City of Culver City Inglewood Oil Field Specific Plan Air Quality and Greenhouse Gas Technical Report

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Prepared for:

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List of Acronyms and Abbreviations

AB	Assembly Bill
AD	Anno Domini
AIHA	American Industrial Hygiene Association
AMS	American Meteorological Society
AQMP	Air Quality Management Plan
BACT	Best Available Control Technology
BARCT	Best Available Retrofit Control Technology
Btu	British Thermal Unit
°C	Degrees Celsius
CAAQS	California Ambient Air Quality Standard
CAPCOA	California Air Pollution Control Officers Association
CARB	California Air Resources Board
CCAA	California Clean Air Act
CEC	California Energy Commission
CEQA	California Environmental Quality Act
CFR	California Code of Regulations
CH_4	Methane
CO	Carbon Monoxide
CO_2	Carbon Dioxide
CO_2e	Carbon Dioxide Equivalent
CPUC	California Public Utilities Commission
DEIR	Draft Environmental Impact Report
DEM	Digital Elevation Model
DOGGR	Division of Oil, Gas & Geothermal Resources
DOT	Department of Transportation
DPM	Diesel Particulate Matter
EPA	Environmental Protection Agency
°F	Degrees Fahrenheit
FCAA	Federal Clean Air Act
FR	Federal Register
GDP	Gross Domestic Product
GHG	Greenhouse Gas
GMC	Growth Management Chapter
GWP	Global Warming Potential
HFC	Hydrofluorocarbon
HIA	Acute Hazard Index
HIC	Chronic Hazard Index
hr	Hour

HR	(U.S.) House of Representatives
HRA	Health Risk Assessment
H_2S	Hydrogen Sulfide
HVIP	Hybrid Vehicle Incentives Project
IOF	Inglewood Oil Field
IPCC	Intergovernmental Panel on Climate Change
lb	Pound
LCFS	Low Carbon Fuel Standard
LST	Localized Significance Threshold
m^3	Cubic Meter
MET	Meteorological
MICR	Maximum Individual Cancer Risk
MMT	Million Metric Tonnes
MSRC	Mobile Source Air Pollution Reduction Review Committee
MT	Metric Tonne
NAAQS	National Ambient Air Quality Standard
NEPA	National Environmental Policy Act
NF_3	Nitrogen Trifluoride
N_2O	Nitrous Oxide
NO_2	Nitrogen Dioxide
NO_x	Nitrogen Oxides
NOAA	National Oceanic and Atmospheric Administration
NOV	Notice of Violation
O_3	Ozone
OEHHA	Office of Environmental Health Hazard Assessment
OSHA	Occupational Safety and Health Administration
PAL	Plant-Wide Applicability Limitation
PERP	Portable Equipment Registration Program
PFC	Perfluorocarbon
$PM_{2.5}$	Particulate Matter with an Aerodynamic Diameter of Less Than 2.5 Microns
PM_{10}	Particulate Matter with an Aerodynamic Diameter of Less Than 10 Microns
ppb	Parts per Billion
ppm	Parts per Million
ppmv	Parts per Million by Volume
PRC	Public Resources Code
PSD	Prevention of Significant Deterioration
PXP	Plains Exploration & Production Co., LLP
RECLAIM	Regional Clean Air Incentives Market
ROG	Reactive Organic Gas
SB	Senate Bill

SCAB	South Coast Air Basin
SCAG	Southern California Association of Government
SCAQMD	South Coast Air Quality Management District
SF_6	Sulfur Hexafluoride
SIP	State Implementation Plan
SO_2	Sulfur Dioxide
SO_4^{2-}	Sulfates
SO_x	Sulfur Oxides
SOON	Surplus Off-Road Option for NO_x
TAC	Toxic Air Contaminant
TSP	Total Suspended Particles
µg	Microgram
UNFCCC	United Nations Framework Convention on Climate Change
U.S.	United States
USGS	United States Geological Survey
UTM	Universal Transverse Mercator
VOC	Volatile Organic Compound

City of Culver City
Inglewood Oil Field Specific Plan
Air Quality and Greenhouse Gas Technical Report

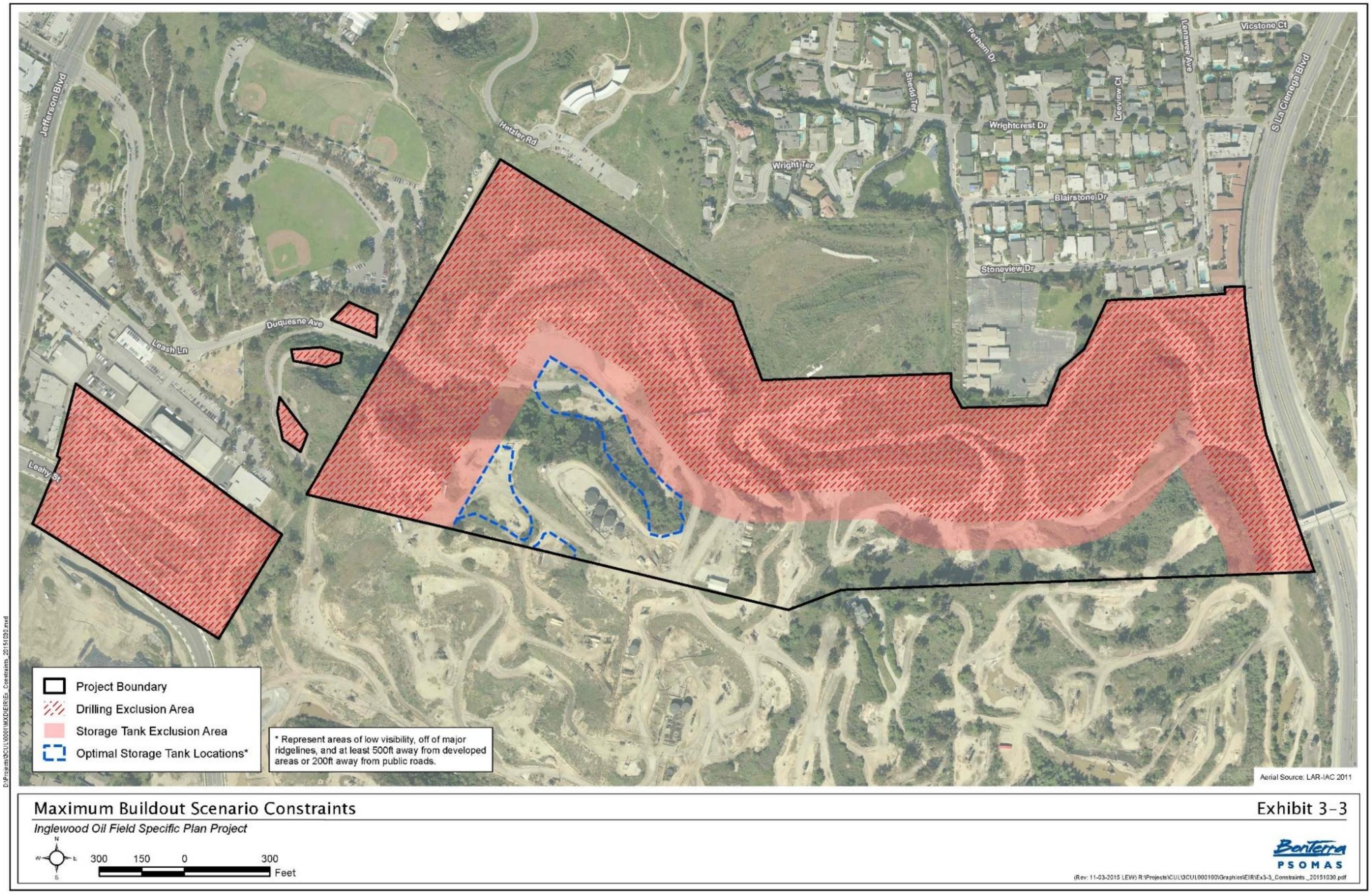
1.0 INTRODUCTION

This Air Quality and Greenhouse Gas Technical Report has been prepared in support of the Draft Environmental Impact Report (DEIR) for the entitlement action associated with the adoption of the Inglewood Oil Field Specific Plan (Project). The Project involves the development of a set of oil drilling regulations designed to help protect the health and safety of the residences of the City of Culver City. The DEIR addresses the potential environmental impacts associated with development of all of the allowable activities and components that could be implemented on the Project site under the Specific Plan. Development of the Inglewood Oil Field (IOF) in accordance with the Specific Plan would occur over the course of many years (not past 2032) based on future market conditions and other factors as determined by the holder of the lease of the IOF. Currently, Sentinel Peak Resources leases the Project site and operates the oil and gas facilities throughout the IOF, including within the City boundaries and within the unincorporated County of Los Angeles.

The Project would update procedures, development and implementation standards, and conditions for future oil and gas exploration, development, and production activities within IOF boundary in the City of Culver City. The Specific Plan contains several administrative items, requires permits and plans, authorizes well operations, guidance and requirements for supporting facilities, equipment and standards, guidance for environmental considerations to help reduce health and safety impacts on residents, reporting requirements and safety initiatives. Upon adoption of the Specific Plan, there would be an amendment to Culver City Municipal Code's Chapter 9.07 and a repeal of the existing Chapter 11.12, Oil, Gas and Hydrocarbons.

The Specific Plan provides for the protection of health and safety for residents and will contain 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 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; Fugitive Dust Control Plan; inspection and maintenance program information requirements; and greenhouse gas recordkeeping and cap and trade program information. Figure 1-1 shows the operational area of Culver City IOF with 400' Setback.

Figure 1-1: Operational Area of Culver City IOF with 400' Setback



The Specific Plan allows 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 under the Specific Plan over the life of the Project. 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, a Maximum Buildout Scenario was developed that sets forth a combination of activities (e.g. construction, maintenance, and operation) that conservatively represents the potential impacts of City IOF development in the context of the requirements and restrictions set forth in the Specific Plan. Because the Project would allow for activities in the City IOF to occur over time at an unknown rate of implementation through 2032, construction, maintenance, and operational activities will likely be occurring at the same time. Therefore, there would not be a discrete short-term construction period followed by a defined long-term operational period, like there is for most land development projects. Rather, the impact analyses in this Technical Report relies on the Maximum Buildout Scenario to set forth a conservative development scenario for activities in the City IOF.

The Maximum Buildout Scenario analyzed in this AQ/GHG Tech Report 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 AQ/GHG Technical Report 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. These activities are described in more detail below.

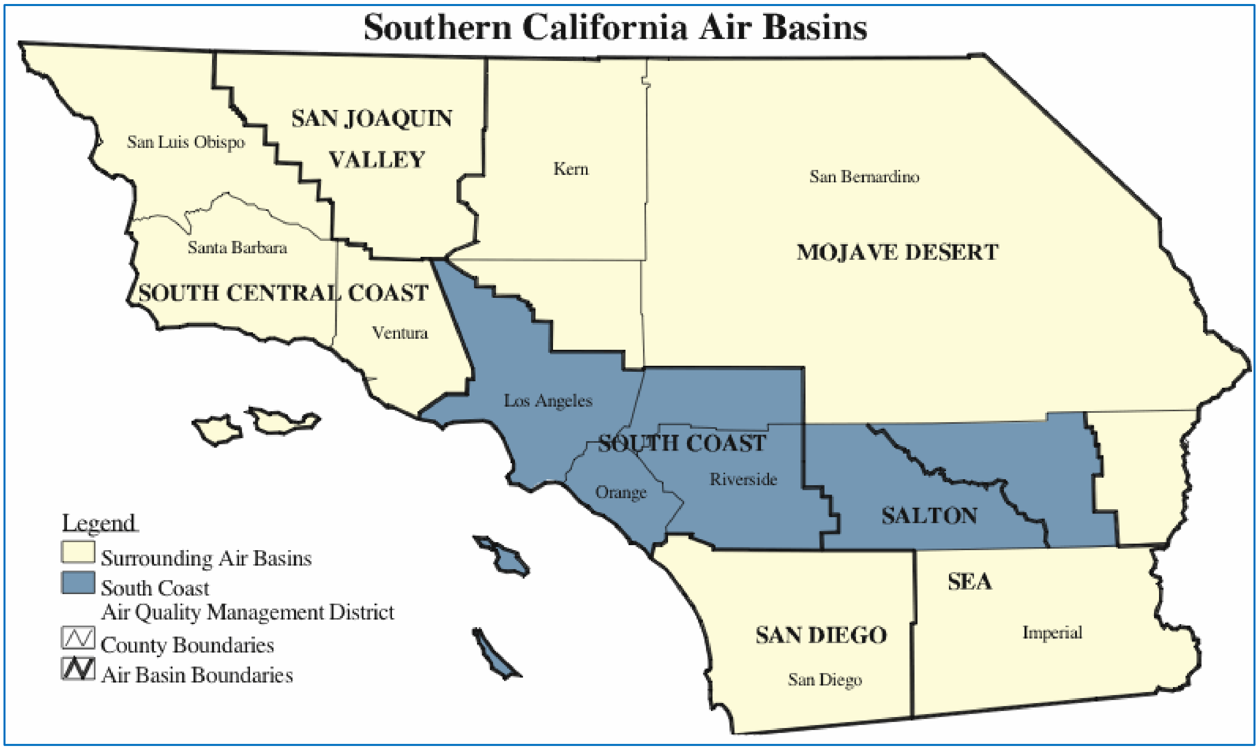
The format and content of this report generally follow the Air Quality and Section of Appendix G of the California Environmental Quality Act (CEQA) Guidelines (Environmental Checklist Form), which contains a list of effects that may be deemed potentially significant. Based on the environmental impacts analysis presented herein, the proposed Project is expected to be potentially significant with mitigation.

2.0 EXISTING SETTING

2.1 Air Quality

The IOF 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 four-county South Coast Air Basin (SCAB) and the Riverside County portions of the Salton Sea Air Basin and the Mojave Desert Air Basin. The SCAB, which is a subarea of the SCAQMD's jurisdiction, is bounded 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 SCAB includes all of Orange County and the non-desert portions of Los Angeles, Riverside, and San Bernardino Counties. A map depicting the SCAB and jurisdiction of the SCAQMD is provided as Figure 2-1.

Figure 2-1: SCAQMD Jurisdiction and SCAB Boundaries



2.1.1 Meteorological Conditions

The climate in the SCAB 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.

2.1.2 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 SCAB 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 SCAB 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.

Table 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 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	9.87"	8.89"	3.65"	8.3"	5.96"
Number of days with precipitation	28	27	14	23	32

Source: NOAA 2015

2.1.3 Wind Flow Patterns

Wind flow patterns play an important role in the transport of air pollutants in the SCAB. The winds flow from offshore and blow eastward during the daytime hours. In summer, the sea breeze starts in mid-morning, peaks at 10-15 miles per hour, 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 SCAB. The normal wind patterns in the SCAB 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 SCAB. A windrose depicting the wind flow patterns at the West Los Angeles monitoring station is provided as Figure 2-2. The West Los Angeles monitoring station is expected to be representative of the IOF. An aerial photo depicting the location of the three monitoring stations nearest the IOF is provided as Figure 2-3.

Figure 2-2: West Los Angeles Meteorological Station Windrose

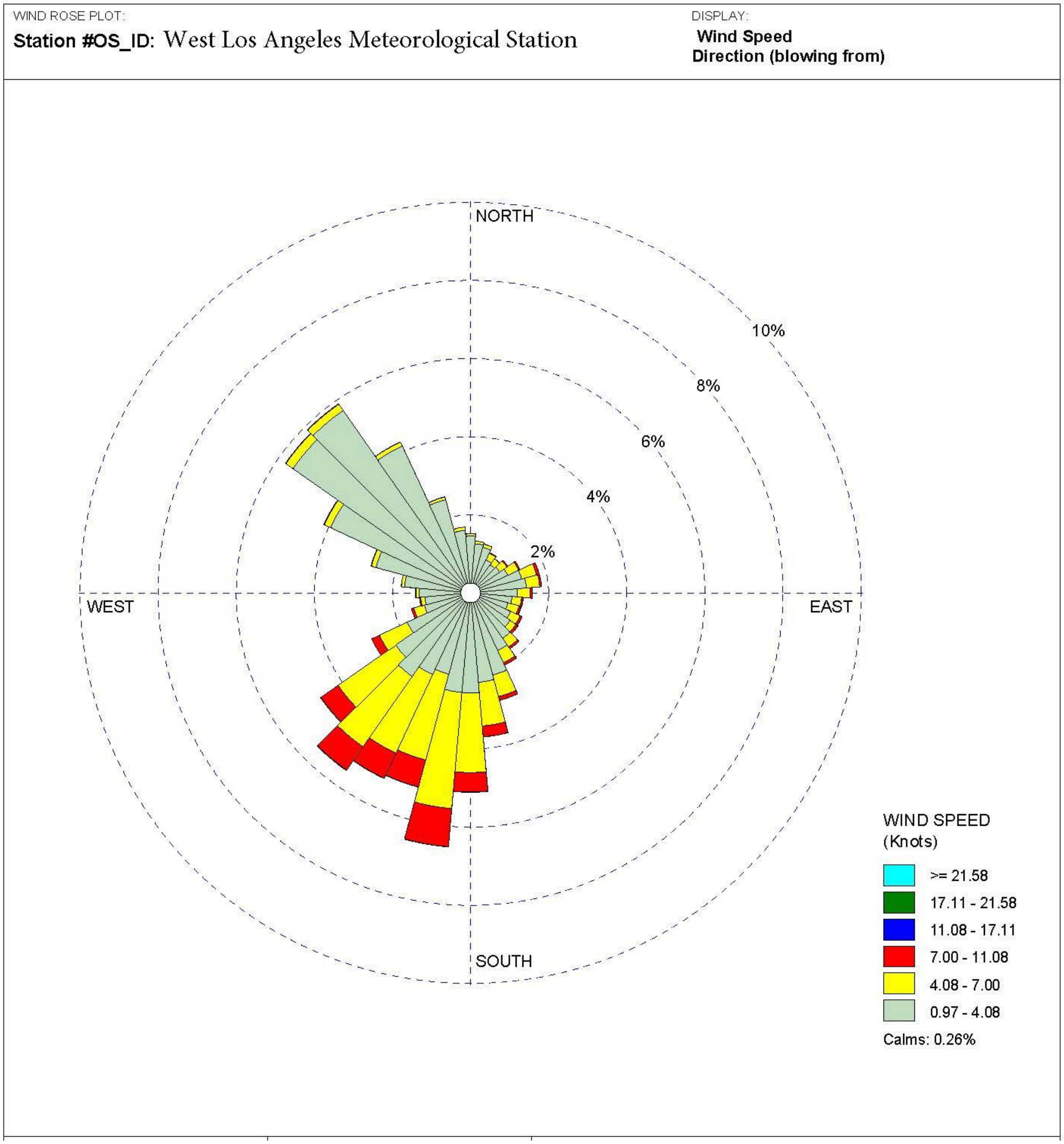
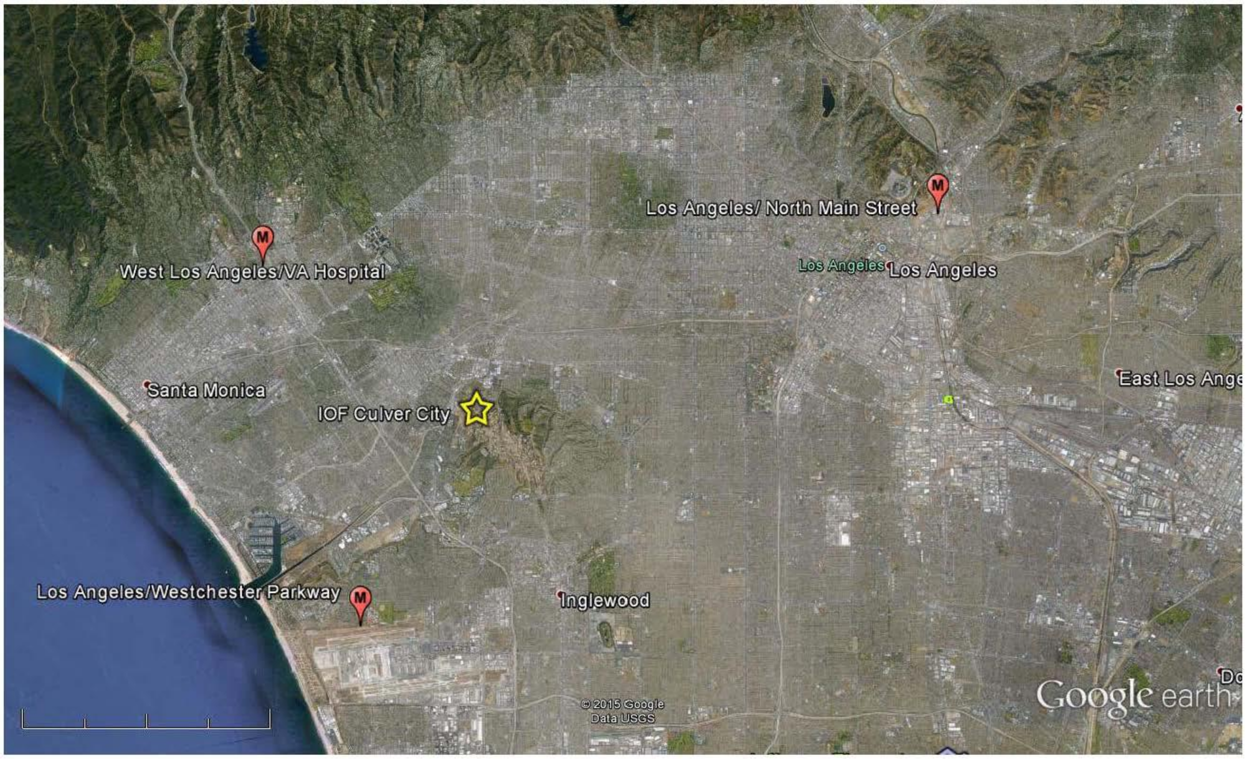


Figure 2-3: Location of Project Site and Meteorological Monitoring Stations



Legend: The "Star" is the location of the IOF; the "M" balloons indicate the monitoring station locations.

2.1.4 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 (PM_{10}), particulate matter with an aerodynamic diameter of less than 2.5 microns ($PM_{2.5}$), sulfur dioxide (SO_2), and lead. These standards were established to protect sensitive receptors within a margin 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, hydrogen sulfide (H_2S), and vinyl chloride. The CAAQS and NAAQS for each of these pollutants and their effects on health are summarized in Table 2-2.

Table 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)[a]; 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 (PM_{10})	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

Air Pollutant	State Standard (concentration/ averaging time)	Federal Primary Standard (concentration/ averaging time)	Most Relevant Health Effects
Suspended Particulate Matter ($PM_{2.5}$)	12 µg/m^3, annual arithmetic mean	35 µg/m^3, 24-hr; 15.0 µg/m^3, annual	function or growth in children; (c) Increased risk of premature death.
Sulfates-PM_{10} (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.
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 (10 a.m.-6 p.m. PST)	No Federal Standard	Visibility impairment on days when relative humidity is less than 70%.
Hydrogen Sulfide	0.03 ppm, 1-hr[b]	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.[c]

Air Pollutant	State Standard (concentration/ averaging time)	Federal Primary Standard (concentration/ averaging time)	Most Relevant Health Effects
Vinyl Chloride	0.01 ppm, 24-hr	No Federal Standard	Known carcinogen.

Notes: ppm – parts per million by volume; ppb – parts per billion by volume. State standards are "not-to-exceed" values; federal standards follow the design value form of the NAAQS.
Source: SCAQMD 2013, unless otherwise noted.
a. EPA 2015.
b. CARB 2015.
c. OSHA 2015.

2.1.5 Regional Air Quality

In 2011, the SCAB exceeded federal standards for either ozone or $PM_{2.5}$ at one or more locations on a total of 124 days, based on the federal standards for 8-hour ozone and 24-hour $PM_{2.5}$. Despite substantial improvement in air quality over the past few decades, some air monitoring stations in the SCAB still exceed the NAAQS for ozone more frequently than any other stations in the U.S. In 2011, three of the top five stations in the nation most frequently exceeding the 8-hour federal ozone NAAQS were located within the SCAB (i.e., Central San Bernardino Mountains, East San Bernardino Valley, and Metropolitan Riverside County). In the year 2011, the former 1-hour and 8-hour average federal standard levels for ozone were exceeded at one or more SCAB locations on 16 and 106 days, respectively.

$PM_{2.5}$ in the SCAB has improved significantly in recent years, with 2010 and 2011 being the cleanest years on record. In 2011, only one station in the SCAB (Metropolitan Riverside County at Mira Loma) exceeded the annual $PM_{2.5}$ NAAQS and the 98^{th} percentile form of the 24-hour $PM_{2.5}$ NAAQS, as well as the 3-year design values for these standards. (Although other stations had 24-hour averages exceeding the federal 24-hour $PM_{2.5}$ standard concentration level in 2011, the 98^{th} percentile concentration did not exceed.) Basin-wide, the federal $PM_{2.5}$ 24-hour standard level was exceeded in 2011 on 17 sampling days. (SCAQMD 2013)

In June 2013, the United States Environmental Protection Agency (U.S. EPA) issued final approval of the SCAQMD's request to re-designate the SCAB as attainment with the PM_{10} NAAQS.

The District is currently in attainment for the federal standards for SO_2, CO, NO_2 and PM10. While the concentration level of the new 1-hour NO_2 federal standard [100 parts per billion (ppb)] was exceeded in the SCAB at two stations (Central Los Angeles and Long Beach, on the same day) in 2011, the NAAQS NO_2 design value has not been exceeded (the 3-year average of the annual 98^{th} percentile of the daily 1-hour maximums). Therefore, the SCAB remains in attainment of the NO_2 NAAQS. U.S. EPA requirements for future near-road NO_2 measurements are not a part of the current ambient NO_2 NAAQS determinations.

The U.S. EPA designated the Los Angeles County portion of the SCAB (excluding the high desert areas and San Clemente and Santa Catalina Islands) as non-attainment for the recently revised (2008) federal lead standard [0.15 micrograms per cubic meter (µg/m^3), rolling 3-month average], due to the addition of source-specific monitoring under the new federal regulation. This designation was based on two source-specific monitors in Vernon and in the City of Industry exceeding the new standard in the 2007-2009 period of data used. For the 2009-2011 data period, only one of these stations (Vernon) still exceeded the lead standard, with a maximum 3-month rolling average of 0.67 µg/m^3 occurring in 2009. In 2011, the rolling 3-month average at that site was 0.46 µg/m^3. (SCAQMD 2013)

The attainment status for federal ambient air quality standards in the SCAB is summarized in Table 2-3.

Table 2-3: NAAQS Attainment Status – South Coast Air Basin

Criteria Pollutant	Averaging Time (standard)	Designation	Attainment Date
1979 1-hr Ozone	1-hr (0.12 ppm)	Non-attainment (extreme)	11/15/2010 (not attained)
1997 8-hr Ozone	8-hr (0.08 ppm)	Non-attainment (extreme)	6/15/2024
2008 8-hr Ozone	8-hr (0.075 ppm)	Non-attainment (extreme)	12/31/2032
CO	1-hr (35 ppm); 8-hr (9 ppm)	Attainment (maintenance)	6/11/2007 (attained)
NO_2	1-hr (100 ppb)	Unclassifiable/attainment	Attained
	annual (0.053 ppm)	Attainment (maintenance)	9/22/1998
SO_2	1-hr (75 ppb)	Designations pending	Pending
	24-hr (0.14 ppm); annual (0.03 ppm)	Unclassifiable/attainment	3/19/1979 (attained)
PM_{10}	24-hr (150 µg/m^3)	Attainment	7/26/2013
$PM_{2.5}$	24-hr (35 µg/m^3)	Non-attainment	12/14/2014
	annual (15.0 µg/m^3)	Non-attainment	4/5/2015
Lead	3-month rolling (0.15 µg/m^3)	Non-attainment (partial)	12/31/2015

Source: SCAQMD 2013

2.1.6 Monitored Air Quality – Project Area

The SCAQMD monitors levels of the aforementioned criteria pollutants at 32 monitoring stations throughout the SCAB. The SCAQMD's Westchester Parkway monitoring station is located 4.8 miles southwest of the Culver City portion of the IOF, and the North Main Street monitoring station is located approximately 9.5 miles northeast of the IOF. Please see Figure 2-3. Air quality data for the Project area for 2012-2014 are presented in Table 2-4.

Table 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 > Nat'l Std	1	3	3
State 8-hr (ppm)	0.082	0.080	0.076
# Days > State Std	1	6	3
Hourly (ppm)	0.105	0.114	0.096
# Days > Nat'l Std	0	0	0
# Days > State Std	1	1	0
Nitrogen Dioxide			
Federal Hourly (ppm)	58.4	66.4	62
# Days > Nat'l Std	0	0	0
State Hourly (ppm)	74	72	73
# Days > State Std	0	0	0
Carbon Monoxide			
8-hr (ppm)	*	*	*
# Days > Nat'l Std	0	0	0
# Days > State Std	0	0	0
PM_{10}			
Federal 24-hr (μ/m^3)	38.0	46.0	42.0
# Days > Nat'l Std	0	0	0
State 24-hr (μ/m^3)	37.0	45.0	42.0
# Days > State Std	0	0	0
$PM_{2.5}$			
Federal 24-hr (μ/m^3)	43.1	59.9	56.4
# Days > Nat'l Std	1	6	7
State 24-hr (μ/m^3)	54.8	65.0	70.3
Sulfur Dioxide			
24-hr (ppm)	0.002	*	*

*Insufficient data available to determine this value.

All values reported are from the Los Angeles Westchester Parkway monitoring station except $PM_{2.5}$, which is taken from the Los Angeles North Main Street monitoring station.

Source: CARB 2017

2.1.7 Baseline Emission Inventory

The current operator of the lease is Sentinel Peak Resources; the operations were formerly conducted by Freeport-McMoRan. Because Sentinel Peak Resources has not yet operated at the facility for more than one year, emissions data from the previous operator are used to establish the baseline emission inventory. Freeport-McMoRan recently 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 2-5. 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 IOF (i.e., both the Culver City IOF and Los Angeles County IOF portions).

Table 2-5: 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

Source: SCAQMD 2015a

2.1.8 Health Risk

A primary health concern due to exposure to TACs is the risk of contracting cancer. 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 (Doll and Peto, 1981).

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 (SCAQMD, 2015b).

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 (SCAQMD 2015b) and is a monitoring and evaluation study conducted in the SCAB. The study is a follow-up to previous air toxics studies in the SCAB and 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 SCAB. 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 study determined that DPM was the predominant (68.2%) TAC leading to health risks. The study concluded that compared to previous studies of air toxics in the SCAB, air toxics exposure has decreased, with the estimated basin-wide, population-weighted risk down by about 57% from the analysis done for the MATES III time period. The ambient air toxics data from the 10 fixed monitoring locations also demonstrated a similar reduction in air toxic levels and risks.

2.1.9 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 (AIHA 1989), 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% of the population at concentrations as low as 0.5 ppb and would qualify as annoying by 50% 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

[1] Per the U.S. Occupational Safety and Health Administration (OSHA 2015), the odor threshold is 0.01-1.5 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.

with varying odor thresholds. Analyses conducted on unprocessed gas samples at the IOF 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 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 (Turk 1970). 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 (Cernansky 1983).

The SCAQMD issued a Notice of Violation (NOV) to PXP, the field operator, from a 2006 odor event. The 2006 incident is the only nuisance event that resulted in an NOV in the last 10 years.

2.2 Greenhouse Gases

Climate change, also referred to as global warming, has been the subject of increasing media coverage over the past decade and is believed to be caused by gases that trap heat in the atmosphere called greenhouse gases (GHGs). Pursuant to California Health and Safety Code Section 38505(g), the seven principal GHGs include carbon dioxide (CO_2), methane (CH_4), nitrous oxide (N_2O), hydrofluorocarbons (HFCs), perfluorocarbons (PFCs), sulfur hexafluoride (SF_6), and nitrogen trifluoride (NF_3). GHGs occur naturally because of volcanoes, forest fires, and biological processes, such as enteric fermentation and aerobic decomposition. They are also produced by the combustion of fuels, industrial processes, agricultural operations, waste management, and land use changes, such conversion of farmland to urban uses. Emissions caused by human activities are called anthropogenic emissions.

The American Meteorological Society (AMS) refers to climate change as any systematic change in the long-term statistics of climate elements (such as temperature, pressure, or winds) sustained over several decades or longer. The AMS also indicates that climate change may be due to natural external forcings, such as changes in solar emission or slow changes in the Earth's orbital elements, natural internal processes of the climate system, or anthropogenic forcing. The climate system can be influenced by changes in the concentration of various GHGs in the atmosphere that affect the Earth's absorption of radiation (AMS 2014). The United Nations Framework Convention on Climate Change defines climate change as "a change of climate which is attributed directly or indirectly to human activity that alters the composition of the global atmosphere and which is in addition to natural climate variability observed over comparable time periods." (UNFCCC 2014)

In its Second Assessment Report (1995) of the science of climate change, the Intergovernmental Panel on Climate Change (IPCC) concluded that "human activities are changing the atmospheric concentrations and distributions of GHGs and aerosols. These changes can produce a radiative forcing by changing either the reflection or absorption of solar radiation, or the emission and absorption of terrestrial radiation." Building on this conclusion, the IPCC Third Assessment Report (2001) asserted that "concentrations of atmospheric GHGs and their radiative forcing have continued to increase as a result of human activities." While the Second Assessment Report concluded that "the balance of evidence suggests that there is a discernible human influence on global climate," the Third Assessment Report more directly connects the influence of human activities on climate. The IPCC concluded that "[I]n light of new evidence and taking into account the remaining uncertainties, most of the observed warming over the last 50 years is likely to have been due to the increase in greenhouse gas concentrations."

In its Fourth Assessment Report (2007), the IPCC stated that warming of the Earth's climate is unequivocal and that warming is very likely attributable to increases in atmospheric GHGs caused by human activities. The IPCC further stated that changes in many physical and biological systems, such as increases in global temperatures, more frequent heat waves, rising sea levels, coastal flooding, loss of wildlife habitat, spread of infectious disease, and other potential environmental impacts, are linked to changes in the climate system and that some changes might be irreversible.

In its Fifth Assessment Report (2013), the IPCC reinforced evidence for the warming of the climate system since the 1950s based on observed changes over decades to millennia. The atmosphere and ocean have warmed, the amounts of snow and ice have diminished, the sea level has risen, and the concentrations of GHGs have increased. Each of the last three decades has been successively warmer at the Earth's surface than any preceding decade since 1850. In the Northern Hemisphere, 1983-2012 was likely the warmest 30-year period of the last 1,400 years. The IPCC also reports (IPCC 2013):

- The atmospheric concentrations of CO_2, CH_4, and N_2O have all increased since 1750 due to human activity. In 2011, average concentrations of CO_2, CH_4, and N_2O were 390 ppm, 1.8 ppm, and 0.3 ppm, respectively, which are higher than pre-industrial levels by about 40%, 150%, and 20%, respectively.
- The globally averaged combined land and ocean surface temperature data, as calculated by a linear trend, showed an average warming of 0.85°C (1.5°F) over the period 1880 to 2012. The average total increase between the 1850-1900 period and the 2003-2012 period was 0.78°C (1.4°F).
- Ocean warming dominates the increase in energy stored in the climate system, accounting for more than 90% of the energy accumulated between 1971 and 2010. The rate of sea level rise since the mid-19th century has been larger than the mean rate during the previous two millennia. Over the period 1901-2010, global mean sea level rose by 0.19 meter (0.62 foot).
- Over the last two decades, the Greenland and Antarctic ice sheets have been losing mass, glaciers have continued to shrink almost worldwide, and Arctic sea ice and Northern Hemisphere spring snow cover have continued to decrease in extent.

According to the NOAA, there is strong evidence that the global sea level is now rising at an increased rate and will continue to rise during this century. While studies show that sea levels changed little from AD 0 until 1900, sea levels began to climb in the 20th century. The two major causes of global sea level rise are thermal expansion caused by the warming of the oceans (since water expands as it warms) and the loss of land-based ice (such as glaciers and polar ice caps) due to increased melting. Records and research show that the sea level has been steadily rising at a rate of 0.04 to 0.1 inch per year since 1900. This rate may be increasing. Since 1992, new methods of satellite altimetry (the measurement of elevation or altitude) indicate a rate of rise of 0.12 inch per year, or 1 foot per century. This is a significantly higher rate than the sea level rise averaged over the last several thousand years (NOAA 2014).

2.2.1 Common GHGs

The most common GHG from human activity (fuel combustion) is CO_2, followed by CH_4 and N_2O (EPA 2014a). The Project is not expected to emit HFCs, PFCs, SF_6, or NF_3; therefore, throughout this analysis, the term GHG refers to combustion byproducts and fugitive emissions of CO_2, CH_4, and N_2O.

Carbon Dioxide: In nature, carbon is cycled between various atmospheric, oceanic, biologic, and mineral reservoirs. Atmospheric CO_2 is part of this global carbon cycle. CO_2 concentrations in the atmosphere increased from 278 parts per million by volume (ppmv) in pre-industrial times to 390 ppmv in 2011, a 40% increase. The IPCC notes that "this concentration has not been exceeded during the past 420,000 years, and likely not during the past 20 million years. The rate of increase over the past century is unprecedented, at least during the past 20,000 years." The IPCC definitively states that "the present atmospheric CO_2 increase is caused by anthropogenic emissions of CO_2" (EPA 2014b; IPCC 2007).

The potential heat trapping ability of different GHGs in the atmosphere varies significantly. To account for these differences in warming effect, GHGs are defined by their global warming potential (GWP). The GWP value for a GHG depends on the time span over which it is calculated and on how the gas concentration decays in the atmosphere over time. Gases with a higher GWP absorb more energy, per pound, than gases with a lower GWP, and thus contribute more to warming Earth (EPA 2014b). Under this EPA methodology, the GWP of CO_2 is set to 1, the GWP of CH_4 is 21, and the GWP of N_2O is 310. Carbon dioxide equivalents (CO_2e) are calculated by summing the products of mass GHG emissions by species times their respective GWP coefficients (EPA 2014b).

Methane: CH_4 is primarily produced through anaerobic decomposition of organic matter in biological systems. Agricultural processes, such as wetland rice cultivation, enteric fermentation in animals, and the decomposition of animal wastes emit CH_4, as does the decomposition of municipal solid wastes. CH_4 is also emitted during the production and distribution of natural gas and petroleum and is released as a byproduct of coal mining and incomplete fossil fuel combustion. Atmospheric CH_4 concentrations have increased by about 150% since pre-industrial times, although the rate of increase has been declining. The IPCC has estimated that slightly more than half of the current CH_4 flux to the atmosphere is anthropogenic from human activities, such as agriculture, fossil fuel use, and waste disposal. The 100-year GWP coefficient of CH_4 ranges from 21 (EPA 2014b) to 25 (IPCC 2007).

Nitrous Oxide: Anthropogenic sources of N_2O emissions include agricultural soils, especially the use of synthetic and manure fertilizers; fossil fuel combustion, especially from combustion in mobile sources; adipic (nylon) and nitric acid production; wastewater treatment and waste combustion; and industrial biomass burning (e.g., electric power generation). The global atmospheric N_2O concentration increased from a pre-industrial value of about 270 ppb to 319 ppb in 2005, a concentration that has not been exceeded during the last thousand years. The 100-year GWP coefficient of N_2O ranges from 298 (IPCC 2007) to 310 (EPA 2014b).

2.2.2 Regional and Local Setting

The environmental setting for GHG emissions and climate change is larger than the immediate Project area. The sections below describe the context for climate change as being the Earth and the properties of GHGs to affect global climate change.

2.2.2.1 Sources of GHG Emissions

The U.S. EPA tracks GHG emissions in the United States and publishes the Inventory of U.S. Greenhouse Gas Emissions and Sinks, which is updated annually. This detailed report contains estimates of the total national GHG emissions and removals associated with human activities in all 50 states. From the current report, the main sources of GHG emissions in the United States are identified below (EPA 2016):

- Electric power generation accounts for about 30.3% of GHG emissions nationwide. Over 70% of electric power is generated by burning fossil fuels, mainly coal and natural gas. GHG emissions from electric power generation in the United States have increased by about 24% since 1990 as demand for electric power has grown and fossil fuels have remained the dominant energy source for generation due to their low cost and high reliability.
- Transportation accounts for about 26.3% of GHG emissions nationwide. GHG emissions from transportation result from burning fossil fuels in automobiles, trucks, trains, ships, and aircraft. About 90% of the fuel used for transportation is petroleum-based, which includes gasoline, diesel, and jet fuel.
- Industry accounts for about 21.3% of GHG emissions nationwide. GHG emissions from industry are associated mainly with burning fossil fuels (coal and natural gas) for heat energy, as well as emissions from certain chemical reactions necessary to produce goods from raw materials.
- Residential and commercial end uses account for about 5.7 and 6.6%, respectively, of GHG emissions nationwide. GHG emissions from businesses and homes result primarily from fossil fuels burned for heat, the use of certain products that contain GHGs, and the handling and disposal of domestic wastes.
- Agriculture accounts for about 9.1% of GHG emissions nationwide. GHG emissions from agriculture are caused by livestock, such as cows (enteric fermentation), soil management practices, and rice farming.
- Land use and forestry offsets (absorbs or sequesters) about 11.5% of GHG emissions nationwide. Land areas can act as GHG sinks (absorbing CO_2

from the atmosphere) or GHG sources. Since 1990, well-managed forests and other lands have absorbed more CO_2 from the atmosphere than they emit.

More recent work by NOAA and the Cooperative Institute for Research in Environmental Sciences (CIRES) (Schwietzke 2016) indicates that methane emissions from fossil fuel development around the world are up to 60 percent greater than estimated by previous studies. The study found that fossil fuel activities contribute between 132 million and 165 million tons of the 623 million tons of methane emitted by all sources every year. That's about 20 to 25 percent of total global methane emissions, and 20 to 60 percent more than previous studies estimated. The upward revision in the estimate of fossil fuel methane emissions comes despite improvements in industry practices that have reduced leaks from oil and gas facilities from about 8 percent of production to about 2 percent over the past three decades. Dramatic production increases have canceled out efficiency gains, keeping the overall contribution from fossil fuel activities constant.

However, the findings also confirm other work by NOAA scientists that conclude fossil fuel facilities are not directly responsible for the increased rate of global atmospheric methane emissions measured in the atmosphere since 2007. According to the study's lead author Stefan Schwietzke, "[W]e believe methane produced by microbial sources – cows, agriculture, landfills, wetlands, and fresh waters – are responsible for the increase, but we cannot yet pinpoint which are the primary drivers."

2.2.2.2 GHG Emission Trends

The California Global Warming Solutions Act of 2006 [Assembly Bill (AB) 32, see Section 3.2.2.1 below] required the California Air Resources Board (CARB) to prepare a Scoping Plan to achieve substantial GHG emissions reductions, both from within the state and from "exported" emissions, such as importing electric power generated at coal-fired power plants located in neighboring western states. The 2008 Scoping Plan outlines a wide range of strategies for reducing statewide GHG emissions to 1990 levels by 2020. This will be achieved by cutting about 30% from business-as-usual emission levels projected for 2020, or about 15% from 2008 levels. Allowing for population growth, the goal is to reduce annual per capita emissions from 14 metric tonnes (MT) of CO_2e down to about 10 MT CO_2e per capita by 2020 (CARB 2008).

Annual GHG emission inventories provide the basis for establishing historical emission trends. Trends are useful in tracking progress toward a specific goal or target. There are many factors affecting GHG emissions, including the state of the economy, changes in demography, improved efficiency, and changes in environmental conditions, such as drought. Consistent with the goals of the Scoping Plan, the following trends are apparent:

- From 2000-2012, California's gross GHG emissions decreased by 1.6% from 466.3 to 458.7 million metric tonnes (MMT) CO_2e, with a maximum of 492.7 MMT CO_2e in 2004. During the same period, California's population grew by 11% from 33.9 to 37.8 million people. As a result, California's per capita GHG emissions have generally decreased over the last 12 years, from 13.7 MT of CO_2e per person in 2000 to 12.1 MT of CO_2e per person in 2012 (CARB 2014).

- California's Gross Domestic Product (GDP) increased from $1.47 trillion in 2000 to $1.75 trillion in 2012 (in 2005 dollars). While California's economy has continued to grow, the "carbon intensity" of the economy (tonnes CO_2e/$GDP) has continually declined since 2001 and has decreased from 316.6 tonnes CO_2e per million dollars in 2000 to 261.9 tonnes per million dollars in 2012 (CARB 2014).
- Since 1990, U.S. GHG emissions have increased by about 5% overall; however, GHG emissions in 2012 were 10% below 2005 levels. From year to year, emissions can rise and fall due to changes in the economy, the price of fuel, and other factors. In 2012, U.S. GHG emissions decreased 3.4% compared to 2011 levels. This decrease was primarily due to a decrease in the carbon intensity of fuels consumed to generate electricity due to a decrease in coal consumption, with corresponding increases in natural gas consumption, and increased hydropower use in some regions of the country. Other factors include improvements in fuel efficiency in vehicles with reductions in miles traveled, and year-to-year changes in the prevailing weather. In 2012, total nationwide GHG emissions were 6,526 MMT of CO_2e (EPA 2014a; EPA 2014b).

2.2.2.3 Statewide GHG Emissions Inventory

Table 2-6 shows California statewide GHG inventory results by economic sector for 2006 through 2012, the most recent data released by CARB. These data are gross basis (i.e., CO_2e emissions only), not including CO_2 sinks, such as forestry and agriculture. As noted above, in 2012, total nationwide GHG emissions were 6,526 MMT of CO_2e, which indicates that California accounts for about 7% of gross CO_2e emissions in the U.S. annually. Since 2007, statewide GHG emissions have declined by about 6% overall (CARB 2014).

Table 2-6: California Statewide Greenhouse Gas Emissions Inventory

Source Category/Sector	Estimated CO_2e Emissions (MMT/year)							Sector Percent
	2006	2007	2008	2009	2010	2011	2012	
Transportation	189.2	189.3	178.0	171.5	170.5	168.1	167.4	36.5%
Electric Power Generation	104.6	113.9	120.1	101.3	90.3	88.1	95.1	20.7%
Commercial and Residential	41.9	42.1	42.4	42.7	43.8	44.3	42.3	9.2%
Industrial Processes	90.3	87.1	87.5	84.9	88.5	88.3	89.2	19.4%
Recycling and Waste	7.7	7.8	7.9	8.1	8.2	8.2	8.3	1.9%
High GWP Gases	11.1	11.8	12.9	14.0	15.9	17.3	18.4	4%
Agriculture	37.8	37.0	38.0	35.8	35.7	36.3	37.9	8.3%
Statewide Totals	483	489	487	458	453	451	459	100%

1 metric tonne = 1,000 kilograms or 2,204.6 pounds

Source: CARB 2014

3.0 REGULATORY SETTING

3.1 Air Quality

3.1.1 Federal Authority

The U.S. EPA enforces the Federal Clean Air Act (FCAA) and the associated NAAQS for CO, NO_2, ozone, SO_2, PM_{10}, $PM_{2.5}$, 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.

Of specific interest to the proposed Project, 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 VOCs, SO_2, and CH_4 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.

3.1.2 State Authority

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 State Implementation Plan (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, PM_{10}, $PM_{2.5}$, 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.

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., nitrogen oxides (NO_x) or VOCs of 100 pounds (lb)/day, PM_{10} of 150 lb/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 IOF are contracted rigs and are not owned by the oil field operator. The drill rigs may be registered in the PERP program.

The Global Warming Solutions Act (AB 32) caps California's GHG emissions at 1990 levels by 2020. This legislation represents the first enforceable statewide program in the U.S. to cap all GHG emissions from major industries that includes penalties for non-compliance. It requires CARB to establish a program for statewide GHG emissions reporting and to monitor and enforce compliance with this program. AB 32 authorizes CARB to adopt market-based compliance mechanisms, including cap-and-trade systems (where the total emissions of GHGs are limited, but users can purchase allowances from other users who reduce their emissions), and allows a 1-year extension of the targets under extraordinary circumstances.

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 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 State's Water Code. 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.

3.1.3 Regional Authority

The SCAQMD is the regional agency responsible for the regulation and enforcement of federal, state, and local air pollution control regulations in the SCAB. The SCAQMD operates monitoring stations in the SCAB, develops and enforces rules and regulations for stationary sources and equipment, prepares emissions inventory and air quality management planning documents, and conducts source testing and inspections.

The oil field operator and activities conducted under the authorization of the proposed Specific Plan would be required to comply with all applicable SCAQMD rules and regulations. Although many rules would not apply to the operations that reside solely within the Culver City portion of the IOF, at a minimum the operator would need to demonstrate compliance with at least the following SCAQMD rules:

- 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: Startup 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 1135.1: Controlling Emissions of Oxides of Nitrogen from Electric Power Generating Equipment
- Rule 1148: Thermally Enhanced Oil Recovery Wells
- Rule 1148.1: Oil and Gas Production Wells
- Rule 1149: Storage Tank Degreasing
- 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

3.1.4 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 a.m. to 5:30 p.m., 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.

The Division of Oil, Gas & Geothermal Resources (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. The odorizing is typically done by injecting trace amounts of mercaptans (a non-toxic 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.

3.2 Greenhouse Gases

3.2.1 Federal Authority

3.2.1.1 40 CFR Part 60, Subpart OOOO—Standards of Performance for Crude Oil and Natural Gas Production, Transmission and Distribution

On June 3, 2016 EPA adopted revisions to its' 2012 New Source Performance Standard for the oil and gas industry to reduce emissions of greenhouse gases – most notably methane – along with smog-forming VOCs. The updates added methane to the pollutants covered by the rule, and would add requirements to limit emissions from hydraulically fractured oil well completions and pneumatic pumps, in addition to requirements for detecting and repairing leaks at oil well sites.

EPA requires owners/operators of hydraulically fractured oil wells to capture the natural gas that currently escapes into the air. Capturing the gas reduces methane and VOC emissions and maximize natural gas recovery from well completions. This significant emissions reduction – nearly 95 percent - would be accomplished primarily through the use of a proven process known as a "reduced emissions completion" or "green completion." In a green completion, special equipment separates gas and liquid hydrocarbons from the flowback that comes from the well as it is being prepared for production. The gas and hydrocarbons can then be treated and used or sold, avoiding the waste of natural resources.

3.2.2 State Authority

3.2.2.1 Global Warming Solutions Act

The Global Warming Solutions Act of 2006 (AB 32, Núñez, Chapter 488, Statutes of 2006) codifies California's goal of reducing statewide emissions of GHGs to 1990 levels by 2020, down to about 427 MMT CO_2e on a statewide basis (CARB 2008). This reduction will be accomplished through an enforceable statewide cap on GHG emissions commencing in 2012 (see Cap and Trade section below) to achieve maximum technologically feasible and cost-effective GHG emission reductions. In order to effectively implement the cap, AB 32 directs CARB to develop appropriate regulations and establish a mandatory reporting system to track and monitor global warming emissions levels.

In June 2007, CARB directed staff to pursue 37 early actions for reducing GHG emissions under AB 32. The broad spectrum of strategies to be developed, including a Low Carbon Fuel Standard (LCFS), regulations for refrigerants with high GWPs, guidance and protocols for local governments to facilitate GHG reductions, and "green ports" (CARB 2007).

In December 2008, CARB approved the AB 32 Scoping Plan outlining the State's strategy to achieve the 2020 GHG emissions limit. This Scoping Plan, developed by CARB in coordination with the Climate Action Team, proposes a comprehensive set of actions designed to reduce overall GHG emissions in California, improve the environment, reduce dependence on oil, diversify California's energy sources, save energy, create new jobs, and enhance public health (CARB 2008).

3.2.2.2 Cap and Trade

Under AB 32, CARB's "Cap and Trade" regulation (Subchapter 10, Article 5, Sections 95800 to 96023, Title 17, California Code of Regulations) is a set of rules (effective September 1, 2012) that establishes a limit on GHG emissions from the largest sources of GHGs in the state. The purpose of the California Cap on Greenhouse Gas Emissions and Market-Based Compliance Mechanisms is to reduce emissions of GHGs from affected stationary sources through the establishment, administration, and enforcement of an aggregate GHG allowance budget and to provide a trading mechanism for compliance instruments (i.e., "GHG allowances" or "carbon credits").

3.2.2.3 Executive Order S-3-05

On June 1, 2005, Executive Order S-3-05 was issued, establishing GHG emission reduction targets: by 2010, reduce GHG emissions to 2000 levels; by 2020, reduce GHG emissions to 1990 levels; and by 2050, reduce GHG emissions to 80% below 1990 levels.

3.2.2.4 Executive Order S-1-07

On January 18, 2007, the LCFS was issued, mandating a reduction of at least 10% in the carbon intensity of California's transportation fuels by 2020. It instructed the California EPA to coordinate activities among the University of California, the California Energy Commission (CEC), and other state agencies to develop and propose a draft compliance schedule to meet the 2020 target. Furthermore, it directed CARB to consider initiating regulatory proceedings to establish and implement the low carbon fuel standard (LCFS).

In response, CARB identified the LCFS as an early action item with a regulation to be adopted and implemented by 2010.

The LCFS, administered by CARB, uses a market-based cap-and-trade approach to lowering the GHG emissions from petroleum-based transportation fuels, like reformulated gasoline and diesel. The LCFS requires producers of petroleum-based fuels to reduce the carbon intensity of their products, beginning with a quarter of a percent in 2011 and culminating in a 10% total reduction in 2020. Petroleum importers, refiners, and wholesalers can either develop their own low carbon fuel products or buy LCFS credits from other companies that develop and sell low carbon alternative fuels, such as biofuels, electricity, natural gas, or hydrogen (CEC 2014).

3.2.2.5 Senate Bill 1368

California SB 1368 adds Sections 8340 and 8341 to the Public Utilities Code (effective January 1, 2007) with the intent "to prevent long-term investments in power plants with GHG emissions in excess of those produced by a combined-cycle natural gas power plant" with the aim of "reducing emissions of GHGs from the state's electricity consumption, not just the state's electricity production." SB 1368 provides a mechanism for reducing the GHG emissions of electricity providers, both in-state and out-of-state, thereby assisting CARB in meeting its mandate under AB 32, the Global Warming Solutions Act of 2006.

3.2.2.6 Senate Bill 605, Short-lived Climate Pollutants

SB 605 requires that the State complete an inventory of sources and emissions of short-lived climate pollutants (including methane) in the state based on available data, identify research needs to address any data gaps, identify existing and potential new control measures to reduce emissions, prioritize the development of new measures for short-lived climate pollutants that offer co-benefits by improving water quality or reducing other air pollutants; and coordinate with other state agencies and districts to develop measures identified as part of the comprehensive strategy.

3.2.2.7 Senate Bill 32, Global Warming Solutions Act of 2006: emissions limit

On September 8, 2016, California adopted Senate Bill (SB) 32. SB 32 expands the program established by AB32, requiring California to reduce greenhouse gas emissions to 40 percent below 1990 levels by 2030. SB 32 authorizes CARB to adopt rules and regulations to achieve the maximum technologically feasible and cost-effective greenhouse gas emissions reductions to ensure that statewide greenhouse gas emissions are reduced to at least 40 percent below the statewide greenhouse gas emissions limit no later than Dec. 31, 2030. In adopting a more aggressive standard, the state is empowering the air board to enact further regulations to reduce emissions, while not prescribing what those regulations must entail.

3.2.2.8 CEQA Guidelines Revisions

In 2007, the state legislature passed SB 97, which required amendment of CEQA Guidelines to incorporate analysis of, and mitigation for, GHG emissions from projects subject to CEQA. The California Natural Resources Agency adopted these amendments on December 30, 2009. Following review by the Office of Administrative Law and filing with the Secretary of State for inclusion in the California Code of Regulations, the CEQA Guidelines revisions became effective March 18, 2010.

The 2010 CEQA Guidelines revisions include a section (§15064.4) that specifically addresses the potential significance of GHG emissions. Section 15064.4 calls for a "good-faith effort" to "describe, calculate or estimate" GHG emissions; Section 15064.4 further states that the analysis of the significance of any GHG impacts should include consideration of the extent to which the project would increase or reduce GHG emissions; exceed a locally applicable threshold of significance; and comply with "regulations or requirements adopted to implement a statewide, regional, or local plan for the reduction or mitigation of greenhouse gas emissions."

The CEQA Guidelines also state that a project may be found to have a less than significant impact on GHG emissions if it complies with an adopted plan that includes specific measures to sufficiently reduce GHG emissions [§15064(h)(3)]. However, the Guidelines do not require or recommend a specific analytical methodology or provide quantitative criteria for determining the significance of GHG emissions. Importantly, the CEQA Guidelines do not contain statewide quantitative standards of significance for GHG impacts; establishing quantitative thresholds has been delegated to Lead Agencies pursuant to CEQA and California's 35 air districts on an individual basis.

4.0 AIR QUALITY IMPACTS ANALYSIS

This report presents a comprehensive air quality impact analysis of the Project and evaluates these impacts for their potential significance. Project impacts were compared to established thresholds for the purpose of determining the air quality impact for each pursuant to CEQA Guidelines.

Table 4-1 summarizes the Project impact level for each air quality CEQA impact. Each impact area is discussed individually in detail in this section.

Table 4-1: Air Quality Impacts Analysis

AIR QUALITY: Where available, the significance criteria established by the applicable air quality management or air pollution control district may be relied upon to make the following determinations. Would the project:	Potentially Significant Impact	Less Than Significant with Mitigation	Less Than Significant Impact	No Impact
a) Conflict with or obstruct implementation of the applicable air quality plan?	☐	☐	☒	☐
b) Violate any air quality standard or contribute substantially to an existing or projected air quality violation?	☐	☒	☐	☐
c) Result in a cumulatively considerable net increase of any criteria pollutant for which the project region is non-attainment under an applicable federal or state ambient air quality standard (including releasing emissions which exceed quantitative thresholds for ozone precursors)?	☐	☒	☐	☐
d) Expose sensitive receptors to substantial pollutant concentrations?	☒	☐	☐	☐
e) Create objectionable odors affecting a substantial number of people?	☐	☐	☒	☐

4.1 Significance Criteria

To determine whether or not air quality impacts from the proposed Project may be significant, impacts are evaluated and compared to the criteria established by the SCAQMD which are listed in Table 4-2. If impacts equal or exceed any of the criteria in Table 4-2, 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 proposed Project to the maximum extent feasible.

