4.2 AIR QUALITY

The *Air Quality and Greenhouse Gas Technical Report*, dated September 2017, prepared by Yorke Engineering, LLC, has been prepared in support of the Draft Environmental Impact Report (Draft EIR) for the proposed Inglewood Oil Field Specific Plan (Project). The Technical Report can be found in Appendix C-1 of this Draft EIR. This Technical Report is the primary source of the information and analyses presented in this section, which addresses the potential environmental impacts associated with development of the Maximum Buildout Scenario, as described in Section 3.0, Project Description, of the Draft EIR. Direct, indirect, and cumulative impacts are addressed for each threshold criteria below, and growth-inducing impacts are described in Sections 6.0, CEQA-Mandated Analyses, of this Draft EIR.

In support of the analyses in this section and in Section 5.0, Project Alternatives of this Draft EIR, the *Feasibility Assessment of Air Quality Performance Standards for the Inglewood Oil Field Project for Culver City* dated September 2017, prepared by Yorke Engineering, LLC, is included in Appendix C-2 of this Draft EIR.

Throughout this Draft EIR, the City's portion of the Inglewood Oil Field (77.8-acres) is referred to as the "Project Site" or the "City IOF." The entire surface boundary limits of the Inglewood Oil Field, including lands within both the City and County, is referred to as "Inglewood Oil Field." The portion of the Inglewood Oil Field (IOF) that is only within the jurisdiction of the County of Los Angeles is referred to as the "County IOF."

The Specific Plan's Drilling Regulations contains guidance on an extensive list of provisions to help reduce air quality, public health, and climate change impacts. These include emission offsets; development of an Odor Minimization Plan; air monitoring for hydrogen sulfide (H_2S) and total hydrocarbon vapors; a portable flare for drilling; oil tank pressure monitoring and venting; odor suppressants for drilling and redrilling operations; closed systems for produced oil and water; requirements for off-road diesel construction equipment engines; requirements for drill rig engines; drilling and redrilling setbacks that require drilling to be at least 400 feet from developed areas and at least 75 feet from any pubic roadway; slant drilling requirements for deep-zone and mid-zone wells; a Fugitive Dust Control Plan; inspection and maintenance program information requirements; and greenhouse gas recordkeeping and cap and trade program information.

4.2.1 METHODOLOGY

The proposed Project would emit air pollutants from both the periodic construction activities and long-term operations. "Construction" activities are considered to be discrete events of short-duration that may or may not occur in any given year, such as site clearing and grading, well drilling and redrilling, well completion, well stimulation treatments, well rework, and the operation of work trucks. "Operational" activities are limited to the subsequent long-term operation of the wells, and fall into two general categories: 1) worker commutes, and 2) fugitive emissions from piping components, such as valves, flanges, fittings, and pump or compressor seals. Construction activities could occur every year for the life of the Project and would occur concurrent with operations. Therefore, rather than use the construction threshold for construction activities and the operations threshold for operating activities, the South Coast Air Quality Management District (SCAQMD) have suggested the use of a single threshold for concurrent construction and operations. Because a construction activity that takes place routinely over a period of years resembles operations, and because the SCAQMD's CEQA significance threshold for operation is lower than the construction threshold (making it more protective of public health), the construction and operations emissions are summed in the analyses below for comparison to the SCAQMD's significance threshold for operations to determine significance.

The Specific Plan's Drilling Regulations allow for the construction of two new oil wells per year, with the construction of a third well upon approval. A total of up to 30 new wells are allowed to be drilled or redrilled through 2032, and if the maximum number of wells are drilled each year, the 30 new wells could be completed within 11 years. The Specific Plan mandates that no more than two rigs used for well reworking can be present on the City IOF at any one time, but does not limit the number of rework events per year. The Specific Plan does not limit the number of well stimulation events that can occur within one year.

In order to analyze the impacts of the Specific Plan, the Maximum Buildout Scenario was developed that sets forth a combination of activities that conservatively represents the potential impacts of City IOF development in the context of the requirements and restrictions set forth in the Specific Plan. Construction, maintenance, and operational activities will likely be occurring at the same time; therefore, this analysis shows the results of emissions from construction activities, operational activities, as well as the overlap of these activities.

The Maximum Buildout Scenario assumes the following activities would occur over the course of one year: drilling a maximum of three new oil wells; three well rework events; one well stimulation (fracking) event, and general operations of the Oil Field. For the peak day activities, this analysis assumes the following: one drill rig in operation for a new well; other site preparation activities (e.g., site grading, mobilization, demobilization) at two other separate well sites; one well stimulation (fracking) event; one well workover event; and general operations of the Oil Field. Emission estimates that are assumed for the City IOF activities, including activity type, equipment types, number of devices, load factors, emissions factors, and other factors, are provided in Appendix C-1 of this Draft EIR.

As discussed in Section 3.0, Project Description, there are different types of well stimulation treatments, as defined by the Department of Conservation's Division of Oil, Gas, and Geothermal Resources (DOGGR), including hydraulic fracturing and high-rate gravel packing (i.e. gravel packing that exceeds the formation fracture gradient). The materials for a gravel pack are pumped at lower pressures than hydraulic fracturing, using less slurry, proppants, and other fracking chemicals. A gravel pack will influence a zone within 100 to 250 feet of the pack, while hydraulic fracturing can affect an area up to 5,000 feet (Yorke 2017a). Because lower pressures are required for gravel packing than for hydraulic fracturing, lower pump horsepower is required, leading to lower air emissions. As such, hydraulic fracturing was assumed for this analysis because it would result in higher emissions than gravel packing, and therefore constitutes the more conservative assessment scenario.

Equipment and Vehicle Emissions

Off-road equipment, including construction equipment and well drilling and production equipment, and on-road vehicle criteria pollutant emissions were manually calculated on detailed spreadsheets included as Appendix A to the Yorke Engineering Air Quality and Greenhouse Gas Technical Report, which is Appendix C-1 of this EIR. The assumptions used for the calculations are detailed in the Yorke spreadsheets and are primarily based on the Maximum Buildout Scenario described in Section 3.2 of this Draft EIR. Emission factors for off-road equipment are taken from the California Emissions Estimator Model (CalEEMod) technical appendix tables of OFFROAD Equipment Emission Factors and OFFROAD Emission Factor Based on Engine Tier. CalEEMod is a computer program that was developed by California air districts and is used to calculate anticipated emissions associated with land development projects in California. On-road vehicle emission factors are from the California Air Resources Board's (CARB) EMFAC 2011 model. The EMFAC emissions model is developed and used by CARB to assess emissions from on-road vehicles including cars, trucks, and buses in California.

Air Dispersion Modeling

Air dispersion modeling was conducted by Yorke Engineering to determine the dispersion characteristics and down-wind ground-level concentrations of pollutants in the vicinity of the Project Site. The dispersion modeling methodology is based on generally accepted modeling practices of the California State Office of Environmental Health Hazard Assessment (OEHHA). The dispersion model used for this Health Risk Assessment (HRA) was AERMOD Version 15181, with the Lakes Environmental Software implementation/user interface, AERMOD View™ Version 9.0.0.

Health Risk Assessment

The Health Risk Assessment (HRA) was prepared by Yorke Engineering to quantify the theoretical cancer and non-cancer health risk impacts from construction and operation of the Project' Maximum Buildout Scenario. Once the down-wind concentration of the pollutants was determined using AERMOD, an exposure assessment was prepared using Hotspots Analysis and Reporting Program (HARP), Version 2, to determine the health impacts to nearby residential and off-site worker receptors. HARP takes into account various parameters that impact the health risk evaluation, including: chemical-specific toxicity data such as cancer potency, exposure routes, exposure duration, age sensitivity, and breathing rates.

4.2.2 ENVIRONMENTAL SETTING

Air Quality

The Project Site is within the jurisdiction of the South Coast Air Quality Management District (SCAQMD or District), which encompasses an area of 10,473 square miles, consisting of the 4-county South Coast Air Basin (SoCAB); the Riverside County portions of the Salton Sea Air Basin; and the Mojave Desert Air Basin. The SoCAB, which is a subarea of the SCAQMD's jurisdiction, is bound by the Pacific Ocean to the west and the San Gabriel, San Bernardino, and San Jacinto Mountains to the north and east. The 6,745-square-mile SoCAB includes all of Orange County and the non-desert portions of Los Angeles, Riverside, and San Bernardino Counties (Yorke 2017a).

Meteorological Conditions

The climate in the SoCAB is characterized by winter rainfall and hot summers tempered by cool ocean breezes. During the summer months, a warm air mass frequently descends over the cool, moist marine layer produced by the interaction between the ocean's surface and the lowest layer of the atmosphere. The warm upper layer forms a cap or "inversion" over the cool marine layer and inhibits the pollutants released into the marine layer from dispersing upward. In addition, light winds during the summer further limit dispersion. Finally, sunlight triggers the photochemical reactions that produce ozone, and this region experiences more days of sunlight than many other major urban areas in the nation (Yorke 2017a).

Temperature and Rainfall

Temperature affects air quality in the region in several ways. Local winds are the result of temperature differences between the relatively stable ocean air and the uneven heating and cooling that takes place in the SoCAB due to a wide variation in topography. Temperature also has a major effect on vertical mixing height and affects chemical and photochemical reaction times. The annual average temperatures vary throughout the SoCAB from the low 40s to the high

90s. The coastal areas show little variation in temperature on a year-round basis due to the moderating effect of the marine influence. On average, September is the warmest month, while December and January are typically the coolest months of the year. Annual rainfall varies from a low of under 4 inches to a high of over 20 inches. No snow, ice, or hail was reported between 2010 and 2014 (Yorke 2017a).

Table 4.2-1 summarizes historical meteorological data readings from 2010 through 2014 taken at the National Oceanic and Atmospheric Administration (NOAA) weather station closest to the site (i.e., the weather station at the Los Angeles International Airport).

TABLE 4.2-1
HISTORICAL METEOROLOGICAL DATA

Climatologic Element	2011	2012	2013	2014	2015
Highest monthly mean temperature (month)	67.6°F (Aug.)	72.3°F (Aug., Sept.)	70.2°F (Sept.)	73°F (Sept.)	75.1°F (Sept.)
Highest temperature (date)	92°F (Oct.)	98°F (Sept. 15)	92°F (Aug. 30)	95°F (Oct. 3)	99°F (Oct. 10)
Lowest monthly mean temperature (month)	55°F (Dec.)	56.6°F (Dec.)	56.1°F (Feb.)	58.2°F (Dec.)	57.3°F (Dec.)
Lowest temperature (date)	40°F (Dec. 23)	41°F (Dec. 31)	38°F (Jan. 15)	40°F (Dec. 27)	36°F (Jan. 1)
Annual average temperature	61.9°F	63.4°F	63.8°F	65.9°F	65.5°F
Total precipitation (in inches)	9.87"	8.89"	3.65"	8.3"	5.96"
Number of days with precipitation	28	27	14	23	32

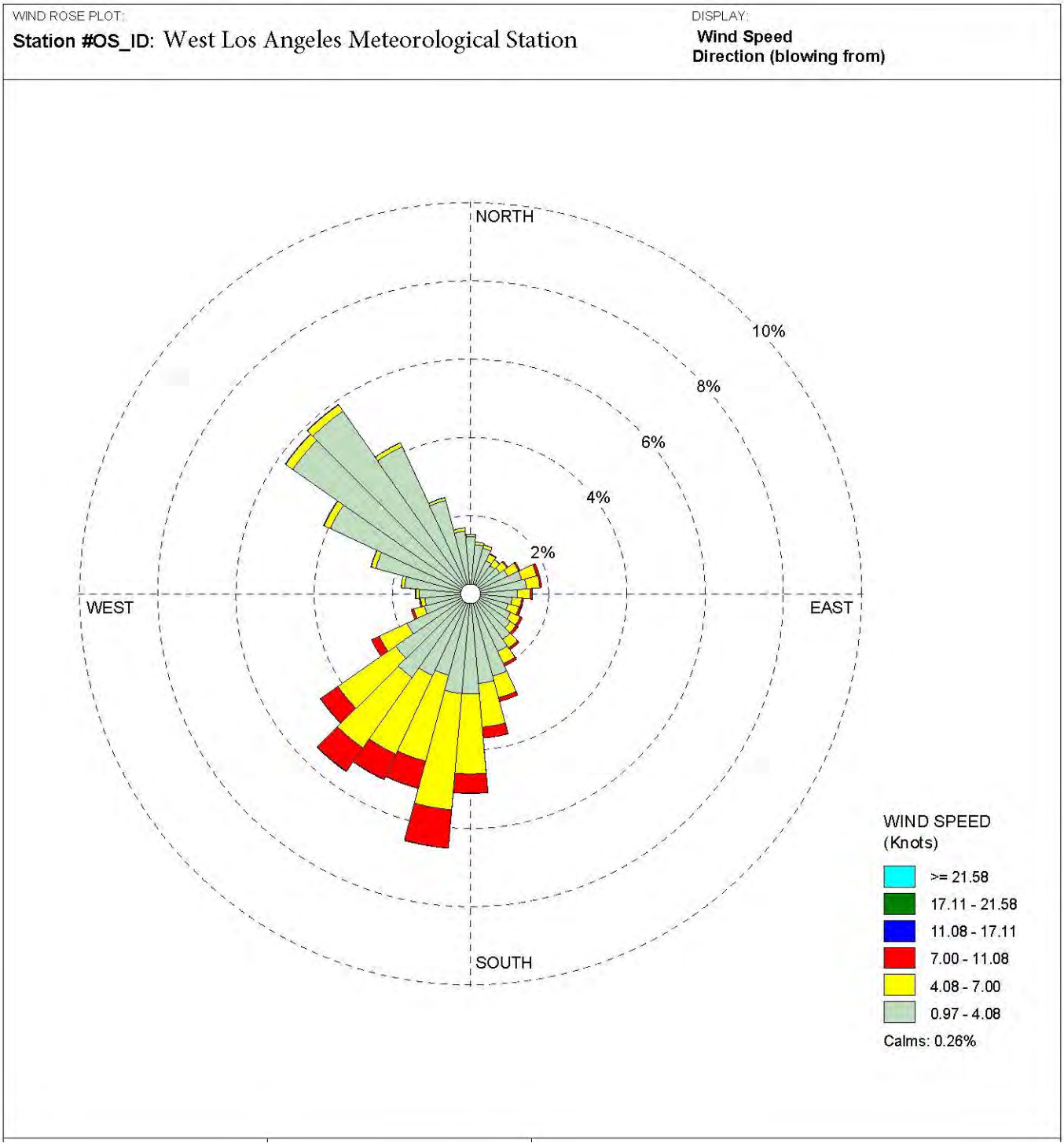
°F: degrees Fahrenheit
Source: Yorke 2017a

Wind Flow Patterns

Wind flow patterns play an important role in the transport of air pollutants in the SoCAB. The winds flow from offshore and blow eastward during the daytime hours. In summer, the sea breeze starts in mid-morning, peaks at 10 to 15 miles per hour (mph), and subsides after sundown. There is a calm period until about midnight. At that time, the land breeze begins from the northwest, typically becoming calm again about sunrise. In winter, the same general wind flow patterns exist except that summer wind speeds average slightly higher than winter wind speeds. This pattern of low wind speeds is a major factor that allows the pollutants to accumulate in the SoCAB. The normal wind patterns in the SoCAB are interrupted by the unstable air accompanying the passing storms during the winter and infrequent strong northeasterly Santa Ana wind flows from the mountains and deserts north of the SoCAB. Exhibit 4.2-1, West Los Angeles Meteorological Station Windrose, depicts the wind flow patterns at the nearest monitoring station, which is expected to be representative of the City IOF (Yorke 2017a).

Ambient Air Quality Standards and Health Effects

The SCAQMD is responsible for ensuring that California and National Ambient Air Quality Standards (CAAQS and NAAQS, respectively) are achieved and maintained in its jurisdiction. Health-based air quality standards have been established by California and the federal government for the following criteria air pollutants: ozone (O_3), carbon monoxide (CO), nitrogen dioxide (NO_2), particulate matter with an aerodynamic diameter of less than 10 microns (PM10), particulate matter with an aerodynamic diameter of less than 2.5 microns (PM2.5), sulfur dioxide (SO_2), and lead. These standards were established to protect sensitive receptors within a margin



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West Los Angeles Meteorological Station Windrose

Exhibit 4.2-1

Inglewood Oil Field Specific Plan Project

PSOMAS

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of safety from adverse health impacts due to exposure to air pollution. In most cases, the California standards are more stringent than the federal standards. California has also established standards for sulfate, visibility, H_2S, and vinyl chloride. The CAAQS and NAAQS for each of these pollutants and their effects on health are summarized in Table 4.2-2.

TABLE 4.2-2
FEDERAL AND STATE AMBIENT AIR QUALITY STANDARDS

Air Pollutant	State Standard (concentration/ averaging time)	Federal Primary Standard (concentration/ averaging time)	Most Relevant Health Effects
Ozone	0.09 ppm (1 hr); 0.070 ppm (8 hr)	0.070 ppm (8 hr/2015); 0.075 ppm (8 hr/2008); 0.08 ppm (8 hr/1997)	(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; (f) Property damage.
Carbon Monoxide	9.0 ppm (8 hr); 20 ppm (1 hr)	9 ppm (8 hr); 35 ppm (1 hr)	(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; (d) Possible increased risk to fetuses.
Nitrogen Dioxide	0.18 ppm (1 hr); 0.030 ppm (annual)	100 ppb (1 hr); 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; (c) Contribution to atmospheric discoloration.
Sulfur Dioxide	0.25 ppm (1 hr); 0.04 ppm (24 hr)	75 ppb (1 hr)	Bronchoconstriction accompanied by symptoms that may include wheezing, shortness of breath, and chest tightness during exercise or physical activity in persons with asthma.
Suspended Particulate Matter (PM10)	20 µg/m^3 (annual arithmetic mean); 50 µg/m^3 (24 hr)	150 µg/m^3 (24 hr)	(a) Exacerbation of symptoms in sensitive patients with respiratory or cardiovascular disease; (b) Decline in pulmonary function or growth in children; (c) Increased risk of premature death.
Suspended Particulate Matter (PM2.5)	12 µg/m^3 (annual arithmetic mean)	35 µg/m^3 (24 hr); 15 µg/m^3 (annual)	
Sulfates-PM10 (SO_4^{2-})	25 µg/m^3 (24 hr)	No Federal Standard	(a) Decrease in lung function; (b) Aggravation of asthmatic symptoms; (c) Aggravation of cardio-pulmonary disease; (d) Vegetation damage; (e) Degradation of visibility; (f) Property damage.
Lead	1.5 µg/m^3 (30-day)	1.5 µg/m^3 (3-month rolling)	(a) Learning disabilities; (b) Impairment of blood formation and nerve conduction.

TABLE 4.2-2
FEDERAL AND STATE AMBIENT AIR QUALITY STANDARDS

Air Pollutant	State Standard (concentration/ averaging time)	Federal Primary Standard (concentration/ averaging time)	Most Relevant Health Effects
Visibility-Reducing Particles	In sufficient amount to give an extinction coefficient > 0.23 inverse kilometers (visual range to less than 10 miles) with relative humidity less than 70% (8-hr average from 10 AM–6 PM PST)	No Federal Standard	Visibility impairment on days when relative humidity is less than 70%.
Hydrogen Sulfide	0.03 ppm (1 hr)	No Federal Standard	Odor annoyance at low concentrations. Prolonged exposure to concentrations of 2 to 5 ppm may cause nausea, tearing of the eyes, headaches or loss of sleep. Airway problems (bronchial constriction) in some asthma patients. Possible fatigue, loss of appetite, headache, irritability, poor memory, and dizziness may occur at 20 ppm. Exposure to concentrations exceeding 100 ppm may cause coughing, eye irritation, loss of smell after 2–15 minutes (olfactory fatigue); altered breathing, drowsiness after 15–30 minutes; throat irritation after 1 hour; gradual increase in severity of symptoms over several hours; death may occur after 48 hours.
Vinyl Chloride	0.01 ppm (24 hr)	No Federal Standard	Known carcinogen.

ppm: parts per million by volume; hr: hour; ppb: parts per billion by volume; $\mu g/m^3$: micrograms per cubic meter; PM10: respirable particulate matter with a diameter of 10 microns or less; PM2.5: fine particulate matter with a diameter of 2.5 microns or less.

Note: State standards are "not-to-exceed" values; federal standards follow the design value form of the NAAQS.

Source: Yorke 2017a

Regional Air Quality

The attainment status for State and federal ambient air quality standards in the SoCAB is summarized in Table 4.2-3.

