AIR QUALITY, ENERGY, AND GREENHOUSE GAS EMISSIONS IMPACT ANALYSIS

MONITORING WELL SA-5 REPLACEMENT PROJECT

CITIES OF HUNTINGTON BEACH & FOUNTAIN VALLEY

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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
BSFC	Brake Specific Fuel Consumption
CAAQS	California Ambient Air Quality Standards
CalEEMod	California Emissions Estimator Model
CalEPA	California Environmental Protection Agency
CAPCOA	California Air Pollution Control Officers Association
CARB	California Air Resources Board
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 Huntington Beach
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/SCS	Regional Transportation Plan/Sustainable Communities Strategy
SB	Senate Bill
SCAQMD	South Coast Air Quality Management District
SCAG	Southern California Association of Governments
SF_6	Sulfur Hexafluoride
SIP	State Implementation Plan
SO_x	Sulfur oxides
TAC	Toxic air contaminants
UNFCCC	United Nations' Framework Convention on Climate Change
VOC	Volatile organic compounds

1.0 INTRODUCTION

1.1 Purpose of Analysis and Study Objectives

This Air Quality, Energy, and Greenhouse Gas (GHG) Emissions Impact Analysis has been completed to determine the air quality, energy, and GHG emissions impacts associated with the proposed Monitoring Well SA-5 replacement 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 GHG emissions regulatory framework;
- A description of the air quality, energy, and GHG emissions thresholds including the California Environmental Quality Act (CEQA) significance thresholds;
- An analysis of the conformity of the proposed project with the South Coast Air Quality Management District (SCAQMD) Air Quality Management Plan (AQMP);
- An analysis of the short-term construction related and long-term operational air quality, energy, and GHG emissions impacts; and
- An analysis of the conformity of the proposed project with all applicable GHG emissions reduction plans and policies.

1.2 Proposed Project Location

The proposed project would occur within portions of the City of Fountain Valley and City of Huntington Beach, which are shown in Figure 1, Regional Vicinity Map. As shown in Figure 2, Project Area, the proposed project would be implemented within two separate sites within the northeastern portion of the City of Huntington Beach and the southwestern portion of the City of Fountain Valley.

Specifically, the decommissioning of the existing Monitoring Well SA-5 would occur with the Brookhurst Street right-of-way in the City of Huntington Beach, approximately 300 feet south of Yorktown Avenue. The proposed replacement Monitoring Well M58 would be constructed with the Oriole Avenue right-of-way in the City of Fountain Valley, approximately 130 feet east of Acacia Street.

1.3 Proposed Project Description

The proposed project would consist of the permanent decommissioning of the existing SA-5 Monitoring Well and the construction of a new replacement monitoring well that would be designated as OCWD-M58. The two project components are described below.

Monitoring Well SA-5 Decommissioning

As shown in Figure 3, Monitoring Well SA-5 Site Plan, the existing SA-5 Monitoring Well is located with the sidewalk along the west (southbound) side of Brookhurst Street. The decommissioning would require

an approximately 12-foot wide by 40-foot long temporary work area that would extend into the first southbound lane along Brookhurst Street.

The decommissioning of the Monitoring Well would require the removal of sediment within the lower portions of the existing well through air-lifting methods. The Monitoring Well would then be filled with cement and would be capped to a depth of five feet below the ground surface. After sealing the well casing with cement, capping would be conducted by excavating to a depth of 5 feet, removing the upper 5 feet of well casing, and installing a 1-foot thick concrete cap over the top of the well. The excavation would be back-filled and the sidewalk would be restored to the existing condition.

The decommissioning of the Monitoring Well would be conducted over approximately 5 working days. Construction activities would be limited to weekdays only and no nighttime construction would be required.

Proposed Monitoring Well OCWD-M58

The proposed project involves the construction and operation of the proposed multi-depth Monitoring Well OCWD-M58 that would be located with the Oriole Avenue right-of-way in the City of Fountain Valley as depicted in Figure 4, OCWD-M58 Site Plan. The proposed 3-casing nested monitoring well would be used to monitor seawater intrusion and groundwater flow within the Talbert Gap, and would be constructed to a depth of 230 feet below the ground surface.

The construction of OCWD-M58 would occur within the northern portion of Oriole Avenue, adjacent to the residential properties located on the north side of Oriole Avenue, which are the nearest sensitive receptors. The construction duration period would be approximately three weeks and would occur only on weekdays and would not include any nighttime construction. The construction would occur within an approximately 12-foot wide by 220 foot long construction area. Due to the proximity to the residences on the north side of the construction area, temporary noise barriers would be erected along the northern portion of the construction area.

1.4 Proposed Construction Activities

Monitoring Well SA-5 Decommissioning

The decommissioning of the existing SA-5 Monitoring Well would occur over a 5-day period. The proposed well decommissioning would occur in four steps; 1) fill removal, 2) pressure grout well casings, 3) cap well, and 4) sidewalk repair. The equipment mix for each step of the well decommissioning is shown in Table A.

Table A – Monitoring Well SA-5 Decommissioning Equipment Mix

Activity	Equipment	Pieces of Equipment	Hours of Operation	Days of Operation	Horsepower
Fill Removal	Pump Rig	1	8	1	550
	Air Compressor	1	4	1	200
Pressure Grout Well Casings	Pump Rig	1	8	1	550
	Air Compressor	1	2	1	200
Cap Well	Vacuum Truck	1	6	1	425
Sidewalk Repair	Backhoe	1	8	2	90
	Cement Truck	1	4	1	350
	Pick-up Truck	1	2	2	250

Construction Trips: 15 round trips mobilizing, 15 round trips demobilizing. All trips assumed 50 miles.
Source: OCWD.

Proposed Monitoring Well OCWD-M58

The proposed construction activities associated with the construction of proposed OCWD-M58 would occur in three construction phases. Phase 1 involves surveying the well site for possible underground utilities, installation of temporary noise panels, and installation of a six-foot protective chain link fence around the perimeter of the well site and construction work area. Phase 2 involves drilling and well construction activities, Phase 3 involves well development, and Phase 4 involves site clean-up and vault installation.

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

Phase 1 of the proposed project involves installation of 10-foot high noise panels on the north side and a 6-foot high chain link fencing around the remainder of the perimeter of the well site and construction work area. Phase 1 would also include surveying the well site for possible underground utilities. The equipment mix for Phase 1 is shown in Table B.

Table B – Monitoring Well M58 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	4	1	550
Utility Clearance	Vacuum Truck	1	5	1	425
Fencing and Noise Panel Installation	No Equipment	-	-	-	-

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

Phase 2: Monitoring Well Drilling and Construction

Phase 2 of the proposed project involves the drilling and construction of the Monitoring Well. The proposed monitoring well would be drilled by using the direct mud rotary drilling method. The Monitoring Well would include up to three 2-inch diameter PVC casings installed into a single 12-inch diameter borehole to an approximate depth of 230 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 three 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 3 foot by 4-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 C.

Table C – Monitoring Well M58 Well Drilling Equipment Mix

Activity	Equipment	Pieces of Equipment	Hours of Operation	Days of Operation	Horsepower
Well Drilling & Construction	Drilling Rig	1	8	7	550
	Mud Tank	1	8	7	75
	Fork Lift	1	3	7	75
	Support Truck	1	2	7	350
	Pick-up Truck	1	2	7	250

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

Phase 3: Monitoring Well Development

Phase 3 of the proposed project involves the mechanical and pumping development for each of the three well casings. The equipment mix for Phase 3 is shown in Table D.

Table D – Monitoring Well M58 Well Development Equipment Mix

Activity	Equipment	Pieces of Equipment	Hours of Operation	Days of Operation	Horsepower
Well Development	Pump Rig	1	8	5	325
	Air Compressor	1	8	5	200
	Electrical Generator	1	8	1	20
	Pick-up Truck	1	2	6	250

Construction Trips: 1 trip mobilizing, 1 trip demobilizing. All 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 E.

Table E – Monitoring Well M58 Subgrade Protective Well Vault Installation Equipment Mix

Activity	Equipment	Pieces of Equipment	Hours of Operation	Days of Operation	Horsepower
Delivery of Pre-Cast Concrete Vault	Truck	1	2	1	550
Receive and Install Pre-Cast Concrete Vault	Forklift	1	8	1	75
Install Well Vault	Pick-up Truck	1	2	1	250

Source: OCWD.

1.5 Monitoring Well Long-Term Operation and Maintenance Activities

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. A submersible pump would be used for periodic sampling. Operation of a submersible pump would require the use of a small portable generator. OCWD staff would collect groundwater samples on a semi-annual basis and record water levels on a monthly basis. In total, the monitoring well would be visited by OCWD staff up to 14 times per year. One truck and two workers would access the well site during collection of water levels, assuming a round trip length of 10 miles per trip. 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 the day. Table F identifies the equipment required for well sampling and redevelopment.

Table F – Monitoring Well Sampling and Redevelopment Equipment Mix

Activity	Equipment	Pieces of Equipment	Hours of Operation	Days of Operation	Horsepower
Sampling	Generator	1	4	1	20
Redevelopment	Pump Rig	1	8	1	325
	Air Compressor	1	8	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, Energy, and GHG Regulatory Conditions

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

South Coast Air Quality Management District Rules

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

- Rule 402 Nuisance – Controls the emissions of odors and other air contaminants;
- Rule 403 Fugitive Dust – Controls the emissions of fugitive dust; and
- 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; and
- CCR Title 13, Section 2025 – On-Road Diesel Truck Fleets.

Summary of Analysis Results

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

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

Less than significant impact.

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

Less than significant impact.

Expose sensitive receptors to substantial pollutant concentrations?

Less than significant impact.

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

Less than significant impact.

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

Less than significant impact.

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

Less than significant impact.

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

Less than significant impact.

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

Less than significant impact.

1.7 Mitigation Measures for the Proposed Project

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

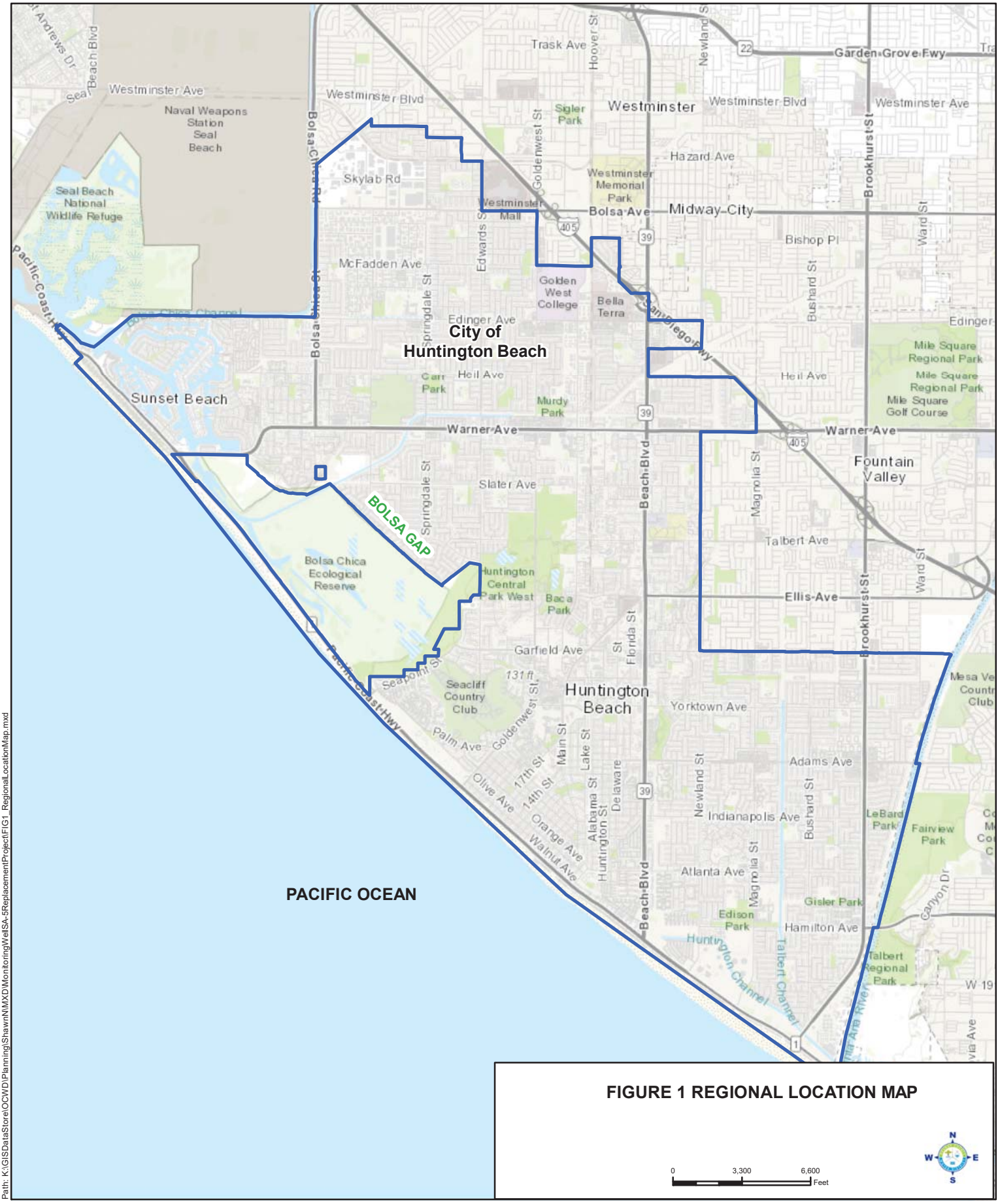

FIGURE 1 REGIONAL LOCATION MAP

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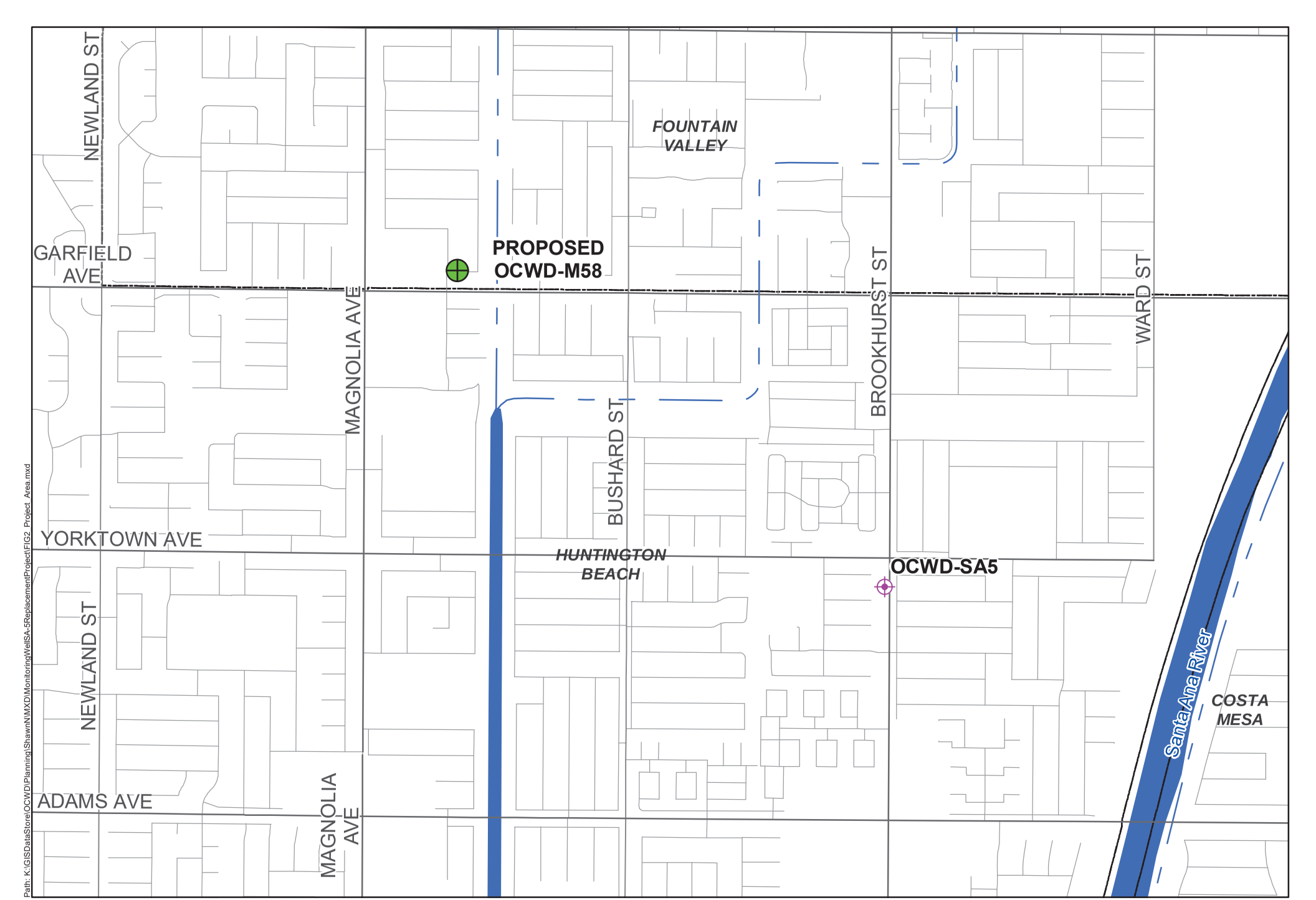
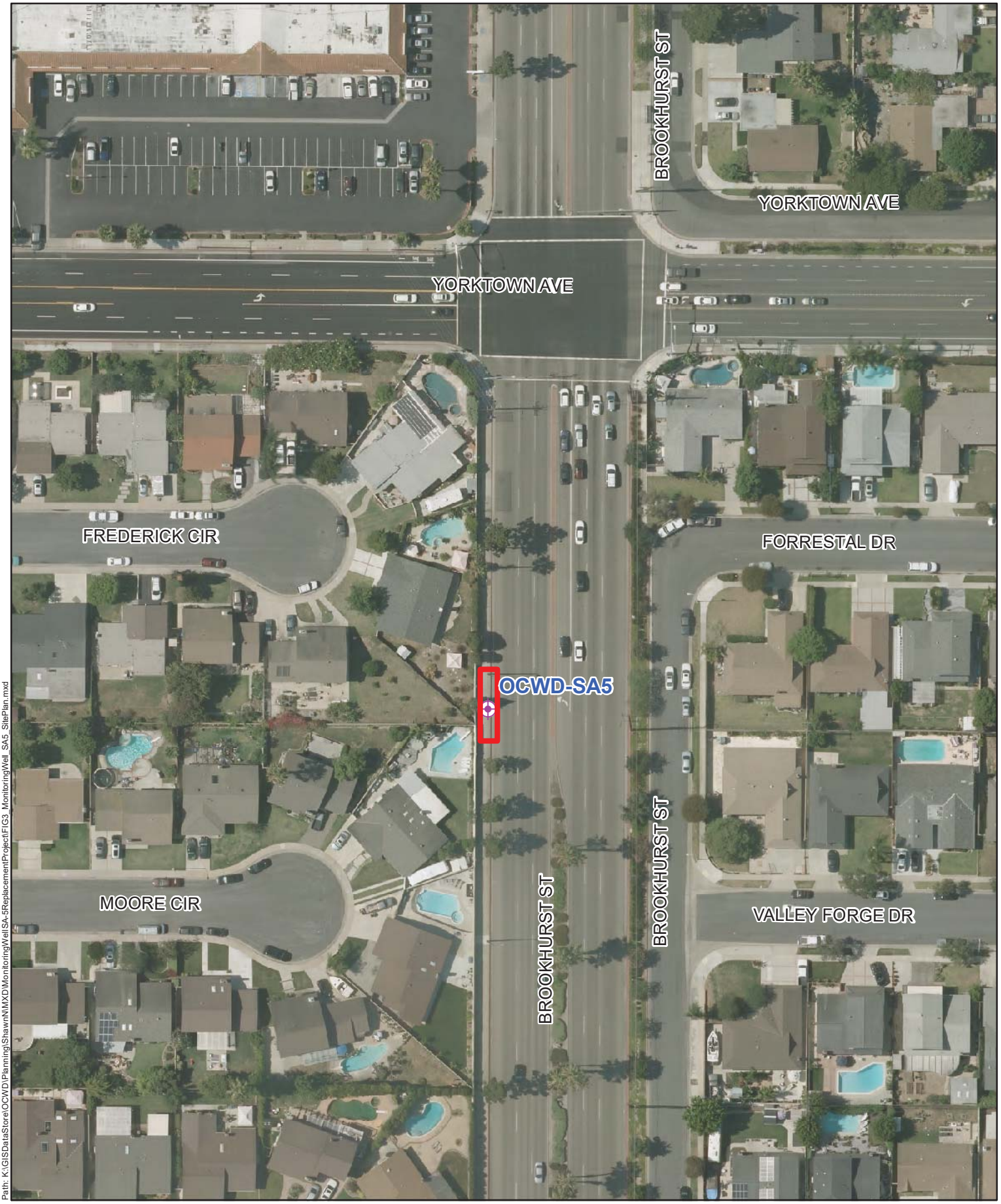
City of Huntington Beach