Table 4-2: SCAQMD Air Quality Significance Thresholds

Pollutant	Construction	Operation
Mass Daily Thresholds		
NO_x	100 lb/day	55 lb/day
VOCs	75 lb/day	55 lb/day
PM_{10}	150 lb/day	150 lb/day

Pollutant	Construction	Operation
$PM_{2.5}$	55 lb/day	55 lb/day
SO_x	150 lb/day	150 lb/day
CO	550 lb/day	550 lb/day
Lead	3 lb/day	3 lb/day
Toxic Air Contaminant (TAC), Odor, and GHG 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 MT/year CO_2e 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)	
PM_{10} 24-hr average annual average	10.4 $\mu g/m^3$ (construction) and 2.5 $\mu g/m^3$ (operation) 1.0 $\mu g/m^3$	
$PM_{2.5}$ 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)	

In addition, the SCAQMD publishes Localized Significance Thresholds (LSTs) as an optional means of evaluating localized impacts from NO_x, CO, PM_{10}, and $PM_{2.5}$. The LSTs would be used in place of ambient air quality modeling. LSTs are discussed in more detail in Section 4.5.

4.2 Conflict with or Obstruct Implementation of the Applicable Air Quality Plan

SUMMARY OF IMPACTS ANALYSIS: The proposed Project will not conflict with the regional AQMP or implementing regulations. The Project would serve existing and intended land uses and would be consistent with the goals and policies of the SCAQMD's 2016 AQMP. It would not affect *regional employment or job growth. The proposed Project is consistent with the AQMP and, therefore, expected to result in **Less Than Significant** impacts related to this air quality criterion.*

4.2.1 Impacts Analysis

The Culver City portion of the IOF is located within the SCAB, 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 in February 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.

4.2.1.1 2016 AQMP

The 2016 AQMP will develop integrated strategies and measures to meet the following NAAQS (SCAQMD 2016b):

- 8-hour O_3 (75 parts per billion [ppb]) by 2031[2]
- Annual PM2.5 (12 micrograms per cubic meter [µg/m3]) from 2021 to 2025
- 8-hour O_3 (80 ppb) by 2023
- 1-hour O_3 (120 ppb) by 2022
- 24-hour PM2.5 (35 µg/m3) 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 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

[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.

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 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 4-3 summarizes the mobile source control measures potentially applicable to the operations authorized by the Specific Plan.

Table 4-3: Summary of 2016 AQMP Mobile Source Control Measures Potentially Relevant to the IOF

Control Measure ID Number	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]	2019–2028
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]	2019–2028
MOB-14	Emission Reductions from Incentive Programs [NOx, PM]	2016–2024

Source: SCAQMD 2016b

Toxic Source Control Measures

One stationary source control measure is proposed 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.

4.2.2 Conclusion

The equipment operated in association with the Culver City IOF Specific Plan is expected to include light-heavy, medium-heavy, and heavy-duty on-road vehicles, construction equipment, offroad 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.

Two control measures proposed in the 2016 AQMP, MOB-09 and MOB-14, may provide additional emission reduction credits that could be used to offset emission increases authorized by the Specific Plan.

The proposed 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 proposed Project.

The proposed Project would be expected to comply with any VOC monitoring or reduction rules developed by the SCAQMD to implement the proposed control measures CMB-03, MSC-02, FUG-01 and TXM-09.

The proposed Project will not conflict with the AQMP or the other applicable plans described above. As a result, the proposed Project is consistent with the AQMP and, therefore, is expected to result in less than significant impacts related to the applicable air quality plan.

4.2.3 Mitigation

None required.

4.3 Violate Any Air Quality Standard or Contribute Substantially to an Existing or Projected Air Quality Violation

SUMMARY OF IMPACTS ANALYSIS: The Project would exceed the significance criteria for NO_x, VOC, and CO during well construction and stimulation activities. With MM-AQ-1 and MM-AQ-2, including the use of Tier 4 diesel engines and management requirements to minimize the overlap of high-emitting activities, impacts would remain significant for NO_x and CO. However, with MM-AQ-3, which requires the Oil Field Operator's annual drilling plan to meet a Performance Standard that ensures excess emissions are mitigated, the proposed Project would have a ***Less than Significant with Mitigation*** *for this criterion.*

4.3.1 Impacts Analysis

To assess the air quality impacts from the proposed Project, project-related construction and operational emissions are presented with the SCAQMD mass-daily significance threshold for construction and operation, respectively, from Table 4-2. However, the significance determination is made comparing the combined construction and operational emissions to the SCAQMD's operational emissions threshold[3]. Combined construction and operational emissions from the proposed Project that are below the operating emissions threshold would be considered less than significant.

4.3.1.1 Construction Emissions

The proposed Project allows for the construction of two new oil wells per year, with the construction of a third well upon approval. Up to 30 wells are provided for under the Specific Plan over the life of the Project. The proposed 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 discussed as construction activities.

Well construction involves a number of individual activities that have the potential to emit regulated air contaminants (i.e., NO_x, SO_x, CO, VOCs, PM_{10}, and/or $PM_{2.5}$). These activities include:

- Well pad clearing and grading, which may emit PM_{10} and $PM_{2.5}$ from earthwork activities, entrained road dust PM_{10} and $PM_{2.5}$ emissions from vehicle travel on paved and unpaved roads in and around the IOF, and combustion emissions (i.e., NO_x, SO_x, CO, VOCs, PM_{10}, and $PM_{2.5}$) from fuel combustion in the off-road equipment and work trucks;
- Worker commuting, which may emit combustion emissions from fuel combustion in personal vehicles, and PM_{10} and $PM_{2.5}$ from entrained road dust from vehicle travel on paved and unpaved roads;
- 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;
- 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;
- Well rework, which may emit combustion contaminants from the combustion of diesel fuel in the service rig engines;
- 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 PM_{10} and $PM_{2.5}$ from entrained road dust from vehicle travel on paved and unpaved roads; and

[3] Well construction activities could occur every year for the life of the project and would occur concurrent with operations. Rather than use the construction threshold for construction activities and the operating threshold for operating activities, the SCAQMD and others 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 operating emissions are summed for comparison to the SCAQMD's significance threshold for operations to determine significance.

- 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:

- The gaseous emissions from the shale shaker would be vented to a portable flare.
- Off-road diesel construction equipment emissions are based on the following:
  - CARB/EPA 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% 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:
  - CARB/EPA 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% reductions for hydrocarbons and for PM_{10}.
- 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.
- Fugitive dust emissions from earthmoving 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. 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[4] is a three-step process, including 1) site preparation, 2) well stimulation, and 3) flow-back. Although the Specific Plan does not

[4] "Well stimulation" includes either hydraulic fracturing or gravel packing. Gravel packing as a well stimulation technique has been used in the IOF since 2003. Gravel packing is a sand-control method used to prevent the production of formation sand. Gravel packing is used in conjunction with hydraulic fracturing, but at much lower pressures. The main goal of gravel packing is to stabilize the formation and maintain well productivity. The process

restrict the number of well stimulation events, for the purpose of the emission estimates, 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 4-4 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

involves simultaneous fracking and the placement of a gravel pack. The materials for a gravel pack are pumped at much 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 fracking affects an area up to 5000 feet. (Earthworks 2016.) Because lower pressures are required for gravel packing than for hydraulic fracturing, lower pump horsepower is required, leading to lower air emissions. The well stimulation activity analyzed herein is hydraulic fracturing, as it will lead to higher emissions than gravel packing.

	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.

The peak daily emissions estimates are based on one (1) well drilled, one (1) well completion with stimulation, one (1) well completion without stimulation, and one (1) well rework event, all assumed to be conducted on the peak day. The activities with the highest emissions and that are included in the tabulation of the peak daily emissions are shown in Table 4-4 using **bold** font.

As described above, the activities that could occur concurrently are included in the peak daily emissions. The construction emissions that are shown in Table 4-4 using **bold** font represent the worst-case overlap of activities for a 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 4-4 provides a summary of the unmitigated peak daily emissions for these activities. Emission calculation worksheets are provided in Appendix A.

4.3.1.1 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. The proposed Project allows for new tank storage of produced fluids. Any new tanks are assumed to be connected to vapor recovery, thus the only losses would be from fugitive components associated with the vapor recovery system. Since the vapor recovery system operates under vacuum conditions, fugitive losses are negligible and have been omitted from the analysis. The operating emissions will reach the peak level in the last year of the lifetime of the proposed 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. Peak daily unmitigated operating emissions are presented in Table 4-4. Emission calculation worksheets are provided in Appendix A.

4.3.1.2 Summary of Emissions

As discussed elsewhere, for the purpose of this evaluation, peak daily emissions from well construction activities are summed with peak daily operating emissions to determine significance. The emissions are summarized and compared to the significance threshold for operations in Table 4-4.

Table 4-4: Unmitigated Peak Daily Emissions and Regional CEQA Significance Determination

Phase	VOC (lb/day)	CO (lb/day)	NO_x (lb/day)	SO_x (lb/day)	PM_{10} (lb/day)	$PM_{2.5}$ (lb/day)
Construction						
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 - Peak Daily Construction Emissions	25.78	1,073.83	1,746.45	3.51	55.96	13.44
Regional SCAQMD CEQA Construction Significance Thresholds	*75*	*550*	*100*	*150*	*150*	*55*
Operations						
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 - Peak Daily Operating Emissions	38.00	1.53	0.14	0.01	1.96	0.23
Regional SCAQMD CEQA Operational Significance Thresholds	*55*	*550*	*55*	*150*	*150*	*55*
Construction and Operations Combined						
Total Peak Daily Emissions	*63.78*	*1075.36*	*1,746.59*	*3.52*	*57.92*	*13.67*
Regional SCAQMD CEQA Operational Significance Thresholds	*55*	*550*	*55*	*150*	*150*	*55*
Significant?	**Yes**	**Yes**	**Yes**	No	No	No

As shown, based on the unmitigated emissions from the proposed Project' Maximum Buildout Scenario, emissions of VOC, NO_x and CO would be significant and emissions of SO_x, PM_{10}, and $PM_{2.5}$ would be less than significant when compared to the Regional SCAQMD CEQA Operational Significance Thresholds. Mitigation is required to reduce these significant impacts.

4.3.2 Mitigation

MM-AQ-1. Drill Rig Engines. All drilling, re-drilling, reworking, well stimulation, and maintenance rig diesel engines, except rigs powered by on-road engines, shall comply with the following provisions:

a) Utilize CARB/EPA 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. Concurrent Operations. The operator shall not conduct well drilling concurrent with well stimulation activities.

MM-AQ-3. Performance Standard. 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;
- PM10 and PM2.5 24-hour average concentrations shall not exceed 2.5 $\mu g/m^3$ at the City IOF boundary; and
- 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.

Upon implementation of the proposed mitigation measures, the proposed Project would be less than significant compared to Regional SCAQMD CEQA Significance Thresholds for all pollutants. Mitigated emissions are presented in Table 4-5. Emission calculation worksheets are provided in Appendix A.

Table 4-5: Mitigated Peak Daily Emissions and Regional Significance Determination

Phase	VOC (lb/day)	CO (lb/day)	NO_x (lb/day)	SO_x (lb/day)	PM_{10} (lb/day)	$PM_{2.5}$ (lb/day)
Construction						
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 - Peak Daily Construction Emissions With MM-AQ-1 and MM-AQ-2	14.46	604.76	485.80	2.61	49.40	7.75
Regional SCAQMD CEQA Construction Significance Thresholds	*75*	*550*	*100*	*150*	*150*	*55*
Operations						
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 - Peak Daily Operating Emissions With MM-AQ-1 and MM-AQ-2	38.00	1.53	0.14	0.01	1.96	0.23
Regional SCAQMD CEQA Operational Significance Thresholds	*55*	*550*	*55*	*150*	*150*	*55*
Construction and Operations Combined						
Peak Daily Emissions MM-AQ-1 and MM-AQ-2	52.46	606.29	485.94	2.62	51.36	7.98
Additional Mitigation per MM-AQ-3 Performance Standard	---	(56.29)	(430.94)	---	---	---
Total Peak Daily Emissions	52.46	550	55	2.62	51.36	7.98

Phase	VOC (lb/day)	CO (lb/day)	NO_x (lb/day)	SO_x (lb/day)	PM_{10} (lb/day)	$PM_{2.5}$ (lb/day)
Regional SCAQMD CEQA Operational Significance Thresholds	*55*	*550*	*55*	*150*	*150*	*55*
Significant?	No	No	No	No	No	No

4.4 Result in a Cumulatively Considerable Net Increase of Any Criteria Pollutant for Which the Project Region Is Non-Attainment under Applicable Federal or State Ambient Air Quality Standards (including releasing emissions which exceed quantitative thresholds for ozone precursors)

<u>SUMMARY OF IMPACTS ANALYSIS</u>: The unmitigated Project emissions would exceed the significance criteria for NO_x, VOC and CO during well construction and stimulation activities. With MM-AQ-1 and MM-AQ-2, including the use of Tier 4 diesel engines and management requirements to minimize the overlap of high-emitting activities, impacts would remain significant. MM-AQ-3 would require the Oil Field Operator's annual drilling plan to meet a Performance Standard that ensures excess emissions are mitigated, however 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 or cumulatively, and thus even with MM-AQ-3, the Project could continue to have localized and cumulative adverse impacts. Additional mitigation to address these impacts has not been identified. Therefore, because the Project will remain locally significant, it will also be cumulatively ***<u>Significant with Mitigation</u>***.

4.4.1 Impacts Analysis

Significant adverse cumulative air quality impacts could occur if the proposed Project resulted in a cumulatively considerable net increase of a criteria pollutant for which the SCAB exceeds federal and state ambient air quality standards and has been designated as an area of non-attainment by the U.S. EPA and/or CARB. The SCAB is a non-attainment area for ozone and particulate matter (PM_{10} and $PM_{2.5}$). Because NO_x is a precursor to ozone, NO_x is treated as a non-attainment pollutant for the purpose of this analysis.

"Cumulatively considerable" means that the incremental effects of a proposed Project are considerable when viewed in connection with the effects of past projects, other current projects, and probable future projects. The SCAB is currently in non-attainment for ozone, PM_{10}, and $PM_{2.5}$, 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.

Therefore, this analysis assumes that 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 SCAB is in non-attainment and, therefore, are considered to have significant adverse cumulative air quality impacts.

As discussed in Section 4.3, mitigated peak daily emissions associated with construction and operation of the proposed Project would not exceed the SCAQMD's regional significance thresholds for any criteria pollutant; however, NOx and CO emissions could potentially be at (but not over) the significance threshold.

The proposed Project is located in the northwestern corner of the IOF, adjacent to the County portion of the IOF, where other oil drilling and well rework event activities take place. The County portion of the IOF is expected to have similar activities and similar, or possibly higher, levels of emissions.

4.4.2 Mitigation

Mitigation measures MM-AQ-1, MM-AQ-2, and MM-AQ-3 would reduce the impacts during construction and operation of the proposed Project, however localized impacts would remain significant. Therefore, the Project remains cumulatively significant with mitigation. Therefore, separate mitigation for cumulative impacts as not proposed.

4.5 Expose Sensitive Receptors to Substantial Pollutant Concentrations

SUMMARY OF IMPACTS ANALYSIS: Localized NO_x, PM_{10} and $PM_{2.5}$ emissions would exceed the significance criteria during well construction and stimulation activities without mitigation. With implementation of mitigation measures MM-AQ-1 and MM-AQ-2, including the use of Tier 4 diesel engines and management requirements to minimize the overlap of high-emitting activities, NO_x, PM_{10} and $PM_{2.5}$ emissions would still exceed the LST values during well construction and stimulation activities and would have a ***Significant with Mitigation*** *for this criterion.*

Air toxics emissions would exceed health risk significance criteria without mitigation. With mitigation measures MM-AQ-1 and MM-AQ-2, including the reductions mandated by MM-AQ-3, the health risk impacts are reduced to ***Less than Significant with Mitigation****.*

4.5.1 Impacts Analysis

In this subsection, the proposed Project is evaluated to determine whether or not it has the potential to expose sensitive receptors to substantial pollutant concentrations.

Ambient air quality standards were developed to protect human health from exposure to criteria pollutants (NO_x, CO, PM_{10}, and $PM_{2.5}$). SCAQMD developed a method for evaluating project to a localized significance threshold (LST) that can be used by public agencies to determine whether or not a project may generate significant adverse localized air quality impacts. 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, 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.

4.5.1.1 LST Criteria Pollutant Impacts

The impact of criteria pollutant emissions from the proposed Project to sensitive receptors is evaluated using the SCAQMD's LST methodology. LSTs are only applicable to the following criteria pollutants: NO_x, CO, PM_{10}, and $PM_{2.5}$. 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 PM_{10}, LSTs were derived based on requirements in SCAQMD Rule 403, Fugitive Dust.

The LST mass rate lookup tables provided in the guidance document allow a user to determine if the daily emissions for proposed construction or operational activities could result in significant localized air quality impacts. If the calculated emissions for the proposed construction or operational activities are 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 air quality. Proposed projects whose calculated emission budgets 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). The lead agency may choose to describe project emissions above those presented in the LST mass rate lookup tables as significant or perform detailed air dispersion modeling or perform localized air quality impacts analysis according to their own significance criteria. (SCAQMD 2008)

The construction and operation of the proposed Project has the potential to generate NO_x, CO, PM_{10}, and $PM_{2.5}$ emissions. The LST lookup tables provide emission thresholds for projects of 1 acre, 2 acres and 5 acres. The 1 acre size was selected based on the well pad area of one-half acre. The proposed Project requires 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.

To assess the air quality impacts from the proposed Project, project-related construction and operational emissions are presented with the SCAQMD LST significance threshold for construction and operation, respectively, from Table 4-2. However, the significance determination is made comparing the combined construction and operational emissions to the SCAQMD's operational LST emissions threshold, as those values are lower and lead to an analysis that is more protective of public health.

<u>Construction</u>

For the LST analysis for construction activities, the same assumptions that were applied to the analysis in Section 4.3 are applied here.

<u>Operations</u>

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 proposed Project (2028), as that is when the maximum number of wells would be in operation.

Table 4-6 provides a summary of the unmitigated peak daily emissions for construction and operations using the highest emitting concurrent activities. The analysis of the proposed Project demonstrates that: 1) the NO_x, PM_{10}, and $PM_{2.5}$ emissions from the proposed Project exceed their LSTs and thus may potentially contribute to an exceedance of any ambient air quality standard, and 2) potential adverse health impacts associated with construction and operating emissions are potentially significant because the emissions may exceed a level at which health effects could occur. Thus, health impacts associated with the unmitigated emissions from the proposed Project are determined to be potentially significant. Emission calculation worksheets are provided in Appendix A.

Table 4-6: Peak Daily Unmitigated Emissions and LST Significance Determination

Phase	CO (lb/day)	NO_x (lb/day)	PM_{10} (lb/day)	$PM_{2.5}$ (lb/day)
Construction				
Site Preparation	4.94	5.32	7.22	**2.22**
Grading	**11.91**	**12.96**	4.77	0.94
Mobilization / 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 prep)	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 Peak Daily Construction Emissions	1,060.82	1,734.04	54.05	13.00
LST SCAQMD CEQA Construction Significance Threshold [a]	*1482.5*	*128.7*	*33.6*	*10.2*
Operations				
Worker Activities	1.53	0.14	1.96	0.23
Fugitive Gas Emissions	0.00	0.00	0.00	0.00
Subtotal Peak Daily Operating Emissions	1.53	0.14	1.96	0.23
LST SCAQMD CEQA Operating Significance Threshold [a]	*1482.5*	*128.7*	*8.54*	*2.66*
Construction and Operations Combined				
Total Peak Daily Emissions	1062.35	1,734.18	56.01	13.23
LST SCAQMD CEQA Operating Significance Threshold [a]	*1482.5*	*128.7*	*8.54*	*2.66*
Significant?	No	**Yes**	**Yes**	**Yes**

[a] The proposed Project requires a 400-foot (122-meter) setback from the property line for well construction activities, as shown in Figure 1-1. 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.

Mitigation measures MM-AQ-1 and MM-AQ-2 are appropriate for mitigating LST impacts from NOx, PM_{10}, and $PM_{2.5}$ 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. The mitigated emissions are shown in Table 4-7. Feasible mitigation for these impacts has not been identified, therefore the Project will be significant with mitigation.

Table 4-7: Peak Daily Mitigated Emissions and LST Significance Determination

Phase	CO (lb/day)	NO_x (lb/day)	PM_{10} (lb/day)	$PM_{2.5}$ (lb/day)
Construction				
Site Preparation	4.94	5.32	**7.22**	**2.22**
Grading	**11.91**	**12.96**	4.18	0.65
Mobilization /Setup (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 prep)	**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 Peak Daily Construction Emissions	592.69	555.57	47.64	7.88
LST SCAQMD CEQA Construction Significance Threshold[a]	*1482.5*	*128.7*	*33.6*	*10.2*
Operations				
Worker Activities	1.53	0.14	1.96	0.23
Fugitive Gas Emissions	0.00	0.00	0.00	0.00
Subtotal Peak Daily Operating Emissions	1.53	0.14	1.96	0.23
SCAQMD CEQA Operating LST Significance Threshold[a]	*1482.5*	*128.7*	*8.54*	*2.66*
Construction and Operations Combined				
Total Peak Daily Emissions	594.22	555.71	49.6	8.11
SCAQMD CEQA Operating LST Significance Threshold[a]	*1482.5*	*128.7*	*8.54*	*2.66*
Significant?	No	**Yes**	**Yes**	**Yes**

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

4.5.1.2 Toxic Air Contaminants (TAC) Health Risk Impact Analysis

The proposed Project has the potential to generate emissions toxic air contaminants (TAC), 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 proposed 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 proposed Project will occur periodically over the course of more than 10 years, TAC emissions from construction are evaluated for health risk impacts. And because construction and operating activities will occur concurrently, a single impacts analysis is conducted.

The health risk assessment (HRA) is prepared in three major steps:

- TAC emission estimates are prepared for each of the emission sources at the proposed Project;
- Dispersion modeling is conducted to assess the dispersion characteristics and the down-wind ground-level pollutant concentrations in the Project area; and
- A 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 are provided in Appendix A; a more comprehensive discussion of the modeling and HRA is provided in Appendix B.

<u>TAC Emission Estimates</u>

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 (PM_{10} and $PM_{2.5}$) 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 Office of Environmental Health Hazard Assessment (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 TAC identified as possible components of the fugitive VOC emissions from new equipment installed as part of the proposed Project (e.g., fugitive piping components). Fugitive TAC emissions are calculated based on the SCAQMD's latest guidelines for fugitive components. Hydrogen sulfide may also be emitted as a result of the proposed Project. The hydrogen sulfide emissions are evaluated here and in the CEQA criterion for odor analysis (see Section 4.6).

The construction and operating activities along with the expected TAC emissions are summarized in Table 4-7.

Table 4-8: Summary of TAC Emission Sources

Activity	Phase	Expected TAC
Combustion of diesel fuel in the portable and mobile sources (bulldozers, drill rig engines, mud pump and pump engines)	Construction	Diesel Particulate Matter (DPM)

Activity	Phase	Expected TAC
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

Because mitigation has been identified as required for criteria pollutants, the HRA conducted for TAC emissions is based on the implementation of MM-AQ-1, 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% for hydrocarbon and particulate matter with an aerodynamic diameter less than or equal to 10 micron.

The TAC emissions assume three (3) wells would be drilled per year, one (1) well would be completed with stimulation, two (2) wells would be completed without stimulation, three (3) wells would be worked-over 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 4-8. Detailed emission calculations are provided in Appendix A.

Table 4-9: Mitigated[a] DPM Emissions from Construction Activities

Phase	DPM (lb/well)	DPM (lb/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**

[a] Mitigation includes MM-AQ-1 and MM-AQ-2, and does not include MM-AQ-3.

When the mud is processed on the shaker table to remove drill cuttings, the fluids degas, releasing natural gas and hydrogen sulfide. The shaker table will be vented to a portable flare for emissions control. TAC emissions from this process include the non-combusted gases and byproducts of combustion. The flare is assumed to have 98% control efficiency. The non-combusted TAC from the gases are shown in Table 4-9. Flare TAC emissions are summarized in Table 4-10. Annual emissions are based on the construction of three (3) wells per year.

Table 4-10: Gaseous TAC Emissions from Shale Shaker Operation

TAC	Hourly Emissions (lb/hr)	Annual Emissions (lb/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

Table 4-11: TAC Emissions from Combustion of Gas in Flare

TAC	Hourly Emissions (lb/hr)	Annual Emissions (lb/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

Completed wells will have well heads encased in well cellars, and will have piping connecting the wells to the operator's downstream 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 TAC. Fugitive TAC emissions from proposed Project operation are summarized in Table 4-11. TAC emissions were estimated using SCAQMD emissions factors based on an increase of 30 wells (maximum number of wells proposed to operate by 2028).

Table 4-12: Fugitive TAC Emissions during Operations

TAC	Hourly Emissions (lb/hr)	Annual Emissions (lb/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

<u>Modeling</u>

Air dispersion modeling is conducted to determine the dispersion characteristics and down-wind ground-level concentrations of pollutants in the vicinity of the proposed 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 AERMOD dispersion modeling output files are provided in Appendix C. 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 Project Description, each well is expected to have a well pad of up to one-half acre. Each well will potentially have drilling operations, well completion, well stimulation, and operations, thus the annual Project construction emissions would be distributed amongst as many as nine (9) locations each year, and annual operating emissions would be distributed amongst as many as 30 well sites. With 30 well pads authorized by the proposed Project, and given the limited area available in the Culver City portion of the IOF, the Project area is represented in the air quality modeling prepared for the HRA as a single volume source. Figure 4-1 shows the volume source as a green line. All of the emissions listed in Tables 4-9, 4-10, 4-11, and 4-12 are assumed to be released from the volume source.

Health Risk Assessment

The HRA was prepared to quantify the theoretical cancer and non-cancer health risks impacts from construction and operation of the proposed Project.

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. The HARP risk modeling output files are provided in Appendix C.

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 1 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-one-million (1.0E-06) 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 the emissions source to the one in one million receptor. In this case that distance was 707 meters with a calculated zone of impact area of 1.57 km^2 and an assumed worst-case SCAQMD-default population density of 7,000 persons per km^2.

Results

- Risk impacts due to implementation of the proposed Project are presented in Table 4-12. As shown, the impacts are greater than the SCAQMD significance thresholds for cancer risk for the residential receptor and less than significant for cancer risk for the worker receptor and chronic and acute non-cancer hazard indices for residential and worker receptors.

As shown in Table 4-12, the maximum cancer risk to off-site residents would be significant with MM-AQ-1 only. (Note: MM-AQ-2 does not influence the health risk analysis.) Implementation of MM AQ-3 would reduce the impact to a less than significant level.

The Project's incremental cancer risk may also be considered in the context of the background cancer risk of approximately 897 per million calculated for the SCAB region as a whole, and 978 per million for the Project area. Therefore, the carcinogenic risk for the Project area is slightly higher than the 897 per million risk calculated for the SCAB region as a whole.

Table 4-13: Summary of Health Risk Impacts and Significance Thresholds

Impact Parameter	Theoretical Health Risk Impact (unitless)	SCAQMD Significance Threshold (unitless)	Significant (Yes/No)
MICR – Resident	1.43E-05	10.0E-06	Yes
HIC – Resident	1.27E-02	1.0	No
HIA – Resident	1.23E-02	1.0	No
MICR – Worker	7.3E-07	10.0E-06	No
HIC – Worker	1.27E-02	1.0	No
HIA – Worker	1.23E-02	1.0	No
8-hr Chronic	6.71E-04	1.0	No
Cancer Burden	0.01	0.5	No

4.5.2 Conclusions

Project emissions mitigated via MM-AQ-1 and MM-AQ-2 would exceed the LST significance criteria for NO_x, PM_{10} and $PM_{2.5}$ during well construction, stimulation and operational activities. Even with the implementation of Tier 4 diesel engine technology on the drill rigs and stimulation pump engines to lower NO_x, PM10 and PM2.5 emissions, the proposed Project would still exceed the LST significance criteria, indicating a potential adverse health impact from these pollutants.

In addition, with Project emissions mitigated via MM-AQ-1, the Project exceeds the health risk criteria for residential cancer risk due to emissions of TAC. The primary driver of risk is emissions of DPM during well drilling and well stimulation activities.

4.5.3 Mitigation

Mitigation measures MM-AQ-1 and MM-AQ-2 are appropriate for mitigating the health risk impacts from diesel-fueled equipment. MM-AQ-3 requires additional emissions reductions be implemented to reduce Project impacts. Therefore, with implementation of MM AQ-3 cancer risk is reduced to ***Less Than Significant with Mitigation***.

Mitigation measure MM-AQ-1 will reduce the toxic DPM emissions from the Project; however, the Project remains significant. MM-AQ-3 provides flexibility in determining how to reduce impacts to below significance thresholds for health risk from TAC emissions. MM-AQ-3 would allow, for example, the facility 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.

4.6 Create objectionable odors affecting a substantial number of people

<u>SUMMARY OF IMPACTS ANALYSIS</u>: The Project is expected to emit small quantities of hydrogen sulfide, a potentially odorous compound. The Project would require venting of gases produced during well construction and development to a portable flare which will reduce the hydrogen sulfide emissions to a level at which odors are not expected to impact offsite receptors. Therefore, the Project is expected to have a ***<u>Less Than Significant</u>*** *impact for this air quality criterion.*

4.6.1 Impacts Analysis

The proposed Project will include odor sources such as production wells. During Project 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 USDOT). As a result, there may be a potential increase in odors from the proposed Project compared to the baseline.

The area to the south and southeast of the Project area 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 calculated 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 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 4-14. The modeled H_2S concentrations are shown in Figure 4-1.

Table 4-14: 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

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

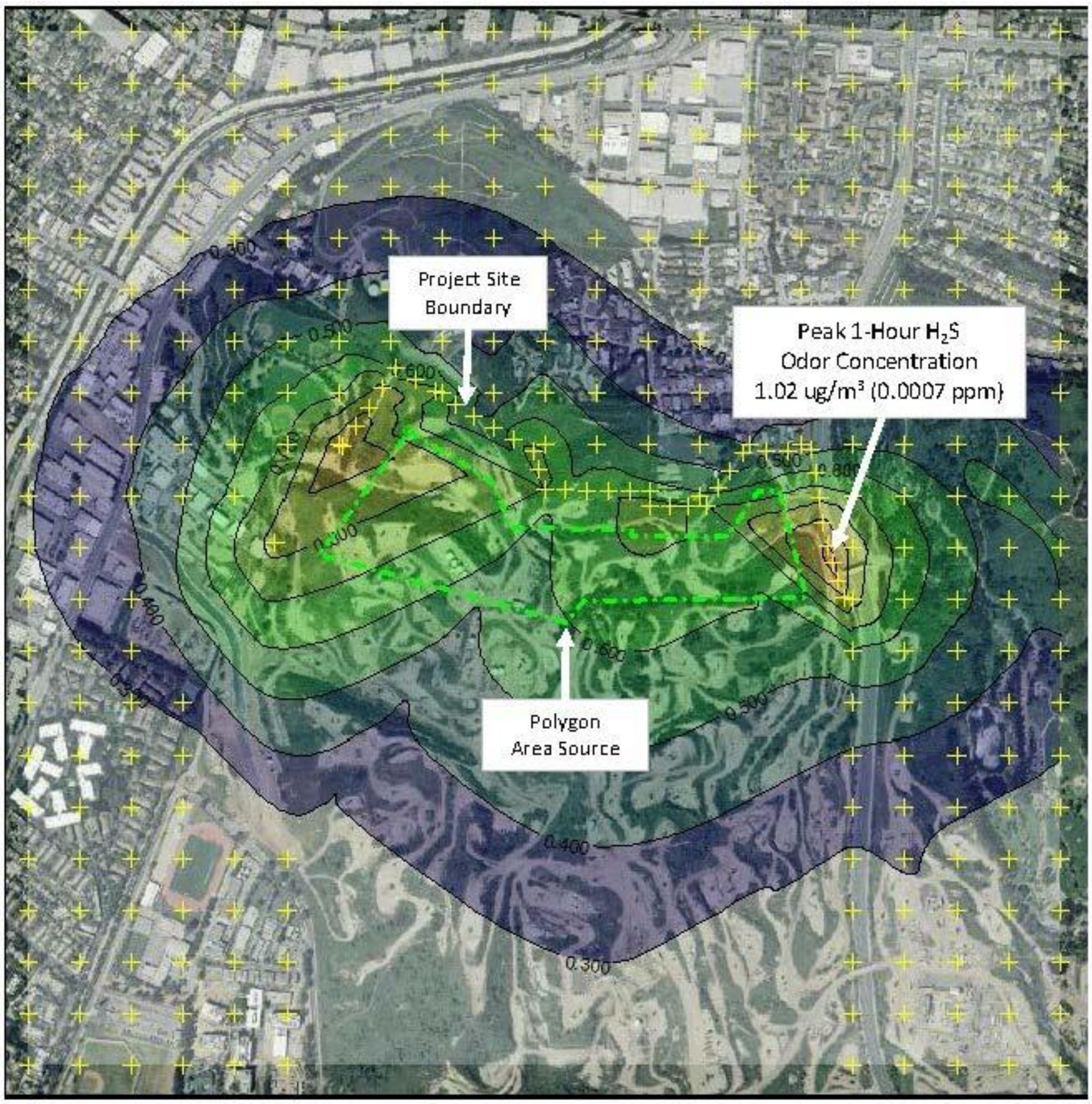
4.6.2 Conclusion

Based on the modeling analysis, potential incremental odor impacts due to the proposed Project compared to the baseline are expected to be less than significant.

4.6.3 Mitigation

None required.

Figure 4-1: Modeled Polygon Area Source and H_2S Concentration Impacts



5.0 GREENHOUSE GASES

This report presents a comprehensive GHG impact analysis of the Project and evaluates these impacts for their potential significance. Project impacts were compared to established thresholds for the purpose of determining the GHG impact for each pursuant to CEQA Guidelines.

Table 5-1 summarizes the Project impact level for each GHG CEQA impact. Each impact area is discussed individually in detail in this section.

Table 5-1: Greenhouse Gas Emissions

Greenhouse Gas Emissions: Would the project:	Potentially Significant Impact	Less Than Significant with Mitigation	Less Than Significant Impact	No Impact
Generate greenhouse gas emissions, either directly or indirectly, that may have a significant impact on the environment?	☐	☐	☒	☐
Conflict with an applicable plan, policy, or regulation adopted for the purpose of reducing the emissions of greenhouse gases?	☐	☐	☒	☐

5.1 Significance Criteria

The analysis of GHG impacts is different from the analysis of criteria pollutants. For criteria pollutants, significance thresholds are based on daily emissions because the attainment or non-attainment status is based on hourly or daily exceedances of applicable ambient air quality standards. Furthermore, several ambient air quality standards are based on the relatively short-term exposure effects on human health (e.g., 1-hour and 8-hour). On the contrary, because the half-life of CO_2 is approximately 100 years, the effects of GHGs are longer-term and affect global climate over a relatively long time frame. Thus, the SCAQMD's current position is to evaluate GHG effects over a longer time frame than a single day.

On December 5, 2008, the SCAQMD adopted the "Draft Guidance Document – Interim CEQA Greenhouse Gas (GHG) Significance Thresholds." This draft guidance proposes a tiered approach to determining GHG significance of projects. The first two tiers involve 1) exempting the project because of potential reductions of GHG emissions allowed under CEQA, and 2) demonstrating that the project's GHG emissions are consistent with a local general plan. Because neither of these tiers is applicable for the proposed Project, the analysis shifts to Tier 3. Tier 3 establishes a numerical threshold of 10,000 MT CO_2e per year as the incremental increase representing significance for industrial sources. Projects with incremental increases below this threshold are not considered to be cumulatively considerable. The significance threshold approaches in Tier 4 were not adopted by the Governing Board and possible options continue to be investigated by staff. Tier 4 will not be considered further. Tier 5 may be applicable if GHG emissions exceed the numerical significance threshold of 10,000 MT CO_2e per year. In this situation, off-site mitigation could be used to reduce GHG emission impacts to less than significant, but mitigation would be required for the life of the project, defined as 30 years. As additional information is compiled regarding the level of GHG emissions that constitute a significant cumulative climate change impact, the SCAQMD will continue to revisit and possibly revise the level of GHG emissions considered to be significant.

To determine whether or not incremental GHG emissions from the proposed Project may be significant, GHG emissions are compared to the 10,000 MT CO_2e/year guidance threshold for industrial sources (see Table 4-2).

5.2 Generate Greenhouse Gas Emissions, Either Directly or Indirectly, That May Have a Significant Impact on the Environment

SUMMARY OF IMPACTS ANALYSIS: The Project is expected to emit GHG emissions from fuel combustion in construction equipment and due to fugitive emissions of hydrocarbons during Project operation. The emission levels are expected to be less than the significance criteria established by the SCAQMD. Therefore, the proposed Project is ***Less Than Significant*** *with respect to this criterion.*

5.2.1 Impacts Analysis

The proposed Project is expected to emit GHG emissions from both construction and operations.

Construction activities required to implement the proposed Project include clearing and grading, drilling, well completion, and well stimulation. Each phase would involve the operation of fuel combustion equipment (e.g., bulldozers, drill rig engines, pump engines) and would require workers to commute to the job site. In addition, gaseous emissions from the shaker table will be vented to a flare for destruction of the VOC and H_2S emissions. Combustion of VOCs will result in GHG emissions. In addition, GHG emissions are estimated for vehicle emissions associated with worker commuting. Annual GHG emissions are estimated based on the maximum build-out scenario: three (3) wells drilled per year, one (1) well completed with stimulation, two (2) wells completed without stimulation, and three (3) wells reworked per year. The total Project construction GHG emissions are estimated based on 30 wells drilled, 10 wells completed with stimulation (1 per year for 10 years), 20 wells completed without stimulation, and 30 wells worked over (3 per year for 10 years).

Detailed GHG emission estimates from construction activities, including activity type, equipment types, number of devices, load factors, and emissions factors, etc., are provided in Appendix A. Construction GHG emissions are summarized in Table 5-2.

Table 5-2: Summary of Project Construction GHG Emissions

Phase	CO_2 (lb/well)	CH_4 (lb/well)	CO_2e (lb/well)	CO_2e (lb/year)	CO_2e (MT/project)[a]
Site Preparation	6,068.54	1.41	6,103.90	18,311.71	83
Grading	10,146.83	2.78	10,216.30	30,648.91	139
Mobilization and Setup (for drilling)	43,561.98	12.43	43,872.65	131,617.95	597
Drilling	3,174,618.13	456.11	3,186,020.77	9,558,062.32	43,347
Demobilization	4,196.38	0.56	4,210.44	12,631.33	57
Well Completion	14,791.01	0.92	14,814.13	29,628.26	134

Phase	CO_2 (lb/well)	CH_4 (lb/well)	CO_2e (lb/well)	CO_2e (lb/year)	CO_2e (MT/project)[a]
Well Stimulation (site preparation)	7,188.98	0.54	7,202.47	7,202.47	33
Well Stimulation	105,920.94	4.54	106,034.39	106,034.39	481
Well Stimulation (flow-back)	10,345.81	1.33	10,379.02	10,379.02	47
Well Rework	5,779.91	0.19	5,784.62	17,353.85	79
Total	3,382,619	481	3,394,639	9,921,870	44,997

[a.] The total Project emissions are based on the emissions per well multiplied by the total number of wells authorized by the Specific Plan of 30.

Operational GHG emissions are estimated based on the fugitive leaks of gas (CH_4 and CO_2) from fugitive components in the well cellars and piping systems. GHG emissions are estimated for vehicle emissions associated with worker commuting. In addition, the indirect GHG emissions from the operation of electric oil pumps are included. Annual operational GHG emissions are summarized in Table 5-3. Detailed GHG emission estimates from operational activities, including activity, equipment types, number of devices, load factors, and emissions factors, etc., are provided in Appendix A.

Table 5-3: Summary of Project Operational GHG Emissions

Phase	CO_2 (lb/day)	CH_4 (lb/day)	CO_2e (lb/day)	CO_2e (MT/year)
Worker Activities	527.46	~0.003	528	87
Fugitive Gas Emissions	18.51	110.38	2,778	460
Indirect Emissions (GHG emissions from electricity production)	--	--	--	5,034
Total				5,581

In accordance with SCAQMD policy, construction emissions are amortized over the life of the project. In this case, the useful life of the wells is assumed to be 30 years. GHG emissions are summarized and compared to the significance threshold in Table 5-4. As shown in Table 5-4, GHG emissions from the proposed Project are less than the significance threshold.

Table 5-4: GHG Significance Determination

Phase	CO_2e (MT/year)
Construction Activities[a]	1,500
Operational Activities	5,581
Total	7,081
CEQA Significance Threshold	*10,000*
Significant? (Yes/No)	No

[a] Total construction GHG emissions are amortized over a 30-year useful life.

Before imposing any mitigation measures, the annual emissions are less than the SCAQMD significance threshold of 10,000 MT CO_2e/year. Thus, construction and operation of the proposed Project is expected to result in less than significant impacts for GHG emissions.

5.2.2 Mitigation

None required.

5.3 Conflict with an Applicable Plan, Policy, or Regulation Adopted for the Purpose of Reducing the Emissions of Greenhouse Gases

SUMMARY OF IMPACTS ANALYSIS: The Project would not conflict with state and local plans, policies, or regulations aimed at curbing GHG emissions. The Project would not conflict with or obstruct implementation of the Global Warming Solutions Act (AB 32) or other applicable rules. The proposed Project is ***Less Than Significant*** *with respect to this criterion.*

5.3.1 Impacts Analysis

California has enacted several pieces of legislation that relate to GHG emissions and climate change, much of which sets aggressive goals for GHG reductions within the state. The first and most far-reaching is AB 32. While AB 32 establishes control measures that would apply to light, medium, and heavy-duty vehicles and the proposed Project will operate those types of vehicles, the proposed Project would not interfere with the implementation of the control measures. Implementation of those control measures may decrease GHG emissions from the proposed Project.

The proposed Project would not disrupt or hinder implementation of any AB 32 control measures. Therefore, any potential impacts associated with conflicting or obstructing implementation applicable plans, policies, or regulations adopted for the purpose of reducing GHG emissions would be less than significant.

5.3.2 Mitigation

None required.

6.0 REFERENCES

AIHA, "Odor Thresholds of Chemicals with Established Occupational Health Thresholds", 1989.

American Meteorological Society (AMS) 2014. Glossary of Meteorology. Website (http://amsglossary.allenpress.com/glossary/search?id=climate-change1) accessed November 2015.

California Air Resources Board (CARB) 2017. iADAM: Air Quality Data Statistics, Top 4 Summary, http://www.arb.ca.gov/adam/topfour/topfour1.php, accessed November 2015.

California Air Resources Board (CARB) 2015. History of Hydrogen Sulfide Ambient Air Quality Standard (website): http://www.arb.ca.gov/research/aaqs/caaqs/h2s/h2s.htm, accessed December 2015.

California Air Resources Board (CARB) 2014. California Greenhouse Gas Emissions for 2000 to 2012 – Trends of Emissions and Other Indicators. Website: http://www.arb.ca.gov/cc/inventory/data/misc/ghg_inventory_trends_00-12_2014-05-13.pdf, accessed November 2015.

California Air Resources Board (CARB) 2008. Climate Change Scoping Plan – A Framework for Change. Website: http://www.arb.ca.gov/cc/scopingplan/document/adopted_scoping_plan.pdf, accessed November, 2015.

California Air Resources Board (CARB) 2007. Expanded List of Early Action Measures to Reduce Greenhouse Gas Emissions in California Recommended for Board Consideration. Website: http://www.arb.ca.gov/cc/ccea/meetings/ea_final_report.pdf, accessed November, 2015.

California Energy Commission (CEC) 2014. Low Carbon Fuel Standard. Website: http://www.energy.ca.gov/low_carbon_fuel_standard/, accessed November 2015.

Cernansky, Nicholas P., "Diesel Exhaust Odor and Irritants: A Review," Journal of the Air Pollution Control Association, February 1983.

Doll, R. and R. Peto 1981. The causes of cancer: quantitative estimates of avoidable risks of cancer in the United States today. Journal of the National Cancer Institute. 66(6):1191-1308.

Earthworks 2016. Gravel Packing (webpage): https://www.earthworksaction.org/issues/detail/gravel_packing; accessed March 2016.

Intergovernmental Panel on Climate Control (IPCC). 1990-2013. IPCC Assessment Reports, Climate Change 1990, 1995, 2001, 2007, 2013 (Reports 1-5). Website: http://www.ipcc.ch/publications_and_data/publications_and_data_reports.htm, accessed November 2015.

Los Angeles County Department of Regional Planning**,** Baldwin Hills Community Standards District Final Environmental Impact Report**,** SCH# 2007061133**,** October 2008**.**

National Oceanic and Atmospheric Administration. (NOAA) 2016. Climate Data Online Search, Los Angeles International Airport Station 2011-2015, Website: http://www.ncdc.noaa.gov/cdo-web/search?datasetid=ANNUAL, accessed January 2016.

National Oceanic and Atmospheric Administration. (NOAA) 2014. Sea Level Rise. Website: http://oceanservice.noaa.gov/facts/sealevel.html, accessed November 2015.

OSHA 2015. Safety and Health Topics, Hydrogen Sulfide, Website: https://www.osha.gov/SLTC/hydrogensulfide/hazards.html, accessed November 2015.

SCAQMD 2015a. Facility INformation Detail (FIND), Website: http://www3.aqmd.gov/webappl/fim/prog/search.aspx, accessed November 2015.

SCAQMD 2015b. Final Report: Multiple Air Toxics Exposure Study in the South Coast Air Basin (MATES IV). May.

SCAQMD 2008. Final Localized Significance Threshold Methodology, Revised July 2008.

Schwietzke 2016. Schwietzke, Stefan, et. al, “Upward revision of global fossil fuel methane emissions based on isotope database”, Nature, volume 538, pgs. 88–91 October 6, 2016.

Turk, Amos, Ph.D., et.al, “Sensory Evaluation of Diesel Exhaust Odors,” U.S. Department of Health, Education and Welfare, February 1970.

United Nations Framework Convention on Climate Change (UNFCCC) 2014. Glossary of Climate Change Acronyms. Website: http://unfccc.int/essential_background/glossary/items/3666.php#G, accessed November 2015.

U.S. Environmental Protection Agency (EPA). 2016. Inventory of U.S. Greenhouse Gas Emissions and Sinks: 1990-2014, Document EPA 430-R-16-002, April 15.

U.S. Environmental Protection Agency (EPA). 2015. National Ambient Air Quality Standards (NAAQS) website: http://www3.epa.gov/ttn/naaqs/criteria.html, accessed December 2015.

U.S. Environmental Protection Agency (EPA). 2014a. Greenhouse Gas Emissions. Website (http://www.epa.gov/climatechange/ghgemissions/), accessed November 2015.

U.S. Environmental Protection Agency (EPA). 2014b. National Greenhouse Gas Emissions Data. Website: http://www.epa.gov/climatechange/ghgemissions/usinventoryreport.html), accessed November 2015.

U.S. Environmental Protection Agency (EPA). 2014c. Clean Air Act Permitting for Greenhouse Gases. Website: http://www.epa.gov/nsr/ghgpermitting.html, accessed November 2015.

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APPENDIX A – EMISSION ESTIMATES

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AIR EMISSIONS CALCULATIONS - INGLEWOOD OIL FIELD SPECIFIC PLAN PROJECT

Introduction

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This file contains emission calculations for the Project Description described in the November 3, 2015 version of the document titled:
Inglewood Oil Field Specific Plan Project; and
Supplemental project information related to mitigation
Each phase in the drilling process is sub-divided into sub-phases as much as possible. Emissions for the emission generating activities in each phase/sub-phase combination are then calculated using standard calculation methodologies.

The phase/sub-phase combinations are as follows:

Phase	Sub-Phase	Description
Well Pad Construction	Site Preparation	This phase/sub-phase represents the initial step of clearing and grubbing a piece of land before grading takes place.
Well Pad Construction	Grading	This phase/sub-phase represents the grading, cut/fill, compacting step. After this step, the well pad is ready for drilling.
Well Drilling	Mobilization and Setup	This phase/sub-phase represents the steps needed to bring the drilling and ancillary equipment to the well pad and prepping it for use.
Well Drilling	Drilling	This phase/sub-phase represents the drilling process.
Well Drilling	Demobilization	This phase/sub-phase represents the steps needed to remove the drilling and ancillary equipment from the well pad after drilling has been completed.
Well Completion	Without Stimulation	This phase/sub-phase represents completion of a well without stimulation.
Well Completion	With Stimulation - Site Preparation	This phase/sub-phase represents the site preparation portion of completion of a well with stimulation. During this phase, all necessary water and sand tanks will be brought to the well pad and filled with water/sand.
Well Completion	With Stimulation - Main Activities	This phase/sub-phase represents the stimulation portion of completion of a well with stimulation. During this phase, the stimulation fluids are prepared and pumped down the well using several large pump trucks.
Well Completion	With Stimulation - Flowback	This phase/sub-phase represents the flowback portion of completion of a well with stimulation. During this phase, the pressure on the well is reduced and a portion of the stimulation fluids are recovered.
Well Rework	Well Rework	This phase/sub-phase represents a rework operation. Rework operations involve some form of work that must be done to the equipment and materials installed in the wellbore in order for production
Routine Operation and Maintenance	Worker Activities	This phase/sub-phase represents day-to-day worker commutes associated with routine operations.
Routine Operation and Maintenance	Fugitive Gas Emissions	This phase/sub-phase represents fugitive emissions associated with well cellars and wellhead/piping fugitive components.

AIR EMISSIONS CALCULATIONS - INGLEWOOD OIL FIELD SPECIFIC PLAN PROJECT

Introduction

Emission calculations are organized by emission categories and types. Each phase/sub-phase from above can have emissions associated with one or more of the categories/types.

The emission categories and types are as follows:

Category	Type(s)	Description
On-Road Vehicles	Worker Vendor Hauler	This category represents emissions associated with worker/vendor/hauler vehicles traveling to and from and within the Inglewood Oil Field, i.e., running exhaust emissions, starting exhaust emissions, idling exhaust emissions, evaporative emissions, and brake and tire wear emissions. Emissions are calculated using the Project-Level version of EMFAC2011, EMFAC2011-PL, along with assumptions related to vehicle types, trip lengths, etc.
Off-Road Combustion	Heavy Equipment	This category represents emissions associated with combustion of diesel fuel in heavy construction equipment as well as the 'drilling' equipment used during drilling, stimulation, and rework. NOx, CO, PM10, and PM2.5 emission factors are from the EPA tier standards; other emission factors are from Table 3.4 from Appendix D of the CalEEMod documentation.
Paved Roads	Worker Vendor Hauler	This category represents particulate emissions associated with resuspsended road dust from travel over paved roads. Emission factors are based on Section 5.3 from Appendix A of the CalEEMod documentation and AP-42, Section 13.2.1. 'Throughput' values are the paved road Vehicle Miles Traveled (VMT) from the On-Road Vehicles calculations.
Unpaved Roads	Worker Vendor Hauler	This category represents particulate emissions associated with resuspsended road dust from travel over unpaved roads. Emission factors are based on Section 5.3 from Appendix A of the CalEEMod documentation and AP-42, Section 13.2.2. 'Throughput' values are the unpaved road Vehicle Miles Traveled (VMT) from the On-Road Vehicles calculations.
Material Handling	Fugitive PM	This category represents particulate emissions associated with the site preparation and grading activities, i.e., clearing and grubbing, grading, cut/fill, etc. Emissions are based on combinations of the earthmoving emission calculation approaches from Section 4.3 from Appendix A of the CalEEMod documentation.
Miscellaneous Venting	Fugitive Gas	This category represents gaseous emissions associated with: (1) degassing of drilling mud generated during drilling; and (2) fugitive emissions associated with well cellars and wellhead/piping fugitive components. Multiple emissions estimation approaches are used. All calculations are documented.
Flaring	Flaring	This category represents emissions associated with combustion of gases released from the drilling mud during the drilling process.

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Table Number	Table Name	Description
1.00	Peak Daily Construction Emissions	This table contains the peak daily unmitigated and mitigated construction emissions. All emissions are on a 'per well' basis.
1.01	Peak Daily Operational Emissions and Operational Project GHG Emissions	This table contains the peak daily unmitigated and mitigated operational emissions. Emissions are shown both on a 'per well' basis and a basis of 30 additional wells in operation.
1.02	Construction Project GHG Emissions	This table contains the construction GHG emissions on a 'per well' basis, a 'per year' basis, and a 'project' basis. Note: The operational GHG emissions can be found in the Peak Daily Operational Emissions table.
1.03	TAC Emissions	This table contains the Toxic Air Contaminant (TAC) emissions that are used as the basis for estimating health risk associated with the project.
2.00	Key Assumptions	The Key Assumptions table contains global assumptions that are used to, for example, set the total horsepower for the drilling rig or the number of workers commuting for routine maintenance and opereation activities.
2.01	On-Road Vehicle Emissions Data	This table contains, for each phase/sub-phase, the assumptions and data that is needed to estimate throughputs, e.g., Vehicle Miles Traveled (VMT), for the on-road vehicles used throughout the project.
2.02	Off-Road Combustion Data	This table contains, for each phase/sub-phase, the assumptions and data that is needed to estimate throughputs, e.g., total horsepower-hours, for the off-road combustion equipment used throughout the project.
2.03	Paved Road Emissions Calculations	This table contains the fugitive PM emissions associated with resuspended dust from travel over paved roads. Emission calculations are based on Section 5.3 from Appendix A of the CalEEMod documentation and AP-42, Section 13.2.1. 'Throughputs' are the Vehicle Miles Traveled (VMT) calculated in the On-Road Vehicle Emissions Data table.

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Table Number	Table Name	Description
2.04	Unpaved Road Emissions Calculations	This table contains the fugitive PM emissions associated with resuspended dust from travel over unpaved roads. Emission calculations are based on Section 5.3 from Appendix A of the CalEEMod documentation and AP-42, Section 13.2.2. 'Throughputs' are the Vehicle Miles Traveled (VMT) calculated in the On-Road Vehicle Emissions Data table.
2.05	Fugitive Particulate Matter - Earthmoving Activities	This table contains the fugitive PM emissions associated with the earthmoving activities from the site preparation and grading activities. Emission calculations are based on combinations of the approaches from Section 4.3 from Appendix A of the CalEEMod documentation.
2.06	Fugitive Gas	This table contains the road dust calculations for heavy equipment used during grading. Emission calculations are based on the unpaved road methodology from CalEEMod and AP-42 Chapter 13 Section 2.2.
2.07	Flaring	This table contains the road dust calculations for heavy equipment used during grading. Emission calculations are based on the unpaved road methodology from CalEEMod and AP-42 Chapter 13 Section 2.2.

AIR EMISSIONS CALCULATIONS - INGLEWOOD OIL FIELD SPECIFIC PLAN PROJECT
TABLE NO. **1.00**
TABLE NAME **Peak Daily Construction Emissions**

These tables contain the Peak Daily Construction Emissions. All emissions are on a 'per well' basis.

Unmitigated Peak Daily Construction Emissions

On-Site / Off-Site	Year	Season	Mitigated / Unmitigated
Total	2017	Peak	Unmitigated

Phase	Sub-Phase	ROG (lb/day)	CO (lb/day)	NOX (lb/day)	SO2 (lb/day)	PM10 (lb/day)	PM2.5 (lb/day)	CO2 (lb/day)	CH4 (lb/day)
Well Pad Construction	Site Preparation	0.51	5.90	5.66	0.01	7.31	**2.24**	1,251.52	0.28
Well Pad Construction	Grading	**0.91**	**12.87**	**13.30**	**0.03**	4.86	0.96	2,595.78	0.69
Well Drilling	Mobilization and Setup	**3.00**	**45.26**	**51.68**	**0.10**	**9.95**	**1.40**	9,592.06	2.50
Well Drilling	Drilling	**10.69**	**493.65**	**839.87**	**2.37**	**12.19**	**4.29**	105,910.66	15.50
Well Drilling	Demobilization	0.74	6.19	8.86	0.02	**9.62**	1.07	2,087.96	0.20
Well Completion	Without Hydraulic Fracturing	**0.63**	**22.13**	**34.43**	**0.05**	**4.49**	**0.60**	4,981.64	0.32
Well Completion	With Hydraulic Fracturing - Site Preparation	0.82	4.77	9.84	0.02	13.39	1.44	2,124.05	0.12
Well Completion	With Hydraulic Fracturing - Main Activities	**10.21**	**473.84**	**762.07**	**0.92**	**17.35**	**4.53**	104,534.21	4.84
Well Completion	With Hydraulic Fracturing - Flowback	0.40	2.94	3.22	0.01	8.12	0.85	833.85	0.10
Well Rework	Well Rework	**0.33**	**26.09**	**45.09**	**0.05**	**2.36**	**0.38**	5,792.85	0.20
	Peak (Sum of Bold)	25.78	1,073.83	1,746.45	3.51	55.96	13.46		

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AIR EMISSIONS CALCULATIONS - INGLEWOOD OIL FIELD SPECIFIC PLAN PROJECT
TABLE NO. **1.00**
TABLE NAME **Peak Daily Construction Emissions**

These tables contain the Peak Daily Construction Emissions. All emissions are on a 'per well' basis.