TABLE 4.2-3
STATE AND FEDERAL ATTAINMENT STATUS OF CRITERIA POLLUTANTS

Pollutant	State	Federal
O_3 (1 hour)	Nonattainment	No standard
O_3 (8 hour)		Extreme Nonattainment
PM10	Nonattainment	Attainment/Maintenance
PM2.5	Nonattainment	Moderate Nonattainment
CO	Attainment	Attainment/Maintenance
NO_2	Attainment	Attainment/Maintenance
SO_2	Attainment	Attainment
Lead	Attainment	Attainment/Nonattainment*
All others	Attainment/Unclassified	No Standards

O_3: ozone; PM10: respirable particulate matter 10 microns or less in diameter; PM2.5: fine particulate matter 2.5 microns or less in diameter; CO: carbon monoxide; NO_2: nitrogen dioxide; SO_2: sulfur dioxide.

* The Los Angeles County portion of the SoCAB is designated nonattainment for lead; the remainder of the SoCAB is designated attainment.

Source: CARB 2016, 2017; USEPA 2017

Monitored Air Quality – Project Area

The SCAQMD monitors levels of the aforementioned criteria pollutants at 32 monitoring stations throughout the SoCAB. The SCAQMD's Westchester Parkway monitoring station is located 4.8 miles southwest of the City IOF, and the North Main Street monitoring station is located approximately 9.5 miles northeast of the Project Site. Air quality data for the Project area for 2013–2015 are presented in Table 4.2-4, Maximum Monitored Pollutant Concentrations in Project Area, which shows the maximum level of each pollutant measured in that year and for how many days the threshold for that pollutant was exceeded in 2013, 2014, and 2015.

TABLE 4.2-4
MAXIMUM MONITORED POLLUTANT CONCENTRATIONS
IN PROJECT AREA

Constituent/Standard	2013	2014	2015
Ozone			
Federal 8-hr (ppm)	0.081	0.080	0.068
# Days > National Standard	1	3	3
State 8-hr (ppm)	0.082	0.080	0.076
# Days > State Standard	1	6	3
Hourly (ppm)	0.105	0.114	0.096
# Days > National Standard	0	0	0
# Days > State Standard	1	1	0
Nitrogen Dioxide			
Federal Hourly (ppm)	58.4	66.4	62
# Days > National Standard	0	0	0
State Hourly (ppm)	74	72	73
# Days > State Standard	0	0	0
Carbon Monoxide			
8-hr (ppm)	*	*	*
# Days > National Standard	0	0	0
# Days > State Standard	0	0	0
PM10			
Federal 24-hr (μ/m^3)	38.0	46.0	42.0
# Days > National Standard	0	0	0
State 24-hr (μ/m^3)	37.0	45.0	42.0
# Days > State Standard	0	0	0
PM2.5			
Federal 24-hr (μ/m^3)	43.1	59.9	56.4
# Days > National Standard	1	6	7
State 24-hr (μ/m^3)	54.8	65.0	70.3
Sulfur Dioxide			
24-hr (ppm)	0.002	*	*

ppm: parts per million by volume; ppb: parts per billion by volume; PM10: respirable particulate matter with a diameter of 10 microns or less; PM2.5: fine particulate matter with a diameter of 2.5 microns or less; µg microgram

*Insufficient data available to determine this value.

All values reported are from the Los Angeles Westchester Parkway monitoring station except PM2.5, which is taken from the Los Angeles North Main Street monitoring station.

Source: Yorke 2017a

Baseline Emission Inventory

The current Oil Field Operator of the City IOF is Sentinel Peak Resources; the operations were formerly conducted by Freeport McMoran Oil and Gas (FM O&G). Because Sentinel Peak Resources has not yet operated at the facility for more than one year, emissions data from previous Oil Field Operators are used to establish the baseline emission inventory. FM O&G previously purchased Plains Exploration & Production Co., LLP (PXP). PXP conducted oil and gas exploration and production activities throughout the IOF, both in the Culver City and Los Angeles County portions of the field. PXP reported emissions for its stationary source operations to the SCAQMD in Annual Emissions Reports; reported emissions for 2014-2016 are shown in

Table 4.2-5, Reported Stationary Source Emissions. Note that: (1) well construction emissions are not included in the reported emission inventory, and (2) the reported emissions include emissions from operations within the entire Inglewood Oil Field.

TABLE 4.2-5
TOTAL INGLEWOOD OIL FIELD REPORTED
STATIONARY SOURCE EMISSIONS

Pollutant	2014 (tons/year)	2015 (tons/year)	2016 (tons/year)
CO	0.801	1.144	1.775
NOx	0.855	1.199	3.162
ROGs	13.495	21.514	27.568
SOx	0.011	0.017	0.029
TSP	0.143	0.220	0.374

CO: carbon monoxide; NOx: nitrogen oxides; ROG: reactive organic gas; SOx: sulfur oxides; TSP: total suspended particulates

Source: Yorke 2017a

Carcinogenic Risks

A primary health concern due to exposure to toxic air contaminants (TACs) is the risk of contracting cancer. Carcinogenic risks (i.e., cancer risks) are estimated as the incremental probability that an individual will develop cancer over a lifetime as a direct result of exposure to potential carcinogens. A risk level of 1 in a million implies a likelihood that up to 1 person out of 1 million equally exposed people would contract cancer if exposed continuously to a specific concentration 24 hours per day for 70 years (an assumed lifetime exposure). This would be in addition to those cancer cases that would normally occur in an unexposed population of one million people.

The carcinogenic potential of TACs is of particular public health concern because it is believed by many scientists that there is no “safe” level of exposure to carcinogens; that is, any exposure to a carcinogen poses some risk of causing cancer. Health statistics show that one in four people (or 250,000 in one million) will contract cancer over their lifetime from all causes, including diet, genetic factors, and lifestyle choices.

Besides carcinogens, there are a number of TACs that cause other types of health effects, due to both acute (short-term) and chronic (long-term) exposure. Unlike carcinogens, most non-carcinogens have a threshold level of exposure below which the compound will not pose a health risk. The California Environmental Protection Agency (CalEPA) and OEHHA have developed reference exposure levels (RELs) for non-carcinogenic TACs that are health-conservative estimates of the levels of exposure at or below which health effects are not expected. The non-cancer health risk due to exposure to a TAC is assessed by comparing the estimated level of exposure to the REL. The comparison is expressed as the ratio of the estimated exposure level to the REL, called the hazard index (HI).

One of the most prevalent TACs in California and throughout the U.S. is diesel particulate matter (DPM). DPM is emitted from vehicles and equipment, such as emergency generators, that combust diesel fuel and is a component of diesel exhaust that includes soot particles made up primarily of carbon, ash, metallic abrasion particles, sulfates, and silicates. Diesel soot particles

have a solid core consisting of elemental carbon, with other substances attached to the surface, including organic carbon compounds known as aromatic hydrocarbons. Short-term exposure to high concentrations of DPM can cause headache, dizziness, and irritation of the eye, nose, and throat severe enough to distract or disable workers. Prolonged DPM exposure can increase the risk of cardiovascular, cardiopulmonary, and respiratory disease and lung cancer.

DPM emissions were identified as a TAC by CARB in 1998 and were added to the SCAQMD Rule 1401 list of compounds on March 7, 2008. Under the current AB 2588 Air Toxics "Hot Spots" Emission Inventory Criteria and Guidelines Regulation, amended on August 27, 2007, facility operators are required to include health risk impacts of any diesel exhaust particulate emissions from stationary emergency and prime compression ignition internal combustion engines, as well as portable diesel engines. On January 5, 2007, the SCAQMD Governing Board adopted separate public notification procedures for emergency diesel internal combustion engines.

For many years, the SCAQMD has studied air toxics emissions and health risks within the District. The most recent of these studies, Multiple Air Toxics Exposure Study IV (MATES IV), was conducted in 2014 and is a monitoring and evaluation study conducted in the SoCAB. The study is a follow-up to previous air toxics studies in the SoCABand is part of the SCAQMD Governing Board Environmental Justice Initiative. The MATES IV study consisted of several elements, including a monitoring program, an updated emission inventory of TACs, and a modeling effort to characterize risk across the SoCAB. The study focused on the carcinogenic risk from exposure to air toxics. A network of 10 fixed sites was used to monitor TACs once every 6 days for 1 year.

The monitoring station nearest to the Project site is the Central Los Angeles station in downtown Los Angeles at 1630 N. Main Street, approximately 8.5 miles to the northeast of the Project site. In the monitoring program, over 30 air pollutants were measured, including both gaseous and particulate air toxics:

> Acetaldehyde; Dichloroethane; Organic Carbon (OC); Acetone; Elemental Carbon (EC); PAHs; Arsenic; Ethyl Benzene; Perchloroethylene; Benzene; Formaldehyde; PM2.5; Black Carbon (BC); Hexavalent Chromium; PM10; 1,3-Butadiene; Lead; Selenium; Cadmium; Manganese; Styrene; Carbon Tetrachloride; Methylene Chloride; Toluene; Chloroform; Methylethylketone; Trichloroethylene; Copper; MTBE; Ultrafine Particles (UFP); Dibromoethane; Naphthalene; Vinyl Chloride; Dichlorobenzene; Nickel; Xylene; Zinc (SCAQMD 2015a).

The toxic emissions inventory for MATES IV consists of four components: (1) point sources; (2) area sources; (3) on-road mobile sources; and (4) off-road (or other) mobile sources. The monitored and modeled concentrations of air toxics were used to estimate the carcinogenic risks from ambient levels. Annual average concentrations were used to estimate a lifetime risk from exposure to these levels, consistent with guidelines established by the OEHHA of the CalEPA. After release of the draft MATES IV Report, OEHHA adopted revised methodology to estimate carcinogenic risk. The OEHHA method uses higher estimates of cancer potency during early life exposures when compared to the previous MATES analysis. The risk estimates in the MATES IV Report should not be interpreted as actual rates of disease in the exposed population, but rather as estimates of potential risk, based on current knowledge and a number of assumptions (SCAQMD 2015a).

The study determined that DPM was the predominant (68.2 percent) TAC leading to health risks. The study concluded that compared to previous studies of air toxics in the SoCAB, air toxics exposure has decreased, with the estimated basin-wide, population-weighted risk down by about 57 percent from the analysis done for the MATES III time period (conducted in the 2004-2006

timeframe). The ambient air toxics data from the 10 fixed monitoring locations also demonstrated a similar reduction in air toxic levels and risks (Yorke 2017a).

Exhibit 4.2-2, Project Vicinity Carcinogenic Risk Per Million, depicts the MATES IV estimated carcinogenic risk per million people, which has been updated using the OEHHA methodology. As shown and as discussed in the MATES IV Report, the areas of higher cancer risk include those near the ports, airports, Central Los Angeles, and along transportation corridors due to exposure to DPM from vehicular traffic. DPM represents approximately 79.6 percent of the contribution to cancer potency (i.e. overall cancer risk), followed by hexavalent chromium at 5.7 percent, 1,3-butadiene at 5.5 percent, and benzene at 4.3 percent (SCAQMD 2015).

As shown in Exhibit 4.2-2, the carcinogenic risk over the majority if the City IOF is estimated to be 978 per million. This is lower than the carcinogenic risk levels found within the City that are closer to the Interstate 10 (I-10), which are estimated to be 1,138 per million, and near Los Angeles International Airport, which are estimated to be 1,659 per million. This risk increases further from the Project Site traveling eastward along the I-10 corridor, with an approximate risk of 1,854 in downtown Los Angeles (SCAQMD 2015b). For context, with the application of the revised OEHHA methodology to the modeled air toxics levels, the MATES IV estimated population weighted risk throughout the Basin is 897 per million (SCAQMD 2015a). Given the remoteness of the nearest monitoring station, no inference can be made that any portion of the risk is related to operations in or near the Inglewood Oil Field nor that there is not a greater localized risk that the MATES IV estimate fails to recognize given its limitations.

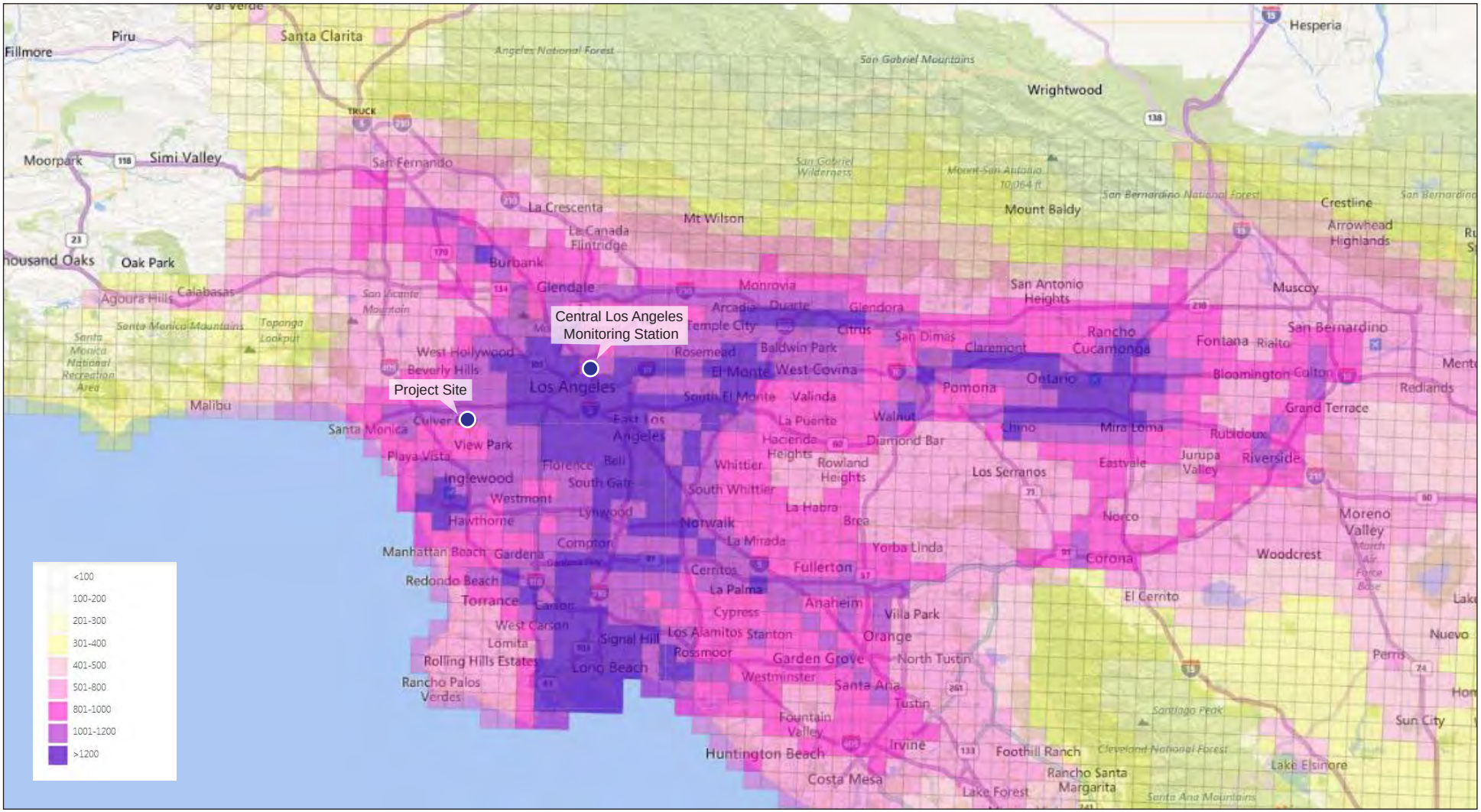
Inglewood Oil Field Odor Emissions

Several compounds associated with the oil and gas industry can produce nuisance odors. Odor thresholds are defined as the point at which a person can detect the substance. Below the odor threshold, the average person would not smell anything. According to the American Industrial Hygiene Association, the odor detection threshold is the lowest concentration of odorant that will elicit a sensory response in the olfactory receptors of a specified percentage of a given population. An odor "event" is defined as a scenario where odors are released and negatively impact the surrounding community, measured as generating odor complaints to the SCAQMD and confirmed by the SCAQMD as attributable to a specific source.

Sulfur compounds found in oil and gas have very low odor threshold levels. For example, H_2S can be detected by 2 percent of the population at concentrations as low as 0.5 part per billion (ppb) and would qualify as annoying by 50 percent of the population at concentrations of 40 ppb. Above these levels, it would be detected by most people. The SCAQMD generally recognizes 0.009 parts per million (ppm)[1] (9 ppb) as the odor threshold for H_2S when evaluating odorous emissions from stationary sources.

Many volatile compounds found in oil and gas (e.g., pentane, n-pentane, hexane, ethane, and other longer-chain hydrocarbons) typically have a petroleum or gasoline-type odor with varying odor thresholds. Analyses conducted on unprocessed gas samples at the Inglewood Oil Field indicate levels of ethane, propane, iso- and n-butane, iso- and n-pentane, and hexane. Petroleum hydrocarbons may be emitted as fugitive emissions. Fugitive emissions are small yet detectable

[1] Per the U.S. Occupational Safety and Health Administration, the odor threshold for H_2S is 0.01–1.50 ppm, which is the point when rotten egg smell is first noticeable to some people. Odor becomes more offensive at 3–5 ppm. Above 30 ppm, odor described as sweet or sickeningly sweet. Use of 0.009 ppm ensures that odor impacts are below the odor threshold (OSHA 2015).



Source: South Coast Air Quality Management District, 2017

Project Vicinity Carcinogenic Risk Per Million

Exhibit 4.2-2

Inglewood Oil Field Specific Plan Project

N W E S

PSOMAS

(09/11/2017 MMD) R:\Projects\CUL\3CUL000100\Graphics\EIR\ex4.2-2_Carcinogenic_Risk.pdf

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emissions from equipment where there are joints, flanges, and seals. Although joints and flanges are typically bolted, small amounts of hydrocarbons may be emitted through leaky joints.

Natural gas contains mostly methane (which is odorless), thus it has to be odorized as dictated by the California Public Utilities Commission (CPUC) before being placed into a distribution pipeline. The various odorizing compounds that are used for odorization contain sulfur compounds (e.g., mercaptans) that have very low odor thresholds and can produce odors if released into the atmosphere.

Exhaust gases emitted by diesel engines are characterized by odors that are offensive in varying degrees to many members of the general public. Production of odorants is inherent in the diesel combustion process. Odorants are formed by partial oxidation in pre-ignition reaction zones and are subsequently consumed in high-temperature flame zones. The ultimate exhaust levels depend on the dynamics of the combustion and mixing processes (Yorke 2017a).

The SCAQMD issued a Notice of Violation (NOV) to PXP, the former Oil Field Operator, from a 2006 odor event. The 2006 incident is the only nuisance event that resulted in an NOV in the last ten years. Other than gasoline station-related violations, there were no other NOVs issued within the City of Culver City in 2015 and zero NOVs within the City in 2016 (through November 1, 2016) (SCAQMD 2016).

4.2.3 REGULATORY SETTING

Federal

The U.S. Environmental Protection Agency's (USEPA's) air quality mandates are drawn primarily from the Federal Clean Air Act (FCAA), which was enacted in 1970. The most recent major amendments made by Congress were in 1990. The USEPA is responsible for setting and enforcing the NAAQS for criteria pollutants. The USEPA enforces the FCAA and the associated NAAQS for CO, NO_2, ozone, SO_2, PM10, PM2.5, and lead. These air quality standards are concentrations above which the pollutant is known to cause adverse health effects. Generally, stationary source regulation of air quality is delegated to the state or local agencies. As part of its enforcement responsibilities, the USEPA requires each state with federal nonattainment areas to prepare and submit a State Implementation Plan (SIP) that demonstrates the means to attain and maintain federal standards. The SIP must integrate federal, State, and local plan components and regulations to identify specific measures to reduce pollution by using a combination of performance standards and market-based programs within the SIP-identified timeframe.

Of specific interest to the Project, the *Code of Federal Regulations* (CFR, Title 40 Subpart OOOO, Standards of Performance for Crude Oil and Natural Gas Production, Transmission and Distribution) establishes emission standards and compliance schedules for the control of volatile organic compounds (VOCs) and SO_2 emissions from affected facilities that commence construction, modification, or reconstruction after August 23, 2011. Affected facilities include natural gas wells, compressors, oil and natural gas production segments between the wellhead and point of custody transfer, natural gas processing plants, and certain storage vessels (Yorke 2017a).

New Source Performance Standards

Under the CAA, the USEPA is given authority to establish and maintain New Source Performance Standards (NSPS; 40 CFR 60) for new stationary sources. Specifically, any new, modified, or reconstructed facility that is listed as a specific source category under 40 CFR Part 60 must meet

the standard. On May 12, 2016, the USEPA issued three final rules that together will curb emissions of methane, smog-forming VOCs and toxic air pollutants such as benzene from new, reconstructed and modified oil and gas sources. The new emissions standards (Subpart OOOOa) address greenhouse gases (e.g., methane) and VOCs, and the emissions standards improve several aspects of Subpart OOOO related to implementation. The new standards now cover hydraulically fractured oil well completions, as well as other equipment (USEPA 2016).

