions thresholds that are detailed respectively above in Sections 8.1 and 8.2. In accordance with SCAQMD methodology, projects that do not exceed SCAQMD criteria or can be mitigated to less than criteria levels are not significant and do not add to the overall cumulative impact.

The following section calculates the potential air emissions associated with the construction and operations of the proposed project and compares the emissions to the SCAQMD standards.

Construction Emissions

The proposed project would consist of construction of a new monitoring well. The CalEEMod model has been utilized to calculate the construction-related regional emissions from the proposed project and the input parameters utilized in this analysis have been detailed in Section 1.4. 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 N and the CalEEMod daily printouts are shown in Appendix A.

Table N – Construction-Related Regional Criteria Pollutant Emissions

Activity	Pollutant Emissions (pounds/day)					
	VOC	NOx	CO	SO_2	PM10	PM2.5
Phase 1 – Noise Panel & Protective Fencing/Utility Clearance						
Onsite[1]	3.73	39.52	22.95	0.05	2.08	1.49
Offsite[2]	0.07	0.54	0.50	0.00	0.16	0.05
Total	**3.80**	**40.06**	**23.45**	**0.05**	**2.24**	**1.54**
Phase 2 – Monitor Well Drilling & Construction						
Onsite	3.36	34.96	27.27	0.09	1.61	1.53
Offsite	0.06	0.54	0.42	0.00	0.14	0.04
Total	**3.42**	**35.50**	**27.69**	**0.09**	**1.75**	**1.57**
Phase 3 – Monitor Well Development						
Onsite	1.34	12.28	6.92	0.03	0.41	0.39
Offsite	0.06	0.54	0.42	0.00	0.14	0.04
Total	**1.40**	**12.82**	**7.34**	**0.03**	**0.55**	**0.43**
Phase 4 – Site Cleanup & Traffic-Related Vault Installation						
Onsite	2.06	21.12	14.28	0.03	1.01	0.93
Offsite	0.05	0.53	0.35	0.00	0.12	0.04
Total	**2.11**	**21.65**	**14.63**	**0.03**	**1.13**	**0.97**
SCQAMD Thresholds	**75**	**100**	**550**	**150**	**150**	**55**
Exceeds Threshold?	No	No	No	No	No	No

Notes:
[1] Onsite emissions from equipment not operated on public roads.
[2] Offsite emissions from vehicles operating on public roads.
Source: CalEEMod Version 2016.3.2.

Table N shows that none of the analyzed criteria pollutants would exceed the regional emissions thresholds during any of the well construction phases. Therefore, a less than significant regional air quality impact would occur from construction of the proposed project.

Operational Emissions

In general, operation of the proposed monitoring well would be passive as there would be no permanent equipment installed in the well. OCWD staff would collect groundwater samples and record water levels on a semi-annual basis. In total, the 5-casing monitoring well would be visited by OCWD staff up to two times a year. Every three to five years OCWD would conduct maintenance activities to redevelop the well. A typical monitoring well redevelopment process would be completed in one day.

The CalEEMod model has been utilized to calculate the operational regional emissions from the well sampling and well redevelopment activities and the input parameters utilized in this analysis as detailed above in Section 1.4. The worst-case summer or winter VOC, NOx, CO, SO_2, PM10, and PM2.5 daily emissions created from the proposed project's long-term operations have been calculated and are summarized below in Table O and the CalEEMod daily emissions printouts are shown in Appendix A.

Table O – Operational Well Rehabilitation Regional Criteria Pollutant Emissions

	Pollutant Emissions (pounds/day)					
Activity	**VOC**	**NOx**	**CO**	**SO_2**	**PM10**	**PM2.5**
Well Sampling						
Onsite[1]	0.21	1.35	0.73	0.00	0.06	0.06
Offsite[2]	0.03	0.29	0.25	0.00	0.08	0.02
Total Emissions	**0.24**	**1.64**	**0.98**	**0.00**	**0.14**	**0.08**
Well Rehabilitation						
Onsite	1.07	9.20	6.84	0.02	0.34	0.32
Offsite	0.03	0.22	0.20	0.00	0.08	0.02
Total Emissions	**1.10**	**9.42**	**7.04**	**0.02**	**0.42**	**0.34**
SCQAMD Operational Thresholds	**55**	**55**	**550**	**150**	**150**	**55**
Exceeds Threshold?	No	No	No	No	No	No

Notes:
[1] Onsite emissions from equipment not operated on public roads.
[2] Offsite emissions from vehicles operating on public roads.
Source: Calculated from CalEEMod Version 2016.3.2.

The data provided in Table O above shows that none of the analyzed criteria pollutants would exceed the operational regional emissions thresholds. Therefore, a less than significant regional air quality impact would occur from operation 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.

9.4 Exposure of Sensitive Receptors to Substantial Pollutant Concentrations

The proposed project would not expose sensitive receptors to substantial pollutant concentrations. The nearest offsite sensitive receptors to the project site consist of people at the OCC athletic fields that are located adjacent to the east side of the proposed well site. Other nearby sensitive receptors include multi-family residential uses located as near as 390 feet to the north, a church located as near as 985 feet to the east, and Costa Mesa High School that is located as near as 1,670 feet to the southeast. The construction and operations-related impacts to the nearby sensitive receptors have been analyzed separately below.

Construction-Related Sensitive Receptor Impacts

The proposed project would consist of construction of a new monitoring well and associated improvements to the project site. Construction of the proposed project would create onsite air emissions from off-road diesel equipment exhaust as well as from fugitive dust created from the movement of dirt and debris on the project site. The construction-related local criteria pollutant impacts and toxic air contaminant impacts have been analyzed separately below.

Construction-Related Local Criteria Pollutant Impacts

Construction-related air emissions may have the potential to exceed localized criteria pollutant thresholds that have been developed by the SCAQMD. 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 P 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 8.2. Since it is possible that building construction, paving, and architectural coating activities may occur concurrently, Table P also shows the combined local criteria pollutant emissions from building construction, paving and architectural coating phases of construction.

Table P – Construction-Related Local Criteria Pollutant Emissions

Phase	Pollutant Emissions (pounds/day)			
	NOx	**CO**	**PM10**	**PM2.5**
Noise Panel & Protective Fencing/Utility Clearance	39.52	22.95	2.08	1.49
Monitor Well Drilling & Construction	34.96	27.27	1.61	1.53
Monitor Well Development	12.31	6.94	0.41	0.39
Site Cleanup & Traffic-Related Vault Installation	21.18	14.32	1.01	0.93
SCAQMD Thresholds for 25 meters (82 feet)[1]	**92**	**647**	**4**	**3**
Exceeds Threshold?	No	No	No	No

Notes:
[1] The nearest sensitive receptors are players and fans at the OCC athletic fields located adjacent to the east side of the proposed well site. According to LST Methodology, all receptors closer than 25 meters are based on the 25 meter threshold.
Source: Calculated from SCAQMD's Mass Rate Look-up Tables for one-acre in Air Monitoring Area 18, North Coastal Orange County.

The data provided in Table P shows that none of the analyzed criteria pollutants would exceed the local emissions thresholds during any of the well construction phases. Therefore, a less than significant local air quality impact would occur from construction of the proposed project.

Construction-Related Toxic Air Contaminant Impacts

The greatest potential for toxic air contaminant emissions would be related to diesel particulate emissions associated with heavy equipment operations during construction of the proposed project. According to 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. Given the relatively limited number of heavy-duty construction equipment and the short-term construction schedule, the proposed project would not result in a long-term (i.e., 70 years) substantial source of toxic air contaminant emissions and corresponding individual cancer risk. Therefore, no significant short-term toxic air contaminant impacts would occur during construction of the proposed project. As such, construction of the proposed project would result in a less than significant exposure of sensitive receptors to substantial pollutant concentrations.

Operations-Related Sensitive Receptor Impacts

In general, operation of the proposed monitoring well would be passive as there would be no permanent equipment installed in the well. OCWD staff would collect groundwater samples and record water levels

on a semi-annual basis. In total, the 5-casing monitoring well would be visited by OCWD staff up to two times a year. Every three to five years OCWD would conduct maintenance activities to redevelop the well. A typical monitoring well redevelopment process would be completed in one day. The operations-related local criteria pollutant impacts and toxic air contaminant impacts have been analyzed separately below.

Operations-Related Local Criteria Pollutant Impacts

Operational air emissions may have the potential to exceed localized criteria pollutant thresholds that have been developed by the SCAQMD. The local air quality emissions from well rehabilitation were analyzed using the SCAQMD's Mass Rate LST Look-up Tables and the methodology described in LST Methodology. The Look-up Tables were developed by the SCAQMD in order to readily determine if the daily emissions of CO, NOx, PM10, and PM2.5 from the proposed project could result in a significant impact to the local air quality. Table Q shows the onsite emissions from the CalEEMod model for the well rehabilitation activities as well as the SCAQMD emissions thresholds.

Table Q – Operational Well Rehabilitation Local Criteria Pollutant Emissions

Onsite Emission Source	Pollutant Emissions (pounds/day)			
	NOx	CO	PM10	PM2.5
Well Sampling	9.33	6.25	0.38	0.36
Well Redevelopment	3.83	2.73	0.13	0.12
SCAQMD Thresholds for 25 meters (82 feet)[1]	**92**	**647**	**1**	**1**
Exceeds Threshold?	No	No	No	No

Notes:
[1] The nearest sensitive receptors are players and fans at the OCC athletic fields located adjacent to the east side of the proposed well site. According to LST Methodology, all receptors closer than 25 meters are based on the 25 meter threshold.
Source: Calculated from SCAQMD's Mass Rate Look-up Tables for one-acre in Air Monitoring Area 18, North Coastal Orange County.

The data provided in Table Q shows that the on-going operations 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, the on-going operations of the proposed project would create a less than significant operations-related impact to local air quality due to on-site emissions and no mitigation would be required.

Operations-Related Toxic Air Contaminant Impacts

The greatest potential for toxic air contaminant emissions would only occur during the well rehabilitation activities that are limited to approximately five days every five to ten years. Given, the infrequent activity schedule, the proposed project would not result in a long-term (i.e., 70 years) substantial source of toxic air contaminant emissions and corresponding individual cancer risk. Therefore, no significant long-term toxic air contaminant impacts would occur during operation of the proposed project. As such, operation of 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.

9.5 Odor Emissions Adversely Affecting a Substantial Number of People

The proposed project would not create objectionable odors affecting 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 odor impacts have been analyzed separately for construction and operations below.

Construction-Related Odor Impacts

Potential sources that may emit odors during construction activities include the extraction of drilling mud and from diesel exhaust associated with the operation of construction equipment. 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. Due to the transitory nature of construction odors, a less than significant odor impact would occur and no mitigation would be required.

Operations-Related Odor Impacts

In general, operation of the proposed monitoring well would be passive as there would be no permanent equipment installed in the well. OCWD staff would collect groundwater samples and record water levels on a semi-annual basis. In total, the 5-casing monitoring well would be visited by OCWD staff up to two times a year. Every three to five years OCWD would conduct maintenance activities to redevelop the well. A typical monitoring well redevelopment process would be completed in one day.

Potential sources that may emit odors during operational activities include the operation of diesel-powered maintenance trucks and equipment. As discussed above for the construction-related odor analysis, the objectionable odors that may be produced from diesel-powered maintenance trucks and equipment would be temporary and would not likely be noticeable for extended periods of time beyond the project site's boundaries. Therefore, due to the transitory nature and infrequency of operations-related odors, a less than significant odor impact would occur from operation of the proposed project.