Mitigated Peak Daily Construction Emissions

On-Site / Off-Site	Year	Season	Mitigated / Unmitigated
Total	2017	Peak	Mitigated

Phase	Sub-Phase	ROG (lb/day)	CO (lb/day)	NOX (lb/day)	SO2 (lb/day)	PM10 (lb/day)	PM2.5 (lb/day)	CO2 (lb/day)	CH4 (lb/day)
Well Pad Construction	Site Preparation	0.51	5.90	5.66	0.01	7.31	**2.24**	1,251.52	0.28
Well Pad Construction	Grading	**0.91**	**12.87**	13.30	**0.03**	4.27	0.68	2,595.78	0.69
Well Drilling	Mobilization and Setup	**3.00**	**45.26**	51.68	**0.10**	**9.95**	**1.40**	9,592.06	2.50
Well Drilling	Drilling	**8.93**	**493.65**	89.29	**2.37**	**9.81**	**1.91**	105,910.66	15.50
Well Drilling	Demobilization	0.74	6.19	8.86	0.02	**9.62**	1.07	2,087.96	0.20
Well Completion	Without Hydraulic Fracturing	**0.57**	**22.13**	6.63	**0.05**	**4.40**	**0.51**	4,981.64	0.32
Well Completion	With Hydraulic Fracturing - Site Preparation	**0.82**	**4.77**	9.84	**0.02**	**13.39**	**1.44**	2,124.05	0.12
Well Completion	With Hydraulic Fracturing - Main Activities	8.80	473.84	**485.80**	0.92	15.66	2.84	104,534.21	4.84
Well Completion	With Hydraulic Fracturing - Flowback	0.40	2.94	3.22	0.01	8.12	0.85	833.85	0.10
Well Rework	Well Rework	**0.23**	**26.09**	3.39	**0.05**	**2.23**	**0.25**	5,792.85	0.20
	Peak (Sum of Bold)	14.46	604.76	485.80	2.61	49.40	7.76		

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AIR EMISSIONS CALCULATIONS - INGLEWOOD OIL FIELD SPECIFIC PLAN PROJECT
TABLE NO. **1.01**
TABLE NAME **Peak Daily Operational Emissions and Operational Project GHG Emissions**

These tables contain the Peak Daily Operational Emissions. Emissions are shown both on a 'per well' basis and assuming 30 additional operational wells. Note: The operational GHG emissions are also shown here.

Unmitigated Peak Daily Operational Emissions

On-Site / Off-Site	Year	Season	Mitigated / Unmitigated	Number of Wells
Total	2027	Peak	Unmitigated	30

'Per Well' Basis

Phase	Sub-Phase	ROG (lb/day)	CO (lb/day)	NOX (lb/day)	SO2 (lb/day)	PM10 (lb/day)	PM2.5 (lb/day)	CO2 (lb/day)	CH4 (lb/day)
Routine Operation and Maintenance	Worker Activities	0.22	1.53	0.14	0.01	1.96	0.23	527.46	0.00
Routine Operation and Maintenance	Fugitive Gas Emissions	1.26	0.00	0.00	0.00	0.00	0.00	0.62	3.68

With 30 additional operational wells

Routine Operation and Maintenance	Total (Including Number of Wells)	38.00	1.53	0.14	0.01	1.96	0.23	545.97	110.39

Mitigated Peak Daily Operational Emissions

On-Site / Off-Site	Year	Season	Mitigated / Unmitigated	Number of Wells
Total	2027	Peak	Mitigated	30

'Per Well' Basis

Phase	Sub-Phase	ROG (lb/day)	CO (lb/day)	NOX (lb/day)	SO2 (lb/day)	PM10 (lb/day)	PM2.5 (lb/day)	CO2 (lb/day)	CH4 (lb/day)
Routine Operation and Maintenance	Worker Activities	0.22	1.53	0.14	0.01	1.96	0.23	527.46	0.0025
Routine Operation and Maintenance	Fugitive Gas Emissions	1.26	0.00	0.00	0.00	0.00	0.00	0.62	3.68

With 30 additional operational wells

Routine Operation and Maintenance	Total (Including Number of Wells)	38.00	1.53	0.14	0.01	1.96	0.23	545.97	110.39

AIR EMISSIONS CALCULATIONS - INGLEWOOD OIL FIELD SPECIFIC PLAN PROJECT
TABLE NO. 1.01
TABLE NAME Peak Daily Operational Emissions and Operational Project GHG Emissions

These tables contain the Peak Daily Operational Emissions. Emissions are shown both on a 'per well' basis and assuming 30 additional operational wells. Note: The operational GHG emissions are also shown here.

Mitigated Peak Daily and Annual Operational GHG Emissions

'Per Well' Basis

Phase	Sub-Phase	CO2e (lb/day)	CO2e (lb/yr)	CO2e (MT/yr)
Routine Operation and Maintenance	Worker Activities	528	192,547	87
Routine Operation and Maintenance	Fugitive Gas Emissions	93	33,800	15

With 30 additional operational wells

Routine Operation and Maintenance	Total	3,306	1,206,561	547

Note:

1. Global Warming Potentials are as follows:
   http://www.ecfr.gov/cgi-bin/text-idx?SID=6698c98f3de29c7487cf144ffefaa17e&mc=true&node=ap40.21.98_19.1&rgn=div9
   CO2 1
   CH4 25
2. In estimating annual GHG emissions associated with fugitive releases, all wells are assumed to operate 365 days per year.
   The maximum number of wells will be in operation in the final year of the project.
   Assuming thirty additional wells in operation as of the final year of the project,
   the 30-year amortized GHG emissions will be the same as the peak daily emissions above multiplied by 365.

   30-Year Amortized Emissions = Peak Daily Emisssions (lb/day) x 365 days per year x ~~30~~ wells / ~~30~~ years

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AIR EMISSIONS CALCULATIONS - INGLEWOOD OIL FIELD SPECIFIC PLAN PROJECT
TABLE NO. 1.02
TABLE NAME Construction Project GHG Emissions

These tables contain the Construction Project GHG Emissions. Emissions are shown on a 'per well' basis, a 'per year' basis, and a 'project' basis. The assumptions used to calculate the 'per year' and 'project' emissions are shown in the notes below the tables.

Mitigated Construction Project GHG Emissions

On-Site / Off-Site	Year	Season	Mitigated / Unmitigated
Total	2018	Annual	Mitigated

Phase	CO2 (lb/well)	CH4 (lb/well)	CO2e (lb/well)	CO2e (lb/yr)	CO2e (MT/project)
Site Preparation	6,068.54	1.41	6,103.90	18,311.71	83
Grading	10,146.83	2.78	10,216.30	30,648.91	139
Mobilization and Setup (for drilling)	43,561.98	12.43	43,872.65	131,617.95	597
Drilling	3,174,618.13	456.11	3,186,020.77	9,558,062.32	43,347
Demobilization	4,196.38	0.56	4,210.44	12,631.33	57
Well Completion	14,791.01	0.92	14,814.13	29,628.26	134
Well Stimulation (Site Preparation)	7,188.98	0.54	7,202.47	7,202.47	33
Well Stimulation	105,920.94	4.54	106,034.39	106,034.39	481
Well Stimulation (Flowback)	10,345.81	1.33	10,379.02	10,379.02	47
Well Rework	5,779.91	0.19	5,784.62	17,353.85	79
Total	3,382,618.51	480.81	3,394,638.69	9,921,870.20	44,997

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AIR EMISSIONS CALCULATIONS - INGLEWOOD OIL FIELD SPECIFIC PLAN PROJECT

TABLE NO.	**1.02**
TABLE NAME	**Construction Project GHG Emissions**

These tables contain the Construction Project GHG Emissions. Emissions are shown on a 'per well' basis, a 'per year' basis, and a 'project' basis. The assumptions used to calculate the 'per year' and 'project' emissions are shown in the notes below the tables.

Note:

1. Global Warming Potentials are as follows:
   http://www.ecfr.gov/cgi-bin/text-idx?SID=6698c98f3de29c7487cf144ffefaa17e&mc=true&node=ap40.21.98_19.1&rgn=div9

CO_2	1
CH_4	25

2. Annual CO_2e emissions calculated using the following:

Wells Drilled	3
Wells Completed without Stimulation	2
Wells Completed with Stimulation	1
Well Reworks	3

   Well Reworks assumed to be equal to 10% of the maximum number of wells drilled from 2017 through 2027.

3. Project CO_2e emissions calculated using the following:

Wells Drilled	30
Wells Completed without Stimulation	20
Wells Completed with Stimulation	10
Well Reworks	30

   Well Reworks assumed to be equal to 10% of the maximum number of wells drilled from 2017 through 2027 for each year of construction.

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AIR EMISSIONS CALCULATIONS - INGLEWOOD OIL FIELD SPECIFIC PLAN PROJECT
TABLE NO. 1.03
TABLE NAME TAC Emissions

These tables contain the Construction + Operational Toxic Air Contaminant (TAC) Emissions. These numbers are used as the basis for estimating health risk associated with the project.
below the tables.

Construction + Operational TAC Emissions

Construction emissions are based on the year 2018, with 3 new wells drilled. DPM emissions associated with the heavy construction equipment and the drilling/workover/stimulation equipment are included in the DPM totals. Additionally, the construction emissions include estimates of TAC emissions associated with the combustion of any gas released during the drilling phase.

Operational emissions are based on the year 2027, with 30 wells in operation.

	Unmitigated		Mitigated	
TAC	Maximum Hourly Emissions (lb/hr)	Annual Emissions (lb/yr)	Maximum Hourly Emissions (lb/hr)	Annual Emissions (lb/yr)
DPM	--	2.859E+02	--	6.926E+01
H2S	6.566E-03	5.352E+01	6.566E-03	5.352E+01
Benzene	1.853E-02	1.502E+02	1.853E-02	1.502E+02
n-Hexane	2.002E-02	1.623E+02	2.002E-02	1.623E+02
Ethylbenzene	1.200E-03	9.729E+00	1.200E-03	9.729E+00
Toluene	8.920E-03	7.232E+01	8.920E-03	7.232E+01
Xylene	3.506E-03	2.842E+01	3.506E-03	2.842E+01
Formaldehyde	9.435E-06	2.038E-02	9.435E-06	2.038E-02
PAH	2.220E-07	4.795E-04	2.220E-07	4.795E-04
Ammonia	1.776E-03	3.836E+00	1.776E-03	3.836E+00

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AIR EMISSIONS CALCULATIONS - INGLEWOOD OIL FIELD SPECIFIC PLAN PROJECT
TABLE NO. **1.03**
TABLE NAME **TAC Emissions**

These tables contain the Construction + Operational Toxic Air Contaminant (TAC) Emissions. These numbers are used as the basis for estimating health risk associated with the project.
below the tables.

Construction TAC Emissions

The section below contains DPM emissions associated with the diesel-fueled construction and drilling equipment.

Number of Wells Drilled	Number of Wells Completed with Hydraulic Fracturing	Number of Wells Completed without Hydraulic Fracturing	Number of Workovers	Year
3	1	2	3	2018

Number of workovers estimated to be 10% of the total new wells from 2017 to 2027.

		Unmitigated		Mitigated	
Phase	**SubPhase**	**DPM (lb/well)**	**DPM (lb/yr)**	**DPM (lb/well)**	**DPM (lb/yr)**
Well Pad Construction	Site Preparation	0.20	0.61	0.20	0.61
Well Pad Construction	Grading	0.40	1.21	0.40	1.21
Well Drilling	Mobilization and Setup	1.82	5.46	1.82	5.46
Well Drilling	Drilling	91.33	274.00	19.97	59.92
Well Drilling	Demobilization	0.08	0.23	0.08	0.23
Well Completion	Without Hydraulic Fracturing	0.37	0.74	0.11	0.21
Well Completion	With Hydraulic Fracturing - Site Preparation	0.07	0.07	0.07	0.07
Well Completion	With Hydraulic Fracturing - Main Activities	3.01	3.01	1.32	1.32
Well Completion	With Hydraulic Fracturing - Flowback	0.18	0.18	0.18	0.18
Well Rework	Well Rework	0.15	0.44	0.01	0.04
		Total	285.95		69.26

AIR EMISSIONS CALCULATIONS - INGLEWOOD OIL FIELD SPECIFIC PLAN PROJECT
TABLE NO. **1.03**
TABLE NAME **TAC Emissions**

These tables contain the Construction + Operational Toxic Air Contaminant (TAC) Emissions. These numbers are used as the basis for estimating health risk associated with the project.
below the tables.

Construction TAC Emissions (continued)

The section below contains TAC emissions associated with incomplete combustion of all of the gases generated durling drilling in a portable vapor combustion device.

ROG (lb/day/well)	4.14E+00
ROG (lb/well)	1.24E+02
H2S (lb/day/well)	1.46E-02
H2S (lb/well)	4.37E-01

Organic TAC	Wt.% in ROG
Benzene	1.06%
n-Hexane	1.15%
Ethylbenzene	0.07%
Toluene	0.51%
Xylene	0.20%

Wt.% in ROG estimated from TANKS 4.09d run.

TAC	Hourly Emissions (lb/hr)	Annual Emissions (lb/yr)
H2S	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

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AIR EMISSIONS CALCULATIONS - INGLEWOOD OIL FIELD SPECIFIC PLAN PROJECT
TABLE NO. **1.03**
TABLE NAME **TAC Emissions**

These tables contain the Construction + Operational Toxic Air Contaminant (TAC) Emissions. These numbers are used as the basis for estimating health risk associated with the project.
below the tables.

Construction TAC Emissions (continued)

The section below contains TAC emissions associated with combustion of the gases generated durling drilling in a portable vapor combustion device.

In addition to the emissions shown above, there will be emissions associated with the flaring of gas released during drilling. These emissions are estimated below.

Volume (scf/day/well)	13,320.52	
Volume (scf/hr)	555.02	
Volume (scf/well)	399,615.59	
Volume (scf/yr)	1,198,846.76	<-- Assumes 3 wells drilled per year.

Emission factors below represent emissions from natural gas combustion in a flare rated less than 10 mmBtu/hr. These emission factors are assumed to be representative of the emissions associated with flaring the gas generated during drilling.

TAC	Emission Factor (lb/mmscf)	Hourly Emissions (lb/hr)	Annual Emissions (lb/yr)
Benzene	0.008	4.44E-06	9.59E-03
Formaldehyde	0.017	9.44E-06	2.04E-02
PAH	0.0004	2.22E-07	4.80E-04
Ammonia	3.2	1.78E-03	3.84E+00

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AIR EMISSIONS CALCULATIONS - INGLEWOOD OIL FIELD SPECIFIC PLAN PROJECT
TABLE NO. **1.03**
TABLE NAME **TAC Emissions**

These tables contain the Construction + Operational Toxic Air Contaminant (TAC) Emissions. These numbers are used as the basis for estimating health risk associated with the project.
below the tables.

Operational TAC Emissions

The section below contains TAC emissions associated with the well cellars and wellhead/piping fugitive components.

Number of Wells in Operation	Year
30	2027

Worst-case year would be the final year of operation. Organic TAC emissions are estimated using the speciation profile shown above for the construction emissions.

ROG (lb/day/well)	1.26E+00
ROG (lb/well)	4.60E+02
H2S (lb/day/well)	4.77E-03
H2S (lb/well)	1.74E+00

TAC	Hourly Emissions (lb/hr)	Annual Emissions (lb/yr)
H2S	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

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AIR EMISSIONS CALCULATIONS - INGLEWOOD OIL FIELD SPECIFIC PLAN PROJECT
TABLE NO. 2.00
TABLE NAME Key Assumptions

Phase	Sub-Phase	Assumption	Value	Comments / Source
Well Pad Construction	All	Site acreage (acre)	0.5	This is from the Maximum Buildout Scenario.
Well Pad Construction	All	Number of workers commuting per day	7	This is from the Maximum Buildout Scenario.
Well Pad Construction	All	Number of water (vendor) trucks per day	1	This is from the Maximum Buildout Scenario.
Well Pad Construction	All	Number of bulldozers used during well pad construction	1	This is from the Maximum Buildout Scenario.
Well Pad Construction	Site Preparation	Number of days for site preparation	5	This is calculated as the difference between the total number of days for pad preparation and the number of days for grading.
Well Pad Construction	Grading	Cut/Fill Material (cu yd)	2,000	This is from the Maximum Buildout Scenario.
Well Pad Construction	Grading	Number of days for grading	4	This is from the Maximum Buildout Scenario.
Well Pad Construction	Grading	Number of off-highway trucks used during the grading portion of well pad construction	1	Assume an off-highway truck is needed to assist with material handling during grading.

Well Drilling	Mobilization and Setup	Number of days for mobilization and setup	5	This is from the Maximum Buildout Scenario.
Well Drilling	Mobilization and Setup	Number of workers commuting per day	14	This is from the Maximum Buildout Scenario.
Well Drilling	Mobilization and Setup	Number of work trucks per day	6	This is from the Maximum Buildout Scenario.
Well Drilling	Mobilization and Setup	Number of water (vendor) trucks per day	1	This water truck will be used for dust suppression during mobilization and setup.
Well Drilling	Mobilization and Setup	Number of hauler trucks	13	1 hauler for 1 drill rig 1 hauler for 2 diesel mud pumps 1 hauler for 1 worker trailer 1 hauler for 1 water tank 1 hauler for 1 oil tank 2 haulers for for tanks for drilling mud 2 haulers for tanks for cuttings 1 hauler for mud/cuttings processing equipment 2 haulers for ancillary drilling equipment (storage racks, drill pipe, casing) 1 hauler for miscellaneous equipment (lighting, toilets, etc.)
Well Drilling	Mobilization and Setup	Number of water (vendor) trucks per day	1	This water truck will be used for filling the water tank during mobilization and setup. The water tank is assumed to be a 500 bbl tank. The full water truck is assumed to contain 100 bbl water. The tank can be filled over the course of the 5 days for mobilization and setup.
Well Drilling	Mobilization and Setup	Number of cranes per day	1	The crane will be used to maneuver the equipment into place during mobilization and setup.

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AIR EMISSIONS CALCULATIONS - INGLEWOOD OIL FIELD SPECIFIC PLAN PROJECT
TABLE NO. 2.00
TABLE NAME Key Assumptions

Phase	Sub-Phase	Assumption	Value	Comments / Source
Well Drilling	Drilling	Number of days for drilling	30	This is from the Maximum Buildout Scenario.
Well Drilling	Drilling	Number of workers commuting (day shift)	14	This is from the Maximum Buildout Scenario.
Well Drilling	Drilling	Number of work trucks (day shift)	6	This is from the Maximum Buildout Scenario.
Well Drilling	Drilling	Number of workers commuting (night shift)	14	This is from the Maximum Buildout Scenario.
Well Drilling	Drilling	Number of work trucks (night shift)	6	This is from the Maximum Buildout Scenario.
Well Drilling	Drilling	Number of water (vendor) trucks per day	1	This is from the Maximum Buildout Scenario.
Well Drilling	Drilling	Number of cement (vendor) trucks per day	1	Assume a cement truck is needed once per day during drilling.
Well Drilling	Drilling	Number of water (vendor) trucks per day	1	Assumption. This watere truck would be used for dust suppression.
Well Drilling	Drilling	Number of cranes per day	1	Assumption. This crane would be used on a limited basis to assist in any heavy moving needed during the drilling operation.
Well Drilling	Drilling	Total drill rig horsepower	3,000	This is from the Maximum Buildout Scenario.
Well Drilling	Drilling	Number of mud pumps per drill rig	2	This is from the Maximum Buildout Scenario.
Well Drilling	Drilling	Number of trailers per drill rig	1	Assumption.
Well Drilling	Drilling	Number of generators per trailer	1	Assumption.
Well Drilling	Drilling	Number of diesel-powered night lights per drill rig	4	Assumption. These will be used during night hours only. Assume the night light on the drill rig is powered by the engines on the drill rig.
Well Drilling	Drilling	Volume of drilling fluids generated per day (gal)	11,340	This is from the Maximum Buildout Scenario.
Well Drilling	Drilling	Volume of cuttings generated per day (gal)	2,520	This is from the Maximum Buildout Scenario.
Well Drilling	Demobilization	Number of days for demobilization	3	Assumption
Well Drilling	Demobilization	Number of workers commuting per day	14	Assumption
Well Drilling	Demobilization	Number of work trucks per day	6	Assumption
Well Drilling	Demobilization	Number of water (vendor) trucks per day	1	This water truck will be used for dust suppression during demobilization at the end of drilling.

AIR EMISSIONS CALCULATIONS - INGLEWOOD OIL FIELD SPECIFIC PLAN PROJECT
TABLE NO. 2.00
TABLE NAME Key Assumptions

Phase	Sub-Phase	Assumption	Value	Comments / Source
Well Drilling	Demobilization	Number of hauler trucks	14	Assumption. 1 hauler for 1 drill rig 1 hauler for 2 diesel mud pumps 1 hauler for 1 worker trailer 1 hauler for 1 water tank 1 hauler for 1 oil tank 2 haulers for for tanks for drilling mud 2 haulers for tanks for cuttings 1 hauler for mud/cuttings processing equipment 2 haulers for ancillary drilling equipment (storage racks, drill pipe, casing) 2 haulers for miscellaneous equipment (lighting, toilets, etc.) and refuse generated during drilling
Well Drilling	Demobilization	Number of cranes per day	1	The crane will be used to help remove equipment from the facility.

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TABLE NO. 2.00
TABLE NAME Key Assumptions

Phase	Sub-Phase	Assumption	Value	Comments / Source
Well Completion	Without Hydraulic Fracturing	Number of days	3	Assumption.
Well Completion	Without Hydraulic Fracturing	Number of workers commuting	14	Assumption. Assume this is similar to drilling activities.
Well Completion	Without Hydraulic Fracturing	Number of work trucks per day	6	Assumption
Well Completion	Without Hydraulic Fracturing	Number of water (vendor) trucks per day	1	This water truck will be used for dust suppression during completion without hydraulic fracturing
Well Completion	Without Hydraulic Fracturing	Number of cement (vendor) trucks per day	1	Assume a cement truck is needed once per day during completion without hydraulic fracturing.
Well Completion	Without Hydraulic Fracturing	Number of hauler trucks per day	1	Assumption. Assume there is a single hauler that brings ancillary eqeuipment needed during completion without hydraulic fracturing.
Well Completion	Without Hydraulic Fracturing	Number of cranes per day	1	The crane will be used to help move equipment around during completion without hydraulic fracturing.
Well Completion	Without Hydraulic Fracturing	Number of service rigs	1	Assumption

Phase	Sub-Phase	Assumption	Value	Comments / Source
Well Completion	With Hydraulic Fracturing - Site Preparation	Number of days	5	This is from the Maximum Buildout Scenario.
Well Completion	With Hydraulic Fracturing - Site Preparation	Number of workers commuting per day	7	Assumption. Assumed the number of on-site workers would be similar to well pad construction.
Well Completion	With Hydraulic Fracturing - Site Preparation	Number of water (vendor) trucks per day	1	This water truck will be used for dust suppression
Well Completion	With Hydraulic Fracturing - Site Preparation	Number of cranes per day	1	The crane will be used to help move equipment around during the site preparation step that preceeds the main segment of hydraulic fracturing.
Well Completion	With Hydraulic Fracturing - Site Preparation	Total water volume brought on-site (gal)	140,000	This is from the Maximum Buildout Scenario.
Well Completion	With Hydraulic Fracturing - Site Preparation	Volume per water truck (gal)	5,000	Assumption
Well Completion	With Hydraulic Fracturing - Site Preparation	Total water trucks	28	Total water volume / volume per water truck
Well Completion	With Hydraulic Fracturing - Site Preparation	Volume per water tank (bbl)	500	Assumption
Well Completion	With Hydraulic Fracturing - Site Preparation	Total water tanks	7	Total water volume / (volume per water tank (bbl) x 42)
Well Completion	With Hydraulic Fracturing - Site Preparation	Mass per sand tank (ton)	150	This is from the Maximum Buildout Scenario.
Well Completion	With Hydraulic Fracturing - Site Preparation	Number of sand tanks	4	This is from the Maximum Buildout Scenario.
Well Completion	With Hydraulic Fracturing - Site Preparation	Total sand brought on-site (ton)	600	This is from the Maximum Buildout Scenario.
Well Completion	With Hydraulic Fracturing - Site Preparation	Mass per sand truck (ton)	25	Assumption
Well Completion	With Hydraulic Fracturing - Site Preparation	Total sand trucks	24	Total sand brought on-site / mass per sand truck
Well Completion	With Hydraulic Fracturing - Site Preparation	Number of hauler trucks	11	Total water tanks + number of sand tanks

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TABLE NO. **2.00**
TABLE NAME **Key Assumptions**

Phase	Sub-Phase	Assumption	Value	Comments / Source
Well Completion	With Hydraulic Fracturing - Main Activities	Number of days for main activities	2	This is from the Maximum Buildout Scenario.
Well Completion	With Hydraulic Fracturing - Main Activities	Number of workers commuting per day	18	Assumption. Assume this is similar to drilling activities.
Well Completion	With Hydraulic Fracturing - Main Activities	Number of water (vendor) trucks per day	1	This water truck will be used for dust suppression
Well Completion	With Hydraulic Fracturing - Main Activities	Number of cement (vendor) trucks per day	1	Assume a cement truck is needed once per day during completion with hydraulic fracturing.
Well Completion	With Hydraulic Fracturing - Main Activities	Number of hauler trucks	1	This hauler would assist with removing refuse from the project site.
Well Completion	With Hydraulic Fracturing - Main Activities	Number of hauler trucks	4	These haulers would remove the sand tanks from the project site at the end of the second day.
Well Completion	With Hydraulic Fracturing - Main Activities	Number of pickup trucks/vans	2	This is from the Maximum Buildout Scenario.
Well Completion	With Hydraulic Fracturing - Main Activities	Number of smaller heavy-duty equipment	6	This is from the Maximum Buildout Scenario. 2 control vans 1 flatbed 1 manifold/treating iron trailer 1 5,000 gal tanker/mixer 1 blender
Well Completion	With Hydraulic Fracturing - Main Activities	Number of mobile pump trucks	4	This is from the Maximum Buildout Scenario
Well Completion	With Hydraulic Fracturing - Main Activities	Total horsepower per mobile pump truck	2,700	This is from the Maximum Buildout Scenario
Well Completion	With Hydraulic Fracturing - Main Activities	Number of cranes	1	This is from the Maximum Buildout Scenario

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TABLE NO. 2.00
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Phase	Sub-Phase	Assumption	Value	Comments / Source
Well Completion	With Hydraulic Fracturing - Flowback	Number of days for flowback	14	This is from the Maximum Buildout Scenario
Well Completion	With Hydraulic Fracturing - Flowback	Number of workers commuting per day	7	Assumption. Assumed the number of on-site workers would be similar to well pad construction.
Well Completion	With Hydraulic Fracturing - Flowback	Number of water (vendor) trucks per day	1	This water truck will be used for dust suppression
Well Completion	With Hydraulic Fracturing - Flowback	Number of hauler trucks	7	These haulers would remove the water tanks from the project site at the end of the last day.
Well Completion	With Hydraulic Fracturing - Flowback	Number of liquid-filled totes used during main activities	10	This is from the Maximum Buildout Scenario
Well Completion	With Hydraulic Fracturing - Flowback	Volume of liquid per tote (gal)	375	This is from the Maximum Buildout Scenario
Well Completion	With Hydraulic Fracturing - Flowback	% of liquid from main activities that is recovered during flowback	100%	Conservative assumption
Well Completion	With Hydraulic Fracturing - Flowback	Volume of liquid recovered during flowback (gal)	143,750	Assumption
Well Completion	With Hydraulic Fracturing - Flowback	Volume per water truck (gal)	5,000	Assumption
Well Completion	With Hydraulic Fracturing - Flowback	Number of cranes	1	This is from the Maximum Buildout Scenario
Well Completion	With Hydraulic Fracturing - Flowback	Total trucks needed during flowback	29	Volume of liquid recovered during flowback / volume per water truck
Well Rework	Well Rework	Number of days for rework	1	This is from the Maximum Buildout Scenario. The project description states "Most maintenance activities are no longer in duration than 7 days. The maximum number of hours for maintenance activities during the weeek is 12 hours. There are normally no maintenance activiites occurring on the weekends." Assume worst-case is all rework occurring in one day."
Well Rework	Well Rework	Number of workers commuting per shift per well	4	This is from the Maximum Buildout Scenario
Well Rework	Well Rework	Number of truck trips per day per well	4	This is from the Maximum Buildout Scenario
Well Rework	Well Rework	Number of hours per week	12	This is from the Maximum Buildout Scenario. Assume that this is the maximum number of hours per week per well
Well Rework	Well Rework	Number of service rigs per well	1	This is from the Maximum Buildout Scenario

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TABLE NO. 2.00
TABLE NAME Key Assumptions

Phase	Sub-Phase	Assumption	Value	Comments / Source
Routine Operation and Maintena	Worker Activities	Number of days per year	365	This is from the Maximum Buildout Scenario.
Routine Operation and Maintena	Worker Activities	Number of days per week	7	This is from the Maximum Buildout Scenario.
Routine Operation and Maintena	Worker Activities	Number of weeks per year	52	This is from the Maximum Buildout Scenario.
Routine Operation and Maintena	Worker Activities	Number of workers commuting on weekday (day shift)	20	This is from the Maximum Buildout Scenario
Routine Operation and Maintena	Worker Activities	Number of workers commuting on weekday (night shift)	1	This is from the Maximum Buildout Scenario
Routine Operation and Maintena	Worker Activities	Number of workers commuting on weekend (day shift)	2	This is from the Maximum Buildout Scenario
Routine Operation and Maintena	Worker Activities	Number of workers commuting on weekend (night shift)	1	This is from the Maximum Buildout Scenario
Routine Operation and Maintena	Worker Activities	Number of work trucks per day	2	This is from the Maximum Buildout Scenario
Routine Operation and Maintena	Fugitive Gas Emissions	Typical API Gravity, Low-End	18.6	This is from the Baldwin Hills EIR.
Routine Operation and Maintena	Fugitive Gas Emissions	Typical API Gravity, High-End	21.8	This is from the Baldwin Hills EIR.
Routine Operation and Maintena	Fugitive Gas Emissions	Average square footage per well (square feet)	100	Assumption. This would be for a square well cellar with 10 feet per side.

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AIR EMISSIONS CALCULATIONS - INGLEWOOD OIL FIELD SPECIFIC PLAN PROJECT
TABLE NO. 2.01
TABLE NAME On-Road Vehicle Emissions Data

These calculations assume the workers commute from home directly to the Inglewood Oil Field (IOF) and then for several miles per day throughout IOF. Trip Length (mile) is from Table 4.2 from Appendix D of the CalEEMod documentation. Speed (mph) is the CalEEMod default.

Key Assumption	CalEEMod Assumption	Assumption	Calculated Value

Total Daily One-Way Trips = Number of Vehicles x One-Way Trips per Day per Worker/Vehicle
Total Daily Idle Time = Idling Time per One-Way Trip x Total Daily One-Way Trips
Total Daily VMT = Total Daily One-Way Trips x [One-Way Trip Length x (Primary% + 0.25 x Diverted%) + 0.1 x PassBy%]
Total Vehicles per Day = Number of Vehicles

Total One-Way Trips = Total Daily One-Way Trips x Total Number of Days
Total Idle Time = Total Daily Idle Time x Total Number of Days
Total VMT = Total Daily VMT x Total Number of Days
Total Vehicle-Days = Total Vehicles per Day x Total Number of Days

Phase	Sub-Phase	Type	On-Site / Off-Site	Trip Description	EMFAC2011 Vehicle and Technology (Assumed)	Number of Workers	Number of Vehicles per Day	Total Number of Days	One-Way Trips per Day per Worker/Vehicle	Speed (mph)	Idling time per One-Way Trip (hr)	One-Way Trip Length (mile)	Primary %	Diverted %	PassBy %	Total Daily One-Way Trips	Total One-Way Trips	Total Daily Idle Time (hr/day)	Total Idle Time (hr)	Total Daily VMT (mile/day)	Total VMT (mile)	Total Vehicles per Day	Total Vehicle-Days
Well Pad Construction	**Site Preparation**							**5**															
Well Pad Construction	Site Preparation	Worker	Off-Site	Workers commuting to IOF	LDT2 - GAS	7	7	5	2	40	0.1	16.6	100%	0%	0%	**14**	**70**	**1.4**	**7**	**232.4**	**1162**	**7**	**35**
Well Pad Construction	Site Preparation	Worker	On-Site	Worker vehicles traveling within IOF	LDT2 - GAS	7	7	5	2	5	0.1	0.75	100%	0%	0%	**14**	**70**	**1.4**	**7**	**10.5**	**52.5**	**7**	**35**
Well Pad Construction	Site Preparation	Vendor	Off-Site	Water truck (dust suppression) traveling to IOF	T7 tractor construction - DSL	--	1	5	2	40	0.1	6.9	100%	0%	0%	**2**	**10**	**0.2**	**1**	**13.8**	**69**	**1**	**5**
Well Pad Construction	Site Preparation	Vendor	On-Site	Water truck (dust suppression) traveling within IOF	T7 tractor construction - DSL	--	1	5	3	5	0.1	**0.844**	100%	0%	0%	**3**	**15**	**0.3**	**1.5**	**2.532**	**12.66**	**1**	**5**
Well Pad Construction	Site Preparation	Worker	Off-Site		LDT2 - GAS					40						14.00	70.00	1.40	7.00	232.40	1,162.00	7.00	35.00
Well Pad Construction	Site Preparation	Worker	On-Site		LDT2 - GAS					5						14.00	70.00	1.40	7.00	10.50	52.50	7.00	35.00
Well Pad Construction	Site Preparation	Vendor	Off-Site		T7 tractor construction - DSL					40						2.00	10.00	0.20	1.00	13.80	69.00	1.00	5.00
Well Pad Construction	Site Preparation	Vendor	On-Site		T7 tractor construction - DSL					5						3.00	15.00	0.30	1.50	2.53	12.66	1.00	5.00

Note:
1. Workers are assumed to drive personal light-duty gasoline-fueled trucks with vehicle weight between 3,751-5,750 lb. An example of a vehicle in this category could be a Ford F-250.
2. Each worker is assumed to drive their own vehicle.
3. The overall trip length is not discounted for Diverted and PassBy trips, i.e., Diverted% and PassBy% are equal to zero.
4. Water truck is assumed to water the site three times per day. One-way trip length per watering event calculated using the methodology for calculating VMT for grading equipment passes from Section 4.3 of Appendix A of the CalEEMod documentation. One-way trip length = Site Acreage (acre) / Vehicle Width (12) x 43,560 / 5,280.
Site Acreage 0.5 Veh. Width (ft) 12
The water truck is also assumed to water the same on-site path traveled by the other vehicles two times per day. This total distance is divided by the number of one-way trips and added to the distance estimated for watering the site three times per day.

Phase	Sub-Phase	Type	On-Site / Off-Site	Trip Description	EMFAC2011 Vehicle and Technology (Assumed)	Number of Workers	Number of Vehicles per Day	Total Number of Days	One-Way Trips per Day per Worker/Vehicle	Speed (mph)	Idling time per One-Way Trip (hr)	One-Way Trip Length (mile)	Primary %	Diverted %	PassBy %	Total Daily One-Way Trips	Total One-Way Trips	Total Daily Idle Time (hr/day)	Total Idle Time (hr)	Total Daily VMT (mile/day)	Total VMT (mile)	Total Vehicles per Day	Total Vehicle-Days
Well Pad Construction	**Grading**							**4**															
Well Pad Construction	Grading	Worker	Off-Site	Workers commuting to IOF	LDT2 - GAS	7	7	4	2	40	0.1	16.6	100%	0%	0%	**14**	**56**	**1.4**	**5.6**	**232.4**	**929.6**	**7**	**28**
Well Pad Construction	Grading	Worker	On-Site	Worker vehicles traveling within IOF	LDT2 - GAS	7	7	4	2	5	0.1	0.75	100%	0%	0%	**14**	**56**	**1.4**	**5.6**	**10.5**	**42**	**7**	**28**
Well Pad Construction	Grading	Vendor	Off-Site	Water truck (dust suppression) traveling to IOF	T7 tractor construction - DSL	--	1	4	2	40	0.1	6.9	100%	0%	0%	**2**	**8**	**0.2**	**0.8**	**13.8**	**55.2**	**1**	**4**
Well Pad Construction	Grading	Vendor	On-Site	Water truck (dust suppression) traveling within IOF	T7 tractor construction - DSL	--	1	4	3	5	0.1	**0.844**	100%	0%	0%	**3**	**12**	**0.3**	**1.2**	**2.532**	**10.128**	**1**	**4**
Well Pad Construction	Grading	Worker	Off-Site		LDT2 - GAS					40						14.00	56.00	1.40	5.60	232.40	929.60	7.00	28.00
Well Pad Construction	Grading	Worker	On-Site		LDT2 - GAS					5						14.00	56.00	1.40	5.60	10.50	42.00	7.00	28.00
Well Pad Construction	Grading	Vendor	Off-Site		T7 tractor construction - DSL					40						2.00	8.00	0.20	0.80	13.80	55.20	1.00	4.00
Well Pad Construction	Grading	Vendor	On-Site		T7 tractor construction - DSL					5						3.00	12.00	0.30	1.20	2.53	10.13	1.00	4.00

Note:
1. Workers are assumed to drive personal light-duty gasoline-fueled trucks with vehicle weight between 3,751-5,750 lb. An example of a vehicle in this category could be a Ford F-250.
2. Each worker is assumed to drive their own vehicle.
3. The overall trip length is not discounted for Diverted and PassBy trips, i.e., Diverted% and PassBy% are equal to zero.
4. Water truck is assumed to water the site three times per day. One-way trip length per watering event calculated using the methodology for calculating VMT for grading equipment passes from Section 4.3 of Appendix A of the CalEEMod documentation. One-way trip length = Site Acreage (acre) / Vehicle Width (12) x 43,560 / 5,280.
Site Acreage 0.5 Veh. Width (ft) 12
The water truck is also assumed to water the same on-site path traveled by the other vehicles two times per day. This total distance is divided by the number of one-way trips and added to the distance estimated for watering the site three times per day.

Phase	Sub-Phase	Type	On-Site / Off-Site	Trip Description	EMFAC2011 Vehicle and Technology (Assumed)	Number of Workers	Number of Vehicles per Day	Total Number of Days	One-Way Trips per Day per Worker/Vehicle	Speed (mph)	Idling time per One-Way Trip (hr)	One-Way Trip Length (mile)	Primary %	Diverted %	PassBy %	Total Daily One-Way Trips	Total One-Way Trips	Total Daily Idle Time (hr/day)	Total Idle Time (hr)	Total Daily VMT (mile/day)	Total VMT (mile)	Total Vehicles per Day	Total Vehicle-Days
Well Drilling	**Mobilization and Setup**							**5**															
Well Drilling	Mobilization and Setup	Worker	Off-Site	Workers commuting to meeting area	LDT2 - GAS	14	14	5	2	40	0.1	16.6	100%	0%	0%	**28**	**140**	**2.8**	**14**	**464.8**	**2324**	**14**	**70**
Well Drilling	Mobilization and Setup	Worker	Off-Site	Workers commuting from meeting area to IOF in work truck	MDV - DSL	--	6	5	2	40	0.1	6.9	100%	0%	0%	**12**	**60**	**1.2**	**6**	**82.8**	**414**	**6**	**30**
Well Drilling	Mobilization and Setup	Worker	On-Site	Work truck traveling within IOF	MDV - DSL	--	6	5	2	5	0.1	0.75	100%	0%	0%	**12**	**60**	**1.2**	**6**	**9**	**45**	**6**	**30**
Well Drilling	Mobilization and Setup	Vendor	Off-Site	Water truck (dust suppression) traveling to IOF	T7 tractor construction - DSL	--	1	5	2	40	0.1	6.9	100%	0%	0%	**2**	**10**	**0.2**	**1**	**13.8**	**69**	**1**	**5**
Well Drilling	Mobilization and Setup	Vendor	On-Site	Water truck (dust suppression) traveling within IOF	T7 tractor construction - DSL	--	1	5	3	5	0.1	**0.844**	100%	0%	0%	**3**	**15**	**0.3**	**1.5**	**2.532**	**12.66**	**1**	**5**
Well Drilling	Mobilization and Setup	Vendor	Off-Site	Water truck (fill water tank) traveling to IOF	T7 tractor construction - DSL	--	1	5	2	40	0.1	6.9	100%	0%	0%	**2**	**10**	**0.2**	**1**	**13.8**	**69**	**1**	**5**
Well Drilling	Mobilization and Setup	Vendor	On-Site	Water truck (fill water tank) traveling within IOF	T7 tractor construction - DSL	--	1	5	2	5	0.1	0.75	100%	0%	0%	**2**	**10**	**0.2**	**1**	**1.5**	**7.5**	**1**	**5**
Well Drilling	Mobilization and Setup	Hauler	Off-Site	Haulers bringing drilling equipment to IOF	T7 tractor construction - DSL	--	13	1	2	40	0.1	6.9	100%	0%	0%	**26**	**26**	**2.6**	**2.6**	**179.4**	**179.4**	**13**	**13**
Well Drilling	Mobilization and Setup	Hauler	On-Site	Haulers traveling within IOF	T7 tractor construction - DSL	--	13	1	2	5	0.1	0.75	100%	0%	0%	**26**	**26**	**2.6**	**2.6**	**19.5**	**19.5**	**13**	**13**
Well Drilling	Mobilization and Setup	Worker	Off-Site		LDT2 - GAS					40						28.00	140.00	2.80	14.00	464.80	2,324.00	14.00	70.00
Well Drilling	Mobilization and Setup	Worker	Off-Site		MDV - DSL					40						12.00	60.00	1.20	6.00	82.80	414.00	6.00	30.00
Well Drilling	Mobilization and Setup	Worker	On-Site		MDV - DSL					5						12.00	60.00	1.20	6.00	9.00	45.00	6.00	30.00
Well Drilling	Mobilization and Setup	Vendor	Off-Site		T7 tractor construction - DSL					40						4.00	20.00	0.40	2.00	27.60	138.00	2.00	10.00
Well Drilling	Mobilization and Setup	Vendor	On-Site		T7 tractor construction - DSL					5						5.00	25.00	0.50	2.50	4.03	20.16	2.00	10.00
Well Drilling	Mobilization and Setup	Hauler	Off-Site		T7 tractor construction - DSL					40						26.00	26.00	2.60	2.60	179.40	179.40	13.00	13.00
Well Drilling	Mobilization and Setup	Hauler	On-Site		T7 tractor construction - DSL					5						26.00	26.00	2.60	2.60	19.50	19.50	13.00	13.00

Note:
1. Workers are assumed to drive personal light-duty gasoline-fueled trucks with vehicle weight between 3,751-5,750 lb. An example of a vehicle in this category could be a Ford F-250.
2. Each worker is assumed to drive their own vehicle.
3. The overall trip length is not discounted for Diverted and PassBy trips, i.e., Diverted% and PassBy% are equal to zero.
4. Water truck is assumed to water the site three times per day. One-way trip length per watering event calculated using the methodology for calculating VMT for grading equipment passes from Section 4.3 of Appendix A of the CalEEMod documentation. One-way trip length = Site Acreage (acre) / Vehicle Width (12) x 43,560 / 5,280.
Site Acreage 0.5 Veh. Width (ft) 12
The water truck is also assumed to water the same on-site path traveled by the other vehicles two times per day. This total distance is divided by the number of one-way trips and added to the distance estimated for watering the site three times per day.

AIR EMISSIONS CALCULATIONS - INGLEWOOD OIL FIELD SPECIFIC PLAN PROJECT
TABLE NO. 2.01
TABLE NAME On-Road Vehicle Emissions Data

These calculations assume the workers commute from home directly to the Inglewood Oil Field (IOF) and then for several miles per day throughout IOF. Trip Length (mile) is from Table 4.2 from Appendix D of the CalEEMod documentation. Speed (mph) is the CalEEMod default.

Key Assumption	CalEEMod Assumption	Assumption	Calculated Value

Total Daily One-Way Trips = Number of Vehicles x One-Way Trips per Day per Worker/Vehicle
Total Daily Idle Time = Idling Time per One-Way Trip x Total Daily One-Way Trips
Total Daily VMT = Total Daily One-Way Trips x [One-Way Trip Length x (Primary% + 0.25 x Diverted%) + 0.1 x PassBy%]
Total Vehicles per Day = Number of Vehicles

Total One-Way Trips = Total Daily One-Way Trips x Total Number of Days
Total Idle Time = Total Daily Idle Time x Total Number of Days
Total VMT = Total Daily VMT x Total Number of Days
Total Vehicle-Days = Total Vehicles per Day x Total Number of Days

5. All hauling is assumed to be done in one day.

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AIR EMISSIONS CALCULATIONS - INGLEWOOD OIL FIELD SPECIFIC PLAN PROJECT
TABLE NO. 2.01
TABLE NAME On-Road Vehicle Emissions Data

These calculations assume the workers commute from home directly to the Inglewood Oil Field (IOF) and then for several miles per day throughout IOF. Trip Length (mile) is from Table 4.2 from Appendix D of the CalEEMod documentation. Speed (mph) is the CalEEMod default.

Key Assumption	CalEEMod Assumption	Assumption	Calculated Value

Total Daily One-Way Trips = Number of Vehicles x One-Way Trips per Day per Worker/Vehicle
Total Daily Idle Time = Idling Time per One-Way Trip x Total Daily One-Way Trips
Total Daily VMT = Total Daily One-Way Trips x [One-Way Trip Length x (Primary% + 0.25 x Diverted%) + 0.1 x PassBy%]
Total Vehicles per Day = Number of Vehicles

Total One-Way Trips = Total Daily One-Way Trips x Total Number of Days
Total Idle Time = Total Daily Idle Time x Total Number of Days
Total VMT = Total Daily VMT x Total Number of Days
Total Vehicle-Days = Total Vehicles per Day x Total Number of Days

Phase	Sub-Phase	Type	On-Site / Off-Site	Trip Description	EMFAC2011 Vehicle and Technology (Assumed)	Number of Workers	Number of Vehicles per Day	Total Number of Days	One-Way Trips per Day per Worker/Vehicle	Speed (mph)	Idling time per One-Way Trip (hr)	One-Way Trip Length (mile)	Primary %	Diverted %	PassBy %	Total Daily One-Way Trips	Total One-Way Trips	Total Daily Idle Time (hr/day)	Total Idle Time (hr)	Total Daily VMT (mile/day)	Total VMT (mile)	Total Vehicles per Day	Total Vehicle-Days
Well Drilling	**Drilling**							**30**															
Well Drilling	Drilling	Worker	Off-Site	Workers commuting to meeting area (day shift)	LDT2 - GAS	14	14	30	2	40	0.1	16.6	100%	0%	0%	**28**	**840**	**2.8**	**84**	**464.8**	**13944**	**14**	**420**
Well Drilling	Drilling	Worker	Off-Site	Workers commuting from meeting area to IOF in work truck (day	MDV - DSL	--	6	30	2	40	0.1	6.9	100%	0%	0%	**12**	**360**	**1.2**	**36**	**82.8**	**2484**	**6**	**180**
Well Drilling	Drilling	Worker	On-Site	Work truck traveling within IOF (day shift)	MDV - DSL	--	6	30	2	5	0.1	0.75	100%	0%	0%	**12**	**360**	**1.2**	**36**	**9**	**270**	**6**	**180**
Well Drilling	Drilling	Worker	Off-Site	Workers commuting to meeting area (night shift)	LDT2 - GAS	14	14	30	2	40	0.1	16.6	100%	0%	0%	**28**	**840**	**2.8**	**84**	**464.8**	**13944**	**14**	**420**
Well Drilling	Drilling	Worker	Off-Site	Workers commuting from meeting area to IOF in work truck (night shift)	MDV - DSL	--	6	30	2	40	0.1	6.9	100%	0%	0%	**12**	**360**	**1.2**	**36**	**82.8**	**2484**	**6**	**180**
Well Drilling	Drilling	Worker	On-Site	Work truck traveling within IOF (night shift)	MDV - DSL	--	6	30	2	5	0.1	0.75	100%	0%	0%	**12**	**360**	**1.2**	**36**	**9**	**270**	**6**	**180**
Well Drilling	Drilling	Vendor	Off-Site	Water truck (fill water tank) traveling to IOF	T7 tractor construction - DSL	--	1	30	2	40	0.1	6.9	100%	0%	0%	**2**	**60**	**0.2**	**6**	**13.8**	**414**	**1**	**30**
Well Drilling	Drilling	Vendor	On-Site	Water truck (fill water tank) traveling within IOF	T7 tractor construction - DSL	--	1	30	2	5	0.1	0.75	100%	0%	0%	**2**	**60**	**0.2**	**6**	**1.5**	**45**	**1**	**30**
Well Drilling	Drilling	Vendor	Off-Site	Water truck (dust suppression) traveling to IOF	T7 tractor construction - DSL	--	1	30	2	40	0.1	6.9	100%	0%	0%	**2**	**60**	**0.2**	**6**	**13.8**	**414**	**1**	**30**
Well Drilling	Drilling	Vendor	On-Site	Water truck (dust suppression) traveling within IOF	T7 tractor construction - DSL	--	1	30	3	5	0.1	**0.844**	100%	0%	0%	**3**	**90**	**0.3**	**9**	**2.532**	**75.96**	**1**	**30**
Well Drilling	Drilling	Vendor	Off-Site	Cement truck traveling to IOF	T7 tractor construction - DSL	--	1	30	2	40	0.1	6.9	100%	0%	0%	**2**	**60**	**0.2**	**6**	**13.8**	**414**	**1**	**30**
Well Drilling	Drilling	Vendor	On-Site	Cement truck traveling within IOF	T7 tractor construction - DSL	--	1	30	2	5	0.1	0.75	100%	0%	0%	**2**	**60**	**0.2**	**6**	**1.5**	**45**	**1**	**30**
Well Drilling	Drilling	Hauler	Off-Site	Drilling fluid/cuttings haulers to IOF	T7 tractor construction - DSL	--	**4**	30	2	40	0.1	6.9	100%	0%	0%	**8**	**240**	**0.8**	**24**	**55.2**	**1656**	**4**	**120**
Well Drilling	Drilling	Hauler	On-Site	Drilling fluid/cuttings haulers within IOF	T7 tractor construction - DSL	--	**4**	30	2	5	0.1	0.75	100%	0%	0%	**8**	**240**	**0.8**	**24**	**6**	**180**	**4**	**120**

Well Drilling	Drilling	Worker	Off-Site	LDT2 - GAS	40	56.00	1,680.00	5.60	168.00	929.60	27,888.00	28.00	840.00
Well Drilling	Drilling	Worker	Off-Site	MDV - DSL	40	24.00	720.00	2.40	72.00	165.60	4,968.00	12.00	360.00
Well Drilling	Drilling	Worker	On-Site	MDV - DSL	5	24.00	720.00	2.40	72.00	18.00	540.00	12.00	360.00
Well Drilling	Drilling	Vendor	Off-Site	T7 tractor construction - DSL	40	6.00	180.00	0.60	18.00	41.40	1,242.00	3.00	90.00
Well Drilling	Drilling	Vendor	On-Site	T7 tractor construction - DSL	5	7.00	210.00	0.70	21.00	5.53	165.96	3.00	90.00
Well Drilling	Drilling	Hauler	Off-Site	T7 tractor construction - DSL	40	8.00	240.00	0.80	24.00	55.20	1,656.00	4.00	120.00
Well Drilling	Drilling	Hauler	On-Site	T7 tractor construction - DSL	5	8.00	240.00	0.80	24.00	6.00	180.00	4.00	120.00

Note:
1. Workers are assumed to drive personal light-duty gasoline-fueled trucks with vehicle weight between 3,751-5,750 lb. An example of a vehicle in this category could be a Ford F-250.
2. Each worker is assumed to drive their own vehicle.
3. The overall trip length is not discounted for Diverted and PassBy trips, i.e., Diverted% and PassBy% are equal to zero.
4. Water truck is assumed to water the site three times per day. One-way trip length per watering event calculated using the methodology for calculating VMT for grading equipment passes from Section 4.3 of Appendix A of the CalEEMod documentation. One-way trip length = Site Acreage (acre) / Vehicle Width (12) x 43,560 / 5,280.
   Site Acreage: 0.5 | Veh. Width (ft): 12
   The water truck is also assumed to water the same on-site path traveled by the other vehicles two times per day. This total distance is divided by the number of one-way trips and added to the distance estimated for watering the site three times per day.
5. Haulers used during drilling are assumed to be water/vacuum trucks with the same capacity (100 bbl) as the water trucks. The capacity of each truck is used to estimate the number of trucks needed per day to remove the drilling fluids and cuttings.
   Truck cap (bbl): 100 | Daily Trucks: 4
   Daily Gen. (gal): 13,860

Phase	Sub-Phase	Type	On-Site / Off-Site	Trip Description	EMFAC2011 Vehicle and Technology (Assumed)	Number of Workers	Number of Vehicles per Day	Total Number of Days	One-Way Trips per Day per Worker/Vehicle	Speed (mph)	Idling time per One-Way Trip (hr)	One-Way Trip Length (mile)	Primary %	Diverted %	PassBy %	Total Daily One-Way Trips	Total One-Way Trips	Total Daily Idle Time (hr/day)	Total Idle Time (hr)	Total Daily VMT (mile/day)	Total VMT (mile)	Total Vehicles per Day	Total Vehicle-Days
Well Drilling	**Demobilization**							**3**															
Well Drilling	Demobilization	Worker	Off-Site	Workers commuting to meeting area	LDT2 - GAS	14	14	3	2	40	0.1	16.6	100%	0%	0%	**28**	**84**	**2.8**	**8.4**	**464.8**	**1394.4**	**14**	**42**
Well Drilling	Demobilization	Worker	Off-Site	Workers commuting from meeting area to IOF in work truck	MDV - DSL	--	6	3	2	40	0.1	6.9	100%	0%	0%	**12**	**36**	**1.2**	**3.6**	**82.8**	**248.4**	**6**	**18**
Well Drilling	Demobilization	Worker	On-Site	Work truck traveling within IOF	MDV - DSL	--	6	3	2	5	0.1	0.75	100%	0%	0%	**12**	**36**	**1.2**	**3.6**	**9**	**27**	**6**	**18**
Well Drilling	Demobilization	Vendor	Off-Site	Water truck (dust suppression) traveling to IOF	T7 tractor construction - DSL	--	1	3	2	40	0.1	6.9	100%	0%	0%	**2**	**6**	**0.2**	**0.6**	**13.8**	**41.4**	**1**	**3**
Well Drilling	Demobilization	Vendor	On-Site	Water truck (dust suppression) traveling within IOF	T7 tractor construction - DSL	--	1	3	3	5	0.1	**0.844**	100%	0%	0%	**3**	**9**	**0.3**	**0.9**	**2.532**	**7.596**	**1**	**3**
Well Drilling	Demobilization	Hauler	Off-Site	Haulers demobilizing drilling equipment	T7 tractor construction - DSL	--	14	1	2	40	0.1	6.9	100%	0%	0%	**28**	**28**	**2.8**	**2.8**	**193.2**	**193.2**	**14**	**14**
Well Drilling	Demobilization	Hauler	On-Site	Haulers driving to well pad	T7 tractor construction - DSL	--	14	1	2	5	0.1	0.75	100%	0%	0%	**28**	**28**	**2.8**	**2.8**	**21**	**21**	**14**	**14**

Well Drilling	Demobilization	Worker	Off-Site	LDT2 - GAS	40	28.00	84.00	2.80	8.40	464.80	1,394.40	14.00	42.00
Well Drilling	Demobilization	Worker	Off-Site	MDV - DSL	40	12.00	36.00	1.20	3.60	82.80	248.40	6.00	18.00
Well Drilling	Demobilization	Worker	On-Site	MDV - DSL	5	12.00	36.00	1.20	3.60	9.00	27.00	6.00	18.00
Well Drilling	Demobilization	Vendor	Off-Site	T7 tractor construction - DSL	40	2.00	6.00	0.20	0.60	13.80	41.40	1.00	3.00
Well Drilling	Demobilization	Vendor	On-Site	T7 tractor construction - DSL	5	3.00	9.00	0.30	0.90	2.53	7.60	1.00	3.00
Well Drilling	Demobilization	Hauler	Off-Site	T7 tractor construction - DSL	40	28.00	28.00	2.80	2.80	193.20	193.20	14.00	14.00
Well Drilling	Demobilization	Hauler	On-Site	T7 tractor construction - DSL	5	28.00	28.00	2.80	2.80	21.00	21.00	14.00	14.00

Note:
1. Workers are assumed to drive personal light-duty gasoline-fueled trucks with vehicle weight between 3,751-5,750 lb. An example of a vehicle in this category could be a Ford F-250.
2. Each worker is assumed to drive their own vehicle.
3. The overall trip length is not discounted for Diverted and PassBy trips, i.e., Diverted% and PassBy% are equal to zero.
4. Water truck is assumed to water the site three times per day. One-way trip length per watering event calculated using the methodology for calculating VMT for grading equipment passes from Section 4.3 of Appendix A of the CalEEMod documentation. One-way trip length = Site Acreage (acre) / Vehicle Width (12) x 43,560 / 5,280.
   Site Acreage: 0.5 | Veh. Width (ft): 12
   The water truck is also assumed to water the same on-site path traveled by the other vehicles two times per day. This total distance is divided by the number of one-way trips and added to the distance estimated for watering the site three times per day.
5. All hauling is assumed to be done in one day.

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AIR EMISSIONS CALCULATIONS - INGLEWOOD OIL FIELD SPECIFIC PLAN PROJECT
TABLE NO. 2.01
TABLE NAME On-Road Vehicle Emissions Data

These calculations assume the workers commute from home directly to the Inglewood Oil Field (IOF) and then for several miles per day throughout IOF. Trip Length (mile) is from Table 4.2 from Appendix D of the CalEEMod documentation. Speed (mph) is the CalEEMod default.