The following Subparts of NSPS (40 CFR 60) are applicable to the Project:

- **NSPS Subpart KKK:** Standards of Performance for Equipment Leaks of VOC from Onshore Natural Gas Processing Plants for Which Construction, Reconstruction or Modification Commenced after January 20, 1984 and on or Before August 23, 2011.
- **NSPS Subpart LLL:** Standards of Performance for SO_2 Emissions from Onshore Natural Gas Processing for Which Construction, Reconstruction or Modification Commenced after January 20, 1984, and on or Before August 23, 2011.
- **NSPS Subpart OOOO:** Standards of Performance for Crude Oil and Natural Gas Production, Transmission, and Distribution, for Which Construction, Reconstruction or Modification Commenced after January 20, 1984, and on or Before August 23, 2011.
- **NSPS Subpart IIII:** Standards of Performance for Stationary Compression Ignition Internal Combustion Engines.
- **NSPS Subpart JJJJ:** Standards of Performance for Spark Ignition Internal Combustion Engines.
- **NSPS Subpart KKKK:** Standards of Performance for Stationary Combustion Turbines.

State

California Air Resources Board

CARB is the state agency that (1) establishes and enforces emission standards for motor vehicles, fuels, and consumer products; (2) establishes health-based air quality standards; (3) conducts research; (4) monitors air quality; (5) identifies and promulgates control measures for toxic air contaminants; (6) provides compliance assistance for businesses; (7) produces education and outreach programs and materials; and (8) oversees and assists local air quality districts that regulate most non-vehicular sources of air pollution. CARB approves the regional Air Quality Management Plans (AQMPs) for incorporation into the SIP and is responsible for preparing those portions of the plan related to mobile source emissions.

CARB implements the California Clean Air Act (CCAA) requirements, regulating emissions from motor vehicles and setting fuel standards. The CCAA established ambient air quality standards for ozone, PM10, PM2.5, CO, NO_2, SO_2, lead, visibility-reducing particles, sulfates, H_2S, and vinyl chloride. California standards are generally more stringent than the national standards. The CCAA articulates the State's air quality goals, planning mechanisms, regulatory strategies, and standards of progress and provides the State with a comprehensive framework for air quality planning regulation. In this capacity, CARB conducts research; sets the California Ambient Air Quality Standards (CAAQS) shown in Table 4.2-2; compiles emission inventories; develops suggested control measures; provides oversight of local programs; and prepares the State SIP.

For regions that do not attain the CAAQS, CARB requires the air districts to prepare plans for attaining the standards. These plans are then integrated into the State SIP. CARB establishes

emissions standards for motor vehicles sold in California, consumer products (e.g., hair spray, aerosol paints, and barbecue lighter fluid), and various types of commercial equipment. It also sets fuel specifications to reduce vehicular emissions of harmful pollutants CARB regulates Toxic Air Contaminants (TACs) through statutes and regulations that generally require the use of Maximum Achievable Control Technology (MACT) and Best Available Control Technology (BACT) to limit emissions.

While most regulations are developed and implemented at the local level by the SCAQMD, some regulations and emissions limits are prescribed by CARB. One example is the Portable Equipment Registration Program (PERP). Once registered in the program, portable engines and equipment units can operate throughout the State of California without the need to get individual permits from local air districts. The program has limits on engine certifications and emissions (e.g., NOx or VOCs of 100 pounds [lbs]/day, PM10 of 150 lbs/day), and limits operation at a specific facility to no more than 12 months. Operation exceeding 12 months would subject the equipment to stationary source permitting through the air district. The drilling rigs used at the Inglewood Oil Field are contracted rigs and are not owned by the oil field operator. The drill rigs may be registered in the PERP program (Yorke 2017a).

On September 20, 2013, Governor Edmund G. Brown, Jr. signed into State law Senate Bill (SB) 4, Oil and Gas: Well Stimulation (Chapter 313), authored by State Senator Fran Pavley, et al., to establish a comprehensive regulatory program for oil and gas well stimulation treatments. As related to oil and gas well stimulation treatments, SB 4 amends Sections 3213, 3215, 3236.5, and 3401 of, and adds Article 3 (Sections 3150 through 3161) to, Chapter 1 of Division 3 of the *California Public Resources Code* (the State's laws for the conservation of petroleum and gas), and adds Section 10783 to Part 2.76 (Groundwater Quality Monitoring) of the *California Water Code. California Public Resources Code* (PRC), Section 3161 was subsequently amended in 2014 by SB 861 (Statutes 2014, Chapter 35). While SB 4 was adopted to directly regulate oil production and oil well stimulation, SB 4 does not directly address air emissions from stimulation activities.

Regional

Air Quality Management Plan

The SCAQMD is responsible for ensuring that the SoCAB meets the NAAQS and CAAQS by reducing emissions from stationary (area and point), mobile, and indirect sources. To accomplish this goal, the SCAQMD prepares Air Quality Management Plans (AQMPs) in conjunction with the Southern California Association of Governments (SCAG), County transportation commissions, and local governments; develops rules and regulations; establishes permitting requirements for stationary sources; inspects emissions sources; and enforces such measures through educational programs or fines, when necessary.

The 2016 AQMP was adopted on March 3, 2017 by the SCAQMD Governing Board. The 2016 AQMP evaluates integrated strategies and measures to meet the following NAAQS (SCAQMD 2017a):

- 8-hour O_3 (75 parts per billion [ppb]) by 2032[2]
- Annual PM2.5 (12 micrograms per cubic meter [µg/m^3]) from 2021 to 2025

[2] On October 1, 2015, the USEPA lowered the 8-hour O_3 standard to 0.070 ppm (70 ppb). The SIP (or AQMP) for the 70 ppb standard will be due 4 years after the attainment/nonattainment designations are issued by the USEPA, which is expected in 2017. Thus, meeting the 70 ppb standard will be addressed in a 2021 AQMP.

- 8-hour O_3 (80 ppb) by 2024
- 1-hour O_3 (120 ppb) by 2023
- 24-hour PM2.5 (35 µg/m^3) by 2019

The 2016 AQMP proposes control measures which seek to reduce VOC emissions from VOC-emission-sources, which include oil and gas production facilities. The relevant control measures are summarized in the following sections.

Stationary Source Control Measures

Three stationary source control measures are proposed in the 2016 AQMP that may be applicable to operations authorized by the Specific Plan. These are summarized below.

CMB-03 – Emission Reductions from Non-Refinery Flares: Flare NOx emissions are regulated through NSR and BACT, but there are currently no source-specific rules regulating NOx emissions from existing flares at non-refinery sources, such as organic liquid loading stations, tank farms, and oil and gas production, landfills and wastewater treatment facilities. This control measure proposes that, consistent with the all feasible control measures, all non-refinery flares meet current BACT for NOx emissions and thermal oxidation of VOCs. The preferred method of control would involve capturing the gas that would typically be flared and converting it into an energy source (e.g., transportation fuel, fuel cells, facility power generation). If gas recovery is not cost-effective or feasible, the installation of newer flares utilizing clean enclosed burner systems implementing BACT will be considered.

MCS-02 – Application of All Feasible Control Measures: This control measure is to address the state law requirement for all feasible measures for ozone. Existing rules and regulations for pollutants such as VOC, NOx, SOx and PM reflect current Best Available Retrofit Technology (BARCT). However, BARCT continually evolves as new technology becomes available that is feasible and cost-effective. The SCAQMD staff will continue to review new emission limits or controls introduced through federal, state or local regulations to determine if SCAQMD regulations remain equivalent or more stringent than rules in other regions. If not, a rulemaking process will be initiated to perform a BARCT analysis with potential rule amendments if deemed feasible. In addition, the SCAQMD will consider adopting and implementing new retrofit technology control standards, based on research and development and other information, that are feasible and cost effective.

FUG-01 – Improved Leak Detection and Repair: This control measure seeks to reduce emissions from a variety of VOC emission sources including, but not limited to, oil and gas production facilities, petroleum refining and chemical products processing, storage and transfer facilities, marine terminals, and other sources, where VOC emissions occur from fugitive leaks in piping components, wastewater system components, and process and storage equipment leaks. Most of these facilities are required under SCAQMD and federal rules to maintain a leak detection and repair (LDAR) program that involves individual screening of all of their piping components and periodic inspection programs of equipment to control and minimize VOC emissions. This measure would utilize advanced remote sensing techniques (Smart LDAR), such as Fourier transform infrared spectroscopy (FTIR), Ultraviolet Differential Optical Absorption Spectroscopy (UV-DOAS), Solar Occultation Flux (SOF), and infrared cameras, that can identify, quantify, and locate VOC leaks in real time allowing for faster repair in a manner that is less time consuming and labor intensive than traditional LDAR.

Mobile Source Control Measures

A total of 15 measures are proposed as actions in the 2016 AQMP to reduce mobile source emissions. One measure is proposed to identify actions to help mitigate and potentially provide emission reductions due to new development and redevelopment projects. Four measures seek to identify actions that will result in additional emission reductions at commercial marine ports, rail yards and intermodal facilities, warehouse distribution centers, and commercial airports to help meet the emission reductions associated with the State SIP Strategy "Further Deployment" measures for on-road heavy-duty vehicles, off-road equipment, and federal and international sources. Five measures focus on on-road mobile sources and four measures focus on off-road mobile sources. Lastly, one measure seeks to recognize the criteria pollutant emission reduction benefits of existing incentives programs such as the Carl Moyer Memorial Air Quality Standards Attainment Program and Proposition 1B – Goods Movement Emission Reduction Program. The measures call for greater emission reductions through accelerated turnover of older vehicles to the cleanest vehicles and equipment currently available and increased penetration of commercially-available near-zero and zero-emission technologies through incentives programs in the near-term. In the longer term, CARB will identify potential regulatory actions that will lead to additional emission reductions and greater deployment of zero-emission vehicle technologies everywhere feasible and cost-effective. Table 4.2-6 summarizes the mobile source control measures 2016 AQMP potentially applicable to the operations authorized by the Specific Plan.

TABLE 4.2-6
SUMMARY OF 2016 AQMP MOBILE SOURCE CONTROL MEASURES POTENTIALLY RELEVANT TO THE INGLEWOOD OIL FIELD

Pollutant	Title [Pollutant(s)]	Implementation Period
MOB-05	Accelerated Penetration of Partial Zero-Emission and Zero-Emission Vehicles [VOC, NOx, CO]	Ongoing
MOB-06	Accelerated Retirement of Older Light-Duty and Medium-Duty Vehicles [VOC, NOx, CO]	Ongoing
MOB-07	Accelerated Penetration of Partial Zero-Emission and Zero-Emission Light-Heavy- and Medium-Heavy Duty Vehicles [NOx, PM]	Ongoing
MOB-08	Accelerated Retirement of Older On-Road Heavy-Duty Vehicles [NOx, PM]	2019–2031
MOB-09	On-Road Mobile Source Emission Reduction Credit Generation Program [NOx, PM]	2019–2027
MOB-10	Extension of the SOON Provision for Construction/Industrial Equipment [NOx]	Ongoing
MOB-13	Off-Road Mobile Source Emission Reduction Credit Generation Program [NOx, SOx, PM]	2019-2027
MOB-14	Emission Reductions from Incentive Programs [NOx, PM]	2016-2024
CO: carbon monoxide; NOx: nitrogen oxides; PM: particulate matter; VOC: volatile organic compounds Source: Yorke 2017a		

Toxic Source Control Measures

One stationary source control measure is proposed in the 2016 AQMP that may be applicable to operations authorized by the Specific Plan. This is summarized below.

> **TXM-09 - Control of Emissions from Oil and Gas Well Activities:** This control measure seeks to develop a series of Best Management Practices (BMPs) to reduce the emission impact from the well maintenance and stimulation activities. The BMPs may include: (1) reduction of BTEX compounds (benzene, toluene, ethylbenzene and xylenes) from return fluids during gravel packing and hydraulic fracturing events by using carbon absorbers to control emissions venting from portable storage tanks, covering circulation tanks, and closing access hatches on portable storage tanks; (2) reduction of BTEX compounds from drilling mud return processing equipment by covering areas open to atmosphere; (3) reduction of fugitive silica dust from the use of portable plastic totes (known as Rigid Intermediate Bulk Containers (RIBC)) in lieu of canvas or cloth bags (known as Flexible Intermediate Bulk Containers (FIBC)); (4) reduction of DPM from the use of Tier 3 and 4 off-road engines, or engines equipped with a CARB certified Level 3 diesel particulate filter (DPF); and (5) work area plastic ground coverings to collect spills and reduce fugitive dust.

The Oil Field Operator and all activities conducted under the authorization of the proposed Specific Plan would be required to comply with all applicable SCAQMD rules and regulations.

SCAQMD Permit Applications (Emission Reduction Credits and RECLAIM)

The SCAQMD has established permitting programs to implement the requirements of the federal and state Clean Air Act (CAA), the AQMP, and air quality rules and regulations. Regulation XIII was established in part to ensure that any emission increase of nonattainment air contaminants from the operation of any relocated source, or from the operation of any new or modified source, does not impede the progress of attaining National Ambient Air Quality Standards (NAAQS) or State Ambient Air Quality Standards (SAAQS). District Rule 1303 was established to accomplish this goal, by giving the Executive Officer authority to deny permits to construct for permits to construct for these permit sources unless a Best Available Control Technology (BACT) is implemented, and the applicant provides emission offsets to mitigate any emission increase. The Emission Reduction Credits (ERCs) and Short Term Emission Reduction Credits (STERCs) were implemented by the SCAQMD to serve as emission offsets. Per District Rule 1309, emission reductions must be: real; quantifiable; permanent; federally enforceable; surplus; and no greater than the equipment would have achieved if it was operating with BACT (SCAQMD 2017b).

The Regional Clean Air Incentives Market (RECLAIM) is another permitting program established by SCAQMD to implement emission limits for nitrogen oxides (NOx) and sulfur oxides (SOx), to meet the requirements of the CAA, AQMP, and air quality rules and regulations. RECLAIM is a market trading program that sets a factory-wide pollution limit for each participating business, and allows these businesses to decide what equipment, processes, and materials they will use to meet their emission limits. Participating businesses receive RECLAIM trading credits (RTCs) to emit a fixed amount of NOx or SOx, and the RTCs can be bought or sold (SCAQMD 2017c).

Odor

In the SCAQMD, odors are regulated under Rule 402, Nuisance, which requires “[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 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".

The SCAQMD accepts air quality complaint calls 24 hours a day. During business hours (i.e., 7:00 AM to 5:30 PM, Tuesday through Friday), an attendant answers the call and directs the information accordingly. During non-business hours, an automated answering service forwards the call to a standby supervisor who takes appropriate action. If a public nuisance is expected based on the number of complaints received, the SCAQMD will respond to the complaint with an immediate investigation.

DOGGR issues permits for drilling and operating each well associated with oil and gas production. In the IOF, such permits contain an advisory that H_2S is known to be present and that adequate safety precautions should be taken for the permitted well. Therefore, as a precaution, each drill rig at the Project Site is equipped with continuous H_2S monitoring and recording devices.

The gas utility company is required by the U.S. Department of Transportation (DOT) and CPUC to odorize natural gas for safety reasons, including leak detection, before sale of the natural gas into a public utility's pipeline system. As discussed above, odorizing of natural gas systems is require and is typically done by injecting trace amounts of mercaptans (an odorous gas) into the otherwise odorless natural gas stream. Fugitive emissions from the natural gas odorant injection system could result in potential odor impacts. However, fugitive emission components associated with the odorant injection system are also regulated by formal regulatory inspection and maintenance programs pursuant to SCAQMD Rule 1173 intended to minimize leaks (Yorke 2017a).

Local

City of Culver City General Plan

Land Use Element

Land Use Element Policy 1.B. Protect the City's residential neighborhoods from the encroachment of incompatible land uses and environmental hazards which may have negative impacts on the quality of life (such as traffic, noise, air pollution, building scale and bulk, and visual intrusions).

4.2.4 SPECIFIC PLAN AND REGULATORY REQUIREMENTS

Specific Plan Drilling Regulations

Section 21. **Air Quality, Public Health and Climate Change.** The Operator shall at all times conduct Oil Operations in accordance with the best available technology, safety devices and measures for the prevention of the release, escape, or emission of dangerous, hazardous, harmful and/or noxious gases, vapors, odors, substances or greenhouse gases, and shall comply with the following provisions:

A. Emission Offsets. The Operator shall obtain emission offsets or Regional Clean Air Incentives Market (RECLAIM) credits as defined and required by South Coast Air Quality Management District (SCAQMD) Regulations for all new or modified emission sources that require a new or modified SCAQMD permit. Proof of SCAQMD review and approval shall be submitted to the Community Development Director.

B. Odor Minimization Plan. Within 90 days of acceptance of the Comprehensive Drilling Plan, the Operator shall submit an Odor Minimization Plan to be reviewed and approved or conditionally approved by the Community Development Director. The Community Development Director may consult with the SCAQMD as needed in its review of the Odor Minimization Plan. The Odor Minimization Plan shall be designed to ensure public health, safety and welfare, provide detailed information about the Drilling Project(s) and Oil Field and Oil Operations; specify the number, type, and location of monitors that will be used; provide detailed information concerning the reliability of the instrumentation, frequency of calibration, and other similar information; and address all issues relating to odors from Oil Operations. Matters addressed within the Odor Minimization Plan shall include setbacks, signs with contact information, logs of odor complaints, method of controlling odors such as flaring and odor suppressants, and the protocol for handling odor complaints. The Odor Minimization Plan shall be reviewed by the Operator on an annual basis to determine if modifications to the Odor Minimization Plan are required and report findings to the Community Development Director. Such findings and proposed modifications to the Odor Minimization Plan shall be submitted to the Community Development Director for review and approval. Operator shall comply with all provisions of the approved Odor Minimization Plan.

C. Air Monitoring.

1. **Air Monitoring Plan.** Operator shall submit an Air Monitoring Plan to be reviewed and approved or conditionally approved by the Community Development Director. At a minimum, the Air Monitoring Plan shall address related air pollutant emissions monitoring and tracking requirements as required by the SCAQMD and the MMP, and shall include any measure requested by the Community Development Director. The Air Monitoring Plan shall be designed to ensure the public health, safety and welfare, and the environment through the reduction in air toxics and odorous emissions and reduce greenhouse gas emissions from Oil Operations. The Air Monitoring Plan shall also specify the number, type and location of monitors that will be used, and provide detailed information concerning the reliability of the instrumentation, frequency of calibration and other similar information. The Air Monitoring Plan shall also be designed to assess the risk of both acute and chronic exposure to air contaminants from Oil Operations within the Oil Field, and endeavor to determine and distinguish the source of emissions, to the extent feasible, using available and affordable monitoring technology. Additionally, air monitoring may also be required, as requested by the Community Development Director, along the Outer Boundary of the Oil Field to assess the risk of both acute and chronic exposure to air contaminants from Oil Operations in the portion of the Inglewood Oil Field under the jurisdiction of Los Angeles County. During drilling, redrilling or reworking operations, the Operator shall monitor for hydrogen sulfide and total hydrocarbon vapors as specified in the approved Air Monitoring Plan. Hydrogen sulfide shall also be monitored using mobile monitoring equipment in response to odor complaints or when on-site odors are encountered by operating personnel. Total hydrocarbon vapors shall be monitored, so as to comply with the requirements of SCAQMD Rule 1173, using mobile monitoring equipment at locations

surrounding the wells, tanks, piping, piping components, and other facilities at the locations and frequencies, no less frequent than quarterly, that shall be specified in the approved Air Monitoring Plan. The approved monitors shall provide automatic alarms that are triggered by the detection of hydrogen sulfide or total hydrocarbon vapors at levels designated in the approved Air Monitoring Plan. For drilling, redrilling or reworking monitors, the alarms shall be audible and/or visible to the person operating the drilling, redrilling, or reworking equipment. When specified alarm levels are reached, the following actions shall be taken:

a. At a hydrogen sulfide concentration of equal to or greater than 1 part per million but less than 10 parts per million, the Operator shall, immediately, and not later than 30 minutes after the alarm, investigate the source of the hydrogen sulfide emissions and take immediate corrective action to eliminate the source. The corrective action taken shall be documented in the drilling, redrilling and reworking log, or applicable inspection and maintenance logs. If the concentration is not reduced to less than one part per million within 30 minutes of the first occurrence of such concentration, the Operator shall shut down the drilling, redrilling, or reworking operations or other source in a safe and controlled manner until the source of the hydrogen sulfide emissions has been eliminated, unless shutdown creates a health and safety hazard.

b. At a hydrogen sulfide concentration equal to or greater than 10 parts per million, the Operator shall promptly commence the shutdown of the drilling, redrilling, or reworking operations or other source in a safe and controlled manner until the source of the hydrogen sulfide emissions has been eliminated, unless shutdown creates a health and safety hazard. The corrective action taken shall be documented in the drilling, redrilling, or reworking log, or applicable inspection and maintenance logs. When an alarm is received, the Operator shall immediately notify, and provide access and the right to investigate the event as necessary to all agencies with jurisdiction over the Oil Field, including, but not limited to, the Culver City Fire Department, the Los Angeles County Fire Department – Health Hazardous Materials Division, Division of Oil, Gas and Geothermal Resources (DOGGR), and SCAQMD.

c. At a total hydrocarbon concentration equal to or greater than 500 parts per million but less than 1,000 parts per million, the Operator shall immediately investigate the source of the hydrocarbon emissions and take immediate corrective action to eliminate the source. The corrective action taken shall be documented in the drilling, redrilling, reworking or maintenance log, or applicable inspection and maintenance logs. If the concentration is not reduced to less than 500 parts per million within 30 minutes of the first occurrence of such concentration, the Operator shall shut down the drilling, redrilling, or reworking in a safe and controlled manner, until the source of the hydrocarbon emissions has been eliminated, unless shutdown creates a health and safety hazard.

d. At a total hydrocarbon concentration equal to or greater than 1,000 parts per million, the Operator shall promptly commence the shutdown of the drilling, redrilling, or reworking operations, or other source, in a safe and controlled manner, until the source of the hydrocarbon emissions has been eliminated, unless shutdown creates a health and safety hazard. The corrective action taken shall be documented in the drilling, redrilling, reworking or maintenance log, or applicable inspection and maintenance logs. When an alarm is received, the Operator shall immediately notify and provide access and the right to investigate the event as necessary to all agencies with jurisdiction over the Oil Field, including the Culver City Fire Department, the Los Angeles County Fire Department – Health Hazardous Materials Division, DOGGR, and SCAQMD.

e. The Operator shall keep a record of the levels of total hydrocarbons and hydrogen sulfide detected at each of the monitors, which shall be retained for at least five years. The Operator shall notify the Fire Chief within 48 hours in the event of the occurrence of any hydrogen sulfide concentration of 1 part per million or more, or any total hydrocarbon concentration of 500 parts per million or more. At the request of the Fire Chief, the Operator shall make available the retained records from the monitoring equipment.