Proposed Monitoring Well Site
OCWD-M58
Figure 2



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N
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Existing Monitoring Well To Be Destroyed

OCWD-SA5

Proposed Work Site

0 50 100 Feet

Figure 3

Path: K:\GISDataStore\OCWD\Planning\ShawnN\MXD\MonitoringWellSA-5ReplacementProject\FIG4_OCWD-M58_SitePlan.mxd

N
W E
S

Proposed Monitoring Well Location

OCWD-M58

Proposed Work Site

0 50 100
Feet

Figure 4

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

Volatile Organic Compounds

Hydrocarbons are organic gases that are formed from hydrogen and carbon and sometimes other elements. Hydrocarbons that contribute to formation of 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 85 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. 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 2007 IPCC Fourth Assessment Report, which are used in CARB's 2014 Scoping Plan Update and the CalEEMod Model Version 2016.3.2 and are detailed in Table G. The IPCC has updated the Global Warming Potentials of some gases in their Fifth Assessment Report, however the new values have not yet been incorporated into the CalEEMod model that has been utilized in this analysis.

Table G – 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

3.3 Greenhouse Gas Emissions Inventory

According to https://cdiac.ess-dive.lbl.gov/trends/emis/tre_glob_2014.html 9,855 million metric tons (MMT) of CO_2 equivalent (CO_2e) emissions were created globally in the year 2014. According to https://www.epa.gov/ghgemissions/global-greenhouse-gas-emissions-data the breakdown of global GHG emissions by sector consists of: 25 percent from electricity and heat production; 21 percent from industry; 24 percent from agriculture, forestry and other land use activities; 14 percent from transportation; 6 percent from building energy use; and 10 percent from all other sources of energy use.

According to *Inventory of U.S. Greenhouse Gas Emissions and Sinks 1990-2016,* prepared by EPA, in 2016 total U.S. GHG emissions were 6,511.3 million metric tons (MMT) of CO_2 equivalent (CO_2e) emissions. Total U.S. emissions have increased by 2.4 percent between 1990 and 2016 and GHG emissions decreased by 1.9 percent between 2015 and 2016. The recent decrease in GHG emissions was a result of multiple factors, including substitution from coal to natural gas in the electricity sector and from a warmer winter and a slow-down in the economy in 2016. However, according to https://rhg.com/research/preliminary-us-emissions-estimates-for-2018/ the preliminary estimates for 2018 show that GHG emissions have increased by 3.4 percent, which is primarily a result from a strong economy that required the use of more transportation fuels and power generation.

According to https://www.arb.ca.gov/cc/inventory/data/data.htm the State of California created 429.4 $MMTCO_2e$ in 2016. The breakdown of California GHG emissions by sector consists of: 41 percent from transportation; 23 percent from industrial; 16 percent from electricity generation; 8 percent from agriculture; 7 percent from residential buildings; 5 percent from commercial buildings; and 1 percent from other uses of energy. In 2016, GHG emissions were 12 $MMTCO_2e$ lower than 2015 levels, which represent a 6 percent year-over-year decline.

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 H.

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 I, the Air Basin has been designated by EPA for the national standards as a non-attainment area for ozone and PM2.5 and partial non-attainment for lead. Currently, the Air Basin is in attainment with the national ambient air quality standards for CO, PM10, SO_2, and NO_2.

Table H – 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 I – 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)	8/3/2038
	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)	8/24/2016 (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 $\mu g/m^3$; 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 $\mu g/m^3$) and 24-hour PM2.5 (65 $\mu g/m^3$) 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 (SCAQMD, 2016).

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 $\mu g/m^3$) 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 $\mu g/m^3$) and 24-hour PM2.5 (65 $\mu g/m^3$) 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 $\mu g/m^3$), including: Mira Loma (Air Basin maximum at 14.1 $\mu g/m^3$), Rubidoux, Fontana, Ontario, Central Los Angeles, and Compton. For the 24-hour PM2.5 NAAQS (35.0 $\mu g/m^3$) 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 (SCAQMD, 2016).

The Air Basin is currently in attainment for the federal standards for SO_2, CO, NO_2, and PM10 and the Riverside County portion of the Air Basin is currently in attainment for the federal standards for lead. 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 Air Basin remains in attainment of the NO_2 NAAQS (SCAQMD, 2016).

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 H. 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 and PM2.5. Currently, the Air Basin is in attainment with the ambient air quality standards for CO, NO_2, SO_2, lead, 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 µg/m^3) by 2019 (updated from the 2012 AQMP)

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

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

Although SCAQMD is responsible for regional air quality planning efforts, it does not have the authority to directly regulate air quality issues associated with plans and new development projects throughout the Air Basin. Instead, this is controlled through local jurisdictions in accordance to 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 all land development projects in the Air Basin.

Rule 402 - Nuisance

Rule 402 prohibits a person from discharging from any source whatsoever such quantities of air contaminants or other material which causes injury, detriment, nuisance, or annoyance to any considerable number of persons or to the public, or which endanger the comfort, repose, health or safety of any such persons or the public, or which cause, or have a natural tendency to cause, injury or damage to business or property. Compliance with Rule 402 will reduce local air quality and odor impacts to nearby sensitive receptors.

Rule 403- Fugitive Dust

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

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

- Restrict traffic speeds on all unpaved roads to 15 miles per hour or less.

Rules 1108 and 1108.1 – Cutback and Emulsified Asphalt

Rules 1108 and 1108.1 govern the sale, use, and manufacturing of asphalt and limits the VOC content in asphalt. This rule regulates the VOC contents of asphalt used during construction as well as any on-going maintenance during operations. Therefore, all asphalt used during construction and operation of the proposed project must comply with SCAQMD Rules 1108 and 1108.1.

Southern California Association of Governments

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4.4 Local

Local jurisdictions, such as the Cities of Huntington Beach and Fountain Valley, have the authority and responsibility to reduce air pollution through its police power and decision-making authority. Specifically, the Cities are responsible for the assessment and mitigation of air emissions resulting from its land use decisions. The Cities are 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 Cities assess 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 Cities do not, however, have the expertise to develop plans, programs, procedures, and methodologies to ensure that air quality within the Cities and region will meet federal and state standards. Instead, the Cities 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, however the repeal of the Plan will require following the same rule-making system used to create regulations and will likely result in court challenges.

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 that are applicable to well construction project and 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.

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 the most current targets are detailed at: https://ww2.arb.ca.gov/our-work/programs/sustainable-communities-program/regional-plan-targets, which provides GHG emissions reduction targets for SCAG of 8 percent by 2020 and 19 percent by 2035.

The *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 19 percent GHG emission reduction target for 2035. CARB is also charged with reviewing SCAG's RTP/SCS for consistency with its assigned targets.

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

Executive Order S-1-07

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

In 2009 CARB approved the proposed regulation to implement the LCFS. The standard was challenged in the courts, but has been in effect since 2011 and was re-approved by the CARB in 2015. The LCFS is anticipated to reduce GHG emissions by about 16 MMT per year by 2020. The LCFS is designed to provide a framework that uses market mechanisms to spur the steady introduction of lower carbon fuels. The framework establishes performance standards that fuel producers and importers must meet annually. Reformulated gasoline mixed with corn-derived ethanol and low-sulfur diesel fuel represent the baseline fuels. Lower carbon fuels may be ethanol, biodiesel, renewable diesel, or blends of these fuels with gasoline or diesel. Compressed natural gas and liquefied natural gas also may be low-carbon fuels. Hydrogen and electricity, when used in fuel cells or electric vehicles, are also considered as low-carbon fuels.

Senate Bill 97

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

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

- Climate Action Plans and other greenhouse gas reduction plans can be used to determine whether a project has significant impacts, based upon its compliance with the plan.
- Local governments are encouraged to quantify the GHG emissions of proposed projects, noting that they have the freedom to select the models and methodologies that best meet their needs and circumstances. The section also recommends consideration of several qualitative factors that may be used in the determination of significance, such as the extent to which the given project complies with state, regional, or local GHG reduction plans and policies. OPR does not set or dictate specific thresholds of significance. Consistent with existing CEQA Guidelines, OPR encourages local governments to develop and publish their own thresholds of significance for GHG impacts assessment.
- When creating their own thresholds of significance, local governments may consider the thresholds of significance adopted or recommended by other public agencies, or recommended by experts.
- New amendments include guidelines for determining methods to mitigate the effects of GHG emissions in Appendix F of the CEQA Guidelines.
- OPR is clear to state that "to qualify as mitigation, specific measures from an existing plan must be identified and incorporated into the project; general compliance with a plan, by itself, is not mitigation."
- OPR's emphasizes the advantages of analyzing GHG impacts on an institutional, programmatic level. OPR therefore approves tiering of environmental analyses and highlights some benefits of such an approach.
- Environmental impact reports must specifically consider a project's energy use and energy efficiency potential.

Assembly Bill 32

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

In 2007 CARB released the calculated Year 1990 GHG emissions of 431 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 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.

5.3 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. 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

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6.0 ATMOSPHERIC SETTING

6.1 South Coast Air Basin

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

6.2 Local Climate

Orange County is located on a coastal plain with connecting broad valleys and low hills to the east. 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 Newport Beach Harbor Monitoring Station, which is the nearest weather station to the project sites with historical data is shown below in Table J. Table J shows that July 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 J – Monthly Climate Data

Month	Average Maximum Temperature (°F)	Average Minimum Temperature (°F)	Average Total Precipitation (inches)
January	63.2	46.9	2.19
February	63.4	48.2	2.30
March	63.9	49.8	1.72
April	65.2	52.3	0.92
May	67.0	56.0	0.23
June	69.1	59.1	0.07
July	72.2	62.2	0.01
August	73.4	63.2	0.06
September	73.0	61.2	0.21
October	70.9	57.2	0.38
November	67.8	51.4	1.08
December	64.2	47.5	1.85
Annual	**67.8**	**54.6**	**11.00**

Source: https://wrcc.dri.edu/cgi-bin/cliMAIN.pl?ca6175

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 with a designated ambient air monitoring station representative of each area. The project sites are located in Air Monitoring Area 18, which covers 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 sites 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 two miles east of the project sites at 2850 Mesa Verde Drive East, Costa Mesa and the Anaheim Station is located approximately ten miles north of the project sites at 1630 W 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 stations distances from the project site, recorded air pollution levels at the monitoring stations reflect with varying degrees of accuracy, local air quality conditions at the project site. The monitoring data presented in Table K 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.

Table K – Local Area Air Quality Monitoring Summary

Pollutant (Standard)	Year[1] 2016	2017	2018
Ozone: [1]			
Maximum 1-Hour Concentration (ppm)	0.090	0.088	ND
Days > CAAQS (0.09 ppm)	0	0	ND
Maximum 8-Hour Concentration (ppm)	0.069	0.080	ND
Days > NAAQS (0.070 ppm)	0	**4**	ND
Days > CAAQs (0.070 ppm)	0	**5**	ND
Nitrogen Dioxide:[1]			
Maximum 1-Hour Concentration (ppb)	59.8	45.3	ND
Days > NAAQS (100 ppb)	0	0	ND
Days > CAAQS (180 ppb)	0	0	ND
Inhalable Particulates (PM10) :[2]			
Maximum 24-Hour National Measurement (ug/m^3)	74.0	95.7	94.6
Days > NAAQS (150 ug/m^3)	0	0	0
Days > CAAQS (50 ug/m^3)	**3**	**5**	**2**
Annual Arithmetic Mean (AAM) (ug/m^3)	27.5	26.9	27.9
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)	44.4	53.9	63.1
Days > NAAQS (35 ug/m^3)	**1**	**7**	**7**
Annual Arithmetic Mean (AAM) (ug/m^3)	9.4	ND	11.4
Annual > NAAQS and CAAQS (12 ug/m^3)	No	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/

Ozone

During the last three years, the State 1-hour concentration standard for ozone has not been exceeded at the Costa Mesa Station. The State 8-hour ozone standard has been exceeded between zero 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 zero 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.

Nitrogen Dioxide

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

Particulate Matter

The State 24-hour concentration standard for PM10 has been exceeded between two and five days each year of the past three years 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 has not exceeded either the State or Federal standard 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 sites have an estimated cancer risk of 801 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 2020.

Land Use Parameters

The proposed project would consist of the permanent decommissioning of the existing SA-5 Monitoring Well and construction of proposed Monitoring Well M58. The proposed project's land use parameters that were entered into the CalEEMod model are shown in Table L.

Table L – CalEEMod Land Use Parameters

Proposed Land Use	Land Use Subtype in CalEEMod	Land Use Size (TSF)[1]	Lot Acreage[2]	Building/Paving (square feet)
Monitoring Well SA-5 Decommissioning and Monitoring Well M58 Construction	Other Asphalt Surfaces	3.12	.07	3,120

Notes:
[1] TSF = Thousand Square Feet.

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 well 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 on a semi-annual basis and record water levels on a monthly basis. In total, the monitoring well would be visited by OCWD staff up to 14 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. All sampling and redevelopment activities would occur during daylight hours.

The anticipated timing and construction equipment utilized during well sampling and rehabilitation have been discussed above in Section 1.5. 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 1.5 for the well sampling and 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 M.

Table M – 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

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 total area that would be disturbed from construction activities for the proposed project. 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 residential uses as near as 35 feet from Monitoring Well SA-5 to be decommissioned and as near as 15 feet from proposed Monitoring Well M58 to be constructed. According to LST Methodology, any receptor located closer than 25 meters (82 feet) shall be based on the 25 meter thresholds. Table N below shows the LSTs for NO_2, PM10 and PM2.5 for both construction and operational activities.

Table N – 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 single-family homes located as near as 35 feet (11 meters) from Monitoring Well SA-5 and as near as 15 feet (5 meters) from proposed Monitoring Well M58. According to SCAQMD 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).

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.

8.5 Energy Conservation

The new 2018 amendments and additions to the CEQA Checklist now includes an Energy Section that analyzes the proposed project's energy consumption in order to avoid or reduce inefficient, wasteful or unnecessary consumption of energy. Since the Energy Section was just added, no state or local agencies

have adopted specific criteria or thresholds to be utilized in an energy impact analysis. However, the 2018 *Guidelines for the Implementation of the California Environmental Quality Act,* provide the following direction on how to analyze a project's energy consumption:

> "If analysis of the project's energy use reveals that the project may result in significant environmental effects due to wasteful, inefficient, or unnecessary use of energy, or wasteful use of energy resources, the EIR shall mitigate that energy use. This analysis should include the project's energy use for all project phases and components, including transportation-related energy, during construction and operation. In addition to building code compliance, other relevant considerations may include, among others, the project's size, location, orientation, equipment use and any renewable energy features that could be incorporated into the project. (Guidance on information that may be included in such an analysis is presented in Appendix F.) This analysis is subject to the rule of reason and shall focus on energy use that is caused by the project. This analysis may be included in related analyses of air quality, greenhouse gas emissions, transportation or utilities in the discretion of the lead agency."

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

8.6 Greenhouse Gas Emissions

The proposed project is located within the jurisdiction of the SCAQMD. In order to identify significance criteria under CEQA for development projects, SCAQMD initiated a Working Group, which provided detailed methodology for evaluating significance under CEQA. At the September 28, 2010 Working Group meeting, the SCAQMD released its most current version of the draft GHG emissions thresholds, which recommends a tiered approach that provides a quantitative annual threshold of 3,000 $MTCO_2e$ for all land use projects. Although the SCAQMD provided substantial evidence supporting the use of the above threshold, 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 9.8 and 9.9.

9.0 IMPACT ANALYSIS

9.1 CEQA Thresholds of Significance

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

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

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 Cities of Huntington Beach and Fountain Valley General Plans Land Use Plans defines the assumptions that are represented in AQMP.

The Monitoring Well SA-5 to be decommissioned and the proposed Monitoring Well M58 to be constructed are both located within public right-of-ways for public roads, which are not designated in the General Plans land use plans or the Zoning Maps. Since well decommissioning and well drilling are all allowed uses in all land use designations, including public right-of-ways, the proposed project is consistent with the current land use designations 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 sites 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 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 involves the permanent decommissioning of Monitoring Well SA-5 and construction of proposed Monitoring Well M58. The construction emissions have been analyzed for both regional and local air quality impacts.

Construction-Related Regional Impacts

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 above in Sections 1.3 and 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 O and the CalEEMod daily printouts are shown in Appendix A.