Key Assumption	CalEEMod Assumption	Assumption	Calculated Value

Total Daily One-Way Trips = Number of Vehicles x One-Way Trips per Day per Worker/Vehicle
Total Daily Idle Time = Idling Time per One-Way Trip x Total Daily One-Way Trips
Total Daily VMT = Total Daily One-Way Trips x [One-Way Trip Length x (Primary% + 0.25 x Diverted%) + 0.1 x PassBy%]
Total Vehicles per Day = Number of Vehicles

Total One-Way Trips = Total Daily One-Way Trips x Total Number of Days
Total Idle Time = Total Daily Idle Time x Total Number of Days
Total VMT = Total Daily VMT x Total Number of Days
Total Vehicle-Days = Total Vehicles per Day x Total Number of Days

Phase	Sub-Phase	Type	On-Site / Off-Site	Trip Description	EMFAC2011 Vehicle and Technology (Assumed)	Number of Workers	Number of Vehicles per Day	Total Number of Days	One-Way Trips per Day per Worker/Vehicle	Speed (mph)	Idling time per One-Way Trip (hr)	One-Way Trip Length (mile)	Primary %	Diverted %	PassBy %	Total Daily One-Way Trips	Total One-Way Trips	Total Daily Idle Time (hr/day)	Total Idle Time (hr)	Total Daily VMT (mile/day)	Total VMT (mile)	Total Vehicles per Day	Total Vehicle-Days
Well Completion	**Without Hydraulic Fracturing**							**3**															
Well Completion	Without Hydraulic Fracturing	Worker	Off-Site	Workers commuting to meeting area	LDT2 - GAS	14	14	3	2	40	0.1	16.6	100%	0%	0%	**28**	**84**	**2.8**	**8.4**	**464.8**	**1394.4**	**14**	**42**
Well Completion	Without Hydraulic Fracturing	Worker	Off-Site	Workers commuting from meeting area to IOF in work truck	MDV - DSL	--	6	3	2	40	0.1	6.9	100%	0%	0%	**12**	**36**	**1.2**	**3.6**	**82.8**	**248.4**	**6**	**18**
Well Completion	Without Hydraulic Fracturing	Worker	On-Site	Work truck traveling within IOF	MDV - DSL	--	6	3	2	5	0.1	0.75	100%	0%	0%	**12**	**36**	**1.2**	**3.6**	**9**	**27**	**6**	**18**
Well Completion	Without Hydraulic Fracturing	Vendor	Off-Site	Water truck (dust suppression) traveling to IOF	T7 tractor construction - DSL	--	1	3	2	40	0.1	6.9	100%	0%	0%	**2**	**6**	**0.2**	**0.6**	**13.8**	**41.4**	**1**	**3**
Well Completion	Without Hydraulic Fracturing	Vendor	On-Site	Water truck (dust suppression) traveling within IOF	T7 tractor construction - DSL	--	1	3	3	5	0.1	**0.844**	100%	0%	0%	**3**	**9**	**0.3**	**0.9**	**2.532**	**7.596**	**1**	**3**
Well Completion	Without Hydraulic Fracturing	Vendor	Off-Site	Cement truck traveling to IOF	T7 tractor construction - DSL	--	1	3	2	40	0.1	6.9	100%	0%	0%	**2**	**6**	**0.2**	**0.6**	**13.8**	**41.4**	**1**	**3**
Well Completion	Without Hydraulic Fracturing	Vendor	On-Site	Cement truck traveling within IOF	T7 tractor construction - DSL	--	1	3	2	5	0.1	0.75	100%	0%	0%	**2**	**6**	**0.2**	**0.6**	**1.5**	**4.5**	**1**	**3**
Well Completion	Without Hydraulic Fracturing	Hauler	Off-Site	Hauler bringing ancillary equipment to IOF	T7 tractor construction - DSL	--	1	3	2	40	0.1	6.9	100%	0%	0%	**2**	**6**	**0.2**	**0.6**	**13.8**	**41.4**	**1**	**3**
Well Completion	Without Hydraulic Fracturing	Hauler	On-Site	Haulers driving to well pad	T7 tractor construction - DSL	--	1	3	2	5	0.1	0.75	100%	0%	0%	**2**	**6**	**0.2**	**0.6**	**1.5**	**4.5**	**1**	**3**
Well Completion	Without Hydraulic Fracturing	Worker	Off-Site	Service rig traveling to IOF	T7 tractor construction - DSL	--	1	2	1	40	0.1	6.9	100%	0%	0%	**1**	**2**	**0.1**	**0.2**	**6.9**	**13.8**	**1**	**2**
Well Completion	Without Hydraulic Fracturing	Worker	On-Site	Service rig within IOF	T7 tractor construction - DSL	--	1	2	2	5	0.1	0.75	100%	0%	0%	**2**	**4**	**0.2**	**0.4**	**1.5**	**3**	**1**	**2**

Well Completion	Without Hydraulic Fracturing	Worker	Off-Site	LDT2 - GAS	40	28.00	84.00	2.80	8.40	464.80	1,394.40	14.00	42.00
Well Completion	Without Hydraulic Fracturing	Worker	Off-Site	MDV - DSL	40	12.00	36.00	1.20	3.60	82.80	248.40	6.00	18.00
Well Completion	Without Hydraulic Fracturing	Worker	On-Site	MDV - DSL	5	12.00	36.00	1.20	3.60	9.00	27.00	6.00	18.00
Well Completion	Without Hydraulic Fracturing	Vendor	Off-Site	T7 tractor construction - DSL	40	4.00	12.00	0.40	1.20	27.60	82.80	2.00	6.00
Well Completion	Without Hydraulic Fracturing	Vendor	On-Site	T7 tractor construction - DSL	5	5.00	15.00	0.50	1.50	4.03	12.10	2.00	6.00
Well Completion	Without Hydraulic Fracturing	Hauler	Off-Site	T7 tractor construction - DSL	40	2.00	6.00	0.20	0.60	13.80	41.40	1.00	3.00
Well Completion	Without Hydraulic Fracturing	Hauler	On-Site	T7 tractor construction - DSL	5	2.00	6.00	0.20	0.60	1.50	4.50	1.00	3.00

Note:
1. Workers are assumed to drive personal light-duty gasoline-fueled trucks with vehicle weight between 3,751-5,750 lb. An example of a vehicle in this category could be a Ford F-250.
2. Each worker is assumed to drive their own vehicle.
3. The overall trip length is not discounted for Diverted and PassBy trips, i.e., Diverted% and PassBy% are equal to zero.
4. Water truck is assumed to water the site three times per day. One-way trip length per watering event calculated using the methodology for calculating VMT for grading equipment passes from Section 4.3 of Appendix A of the CalEEMod documentation. One-way trip length = Site Acreage (acre) / Vehicle Width (12) x 43,560 / 5,280.
   Site Acreage 0.5 Veh. Width (ft) 12
   The water truck is also assumed to water the same on-site path traveled by the other vehicles two times per day. This total distance is divided by the number of one-way trips and added to the distance estimated for watering the site three times per day.
5. All hauling is assumed to be done in one day.

Phase	Sub-Phase	Type	On-Site / Off-Site	Trip Description	EMFAC2011 Vehicle and Technology (Assumed)	Number of Workers	Number of Vehicles per Day	Total Number of Days	One-Way Trips per Day per Worker/Vehicle	Speed (mph)	Idling time per One-Way Trip (hr)	One-Way Trip Length (mile)	Primary %	Diverted %	PassBy %	Total Daily One-Way Trips	Total One-Way Trips	Total Daily Idle Time (hr/day)	Total Idle Time (hr)	Total Daily VMT (mile/day)	Total VMT (mile)	Total Vehicles per Day	Total Vehicle-Days
Well Completion	**With Hydraulic Fracturing - Site Preparation**							**5**															
Well Completion	With Hydraulic Fracturing - Site Preparation	Worker	Off-Site	Workers commuting to IOF	LDT2 - GAS	7	7	5	2	40	0.1	16.6	100%	0%	0%	**14**	**70**	**1.4**	**7**	**232.4**	**1162**	**7**	**35**
Well Completion	With Hydraulic Fracturing - Site Preparation	Worker	On-Site	Worker vehicles traveling within IOF	LDT2 - GAS	7	7	5	2	5	0.1	0.75	100%	0%	0%	**14**	**70**	**1.4**	**7**	**10.5**	**52.5**	**7**	**35**
Well Completion	With Hydraulic Fracturing - Site Preparation	Vendor	Off-Site	Water truck (dust suppression) traveling to IOF	T7 tractor construction - DSL	--	1	5	2	40	0.1	6.9	100%	0%	0%	**2**	**10**	**0.2**	**1**	**13.8**	**69**	**1**	**5**
Well Completion	With Hydraulic Fracturing - Site Preparation	Vendor	On-Site	Water truck (dust suppression) traveling within IOF	T7 tractor construction - DSL	--	1	5	3	5	0.1	**0.844**	100%	0%	0%	**3**	**15**	**0.3**	**1.5**	**2.532**	**12.66**	**1**	**5**
Well Completion	With Hydraulic Fracturing - Site Preparation	Vendor	Off-Site	Water truck traveling to IOF	T7 tractor construction - DSL	--	**6**	**4.67**	2	40	0.1	6.9	100%	0%	0%	**12**	**56**	**1.2**	**5.6**	**82.8**	**386.4**	**6**	**28**
Well Completion	With Hydraulic Fracturing - Site Preparation	Vendor	On-Site	Water truck traveling within IOF	T7 tractor construction - DSL	--	**6**	**4.67**	2	5	0.1	0.75	100%	0%	0%	**12**	**56**	**1.2**	**5.6**	**9**	**42**	**6**	**28**
Well Completion	With Hydraulic Fracturing - Site Preparation	Vendor	Off-Site	Sand truck traveling to IOF	T7 tractor construction - DSL	--	**5**	**4.80**	2	40	0.1	6.9	100%	0%	0%	**10**	**48**	**1**	**4.8**	**69**	**331.2**	**5**	**24**
Well Completion	With Hydraulic Fracturing - Site Preparation	Vendor	On-Site	Sand truck traveling within IOF	T7 tractor construction - DSL	--	**5**	**4.80**	2	5	0.1	0.75	100%	0%	0%	**10**	**48**	**1**	**4.8**	**7.5**	**36**	**5**	**24**
Well Completion	With Hydraulic Fracturing - Site Preparation	Hauler	Off-Site	Haulers bringing water and sand tanks to IOF	T7 tractor construction - DSL	--	11	1	2	40	0.1	6.9	100%	0%	0%	**22**	**22**	**2.2**	**2.2**	**151.8**	**151.8**	**11**	**11**
Well Completion	With Hydraulic Fracturing - Site Preparation	Hauler	On-Site	Haulers driving to well pad	T7 tractor construction - DSL	--	11	1	2	5	0.1	0.75	100%	0%	0%	**22**	**22**	**2.2**	**2.2**	**16.5**	**16.5**	**11**	**11**

Well Completion	With Hydraulic Fracturing - Site Preparation	Worker	Off-Site	LDT2 - GAS	40	14.00	70.00	1.40	7.00	232.40	1,162.00	7.00	35.00
Well Completion	With Hydraulic Fracturing - Site Preparation	Worker	On-Site	LDT2 - GAS	5	14.00	70.00	1.40	7.00	10.50	52.50	7.00	35.00
Well Completion	With Hydraulic Fracturing - Site Preparation	Vendor	Off-Site	T7 tractor construction - DSL	40	24.00	114.00	2.40	11.40	165.60	786.60	12.00	57.00
Well Completion	With Hydraulic Fracturing - Site Preparation	Vendor	On-Site	T7 tractor construction - DSL	5	25.00	119.00	2.50	11.90	19.03	90.66	12.00	57.00
Well Completion	With Hydraulic Fracturing - Site Preparation	Hauler	Off-Site	T7 tractor construction - DSL	40	22.00	22.00	2.20	2.20	151.80	151.80	11.00	11.00
Well Completion	With Hydraulic Fracturing - Site Preparation	Hauler	On-Site	T7 tractor construction - DSL	5	22.00	22.00	2.20	2.20	16.50	16.50	11.00	11.00

Note:
1. Workers are assumed to drive personal light-duty gasoline-fueled trucks with vehicle weight between 3,751-5,750 lb. An example of a vehicle in this category could be a Ford F-250.
2. Each worker is assumed to drive their own vehicle.
3. The overall trip length is not discounted for Diverted and PassBy trips, i.e., Diverted% and PassBy% are equal to zero.
4. Water truck is assumed to water the site three times per day. One-way trip length per watering event calculated using the methodology for calculating VMT for grading equipment passes from Section 4.3 of Appendix A of the CalEEMod documentation. One-way trip length = Site Acreage (acre) / Vehicle Width (12) x 43,560 / 5,280.
   Site Acreage 0.5 Veh. Width (ft) 12
   The water truck is also assumed to water the same on-site path traveled by the other vehicles two times per day. This total distance is divided by the number of one-way trips and added to the distance estimated for watering the site three times per day.
5. All hauling is assumed to be done in one day.
6. Delivery (water and sand) vehicles are assumed to visit the facility evenly. The total number of each type of vehicle is divided by the total number of days to get a maximum in a single day. The total number of days is then converted to an adjusted number that can be multiplied by the maximum per day to get the actual total.

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AIR EMISSIONS CALCULATIONS - INGLEWOOD OIL FIELD SPECIFIC PLAN PROJECT
TABLE NO. 2.01
TABLE NAME On-Road Vehicle Emissions Data

These calculations assume the workers commute from home directly to the Inglewood Oil Field (IOF) and then for several miles per day throughout IOF. Trip Length (mile) is from Table 4.2 from Appendix D of the CalEEMod documentation. Speed (mph) is the CalEEMod default.

Key Assumption	CalEEMod Assumption	Assumption	Calculated Value

Total Daily One-Way Trips = Number of Vehicles x One-Way Trips per Day per Worker/Vehicle
Total Daily Idle Time = Idling Time per One-Way Trip x Total Daily One-Way Trips
Total Daily VMT = Total Daily One-Way Trips x [One-Way Trip Length x (Primary% + 0.25 x Diverted%) + 0.1 x PassBy%]
Total Vehicles per Day = Number of Vehicles

Total One-Way Trips = Total Daily One-Way Trips x Total Number of Days
Total Idle Time = Total Daily Idle Time x Total Number of Days
Total VMT = Total Daily VMT x Total Number of Days
Total Vehicle-Days = Total Vehicles per Day x Total Number of Days

Total Days	5		
Total Water Trucks	28	Water Trucks Per Day	6
		Adjusted Total Days	4.67
Total Sand Trucks	24	Sand Trucks Per Day	5
		Adjusted Total Days	4.80

Phase	Sub-Phase	Type	On-Site / Off-Site	Trip Description	EMFAC2011 Vehicle and Technology (Assumed)	Number of Workers	Number of Vehicles per Day	Total Number of Days	One-Way Trips per Day per Worker/Vehicle	Speed (mph)	Idling time per One-Way Trip (hr)	One-Way Trip Length (mile)	Primary %	Diverted %	PassBy %	Total Daily One-Way Trips	Total One-Way Trips	Total Daily Idle Time (hr/day)	Total Idle Time (hr)	Total Daily VMT (mile/day)	Total VMT (mile)	Total Vehicles per Day	Total Vehicle-Days
Well Completion	**With Hydraulic Fracturing - Main Activities**							**2**															
Well Completion	With Hydraulic Fracturing - Main Activities	Worker	Off-Site	Workers commuting to IOF	LDT2 - GAS	18	18	2	2	40	0.1	16.6	100%	0%	0%	**36**	**72**	**3.6**	**7.2**	**597.6**	**1195.2**	**18**	**36**
Well Completion	With Hydraulic Fracturing - Main Activities	Worker	On-Site	Worker vehicles traveling within IOF	LDT2 - GAS	18	18	2	2	5	0.1	0.75	100%	0%	0%	**36**	**72**	**3.6**	**7.2**	**27**	**54**	**18**	**36**
Well Completion	With Hydraulic Fracturing - Main Activities	Worker	Off-Site	Workers commuting to IOF in work trucks	MDV - DSL	--	2	2	2	40	0.1	16.6	100%	0%	0%	**4**	**8**	**0.4**	**0.8**	**66.4**	**132.8**	**2**	**4**
Well Completion	With Hydraulic Fracturing - Main Activities	Worker	On-Site	Work trucks traveling within IOF	MDV - DSL	--	2	2	2	5	0.1	0.75	100%	0%	0%	**4**	**8**	**0.4**	**0.8**	**3**	**6**	**2**	**4**
Well Completion	With Hydraulic Fracturing - Main Activities	Vendor	Off-Site	Cement truck traveling to IOF	T7 tractor construction - DSL	--	1	2	2	40	0.1	6.9	100%	0%	0%	**2**	**4**	**0.2**	**0.4**	**13.8**	**27.6**	**1**	**2**
Well Completion	With Hydraulic Fracturing - Main Activities	Vendor	On-Site	Ceement truck traveling within IOF	T7 tractor construction - DSL	--	1	2	2	5	0.1	0.75	100%	0%	0%	**2**	**4**	**0.2**	**0.4**	**1.5**	**3**	**1**	**2**
Well Completion	With Hydraulic Fracturing - Main Activities	Vendor	Off-Site	Water truck (dust suppression) traveling to IOF	T7 tractor construction - DSL	--	1	2	2	40	0.1	6.9	100%	0%	0%	**2**	**4**	**0.2**	**0.4**	**13.8**	**27.6**	**1**	**2**
Well Completion	With Hydraulic Fracturing - Main Activities	Vendor	On-Site	Water truck (dust suppression) traveling within IOF	T7 tractor construction - DSL	--	1	2	3	5	0.1	**0.844**	100%	0%	0%	**3**	**6**	**0.3**	**0.6**	**2.532**	**5.064**	**1**	**2**
Well Completion	With Hydraulic Fracturing - Main Activities	Vendor	Off-Site	Smaller heavy-duty equipment	T7 tractor construction - DSL	--	6	2	1	40	0.1	16.6	100%	0%	0%	**6**	**12**	**0.6**	**1.2**	**99.6**	**199.2**	**6**	**12**
Well Completion	With Hydraulic Fracturing - Main Activities	Vendor	On-Site	Smaller heavy-duty equipment	T7 tractor construction - DSL	--	6	2	1	5	0.1	0.75	100%	0%	0%	**6**	**12**	**0.6**	**1.2**	**4.5**	**9**	**6**	**12**
Well Completion	With Hydraulic Fracturing - Main Activities	Vendor	Off-Site	Mobile pump trucks	T7 tractor construction - DSL	--	4	2	1	40	0.1	16.6	100%	0%	0%	**4**	**8**	**0.4**	**0.8**	**66.4**	**132.8**	**4**	**8**
Well Completion	With Hydraulic Fracturing - Main Activities	Vendor	On-Site	Mobile pump trucks	T7 tractor construction - DSL	--	4	2	1	5	0.1	0.75	100%	0%	0%	**4**	**8**	**0.4**	**0.8**	**3**	**6**	**4**	**8**
Well Completion	With Hydraulic Fracturing - Main Activities	Hauler	Off-Site	Haulers traveling to IOF (refuse and sand tank)	T7 tractor construction - DSL	--	5	1	2	40	0.1	6.9	100%	0%	0%	**10**	**10**	**1**	**1**	**69**	**69**	**5**	**5**
Well Completion	With Hydraulic Fracturing - Main Activities	Hauler	On-Site	Haulers traveling within IOF (refuse and sand tank removal)	T7 tractor construction - DSL	--	5	1	2	5	0.1	0.75	100%	0%	0%	**10**	**10**	**1**	**1**	**7.5**	**7.5**	**5**	**5**
Well Completion	With Hydraulic Fracturing - Main Activities	Worker	Off-Site		LDT2 - GAS					40						36.00	72.00	3.60	7.20	597.60	1,195.20	18.00	36.00
Well Completion	With Hydraulic Fracturing - Main Activities	Worker	On-Site		LDT2 - GAS					5						36.00	72.00	3.60	7.20	27.00	54.00	18.00	36.00
Well Completion	With Hydraulic Fracturing - Main Activities	Worker	Off-Site		MDV - DSL					40						4.00	8.00	0.40	0.80	66.40	132.80	2.00	4.00
Well Completion	With Hydraulic Fracturing - Main Activities	Worker	On-Site		MDV - DSL					5						4.00	8.00	0.40	0.80	3.00	6.00	2.00	4.00
Well Completion	With Hydraulic Fracturing - Main Activities	Vendor	Off-Site		T7 tractor construction - DSL					40						14.00	28.00	1.40	2.80	193.60	387.20	12.00	24.00
Well Completion	With Hydraulic Fracturing - Main Activities	Vendor	On-Site		T7 tractor construction - DSL					5						15.00	30.00	1.50	3.00	11.53	23.06	12.00	24.00
Well Completion	With Hydraulic Fracturing - Main Activities	Hauler	Off-Site		T7 tractor construction - DSL					40						10.00	10.00	1.00	1.00	69.00	69.00	5.00	5.00
Well Completion	With Hydraulic Fracturing - Main Activities	Hauler	On-Site		T7 tractor construction - DSL					5						10.00	10.00	1.00	1.00	7.50	7.50	5.00	5.00

Note:
1. Workers are assumed to drive personal light-duty gasoline-fueled trucks with vehicle weight between 3,751-5,750 lb. An example of a vehicle in this category could be a Ford F-250.
2. Each worker is assumed to drive their own vehicle.
3. The overall trip length is not discounted for Diverted and PassBy trips, i.e., Diverted% and PassBy% are equal to zero.
4. Water truck is assumed to water the site three times per day. One-way trip length per watering event calculated using the methodology for calculating VMT for grading equipment passes from Section 4.3 of Appendix A of the CalEEMod documentation. One-way trip length = Site Acreage (acre) / Vehicle Width (12) x 43,560 / 5,280.
Site Acreage 0.5 Veh. Width (ft) 12
The water truck is also assumed to water the same on-site path traveled by the other vehicles two times per day. This total distance is divided by the number of one-way trips and added to the distance estimated for watering the site three times per day.

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AIR EMISSIONS CALCULATIONS - INGLEWOOD OIL FIELD SPECIFIC PLAN PROJECT
TABLE NO. 2.01
TABLE NAME On-Road Vehicle Emissions Data

These calculations assume the workers commute from home directly to the Inglewood Oil Field (IOF) and then for several miles per day throughout IOF. Trip Length (mile) is from Table 4.2 from Appendix D of the CalEEMod documentation. Speed (mph) is the CalEEMod default.

Key Assumption	CalEEMod Assumption	Assumption	Calculated Value

Total Daily One-Way Trips = Number of Vehicles x One-Way Trips per Day per Worker/Vehicle
Total Daily Idle Time = Idling Time per One-Way Trip x Total Daily One-Way Trips
Total Daily VMT = Total Daily One-Way Trips x [One-Way Trip Length x (Primary% + 0.25 x Diverted%) + 0.1 x PassBy%]
Total Vehicles per Day = Number of Vehicles

Total One-Way Trips = Total Daily One-Way Trips x Total Number of Days
Total Idle Time = Total Daily Idle Time x Total Number of Days
Total VMT = Total Daily VMT x Total Number of Days
Total Vehicle-Days = Total Vehicles per Day x Total Number of Days

Phase	Sub-Phase	Type	On-Site / Off-Site	Trip Description	EMFAC2011 Vehicle and Technology (Assumed)	Number of Workers	Number of Vehicles per Day	Total Number of Days	One-Way Trips per Day per Worker/Vehicle	Speed (mph)	Idling time per One-Way Trip (hr)	One-Way Trip Length (mile)	Primary %	Diverted %	PassBy %	Total Daily One Way Trips	Total One-Way Trips	Total Daily Idle Time (hr/day)	Total Idle Time (hr)	Total Daily VMT (mile/day)	Total VMT (mile)	Total Vehicles per Day	Total Vehicle-Days
Well Completion	**With Hydraulic Fracturing - Flowback**							**14**															
Well Completion	With Hydraulic Fracturing - Flowback	Worker	Off-Site	Workers commuting to IOF	LDT2 - GAS	7	7	14	2	40	0.1	16.6	100%	0%	0%	**14**	**196**	**1.4**	**19.6**	**232.4**	**3253.6**	**7**	**98**
Well Completion	With Hydraulic Fracturing - Flowback	Worker	On-Site	Worker vehicles traveling within IOF	LDT2 - GAS	7	7	14	2	5	0.1	0.75	100%	0%	0%	**14**	**196**	**1.4**	**19.6**	**10.5**	**147**	**7**	**98**
Well Completion	With Hydraulic Fracturing - Flowback	Vendor	Off-Site	Water truck (dust suppression) traveling to IOF	T7 tractor construction - DSL	--	1	14	2	40	0.1	6.9	100%	0%	0%	**2**	**28**	**0.2**	**2.8**	**13.8**	**193.2**	**1**	**14**
Well Completion	With Hydraulic Fracturing - Flowback	Vendor	On-Site	Water truck (dust suppression) traveling within IOF	T7 tractor construction - DSL	--	1	14	3	5	0.1	**0.844**	100%	0%	0%	**3**	**42**	**0.3**	**4.2**	**2.532**	**35.448**	**1**	**14**
Well Completion	With Hydraulic Fracturing - Flowback	Hauler	Off-Site	Haulers traveling to IOF (removing water tanks)	T7 tractor construction - DSL		7	1	2	40	0.1	6.9	100%	0%	0%	**14**	**14**	**1.4**	**1.4**	**96.6**	**96.6**	**7**	**7**
Well Completion	With Hydraulic Fracturing - Flowback	Hauler	On-Site	Haulers traveling within IOF (removing water tanks)	T7 tractor construction - DSL		7	1	2	5	0.1	0.75	100%	0%	0%	**14**	**14**	**1.4**	**1.4**	**10.5**	**10.5**	**7**	**7**
Well Completion	With Hydraulic Fracturing - Flowback	Vendor	Off-Site	Water truck commute to IOF. These water trucks remove the flowback fluid from the project site.	T7 tractor construction - DSL	--	**3**	**9.67**	2	40	0.1	6.9	100%	0%	0%	**6**	**58**	**0.6**	**5.8**	**41.4**	**400.2**	**3**	**29**
Well Completion	With Hydraulic Fracturing - Flowback	Vendor	On-Site	Water truck commute within IOF. These water trucks remove the flowback fluid from the project site.	T7 tractor construction - DSL	--	**3**	**9.67**	2	5	0.1	0.75	100%	0%	0%	**6**	**58**	**0.6**	**5.8**	**4.5**	**43.5**	**3**	**29**

Well Completion	With Hydraulic Fracturing - Flowback	Worker	Off-Site		LDT2 - GAS					40						14.00	196.00	1.40	19.60	232.40	3,253.60	7.00	98.00
Well Completion	With Hydraulic Fracturing - Flowback	Worker	On-Site		LDT2 - GAS					5						14.00	196.00	1.40	19.60	10.50	147.00	7.00	98.00
Well Completion	With Hydraulic Fracturing - Flowback	Vendor	Off-Site		T7 tractor construction - DSL					40						8.00	86.00	0.80	8.60	55.20	593.40	4.00	43.00
Well Completion	With Hydraulic Fracturing - Flowback	Vendor	On-Site		T7 tractor construction - DSL					5						9.00	100.00	0.90	10.00	7.03	78.95	4.00	43.00
Well Completion	With Hydraulic Fracturing - Flowback	Hauler	Off-Site		T7 tractor construction - DSL					40						14.00	14.00	1.40	1.40	96.60	96.60	7.00	7.00
Well Completion	With Hydraulic Fracturing - Flowback	Hauler	On-Site		T7 tractor construction - DSL					5						14.00	14.00	1.40	1.40	10.50	10.5	7.00	7.00

Note:

1. Workers are assumed to drive personal light-duty gasoline-fueled trucks with vehicle weight between 3,751-5,750 lb. An example of a vehicle in this category could be a Ford F-250.
2. Each worker is assumed to drive their own vehicle.
3. The overall trip length is not discounted for Diverted and PassBy trips, i.e., Diverted% and PassBy% are equal to zero.
4. Water truck is assumed to water the site three times per day. One-way trip length per watering event calculated using the methodology for calculating VMT for grading equipment passes from Section 4.3 of Appendix A of the CalEEMod documentation. One-way trip length = Site Acreage (acre) / Vehicle Width (12) x 43,560 / 5,280.
   Site Acreage 0.5 Veh. Width (ft) 12
   The water truck is also assumed to water the same on-site path traveled by the other vehicles two times per day. This total distance is divided by the number of one-way trips and added to the distance estimated for watering the site three times per day.
5. Vendor vehicles are assumed to visit the facility evenly to dispose of the flowback fluid. The total number of trucks needed is divided by the total number of days to get a maximum in a single day. The total number of days is then converted to an adjusted number that can be multiplied by the maximum per day to get the actual total.
   Total Days 14
   Total Water Trucks 29 Water Trucks Per Day **3**
   Adjusted Total Days **9.67**

Phase	Sub-Phase	Type	On-Site / Off-Site	Trip Description	EMFAC2011 Vehicle and Technology (Assumed)	Number of Workers	Number of Vehicles per Day	Total Number of Days	One-Way Trips per Day per Worker/Vehicle	Speed (mph)	Idling time per One-Way Trip (hr)	One-Way Trip Length (mile)	Primary %	Diverted %	PassBy %	Total Daily One Way Trips	Total One-Way Trips	Total Daily Idle Time (hr/day)	Total Idle Time (hr)	Total Daily VMT (mile/day)	Total VMT (mile)	Total Vehicles per Day	Total Vehicle-Days
Well Rework	**Well Rework**							**1**															
Well Rework	Well Rework	Worker	Off-Site	Workers commuting to meeting area	LDT2 - GAS	4	4	1	2	40	0.1	16.6	100%	0%	0%	**8**	**8**	**0.8**	**0.8**	**132.8**	**132.8**	**4**	**4**
Well Rework	Well Rework	Worker	Off-Site	Workers commuting from meeting area to IOF in work truck	MDV - DSL	--	4	1	2	40	0.1	6.9	100%	0%	0%	**8**	**8**	**0.8**	**0.8**	**55.2**	**55.2**	**4**	**4**
Well Rework	Well Rework	Worker	On-Site	Work truck traveling within IOF	MDV - DSL	--	4	1	2	5	0.1	0.75	100%	0%	0%	**8**	**8**	**0.8**	**0.8**	**6**	**6**	**4**	**4**
Well Rework	Well Rework	Vendor	Off-Site	Service rig traveling to IOF	T7 tractor construction - DSL	--	1	1	2	40	0.1	6.9	100%	0%	0%	**2**	**2**	**0.2**	**0.2**	**13.8**	**13.8**	**1**	**1**
Well Rework	Well Rework	Vendor	On-Site	Service rig within IOF	T7 tractor construction - DSL	--	1	1	2	5	0.1	0.75	100%	0%	0%	**2**	**2**	**0.2**	**0.2**	**1.5**	**1.5**	**1**	**1**

Well Rework	Well Rework	Worker	Off-Site		LDT2 - GAS					40						8.00	8.00	0.80	0.80	132.80	132.80	4.00	4.00
Well Rework	Well Rework	Worker	Off-Site		MDV - DSL					40						8.00	8.00	0.80	0.80	55.20	55.20	4.00	4.00
Well Rework	Well Rework	Worker	On-Site		MDV - DSL					5						8.00	8.00	0.80	0.80	6.00	6.00	4.00	4.00
Well Rework	Well Rework	Vendor	Off-Site		T7 tractor construction - DSL					40						2.00	2.00	0.20	0.20	13.80	13.80	1.00	1.00
Well Rework	Well Rework	Vendor	On-Site		T7 tractor construction - DSL					5						2.00	2.00	0.20	0.20	1.50	1.50	1.00	1.00

Note:

1. Workers are assumed to drive personal light-duty gasoline-fueled trucks with vehicle weight between 3,751-5,750 lb. An example of a vehicle in this category could be a Ford F-250.
2. Each worker is assumed to drive their own vehicle.
3. The overall trip length is not discounted for Diverted and PassBy trips, i.e., Diverted% and PassBy% are equal to zero.

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AIR EMISSIONS CALCULATIONS - INGLEWOOD OIL FIELD SPECIFIC PLAN PROJECT
TABLE NO. **2.01**
TABLE NAME **On-Road Vehicle Emissions Data**

These calculations assume the workers commute from home directly to the Inglewood Oil Field (IOF) and then for several miles per day throughout IOF. Trip Length (mile) is from Table 4.2 from Appendix D of the CalEEMod documentation. Speed (mph) is the CalEEMod default.

Key Assumption	CalEEMod Assumption	Assumption	Calculated Value

Total Daily One-Way Trips = Number of Vehicles x One-Way Trips per Day per Worker/Vehicle
Total Daily Idle Time = Idling Time per One-Way Trip x Total Daily One-Way Trips
Total Daily VMT = Total Daily One-Way Trips x [One-Way Trip Length x (Primary% + 0.25 x Diverted%) + 0.1 x PassBy%]
Total Vehicles per Day = Number of Vehicles

Total One-Way Trips = Total Daily One-Way Trips x Total Number of Days
Total Idle Time = Total Daily Idle Time x Total Number of Days
Total VMT = Total Daily VMT x Total Number of Days
Total Vehicle-Days = Total Vehicles per Day x Total Number of Days

Phase	Sub-Phase	Type	On-Site / Off-Site	Trip Description	EMFAC2011 Vehicle and Technology (Assumed)	Number of Workers	Number of Vehicles per Day	Total Number of Days	One-Way Trips per Day per Worker/Vehicle	Speed (mph)	Idling time per One-Way Trip (hr)	One-Way Trip Length (mile)	Primary %	Diverted %	PassBy %	Total Daily One-Way Trips	Total One-Way Trips	Total Daily Idle Time (hr/day)	Total Idle Time (hr)	Total Daily VMT (mile/day)	Total VMT (mile)	Total Vehicles per Day	Total Vehicle-Days
Routine Operation and Maintenance	**Worker Activities**							**365**															
Routine Operation and Maintenance	Worker Activities	Worker	Off-Site	Workers commuting to IOF	LDT2 - GAS	21	21	274.86	2	40	0.1	16.6	100%	0%	0%	**42**	**11544**	**4.2**	**1154.4**	**697.2**	**191630.4**	**21**	**5772**
Routine Operation and Maintenance	Worker Activities	Worker	On-Site	Work truck traveling within IOF	MDV - DSL	--	2	365	1	5	0.1	3	100%	0%	0%	**2**	**730**	**0.2**	**73**	**6**	**2190**	**2**	**730**
Routine Operation and Maintenance	Worker Activities	Worker	Off-Site		LDT2 - GAS					40						42.00	11,544.00	4.20	1,154.40	697.20	191,630.40	21.00	5,772.00
Routine Operation and Maintenance	Worker Activities	Worker	On-Site		MDV - DSL					5						2.00	730.00	0.20	73.00	6.00	2,190.00	2.00	730.00

Note:

1. Workers are assumed to drive personal light-duty gasoline-fueled trucks with vehicle weight between 3,751-5,750 lb. An example of a vehicle in this category could be a Ford F-250.
2. Each worker is assumed to drive their own vehicle.
3. The overall trip length is not discounted for Diverted and PassBy trips, i.e., Diverted% and PassBy% are equal to zero.
4. All numbers above are on a per-year basis.
5. Worker trip information calculated using the following:

Number of workers commuting on weekday (day shift)	WD Commute, DS	20
Number of workers commuting on weekday (night shift)	WD Commute, NS	1
Number of workers commuting on weekend (day shift)	WE Commute, DS	2
Number of workers commuting on weekend (night shift)	WE Commute. NS	1

The peak day will occur during thee week
Number of workers commuting on peak day 21

The total number of days is adjusted in order to account for all of the weekday and weekend trips throughout the year.

Number of weekdays per week	Weekdays per Week	5
Number of weekends per week	Weekends per Week	2
Number of weeks per year	Weeks per Year	52
Total weekday trips	Weeks per Year x [Weekdays per Week x (WD Commute, DS + WD Commute, NS) + Weekends per Week x (WE Commute, DS + WE Commute, NS)]	5772
Adjusted number of Days per Year	Total weekday trips / Number of workers commuting on peak day	274.86

6. The on-site work trucks could be working anywhere within the facility. Assume that the number shown above is representative of the peak day and the average.

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AIR EMISSIONS CALCULATIONS - INGLEWOOD OIL FIELD SPECIFIC PLAN PROJECT
TABLE NO. 2.02
TABLE NAME On-Road Vehicle Emissions Calculations

These calculations assume the workers commute from home directly to the Inglewood Oil Field (IOF) and then for several miles per day throughout IOF. Trip Length (mile) is from Table 4.2 from Appendix D of the CalEEMod documentation. Speed (mph) is the CalEEMod default.

Key Assumption	CalEEMod Assumption	Assumption	Calculated Value

Day Factor = Number x Size (hp) x Load Factor x Hours per Day

Total Factor = Number x Size (hp) x Load Factor x Hours per Day x Total Days

Phase	Sub-Phase	Equipment Type	On-Site / Off-Site	Description	Unmitigated Engine Tier	Unmitigated Add-On Control	Mitigated Engine Tier	Mitigated Add-On Control	Number of Engines	Size (hp)	Load Factor	Hours per Day	Total Days	Day Factor	Total Factor
Well Pad Construction	**Site Preparation**												**5**		
Well Pad Construction	Site Preparation	Rubber Tired Dozers	On-Site	Clearing and Grubbing	Tier 3	Level 3	Tier 3	Level 3	1	255	0.4	8	5	8.1600E+02	4.0800E+03

Note:
1. Size and Load Factor are default values from Table 3.3 from Appendix D of the CalEEMod documentation.

Phase	Sub-Phase	Equipment Type	On-Site / Off-Site	Description	Unmitigated Engine Tier	Unmitigated Add-On Control	Mitigated Engine Tier	Mitigated Add-On Control	Number of Engines	Size (hp)	Load Factor	Hours per Day	Total Days	Day Factor	Total Factor
Well Pad Construction	**Grading**												**4**		
Well Pad Construction	Grading	Rubber Tired Dozers	On-Site	Grading and Cut/Fill	Tier 3	Level 3	Tier 3	Level 3	1	255	0.4	8	4	8.1600E+02	3.2640E+03
Well Pad Construction	Grading	Off-Highway Trucks	On-Site	Grading and Cut/Fill	Tier 3	Level 3	Tier 3	Level 3	1	400	0.38	8	4	1.2160E+03	4.8640E+03

Note:
1. Size and Load Factor are default values from Table 3.3 from Appendix D of the CalEEMod documentation.
2. The equipment list for this phase/sub-phase is based on the Maximum Buildout Scenario for well pad construction, with the addition of an off-highway truck for material handling during cut/fill.

Phase	Sub-Phase	Equipment Type	On-Site / Off-Site	Description	Unmitigated Engine Tier	Unmitigated Add-On Control	Mitigated Engine Tier	Mitigated Add-On Control	Number of Engines	Size (hp)	Load Factor	Hours per Day	Total Days	Day Factor	Total Factor
Well Drilling	**Mobilization and Setup**												**5**		
Well Drilling	Mobilization and Setup	Cranes	On-Site	Equipment Setup	Tier 3	Level 3	Tier 3	Level 3	14	226	0.29	8	5	7.3405E+03	3.6702E+04

Note:
1. Size and Load Factor are default values from Table 3.3 from Appendix D of the CalEEMod documentation.
2. Assume that a crane is needed to assist with equipment maneuvering during this phase/sub-phase.

Phase	Sub-Phase	Equipment Type	On-Site / Off-Site	Description	Unmitigated Engine Tier	Unmitigated Add-On Control	Mitigated Engine Tier	Mitigated Add-On Control	Number of Engines	Size (hp)	Load Factor	Hours per Day	Total Days	Day Factor	Total Factor
Well Drilling	**Drilling**												**30**		
Well Drilling	Drilling	Generator Sets	On-Site	Drill Rig Engines	Tier 2	2nd Gen.	Tier 4 Final	2nd Gen.	4	750	0.74	24	30	5.3280E+04	1.5984E+06
Well Drilling	Drilling	Pumps	On-Site	Mud Pump Engines	Tier 2	2nd Gen.	Tier 4 Final	2nd Gen.	2	750	0.74	24	30	2.6640E+04	7.9920E+05
Well Drilling	Drilling	Generator Sets	On-Site	Trailer Generators	Tier 3	Level 3	Tier 3	Level 3	1	49	0.74	24	30	8.7024E+02	2.6107E+04
Well Drilling	Drilling	Generator Sets	On-Site	Night Lights	Tier 3	Level 3	Tier 3	Level 3	4	49	0.74	12	30	1.7405E+03	5.2214E+04
Well Drilling	Drilling	Cranes	On-Site	Equipment Maneuvering	Tier 3	Level 3	Tier 3	Level 3	1	226	0.29	4	30	2.6216E+02	7.8648E+03

Note:
1. Assumeed a crane would be needed for a limited number of hours per day for miscellaneous equipment maneuvering.
2. All Load Factors and the crane size are default values from Table 3.3 from Appendix D of the CalEEMod documentation.
3. Assumed that the drill rig contains a given number of engines, with the total horsepower distributed evently among the engines.

Total horsepower	3,000
Number of engines	4
Horsepower per engine	750

For emission calculations, each drill rig engine is represented by the Generator Set category.

4. Assumed each mud pump engine is the same size as each drill rig engine.
5. The number of hours the night lights operate during drilling approximated as half a day.

Phase	Sub-Phase	Equipment Type	On-Site / Off-Site	Description	Unmitigated Engine Tier	Unmitigated Add-On Control	Mitigated Engine Tier	Mitigated Add-On Control	Number of Engines	Size (hp)	Load Factor	Hours per Day	Total Days	Day Factor	Total Factor
Well Drilling	**Demobilization**												**3**		
Well Drilling	Demobilization	Cranes	On-Site	Demobilization	Tier 3	Level 3	Tier 3	Level 3	1	226	0.29	8	3	524.32	1,572.96

Note:
1. Assumeed a crane would be needed for a limited number of hours per day for miscellaneous equipment maneuvering.

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AIR EMISSIONS CALCULATIONS - INGLEWOOD OIL FIELD SPECIFIC PLAN PROJECT
TABLE NO. 2.02
TABLE NAME On-Road Vehicle Emissions Calculations

These calculations assume the workers commute from home directly to the Inglewood Oil Field (IOF) and then for several miles per day throughout IOF. Trip Length (mile) is from Table 4.2 from Appendix D of the CalEEMod documentation. Speed (mph) is the CalEEMod default.

Key Assumption	CalEEMod Assumption	Assumption	Calculated Value

Day Factor = Number x Size (hp) x Load Factor x Hours per Day

Total Factor = Number x Size (hp) x Load Factor x Hours per Day x Total Days

Phase	Sub-Phase	Equipment Type	On-Site / Off-Site	Description	Unmitigated Engine Tier	Unmitigated Add-On Control	Mitigated Engine Tier	Mitigated Add-On Control	Number of Engines	Size (hp)	Load Factor	Hours per Day	Total Days	Day Factor	Total Factor
Well Completion	**Without Hydraulic Fracturing**												**3**		
Well Completion	Without Hydraulic Fracturing	Cranes	On-Site	Equipment Maneuvering	Tier 3	Level 3	Tier 3	Level 3	1	226	0.29	8	3	**524.32**	**1,572.96**
Well Completion	Without Hydraulic Fracturing	Generator Sets	On-Site	Service Rig	Tier 2	2nd Gen.	Tier 4 Final	2nd Gen.	1	500	0.74	8	3	**2,960.00**	**8,880.00**

Note:
1. Assumeed a crane would be needed for a limited number of hours per day for miscellaneous equipment maneuvering.
2. All Load Factors and the crane size are default values from Table 3.3 from Appendix D of the CalEEMod documentation.
3. Service rig hp is estimated as slightly larger than the largest rig (450 hp) shown in the following page
http://mcconnellscully.com/Rig_Services_Equipment.html

Phase	Sub-Phase	Equipment Type	On-Site / Off-Site	Description	Unmitigated Engine Tier	Unmitigated Add-On Control	Mitigated Engine Tier	Mitigated Add-On Control	Number of Engines	Size (hp)	Load Factor	Hours per Day	Total Days	Day Factor	Total Factor
Well Completion	**With Hydraulic Fracturing - Site Preparation**												**5**		
Well Completion	With Hydraulic Fracturing - Site Preparation	Cranes	On-Site	Equipment Maneuvering	Tier 3	Level 3	Tier 3	Level 3	1	226	0.29	4	5	**262.16**	**1,310.80**

Note:
1. Assumeed a crane would be needed for a limited number of hours per day for miscellaneous equipment maneuvering.

Phase	Sub-Phase	Equipment Type	On-Site / Off-Site	Description	Unmitigated Engine Tier	Unmitigated Add-On Control	Mitigated Engine Tier	Mitigated Add-On Control	Number of Engines	Size (hp)	Load Factor	Hours per Day	Total Days	Day Factor	Total Factor
Well Completion	**With Hydraulic Fracturing - Main Activities**												**2**		
Well Completion	With Hydraulic Fracturing - Main Activities	Cranes	On-Site	Equipment Maneuvering	Tier 3	Level 3	Tier 3	Level 3	1	226	0.29	4	1	**262.16**	**262.16**
Well Completion	With Hydraulic Fracturing - Main Activities	Generator Sets	On-Site	Smaller Heavy Equipment	Tier 3	Level 3	Tier 3	Level 3	6	500	0.74	8	1	**17,760.00**	**17,760.00**
Well Completion	With Hydraulic Fracturing - Main Activities	Pumps	On-Site	Mobile Pump Trucks	Tier 2	2nd Gen.	Tier 4 Final	2nd Gen.	4	2700	0.74	8	1	**63,936.00**	**63,936.00**

Note:
1. Main hydraulic fracturing activities are assumed to take place in one day. The second day shown in the key assumptions is assumed to be spent breaking down and cleaning up.
2. The smaller heavy equipment (blenders, etc.) are assumed to be 500 hp each.
3. Assumed that the pumping trucks each contain a given number of engines, with the total horsepower distributed evently among the engines.

Total horsepower	2,700
Number of engines per truck	1
Horsepower per engine	**2700**
Number of trucks	4
Total number of engines	**4**

Phase	Sub-Phase	Equipment Type	On-Site / Off-Site	Description	Unmitigated Engine Tier	Unmitigated Add-On Control	Mitigated Engine Tier	Mitigated Add-On Control	Number of Engines	Size (hp)	Load Factor	Hours per Day	Total Days	Day Factor	Total Factor
Well Completion	**With Hydraulic Fracturing - Flowback**												**14**		
Well Completion	With Hydraulic Fracturing - Flowback	Cranes	On-Site	Equipment Maneuvering	Tier 3	Level 3	Tier 3	Level 3	1	226	0.29	4	14	**262.16**	**3,670.24**

Note:
1. Assumeed a crane would be needed for a limited number of hours per day for miscellaneous equipment maneuvering.

Phase	Sub-Phase	Equipment Type	On-Site / Off-Site	Description	Unmitigated Engine Tier	Unmitigated Add-On Control	Mitigated Engine Tier	Mitigated Add-On Control	Number of Engines	Size (hp)	Load Factor	Hours per Day	Total Days	Day Factor	Total Factor
Well Rework	**Well Rework**												**1**		
Well Rework	Well Rework	Generator Sets	On-Site	Service Rig	Tier 2	2nd Gen.	Tier 4 Final	2nd Gen.	1	500	0.74	12	1	**4,440.00**	**4,440.00**

Note:
1. Assumeed a crane would be needed for a limited number of hours per day for miscellaneous equipment maneuvering.
2. All Load Factors and the crane size are default values from Table 3.3 from Appendix D of the CalEEMod documentation.
3. Service rig hp is estimated as slightly larger than the largest rig (450 hp) shown in the following page
http://mcconnellscully.com/Rig_Services_Equipment.html

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AIR EMISSIONS CALCULATIONS - INGLEWOOD OIL FIELD SPECIFIC PLAN PROJECT
TABLE NO. **2.03**
TABLE NAME **Paved Road Emissions Calculations**

Paved Road Emissions Calculations

Calculations are based on Section 5.3 of Appendix A of the CalEEMod documentation and AP-42, Chapter 13, Section 13.2.1.

Note:
1. All VMT is calculated in the On-Road Vehicle Emissions Data table.
2. These calculations assume no reduction for the paved road (off-site) dust.

Key Assumption	CalEEMod Assumption	Assumption

						Unmitigated					Mitigated			
Phase	**Sub-Phase**	**Type**	**On-Site / Off-Site**	**Total Daily VMT (mile/day)**	**Total VMT (mile)**	**Daily PM10 Emissions (lb/day)**	**PM10 Emissions (lb)**	**Daily PM2.5 Emissions (lb/day)**	**PM2.5 Emissions (lb)**	**% Reduction**	**Daily PM10 Emissions (lb/day)**	**PM10 Emissions (lb)**	**Daily PM2.5 Emissions (lb/day)**	**PM2.5 Emissions (lb)**
Well Pad Construction	**Site Preparation**													
Well Pad Construction	Site Preparation	Worker	Off-Site	232.40	1,162.00	6.22E-02	3.04E-01	1.53E-02	7.46E-02	0%	6.22E-02	3.04E-01	1.53E-02	7.46E-02
Well Pad Construction	Site Preparation	Vendor	Off-Site	13.80	69.00	3.69E-03	1.80E-02	9.06E-04	4.43E-03	0%	3.69E-03	1.80E-02	9.06E-04	4.43E-03
Well Pad Construction	Site Preparation	Hauler	Off-Site	0.00	0.00	N/A	N/A	N/A	N/A	0%	N/A	N/A	N/A	N/A
Well Pad Construction	**Site Preparation**		**Off-Site**		**Totals**	**6.59E-02**	**3.22E-01**	**1.62E-02**	**7.90E-02**		**6.59E-02**	**3.22E-01**	**1.62E-02**	**7.90E-02**
Well Pad Construction	**Grading**													
Well Pad Construction	Grading	Worker	Off-Site	232.40	929.60	6.22E-02	2.43E-01	1.53E-02	5.97E-02	0%	6.22E-02	2.43E-01	1.53E-02	5.97E-02
Well Pad Construction	Grading	Vendor	Off-Site	13.80	55.20	3.69E-03	1.44E-02	9.06E-04	3.54E-03	0%	3.69E-03	1.44E-02	9.06E-04	3.54E-03
Well Pad Construction	Grading	Hauler	Off-Site	0.00	0.00	N/A	N/A	N/A	N/A	0%	N/A	N/A	N/A	N/A
Well Pad Construction	**Grading**		**Off-Site**		**Totals**	**6.59E-02**	**2.57E-01**	**1.62E-02**	**6.32E-02**		**6.59E-02**	**2.57E-01**	**1.62E-02**	**6.32E-02**
Well Drilling	**Mobilization and Setup**													
Well Drilling	Mobilization and Setup	Worker	Off-Site	547.60	2,738.00	1.46E-01	7.16E-01	3.60E-02	1.76E-01	0%	1.46E-01	7.16E-01	3.60E-02	1.76E-01
Well Drilling	Mobilization and Setup	Vendor	Off-Site	27.60	138.00	7.38E-03	3.61E-02	1.81E-03	8.86E-03	0%	7.38E-03	3.61E-02	1.81E-03	8.86E-03
Well Drilling	Mobilization and Setup	Hauler	Off-Site	179.40	179.40	4.80E-02	4.69E-02	1.18E-02	1.15E-02	0%	4.80E-02	4.69E-02	1.18E-02	1.15E-02
Well Drilling	**Mobilization and Setup**		**Off-Site**		**Totals**	**2.02E-01**	**7.99E-01**	**4.95E-02**	**1.96E-01**		**2.02E-01**	**7.99E-01**	**4.95E-02**	**1.96E-01**
Well Drilling	**Drilling**													
Well Drilling	Drilling	Worker	Off-Site	1,095.20	32,856.00	2.93E-01	8.59E+00	7.19E-02	2.11E+00	0%	2.93E-01	8.59E+00	7.19E-02	2.11E+00
Well Drilling	Drilling	Vendor	Off-Site	41.40	1,242.00	1.11E-02	3.25E-01	2.72E-03	7.97E-02	0%	1.11E-02	3.25E-01	2.72E-03	7.97E-02
Well Drilling	Drilling	Hauler	Off-Site	55.20	1,656.00	1.48E-02	4.33E-01	3.62E-03	1.06E-01	0%	1.48E-02	4.33E-01	3.62E-03	1.06E-01
Well Drilling	**Drilling**		**Off-Site**		**Totals**	**3.19E-01**	**9.35E+00**	**7.82E-02**	**2.29E+00**		**3.19E-01**	**9.35E+00**	**7.82E-02**	**2.29E+00**
Well Drilling	**Demobilization**													
Well Drilling	Demobilization	Worker	Off-Site	547.60	1,642.80	1.46E-01	4.29E-01	3.60E-02	1.05E-01	0%	1.46E-01	4.29E-01	3.60E-02	1.05E-01
Well Drilling	Demobilization	Vendor	Off-Site	13.80	41.40	3.69E-03	1.08E-02	9.06E-04	2.66E-03	0%	3.69E-03	1.08E-02	9.06E-04	2.66E-03
Well Drilling	Demobilization	Hauler	Off-Site	193.20	193.20	5.17E-02	5.05E-02	1.27E-02	1.24E-02	0%	5.17E-02	5.05E-02	1.27E-02	1.24E-02
Well Drilling	**Demobilization**		**Off-Site**		**Totals**	**2.02E-01**	**4.91E-01**	**4.95E-02**	**1.20E-01**		**2.02E-01**	**4.91E-01**	**4.95E-02**	**1.20E-01**
Well Completion	**Without Hydraulic Fracturing**													
Well Completion	Without Hydraulic Fracturing	Worker	Off-Site	547.60	1,642.80	1.46E-01	4.29E-01	3.60E-02	1.05E-01	0%	1.46E-01	4.29E-01	3.60E-02	1.05E-01
Well Completion	Without Hydraulic Fracturing	Vendor	Off-Site	27.60	82.80	7.38E-03	2.16E-02	1.81E-03	5.31E-03	0%	7.38E-03	2.16E-02	1.81E-03	5.31E-03
Well Completion	Without Hydraulic Fracturing	Hauler	Off-Site	13.80	41.40	3.69E-03	1.08E-02	9.06E-04	2.66E-03	0%	3.69E-03	1.08E-02	9.06E-04	2.66E-03
Well Completion	**Without Hydraulic Fracturing**		**Off-Site**		**Totals**	**1.58E-01**	**4.62E-01**	**3.87E-02**	**1.13E-01**		**1.58E-01**	**4.62E-01**	**3.87E-02**	**1.13E-01**
Well Completion	**With Hydraulic Fracturing - Site Preparation**													
Well Completion	With Hydraulic Fracturing - Site Preparation	Worker	Off-Site	232.40	1,162.00	6.22E-02	3.04E-01	1.53E-02	7.46E-02	0%	6.22E-02	3.04E-01	1.53E-02	7.46E-02
Well Completion	With Hydraulic Fracturing - Site Preparation	Vendor	Off-Site	165.60	786.60	4.43E-02	2.06E-01	1.09E-02	5.05E-02	0%	4.43E-02	2.06E-01	1.09E-02	5.05E-02
Well Completion	With Hydraulic Fracturing - Site Preparation	Hauler	Off-Site	151.80	151.80	4.06E-02	3.97E-02	9.97E-03	9.74E-03	0%	4.06E-02	3.97E-02	9.97E-03	9.74E-03
Well Completion	**With Hydraulic Fracturing - Site Preparation**		**Off-Site**		**Totals**	**1.47E-01**	**5.49E-01**	**3.61E-02**	**1.35E-01**		**1.47E-01**	**5.49E-01**	**3.61E-02**	**1.35E-01**

AIR EMISSIONS CALCULATIONS - INGLEWOOD OIL FIELD SPECIFIC PLAN PROJECT
TABLE NO. 2.03
TABLE NAME Paved Road Emissions Calculations

Paved Road Emissions Calculations

Calculations are based on Section 5.3 of Appendix A of the CalEEMod documentation and AP-42, Chapter 13, Section 13.2.1.

Note:
1. All VMT is calculated in the On-Road Vehicle Emissions Data table.
2. These calculations assume no reduction for the paved road (off-site) dust.