Level of Significance

Less than significant impact.

9.6 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. The proposed project would result in the construction and operation of the proposed monitoring well. Construction activities would include the operation of off-road equipment as well as truck trips and worker trips to the project site that would create GHG emissions.

In general, operation of the proposed monitoring well would be passive as there would be no permanent equipment installed in the well. OCWD staff would collect groundwater samples and record water levels on a semi-annual basis. In total, the 5-casing monitoring well would be visited by OCWD staff up to two times a year. Every three to five years OCWD would conduct maintenance activities to redevelop the well. A typical monitoring well redevelopment process would be completed in one day.

The CalEEMod model was utilized to calculate the GHG emissions from each phase of construction activities and for the operational well rehabilitation activities utilizing the input parameters detailed above in Section 1.3. A summary of the GHG emissions is shown below in Table R and the CalEEMod model run annual printouts are provided in Appendix B.

Table R – Project Related Greenhouse Gas Annual Emissions

	Greenhouse Gas Emissions (Metric Tons per Year)			
Category	**CO_2**	**CH_4**	**N_2O**	**CO_2e**
Construction				
Noise Panel & Protective Fencing/Utility Clearance	2.58	0.00	0.00	2.60
Monitor Well Drilling & Construction	25.36	0.01	0.00	25.53
Monitor Well Development	25.85	0.00	0.00	25.97
Site Cleanup & Traffic-Related Vault Installation	1.38	0.00	0.00	1.39
Total Construction Emissions	55.18	0.01	0.00	55.49
Amortized Construction Emissions (30 Years)[1]	1.84	0.00	0.00	1.85
Operations				
Well Sampling	0.13	0.00	0.00	0.13
Total Well Sampling (2 times per year)	0.27	0.00	0.00	0.27
Well Redevelopment	1.05	0.00	0.00	1.06
Amortized Operational Emissions (3 Years)[2]	0.35	0.00	0.00	0.35
Total Operational Emissions	0.62	0.00	0.00	0.62
Total Annual Emissions (Construction & Operations)	**2.46**	**0.00**	**0.00**	**2.47**
SCAQMD Draft Threshold of Significance				**3,000**
Exceed Threshold?				No

Notes:
[1] Construction emissions amortized over 30 years as recommended in the SCAQMD GHG Working Group on November 19, 2009.
[2] Well Rehabilitation amortized over 3 years as that is the worst-case schedule for well redevelopment.
Source: CalEEMod Version 2016.3.2.

The data provided in Table R shows that the proposed project would create 2.47 $MTCO_2e$ per year. According to the SCAQMD draft threshold of significance detailed above in Section 8.5, a cumulative global climate change impact would occur if the GHG emissions created from the on-going operations would exceed 3,000 $MTCO_2e$ per year. Therefore, a less than significant generation of greenhouse gas emissions would occur from construction and operation of the proposed project.

Level of Significance

Less than significant impact.

9.7 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 would consist of the construction and operation of a new monitoring well in the City of Costa Mesa. In general, operation of

the proposed monitoring well would be passive as there would be no permanent equipment installed in the well. OCWD staff would collect groundwater samples and record water levels on a semi-annual basis. In total, the 5-casing monitoring well would be visited by OCWD staff up to two times a year. Every three to five years OCWD would conduct maintenance activities to redevelop the well. A typical monitoring well redevelopment process would be completed in one day

As detailed above in Section 9.6, the proposed project is anticipated to create 2.47 $MTCO_2e$ per year, which is well below the SCAQMD draft threshold of significance of 3,000 $MTCO_2e$ per year. The SCAQMD developed this threshold through a Working Group, which also developed 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 type projects, which was based on substantial evidence supporting the use of the recommended thresholds. 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.

10.0 REFERENCES

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APPENDIX A

CalEEMod Model Daily Printouts

Monitoring Well OCWD-M43R at Orange Coast College

Orange County, Summer

1.0 Project Characteristics

1.1 Land Usage

Land Uses	Size	Metric	Lot Acreage	Floor Surface Area	Population
Other Non-Asphalt Surfaces	15.00	1000sqft	0.34	15,000.00	0

1.2 Other Project Characteristics

Urbanization	Urban	**Wind Speed (m/s)**	2.2	**Precipitation Freq (Days)**	30
Climate Zone	8			**Operational Year**	2019
Utility Company	Southern California Edison				
CO2 Intensity (lb/MWhr)	702.44	**CH4 Intensity (lb/MWhr)**	0.029	**N2O Intensity (lb/MWhr)**	0.006

1.3 User Entered Comments & Non-Default Data

Project Characteristics - Operational Year 2019

Land Use - 15,000 SF of Other Non-Asphalt Surfaces

Construction Phase - Construction phases and schedule provided by applicant.

Off-road Equipment - Construction equipment and horsepower provided by applicant.

Off-road Equipment - Construction equipment and horsepower provided by applicant.

Off-road Equipment - Construction equipment and horsepower provided by applicant.

Off-road Equipment - Construction equipment and horsepower provided by applicant.

Off-road Equipment - Construction equipment and horsepower provided by applicant.

Off-road Equipment - Construction equipment and horsepower provided by applicant.

Trips and VMT - Vendor trips based on mobilizing and demobilizing trips provided by applicant. Construction vendor trips set to 25 miles and operational vendor trips set to 10 miles.
Energy Use -

Table Name	Column Name	Default Value	New Value
tblConstructionPhase	NumDays	100.00	1.00
tblConstructionPhase	NumDaysWeek	5.00	6.00
tblOffRoadEquipment	HorsePower	89.00	75.00
tblOffRoadEquipment	HorsePower	78.00	200.00
tblOffRoadEquipment	HorsePower	78.00	200.00
tblOffRoadEquipment	HorsePower	221.00	550.00
tblOffRoadEquipment	HorsePower	221.00	325.00
tblOffRoadEquipment	HorsePower	231.00	325.00
tblOffRoadEquipment	HorsePower	89.00	75.00
tblOffRoadEquipment	HorsePower	84.00	20.00
tblOffRoadEquipment	HorsePower	84.00	20.00
tblOffRoadEquipment	HorsePower	402.00	550.00
tblOffRoadEquipment	HorsePower	402.00	550.00
tblOffRoadEquipment	HorsePower	402.00	300.00
tblOffRoadEquipment	HorsePower	84.00	75.00
tblOffRoadEquipment	OffRoadEquipmentType		Cranes
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	2.00	1.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	0.00	1.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	0.00	1.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	0.00	1.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	0.00	1.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	0.00	1.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	0.00	1.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	0.00	1.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	0.00	2.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	0.00	1.00

tblOffRoadEquipment	OffRoadEquipmentUnitAmount	0.00	1.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	0.00	1.00
tblOffRoadEquipment	PhaseName		Monitor Well Development
tblOffRoadEquipment	PhaseName		Operations - Well Redevelopment
tblOffRoadEquipment	PhaseName		Monitor Well Drilling & Construction
tblOffRoadEquipment	PhaseName		Monitor Well Development
tblOffRoadEquipment	PhaseName		Operations - Well Redevelopment
tblOffRoadEquipment	PhaseName		Monitor Well Drilling & Construction
tblOffRoadEquipment	PhaseName		Monitor Well Development
tblOffRoadEquipment	PhaseName		Operations - Well Sampling
tblOffRoadEquipment	PhaseName		Noise Panel & Protective Fencing/Utility Clearance
tblOffRoadEquipment	PhaseName		Site Cleanup & Traffic-Related Vault Installation
tblOffRoadEquipment	PhaseName		Operations - Well Redevelopment
tblOffRoadEquipment	PhaseName		Monitor Well Drilling & Construction
tblOffRoadEquipment	UsageHours	6.00	8.00
tblTripsAndVMT	VendorTripLength	6.90	25.00
tblTripsAndVMT	VendorTripLength	6.90	25.00
tblTripsAndVMT	VendorTripLength	6.90	25.00
tblTripsAndVMT	VendorTripLength	6.90	25.00
tblTripsAndVMT	VendorTripLength	6.90	10.00
tblTripsAndVMT	VendorTripLength	6.90	10.00
tblTripsAndVMT	VendorTripNumber	0.00	2.00
tblTripsAndVMT	VendorTripNumber	0.00	2.00
tblTripsAndVMT	VendorTripNumber	0.00	2.00
tblTripsAndVMT	VendorTripNumber	0.00	2.00
tblTripsAndVMT	VendorTripNumber	0.00	2.00

2.0 Emissions Summary

2.1 Overall Construction (Maximum Daily Emission)

Unmitigated Construction

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio-CO2	Total CO2	CH4	N2O	CO2e
Year	lb/day										lb/day					
2019	3.7927	40.0463	27.6959	0.0948	0.6882	1.6187	2.2467	0.1002	1.5404	1.5774	0.0000	9,321.8757	9,321.8757	2.4645	0.0000	9,383.4888
2022	1.0924	9.4222	7.0371	0.0241	0.0744	0.3450	0.4194	0.0201	0.3254	0.3455	0.0000	2,321.3736	2,321.3736	0.4110	0.0000	2,331.6473
Maximum	**3.7927**	**40.0463**	**27.6959**	**0.0948**	**0.6882**	**1.6187**	**2.2467**	**0.1002**	**1.5404**	**1.5774**	**0.0000**	**9,321.8757**	**9,321.8757**	**2.4645**	**0.0000**	**9,383.4888**

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					
2019	3.7927	40.0463	27.6959	0.0948	0.6882	1.6187	2.2467	0.1002	1.5404	1.5774	0.0000	9,321.8757	9,321.8757	2.4645	0.0000	9,383.4888
2022	1.0924	9.4222	7.0371	0.0241	0.0744	0.3450	0.4194	0.0201	0.3254	0.3455	0.0000	2,321.3736	2,321.3736	0.4110	0.0000	2,331.6473
Maximum	**3.7927**	**40.0463**	**27.6959**	**0.0948**	**0.6882**	**1.6187**	**2.2467**	**0.1002**	**1.5404**	**1.5774**	**0.0000**	**9,321.8757**	**9,321.8757**	**2.4645**	**0.0000**	**9,383.4888**

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

3.0 Construction Detail

Construction Phase

Phase Number	Phase Name	Phase Type	Start Date	End Date	Num Days Week	Num Days	Phase Description
1	Noise Panel & Protective Fencing/Utility Clearance	Site Preparation	5/1/2019	5/1/2019	5	1	
2	Monitor Well Drilling & Construction	Trenching	5/2/2019	5/8/2019	6	6	
3	Monitor Well Development	Trenching	5/9/2019	5/31/2019	5	17	
4	Site Cleanup & Traffic-Related Vault Installation	Building Construction	6/3/2019	6/3/2019	5	1	
5	Operations - Well Sampling	Trenching	12/13/2019	12/13/2019	5	1	
6	Operations - Well Redevelopment	Trenching	1/3/2022	1/3/2022	5	1	

Acres of Grading (Site Preparation Phase): 0

Acres of Grading (Grading Phase): 0

Acres of Paving: 0.34

Residential Indoor: 0; Residential Outdoor: 0; Non-Residential Indoor: 0; Non-Residential Outdoor: 0; Striped Parking Area: 0