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

Table O – Construction-Related Regional Criteria Pollutant Emissions

Activity	Pollutant Emissions (pounds/day)					
	VOC	NOx	CO	SO_2	PM10	PM2.5
Monitoring Well SA-5 Decommissioning						
Onsite	1.89	18.58	13.05	0.05	0.70	0.65
Offsite	0.18	3.95	1.50	0.01	0.44	0.13
Total	**2.07**	**22.53**	**14.55**	**0.06**	**1.14**	**0.78**
Monitoring Well M58 Phase 1 – Noise Panel and Protective Fencing Installation / Utility Clearance						
Onsite	1.01	9.81	6.25	0.02	0.37	0.34
Offsite	0.04	0.67	0.33	0.00	0.10	0.03
Total	**1.05**	**10.48**	**6.58**	**0.02**	**0.47**	**0.37**
Monitoring Well M58 Phase 2 – Monitoring Well Drilling and Construction						
Onsite	1.21	11.96	9.87	0.04	0.51	0.48
Offsite	0.08	0.43	0.59	0.00	0.20	0.05
Total	**1.29**	**12.39**	**10.46**	**0.04**	**0.71**	**0.53**
Monitoring Well M58 Phase 3 – Monitoring Well Development						
Onsite	1.15	9.95	6.03	0.03	0.34	0.33
Offsite	0.05	0.24	0.38	0.00	0.13	0.04
Total	**1.20**	**10.19**	**6.41**	**0.03**	**0.47**	**0.37**
Monitoring Well M58 Phase 4 – Site Cleanup and Traffic-Rated Vault Installation						
Onsite	0.62	4.96	3.45	0.01	0.23	0.21
Offsite	0.04	0.30	0.33	0.00	0.11	0.03
Total	**0.66**	**5.26**	**3.78**	**0.01**	**0.34**	**0.24**
Maximum Daily Emissions (All Phases)	**2.07**	**22.53**	**14.55**	**0.06**	**1.14**	**0.78**
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.

Construction-Related Local Impacts

Construction-related air emissions may have the potential to exceed the State and Federal air quality standards in the project vicinity, even though these pollutant emissions may not be significant enough to create a regional impact to the Air Basin.

The local air quality emissions from construction were analyzed through utilizing the methodology described in *Localized Significance Threshold Methodology* (LST Methodology), prepared by SCAQMD, revised October 2009. The LST Methodology found the primary criteria pollutant emissions of concern are NOx, CO, PM10, and PM2.5. In order to determine if any of these pollutants require a detailed analysis of the local air quality impacts, each phase of construction was screened using the SCAQMD's Mass Rate LST Look-up Tables. The Look-up Tables were developed by the SCAQMD in order to readily determine if the daily onsite emissions of CO, NOx, PM10, and PM2.5 from the proposed project could result in a significant impact to the local air quality. Table 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.

Table P – Construction-Related Local Criteria Pollutant Emissions

Construction Activity	Pollutant Emissions[1] (pounds/day)			
	NOx	CO	PM10	PM2.5
Monitoring Well SA-5 Decommissioning	18.58	13.05	0.70	0.65
Monitoring Well M58 Phase 1 – Noise Panel and Protective Fencing Installation / Utility Clearance	9.81	6.25	0.37	0.34
Monitoring Well M58 Phase 2 – Monitoring Well Drilling and Construction	11.96	9.87	0.51	0.48
Monitoring Well M58 Phase 3 – Monitoring Well Development	9.95	6.03	0.34	0.33
Monitoring Well M58 Phase 4 – Site Cleanup and Traffic-Rated Vault Installation	4.96	3.45	0.23	0.21
Maximum Daily Onsite Emissions (All Phases)	**18.58**	**13.05**	**0.70**	**0.65**
SCAQMD Thresholds for 25 meters (82 feet)[2]	**92**	**647**	**4**	**3**
Exceeds Threshold?	No	No	No	No

Notes:
[1] Based on adherence to fugitive dust suppression requirements from SCAQMD Rule 403.
[2] The nearest sensitive receptors are single-family homes located as near as 35 feet (11 meters) from Monitoring Well SA-5 and as near as 15 feet (5 meters) from proposed Monitoring Well M58. According to SCAQMD 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 phase of construction activities. Therefore, a less than significant local air quality impact would occur from construction of the proposed project.

Operational Emissions

In general, operation of the monitoring well will be passive as there will be no permanent equipment installed in the wells. OCWD staff will collect groundwater samples and record water levels from the monitoring well on a quarterly basis or less. In total, the monitoring wells would be visited by OCWD staff up to eight times per year. In addition, every three to five years OCWD will conduct maintenance activities to redevelop the monitoring well, and the well redevelopment activities would generate the highest daily criteria pollutant emissions. The operational emissions have been analyzed for both regional and local air quality impacts.

Operations-Related Regional Air Quality Impacts

The CalEEMod model has been utilized to calculate the operational regional emissions from the proposed Monitoring Well M58 well sampling and well redevelopment activities and the input parameters utilized in this analysis have been detailed above in Sections 1.5 and 7.1. The operational analysis is limited to well sampling and well redevelopment activities, since the other operational activity of water level gauging would be measured using by hand using a battery powered wire-line sounder and would result in the creation of nominal air emissions. The worst-case summer or winter daily operational criteria pollutant emissions from the proposed project for the well sampling and redevelopment activities are shown below in Table Q and the CalEEMod daily printouts for operational well sampling and well redevelopment activities are shown in Appendix A.

Table Q – Operational Well Sampling and Redevelopment Regional Criteria Pollutant Emissions

Activity	Pollutant Emissions (pounds/day)					
	VOC	NOx	CO	SO_2	PM10	PM2.5
Well Sampling Equipment						
Onsite[1]	0.09	0.59	0.32	0.00	0.03	0.03
Offsite[2]	0.01	0.01	0.09	0.00	0.03	0.01
Total	**0.10**	**0.60**	**0.41**	**0.00**	**0.06**	**0.04**
Well Redevelopment Equipment						
Onsite	0.90	7.63	5.46	0.03	0.25	0.24
Offsite	0.03	0.02	0.24	0.00	0.09	0.02
Total	**0.93**	**7.65**	**5.70**	**0.03**	**0.34**	**0.26**
SCQAMD 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: CalEEMod Version 2016.3.2.

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

Operations-Related Local Air Quality Impacts

Operational air emissions may have the potential to exceed the State and Federal air quality standards in the project vicinity, even though these pollutant emissions may not be significant enough to create a regional impact to the Air Basin. The local air quality emissions from Monitoring Well M58 well sampling and redevelopment were analyzed through utilizing the methodology described in the LST Methodology. In order to determine if any of these pollutants require a detailed analysis of the local air quality impacts, the operational well sampling and redevelopment activities were screened using the SCAQMD's Mass Rate LST Look-up Tables. Table R shows the onsite emissions from the CalEEMod model for the operational well sampling and redevelopment activities and the calculated emissions thresholds that have been detailed above in Section 6.2.

Table R – Operational Well Sampling and Redevelopment Local Criteria Pollutant Emissions

Operational Activities	Pollutant Emissions (pounds/day)			
	NOx	CO	PM10	PM2.5
Well Sampling	0.59	0.32	0.03	0.03
Well Redevelopment	7.63	5.46	0.25	0.24
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 single-family homes located as near as 35 feet (11 meters) from Monitoring Well SA-5 and as near as 15 feet (5 meters) from proposed Monitoring Well M58. According to SCAQMD 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 R 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 6.2. Therefore, the on-going operations of the proposed project would create a less than significant operations-related impact to local air quality due to onsite emissions and no mitigation would be required.

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 Sensitive Receptors

The proposed project would not expose sensitive receptors to substantial pollutant concentrations. The local concentrations of criteria pollutant emissions produced in the nearby vicinity of the proposed project, which may expose sensitive receptors to substantial concentrations have been calculated above in Section 9.3 for both construction and operations, which are discussed separately below. The discussion below also includes an analysis of the potential impacts from toxic air contaminant emissions. The nearest sensitive receptors to the project site are single-family homes located as near as 35 feet from Monitoring Well SA-5 and as near as 15 feet from proposed Monitoring Well M58.

Construction-Related Sensitive Receptor Impacts

The proposed project involves the destruction and permanent decommissioning of Monitoring Well SA-5 and construction of proposed Monitoring Well M58. Construction activities may expose sensitive receptors to substantial pollutant concentrations of localized criteria pollutant concentrations and from toxic air contaminant emissions created from onsite construction equipment, which are described below.

Local Criteria Pollutant Impacts from Construction

The local air quality impacts from construction of the proposed project has been analyzed above in Section 9.3 and found that the construction of the proposed project would not exceed the local NOx, CO, PM10 and PM2.5 thresholds of significance discussed above in Section 8.2. Therefore, construction of the proposed project would create a less than significant construction-related impact to local air quality and no mitigation would be required.

Toxic Air Contaminants Impacts from Construction

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

Given the relatively limited number of heavy-duty construction equipment, the varying distances that construction equipment would operate to the nearby sensitive receptors, and the short-term construction schedule, the proposed project would not result in a long-term (i.e., 30 or 70 years) substantial source of

toxic air contaminant emissions and corresponding individual cancer risk. In addition, California Code of Regulations Title 13, Article 4.8, Chapter 9, Section 2449 regulates emissions from off-road diesel equipment in California. This regulation limits idling of equipment to no more than five minutes, requires equipment operators to label each piece of equipment and provide annual reports to CARB of their fleet's usage and emissions. This regulation also requires systematic upgrading of the emission Tier level of each fleet, and currently no commercial operator is allowed to purchase Tier 0 or Tier 1 equipment and by January 2023 no commercial operator is allowed to purchase Tier 2 equipment. In addition to the purchase restrictions, equipment operators need to meet fleet average emissions targets that become more stringent each year between years 2014 and 2023. 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 M58 would be passive as there would be no permanent equipment installed in the well. OCWD staff would collect groundwater samples on a semi-annual basis and record water levels on a monthly basis. In total, the monitoring well would be visited by OCWD staff up to 14 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 following analyzes the local criteria pollutant impacts from onsite operations and toxic air contaminant impacts.

Local Criteria Pollutant Impacts from Onsite Operations

The local air quality impacts from operation of the proposed project has been analyzed above in Section 9.3 and found that the operation of the proposed project would not exceed the local NOx, CO, PM10 and PM2.5 thresholds of significance discussed above in Section 8.2. Therefore, operation of the proposed project would create a less than significant operation-related impact to local air quality 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 one day 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.

Therefore, 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 on a semi-annual basis and record water levels on a monthly basis. In total, the monitoring well would be visited by OCWD staff up to 14 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 Energy Consumption

The proposed project would impact energy resources during construction and operation. Energy resources that would be potentially impacted include electricity, natural gas, and petroleum based fuel supplies and distribution systems. This analysis includes a discussion of the potential energy impacts of the proposed projects, with particular emphasis on avoiding or reducing inefficient, wasteful, and unnecessary consumption of energy. A general definition of each of these energy resources are provided below.

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

Natural gas is a combustible mixture of simple hydrocarbon compounds (primarily methane) that is used as a fuel source. Natural gas consumed in California is obtained from naturally occurring reservoirs, mainly located outside the State, and delivered through high-pressure transmission pipelines. The natural gas transportation system is a nationwide network and, therefore, resource availability is typically not an issue. Natural gas satisfies almost one-third of the State's total energy requirements and is used in electricity generation, space heating, cooking, water heating, industrial processes, and as a transportation fuel. Natural gas is measured in terms of cubic feet.

Petroleum-based fuels currently account for a majority of the California's transportation energy sources. However, the state has been working on developing strategies to reduce petroleum use. Over the last decade California has implemented several policies, rules, and regulations to improve vehicle efficiency, increase the development and use of alternative fuels, reduce air pollutants and GHG emissions from the transportation sector, and reduce vehicle miles traveled (VMT). Accordingly, gasoline consumption in California has declined.

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

Construction Energy

The construction activities for the proposed project involves the destruction and permanent decommissioning of Monitoring Well SA-5 and construction of proposed Monitoring Well M58. The proposed project would consume energy resources during construction in three (3) general forms:

1. Petroleum-based fuels used to power off-road construction vehicles and equipment on the Project Site, construction worker travel to and from the Project Site, as well as delivery and haul truck trips (e.g. hauling of demolition material to off-site reuse and disposal facilities);

2. Electricity associated with the conveyance of water that would be used during Project construction for dust control (supply and conveyance) and electricity to power any necessary lighting during construction, electronic equipment, or other construction activities necessitating electrical power; and,
3. Energy used in the production of construction materials, such as asphalt, steel, concrete, pipes, and manufactured or processed materials such as lumber and glass.

Construction-Related Electricity

During construction the proposed project would only consume a nominal amount of electricity during monitoring well construction through use of generator for approximately one day of operation. Due to the limited time of electrical consumption, it is not feasible to install a temporary power pole, in order to utilize electricity supplied by Southern California Edison. Other construction activities that would indirectly use electricity include electricity associated with the conveyance of water that would be used during project construction for dust control (supply and conveyance) and in the preparation of the slurry and drilling mud. Such electricity demand would be temporary, nominal, and would cease upon the completion of construction. Overall, construction activities associated with the proposed project would require limited electricity consumption that would not be expected to have an adverse impact on available electricity supplies and infrastructure. Therefore, the use of electricity during project construction would not be wasteful, inefficient, or unnecessary. In addition, compliance with City's guidelines and requirements would ensure that the proposed project fulfills its responsibilities relative to infrastructure removal and installation, coordinates any electrical infrastructure removals or relocations, and limits any impacts associated with all excavation activities.

Construction-Related Natural Gas

Construction of the proposed project typically would not involve the consumption of natural gas. Natural gas would not be supplied to support construction activities, thus there would be no demand generated by construction. Since the project site is located in a developed community that has natural gas lines in the vicinity of the project sites, prior to ground disturbance, the project applicant would be required to notify and coordinate with SoCalGas to identify the locations and depth of all existing gas lines to avoid disruption of gas service. Therefore, construction-related impacts to natural gas supply and infrastructure would be less than significant.

Construction-Related Transportation Energy

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

The off-road construction equipment fuel usage was calculated through use of the off-road equipment assumptions for each phase that are detailed above in Section 1.4. The fuel usage calculations utilized in this analysis were obtained from the *2017 Off-road Diesel Emission Factors* spreadsheet, prepared by CARB (https://ww3.arb.ca.gov/msei/ordiesel.htm). The Spreadsheet provides the following formula to calculate fuel usage from off-road equipment:

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

Where:

Load Factor - Obtained from CalEEMod default values

Horsepower – Obtained from CalEEMod default values

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

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

Unit Conversion – Converts pounds to gallons = 7.109

Table S shows the off-road construction equipment fuel calculations based on the above formula, which shows that the off-road equipment utilized during construction of the proposed project would consume 2,423 gallons of fuel.

Table S – Off-Road Equipment Used During Construction and Fuel Used

Equipment Type	Equipment Quantity	Horse-power	Load Factor[1]	Operating Time			Fuel Used (gallons)
				Days	Hours per Day	Total Hours[1]	
Monitoring Well SA-5 Decommissioning							
Pump Rig	1	550	0.50	2	8	16	227
Air Compressor	1	200	0.48	1.5	4	6	30
Air-Vac Truck	1	425	0.38	1	6	6	50
Backhoe	1	80	0.37	2	8	16	27
Cement Truck	1	350	0.38	1	4	4	27
Pick-up Truck	1	250	0.38	2	2	4	20
Monitoring Well M58 Phase 1 – Noise Panel and Protective Fencing Installation / Utility Clearance							
Support Truck	1	550	0.38	1	4	4	43
Air-Vac Truck	1	425	0.38	1	5	5	42
Monitoring Well M58 Phase 2 – Monitoring Well Drilling and Construction							
Drilling Rig	1	550	0.50	7	8	56	795
Mud Circulation System	1	75	0.74	7	8	56	178
Forklift	1	75	0.20	7	3	21	18
Support Truck	1	350	0.38	7	2	14	97
Pick-up Truck	1	250	0.38	7	2	14	69
Monitoring Well M58 Phase 3 – Monitoring Well Development							
Pump Rig	1	325	0.74	5	8	40	497
Air Compressor	1	200	0.48	5	8	40	198
Electrical Generator	1	20	0.74	1	8	8	7
Pick-up Truck	1	250	0.38	6	2	12	59
Monitoring Well M58 Phase 4 – Site Cleanup and Traffic-Rated Vault Installation							
Delivery Truck	1	550	0.38	1	2	2	22
Forklift	1	75	0.20	1	8	8	7
Pick-up Truck	1	250	0.38	1	2	2	10
Total Off-Road Equipment Fuel Used during Construction (gallons)							**2,423**

Notes:
[1] Load Factor obtained from CalEEMod model default load factors.
Source: CalEEMod Version 2016.3.2; CARB, 2018.

The on-road construction-related vehicle trips fuel usage was calculated through use of the estimated haul trips provided above in Section 1.4 and the worker trips provided from the default CalEEMod model values. The fleet average miles per gallon rates calculated through use of the EMFAC2017 model (https://www.arb.ca.gov/emfac/2017/) and the EMFAC2017 model printouts are provided in Appendix B. Table T shows the on-road construction vehicle trips modeled in CalEEMod and the fuel usage calculations, which shows that the on-road construction-related vehicle trips would consume 418 gallons of fuel.

Table T – On-Road Construction Vehicle Trips and Fuel Used

Vehicle Trip Types	Daily Trips	Trip Length (miles)	Total Miles per Day	Total Miles per Phase[1]	Fleet Average Miles per Gallon[2]	Fuel Used (gallons)
Monitoring Well SA-5 Decommissioning						
Worker Trips	15	14.7	221	1,103	23.9	46
Haul Trips	12	25	300	1,500	7.6	196
Monitoring Well M58 Phase 1 – Noise Panel and Protective Fencing Installation / Utility Clearance						
Worker Trips	5	14.7	74	147	23.9	6
Haul Trips	2	25	50	100	7.6	13
Monitoring Well M58 Phase 2 – Monitoring Well Drilling and Construction						
Worker Trips	15	14.7	221	1,544	23.9	65
Vendor Trips	2	6.9	14	97	7.6	13
Haul Trips	1	25	14	100	7.6	13
Monitoring Well M58 Phase 3 – Monitoring Well Development						
Worker Trips	10	14.7	147	882	23.9	37
Haul Trips	1	25	17	100	7.6	13
Monitoring Well M58 Phase 4 – Site Cleanup and Traffic-Rated Vault Installation						
Worker Trips	8	14.7	118	235	23.9	10
Haul Trips	1	25	25	50	7.6	7
		Total Fuel Used from On-Road Construction Vehicles (gallons)				**418**

Notes:
[1] Based on: 5 days for Well SA-5, 2 days for Well M58 Phase 1; 7 days for Well M58 Phase 2; 6 days for Well M58 Phase 3; 2 days for Well M58 Phase 4.
[2] From EMFAC 2017 model (see Appendix B). Worker Trips based on entire fleet of gasoline vehicles and Vendor Trips based on only truck fleet of diesel vehicles.
Source: CalEEMod Version 2016.3.2; CARB, 2018.

As shown above in Table S and Table T, construction of the proposed project would result in the consumption of 2,841 gallons of fuel. Construction activities associated with the proposed project would be required to adhere to all State and SCAQMD regulations for off-road equipment and on-road trucks, which provide minimum fuel efficiency standards. As such, construction activities for the proposed project would not result in the wasteful, inefficient, and unnecessary consumption of energy resources. Impacts regarding transportation energy would be less than significant. Development of the Project would not result in the need to manufacture construction materials or create new building material facilities specifically to supply the proposed project. It is difficult to measure the energy used in the production of construction materials such as asphalt, steel, and concrete, it is reasonable to assume that the production of building materials such as concrete, steel, etc., would employ all reasonable energy conservation practices in the interest of minimizing the cost of doing business.