2. City Testing. In the event of a gas release in the Oil Field or in response to complaints received regarding odors in the Oil Field, substantiated by City personnel called to the location of the odor, the City may take grab samples of the air outside the Oil Field boundary to test for airborne toxins including hydrogen sulfide. The Operator shall be required to pay for all of the City's cost to sample the air including, without limitation, the costs to obtain vacuum canisters and teflar bags for air sampling, the costs to contract with a local laboratory to pick up the canisters and teflar bags immediately after sampling takes place and transport the samples to a laboratory for immediate analysis as required to obtain a valid and accurate test of the air and report for the presence and concentration of airborne toxins. The Operator shall also be responsible for the costs for City personnel to be trained in the proper techniques for conducting the air sampling.

D. Portable Flare for Drilling. To reduce air toxics emissions, odorous substances emissions, and greenhouse gas emissions, the Operator shall have a gas buster and a portable flare, approved by SCAQMD, at the Oil Field and available for immediate use to remove any gas encountered during drilling operations from drilling muds prior to the muds being sent to the shaker table, and to direct such gas to the portable flare for combustion. The portable flare shall record the volume of gas that is burned in the flare. The volume of gas burned in the flare shall be documented in the drilling log. The Operator shall notify the Fire Chief and SCAQMD within 48 hours in the event gas is burned by the flare, and shall specify the volume of gas that was burned in the flare. No drilling or redrilling shall be conducted in areas that are known to penetrate the Nodular Shale zone, or where pressurized methane is known or reasonably suspected to exist, unless a fully operational and properly maintained gas buster and portable flare are installed on the rig. All other drilling and redrilling

operations shall be conducted so that any measurable gas that is encountered can, and will, be retained in the well bore until the gas buster and portable flare are installed on the rig, after which the gas will be run through the system. The Operator shall immediately notify the Fire Chief and SCAQMD in the event any gas from drilling or redrilling operations is released into the atmosphere without being directed to and burned in the flare.

E. Oil Tank Pressure Monitoring and Venting. All oil tanks that contain or could contain oil shall have a fully operational pressure monitoring system, of a type and design approved by the Fire Chief that continuously measures and digitally records the pressure in the vapor space of each tank. The detection system shall notify the Operator via an alarm when the pressure in the tank reaches within 10 percent of the tank relief pressure. In the event of an alarm, the Operator shall immediately take corrective action to reduce the tank pressure. The corrective action shall be documented in the applicable inspection and maintenance log. The Operator shall notify the Fire Chief and SCAQMD within 24 hours if the pressure in any tank covered by this Subsection ever exceeds such tank's relief pressure or if the hatches on the tank(s) have lifted and allowed gas to vent to atmosphere. Within seven calendar days after any tank vapor release, the Operator shall submit a report of the incident to SCAQMD as a breakdown event pursuant to Rule 430, and shall provide the Fire Chief with a written report of the event and the corrective measures undertaken and to be undertaken to avoid future oil tank vapor releases. The Operator shall make any changes to such report that may be required to obtain approval from the Fire Chief and SCAQMD, shall promptly institute all corrective measures called for by the report, and shall report the completion of the corrective measures to the Fire Chief and the Community Development Director within one week of their completion.

F. Odor Suppressant for Drilling and Redrilling Operations. The Operator shall use an odor suppressant spray system on the mud shaker tables for all drilling, redrilling, well stimulation and well reworking operations that use mud shaker tables, or equivalent, to ensure that no odors from such operations can be detected at the Outer Boundary of the Oil Field. In addition, an automatic electronic alarm shall be installed at the tank relief outlets (vents) to notify the Operator if any release occurs.

G. Closed Systems for Produced Oil and Water. The Operator shall ensure all produced water and oil associated with production, processing, and storage, except produced water and oil used for sampling only, are contained within closed systems, as defined in the current California Fire Code, at all times.

H. Off-Road Diesel Construction Equipment Engines. All off-road diesel construction equipment shall comply with the following provisions:

1. Utilize California Air Resources Board (CARB)/U.S. Environmental Protection Agency (USEPA) Certification Tier 3 or better certified engines for engines below 750 horsepower and Tier 2 engines for engines at or above 750 horsepower or other methods approved by CARB as meeting or exceeding the Tier 2 or Tier 3 standards.

2. Utilize a CARB-Verified Level 3 diesel catalyst. The catalyst shall be capable of achieving an 85 percent reduction for diesel particulate matter. Copies of the CARB verification shall be provided to the

Community Development Director. Said catalysts shall be properly maintained and operational at all times when the diesel engines are running. CARB Verified Level 3 catalysts are not required for engines that meet Tier 4 standards.

I. Drill Rig Engines. All drilling, redrilling, reworking and maintenance rig diesel engines, except rigs powered by on-road engines, shall comply with the following provisions:

1. Utilize CARB/USEPA Certification Tier 2 or better certified engines or other methods approved by CARB as meeting or exceeding the Tier 2 standard.

2. Utilize second generation heavy duty diesel catalysts capable of achieving 90 percent reductions for hydrocarbons and for particulate matter smaller than 10 microns. Said catalysts shall be properly maintained and operational at all times when the diesel engines are running.

3. Utilize natural gas-powered drill rigs or other engine technologies that are capable of reducing environmental impacts in comparison to the requirements set forth in Subsections 15.14.100.I.1 and 15.14.100.I.2 of the Culver City Municipal Code, hereinabove, when such technologies have been determined to be feasible and commercially available through a Clean Technology Assessment in the Annual Consolidation and Drilling Plan.

J. Drilling and Redrilling Setbacks. The following setbacks shall apply within the Oil Field for drilling or redrilling:

1. Drilling.

a. At least 400 feet from Developed Areas.

b. At least 75 feet from any public roadway.

c. The well hole setbacks prescribed in this subsection may be reduced at the discretion and approval of the City Council if it can be determined the setback reduction will not be detrimental to the public health, safety or welfare, or the environment.

d. As part of the Annual Consolidation and Drilling Plan (Section 31.B) the Operator shall provide an inventory of existing wells that encroach into the setback area specified above. Said inventory shall also include an estimated schedule for properly abandoning the wells encroaching into the setback area, based upon their respective current productive life without redrilling.

2. Slant Drilling. The Operator shall employ slant drilling whenever feasible to do so in order to locate the Top Hole as far from Sensitive Developed Areas as may be reasonably necessary to mitigate impacts.

a. Deep-Zone Wells. If the Operator intends to drill Deep-Zone Wells where the Top Hole is closer than 800 feet to a Sensitive Developed Area then the Operator shall prepare and receive approval for a

Deep-Zone Supplement to the Annual Consolidation and Drilling Plan, as required by Section 31.C.

b. Mid-Zone Wells. If an Operator intends to drill Mid-Zone Wells where the Top Hole is closer than 800 feet to a Sensitive Developed Area then the Operator shall prepare and receive approval for a Mid-Zone Supplement to the Annual Consolidation and Drilling Plan, as required by described in Section 31.C.

K. Fugitive Dust Control Plan. Within 120 days following the date of approval of the Comprehensive Drilling Plan, or at such later date as may be approved by the Public Works Director/City Engineer for good cause shown, Operator shall submit a Fugitive Dust Control Plan to the Public Works Director/City Engineer for review. The Fugitive Dust Control Plan shall comply with all requirements of SCAQMD Rule 403 and shall cover all existing operations and any future projects that may or may not require a grading permit. The Operator shall review the Fugitive Dust Control Plan every five years and incorporate any modifications deemed necessary due to amendments to SCAQMD Rule 403 or as required by the City. Any revisions to the Fugitive Dust Control Plan shall be reviewed and approved by the Public Works Director/City Engineer. The plan shall include consideration of the following measures, other measures listed in SCAQMD Rule 403, Tables 1 through 3, and other measures at the discretion of the Public Works Director/City Engineer.

1. Application of water at least every 4 hours, or more frequently if conditions so require, to the area within 100 feet of a structure being demolished, to reduce vehicle trackout, and to other actively disturbed areas within a construction site;

2. Application of CARB-precertified, or equivalently effective, non-toxic soil binders to disturbed areas upon completion of demolition;

3. Application of water to disturbed soils after demolition is completed or at the end of each day of cleanup;

4. Prohibition against demolition activities when wind speeds exceed 25 miles per hour (mph);

5. Requirement of minimum soil moisture of 12 percent for earth moving by use of a moveable sprinkler system or a water truck. Moisture content can be verified by lab sample or moisture probe;

6. Requirement that all trucks hauling dirt, sand, soil, or other loose materials are to be tarped with a fabric cover and maintain a freeboard height of 12 inches;

7. When backfilling, mix backfill soil with water prior to moving, dedicate water truck or high capacity hose to equipment, minimize drop height from loader bucket and empty loader bucket slowly;

8. Requirement of paved interior roads to be at least 100 feet long, 12 feet wide per lane and edged by rock berm or row of stakes, or addition of four-foot shoulder for paved roads;

9. Limit vehicular traffic to established paved and unpaved roads and parking areas;

10. Requirement that maximum speed on unpaved roads be limited to 15mph;

11. Implementation of watering three times a day for active unpaved roads, or more often as necessary to ensure that no visible emissions occur during unpaved road travels. As an alternative to watering, unpaved roads may be treated with CARB-precertified, or equivalently effective, non-toxic soil binders in a manner and at a frequency based on manufacturer recommendations;

12. Application of CARB-precertified, or equivalently effective, non-toxic soil binders annually to unpaved parking areas;

13. Application of CARB-precertified, or equivalently effective, non-toxic soil binders, or daily watering, or installation of temporary coverings to storage piles;

14. Application of CARB-precertified, or equivalently effective, non-toxic soil binders on inactive construction areas (disturbed lands within construction projects that are unused for at least four consecutive days);

15. Planting of tree windbreaks, consistent with the approved Landscaping Plan or installation of engineered windbreaks, such as wind fences, on the windward perimeter of construction projects if adjacent to open land;

16. Planting of vegetative ground cover in disturbed areas, consistent with the approved Landscaping Plan, as soon as possible;

17. Installation of a track-out control device to reduce mud/dirt track out from unpaved truck exit routes that exit onto City streets, that may be any or a combination of the three following options: (a) wheel washers where vehicles enter and exit unpaved areas onto paved roads, or requirement to wash off trucks and any equipment leaving the site each trip; (b) pipe-grid track-out-control device; or (c) installation of gravel bed track-out apron (3 inches deep, 25 feet long, 12 feet wide per lane and edged by rock berm or row of stakes). Additionally, any visible track-out onto City streets caused by Oil Operations will be swept using water-based sweepers at least once a day; and

18. Limit construction projects or schedule them to the extent possible so that they are not concurrent to prevent grading at multiple locations within the Oil Field.

L. Inspection and Maintenance Program Information. Upon request and reasonable prior notification, the Operator shall make available for inspection by City staff all required SCAQMD, CARB, and USEPA inspection and maintenance program records. This requirement applies to all sites subject to SCAQMD, CARB, and USEPA inspection and maintenance programs within City limits.

M. Greenhouse Gas Recordkeeping and Cap and Trade Program Information. Upon request, the Operator shall make available for inspection by City staff all required CARB and EPA greenhouse gas inventories and

inventory verifications that include emission from activities within the Oil Field, and CARB Cap and Trade program compliance documentation.

Regulatory Requirements

RR AQ-1 Activities within the City IOF must be conducted in compliance with all applicable SCAQMD rules and regulations, including but not limited to the following:

- **Rule 212:** Standards for Approving Permits and Issuing Public Notice
- **Rule 401:** Visible Emissions
- **Rule 402:** Nuisance
- **Rule 403:** Fugitive Dust
- **Rule 407:** Liquid and Gaseous Air Contaminants
- **Rule 408:** Circumvention
- **Rule 409:** Combustion Contaminants
- **Rule 429:** Start-Up and Shutdown Exemption Provisions for Oxides of Nitrogen
- **Rule 430:** Breakdown Provisions
- **Rule 431.1:** Sulfur Content of Gaseous Fuels
- **Rule 431.2:** Sulfur Content of Liquid Fuels
- **Rule 442:** Usage of Solvents
- **Rule 461:** Gasoline Transfer and Dispensing
- **Rule 462:** Organic Liquid Loading
- **Rule 463:** Storage of Organic Liquids
- **Rule 464:** Wastewater Separators
- **Rule 466:** Pumps and Compressors
- **Rule 466.1:** Valves and Flanges
- **Rule 476:** Steam Generating Equipment
- **Rule 1110.2:** Emissions from Gaseous- and Liquid-Fueled Internal Combustion Engines
- **Rule 1122:** Solvent Degreasers
- **Rule 1148:** Thermally Enhanced Oil Recovery Wells
- **Rule 1148.1:** Oil and Gas Production Wells
- **Rule 1148.2:** Notification and Reporting Requirements for Oil and Gas Wells and Chemical Suppliers (Amended September 4, 2015)
- **Rule 1149:** Storage Tank and Pipeline Cleaning and Degassing
- **Rule 1166:** Volatile Organic Compound Emissions from Decontamination of Soil
- **Rule 1173:** Control of Volatile Organic Compound Leaks from Components at Petroleum Facilities and Chemical Plants

- **Rule 1176:** Sumps and Wastewater Separators
- **Rule 1303:** New Source Review Requirements
- **Rule 1401:** New Source Review of Toxic Air Contaminants
- **Rule 1470:** Requirements for Stationary Diesel-Fueled Internal Combustion and Other Compression Ignition Engines
- **Regulation XX:** Regional Clean Air Incentives Market (RECLAIM)
- **Rule 2100:** Registration of Portable Equipment
- **Regulation XXX:** Title V Permits

4.2.5 THRESHOLDS OF SIGNIFICANCE

The Initial Study for the Project concludes that additional project-level analysis of the following thresholds of significance is required in this Draft EIR. According to Appendix G of the California Environmental Quality Act (CEQA) Guidelines, a project would normally have a significant adverse environmental impact on air quality if it would do the following:

Threshold 2-1: Conflict with or obstruct implementation of the applicable air quality plan.

Threshold 2-2: Violate any air quality standard or contribute substantially to an existing or projected air quality violation.

Threshold 2-3: 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 (including releasing emissions which exceed quantitative thresholds for ozone precursors).

Threshold 2-4: Expose sensitive receptors to substantial pollutant concentrations.

Threshold 2-5: Create objectionable odors affecting a substantial number of people.

To determine whether or not air quality impacts from the Project may be significant, impacts are evaluated and compared to the criteria established by the SCAQMD which are listed in Table 4.2-7. If impacts equal or exceed any of the criteria in Table 4.2-7, they would be considered significant. As necessary, all feasible mitigation measures will be identified and implemented to reduce any significant adverse air quality impacts from the Project to the maximum extent feasible.

TABLE 4.2-7
SOUTH COAST AIR QUALITY MANAGEMENT DISTRICT AIR QUALITY SIGNIFICANCE THRESHOLDS

Pollutant	Construction	Operation
Mass Daily Thresholds		
NOx	100 lbs/day	55 lbs/day
VOCs	75 lbs/day	55 lbs/day
PM10	150 lbs/day	150 lbs/day
PM2.5	55 lbs/day	55 lbs/day
SOx	150 lbs/day	150 lbs/day
CO	550 lbs/day	550 lbs/day
Lead	3 lbs/day	3 lbs/day
Toxic Air Contaminant, Odor, and Greenhouse Gas Thresholds		
TACs (including carcinogens and non-carcinogens)	Maximum Incremental Cancer Risk ≥ 10 in 1 million Cancer Burden > 0.5 excess cancer cases (in areas ≥ 1 in 1 million) Chronic and Acute Hazard Index ≥ 1.0 (project increment)	
Odor	Project creates a minimal odor nuisance pursuant to SCAQMD Rule 402	
GHGs	10,000 $MTCO_2e$/year for industrial facilities	
Ambient Air Quality Standards for Criteria Pollutants		
NO_2 1-hr average annual arithmetic mean	SCAQMD is in attainment; project is significant if it causes or contributes to an exceedance of the following attainment standards: 0.18 ppm (state) 0.03 ppm (state) and 0.0534 ppm (federal)	
PM10 24-hr average annual average	10.4 $\mu g/m^3$ (construction) and 2.5 $\mu g/m^3$ (operation) 1.0 $\mu g/m^3$	
PM2.5 24-hr average	10.4 $\mu g/m^3$ (construction) and 2.5 $\mu g/m^3$ (operation)	
SO_2 1-hr average 24-hr average	0.25 ppm (state) and 0.075 ppm (federal – 99th percentile) 0.04 ppm (state)	
Sulfate (24-hr average)	25 $\mu g/m^3$ (state)	
CO 1-hr average 8-hr average	SCAQMD is in attainment; project is significant if it causes or contributes to an exceedance of the following ambient standards: 20 ppm (state) and 35 ppm (federal) 9.0 ppm (state/federal)	
Lead 30-day average rolling 3-month average quarterly average	1.5 $\mu g/m^3$ (state) 0.15 $\mu g/m^3$ (federal) 1.5 $\mu g/m^3$ (federal)	

NOx: nitrogen oxides; lbs/day: pounds per day; VOCs: volatile organic compounds; PM10: respirable particulate matter with a diameter of 10 microns or less; PM2.5: fine particulate matter with a diameter of 2.5 microns or less; SOx: sulfur oxides; CO: carbon monoxide; TACs: toxic air contaminants; SCAQMD: South Coast Air Quality Management District; GHGs: greenhouse gasses; $MTCO_2e$/year: metric tons of carbon dioxide equivalent per year; NO_2: nitrogen dioxide; hr: hour; ppm: parts per million; $\mu g/m^3$: micrograms per cubic meter; SO_2: sulfur dioxide

Source: Yorke Engineering 2017.

In addition, the SCAQMD publishes Localized Significance Thresholds (LSTs) as an optional means of evaluating localized impacts from NOx, CO, PM10, and PM2.5. The LSTs would be used in place of ambient air quality modeling. LSTs are discussed in more detail under Threshold 2-4 below.

4.2.6 IMPACT ANALYSIS

Threshold 2-1: Would the Project conflict with or obstruct implementation of the applicable air quality plan?