OffRoad Equipment

Phase Name	Offroad Equipment Type	Amount	Usage Hours	Horse Power	Load Factor
Noise Panel & Protective Fencing/Utility Clearance	Graders	1	8.00	187	0.41
Noise Panel & Protective Fencing/Utility Clearance	Off-Highway Trucks	2	10.00	550	0.38
Noise Panel & Protective Fencing/Utility Clearance	Tractors/Loaders/Backhoes	1	8.00	97	0.37
Monitor Well Drilling & Construction	Bore/Drill Rigs	1	24.00	550	0.50
Monitor Well Drilling & Construction	Forklifts	1	24.00	75	0.20
Monitor Well Drilling & Construction	Pumps	1	24.00	75	0.74
Monitor Well Development	Air Compressors	1	10.00	200	0.48
Monitor Well Development	Bore/Drill Rigs	1	10.00	325	0.50
Monitor Well Development	Generator Sets	1	10.00	20	0.74
Site Cleanup & Traffic-Related Vault Installation	Cranes	1	4.00	231	0.29
Site Cleanup & Traffic-Related Vault Installation	Forklifts	1	8.00	75	0.20
Site Cleanup & Traffic-Related Vault Installation	Off-Highway Trucks	1	8.00	550	0.38
Site Cleanup & Traffic-Related Vault Installation	Tractors/Loaders/Backhoes	2	8.00	97	0.37
Operations - Well Redevelopment	Cranes	1	9.00	325	0.29

Operations - Well Sampling	Generator Sets	1	9.00	20	0.74
Operations - Well Redevelopment	Air Compressors	1	9.00	200	0.48
Operations - Well Redevelopment	Off-Highway Trucks	1	2.00	300	0.38

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
Noise Panel & Protective	4	10.00	2.00	0.00	14.70	25.00	20.00	LD_Mix	HDT_Mix	HHDT
Monitor Well Drilling & Construction	3	8.00	2.00	0.00	14.70	25.00	20.00	LD_Mix	HDT_Mix	HHDT
Monitor Well Development	3	8.00	2.00	0.00	14.70	25.00	20.00	LD_Mix	HDT_Mix	HHDT
Site Cleanup & Traffic-Related Vault	5	6.00	2.00	0.00	14.70	25.00	20.00	LD_Mix	HDT_Mix	HHDT
Operations - Well Sampling	2	5.00	2.00	0.00	14.70	10.00	20.00	LD_Mix	HDT_Mix	HHDT
Operations - Well Redevelopment	2	5.00	2.00	0.00	14.70	10.00	20.00	LD_Mix	HDT_Mix	HHDT

3.1 Mitigation Measures Construction

3.2 Noise Panel & Protective Fencing/Utility Clearance - 2019

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio-CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Fugitive Dust					0.5303	0.0000	0.5303	0.0573	0.0000	0.0573			0.0000			0.0000
Off-Road	3.7320	39.5159	22.9519	0.0547		1.5525	1.5525		1.4283	1.4283		5,418.1807	5,418.1807	1.7143		5,461.0370
Total	**3.7320**	**39.5159**	**22.9519**	**0.0547**	**0.5303**	**1.5525**	**2.0827**	**0.0573**	**1.4283**	**1.4855**		**5,418.1807**	**5,418.1807**	**1.7143**		**5,461.0370**

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio-CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Vendor	0.0195	0.5034	0.1385	1.5600e-003	0.0462	5.3000e-003	0.0515	0.0133	5.0700e-003	0.0183		169.4262	169.4262	0.0115		169.7134
Worker	0.0412	0.0270	0.3567	1.1300e-003	0.1118	7.5000e-004	0.1125	0.0296	6.9000e-004	0.0303		112.6140	112.6140	2.7700e-003		112.6833
Total	**0.0607**	**0.5304**	**0.4953**	**2.6900e-003**	**0.1579**	**6.0500e-003**	**0.1640**	**0.0429**	**5.7600e-003**	**0.0487**		**282.0402**	**282.0402**	**0.0143**		**282.3967**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio-CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Fugitive Dust					0.5303	0.0000	0.5303	0.0573	0.0000	0.0573			0.0000			0.0000
Off-Road	3.7320	39.5159	22.9519	0.0547		1.5525	1.5525		1.4283	1.4283	0.0000	5,418.1807	5,418.1807	1.7143		5,461.0370
Total	**3.7320**	**39.5159**	**22.9519**	**0.0547**	**0.5303**	**1.5525**	**2.0827**	**0.0573**	**1.4283**	**1.4855**	**0.0000**	**5,418.1807**	**5,418.1807**	**1.7143**		**5,461.0370**

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio-CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Vendor	0.0195	0.5034	0.1385	1.5600e-003	0.0462	5.3000e-003	0.0515	0.0133	5.0700e-003	0.0183		169.4262	169.4262	0.0115		169.7134
Worker	0.0412	0.0270	0.3567	1.1300e-003	0.1118	7.5000e-004	0.1125	0.0296	6.9000e-004	0.0303		112.6140	112.6140	2.7700e-003		112.6833
Total	**0.0607**	**0.5304**	**0.4953**	**2.6900e-003**	**0.1579**	**6.0500e-003**	**0.1640**	**0.0429**	**5.7600e-003**	**0.0487**		**282.0402**	**282.0402**	**0.0143**		**282.3967**

3.3 Monitor Well Drilling & Construction - 2019

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	3.3590	34.9586	27.2720	0.0924		1.6128	1.6128		1.5348	1.5348		9,062.3583	9,062.3583	2.4508		9,123.6288
Total	**3.3590**	**34.9586**	**27.2720**	**0.0924**		**1.6128**	**1.6128**		**1.5348**	**1.5348**		**9,062.3583**	**9,062.3583**	**2.4508**		**9,123.6288**

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio-CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Vendor	0.0195	0.5034	0.1385	1.5600e-003	0.0462	5.3000e-003	0.0515	0.0133	5.0700e-003	0.0183		169.4262	169.4262	0.0115		169.7134
Worker	0.0330	0.0216	0.2854	9.0000e-004	0.0894	6.0000e-004	0.0900	0.0237	5.5000e-004	0.0243		90.0912	90.0912	2.2100e-003		90.1466
Total	**0.0524**	**0.5250**	**0.4239**	**2.4600e-003**	**0.1356**	**5.9000e-003**	**0.1415**	**0.0370**	**5.6200e-003**	**0.0426**		**259.5174**	**259.5174**	**0.0137**		**259.8600**

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	3.3590	34.9586	27.2720	0.0924		1.6128	1.6128		1.5348	1.5348	0.0000	9,062.3583	9,062.3583	2.4508		9,123.6288
Total	**3.3590**	**34.9586**	**27.2720**	**0.0924**		**1.6128**	**1.6128**		**1.5348**	**1.5348**	**0.0000**	**9,062.3583**	**9,062.3583**	**2.4508**		**9,123.6288**

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio-CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Vendor	0.0195	0.5034	0.1385	1.5600e-003	0.0462	5.3000e-003	0.0515	0.0133	5.0700e-003	0.0183		169.4262	169.4262	0.0115		169.7134
Worker	0.0330	0.0216	0.2854	9.0000e-004	0.0894	6.0000e-004	0.0900	0.0237	5.5000e-004	0.0243		90.0912	90.0912	2.2100e-003		90.1466
Total	**0.0524**	**0.5250**	**0.4239**	**2.4600e-003**	**0.1356**	**5.9000e-003**	**0.1415**	**0.0370**	**5.6200e-003**	**0.0426**		**259.5174**	**259.5174**	**0.0137**		**259.8600**

3.4 Monitor Well Development - 2019

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	1.3447	12.2815	6.9179	0.0323		0.4065	0.4065		0.3928	0.3928		3,097.2199	3,097.2199	0.6194		3,112.7047
Total	**1.3447**	**12.2815**	**6.9179**	**0.0323**		**0.4065**	**0.4065**		**0.3928**	**0.3928**		**3,097.2199**	**3,097.2199**	**0.6194**		**3,112.7047**

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio-CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Vendor	0.0195	0.5034	0.1385	1.5600e-003	0.0462	5.3000e-003	0.0515	0.0133	5.0700e-003	0.0183		169.4262	169.4262	0.0115		169.7134
Worker	0.0330	0.0216	0.2854	9.0000e-004	0.0894	6.0000e-004	0.0900	0.0237	5.5000e-004	0.0243		90.0912	90.0912	2.2100e-003		90.1466
Total	**0.0524**	**0.5250**	**0.4239**	**2.4600e-003**	**0.1356**	**5.9000e-003**	**0.1415**	**0.0370**	**5.6200e-003**	**0.0426**		**259.5174**	**259.5174**	**0.0137**		**259.8600**

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	1.3447	12.2815	6.9179	0.0323		0.4065	0.4065		0.3928	0.3928	0.0000	3,097.2198	3,097.2198	0.6194		3,112.7047
Total	**1.3447**	**12.2815**	**6.9179**	**0.0323**		**0.4065**	**0.4065**		**0.3928**	**0.3928**	**0.0000**	**3,097.2198**	**3,097.2198**	**0.6194**		**3,112.7047**

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio-CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Vendor	0.0195	0.5034	0.1385	1.5600e-003	0.0462	5.3000e-003	0.0515	0.0133	5.0700e-003	0.0183		169.4262	169.4262	0.0115		169.7134
Worker	0.0330	0.0216	0.2854	9.0000e-004	0.0894	6.0000e-004	0.0900	0.0237	5.5000e-004	0.0243		90.0912	90.0912	2.2100e-003		90.1466
Total	**0.0524**	**0.5250**	**0.4239**	**2.4600e-003**	**0.1356**	**5.9000e-003**	**0.1415**	**0.0370**	**5.6200e-003**	**0.0426**		**259.5174**	**259.5174**	**0.0137**		**259.8600**

3.5 Site Cleanup & Traffic-Related Vault Installation - 2019

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	2.0574	21.1214	14.2827	0.0284		1.0067	1.0067		0.9262	0.9262		2,809.4109	2,809.4109	0.8889		2,831.6326
Total	**2.0574**	**21.1214**	**14.2827**	**0.0284**		**1.0067**	**1.0067**		**0.9262**	**0.9262**		**2,809.4109**	**2,809.4109**	**0.8889**		**2,831.6326**

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio-CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Vendor	0.0195	0.5034	0.1385	1.5600e-003	0.0462	5.3000e-003	0.0515	0.0133	5.0700e-003	0.0183		169.4262	169.4262	0.0115		169.7134
Worker	0.0247	0.0162	0.2141	6.8000e-004	0.0671	4.5000e-004	0.0675	0.0178	4.1000e-004	0.0182		67.5684	67.5684	1.6600e-003		67.6100
Total	**0.0442**	**0.5196**	**0.3526**	**2.2400e-003**	**0.1132**	**5.7500e-003**	**0.1190**	**0.0311**	**5.4800e-003**	**0.0365**		**236.9946**	**236.9946**	**0.0132**		**237.3234**

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	2.0574	21.1214	14.2827	0.0284		1.0067	1.0067		0.9262	0.9262	0.0000	2,809.4109	2,809.4109	0.8889		2,831.6326
Total	**2.0574**	**21.1214**	**14.2827**	**0.0284**		**1.0067**	**1.0067**		**0.9262**	**0.9262**	**0.0000**	**2,809.4109**	**2,809.4109**	**0.8889**		**2,831.6326**

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio-CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Vendor	0.0195	0.5034	0.1385	1.5600e-003	0.0462	5.3000e-003	0.0515	0.0133	5.0700e-003	0.0183		169.4262	169.4262	0.0115		169.7134
Worker	0.0247	0.0162	0.2141	6.8000e-004	0.0671	4.5000e-004	0.0675	0.0178	4.1000e-004	0.0182		67.5684	67.5684	1.6600e-003		67.6100
Total	**0.0442**	**0.5196**	**0.3526**	**2.2400e-003**	**0.1132**	**5.7500e-003**	**0.1190**	**0.0311**	**5.4800e-003**	**0.0365**		**236.9946**	**236.9946**	**0.0132**		**237.3234**