Operational Energy

In general, operation of the monitoring well will be passive as there will be no permanent equipment installed in the wells. OCWD staff will collect groundwater samples semi-annually and record water levels from the monitoring well on a quarterly basis or less. In total, the monitoring wells would be visited by OCWD staff up to eight times per year. In addition, every three to five years OCWD will conduct maintenance activities to redevelop the monitoring well, and the well redevelopment activities would consume the highest amount of energy, in the form of transportation fuel. Since only nominal amounts of electricity and natural gas would be consumed indirectly from operational activities, no further analysis is provided for operational electricity and natural gas usages. Operation of the proposed project would result in increased consumption of petroleum-based fuels related to the off-road equipment and vehicular travel associated with the monitor well sampling and well redevelopment activities.

The off-road equipment fuel usage was calculated through use of the off-road equipment assumptions for the monitor well sampling and redevelopment activities that are detailed above in Section 1.6. The off-road equipment fuel usage was calculated through use of the same methodology detailed above for the off-road construction equipment. Table U shows the operational off-road equipment fuel usage from the monitor well sampling and redevelopment activities, which shows that the off-road equipment utilized during operation of the proposed project would consume up to 122 gallons of fuel in years when both well sampling and well redevelopment equipment would both occur.

Table U – Off-Road Equipment Used During Operations and Fuel Used

Equipment Type	Equipment Quantity	Horse-power	Load Factor[1]	Operating Time			Fuel Used (gallons)
				Days	Hours per Day	Total Hours[1]	
Well Sampling							
Generator	1	20	0.74	1	4	4	3
Well Redevelopment							
Pump Rig	1	325	0.50	1	8	8	67
Air Compressor	1	200	0.48	1	8	8	40
Pick-up Truck	1	300	0.38	1	2	2	12
Total Worst-Case Annual Off-Road Equipment Fuel Used during Operations (gallons)							**122**

Notes:
[1] Load Factor obtained from CalEEMod model default load factors.
Source: CalEEMod Version 2016.3.2; CARB, 2018.

The on-road operation-related vehicle trips fuel usage was calculated through use of the estimated haul trips provided above in Section 1.5 and the worker trips provided from the default CalEEMod model values. The fleet average miles per gallon rates calculated through use of the EMFAC2017 model (https://www.arb.ca.gov/emfac/2017/) and the EMFAC2017 model printouts are provided in Appendix B. Table V shows the on-road operational vehicle trips for well sampling and well redevelopment activities that were modeled in CalEEMod and the fuel usage calculations, which shows that the on-road operation-related vehicle trips would consume a worst-case of 13 gallons of fuel per year for the years when well redevelopment would occur.

Table V – On-Road Operational Vehicle Trips and Fuel Used

Vehicle Trip Types	Daily Trips	Trip Length (miles)	Total Miles per Day	Total Miles per Phase[1]	Fleet Average Miles per Gallon[2]	Fuel Used (gallons)
Well Sampling						
Worker Trips	3	14.7	44	44	23.9	2
Haul Trips	1	20	20	20	7.6	3
			Total Fuel Used from On-Road Vehicles for Well Sampling (gallons)			5
Well Redevelopment						
Worker Trips	8	14.7	118	118	23.9	5
Haul Trips	1	20	20	20	7.6	3
				Total Fuel Used for Well Redevelopment (gallons)		8
			Total Worst-Case Annual Fuel Used from On-Road Operational Vehicles (gallons)			**13**

Notes:
[1] Based on 1 day for Well Sampling and 1 day for Well Redevelopment.
[2] From EMFAC 2017 model (see Appendix B). Worker Trips based on entire fleet of gasoline vehicles and Vendor Trips based on only truck fleet of diesel vehicles.
Source: CalEEMod Version 2016.3.2; CARB, 2018.

As shown above in Table U and Table V, operation of the proposed project would result in the worst-case consumption of 135 gallons of fuel per year, which would occur in the years when well redevelopment would occur. Operational activities associated with the proposed project would be required to adhere to all State and SCAQMD regulations for off-road equipment and on-road trucks, which provide minimum fuel efficiency standards. As such, operational activities for the proposed project would not result in the wasteful, inefficient, and unnecessary consumption of energy resources. Impacts regarding operational transportation energy would be less than significant.

In conclusion, the proposed project would comply with regulatory compliance measures outlined by the State and City related to Air Quality, Greenhouse Gas Emissions (GHG), Transportation/Circulation, and Water Supply. Additionally, the proposed project would be constructed in accordance with all applicable City Building and Fire Codes. Therefore, the proposed project would not result in the wasteful, inefficient, or unnecessary consumption of energy resources during project construction or operation. Impacts would be less than significant.

9.7 Energy Plan Consistency

The proposed project would not conflict with or obstruct a state or local plan for renewable energy or energy efficiency. The applicable energy plans for the proposed project include the *City of Huntington Beach General Plan,* adopted October 2, 2017, and applicable State and SCAQMD energy-related rules and regulations.

The proposed project consists of the permanent decommissioning of Monitoring Well SA-5 and construction of proposed Monitoring Well M58. As detailed above in Section 9.6, the proposed project would utilize energy, primarily in the form of transportation fuel, during construction and operation of the proposed project. The General Plan has analyzed energy resources in Chapter IV Environmental Resources and Conservation. The General Plan provides several energy-related policies related to conserving energy in homes and businesses, although none of the policies are applicable to the proposed project. However, the proposed project would be required to adhere to all State and SCAQMD energy-

related rules and regulations for off-road equipment and on-road trucks, which include minimum fuel efficiency standards. Thus, through implementation of the applicable State and SCAQMD energy-related rules and regulations, the proposed project would not conflict with or obstruct a state or local plan for renewable energy or energy efficiency.

9.8 Generation of Greenhouse Gas Emissions

The proposed project would not generate GHG emissions, either directly or indirectly, that may have a significant impact on the environment. The proposed project consists of the destruction and permanent decommissioning of Monitoring Well SA-5 and construction of proposed Monitoring Well M58. Construction and operational 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 M58 would be passive as there would be no permanent equipment installed in the well. OCWD staff would collect groundwater samples on a semi-annual basis and record water levels on a monthly basis. In total, the monitoring well would be visited by OCWD staff up to 14 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 W and the CalEEMod model run annual printouts are provided in Appendix C.

Table W – Project Related Greenhouse Gas Annual Emissions

	Greenhouse Gas Emissions (Metric Tons per Year)			
Category	**CO_2**	**CH_4**	**N_2O**	**CO_2e**
Construction				
Monitoring Well SA-5 Decommissioning	14.11	0.00	0.00	14.21
Monitoring Well M58 Phase 1 – Noise Panel and Protective Fencing Installation / Utility Clearance	1.79	0.00	0.00	1.81
Monitoring Well M58 Phase 2 – Monitoring Well Drilling and Construction	11.58	0.00	0.00	11.65
Monitoring Well M58 Phase 3 – Monitoring Well Development	7.71	0.00	0.00	7.71
Monitoring Well M58 Phase 4 – Site Cleanup and Traffic-Rated Vault Installation	0.84	0.00	0.00	0.85
Total Construction Emissions	36.03	0.01	0.00	36.22
Amortized Construction Emissions (30 Years)[1]	1.20	0.00	0.00	1.21
Operations				
Well Sampling	0.05	0.00	0.00	0.05
Total Well Sampling (2 times per year)	0.09	0.00	0.00	0.09
Well Redevelopment	1.19	0.00	0.00	1.20
Amortized Operational Emissions (3 Years)[2]	1.19	0.00	0.00	1.20
Total Operational Emissions	0.40	0.00	0.00	0.40
Total Annual Emissions (Construction & Operations)	**1.69**	**0.00**	**0.00**	**1.70**
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 W shows that the proposed project would create 1.70 $MTCO_2e$ 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.

9.9 Greenhouse Gas Plan Consistency

The proposed project would not conflict with any applicable plan, policy or regulation of an agency adopted for the purpose of reducing GHG emissions. The proposed project consists of the destruction and permanent decommissioning of Monitoring Well SA-5 and construction of proposed Monitoring Well M58. 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 on a semi-annual basis and record water levels on a monthly basis. In total, the monitoring well would be visited by OCWD staff up to 14 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 9.8, the proposed project is anticipated to create 1.70 $MTCO_2e$ 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.

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APPENDIX A

CalEEMod Model Daily Printouts

Monitoring Well SA-5 Replacement Project

Orange County, Summer

1.0 Project Characteristics

1.1 Land Usage

Land Uses	Size	Metric	Lot Acreage	Floor Surface Area	Population
Other Asphalt Surfaces	3.12	1000sqft	0.07	3,120.00	0

1.2 Other Project Characteristics

Urbanization	Urban	**Wind Speed (m/s)**	2.2	**Precipitation Freq (Days)**	30
Climate Zone	8			**Operational Year**	2020
Utility Company	Southern California Edison				
CO2 Intensity (lb/MWhr)	702.44	**CH4 Intensity (lb/MWhr)**	0.029	**N2O Intensity (lb/MWhr)**	0.006

1.3 User Entered Comments & Non-Default Data

Project Characteristics -

Land Use - 3.12 TSF Other Asphalt Surfaces

Construction Phase - Construction Phases provided by applicant

Off-road Equipment - 1 Support Truck (Off-Hwy Truck) 4 hr/day 550 hp, 1 Vacuum Truck 5 hr/day 425 hp

Off-road Equipment - 1 Delivery Truck 2 hr/day 550 hp, 1 Forklft 8 hr/day 75hp, 1 Pckup 2hr/day 250 hp

Off-road Equipment - 1 Air Compressor 8hr/day 200hp, 1 Pump Rig 8hr/day 325 hp, 1 Gen 8hr/day 20hp, 1 Pickup 2 hr/day 250 hp

Off-road Equipment - 1 Drill Rig 8 hr/day 550 hp, 1 Mud Tank (Pump) 8 hr/day 75 hp, 1 Forklift 3 hr/day 75 hp, 1 Support Truck 2 hr/day 350 hp, 1 Pickup 2 hr/day 250 hp

Off-road Equipment - 1 Pump Rig 8 hr/day 325 hp, 1 Air Compressor 8 hr/day 200 hp, 1 Pickup 2 hr/day 300 hp

Off-road Equipment - 1 Generator 4 hr/day 20 hp

Off-road Equipment - 1 Pump Rig 8 hr/day 550 hp, 1 Air Compressor 4 hr/day 200 hp, 1 Vacuum Truck 6 hr/day 425 hp, 1 Backhoe 8 hr/day 90 hp, 1 Cement Truck 4 hr/day 350 hp, 1 Pickup 2 hr/day 250 hp

Trips and VMT - Well SA-5 Decommissioning 30 haul round trips 50 miles (60 one way 25 miles), Fencing, Well Drilling & Well Development 2 haul round trips (4 one way),

Table Name	Column Name	Default Value	New Value
tblConstructionPhase	NumDays	100.00	7.00
tblConstructionPhase	NumDays	10.00	5.00
tblConstructionPhase	NumDays	5.00	2.00
tblConstructionPhase	NumDays	1.00	2.00
tblOffRoadEquipment	HorsePower	89.00	75.00
tblOffRoadEquipment	HorsePower	97.00	90.00
tblOffRoadEquipment	HorsePower	78.00	200.00
tblOffRoadEquipment	HorsePower	78.00	200.00
tblOffRoadEquipment	HorsePower	78.00	200.00
tblOffRoadEquipment	HorsePower	221.00	550.00
tblOffRoadEquipment	HorsePower	221.00	550.00
tblOffRoadEquipment	HorsePower	221.00	325.00
tblOffRoadEquipment	HorsePower	221.00	325.00
tblOffRoadEquipment	HorsePower	89.00	75.00
tblOffRoadEquipment	HorsePower	84.00	20.00
tblOffRoadEquipment	HorsePower	84.00	20.00
tblOffRoadEquipment	HorsePower	402.00	425.00
tblOffRoadEquipment	HorsePower	402.00	350.00
tblOffRoadEquipment	HorsePower	402.00	250.00
tblOffRoadEquipment	HorsePower	402.00	550.00
tblOffRoadEquipment	HorsePower	402.00	425.00
tblOffRoadEquipment	HorsePower	402.00	350.00
tblOffRoadEquipment	HorsePower	402.00	250.00
tblOffRoadEquipment	HorsePower	402.00	250.00
tblOffRoadEquipment	HorsePower	402.00	550.00
tblOffRoadEquipment	HorsePower	402.00	250.00

tblOffRoadEquipment	HorsePower	402.00	300.00
tblOffRoadEquipment	HorsePower	84.00	75.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	2.00	1.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	2.00	1.00
tblOffRoadEquipment	UsageHours	6.00	3.00
tblOffRoadEquipment	UsageHours	6.00	8.00
tblTripsAndVMT	HaulingTripLength	20.00	25.00
tblTripsAndVMT	HaulingTripLength	20.00	25.00
tblTripsAndVMT	HaulingTripLength	20.00	25.00
tblTripsAndVMT	HaulingTripLength	20.00	25.00
tblTripsAndVMT	HaulingTripNumber	0.00	60.00
tblTripsAndVMT	HaulingTripNumber	0.00	4.00
tblTripsAndVMT	HaulingTripNumber	0.00	4.00
tblTripsAndVMT	HaulingTripNumber	0.00	4.00
tblTripsAndVMT	HaulingTripNumber	0.00	2.00
tblTripsAndVMT	VendorTripNumber	1.00	2.00
tblTripsAndVMT	WorkerTripNumber	1.00	15.00

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					
2020	2.0610	22.4628	14.5462	0.0628	0.4288	0.7187	1.1474	0.1159	0.6663	0.7823	0.0000	6,237.6423	6,237.6423	1.5584	0.0000	6,276.6012
2021	0.9311	7.6455	5.6999	0.0274	0.0894	0.2553	0.3447	0.0237	0.2430	0.2667	0.0000	2,631.4179	2,631.4179	0.5551	0.0000	2,645.2947
Maximum	**2.0610**	**22.4628**	**14.5462**	**0.0628**	**0.4288**	**0.7187**	**1.1474**	**0.1159**	**0.6663**	**0.7823**	**0.0000**	**6,237.6423**	**6,237.6423**	**1.5584**	**0.0000**	**6,276.6012**

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					
2020	2.0610	22.4628	14.5462	0.0628	0.4288	0.7187	1.1474	0.1159	0.6663	0.7823	0.0000	6,237.6423	6,237.6423	1.5584	0.0000	6,276.6012
2021	0.9311	7.6455	5.6999	0.0274	0.0894	0.2553	0.3447	0.0237	0.2430	0.2667	0.0000	2,631.4179	2,631.4179	0.5551	0.0000	2,645.2946
Maximum	**2.0610**	**22.4628**	**14.5462**	**0.0628**	**0.4288**	**0.7187**	**1.1474**	**0.1159**	**0.6663**	**0.7823**	**0.0000**	**6,237.6423**	**6,237.6423**	**1.5584**	**0.0000**	**6,276.6012**

	ROG	NOx	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	Well SA-5 Decommissioning	Demolition	3/1/2020	3/6/2020	5	5	
2	M58 Fencing/Utility Clearance	Site Preparation	3/9/2020	3/10/2020	5	2	
3	M58 Well Drilling	Building Construction	3/11/2020	3/19/2020	5	7	
4	M58 Well Development	Trenching	3/20/2020	3/27/2020	5	6	
5	M58 Site Cleanup & Vault Installation	Paving	3/30/2020	3/31/2020	5	2	
6	Monitor Well Sampling	Trenching	1/1/2021	1/1/2021	5	1	
7	Monitor Well Development	Trenching	2/1/2021	2/1/2021	5	1	

Acres of Grading (Site Preparation Phase): 0

Acres of Grading (Grading Phase): 0

Acres of Paving: 0.07

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
Well SA-5 Decommissioning	Air Compressors	1	4.00	200	0.48
Well SA-5 Decommissioning	Bore/Drill Rigs	1	8.00	550	0.50
Well SA-5 Decommissioning	Off-Highway Trucks	1	6.00	425	0.38
Well SA-5 Decommissioning	Off-Highway Trucks	1	4.00	350	0.38
Well SA-5 Decommissioning	Off-Highway Trucks	1	2.00	250	0.38
Well SA-5 Decommissioning	Tractors/Loaders/Backhoes	1	8.00	90	0.37
M58 Fencing/Utility Clearance	Off-Highway Trucks	1	4.00	550	0.38
M58 Fencing/Utility Clearance	Off-Highway Trucks	1	5.00	425	0.38
M58 Well Drilling	Bore/Drill Rigs	1	8.00	550	0.50
M58 Well Drilling	Forklifts	1	3.00	75	0.20
M58 Well Drilling	Off-Highway Trucks	1	2.00	350	0.38
M58 Well Drilling	Off-Highway Trucks	1	2.00	250	0.38
M58 Well Drilling	Pumps	1	8.00	75	0.74
M58 Well Development	Air Compressors	1	8.00	200	0.48
M58 Well Development	Bore/Drill Rigs	1	8.00	325	0.50
M58 Well Development	Generator Sets	1	8.00	20	0.74
M58 Well Development	Off-Highway Trucks	1	2.00	250	0.38
M58 Site Cleanup & Vault Installation	Forklifts	1	8.00	75	0.20
M58 Site Cleanup & Vault Installation	Off-Highway Trucks	1	2.00	550	0.38
M58 Site Cleanup & Vault Installation	Off-Highway Trucks	1	2.00	250	0.38
Monitor Well Sampling	Generator Sets	1	4.00	20	0.74
Monitor Well Development	Air Compressors	1	8.00	200	0.48
Monitor Well Development	Bore/Drill Rigs	1	8.00	325	0.50
Monitor Well Development	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
Well SA-5 Decommissioning	6	15.00	0.00	60.00	14.70	6.90	25.00	LD_Mix	HDT_Mix	HHDT
M58 Fencing/Utility Clearance	2	5.00	0.00	4.00	14.70	6.90	25.00	LD_Mix	HDT_Mix	HHDT
M58 Well Drilling	5	15.00	2.00	4.00	14.70	6.90	25.00	LD_Mix	HDT_Mix	HHDT
M58 Well Development	4	10.00	0.00	4.00	14.70	6.90	25.00	LD_Mix	HDT_Mix	HHDT
M58 Site Cleanup & Vault Installation	3	8.00	0.00	2.00	14.70	6.90	20.00	LD_Mix	HDT_Mix	HHDT
Monitor Well Sampling	1	3.00	0.00	0.00	14.70	6.90	20.00	LD_Mix	HDT_Mix	HHDT
Monitor Well Development	3	8.00	0.00	0.00	14.70	6.90	20.00	LD_Mix	HDT_Mix	HHDT

3.1 Mitigation Measures Construction

3.2 Well SA-5 Decommissioning - 2020

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	1.8947	18.5778	13.0513	0.0500		0.7043	0.7043		0.6527	0.6527		4,824.9308	4,824.9308	1.4269		4,860.6031
Total	**1.8947**	**18.5778**	**13.0513**	**0.0500**		**0.7043**	**0.7043**		**0.6527**	**0.6527**		**4,824.9308**	**4,824.9308**	**1.4269**		**4,860.6031**