The City IOF is located within the SoCAB, which is under the jurisdiction of the SCAQMD. The SCAQMD is the regional air pollution control agency primarily responsible for preparing the AQMP, which is a comprehensive air pollution control program for making progress toward and attaining the state and federal ambient air quality standards. The most recent AQMP was adopted by the Governing Board of the SCAQMD on March 3, 2017. An inventory of existing emissions from industrial facilities is included in the baseline inventory in the 2016 AQMP, as well as projections of the future emissions, which are based on source category growth factors provided by the Southern California Association of Government (SCAG). A significant impact would occur if the proposed Project were not consistent with the 2016 AQMP.

The 2016 AQMP demonstrates that applicable ambient air quality standards can be achieved within the timeframes required under federal law. The Project may include the operation of one or more new "stationary sources" such as an emergency generator engine[3] that would be subject to SCAQMD rules and regulations for new or modified sources, such as the SCAQMD's Regulation XIII, New Source Review, which requires that the new or modified source be equipped with BACT, provide offsets, and demonstrate compliance with ambient air quality standards through modeling. In addition, the Project must comply with prohibitory rules, as applicable, such as Rule 403, for the control of fugitive dust (RR AQ-1).

As previously presented in Table 4.2-6, the 2016 AQMP proposes control measures which seek to reduce emissions from mobile sources, as well as VOC emissions from VOC-emission-sources, which include oil and gas production facilities. The relevant control measures for VOC are summarized in the following sections.

- CMB-03 – Emission Reductions from Non-Refinery Flares
- MCS-02 – Application of All Feasible Control Measures
- FUG-01 – Improved Leak Detection and Repair

Additionally, TXM-09 - Control of Emissions from Oil and Gas Well Activities is proposed in the 2016 AQMD to provide BMPs for well maintenance and stimulation activities.

The equipment operated in association with the Project would include light-heavy, medium-heavy, and heavy-duty on-road vehicles, construction equipment, off-road equipment, and portable vapor combustion equipment. Operation of the equipment at the Project Site would not adversely impact implementation of any of the 2016 AQMP control measures. It is possible, however, that the equipment operated at the Project Site could be replaced with lower-emitting equipment as a consequence of one or more of these control measures, thus lowering emissions and potential air quality impacts. The Project would be expected to comply with any VOC monitoring or

[3] A stationary source is a permanent source of emissions, like a tank or boiler or emergency generator engine. An oil/gas well, while stationary and permanent, is not regulated as a stationary source, as it does not need a permit to operate (a well requires registration with AQMD, but does not require a permit).

reduction rules developed by the SCAQMD to implement the proposed control measures CMB-03, MSC-02, FUG-01 and TXM-09. Two control measures proposed in the 2016 AQMP, MOB-09 and MOB-14, may provide addition emission reduction credits that could be used to offset emission increases at the Project Site.

The GMC of SCAG's RCP forms the basis of the land use and transportation control measure portions of the AQMP. Projects that are consistent with the projections of the employment and population forecasts identified in the GMC are considered consistent with the 2016 AQMP growth projections. Workers would be required for construction and operation activities, including approximately 14 workers per shift for new well construction, 18 workers per shift for a fracturing event, 4 workers per shift for well rework. However, these workers would either be current employees of the Oil Field Operator, or contract labor that are anticipated to be supplied by the existing local labor pool. The number of full-time employees and vendors that travel to and work at the facility would be approximately 20 upon completion of the Project, which is negligible compared to the total SCAG population and employment forecasts. Therefore, the Project will also be consistent with the 2016 AQMP population and employment forecasts.

Drilling Regulations Section 21 requires the Oil Field Operator to conduct oil operations in accordance with the best available technology, safety devices and measures for the prevention of the release, escape, or emission of dangerous, hazardous, harmful and/or noxious gases, vapors, odors, substances or greenhouse gases. Some of the provisions in the Specific Plan's Drilling Regulations require air monitoring; use of portable flare for drilling to reduce air toxics emissions and greenhouse gases; closed systems for produced oil and water; use all off-road diesel construction equipment to comply with CARB and USEPA Tier 2, Tier 3, and Tier 4 engine requirements; requirements for drill rig engines; and applying setback requirements for drilling and redrilling activities; along with requiring a Fugitive Dust Control Plan. All of these requirements in Drilling Regulations Section 21 would assist in reducing emissions to prevent a conflict with or obstruction of the implementation of the 2016 AQMP.

The Project would serve existing and intended land uses and would be consistent with the goals and policies of the 2016 AQMP. It would not affect regional employment or job growth. Existing uses on and surrounding the Project Site would not be changed by the Project. The Project will not conflict with the AQMP or the other applicable plans described above. As a result, the Project is consistent with the AQMP and the impact would be less than significant. No mitigation is required.

Threshold 2-2: Would the project violate any air quality standard or contribute substantially to an existing or projected air quality violation?

To assess the air quality impacts from the Project, construction and operational emissions from the Maximum Buildout Scenario are compared to the SCAQMD mass daily significance thresholds shown in Table 4.2-7 above.

Construction Emissions

The Specific Plan allows for the construction of two new oil wells per year, with the construction of a third well upon approval. Up to 30 new wells are provided for under the Specific Plan over the life of the Project (2032). The Project also allows for multiple well rework events per year. For the emission estimates, it is assumed that there would be no more than one well stimulation event per year. Each of these activities is a short-duration event, most similar to construction; thus, for the purpose of this analysis, these activities are evaluated as construction activities. However,

the impacts of both "construction" and "operational" emissions are also combined and presented below in order to demonstrate the impacts due to these activities occurring at the same time.

Well construction involves a number of individual activities that have the potential to emit regulated air contaminants (i.e., NOx, SOx, CO, VOCs, PM10, and/or PM2.5). These activities are included in the modelling assumption for this short-term construction emissions analysis:

1. Well pad clearing and grading, which may emit PM10 and PM2.5 from earthwork activities, entrained road dust PM10 and PM2.5 emissions from vehicle travel on paved and unpaved roads in and around the Inglewood Oil Field, and combustion emissions (i.e., NOx, SOx, CO, VOCs, PM10, and PM2.5) from fuel combustion in the off-road equipment and work trucks.
2. Worker commuting, which may emit combustion emissions from fuel combustion in personal vehicles, and PM10 and PM2.5 from entrained road dust from vehicle travel on paved and unpaved roads.
3. Drilling, which may emit combustion contaminants from the combustion of diesel fuel in the mud pump and generator engines, and VOC and H_2S emissions from degassing drilling mud in the shale shakers.
4. Well Stimulation, which may emit combustion contaminants from the combustion of diesel fuel in the pump truck engines and the other equipment used to prepare and blend the stimulation fluids.
5. Well rework, which may emit combustion contaminants from the combustion of diesel fuel in the service rig engines.
6. Operation of work trucks, including, but not limited to, delivery trucks, water trucks, cement trucks, and dump trucks, which may emit combustion emissions from fuel combustion in the vehicles, and PM10 and PM2.5 from entrained road dust from vehicle travel on paved and unpaved roads.
7. Miscellaneous activities, such as operation of a crane and light plants (for nighttime operation), which may emit combustion emissions from fuel combustion in the equipment.

The emission estimates are based on the following considerations which are required by Drilling Regulations Section 21 and 31:

- The gaseous emissions from the shale shaker would be vented to a portable flare (Section 21.D).
- Off-road diesel construction equipment emissions are based on the following (Section 21.H):
    - CARB/USEPA Certification Tier 3 certified engines for engines below 750 horsepower and Tier 2 engines for engines at or above 750 horsepower; and
    - Each engine would be equipped with a CARB Verified Level 3 diesel catalyst capable of achieving an 85 percent reduction for Diesel Particulate Matter (DPM).
- Emissions from all drilling, re-drilling, reworking, and maintenance rig diesel engines, except rigs powered by on-road engines, are based on the following (Section 21.I):
    - CARB/USEPA Certification Tier 2, or better, certified engines; and

  - Each engine would be equipped with a second-generation heavy-duty diesel catalyst capable of achieving 90 percent reductions for hydrocarbons and for PM10.

- Fugitive dust emissions from travel on unpaved surfaces are controlled by watering three times per day and limiting vehicle speed to no more than 15 miles per hour (Section 21.K).
- Fugitive dust emissions from earth-moving activities are controlled by watering once every 3.2 hours.
- Well drilling is a five-step process: (1) site preparation, (2) grading, (3) mobilization and setup, (4) drilling, and (5) demobilization. Beginning in 2017, up to three wells could be drilled per year but no more than one drilling or redrilling rig may be in place at any one time (Section 31). Thus, three of the five steps could be conducted concurrently, but all five could not be conducted concurrently. For this analysis, the steps with the three highest emission levels for each pollutant were included in the total peak daily emissions as the "worst-case" peak day.
- Well stimulation is a three-step process, including (1) site preparation, (2) well stimulation, and (3) flow-back. Although the Specific Plan does not restrict the number of well stimulation events, for the purpose of the emission estimates in the Maximum Buildout Scenario, it is assumed that no more than one well stimulation event would be conducted per year. With this assumption, only one of these three steps could be conducted on the peak day. The well stimulation step has the highest emissions of each pollutant, so the site preparation and flow-back steps are not included in the peak daily emission total. The activities with the highest emissions and that are included in the tabulation of the peak daily emissions are shown in Table 4.2-8 using **bold** font.

The emission estimates are based on the following data and information.

Well Pad Construction	Grading: 0.5-acres; 1 water/vendor truck; 1 bulldozer; 1 off-road truck; 7 workers commuting; 2,000 cy of cut/fill balanced on-site; 5 days of site preparation; 4 days of grading
Well Drilling	Mobilization: 14 workers commuting; 6 work trucks; 13 hauler trucks; 2 water/vendor trucks; 1 crane; 5 days for mobilization Daytime/Nighttime Drilling: 14 workers commuting; 6 work trucks; 13 hauler trucks; 3 water/vendor/cement trucks; 1 crane; 1 drill rig; 2 mud pumps; 1 generator; 4 diesel powered night lights; 30 days for drilling Demobilization: 14 workers commuting; 6 work trucks; 13 hauler trucks; 14 hauler trucks; 1 water/vendor trucks; 1 crane; 3 days for demobilization

Well Completion	Without Well Stimulation: 14 workers commuting; 6 work trucks; 1 hauler truck; 2 water/vendor/cement trucks; 1 crane; 1 service rig; 3 days for well completion With Well Stimulation-Site Preparation: 7 workers commuting; 28 water trucks; 6 work trucks; 11 hauler trucks; 1 water/vendor truck; 1 crane; 5 days for site preparation With Well Stimulation- Main Activities: 18 workers commuting; 2 water/vendor/cement trucks; 5 hauler trucks; 2 vans; 6 pieces of heavy equipment; 4 mobile pump trucks; 1 crane; 2 days for main activities With Well Stimulation- Flowback: 7 workers commuting; 1 water/vendor truck; 7 hauler trucks; 29 flowback trucks; 1 crane; 14 days for flowback
Well Rework	4 workers commuting per shift per well; 4 truck trips per day per well; 1 service rig per well; up to 12 hours per week per well.

Source: Yorke 2017a

The peak daily emissions estimates are based on one well drilled, one well completion with stimulation, one well completion without stimulation, and one well rework event, all assumed to be conducted on the peak day.

Operating Emissions

Operating emissions fall into two general categories: (1) worker commutes and (2) fugitive emissions from piping components, such as valves, flanges, fittings, and pump or compressor seals. For worker commutes, it was assumed that 20 workers would be commuting during the dayshift on week days; 1 worker would be commuting for the nightshift on week days; 2 workers would be commuting during the day shift for weekends; and 1 worker would be commuting on the weekend for the nightshift. For fugitive emissions, it was assumed that there would be 30 new production wells operating creating the fugitive emissions. Operations are assumed to be 24 hours per day, 7 days a week, for 365 days of the year. The operating emissions would reach the peak level in the last year of the lifetime of the Project, as that is when the maximum number of wells would be in operation. Peak daily unmitigated operational emissions are also presented in Table 4.2-8.

As described above, the activities that could occur concurrently are included in the peak daily emissions. The construction emissions that are shown in Table 4.2-8 using **bold** font represent the worst case overlap of activities for that particular pollutant. Therefore, the peak day for VOCs may have a different set of assumptions than the peak day for NOx emissions, but both are equally possible depending on the overlap of events. Only the **bold** emissions are totaled and contribute to the “Peak Day Emissions” for that pollutant. For example, the peak day for PM2.5 included site preparation, mobilization and setup, drilling, well completion, well stimulation, and well rework. Table 4.2-8 provides a summary of the unmitigated peak daily emissions for these activities. Emission calculation worksheets are provided in Appendix C-1 of this Draft EIR.

TABLE 4.2-8
UNMITIGATED PEAK DAILY EMISSIONS AND REGIONAL SIGNIFICANCE DETERMINATION

Phase	VOCs (lbs/day)	CO (lbs/day)	NOx (lbs/day)	SOx (lbs/day)	PM10 (lbs/day)	PM2.5 (lbs/day)
CONSTRUCTION EMISSIONS						
Site Preparation	0.51	5.90	5.66	0.01	7.31	**2.24**
Grading	**0.91**	**12.87**	**13.30**	**0.03**	4.86	0.96
Mobilization and Setup (for drilling)	**3.00**	**45.26**	**51.68**	**0.10**	**9.95**	**1.40**
Drilling	**10.69**	**493.65**	**839.87**	**2.37**	**12.19**	**4.29**
Demobilization	0.74	6.19	8.86	0.02	**9.62**	1.07
Well Completion	**0.63**	**22.13**	**34.43**	**0.05**	**4.49**	**0.60**
Well Stimulation (site preparation)	0.82	4.77	9.84	0.02	13.39	1.44
Well Stimulation	**10.21**	**473.84**	**762.07**	**0.92**	**17.35**	**4.53**
Well Stimulation (flow-back)	0.40	2.94	3.22	0.01	8.12	0.85
Well Rework	**0.33**	**26.09**	**45.09**	**0.05**	**2.36**	**0.38**
Subtotal-Construction Peak Daily Emissions*	**25.78***	**1,073.83***	**1,746.45***	**3.51***	**55.96***	**13.44***
Regional SCAQMD Construction Threshold	*75*	*550*	*100*	*150*	*150*	*55*
OPERATIONAL EMISSIONS						
Worker Activities	0.22	1.53	0.14	0.01	1.96	0.23
Fugitive Gas Emissions	37.78	0.00	0.00	0.00	0.00	0.00
Subtotal-Operation Peak Daily Emissions	**38.00**	**1.53**	**0.14**	**0.01**	**1.96**	**0.23**
Regional SCAQMD Operational Threshold	*55*	*550*	*55*	*150*	*150*	*55*
COMBINED CONSTUCTION AND OPERATION EMISSIONS						
Total Peak Daily Emissions	**63.78**	**1075.36**	**1,746.59**	**3.52**	**57.92**	**13.67**
Regional SCAQMD Operational Threshold	*55*	*550*	*55*	*150*	*150*	*55*
Significant?	**Yes**	**Yes**	**Yes**	No	No	No

VOCs: volatile organic compounds; lbs/day: pounds per day; CO: carbon monoxide; NOx: nitrogen oxides; SOx: sulfur oxides; PM10: particulate matter [diameter of 10 microns or less]; PM2.5: fine particulate matter [diameter of 2.5 microns or less]; SCAQMD: South Coast Air Quality Management District; CEQA: California Environmental Quality Act

* Total of **bold** values.

Source: Yorke 2017a.

As shown, considering the most conservative scenario of construction and operational emissions of the Maximum Buildout Scenario combined, and then comparing those unmitigated emissions to the regional SCAQMD Operational Thresholds, impacts of the Project would be significant for VOCs, NO_x and CO and would be less than significant for SOx, PM10, and PM2.5. Mitigation is required to reduce these significant impacts.

Emissions Impacts

Even with compliance with applicable regulations as summarized in RR AQ-1, unmitigated emissions from the construction activities associated with the Project would exceed the significance thresholds for VOC, NOx and CO; therefore, mitigation is required. Mitigation Measure (MM) AQ-1 and MM AQ-2 are required to reduce these significant impacts, which are applicable to construction-related activities only. MM AQ-1 requires that all drilling, re-drilling, reworking, well stimulation, and maintenance rig diesel engines, except rigs powered by on-road engines, shall utilize CARB/USEPA Tier 4 Certified engines or other methods approved by CARB as meeting or exceeding the Tier 4 standard and shall utilize second generation heavy-duty diesel catalysts capable of achieving 90 percent reductions for hydrocarbons and for PM10. MM AQ-2 requires that the Oil Field Operator not conduct well drilling operations and well stimulation activities concurrently.

The proposed MMs would reduce emissions of all criteria pollutants. The mitigated emissions are presented in Table 4.2-9. As previously shown in Table 4.2-8, the activities that could occur concurrently are included using **bold** font to represent the worst case overlap of activities for that particular pollutant, inclusive of MM AQ-1 and MM AQ-2.

TABLE 4.2-9
MITIGATED PEAK DAILY EMISSIONS AND REGIONAL SIGNIFICANCE DETERMINATION

Phase	VOCs (lbs/day)	CO (lbs/day)	NOx (lbs/day)	SOx (lbs/day)	PM10 (lbs/day)	PM2.5 (lbs/day)
CONSTRUCTION EMISSIONS (Mitigated with MM AQ-1 and MM AQ-2)						
Site Preparation	0.51	5.90	5.66	0.01	7.31	**2.24**
Grading	**0.91**	**12.87**	13.30	0.03	4.27	0.68
Mobilization and Setup (for drilling)	**3.00**	**45.26**	51.68	**0.10**	**9.95**	**1.40**
Drilling	**8.93**	**493.65**	89.29	**2.37**	**9.81**	**1.91**
Demobilization	0.74	6.19	8.86	**0.02**	**9.62**	1.07
Well Completion	**0.57**	**22.13**	6.63	**0.05**	**4.40**	**0.51**
Well Stimulation (site preparation)	**0.82**	**4.77**	9.84	**0.02**	**13.39**	**1.44**
Well Stimulation	8.80	473.84	**485.80**	0.92	15.66	2.84
Well Stimulation (flow-back)	0.40	2.94	3.22	0.01	8.12	0.85
Well Rework	**0.23**	**26.09**	3.39	**0.05**	**2.23**	**0.25**
Subtotal-Construction Peak Daily Emissions	**14.46***	**604.76***	**485.80***	**2.61***	**49.40***	**7.75***
Regional SCAQMD Construction Threshold	*75*	*550*	*100*	*150*	*150*	*55*
OPERATIONAL EMISSIONS (Not Mitigated)						
Worker Activities	0.22	1.53	0.14	0.01	1.96	0.23
Fugitive Gas Emissions	37.78	0.00	0.00	0.00	0.00	0.00
Subtotal-Operation Peak Daily Emissions	**38.00**	**1.53**	**0.14**	**0.01**	**1.96**	**0.23**
Regional SCAQMD Operational Threshold	*55*	*550*	*55*	*150*	*150*	*55*
COMBINED CONSTUCTION AND OPERATION EMISSIONS (Mitigated with MM AQ-1 and MM AQ-2)						
Total Peak Daily Emissions	**52.46**	**606.29**	**485.94**	**2.62**	**51.36**	**7.98**
Regional SCAQMD Operational Threshold	*55*	*550*	*55*	*150*	*150*	*55*
Significant?	No	**Yes**	**Yes**	No	No	No
MM AQ-3 Performance Standard Reductions	None	(56.29)	(430.94)	None	None	None
Significant?	No	No	No	No	No	No

VOCs: volatile organic compounds; lbs/day: pounds per day; CO: carbon monoxide; NOx: nitrogen oxides; SOx: sulfur oxides; PM10: particulate matter [diameter of 10 microns or less]; PM2.5: fine particulate matter [diameter of 2.5 microns or less]; SCAQMD: South Coast Air Quality Management District; CEQA: California Environmental Quality Act

* Total of **bold** values.

Source: Yorke 2017a.

As shown in Table 4.2-9, even with compliance with RR AQ-1 and implementation of MM AQ-1 and MM AQ-2, the Project's impacts based on the Maximum Buildout Scenario would remain significant for NOx and CO. These impacts are summarized below.