3.6 Operations - Well Sampling - 2019

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio-CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Off-Road	0.2147	1.3496	0.7344	2.0600e-003		0.0628	0.0628		0.0628	0.0628		166.8843	166.8843	0.0194		167.3688
Total	**0.2147**	**1.3496**	**0.7344**	**2.0600e-003**		**0.0628**	**0.0628**		**0.0628**	**0.0628**		**166.8843**	**166.8843**	**0.0194**		**167.3688**

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio-CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Vendor	9.5500e-003	0.2743	0.0735	6.8000e-004	0.0185	2.1800e-003	0.0207	5.3200e-003	2.0800e-003	7.4000e-003		74.2612	74.2612	5.7900e-003		74.4059
Worker	0.0206	0.0135	0.1784	5.6000e-004	0.0559	3.7000e-004	0.0563	0.0148	3.4000e-004	0.0152		56.3070	56.3070	1.3800e-003		56.3416
Total	**0.0302**	**0.2878**	**0.2518**	**1.2400e-003**	**0.0744**	**2.5500e-003**	**0.0769**	**0.0201**	**2.4200e-003**	**0.0226**		**130.5682**	**130.5682**	**7.1700e-003**		**130.7475**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio-CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Off-Road	0.2147	1.3496	0.7344	2.0600e-003		0.0628	0.0628		0.0628	0.0628	0.0000	166.8843	166.8843	0.0194		167.3688
Total	**0.2147**	**1.3496**	**0.7344**	**2.0600e-003**		**0.0628**	**0.0628**		**0.0628**	**0.0628**	**0.0000**	**166.8843**	**166.8843**	**0.0194**		**167.3688**

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio-CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Vendor	9.5500e-003	0.2743	0.0735	6.8000e-004	0.0185	2.1800e-003	0.0207	5.3200e-003	2.0800e-003	7.4000e-003		74.2612	74.2612	5.7900e-003		74.4059
Worker	0.0206	0.0135	0.1784	5.6000e-004	0.0559	3.7000e-004	0.0563	0.0148	3.4000e-004	0.0152		56.3070	56.3070	1.3800e-003		56.3416
Total	**0.0302**	**0.2878**	**0.2518**	**1.2400e-003**	**0.0744**	**2.5500e-003**	**0.0769**	**0.0201**	**2.4200e-003**	**0.0226**		**130.5682**	**130.5682**	**7.1700e-003**		**130.7475**

3.7 Operations - Well Redevelopment - 2022

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio-CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Off-Road	1.0690	9.2048	6.8352	0.0230		0.3442	0.3442		0.3246	0.3246		2,198.3372	2,198.3372	0.4047		2,208.4546
Total	**1.0690**	**9.2048**	**6.8352**	**0.0230**		**0.3442**	**0.3442**		**0.3246**	**0.3246**		**2,198.3372**	**2,198.3372**	**0.4047**		**2,208.4546**

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio-CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Vendor	6.2700e-003	0.2075	0.0602	6.6000e-004	0.0185	4.8000e-004	0.0190	5.3200e-003	4.5000e-004	5.7700e-003		72.3763	72.3763	5.2300e-003		72.5071
Worker	0.0171	9.8900e-003	0.1417	5.1000e-004	0.0559	3.5000e-004	0.0562	0.0148	3.3000e-004	0.0152		50.6601	50.6601	1.0200e-003		50.6856
Total	**0.0233**	**0.2174**	**0.2019**	**1.1700e-003**	**0.0744**	**8.3000e-004**	**0.0752**	**0.0201**	**7.8000e-004**	**0.0209**		**123.0364**	**123.0364**	**6.2500e-003**		**123.1927**

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	1.0690	9.2048	6.8352	0.0230		0.3442	0.3442		0.3246	0.3246	0.0000	2,198.3372	2,198.3372	0.4047		2,208.4546
Total	**1.0690**	**9.2048**	**6.8352**	**0.0230**		**0.3442**	**0.3442**		**0.3246**	**0.3246**	**0.0000**	**2,198.3372**	**2,198.3372**	**0.4047**		**2,208.4546**

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio-CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Vendor	6.2700e-003	0.2075	0.0602	6.6000e-004	0.0185	4.8000e-004	0.0190	5.3200e-003	4.5000e-004	5.7700e-003		72.3763	72.3763	5.2300e-003		72.5071
Worker	0.0171	9.8900e-003	0.1417	5.1000e-004	0.0559	3.5000e-004	0.0562	0.0148	3.3000e-004	0.0152		50.6601	50.6601	1.0200e-003		50.6856
Total	**0.0233**	**0.2174**	**0.2019**	**1.1700e-003**	**0.0744**	**8.3000e-004**	**0.0752**	**0.0201**	**7.8000e-004**	**0.0209**		**123.0364**	**123.0364**	**6.2500e-003**		**123.1927**

Monitoring Well OCWD-M43R at Orange Coast College

Orange County, Winter

1.0 Project Characteristics

1.1 Land Usage

Land Uses	Size	Metric	Lot Acreage	Floor Surface Area	Population
Other Non-Asphalt Surfaces	15.00	1000sqft	0.34	15,000.00	0

1.2 Other Project Characteristics

Urbanization	Urban	**Wind Speed (m/s)**	2.2	**Precipitation Freq (Days)**	30
Climate Zone	8			**Operational Year**	2019
Utility Company	Southern California Edison				
CO2 Intensity (lb/MWhr)	702.44	**CH4 Intensity (lb/MWhr)**	0.029	**N2O Intensity (lb/MWhr)**	0.006

1.3 User Entered Comments & Non-Default Data

Project Characteristics - Operational Year 2019

Land Use - 15,000 SF of Other Non-Asphalt Surfaces

Construction Phase - Construction phases and schedule provided by applicant.

Off-road Equipment - Construction equipment and horsepower provided by applicant.

Off-road Equipment - Construction equipment and horsepower provided by applicant.

Off-road Equipment - Construction equipment and horsepower provided by applicant.

Off-road Equipment - Construction equipment and horsepower provided by applicant.

Off-road Equipment - Construction equipment and horsepower provided by applicant.

Off-road Equipment - Construction equipment and horsepower provided by applicant.

Trips and VMT - Vendor trips based on mobilizing and demobilizing trips provided by applicant. Construction vendor trips set to 25 miles and operational vendor trips set to 10 miles.

Energy Use -

Table Name	Column Name	Default Value	New Value
tblConstructionPhase	NumDays	100.00	1.00
tblConstructionPhase	NumDaysWeek	5.00	6.00
tblOffRoadEquipment	HorsePower	89.00	75.00
tblOffRoadEquipment	HorsePower	78.00	200.00
tblOffRoadEquipment	HorsePower	78.00	200.00
tblOffRoadEquipment	HorsePower	221.00	550.00
tblOffRoadEquipment	HorsePower	221.00	325.00
tblOffRoadEquipment	HorsePower	231.00	325.00
tblOffRoadEquipment	HorsePower	89.00	75.00
tblOffRoadEquipment	HorsePower	84.00	20.00
tblOffRoadEquipment	HorsePower	84.00	20.00
tblOffRoadEquipment	HorsePower	402.00	550.00
tblOffRoadEquipment	HorsePower	402.00	550.00
tblOffRoadEquipment	HorsePower	402.00	300.00
tblOffRoadEquipment	HorsePower	84.00	75.00
tblOffRoadEquipment	OffRoadEquipmentType		Cranes
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	2.00	1.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	0.00	1.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	0.00	1.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	0.00	1.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	0.00	1.00
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tblOffRoadEquipment	OffRoadEquipmentUnitAmount	0.00	1.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	0.00	1.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	0.00	2.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	0.00	1.00

tblOffRoadEquipment	OffRoadEquipmentUnitAmount	0.00	1.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	0.00	1.00
tblOffRoadEquipment	PhaseName		Monitor Well Development
tblOffRoadEquipment	PhaseName		Operations - Well Redevelopment
tblOffRoadEquipment	PhaseName		Monitor Well Drilling & Construction
tblOffRoadEquipment	PhaseName		Monitor Well Development
tblOffRoadEquipment	PhaseName		Operations - Well Redevelopment
tblOffRoadEquipment	PhaseName		Monitor Well Drilling & Construction
tblOffRoadEquipment	PhaseName		Monitor Well Development
tblOffRoadEquipment	PhaseName		Operations - Well Sampling
tblOffRoadEquipment	PhaseName		Noise Panel & Protective Fencing/Utility Clearance
tblOffRoadEquipment	PhaseName		Site Cleanup & Traffic-Related Vault Installation
tblOffRoadEquipment	PhaseName		Operations - Well Redevelopment
tblOffRoadEquipment	PhaseName		Monitor Well Drilling & Construction
tblOffRoadEquipment	UsageHours	6.00	8.00
tblTripsAndVMT	VendorTripLength	6.90	25.00
tblTripsAndVMT	VendorTripLength	6.90	25.00
tblTripsAndVMT	VendorTripLength	6.90	25.00
tblTripsAndVMT	VendorTripLength	6.90	25.00
tblTripsAndVMT	VendorTripLength	6.90	10.00
tblTripsAndVMT	VendorTripLength	6.90	10.00
tblTripsAndVMT	VendorTripNumber	0.00	2.00
tblTripsAndVMT	VendorTripNumber	0.00	2.00
tblTripsAndVMT	VendorTripNumber	0.00	2.00
tblTripsAndVMT	VendorTripNumber	0.00	2.00
tblTripsAndVMT	VendorTripNumber	0.00	2.00

2.0 Emissions Summary

2.1 Overall Construction (Maximum Daily Emission)

Unmitigated Construction

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio-CO2	Total CO2	CH4	N2O	CO2e
Year	lb/day										lb/day					
2019	3.7984	40.0598	27.6801	0.0948	0.6882	1.6187	2.2467	0.1002	1.5404	1.5774	0.0000	9,315.7237	9,315.7237	2.4647	0.0000	9,377.3398
2022	1.0949	9.4238	7.0306	0.0241	0.0744	0.3450	0.4194	0.0201	0.3254	0.3455	0.0000	2,317.3498	2,317.3498	0.4111	0.0000	2,327.6269
Maximum	**3.7984**	**40.0598**	**27.6801**	**0.0948**	**0.6882**	**1.6187**	**2.2467**	**0.1002**	**1.5404**	**1.5774**	**0.0000**	**9,315.7237**	**9,315.7237**	**2.4647**	**0.0000**	**9,377.3398**

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					
2019	3.7984	40.0598	27.6801	0.0948	0.6882	1.6187	2.2467	0.1002	1.5404	1.5774	0.0000	9,315.7237	9,315.7237	2.4647	0.0000	9,377.3398
2022	1.0949	9.4238	7.0306	0.0241	0.0744	0.3450	0.4194	0.0201	0.3254	0.3455	0.0000	2,317.3498	2,317.3498	0.4111	0.0000	2,327.6269
Maximum	**3.7984**	**40.0598**	**27.6801**	**0.0948**	**0.6882**	**1.6187**	**2.2467**	**0.1002**	**1.5404**	**1.5774**	**0.0000**	**9,315.7237**	**9,315.7237**	**2.4647**	**0.0000**	**9,377.3398**