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	0.1087	3.8486	1.0039	0.0112	0.2611	0.0132	0.2743	0.0715	0.0126	0.0841		1,249.2050	1,249.2050	0.1277		1,252.3984
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Worker	0.0576	0.0363	0.4910	1.6400e-003	0.1677	1.1100e-003	0.1688	0.0445	1.0200e-003	0.0455		163.5065	163.5065	3.7300e-003		163.5997
Total	**0.1663**	**3.8849**	**1.4949**	**0.0129**	**0.4288**	**0.0143**	**0.4431**	**0.1159**	**0.0137**	**0.1296**		**1,412.7115**	**1,412.7115**	**0.1315**		**1,415.9981**

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	1.8947	18.5778	13.0513	0.0500		0.7043	0.7043		0.6527	0.6527	0.0000	4,824.9308	4,824.9308	1.4269		4,860.6031
Total	**1.8947**	**18.5778**	**13.0513**	**0.0500**		**0.7043**	**0.7043**		**0.6527**	**0.6527**	**0.0000**	**4,824.9308**	**4,824.9308**	**1.4269**		**4,860.6031**

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	0.1087	3.8486	1.0039	0.0112	0.2611	0.0132	0.2743	0.0715	0.0126	0.0841		1,249.2050	1,249.2050	0.1277		1,252.3984
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Worker	0.0576	0.0363	0.4910	1.6400e-003	0.1677	1.1100e-003	0.1688	0.0445	1.0200e-003	0.0455		163.5065	163.5065	3.7300e-003		163.5997
Total	**0.1663**	**3.8849**	**1.4949**	**0.0129**	**0.4288**	**0.0143**	**0.4431**	**0.1159**	**0.0137**	**0.1296**		**1,412.7115**	**1,412.7115**	**0.1315**		**1,415.9981**

3.3 M58 Fencing/Utility Clearance - 2020

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					0.0000	0.0000	0.0000	0.0000	0.0000	0.0000			0.0000			0.0000
Off-Road	1.0138	9.8142	6.2531	0.0177		0.3727	0.3727		0.3429	0.3429		1,716.1691	1,716.1691	0.5550		1,730.0452
Total	**1.0138**	**9.8142**	**6.2531**	**0.0177**	**0.0000**	**0.3727**	**0.3727**	**0.0000**	**0.3429**	**0.3429**		**1,716.1691**	**1,716.1691**	**0.5550**		**1,730.0452**

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	0.0181	0.6414	0.1673	1.8700e-003	0.0435	2.2000e-003	0.0457	0.0119	2.1100e-003	0.0140		208.2008	208.2008	0.0213		208.7331
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Worker	0.0192	0.0121	0.1637	5.5000e-004	0.0559	3.7000e-004	0.0563	0.0148	3.4000e-004	0.0152		54.5022	54.5022	1.2400e-003		54.5332
Total	**0.0373**	**0.6535**	**0.3310**	**2.4200e-003**	**0.0994**	**2.5700e-003**	**0.1020**	**0.0267**	**2.4500e-003**	**0.0292**		**262.7030**	**262.7030**	**0.0225**		**263.2663**

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					0.0000	0.0000	0.0000	0.0000	0.0000	0.0000			0.0000			0.0000
Off-Road	1.0138	9.8142	6.2531	0.0177		0.3727	0.3727		0.3429	0.3429	0.0000	1,716.1691	1,716.1691	0.5550		1,730.0452
Total	**1.0138**	**9.8142**	**6.2531**	**0.0177**	**0.0000**	**0.3727**	**0.3727**	**0.0000**	**0.3429**	**0.3429**	**0.0000**	**1,716.1691**	**1,716.1691**	**0.5550**		**1,730.0452**

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	0.0181	0.6414	0.1673	1.8700e-003	0.0435	2.2000e-003	0.0457	0.0119	2.1100e-003	0.0140		208.2008	208.2008	0.0213		208.7331
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Worker	0.0192	0.0121	0.1637	5.5000e-004	0.0559	3.7000e-004	0.0563	0.0148	3.4000e-004	0.0152		54.5022	54.5022	1.2400e-003		54.5332
Total	**0.0373**	**0.6535**	**0.3310**	**2.4200e-003**	**0.0994**	**2.5700e-003**	**0.1020**	**0.0267**	**2.4500e-003**	**0.0292**		**262.7030**	**262.7030**	**0.0225**		**263.2663**

3.4 M58 Well Drilling - 2020

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	1.2097	11.9572	9.8691	0.0350		0.5052	0.5052		0.4796	0.4796		3,375.6799	3,375.6799	0.9451		3,399.3082
Total	**1.2097**	**11.9572**	**9.8691**	**0.0350**		**0.5052**	**0.5052**		**0.4796**	**0.4796**		**3,375.6799**	**3,375.6799**	**0.9451**		**3,399.3082**

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	5.1800e-003	0.1833	0.0478	5.3000e-004	0.0124	6.3000e-004	0.0131	3.4000e-003	6.0000e-004	4.0100e-003		59.4860	59.4860	6.0800e-003		59.6380
Vendor	6.3900e-003	0.2084	0.0550	5.0000e-004	0.0128	1.0900e-003	0.0139	3.6800e-003	1.0400e-003	4.7200e-003		54.2258	54.2258	4.3900e-003		54.3354
Worker	0.0576	0.0363	0.4910	1.6400e-003	0.1677	1.1100e-003	0.1688	0.0445	1.0200e-003	0.0455		163.5065	163.5065	3.7300e-003		163.5997
Total	**0.0692**	**0.4280**	**0.5938**	**2.6700e-003**	**0.1929**	**2.8300e-003**	**0.1957**	**0.0516**	**2.6600e-003**	**0.0542**		**277.2183**	**277.2183**	**0.0142**		**277.5732**

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	1.2097	11.9572	9.8691	0.0350		0.5052	0.5052		0.4796	0.4796	0.0000	3,375.6799	3,375.6799	0.9451		3,399.3082
Total	**1.2097**	**11.9572**	**9.8691**	**0.0350**		**0.5052**	**0.5052**		**0.4796**	**0.4796**	**0.0000**	**3,375.6799**	**3,375.6799**	**0.9451**		**3,399.3082**

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	5.1800e-003	0.1833	0.0478	5.3000e-004	0.0124	6.3000e-004	0.0131	3.4000e-003	6.0000e-004	4.0100e-003		59.4860	59.4860	6.0800e-003		59.6380
Vendor	6.3900e-003	0.2084	0.0550	5.0000e-004	0.0128	1.0900e-003	0.0139	3.6800e-003	1.0400e-003	4.7200e-003		54.2258	54.2258	4.3900e-003		54.3354
Worker	0.0576	0.0363	0.4910	1.6400e-003	0.1677	1.1100e-003	0.1688	0.0445	1.0200e-003	0.0455		163.5065	163.5065	3.7300e-003		163.5997
Total	**0.0692**	**0.4280**	**0.5938**	**2.6700e-003**	**0.1929**	**2.8300e-003**	**0.1957**	**0.0516**	**2.6600e-003**	**0.0542**		**277.2183**	**277.2183**	**0.0142**		**277.5732**

3.5 M58 Well Development - 2020

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	1.1478	9.9516	6.0284	0.0279		0.3390	0.3390		0.3255	0.3255		2,645.4161	2,645.4161	0.5574		2,659.3510
Total	**1.1478**	**9.9516**	**6.0284**	**0.0279**		**0.3390**	**0.3390**		**0.3255**	**0.3255**		**2,645.4161**	**2,645.4161**	**0.5574**		**2,659.3510**

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	6.0400e-003	0.2138	0.0558	6.2000e-004	0.0145	7.3000e-004	0.0152	3.9700e-003	7.0000e-004	4.6700e-003		69.4003	69.4003	7.1000e-003		69.5777
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Worker	0.0384	0.0242	0.3273	1.0900e-003	0.1118	7.4000e-004	0.1125	0.0296	6.8000e-004	0.0303		109.0044	109.0044	2.4800e-003		109.0665
Total	**0.0445**	**0.2380**	**0.3831**	**1.7100e-003**	**0.1263**	**1.4700e-003**	**0.1278**	**0.0336**	**1.3800e-003**	**0.0350**		**178.4046**	**178.4046**	**9.5800e-003**		**178.6442**

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	1.1478	9.9516	6.0284	0.0279		0.3390	0.3390		0.3255	0.3255	0.0000	2,645.4161	2,645.4161	0.5574		2,659.3510
Total	**1.1478**	**9.9516**	**6.0284**	**0.0279**		**0.3390**	**0.3390**		**0.3255**	**0.3255**	**0.0000**	**2,645.4161**	**2,645.4161**	**0.5574**		**2,659.3510**

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	6.0400e-003	0.2138	0.0558	6.2000e-004	0.0145	7.3000e-004	0.0152	3.9700e-003	7.0000e-004	4.6700e-003		69.4003	69.4003	7.1000e-003		69.5777
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Worker	0.0384	0.0242	0.3273	1.0900e-003	0.1118	7.4000e-004	0.1125	0.0296	6.8000e-004	0.0303		109.0044	109.0044	2.4800e-003		109.0665
Total	**0.0445**	**0.2380**	**0.3831**	**1.7100e-003**	**0.1263**	**1.4700e-003**	**0.1278**	**0.0336**	**1.3800e-003**	**0.0350**		**178.4046**	**178.4046**	**9.5800e-003**		**178.6442**

3.6 M58 Site Cleanup & Vault Installation - 2020

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	0.5243	4.9618	3.4451	7.8200e-003		0.2326	0.2326		0.2140	0.2140		757.3423	757.3423	0.2449		763.4658
Paving	0.0917					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Total	**0.6160**	**4.9618**	**3.4451**	**7.8200e-003**		**0.2326**	**0.2326**		**0.2140**	**0.2140**		**757.3423**	**757.3423**	**0.2449**		**763.4658**

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	7.5500e-003	0.2750	0.0695	7.7000e-004	0.0174	8.9000e-004	0.0183	4.7700e-003	8.5000e-004	5.6200e-003		85.3058	85.3058	8.8400e-003		85.5269
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Worker	0.0307	0.0194	0.2619	8.7000e-004	0.0894	5.9000e-004	0.0900	0.0237	5.4000e-004	0.0243		87.2035	87.2035	1.9900e-003		87.2532
Total	**0.0383**	**0.2943**	**0.3313**	**1.6400e-003**	**0.1068**	**1.4800e-003**	**0.1083**	**0.0285**	**1.3900e-003**	**0.0299**		**172.5093**	**172.5093**	**0.0108**		**172.7800**

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	0.5243	4.9618	3.4451	7.8200e-003		0.2326	0.2326		0.2140	0.2140	0.0000	757.3423	757.3423	0.2449		763.4658
Paving	0.0917					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Total	**0.6160**	**4.9618**	**3.4451**	**7.8200e-003**		**0.2326**	**0.2326**		**0.2140**	**0.2140**	**0.0000**	**757.3423**	**757.3423**	**0.2449**		**763.4658**

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	7.5500e-003	0.2750	0.0695	7.7000e-004	0.0174	8.9000e-004	0.0183	4.7700e-003	8.5000e-004	5.6200e-003		85.3058	85.3058	8.8400e-003		85.5269
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Worker	0.0307	0.0194	0.2619	8.7000e-004	0.0894	5.9000e-004	0.0900	0.0237	5.4000e-004	0.0243		87.2035	87.2035	1.9900e-003		87.2532
Total	**0.0383**	**0.2943**	**0.3313**	**1.6400e-003**	**0.1068**	**1.4800e-003**	**0.1083**	**0.0285**	**1.3900e-003**	**0.0299**		**172.5093**	**172.5093**	**0.0108**		**172.7800**

3.7 Monitor Well Sampling - 2021

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Off-Road	0.0929	0.5869	0.3192	9.1000e-004		0.0256	0.0256		0.0256	0.0256		74.1708	74.1708	8.3500e-003		74.3796
Total	**0.0929**	**0.5869**	**0.3192**	**9.1000e-004**		**0.0256**	**0.0256**		**0.0256**	**0.0256**		**74.1708**	**74.1708**	**8.3500e-003**		**74.3796**

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Worker	0.0108	6.5500e-003	0.0911	3.2000e-004	0.0335	2.2000e-004	0.0338	8.8900e-003	2.0000e-004	9.0900e-003		31.5658	31.5658	6.8000e-004		31.5827
Total	**0.0108**	**6.5500e-003**	**0.0911**	**3.2000e-004**	**0.0335**	**2.2000e-004**	**0.0338**	**8.8900e-003**	**2.0000e-004**	**9.0900e-003**		**31.5658**	**31.5658**	**6.8000e-004**		**31.5827**

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	0.0929	0.5869	0.3192	9.1000e-004		0.0256	0.0256		0.0256	0.0256	0.0000	74.1708	74.1708	8.3500e-003		74.3796
Total	**0.0929**	**0.5869**	**0.3192**	**9.1000e-004**		**0.0256**	**0.0256**		**0.0256**	**0.0256**	**0.0000**	**74.1708**	**74.1708**	**8.3500e-003**		**74.3796**

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Worker	0.0108	6.5500e-003	0.0911	3.2000e-004	0.0335	2.2000e-004	0.0338	8.8900e-003	2.0000e-004	9.0900e-003		31.5658	31.5658	6.8000e-004		31.5827
Total	**0.0108**	**6.5500e-003**	**0.0911**	**3.2000e-004**	**0.0335**	**2.2000e-004**	**0.0338**	**8.8900e-003**	**2.0000e-004**	**9.0900e-003**		**31.5658**	**31.5658**	**6.8000e-004**		**31.5827**

3.8 Monitor Well Development - 2021

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Off-Road	0.9022	7.6280	5.4569	0.0265		0.2547	0.2547		0.2424	0.2424		2,547.2424	2,547.2424	0.5533		2,561.0741
Total	**0.9022**	**7.6280**	**5.4569**	**0.0265**		**0.2547**	**0.2547**		**0.2424**	**0.2424**		**2,547.2424**	**2,547.2424**	**0.5533**		**2,561.0741**

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Worker	0.0289	0.0175	0.2430	8.4000e-004	0.0894	5.8000e-004	0.0900	0.0237	5.3000e-004	0.0243		84.1755	84.1755	1.8000e-003		84.2206
Total	**0.0289**	**0.0175**	**0.2430**	**8.4000e-004**	**0.0894**	**5.8000e-004**	**0.0900**	**0.0237**	**5.3000e-004**	**0.0243**		**84.1755**	**84.1755**	**1.8000e-003**		**84.2206**

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	0.9022	7.6280	5.4569	0.0265		0.2547	0.2547		0.2424	0.2424	0.0000	2,547.2424	2,547.2424	0.5533		2,561.0740
Total	**0.9022**	**7.6280**	**5.4569**	**0.0265**		**0.2547**	**0.2547**		**0.2424**	**0.2424**	**0.0000**	**2,547.2424**	**2,547.2424**	**0.5533**		**2,561.0740**

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Worker	0.0289	0.0175	0.2430	8.4000e-004	0.0894	5.8000e-004	0.0900	0.0237	5.3000e-004	0.0243		84.1755	84.1755	1.8000e-003		84.2206
Total	**0.0289**	**0.0175**	**0.2430**	**8.4000e-004**	**0.0894**	**5.8000e-004**	**0.0900**	**0.0237**	**5.3000e-004**	**0.0243**		**84.1755**	**84.1755**	**1.8000e-003**		**84.2206**

Monitoring Well SA-5 Replacement Project

Orange County, Winter

1.0 Project Characteristics

1.1 Land Usage

Land Uses	Size	Metric	Lot Acreage	Floor Surface Area	Population
Other Asphalt Surfaces	3.12	1000sqft	0.07	3,120.00	0

1.2 Other Project Characteristics

Urbanization	Urban	**Wind Speed (m/s)**	2.2	**Precipitation Freq (Days)**	30
Climate Zone	8			**Operational Year**	2020
Utility Company	Southern California Edison				
CO2 Intensity (lb/MWhr)	702.44	**CH4 Intensity (lb/MWhr)**	0.029	**N2O Intensity (lb/MWhr)**	0.006

1.3 User Entered Comments & Non-Default Data

Project Characteristics -

Land Use - 3.12 TSF Other Asphalt Surfaces

Construction Phase - Construction Phases provided by applicant

Off-road Equipment - 1 Support Truck (Off-Hwy Truck) 4 hr/day 550 hp, 1 Vacuum Truck 5 hr/day 425 hp

Off-road Equipment - 1 Delivery Truck 2 hr/day 550 hp, 1 Forklft 8 hr/day 75hp, 1 Pckup 2hr/day 250 hp

Off-road Equipment - 1 Air Compressor 8hr/day 200hp, 1 Pump Rig 8hr/day 325 hp, 1 Gen 8hr/day 20hp, 1 Pickup 2 hr/day 250 hp

Off-road Equipment - 1 Drill Rig 8 hr/day 550 hp, 1 Mud Tank (Pump) 8 hr/day 75 hp, 1 Forklift 3 hr/day 75 hp, 1 Support Truck 2 hr/day 350 hp, 1 Pickup 2 hr/day 250 hp

Off-road Equipment - 1 Pump Rig 8 hr/day 325 hp, 1 Air Compressor 8 hr/day 200 hp, 1 Pickup 2 hr/day 300 hp

Off-road Equipment - 1 Generator 4 hr/day 20 hp

Off-road Equipment - 1 Pump Rig 8 hr/day 550 hp, 1 Air Compressor 4 hr/day 200 hp, 1 Vacuum Truck 6 hr/day 425 hp, 1 Backhoe 8 hr/day 90 hp, 1 Cement Truck 4 hr/day 350 hp, 1 Pickup 2 hr/day 250 hp

Trips and VMT - Well SA-5 Decommissioning 30 haul round trips 50 miles (60 one way 25 miles), Fencing, Well Drilling & Well Development 2 haul round trips (4 one way),

Table Name	Column Name	Default Value	New Value
tblConstructionPhase	NumDays	100.00	7.00
tblConstructionPhase	NumDays	10.00	5.00
tblConstructionPhase	NumDays	5.00	2.00
tblConstructionPhase	NumDays	1.00	2.00
tblOffRoadEquipment	HorsePower	89.00	75.00
tblOffRoadEquipment	HorsePower	97.00	90.00
tblOffRoadEquipment	HorsePower	78.00	200.00
tblOffRoadEquipment	HorsePower	78.00	200.00
tblOffRoadEquipment	HorsePower	78.00	200.00
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tblOffRoadEquipment	HorsePower	221.00	550.00
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tblOffRoadEquipment	HorsePower	402.00	250.00
tblOffRoadEquipment	HorsePower	402.00	550.00
tblOffRoadEquipment	HorsePower	402.00	250.00

tblOffRoadEquipment	HorsePower	402.00	300.00
tblOffRoadEquipment	HorsePower	84.00	75.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	2.00	1.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	2.00	1.00
tblOffRoadEquipment	UsageHours	6.00	3.00
tblOffRoadEquipment	UsageHours	6.00	8.00
tblTripsAndVMT	HaulingTripLength	20.00	25.00
tblTripsAndVMT	HaulingTripLength	20.00	25.00
tblTripsAndVMT	HaulingTripLength	20.00	25.00
tblTripsAndVMT	HaulingTripLength	20.00	25.00
tblTripsAndVMT	HaulingTripNumber	0.00	60.00
tblTripsAndVMT	HaulingTripNumber	0.00	4.00
tblTripsAndVMT	HaulingTripNumber	0.00	4.00
tblTripsAndVMT	HaulingTripNumber	0.00	4.00
tblTripsAndVMT	HaulingTripNumber	0.00	2.00
tblTripsAndVMT	VendorTripNumber	1.00	2.00
tblTripsAndVMT	WorkerTripNumber	1.00	15.00