Key Assumption	CalEEMod Assumption	Assumption

Well Completion — With Hydraulic Fracturing - Main Activities

Phase	Sub-Phase	Type	On-Site / Off-Site	Total Daily VMT (mile/day)	Total VMT (mile)	Unmitigated Daily PM10 Emissions (lb/day)	Unmitigated PM10 Emissions (lb)	Unmitigated Daily PM2.5 Emissions (lb/day)	Unmitigated PM2.5 Emissions (lb)	% Reduction	Mitigated Daily PM10 Emissions (lb/day)	Mitigated PM10 Emissions (lb)	Mitigated Daily PM2.5 Emissions (lb/day)	Mitigated PM2.5 Emissions (lb)
Well Completion	With Hydraulic Fracturing - Main Activities	Worker	Off-Site	664.00	1,328.00	1.78E-01	3.47E-01	4.36E-02	8.52E-02	0%	1.78E-01	3.47E-01	4.36E-02	8.52E-02
Well Completion	With Hydraulic Fracturing - Main Activities	Vendor	Off-Site	193.60	387.20	5.18E-02	1.01E-01	1.27E-02	2.48E-02	0%	5.18E-02	1.01E-01	1.27E-02	2.48E-02
Well Completion	With Hydraulic Fracturing - Main Activities	Hauler	Off-Site	69.00	69.00	1.85E-02	1.80E-02	4.53E-03	4.43E-03	0%	1.85E-02	1.80E-02	4.53E-03	4.43E-03
Well Completion	**With Hydraulic Fracturing - Main Activities**		**Off-Site**		**Totals**	**2.48E-01**	**4.66E-01**	**6.08E-02**	**1.14E-01**		**2.48E-01**	**4.66E-01**	**6.08E-02**	**1.14E-01**

Well Completion — With Hydraulic Fracturing - Flowback

Phase	Sub-Phase	Type	On-Site / Off-Site	Total Daily VMT (mile/day)	Total VMT (mile)	Unmitigated Daily PM10 Emissions (lb/day)	Unmitigated PM10 Emissions (lb)	Unmitigated Daily PM2.5 Emissions (lb/day)	Unmitigated PM2.5 Emissions (lb)	% Reduction	Mitigated Daily PM10 Emissions (lb/day)	Mitigated PM10 Emissions (lb)	Mitigated Daily PM2.5 Emissions (lb/day)	Mitigated PM2.5 Emissions (lb)
Well Completion	With Hydraulic Fracturing - Flowback	Worker	Off-Site	232.40	3,253.60	6.22E-02	8.51E-01	1.53E-02	2.09E-01	0%	6.22E-02	8.51E-01	1.53E-02	2.09E-01
Well Completion	With Hydraulic Fracturing - Flowback	Vendor	Off-Site	55.20	593.40	1.48E-02	1.55E-01	3.62E-03	3.81E-02	0%	1.48E-02	1.55E-01	3.62E-03	3.81E-02
Well Completion	With Hydraulic Fracturing - Flowback	Hauler	Off-Site	96.60	96.60	2.58E-02	2.53E-02	6.34E-03	6.20E-03	0%	2.58E-02	2.53E-02	6.34E-03	6.20E-03
Well Completion	**With Hydraulic Fracturing - Flowback**		**Off-Site**		**Totals**	**1.03E-01**	**1.03E+00**	**2.52E-02**	**2.53E-01**		**1.03E-01**	**1.03E+00**	**2.52E-02**	**2.53E-01**

Well Rework — Well Rework

Phase	Sub-Phase	Type	On-Site / Off-Site	Total Daily VMT (mile/day)	Total VMT (mile)	Unmitigated Daily PM10 Emissions (lb/day)	Unmitigated PM10 Emissions (lb)	Unmitigated Daily PM2.5 Emissions (lb/day)	Unmitigated PM2.5 Emissions (lb)	% Reduction	Mitigated Daily PM10 Emissions (lb/day)	Mitigated PM10 Emissions (lb)	Mitigated Daily PM2.5 Emissions (lb/day)	Mitigated PM2.5 Emissions (lb)
Well Rework	Well Rework	Worker	Off-Site	188.00	188.00	5.03E-02	4.92E-02	1.23E-02	1.21E-02	0%	5.03E-02	4.92E-02	1.23E-02	1.21E-02
Well Rework	Well Rework	Vendor	Off-Site	13.80	13.80	3.69E-03	3.61E-03	9.06E-04	8.86E-04	0%	3.69E-03	3.61E-03	9.06E-04	8.86E-04
Well Rework	Well Rework	Hauler	Off-Site	0.00	0.00	N/A	N/A	N/A	N/A	0%	N/A	N/A	N/A	N/A
Well Rework	**Well Rework**		**Off-Site**		**Totals**	**5.40E-02**	**5.28E-02**	**1.32E-02**	**1.29E-02**		**5.40E-02**	**5.28E-02**	**1.32E-02**	**1.29E-02**

Routine Operation and Maintenance — Worker Activities

Phase	Sub-Phase	Type	On-Site / Off-Site	Total Daily VMT (mile/day)	Total VMT (mile)	Unmitigated Daily PM10 Emissions (lb/day)	Unmitigated PM10 Emissions (lb)	Unmitigated Daily PM2.5 Emissions (lb/day)	Unmitigated PM2.5 Emissions (lb)	% Reduction	Mitigated Daily PM10 Emissions (lb/day)	Mitigated PM10 Emissions (lb)	Mitigated Daily PM2.5 Emissions (lb/day)	Mitigated PM2.5 Emissions (lb)
Routine Operation and Maintenance	Worker Activities	Worker	Off-Site	697.20	191,630.40	1.86E-01	5.01E+01	4.58E-02	1.23E+01	0%	1.86E-01	5.01E+01	4.58E-02	1.23E+01
Routine Operation and Maintenance	Worker Activities	Vendor	Off-Site	0.00	0.00	N/A	N/A	N/A	N/A	0%	N/A	N/A	N/A	N/A
Routine Operation and Maintenance	Worker Activities	Hauler	Off-Site	0.00	0.00	N/A	N/A	N/A	N/A	0%	N/A	N/A	N/A	N/A
Routine Operation and Maintenance	**Worker Activities**		**Off-Site**		**Totals**	**1.86E-01**	**5.01E+01**	**4.58E-02**	**1.23E+01**		**1.86E-01**	**5.01E+01**	**4.58E-02**	**1.23E+01**

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AIR EMISSIONS CALCULATIONS - INGLEWOOD OIL FIELD SPECIFIC PLAN PROJECT
TABLE NO. **2.03**
TABLE NAME **Paved Road Emissions Calculations**

Paved Road Emissions Calculations

Calculations are based on Section 5.3 of Appendix A of the CalEEMod documentation and AP-42, Chapter 13, Section 13.2.1.

Note:
1. All VMT is calculated in the On-Road Vehicle Emissions Data table.
2. These calculations assume no reduction for the paved road (off-site) dust.

Key Assumption	CalEEMod Assumption	Assumption

						Unmitigated					Mitigated			
Phase	**Sub-Phase**	**Type**	**On-Site / Off-Site**	**Total Daily VMT (mile/day)**	**Total VMT (mile)**	**Daily PM10 Emissions (lb/day)**	**PM10 Emissions (lb)**	**Daily PM2.5 Emissions (lb/day)**	**PM2.5 Emissions (lb)**	**% Reduction**	**Daily PM10 Emissions (lb/day)**	**PM10 Emissions (lb)**	**Daily PM2.5 Emissions (lb/day)**	**PM2.5 Emissions (lb)**

PM2.5 Scaling Factor	$F_{PM2.5}$		0.00054
PM10 Scaling Factor	F_{PM10}		0.0022
Silt Loading (g/m^2)	sL		0.037
Average Weight of All Vehicles on Road (ton)	W		2.4
Annual Number of Days with Precipitation > 0.01 in.	P		33
Number of Days in "Wet Day" Averaging Period	N		365
Average PM10 Emission Factor (lb/VMT)	EF_{PM10}	$(F_{PM10} \times (sL)^{0.91} \times (W)^{1.02}) \times (1 - (P / 4 \times N))$	2.614E-04
Daily PM10 Emission Factor (lb/VMT/day)	EF_{PM10}, D	$F_{PM10} \times (sL)^{0.91} \times (W)^{1.02}$	2.675E-04
Average PM2.5 Emission Factor (lb/VMT)	$EF_{PM2.5}$	$(F_{PM2.5} \times (sL)^{0.91} \times (W)^{1.02}) \times (1 - (P / 4 \times N))$	6.417E-05
Daily PM2.5 Emission Factor (lb/VMT/day)	$EF_{PM2.5}$, D	$F_{PM2.5} \times (sL)^{0.91} \times (W)^{1.02}$	6.566E-05

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AIR EMISSIONS CALCULATIONS - INGLEWOOD OIL FIELD SPECIFIC PLAN PROJECT
TABLE NO. **2.04**
TABLE NAME **Off-Road Combustion Emissions Calculations**

Unpaved Road Emission Calculations

Calculations are based on Section 5.3 of Appendix A of the CalEEMod documentation and AP-42, Chapter 13, Section 13.2.2.

Note:
1. All VMT is calculated in the On-Road Vehicle Emissions Data table.
2. These calculations assume minimum reduction for the unpaved road (on-site) dust based on specific measures identified in the Specific Plan.

Key Assumption	CalEEMod Assumption	Assumption

						Unmitigated					Mitigated			
Phase	**Sub-Phase**	**Type**	**On-Site / Off-Site**	**Total Daily VMT (mile/day)**	**Total VMT (mile)**	**Daily PM10 Emissions (lb/day)**	**PM10 Emissions (lb)**	**Daily PM2.5 Emissions (lb/day)**	**PM2.5 Emissions (lb)**	**% Reduction**	**Daily PM10 Emissions (lb/day)**	**PM10 Emissions (lb)**	**Daily PM2.5 Emissions (lb/day)**	**PM2.5 Emissions (lb)**
Well Pad Construction	**Site Preparation**													
Well Pad Construction	Site Preparation	Worker	On-Site	10.50	52.50	2.98E+00	1.35E+01	2.98E-01	1.35E+00	0.00%	2.98E+00	1.35E+01	2.98E-01	1.35E+00
Well Pad Construction	Site Preparation	Vendor	On-Site	2.53	12.66	7.18E-01	3.27E+00	7.18E-02	3.27E-01	0.00%	7.18E-01	3.27E+00	7.18E-02	3.27E-01
Well Pad Construction	Site Preparation	Hauler	On-Site	0.00	0.00	N/A	N/A	N/A	N/A	0.00%	N/A	N/A	N/A	N/A
Well Pad Construction	**Site Preparation**		**On-Site**		**Totals**	**3.70E+00**	**1.68E+01**	**3.70E-01**	**1.68E+00**		**3.70E+00**	**1.68E+01**	**3.70E-01**	**1.68E+00**
Well Pad Construction	**Grading**													
Well Pad Construction	Grading	Worker	On-Site	10.50	42.00	2.98E+00	1.08E+01	2.98E-01	1.08E+00	0.00%	2.98E+00	1.08E+01	2.98E-01	1.08E+00
Well Pad Construction	Grading	Vendor	On-Site	2.53	10.13	7.18E-01	2.61E+00	7.18E-02	2.61E-01	0.00%	7.18E-01	2.61E+00	7.18E-02	2.61E-01
Well Pad Construction	Grading	Hauler	On-Site	0.00	0.00	N/A	N/A	N/A	N/A	0.00%	N/A	N/A	N/A	N/A
Well Pad Construction	**Grading**		**On-Site**		**Totals**	**3.70E+00**	**1.34E+01**	**3.70E-01**	**1.34E+00**		**3.70E+00**	**1.34E+01**	**3.70E-01**	**1.34E+00**
Well Drilling	**Mobilization and Setup**													
Well Drilling	Mobilization and Setup	Worker	On-Site	9.00	45.00	2.55E+00	1.16E+01	2.55E-01	1.16E+00	0.00%	2.55E+00	1.16E+01	2.55E-01	1.16E+00
Well Drilling	Mobilization and Setup	Vendor	On-Site	4.03	20.16	1.14E+00	5.20E+00	1.14E-01	5.20E-01	0.00%	1.14E+00	5.20E+00	1.14E-01	5.20E-01
Well Drilling	Mobilization and Setup	Hauler	On-Site	19.50	19.50	5.53E+00	5.03E+00	5.53E-01	5.03E-01	0.00%	5.53E+00	5.03E+00	5.53E-01	5.03E-01
Well Drilling	**Mobilization and Setup**		**On-Site**		**Totals**	**9.23E+00**	**2.18E+01**	**9.23E-01**	**2.18E+00**		**9.23E+00**	**2.18E+01**	**9.23E-01**	**2.18E+00**
Weell Drilling	**Drilling**													
Well Drilling	Drilling	Worker	On-Site	18.00	540.00	5.10E+00	1.39E+02	5.10E-01	1.39E+01	0.00%	5.10E+00	1.39E+02	5.10E-01	1.39E+01
Well Drilling	Drilling	Vendor	On-Site	5.53	165.96	1.57E+00	4.28E+01	1.57E-01	4.28E+00	0.00%	1.57E+00	4.28E+01	1.57E-01	4.28E+00
Well Drilling	Drilling	Hauler	On-Site	6.00	180.00	1.70E+00	4.64E+01	1.70E-01	4.64E+00	0.00%	1.70E+00	4.64E+01	1.70E-01	4.64E+00
Well Drilling	**Drilling**		**On-Site**		**Totals**	**8.37E+00**	**2.29E+02**	**8.37E-01**	**2.29E+01**		**8.37E+00**	**2.29E+02**	**8.37E-01**	**2.29E+01**
Well Drilling	**Demobilization**													
Well Drilling	Demobilization	Worker	On-Site	9.00	27.00	2.55E+00	6.96E+00	2.55E-01	6.96E-01	0.00%	2.55E+00	6.96E+00	2.55E-01	6.96E-01
Well Drilling	Demobilization	Vendor	On-Site	2.53	7.60	7.18E-01	1.96E+00	7.18E-02	1.96E-01	0.00%	7.18E-01	1.96E+00	7.18E-02	1.96E-01
Well Drilling	Demobilization	Hauler	On-Site	21.00	21.00	5.96E+00	5.42E+00	5.96E-01	5.42E-01	0.00%	5.96E+00	5.42E+00	5.96E-01	5.42E-01
Well Drilling	**Demobilization**		**On-Site**		**Totals**	**9.23E+00**	**1.43E+01**	**9.23E-01**	**1.43E+00**		**9.23E+00**	**1.43E+01**	**9.23E-01**	**1.43E+00**
Well Completion	**Without Hydraulic Fracturing**													
Well Completion	Without Hydraulic Fracturing	Worker	On-Site	9.00	27.00	2.55E+00	6.96E+00	2.55E-01	6.96E-01	0.00%	2.55E+00	6.96E+00	2.55E-01	6.96E-01
Well Completion	Without Hydraulic Fracturing	Vendor	On-Site	4.03	12.10	1.14E+00	3.12E+00	1.14E-01	3.12E-01	0.00%	1.14E+00	3.12E+00	1.14E-01	3.12E-01
Well Completion	Without Hydraulic Fracturing	Hauler	On-Site	1.50	4.50	4.25E-01	1.16E+00	4.25E-02	1.16E-01	0.00%	4.25E-01	1.16E+00	4.25E-02	1.16E-01
Well Completion	**Without Hydraulic Fracturing**		**On-Site**		**Totals**	**4.12E+00**	**1.12E+01**	**4.12E-01**	**1.12E+00**		**4.12E+00**	**1.12E+01**	**4.12E-01**	**1.12E+00**
Well Completion	**With Hydraulic Fracturing - Site Preparation**													
Well Completion	With Hydraulic Fracturing - Site Preparation	Worker	On-Site	10.50	52.50	2.98E+00	1.35E+01	2.98E-01	1.35E+00	0.00%	2.98E+00	1.35E+01	2.98E-01	1.35E+00
Well Completion	With Hydraulic Fracturing - Site Preparation	Vendor	On-Site	19.03	90.66	5.40E+00	2.34E+01	5.40E-01	2.34E+00	0.00%	5.40E+00	2.34E+01	5.40E-01	2.34E+00
Well Completion	With Hydraulic Fracturing - Site Preparation	Hauler	On-Site	16.50	16.50	4.68E+00	4.26E+00	4.68E-01	4.26E-01	0.00%	4.68E+00	4.26E+00	4.68E-01	4.26E-01
Well Completion	**With Hydraulic Fracturing - Site Preparation**		**On-Site**		**Totals**	**1.31E+01**	**4.12E+01**	**1.31E+00**	**4.12E+00**		**1.31E+01**	**4.12E+01**	**1.31E+00**	**4.12E+00**

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AIR EMISSIONS CALCULATIONS - INGLEWOOD OIL FIELD SPECIFIC PLAN PROJECT
TABLE NO. 2.04
TABLE NAME Off-Road Combustion Emissions Calculations

Unpaved Road Emission Calculations

Calculations are based on Section 5.3 of Appendix A of the CalEEMod documentation and AP-42, Chapter 13, Section 13.2.2.

Note:
1. All VMT is calculated in the On-Road Vehicle Emissions Data table.
2. These calculations assume minimum reduction for the unpaved road (on-site) dust based on specific measures identified in the Specific Plan.

Key Assumption	CalEEMod Assumption	Assumption

						Unmitigated					Mitigated			
Phase	**Sub-Phase**	**Type**	**On-Site / Off-Site**	**Total Daily VMT (mile/day)**	**Total VMT (mile)**	**Daily PM10 Emissions (lb/day)**	**PM10 Emissions (lb)**	**Daily PM2.5 Emissions (lb/day)**	**PM2.5 Emissions (lb)**	**% Reduction**	**Daily PM10 Emissions (lb/day)**	**PM10 Emissions (lb)**	**Daily PM2.5 Emissions (lb/day)**	**PM2.5 Emissions (lb)**
Well Completion	**With Hydraulic Fracturing - Main Activities**													
Well Completion	With Hydraulic Fracturing - Main Activities	Worker	On-Site	30.00	60.00	8.51E+00	1.55E+01	8.51E-01	1.55E+00	0.00%	8.51E+00	1.55E+01	8.51E-01	1.55E+00
Well Completion	With Hydraulic Fracturing - Main Activities	Vendor	On-Site	11.53	23.06	3.27E+00	5.95E+00	3.27E-01	5.95E-01	0.00%	3.27E+00	5.95E+00	3.27E-01	5.95E-01
Well Completion	With Hydraulic Fracturing - Main Activities	Hauler	On-Site	7.50	7.50	2.13E+00	1.93E+00	2.13E-01	1.93E-01	0.00%	2.13E+00	1.93E+00	2.13E-01	1.93E-01
Well Completion	**With Hydraulic Fracturing - Main Activities**		**On-Site**		**Totals**	**1.39E+01**	**2.34E+01**	**1.39E+00**	**2.34E+00**		**1.39E+01**	**2.34E+01**	**1.39E+00**	**2.34E+00**
Well Completion	**With Hydraulic Fracturing - Flowback**													
Well Completion	With Hydraulic Fracturing - Flowback	Worker	On-Site	10.50	147.00	2.98E+00	3.79E+01	2.98E-01	3.79E+00	0.00%	2.98E+00	3.79E+01	2.98E-01	3.79E+00
Well Completion	With Hydraulic Fracturing - Flowback	Vendor	On-Site	7.03	78.95	1.99E+00	2.04E+01	1.99E-01	2.04E+00	0.00%	1.99E+00	2.04E+01	1.99E-01	2.04E+00
Well Completion	With Hydraulic Fracturing - Flowback	Hauler	On-Site	10.50	10.50	2.98E+00	2.71E+00	2.98E-01	2.71E-01	0.00%	2.98E+00	2.71E+00	2.98E-01	2.71E-01
Well Completion	**With Hydraulic Fracturing - Flowback**		**On-Site**		**Totals**	**7.95E+00**	**6.10E+01**	**7.95E-01**	**6.10E+00**		**7.95E+00**	**6.10E+01**	**7.95E-01**	**6.10E+00**
Well Rework	**Well Rework**													
Well Rework	Well Rework	Worker	On-Site	6.00	6.00	1.70E+00	1.55E+00	1.70E-01	1.55E-01	0.00%	1.70E+00	1.55E+00	1.70E-01	1.55E-01
Well Rework	Well Rework	Vendor	On-Site	1.50	1.50	4.25E-01	3.87E-01	4.25E-02	3.87E-02	0.00%	4.25E-01	3.87E-01	4.25E-02	3.87E-02
Well Rework	Well Rework	Hauler	On-Site	0.00	0.00	N/A	N/A	N/A	N/A	0.00%	N/A	N/A	N/A	N/A
Well Rework	**Well Rework**		**On-Site**		**Totals**	**2.13E+00**	**1.93E+00**	**2.13E-01**	**1.93E-01**		**2.13E+00**	**1.93E+00**	**2.13E-01**	**1.93E-01**
Routine Operation and Maintenance	**Worker Activities**													
Routine Operation and Maintenance	Worker Activities	Worker	On-Site	6.00	2,190.00	1.70E+00	5.65E+02	1.70E-01	5.65E+01	0.00%	1.70E+00	5.65E+02	1.70E-01	5.65E+01
Routine Operation and Maintenance	Worker Activities	Vendor	On-Site	0.00	0.00	N/A	N/A	N/A	N/A	0.00%	N/A	N/A	N/A	N/A
Routine Operation and Maintenance	Worker Activities	Hauler	On-Site	0.00	0.00	N/A	N/A	N/A	N/A	0.00%	N/A	N/A	N/A	N/A
Routine Operation and Maintenance	**Worker Activities**		**On-Site**		**Totals**	**1.70E+00**	**5.65E+02**	**1.70E-01**	**5.65E+01**		**1.70E+00**	**5.65E+02**	**1.70E-01**	**5.65E+01**

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AIR EMISSIONS CALCULATIONS - INGLEWOOD OIL FIELD SPECIFIC PLAN PROJECT
TABLE NO. 2.04
TABLE NAME Off-Road Combustion Emissions Calculations

Unpaved Road Emission Calculations

Calculations are based on Section 5.3 of Appendix A of the CalEEMod documentation and AP-42, Chapter 13, Section 13.2.2.

Note:
1. All VMT is calculated in the On-Road Vehicle Emissions Data table.
2. These calculations assume minimum reduction for the unpaved road (on-site) dust based on specific measures identified in the Specific Plan.

Key Assumption	CalEEMod Assumption	Assumption

						Unmitigated					Mitigated			
Phase	Sub-Phase	Type	On-Site / Off-Site	Total Daily VMT (mile/day)	Total VMT (mile)	Daily PM10 Emissions (lb/day)	PM10 Emissions (lb)	Daily PM2.5 Emissions (lb/day)	PM2.5 Emissions (lb)	% Reduction	Daily PM10 Emissions (lb/day)	PM10 Emissions (lb)	Daily PM2.5 Emissions (lb/day)	PM2.5 Emissions (lb)

PM2.5 Scaling Factor	$F_{PM2.5}$		0.15
PM10 Scaling Factor	F_{PM10}		1.5
Exponent 1	a		0.9
Exponent 2	b		0.45
Annual Number of Days with Precipitation > 0.01 in.	P		33
Silt % (%)	s		8.5
Mean Vehicle Weight (ton)	W		10

Average PM10 Emission Factor (lb/VMT)	EF_{PM10}	$(F_{PM10} \times (s/12)^a \times (W/3)^b) \times (1 - (P / 365))$	1.720E+00
Daily PM10 Emission Factor (lb/VMT/day)	EF_{PM10}, D	$F_{PM10} \times (s/12)^a \times (W/3)^b$	1.891E+00
Average PM2.5 Emission Factor (lb/VMT)	$EF_{PM2.5}$	$(F_{PM2.5} \times (s/12)^a \times (W/3)^b) \times (1 - (P / 365))$	1.720E-01
Daily PM2.5 Emission Factor (lb/VMT/day)	$EF_{PM2.5}$, D	$F_{PM2.5} \times (s/12)^a \times (W/3)^b$	1.891E-01

Note:
1. Surface material silt content is taken as the mean value for scraper routes at construction sites from Table 13.2.2-1 of AP-42, Chapter 13, Section 13.2.2.
2. "Wet day" data is taken from Table 1 from Appendix D of the CalEEMod documentation.
3. Although there is a mix of lighter worker vehicles and heavier vendor and hauler vehicles, assumed that, on average, the mean vehicle weight is about 4x the default for paved roads (2.4 tons). This is due to the fact that in addition to the activities related to drilling there will also be continuous (24/7/365) operation-related activities that will only involve the lighter worker vehicles.
4. Reduction efficiencies are as follows:
http://www.aqmd.gov/docs/default-source/ceqa/handbook/mitigation-measures-and-control-efficiencies/fugitive-dust/fugitive-dust-table-xi-d.doc?sfvrsn=2

The specific plan requires watering active unpaved roads a minimum of 3x a day. The SCAQMD document referenced above provides default reduction efficiency for watering 2x a day. The 2x a day reduction efficiency is used.

Water 2x per day	R.E. 1		55%

The specific plan limits maximum speed on unpaved roads to no more than 15 miles per hour. The SCAQMD document referenced above provides a reduction efficiency for 25 miles per hour along with a statement that the reduction efficiency is linear with an uncontrolled speed of 45 miles per hour. The reduction efficiency below is based on a linear reduction from 45 miles per hour to 15 miles per hour.

Speed Limit (mph)	Max. Speed		15
Uncontrolled Speed Limit (mph)	Unc. Max Speed		45
Limit maximum speed to 5 miles per hour	R.E. 2	1 - Max. Speed / Unc. Max Speed	67%
Overall % Reduction	% Red.	1 - (1 - R.E. 1) x (1 - R.E. 2)	85.00%

Overall % Reduction is applied to the unmitigated emissions.

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AIR EMISSIONS CALCULATIONS - INGLEWOOD OIL FIELD SPECIFIC PLAN PROJECT	
TABLE NO.	**2.05**
TABLE NAME	**Fugitive Particulate Matter - Earthmoving Activities**

Fugitive PM Emissions

Calculations are based on Section 4.3 of Appendix A of the CalEEMod documentation.

Key Assumption	CalEEMod Assumption	Assumption

Phase	Sub-Phase	Activity	Emission Category	On-Site / Off-Site	Throughput Units	Total Daily Throughput (units/day)	Total Throughput (units)	PM10 Emission Factor (lb/units)	PM2.5 Emission Factor (lb/units)	Unmitigated: Daily PM10 Emissions (lb/day)	Unmitigated: PM10 Emissions (lb)	Unmitigated: Daily PM2.5 Emissions (lb/day)	Unmitigated: PM2.5 Emissions (lb)	% Reduction	Mitigated: Daily PM10 Emissions (lb/day)	Mitigated: PM10 Emissions (lb)	Mitigated: Daily PM2.5 Emissions (lb/day)	Mitigated: PM2.5 Emissions (lb)
Well Pad Construction	**Site Preparation**																	
Well Pad Construction	Site Preparation	Clearing and Grubbing	Bulldozing	On-Site	Operating Hours	8	40	1.11E+00	5.80E-01	3.48E+00	1.74E+01	1.81E+00	9.05E+00	0%	3.48E+00	1.74E+01	1.81E+00	9.05E+00
Well Pad Construction	**Grading**																	
Well Pad Construction	Grading	Grading and Cut/Fill	Bulldozing	On-Site	Operating Hours	2	8	1.11E+00	5.80E-01	8.69E-01	3.48E+00	4.53E-01	1.81E+00	61%	3.39E-01	1.36E+00	1.77E-01	7.06E-01
Well Pad Construction	Grading	Grading and Cut/Fill	Grading Passes	On-Site	VMT	0.086	0.344	1.54E+00	1.67E-01	5.17E-02	2.07E-01	5.58E-03	2.23E-02	61%	2.02E-02	8.07E-02	2.18E-03	8.71E-03
Well Pad Construction	Grading	Grading and Cut/Fill	Loading	On-Site	Ton	1,264.17	5,056.66	8.93E-05	1.35E-05	4.40E-02	1.76E-01	6.67E-03	2.67E-02	61%	1.72E-02	6.87E-02	2.60E-03	1.04E-02

Bulldozing

Clearing and grubbing is assumed to be approximated by the bulldozing calculation from Section 4.3 of Appendix A of the CalEEMod documentation.
Compacting that occurs during grading is also assumed to be approximated by the bulldozing calculation from Section 4.3 of Appendix A of the CalEEMod documentation.

PM2.5 Scaling Factor	$F_{PM2.5}$		0.105
PM10 Scaling Factor	F_{PM10}		0.75
Material Silt Content (%)	S		7.90
Material Moisture Content (%)	M		6.90
Arbitrary AP-42 TSP Coefficient	C_{TSP}		5.7
Arbitrary AP-42 PM15 Coefficient	C_{PM15}		1.00
PM15 Emission Factor (lb/hr)	EF_{PM15}	$C_{PM15} \times S^{1.5} / M^{1.4}$	1.49E+00
PM10 Emission Factor (lb/hr)	EF_{PM10}	$EF_{PM15} \times F_{PM10}$	1.11E+00
TSP Emission Factor (lb/hr)	EF_{TSP}	$C_{TSP} \times S^{1.2} / M^{1.3}$	5.53E+00
PM2.5 Emission Factor (lb/hr)	$EF_{PM2.5}$	$EF_{TSP} \times F_{PM2.5}$	5.80E-01
Daily Operating Hours, Site Preparation			8
Total Days, Site Preparation			5
Daily Operating Hours, Grading			2
Total Days, Grading			4

Grading Passes

Mean Vehicle Speed (mph)	S		7.1
PM2.5 Scaling Factor	$F_{PM2.5}$		0.031
PM10 Scaling Factor	F_{PM10}		0.6
PM15 Emission Factor (lb/VMT)	EF_{PM15}	$0.051 \times S^{2.0}$	2.57E+00
PM10 Emission Factor (lb/VMT)	EF_{PM10}	$EF_{PM15} \times F_{PM10}$	1.54E+00
TSP Emission Factor (lb/VMT)	EF_{TSP}	$0.04 \times S^{2.5}$	5.37E+00
PM2.5 Emission Factor (lb/VMT)	$EF_{PM2.5}$	$EF_{TSP} \times F_{PM2.5}$	1.67E-01

VMT is calculated according to CalEEMod. It is assumed that the total site acreage is graded over the course of the total days for grading.

Site Acreage	As		0.5
Vehicle Width (ft)	Wb		12
Total VMT (mile)	VMT	As / Wb x 43,560 / 5,280	0.344
Grading Days	Days, Gr		4
Grading Daily VMT	VMT, Daily	VMT / Days, Gr	0.086

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AIR EMISSIONS CALCULATIONS - INGLEWOOD OIL FIELD SPECIFIC PLAN PROJECT
TABLE NO. **2.05**
TABLE NAME **Fugitive Particulate Matter - Earthmoving Activities**

Fugitive PM Emissions

Calculations are based on Section 4.3 of Appendix A of the CalEEMod documentation.

Key Assumption	CalEEMod Assumption	Assumption

										Unmitigated					Mitigated			
Phase	**Sub-Phase**	**Activity**	**Emission Category**	**On-Site / Off-Site**	**Throughput Units**	**Total Daily Throughput (units/day)**	**Total Throughput (units)**	**PM10 Emission Factor (lb/units)**	**PM2.5 Emission Factor (lb/units)**	**Daily PM10 Emissions (lb/day)**	**PM10 Emissions (lb)**	**Daily PM2.5 Emissions (lb/day)**	**PM2.5 Emissions (lb)**	**% Reduction**	**Daily PM10 Emissions (lb/day)**	**PM10 Emissions (lb)**	**Daily PM2.5 Emissions (lb/day)**	**PM2.5 Emissions (lb)**

Loading

It is assumed that the cut/fill material, including any material bulldozed during site preparation, generates loading emissions during the grading phase. The calculation assumes two 'drop points' for the entire volume handled:
one drop point for loading the truck and one drop point for unloading the truck.

PM2.5 Scaling Factor	$F_{PM2.5}$		0.053
PM10 Scaling Factor	F_{PM10}		0.35
Mean Wind Speed (m/s)	U_{ms}		2.2
(m/s) to (mph) Conversion Factor	C1		2.2369
Mean Wind Speed (mph)	U	U_{ms} x C1	4.92118
Material Moisture Content (%)	M		12
PM10 Emission Factor (lb/ton)	EF_{PM10}	$F_{PM10} \times 0.0032 \times (U/5)^{1.3} / (M/2)^{1.4}$	8.93E-05
PM2.5 Emission Factor (lb/ton)	$EF_{PM2.5}$	$F_{PM2.5} \times 0.0032 \times (U/5)^{1.3} / (M/2)^{1.4}$	1.35E-05

Mass is calculated according to the default CalEEMod assumptions and the total volume of cut/fill material.

Volume of Cut/Fill Material (cu yd)	V		2,000
Density (ton/cu yd)	ρ		1.2641662
Number of Drop Points	n		2
Mass of Cut/Fill Material (ton)	M	V x ρ x n	5,056.66
Grading Days	Days, Gr		4
Mass of Cut/Fill Material per Day (ton/day)	M, Daily	M / Days, Gr	1,264.17

Note:

4. Reduction efficiencies are as follows:
http://www.aqmd.gov/docs/default-source/ceqa/handbook/mitigation-measures-and-control-efficiencies/fugitive-dust/fugitive-dust-table-xi-a.doc?sfvrsn=2

The specific plan requires watering actively disturbed areas at a minimum of once every 4 hours. The SCAQMD document referenced above presents a 61% reduction efficiency for watering once every 3.2 hours (3x per 8-hour day).
Assumed that watering will occur at the 3.2-hour interval specified in the specific plan.

Water 3x a day	R.E. 1	61%

R.E.1 is applied to the unmitigated emissions.

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AIR EMISSIONS CALCULATIONS - INGLEWOOD OIL FIELD SPECIFIC PLAN PROJECT
TABLE NO. **2.06**
TABLE NAME **Fugitive Gas**

Fugitive Gas Emissions

These calculations represent miscellaneous gas venting during each applicable phase/sub-phase.

Key Assumption	CalEEMod Assumption	Assumption

Phase	Sub-Phase	Activity	Emission Category	On-Site / Off-Site	Throughput Units	Total Daily Throughput (units/day)	Total Throughput (units)	Unmitigated: Daily ROG Emissions (lb/day)	Unmitigated: ROG Emissions (lb)	Unmitigated: Daily CO2 Emissions (lb/day)	Unmitigated: CO2 Emissions (lb)	Unmitigated: Daily CH4 Emissions (lb/day)	Unmitigated: CH4 Emissions (lb)	Unmitigated: Daily H2S Emissions (lb/day)	Unmitigated: H2S Emissions (lb)
Well Drilling	**Drilling**														
Well Drilling	Drilling	Mud Degassing	Venting	On-Site	Drilling Days	1	30	4.14E+00	1.24E+02	7.71E+02	2.31E+04	1.12E+01	3.37E+02	1.46E-02	4.37E-01
Routine Operation and Maintenance	**Fugitive Gas Emissions**														
Routine Operation and Maintenance	Fugitive Gas Emissions	Well Operation	Fugitive Gas	On-Site	Days	N/A	365	1.26E+00	4.60E+02	6.17E-01	2.25E+02	3.68E+00	1.34E+03	4.77E-03	1.74E+00

Phase	% Reduction	Mitigated: Daily ROG Emissions (lb/day)	Mitigated: ROG Emissions (lb)	Mitigated: Daily CO2 Emissions (lb/day)	Mitigated: CO2 Emissions (lb)	Mitigated: Daily CH4 Emissions (lb/day)	Mitigated: CH4 Emissions (lb)	Mitigated: Daily H2S Emissions (lb/day)	Mitigated: H2S Emissions (lb)
Well Drilling	0%	4.14E+00	1.24E+02	7.71E+02	2.31E+04	1.12E+01	3.37E+02	1.46E-02	4.37E-01
Routine Operation and Maintenance	0%	1.26E+00	4.60E+02	6.17E-01	2.25E+02	3.68E+00	1.34E+03	4.77E-03	1.74E+00

IOF Gas Analysis

Emission factors shown below are adjusted, as needed, for gas composition using the paragraph below Table 4.1.1 from page 196 of 701 of the document:
http://www.inglewoodoilfield.com/res/docs/baldwin_hills_community_standards_district_final_eir%20.pdf

Component #	Component	Low%	High%	Average%	MW
1	CH4	78%	86%	82%	16
2	C2H6	--	--	5%	30
3	C3H8	--	--	3%	44
4	C4H10	--	--	2%	58
5	C5H12	--	--	1%	72
6	C6H14+	1%	2%	1.50%	86
7	CO2	--	--	5%	44
8	H2S (ppm)	0	10	5	34

THC (1-mole whole gas basis)

Moles	Weight
0.82	13.12
0.05	1.5
0.03	1.32
0.02	1.16
0.01	0.72
0.015	1.29
0.945	19.11
Avg MW	20.22

ROG (1-mole whole gas basis)

Moles	Weight
--	--
--	--
0.03	1.32
0.02	1.16
0.01	0.72
0.015	1.29
0.075	4.49
Avg MW	59.87

Percent THC	%THC	CH4 + C2H6 + C3H8 + C4H10 + C5H12 + C6H14+	94.50%
Percent ROG	%ROG	C3H8 + C4H10 + C5H12 + C6H14+	7.50%

Note: 1. The referenced document shows CO2 = 3%. Adjusted upward to 5% in order for the percentages to sum to 1.

Mud Degassing

Fugitive gas emissions associated with the handling of drilling mud and cuttings are assumed to be approximated by the mud degassing calculation approach from pages 80 through 82 of the document:
http://www.theclimateregistry.org/wp-content/uploads/2014/12/Final-OGP-Protocol.pdf
The emission factors from the above document are adjusted, as needed, for gas composition using the paragraph below Table 4.1.1 from page 196 of 701 of the document:
http://www.inglewoodoilfield.com/res/docs/baldwin_hills_community_standards_district_final_eir%20.pdf

This emission factor is assumed to apply throughout the drilling operation.
Emissions are assumed to be vented to a flare in the unmitigated case.

Control Efficiency (%)	C.E.		98%
For a water-based mud:			
THC Emission Factor (lb/day)	THC EF		881.84
CH4 Emission Factor (tonnes/day)	CH4 EF (tonnes)		0.2605
Default CH4 Content (%)	CH4, Def		83.85
IOF CH4 Content (%)	CH4, IOF		82
Tonnes to lb Conversion Factor	C1		2,204.62
CH4 Emission Factor, Unc. (lb/day)	CH4 EF, Unc.	CH4 EF (tonnes) x C1 x CH4, IOF / CH4, Def	561.63
CH4 Emission Factor, Pass-Through (lb/day)	CH4 EF, P-T	CH4 EF, Unc. x (1 - C.E.)	11.23
Molar Volume @ 60 Deg F and 14.696 psia (scf/lbmol)	Std. Molar Volume		379.48
MW CH4	MW CH4		16.00
Volume sent to flare per day (scf/day)	V	CH4 EF, Unc. / MW CH4 x Std. Molar Volume	13,320.52

CO2 will have 'pass-through' emissions based on the CO2 content of the gas itself plus any other hydrocarbons that are converted to CO2 in the flare.

IOF CO2 Content (wt. per 1-mole)	CO2, IOF (wt.)		2.2
IOF CH4 Content (wt. per 1-mole)	CH4, IOF (wt.)		13.12
CO2 Emission Factor, Pass-Through (lb/day)	CO2 EF, P-T	CH4 EF x CO2, IOF (wt.) / CH4, IOF (wt.)	94.18

CO2 generated by the flare calculated using the methodology for flares from the flare section (Page 226 of 292) of the AB32 reporting guidelines:
http://www.arb.ca.gov/cc/reporting/ghg-rep/regulation/mrr-2014-unofficial-02042015.pdf

In the equation below, Yi = the % of each hydrocarbon in the gas, as shown in the IOF gas analysis above and Ri is the number of carbons in 1 molecule of each hydrocarbon.

CO2 Emission Factor, Generated (lb/day)	CO2 EF, Gen	C.E. x V / Std. Molar Volume x MW CH4 x Sum(i = 1 to 6 ; Yi x Ri)	676.99
CO2 EF (lb/day)	CO2 EF	CO2 EF, P-T + CO2 EF, Gen	771.17
IOF THC Content (wt. per 1-mole)	THC, IOF (wt.)		19.11
IOF ROG Content (wt. per 1-mole)	ROG, IOF (wt.)		4.49
ROG Emission Factor, Unc. (lb/day)	ROG EF, Unc.	THC EF x ROG, IOF / THC, IOF	207.19
ROG Emission Factor, Pass-Through (lb/day)	ROG EF	ROG EF, Unc. X (1 - C.E.)	4.14
IOF H2S Content (ppm)	H2S, IOF (ppm)		5
IOF H2S Content (%)	H2S, IOF (%)	H2S, IOF (ppm) / 1e6 x 1e2	0.0005
IOF H2S Content (wt. per 1-mole)	H2S, IOF (wt.)	H2S, IOF (%) x MW H2S	0.017
IOF CH4 Content (wt. per 1-mole)	CH4, IOF (wt.)		13.12
H2S Emission Factor, Unc. (lb/day)	H2S EF, Unc.	CH4 EF x H2S, IOF (wt.) / CH4, IOF (wt.)	0.73
H2S Emission Factor, Pass-Through (lb/day)	H2S EF	H2S EF, Unc. X (1 - C.E.)	0.01

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AIR EMISSIONS CALCULATIONS - INGLEWOOD OIL FIELD SPECIFIC PLAN PROJECT
TABLE NO. 2.06
TABLE NAME Fugitive Gas

Fugitive Gas Emissions

These calculations represent miscellaneous gas venting during each applicable phase/sub-phase.

Key Assumption	CalEEMod Assumption	Assumption

								Unmitigated									Mitigated							
Phase	Sub-Phase	Activity	Emission Category	On-Site / Off-Site	Throughput Units	Total Daily Throughput (units/day)	Total Throughput (units)	Daily ROG Emissions (lb/day)	ROG Emissions (lb)	Daily CO2 Emissions (lb/day)	CO2 Emissions (lb)	Daily CH4 Emissions (lb/day)	CH4 Emissions (lb)	Daily H2S Emissions (lb/day)	H2S Emissions (lb)	% Reduction	Daily ROG Emissions (lb/day)	ROG Emissions (lb)	Daily CO2 Emissions (lb/day)	CO2 Emissions (lb)	Daily CH4 Emissions (lb/day)	CH4 Emissions (lb)	Daily H2S Emissions (lb/day)	H2S Emissions (lb)

The parameter below is the assumed percentage of the gas that is released to the atmosphere during handling of the drilling mud and cuttings.
The daily emission factors shown above are multiplied by this adjustment factor to calculate daily emissions.

% Released	% Rel.	100%

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AIR EMISSIONS CALCULATIONS - INGLEWOOD OIL FIELD SPECIFIC PLAN PROJECT
TABLE NO. **2.06**
TABLE NAME **Fugitive Gas**

Fugitive Gas Emissions

These calculations represent miscellaneous gas venting during each applicable phase/sub-phase.

Key Assumption	CalEEMod Assumption	Assumption

								Unmitigated									Mitigated							
Phase	**Sub-Phase**	**Activity**	**Emission Category**	**On-Site / Off-Site**	**Throughput Units**	**Total Daily Throughput (units/day)**	**Total Throughput (units)**	**Daily ROG Emissions (lb/day)**	**ROG Emissions (lb)**	**Daily CO2 Emissions (lb/day)**	**CO2 Emissions (lb)**	**Daily CH4 Emissions (lb/day)**	**CH4 Emissions (lb)**	**Daily H2S Emissions (lb/day)**	**H2S Emissions (lb)**	**% Reduction**	**Daily ROG Emissions (lb/day)**	**ROG Emissions (lb)**	**Daily CO2 Emissions (lb/day)**	**CO2 Emissions (lb)**	**Daily CH4 Emissions (lb/day)**	**CH4 Emissions (lb)**	**Daily H2S Emissions (lb/day)**	**H2S Emissions (lb)**

Fugitive Gas Emissions per Well

These calculations estimate emissions from two different fugitive sources: (1) well cellars; and (2) the additional number of fugitive components (valves, flanges, etc.) per well.

Well Cellars

The default ROG emission factors for the SCAQMD's annual emission reporting program are shown below:

Well Cellars, Heavy Oil (surface area) (lb/sq. ft./year)	1.77
Well Cellars, Light Oil (surface area) (lb/sq. ft./year)	2.59

Designation of heavy or light uses the definition from SCAQMD Rule 463(b)(7):
http://www.aqmd.gov/docs/default-source/rule-book/rule-iv/rule-463.pdf?sfvrsn=4
"HEAVY CRUDE OIL means a crude oil with American Petroleum Institute (API) gravity 20 degrees or less."

Typical API gravity for the Inglewood Oil Fieldis shown in Table 4.1.1 from page 196 of 701 of the document:
http://www.inglewoodoilfield.com/res/docs/baldwin_hills_community_standards_district_final_eir%20.pdf

Low-End	18.6
High-End	21.8

The average API is right on the Light/Heavy cusp.: 20.2

To be conservative, assume that the light oil emission factor is more appropriate than the heavy oil emission factor.

Surface Area per Well (square feet)			100
Side-length for a square well of this size (feet)			10
ROG EF (lb/well/year)			259
IOF CO2 Content (wt. per 1-mole)	CO2, IOF (wt.)		2.2
IOF ROG Content (wt. per 1-mole)	ROG, IOF (wt.)		4.49
CO2 Emission Factor (lb/well/year)	CO2 EF	ROG EF x CO2, IOF (wt.) / ROG, IOF (wt.)	126.90
IOF CH4 Content (wt. per 1-mole)	CH4, IOF (wt.)		13.12
IOF ROG Content (wt. per 1-mole)	ROG, IOF (wt.)		4.49
CH4 Emission Factor (lb/well/year)	CH4 EF	ROG EF x CH4, IOF (wt.) / ROG, IOF (wt.)	756.81
IOF H2S Content (ppm)	H2S, IOF (ppm)		5
IOF H2S Content (%)	H2S, IOF (%)	H2S, IOF (ppm) / 1e6 x 1e2	0.0005
IOF H2S Content (wt. per 1-mole)	H2S, IOF (wt.)	H2S, IOF (%) x MW H2S	0.017
IOF ROG Content (wt. per 1-mole)	ROG, IOF (wt.)		4.49
H2S Emission Factor (lb/well/year)	H2S EF	ROG EF x H2S, IOF (wt.) / ROG, IOF (wt.)	0.98

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AIR EMISSIONS CALCULATIONS - INGLEWOOD OIL FIELD SPECIFIC PLAN PROJECT
TABLE NO. **2.06**
TABLE NAME **Fugitive Gas**

Fugitive Gas Emissions

These calculations represent miscellaneous gas venting during each applicable phase/sub-phase.

Key Assumption	CalEEMod Assumption	Assumption

								Unmitigated									Mitigated							
Phase	Sub-Phase	Activity	Emission Category	On-Site / Off-Site	Throughput Units	Total Daily Throughput (units/day)	Total Throughput (units)	Daily ROG Emissions (lb/day)	ROG Emissions (lb)	Daily CO2 Emissions (lb/day)	CO2 Emissions (lb)	Daily CH4 Emissions (lb/day)	CH4 Emissions (lb)	Daily H2S Emissions (lb/day)	H2S Emissions (lb)	% Reduction	Daily ROG Emissions (lb/day)	ROG Emissions (lb)	Daily CO2 Emissions (lb/day)	CO2 Emissions (lb)	Daily CH4 Emissions (lb/day)	CH4 Emissions (lb)	Daily H2S Emissions (lb/day)	H2S Emissions (lb)

Fugitive Components

This calculation uses defult component counts and emission factors to estimate daily and annual fugitive emissions.

Per well component counts are estimated from the default values in Table 1C (Page 265 of 292) from the following document:
http://www.arb.ca.gov/cc/reporting/ghg-rep/regulation/mrr-2014-unofficial-02042015.pdf
This assumes that each well adds 1 wellhead and 2 headers.

As an order-of-magnitude estimate, each component type is assumed to leak at a rate equal to 1% of the maximum annual component hours for each component type.

THC emission factors are for gas/light liquid service from Table IV-2c (Page 11 of 20) from the following document:
http://www.aqmd.gov/docs/default-source/planning/annual-emission-reporting/guidelreportvocemiscomleaks.pdf?sfvrsn=9

Major Equipment	Number of Major	Valves per	Flanges per	Connectors per	Other Components per
Wellhead	1	5	10	4	1
Header	2	5	10	4	0
	Totals	15	30	12	1
	Maximum Annual Component Hours	131,400	262,800	105,120	8,760
	Assumed Leak Rate (%)	1%	1%	1%	1%
	Annual Leak Hours	1,314	2,628	1,052	88
	Annual Non-Leak Hours	130,086	260,172	104,068	8,672
	Leak Emission Factor (lb THC/hr-source)	3.00E-01	1.30E-01	5.70E-02	3.00E-01
	Leak Emissions (lb THC/yr)	3.94E+02	3.42E+02	6.00E+01	2.64E+01
	Non-Leak Emission Factor (lb THC/hr-source)	7.70E-05	6.20E-05	2.60E-05	3.20E-04
	Non-Leak Emissions (lb THC/yr)	1.00E+01	1.61E+01	2.71E+00	2.78E+00
THC Emissions (lb/yr/well)				8.54E+02	
IOF ROG Content (wt. per 1-mole)		ROG, IOF (wt.)		4.49	
IOF THC Content (wt. per 1-mole)		THC, IOF (wt.)		19.11	
ROG Emission Factor (lb/well/year)		ROG EF	THC Emissions x ROG, IOF (wt.) / THC, IOF (wt.)	200.61	
IOF CO2 Content (wt. per 1-mole)		CO2, IOF (wt.)		2.2	
IOF THC Content (wt. per 1-mole)		THC, IOF (wt.)		19.11	
CO2 Emission Factor (lb/well/year)		CO2 EF	THC Emissions x CO2, IOF (wt.) / THC, IOF (wt.)	98.30	
IOF CH4 Content (wt. per 1-mole)		CH4, IOF (wt.)		13.12	
IOF THC Content (wt. per 1-mole)		THC, IOF (wt.)		19.11	
CH4 Emission Factor (lb/well/year)		CH4 EF	THC Emissions x CH4, IOF (wt.) / THC, IOF (wt.)	586.20	
IOF H2S Content (ppm)		H2S, IOF (ppm)		5	
IOF H2S Content (%)		H2S, IOF (%)	H2S, IOF (ppm) / 1e6 x 1e2	0.0005	
IOF H2S Content (wt. per 1-mole)		H2S, IOF (wt.)	H2S, IOF (%) x MW H2S	0.017	
IOF THC Content (wt. per 1-mole)		THC, IOF (wt.)		19.11	
H2S Emission Factor (lb/well/year)		H2S EF	ROG EF x H2S, IOF (wt.) / ROG, IOF (wt.)	0.76	

AIR EMISSIONS CALCULATIONS - INGLEWOOD OIL FIELD SPECIFIC PLAN PROJECT
TABLE NO. 2.07
TABLE NAME Flaring

These calculations represent the emissions associated with the flaring of gas released during the drilling process.

Phase	Sub-Phase	Type	On-Site / Off-Site	Description	Throughput Units	Daily 'Throughput' Parameter	Total 'Throughput' Parameter	CO (lb/TP)	CO (lb/day)	CO (lb)	NOX (lb/TP)	NOX (lb/day)	NOX (lb)	SO2 (lb/TP)	SO2 (lb/day)	SO2 (lb)	PM10 (lb/TP)	PM10 (lb/day)	PM10 (lb)	PM2.5 (lb/TP)	PM2.5 (lb/day)	PM2.5 (lb)
Well Drilling	**Drilling**																					
Well Drilling	Drilling	Flaring	On-Site	Flaring of emissions released during mud degassing	scf	13,320.52	399,615.59	4.57E-04	6.09E+00	1.83E+02	8.40E-05	1.12E+00	3.36E+01	1.07E-04	1.43E+00	4.28E+01	2.10E-05	2.80E-01	8.39E+00	2.10E-05	2.80E-01	8.39E+00

Flaring

Higher heating value for the gas sent to the flare during drilling is the value from Page 244 of 292 from:
http://www.arb.ca.gov/cc/reporting/ghg-rep/regulation/mrr-2014-unofficial-02042015.pdf

Higher Heating Value (mmBtu/scf)	HHV		1.235E-03

Flaring emission factors are from the Vent Gas section of Attachment B of SCAQMD Rule 1118:
http://www.aqmd.gov/docs/default-source/rule-book/reg-xi/rule-1118.pdf?sfvrsn=4

NOx EF (lb/mmBtu)	NOx EF, mmBtu		0.068
NOx EF (lb/scf)	NOx EF	NOx EF, mmBtu x HHV	8.398E-05
CO EF (lb/mmBtu)	CO EF, mmBtu		0.37
CO EF (lb/scf)	CO EF	CO EF, mmBtu x HHV	4.570E-04

PM is assumed to be equal to PM10 and PM2.5

PM EF (lb/mmscf)	PM EF, mmscf		21
PM EF (lb/scf)	PM EF	PM EF, mmscf / 1e6	2.10E-05

SO2 emissions are based on the fraction of H2S that is converted to SO2 in the flare:

Control Efficiency	C.E.		98%
H2S Emission Factor, Unc. (lb/day)	H2S EF, Unc.	(see Fugitive Gas calculations)	0.73
Daily Volume Vented to Flare (scf/day)	V	(see Fugitive Gas calculations)	13,320.52
H2S Converted to SO2 (lb/day)	H2S Conv.	H2S EF, Unc.x C.E.	0.71
SO2 Generated (lb/day)	SO2 Gen.	H2S Conv. X 64 / 32	1.43
SO2 EF (lb/scf)	SO2 EF	SO2 Gen. / V	1.07E-04

APPENDIX B – HEALTH RISK ASSESSMENT

Air Dispersion Modeling Summary:

- Air Dispersion Model
- Source Description
- Modeled Emission Rates
- Meteorological Data
- Urban and Rural Dispersion Options
- Modeling Options
- Terrain
- Modeling Grid
- Receptor Overview
- Equipment Operating Scenarios:
- Results

Health Risk Assessment Summary:

- Health Risk Assessment Program
- Program Options and Defaults Settings
- Results
    - Maximum Individual Cancer Risk
    - Chronic Hazard Index
    - Acute Hazard Index
    - Cancer Burden

Appendix B – Health Risk Assessment

Air Dispersion Modeling Summary

Air Dispersion Model:

The AERMOD air dispersion model was utilized for the HRA. AERMOD is a steady-state plume dispersion model that incorporates air dispersion calculations based on planetary boundary layer turbulence structure and scaling concepts. AERMOD includes the treatment of both surface and elevated sources, and both simple and complex terrain. AERMOD, like most dispersion models, uses mathematical formulations to characterize the atmospheric processes that disperse pollutants emitted by a source. Using emission rates, exhaust parameters, terrain characteristics, and meteorological inputs, AERMOD calculates down-wind pollutant concentrations at specified receptor locations. The results are then used with health risk calculation programs such as the Hotspots Analysis and Reporting Program (HARP) to obtain final health risk values. AERMOD is recommended by both the USEPA and SCAQMD for stationary source air dispersion modeling and health risk assessment projects.

Source Description:

AERMOD was run with a single polygon area source that was used to represent the area in which emissions could potentially be emitted. The polygon area source encompassed the majority of the project area and included the 400’ setback requirement, except along the southern boundary. The polygon area source extended to the edge of the southern boundary with no setback since the contiguous property is under the control of the same oil field operator.

Modeled Emission Rates:

AERMOD was run with an emission rate of 1.0 gram/second for all pollutants resulting in down-wind pollutant concentrations that are unitized and can be multiplied by the actual pollutant emission rate (in grams/second) to obtain the final pollutant concentration values.

Meteorological Data:

AERMOD-specific meteorological data files for West Los Angeles, California were used by AERMOD and were assumed to be representative of the project area. Specifically, years 2005, 06, 08, 09, and 11 were included. All meteorological data used was supplied by SCAQMD staff in a preprocessed format suitable for use in AERMOD.

Urban and Rural Dispersion Options (SCAQMD Version)

Since urban areas typically have considerably more surface roughness as well as structures and surfaces that absorb heat, atmospheric dispersion can be somewhat different compared to rural areas. However, the SCAQMD generally requires the use of the urban dispersion option. For this project, the urban dispersion option was used along with the SCAQMD-recommended population assumption of 9,862,049 for Los Angeles County, California.

Modeling Options:

The modeling included the use of all standard regulatory default options including the use of elevated terrain.

Terrain:

The terrain in the vicinity of the project site is generally hilly with various elevation changes. The elevation of the facility is approximately 300' above sea level. Digital elevation model (DEM) data was imported into AERMOD and elevated terrain features were evaluated.

Modeling Grid:

The receptor grid used for this analysis consisted of one uniform Cartesian coordinate system in combination with appropriate fenceline receptors. The grid size was 2 km x 2 km with 100-meter spacing. The fenceline included intermediate receptors at 50 m spacing.

Receptor Overview:

The acute analysis utilized a grid that included all receptors where the public may have access. The chronic and cancer analysis utilized a grid that included only known receptors such as schools, residences, and workplaces. Receptors that were located on the adjacent Freeport-McMoRan property were omitted from the receptor grid.

Equipment Operating Scenarios:

The air dispersion modeling evaluated the equipment in normal operating modes.

Results:

As previously noted, AERMOD was executed with an emission rate of 1.0 gram/second for all pollutants resulting in down-wind pollutant concentrations that are unitized and can be multiplied by the actual pollutant emission rate (in grams/second) in HARP to obtain the final pollutant concentration values.

The AERMOD input parameters are summarized below in Table B-1.

Table B-1: Emission Sources and Release Parameters

Parameter	Value	Units
Source Type:	Polygon Area Source	-
No. of Vertices:	14	-
Coordinates:	372316.23	UTME
	3764653.22	UTMN
Base Elevation:	299.6	Feet
Release Height:	15	Feet
Emission Rate:	1.0	grams/second
Emission Rate:	0.000006	grams/second-m^2
Initial Vertical Dimension:	3.49	Feet

Health Risk Impact Assessment Summary

Health Risk Assessment Program:

The health risk assessment process involves a number of steps, which aim at estimating the extent of cancer and non-cancer health effects associated with TAC emissions on both a population and specific receptor basis. The four major components of a HRA include:

- Hazard Identification
- Dose-Response Assessment
- Exposure Assessment
- Risk Characterization

Hazard identification generally involves the determination of potential health effects, which may be associated with an emitted pollutant. Dose-response assessment is the process of characterizing the relationship between the exposure to a substance or emitted pollutant and the incidence of an adverse health effect in an exposed population. These two risk assessment components are generally performed by regulatory health agencies such as California's Air Resources Board (CARB) and the Office of Environmental Health Hazard Assessment (OEHHA). These agencies provide hazard identification and dose-response assessment information to air district regulators and other government agencies, consultants and engineers, and the public.

The purpose of the exposure assessment is to estimate the extent of public exposure to a substance for which cancer risk will be quantified and non-cancer effects evaluated. This involves emissions quantification, modeling of environmental transport, evaluation of environmental fate, identification of exposure routes, identification of exposed population, and estimations of short-term (acute) and long-term (chronic) exposure levels. Risk characterization, which is the final step in the risk assessment process, is the integration of the health effects and the public exposure information developed for emitted pollutants.

The exposure assessment and risk characterization calculations were performed by the Hotspots Analysis and Reporting Program (HARP), Version 2. HARP is distributed by CARB and is intended to facilitate the completion of health risk assessments for TAC. The HARP model is a multiple pollutant, multiple pathway health risk program that utilizes the calculation procedures set forth in CARB/California Air Pollution Control Officers Association (CAPCOA) guidelines.

Program Options and Default Settings:

The HARP program options and default setting used for this analysis are summarized in Table B-2.

Table B-2: Health Risk Model Parameters

Parameter	Description
HARP Version:	HARP2 (dated 15197)
GLC Data Source:	AERMOD Plot Files
Exposure Duration:	30 Years for Operational Phase 11 Years for Construction phase
Analysis Method:	Derived OEHHA method.
Health Effects:	Cancer, Chronic, Acute
Site Parameters:	N/A
Deposition Rate:	N/A

Results:

Results of the health risk assessment are summarized below in Table B-3. A detailed discussion of the results is provided below.

Maximum Individual Cancer Risk:

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 receptor. For this analysis, the MICR for the worst-case residential/sensitive receptor is 14.3 in-one-million (1.43E-05).

Chronic Hazard Index:

Chronic Hazard Index (HIC) is the sum of the individual substance chronic hazard indices for all TACs affecting the same target organ system because some TACs increase non-cancer health risk due to long-term (chronic) exposures. For this analysis, the HIC for the worst-case residential/sensitive receptor is 0.0124 (1.24E-02).

Acute Hazard Index:

Acute Hazard Index (HIA) is the sum of the individual substance acute hazard indices for all TACs affecting the same target organ system because some TACs increase non-cancer health risk due to short-term (acute) exposures. Acute risk can be calculated at the nearest receptor at any point at or beyond the fence line for exposure duration of 1 hour. For this analysis, the HIA for the worst-case receptor is 0.0122 (1.22E-02).

Cancer Burden:

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-one-million (1.0E-06) 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 the emissions source to the one in one million receptor. In this case that distance was 707 meters with a calculated zone of impact area of 1.57 km^2 and an assumed worst-case SCAQMD-default population density of 7,000 persons per km^2. Using these parameters, the calculated cancer burden for the project is 0.2.