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

3.0 Construction Detail

Construction Phase

Phase Number	Phase Name	Phase Type	Start Date	End Date	Num Days Week	Num Days	Phase Description
1	Noise Panel & Protective Fencing/Utility Clearance	Site Preparation	5/1/2019	5/1/2019	5	1	
2	Monitor Well Drilling & Construction	Trenching	5/2/2019	5/8/2019	6	6	
3	Monitor Well Development	Trenching	5/9/2019	5/31/2019	5	17	
4	Site Cleanup & Traffic-Related Vault Installation	Building Construction	6/3/2019	6/3/2019	5	1	
5	Operations - Well Sampling	Trenching	12/13/2019	12/13/2019	5	1	
6	Operations - Well Redevelopment	Trenching	1/3/2022	1/3/2022	5	1	

Acres of Grading (Site Preparation Phase): 0

Acres of Grading (Grading Phase): 0

Acres of Paving: 0.34

Residential Indoor: 0; Residential Outdoor: 0; Non-Residential Indoor: 0; Non-Residential Outdoor: 0; Striped Parking Area: 0

OffRoad Equipment

Phase Name	Offroad Equipment Type	Amount	Usage Hours	Horse Power	Load Factor
Noise Panel & Protective Fencing/Utility Clearance	Graders	1	8.00	187	0.41
Noise Panel & Protective Fencing/Utility Clearance	Off-Highway Trucks	2	10.00	550	0.38
Noise Panel & Protective Fencing/Utility Clearance	Tractors/Loaders/Backhoes	1	8.00	97	0.37
Monitor Well Drilling & Construction	Bore/Drill Rigs	1	24.00	550	0.50
Monitor Well Drilling & Construction	Forklifts	1	24.00	75	0.20
Monitor Well Drilling & Construction	Pumps	1	24.00	75	0.74
Monitor Well Development	Air Compressors	1	10.00	200	0.48
Monitor Well Development	Bore/Drill Rigs	1	10.00	325	0.50
Monitor Well Development	Generator Sets	1	10.00	20	0.74
Site Cleanup & Traffic-Related Vault Installation	Cranes	1	4.00	231	0.29
Site Cleanup & Traffic-Related Vault Installation	Forklifts	1	8.00	75	0.20
Site Cleanup & Traffic-Related Vault Installation	Off-Highway Trucks	1	8.00	550	0.38
Site Cleanup & Traffic-Related Vault Installation	Tractors/Loaders/Backhoes	2	8.00	97	0.37

Operations - Well Redevelopment	Cranes	1	9.00	325	0.29
Operations - Well Sampling	Generator Sets	1	9.00	20	0.74
Operations - Well Redevelopment	Air Compressors	1	9.00	200	0.48
Operations - Well Redevelopment	Off-Highway Trucks	1	2.00	300	0.38

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
Noise Panel & Protective	4	10.00	2.00	0.00	14.70	25.00	20.00	LD_Mix	HDT_Mix	HHDT
Monitor Well Drilling & Construction	3	8.00	2.00	0.00	14.70	25.00	20.00	LD_Mix	HDT_Mix	HHDT
Monitor Well Development	3	8.00	2.00	0.00	14.70	25.00	20.00	LD_Mix	HDT_Mix	HHDT
Site Cleanup & Traffic-Related Vault	5	6.00	2.00	0.00	14.70	25.00	20.00	LD_Mix	HDT_Mix	HHDT
Operations - Well Sampling	2	5.00	2.00	0.00	14.70	10.00	20.00	LD_Mix	HDT_Mix	HHDT
Operations - Well Redevelopment	2	5.00	2.00	0.00	14.70	10.00	20.00	LD_Mix	HDT_Mix	HHDT

3.1 Mitigation Measures Construction

3.2 Noise Panel & Protective Fencing/Utility Clearance - 2019

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio-CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Fugitive Dust					0.5303	0.0000	0.5303	0.0573	0.0000	0.0573			0.0000			0.0000
Off-Road	3.7320	39.5159	22.9519	0.0547		1.5525	1.5525		1.4283	1.4283		5,418.1807	5,418.1807	1.7143		5,461.0370
Total	**3.7320**	**39.5159**	**22.9519**	**0.0547**	**0.5303**	**1.5525**	**2.0827**	**0.0573**	**1.4283**	**1.4855**		**5,418.1807**	**5,418.1807**	**1.7143**		**5,461.0370**

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio-CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Vendor	0.0199	0.5141	0.1438	1.5500e-003	0.0462	5.3300e-003	0.0515	0.0133	5.1000e-003	0.0184		168.1034	168.1034	0.0117		168.3966
Worker	0.0465	0.0297	0.3303	1.0700e-003	0.1118	7.5000e-004	0.1125	0.0296	6.9000e-004	0.0303		106.5774	106.5774	2.6300e-003		106.6430
Total	**0.0664**	**0.5438**	**0.4741**	**2.6200e-003**	**0.1579**	**6.0800e-003**	**0.1640**	**0.0429**	**5.7900e-003**	**0.0487**		**274.6808**	**274.6808**	**0.0144**		**275.0396**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio-CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Fugitive Dust					0.5303	0.0000	0.5303	0.0573	0.0000	0.0573			0.0000			0.0000
Off-Road	3.7320	39.5159	22.9519	0.0547		1.5525	1.5525		1.4283	1.4283	0.0000	5,418.1807	5,418.1807	1.7143		5,461.0370
Total	**3.7320**	**39.5159**	**22.9519**	**0.0547**	**0.5303**	**1.5525**	**2.0827**	**0.0573**	**1.4283**	**1.4855**	**0.0000**	**5,418.1807**	**5,418.1807**	**1.7143**		**5,461.0370**

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio-CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Vendor	0.0199	0.5141	0.1438	1.5500e-003	0.0462	5.3300e-003	0.0515	0.0133	5.1000e-003	0.0184		168.1034	168.1034	0.0117		168.3966
Worker	0.0465	0.0297	0.3303	1.0700e-003	0.1118	7.5000e-004	0.1125	0.0296	6.9000e-004	0.0303		106.5774	106.5774	2.6300e-003		106.6430
Total	**0.0664**	**0.5438**	**0.4741**	**2.6200e-003**	**0.1579**	**6.0800e-003**	**0.1640**	**0.0429**	**5.7900e-003**	**0.0487**		**274.6808**	**274.6808**	**0.0144**		**275.0396**

3.3 Monitor Well Drilling & Construction - 2019

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	3.3590	34.9586	27.2720	0.0924		1.6128	1.6128		1.5348	1.5348		9,062.3583	9,062.3583	2.4508		9,123.6288
Total	**3.3590**	**34.9586**	**27.2720**	**0.0924**		**1.6128**	**1.6128**		**1.5348**	**1.5348**		**9,062.3583**	**9,062.3583**	**2.4508**		**9,123.6288**

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio-CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Vendor	0.0199	0.5141	0.1438	1.5500e-003	0.0462	5.3300e-003	0.0515	0.0133	5.1000e-003	0.0184		168.1034	168.1034	0.0117		168.3966
Worker	0.0372	0.0238	0.2642	8.6000e-004	0.0894	6.0000e-004	0.0900	0.0237	5.5000e-004	0.0243		85.2619	85.2619	2.1000e-003		85.3144
Total	**0.0571**	**0.5379**	**0.4081**	**2.4100e-003**	**0.1356**	**5.9300e-003**	**0.1415**	**0.0370**	**5.6500e-003**	**0.0426**		**253.3653**	**253.3653**	**0.0138**		**253.7110**

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	3.3590	34.9586	27.2720	0.0924		1.6128	1.6128		1.5348	1.5348	0.0000	9,062.3583	9,062.3583	2.4508		9,123.6288
Total	**3.3590**	**34.9586**	**27.2720**	**0.0924**		**1.6128**	**1.6128**		**1.5348**	**1.5348**	**0.0000**	**9,062.3583**	**9,062.3583**	**2.4508**		**9,123.6288**

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio-CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Vendor	0.0199	0.5141	0.1438	1.5500e-003	0.0462	5.3300e-003	0.0515	0.0133	5.1000e-003	0.0184		168.1034	168.1034	0.0117		168.3966
Worker	0.0372	0.0238	0.2642	8.6000e-004	0.0894	6.0000e-004	0.0900	0.0237	5.5000e-004	0.0243		85.2619	85.2619	2.1000e-003		85.3144
Total	**0.0571**	**0.5379**	**0.4081**	**2.4100e-003**	**0.1356**	**5.9300e-003**	**0.1415**	**0.0370**	**5.6500e-003**	**0.0426**		**253.3653**	**253.3653**	**0.0138**		**253.7110**

3.4 Monitor Well Development - 2019

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	1.3447	12.2815	6.9179	0.0323		0.4065	0.4065		0.3928	0.3928		3,097.2199	3,097.2199	0.6194		3,112.7047
Total	**1.3447**	**12.2815**	**6.9179**	**0.0323**		**0.4065**	**0.4065**		**0.3928**	**0.3928**		**3,097.2199**	**3,097.2199**	**0.6194**		**3,112.7047**

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio-CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Vendor	0.0199	0.5141	0.1438	1.5500e-003	0.0462	5.3300e-003	0.0515	0.0133	5.1000e-003	0.0184		168.1034	168.1034	0.0117		168.3966
Worker	0.0372	0.0238	0.2642	8.6000e-004	0.0894	6.0000e-004	0.0900	0.0237	5.5000e-004	0.0243		85.2619	85.2619	2.1000e-003		85.3144
Total	**0.0571**	**0.5379**	**0.4081**	**2.4100e-003**	**0.1356**	**5.9300e-003**	**0.1415**	**0.0370**	**5.6500e-003**	**0.0426**		**253.3653**	**253.3653**	**0.0138**		**253.7110**

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	1.3447	12.2815	6.9179	0.0323		0.4065	0.4065		0.3928	0.3928	0.0000	3,097.2198	3,097.2198	0.6194		3,112.7047
Total	**1.3447**	**12.2815**	**6.9179**	**0.0323**		**0.4065**	**0.4065**		**0.3928**	**0.3928**	**0.0000**	**3,097.2198**	**3,097.2198**	**0.6194**		**3,112.7047**

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio-CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Vendor	0.0199	0.5141	0.1438	1.5500e-003	0.0462	5.3300e-003	0.0515	0.0133	5.1000e-003	0.0184		168.1034	168.1034	0.0117		168.3966
Worker	0.0372	0.0238	0.2642	8.6000e-004	0.0894	6.0000e-004	0.0900	0.0237	5.5000e-004	0.0243		85.2619	85.2619	2.1000e-003		85.3144
Total	**0.0571**	**0.5379**	**0.4081**	**2.4100e-003**	**0.1356**	**5.9300e-003**	**0.1415**	**0.0370**	**5.6500e-003**	**0.0426**		**253.3653**	**253.3653**	**0.0138**		**253.7110**

3.5 Site Cleanup & Traffic-Related Vault Installation - 2019

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	2.0574	21.1214	14.2827	0.0284		1.0067	1.0067		0.9262	0.9262		2,809.4109	2,809.4109	0.8889		2,831.6326
Total	**2.0574**	**21.1214**	**14.2827**	**0.0284**		**1.0067**	**1.0067**		**0.9262**	**0.9262**		**2,809.4109**	**2,809.4109**	**0.8889**		**2,831.6326**