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					
2020	2.0708	22.5288	14.5519	0.0626	0.4288	0.7189	1.1476	0.1159	0.6665	0.7825	0.0000	6,213.4254	6,213.4254	1.5607	0.0000	6,252.4422
2021	0.9349	7.6472	5.6811	0.0273	0.0894	0.2553	0.3447	0.0237	0.2430	0.2667	0.0000	2,626.9090	2,626.9090	0.5550	0.0000	2,640.7833
Maximum	**2.0708**	**22.5288**	**14.5519**	**0.0626**	**0.4288**	**0.7189**	**1.1476**	**0.1159**	**0.6665**	**0.7825**	**0.0000**	**6,213.4254**	**6,213.4254**	**1.5607**	**0.0000**	**6,252.4422**

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					
2020	2.0708	22.5288	14.5519	0.0626	0.4288	0.7189	1.1476	0.1159	0.6665	0.7825	0.0000	6,213.4254	6,213.4254	1.5607	0.0000	6,252.4422
2021	0.9349	7.6472	5.6811	0.0273	0.0894	0.2553	0.3447	0.0237	0.2430	0.2667	0.0000	2,626.9090	2,626.9090	0.5550	0.0000	2,640.7833
Maximum	**2.0708**	**22.5288**	**14.5519**	**0.0626**	**0.4288**	**0.7189**	**1.1476**	**0.1159**	**0.6665**	**0.7825**	**0.0000**	**6,213.4254**	**6,213.4254**	**1.5607**	**0.0000**	**6,252.4422**

	ROG	NOx	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	Well SA-5 Decommissioning	Demolition	3/1/2020	3/6/2020	5	5	
2	M58 Fencing/Utility Clearance	Site Preparation	3/9/2020	3/10/2020	5	2	
3	M58 Well Drilling	Building Construction	3/11/2020	3/19/2020	5	7	
4	M58 Well Development	Trenching	3/20/2020	3/27/2020	5	6	
5	M58 Site Cleanup & Vault Installation	Paving	3/30/2020	3/31/2020	5	2	
6	Monitor Well Sampling	Trenching	1/1/2021	1/1/2021	5	1	
7	Monitor Well Development	Trenching	2/1/2021	2/1/2021	5	1	

Acres of Grading (Site Preparation Phase): 0

Acres of Grading (Grading Phase): 0

Acres of Paving: 0.07

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
Well SA-5 Decommissioning	Air Compressors	1	4.00	200	0.48
Well SA-5 Decommissioning	Bore/Drill Rigs	1	8.00	550	0.50
Well SA-5 Decommissioning	Off-Highway Trucks	1	6.00	425	0.38
Well SA-5 Decommissioning	Off-Highway Trucks	1	4.00	350	0.38
Well SA-5 Decommissioning	Off-Highway Trucks	1	2.00	250	0.38
Well SA-5 Decommissioning	Tractors/Loaders/Backhoes	1	8.00	90	0.37
M58 Fencing/Utility Clearance	Off-Highway Trucks	1	4.00	550	0.38
M58 Fencing/Utility Clearance	Off-Highway Trucks	1	5.00	425	0.38
M58 Well Drilling	Bore/Drill Rigs	1	8.00	550	0.50
M58 Well Drilling	Forklifts	1	3.00	75	0.20
M58 Well Drilling	Off-Highway Trucks	1	2.00	350	0.38
M58 Well Drilling	Off-Highway Trucks	1	2.00	250	0.38
M58 Well Drilling	Pumps	1	8.00	75	0.74
M58 Well Development	Air Compressors	1	8.00	200	0.48
M58 Well Development	Bore/Drill Rigs	1	8.00	325	0.50
M58 Well Development	Generator Sets	1	8.00	20	0.74
M58 Well Development	Off-Highway Trucks	1	2.00	250	0.38
M58 Site Cleanup & Vault Installation	Forklifts	1	8.00	75	0.20
M58 Site Cleanup & Vault Installation	Off-Highway Trucks	1	2.00	550	0.38
M58 Site Cleanup & Vault Installation	Off-Highway Trucks	1	2.00	250	0.38
Monitor Well Sampling	Generator Sets	1	4.00	20	0.74
Monitor Well Development	Air Compressors	1	8.00	200	0.48
Monitor Well Development	Bore/Drill Rigs	1	8.00	325	0.50
Monitor Well Development	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
Well SA-5 Decommissioning	6	15.00	0.00	60.00	14.70	6.90	25.00	LD_Mix	HDT_Mix	HHDT
M58 Fencing/Utility Clearance	2	5.00	0.00	4.00	14.70	6.90	25.00	LD_Mix	HDT_Mix	HHDT
M58 Well Drilling	5	15.00	2.00	4.00	14.70	6.90	25.00	LD_Mix	HDT_Mix	HHDT
M58 Well Development	4	10.00	0.00	4.00	14.70	6.90	25.00	LD_Mix	HDT_Mix	HHDT
M58 Site Cleanup & Vault Installation	3	8.00	0.00	2.00	14.70	6.90	20.00	LD_Mix	HDT_Mix	HHDT
Monitor Well Sampling	1	3.00	0.00	0.00	14.70	6.90	20.00	LD_Mix	HDT_Mix	HHDT
Monitor Well Development	3	8.00	0.00	0.00	14.70	6.90	20.00	LD_Mix	HDT_Mix	HHDT

3.1 Mitigation Measures Construction

3.2 Well SA-5 Decommissioning - 2020

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	1.8947	18.5778	13.0513	0.0500		0.7043	0.7043		0.6527	0.6527		4,824.9308	4,824.9308	1.4269		4,860.6031
Total	**1.8947**	**18.5778**	**13.0513**	**0.0500**		**0.7043**	**0.7043**		**0.6527**	**0.6527**		**4,824.9308**	**4,824.9308**	**1.4269**		**4,860.6031**

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	0.1110	3.9110	1.0468	0.0111	0.2611	0.0134	0.2745	0.0715	0.0128	0.0843		1,233.7514	1,233.7514	0.1303		1,237.0077
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Worker	0.0651	0.0399	0.4538	1.5500e-003	0.1677	1.1100e-003	0.1688	0.0445	1.0200e-003	0.0455		154.7432	154.7432	3.5300e-003		154.8314
Total	**0.1761**	**3.9509**	**1.5007**	**0.0126**	**0.4288**	**0.0145**	**0.4433**	**0.1159**	**0.0139**	**0.1298**		**1,388.4946**	**1,388.4946**	**0.1338**		**1,391.8392**

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	1.8947	18.5778	13.0513	0.0500		0.7043	0.7043		0.6527	0.6527	0.0000	4,824.9308	4,824.9308	1.4269		4,860.6031
Total	**1.8947**	**18.5778**	**13.0513**	**0.0500**		**0.7043**	**0.7043**		**0.6527**	**0.6527**	**0.0000**	**4,824.9308**	**4,824.9308**	**1.4269**		**4,860.6031**

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	0.1110	3.9110	1.0468	0.0111	0.2611	0.0134	0.2745	0.0715	0.0128	0.0843		1,233.7514	1,233.7514	0.1303		1,237.0077
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Worker	0.0651	0.0399	0.4538	1.5500e-003	0.1677	1.1100e-003	0.1688	0.0445	1.0200e-003	0.0455		154.7432	154.7432	3.5300e-003		154.8314
Total	**0.1761**	**3.9509**	**1.5007**	**0.0126**	**0.4288**	**0.0145**	**0.4433**	**0.1159**	**0.0139**	**0.1298**		**1,388.4946**	**1,388.4946**	**0.1338**		**1,391.8392**

3.3 M58 Fencing/Utility Clearance - 2020

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					0.0000	0.0000	0.0000	0.0000	0.0000	0.0000			0.0000			0.0000
Off-Road	1.0138	9.8142	6.2531	0.0177		0.3727	0.3727		0.3429	0.3429		1,716.1691	1,716.1691	0.5550		1,730.0452
Total	**1.0138**	**9.8142**	**6.2531**	**0.0177**	**0.0000**	**0.3727**	**0.3727**	**0.0000**	**0.3429**	**0.3429**		**1,716.1691**	**1,716.1691**	**0.5550**		**1,730.0452**

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	0.0185	0.6518	0.1745	1.8400e-003	0.0435	2.2400e-003	0.0458	0.0119	2.1400e-003	0.0141		205.6252	205.6252	0.0217		206.1680
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Worker	0.0217	0.0133	0.1513	5.2000e-004	0.0559	3.7000e-004	0.0563	0.0148	3.4000e-004	0.0152		51.5811	51.5811	1.1800e-003		51.6105
Total	**0.0402**	**0.6651**	**0.3257**	**2.3600e-003**	**0.0994**	**2.6100e-003**	**0.1020**	**0.0267**	**2.4800e-003**	**0.0292**		**257.2063**	**257.2063**	**0.0229**		**257.7784**

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					0.0000	0.0000	0.0000	0.0000	0.0000	0.0000			0.0000			0.0000
Off-Road	1.0138	9.8142	6.2531	0.0177		0.3727	0.3727		0.3429	0.3429	0.0000	1,716.1691	1,716.1691	0.5550		1,730.0452
Total	**1.0138**	**9.8142**	**6.2531**	**0.0177**	**0.0000**	**0.3727**	**0.3727**	**0.0000**	**0.3429**	**0.3429**	**0.0000**	**1,716.1691**	**1,716.1691**	**0.5550**		**1,730.0452**

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	0.0185	0.6518	0.1745	1.8400e-003	0.0435	2.2400e-003	0.0458	0.0119	2.1400e-003	0.0141		205.6252	205.6252	0.0217		206.1680
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Worker	0.0217	0.0133	0.1513	5.2000e-004	0.0559	3.7000e-004	0.0563	0.0148	3.4000e-004	0.0152		51.5811	51.5811	1.1800e-003		51.6105
Total	**0.0402**	**0.6651**	**0.3257**	**2.3600e-003**	**0.0994**	**2.6100e-003**	**0.1020**	**0.0267**	**2.4800e-003**	**0.0292**		**257.2063**	**257.2063**	**0.0229**		**257.7784**

3.4 M58 Well Drilling - 2020

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	1.2097	11.9572	9.8691	0.0350		0.5052	0.5052		0.4796	0.4796		3,375.6799	3,375.6799	0.9451		3,399.3082
Total	**1.2097**	**11.9572**	**9.8691**	**0.0350**		**0.5052**	**0.5052**		**0.4796**	**0.4796**		**3,375.6799**	**3,375.6799**	**0.9451**		**3,399.3082**

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	5.2800e-003	0.1862	0.0499	5.3000e-004	0.0124	6.4000e-004	0.0131	3.4000e-003	6.1000e-004	4.0100e-003		58.7501	58.7501	6.2000e-003		58.9051
Vendor	6.6700e-003	0.2083	0.0603	4.9000e-004	0.0128	1.1100e-003	0.0139	3.6800e-003	1.0600e-003	4.7400e-003		52.8932	52.8932	4.6100e-003		53.0084
Worker	0.0651	0.0399	0.4538	1.5500e-003	0.1677	1.1100e-003	0.1688	0.0445	1.0200e-003	0.0455		154.7432	154.7432	3.5300e-003		154.8314
Total	**0.0771**	**0.4344**	**0.5639**	**2.5700e-003**	**0.1929**	**2.8600e-003**	**0.1957**	**0.0516**	**2.6900e-003**	**0.0542**		**266.3865**	**266.3865**	**0.0143**		**266.7450**

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	1.2097	11.9572	9.8691	0.0350		0.5052	0.5052		0.4796	0.4796	0.0000	3,375.6799	3,375.6799	0.9451		3,399.3082
Total	**1.2097**	**11.9572**	**9.8691**	**0.0350**		**0.5052**	**0.5052**		**0.4796**	**0.4796**	**0.0000**	**3,375.6799**	**3,375.6799**	**0.9451**		**3,399.3082**

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	5.2800e-003	0.1862	0.0499	5.3000e-004	0.0124	6.4000e-004	0.0131	3.4000e-003	6.1000e-004	4.0100e-003		58.7501	58.7501	6.2000e-003		58.9051
Vendor	6.6700e-003	0.2083	0.0603	4.9000e-004	0.0128	1.1100e-003	0.0139	3.6800e-003	1.0600e-003	4.7400e-003		52.8932	52.8932	4.6100e-003		53.0084
Worker	0.0651	0.0399	0.4538	1.5500e-003	0.1677	1.1100e-003	0.1688	0.0445	1.0200e-003	0.0455		154.7432	154.7432	3.5300e-003		154.8314
Total	**0.0771**	**0.4344**	**0.5639**	**2.5700e-003**	**0.1929**	**2.8600e-003**	**0.1957**	**0.0516**	**2.6900e-003**	**0.0542**		**266.3865**	**266.3865**	**0.0143**		**266.7450**

3.5 M58 Well Development - 2020

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	1.1478	9.9516	6.0284	0.0279		0.3390	0.3390		0.3255	0.3255		2,645.4161	2,645.4161	0.5574		2,659.3510
Total	**1.1478**	**9.9516**	**6.0284**	**0.0279**		**0.3390**	**0.3390**		**0.3255**	**0.3255**		**2,645.4161**	**2,645.4161**	**0.5574**		**2,659.3510**

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	6.1600e-003	0.2173	0.0582	6.1000e-004	0.0145	7.5000e-004	0.0153	3.9700e-003	7.1000e-004	4.6800e-003		68.5418	68.5418	7.2400e-003		68.7227
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Worker	0.0434	0.0266	0.3025	1.0300e-003	0.1118	7.4000e-004	0.1125	0.0296	6.8000e-004	0.0303		103.1621	103.1621	2.3500e-003		103.2210
Total	**0.0496**	**0.2439**	**0.3607**	**1.6400e-003**	**0.1263**	**1.4900e-003**	**0.1278**	**0.0336**	**1.3900e-003**	**0.0350**		**171.7039**	**171.7039**	**9.5900e-003**		**171.9436**

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	1.1478	9.9516	6.0284	0.0279		0.3390	0.3390		0.3255	0.3255	0.0000	2,645.4161	2,645.4161	0.5574		2,659.3510
Total	**1.1478**	**9.9516**	**6.0284**	**0.0279**		**0.3390**	**0.3390**		**0.3255**	**0.3255**	**0.0000**	**2,645.4161**	**2,645.4161**	**0.5574**		**2,659.3510**

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	6.1600e-003	0.2173	0.0582	6.1000e-004	0.0145	7.5000e-004	0.0153	3.9700e-003	7.1000e-004	4.6800e-003		68.5418	68.5418	7.2400e-003		68.7227
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Worker	0.0434	0.0266	0.3025	1.0300e-003	0.1118	7.4000e-004	0.1125	0.0296	6.8000e-004	0.0303		103.1621	103.1621	2.3500e-003		103.2210
Total	**0.0496**	**0.2439**	**0.3607**	**1.6400e-003**	**0.1263**	**1.4900e-003**	**0.1278**	**0.0336**	**1.3900e-003**	**0.0350**		**171.7039**	**171.7039**	**9.5900e-003**		**171.9436**

3.6 M58 Site Cleanup & Vault Installation - 2020

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	0.5243	4.9618	3.4451	7.8200e-003		0.2326	0.2326		0.2140	0.2140		757.3423	757.3423	0.2449		763.4658
Paving	0.0917					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Total	**0.6160**	**4.9618**	**3.4451**	**7.8200e-003**		**0.2326**	**0.2326**		**0.2140**	**0.2140**		**757.3423**	**757.3423**	**0.2449**		**763.4658**

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	7.7400e-003	0.2784	0.0732	7.5000e-004	0.0174	9.1000e-004	0.0183	4.7700e-003	8.7000e-004	5.6300e-003		84.0180	84.0180	9.0500e-003		84.2443
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Worker	0.0347	0.0213	0.2420	8.3000e-004	0.0894	5.9000e-004	0.0900	0.0237	5.4000e-004	0.0243		82.5297	82.5297	1.8800e-003		82.5768
Total	**0.0425**	**0.2997**	**0.3152**	**1.5800e-003**	**0.1068**	**1.5000e-003**	**0.1083**	**0.0285**	**1.4100e-003**	**0.0299**		**166.5477**	**166.5477**	**0.0109**		**166.8211**

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	0.5243	4.9618	3.4451	7.8200e-003		0.2326	0.2326		0.2140	0.2140	0.0000	757.3423	757.3423	0.2449		763.4658
Paving	0.0917					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Total	**0.6160**	**4.9618**	**3.4451**	**7.8200e-003**		**0.2326**	**0.2326**		**0.2140**	**0.2140**	**0.0000**	**757.3423**	**757.3423**	**0.2449**		**763.4658**

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	7.7400e-003	0.2784	0.0732	7.5000e-004	0.0174	9.1000e-004	0.0183	4.7700e-003	8.7000e-004	5.6300e-003		84.0180	84.0180	9.0500e-003		84.2443
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Worker	0.0347	0.0213	0.2420	8.3000e-004	0.0894	5.9000e-004	0.0900	0.0237	5.4000e-004	0.0243		82.5297	82.5297	1.8800e-003		82.5768
Total	**0.0425**	**0.2997**	**0.3152**	**1.5800e-003**	**0.1068**	**1.5000e-003**	**0.1083**	**0.0285**	**1.4100e-003**	**0.0299**		**166.5477**	**166.5477**	**0.0109**		**166.8211**

3.7 Monitor Well Sampling - 2021

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio-CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Off-Road	0.0929	0.5869	0.3192	9.1000e-004		0.0256	0.0256		0.0256	0.0256		74.1708	74.1708	8.3500e-003		74.3796
Total	**0.0929**	**0.5869**	**0.3192**	**9.1000e-004**		**0.0256**	**0.0256**		**0.0256**	**0.0256**		**74.1708**	**74.1708**	**8.3500e-003**		**74.3796**

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio-CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Worker	0.0123	7.2000e-003	0.0841	3.0000e-004	0.0335	2.2000e-004	0.0338	8.8900e-003	2.0000e-004	9.0900e-003		29.8750	29.8750	6.4000e-004		29.8910
Total	**0.0123**	**7.2000e-003**	**0.0841**	**3.0000e-004**	**0.0335**	**2.2000e-004**	**0.0338**	**8.8900e-003**	**2.0000e-004**	**9.0900e-003**		**29.8750**	**29.8750**	**6.4000e-004**		**29.8910**