> AQ Impact 1: Peak daily NO_x emissions exceed the regional significance threshold of 55 pounds per day and impacts remain significant for well stimulation (fracking). Well stimulation activities were assumed to require large pumps providing up to 10,000 hydraulic horsepower (HHP) for the hydraulic fracturing. Up to four diesel pump rigs at 2,500-HP each were assumed for the emission analysis, based on the Maximum Buildout Scenario. Therefore the use of multiple, large capacity engines to power the well stimulation pumps is the primary contributor to significant peak daily NO_x impacts.
>
> AQ Impact 2: Peak daily NO_x impacts remain significant when well drilling occurs on the same day as other on-site activities (e.g., general site preparation, drilling mobilization and setup, grading, demobilization, well completion, well stimulation, site preparation and flow-back, and well rework, as well as operational emissions from worker activities and fugitive emissions from piping and connections throughout the City IOF). Well drilling rigs generally require up to four 750-HP engines to power the drill and mud pumps. Well drilling alone is predicted to emit 89 pounds per day of NO_x, compared to a CEQA significance threshold of 55 pounds per day, as shown in Table 4.2-9.
>
> AQ Impact 3: Peak daily CO emissions exceed the significance threshold of 550 pounds per day when well drilling occurs on the same day as other on-site activities (e.g., general site preparation, drilling mobilization and setup, grading, demobilization, well completion, well stimulation, site preparation and flow-back, and well rework, as well as operational emissions from worker activities and fugitive emissions from piping and connections throughout the City IOF), or when well stimulation (fracking) occurs on the same day as other on-site activities. Peak daily CO emissions exceed the significance threshold of 550 pounds per day. This conclusion assumes that multiple activities are conducted on the same day, although no single activity exceeds the significance threshold by itself. The largest single contributor is drilling emissions at 493 pounds per day. If drilling emissions were eliminated, peak daily CO emissions would remain significant due to well stimulation emissions at 473 pounds per day. Other sources of CO are relatively minor contributors to the CO impacts.

There are also mitigation measures in DOGGR's Draft Mitigation Policy Manual prepared pursuant to the SB4 EIR, which is included in Appendix B-2 of this Draft EIR, that are applicable to the analysis of criteria air pollutant emissions, as listed below (DOC 2015b):

- SB4 MM AQ-2b Reduce Emissions from Portable Equipment and Mobile Sources
- SB4 MM AQ-2c Reduce Emissions from Dust-Causing Activities

The intent of these DOGGR SB4 measures is already incorporated into requirements set forth in the Drilling Regulations of the Specific Plan, and no new or additional measures related to these SB4 MMs are required.

Because even with implementation of MM AQ-1 and MM AQ-2, the Project's impacts based on the Maximum Buildout Scenario would remain significant for NOx and CO, MM AQ-3 is required to further reduce emissions of criteria pollutants to less than significant. MM AQ-3 requires the Oil Field Operator to demonstrate that the activities included in the Annual Drilling Plan will be conducted in compliance with performance standards that correspond to the SCAQMD's operational thresholds of significance. MM AQ-3 requires compliance with the standards be demonstrated through a quantified analysis using an SCAQMD-approved methodology that

includes a description of the anticipated activities, equipment, duration/schedule, locations, and distances to the nearest sensitive receptors. Any changes to the planned activities and/or equipment assumed in the Annual Drilling Plan must be subject to the same quantified analysis not less than 30 days prior to the start of the activities.

MM AQ-3 may be met through a number of options that reduce, minimize, or eliminate certain air emissions from the proposed Project. The Performance Standard allows the Oil Field Operator reasonable and substantial flexibility to accomplish the target reductions and demonstrate that the Project impacts are reduced below the significance thresholds. A list of possible alternative control technologies, management strategies and other compliance options that could be used individually or in combination to achieve compliance with the Performance Standard are presented below. The technologies listed herein are not mandates, nor is it intended to be a complete list of alternative methods to achieve the Performance Standard. The technologies listed are provided to illustrate that multiple alternatives may be available to address each of the activities with emissions exceeding a significance threshold. The feasibility of these options is provided in *Feasibility Assessment of Air Quality Performance Standards for the Inglewood Oil Field Project for Culver City* included in Appendix C-2 of this Draft EIR

Option 1: Concurrent Activities

The concurrent operation of well drilling, well stimulation, and other City IOF activities could be prohibited to the level necessary to remain below CEQA significance thresholds for CO, NOx, and PM10. Applying this option will reduce peak daily emissions (i.e., the maximum emission that could occur on any individual day) while maintaining the equipment assumptions for well drilling, well stimulation, and other City IOF activities through implementation of the Project. This would require scheduling well construction so that drilling or well stimulation does not overlap any other well preparation, completion, or stimulation activities (Yorke 2017b).

Option 2: SCAQMD Emission Reduction Credits

Emission offsets or contemporaneous reductions, sometimes called ‘netting’, to offset the excess emissions have been used by all levels of air agencies and air program to force a beneficial air quality result due to an emission increase. Under the Clean Air Act (CAA), emission offsets must be 1) real; 2) quantifiable; 3) permanent; 4) enforceable; and 5) surplus (i.e., not required by rule or regulation) (Yorke 2017b).

There are three types of credits managed and administered by the SCAQMD that could be used by the Oil Field Operator to offset emissions from the Project Site. These include the following:

- Emission Reduction Credits (ERCs), available for NO_x, CO, and PM10, are considered permanent, life-of-project reductions.
- Short Term Emission Reduction Credits (STERCs), available for NO_x, CO, and PM10, are considered valid for discrete years, having a start and expiration year.
- Regional Clean Air Incentives Market (RECLAIM) Trading Credits (RTCs), available only for NO_x, are administered through the SCAQMD cap-and-trade RECLAIM program.

The SCAQMD maintains a registry of ERCs and STERCs, which are available for purchase, typically through a broker. The most recent SCAQMD ERC/STERC registry, updated October 2016, can be viewed at http://www.aqmd.gov/home/permits/emission-reduction-credits. RTCs are typically traded in higher volume and are obtained through use of broker. The SCAQMD list of brokers can be viewed at http://www.aqmd.gov/home/permits/erc-brokers.

Note that when applying RTCs, ERCs, or STERCs, the offsets would have to be provided for each day that excess emissions would occur. For example, well drilling may require 30 days. Well drilling by itself does not exceed the significance threshold. If mobilization were to overlap well drilling by 5 days, then the offsets would be required for each day of that 5-day period.

Option 3: Local Culver City Emission Reduction Program

Emission offsets or contemporaneous reductions, sometimes called 'netting', to offset the excess emissions have been used by all levels of air agencies and air program to force a beneficial air quality result due to an emission increase. Under the Clean Air Act (CAA), emission offsets must be 1) real; 2) quantifiable; 3) permanent; 4) enforceable; and 5) surplus (i.e., not required by rule or regulation). Offsets obtained through or recognized by the SCAQMD typically meet the offset CAA criteria stated above, however because the Oil Field Operator would be seeking to offset temporary emissions, a temporary offset or contemporaneous reduction may be acceptable.

As a Lead Agency pursuant to CEQA, Culver City could independently develop an emissions offset program for this Specific Plan. Any offset program developed by the City should require the Oil Field Operator to demonstrate that any emission reductions not obtained through SCAQMD also meet the criteria identified above. In this case, enforcement could be through the Annual Drilling Plan, individual drilling permit, or city ordinances designed to limit the emissions such that the reduction can be quantified and attributed to the Specific Plan. The Oil Field Operator could provide concurrent emission reductions from other oilfield operations; and/or concurrent emission reductions from other (off-site) local sources. Emission reductions could come from any source of diesel emissions, e.g., on-site service truck(s) could be converted to an alternative fuel such as CNG. Independent development of an emissions offset program would likely require resources to establish and maintain the program and would be developed in coordination with the SCAQMD as a form of voluntary emission reduction agreement (VERA) for the Specific Plan (Yorke 2017b).

Option 4: Limiting Engine Intensity

Limiting the number and size of engines running at the City IOF on any single day will reduce the engine intensity and may reduce many of the AQ impacts to below significance. For example, the Oil Field Operator may have flexibility when selecting the size of the engines servicing a load. EPA's Tier 4 off-road emission standards for large engine class (engines greater than 750 brake horsepower [bhp]), at 2.6 grams per bhp-hour (g/bhp-hr), is a substantially higher emission rate than the 0.3 g/bhp-hr standard for engines between 750 and 600 bhp. To illustrate, if a well stimulation activity required 2,000-HP to be supplied by electric generators, there would be substantially less NOx emissions from three 750-HP engines than there would be from a single 2,000-HP engine (Yorke 2017b).

Option 5: Alternatives to Diesel

Alternatives to the use of diesel include use of gasoline-powered engines, natural gas or propane-fired engines, and use of electric power provided directly from the utility power grid. Use of an alternative fuel (natural gas, propane, or gasoline) would not significantly lower criteria pollutant emissions because of the Tier 4 Final engine standards already assumed/required under MM AQ-1. Because NOx emissions would result from any combustion option, use of an alternative fuel would provide minimal benefit as fuel combustion produces NOx emissions, regardless of the fuel type. However use of non-diesel alternative fuels for local engines would eliminate DPM, thereby reducing health risk impacts. Use of electric drill rigs would also eliminate all local emissions from this source and relocate the emissions to power plants. The energy used for electric drill rigs is anticipated to result in generally less emissions at these power plants as

compared to the same activity powered by diesel fuel. The use of grid-supplied electric power would reduce local emissions of NOx, PM10 and PM2.5, potentially reducing the impacts to ambient air quality (as was assessed via the Localized Significance Threshold [LST] analysis) (Yorke 2017b).

Option 6: Air Dispersion Modeling

The air dispersion modeling analysis used dispersion parameters that are representative of the coastal metropolitan area within the South Coast Air Basin, but not specific to the local topography of the City IOF. The Oil Field Operator may conduct an air dispersion modeling analysis that contains specific parameters for actual equipment to be used, specific site location of drilling, etc. A situation-specific air dispersion modeling analysis may demonstrate impacts that would be less than the applicable ambient air quality standards for PM10 (Yorke 2017b).

Option 7: Other Feasible Technologies or Methods

There are various other means of reducing air quality impacts that may be available to the Oil Field Operator, such as increasing setbacks, reducing daily activities, or using more advanced technologies. This option is provided to ensure that the Oil Field Operator considers all available options for reducing air quality impacts, with the understanding that these options must be measurable and beyond the expectation of compliance with regulations (Yorke 2017b).

MM AQ-3 would reduce impacts to less than significant through the following implementation of the Options presented above.

AQ Impact 1 (Peak daily NOx from Hydraulic Fracturing): Operational scenarios that may allow the Oil Field Operator to demonstrate compliance with the Performance Standard include, but are not limited to the following:

a. Concurrent emission reductions from other IOF local sources (Option 3)
b. Limit engine intensity from City IOF operations (Option 4)
c. Electrification of engines used for well stimulation activities (Option 5). The use of a non-diesel alternative fuel (e.g., on-site use of natural gas, gasoline powered engines) would provide minimal benefit for NO_x emissions, as fuel combustion produces NOx emissions regardless of the fuel type.
d. Choose not to conduct well stimulation during that calendar year (Option 7)
e. Another feasible approach proposed by the Oil Field Operator (Option 7)

If options a through e cannot be demonstrated to be feasible and/or cannot be demonstrated to satisfy MM AQ-3 to the satisfaction of the City of Culver City, then the Oil Field Operator may pursue NOx emissions offsets in the form of RTCs, ERCs, or Short Term ERCs to mitigate excess emissions (Option 2).

AQ Impact 2 (Peak daily NOx from Well Drilling): Operational scenarios that may allow the Oil Field Operator to demonstrate compliance with the Performance Standard include, but are not limited to the following:

a. Schedule City IOF activities so that well drilling does not overlap any other well preparation or completion activities (Option 1)
b. Concurrent emission reductions from other IOF local sources (Option 3)

c. Limit engine intensity from City IOF operations (Option 4)

d. Electrification of engines used for well drilling (Option 5). The use of a non-diesel alternative fuel (e.g., on-site use of natural gas, gasoline powered engines) would provide minimal benefit for NOx emissions, as fuel combustion produces NOx emissions regardless of the fuel type.

e. Another feasible approach proposed by the Oil Field Operator (Option 7)

If options a through e cannot be demonstrated to be feasible and/or cannot be demonstrated to satisfy MM AQ-3 to the satisfaction of the City of Culver City, then the Oil Field Operator may pursue NOx emissions offsets in the form of RTCs, ERCs, or Short Term ERCs to mitigate excess emissions (Option 2). Note that when applying RTCs, ERCs, or STERCs, the offsets would have to be provided for each day that excess emissions would occur.

AQ Impact 3 (Peak daily CO from City IOF Activities): Operational scenarios that may allow the Oil Field Operator to demonstrate compliance with the Performance Standard include, but are not limited to the following:

a. Schedule well construction activities so that well drilling does not overlap any other well preparation, completion and stimulation activities (Option 1)

b. Concurrent emission reductions from other IOF local sources (Option 3)

c. Limit engine intensity from City IOF operations (Option 4)

d. Electrification of engines used for well drilling (Option 5). The use of a non-diesel alternative fuel (e.g., on-site use of natural gas, gasoline powered engines) would provide minimal benefit for CO emissions, as fuel combustion produces CO emissions regardless of the fuel type.

e. Another feasible approach proposed by the Oil Field Operator (Option 7)

If options a through e cannot be demonstrated to be feasible and/or cannot be demonstrated to satisfy MM AQ-3 to the satisfaction of the City of Culver City, then the Oil Field Operator may pursue CO emissions offsets in the form of ERCs or Short Term ERCs to mitigate excess emissions (Option 2). Note that when applying ERCs or STERCs, the offsets would have to be provided for each day that excess emissions would occur.

MM AQ-3 requires that if emission offsets are proposed to mitigate any excess emissions, the Oil Field Operator must provide a minimum of 20 percent of those offsets from local sources, specifically within the Inglewood Oil Field as a whole. If offsets totaling 20 percent of the offset requirement are not available, the Oil Field Operator must document that a good-faith effort was made to obtain local offsets. With implementation of MM AQ-1, MM AQ-2, and MM AQ-3, NOx and CO for overlapping construction and operational emissions would be less than significant.

Threshold 2-3: Would the project 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 (including releasing emissions which exceed quantitative thresholds for ozone precursors)?

Significant adverse cumulative air quality impacts could occur if the Project resulted in a cumulatively considerable net increase of a criteria pollutant for which the SoCAB exceeds federal and state ambient air quality standards and has been designated as an area of non-attainment by the USEPA and/or CARB. The SoCAB is a non-attainment area for ozone, PM10, and PM2.5. Because NOx and VOCs are precursors to ozone, NOx and VOCs are treated as non-attainment pollutants for the purpose of this analysis.

"Cumulatively considerable" means that the incremental effects of a Project are considerable when viewed in connection with the effects of past projects, other current projects, and probable future projects. Related projects could exceed the applicable air quality standard or contribute to an existing or projected air quality exceedance when considered in combination with the effects of the project.

Individual projects that generate construction or operational emissions that exceed the SCAQMD's recommended daily thresholds for project-specific impacts would also cause a cumulatively considerable increase in emissions for those pollutants for which the SoCAB is in non-attainment and, therefore, are considered to have significant adverse cumulative air quality impacts.

As discussed under Threshold 2-2, mitigated peak daily emissions for all criteria pollutant emissions associated with construction and operation of the Project would be less than the regional significance thresholds after implementation of MM AQ-1, MM AQ-2, and MM AQ-3. However, NOx and CO emissions could potentially approach the significance threshold. The Project is located in the northwestern corner of the Inglewood Oil Field, adjacent to the County IOF, where other oil drilling, construction, maintenance, and well stimulation activities are anticipated to increase in the future, pursuant to the limits in the Community Services District (CSD) Settlement Agreement. The County IOF is expected to have similar activities and similar, or possibly higher, levels of emissions as compared to the Project.

For the City IOF Project, MM AQ-1, MM AQ-2 and MM AQ-3 would reduce the regional impacts during construction and operation of the Project to less than significant. Per SCAQMD guidance, a project that is less than significant individually is considered less than significant cumulatively as well. Therefore, additional mitigation is not required to address cumulative effects and the Project would not result in cumulatively considerable net increase of criteria pollutants.

Threshold 2-4: Would the project expose sensitive receptors to substantial pollutant concentrations?

Ambient air quality standards were developed to protect human health from exposure to criteria pollutants (NOx, CO, PM10, and PM2.5). SCAQMD developed a method for evaluating project's emissions relative to a localized significance threshold (LST) that can be used by public agencies to determine whether or not a project may generate a significant adverse localized air quality impact. LSTs represent the maximum emissions from a project that will not cause or contribute to an exceedance of the most stringent applicable federal or state ambient air quality standard, and are developed based on the ambient concentrations of that pollutant for each source receptor area.

Health risk standards (e.g., SCAQMD Rule 1401 and SCAQMD CEQA Significance Thresholds) were developed to protect human health from exposure to TAC emission. The following are typically considered to be sensitive receptors: long-term health care facilities, rehabilitation centers, convalescent centers, retirement homes, residences, schools, playgrounds, child care centers, and athletic facilities. Other receptors that may be considered for evaluating public health

are residences and worker locations. Potential impacts related to exposure to criteria pollutants and TACs are assessed in the following sections.

LST Criteria Pollutant Impacts

The Project's impact of criteria pollutant emissions based on the Maximum Buildout Scenario to sensitive receptors is evaluated using the SCAQMD's LST methodology. LSTs are only applicable to the following criteria pollutants: NOx, CO, PM10, and PM2.5 and are limited to emissions generated on the Project Site. LSTs represent the maximum emissions from a project that are not expected to cause or contribute to an exceedance of the most stringent applicable federal or state ambient air quality standard and are developed based on the ambient concentrations of that pollutant for each source receptor area and distance to the nearest sensitive receptor. For PM10, LSTs were derived based on requirements in SCAQMD Rule 403, Fugitive Dust.

The LST mass rate lookup tables provided in the SCAQMD guidance document allow a user to determine if the daily emissions for proposed construction or operational activities would result in significant localized air quality impacts. If the calculated emissions for the proposed construction or operational activity is below the LST emission levels found on the LST mass rate lookup tables and no potentially significant impacts are found to be associated with other environmental issues, then the proposed construction or operation activity is not significant for local impact of that pollutant. Proposed projects whose calculated emissions for the proposed construction or operational activities are above the LST emission levels found in the LST mass rate lookup tables should not assume that the project would necessarily generate adverse impacts. Detailed air dispersion modeling may demonstrate that pollutant concentrations are below ambient air quality standards, and would thus be less than significant (see Option 6 of MM AQ-3 above).

The LST lookup tables provide emission thresholds for projects of one acre, two acres, and five acres. The one-acre size, the most conservative threshold, which is used for sites of one acre or less, was selected based on the well pad area of ½ acre. The Specific Plan's Drilling Regulations mandate a 400-foot (122-meter) setback from the property line for all well construction activities. The LST lookup tables have divisions of 100 and 200 meters. The LSTs listed herein are determined by linear interpolation from the lookup tables in the guidance document.

Construction

For the LST analysis for construction activities, the same assumptions that were applied to the analysis in Threshold 2-2 are applied here. Operating emissions fall into two general categories: 1) worker commutes, and 2) fugitive emission from piping components, such as valves, flanges, fittings, and pump or compressor seals. The operating emissions will reach the peak level in the last year of the lifetime of the Project (under the assumption of all activities completed within 11 years [2028]), as that is when the maximum number of wells would be in operation.

Table 4.2-10 provides a summary of the unmitigated peak daily emissions for construction and operations using the highest emitting concurrent activities. As described above, the activities with the highest emissions that could occur concurrently, and therefore included in the tabulation of the peak daily emissions, and are shown in Table 4.2-10 using **bold** font. Emission calculation worksheets are provided in Appendix C-1 of this Draft EIR.

Operations

Operating emissions fall into two general categories: (1) worker commutes and (2) fugitive emission from piping components, such as valves, flanges, fittings, and pump or compressor

seals. The operating emissions will reach the peak level in the last year of the lifetime of the Project, as that is when the maximum number of wells would be in operation. Peak daily unmitigated operations emissions are presented also in Table 4.2-10.