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio-CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Vendor	0.0199	0.5141	0.1438	1.5500e-003	0.0462	5.3300e-003	0.0515	0.0133	5.1000e-003	0.0184		168.1034	168.1034	0.0117		168.3966
Worker	0.0279	0.0178	0.1982	6.4000e-004	0.0671	4.5000e-004	0.0675	0.0178	4.1000e-004	0.0182		63.9464	63.9464	1.5800e-003		63.9858
Total	**0.0478**	**0.5320**	**0.3420**	**2.1900e-003**	**0.1132**	**5.7800e-003**	**0.1190**	**0.0311**	**5.5100e-003**	**0.0366**		**232.0498**	**232.0498**	**0.0133**		**232.3824**

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	2.0574	21.1214	14.2827	0.0284		1.0067	1.0067		0.9262	0.9262	0.0000	2,809.4109	2,809.4109	0.8889		2,831.6326
Total	**2.0574**	**21.1214**	**14.2827**	**0.0284**		**1.0067**	**1.0067**		**0.9262**	**0.9262**	**0.0000**	**2,809.4109**	**2,809.4109**	**0.8889**		**2,831.6326**

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio-CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Vendor	0.0199	0.5141	0.1438	1.5500e-003	0.0462	5.3300e-003	0.0515	0.0133	5.1000e-003	0.0184		168.1034	168.1034	0.0117		168.3966
Worker	0.0279	0.0178	0.1982	6.4000e-004	0.0671	4.5000e-004	0.0675	0.0178	4.1000e-004	0.0182		63.9464	63.9464	1.5800e-003		63.9858
Total	**0.0478**	**0.5320**	**0.3420**	**2.1900e-003**	**0.1132**	**5.7800e-003**	**0.1190**	**0.0311**	**5.5100e-003**	**0.0366**		**232.0498**	**232.0498**	**0.0133**		**232.3824**

3.6 Operations - Well Sampling - 2019

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio-CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Off-Road	0.2147	1.3496	0.7344	2.0600e-003		0.0628	0.0628		0.0628	0.0628		166.8843	166.8843	0.0194		167.3688
Total	**0.2147**	**1.3496**	**0.7344**	**2.0600e-003**		**0.0628**	**0.0628**		**0.0628**	**0.0628**		**166.8843**	**166.8843**	**0.0194**		**167.3688**

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio-CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Vendor	9.8800e-003	0.2763	0.0792	6.7000e-004	0.0185	2.2100e-003	0.0207	5.3200e-003	2.1100e-003	7.4300e-003		72.9385	72.9385	6.0300e-003		73.0892
Worker	0.0233	0.0149	0.1651	5.3000e-004	0.0559	3.7000e-004	0.0563	0.0148	3.4000e-004	0.0152		53.2887	53.2887	1.3100e-003		53.3215
Total	**0.0331**	**0.2912**	**0.2444**	**1.2000e-003**	**0.0744**	**2.5800e-003**	**0.0770**	**0.0201**	**2.4500e-003**	**0.0226**		**126.2271**	**126.2271**	**7.3400e-003**		**126.4107**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio-CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Off-Road	0.2147	1.3496	0.7344	2.0600e-003		0.0628	0.0628		0.0628	0.0628	0.0000	166.8843	166.8843	0.0194		167.3688
Total	**0.2147**	**1.3496**	**0.7344**	**2.0600e-003**		**0.0628**	**0.0628**		**0.0628**	**0.0628**	**0.0000**	**166.8843**	**166.8843**	**0.0194**		**167.3688**

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio-CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Vendor	9.8800e-003	0.2763	0.0792	6.7000e-004	0.0185	2.2100e-003	0.0207	5.3200e-003	2.1100e-003	7.4300e-003		72.9385	72.9385	6.0300e-003		73.0892
Worker	0.0233	0.0149	0.1651	5.3000e-004	0.0559	3.7000e-004	0.0563	0.0148	3.4000e-004	0.0152		53.2887	53.2887	1.3100e-003		53.3215
Total	**0.0331**	**0.2912**	**0.2444**	**1.2000e-003**	**0.0744**	**2.5800e-003**	**0.0770**	**0.0201**	**2.4500e-003**	**0.0226**		**126.2271**	**126.2271**	**7.3400e-003**		**126.4107**

3.7 Operations - Well Redevelopment - 2022

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio-CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Off-Road	1.0690	9.2048	6.8352	0.0230		0.3442	0.3442		0.3246	0.3246		2,198.3372	2,198.3372	0.4047		2,208.4546
Total	**1.0690**	**9.2048**	**6.8352**	**0.0230**		**0.3442**	**0.3442**		**0.3246**	**0.3246**		**2,198.3372**	**2,198.3372**	**0.4047**		**2,208.4546**

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio-CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Vendor	6.5400e-003	0.2081	0.0648	6.5000e-004	0.0185	4.9000e-004	0.0190	5.3200e-003	4.7000e-004	5.7900e-003		71.0637	71.0637	5.4200e-003		71.1992
Worker	0.0194	0.0109	0.1306	4.8000e-004	0.0559	3.5000e-004	0.0562	0.0148	3.3000e-004	0.0152		47.9489	47.9489	9.7000e-004		47.9731
Total	**0.0259**	**0.2189**	**0.1954**	**1.1300e-003**	**0.0744**	**8.4000e-004**	**0.0752**	**0.0201**	**8.0000e-004**	**0.0209**		**119.0126**	**119.0126**	**6.3900e-003**		**119.1723**

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	1.0690	9.2048	6.8352	0.0230		0.3442	0.3442		0.3246	0.3246	0.0000	2,198.3372	2,198.3372	0.4047		2,208.4546
Total	**1.0690**	**9.2048**	**6.8352**	**0.0230**		**0.3442**	**0.3442**		**0.3246**	**0.3246**	**0.0000**	**2,198.3372**	**2,198.3372**	**0.4047**		**2,208.4546**

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio-CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Vendor	6.5400e-003	0.2081	0.0648	6.5000e-004	0.0185	4.9000e-004	0.0190	5.3200e-003	4.7000e-004	5.7900e-003		71.0637	71.0637	5.4200e-003		71.1992
Worker	0.0194	0.0109	0.1306	4.8000e-004	0.0559	3.5000e-004	0.0562	0.0148	3.3000e-004	0.0152		47.9489	47.9489	9.7000e-004		47.9731
Total	**0.0259**	**0.2189**	**0.1954**	**1.1300e-003**	**0.0744**	**8.4000e-004**	**0.0752**	**0.0201**	**8.0000e-004**	**0.0209**		**119.0126**	**119.0126**	**6.3900e-003**		**119.1723**

APPENDIX B

CalEEMod Model Annual Printouts

Monitoring Well OCWD-M43R at Orange Coast College

Orange County, Annual

1.0 Project Characteristics

1.1 Land Usage

Land Uses	Size	Metric	Lot Acreage	Floor Surface Area	Population
Other Non-Asphalt Surfaces	15.00	1000sqft	0.34	15,000.00	0

1.2 Other Project Characteristics

Urbanization	Urban	**Wind Speed (m/s)**	2.2	**Precipitation Freq (Days)**	30
Climate Zone	8			**Operational Year**	2019
Utility Company	Southern California Edison				
CO2 Intensity (lb/MWhr)	702.44	**CH4 Intensity (lb/MWhr)**	0.029	**N2O Intensity (lb/MWhr)**	0.006

1.3 User Entered Comments & Non-Default Data

Project Characteristics - Operational Year 2019

Land Use - 15,000 SF of Other Non-Asphalt Surfaces

Construction Phase - Construction phases and schedule provided by applicant.

Off-road Equipment - Construction equipment and horsepower provided by applicant.

Off-road Equipment - Construction equipment and horsepower provided by applicant.

Off-road Equipment - Construction equipment and horsepower provided by applicant.

Off-road Equipment - Construction equipment and horsepower provided by applicant.

Off-road Equipment - Construction equipment and horsepower provided by applicant.

Off-road Equipment - Construction equipment and horsepower provided by applicant.

Trips and VMT - Vendor trips based on mobilizing and demobilizing trips provided by applicant. Construction vendor trips set to 25 miles and operational vendor trips set to 10 miles.
Energy Use -

Table Name	Column Name	Default Value	New Value
tblConstructionPhase	NumDays	100.00	1.00
tblConstructionPhase	NumDaysWeek	5.00	6.00
tblOffRoadEquipment	HorsePower	89.00	75.00
tblOffRoadEquipment	HorsePower	78.00	200.00
tblOffRoadEquipment	HorsePower	78.00	200.00
tblOffRoadEquipment	HorsePower	221.00	550.00
tblOffRoadEquipment	HorsePower	221.00	325.00
tblOffRoadEquipment	HorsePower	231.00	325.00
tblOffRoadEquipment	HorsePower	89.00	75.00
tblOffRoadEquipment	HorsePower	84.00	20.00
tblOffRoadEquipment	HorsePower	84.00	20.00
tblOffRoadEquipment	HorsePower	402.00	550.00
tblOffRoadEquipment	HorsePower	402.00	550.00
tblOffRoadEquipment	HorsePower	402.00	300.00
tblOffRoadEquipment	HorsePower	84.00	75.00
tblOffRoadEquipment	OffRoadEquipmentType		Cranes
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	2.00	1.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	0.00	1.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	0.00	1.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	0.00	1.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	0.00	1.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	0.00	1.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	0.00	1.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	0.00	1.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	0.00	2.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	0.00	1.00

tblOffRoadEquipment	OffRoadEquipmentUnitAmount	0.00	1.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	0.00	1.00
tblOffRoadEquipment	PhaseName		Monitor Well Development
tblOffRoadEquipment	PhaseName		Operations - Well Redevelopment
tblOffRoadEquipment	PhaseName		Monitor Well Drilling & Construction
tblOffRoadEquipment	PhaseName		Monitor Well Development
tblOffRoadEquipment	PhaseName		Operations - Well Redevelopment
tblOffRoadEquipment	PhaseName		Monitor Well Drilling & Construction
tblOffRoadEquipment	PhaseName		Monitor Well Development
tblOffRoadEquipment	PhaseName		Operations - Well Sampling
tblOffRoadEquipment	PhaseName		Noise Panel & Protective Fencing/Utility Clearance
tblOffRoadEquipment	PhaseName		Site Cleanup & Traffic-Related Vault Installation
tblOffRoadEquipment	PhaseName		Operations - Well Redevelopment
tblOffRoadEquipment	PhaseName		Monitor Well Drilling & Construction
tblOffRoadEquipment	UsageHours	6.00	8.00
tblTripsAndVMT	VendorTripLength	6.90	25.00
tblTripsAndVMT	VendorTripLength	6.90	25.00
tblTripsAndVMT	VendorTripLength	6.90	25.00
tblTripsAndVMT	VendorTripLength	6.90	25.00
tblTripsAndVMT	VendorTripLength	6.90	10.00
tblTripsAndVMT	VendorTripLength	6.90	10.00
tblTripsAndVMT	VendorTripNumber	0.00	2.00
tblTripsAndVMT	VendorTripNumber	0.00	2.00
tblTripsAndVMT	VendorTripNumber	0.00	2.00
tblTripsAndVMT	VendorTripNumber	0.00	2.00
tblTripsAndVMT	VendorTripNumber	0.00	2.00

2.0 Emissions Summary

2.1 Overall Construction

Unmitigated Construction

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio-CO2	Total CO2	CH4	N2O	CO2e
Year	tons/yr										MT/yr					
2019	0.0252	0.2473	0.1649	6.2000e-004	1.9700e-003	9.6800e-003	0.0117	4.9000e-004	9.2200e-003	9.7200e-003	0.0000	55.3088	55.3088	0.0128	0.0000	55.6287
2022	5.5000e-004	4.7100e-003	3.5200e-003	1.0000e-005	4.0000e-005	1.7000e-004	2.1000e-004	1.0000e-005	1.6000e-004	1.7000e-004	0.0000	1.0518	1.0518	1.9000e-004	0.0000	1.0565
Maximum	**0.0252**	**0.2473**	**0.1649**	**6.2000e-004**	**1.9700e-003**	**9.6800e-003**	**0.0117**	**4.9000e-004**	**9.2200e-003**	**9.7200e-003**	**0.0000**	**55.3088**	**55.3088**	**0.0128**	**0.0000**	**55.6287**