Table B-3: Health Risk Results

Parameter	Results
MICR (Residential/Sensitive Receptor):	1.43E-05
HIC (Residential/Sensitive Receptor):	1.27E-02
MICR (Worker Receptor):	7.13E-07
HIC (Worker Receptor):	1.27E-02
HIA (Point of Maximum Impact):	1.23E-02
Cancer Burden:	0.2

Notes:

1) Maximum individual cancer risk (MICR) represents potential cancer risk at the nearest known off-site receptor.
2) Chronic hazard index (HIC) represents potential chronic risk at the nearest known off-site receptor.
3) Acute hazard index (HIC) represents potential chronic risk at the nearest known off-site receptor.

APPENDIX C – MODELING AND HEALTH RISK ASSESSMENT OUTPUT FILES

AERMOD Dispersion Modeling Output Files:

- Psomas_IOF_Cancer_Burden_Analysis
- Psomas_IOF_Chronic_Cancer_HRA
- Psomas_IOF_Acute_HRA
- Psomas_IOF_Odor_Analysis

Health Risk Assessment Output Files:

- Psomas - construction_cancer_chronic
- Psomas - construction_cancer_burden
- Psomas - construction_8hrchronic
- Psomas - construction_acute
- Psomas - construction_worker
- Psomas - operational_cancer_chronic
- Psomas - operational_8hrchronic
- Psomas - operational_acute
- Psomas - operational_worker

```
** Lakes Environmental AERMOD MPI
**
****************************************
**
** AERMOD Input Produced by:
** AERMOD View Ver. 9.0.0
** Lakes Environmental Software Inc.
** Date: 11/24/2015
** File: C:\Lakes\AERMOD View\Projects\Psomas_IOF_Cancer_Burden_Analysis\Psomas_IOF_Cancer_Burden_Analysis.ADI
**
****************************************
**
**
****************************************
** AERMOD Control Pathway
****************************************
**
**
CO STARTING
   TITLEONE Inglewood Oil Field HRA
   TITLETWO Cancer Burden Analysis
   MODELOPT DFAULT CONC
   AVERTIME 1 PERIOD
   URBANOPT 9862049
   POLLUTID TACS
   RUNORNOT RUN
   ERRORFIL Psomas_IOF_Cancer_Burden_Analysis.err
CO FINISHED
**
****************************************
** AERMOD Source Pathway
****************************************
**
**
SO STARTING
** Source Location **
** Source ID - Type - X Coord. - Y Coord. **
   LOCATION PAREA1       AREAPOLY   372316.231  3764653.222       91.320
** Source Parameters **
   SRCPARAM PAREA1       6.357E-06     4.572        14     1.064
```

```
   AREAVERT PAREA1       372316.231 3764653.222 372475.937 3764555.975
   AREAVERT PAREA1       372510.725 3764477.703 372513.888 3764467.424
   AREAVERT PAREA1       372747.913 3764462.681 372747.913 3764450.821
   AREAVERT PAREA1       372925.014 3764450.031 372935.292 3764449.240
   AREAVERT PAREA1       372993.008 3764536.209 373034.121 3764537.000
   AREAVERT PAREA1       373086.302 3764329.855 372653.038 3764322.739
   AREAVERT PAREA1       372623.785 3764282.417 372140.711 3764416.034
   URBANSRC ALL
   SRCGROUP PAREA1   PAREA1
SO FINISHED
**
****************************************
** AERMOD Receptor Pathway
****************************************
**
**
RE STARTING
   INCLUDED Psomas_IOF_Cancer_Burden_Analysis.rou
RE FINISHED
**
****************************************
** AERMOD Meteorology Pathway
****************************************
**
**
ME STARTING
   SURFFILE wsla8.sfc
   PROFFILE wsla8.PFL
   SURFDATA 0 2008
   UAIRDATA 3190 2008
   SITEDATA 99999 2008
   PROFBASE 10.0 METERS
ME FINISHED
**
****************************************
** AERMOD Output Pathway
****************************************
**
**
OU STARTING
```

```
   RECTABLE ALLAVE 1ST
   RECTABLE 1 1ST
** Auto-Generated Plotfiles
   PLOTFILE 1 PAREA1 1ST PSOMAS_IOF_CANCER_BURDEN_ANALYSIS.AD\01H1G001.PLT 31
   PLOTFILE PERIOD PAREA1 PSOMAS_IOF_CANCER_BURDEN_ANALYSIS.AD\PE00G000.PLT 32
   SUMMFILE Psomas_IOF_Cancer_Burden_Analysis.sum
OU FINISHED

 *********************************
 *** SETUP Finishes Successfully ***
 *********************************

↑ *** AERMOD - VERSION  15181 ***   *** Inglewood Oil Field HRA                                           ***
11/24/15
 *** AERMET - VERSION  14134 ***   *** Cancer Burden Analysis                                            ***
10:33:11
                                                                                                                   PAGE
 1
 **MODELOPTs:   RegDFAULT CONC      ELEV      URBAN

                                               ***     MODEL SETUP OPTIONS SUMMARY       ***
 - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - -
-

 **Model Is Setup For Calculation of Average CONCentration Values.

   --  DEPOSITION LOGIC  --
 **NO GAS DEPOSITION Data Provided.
 **NO PARTICLE DEPOSITION Data Provided.
 **Model Uses NO DRY DEPLETION.  DRYDPLT  =  F
 **Model Uses NO WET DEPLETION.  WETDPLT  =  F

 **Model Uses URBAN Dispersion Algorithm for the SBL for     1 Source(s),
   for Total of    1 Urban Area(s):
   Urban Population =   9862049.0 ;  Urban Roughness Length =  1.000 m

 **Model Uses Regulatory DEFAULT Options:
         1. Stack-tip Downwash.
         2. Model Accounts for ELEVated Terrain Effects.
         3. Use Calms Processing Routine.
```

```
        4. Use Missing Data Processing Routine.
        5. No Exponential Decay.
        6. Urban Roughness Length of 1.0 Meter Assumed.

**Other Options Specified:
        TEMP_Sub - Meteorological data includes TEMP substitutions

**Model Assumes No FLAGPOLE Receptor Heights.

**The User Specified a Pollutant Type of:  TACS

**Model Calculates  1 Short Term Average(s) of:   1-HR
    and Calculates PERIOD Averages

**This Run Includes:      1 Source(s);       1 Source Group(s); and     441 Receptor(s)

               with:      0 POINT(s), including
                          0 POINTCAP(s) and      0 POINTHOR(s)
                and:      0 VOLUME source(s)
                and:      1 AREA type source(s)
                and:      0 LINE source(s)
                and:      0 OPENPIT source(s)


**Model Set To Continue RUNning After the Setup Testing.

**The AERMET Input Meteorological Data Version Date:  14134

**Output Options Selected:
         Model Outputs Tables of PERIOD Averages by Receptor
         Model Outputs Tables of Highest Short Term Values by Receptor (RECTABLE Keyword)
         Model Outputs External File(s) of High Values for Plotting (PLOTFILE Keyword)
         Model Outputs Separate Summary File of High Ranked Values (SUMMFILE Keyword)

**NOTE:  The Following Flags May Appear Following CONC Values:  c for Calm Hours
                                                                m for Missing Hours
                                                                b for Both Calm and Missing Hours

**Misc. Inputs:  Base Elev. for Pot. Temp. Profile (m MSL) =    10.00 ;  Decay Coef. =    0.000     ;  Rot. Angle =     0.0
                 Emission Units = GRAMS/SEC                                ;  Emission Rate Unit Factor =   0.10000E+07
```

Psomas_IOF_Cancer_Burden_Analysis
Output Units = MICROGRAMS/M**3

**Approximate Storage Requirements of Model = 3.6 MB of RAM.

**Detailed Error/Message File: Psomas_IOF_Cancer_Burden_Analysis.err

**File for Summary of Results: Psomas_IOF_Cancer_Burden_Analysis.sum

*** AREAPOLY SOURCE DATA ***

SOURCE ID	NUMBER PART. CATS.	EMISSION RATE (GRAMS/SEC /METER**2)	LOCATION OF AREA X (METERS)	LOCATION OF AREA Y (METERS)	BASE ELEV. (METERS)	RELEASE HEIGHT (METERS)	NUMBER OF VERTS.	INIT. SZ (METERS)	URBAN SOURCE	EMISSION RATE SCALAR VARY BY
PAREA1	0	0.63570E-05	372316.2	3764653.2	91.3	4.57	14	1.06	YES	

*** SOURCE IDs DEFINING SOURCE GROUPS ***

SRCGROUP ID SOURCE IDs
----------- ----------

```
  PAREA1     PAREA1      ,
↑ *** AERMOD - VERSION  15181 ***   *** Inglewood Oil Field HRA                                        ***
11/24/15
 *** AERMET - VERSION  14134 ***   *** Cancer Burden Analysis                                          ***
10:33:11
                                                                                                            PAGE
 4
 **MODELOPTs:   RegDFAULT CONC      ELEV      URBAN


                                              *** SOURCE IDs DEFINED AS URBAN SOURCES ***

  URBAN ID   URBAN POP                                  SOURCE IDs
  --------   ---------                                  ----------


             9862049.   PAREA1      ,
↑ *** AERMOD - VERSION  15181 ***   *** Inglewood Oil Field HRA                                        ***
11/24/15
 *** AERMET - VERSION  14134 ***   *** Cancer Burden Analysis                                          ***
10:33:11
                                                                                                            PAGE
 5
 **MODELOPTs:   RegDFAULT CONC      ELEV      URBAN

                                                *** DISCRETE CARTESIAN RECEPTORS ***
                                              (X-COORD, Y-COORD, ZELEV, ZHILL, ZFLAG)
                                                            (METERS)

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0.0);
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0.0);
     ( 371716.2, 3763653.2,      21.2,     126.5,       0.0);        ( 371816.2, 3763653.2,      25.8,     126.5,
0.0);
     ( 371916.2, 3763653.2,      31.7,     126.5,       0.0);        ( 372016.2, 3763653.2,      39.2,     126.5,
0.0);
     ( 372116.2, 3763653.2,      47.8,     125.0,       0.0);        ( 372216.2, 3763653.2,      61.9,     125.0,
0.0);
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(373116.2, 3763653.2, 89.0, 123.7, 0.0); (373216.2, 3763653.2, 96.8, 96.8, 0.0);
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(371816.2, 3763753.2, 25.0, 126.5, 0.0); (371916.2, 3763753.2, 30.2, 126.5, 0.0);
(372016.2, 3763753.2, 35.3, 126.5, 0.0); (372116.2, 3763753.2, 45.5, 126.5, 0.0);
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(372416.2, 3763753.2, 112.8, 125.0, 0.0); (372516.2, 3763753.2, 110.4, 125.0, 0.0);
(372616.2, 3763753.2, 112.2, 117.2, 0.0); (372716.2, 3763753.2, 120.4, 123.7, 0.0);
(372816.2, 3763753.2, 116.7, 123.4, 0.0); (372916.2, 3763753.2, 104.5, 123.7, 0.0);
(373016.2, 3763753.2, 93.2, 123.7, 0.0); (373116.2, 3763753.2, 82.4, 123.7, 0.0);
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(371516.2, 3763853.2, 17.7, 126.5, 0.0); (371616.2, 3763853.2, 20.5, 126.5, 0.0);
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(371916.2, 3763853.2, 28.7, 126.5, 0.0); (372016.2, 3763853.2, 35.1, 126.5, 0.0);

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0.0);
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0.0);
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0.0);
     ( 372716.2, 3763853.2,     120.8,     120.8,       0.0);         ( 372816.2, 3763853.2,     112.4,     120.7,
0.0);
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0.0);
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0.0);
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0.0);
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0.0);
     ( 371616.2, 3763953.2,      21.8,     126.5,       0.0);         ( 371716.2, 3763953.2,      23.6,     126.5,
0.0);
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0.0);
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0.0);
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0.0);
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0.0);
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0.0);
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0.0);
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0.0);
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0.0);
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0.0);
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0.0);
     ( 371716.2, 3764053.2,      22.9,     129.3,       0.0);         ( 371816.2, 3764053.2,      27.6,     129.3,
0.0);
```

**MODELOPTs: RegDFAULT CONC   ELEV   URBAN

*** DISCRETE CARTESIAN RECEPTORS ***
(X-COORD, Y-COORD, ZELEV, ZHILL, ZFLAG)
(METERS)

```
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0.0);
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0.0);
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0.0);
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0.0);
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0.0);
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0.0);
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0.0);
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0.0);
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0.0);
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0.0);
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0.0);
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0.0);
     ( 372416.2, 3764153.2,     103.0,     125.3,       0.0);         ( 372516.2, 3764153.2,      99.5,     125.3,
0.0);
```

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0.0);
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0.0);
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0.0);
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0.0);
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0.0);
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0.0);
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0.0);
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0.0);
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0.0);
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0.0);
    ( 372716.2, 3764253.2,     112.2,     124.5,       0.0);         ( 372816.2, 3764253.2,      93.1,     125.3,
0.0);
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0.0);
    ( 373116.2, 3764253.2,      76.7,     120.9,       0.0);         ( 373216.2, 3764253.2,      69.8,     130.5,
0.0);
    ( 373316.2, 3764253.2,      69.5,     130.5,       0.0);         ( 371316.2, 3764353.2,      19.9,      19.9,
0.0);
    ( 371416.2, 3764353.2,      19.6,     126.5,       0.0);         ( 371516.2, 3764353.2,      11.8,     129.3,
0.0);
    ( 371616.2, 3764353.2,      22.4,     129.3,       0.0);         ( 371716.2, 3764353.2,      24.2,     129.3,
0.0);
    ( 371816.2, 3764353.2,      29.0,     129.3,       0.0);         ( 371916.2, 3764353.2,      34.7,     129.3,
0.0);
    ( 372016.2, 3764353.2,      46.6,     129.3,       0.0);         ( 372116.2, 3764353.2,      75.8,     126.5,
0.0);
    ( 372216.2, 3764353.2,     100.3,     126.5,       0.0);         ( 372316.2, 3764353.2,     111.2,     126.5,
0.0);
```

```
    ( 372416.2, 3764353.2,     122.8,     122.8,       0.0);         ( 372516.2, 3764353.2,     123.6,     123.6,
0.0);
    ( 372616.2, 3764353.2,     112.7,     125.3,       0.0);         ( 372716.2, 3764353.2,     103.0,     125.3,
0.0);
    ( 372816.2, 3764353.2,      86.1,     125.3,       0.0);         ( 372916.2, 3764353.2,      77.0,     125.3,
0.0);
    ( 373016.2, 3764353.2,      79.8,     124.5,       0.0);         ( 373116.2, 3764353.2,      72.3,     130.5,
0.0);
    ( 373216.2, 3764353.2,      67.4,     130.5,       0.0);         ( 373316.2, 3764353.2,      71.8,     130.5,
0.0);
    ( 371316.2, 3764453.2,      20.4,      20.4,       0.0);         ( 371416.2, 3764453.2,      19.9,     129.3,
0.0);
    ( 371516.2, 3764453.2,      10.1,     129.3,       0.0);         ( 371616.2, 3764453.2,      22.8,     129.3,
0.0);
    ( 371716.2, 3764453.2,      24.4,     129.3,       0.0);         ( 371816.2, 3764453.2,      29.4,     129.3,
0.0);
    ( 371916.2, 3764453.2,      34.9,     129.3,       0.0);         ( 372016.2, 3764453.2,      46.1,     129.3,
0.0);
    ( 372116.2, 3764453.2,      80.0,     129.3,       0.0);         ( 372216.2, 3764453.2,     102.0,     126.5,
0.0);
    ( 372316.2, 3764453.2,     113.1,     126.5,       0.0);         ( 372416.2, 3764453.2,     110.5,     126.5,
0.0);
↑ *** AERMOD - VERSION  15181 ***   *** Inglewood Oil Field HRA                                                ***
11/24/15
 *** AERMET - VERSION  14134 ***   *** Cancer Burden Analysis                                                 ***
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                                                                                                                    PAGE
 7
 **MODELOPTs:   RegDFAULT CONC      ELEV      URBAN

                                               *** DISCRETE CARTESIAN RECEPTORS ***
                                             (X-COORD, Y-COORD, ZELEV, ZHILL, ZFLAG)
                                                              (METERS)

    ( 372516.2, 3764453.2,     116.0,     124.4,       0.0);         ( 372616.2, 3764453.2,     101.8,     126.5,
0.0);
    ( 372716.2, 3764453.2,      96.2,     125.3,       0.0);         ( 372816.2, 3764453.2,      87.1,     125.3,
0.0);
    ( 372916.2, 3764453.2,      80.5,     125.3,       0.0);         ( 373016.2, 3764453.2,      65.4,     130.5,
0.0);
```

    (373116.2, 3764453.2,   66.0,   130.5,   0.0);   (373216.2, 3764453.2,   72.9,   130.5,
0.0);
    (373316.2, 3764453.2,   79.4,   130.5,   0.0);   (371316.2, 3764553.2,   21.4,   21.4,
0.0);
    (371416.2, 3764553.2,   21.0,   129.3,   0.0);   (371516.2, 3764553.2,   16.3,   129.3,
0.0);
    (371616.2, 3764553.2,   22.6,   129.3,   0.0);   (371716.2, 3764553.2,   25.8,   129.3,
0.0);
    (371816.2, 3764553.2,   31.5,   129.3,   0.0);   (371916.2, 3764553.2,   36.8,   129.3,
0.0);
    (372016.2, 3764553.2,   48.6,   129.3,   0.0);   (372116.2, 3764553.2,   72.4,   129.3,
0.0);
    (372216.2, 3764553.2,   67.8,   129.3,   0.0);   (372316.2, 3764553.2,   86.7,   129.3,
0.0);
    (372416.2, 3764553.2,   102.0,   129.3,   0.0);   (372516.2, 3764553.2,   118.0,   119.6,
0.0);
    (372616.2, 3764553.2,   111.6,   114.7,   0.0);   (372716.2, 3764553.2,   99.1,   124.4,
0.0);
    (372816.2, 3764553.2,   77.5,   129.3,   0.0);   (372916.2, 3764553.2,   72.2,   130.5,
0.0);
    (373016.2, 3764553.2,   65.5,   130.5,   0.0);   (373116.2, 3764553.2,   61.1,   130.5,
0.0);
    (373216.2, 3764553.2,   83.3,   130.5,   0.0);   (373316.2, 3764553.2,   88.4,   130.5,
0.0);
    (371316.2, 3764653.2,   22.2,   22.2,   0.0);   (371416.2, 3764653.2,   22.3,   129.3,
0.0);
    (371516.2, 3764653.2,   21.8,   129.3,   0.0);   (371616.2, 3764653.2,   19.0,   129.3,
0.0);
    (371716.2, 3764653.2,   27.6,   129.3,   0.0);   (371816.2, 3764653.2,   30.0,   129.3,
0.0);
    (371916.2, 3764653.2,   40.6,   129.3,   0.0);   (372016.2, 3764653.2,   56.3,   129.3,
0.0);
    (372116.2, 3764653.2,   65.8,   129.3,   0.0);   (372216.2, 3764653.2,   80.7,   129.3,
0.0);
    (372316.2, 3764653.2,   91.3,   129.3,   0.0);   (372416.2, 3764653.2,   115.9,   124.6,
0.0);
    (372516.2, 3764653.2,   110.1,   129.3,   0.0);   (372616.2, 3764653.2,   91.8,   129.3,
0.0);
    (372716.2, 3764653.2,   95.2,   129.3,   0.0);   (372816.2, 3764653.2,   75.5,   129.3,
0.0);

(372916.2, 3764653.2,   66.8,   130.5,   0.0);   (373016.2, 3764653.2,   60.2,   130.5,
0.0);
(373116.2, 3764653.2,   62.8,   130.5,   0.0);   (373216.2, 3764653.2,   76.0,   130.5,
0.0);
(373316.2, 3764653.2,   100.6,   130.5,   0.0);   (371316.2, 3764753.2,   22.8,   22.8,
0.0);
(371416.2, 3764753.2,   22.6,   129.3,   0.0);   (371516.2, 3764753.2,   21.1,   129.3,
0.0);
(371616.2, 3764753.2,   11.8,   129.3,   0.0);   (371716.2, 3764753.2,   26.7,   129.3,
0.0);
(371816.2, 3764753.2,   28.7,   129.3,   0.0);   (371916.2, 3764753.2,   46.3,   129.3,
0.0);
(372016.2, 3764753.2,   68.6,   129.3,   0.0);   (372116.2, 3764753.2,   66.1,   129.3,
0.0);
(372216.2, 3764753.2,   79.0,   129.3,   0.0);   (372316.2, 3764753.2,   107.0,   129.3,
0.0);
(372416.2, 3764753.2,   124.3,   124.3,   0.0);   (372516.2, 3764753.2,   115.0,   129.3,
0.0);
(372616.2, 3764753.2,   93.9,   129.3,   0.0);   (372716.2, 3764753.2,   76.4,   129.3,
0.0);
(372816.2, 3764753.2,   70.9,   129.3,   0.0);   (372916.2, 3764753.2,   61.9,   130.5,
0.0);
(373016.2, 3764753.2,   56.7,   130.5,   0.0);   (373116.2, 3764753.2,   58.0,   130.5,
0.0);
(373216.2, 3764753.2,   69.6,   130.5,   0.0);   (373316.2, 3764753.2,   99.1,   130.5,
0.0);
(371316.2, 3764853.2,   23.9,   23.9,   0.0);   (371416.2, 3764853.2,   23.7,   129.3,
0.0);
(371516.2, 3764853.2,   22.5,   129.3,   0.0);   (371616.2, 3764853.2,   20.1,   129.3,
0.0);
(371716.2, 3764853.2,   18.2,   129.3,   0.0);   (371816.2, 3764853.2,   24.1,   129.3,
0.0);
(371916.2, 3764853.2,   42.1,   129.3,   0.0);   (372016.2, 3764853.2,   75.0,   129.3,
0.0);
(372116.2, 3764853.2,   77.6,   129.3,   0.0);   (372216.2, 3764853.2,   86.5,   129.3,
0.0);
(372316.2, 3764853.2,   111.9,   129.3,   0.0);   (372416.2, 3764853.2,   123.1,   129.3,
0.0);
(372516.2, 3764853.2,   115.2,   129.3,   0.0);   (372616.2, 3764853.2,   90.2,   129.3,
0.0);

```
     ( 372716.2, 3764853.2,      77.4,     129.3,       0.0);         ( 372816.2, 3764853.2,      66.2,     130.5,
0.0);
     ( 372916.2, 3764853.2,      60.7,     130.5,       0.0);         ( 373016.2, 3764853.2,      50.7,     130.5,
0.0);
↑ *** AERMOD - VERSION  15181 ***   *** Inglewood Oil Field HRA                                          ***
11/24/15
 *** AERMET - VERSION  14134 ***   *** Cancer Burden Analysis                                           ***
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                                                                                                                    PAGE
 8
 **MODELOPTs:   RegDFAULT CONC      ELEV      URBAN

                                          *** DISCRETE CARTESIAN RECEPTORS ***
                                        (X-COORD, Y-COORD, ZELEV, ZHILL, ZFLAG)
                                                      (METERS)

     ( 373116.2, 3764853.2,      51.7,     130.5,       0.0);         ( 373216.2, 3764853.2,      73.5,     130.5,
0.0);
     ( 373316.2, 3764853.2,      92.0,     130.5,       0.0);         ( 371316.2, 3764953.2,      25.1,      25.1,
0.0);
     ( 371416.2, 3764953.2,      25.1,     129.3,       0.0);         ( 371516.2, 3764953.2,      24.7,     129.3,
0.0);
     ( 371616.2, 3764953.2,      22.9,     129.3,       0.0);         ( 371716.2, 3764953.2,      13.9,     129.3,
0.0);
     ( 371816.2, 3764953.2,      26.7,     129.3,       0.0);         ( 371916.2, 3764953.2,      30.4,     129.3,
0.0);
     ( 372016.2, 3764953.2,      45.5,     129.3,       0.0);         ( 372116.2, 3764953.2,      56.4,     129.3,
0.0);
     ( 372216.2, 3764953.2,      74.3,     129.3,       0.0);         ( 372316.2, 3764953.2,      94.1,     129.3,
0.0);
     ( 372416.2, 3764953.2,     124.8,     124.8,       0.0);         ( 372516.2, 3764953.2,     118.1,     128.4,
0.0);
     ( 372616.2, 3764953.2,      93.0,     129.3,       0.0);         ( 372716.2, 3764953.2,      75.1,     129.3,
0.0);
     ( 372816.2, 3764953.2,      48.5,     130.5,       0.0);         ( 372916.2, 3764953.2,      43.9,     130.5,
0.0);
     ( 373016.2, 3764953.2,      42.5,     130.5,       0.0);         ( 373116.2, 3764953.2,      45.5,     130.5,
0.0);
     ( 373216.2, 3764953.2,      44.0,     130.5,       0.0);         ( 373316.2, 3764953.2,      59.2,     130.5,
0.0);
```

```
     ( 371316.2, 3765053.2,      26.1,      26.1,       0.0);         ( 371416.2, 3765053.2,      26.1,      26.1,
0.0);
     ( 371516.2, 3765053.2,      25.8,     129.3,       0.0);         ( 371616.2, 3765053.2,      25.4,     129.3,
0.0);
     ( 371716.2, 3765053.2,      23.7,     129.3,       0.0);         ( 371816.2, 3765053.2,      18.1,     129.3,
0.0);
     ( 371916.2, 3765053.2,      28.5,     129.3,       0.0);         ( 372016.2, 3765053.2,      34.3,     129.3,
0.0);
     ( 372116.2, 3765053.2,      57.4,     129.3,       0.0);         ( 372216.2, 3765053.2,      77.8,     129.3,
0.0);
     ( 372316.2, 3765053.2,      90.5,     129.3,       0.0);         ( 372416.2, 3765053.2,     101.8,     129.3,
0.0);
     ( 372516.2, 3765053.2,      89.0,     129.3,       0.0);         ( 372616.2, 3765053.2,      69.7,     129.3,
0.0);
     ( 372716.2, 3765053.2,      41.3,     130.5,       0.0);         ( 372816.2, 3765053.2,      39.0,     130.5,
0.0);
     ( 372916.2, 3765053.2,      37.1,     130.5,       0.0);         ( 373016.2, 3765053.2,      38.4,     130.5,
0.0);
     ( 373116.2, 3765053.2,      39.9,     130.5,       0.0);         ( 373216.2, 3765053.2,      38.1,     130.5,
0.0);
     ( 373316.2, 3765053.2,      36.1,     130.5,       0.0);         ( 371316.2, 3765153.2,      27.3,      27.3,
0.0);
     ( 371416.2, 3765153.2,      27.1,      27.1,       0.0);         ( 371516.2, 3765153.2,      26.9,     129.3,
0.0);
     ( 371616.2, 3765153.2,      26.4,     129.3,       0.0);         ( 371716.2, 3765153.2,      25.7,     129.3,
0.0);
     ( 371816.2, 3765153.2,      18.7,     129.3,       0.0);         ( 371916.2, 3765153.2,      25.3,     129.3,
0.0);
     ( 372016.2, 3765153.2,      27.7,     129.3,       0.0);         ( 372116.2, 3765153.2,      32.0,     129.3,
0.0);
     ( 372216.2, 3765153.2,      49.4,     129.3,       0.0);         ( 372316.2, 3765153.2,      64.3,     129.3,
0.0);
     ( 372416.2, 3765153.2,      59.6,     129.3,       0.0);         ( 372516.2, 3765153.2,      50.7,     129.3,
0.0);
     ( 372616.2, 3765153.2,      36.5,     130.5,       0.0);         ( 372716.2, 3765153.2,      33.5,     130.5,
0.0);
     ( 372816.2, 3765153.2,      34.9,     130.5,       0.0);         ( 372916.2, 3765153.2,      34.9,     130.5,
0.0);
     ( 373016.2, 3765153.2,      35.3,     130.5,       0.0);         ( 373116.2, 3765153.2,      36.2,     130.5,
0.0);
```

```
     ( 373216.2, 3765153.2,      34.6,     130.5,       0.0);         ( 373316.2, 3765153.2,      31.0,     130.5,
0.0);
     ( 371316.2, 3765253.2,      28.2,      28.2,       0.0);         ( 371416.2, 3765253.2,      28.0,      28.0,
0.0);
     ( 371516.2, 3765253.2,      27.8,     127.6,       0.0);         ( 371616.2, 3765253.2,      27.5,     129.3,
0.0);
     ( 371716.2, 3765253.2,      26.7,     129.3,       0.0);         ( 371816.2, 3765253.2,      25.8,     129.3,
0.0);
     ( 371916.2, 3765253.2,      19.9,     129.3,       0.0);         ( 372016.2, 3765253.2,      15.6,     129.3,
0.0);
     ( 372116.2, 3765253.2,      19.9,     129.3,       0.0);         ( 372216.2, 3765253.2,      22.1,     129.3,
0.0);
     ( 372316.2, 3765253.2,      26.7,     129.3,       0.0);         ( 372416.2, 3765253.2,      38.2,     129.3,
0.0);
     ( 372516.2, 3765253.2,      28.5,     129.3,       0.0);         ( 372616.2, 3765253.2,      28.1,     130.5,
0.0);
     ( 372716.2, 3765253.2,      28.5,     130.5,       0.0);         ( 372816.2, 3765253.2,      31.7,     130.5,
0.0);
     ( 372916.2, 3765253.2,      32.4,     130.5,       0.0);         ( 373016.2, 3765253.2,      32.8,     130.5,
0.0);
     ( 373116.2, 3765253.2,      33.4,     130.5,       0.0);         ( 373216.2, 3765253.2,      31.9,     130.5,
0.0);
     ( 373316.2, 3765253.2,      30.4,     130.5,       0.0);         ( 371316.2, 3765353.2,      28.9,      28.9,
0.0);
     ( 371416.2, 3765353.2,      28.7,      28.7,       0.0);         ( 371516.2, 3765353.2,      28.6,      28.6,
0.0);
↑ *** AERMOD - VERSION  15181 ***   *** Inglewood Oil Field HRA                                           ***
11/24/15
 *** AERMET - VERSION  14134 ***   *** Cancer Burden Analysis                                            ***
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                                                                                                                  PAGE
 9
 **MODELOPTs:   RegDFAULT CONC      ELEV      URBAN

                                               *** DISCRETE CARTESIAN RECEPTORS ***
                                             (X-COORD, Y-COORD, ZELEV, ZHILL, ZFLAG)
                                                              (METERS)

     ( 371616.2, 3765353.2,      28.3,     129.3,       0.0);         ( 371716.2, 3765353.2,      27.6,     129.3,
0.0);
```

(371816.2, 3765353.2, 26.9, 129.3, 0.0); (371916.2, 3765353.2, 26.0, 129.3, 0.0);
(372016.2, 3765353.2, 24.4, 129.3, 0.0); (372116.2, 3765353.2, 21.9, 129.3, 0.0);
(372216.2, 3765353.2, 24.2, 129.3, 0.0); (372316.2, 3765353.2, 18.7, 129.3, 0.0);
(372416.2, 3765353.2, 16.2, 129.3, 0.0); (372516.2, 3765353.2, 16.1, 130.5, 0.0);
(372616.2, 3765353.2, 19.8, 130.5, 0.0); (372716.2, 3765353.2, 26.2, 130.5, 0.0);
(372816.2, 3765353.2, 28.6, 130.5, 0.0); (372916.2, 3765353.2, 28.9, 130.5, 0.0);
(373016.2, 3765353.2, 30.7, 130.5, 0.0); (373116.2, 3765353.2, 31.3, 130.5, 0.0);
(373216.2, 3765353.2, 30.9, 130.5, 0.0); (373316.2, 3765353.2, 29.8, 130.5, 0.0);
(371316.2, 3765453.2, 29.5, 29.5, 0.0); (371416.2, 3765453.2, 29.4, 29.4, 0.0);
(371516.2, 3765453.2, 29.2, 29.2, 0.0); (371616.2, 3765453.2, 28.9, 125.8, 0.0);
(371716.2, 3765453.2, 28.5, 129.3, 0.0); (371816.2, 3765453.2, 27.8, 129.3, 0.0);
(371916.2, 3765453.2, 27.3, 129.3, 0.0); (372016.2, 3765453.2, 26.7, 129.3, 0.0);
(372116.2, 3765453.2, 25.7, 129.3, 0.0); (372216.2, 3765453.2, 24.7, 129.3, 0.0);
(372316.2, 3765453.2, 24.1, 129.3, 0.0); (372416.2, 3765453.2, 25.3, 129.3, 0.0);
(372516.2, 3765453.2, 25.4, 129.3, 0.0); (372616.2, 3765453.2, 26.1, 129.3, 0.0);
(372716.2, 3765453.2, 22.4, 130.5, 0.0); (372816.2, 3765453.2, 24.4, 130.5, 0.0);
(372916.2, 3765453.2, 28.1, 130.5, 0.0); (373016.2, 3765453.2, 29.2, 130.5, 0.0);
(373116.2, 3765453.2, 29.8, 130.5, 0.0); (373216.2, 3765453.2, 29.8, 130.5, 0.0);
(373316.2, 3765453.2, 29.4, 130.5, 0.0); (371316.2, 3765553.2, 30.3, 30.3, 0.0);
(371416.2, 3765553.2, 30.2, 30.2, 0.0); (371516.2, 3765553.2, 30.0, 30.0, 0.0);

```
     ( 371616.2, 3765553.2,      29.6,      29.6,       0.0);         ( 371716.2, 3765553.2,      29.2,     125.8,
0.0);
     ( 371816.2, 3765553.2,      28.8,     129.3,       0.0);         ( 371916.2, 3765553.2,      28.3,     129.3,
0.0);
     ( 372016.2, 3765553.2,      27.8,     129.3,       0.0);         ( 372116.2, 3765553.2,      28.1,     129.3,
0.0);
     ( 372216.2, 3765553.2,      27.9,     129.3,       0.0);         ( 372316.2, 3765553.2,      26.9,     129.3,
0.0);
     ( 372416.2, 3765553.2,      26.7,     129.3,       0.0);         ( 372516.2, 3765553.2,      27.0,     129.3,
0.0);
     ( 372616.2, 3765553.2,      27.4,     129.3,       0.0);         ( 372716.2, 3765553.2,      27.2,     129.3,
0.0);
     ( 372816.2, 3765553.2,      22.5,     130.5,       0.0);         ( 372916.2, 3765553.2,      27.8,     130.5,
0.0);
     ( 373016.2, 3765553.2,      28.1,     130.5,       0.0);         ( 373116.2, 3765553.2,      28.8,     130.5,
0.0);
     ( 373216.2, 3765553.2,      29.5,     130.5,       0.0);         ( 373316.2, 3765553.2,      29.5,     130.5,
0.0);
     ( 371316.2, 3765653.2,      31.0,      31.0,       0.0);         ( 371416.2, 3765653.2,      31.0,      31.0,
0.0);
     ( 371516.2, 3765653.2,      30.8,      30.8,       0.0);         ( 371616.2, 3765653.2,      30.4,      30.4,
0.0);
     ( 371716.2, 3765653.2,      30.0,      30.0,       0.0);         ( 371816.2, 3765653.2,      29.5,     125.8,
0.0);
     ( 371916.2, 3765653.2,      29.0,     129.3,       0.0);         ( 372016.2, 3765653.2,      28.6,     129.3,
0.0);
     ( 372116.2, 3765653.2,      28.4,     129.3,       0.0);         ( 372216.2, 3765653.2,      28.3,     129.3,
0.0);
     ( 372316.2, 3765653.2,      28.1,     129.3,       0.0);         ( 372416.2, 3765653.2,      28.0,     129.3,
0.0);
     ( 372516.2, 3765653.2,      28.1,     129.3,       0.0);         ( 372616.2, 3765653.2,      28.4,     129.3,
0.0);
     ( 372716.2, 3765653.2,      28.3,     129.3,       0.0);         ( 372816.2, 3765653.2,      27.7,     129.3,
0.0);
     ( 372916.2, 3765653.2,      27.5,     129.3,       0.0);         ( 373016.2, 3765653.2,      28.4,     130.5,
0.0);
     ( 373116.2, 3765653.2,      29.0,     130.5,       0.0);         ( 373216.2, 3765653.2,      29.9,     130.5,
0.0);
     ( 373316.2, 3765653.2,      30.2,     130.5,       0.0);
```

**MODELOPTs: RegDFAULT CONC   ELEV   URBAN

*** METEOROLOGICAL DAYS SELECTED FOR PROCESSING ***
(1=YES; 0=NO)