TABLE 4.2-10
UNMITIGATED PEAK DAILY ON-SITE EMISSIONS AND LST SIGNIFICANCE DETERMINATION

Phase	CO (lbs/day)	NOx (lbs/day)	PM10 (lbs/day)	PM2.5 (lbs/day)
CONSTRUCTION EMISSIONS				
Site Preparation	4.94	5.32	7.22	**2.22**
Grading	**11.91**	**12.96**	4.77	0.94
Mobilization and Setup (Drilling)	**42.76**	**47.80**	**9.61**	**1.30**
Drilling	**489.65**	**837.68**	**11.71**	**4.17**
Demobilization	3.69	4.98	**9.27**	0.96
Well Completion	**20.14**	**33.46**	**4.25**	**0.54**
Well Stimulation (site preparation)	2.72	4.19	13.10	1.34
Well Stimulation	**470.85**	**757.39**	**16.93**	**4.41**
Well Stimulation (flow-back)	1.90	2.16	7.97	0.81
Well Rework	**25.51**	**44.75**	**2.28**	**0.36**
Subtotal-Construction Peak Daily Emissions*	**1,060.82***	**1,734.04***	**54.05***	**13.00***
LST SCAQMD Construction Significance Threshold [a]	*1,482.5*	*128.7*	*33.6*	*10.2*
OPERATION EMISSIONS				
Worker Activities	1.53	0.14	1.96	0.23
Fugitive Gas Emissions	0.00	0.00	0.00	0.00
Subtotal-Operation Peak Daily Emissions*	**1.53**	**0.14**	**1.96**	**0.23**
LST SCAQMD Operating Significance Threshold [a]	*1,482.5*	*128.7*	*8.54*	*2.66*
COMBINED CONSTRUCTION AND OPERATION EMISSIONS				
Total Peak Daily Emissions	1,062.35	1,734.18	56.01	13.23
LST SCAQMD Operating Significance Threshold [a]	*1,482.5*	*128.7*	*8.54*	*2.66*
Significant?	No	**Yes**	**Yes**	**Yes**

CO: carbon monoxide; lbs/day: pounds per day; NOx: nitrogen oxides; PM10: respirable particulate matter with a diameter of 10 microns or less; PM2.5: fine particulate matter with a diameter of 2.5 microns or less; LST: localized significance threshold

* Total of **bold** values.

[a] The Project requires a 400-foot (122-meter) setback from the property line for well construction activities. The LST lookup tables have divisions of 100 and 200 meters. The LSTs listed herein are determined by linear interpolation. The LST values used are for SRA#2, Northwest Coastal LA County.

Source: Yorke 2017a

The analysis in Table 4.2-10 demonstrates that (1) the NOx, PM10, and PM2.5 emissions from overlapping construction and operation activities exceed LSTs and thus may potentially contribute to an exceedance of an ambient air quality standard and (2) health impacts associated with unmitigated emissions are potentially significant because the emissions may exceed a level at

which health effects could occur. Thus, health impacts associated with the construction emissions from the Project are determined to be potentially significant and require mitigation.

Mitigation – Criteria pollutants

As shown in Table 4.2-10, without mitigation, on-site emissions would exceed the LST significance criteria for NOx, PM10, and PM2.5 during well construction and stimulation activities.

As described above, the activities with the highest emissions that could occur concurrently, and therefore included in the tabulation of the peak daily mitigated emissions, and are shown in Table 4.2-11 using **bold** font. MM AQ-1 and MM AQ-2 are appropriate for mitigating LST impacts from NOx, PM10, and PM2.5 emissions from diesel-fueled equipment. While MM AQ-3 requires that additional emissions reductions be implemented to reduce Project impacts, MM AQ-3 does not specifically require that the facility operator reduce emissions locally, and thus even with MM-AQ-3, the Project could continue to have localized adverse impacts. Still, this would not preclude the Oil Field Operatory from voluntarily applying a future technology or operational adjustments that may further reduce localized emissions. The mitigated emissions are shown in Table 4.2-11.

TABLE 4.2-11
MM AQ-1 AND MM AQ-2: MITIGATED PEAK DAILY EMISSIONS AND LST DETERMINATION

Phase	CO (lbs/day)	NOx (lbs/day)	PM10 (lbs/day)	PM2.5 (lbs/day)
CONSTRUCTION EMISSIONS (Mitigated with MM AQ-1 and MM AQ-2)				
Site Preparation	4.94	5.32	**7.22**	**2.22**
Grading	**11.91**	**12.96**	4.18	0.65
Mobilization and Setup (for drilling)	**42.76**	**47.80**	**9.61**	**1.30**
Drilling	**489.65**	87.09	9.34	1.79
Demobilization	3.69	**4.98**	**9.27**	**0.96**
Well Completion	**20.14**	**5.66**	**4.16**	**0.45**
Well Stimulation (site preparation)	**2.72**	4.19	13.10	1.34
Well Stimulation	470.85	**481.12**	**15.24**	**2.72**
Well Stimulation (flowback)	1.90	2.16	7.97	0.81
Well Rework	**25.51**	**3.05**	**2.14**	**0.23**
Subtotal-Construction Peak Daily Emissions	**592.69***	**555.57***	**47.64***	**7.88***
LST SCAQMD Construction Significance Threshold [a]	*1,482.5*	*128.7*	*33.6*	*10.2*
OPERATIONAL EMISSIONS (Not Mitigated)				
Worker Activities	1.53	0.14	1.96	0.23
Fugitive Gas Emissions	0.00	0.00	0.00	0.00
Subtotal-Operational Peak Daily Emissions*	**1.53**	**0.14**	**1.96**	**0.23**
LST SCAQMD Operating Significance Threshold [a]	*1,482.5*	*128.7*	*8.54*	*2.66*
COMBINED CONSTRUCTION AND OPERATIONAL EMISSIONS (Mitigated with MM AQ-1 and MM AQ-2)				
Total Peak Daily Emissions	594.22	555.71	49.60	8.11
LST SCAQMD Operating Significance Threshold [a]	*1,482.5*	*128.7*	*8.54*	*2.66*
Significant?	No	**Yes**	**Yes**	**Yes**

CO: carbon monoxide; lbs/day: pounds per day; NOx: nitrogen oxides; PM10: respirable particulate matter with a diameter of 10 microns or less; PM2.5: fine particulate matter with a diameter of 2.5 microns or less; LST: localized significance threshold

* Total of **bold** values.

[a] The Project requires a 400-foot (122-meter) setback from the property line for well construction activities. The LST lookup tables have divisions of 100 and 200 meters. The LSTs listed herein are determined by linear interpolation. The LST values used are for SRA#2, Northwest Coastal LA County.

Source: Yorke 2017a.

As shown in Table 4.2-11, localized impacts for NOx, PM10 and PM2.5 would remain significant after implementation of MM AQ-1 and MM AQ-2. These impacts are summarized below.

> AQ Impact 4: Peak daily NOx emissions remain significant (i.e., exceed the LST significance criterion of 128.7 pounds per day) due to well drilling and/or well stimulation in combination with other City IOF activities. Well stimulation is the largest contributor to the exceedance with 481 pounds per day of NOx emissions. Other City IOF activities

include general site preparation, drilling mobilization and setup, grading, demobilization, well completion, well stimulation, site preparation and flow-back, and well rework, as well as incidental operational emissions from worker activities and fugitive emissions from piping and connections throughout the City IOF, which could occur on the same day.

AQ Impact 5: Peak daily PM10 emissions remain significant (i.e., exceed the LST significance criterion of 8.54 pounds per day) due to well drilling and/or well stimulation in combination with other City IOF activities. Well stimulation is the largest contributor to the exceedance with 15.24 pounds per day of PM10 emissions. Other City IOF activities include general site preparation, drilling mobilization and setup, grading, demobilization, well completion, well stimulation, site preparation and flow-back, and well rework, as well as incidental operational emissions from worker activities and fugitive emissions from piping and connections throughout the City IOF, which could occur on the same day.

AQ Impact 6: Peak daily PM2.5 emissions remain significant (i.e., exceed the LST significance criterion of 2.66 pounds per day) due to well drilling and/or well stimulation in combination with other IOF activities. Well stimulation is the largest contributor to the exceedance with 2.72 pounds per day of PM2.5 emissions. Other City IOF activities include general site preparation, drilling mobilization and setup, grading, demobilization, well completion, well stimulation, site preparation and flow-back, and well rework, as well as incidental operational emissions from worker activities and fugitive emissions from piping and connections throughout the City IOF, which could occur on the same day.

MM AQ-3 would reduce impacts through the following implementation of the Options presented above.

AQ Impact 4 (Peak daily NOx Exceeds LST): Operational scenarios that may allow the Oil Field Operator to demonstrate compliance with the Performance Standard include, but are not limited to the following:

a. Schedule City IOF activities so that well drilling does not overlap any other well preparation, completion and stimulation activities (Option 1)
b. Limit engine intensity from City IOF operations (Option 4)
c. Electrification of engines used for well drilling (Option 5). The use of a non-diesel alternative fuel (e.g. on-site use of natural gas, gasoline powered engines) would provide minimal benefit for NOx emissions, as fuel combustion produces NOx emissions regardless of the fuel type.
d. Provide an ambient air quality modeling analysis that demonstrates impacts less than the applicable ambient air quality standards (Option 6)
e. Another feasible approach proposed by the Oil Field Operator (Option 7)

AQ Impact 5 (Peak daily PM10 Exceeds LST): Operational scenarios that may allow the Oil Field Operator to demonstrate compliance with the Performance Standard include, but are not limited to the following:

a. Schedule City IOF activities so that well drilling does not overlap any other well preparation, completion and stimulation activities (Option 1)
b. Limit engine intensity from City IOF operations (Option 4)
c. Electrification of engines used for well drilling (Option 5). The use of a non-diesel alternative fuel (e.g. on-site use of natural gas, gasoline powered engines) would

provide minimal benefit for PM10 emissions, as fuel combustion produces PM10 emissions regardless of the fuel type.

d. Provide an ambient air quality modeling analysis that demonstrates impacts less than the applicable ambient air quality standards (Option 6)

e. Another feasible approach proposed by the Oil Field Operator (Option 7)

AQ Impact 6 (Peak daily PM2.5 Exceeds LST): Operational scenarios that may allow the Oil Field Operator to demonstrate compliance with the Performance Standard include, but are not limited to the following:

a. Schedule City IOF activities so that well drilling does not overlap any other well preparation, completion and stimulation activities (Option 1)

b. Limit engine intensity from City IOF operations (Option 4)

c. Electrification of engines used for well drilling (Option 5). The use of a non-diesel alternative fuel (e.g. on-site use of natural gas, gasoline powered engines) would provide minimal benefit for PM2.5 emissions, as fuel combustion produces PM2.5 emissions regardless of the fuel type.

d. Provide an ambient air quality modeling analysis that demonstrates impacts less than the applicable ambient air quality standards (Option 6)

e. Another feasible approach proposed by the Oil Field Operator (Option 7)

While MM AQ-3 requires that additional emissions reductions be implemented to reduce Project impacts, MM AQ-3 does not specifically require that the Oil Field Operator reduce emissions locally through the use of electric engines. Additionally, the use of regional offsets (see Option 2) or offsets within the larger County IOF (see Option 3) were determined to be ineffective at reducing localized impacts at a specific sensitive receptor site. Therefore, even with MM AQ-3, the Project could continue to have localized adverse impacts. Additional mitigation to address these impacts has not been identified. Therefore, considering the Maximum Buildout Scenario assumptions, the Project could result in significant and unavoidable direct impacts for localized NOx, PM10, and PM2.5 emissions.

Toxic Air Contaminants Health Risk Impact Analysis

The Project has the potential to generate TAC emissions (i.e., chemicals that have either carcinogenic or non-cancer chronic or acute health effects, depending on concentration levels and the duration of exposure). The TAC evaluated for health impacts are those constituents emitted by Project equipment that are listed in SCAQMD Rule 1401.

The Project involves both construction and operations. Normally, short-duration construction events are not evaluated for health risk impacts. However, because the well construction activities authorized by the Project will occur periodically over the course of more than ten years, TAC emissions from construction are evaluated for health risk impacts. Construction and operational activities would occur concurrently; therefore, a single impact analysis is conducted for both construction and operating emissions while operating simultaneously.

The HRA is prepared in three major steps:

- TAC emission estimates are prepared for each of the emission sources at the Project;

- Dispersion modeling is conducted to assess the dispersion characteristics and the down-wind ground-level pollutant concentrations in the Project area; and
- An HRA is prepared using the emission estimates, dispersion modeling and chemical-specific toxicity data such as cancer potency, exposure routes, exposure duration, age sensitivity, and breathing rates.

Each of these major steps is explained below. Detailed emission estimates and a more comprehensive discussion of the modeling and HRA is provided in Appendix C-1 of this Draft EIR.

Toxic Air Contaminant Emission Estimates

DPM, or the solid particles in diesel exhaust that at times may be visible and includes carbon particles or "soot", is a SCAQMD Rule 1401-listed TAC. The health impacts of particulate matter (PM10 and PM2.5) in general have been studied, and exposure to it is associated with a variety of health effects including premature death and a number of heart and lung diseases. Cancer and chronic health risk values for DPM emitted by internal combustion engines were approved by the OEHHA and adopted by the CARB in 1998. The SCAQMD added DPM to the list of TACs in Rule 1401 in 2008.

Benzene, toluene, ethylbenzene, xylene, and n-hexane are TACs identified as possible components of the fugitive VOC emissions from new equipment installed as part of the Project, as well as from existing City IOF operations (e.g. fugitive piping components). Fugitive TAC emissions are calculated based on the SCAQMD's latest guidelines for fugitive components. H_2S may also be emitted as a result of the Project and H_2S emissions are evaluated here and in the CEQA criterion for odor analysis. The Project's expected TAC emissions are summarized in Table 4.2-12.

TABLE 4.2-12
SUMMARY OF TOXIC AIR CONTAMINANT EMISSION SOURCES

Activity	Phase	Expected TAC
Combustion of diesel fuel in the portable and mobile sources, such as bulldozers, drill rig engines, mud pump and pump engines	Construction	DPM
Combustion in a flare of gases produced during drilling	Construction	Benzene, Formaldehyde, PAH, Ammonia, and H_2S
Fugitive emissions from leaking valves, flanges, and similar connector items	Operations	Benzene, toluene, ethylbenzene, xylene, n-hexane, and H_2S
TAC: toxic air contaminant; DPM: Diesel Particulate Matter; PAH: Polycyclic Aromatic Hydrocarbon; H2S: hydrogen sulfide Source: Yorke 2017a.		

Because MM AQ-1 has been identified as required to reduce maximum daily construction NOx emissions, the HRA conducted for TAC emissions is based on the mitigated condition. Additionally, in accordance with Drilling Regulations Section 21.D, the HRA assumes that the gaseous emissions from the shale shaker would be vented to a portable flare and all drilling, re-drilling, reworking, well stimulation, and maintenance rig diesel engines, except rigs powered by on-road engines, will operate with CARB/EPA Certified Tier 4 engines and utilize a second generation heavy duty diesel catalyst with a minimum reduction efficiency of 90 percent for hydrocarbon and particulate matter with an aerodynamic diameter less than or equal to 10 micron.

The TAC emissions assume three wells would be drilled per year, one well would be completed with stimulation, two wells would be completed without stimulation, and three wells would be reworked per year, and all stationary, non-road engines would comply with MM AQ-1. A summary of the TAC emissions from equipment is provided in Table 4.2-13. Detailed emission calculations are provided in Appendix C-1.

TABLE 4.2-13
MM AQ-1 AND MM AQ-2: MITIGATED DIESEL PARTICULATE MATTER EMISSIONS FROM CONSTRUCTION ACTIVITIES

Phase	DPM (lbs/well)	DPM (lbs/yr)
Site Preparation	0.20	0.61
Grading	0.40	1.21
Mobilization and Setup	1.82	5.46
Drilling	19.97	59.92
Demobilization	0.08	0.23
Well Completion (Without Stimulation)	0.11	0.21
Well Stimulation (site preparation)	0.07	0.07
Well Stimulation	1.32	1.32
Well Stimulation (flowback)	0.18	0.18
Well Rework	0.01	0.04
Total	–	**69.26**

DPM: Diesel Particulate Matter; lbs: pounds; yr: year
Source: Yorke 2017a

When the mud is processed on the shaker table to remove drill cuttings, the fluids degas, releasing natural gas and H_2S. The shaker table would be vented to a portable flare for emissions control, as required by Drilling Regulations Section 21.D. TAC emissions from this process include the non-combusted gases and byproducts of combustion. The flare is assumed to have 98 percent control efficiency. The non-combusted TAC from the gases are shown in Table 4.2-14. Flare TAC emissions are summarized in Table 4.2-15. Annual emissions are based on the construction of three wells per year.

TABLE 4.2-14
GASEOUS TOXIC AIR CONTAMINANT EMISSIONS FROM SHALE SHAKER OPERATION

TAC	Hourly Emissions (lbs/hr)	Annual Emissions (lbs/yr)
H_2S	6.06E-04	1.31E+00
Benzene	1.83E-03	3.96E+00
n-Hexane	1.98E-03	4.27E+00
Ethylbenzene	1.19E-04	2.56E-01
Toluene	8.82E-04	1.90E+00
Xylene	3.47E-04	7.48E-01

TAC: toxic air contaminant; lbs: pounds; hr: hour; yr: year; H_2S: hydrogen sulfide
Source: Yorke 2017a.

TABLE 4.2-15
TOXIC AIR CONTAMINANT EMISSIONS FROM COMBUSTION OF GAS IN FLARE

TAC	Hourly Emissions (lbs/hr)	Annual Emissions (lbs/yr)
Benzene	4.44E-06	9.59E-03
Formaldehyde	9.44E-06	2.04E-02
PAH	2.22E-07	4.80E-04
Ammonia	1.78E-03	3.84E+00
TAC: toxic air contaminant; lbs: pounds; hr: hour; yr: year; PAH: Polycyclic Aromatic Hydrocarbon Source: Yorke 2017a.		

Completed wells would have well heads encased in well cellars, and would have piping connecting the wells to the Oil Field Operator's downstream on and off-site processing facilities (e.g., gas plant, oil-water separation, and storage). The well heads, well cellars and piping components (e.g., valves, flanges, seals, connectors) are potential sources of fugitive emissions, including TACs. TAC emissions from these sources are estimated based on SCAQMD emissions factors, and are based on the maximum number of 30 wells that would occur in 2028 at the earliest. Fugitive TAC emissions from operations are summarized in Table 4.2-16.

TABLE 4.2-16
FUGITIVE TOXIC AIR CONTAMINANT EMISSIONS DURING OPERATIONS

TAC	Hourly Emissions (lbs/hr)	Annual Emissions (lbs/yr)
H_2S	5.96E-03	5.22E+01
Benzene	1.67E-02	1.46E+02
n-Hexane	1.80E-02	1.58E+02
Ethylbenzene	1.08E-03	9.47E+00
Toluene	8.04E-03	7.04E+01
Xylene	3.16E-03	2.77E+01
Source: Yorke 2017a		

Modeling

As discussed in Section 4.2.1, Methodology, air dispersion modeling was conducted to determine the dispersion characteristics and down-wind ground-level concentrations of pollutants in the vicinity of the Project. The dispersion modeling methodology is based on generally accepted modeling practices of OEHHA. The dispersion model used for this HRA was AERMOD Version 15181, with the Lakes Environmental Software implementation/user interface, AERMOD View™ Version 9.0.0. The modeling was prepared using the following parameters:

- The model was configured with the "Urban" modeling option, and "Elevated" terrain for this analysis.
- AERMOD-ready pre-processed meteorological (MET) data files were obtained from the SCAQMD. The MET data files contained data for Los Angeles for the years 2005, 2006, 2008, 2009 and 2011.

- Digital elevation data was imported into AERMOD and elevations were assigned to receptors, buildings, and emission sources, as necessary. Digital elevation data was obtained through the AERMOD View™ WebGIS import feature in the United States Geological Survey's (USGS) Digital Elevation Model (DEM) format, with a resolution of 1 degree.

As noted in the assumptions for the air quality analysis included in Appendix C-1 of this Draft EIR, each well is assumed to require a well pad of up to 0.5 acre. This is a conservative scenario and allows the air quality analysis to account for any trenching or other earth-moving activities that may be required. Each well would potentially have drilling operations, well completion, well stimulation, and operations, thus the annual emissions from construction-related activities would be distributed amongst as many as 9 locations each year, and annual operating emissions would be distributed amongst as many as 30 well sites. Given the limited land area available in the City IOF, the Project Site is represented in the air quality modeling prepared for the HRA as a single volume source. The volume source is shown in Exhibit 4.2-3, Toxic Air Contaminant Modeling, with an indication of the area assessed for the cancer burden calculation, with the volume source shown with a green line. All of the emissions listed in Tables 4.2-14, 4.2-15, and 4.2-16 are assumed to be released from the volume source.

Health Risk Assessment

As discussed in Section 4.2.1, Methodology, the HRA was prepared to quantify the theoretical cancer and non-cancer health risks impacts from Specific Plan implementation, as defined through the Maximum Buildout Scenario. Once the down-wind concentration of the pollutants was determined using AERMOD, an exposure assessment was prepared using Hotspots Analysis and Reporting Program (HARP), Version 2, to determine the health impacts to nearby residential and off-site worker receptors.