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					
2019	0.0252	0.2473	0.1649	6.2000e-004	1.9700e-003	9.6800e-003	0.0117	4.9000e-004	9.2200e-003	9.7200e-003	0.0000	55.3087	55.3087	0.0128	0.0000	55.6286
2022	5.5000e-004	4.7100e-003	3.5200e-003	1.0000e-005	4.0000e-005	1.7000e-004	2.1000e-004	1.0000e-005	1.6000e-004	1.7000e-004	0.0000	1.0518	1.0518	1.9000e-004	0.0000	1.0565
Maximum	**0.0252**	**0.2473**	**0.1649**	**6.2000e-004**	**1.9700e-003**	**9.6800e-003**	**0.0117**	**4.9000e-004**	**9.2200e-003**	**9.7200e-003**	**0.0000**	**55.3087**	**55.3087**	**0.0128**	**0.0000**	**55.6286**

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

Quarter	Start Date	End Date	Maximum Unmitigated ROG + NOX (tons/quarter)	Maximum Mitigated ROG + NOX (tons/quarter)
1	5-1-2019	7-31-2019	0.2575	0.2575
3	11-1-2019	1-31-2020	0.0007	0.0007
11	11-1-2021	1-31-2022	0.0038	0.0038
		Highest	0.2575	0.2575

3.0 Construction Detail

Construction Phase

Phase Number	Phase Name	Phase Type	Start Date	End Date	Num Days Week	Num Days	Phase Description
1	Noise Panel & Protective Fencing/Utility Clearance	Site Preparation	5/1/2019	5/1/2019	5	1	
2	Monitor Well Drilling & Construction	Trenching	5/2/2019	5/8/2019	6	6	
3	Monitor Well Development	Trenching	5/9/2019	5/31/2019	5	17	
4	Site Cleanup & Traffic-Related Vault Installation	Building Construction	6/3/2019	6/3/2019	5	1	
5	Operations - Well Sampling	Trenching	12/13/2019	12/13/2019	5	1	
6	Operations - Well Redevelopment	Trenching	1/3/2022	1/3/2022	5	1	

Acres of Grading (Site Preparation Phase): 0

Acres of Grading (Grading Phase): 0

Acres of Paving: 0.34

Residential Indoor: 0; Residential Outdoor: 0; Non-Residential Indoor: 0; Non-Residential Outdoor: 0; Striped Parking Area: 0

OffRoad Equipment

Phase Name	Offroad Equipment Type	Amount	Usage Hours	Horse Power	Load Factor
Noise Panel & Protective Fencing/Utility Clearance	Graders	1	8.00	187	0.41
Noise Panel & Protective Fencing/Utility Clearance	Off-Highway Trucks	2	10.00	550	0.38
Noise Panel & Protective Fencing/Utility Clearance	Tractors/Loaders/Backhoes	1	8.00	97	0.37
Monitor Well Drilling & Construction	Bore/Drill Rigs	1	24.00	550	0.50
Monitor Well Drilling & Construction	Forklifts	1	24.00	75	0.20
Monitor Well Drilling & Construction	Pumps	1	24.00	75	0.74
Monitor Well Development	Air Compressors	1	10.00	200	0.48
Monitor Well Development	Bore/Drill Rigs	1	10.00	325	0.50
Monitor Well Development	Generator Sets	1	10.00	20	0.74
Site Cleanup & Traffic-Related Vault Installation	Cranes	1	4.00	231	0.29
Site Cleanup & Traffic-Related Vault Installation	Forklifts	1	8.00	75	0.20

Site Cleanup & Traffic-Related Vault Installation	Off-Highway Trucks	1	8.00	550	0.38
Site Cleanup & Traffic-Related Vault Installation	Tractors/Loaders/Backhoes	2	8.00	97	0.37
Operations - Well Redevelopment	Cranes	1	9.00	325	0.29
Operations - Well Sampling	Generator Sets	1	9.00	20	0.74
Operations - Well Redevelopment	Air Compressors	1	9.00	200	0.48
Operations - Well Redevelopment	Off-Highway Trucks	1	2.00	300	0.38

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
Noise Panel & Protective	4	10.00	2.00	0.00	14.70	25.00	20.00	LD_Mix	HDT_Mix	HHDT
Monitor Well Drilling & Construction	3	8.00	2.00	0.00	14.70	25.00	20.00	LD_Mix	HDT_Mix	HHDT
Monitor Well Development	3	8.00	2.00	0.00	14.70	25.00	20.00	LD_Mix	HDT_Mix	HHDT
Site Cleanup & Traffic-Related Vault	5	6.00	2.00	0.00	14.70	25.00	20.00	LD_Mix	HDT_Mix	HHDT
Operations - Well Sampling	2	5.00	2.00	0.00	14.70	10.00	20.00	LD_Mix	HDT_Mix	HHDT
Operations - Well Redevelopment	2	5.00	2.00	0.00	14.70	10.00	20.00	LD_Mix	HDT_Mix	HHDT

3.1 Mitigation Measures Construction

3.2 Noise Panel & Protective Fencing/Utility Clearance - 2019

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio-CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Fugitive Dust					2.7000e-004	0.0000	2.7000e-004	3.0000e-005	0.0000	3.0000e-005	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	1.8700e-003	0.0198	0.0115	3.0000e-005		7.8000e-004	7.8000e-004		7.1000e-004	7.1000e-004	0.0000	2.4577	2.4577	7.8000e-004	0.0000	2.4771
Total	**1.8700e-003**	**0.0198**	**0.0115**	**3.0000e-005**	**2.7000e-004**	**7.8000e-004**	**1.0500e-003**	**3.0000e-005**	**7.1000e-004**	**7.4000e-004**	**0.0000**	**2.4577**	**2.4577**	**7.8000e-004**	**0.0000**	**2.4771**

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio-CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	1.0000e-005	2.6000e-004	7.0000e-005	0.0000	2.0000e-005	0.0000	3.0000e-005	1.0000e-005	0.0000	1.0000e-005	0.0000	0.0766	0.0766	1.0000e-005	0.0000	0.0767
Worker	2.0000e-005	2.0000e-005	1.7000e-004	0.0000	5.0000e-005	0.0000	6.0000e-005	1.0000e-005	0.0000	1.0000e-005	0.0000	0.0491	0.0491	0.0000	0.0000	0.0491
Total	**3.0000e-005**	**2.8000e-004**	**2.4000e-004**	**0.0000**	**7.0000e-005**	**0.0000**	**9.0000e-005**	**2.0000e-005**	**0.0000**	**2.0000e-005**	**0.0000**	**0.1257**	**0.1257**	**1.0000e-005**	**0.0000**	**0.1258**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio-CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Fugitive Dust					2.7000e-004	0.0000	2.7000e-004	3.0000e-005	0.0000	3.0000e-005	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	1.8700e-003	0.0198	0.0115	3.0000e-005		7.8000e-004	7.8000e-004		7.1000e-004	7.1000e-004	0.0000	2.4576	2.4576	7.8000e-004	0.0000	2.4771
Total	**1.8700e-003**	**0.0198**	**0.0115**	**3.0000e-005**	**2.7000e-004**	**7.8000e-004**	**1.0500e-003**	**3.0000e-005**	**7.1000e-004**	**7.4000e-004**	**0.0000**	**2.4576**	**2.4576**	**7.8000e-004**	**0.0000**	**2.4771**

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio-CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	1.0000e-005	2.6000e-004	7.0000e-005	0.0000	2.0000e-005	0.0000	3.0000e-005	1.0000e-005	0.0000	1.0000e-005	0.0000	0.0766	0.0766	1.0000e-005	0.0000	0.0767
Worker	2.0000e-005	2.0000e-005	1.7000e-004	0.0000	5.0000e-005	0.0000	6.0000e-005	1.0000e-005	0.0000	1.0000e-005	0.0000	0.0491	0.0491	0.0000	0.0000	0.0491
Total	**3.0000e-005**	**2.8000e-004**	**2.4000e-004**	**0.0000**	**7.0000e-005**	**0.0000**	**9.0000e-005**	**2.0000e-005**	**0.0000**	**2.0000e-005**	**0.0000**	**0.1257**	**0.1257**	**1.0000e-005**	**0.0000**	**0.1258**

3.3 Monitor Well Drilling & Construction - 2019

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	0.0101	0.1049	0.0818	2.8000e-004		4.8400e-003	4.8400e-003		4.6000e-003	4.6000e-003	0.0000	24.6637	24.6637	6.6700e-003	0.0000	24.8305
Total	**0.0101**	**0.1049**	**0.0818**	**2.8000e-004**		**4.8400e-003**	**4.8400e-003**		**4.6000e-003**	**4.6000e-003**	**0.0000**	**24.6637**	**24.6637**	**6.6700e-003**	**0.0000**	**24.8305**

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio-CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	6.0000e-005	1.5700e-003	4.2000e-004	0.0000	1.4000e-004	2.0000e-005	1.5000e-004	4.0000e-005	2.0000e-005	5.0000e-005	0.0000	0.4596	0.4596	3.0000e-005	0.0000	0.4604
Worker	1.0000e-004	7.0000e-005	8.1000e-004	0.0000	2.6000e-004	0.0000	2.7000e-004	7.0000e-005	0.0000	7.0000e-005	0.0000	0.2356	0.2356	1.0000e-005	0.0000	0.2357
Total	**1.6000e-004**	**1.6400e-003**	**1.2300e-003**	**0.0000**	**4.0000e-004**	**2.0000e-005**	**4.2000e-004**	**1.1000e-004**	**2.0000e-005**	**1.2000e-004**	**0.0000**	**0.6952**	**0.6952**	**4.0000e-005**	**0.0000**	**0.6961**

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	0.0101	0.1049	0.0818	2.8000e-004		4.8400e-003	4.8400e-003		4.6000e-003	4.6000e-003	0.0000	24.6637	24.6637	6.6700e-003	0.0000	24.8304
Total	**0.0101**	**0.1049**	**0.0818**	**2.8000e-004**		**4.8400e-003**	**4.8400e-003**		**4.6000e-003**	**4.6000e-003**	**0.0000**	**24.6637**	**24.6637**	**6.6700e-003**	**0.0000**	**24.8304**

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio-CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	6.0000e-005	1.5700e-003	4.2000e-004	0.0000	1.4000e-004	2.0000e-005	1.5000e-004	4.0000e-005	2.0000e-005	5.0000e-005	0.0000	0.4596	0.4596	3.0000e-005	0.0000	0.4604
Worker	1.0000e-004	7.0000e-005	8.1000e-004	0.0000	2.6000e-004	0.0000	2.7000e-004	7.0000e-005	0.0000	7.0000e-005	0.0000	0.2356	0.2356	1.0000e-005	0.0000	0.2357
Total	**1.6000e-004**	**1.6400e-003**	**1.2300e-003**	**0.0000**	**4.0000e-004**	**2.0000e-005**	**4.2000e-004**	**1.1000e-004**	**2.0000e-005**	**1.2000e-004**	**0.0000**	**0.6952**	**0.6952**	**4.0000e-005**	**0.0000**	**0.6961**