```
1 1 1 1 1 1 1 1 1 1  1 1 1 1 1 1 1 1 1 1  1 1 1 1 1 1 1 1 1 1  1 1 1 1 1 1 1 1 1 1  1 1 1 1 1 1 1 1 1 1
1 1 1 1 1 1 1 1 1 1  1 1 1 1 1 1 1 1 1 1  1 1 1 1 1 1 1 1 1 1  1 1 1 1 1 1 1 1 1 1  1 1 1 1 1 1 1 1 1 1
1 1 1 1 1 1 1 1 1 1  1 1 1 1 1 1 1 1 1 1  1 1 1 1 1 1 1 1 1 1  1 1 1 1 1 1 1 1 1 1  1 1 1 1 1 1 1 1 1 1
1 1 1 1 1 1 1 1 1 1  1 1 1 1 1 1 1 1 1 1  1 1 1 1 1 1 1 1 1 1  1 1 1 1 1 1 1 1 1 1  1 1 1 1 1 1 1 1 1 1
1 1 1 1 1 1 1 1 1 1  1 1 1 1 1 1 1 1 1 1  1 1 1 1 1 1 1 1 1 1  1 1 1 1 1 1 1 1 1 1  1 1 1 1 1 1 1 1 1 1
1 1 1 1 1 1 1 1 1 1  1 1 1 1 1 1 1 1 1 1  1 1 1 1 1 1 1 1 1 1  1 1 1 1 1 1 1 1 1 1  1 1 1 1 1 1 1 1 1 1
1 1 1 1 1 1 1 1 1 1  1 1 1 1 1 1 1 1 1 1  1 1 1 1 1 1 1 1 1 1  1 1 1 1 1 1 1 1 1 1  1 1 1 1 1 1 1 1 1 1
1 1 1 1 1 1 1 1 1 1  1 1 1 1 1 1
```

NOTE: METEOROLOGICAL DATA ACTUALLY PROCESSED WILL ALSO DEPEND ON WHAT IS INCLUDED IN THE DATA FILE.

*** UPPER BOUND OF FIRST THROUGH FIFTH WIND SPEED CATEGORIES ***
(METERS/SEC)

1.54,   3.09,   5.14,   8.23, 10.80,

**MODELOPTs: RegDFAULT CONC   ELEV   URBAN

*** UP TO THE FIRST 24 HOURS OF METEOROLOGICAL DATA ***

Surface file: wsla8.sfc   Met Version: 14134
Profile file: wsla8.PFL

Psomas_IOF_Cancer_Burden_Analysis

Surface format: FREE
Profile format: FREE
Surface station no.: 0 Upper air station no.: 3190
Name: UNKNOWN Name: UNKNOWN
Year: 2008 Year: 2008

First 24 hours of scalar data

YR	MO	DY	JDY	HR	H0	U*	W*	DT/DZ	ZICNV	ZIMCH	M-O LEN	Z0	BOWEN	ALBEDO	REF WS	WD	HT	REF TA	HT
08	01	01	1	01	-999.0	-9.000	-9.000	-9.000	-999.	-999.	-99999.0	0.40	1.00	1.00	999.00	999.	-9.0	288.4	5.5
08	01	01	1	02	-999.0	-9.000	-9.000	-9.000	-999.	-999.	-99999.0	0.40	1.00	1.00	999.00	999.	-9.0	288.0	5.5
08	01	01	1	03	-999.0	-9.000	-9.000	-9.000	-999.	-999.	-99999.0	0.40	1.00	1.00	999.00	999.	-9.0	287.9	5.5
08	01	01	1	04	-999.0	-9.000	-9.000	-9.000	-999.	-999.	-99999.0	0.40	1.00	1.00	999.00	999.	-9.0	287.8	5.5
08	01	01	1	05	-999.0	-9.000	-9.000	-9.000	-999.	-999.	-99999.0	0.40	1.00	1.00	999.00	999.	-9.0	287.6	5.5
08	01	01	1	06	-999.0	-9.000	-9.000	-9.000	-999.	-999.	-99999.0	0.40	1.00	1.00	999.00	999.	-9.0	288.1	5.5
08	01	01	1	07	-999.0	-9.000	-9.000	-9.000	-999.	-999.	-99999.0	0.40	1.00	1.00	999.00	999.	-9.0	288.1	5.5
08	01	01	1	08	-999.0	-9.000	-9.000	-9.000	-999.	-999.	-99999.0	0.40	1.00	0.55	999.00	999.	-9.0	288.4	5.5
08	01	01	1	09	21.6	-9.000	-9.000	-9.000	53.	-999.	-99999.0	0.40	1.00	0.32	999.00	999.	-9.0	288.9	5.5
08	01	01	1	10	66.0	-9.000	-9.000	-9.000	139.	-999.	-99999.0	0.40	1.00	0.24	999.00	999.	-9.0	290.0	5.5
08	01	01	1	11	126.1	-9.000	-9.000	-9.000	371.	-999.	-99999.0	0.40	1.00	0.21	999.00	999.	-9.0	292.0	5.5
08	01	01	1	12	144.0	-9.000	-9.000	-9.000	600.	-999.	-99999.0	0.40	1.00	0.20	999.00	999.	-9.0	293.0	5.5
08	01	01	1	13	126.0	-9.000	-9.000	-9.000	722.	-999.	-99999.0	0.40	1.00	0.20	999.00	999.	-9.0	293.6	5.5
08	01	01	1	14	69.5	-9.000	-9.000	-9.000	753.	-999.	-99999.0	0.40	1.00	0.21	999.00	999.	-9.0	293.1	5.5
08	01	01	1	15	32.0	-9.000	-9.000	-9.000	767.	-999.	-99999.0	0.40	1.00	0.24	999.00	999.	-9.0	292.6	5.5
08	01	01	1	16	14.4	-9.000	-9.000	-9.000	773.	-999.	-99999.0	0.40	1.00	0.33	999.00	999.	-9.0	292.0	5.5
08	01	01	1	17	-999.0	-9.000	-9.000	-9.000	-999.	-999.	-99999.0	0.40	1.00	0.59	999.00	999.	-9.0	291.1	5.5
08	01	01	1	18	-999.0	-9.000	-9.000	-9.000	-999.	-999.	-99999.0	0.40	1.00	1.00	999.00	999.	-9.0	290.4	5.5
08	01	01	1	19	-999.0	-9.000	-9.000	-9.000	-999.	-999.	-99999.0	0.40	1.00	1.00	999.00	999.	-9.0	289.5	5.5
08	01	01	1	20	-999.0	-9.000	-9.000	-9.000	-999.	-999.	-99999.0	0.40	1.00	1.00	999.00	999.	-9.0	289.4	5.5
08	01	01	1	21	-999.0	-9.000	-9.000	-9.000	-999.	-999.	-99999.0	0.40	1.00	1.00	999.00	999.	-9.0	289.4	5.5
08	01	01	1	22	-999.0	-9.000	-9.000	-9.000	-999.	-999.	-99999.0	0.40	1.00	1.00	999.00	999.	-9.0	289.4	5.5
08	01	01	1	23	-999.0	-9.000	-9.000	-9.000	-999.	-999.	-99999.0	0.40	1.00	1.00	999.00	999.	-9.0	289.4	5.5
08	01	01	1	24	-999.0	-9.000	-9.000	-9.000	-999.	-999.	-99999.0	0.40	1.00	1.00	999.00	999.	-9.0	289.1	5.5

First hour of profile data

YR	MO	DY	HR	HEIGHT	F	WDIR	WSPD	AMB_TMP	sigmaA	sigmaW	sigmaV
08	01	01	01	5.5	0	-999.	-99.00	288.5	99.0	-99.00	-99.00
08	01	01	01	9.1	1	-999.	-99.00	-999.0	99.0	-99.00	-99.00

F indicates top of profile (=1) or below (=0)
*** AERMOD - VERSION 15181 *** *** Inglewood Oil Field HRA *** 11/24/15
*** AERMET - VERSION 14134 *** *** Cancer Burden Analysis *** 10:33:11
PAGE 12
**MODELOPTs: RegDFAULT CONC ELEV URBAN

*** THE PERIOD (43848 HRS) AVERAGE CONCENTRATION VALUES FOR SOURCE GROUP: PAREA1 ***
INCLUDING SOURCE(S): PAREA1 ,

*** DISCRETE CARTESIAN RECEPTOR POINTS ***

** CONC OF TACS IN MICROGRAMS/M**3 **

X-COORD (M)	Y-COORD (M)	CONC	X-COORD (M)	Y-COORD (M)	CONC
371316.23	3763653.22	0.42970	371416.23	3763653.22	0.46503
371516.23	3763653.22	0.50686	371616.23	3763653.22	0.55896
371716.23	3763653.22	0.61822	371816.23	3763653.22	0.70103
371916.23	3763653.22	0.81033	372016.23	3763653.22	0.95603
372116.23	3763653.22	1.14575	372216.23	3763653.22	1.41018
372316.23	3763653.22	1.76406	372416.23	3763653.22	1.71745
372516.23	3763653.22	2.42104	372616.23	3763653.22	2.80443
372716.23	3763653.22	3.03693	372816.23	3763653.22	3.52736
372916.23	3763653.22	4.48434	373016.23	3763653.22	5.08904
373116.23	3763653.22	5.20729	373216.23	3763653.22	5.33171
373316.23	3763653.22	5.27982	371316.23	3763753.22	0.46557

371416.23	3763753.22	0.50713	371516.23	3763753.22	0.55639
371616.23	3763753.22	0.61622	371716.23	3763753.22	0.68964
371816.23	3763753.22	0.77906	371916.23	3763753.22	0.90467
372016.23	3763753.22	1.06981	372116.23	3763753.22	1.30847
372216.23	3763753.22	1.69451	372316.23	3763753.22	2.14499
372416.23	3763753.22	2.19250	372516.23	3763753.22	2.77510
372616.23	3763753.22	3.40530	372716.23	3763753.22	3.84461
372816.23	3763753.22	4.80836	372916.23	3763753.22	5.97213
373016.23	3763753.22	6.28807	373116.23	3763753.22	6.29498
373216.23	3763753.22	6.17880	373316.23	3763753.22	6.08666
371316.23	3763853.22	0.50136	371416.23	3763853.22	0.55129
371516.23	3763853.22	0.61137	371616.23	3763853.22	0.68276
371716.23	3763853.22	0.76888	371816.23	3763853.22	0.87580
371916.23	3763853.22	1.02141	372016.23	3763853.22	1.22696
372116.23	3763853.22	1.56193	372216.23	3763853.22	1.95111
372316.23	3763853.22	2.58691	372416.23	3763853.22	3.20286
372516.23	3763853.22	3.92407	372616.23	3763853.22	4.20605
372716.23	3763853.22	5.14396	372816.23	3763853.22	6.72116
372916.23	3763853.22	7.76712	373016.23	3763853.22	7.87573
373116.23	3763853.22	7.64952	373216.23	3763853.22	7.30039

373316.23	3763853.22	6.89162	371316.23	3763953.22	0.53513
371416.23	3763953.22	0.59336	371516.23	3763953.22	0.67034
371616.23	3763953.22	0.75948	371716.23	3763953.22	0.86347
371816.23	3763953.22	0.99934	371916.23	3763953.22	1.17846
372016.23	3763953.22	1.43219	372116.23	3763953.22	2.01969
372216.23	3763953.22	2.55266	372316.23	3763953.22	3.44743
372416.23	3763953.22	4.72524	372516.23	3763953.22	5.92370
372616.23	3763953.22	7.23253	372716.23	3763953.22	7.38999
372816.23	3763953.22	9.95810	372916.23	3763953.22	10.14713

↑ *** AERMOD - VERSION 15181 *** *** Inglewood Oil Field HRA *** 11/24/15
*** AERMET - VERSION 14134 *** *** Cancer Burden Analysis *** 10:33:11
PAGE 13
**MODELOPTs: RegDFAULT CONC ELEV URBAN

*** THE PERIOD (43848 HRS) AVERAGE CONCENTRATION VALUES FOR SOURCE GROUP: PAREA1 ***
INCLUDING SOURCE(S): PAREA1 ,

*** DISCRETE CARTESIAN RECEPTOR POINTS ***

** CONC OF TACS IN MICROGRAMS/M**3 **

X-COORD (M)	Y-COORD (M)	CONC	X-COORD (M)	Y-COORD (M)	CONC
373016.23	3763953.22	9.76087	373116.23	3763953.22	9.24517
373216.23	3763953.22	8.59746	373316.23	3763953.22	7.46796

371316.23	3764053.22	0.57080	371416.23	3764053.22	0.63730
371516.23	3764053.22	0.72774	371616.23	3764053.22	0.83495
371716.23	3764053.22	0.96473	371816.23	3764053.22	1.13888
371916.23	3764053.22	1.38530	372016.23	3764053.22	1.75006
372116.23	3764053.22	2.49984	372216.23	3764053.22	3.54852
372316.23	3764053.22	4.93995	372416.23	3764053.22	6.80095
372516.23	3764053.22	9.33117	372616.23	3764053.22	8.28384
372716.23	3764053.22	12.60401	372816.23	3764053.22	13.77366
372916.23	3764053.22	13.67250	373016.23	3764053.22	12.53247
373116.23	3764053.22	11.22842	373216.23	3764053.22	10.03070
373316.23	3764053.22	8.11447	371316.23	3764153.22	0.59362
371416.23	3764153.22	0.67073	371516.23	3764153.22	0.76504
371616.23	3764153.22	0.90532	371716.23	3764153.22	1.06914
371816.23	3764153.22	1.30323	371916.23	3764153.22	1.61929
372016.23	3764153.22	2.12441	372116.23	3764153.22	3.10043
372216.23	3764153.22	4.49337	372316.23	3764153.22	7.45612
372416.23	3764153.22	10.18616	372516.23	3764153.22	14.96137
372616.23	3764153.22	12.96821	372716.23	3764153.22	19.29421
372816.23	3764153.22	19.65993	372916.23	3764153.22	17.89230
373016.23	3764153.22	16.57190	373116.23	3764153.22	13.91808

373216.23	3764153.22	11.34849	373316.23	3764153.22	8.28498
371316.23	3764253.22	0.60076	371416.23	3764253.22	0.68762
371516.23	3764253.22	0.78769	371616.23	3764253.22	0.94675
371716.23	3764253.22	1.15062	371816.23	3764253.22	1.43954
371916.23	3764253.22	1.85634	372016.23	3764253.22	2.55676
372116.23	3764253.22	4.12946	372216.23	3764253.22	7.65347
372316.23	3764253.22	13.01520	372416.23	3764253.22	15.72233
372516.23	3764253.22	21.58872	372616.23	3764253.22	25.50716
372716.23	3764253.22	25.05044	372816.23	3764253.22	31.20230
372916.23	3764253.22	26.38117	373016.23	3764253.22	23.17123
373116.23	3764253.22	19.46623	373216.23	3764253.22	11.52587
373316.23	3764253.22	7.15922	371316.23	3764353.22	0.58919
371416.23	3764353.22	0.67831	371516.23	3764353.22	0.78037
371616.23	3764353.22	0.95300	371716.23	3764353.22	1.17119
371816.23	3764353.22	1.50057	371916.23	3764353.22	2.02557
372016.23	3764353.22	3.02098	372116.23	3764353.22	5.96113
372216.23	3764353.22	15.46182	372316.23	3764353.22	22.60055
372416.23	3764353.22	28.57365	372516.23	3764353.22	34.04933

↑ *** AERMOD - VERSION 15181 *** *** Inglewood Oil Field HRA ***
11/24/15
*** AERMET - VERSION 14134 *** *** Cancer Burden Analysis ***

**MODELOPTs: RegDFAULT CONC ELEV URBAN

*** THE PERIOD (43848 HRS) AVERAGE CONCENTRATION VALUES FOR SOURCE GROUP: PAREA1 ***
INCLUDING SOURCE(S): PAREA1 ,

*** DISCRETE CARTESIAN RECEPTOR POINTS ***

** CONC OF TACS IN MICROGRAMS/M**3 **

X-COORD (M)	Y-COORD (M)	CONC	X-COORD (M)	Y-COORD (M)	CONC
372616.23	3764353.22	39.19190	372716.23	3764353.22	47.58852
372816.23	3764353.22	65.65895	372916.23	3764353.22	57.79971
373016.23	3764353.22	56.51974	373116.23	3764353.22	23.08211
373216.23	3764353.22	9.30459	373316.23	3764353.22	5.55471
371316.23	3764453.22	0.56472	371416.23	3764453.22	0.64999
371516.23	3764453.22	0.74616	371616.23	3764453.22	0.91769
371716.23	3764453.22	1.13453	371816.23	3764453.22	1.47103
371916.23	3764453.22	2.03198	372016.23	3764453.22	3.18946
372116.23	3764453.22	8.00952	372216.23	3764453.22	27.94817
372316.23	3764453.22	30.48108	372416.23	3764453.22	39.64522
372516.23	3764453.22	34.45526	372616.23	3764453.22	38.47537
372716.23	3764453.22	61.05756	372816.23	3764453.22	40.06127
372916.23	3764453.22	36.18430	373016.23	3764453.22	50.99122

373116.23	3764453.22	14.72467	373216.23	3764453.22	6.67715
373316.23	3764453.22	4.23730	371316.23	3764553.22	0.53492
371416.23	3764553.22	0.61415	371516.23	3764553.22	0.70994
371616.23	3764553.22	0.85937	371716.23	3764553.22	1.06302
371816.23	3764553.22	1.37761	371916.23	3764553.22	1.89935
372016.23	3764553.22	2.98476	372116.23	3764553.22	6.34763
372216.23	3764553.22	18.07379	372316.23	3764553.22	62.34460
372416.23	3764553.22	46.79103	372516.23	3764553.22	15.39699
372616.23	3764553.22	13.06023	372716.23	3764553.22	16.20661
372816.23	3764553.22	14.48077	372916.23	3764553.22	13.77187
373016.23	3764553.22	18.44625	373116.23	3764553.22	8.31133
373216.23	3764553.22	5.41174	373316.23	3764553.22	3.58727
371316.23	3764653.22	0.50608	371416.23	3764653.22	0.58001
371516.23	3764653.22	0.67453	371616.23	3764653.22	0.79687
371716.23	3764653.22	0.99434	371816.23	3764653.22	1.27245
371916.23	3764653.22	1.76715	372016.23	3764653.22	2.76202
372116.23	3764653.22	4.83805	372216.23	3764653.22	10.34093
372316.23	3764653.22	29.18371	372416.23	3764653.22	12.42317
372516.23	3764653.22	11.15031	372616.23	3764653.22	12.14354
372716.23	3764653.22	10.61935	372816.23	3764653.22	9.17605

372916.23	3764653.22	8.25011	373016.23	3764653.22	7.37610
373116.23	3764653.22	5.72133	373216.23	3764653.22	4.31972
373316.23	3764653.22	3.03563	371316.23	3764753.22	0.48254
371416.23	3764753.22	0.55201	371516.23	3764753.22	0.63955
371616.23	3764753.22	0.74469	371716.23	3764753.22	0.94026
371816.23	3764753.22	1.19819	371916.23	3764753.22	1.68555
372016.23	3764753.22	2.64836	372116.23	3764753.22	3.94031

↑ *** AERMOD - VERSION 15181 *** *** Inglewood Oil Field HRA *** 11/24/15
*** AERMET - VERSION 14134 *** *** Cancer Burden Analysis *** 10:33:11
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**MODELOPTs: RegDFAULT CONC ELEV URBAN

*** THE PERIOD (43848 HRS) AVERAGE CONCENTRATION VALUES FOR SOURCE GROUP: PAREA1 ***
INCLUDING SOURCE(S): PAREA1 ,

*** DISCRETE CARTESIAN RECEPTOR POINTS ***

** CONC OF TACS IN MICROGRAMS/M**3 **

X-COORD (M)	Y-COORD (M)	CONC	X-COORD (M)	Y-COORD (M)	CONC
372216.23	3764753.22	6.60088	372316.23	3764753.22	8.12380
372416.23	3764753.22	6.26566	372516.23	3764753.22	6.87525
372616.23	3764753.22	8.37358	372716.23	3764753.22	7.22900
372816.23	3764753.22	6.48841	372916.23	3764753.22	5.72519

373016.23	3764753.22	4.98749	373116.23	3764753.22	4.17797
373216.23	3764753.22	3.48549	373316.23	3764753.22	2.81324
371316.23	3764853.22	0.46654	371416.23	3764853.22	0.53386
371516.23	3764853.22	0.61931	371616.23	3764853.22	0.73145
371716.23	3764853.22	0.88832	371816.23	3764853.22	1.13495
371916.23	3764853.22	1.56390	372016.23	3764853.22	2.43987
372116.23	3764853.22	3.43367	372216.23	3764853.22	4.82918
372316.23	3764853.22	4.84372	372416.23	3764853.22	4.26603
372516.23	3764853.22	4.94999	372616.23	3764853.22	6.12934
372716.23	3764853.22	5.52566	372816.23	3764853.22	4.88632
372916.23	3764853.22	4.37988	373016.23	3764853.22	3.75133
373116.23	3764853.22	3.25052	373216.23	3764853.22	2.97174
373316.23	3764853.22	2.51860	371316.23	3764953.22	0.45629
371416.23	3764953.22	0.52305	371516.23	3764953.22	0.60846
371616.23	3764953.22	0.71862	371716.23	3764953.22	0.85415
371816.23	3764953.22	1.09624	371916.23	3764953.22	1.41135
372016.23	3764953.22	1.91926	372116.23	3764953.22	2.58754
372216.23	3764953.22	3.50068	372316.23	3764953.22	4.27880
372416.23	3764953.22	3.10156	372516.23	3764953.22	3.54858
372616.23	3764953.22	4.62444	372716.23	3764953.22	4.27344

372816.23	3764953.22	3.60377	372916.23	3764953.22	3.28171
373016.23	3764953.22	2.95650	373116.23	3764953.22	2.64025
373216.23	3764953.22	2.27868	373316.23	3764953.22	2.05945
371316.23	3765053.22	0.44968	371416.23	3765053.22	0.51567
371516.23	3765053.22	0.59941	371616.23	3765053.22	0.70781
371716.23	3765053.22	0.84783	371816.23	3765053.22	1.02356
371916.23	3765053.22	1.30380	372016.23	3765053.22	1.64844
372116.23	3765053.22	2.19907	372216.23	3765053.22	2.81966
372316.23	3765053.22	3.26878	372416.23	3765053.22	3.38923
372516.23	3765053.22	3.60744	372616.23	3765053.22	3.42670
372716.23	3765053.22	2.99282	372816.23	3765053.22	2.83942
372916.23	3765053.22	2.64279	373016.23	3765053.22	2.43546
373116.23	3765053.22	2.20447	373216.23	3765053.22	1.94702
373316.23	3765053.22	1.70274	371316.23	3765153.22	0.44522
371416.23	3765153.22	0.50969	371516.23	3765153.22	0.59060
371616.23	3765153.22	0.69305	371716.23	3765153.22	0.82299

*** AERMOD - VERSION 15181 *** *** Inglewood Oil Field HRA ***
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*** AERMET - VERSION 14134 *** *** Cancer Burden Analysis ***
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**MODELOPTs: RegDFAULT CONC ELEV URBAN

*** THE PERIOD (43848 HRS) AVERAGE CONCENTRATION VALUES FOR SOURCE GROUP: PAREA1 ***
INCLUDING SOURCE(S): PAREA1 ,

*** DISCRETE CARTESIAN RECEPTOR POINTS ***

** CONC OF TACS IN MICROGRAMS/M**3 **

X-COORD (M)	Y-COORD (M)	CONC	X-COORD (M)	Y-COORD (M)	CONC
371816.23	3765153.22	0.97124	371916.23	3765153.22	1.19314
372016.23	3765153.22	1.44355	372116.23	3765153.22	1.72683
372216.23	3765153.22	2.10020	372316.23	3765153.22	2.45382
372416.23	3765153.22	2.56668	372516.23	3765153.22	2.55952
372616.23	3765153.22	2.45132	372716.23	3765153.22	2.39240
372816.23	3765153.22	2.32060	372916.23	3765153.22	2.19812
373016.23	3765153.22	2.04682	373116.23	3765153.22	1.87935
373216.23	3765153.22	1.69281	373316.23	3765153.22	1.50416
371316.23	3765253.22	0.44078	371416.23	3765253.22	0.50325
371516.23	3765253.22	0.58027	371616.23	3765253.22	0.67539
371716.23	3765253.22	0.79187	371816.23	3765253.22	0.93258
371916.23	3765253.22	1.08313	372016.23	3765253.22	1.25362
372116.23	3765253.22	1.45553	372216.23	3765253.22	1.63953
372316.23	3765253.22	1.80487	372416.23	3765253.22	1.97092
372516.23	3765253.22	1.97102	372616.23	3765253.22	1.98445

372716.23	3765253.22	1.96679	372816.23	3765253.22	1.93051
372916.23	3765253.22	1.85050	373016.23	3765253.22	1.74406
373116.23	3765253.22	1.62240	373216.23	3765253.22	1.48504
373316.23	3765253.22	1.34894	371316.23	3765353.22	0.43554
371416.23	3765353.22	0.49522	371516.23	3765353.22	0.56749
371616.23	3765353.22	0.65453	371716.23	3765353.22	0.75773
371816.23	3765353.22	0.87794	371916.23	3765353.22	1.01257
372016.23	3765353.22	1.15336	372116.23	3765353.22	1.28847
372216.23	3765353.22	1.42627	372316.23	3765353.22	1.51036
372416.23	3765353.22	1.57417	372516.23	3765353.22	1.61507
372616.23	3765353.22	1.64200	372716.23	3765353.22	1.65601
372816.23	3765353.22	1.62947	372916.23	3765353.22	1.57136
373016.23	3765353.22	1.50183	373116.23	3765353.22	1.41380
373216.23	3765353.22	1.31515	373316.23	3765353.22	1.21239
371316.23	3765453.22	0.42924	371416.23	3765453.22	0.48556
371516.23	3765453.22	0.55238	371616.23	3765453.22	0.63103
371716.23	3765453.22	0.72193	371816.23	3765453.22	0.82420
371916.23	3765453.22	0.93512	372016.23	3765453.22	1.04884
372116.23	3765453.22	1.15681	372216.23	3765453.22	1.25211
372316.23	3765453.22	1.32902	372416.23	3765453.22	1.38848

372516.23	3765453.22	1.42037	372616.23	3765453.22	1.43225
372716.23	3765453.22	1.40912	372816.23	3765453.22	1.38919
372916.23	3765453.22	1.35935	373016.23	3765453.22	1.30664
373116.23	3765453.22	1.24191	373216.23	3765453.22	1.16924
373316.23	3765453.22	1.09243	371316.23	3765553.22	0.42181

*** AERMOD - VERSION 15181 ***   *** Inglewood Oil Field HRA   ***
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*** AERMET - VERSION 14134 ***   *** Cancer Burden Analysis   ***
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**MODELOPTs: RegDFAULT CONC   ELEV   URBAN

*** THE PERIOD (43848 HRS) AVERAGE CONCENTRATION   VALUES FOR SOURCE GROUP: PAREA1   ***
INCLUDING SOURCE(S):   PAREA1   ,

*** DISCRETE CARTESIAN RECEPTOR POINTS ***

** CONC OF TACS   IN MICROGRAMS/M**3   **

X-COORD (M)	Y-COORD (M)	CONC	X-COORD (M)	Y-COORD (M)	CONC
371416.23	3765553.22	0.47447	371516.23	3765553.22	0.53575
371616.23	3765553.22	0.60614	371716.23	3765553.22	0.68553
371816.23	3765553.22	0.77245	371916.23	3765553.22	0.86393
372016.23	3765553.22	0.95516	372116.23	3765553.22	1.04307
372216.23	3765553.22	1.11896	372316.23	3765553.22	1.17660
372416.23	3765553.22	1.21801	372516.23	3765553.22	1.24246

372616.23	3765553.22	1.25037	372716.23	3765553.22	1.24125
372816.23	3765553.22	1.20551	372916.23	3765553.22	1.18900
373016.23	3765553.22	1.14731	373116.23	3765553.22	1.09937
373216.23	3765553.22	1.04593	373316.23	3765553.22	0.98760
371316.23	3765653.22	0.41318	371416.23	3765653.22	0.46207
371516.23	3765653.22	0.51787	371616.23	3765653.22	0.58062
371716.23	3765653.22	0.64973	371816.23	3765653.22	0.72328
371916.23	3765653.22	0.79870	372016.23	3765653.22	0.87254
372116.23	3765653.22	0.94145	372216.23	3765653.22	1.00079
372316.23	3765653.22	1.04748	372416.23	3765653.22	1.07958
372516.23	3765653.22	1.09754	372616.23	3765653.22	1.10273
372716.23	3765653.22	1.09476	372816.23	3765653.22	1.07562
372916.23	3765653.22	1.04929	373016.23	3765653.22	1.01867
373116.23	3765653.22	0.98173	373216.23	3765653.22	0.94097
373316.23	3765653.22	0.89631			

↑ *** AERMOD - VERSION 15181 *** *** Inglewood Oil Field HRA ***
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*** AERMET - VERSION 14134 *** *** Cancer Burden Analysis ***
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**MODELOPTs: RegDFAULT CONC ELEV URBAN

*** THE 1ST HIGHEST 1-HR AVERAGE CONCENTRATION VALUES FOR SOURCE GROUP: PAREA1 ***

Psomas_IOF_Cancer_Burden_Analysis
INCLUDING SOURCE(S): PAREA1 ,

*** DISCRETE CARTESIAN RECEPTOR POINTS ***

** CONC OF TACS IN MICROGRAMS/M**3 **

X-COORD (M)	Y-COORD (M)	CONC	(YYMMDDHH)	X-COORD (M)	Y-COORD (M)	CONC	(YYMMDDHH)
371316.23	3763653.22	22.64745	(12102721)	371416.23	3763653.22	23.57151	(09121824)
371516.23	3763653.22	24.68052	(12082904)	371616.23	3763653.22	25.73669	(12100123)
371716.23	3763653.22	26.34286	(09011902)	371816.23	3763653.22	27.34536	(12110507)
371916.23	3763653.22	28.32231	(11100219)	372016.23	3763653.22	29.46219	(08100724)
372116.23	3763653.22	30.90361	(12091504)	372216.23	3763653.22	32.80949	(09012019)
372316.23	3763653.22	35.12208	(10092422)	372416.23	3763653.22	38.43220	(08062022)
372516.23	3763653.22	38.73217	(12100203)	372616.23	3763653.22	41.44663	(12091421)
372716.23	3763653.22	41.32373	(08100807)	372816.23	3763653.22	41.49716	(12082901)
372916.23	3763653.22	43.15714	(12091524)	373016.23	3763653.22	39.11604	(11101306)
373116.23	3763653.22	35.94557	(08102307)	373216.23	3763653.22	36.95860	(11050221)
373316.23	3763653.22	39.54307	(08100123)	371316.23	3763753.22	24.05008	(12101421)
371416.23	3763753.22	25.21856	(12102721)	371516.23	3763753.22	26.43916	(09121824)
371616.23	3763753.22	27.75658	(12082904)	371716.23	3763753.22	28.92428	(12100123)
371816.23	3763753.22	29.62768	(09080323)	371916.23	3763753.22	30.74930	(12110507)
372016.23	3763753.22	31.74038	(12102624)	372116.23	3763753.22	33.57192	(12091504)
372216.23	3763753.22	36.89075	(12110421)	372316.23	3763753.22	39.27860	(10092422)

372416.23	3763753.22	43.24868	(08062022)	372516.23	3763753.22	45.03824	(09012020)
372616.23	3763753.22	46.20019	(12091501)	372716.23	3763753.22	45.74240	(10092805)
372816.23	3763753.22	47.35129	(12102724)	372916.23	3763753.22	48.22972	(11101306)
373016.23	3763753.22	41.16460	(12091422)	373116.23	3763753.22	40.15636	(08041323)
373216.23	3763753.22	39.63897	(11101304)	373316.23	3763753.22	43.53448	(08100106)
371316.23	3763853.22	25.30118	(11082501)	371416.23	3763853.22	26.91697	(12091323)
371516.23	3763853.22	28.48610	(12101421)	371616.23	3763853.22	30.06241	(12102721)
371716.23	3763853.22	31.47218	(12082904)	371816.23	3763853.22	32.70580	(12100123)
371916.23	3763853.22	33.63773	(09080323)	372016.23	3763853.22	34.86384	(11100222)
372116.23	3763853.22	37.65019	(11050306)	372216.23	3763853.22	39.62785	(11101220)
372316.23	3763853.22	43.05529	(10092422)	372416.23	3763853.22	48.77515	(08062022)
372516.23	3763853.22	51.57874	(12100120)	372616.23	3763853.22	50.52980	(12101724)
372716.23	3763853.22	51.66095	(12082901)	372816.23	3763853.22	55.58654	(12100122)
372916.23	3763853.22	48.25260	(12101420)	373016.23	3763853.22	47.08603	(08041323)
373116.23	3763853.22	45.75000	(11101304)	373216.23	3763853.22	44.93397	(08100106)
373316.23	3763853.22	46.81865	(10092620)	371316.23	3763953.22	26.93552	(08100120)
371416.23	3763953.22	28.53800	(09082923)	371516.23	3763953.22	30.70495	(11082501)
371616.23	3763953.22	32.99010	(12091323)	371716.23	3763953.22	34.73909	(12030322)
371816.23	3763953.22	36.48430	(09121824)	371916.23	3763953.22	37.98672	(12100123)
372016.23	3763953.22	39.06705	(10092823)	372116.23	3763953.22	45.67278	(08100724)

372216.23	3763953.22	47.42855	(11101220)	372316.23	3763953.22	50.58695	(10092422)
372416.23	3763953.22	54.20847	(08062022)	372516.23	3763953.22	58.10219	(12100120)
372616.23	3763953.22	63.09535	(08100807)	372716.23	3763953.22	61.08522	(12091524)
372816.23	3763953.22	65.03986	(12091422)	372916.23	3763953.22	56.79326	(08041323)

↑ *** AERMOD - VERSION 15181 ***   *** Inglewood Oil Field HRA   ***
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*** AERMET - VERSION 14134 ***   *** Cancer Burden Analysis   ***
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**MODELOPTs: RegDFAULT CONC   ELEV   URBAN

*** THE   1ST HIGHEST 1-HR AVERAGE CONCENTRATION   VALUES FOR SOURCE GROUP: PAREA1   ***
INCLUDING SOURCE(S):   PAREA1   ,

*** DISCRETE CARTESIAN RECEPTOR POINTS ***

** CONC OF TACS   IN MICROGRAMS/M**3   **

X-COORD (M)	Y-COORD (M)	CONC	(YYMMDDHH)	X-COORD (M)	Y-COORD (M)	CONC	(YYMMDDHH)
373016.23	3763953.22	54.17948	(11101304)	373116.23	3763953.22	52.49718	(08100106)
373216.23	3763953.22	51.82771	(10092620)	373316.23	3763953.22	50.07007	(12091424)
371316.23	3764053.22	28.69919	(08111501)	371416.23	3764053.22	30.57092	(12092304)
371516.23	3764053.22	33.42071	(10092520)	371616.23	3764053.22	36.14306	(08100120)
371716.23	3764053.22	38.47486	(11082501)	371816.23	3764053.22	41.32226	(12101421)
371916.23	3764053.22	44.00073	(12102721)	372016.23	3764053.22	46.47693	(12100123)
372116.23	3764053.22	52.93693	(11100219)	372216.23	3764053.22	58.84203	(11101220)

372316.23	3764053.22	61.70604	(10092422)	372416.23	3764053.22	64.15907	(08062022)
372516.23	3764053.22	69.28554	(12091421)	372616.23	3764053.22	66.04242	(12082901)
372716.23	3764053.22	80.60648	(12101420)	372816.23	3764053.22	80.45392	(11101305)
372916.23	3764053.22	72.79016	(08100106)	373016.23	3764053.22	65.17051	(10121120)
373116.23	3764053.22	61.81438	(12091424)	373216.23	3764053.22	61.23339	(09101703)
373316.23	3764053.22	58.43958	(09011223)	371316.23	3764153.22	30.21094	(08103022)
371416.23	3764153.22	32.72905	(08092923)	371516.23	3764153.22	35.38722	(08092923)
371616.23	3764153.22	39.63270	(08111501)	371716.23	3764153.22	43.17861	(10092520)
371816.23	3764153.22	48.04713	(08100120)	371916.23	3764153.22	51.77973	(08082924)
372016.23	3764153.22	56.09713	(12101421)	372116.23	3764153.22	61.94717	(12110507)
372216.23	3764153.22	66.00986	(12091504)	372316.23	3764153.22	75.67781	(10092422)
372416.23	3764153.22	85.26472	(12100203)	372516.23	3764153.22	93.53215	(12101724)
372616.23	3764153.22	81.31402	(12100122)	372716.23	3764153.22	106.65559	(11101305)
372816.23	3764153.22	93.02125	(08100106)	372916.23	3764153.22	85.92469	(10092620)
373016.23	3764153.22	81.96808	(09101703)	373116.23	3764153.22	76.16492	(09112619)
373216.23	3764153.22	75.21552	(09101702)	373316.23	3764153.22	70.55941	(10110418)
371316.23	3764253.22	31.75050	(09102623)	371416.23	3764253.22	34.79964	(12090701)
371516.23	3764253.22	37.73551	(12090701)	371616.23	3764253.22	42.75595	(12090722)
371716.23	3764253.22	48.10536	(08103022)	371816.23	3764253.22	54.90325	(08092923)
371916.23	3764253.22	62.03640	(08111501)	372016.23	3764253.22	70.14741	(08100120)

372116.23	3764253.22	81.89781	(08100120)	372216.23	3764253.22	93.22773	(08100724)
372316.23	3764253.22	107.05304	(08100120)	372416.23	3764253.22	106.90175	(08100120)
372516.23	3764253.22	109.64224	(09101620)	372616.23	3764253.22	126.36980	(11101305)
372716.23	3764253.22	135.02538	(12091424)	372816.23	3764253.22	132.50084	(08111618)
372916.23	3764253.22	118.82280	(08100806)	373016.23	3764253.22	111.15941	(10110418)
373116.23	3764253.22	109.99383	(10110418)	373216.23	3764253.22	96.36503	(08100803)
373316.23	3764253.22	81.50670	(09100121)	371316.23	3764353.22	32.84646	(09092321)
371416.23	3764353.22	36.27058	(09092522)	371516.23	3764353.22	39.57976	(09092522)
371616.23	3764353.22	45.74861	(09092522)	371716.23	3764353.22	52.22410	(12100223)
371816.23	3764353.22	61.25750	(12100223)	371916.23	3764353.22	73.09906	(09102623)
372016.23	3764353.22	91.34319	(12090722)	372116.23	3764353.22	124.81134	(08092923)
372216.23	3764353.22	158.90817	(12090701)	372316.23	3764353.22	168.70824	(12100223)
372416.23	3764353.22	153.79775	(12100223)	372516.23	3764353.22	140.26246	(12100223)

↑ *** AERMOD - VERSION 15181 *** *** Inglewood Oil Field HRA ***
11/24/15
*** AERMET - VERSION 14134 *** *** Cancer Burden Analysis ***
10:33:11
PAGE
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**MODELOPTs: RegDFAULT CONC ELEV URBAN

*** THE 1ST HIGHEST 1-HR AVERAGE CONCENTRATION VALUES FOR SOURCE GROUP: PAREA1 ***
INCLUDING SOURCE(S): PAREA1 ,

*** DISCRETE CARTESIAN RECEPTOR POINTS ***

** CONC OF TACS IN MICROGRAMS/M**3 **

X-COORD (M)	Y-COORD (M)	CONC	(YYMMDDHH)	X-COORD (M)	Y-COORD (M)	CONC	(YYMMDDHH)
372616.23	3764353.22	155.59058	(10110418)	372716.23	3764353.22	216.93833	(08100803)
372816.23	3764353.22	248.29866	(09100121)	372916.23	3764353.22	230.31996	(08102806)
373016.23	3764353.22	234.19947	(09090502)	373116.23	3764353.22	178.24404	(09090203)
373216.23	3764353.22	116.67648	(10092820)	373316.23	3764353.22	92.08505	(10092820)
371316.23	3764453.22	33.51772	(09030121)	371416.23	3764453.22	37.11471	(09030121)
371516.23	3764453.22	40.47940	(09030121)	371616.23	3764453.22	47.44591	(09030121)
371716.23	3764453.22	54.86713	(09030121)	371816.23	3764453.22	65.49324	(09030121)
371916.23	3764453.22	80.93855	(08111420)	372016.23	3764453.22	108.05235	(08111420)
372116.23	3764453.22	188.10991	(08111420)	372216.23	3764453.22	243.73223	(12082024)
372316.23	3764453.22	183.46568	(12082024)	372416.23	3764453.22	175.21838	(12090906)
372516.23	3764453.22	147.13232	(12090604)	372616.23	3764453.22	187.20080	(12100221)
372716.23	3764453.22	238.52052	(11090620)	372816.23	3764453.22	195.88229	(11090620)
372916.23	3764453.22	182.27684	(11090620)	373016.23	3764453.22	200.50309	(09030120)
373116.23	3764453.22	153.17013	(12082902)	373216.23	3764453.22	115.43993	(12082902)
373316.23	3764453.22	92.00713	(12100221)	371316.23	3764553.22	33.72856	(12081802)
371416.23	3764553.22	37.42148	(12081802)	371516.23	3764553.22	41.31560	(12081802)
371616.23	3764553.22	47.64479	(12082024)	371716.23	3764553.22	55.06256	(12082024)
371816.23	3764553.22	65.72810	(12090906)	371916.23	3764553.22	80.24403	(12090604)

372016.23	3764553.22	103.31709	(12010405)	372116.23	3764553.22	147.34816	(12091605)
372216.23	3764553.22	201.42476	(10092923)	372316.23	3764553.22	238.07627	(10092622)
372416.23	3764553.22	170.42131	(10092521)	372516.23	3764553.22	104.51697	(09090121)
372616.23	3764553.22	95.66343	(12081022)	372716.23	3764553.22	91.87107	(09090121)
372816.23	3764553.22	86.32367	(12030423)	372916.23	3764553.22	82.30665	(12030423)
373016.23	3764553.22	123.03922	(12100102)	373116.23	3764553.22	102.74143	(12081806)
373216.23	3764553.22	96.87380	(09090224)	373316.23	3764553.22	81.72336	(11090620)
371316.23	3764653.22	33.36211	(12090906)	371416.23	3764653.22	36.88549	(12090604)
371516.23	3764653.22	41.00393	(12010405)	371616.23	3764653.22	45.85529	(12010405)
371716.23	3764653.22	53.26451	(12091605)	371816.23	3764653.22	61.55298	(12091605)
371916.23	3764653.22	74.28238	(11050223)	372016.23	3764653.22	92.21899	(08092603)
372116.23	3764653.22	114.50600	(10092622)	372216.23	3764653.22	152.37233	(09041922)
372316.23	3764653.22	231.61112	(11090720)	372416.23	3764653.22	93.27075	(11090703)
372516.23	3764653.22	96.21740	(11090622)	372616.23	3764653.22	86.24776	(12091303)
372716.23	3764653.22	71.83280	(10071705)	372816.23	3764653.22	63.21835	(10071705)
372916.23	3764653.22	59.20650	(10071705)	373016.23	3764653.22	56.98290	(12100102)
373116.23	3764653.22	64.26283	(11090622)	373216.23	3764653.22	69.17065	(08090501)
373316.23	3764653.22	72.10207	(10082503)	371316.23	3764753.22	32.46802	(12090804)
371416.23	3764753.22	35.80153	(12091605)	371516.23	3764753.22	39.20679	(12100721)
371616.23	3764753.22	42.56629	(11050223)	371716.23	3764753.22	49.62722	(10092923)

371816.23	3764753.22	55.69630	(08092603)	371916.23	3764753.22	67.11272	(10092622)
372016.23	3764753.22	82.14754	(11090722)	372116.23	3764753.22	90.29620	(11100119)

↑ *** AERMOD - VERSION 15181 *** *** Inglewood Oil Field HRA *** 11/24/15
*** AERMET - VERSION 14134 *** *** Cancer Burden Analysis *** 10:33:11
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**MODELOPTs: RegDFAULT CONC ELEV URBAN

*** THE 1ST HIGHEST 1-HR AVERAGE CONCENTRATION VALUES FOR SOURCE GROUP: PAREA1 ***
INCLUDING SOURCE(S): PAREA1 ,

*** DISCRETE CARTESIAN RECEPTOR POINTS ***

** CONC OF TACS IN MICROGRAMS/M**3 **

X-COORD (M)	Y-COORD (M)	CONC	(YYMMDDHH)	X-COORD (M)	Y-COORD (M)	CONC	(YYMMDDHH)
372216.23	3764753.22	104.84981	(10092706)	372316.23	3764753.22	105.45189	(09082921)
372416.23	3764753.22	66.01597	(11101322)	372516.23	3764753.22	72.70291	(10092621)
372616.23	3764753.22	70.63314	(12091420)	372716.23	3764753.22	59.07612	(11090622)
372816.23	3764753.22	52.54855	(08082122)	372916.23	3764753.22	48.21536	(12091303)
373016.23	3764753.22	46.14869	(08083105)	373116.23	3764753.22	46.79801	(12091303)
373216.23	3764753.22	51.44089	(12091303)	373316.23	3764753.22	55.50034	(10071705)
371316.23	3764853.22	31.38561	(08071004)	371416.23	3764853.22	34.24693	(08080702)
371516.23	3764853.22	37.35294	(10092923)	371616.23	3764853.22	40.47210	(10101324)
371716.23	3764853.22	44.55509	(10092622)	371816.23	3764853.22	49.43485	(08062024)

371916.23	3764853.22	57.06555	(08100122)	372016.23	3764853.22	69.58348	(11100119)
372116.23	3764853.22	74.89076	(12090921)	372216.23	3764853.22	79.66571	(10110319)
372316.23	3764853.22	76.59501	(12080901)	372416.23	3764853.22	59.58956	(11090621)
372516.23	3764853.22	62.34693	(12081322)	372616.23	3764853.22	58.21786	(09082903)
372716.23	3764853.22	51.58393	(10092623)	372816.23	3764853.22	45.72302	(09042023)
372916.23	3764853.22	42.34860	(11090622)	373016.23	3764853.22	39.31421	(11090701)
373116.23	3764853.22	38.99190	(08082122)	373216.23	3764853.22	42.62781	(11090622)
373316.23	3764853.22	43.86886	(12091303)	371316.23	3764953.22	30.02457	(08081223)
371416.23	3764953.22	32.42401	(09083124)	371516.23	3764953.22	35.30793	(10092622)
371616.23	3764953.22	37.91230	(09090123)	371716.23	3764953.22	39.67703	(11090722)
371816.23	3764953.22	44.20440	(11090803)	371916.23	3764953.22	47.43017	(11100119)
372016.23	3764953.22	52.37249	(12100119)	372116.23	3764953.22	56.20258	(11090624)
372216.23	3764953.22	60.70835	(11090720)	372316.23	3764953.22	61.30237	(12080901)
372416.23	3764953.22	52.02364	(09090124)	372516.23	3764953.22	53.06795	(11101206)
372616.23	3764953.22	49.78698	(11082601)	372716.23	3764953.22	44.63160	(10092621)
372816.23	3764953.22	38.21882	(10092623)	372916.23	3764953.22	35.88218	(12091420)
373016.23	3764953.22	34.49670	(09042023)	373116.23	3764953.22	34.11982	(11090622)
373216.23	3764953.22	33.92219	(11090622)	373316.23	3764953.22	35.70405	(11090701)
371316.23	3765053.22	28.68147	(10092622)	371416.23	3765053.22	30.72549	(10092622)
371516.23	3765053.22	32.86656	(08062024)	371616.23	3765053.22	35.05785	(08100122)

371716.23	3765053.22	37.02007	(09041922)	371816.23	3765053.22	38.33369	(11100119)
371916.23	3765053.22	41.14938	(08080706)	372016.23	3765053.22	43.14871	(10081901)
372116.23	3765053.22	47.74167	(10110319)	372216.23	3765053.22	50.79419	(08062101)
372316.23	3765053.22	50.58897	(12081824)	372416.23	3765053.22	52.78870	(09080322)
372516.23	3765053.22	46.08241	(12082821)	372616.23	3765053.22	41.61442	(11101206)
372716.23	3765053.22	35.32576	(12091022)	372816.23	3765053.22	33.30853	(10092621)
372916.23	3765053.22	31.88356	(10092623)	373016.23	3765053.22	31.02202	(12091420)
373116.23	3765053.22	30.61617	(12091420)	373216.23	3765053.22	30.13913	(09042023)
373316.23	3765053.22	29.90939	(11090622)	371316.23	3765153.22	27.16232	(08062024)
371416.23	3765153.22	28.68296	(11090722)	371516.23	3765153.22	30.58113	(08100122)
371616.23	3765153.22	32.22001	(11101320)	371716.23	3765153.22	33.68138	(11100119)

↑ *** AERMOD - VERSION 15181 *** *** Inglewood Oil Field HRA *** 11/24/15
*** AERMET - VERSION 14134 *** *** Cancer Burden Analysis *** 10:33:11
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**MODELOPTs: RegDFAULT CONC ELEV URBAN

*** THE 1ST HIGHEST 1-HR AVERAGE CONCENTRATION VALUES FOR SOURCE GROUP: PAREA1 ***
INCLUDING SOURCE(S): PAREA1 ,

*** DISCRETE CARTESIAN RECEPTOR POINTS ***

** CONC OF TACS IN MICROGRAMS/M**3 **

X-COORD (M)	Y-COORD (M)	CONC	(YYMMDDHH)	X-COORD (M)	Y-COORD (M)	CONC	(YYMMDDHH)

- - - -

371816.23	3765153.22	34.32704	(10092521)	371916.23	3765153.22	36.14036	(09090323)
372016.23	3765153.22	37.10542	(10110219)	372116.23	3765153.22	37.75500	(11112918)
372216.23	3765153.22	39.81509	(10101020)	372316.23	3765153.22	41.04780	(12081824)
372416.23	3765153.22	39.23941	(11090802)	372516.23	3765153.22	36.55492	(11090621)
372616.23	3765153.22	33.02666	(08080423)	372716.23	3765153.22	31.33237	(11082601)
372816.23	3765153.22	30.18730	(12091022)	372916.23	3765153.22	29.07146	(10092621)
373016.23	3765153.22	28.30863	(10092621)	373116.23	3765153.22	27.88904	(10092623)
373216.23	3765153.22	27.44420	(12091420)	373316.23	3765153.22	26.98645	(09042023)
371316.23	3765253.22	25.59783	(11090722)	371416.23	3765253.22	26.95044	(11090803)
371516.23	3765253.22	28.39366	(11101320)	371616.23	3765253.22	29.61419	(09092521)
371716.23	3765253.22	30.77835	(10092521)	371816.23	3765253.22	31.73822	(12090921)
371916.23	3765253.22	31.83074	(12082022)	372016.23	3765253.22	31.83110	(09082621)
372116.23	3765253.22	32.28313	(11090720)	372216.23	3765253.22	32.10991	(10101020)
372316.23	3765253.22	31.97370	(12081824)	372416.23	3765253.22	32.44591	(11090802)
372516.23	3765253.22	30.39027	(09090124)	372616.23	3765253.22	29.20238	(12100102)
372716.23	3765253.22	28.24660	(11101206)	372816.23	3765253.22	27.54116	(11082601)
372916.23	3765253.22	26.75700	(12091022)	373016.23	3765253.22	26.09031	(10092621)
373116.23	3765253.22	25.67064	(10092621)	373216.23	3765253.22	25.28636	(10092623)
373316.23	3765253.22	24.91626	(12091420)	371316.23	3765353.22	24.10519	(11090803)
371416.23	3765353.22	25.23972	(11101320)	371516.23	3765353.22	26.32752	(09092521)

371616.23	3765353.22	27.39705	(10092521)	371716.23	3765353.22	28.30716	(12100119)
371816.23	3765353.22	28.87260	(10081901)	371916.23	3765353.22	29.40915	(10110219)
372016.23	3765353.22	29.49229	(11090705)	372116.23	3765353.22	29.21709	(09082922)
372216.23	3765353.22	29.14699	(09082921)	372316.23	3765353.22	28.21035	(12081824)
372416.23	3765353.22	27.44602	(11090802)	372516.23	3765353.22	26.71032	(11101321)
372616.23	3765353.22	26.22196	(12082821)	372716.23	3765353.22	25.90819	(08080423)
372816.23	3765353.22	25.33471	(11101322)	372916.23	3765353.22	24.67880	(12081322)
373016.23	3765353.22	24.23284	(09082903)	373116.23	3765353.22	23.81496	(10092621)
373216.23	3765353.22	23.52672	(10092621)	373316.23	3765353.22	23.25518	(10092623)
371316.23	3765453.22	22.63595	(11100119)	371416.23	3765453.22	23.62140	(09092521)
371516.23	3765453.22	24.57022	(10092521)	371616.23	3765453.22	25.39416	(12100119)
371716.23	3765453.22	25.97762	(11082702)	371816.23	3765453.22	26.57780	(11090624)
371916.23	3765453.22	26.86609	(09082621)	372016.23	3765453.22	27.01871	(11112918)
372116.23	3765453.22	26.90314	(08062101)	372216.23	3765453.22	26.63764	(09082921)
372316.23	3765453.22	26.19926	(12081824)	372416.23	3765453.22	25.82898	(09083023)
372516.23	3765453.22	25.26668	(09080322)	372616.23	3765453.22	24.81065	(11090621)
372716.23	3765453.22	23.78418	(09101823)	372816.23	3765453.22	23.39499	(11101206)
372916.23	3765453.22	23.13536	(11082601)	373016.23	3765453.22	22.65077	(12091022)
373116.23	3765453.22	22.28474	(09082903)	373216.23	3765453.22	21.98727	(10092621)
373316.23	3765453.22	21.74404	(10092621)	371316.23	3765553.22	21.37344	(09092521)

↑ *** AERMOD - VERSION 15181 *** *** Inglewood Oil Field HRA *** 11/24/15
*** AERMET - VERSION 14134 *** *** Cancer Burden Analysis *** 10:33:11
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**MODELOPTs: RegDFAULT CONC ELEV URBAN

*** THE 1ST HIGHEST 1-HR AVERAGE CONCENTRATION VALUES FOR SOURCE GROUP: PAREA1 ***
INCLUDING SOURCE(S): PAREA1 ,

*** DISCRETE CARTESIAN RECEPTOR POINTS ***

** CONC OF TACS IN MICROGRAMS/M**3 **

X-COORD (M)	Y-COORD (M)	CONC	(YYMMDDHH)	X-COORD (M)	Y-COORD (M)	CONC	(YYMMDDHH)
371416.23	3765553.22	22.21001	(10092521)	371516.23	3765553.22	22.88314	(12100119)
371616.23	3765553.22	23.55713	(09090323)	371716.23	3765553.22	24.04647	(10092706)
371816.23	3765553.22	24.55345	(10110219)	371916.23	3765553.22	24.81865	(10110319)
372016.23	3765553.22	24.88596	(11090720)	372116.23	3765553.22	24.83909	(09090302)
372216.23	3765553.22	24.67668	(09082921)	372316.23	3765553.22	24.33063	(12081824)
372416.23	3765553.22	23.94513	(09083023)	372516.23	3765553.22	23.53595	(09080322)
372616.23	3765553.22	23.10046	(11090621)	372716.23	3765553.22	22.56954	(09091904)
372816.23	3765553.22	21.79899	(08080423)	372916.23	3765553.22	21.67090	(11101322)
373016.23	3765553.22	21.27798	(11082601)	373116.23	3765553.22	21.00063	(12091022)
373216.23	3765553.22	20.68422	(09082903)	373316.23	3765553.22	20.49198	(10092621)
371316.23	3765653.22	20.20593	(10092521)	371416.23	3765653.22	20.77963	(11082604)

371516.23	3765653.22	21.45403	(12090921)	371616.23	3765653.22	21.92856	(10081901)
371716.23	3765653.22	22.40010	(11090624)	371816.23	3765653.22	22.72985	(09082621)
371916.23	3765653.22	22.94220	(11090721)	372016.23	3765653.22	22.99656	(09082922)
372116.23	3765653.22	22.99916	(10101020)	372216.23	3765653.22	22.84124	(12091006)
372316.23	3765653.22	22.64095	(12100220)	372416.23	3765653.22	22.31087	(09083023)
372516.23	3765653.22	21.94996	(12082302)	372616.23	3765653.22	21.67483	(09090124)
372716.23	3765653.22	21.25618	(12082821)	372816.23	3765653.22	20.77124	(09072623)
372916.23	3765653.22	20.43757	(11101206)	373016.23	3765653.22	20.16547	(11082601)
373116.23	3765653.22	19.84175	(12081322)	373216.23	3765653.22	19.61435	(12091022)
373316.23	3765653.22	19.29040	(11063022)				

↑ *** AERMOD - VERSION 15181 *** *** Inglewood Oil Field HRA *** 11/24/15
*** AERMET - VERSION 14134 *** *** Cancer Burden Analysis *** 10:33:11
PAGE 24
**MODELOPTs: RegDFAULT CONC ELEV URBAN

*** THE SUMMARY OF MAXIMUM PERIOD (43848 HRS) RESULTS ***

** CONC OF TACS IN MICROGRAMS/M**3 **

```
                                                                                                      NETWORK
GROUP ID                        AVERAGE CONC                RECEPTOR  (XR, YR, ZELEV, ZHILL, ZFLAG)  OF TYPE  GRID-ID
- - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - -

PAREA1    1ST HIGHEST VALUE IS      65.65895 AT (  372816.23,  3764353.22,    86.06,   125.35,    0.00)  DC
          2ND HIGHEST VALUE IS      62.34460 AT (  372316.23,  3764553.22,    86.72,   129.30,    0.00)  DC
```

```
         3RD HIGHEST VALUE IS      61.05756 AT (  372716.23,  3764453.22,    96.16,   125.35,    0.00)  DC
         4TH HIGHEST VALUE IS      57.79971 AT (  372916.23,  3764353.22,    76.98,   125.35,    0.00)  DC
         5TH HIGHEST VALUE IS      56.51974 AT (  373016.23,  3764353.22,    79.76,   124.53,    0.00)  DC
         6TH HIGHEST VALUE IS      50.99122 AT (  373016.23,  3764453.22,    65.43,   130.50,    0.00)  DC
         7TH HIGHEST VALUE IS      47.58852 AT (  372716.23,  3764353.22,   103.03,   125.35,    0.00)  DC
         8TH HIGHEST VALUE IS      46.79103 AT (  372416.23,  3764553.22,   102.00,   129.30,    0.00)  DC
         9TH HIGHEST VALUE IS      40.06127 AT (  372816.23,  3764453.22,    87.11,   125.35,    0.00)  DC
        10TH HIGHEST VALUE IS      39.64522 AT (  372416.23,  3764453.22,   110.55,   126.52,    0.00)  DC


 *** RECEPTOR TYPES:  GC = GRIDCART
                      GP = GRIDPOLR
                      DC = DISCCART
                      DP = DISCPOLR
 *** AERMOD - VERSION  15181 ***   *** Inglewood Oil Field HRA                                      ***
11/24/15
 *** AERMET - VERSION  14134 ***   *** Cancer Burden Analysis                                       ***
10:33:11
                                                                                                           PAGE
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 **MODELOPTs:   RegDFAULT CONC      ELEV      URBAN

                                                 *** THE SUMMARY OF HIGHEST  1-HR RESULTS ***


                                    ** CONC OF TACS     IN MICROGRAMS/M**3                         **

                                                        DATE
 NETWORK
GROUP ID                          AVERAGE CONC     (YYMMDDHH)             RECEPTOR  (XR, YR, ZELEV, ZHILL, ZFLAG)    OF TYPE
 GRID-ID
- - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - -
- - - -

PAREA1   HIGH   1ST HIGH VALUE IS     248.29866  ON 09100121: AT (  372816.23,  3764353.22,    86.06,   125.35,    0.00)  DC



 *** RECEPTOR TYPES:  GC = GRIDCART
                      GP = GRIDPOLR
```

DC = DISCCART
DP = DISCPOLR

**MODELOPTs: RegDFAULT CONC   ELEV   URBAN

*** Message Summary : AERMOD Model Execution ***

--------- Summary of Total Messages --------

A Total of   0 Fatal Error Message(s)
A Total of   0 Warning Message(s)
A Total of   1558 Informational Message(s)

A Total of   43848 Hours Were Processed

A Total of   115 Calm Hours Identified

A Total of   1443 Missing Hours Identified (3.29 Percent)

******** FATAL ERROR MESSAGES ********
*** NONE ***

******** WARNING MESSAGES ********
*** NONE ***

****
*** AERMOD Finishes Successfully ***
****

```
** Lakes Environmental AERMOD MPI
**
****************************************
**
** AERMOD Input Produced by:
** AERMOD View Ver. 9.0.0
** Lakes Environmental Software Inc.
** Date: 11/23/2015
** File: C:\Lakes\AERMOD View\Projects\Psomas_IOF_Chronic_Cancer_HRA\Psomas_IOF_Chronic_Cancer_HRA.ADI
**
****************************************
**
**
****************************************
** AERMOD Control Pathway
****************************************
**
**
CO STARTING
   TITLEONE Inglewood Oil Field HRA
   TITLETWO Chronic and Cancer Analysis
   MODELOPT DFAULT CONC
   AVERTIME 1 PERIOD
   URBANOPT 9862049
   POLLUTID TACS
   RUNORNOT RUN
   ERRORFIL Psomas_IOF_Chronic_Cancer_HRA.err
CO FINISHED
**
****************************************
** AERMOD Source Pathway
****************************************
**
**
SO STARTING
** Source Location **
** Source ID - Type - X Coord. - Y Coord. **
   LOCATION PAREA1       AREAPOLY   372316.231  3764653.222       91.320
** Source Parameters **
   SRCPARAM PAREA1       6.3574E-06     4.572        14     1.064
```

```
   AREAVERT PAREA1       372316.231 3764653.222 372475.937 3764555.975
   AREAVERT PAREA1       372510.725 3764477.703 372513.888 3764467.424
   AREAVERT PAREA1       372747.913 3764462.681 372747.913 3764450.821
   AREAVERT PAREA1       372925.014 3764450.031 372935.292 3764449.240
   AREAVERT PAREA1       372993.008 3764536.209 373034.121 3764537.000
   AREAVERT PAREA1       373086.302 3764329.855 372653.038 3764322.739
   AREAVERT PAREA1       372623.785 3764282.417 372140.711 3764416.034
   URBANSRC ALL
   SRCGROUP PAREA1   PAREA1
SO FINISHED
**
****************************************
** AERMOD Receptor Pathway
****************************************
**
**
RE STARTING
   INCLUDED Psomas_IOF_Chronic_Cancer_HRA.rou
RE FINISHED
**
****************************************
** AERMOD Meteorology Pathway
****************************************
**
**
ME STARTING
   SURFFILE wsla8.sfc
   PROFFILE wsla8.PFL
   SURFDATA 0 2008
   UAIRDATA 3190 2008
   SITEDATA 99999 2008
   PROFBASE 10.0 METERS
ME FINISHED
**
****************************************
** AERMOD Output Pathway
****************************************
**
**
OU STARTING
```

```
   RECTABLE ALLAVE 1ST
   RECTABLE 1 1ST
** Auto-Generated Plotfiles
   PLOTFILE 1 PAREA1 1ST PSOMAS_IOF_CHRONIC_CANCER_HRA.AD\01H1G001.PLT 31
   PLOTFILE PERIOD PAREA1 PSOMAS_IOF_CHRONIC_CANCER_HRA.AD\PE00G000.PLT 32
   SUMMFILE Psomas_IOF_Chronic_Cancer_HRA.sum
OU FINISHED

 **********************************
 *** SETUP Finishes Successfully ***
 **********************************

↑ *** AERMOD - VERSION  15181 ***   *** Inglewood Oil Field HRA                                           ***
11/23/15
 *** AERMET - VERSION  14134 ***   *** Chronic and Cancer Analysis                                        ***
12:46:22
                                                                                                              PAGE
 1
 **MODELOPTs:   RegDFAULT CONC      ELEV      URBAN

                                              ***     MODEL SETUP OPTIONS SUMMARY       ***
 - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - -
-

 **Model Is Setup For Calculation of Average CONCentration Values.

   --  DEPOSITION LOGIC  --
 **NO GAS DEPOSITION Data Provided.
 **NO PARTICLE DEPOSITION Data Provided.
 **Model Uses NO DRY DEPLETION.  DRYDPLT  =  F
 **Model Uses NO WET DEPLETION.  WETDPLT  =  F

 **Model Uses URBAN Dispersion Algorithm for the SBL for     1 Source(s),
   for Total of    1 Urban Area(s):
   Urban Population =   9862049.0 ;  Urban Roughness Length =  1.000 m

 **Model Uses Regulatory DEFAULT Options:
         1. Stack-tip Downwash.
         2. Model Accounts for ELEVated Terrain Effects.
         3. Use Calms Processing Routine.
```

```
        4. Use Missing Data Processing Routine.
        5. No Exponential Decay.
        6. Urban Roughness Length of 1.0 Meter Assumed.

**Other Options Specified:
        TEMP_Sub - Meteorological data includes TEMP substitutions

**Model Assumes No FLAGPOLE Receptor Heights.

**The User Specified a Pollutant Type of:  TACS

**Model Calculates  1 Short Term Average(s) of:   1-HR
    and Calculates PERIOD Averages

**This Run Includes:      1 Source(s);       1 Source Group(s); and     216 Receptor(s)

               with:      0 POINT(s), including
                          0 POINTCAP(s) and      0 POINTHOR(s)
                and:      0 VOLUME source(s)
                and:      1 AREA type source(s)
                and:      0 LINE source(s)
                and:      0 OPENPIT source(s)


**Model Set To Continue RUNning After the Setup Testing.

**The AERMET Input Meteorological Data Version Date:  14134

**Output Options Selected:
         Model Outputs Tables of PERIOD Averages by Receptor
         Model Outputs Tables of Highest Short Term Values by Receptor (RECTABLE Keyword)
         Model Outputs External File(s) of High Values for Plotting (PLOTFILE Keyword)
         Model Outputs Separate Summary File of High Ranked Values (SUMMFILE Keyword)

**NOTE:  The Following Flags May Appear Following CONC Values:  c for Calm Hours
                                                                m for Missing Hours
                                                                b for Both Calm and Missing Hours

**Misc. Inputs:  Base Elev. for Pot. Temp. Profile (m MSL) =    10.00 ;  Decay Coef. =    0.000     ;  Rot. Angle =     0.0
                 Emission Units = GRAMS/SEC                                ;  Emission Rate Unit Factor =   0.10000E+07
```

Psomas_IOF_Chronic_Cancer_HRA
Output Units = MICROGRAMS/M**3

**Approximate Storage Requirements of Model = 3.5 MB of RAM.

**Detailed Error/Message File: Psomas_IOF_Chronic_Cancer_HRA.err

**File for Summary of Results: Psomas_IOF_Chronic_Cancer_HRA.sum

**MODELOPTs: RegDFAULT CONC ELEV URBAN

*** AREAPOLY SOURCE DATA ***

SOURCE ID	NUMBER PART. CATS.	EMISSION RATE (GRAMS/SEC /METER**2)	LOCATION OF AREA X (METERS)	LOCATION OF AREA Y (METERS)	BASE ELEV. (METERS)	RELEASE HEIGHT (METERS)	NUMBER OF VERTS.	INIT. SZ (METERS)	URBAN SOURCE	EMISSION RATE SCALAR VARY BY
PAREA1	0	0.63574E-05	372316.2	3764653.2	91.3	4.57	14	1.06	YES	

**MODELOPTs: RegDFAULT CONC ELEV URBAN

*** SOURCE IDs DEFINING SOURCE GROUPS ***

SRCGROUP ID SOURCE IDs
----------- ----------

```
  PAREA1     PAREA1      ,
↑ *** AERMOD - VERSION  15181 ***   *** Inglewood Oil Field HRA                                                ***
11/23/15
 *** AERMET - VERSION  14134 ***   *** Chronic and Cancer Analysis                                          ***
12:46:22
                                                                                                                      PAGE
 4
 **MODELOPTs:   RegDFAULT CONC      ELEV      URBAN


                                             *** SOURCE IDs DEFINED AS URBAN SOURCES ***

  URBAN ID   URBAN POP                                        SOURCE IDs
  --------   ---------                                        ----------


             9862049.   PAREA1      ,
↑ *** AERMOD - VERSION  15181 ***   *** Inglewood Oil Field HRA                                                ***
11/23/15
 *** AERMET - VERSION  14134 ***   *** Chronic and Cancer Analysis                                          ***
12:46:22
                                                                                                                      PAGE
 5
 **MODELOPTs:   RegDFAULT CONC      ELEV      URBAN

                                                *** DISCRETE CARTESIAN RECEPTORS ***
                                              (X-COORD, Y-COORD, ZELEV, ZHILL, ZFLAG)
                                                              (METERS)

     ( 371578.8, 3763428.2,      18.8,     125.0,       0.0);         ( 371678.8, 3763428.2,      21.1,     125.0,
0.0);
     ( 371778.8, 3763428.2,      24.2,     125.0,       0.0);         ( 371878.8, 3763428.2,      29.3,     125.0,
0.0);
     ( 371978.8, 3763428.2,      36.2,     125.0,       0.0);         ( 372078.8, 3763428.2,      43.5,     125.0,
0.0);
     ( 371578.8, 3763528.2,      19.0,     125.0,       0.0);         ( 371678.8, 3763528.2,      21.3,     125.0,
0.0);
     ( 371778.8, 3763528.2,      24.4,     125.0,       0.0);         ( 371878.8, 3763528.2,      28.9,     125.0,
0.0);
```

(371978.8, 3763528.2, 34.5, 125.0, 0.0); (372078.8, 3763528.2, 42.0, 125.0, 0.0);
(371578.8, 3763628.2, 19.3, 125.0, 0.0); (371678.8, 3763628.2, 21.0, 125.0, 0.0);
(371778.8, 3763628.2, 24.0, 126.5, 0.0); (371878.8, 3763628.2, 29.1, 126.5, 0.0);
(371978.8, 3763628.2, 36.3, 126.5, 0.0); (372078.8, 3763628.2, 44.0, 125.0, 0.0);
(371578.8, 3763728.2, 19.5, 126.5, 0.0); (371678.8, 3763728.2, 25.5, 126.5, 0.0);
(371778.8, 3763728.2, 23.3, 126.5, 0.0); (371878.8, 3763728.2, 28.4, 126.5, 0.0);
(371978.8, 3763728.2, 34.6, 126.5, 0.0); (372078.8, 3763728.2, 41.7, 126.5, 0.0);
(371578.8, 3763828.2, 19.2, 126.5, 0.0); (371678.8, 3763828.2, 22.0, 126.5, 0.0);
(371778.8, 3763828.2, 24.0, 126.5, 0.0); (371878.8, 3763828.2, 27.0, 126.5, 0.0);
(371978.8, 3763828.2, 31.4, 126.5, 0.0); (372078.8, 3763828.2, 41.4, 126.5, 0.0);
(371578.8, 3763928.2, 19.9, 126.5, 0.0); (371678.8, 3763928.2, 22.8, 126.5, 0.0);
(371778.8, 3763928.2, 25.6, 126.5, 0.0); (371878.8, 3763928.2, 28.5, 126.5, 0.0);
(371578.8, 3764028.2, 20.5, 126.5, 0.0); (371678.8, 3764028.2, 22.1, 126.5, 0.0);
(371778.8, 3764028.2, 25.2, 129.3, 0.0); (371878.8, 3764028.2, 32.5, 127.5, 0.0);
(371578.8, 3764128.2, 21.0, 126.5, 0.0); (371678.8, 3764128.2, 23.7, 129.3, 0.0);
(371778.8, 3764128.2, 25.9, 129.3, 0.0); (371878.8, 3764128.2, 34.5, 129.3, 0.0);
(371578.8, 3764228.2, 20.8, 129.3, 0.0); (371678.8, 3764228.2, 24.9, 129.3, 0.0);
(371778.8, 3764228.2, 30.5, 129.3, 0.0); (371578.8, 3764328.2, 21.9, 129.3, 0.0);
(371678.8, 3764328.2, 23.2, 129.3, 0.0); (371778.8, 3764328.2, 26.8, 129.3, 0.0);
(371578.8, 3764428.2, 22.1, 129.3, 0.0); (371678.8, 3764428.2, 23.7, 129.3, 0.0);

(371578.8, 3764528.2, 18.1, 129.3, 0.0); (371678.8, 3764528.2, 24.4, 129.3, 0.0);
(371778.8, 3764528.2, 28.6, 129.3, 0.0); (371878.8, 3764528.2, 34.0, 129.3, 0.0);
(371978.8, 3764528.2, 42.3, 129.3, 0.0); (371578.8, 3764628.2, 11.4, 129.3, 0.0);
(371678.8, 3764628.2, 26.7, 129.3, 0.0); (371778.8, 3764628.2, 29.4, 129.3, 0.0);
(371878.8, 3764628.2, 34.1, 129.3, 0.0); (372778.8, 3764628.2, 89.7, 129.3, 0.0);
(372878.8, 3764628.2, 69.7, 151.8, 0.0); (372978.8, 3764628.2, 62.1, 151.8, 0.0);
(373078.8, 3764628.2, 60.1, 151.8, 0.0); (371578.8, 3764728.2, 17.9, 129.3, 0.0);
(371678.8, 3764728.2, 25.5, 129.3, 0.0); (371778.8, 3764728.2, 28.2, 129.3, 0.0);
(371878.8, 3764728.2, 33.9, 129.3, 0.0); (372578.8, 3764728.2, 103.2, 129.3, 0.0);
(372678.8, 3764728.2, 81.8, 129.3, 0.0); (372778.8, 3764728.2, 75.8, 129.3, 0.0);
(372878.8, 3764728.2, 66.2, 151.8, 0.0); (372978.8, 3764728.2, 59.5, 151.8, 0.0);
(373078.8, 3764728.2, 58.7, 151.8, 0.0); (371578.8, 3764828.2, 20.6, 129.3, 0.0);
(371678.8, 3764828.2, 11.9, 129.3, 0.0); (371778.8, 3764828.2, 24.0, 129.3, 0.0);
(371878.8, 3764828.2, 35.7, 129.3, 0.0); (372378.8, 3764828.2, 122.5, 129.3, 0.0);
(372478.8, 3764828.2, 124.5, 129.3, 0.0); (372578.8, 3764828.2, 102.2, 129.3, 0.0);
(372678.8, 3764828.2, 82.8, 129.3, 0.0); (372778.8, 3764828.2, 71.4, 129.3, 0.0);
(372878.8, 3764828.2, 64.8, 151.8, 0.0); (372978.8, 3764828.2, 54.8, 151.8, 0.0);
(373078.8, 3764828.2, 52.4, 151.8, 0.0); (373478.8, 3764828.2, 85.2, 151.8, 0.0);
(373578.8, 3764828.2, 76.3, 151.8, 0.0); (371578.8, 3764928.2, 23.0, 129.3, 0.0);
(371678.8, 3764928.2, 18.2, 129.3, 0.0); (371778.8, 3764928.2, 23.6, 129.3, 0.0);

 **MODELOPTs: RegDFAULT CONC   ELEV   URBAN

*** DISCRETE CARTESIAN RECEPTORS ***
(X-COORD, Y-COORD, ZELEV, ZHILL, ZFLAG)
(METERS)

```
     ( 371878.8, 3764928.2,      28.6,     129.3,       0.0);         ( 372078.8, 3764928.2,      55.8,     129.3,
0.0);
     ( 372178.8, 3764928.2,      68.2,     129.3,       0.0);         ( 372278.8, 3764928.2,      82.5,     129.3,
0.0);
     ( 372378.8, 3764928.2,     111.5,     129.3,       0.0);         ( 372478.8, 3764928.2,     123.1,     128.4,
0.0);
     ( 372578.8, 3764928.2,     106.5,     129.3,       0.0);         ( 372678.8, 3764928.2,      85.9,     129.3,
0.0);
     ( 372778.8, 3764928.2,      58.9,     151.8,       0.0);         ( 372878.8, 3764928.2,      48.4,     151.8,
0.0);
     ( 372978.8, 3764928.2,      43.2,     151.8,       0.0);         ( 373078.8, 3764928.2,      46.1,     151.8,
0.0);
     ( 373178.8, 3764928.2,      46.5,     151.8,       0.0);         ( 373378.8, 3764928.2,      66.6,     151.8,
0.0);
     ( 373478.8, 3764928.2,      63.9,     151.8,       0.0);         ( 373578.8, 3764928.2,      59.7,     151.8,
0.0);
     ( 371578.8, 3765028.2,      25.3,     129.3,       0.0);         ( 371678.8, 3765028.2,      24.7,     129.3,
0.0);
     ( 371778.8, 3765028.2,      13.0,     129.3,       0.0);         ( 371878.8, 3765028.2,      27.9,     129.3,
0.0);
     ( 371978.8, 3765028.2,      30.8,     129.3,       0.0);         ( 372078.8, 3765028.2,      56.1,     129.3,
0.0);
     ( 372178.8, 3765028.2,      73.8,     129.3,       0.0);         ( 372278.8, 3765028.2,      86.3,     129.3,
0.0);
     ( 372378.8, 3765028.2,     109.5,     128.4,       0.0);         ( 372478.8, 3765028.2,     102.1,     129.3,
0.0);
     ( 372578.8, 3765028.2,      88.5,     129.3,       0.0);         ( 372678.8, 3765028.2,      59.0,     129.3,
0.0);
```

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(372978.8, 3765028.2, 37.9, 151.8, 0.0); (373078.8, 3765028.2, 40.6, 151.8, 0.0);
(373178.8, 3765028.2, 41.0, 151.8, 0.0); (373278.8, 3765028.2, 37.0, 151.8, 0.0);
(373378.8, 3765028.2, 40.1, 151.8, 0.0); (373478.8, 3765028.2, 36.5, 151.8, 0.0);
(373578.8, 3765028.2, 34.3, 151.8, 0.0); (371578.8, 3765128.2, 26.4, 129.3, 0.0);
(371678.8, 3765128.2, 25.8, 129.3, 0.0); (371778.8, 3765128.2, 22.6, 129.3, 0.0);
(371878.8, 3765128.2, 21.9, 129.3, 0.0); (371978.8, 3765128.2, 28.5, 129.3, 0.0);
(372078.8, 3765128.2, 31.8, 129.3, 0.0); (372178.8, 3765128.2, 52.5, 129.3, 0.0);
(372278.8, 3765128.2, 67.1, 129.3, 0.0); (372378.8, 3765128.2, 71.9, 129.3, 0.0);
(372478.8, 3765128.2, 62.0, 129.3, 0.0); (372578.8, 3765128.2, 49.2, 129.3, 0.0);
(372678.8, 3765128.2, 36.4, 151.8, 0.0); (372778.8, 3765128.2, 35.3, 151.8, 0.0);
(372878.8, 3765128.2, 36.2, 151.8, 0.0); (372978.8, 3765128.2, 35.7, 151.8, 0.0);
(373078.8, 3765128.2, 36.6, 151.8, 0.0); (373178.8, 3765128.2, 36.2, 151.8, 0.0);
(373278.8, 3765128.2, 32.3, 151.8, 0.0); (373378.8, 3765128.2, 30.9, 151.8, 0.0);
(373478.8, 3765128.2, 31.2, 151.8, 0.0); (373578.8, 3765128.2, 30.1, 151.8, 0.0);
(371578.8, 3765228.2, 27.4, 129.3, 0.0); (371678.8, 3765228.2, 26.8, 129.3, 0.0);
(371778.8, 3765228.2, 25.8, 129.3, 0.0); (371878.8, 3765228.2, 20.6, 129.3, 0.0);
(371978.8, 3765228.2, 18.7, 129.3, 0.0); (372078.8, 3765228.2, 21.3, 129.3, 0.0);
(372178.8, 3765228.2, 22.9, 129.3, 0.0); (372278.8, 3765228.2, 31.9, 129.3, 0.0);
(372378.8, 3765228.2, 38.7, 129.3, 0.0); (372478.8, 3765228.2, 39.0, 129.3, 0.0);

```
     ( 372578.8, 3765228.2,      30.7,     150.8,       0.0);         ( 372678.8, 3765228.2,      28.8,     151.8,
0.0);
     ( 372778.8, 3765228.2,      30.6,     151.8,       0.0);         ( 372878.8, 3765228.2,      33.9,     151.8,
0.0);
     ( 372978.8, 3765228.2,      33.1,     151.8,       0.0);         ( 373078.8, 3765228.2,      34.1,     151.8,
0.0);
     ( 373178.8, 3765228.2,      33.5,     151.8,       0.0);         ( 373278.8, 3765228.2,      30.5,     151.8,
0.0);
     ( 373378.8, 3765228.2,      30.1,     151.8,       0.0);         ( 373478.8, 3765228.2,      30.2,     151.8,
0.0);
     ( 373578.8, 3765228.2,      30.0,     151.8,       0.0);         ( 371578.8, 3765328.2,      28.3,     129.3,
0.0);
     ( 371678.8, 3765328.2,      27.8,     129.3,       0.0);         ( 371778.8, 3765328.2,      27.0,     129.3,
0.0);
     ( 371878.8, 3765328.2,      26.0,     129.3,       0.0);         ( 371978.8, 3765328.2,      24.7,     129.3,
0.0);
     ( 372078.8, 3765328.2,      20.9,     129.3,       0.0);         ( 372178.8, 3765328.2,      17.8,     129.3,
0.0);
     ( 372278.8, 3765328.2,      17.4,     129.3,       0.0);         ( 372378.8, 3765328.2,      16.2,     129.3,
0.0);
     ( 372478.8, 3765328.2,      17.4,     130.5,       0.0);         ( 372578.8, 3765328.2,      22.1,     151.8,
0.0);
↑ *** AERMOD - VERSION  15181 ***   *** Inglewood Oil Field HRA                                              ***
11/23/15
 *** AERMET - VERSION  14134 ***   *** Chronic and Cancer Analysis                                          ***
12:46:22
                                                                                                                  PAGE
 7
 **MODELOPTs:   RegDFAULT CONC      ELEV      URBAN

                                              *** DISCRETE CARTESIAN RECEPTORS ***
                                            (X-COORD, Y-COORD, ZELEV, ZHILL, ZFLAG)
                                                            (METERS)

     ( 372678.8, 3765328.2,      25.5,     151.8,       0.0);         ( 372778.8, 3765328.2,      28.2,     151.8,
0.0);
     ( 372878.8, 3765328.2,      30.4,     151.8,       0.0);         ( 372978.8, 3765328.2,      30.5,     151.8,
0.0);
     ( 373078.8, 3765328.2,      31.4,     151.8,       0.0);         ( 373178.8, 3765328.2,      31.8,     151.8,
0.0);
```

```
     ( 373278.8, 3765328.2,      29.8,     151.8,       0.0);         ( 373378.8, 3765328.2,      29.9,     151.8,
0.0);
     ( 373478.8, 3765328.2,      29.9,     151.8,       0.0);         ( 373578.8, 3765328.2,      30.1,     151.8,
0.0);
     ( 371578.8, 3765428.2,      28.9,     125.8,       0.0);         ( 371678.8, 3765428.2,      28.4,     129.3,
0.0);
     ( 371778.8, 3765428.2,      27.9,     129.3,       0.0);         ( 371878.8, 3765428.2,      27.2,     129.3,
0.0);
     ( 371978.8, 3765428.2,      26.4,     129.3,       0.0);         ( 372078.8, 3765428.2,      25.8,     129.3,
0.0);
     ( 372178.8, 3765428.2,      25.0,     129.3,       0.0);         ( 372278.8, 3765428.2,      23.3,     129.3,
0.0);
     ( 372378.8, 3765428.2,      24.4,     129.3,       0.0);         ( 372478.8, 3765428.2,      25.1,     129.3,
0.0);
     ( 372578.8, 3765428.2,      25.2,     129.3,       0.0);         ( 372678.8, 3765428.2,      22.2,     151.8,
0.0);
     ( 372778.8, 3765428.2,      24.6,     151.8,       0.0);         ( 372878.8, 3765428.2,      29.1,     151.8,
0.0);
     ( 372978.8, 3765428.2,      29.1,     151.8,       0.0);         ( 373078.8, 3765428.2,      30.1,     151.8,
0.0);
     ( 373178.8, 3765428.2,      30.3,     151.8,       0.0);         ( 373278.8, 3765428.2,      29.3,     151.8,
0.0);
     ( 373378.8, 3765428.2,      29.5,     151.8,       0.0);         ( 373478.8, 3765428.2,      29.8,     151.8,
0.0);
     ( 373578.8, 3765428.2,      30.0,     151.8,       0.0);         ( 372057.1, 3764438.3,      56.5,     129.3,
0.0);
     ( 372802.8, 3764579.9,      80.1,     129.3,       0.0);         ( 372802.8, 3764527.0,      80.6,     129.3,
0.0);
     ( 372877.6, 3764524.4,      75.1,     151.8,       0.0);         ( 372913.0, 3764576.6,      70.4,     151.8,
0.0);
 *** AERMOD - VERSION  15181 ***   *** Inglewood Oil Field HRA                                                ***
11/23/15
 *** AERMET - VERSION  14134 ***   *** Chronic and Cancer Analysis                                            ***
12:46:22
                                                                                                                    PAGE
 8
 **MODELOPTs:   RegDFAULT CONC      ELEV      URBAN

                                             *** METEOROLOGICAL DAYS SELECTED FOR PROCESSING ***
                                                                (1=YES; 0=NO)
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1 1 1 1 1 1 1 1 1 1  1 1 1 1 1 1 1 1 1 1  1 1 1 1 1 1 1 1 1 1  1 1 1 1 1 1 1 1 1 1  1 1 1 1 1 1 1 1 1 1
1 1 1 1 1 1 1 1 1 1  1 1 1 1 1 1 1 1 1 1  1 1 1 1 1 1 1 1 1 1  1 1 1 1 1 1 1 1 1 1  1 1 1 1 1 1 1 1 1 1
1 1 1 1 1 1 1 1 1 1  1 1 1 1 1 1 1 1 1 1  1 1 1 1 1 1 1 1 1 1  1 1 1 1 1 1 1 1 1 1  1 1 1 1 1 1 1 1 1 1
1 1 1 1 1 1 1 1 1 1  1 1 1 1 1 1 1 1 1 1  1 1 1 1 1 1 1 1 1 1  1 1 1 1 1 1 1 1 1 1  1 1 1 1 1 1 1 1 1 1
1 1 1 1 1 1 1 1 1 1  1 1 1 1 1 1 1 1 1 1  1 1 1 1 1 1 1 1 1 1  1 1 1 1 1 1 1 1 1 1  1 1 1 1 1 1 1 1 1 1
1 1 1 1 1 1 1 1 1 1  1 1 1 1 1 1 1 1 1 1  1 1 1 1 1 1 1 1 1 1  1 1 1 1 1 1 1 1 1 1  1 1 1 1 1 1 1 1 1 1
1 1 1 1 1 1 1 1 1 1  1 1 1 1 1 1 1 1 1 1  1 1 1 1 1 1 1 1 1 1  1 1 1 1 1 1 1 1 1 1  1 1 1 1 1 1 1 1 1 1
1 1 1 1 1 1 1 1 1 1  1 1 1 1 1 1
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NOTE: METEOROLOGICAL DATA ACTUALLY PROCESSED WILL ALSO DEPEND ON WHAT IS INCLUDED IN THE DATA FILE.