HARP takes into account various parameters that impact the health risk evaluation, including: chemical-specific toxicity data such as cancer potency, exposure routes, exposure duration, age sensitivity, and breathing rates. HARP calculates the following risk parameters:

- **Maximum Individual Cancer Risk (MICR)** is the estimated probability of a maximally exposed individual potentially contracting cancer as a result of continuous exposure to TACs over a period of 30 years for residential receptor locations or 25 years for off-site worker receptor locations. Sensitive receptors such as schools, hospitals, convalescent homes, and day-care centers are evaluated as residential receptors.
- **Chronic Hazard Index:** Some TACs increase non-cancer health risk due to long-term (chronic) exposures. The Chronic Hazard Index (HIC) is the sum of the individual substance chronic hazard indices for all TACs affecting the same target organ system.
- **Acute Hazard Risk:** Some TACs increase non-cancer health risk due to short-term (acute) exposures. The Acute Hazard Index (HIA) is the sum of the individual substance acute hazard indices for all TACs affecting the same target organ system. Acute risk is calculated at the nearest receptor at any point beyond the fence line for exposure duration of one hour.
- **Cancer Burden** is the estimated increase in the occurrence of cancer cases in a population subject to an MICR of greater than or equal to 1.0 in 1 million (equivalent to 1.0E-06 or 0.000001) resulting from exposure to TACs. The cancer burden is determined for the population located within the zone of impact, defined as the area within the one in one million cancer risk isopleth. The area is determined by measuring the distance from

Source: Yorke Engineering 2016

Toxic Air Contaminant Modeling

Exhibit 4.2-3

Inglewood Oil Field Specific Plan Project

PSOMAS

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the emissions source to the 1 in 1 million receptor. In this case, that distance was 707 meters with a calculated zone of impact area of 1.57 square kilometers (km^2) and an assumed worst-case SCAQMD-default population density of 7,000 persons per km^2. The zone of impact is depicted in Exhibit 4.2-3, Toxic Air Contaminant Modeling.

Risk impacts due to Project implementation are presented in Table 4.2-17. As shown, the maximum cancer risk to off-site residents as calculated from the Maximum Buildout Scenario with mitigation (e.g. MM AQ-1) would be significant for cancer risk for the residential receptor, but less than significant for cancer risk for the worker receptor. Also, the chronic and acute non-cancer hazard indices for both residential and worker receptors would be less than significant.

TABLE 4.2-17
SUMMARY OF HEALTH RISK IMPACTS AND SIGNIFICANCE THRESHOLDS

Impact Parameter	Theoretical Health Risk Impact (unitless)	SCAQMD Significance Threshold (unitless)	Significant (Yes/No)
MICR – Resident	14.3 in 1 million	10 in 1 million	**Yes**
HIC – Resident	0.0127	1.0	No
HIA – Resident	0.0123	1.0	No
MICR – Worker	7.3 in 1 million	10 in 1 million	No
HIC – Worker	0.0127	1.0	No
HIA – Worker	0.0123	1.0	No
8-hr Chronic	0.00067	1.0	No
Cancer Burden	0.01	0.5	No

MICR: Maximum Individual Cancer Risk; HIC: Chronic Hazard Index; HIA: Acute Hazard Index
Source: Yorke 2017a.

An additional contaminant of concern associated with well stimulation, and specifically fracking, is the release of silica. The National Institute for Occupational Safety and Health (NIOSH) identified exposure to airborne silica as a health hazard to workers conducting some hydraulic fracturing operations during recent field studies (OSHA 2012). Silica has not been identified by the USEPA or CARB or OEHHA as either a criteria pollutant or a TAC. Therefore, potential impacts to workers or off-site receptors due to silica are not discussed in this section of the Draft EIR. Hazards associated with silica are discussed in Section 4.7, Hazards and Hazardous Materials, of this Draft EIR.

Mitigation – Toxic Air Contaminants

As shown in Table 4.2-17, the Maximum Buildout Scenario, which already anticipated implementation of MM AQ-1, exceeds the significance criteria for health risk impacts (cancer risk) at the nearest residential receptor due to emissions of TAC. The primary driver of the cancer risk is emissions of DPM; as shown in Table 4.2-18, the major DPM source is well drilling. This impact is summarized below.

TABLE 4.2-18
SUMMARY OF TOXICS EMISSIONS AND CANCER RISK

Project Activity	Culver City IOF Residential Cancer Risk	Contribution to Total Cancer Risk (%)
Well Drilling	9.86	68.8
Well Stimulation	0.22	1.5
Other IOF Well Activities	1.32	9.2
IOF Operations	2.94	20.5
Total	**14.3**	**100.0**

Other City IOF activities, for the purpose of this evaluation are those that occur only the Culver City IOF. Other activities include general site preparation, drilling mobilization and setup, grading, demobilization, well completion, well stimulation site preparation and flow-back, and well rework. Note that this also includes the incidental operational emissions from worker activities (passenger vehicles, etc.), and fugitive emissions from piping and connections throughout the City IOF.

Source: Yorke 2017a

AQ Impact 7 (Health Risks Exceed Threshold for Cancer Risk): Health risk impacts, expressed as cancer risk, are significant based on annual emissions that include well drilling, well stimulation, and fugitive emissions from the operation of the City IOF. The primary cause of the cancer risk impact is the accumulation of emissions from activities throughout the course of a year, as would be allowed by the Drilling Regulations of the Specific Plan. The combined emissions from City IOF activities results in a cancer risk of approximately 14.3 per million, compared to a CEQA significance threshold of 10 per million. Approximately 80 percent of the cancer risk is from DPM emissions, and the majority of DPM is from well drilling.

There are mitigation measures in DOGGR's Draft Mitigation Policy Manual prepared pursuant to the SB4 EIR, which is included in Appendix B-2 of this Draft EIR, that are applicable to the analysis of TACs, as listed below (DOC 2015b):

- SB4 MM AQ-3a Prepare a Health Risk Assessment and Implement Emission Controls
- SB4 MM AQ-3b Avoid Unnecessary Exposure to Air Pollutants by Improving Local Land Use Compatibility

The intent of these DOGGR SB4 measures are already incorporated into requirements set forth in the Drilling Regulations of the Specific Plan, and no new or additional measures related to these SB4 MMs are required.

Because the Project could exceed the health risk criteria for residential cancer risk due to emissions of TAC, MM AQ-3 is required. MM AQ-3 would reduce impacts to less than significant through the implementation of the Options for AQ Impact 7 presented below.

AQ Impact 7: Operational scenarios that may allow the Oil Field Operator to demonstrate compliance with the Performance Standard include, but are not limited to the following:

a. Electrification of engines used for well drilling (Option 5)
b. Use an alternative fuel (e.g. natural gas or propane) for at least 33 percent of the required engine horsepower for drill rig operation (e.g., the generators on the rig could be natural gas-fired, while the mud pumps could use diesel fuel) (Option 5)
c. Drill less than the maximum number of new wells for the Project (Option 7)

d. Another feasible approach proposed by the Oil Field Operator (Option 7)

Electrification of well drilling and well stimulation activities will significantly reduce all pollutant emissions from internal combustion, but will have the most pronounced effect on reducing health risk impacts due to emissions of DPM. Even without electrification, MM AQ-3 would allow the Oil Field Operator to operate natural gas or propane-fired engines to power generators in place of diesel-fueled engines, thus lowering DPM emissions and the associated risk. With incorporation of MM AQ-1 and MM AQ-3, impacts related to health risk impacts (cancer risk) at the nearest residential receptor would be less than significant. Note that if DPM reductions are the selected compliance option, the reductions would have to be on-site or immediately local, but would not necessarily need to be contemporaneous because cancer risk is evaluated over a 30-year lifetime. Emission reductions could come from any source of diesel emissions, e.g., on-site service truck(s) could be converted to an alternative fuel such as compressed natural gas (CNG).

Threshold 2-5 Create objectionable odors affecting a substantial number of people?

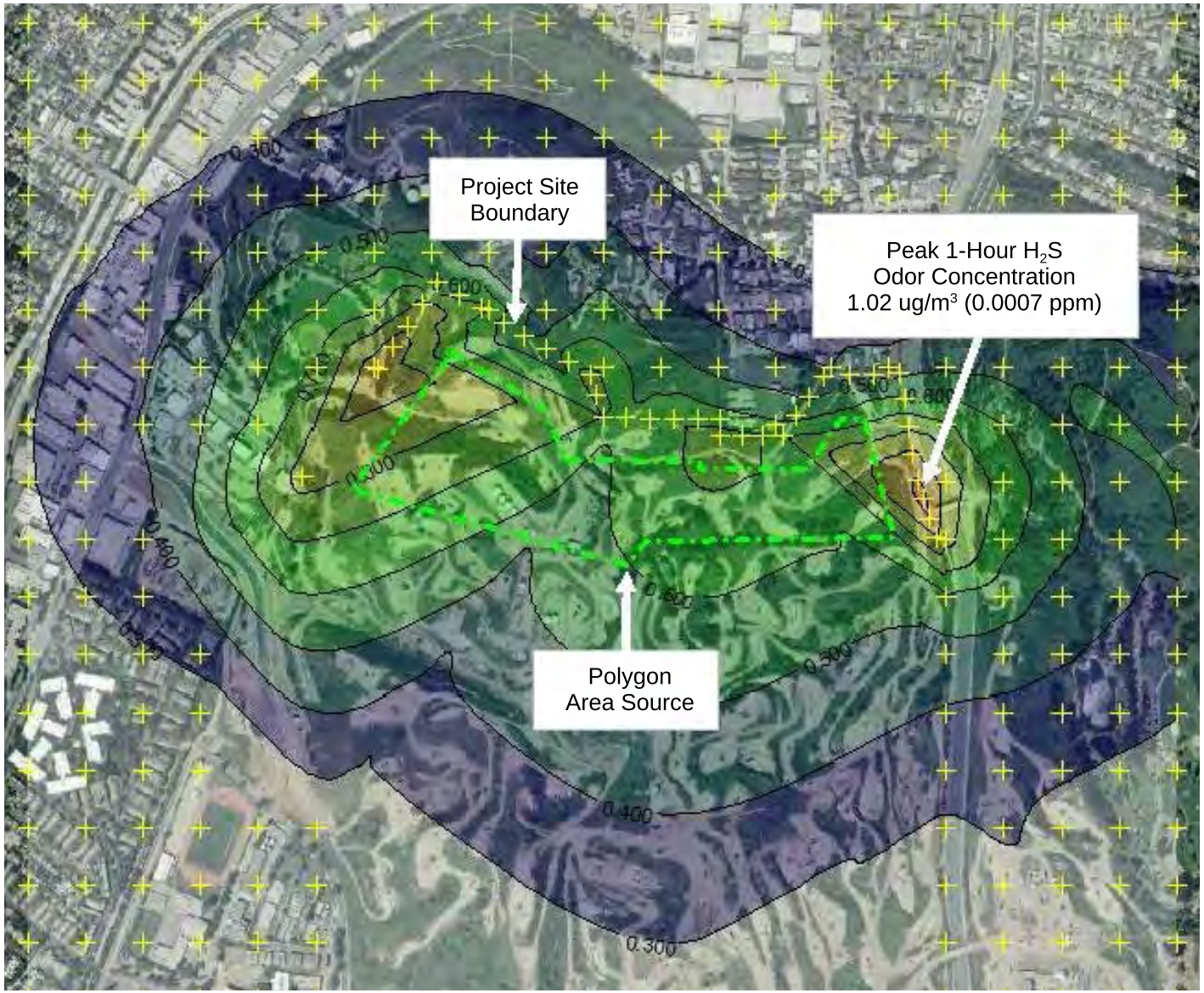
The Project will include odor sources such as production wells. During operation, potential sources of odor are fugitive emissions from the additional flanges, pressure relief devices, and other connections associated with the wellhead and odorant for gas sales (as required by the CPUC and the U.S. Department of Transportation). As a result, there may be a potential increase in odors from the Project Site compared to the baseline.

The area to the south and southeast of the Project Site is currently developed with oil production uses. The areas generally to the west, north, and northeast of the Project Site are currently developed with residential uses, parks and other recreational areas. Since receptors such as residences are located near the vicinity of the Project, an odor analysis was prepared.

The odor analysis consisted of analyzing down-wind concentrations of H_2S emissions compared to SCAQMD detectability thresholds. H_2S was assumed to represent the vast majority of potential odorous compounds emitted from the Project. The AERMOD air dispersion model was used to calculate down-wind H_2S concentrations. The results of the analysis, which are predicated on the 1-hour emission estimates for the Project, indicate potential H_2S emissions emitted from the Project will be less than the SCAQMD odor detectability threshold. Specifically, maximum modeled down-wind H_2S emissions were 0.0007 ppm. The SCAQMD odor threshold for H_2S is 0.009 ppm. Modeled results are summarized in Table 4.2-19 and modeled in Exhibit 4.2-4, Modeled H_2S Concentration.

TABLE 4.2-19
ODOR MODELING RESULTS

Parameter	Value
AERMOD Max (ug/m^3)	1.02
Molecular Weight (lb/lb-mol)	34.08
Constant (ppm to ug/m^3)	0.0245
Results (ppm)	**0.0007**
Odor Threshold (ppm)	0.009
Exceed Odor Threshold? (Yes/No)	No
H_2S: hydrogen sulfide; ppm: parts per million Source: Yorke 2017a	



Source: Yorke Engineering 2016

Modeled H_2S Concentration

Exhibit 4.2-4

Inglewood Oil Field Specific Plan Project

N W E S

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During construction-related activities on the Project Site, diesel emissions from equipment may be sources of odor. All construction activities allowed by Project would not occur on the same day, limiting the potential impacts of construction odors. In addition, odors associated with construction-related activities would be temporary and localized. Odor from diesel combustion are assumed to be less than significant.

Drilling Regulations Section 21.B also requires an Odor Minimization Plan be submitted to the Community Development Director. The Odor Minimization Plan requires setbacks, methods of controlling odors such as flaring and odor suppressants, and other administrative items in an effort to reduce odor emissions and impacts from the Project Site.

There are mitigation measures in DOGGR's Draft Mitigation Policy Manual prepared pursuant to the SB4 EIR, which is included in Appendix B-2 of this Draft EIR that are applicable to the analysis of odors, as listed below (DOC 2015b):

- SB4 MM AQ-4a Prepare and Implement an Odor Minimization Plan
- SB4 MM AQ-4b Avoid Unnecessary Exposure to Odors by Improving Local Land Use Compatibility

The intent of these DOGGR SB4 measures are already incorporated into requirements set forth in the Drilling Regulations of the Specific Plan, and no new or additional measures related to these SB4 MMs are required. Based on the modeling analysis and requirements outlined in Drilling Regulations Section 21.B, potential incremental odor impacts due to the Project compared to the baseline would be less than significant and there is no mitigation required.

4.2.7 CUMULATIVE IMPACTS

As stated under Threshold 2-3, "cumulatively considerable" means that the incremental effects of a Project are considerable when viewed in connection with the effects of past projects, other current projects, and probable future projects. The SoCAB is currently in non-attainment for ozone, PM10, and PM2.5, and related projects could exceed the applicable air quality standard or contribute to an existing or projected air quality exceedance when considered in combination with the effects of the proposed Project.

Mitigated peak daily emissions for all criteria pollutant emissions associated with construction and operation of the Project would be less than the regional significance thresholds after implementation of MM AQ-1, MM AQ-2, and MM AQ-3. Per SCAQMD guidance, a project that is less than significant individually is considered less than significant cumulatively as well. Therefore, additional mitigation is not required and the Project would not result in a cumulatively considerable net increase of criteria pollutants.

As shown in Table 4.2-17, the maximum cancer risk to off-site residents would be less than significant with implementation of MM AQ-1 and MM AQ-3. Therefore, additional mitigation is not required and the Project would not result in cumulatively considerable net increase of criteria pollutants.

With implementation of MM AQ-1, MM AQ-2, and MM AQ-3, the Project could generate localized emissions of NOx, PM10 and PM2.5 at levels that exceed the operational localized significance threshold. As such, impacts for localized emissions of NOx, PM10 and PM2.5 would also be cumulatively significant.

As shown in Table 4.2-18, maximum H_2S emissions would be substantially less than the odor threshold and would therefore be cumulatively less than significant.

4.2.8 MITIGATION MEASURES

MM AQ-1 The Oil Field Operator shall provide the City with documentation prior to any drilling, re-drilling, reworking, well stimulation, and maintenance activities, and confirmation afterwards, that such activities that use rig diesel engines, except rigs powered by on-road engines, comply with the following provisions:

a. Utilize CARB/USEPA Tier 4 Certified engines or other methods approved by CARB as meeting or exceeding the Tier 4 standard, and

b. Utilize second generation heavy duty diesel catalysts capable of achieving 90 percent reductions for hydrocarbons and for PM10.

MM AQ-2 The Oil Field Operator shall not conduct well drilling concurrent with well stimulation activities within the City IOF.

MM AQ-3 The Oil Field Operator shall demonstrate that the activities included in the Annual Drilling Plan will be conducted in compliance with the following performance standards:

- Mitigated VOCs emissions shall not exceed 55 pounds per highest day;
- Mitigated CO emissions shall not exceed 550 pounds per highest day;
- Mitigated NOx emissions shall not exceed 55 pounds per highest day;
- Mitigated SOx emissions shall not exceed 150 pounds per highest day;
- Mitigated PM10 emissions shall not exceed 150 pounds per highest day;
- Mitigated PM2.5 emissions shall not exceed 55 pounds per highest day; and
- PM10 and PM2.5 24-hour average shall not exceed 2.5 µg/m3 at the City IOF boundary.
- Health risk impacts shall not exceed the following thresholds:
  - Cancer Risk: 10 per million,
  - Chronic, non-cancer risk: 1.0 Hazard Index, and
  - Acute risk: 1.0 Hazard Index.

Compliance with the above standards shall be demonstrated through a quantified analysis using a SCAQMD-approved methodology that includes a description of the anticipated activities, equipment, duration/schedule, locations, and distances to the nearest sensitive receptors. Any changes to the planned activities and/or equipment assumed in the Annual Drilling Plan shall be subject to the same quantified analysis not less than 30 days prior to the start of the activities. All activities within 500 feet of City IOF southern boundary (i.e., City/County boundary) that may overlap planned City IOF activities and potentially effect a peak day analysis must be considered in the Annual Drilling Plan and well-specific drilling plan for comparison to the emissions and impact thresholds established by this mitigation measure.

If emission offsets are proposed to mitigate any excess emissions, the Oil Field Operator shall provide a minimum of 20 percent of those offsets from local sources, specifically within the Inglewood Oil Field as a whole. If offsets totaling 20 percent of the offset requirement are not available, the Oil Field Operator shall document that a good-faith effort was made to obtain local offsets.

4.2.9 LEVEL OF SIGNIFICANCE

The Project will not conflict with the regional AQMP or implementing regulations. With implementation of MM AQ-1, MM AQ-2, and MM AQ-3, regional emissions of criteria pollutants would not exceed the SCAQMD CEQA significance criteria, and both direct and cumulative impacts would be less than significant. With incorporation of MM AQ-1 and MM AQ-3, impacts related to health risk impacts (cancer risk) at the nearest residential receptor would be less than significant. The Project would emit small quantities of H_2S, but odors are not expected to impact offsite receptors. Therefore, the Project would have a less than significant impact for this air quality criterion.

Significant Unavoidable Impact AQ-1: With implementation of MM AQ-1, MM AQ-2, and MM AQ-3, the Project could generate localized emissions of NOx, PM10 and PM2.5 at levels that exceed the operational localized significance threshold. While MM AQ-3 requires that additional emissions reductions be implemented to reduce Project impacts, MM AQ-3 does not specifically require that the Oil Field Operator reduce emissions locally through the use of electric engines. Additionally, the use of regional offsets (see Option 2) or offsets within the larger County IOF (see Option 3) were determined to be ineffective at reducing localized impacts at a specific sensitive receptor site. Therefore, even with MM AQ-3, the Project could result in significant and unavoidable direct and cumulative impacts for localized NOx, PM10, and PM2.5 emissions at some potential well locations where sensitive receptors are close enough to be affected. Table 4.2-20 below summarizes the significance finding of each threshold addressed in this section before and after mitigation, where applicable.

TABLE 4.2-20
SIGNIFICANCE SUMMARY

Threshold		Project Level of Significance	Mitigation Measure(s)	Level of Significance after Mitigation
2-1	Conflict with or obstruct implementation of the applicable air quality plan.	Less than Significant	N/A	Less than Significant
2-2	Violate any air quality standard or contribute substantially to an existing or projected air quality violation.	Potentially Significant	MM AQ-1 through MM AQ-3	Less than Significant With Mitigation
2-3	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 (including releasing emissions which exceed quantitative thresholds for ozone precursors).	Potentially Significant	MM AQ-1 through MM AQ-3	Less than Significant With Mitigation
2-4	Expose sensitive receptors to substantial pollutant concentrations.	Potentially Significant	MM AQ-1 through MM AQ-3	Significant and Unavoidable
2-5	Create objectionable odors affecting a substantial number of people.	Less than Significant	N/A	Less than Significant
N/A: not applicable				

4.2.10 REFERENCES

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