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	0.0929	0.5869	0.3192	9.1000e-004		0.0256	0.0256		0.0256	0.0256	0.0000	74.1708	74.1708	8.3500e-003		74.3796
Total	**0.0929**	**0.5869**	**0.3192**	**9.1000e-004**		**0.0256**	**0.0256**		**0.0256**	**0.0256**	**0.0000**	**74.1708**	**74.1708**	**8.3500e-003**		**74.3796**

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio-CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Worker	0.0123	7.2000e-003	0.0841	3.0000e-004	0.0335	2.2000e-004	0.0338	8.8900e-003	2.0000e-004	9.0900e-003		29.8750	29.8750	6.4000e-004		29.8910
Total	**0.0123**	**7.2000e-003**	**0.0841**	**3.0000e-004**	**0.0335**	**2.2000e-004**	**0.0338**	**8.8900e-003**	**2.0000e-004**	**9.0900e-003**		**29.8750**	**29.8750**	**6.4000e-004**		**29.8910**

3.8 Monitor Well Development - 2021

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio-CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Off-Road	0.9022	7.6280	5.4569	0.0265		0.2547	0.2547		0.2424	0.2424		2,547.2424	2,547.2424	0.5533		2,561.0741
Total	**0.9022**	**7.6280**	**5.4569**	**0.0265**		**0.2547**	**0.2547**		**0.2424**	**0.2424**		**2,547.2424**	**2,547.2424**	**0.5533**		**2,561.0741**

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio-CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Worker	0.0327	0.0192	0.2242	8.0000e-004	0.0894	5.8000e-004	0.0900	0.0237	5.3000e-004	0.0243		79.6666	79.6666	1.7100e-003		79.7092
Total	**0.0327**	**0.0192**	**0.2242**	**8.0000e-004**	**0.0894**	**5.8000e-004**	**0.0900**	**0.0237**	**5.3000e-004**	**0.0243**		**79.6666**	**79.6666**	**1.7100e-003**		**79.7092**

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	0.9022	7.6280	5.4569	0.0265		0.2547	0.2547		0.2424	0.2424	0.0000	2,547.2424	2,547.2424	0.5533		2,561.0740
Total	**0.9022**	**7.6280**	**5.4569**	**0.0265**		**0.2547**	**0.2547**		**0.2424**	**0.2424**	**0.0000**	**2,547.2424**	**2,547.2424**	**0.5533**		**2,561.0740**

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio-CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Worker	0.0327	0.0192	0.2242	8.0000e-004	0.0894	5.8000e-004	0.0900	0.0237	5.3000e-004	0.0243		79.6666	79.6666	1.7100e-003		79.7092
Total	**0.0327**	**0.0192**	**0.2242**	**8.0000e-004**	**0.0894**	**5.8000e-004**	**0.0900**	**0.0237**	**5.3000e-004**	**0.0243**		**79.6666**	**79.6666**	**1.7100e-003**		**79.7092**

APPENDIX B

EMFAC2017 Model Printouts

EMFAC2017 (v1.0.2) Emissions Inventory
Region Type: Air Basin
Region: SOUTH COAST
Calendar Year: 2019
Season: Annual
Vehicle Classification: EMFAC2007 Categories
Units: miles/day for VMT, trips/day for Trips, tons/day for Emissions, 1000 gallons/day for Fuel Consumption

Region	Calendar Y	Vehicle Cat	Model Year	Speed	Fuel	Population	VMT	Trips	Fuel Consumption
SOUTH COAST	2019	HHDT	Aggregated	Aggregatec	GAS	101.2689	7,659	2,026	2.0
SOUTH COAST	2019	LDA	Aggregated	Aggregatec	GAS	6081048	244,446,391	28,695,373	8,546.8
SOUTH COAST	2019	LDT1	Aggregated	Aggregatec	GAS	651943.4	24,807,246	2,983,370	1,008.7
SOUTH COAST	2019	LDT2	Aggregated	Aggregatec	GAS	2073197	80,872,282	9,694,322	3,631.6
SOUTH COAST	2019	LHDT1	Aggregated	Aggregatec	GAS	175207.5	6,463,196	2,610,330	629.8
SOUTH COAST	2019	LHDT2	Aggregated	Aggregatec	GAS	28634.65	1,024,337	426,614	114.6
SOUTH COAST	2019	MCY	Aggregated	Aggregatec	GAS	259354.2	1,869,286	518,708	51.3
SOUTH COAST	2019	MDV	Aggregated	Aggregatec	GAS	1497221	54,845,361	6,911,949	2,999.3
SOUTH COAST	2019	MH	Aggregated	Aggregatec	GAS	35590.49	335,289	3,560	67.3
SOUTH COAST	2019	MHDT	Aggregated	Aggregatec	GAS	24590.83	1,348,347	492,013	274.0
SOUTH COAST	2019	OBUS	Aggregated	Aggregatec	GAS	5873.334	259,979	117,514	53.2
SOUTH COAST	2019	SBUS	Aggregated	Aggregatec	GAS	2127.585	88,942	8,510	10.0
SOUTH COAST	2019	UBUS	Aggregated	Aggregatec	GAS	931.1469	87,702	3,725	18.7

vehicle miles per day (All Categories) 416,456,016

17407 1,000 gall per day
17407182 gallons per day

Fleet Avg Miles per gallon 23.9

EMFAC2017 (v1.0.2) Emissions Inventory
Region Type: Air Basin
Region: SOUTH COAST
Calendar Year: 2019
Season: Annual
Vehicle Classification: EMFAC2007 Categories
Units: miles/day for VMT, trips/day for Trips, tons/day for Emissions, 1000 gallons/day for Fuel Consumption

Region	Calendar Y	Vehicle Cat	Model Year	Speed	Fuel	Population	VMT	Trips	Fuel Consumption
SOUTH COAST	2019	HHDT	Aggregated	Aggregated	DSL	92086.456	11035509.7	918238.1	1756.357
SOUTH COAST	2019	LDA	Aggregated	Aggregated	DSL	45875.256	1896328.9	216399.5	42.11914
SOUTH COAST	2019	LDT1	Aggregated	Aggregated	DSL	482.355	11462.4	1688.987	0.524598
SOUTH COAST	2019	LDT2	Aggregated	Aggregated	DSL	9664.5065	445809.6	48035.03	13.63116
SOUTH COAST	2019	LHDT1	Aggregated	Aggregated	DSL	97012.581	4044994.9	1220296	195.5523
SOUTH COAST	2019	LHDT2	Aggregated	Aggregated	DSL	37899.954	1552333.1	476733.7	83.01222
SOUTH COAST	2019	MDV	Aggregated	Aggregated	DSL	23710.3	1023300.7	117204.2	40.71306
SOUTH COAST	2019	MH	Aggregated	Aggregated	DSL	11071.442	110800.3	1107.144	10.75767
SOUTH COAST	2019	MHDT	Aggregated	Aggregated	DSL	114050.54	7128971.3	1136926	714.723
SOUTH COAST	2019	OBUS	Aggregated	Aggregated	DSL	4003.9331	293204.8	39272.79	37.05915
SOUTH COAST	2019	SBUS	Aggregated	Aggregated	DSL	6232.5511	197082.4	71922.78	26.67112
SOUTH COAST	2019	UBUS	Aggregated	Aggregated	DSL	18.196918	1877.4	72.78767	0.296796

Diesel Truck (HHDT, MDV, MHDT) vehicle miles per day	19,187,782	2,512	1,000 gall per day
		2511793	gallons per day
Diesel Truck Fleet Avg Miles per gallon	7.6		

APPENDIX C

CalEEMod Model Annual Printouts

Monitoring Well SA-5 Replacement Project

Orange County, Annual

1.0 Project Characteristics

1.1 Land Usage

Land Uses	Size	Metric	Lot Acreage	Floor Surface Area	Population
Other Asphalt Surfaces	3.12	1000sqft	0.07	3,120.00	0

1.2 Other Project Characteristics

Urbanization	Urban	**Wind Speed (m/s)**	2.2	**Precipitation Freq (Days)**	30
Climate Zone	8			**Operational Year**	2020
Utility Company	Southern California Edison				
CO2 Intensity (lb/MWhr)	702.44	**CH4 Intensity (lb/MWhr)**	0.029	**N2O Intensity (lb/MWhr)**	0.006

1.3 User Entered Comments & Non-Default Data

Project Characteristics -

Land Use - 3.12 TSF Other Asphalt Surfaces

Construction Phase - Construction Phases provided by applicant

Off-road Equipment - 1 Support Truck (Off-Hwy Truck) 4 hr/day 550 hp, 1 Vacuum Truck 5 hr/day 425 hp

Off-road Equipment - 1 Delivery Truck 2 hr/day 550 hp, 1 Forklft 8 hr/day 75hp, 1 Pckup 2hr/day 250 hp

Off-road Equipment - 1 Air Compressor 8hr/day 200hp, 1 Pump Rig 8hr/day 325 hp, 1 Gen 8hr/day 20hp, 1 Pickup 2 hr/day 250 hp

Off-road Equipment - 1 Drill Rig 8 hr/day 550 hp, 1 Mud Tank (Pump) 8 hr/day 75 hp, 1 Forklift 3 hr/day 75 hp, 1 Support Truck 2 hr/day 350 hp, 1 Pickup 2 hr/day 250 hp

Off-road Equipment - 1 Pump Rig 8 hr/day 325 hp, 1 Air Compressor 8 hr/day 200 hp, 1 Pickup 2 hr/day 300 hp

Off-road Equipment - 1 Generator 4 hr/day 20 hp

Off-road Equipment - 1 Pump Rig 8 hr/day 550 hp, 1 Air Compressor 4 hr/day 200 hp, 1 Vacuum Truck 6 hr/day 425 hp, 1 Backhoe 8 hr/day 90 hp, 1 Cement Truck 4 hr/day 350 hp, 1 Pickup 2 hr/day 250 hp

Trips and VMT - Well SA-5 Decommissioning 30 haul round trips 50 miles (60 one way 25 miles), Fencing, Well Drilling & Well Development 2 haul round trips (4 one way),

Table Name	Column Name	Default Value	New Value
tblConstructionPhase	NumDays	100.00	7.00
tblConstructionPhase	NumDays	10.00	5.00
tblConstructionPhase	NumDays	5.00	2.00
tblConstructionPhase	NumDays	1.00	2.00
tblOffRoadEquipment	HorsePower	89.00	75.00
tblOffRoadEquipment	HorsePower	97.00	90.00
tblOffRoadEquipment	HorsePower	78.00	200.00
tblOffRoadEquipment	HorsePower	78.00	200.00
tblOffRoadEquipment	HorsePower	78.00	200.00
tblOffRoadEquipment	HorsePower	221.00	550.00
tblOffRoadEquipment	HorsePower	221.00	550.00
tblOffRoadEquipment	HorsePower	221.00	325.00
tblOffRoadEquipment	HorsePower	221.00	325.00
tblOffRoadEquipment	HorsePower	89.00	75.00
tblOffRoadEquipment	HorsePower	84.00	20.00
tblOffRoadEquipment	HorsePower	84.00	20.00
tblOffRoadEquipment	HorsePower	402.00	425.00
tblOffRoadEquipment	HorsePower	402.00	350.00
tblOffRoadEquipment	HorsePower	402.00	250.00
tblOffRoadEquipment	HorsePower	402.00	550.00
tblOffRoadEquipment	HorsePower	402.00	425.00
tblOffRoadEquipment	HorsePower	402.00	350.00
tblOffRoadEquipment	HorsePower	402.00	250.00
tblOffRoadEquipment	HorsePower	402.00	250.00
tblOffRoadEquipment	HorsePower	402.00	550.00
tblOffRoadEquipment	HorsePower	402.00	250.00

tblOffRoadEquipment	HorsePower	402.00	300.00
tblOffRoadEquipment	HorsePower	84.00	75.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	2.00	1.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	2.00	1.00
tblOffRoadEquipment	UsageHours	6.00	3.00
tblOffRoadEquipment	UsageHours	6.00	8.00
tblTripsAndVMT	HaulingTripLength	20.00	25.00
tblTripsAndVMT	HaulingTripLength	20.00	25.00
tblTripsAndVMT	HaulingTripLength	20.00	25.00
tblTripsAndVMT	HaulingTripLength	20.00	25.00
tblTripsAndVMT	HaulingTripNumber	0.00	60.00
tblTripsAndVMT	HaulingTripNumber	0.00	4.00
tblTripsAndVMT	HaulingTripNumber	0.00	4.00
tblTripsAndVMT	HaulingTripNumber	0.00	4.00
tblTripsAndVMT	HaulingTripNumber	0.00	2.00
tblTripsAndVMT	VendorTripNumber	1.00	2.00
tblTripsAndVMT	WorkerTripNumber	1.00	15.00

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					
2020	0.0149	0.1463	0.1024	4.1000e-004	2.2900e-003	5.2100e-003	7.5000e-003	6.2000e-004	4.9000e-003	5.5100e-003	0.0000	35.9977	35.9977	8.8800e-003	0.0000	36.2198
2021	5.2000e-004	4.1200e-003	3.0500e-003	1.0000e-005	6.0000e-005	1.4000e-004	2.0000e-004	2.0000e-005	1.3000e-004	1.5000e-004	0.0000	1.2395	1.2395	2.6000e-004	0.0000	1.2459
Maximum	**0.0149**	**0.1463**	**0.1024**	**4.1000e-004**	**2.2900e-003**	**5.2100e-003**	**7.5000e-003**	**6.2000e-004**	**4.9000e-003**	**5.5100e-003**	**0.0000**	**35.9977**	**35.9977**	**8.8800e-003**	**0.0000**	**36.2198**

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					
2020	0.0149	0.1463	0.1024	4.1000e-004	2.2900e-003	5.2100e-003	7.5000e-003	6.2000e-004	4.9000e-003	5.5100e-003	0.0000	35.9977	35.9977	8.8800e-003	0.0000	36.2197
2021	5.2000e-004	4.1200e-003	3.0500e-003	1.0000e-005	6.0000e-005	1.4000e-004	2.0000e-004	2.0000e-005	1.3000e-004	1.5000e-004	0.0000	1.2395	1.2395	2.6000e-004	0.0000	1.2459
Maximum	**0.0149**	**0.1463**	**0.1024**	**4.1000e-004**	**2.2900e-003**	**5.2100e-003**	**7.5000e-003**	**6.2000e-004**	**4.9000e-003**	**5.5100e-003**	**0.0000**	**35.9977**	**35.9977**	**8.8800e-003**	**0.0000**	**36.2197**

	ROG	NOx	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	**3-1-2020**	**5-31-2020**	0.1417	0.1417
4	**12-1-2020**	**2-28-2021**	0.0033	0.0033
		Highest	0.1417	0.1417

3.0 Construction Detail

Construction Phase

Phase Number	Phase Name	Phase Type	Start Date	End Date	Num Days Week	Num Days	Phase Description
1	Well SA-5 Decommissioning	Demolition	3/1/2020	3/6/2020	5	5	
2	M58 Fencing/Utility Clearance	Site Preparation	3/9/2020	3/10/2020	5	2	
3	M58 Well Drilling	Building Construction	3/11/2020	3/19/2020	5	7	
4	M58 Well Development	Trenching	3/20/2020	3/27/2020	5	6	
5	M58 Site Cleanup & Vault Installation	Paving	3/30/2020	3/31/2020	5	2	
6	Monitor Well Sampling	Trenching	1/1/2021	1/1/2021	5	1	
7	Monitor Well Development	Trenching	2/1/2021	2/1/2021	5	1	

Acres of Grading (Site Preparation Phase): 0

Acres of Grading (Grading Phase): 0

Acres of Paving: 0.07

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
Well SA-5 Decommissioning	Air Compressors	1	4.00	200	0.48
Well SA-5 Decommissioning	Bore/Drill Rigs	1	8.00	550	0.50
Well SA-5 Decommissioning	Off-Highway Trucks	1	6.00	425	0.38
Well SA-5 Decommissioning	Off-Highway Trucks	1	4.00	350	0.38
Well SA-5 Decommissioning	Off-Highway Trucks	1	2.00	250	0.38
Well SA-5 Decommissioning	Tractors/Loaders/Backhoes	1	8.00	90	0.37
M58 Fencing/Utility Clearance	Off-Highway Trucks	1	4.00	550	0.38
M58 Fencing/Utility Clearance	Off-Highway Trucks	1	5.00	425	0.38
M58 Well Drilling	Bore/Drill Rigs	1	8.00	550	0.50
M58 Well Drilling	Forklifts	1	3.00	75	0.20
M58 Well Drilling	Off-Highway Trucks	1	2.00	350	0.38
M58 Well Drilling	Off-Highway Trucks	1	2.00	250	0.38
M58 Well Drilling	Pumps	1	8.00	75	0.74
M58 Well Development	Air Compressors	1	8.00	200	0.48
M58 Well Development	Bore/Drill Rigs	1	8.00	325	0.50
M58 Well Development	Generator Sets	1	8.00	20	0.74
M58 Well Development	Off-Highway Trucks	1	2.00	250	0.38
M58 Site Cleanup & Vault Installation	Forklifts	1	8.00	75	0.20
M58 Site Cleanup & Vault Installation	Off-Highway Trucks	1	2.00	550	0.38
M58 Site Cleanup & Vault Installation	Off-Highway Trucks	1	2.00	250	0.38
Monitor Well Sampling	Generator Sets	1	4.00	20	0.74
Monitor Well Development	Air Compressors	1	8.00	200	0.48
Monitor Well Development	Bore/Drill Rigs	1	8.00	325	0.50
Monitor Well Development	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
Well SA-5 Decommissioning	6	15.00	0.00	60.00	14.70	6.90	25.00	LD_Mix	HDT_Mix	HHDT
M58 Fencing/Utility Clearance	2	5.00	0.00	4.00	14.70	6.90	25.00	LD_Mix	HDT_Mix	HHDT
M58 Well Drilling	5	15.00	2.00	4.00	14.70	6.90	25.00	LD_Mix	HDT_Mix	HHDT
M58 Well Development	4	10.00	0.00	4.00	14.70	6.90	25.00	LD_Mix	HDT_Mix	HHDT
M58 Site Cleanup & Vault Installation	3	8.00	0.00	2.00	14.70	6.90	20.00	LD_Mix	HDT_Mix	HHDT
Monitor Well Sampling	1	3.00	0.00	0.00	14.70	6.90	20.00	LD_Mix	HDT_Mix	HHDT
Monitor Well Development	3	8.00	0.00	0.00	14.70	6.90	20.00	LD_Mix	HDT_Mix	HHDT

3.1 Mitigation Measures Construction

3.2 Well SA-5 Decommissioning - 2020

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio-CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Off-Road	4.7400e-003	0.0464	0.0326	1.2000e-004		1.7600e-003	1.7600e-003		1.6300e-003	1.6300e-003	0.0000	10.9428	10.9428	3.2400e-003	0.0000	11.0237
Total	**4.7400e-003**	**0.0464**	**0.0326**	**1.2000e-004**		**1.7600e-003**	**1.7600e-003**		**1.6300e-003**	**1.6300e-003**	**0.0000**	**10.9428**	**10.9428**	**3.2400e-003**	**0.0000**	**11.0237**