3.4 Monitor Well Development - 2019

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	0.0114	0.1044	0.0588	2.7000e-004		3.4600e-003	3.4600e-003		3.3400e-003	3.3400e-003	0.0000	23.8829	23.8829	4.7800e-003	0.0000	24.0023
Total	**0.0114**	**0.1044**	**0.0588**	**2.7000e-004**		**3.4600e-003**	**3.4600e-003**		**3.3400e-003**	**3.3400e-003**	**0.0000**	**23.8829**	**23.8829**	**4.7800e-003**	**0.0000**	**24.0023**

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio-CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	1.7000e-004	4.4500e-003	1.2000e-003	1.0000e-005	3.9000e-004	5.0000e-005	4.3000e-004	1.1000e-004	4.0000e-005	1.5000e-004	0.0000	1.3022	1.3022	9.0000e-005	0.0000	1.3044
Worker	2.8000e-004	2.1000e-004	2.3000e-003	1.0000e-005	7.5000e-004	1.0000e-005	7.5000e-004	2.0000e-004	0.0000	2.0000e-004	0.0000	0.6675	0.6675	2.0000e-005	0.0000	0.6679
Total	**4.5000e-004**	**4.6600e-003**	**3.5000e-003**	**2.0000e-005**	**1.1400e-003**	**6.0000e-005**	**1.1800e-003**	**3.1000e-004**	**4.0000e-005**	**3.5000e-004**	**0.0000**	**1.9697**	**1.9697**	**1.1000e-004**	**0.0000**	**1.9723**

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	0.0114	0.1044	0.0588	2.7000e-004		3.4600e-003	3.4600e-003		3.3400e-003	3.3400e-003	0.0000	23.8829	23.8829	4.7800e-003	0.0000	24.0023
Total	**0.0114**	**0.1044**	**0.0588**	**2.7000e-004**		**3.4600e-003**	**3.4600e-003**		**3.3400e-003**	**3.3400e-003**	**0.0000**	**23.8829**	**23.8829**	**4.7800e-003**	**0.0000**	**24.0023**

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio-CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	1.7000e-004	4.4500e-003	1.2000e-003	1.0000e-005	3.9000e-004	5.0000e-005	4.3000e-004	1.1000e-004	4.0000e-005	1.5000e-004	0.0000	1.3022	1.3022	9.0000e-005	0.0000	1.3044
Worker	2.8000e-004	2.1000e-004	2.3000e-003	1.0000e-005	7.5000e-004	1.0000e-005	7.5000e-004	2.0000e-004	0.0000	2.0000e-004	0.0000	0.6675	0.6675	2.0000e-005	0.0000	0.6679
Total	**4.5000e-004**	**4.6600e-003**	**3.5000e-003**	**2.0000e-005**	**1.1400e-003**	**6.0000e-005**	**1.1800e-003**	**3.1000e-004**	**4.0000e-005**	**3.5000e-004**	**0.0000**	**1.9697**	**1.9697**	**1.1000e-004**	**0.0000**	**1.9723**

3.5 Site Cleanup & Traffic-Related Vault Installation - 2019

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	1.0300e-003	0.0106	7.1400e-003	1.0000e-005		5.0000e-004	5.0000e-004		4.6000e-004	4.6000e-004	0.0000	1.2743	1.2743	4.0000e-004	0.0000	1.2844
Total	**1.0300e-003**	**0.0106**	**7.1400e-003**	**1.0000e-005**		**5.0000e-004**	**5.0000e-004**		**4.6000e-004**	**4.6000e-004**	**0.0000**	**1.2743**	**1.2743**	**4.0000e-004**	**0.0000**	**1.2844**

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio-CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	1.0000e-005	2.6000e-004	7.0000e-005	0.0000	2.0000e-005	0.0000	3.0000e-005	1.0000e-005	0.0000	1.0000e-005	0.0000	0.0766	0.0766	1.0000e-005	0.0000	0.0767
Worker	1.0000e-005	1.0000e-005	1.0000e-004	0.0000	3.0000e-005	0.0000	3.0000e-005	1.0000e-005	0.0000	1.0000e-005	0.0000	0.0295	0.0295	0.0000	0.0000	0.0295
Total	**2.0000e-005**	**2.7000e-004**	**1.7000e-004**	**0.0000**	**5.0000e-005**	**0.0000**	**6.0000e-005**	**2.0000e-005**	**0.0000**	**2.0000e-005**	**0.0000**	**0.1061**	**0.1061**	**1.0000e-005**	**0.0000**	**0.1062**

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	1.0300e-003	0.0106	7.1400e-003	1.0000e-005		5.0000e-004	5.0000e-004		4.6000e-004	4.6000e-004	0.0000	1.2743	1.2743	4.0000e-004	0.0000	1.2844
Total	**1.0300e-003**	**0.0106**	**7.1400e-003**	**1.0000e-005**		**5.0000e-004**	**5.0000e-004**		**4.6000e-004**	**4.6000e-004**	**0.0000**	**1.2743**	**1.2743**	**4.0000e-004**	**0.0000**	**1.2844**

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio-CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	1.0000e-005	2.6000e-004	7.0000e-005	0.0000	2.0000e-005	0.0000	3.0000e-005	1.0000e-005	0.0000	1.0000e-005	0.0000	0.0766	0.0766	1.0000e-005	0.0000	0.0767
Worker	1.0000e-005	1.0000e-005	1.0000e-004	0.0000	3.0000e-005	0.0000	3.0000e-005	1.0000e-005	0.0000	1.0000e-005	0.0000	0.0295	0.0295	0.0000	0.0000	0.0295
Total	**2.0000e-005**	**2.7000e-004**	**1.7000e-004**	**0.0000**	**5.0000e-005**	**0.0000**	**6.0000e-005**	**2.0000e-005**	**0.0000**	**2.0000e-005**	**0.0000**	**0.1061**	**0.1061**	**1.0000e-005**	**0.0000**	**0.1062**

3.6 Operations - Well Sampling - 2019

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	1.1000e-004	6.7000e-004	3.7000e-004	0.0000		3.0000e-005	3.0000e-005		3.0000e-005	3.0000e-005	0.0000	0.0757	0.0757	1.0000e-005	0.0000	0.0759
Total	**1.1000e-004**	**6.7000e-004**	**3.7000e-004**	**0.0000**		**3.0000e-005**	**3.0000e-005**		**3.0000e-005**	**3.0000e-005**	**0.0000**	**0.0757**	**0.0757**	**1.0000e-005**	**0.0000**	**0.0759**

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio-CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0000	1.4000e-004	4.0000e-005	0.0000	1.0000e-005	0.0000	1.0000e-005	0.0000	0.0000	0.0000	0.0000	0.0334	0.0334	0.0000	0.0000	0.0335
Worker	1.0000e-005	1.0000e-005	8.0000e-005	0.0000	3.0000e-005	0.0000	3.0000e-005	1.0000e-005	0.0000	1.0000e-005	0.0000	0.0245	0.0245	0.0000	0.0000	0.0246
Total	**1.0000e-005**	**1.5000e-004**	**1.2000e-004**	**0.0000**	**4.0000e-005**	**0.0000**	**4.0000e-005**	**1.0000e-005**	**0.0000**	**1.0000e-005**	**0.0000**	**0.0580**	**0.0580**	**0.0000**	**0.0000**	**0.0581**

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	1.1000e-004	6.7000e-004	3.7000e-004	0.0000		3.0000e-005	3.0000e-005		3.0000e-005	3.0000e-005	0.0000	0.0757	0.0757	1.0000e-005	0.0000	0.0759
Total	**1.1000e-004**	**6.7000e-004**	**3.7000e-004**	**0.0000**		**3.0000e-005**	**3.0000e-005**		**3.0000e-005**	**3.0000e-005**	**0.0000**	**0.0757**	**0.0757**	**1.0000e-005**	**0.0000**	**0.0759**

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio-CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0000	1.4000e-004	4.0000e-005	0.0000	1.0000e-005	0.0000	1.0000e-005	0.0000	0.0000	0.0000	0.0000	0.0334	0.0334	0.0000	0.0000	0.0335
Worker	1.0000e-005	1.0000e-005	8.0000e-005	0.0000	3.0000e-005	0.0000	3.0000e-005	1.0000e-005	0.0000	1.0000e-005	0.0000	0.0245	0.0245	0.0000	0.0000	0.0246
Total	**1.0000e-005**	**1.5000e-004**	**1.2000e-004**	**0.0000**	**4.0000e-005**	**0.0000**	**4.0000e-005**	**1.0000e-005**	**0.0000**	**1.0000e-005**	**0.0000**	**0.0580**	**0.0580**	**0.0000**	**0.0000**	**0.0581**

3.7 Operations - Well Redevelopment - 2022

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio-CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Off-Road	5.3000e-004	4.6000e-003	3.4200e-003	1.0000e-005		1.7000e-004	1.7000e-004		1.6000e-004	1.6000e-004	0.0000	0.9972	0.9972	1.8000e-004	0.0000	1.0017
Total	**5.3000e-004**	**4.6000e-003**	**3.4200e-003**	**1.0000e-005**		**1.7000e-004**	**1.7000e-004**		**1.6000e-004**	**1.6000e-004**	**0.0000**	**0.9972**	**0.9972**	**1.8000e-004**	**0.0000**	**1.0017**

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio-CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0000	1.1000e-004	3.0000e-005	0.0000	1.0000e-005	0.0000	1.0000e-005	0.0000	0.0000	0.0000	0.0000	0.0326	0.0326	0.0000	0.0000	0.0326
Worker	1.0000e-005	1.0000e-005	7.0000e-005	0.0000	3.0000e-005	0.0000	3.0000e-005	1.0000e-005	0.0000	1.0000e-005	0.0000	0.0221	0.0221	0.0000	0.0000	0.0221
Total	**1.0000e-005**	**1.2000e-004**	**1.0000e-004**	**0.0000**	**4.0000e-005**	**0.0000**	**4.0000e-005**	**1.0000e-005**	**0.0000**	**1.0000e-005**	**0.0000**	**0.0547**	**0.0547**	**0.0000**	**0.0000**	**0.0547**

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	5.3000e-004	4.6000e-003	3.4200e-003	1.0000e-005		1.7000e-004	1.7000e-004		1.6000e-004	1.6000e-004	0.0000	0.9972	0.9972	1.8000e-004	0.0000	1.0017
Total	**5.3000e-004**	**4.6000e-003**	**3.4200e-003**	**1.0000e-005**		**1.7000e-004**	**1.7000e-004**		**1.6000e-004**	**1.6000e-004**	**0.0000**	**0.9972**	**0.9972**	**1.8000e-004**	**0.0000**	**1.0017**

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio-CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0000	1.1000e-004	3.0000e-005	0.0000	1.0000e-005	0.0000	1.0000e-005	0.0000	0.0000	0.0000	0.0000	0.0326	0.0326	0.0000	0.0000	0.0326
Worker	1.0000e-005	1.0000e-005	7.0000e-005	0.0000	3.0000e-005	0.0000	3.0000e-005	1.0000e-005	0.0000	1.0000e-005	0.0000	0.0221	0.0221	0.0000	0.0000	0.0221
Total	**1.0000e-005**	**1.2000e-004**	**1.0000e-004**	**0.0000**	**4.0000e-005**	**0.0000**	**4.0000e-005**	**1.0000e-005**	**0.0000**	**1.0000e-005**	**0.0000**	**0.0547**	**0.0547**	**0.0000**	**0.0000**	**0.0547**