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	2.7000e-004	9.9600e-003	2.5600e-003	3.0000e-005	6.4000e-004	3.0000e-005	6.8000e-004	1.8000e-004	3.0000e-005	2.1000e-004	0.0000	2.8184	2.8184	2.9000e-004	0.0000	2.8257
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	1.5000e-004	1.0000e-004	1.1600e-003	0.0000	4.1000e-004	0.0000	4.1000e-004	1.1000e-004	0.0000	1.1000e-004	0.0000	0.3563	0.3563	1.0000e-005	0.0000	0.3565
Total	**4.2000e-004**	**0.0101**	**3.7200e-003**	**3.0000e-005**	**1.0500e-003**	**3.0000e-005**	**1.0900e-003**	**2.9000e-004**	**3.0000e-005**	**3.2000e-004**	**0.0000**	**3.1747**	**3.1747**	**3.0000e-004**	**0.0000**	**3.1822**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio-CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Off-Road	4.7400e-003	0.0464	0.0326	1.2000e-004		1.7600e-003	1.7600e-003		1.6300e-003	1.6300e-003	0.0000	10.9428	10.9428	3.2400e-003	0.0000	11.0237
Total	**4.7400e-003**	**0.0464**	**0.0326**	**1.2000e-004**		**1.7600e-003**	**1.7600e-003**		**1.6300e-003**	**1.6300e-003**	**0.0000**	**10.9428**	**10.9428**	**3.2400e-003**	**0.0000**	**11.0237**

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	2.7000e-004	9.9600e-003	2.5600e-003	3.0000e-005	6.4000e-004	3.0000e-005	6.8000e-004	1.8000e-004	3.0000e-005	2.1000e-004	0.0000	2.8184	2.8184	2.9000e-004	0.0000	2.8257
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	1.5000e-004	1.0000e-004	1.1600e-003	0.0000	4.1000e-004	0.0000	4.1000e-004	1.1000e-004	0.0000	1.1000e-004	0.0000	0.3563	0.3563	1.0000e-005	0.0000	0.3565
Total	**4.2000e-004**	**0.0101**	**3.7200e-003**	**3.0000e-005**	**1.0500e-003**	**3.0000e-005**	**1.0900e-003**	**2.9000e-004**	**3.0000e-005**	**3.2000e-004**	**0.0000**	**3.1747**	**3.1747**	**3.0000e-004**	**0.0000**	**3.1822**

3.3 M58 Fencing/Utility Clearance - 2020

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio-CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Fugitive Dust					0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	1.0100e-003	9.8100e-003	6.2500e-003	2.0000e-005		3.7000e-004	3.7000e-004		3.4000e-004	3.4000e-004	0.0000	1.5569	1.5569	5.0000e-004	0.0000	1.5695
Total	**1.0100e-003**	**9.8100e-003**	**6.2500e-003**	**2.0000e-005**	**0.0000**	**3.7000e-004**	**3.7000e-004**	**0.0000**	**3.4000e-004**	**3.4000e-004**	**0.0000**	**1.5569**	**1.5569**	**5.0000e-004**	**0.0000**	**1.5695**

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	2.0000e-005	6.6000e-004	1.7000e-004	0.0000	4.0000e-005	0.0000	5.0000e-005	1.0000e-005	0.0000	1.0000e-005	0.0000	0.1879	0.1879	2.0000e-005	0.0000	0.1884
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	2.0000e-005	1.0000e-005	1.5000e-004	0.0000	5.0000e-005	0.0000	6.0000e-005	1.0000e-005	0.0000	1.0000e-005	0.0000	0.0475	0.0475	0.0000	0.0000	0.0475
Total	**4.0000e-005**	**6.7000e-004**	**3.2000e-004**	**0.0000**	**9.0000e-005**	**0.0000**	**1.1000e-004**	**2.0000e-005**	**0.0000**	**2.0000e-005**	**0.0000**	**0.2354**	**0.2354**	**2.0000e-005**	**0.0000**	**0.2359**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio-CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Fugitive Dust					0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	1.0100e-003	9.8100e-003	6.2500e-003	2.0000e-005		3.7000e-004	3.7000e-004		3.4000e-004	3.4000e-004	0.0000	1.5569	1.5569	5.0000e-004	0.0000	1.5695
Total	**1.0100e-003**	**9.8100e-003**	**6.2500e-003**	**2.0000e-005**	**0.0000**	**3.7000e-004**	**3.7000e-004**	**0.0000**	**3.4000e-004**	**3.4000e-004**	**0.0000**	**1.5569**	**1.5569**	**5.0000e-004**	**0.0000**	**1.5695**

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	2.0000e-005	6.6000e-004	1.7000e-004	0.0000	4.0000e-005	0.0000	5.0000e-005	1.0000e-005	0.0000	1.0000e-005	0.0000	0.1879	0.1879	2.0000e-005	0.0000	0.1884
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	2.0000e-005	1.0000e-005	1.5000e-004	0.0000	5.0000e-005	0.0000	6.0000e-005	1.0000e-005	0.0000	1.0000e-005	0.0000	0.0475	0.0475	0.0000	0.0000	0.0475
Total	**4.0000e-005**	**6.7000e-004**	**3.2000e-004**	**0.0000**	**9.0000e-005**	**0.0000**	**1.1000e-004**	**2.0000e-005**	**0.0000**	**2.0000e-005**	**0.0000**	**0.2354**	**0.2354**	**2.0000e-005**	**0.0000**	**0.2359**

3.4 M58 Well Drilling - 2020

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio-CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Off-Road	4.2300e-003	0.0419	0.0345	1.2000e-004		1.7700e-003	1.7700e-003		1.6800e-003	1.6800e-003	0.0000	10.7183	10.7183	3.0000e-003	0.0000	10.7933
Total	**4.2300e-003**	**0.0419**	**0.0345**	**1.2000e-004**		**1.7700e-003**	**1.7700e-003**		**1.6800e-003**	**1.6800e-003**	**0.0000**	**10.7183**	**10.7183**	**3.0000e-003**	**0.0000**	**10.7933**

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	2.0000e-005	6.6000e-004	1.7000e-004	0.0000	4.0000e-005	0.0000	5.0000e-005	1.0000e-005	0.0000	1.0000e-005	0.0000	0.1879	0.1879	2.0000e-005	0.0000	0.1884
Vendor	2.0000e-005	7.4000e-004	2.0000e-004	0.0000	4.0000e-005	0.0000	5.0000e-005	1.0000e-005	0.0000	2.0000e-005	0.0000	0.1704	0.1704	1.0000e-005	0.0000	0.1708
Worker	2.0000e-004	1.4000e-004	1.6300e-003	1.0000e-005	5.8000e-004	0.0000	5.8000e-004	1.5000e-004	0.0000	1.6000e-004	0.0000	0.4988	0.4988	1.0000e-005	0.0000	0.4991
Total	**2.4000e-004**	**1.5400e-003**	**2.0000e-003**	**1.0000e-005**	**6.6000e-004**	**0.0000**	**6.8000e-004**	**1.7000e-004**	**0.0000**	**1.9000e-004**	**0.0000**	**0.8571**	**0.8571**	**4.0000e-005**	**0.0000**	**0.8583**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio-CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Off-Road	4.2300e-003	0.0419	0.0345	1.2000e-004		1.7700e-003	1.7700e-003		1.6800e-003	1.6800e-003	0.0000	10.7183	10.7183	3.0000e-003	0.0000	10.7933
Total	**4.2300e-003**	**0.0419**	**0.0345**	**1.2000e-004**		**1.7700e-003**	**1.7700e-003**		**1.6800e-003**	**1.6800e-003**	**0.0000**	**10.7183**	**10.7183**	**3.0000e-003**	**0.0000**	**10.7933**

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	2.0000e-005	6.6000e-004	1.7000e-004	0.0000	4.0000e-005	0.0000	5.0000e-005	1.0000e-005	0.0000	1.0000e-005	0.0000	0.1879	0.1879	2.0000e-005	0.0000	0.1884
Vendor	2.0000e-005	7.4000e-004	2.0000e-004	0.0000	4.0000e-005	0.0000	5.0000e-005	1.0000e-005	0.0000	2.0000e-005	0.0000	0.1704	0.1704	1.0000e-005	0.0000	0.1708
Worker	2.0000e-004	1.4000e-004	1.6300e-003	1.0000e-005	5.8000e-004	0.0000	5.8000e-004	1.5000e-004	0.0000	1.6000e-004	0.0000	0.4988	0.4988	1.0000e-005	0.0000	0.4991
Total	**2.4000e-004**	**1.5400e-003**	**2.0000e-003**	**1.0000e-005**	**6.6000e-004**	**0.0000**	**6.8000e-004**	**1.7000e-004**	**0.0000**	**1.9000e-004**	**0.0000**	**0.8571**	**0.8571**	**4.0000e-005**	**0.0000**	**0.8583**

3.5 M58 Well Development - 2020

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	3.4400e-003	0.0299	0.0181	8.0000e-005		1.0200e-003	1.0200e-003		9.8000e-004	9.8000e-004	0.0000	7.1996	7.1996	1.5200e-003	0.0000	7.2376
Total	**3.4400e-003**	**0.0299**	**0.0181**	**8.0000e-005**		**1.0200e-003**	**1.0200e-003**		**9.8000e-004**	**9.8000e-004**	**0.0000**	**7.1996**	**7.1996**	**1.5200e-003**	**0.0000**	**7.2376**

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	2.0000e-005	6.6000e-004	1.7000e-004	0.0000	4.0000e-005	0.0000	5.0000e-005	1.0000e-005	0.0000	1.0000e-005	0.0000	0.1879	0.1879	2.0000e-005	0.0000	0.1884
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	1.2000e-004	8.0000e-005	9.3000e-004	0.0000	3.3000e-004	0.0000	3.3000e-004	9.0000e-005	0.0000	9.0000e-005	0.0000	0.2851	0.2851	1.0000e-005	0.0000	0.2852
Total	**1.4000e-004**	**7.4000e-004**	**1.1000e-003**	**0.0000**	**3.7000e-004**	**0.0000**	**3.8000e-004**	**1.0000e-004**	**0.0000**	**1.0000e-004**	**0.0000**	**0.4730**	**0.4730**	**3.0000e-005**	**0.0000**	**0.4736**

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	3.4400e-003	0.0299	0.0181	8.0000e-005		1.0200e-003	1.0200e-003		9.8000e-004	9.8000e-004	0.0000	7.1996	7.1996	1.5200e-003	0.0000	7.2376
Total	**3.4400e-003**	**0.0299**	**0.0181**	**8.0000e-005**		**1.0200e-003**	**1.0200e-003**		**9.8000e-004**	**9.8000e-004**	**0.0000**	**7.1996**	**7.1996**	**1.5200e-003**	**0.0000**	**7.2376**

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	2.0000e-005	6.6000e-004	1.7000e-004	0.0000	4.0000e-005	0.0000	5.0000e-005	1.0000e-005	0.0000	1.0000e-005	0.0000	0.1879	0.1879	2.0000e-005	0.0000	0.1884
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	1.2000e-004	8.0000e-005	9.3000e-004	0.0000	3.3000e-004	0.0000	3.3000e-004	9.0000e-005	0.0000	9.0000e-005	0.0000	0.2851	0.2851	1.0000e-005	0.0000	0.2852
Total	**1.4000e-004**	**7.4000e-004**	**1.1000e-003**	**0.0000**	**3.7000e-004**	**0.0000**	**3.8000e-004**	**1.0000e-004**	**0.0000**	**1.0000e-004**	**0.0000**	**0.4730**	**0.4730**	**3.0000e-005**	**0.0000**	**0.4736**

3.6 M58 Site Cleanup & Vault Installation - 2020

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	5.2000e-004	4.9600e-003	3.4500e-003	1.0000e-005		2.3000e-004	2.3000e-004		2.1000e-004	2.1000e-004	0.0000	0.6871	0.6871	2.2000e-004	0.0000	0.6926
Paving	9.0000e-005					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Total	**6.1000e-004**	**4.9600e-003**	**3.4500e-003**	**1.0000e-005**		**2.3000e-004**	**2.3000e-004**		**2.1000e-004**	**2.1000e-004**	**0.0000**	**0.6871**	**0.6871**	**2.2000e-004**	**0.0000**	**0.6926**

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio-CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	1.0000e-005	2.8000e-004	7.0000e-005	0.0000	2.0000e-005	0.0000	2.0000e-005	0.0000	0.0000	1.0000e-005	0.0000	0.0769	0.0769	1.0000e-005	0.0000	0.0771
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	3.0000e-005	2.0000e-005	2.5000e-004	0.0000	9.0000e-005	0.0000	9.0000e-005	2.0000e-005	0.0000	2.0000e-005	0.0000	0.0760	0.0760	0.0000	0.0000	0.0761
Total	**4.0000e-005**	**3.0000e-004**	**3.2000e-004**	**0.0000**	**1.1000e-004**	**0.0000**	**1.1000e-004**	**2.0000e-005**	**0.0000**	**3.0000e-005**	**0.0000**	**0.1529**	**0.1529**	**1.0000e-005**	**0.0000**	**0.1532**

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	5.2000e-004	4.9600e-003	3.4500e-003	1.0000e-005		2.3000e-004	2.3000e-004		2.1000e-004	2.1000e-004	0.0000	0.6871	0.6871	2.2000e-004	0.0000	0.6926
Paving	9.0000e-005					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Total	**6.1000e-004**	**4.9600e-003**	**3.4500e-003**	**1.0000e-005**		**2.3000e-004**	**2.3000e-004**		**2.1000e-004**	**2.1000e-004**	**0.0000**	**0.6871**	**0.6871**	**2.2000e-004**	**0.0000**	**0.6926**

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio-CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	1.0000e-005	2.8000e-004	7.0000e-005	0.0000	2.0000e-005	0.0000	2.0000e-005	0.0000	0.0000	1.0000e-005	0.0000	0.0769	0.0769	1.0000e-005	0.0000	0.0771
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	3.0000e-005	2.0000e-005	2.5000e-004	0.0000	9.0000e-005	0.0000	9.0000e-005	2.0000e-005	0.0000	2.0000e-005	0.0000	0.0760	0.0760	0.0000	0.0000	0.0761
Total	**4.0000e-005**	**3.0000e-004**	**3.2000e-004**	**0.0000**	**1.1000e-004**	**0.0000**	**1.1000e-004**	**2.0000e-005**	**0.0000**	**3.0000e-005**	**0.0000**	**0.1529**	**0.1529**	**1.0000e-005**	**0.0000**	**0.1532**

3.7 Monitor Well Sampling - 2021

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio-CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Off-Road	5.0000e-005	2.9000e-004	1.6000e-004	0.0000		1.0000e-005	1.0000e-005		1.0000e-005	1.0000e-005	0.0000	0.0336	0.0336	0.0000	0.0000	0.0337
Total	**5.0000e-005**	**2.9000e-004**	**1.6000e-004**	**0.0000**		**1.0000e-005**	**1.0000e-005**		**1.0000e-005**	**1.0000e-005**	**0.0000**	**0.0336**	**0.0336**	**0.0000**	**0.0000**	**0.0337**

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio-CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	1.0000e-005	0.0000	4.0000e-005	0.0000	2.0000e-005	0.0000	2.0000e-005	0.0000	0.0000	0.0000	0.0000	0.0138	0.0138	0.0000	0.0000	0.0138
Total	**1.0000e-005**	**0.0000**	**4.0000e-005**	**0.0000**	**2.0000e-005**	**0.0000**	**2.0000e-005**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0138**	**0.0138**	**0.0000**	**0.0000**	**0.0138**

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	5.0000e-005	2.9000e-004	1.6000e-004	0.0000		1.0000e-005	1.0000e-005		1.0000e-005	1.0000e-005	0.0000	0.0336	0.0336	0.0000	0.0000	0.0337
Total	**5.0000e-005**	**2.9000e-004**	**1.6000e-004**	**0.0000**		**1.0000e-005**	**1.0000e-005**		**1.0000e-005**	**1.0000e-005**	**0.0000**	**0.0336**	**0.0336**	**0.0000**	**0.0000**	**0.0337**

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio-CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	1.0000e-005	0.0000	4.0000e-005	0.0000	2.0000e-005	0.0000	2.0000e-005	0.0000	0.0000	0.0000	0.0000	0.0138	0.0138	0.0000	0.0000	0.0138
Total	**1.0000e-005**	**0.0000**	**4.0000e-005**	**0.0000**	**2.0000e-005**	**0.0000**	**2.0000e-005**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0138**	**0.0138**	**0.0000**	**0.0000**	**0.0138**

3.8 Monitor Well Development - 2021

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio-CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Off-Road	4.5000e-004	3.8100e-003	2.7300e-003	1.0000e-005		1.3000e-004	1.3000e-004		1.2000e-004	1.2000e-004	0.0000	1.1554	1.1554	2.5000e-004	0.0000	1.1617
Total	**4.5000e-004**	**3.8100e-003**	**2.7300e-003**	**1.0000e-005**		**1.3000e-004**	**1.3000e-004**		**1.2000e-004**	**1.2000e-004**	**0.0000**	**1.1554**	**1.1554**	**2.5000e-004**	**0.0000**	**1.1617**

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio-CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	1.0000e-005	1.0000e-005	1.1000e-004	0.0000	4.0000e-005	0.0000	4.0000e-005	1.0000e-005	0.0000	1.0000e-005	0.0000	0.0367	0.0367	0.0000	0.0000	0.0367
Total	**1.0000e-005**	**1.0000e-005**	**1.1000e-004**	**0.0000**	**4.0000e-005**	**0.0000**	**4.0000e-005**	**1.0000e-005**	**0.0000**	**1.0000e-005**	**0.0000**	**0.0367**	**0.0367**	**0.0000**	**0.0000**	**0.0367**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio-CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Off-Road	4.5000e-004	3.8100e-003	2.7300e-003	1.0000e-005		1.3000e-004	1.3000e-004		1.2000e-004	1.2000e-004	0.0000	1.1554	1.1554	2.5000e-004	0.0000	1.1617
Total	**4.5000e-004**	**3.8100e-003**	**2.7300e-003**	**1.0000e-005**		**1.3000e-004**	**1.3000e-004**		**1.2000e-004**	**1.2000e-004**	**0.0000**	**1.1554**	**1.1554**	**2.5000e-004**	**0.0000**	**1.1617**

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio-CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	1.0000e-005	1.0000e-005	1.1000e-004	0.0000	4.0000e-005	0.0000	4.0000e-005	1.0000e-005	0.0000	1.0000e-005	0.0000	0.0367	0.0367	0.0000	0.0000	0.0367
Total	**1.0000e-005**	**1.0000e-005**	**1.1000e-004**	**0.0000**	**4.0000e-005**	**0.0000**	**4.0000e-005**	**1.0000e-005**	**0.0000**	**1.0000e-005**	**0.0000**	**0.0367**	**0.0367**	**0.0000**	**0.0000**	**0.0367**