*** UPPER BOUND OF FIRST THROUGH FIFTH WIND SPEED CATEGORIES ***
(METERS/SEC)

1.54, 3.09, 5.14, 8.23, 10.80,

**MODELOPTs: RegDFAULT CONC ELEV URBAN

*** UP TO THE FIRST 24 HOURS OF METEOROLOGICAL DATA ***

Surface file: wsla8.sfc Met Version: 14134
Profile file: wsla8.PFL
Surface format: FREE
Profile format: FREE
Surface station no.: 0 Upper air station no.: 3190
Name: UNKNOWN Name: UNKNOWN
Year: 2008 Year: 2008

First 24 hours of scalar data

YR	MO	DY	JDY	HR	H0	U*	W*	DT/DZ	ZICNV	ZIMCH	M-O LEN	Z0	BOWEN	ALBEDO	REF WS	WD	HT	REF TA	HT
08	01	01	1	01	-999.0	-9.000	-9.000	-9.000	-999.	-999.	-99999.0	0.40	1.00	1.00	999.00	999.	-9.0	288.4	5.5

08	01	01	1	02	-999.0	-9.000	-9.000	-9.000	-999.	-999.	-99999.0	0.40	1.00	1.00	999.00	999.	-9.0	288.0	5.5
08	01	01	1	03	-999.0	-9.000	-9.000	-9.000	-999.	-999.	-99999.0	0.40	1.00	1.00	999.00	999.	-9.0	287.9	5.5
08	01	01	1	04	-999.0	-9.000	-9.000	-9.000	-999.	-999.	-99999.0	0.40	1.00	1.00	999.00	999.	-9.0	287.8	5.5
08	01	01	1	05	-999.0	-9.000	-9.000	-9.000	-999.	-999.	-99999.0	0.40	1.00	1.00	999.00	999.	-9.0	287.6	5.5
08	01	01	1	06	-999.0	-9.000	-9.000	-9.000	-999.	-999.	-99999.0	0.40	1.00	1.00	999.00	999.	-9.0	288.1	5.5
08	01	01	1	07	-999.0	-9.000	-9.000	-9.000	-999.	-999.	-99999.0	0.40	1.00	1.00	999.00	999.	-9.0	288.1	5.5
08	01	01	1	08	-999.0	-9.000	-9.000	-9.000	-999.	-999.	-99999.0	0.40	1.00	0.55	999.00	999.	-9.0	288.4	5.5
08	01	01	1	09	21.6	-9.000	-9.000	-9.000	53.	-999.	-99999.0	0.40	1.00	0.32	999.00	999.	-9.0	288.9	5.5
08	01	01	1	10	66.0	-9.000	-9.000	-9.000	139.	-999.	-99999.0	0.40	1.00	0.24	999.00	999.	-9.0	290.0	5.5
08	01	01	1	11	126.1	-9.000	-9.000	-9.000	371.	-999.	-99999.0	0.40	1.00	0.21	999.00	999.	-9.0	292.0	5.5
08	01	01	1	12	144.0	-9.000	-9.000	-9.000	600.	-999.	-99999.0	0.40	1.00	0.20	999.00	999.	-9.0	293.0	5.5
08	01	01	1	13	126.0	-9.000	-9.000	-9.000	722.	-999.	-99999.0	0.40	1.00	0.20	999.00	999.	-9.0	293.6	5.5
08	01	01	1	14	69.5	-9.000	-9.000	-9.000	753.	-999.	-99999.0	0.40	1.00	0.21	999.00	999.	-9.0	293.1	5.5
08	01	01	1	15	32.0	-9.000	-9.000	-9.000	767.	-999.	-99999.0	0.40	1.00	0.24	999.00	999.	-9.0	292.6	5.5
08	01	01	1	16	14.4	-9.000	-9.000	-9.000	773.	-999.	-99999.0	0.40	1.00	0.33	999.00	999.	-9.0	292.0	5.5
08	01	01	1	17	-999.0	-9.000	-9.000	-9.000	-999.	-999.	-99999.0	0.40	1.00	0.59	999.00	999.	-9.0	291.1	5.5
08	01	01	1	18	-999.0	-9.000	-9.000	-9.000	-999.	-999.	-99999.0	0.40	1.00	1.00	999.00	999.	-9.0	290.4	5.5
08	01	01	1	19	-999.0	-9.000	-9.000	-9.000	-999.	-999.	-99999.0	0.40	1.00	1.00	999.00	999.	-9.0	289.5	5.5
08	01	01	1	20	-999.0	-9.000	-9.000	-9.000	-999.	-999.	-99999.0	0.40	1.00	1.00	999.00	999.	-9.0	289.4	5.5
08	01	01	1	21	-999.0	-9.000	-9.000	-9.000	-999.	-999.	-99999.0	0.40	1.00	1.00	999.00	999.	-9.0	289.4	5.5
08	01	01	1	22	-999.0	-9.000	-9.000	-9.000	-999.	-999.	-99999.0	0.40	1.00	1.00	999.00	999.	-9.0	289.4	5.5
08	01	01	1	23	-999.0	-9.000	-9.000	-9.000	-999.	-999.	-99999.0	0.40	1.00	1.00	999.00	999.	-9.0	289.4	5.5
08	01	01	1	24	-999.0	-9.000	-9.000	-9.000	-999.	-999.	-99999.0	0.40	1.00	1.00	999.00	999.	-9.0	289.1	5.5

First hour of profile data

YR	MO	DY	HR	HEIGHT	F	WDIR	WSPD	AMB_TMP	sigmaA	sigmaW	sigmaV
08	01	01	01	5.5	0	-999.	-99.00	288.5	99.0	-99.00	-99.00
08	01	01	01	9.1	1	-999.	-99.00	-999.0	99.0	-99.00	-99.00

F indicates top of profile (=1) or below (=0)

↑ *** AERMOD - VERSION 15181 *** *** Inglewood Oil Field HRA *** 11/23/15

*** AERMET - VERSION 14134 *** *** Chronic and Cancer Analysis *** 12:46:22

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**MODELOPTs: RegDFAULT CONC ELEV URBAN

*** THE PERIOD (43848 HRS) AVERAGE CONCENTRATION VALUES FOR SOURCE GROUP: PAREA1 ***

Psomas_IOF_Chronic_Cancer_HRA
INCLUDING SOURCE(S): PAREA1 ,

*** DISCRETE CARTESIAN RECEPTOR POINTS ***

** CONC OF TACS IN MICROGRAMS/M**3 **

X-COORD (M)	Y-COORD (M)	CONC	X-COORD (M)	Y-COORD (M)	CONC
371578.83	3763428.16	0.44152	371678.83	3763428.16	0.48650
371778.83	3763428.16	0.54304	371878.83	3763428.16	0.61597
371978.83	3763428.16	0.70852	372078.83	3763428.16	0.82057
371578.83	3763528.16	0.47975	371678.83	3763528.16	0.52957
371778.83	3763528.16	0.59271	371878.83	3763528.16	0.67446
371978.83	3763528.16	0.77859	372078.83	3763528.16	0.91193
371578.83	3763628.16	0.52491	371678.83	3763628.16	0.58007
371778.83	3763628.16	0.65095	371878.83	3763628.16	0.74544
371978.83	3763628.16	0.87185	372078.83	3763628.16	1.03409
371578.83	3763728.16	0.57776	371678.83	3763728.16	0.64842
371778.83	3763728.16	0.72064	371878.83	3763728.16	0.82972
371978.83	3763728.16	0.97555	372078.83	3763728.16	1.16985
371578.83	3763828.16	0.63788	371678.83	3763828.16	0.71461
371778.83	3763828.16	0.80810	371878.83	3763828.16	0.93124
371978.83	3763828.16	1.09940	372078.83	3763828.16	1.35072
371578.83	3763928.16	0.70600	371678.83	3763928.16	0.79933

371778.83	3763928.16	0.91519	371878.83	3763928.16	1.06539
371578.83	3764028.16	0.77638	371678.83	3764028.16	0.88911
371778.83	3764028.16	1.03441	371878.83	3764028.16	1.23823
371578.83	3764128.16	0.83961	371678.83	3764128.16	0.98266
371778.83	3764128.16	1.16582	371878.83	3764128.16	1.43410
371578.83	3764228.16	0.88134	371678.83	3764228.16	1.05679
371778.83	3764228.16	1.29869	371578.83	3764328.16	0.89254
371678.83	3764328.16	1.08132	371778.83	3764328.16	1.35520
371578.83	3764428.16	0.86555	371678.83	3764428.16	1.05712
371578.83	3764528.16	0.80771	371678.83	3764528.16	0.99558
371778.83	3764528.16	1.26526	371878.83	3764528.16	1.70008
371978.83	3764528.16	2.51651	371578.83	3764628.16	0.74486
371678.83	3764628.16	0.93185	371778.83	3764628.16	1.17458
371878.83	3764628.16	1.56659	372778.83	3764628.16	11.17959
372878.83	3764628.16	9.39035	372978.83	3764628.16	8.82576
373078.83	3764628.16	7.10596	371578.83	3764728.16	0.71323
371678.83	3764728.16	0.87674	371778.83	3764728.16	1.10247
371878.83	3764728.16	1.46530	372578.83	3764728.16	8.89819
372678.83	3764728.16	8.29364	372778.83	3764728.16	7.37178
372878.83	3764728.16	6.50291	372978.83	3764728.16	5.74698

373078.83	3764728.16	4.86520	371578.83	3764828.16	0.68990
371678.83	3764828.16	0.81761	371778.83	3764828.16	1.04582
371878.83	3764828.16	1.39700	372378.83	3764828.16	4.61406
372478.83	3764828.16	4.59196	372578.83	3764828.16	6.52224

↑ *** AERMOD - VERSION 15181 *** *** Inglewood Oil Field HRA *** 11/23/15
*** AERMET - VERSION 14134 *** *** Chronic and Cancer Analysis *** 12:46:22
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**MODELOPTs: RegDFAULT CONC ELEV URBAN

*** THE PERIOD (43848 HRS) AVERAGE CONCENTRATION VALUES FOR SOURCE GROUP: PAREA1 ***
INCLUDING SOURCE(S): PAREA1 ,

*** DISCRETE CARTESIAN RECEPTOR POINTS ***

** CONC OF TACS IN MICROGRAMS/M**3 **

X-COORD (M)	Y-COORD (M)	CONC	X-COORD (M)	Y-COORD (M)	CONC
372678.83	3764828.16	6.19455	372778.83	3764828.16	5.48160
372878.83	3764828.16	4.91095	372978.83	3764828.16	4.24204
373078.83	3764828.16	3.65394	373478.83	3764828.16	1.82103
373578.83	3764828.16	1.46901	371578.83	3764928.16	0.67631
371678.83	3764928.16	0.80506	371778.83	3764928.16	1.00813
371878.83	3764928.16	1.29798	372078.83	3764928.16	2.44132
372178.83	3764928.16	3.33648	372278.83	3764928.16	4.32441

372378.83	3764928.16	4.10169	372478.83	3764928.16	3.46093
372578.83	3764928.16	4.61185	372678.83	3764928.16	4.77974
372778.83	3764928.16	4.07619	372878.83	3764928.16	3.62963
372978.83	3764928.16	3.24342	373078.83	3764928.16	2.90885
373178.83	3764928.16	2.52580	373378.83	3764928.16	1.95302
373478.83	3764928.16	1.62483	373578.83	3764928.16	1.35095
371578.83	3765028.16	0.66677	371678.83	3765028.16	0.79707
371778.83	3765028.16	0.94661	371878.83	3765028.16	1.21952
371978.83	3765028.16	1.54253	372078.83	3765028.16	2.10752
372178.83	3765028.16	2.75667	372278.83	3765028.16	3.32142
372378.83	3765028.16	3.26551	372478.83	3765028.16	3.67405
372578.83	3765028.16	3.83897	372678.83	3765028.16	3.42439
372778.83	3765028.16	3.06156	372878.83	3765028.16	2.86159
372978.83	3765028.16	2.63245	373078.83	3765028.16	2.39755
373178.83	3765028.16	2.13119	373278.83	3765028.16	1.84708
373378.83	3765028.16	1.62396	373478.83	3765028.16	1.39071
373578.83	3765028.16	1.19418	371578.83	3765128.16	0.65506
371678.83	3765128.16	0.77665	371778.83	3765128.16	0.92614
371878.83	3765128.16	1.12191	371978.83	3765128.16	1.38708
372078.83	3765128.16	1.68114	372178.83	3765128.16	2.11306

372278.83	3765128.16	2.51936	372378.83	3765128.16	2.77290
372478.83	3765128.16	2.79199	372578.83	3765128.16	2.69534
372678.83	3765128.16	2.55591	372778.83	3765128.16	2.47300
372878.83	3765128.16	2.35995	372978.83	3765128.16	2.19903
373078.83	3765128.16	2.02242	373178.83	3765128.16	1.82776
373278.83	3765128.16	1.61933	373378.83	3765128.16	1.43525
373478.83	3765128.16	1.27115	373578.83	3765128.16	1.11716
371578.83	3765228.16	0.64142	371678.83	3765228.16	0.75228
371778.83	3765228.16	0.88813	371878.83	3765228.16	1.04001
371978.83	3765228.16	1.22309	372078.83	3765228.16	1.43443
372178.83	3765228.16	1.63967	372278.83	3765228.16	1.85671
372378.83	3765228.16	2.02822	372478.83	3765228.16	2.11021
372578.83	3765228.16	2.08932	372678.83	3765228.16	2.06957

↑ *** AERMOD - VERSION 15181 ***   *** Inglewood Oil Field HRA   ***
11/23/15
*** AERMET - VERSION 14134 ***   *** Chronic and Cancer Analysis   ***
12:46:22
PAGE
12
**MODELOPTs: RegDFAULT CONC   ELEV   URBAN

*** THE PERIOD (43848 HRS) AVERAGE CONCENTRATION   VALUES FOR SOURCE GROUP: PAREA1   ***
INCLUDING SOURCE(S):   PAREA1   ,

*** DISCRETE CARTESIAN RECEPTOR POINTS ***

** CONC OF TACS IN MICROGRAMS/M**3 **

X-COORD (M)	Y-COORD (M)	CONC	X-COORD (M)	Y-COORD (M)	CONC
372778.83	3765228.16	2.03455	372878.83	3765228.16	1.97303
372978.83	3765228.16	1.85889	373078.83	3765228.16	1.73392
373178.83	3765228.16	1.59081	373278.83	3765228.16	1.43760
373378.83	3765228.16	1.30010	373478.83	3765228.16	1.17140
373578.83	3765228.16	1.04978	371578.83	3765328.16	0.62484
371678.83	3765328.16	0.72469	371778.83	3765328.16	0.84287
371878.83	3765328.16	0.97859	371978.83	3765328.16	1.12642
372078.83	3765328.16	1.26917	372178.83	3765328.16	1.40410
372278.83	3765328.16	1.52584	372378.83	3765328.16	1.61260
372478.83	3765328.16	1.67403	372578.83	3765328.16	1.71795
372678.83	3765328.16	1.72912	372778.83	3765328.16	1.71049
372878.83	3765328.16	1.66526	372978.83	3765328.16	1.58823
373078.83	3765328.16	1.49856	373178.83	3765328.16	1.39741
373278.83	3765328.16	1.28397	373378.83	3765328.16	1.17986
373478.83	3765328.16	1.07848	373578.83	3765328.16	0.98153
371578.83	3765428.16	0.60540	371678.83	3765428.16	0.69432
371778.83	3765428.16	0.79641	371878.83	3765428.16	0.90968
371978.83	3765428.16	1.02892	372078.83	3765428.16	1.14770

372178.83	3765428.16	1.25643	372278.83	3765428.16	1.34379
372378.83	3765428.16	1.41670	372478.83	3765428.16	1.46255
372578.83	3765428.16	1.48141	372678.83	3765428.16	1.46711
372778.83	3765428.16	1.45389	372878.83	3765428.16	1.43085
372978.83	3765428.16	1.37450	373078.83	3765428.16	1.31007
373178.83	3765428.16	1.23432	373278.83	3765428.16	1.15082
373378.83	3765428.16	1.07064	373478.83	3765428.16	0.99129
373578.83	3765428.16	0.91375	372057.15	3764438.30	4.17563
372802.77	3764579.86	13.03192	372802.77	3764526.99	17.64642
372877.57	3764524.41	16.41928	372913.03	3764576.64	11.91996

↑ *** AERMOD - VERSION 15181 *** *** Inglewood Oil Field HRA *** 11/23/15
*** AERMET - VERSION 14134 *** *** Chronic and Cancer Analysis *** 12:46:22
PAGE 13
**MODELOPTs: RegDFAULT CONC ELEV URBAN

*** THE 1ST HIGHEST 1-HR AVERAGE CONCENTRATION VALUES FOR SOURCE GROUP: PAREA1 ***
INCLUDING SOURCE(S): PAREA1 ,

*** DISCRETE CARTESIAN RECEPTOR POINTS ***

** CONC OF TACS IN MICROGRAMS/M**3 **

X-COORD (M)	Y-COORD (M)	CONC	(YYMMDDHH)	X-COORD (M)	Y-COORD (M)	CONC	(YYMMDDHH)
371578.83	3763428.16	21.58201	(08100823)	371678.83	3763428.16	22.29431	(10092423)

371778.83	3763428.16	22.92665	(11100219)	371878.83	3763428.16	23.66802	(08100724)
371978.83	3763428.16	24.39799	(11050306)	372078.83	3763428.16	25.38751	(11101220)
371578.83	3763528.16	23.05105	(09011902)	371678.83	3763528.16	23.80429	(08100823)
371778.83	3763528.16	24.57615	(10092423)	371878.83	3763528.16	25.33505	(12102624)
371978.83	3763528.16	26.13564	(08092920)	372078.83	3763528.16	27.23936	(12091504)
371578.83	3763628.16	24.87153	(12100123)	371678.83	3763628.16	25.56764	(09011902)
371778.83	3763628.16	26.39999	(08100823)	371878.83	3763628.16	27.33900	(11100222)
371978.83	3763628.16	28.46350	(08100724)	372078.83	3763628.16	29.69047	(12091504)
371578.83	3763728.16	26.76135	(12082904)	371678.83	3763728.16	28.16564	(12100123)
371778.83	3763728.16	28.59670	(09011902)	371878.83	3763728.16	29.71150	(12110507)
371978.83	3763728.16	30.78964	(11100219)	372078.83	3763728.16	31.97128	(11050306)
371578.83	3763828.16	28.87114	(12102721)	371678.83	3763828.16	30.24792	(12082904)
371778.83	3763828.16	31.51453	(12100123)	371878.83	3763828.16	32.38544	(09011902)
371978.83	3763828.16	33.44507	(10092423)	372078.83	3763828.16	35.22177	(08100724)
371578.83	3763928.16	31.47748	(12091323)	371678.83	3763928.16	33.25145	(12030322)
371778.83	3763928.16	34.88762	(09121824)	371878.83	3763928.16	36.30964	(12100123)
371578.83	3764028.16	34.32345	(08100120)	371678.83	3764028.16	36.58762	(08082924)
371778.83	3764028.16	39.08819	(12101421)	371878.83	3764028.16	41.58011	(12102721)
371578.83	3764128.16	37.38487	(12100222)	371678.83	3764128.16	40.85729	(10092520)
371778.83	3764128.16	44.39353	(08100120)	371878.83	3764128.16	48.31372	(08082924)

371578.83	3764228.16	40.22544	(08103022)	371678.83	3764228.16	45.11676	(08092923)
371778.83	3764228.16	50.94099	(08111501)	371578.83	3764328.16	43.15576	(12100223)
371678.83	3764328.16	48.80180	(12100223)	371778.83	3764328.16	56.13504	(09102623)
371578.83	3764428.16	44.90434	(12081104)	371678.83	3764428.16	51.50998	(12081104)
371578.83	3764528.16	44.88619	(12081802)	371678.83	3764528.16	52.35001	(12081802)
371778.83	3764528.16	61.75435	(12082024)	371878.83	3764528.16	74.74049	(12082024)
371978.83	3764528.16	94.82633	(12090906)	371578.83	3764628.16	43.23467	(12090604)
371678.83	3764628.16	51.34291	(12010405)	371778.83	3764628.16	59.25540	(12090804)
371878.83	3764628.16	70.20388	(12091605)	372778.83	3764628.16	71.00709	(09121818)
372878.83	3764628.16	64.17021	(09121818)	372978.83	3764628.16	60.91640	(08090501)
373078.83	3764628.16	68.25623	(12091420)	371578.83	3764728.16	42.05288	(12091605)
371678.83	3764728.16	48.16364	(11050223)	371778.83	3764728.16	54.80496	(10092923)
371878.83	3764728.16	62.87189	(09083124)	372578.83	3764728.16	82.36763	(12091420)
372678.83	3764728.16	65.72271	(11090622)	372778.83	3764728.16	57.09471	(08082122)
372878.83	3764728.16	51.75018	(12091303)	372978.83	3764728.16	48.96798	(08083105)
373078.83	3764728.16	48.63507	(08083105)	371578.83	3764828.16	40.00859	(10092923)
371678.83	3764828.16	42.92153	(09083124)	371778.83	3764828.16	49.26605	(10092622)
371878.83	3764828.16	55.80615	(08062024)	372378.83	3764828.16	63.88497	(09080322)
372478.83	3764828.16	57.78819	(11082601)	372578.83	3764828.16	67.89926	(10092621)

**MODELOPTs: RegDFAULT CONC ELEV URBAN

*** THE 1ST HIGHEST 1-HR AVERAGE CONCENTRATION VALUES FOR SOURCE GROUP: PAREA1 ***
INCLUDING SOURCE(S): PAREA1 ,

*** DISCRETE CARTESIAN RECEPTOR POINTS ***

** CONC OF TACS IN MICROGRAMS/M**3 **

X-COORD (M)	Y-COORD (M)	CONC	(YYMMDDHH)	X-COORD (M)	Y-COORD (M)	CONC	(YYMMDDHH)
372678.83	3764828.16	56.41512	(10092623)	372778.83	3764828.16	49.40644	(09042023)
372878.83	3764828.16	45.07236	(11090622)	372978.83	3764828.16	41.58043	(08082122)
373078.83	3764828.16	40.43354	(08082122)	373478.83	3764828.16	42.80288	(10071901)
373578.83	3764828.16	39.94563	(12030423)	371578.83	3764928.16	37.69383	(10092622)
371678.83	3764928.16	40.12293	(09090123)	371778.83	3764928.16	43.92327	(11090722)
371878.83	3764928.16	47.75273	(09041922)	372078.83	3764928.16	58.07610	(09090323)
372178.83	3764928.16	62.59054	(10110319)	372278.83	3764928.16	64.92007	(09082921)
372378.83	3764928.16	63.82014	(09080322)	372478.83	3764928.16	52.65310	(08080423)
372578.83	3764928.16	57.37488	(12091022)	372678.83	3764928.16	48.60141	(09082903)
372778.83	3764928.16	41.81889	(10092623)	372878.83	3764928.16	38.01753	(12091420)
372978.83	3764928.16	35.80924	(09042023)	373078.83	3764928.16	35.26858	(11090622)
373178.83	3764928.16	35.08382	(11090622)	373378.83	3764928.16	37.44601	(08062004)

373478.83	3764928.16	36.32470	(09082402)	373578.83	3764928.16	34.58738	(09121818)
371578.83	3765028.16	34.77874	(08062024)	371678.83	3765028.16	37.25956	(08100122)
371778.83	3765028.16	38.21478	(11101320)	371878.83	3765028.16	41.92068	(10092420)
371978.83	3765028.16	43.89469	(12100119)	372078.83	3765028.16	49.17202	(10110219)
372178.83	3765028.16	52.60237	(11090720)	372278.83	3765028.16	53.41027	(09082921)
372378.83	3765028.16	55.64971	(10081724)	372478.83	3765028.16	52.99192	(12082821)
372578.83	3765028.16	45.78087	(11101206)	372678.83	3765028.16	39.70388	(12081322)
372778.83	3765028.16	34.82195	(11063022)	372878.83	3765028.16	33.18454	(10092623)
372978.83	3765028.16	31.97041	(12091420)	373078.83	3765028.16	31.56038	(12091420)
373178.83	3765028.16	31.15161	(09042023)	373278.83	3765028.16	30.72513	(11090622)
373378.83	3765028.16	30.91102	(11090701)	373478.83	3765028.16	30.18195	(08062004)
373578.83	3765028.16	29.31433	(08083105)	371578.83	3765128.16	32.19595	(11090803)
371678.83	3765128.16	33.93920	(11101320)	371778.83	3765128.16	35.27976	(10092420)
371878.83	3765128.16	36.50887	(12100119)	371978.83	3765128.16	38.08974	(10092706)
372078.83	3765128.16	38.96674	(10110319)	372178.83	3765128.16	41.85669	(09082922)
372278.83	3765128.16	43.32835	(12091006)	372378.83	3765128.16	42.83329	(08041321)
372478.83	3765128.16	39.82866	(09090124)	372578.83	3765128.16	36.09954	(12100102)
372678.83	3765128.16	32.86486	(11101322)	372778.83	3765128.16	31.33784	(12091022)
372878.83	3765128.16	30.09761	(11091824)	372978.83	3765128.16	29.23303	(10092621)
373078.83	3765128.16	28.67132	(10092623)	373178.83	3765128.16	28.22877	(12091420)

373278.83	3765128.16	27.69596	(09042023)	373378.83	3765128.16	27.39791	(11090622)
373478.83	3765128.16	27.10063	(11090701)	373578.83	3765128.16	26.48374	(08082122)
371578.83	3765228.16	29.75743	(11100119)	371678.83	3765228.16	31.10243	(10092420)
371778.83	3765228.16	32.05961	(11082604)	371878.83	3765228.16	32.49062	(11082702)
371978.83	3765228.16	32.97230	(10110219)	372078.83	3765228.16	33.35687	(11090721)
372178.83	3765228.16	33.30924	(08062101)	372278.83	3765228.16	33.72923	(12091006)
372378.83	3765228.16	33.83216	(08041321)	372478.83	3765228.16	32.63790	(09080322)
372578.83	3765228.16	30.59153	(12082821)	372678.83	3765228.16	29.21179	(09072206)

↑ *** AERMOD - VERSION 15181 *** *** Inglewood Oil Field HRA *** 11/23/15
*** AERMET - VERSION 14134 *** *** Chronic and Cancer Analysis *** 12:46:22
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**MODELOPTs: RegDFAULT CONC ELEV URBAN

*** THE 1ST HIGHEST 1-HR AVERAGE CONCENTRATION VALUES FOR SOURCE GROUP: PAREA1 ***
INCLUDING SOURCE(S): PAREA1 ,

*** DISCRETE CARTESIAN RECEPTOR POINTS ***

** CONC OF TACS IN MICROGRAMS/M**3 **

X-COORD (M)	Y-COORD (M)	CONC	(YYMMDDHH)	X-COORD (M)	Y-COORD (M)	CONC	(YYMMDDHH)
372778.83	3765228.16	28.43131	(11082601)	372878.83	3765228.16	27.74125	(12091022)
372978.83	3765228.16	26.75958	(10092621)	373078.83	3765228.16	26.38065	(10092621)
373178.83	3765228.16	25.96630	(10092623)	373278.83	3765228.16	25.44410	(12091420)

373378.83	3765228.16	25.28041	(12091420)	373478.83	3765228.16	24.90779	(11090622)
373578.83	3765228.16	24.48501	(11090701)	371578.83	3765328.16	27.57181	(10092420)
371678.83	3765328.16	28.46944	(08080706)	371778.83	3765328.16	29.33683	(09090323)
371878.83	3765328.16	29.90361	(11090624)	371978.83	3765328.16	30.15104	(09082621)
372078.83	3765328.16	29.89660	(11090720)	372178.83	3765328.16	29.44577	(10101020)
372278.83	3765328.16	28.97027	(12080901)	372378.83	3765328.16	28.45672	(08041321)
372478.83	3765328.16	27.68020	(09080322)	372578.83	3765328.16	27.34988	(11090621)
372678.83	3765328.16	26.62536	(08080423)	372778.83	3765328.16	26.04003	(11101322)
372878.83	3765328.16	25.45703	(08091004)	372978.83	3765328.16	24.83354	(12091022)
373078.83	3765328.16	24.31478	(10092621)	373178.83	3765328.16	24.10572	(10092621)
373278.83	3765328.16	23.72598	(10092623)	373378.83	3765328.16	23.41871	(12091420)
373478.83	3765328.16	23.24910	(12091420)	373578.83	3765328.16	22.77563	(09042023)
371578.83	3765428.16	25.45589	(08080706)	371678.83	3765428.16	26.33234	(12090921)
371778.83	3765428.16	26.89289	(10092706)	371878.83	3765428.16	27.41033	(10110219)
371978.83	3765428.16	27.59063	(10110319)	372078.83	3765428.16	27.53611	(10081722)
372178.83	3765428.16	27.32528	(10101020)	372278.83	3765428.16	26.82716	(12080901)
372378.83	3765428.16	26.65226	(08041321)	372478.83	3765428.16	25.94113	(12082302)
372578.83	3765428.16	25.35255	(11090621)	372678.83	3765428.16	24.45691	(09091904)
372778.83	3765428.16	23.98390	(09072206)	372878.83	3765428.16	23.77047	(11082601)
372978.83	3765428.16	23.18255	(12081322)	373078.83	3765428.16	22.79511	(09082903)

373178.83	3765428.16	22.41270	(10092621)	373278.83	3765428.16	22.19580	(10092621)
373378.83	3765428.16	22.00145	(10092623)	373478.83	3765428.16	21.64302	(12091420)
373578.83	3765428.16	21.41497	(12091420)	372057.15	3764438.30	127.37983	(12092323)
372802.77	3764579.86	78.92932	(09121818)	372802.77	3764526.99	100.22360	(12030423)
372877.57	3764524.41	95.88687	(12081806)	372913.03	3764576.64	74.76320	(12030423)

↑ *** AERMOD - VERSION 15181 ***   *** Inglewood Oil Field HRA   ***
11/23/15
*** AERMET - VERSION 14134 ***   *** Chronic and Cancer Analysis   ***
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**MODELOPTs: RegDFAULT CONC   ELEV   URBAN

*** THE SUMMARY OF MAXIMUM PERIOD (43848 HRS) RESULTS ***

** CONC OF TACS   IN MICROGRAMS/M**3   **

GROUP ID		AVERAGE CONC	RECEPTOR (XR, YR, ZELEV, ZHILL, ZFLAG)	OF TYPE	NETWORK GRID-ID
PAREA1	1ST HIGHEST VALUE IS	17.64642 AT	(372802.77, 3764526.99, 80.59, 129.30, 0.00)	DC	
	2ND HIGHEST VALUE IS	16.41928 AT	(372877.57, 3764524.41, 75.11, 151.80, 0.00)	DC	
	3RD HIGHEST VALUE IS	13.03192 AT	(372802.77, 3764579.86, 80.14, 129.30, 0.00)	DC	
	4TH HIGHEST VALUE IS	11.91996 AT	(372913.03, 3764576.64, 70.38, 151.80, 0.00)	DC	
	5TH HIGHEST VALUE IS	11.17959 AT	(372778.83, 3764628.16, 89.67, 129.30, 0.00)	DC	
	6TH HIGHEST VALUE IS	9.39035 AT	(372878.83, 3764628.16, 69.69, 151.80, 0.00)	DC	
	7TH HIGHEST VALUE IS	8.89819 AT	(372578.83, 3764728.16, 103.22, 129.30, 0.00)	DC	
	8TH HIGHEST VALUE IS	8.82576 AT	(372978.83, 3764628.16, 62.07, 151.80, 0.00)	DC	
	9TH HIGHEST VALUE IS	8.29364 AT	(372678.83, 3764728.16, 81.83, 129.30, 0.00)	DC	
	10TH HIGHEST VALUE IS	7.37178 AT	(372778.83, 3764728.16, 75.75, 129.30, 0.00)	DC	

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 *** RECEPTOR TYPES:  GC = GRIDCART
                      GP = GRIDPOLR
                      DC = DISCCART
                      DP = DISCPOLR
↑ *** AERMOD - VERSION  15181 ***   *** Inglewood Oil Field HRA                                             ***
11/23/15
 *** AERMET - VERSION  14134 ***   *** Chronic and Cancer Analysis                                         ***
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                                                                                                                     PAGE
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 **MODELOPTs:   RegDFAULT CONC      ELEV      URBAN

                                                  *** THE SUMMARY OF HIGHEST  1-HR RESULTS ***


                                      ** CONC OF TACS     IN MICROGRAMS/M**3                          **

                                                        DATE
 NETWORK
GROUP ID                            AVERAGE CONC     (YYMMDDHH)             RECEPTOR  (XR, YR, ZELEV, ZHILL, ZFLAG)    OF TYPE
 GRID-ID
- - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - -
- - - -

PAREA1   HIGH   1ST HIGH VALUE IS     127.37983  ON 12092323: AT (  372057.15,  3764438.30,    56.53,   129.30,    0.00)  DC



 *** RECEPTOR TYPES:  GC = GRIDCART
                      GP = GRIDPOLR
                      DC = DISCCART
                      DP = DISCPOLR
↑ *** AERMOD - VERSION  15181 ***   *** Inglewood Oil Field HRA                                             ***
11/23/15
 *** AERMET - VERSION  14134 ***   *** Chronic and Cancer Analysis                                         ***
12:46:22
                                                                                                                     PAGE
18
 **MODELOPTs:   RegDFAULT CONC      ELEV      URBAN
```

```
*** Message Summary : AERMOD Model Execution ***

 --------- Summary of Total Messages --------

A Total of             0 Fatal Error Message(s)
A Total of             0 Warning Message(s)
A Total of          1558 Informational Message(s)

A Total of         43848 Hours Were Processed

A Total of           115 Calm Hours Identified

A Total of          1443 Missing Hours Identified (  3.29 Percent)


   ******** FATAL ERROR MESSAGES ********
              ***  NONE  ***


   ********   WARNING MESSAGES   ********
              ***  NONE  ***


   ************************************
   *** AERMOD Finishes Successfully ***
   ************************************
```

```
** Lakes Environmental AERMOD MPI
**
****************************************
**
** AERMOD Input Produced by:
** AERMOD View Ver. 9.0.0
** Lakes Environmental Software Inc.
** Date: 11/23/2015
** File: C:\Lakes\AERMOD View\Projects\Psomas_IOF_Acute_HRA\Psomas_IOF_Acute_HRA.ADI
**
****************************************
**
**
****************************************
** AERMOD Control Pathway
****************************************
**
**
CO STARTING
   TITLEONE Inglewood Oil Field HRA
   TITLETWO Acute Analysis
   MODELOPT DFAULT CONC
   AVERTIME 1 PERIOD
   URBANOPT 9862049
   POLLUTID TACS
   RUNORNOT RUN
   ERRORFIL Psomas_IOF_Acute_HRA.err
CO FINISHED
**
****************************************
** AERMOD Source Pathway
****************************************
**
**
SO STARTING
** Source Location **
** Source ID - Type - X Coord. - Y Coord. **
   LOCATION PAREA1       AREAPOLY   372316.231  3764653.222       91.320
** Source Parameters **
   SRCPARAM PAREA1       6.3574E-06     4.572        14     1.064
```

```
   AREAVERT PAREA1       372316.231 3764653.222 372475.937 3764555.975
   AREAVERT PAREA1       372510.725 3764477.703 372513.888 3764467.424
   AREAVERT PAREA1       372747.913 3764462.681 372747.913 3764450.821
   AREAVERT PAREA1       372925.014 3764450.031 372935.292 3764449.240
   AREAVERT PAREA1       372993.008 3764536.209 373034.121 3764537.000
   AREAVERT PAREA1       373086.302 3764329.855 372653.038 3764322.739
   AREAVERT PAREA1       372623.785 3764282.417 372140.711 3764416.034
   URBANSRC ALL
   SRCGROUP PAREA1   PAREA1
SO FINISHED
**
****************************************
** AERMOD Receptor Pathway
****************************************
**
**
RE STARTING
   INCLUDED Psomas_IOF_Acute_HRA.rou
RE FINISHED
**
****************************************
** AERMOD Meteorology Pathway
****************************************
**
**
ME STARTING
   SURFFILE wsla8.sfc
   PROFFILE wsla8.PFL
   SURFDATA 0 2008
   UAIRDATA 3190 2008
   SITEDATA 99999 2008
   PROFBASE 10.0 METERS
ME FINISHED
**
****************************************
** AERMOD Output Pathway
****************************************
**
**
OU STARTING
```

```
   RECTABLE ALLAVE 1ST
   RECTABLE 1 1ST
** Auto-Generated Plotfiles
   PLOTFILE 1 PAREA1 1ST PSOMAS_IOF_ACUTE_HRA.AD\01H1G001.PLT 31
   PLOTFILE PERIOD PAREA1 PSOMAS_IOF_ACUTE_HRA.AD\PE00G000.PLT 32
   SUMMFILE Psomas_IOF_Acute_HRA.sum
OU FINISHED

 ***********************************
 *** SETUP Finishes Successfully ***
 ***********************************

↑ *** AERMOD - VERSION  15181 ***   *** Inglewood Oil Field HRA                                        ***
11/23/15
 *** AERMET - VERSION  14134 ***   *** Acute Analysis                                                 ***
11:10:50
                                                                                                              PAGE
 1
 **MODELOPTs:   RegDFAULT CONC      ELEV      URBAN

                                               ***     MODEL SETUP OPTIONS SUMMARY       ***
 - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - -
-

 **Model Is Setup For Calculation of Average CONCentration Values.

   --  DEPOSITION LOGIC  --
 **NO GAS DEPOSITION Data Provided.
 **NO PARTICLE DEPOSITION Data Provided.
 **Model Uses NO DRY DEPLETION.  DRYDPLT  =  F
 **Model Uses NO WET DEPLETION.  WETDPLT  =  F

 **Model Uses URBAN Dispersion Algorithm for the SBL for     1 Source(s),
   for Total of    1 Urban Area(s):
   Urban Population =   9862049.0 ;  Urban Roughness Length =  1.000 m

 **Model Uses Regulatory DEFAULT Options:
         1. Stack-tip Downwash.
         2. Model Accounts for ELEVated Terrain Effects.
         3. Use Calms Processing Routine.
```

```
        4. Use Missing Data Processing Routine.
        5. No Exponential Decay.
        6. Urban Roughness Length of 1.0 Meter Assumed.

**Other Options Specified:
        TEMP_Sub - Meteorological data includes TEMP substitutions

**Model Assumes No FLAGPOLE Receptor Heights.

**The User Specified a Pollutant Type of:  TACS

**Model Calculates  1 Short Term Average(s) of:   1-HR
    and Calculates PERIOD Averages

**This Run Includes:      1 Source(s);       1 Source Group(s); and     338 Receptor(s)

               with:      0 POINT(s), including
                          0 POINTCAP(s) and      0 POINTHOR(s)
                and:      0 VOLUME source(s)
                and:      1 AREA type source(s)
                and:      0 LINE source(s)
                and:      0 OPENPIT source(s)


**Model Set To Continue RUNning After the Setup Testing.

**The AERMET Input Meteorological Data Version Date:  14134

**Output Options Selected:
         Model Outputs Tables of PERIOD Averages by Receptor
         Model Outputs Tables of Highest Short Term Values by Receptor (RECTABLE Keyword)
         Model Outputs External File(s) of High Values for Plotting (PLOTFILE Keyword)
         Model Outputs Separate Summary File of High Ranked Values (SUMMFILE Keyword)

**NOTE:  The Following Flags May Appear Following CONC Values:  c for Calm Hours
                                                                m for Missing Hours
                                                                b for Both Calm and Missing Hours

**Misc. Inputs:  Base Elev. for Pot. Temp. Profile (m MSL) =    10.00 ;  Decay Coef. =    0.000     ;  Rot. Angle =     0.0
                 Emission Units = GRAMS/SEC                               ;  Emission Rate Unit Factor =   0.10000E+07
```

Psomas_IOF_Acute_HRA

Output Units = MICROGRAMS/M**3

**Approximate Storage Requirements of Model = 3.5 MB of RAM.

**Detailed Error/Message File: Psomas_IOF_Acute_HRA.err

**File for Summary of Results: Psomas_IOF_Acute_HRA.sum

**MODELOPTs: RegDFAULT CONC ELEV URBAN

*** AREAPOLY SOURCE DATA ***

SOURCE ID	NUMBER PART. CATS.	EMISSION RATE (GRAMS/SEC /METER**2)	LOCATION OF AREA X (METERS)	LOCATION OF AREA Y (METERS)	BASE ELEV. (METERS)	RELEASE HEIGHT (METERS)	NUMBER OF VERTS.	INIT. SZ (METERS)	URBAN SOURCE	EMISSION RATE SCALAR VARY BY
PAREA1	0	0.63574E-05	372316.2	3764653.2	91.3	4.57	14	1.06	YES	

**MODELOPTs: RegDFAULT CONC ELEV URBAN

*** SOURCE IDs DEFINING SOURCE GROUPS ***

SRCGROUP ID SOURCE IDs
----------- ----------

PAREA1 PAREA1 ,

↑ *** AERMOD - VERSION 15181 *** *** Inglewood Oil Field HRA *** 11/23/15
*** AERMET - VERSION 14134 *** *** Acute Analysis *** 11:10:50
PAGE 4
**MODELOPTs: RegDFAULT CONC ELEV URBAN

*** SOURCE IDs DEFINED AS URBAN SOURCES ***

URBAN ID	URBAN POP	SOURCE IDs
	9862049.	PAREA1 ,

↑ *** AERMOD - VERSION 15181 *** *** Inglewood Oil Field HRA *** 11/23/15
*** AERMET - VERSION 14134 *** *** Acute Analysis *** 11:10:50
PAGE 5
**MODELOPTs: RegDFAULT CONC ELEV URBAN

*** DISCRETE CARTESIAN RECEPTORS ***
(X-COORD, Y-COORD, ZELEV, ZHILL, ZFLAG)
(METERS)

(371578.8, 3763428.2, 18.8, 125.0, 0.0); (371678.8, 3763428.2, 21.1, 125.0, 0.0);
(371778.8, 3763428.2, 24.2, 125.0, 0.0); (371878.8, 3763428.2, 29.3, 125.0, 0.0);
(371978.8, 3763428.2, 36.2, 125.0, 0.0); (372078.8, 3763428.2, 43.5, 125.0, 0.0);
(373178.8, 3763428.2, 90.0, 119.1, 0.0); (373278.8, 3763428.2, 90.8, 103.6, 0.0);
(373378.8, 3763428.2, 96.0, 101.7, 0.0); (373478.8, 3763428.2, 98.8, 98.8, 0.0);

```
     ( 373578.8, 3763428.2,      95.7,      99.6,       0.0);         ( 371578.8, 3763528.2,      19.0,     125.0,
0.0);
     ( 371678.8, 3763528.2,      21.3,     125.0,       0.0);         ( 371778.8, 3763528.2,      24.4,     125.0,
0.0);
     ( 371878.8, 3763528.2,      28.9,     125.0,       0.0);         ( 371978.8, 3763528.2,      34.5,     125.0,
0.0);
     ( 372078.8, 3763528.2,      42.0,     125.0,       0.0);         ( 373178.8, 3763528.2,      92.8,     118.0,
0.0);
     ( 373278.8, 3763528.2,      98.2,      98.2,       0.0);         ( 373378.8, 3763528.2,     104.0,     104.0,
0.0);
     ( 373478.8, 3763528.2,     100.3,     100.3,       0.0);         ( 373578.8, 3763528.2,      84.5,     104.8,
0.0);
     ( 371578.8, 3763628.2,      19.3,     125.0,       0.0);         ( 371678.8, 3763628.2,      21.0,     125.0,
0.0);
     ( 371778.8, 3763628.2,      24.0,     126.5,       0.0);         ( 371878.8, 3763628.2,      29.1,     126.5,
0.0);
     ( 371978.8, 3763628.2,      36.3,     126.5,       0.0);         ( 372078.8, 3763628.2,      44.0,     125.0,
0.0);
     ( 373178.8, 3763628.2,      93.3,      93.3,       0.0);         ( 373278.8, 3763628.2,      99.8,      99.8,
0.0);
     ( 373378.8, 3763628.2,     104.3,     104.3,       0.0);         ( 373478.8, 3763628.2,      95.8,     103.9,
0.0);
     ( 373578.8, 3763628.2,      79.6,     105.2,       0.0);         ( 371578.8, 3763728.2,      19.5,     126.5,
0.0);
     ( 371678.8, 3763728.2,      25.5,     126.5,       0.0);         ( 371778.8, 3763728.2,      23.3,     126.5,
0.0);
     ( 371878.8, 3763728.2,      28.4,     126.5,       0.0);         ( 371978.8, 3763728.2,      34.6,     126.5,
0.0);
     ( 372078.8, 3763728.2,      41.7,     126.5,       0.0);         ( 373178.8, 3763728.2,      90.8,      99.2,
0.0);
     ( 373278.8, 3763728.2,     100.2,     100.2,       0.0);         ( 373378.8, 3763728.2,     101.1,     101.1,
0.0);
     ( 373478.8, 3763728.2,      87.6,     105.2,       0.0);         ( 373578.8, 3763728.2,      79.0,     126.5,
0.0);
     ( 371578.8, 3763828.2,      19.2,     126.5,       0.0);         ( 371678.8, 3763828.2,      22.0,     126.5,
0.0);
     ( 371778.8, 3763828.2,      24.0,     126.5,       0.0);         ( 371878.8, 3763828.2,      27.0,     126.5,
0.0);
     ( 371978.8, 3763828.2,      31.4,     126.5,       0.0);         ( 372078.8, 3763828.2,      41.4,     126.5,
0.0);
```

```
     ( 373178.8, 3763828.2,      88.3,     101.0,       0.0);         ( 373278.8, 3763828.2,     100.7,     100.7,
0.0);
     ( 373378.8, 3763828.2,      90.0,     103.6,       0.0);         ( 373478.8, 3763828.2,      74.3,     151.8,
0.0);
     ( 373578.8, 3763828.2,      81.2,     149.4,       0.0);         ( 371578.8, 3763928.2,      19.9,     126.5,
0.0);
     ( 371678.8, 3763928.2,      22.8,     126.5,       0.0);         ( 371778.8, 3763928.2,      25.6,     126.5,
0.0);
     ( 371878.8, 3763928.2,      28.5,     126.5,       0.0);         ( 373178.8, 3763928.2,      90.0,     100.0,
0.0);
     ( 373278.8, 3763928.2,      96.5,      98.6,       0.0);         ( 373378.8, 3763928.2,      87.2,     148.2,
0.0);
     ( 373478.8, 3763928.2,      75.4,     151.8,       0.0);         ( 373578.8, 3763928.2,      83.6,     151.8,
0.0);
     ( 371578.8, 3764028.2,      20.5,     126.5,       0.0);         ( 371678.8, 3764028.2,      22.1,     126.5,
0.0);
     ( 371778.8, 3764028.2,      25.2,     129.3,       0.0);         ( 371878.8, 3764028.2,      32.5,     127.5,
0.0);
     ( 373178.8, 3764028.2,      88.1,      93.3,       0.0);         ( 373278.8, 3764028.2,      88.5,     151.8,
0.0);
     ( 373378.8, 3764028.2,      76.0,     151.8,       0.0);         ( 373478.8, 3764028.2,      75.0,     151.8,
0.0);
     ( 373578.8, 3764028.2,      82.1,     151.8,       0.0);         ( 371578.8, 3764128.2,      21.0,     126.5,
0.0);
     ( 371678.8, 3764128.2,      23.7,     129.3,       0.0);         ( 371778.8, 3764128.2,      25.9,     129.3,
0.0);
     ( 371878.8, 3764128.2,      34.5,     129.3,       0.0);         ( 373178.8, 3764128.2,      73.6,     151.8,
0.0);
     ( 373278.8, 3764128.2,      84.1,     151.8,       0.0);         ( 373378.8, 3764128.2,      78.4,     151.8,
0.0);
     ( 373478.8, 3764128.2,      76.5,     151.8,       0.0);         ( 373578.8, 3764128.2,      88.0,     151.8,
0.0);
     ( 371578.8, 3764228.2,      20.8,     129.3,       0.0);         ( 371678.8, 3764228.2,      24.9,     129.3,
0.0);
     ( 371778.8, 3764228.2,      30.5,     129.3,       0.0);         ( 373178.8, 3764228.2,      64.4,     151.8,
0.0);
     ( 373278.8, 3764228.2,      70.9,     151.8,       0.0);         ( 373378.8, 3764228.2,      66.0,     151.8,
0.0);
     ( 373478.8, 3764228.2,      80.2,     151.8,       0.0);         ( 373578.8, 3764228.2,      92.1,     151.8,
0.0);
```

 **MODELOPTs: RegDFAULT CONC   ELEV   URBAN

*** DISCRETE CARTESIAN RECEPTORS ***
(X-COORD, Y-COORD, ZELEV, ZHILL, ZFLAG)
(METERS)

```
     ( 371578.8, 3764328.2,      21.9,     129.3,       0.0);         ( 371678.8, 3764328.2,      23.2,     129.3,
0.0);
     ( 371778.8, 3764328.2,      26.8,     129.3,       0.0);         ( 373178.8, 3764328.2,      69.5,     151.8,
0.0);
     ( 373278.8, 3764328.2,      67.0,     151.8,       0.0);         ( 373378.8, 3764328.2,      75.3,     151.8,
0.0);
     ( 373478.8, 3764328.2,      82.2,     151.8,       0.0);         ( 373578.8, 3764328.2,     104.4,     151.8,
0.0);
     ( 371578.8, 3764428.2,      22.1,     129.3,       0.0);         ( 371678.8, 3764428.2,      23.7,     129.3,
0.0);
     ( 373178.8, 3764428.2,      68.5,     151.8,       0.0);         ( 373278.8, 3764428.2,      74.9,     151.8,
0.0);
     ( 373378.8, 3764428.2,      81.2,     151.8,       0.0);         ( 373478.8, 3764428.2,      95.6,     151.8,
0.0);
     ( 373578.8, 3764428.2,     119.0,     151.8,       0.0);         ( 371578.8, 3764528.2,      18.1,     129.3,
0.0);
     ( 371678.8, 3764528.2,      24.4,     129.3,       0.0);         ( 371778.8, 3764528.2,      28.6,     129.3,
0.0);
     ( 371878.8, 3764528.2,      34.0,     129.3,       0.0);         ( 371978.8, 3764528.2,      42.3,     129.3,
0.0);
     ( 372878.8, 3764528.2,      74.7,     151.8,       0.0);         ( 373178.8, 3764528.2,      75.5,     151.8,
0.0);
     ( 373278.8, 3764528.2,      85.6,     151.8,       0.0);         ( 373378.8, 3764528.2,      90.7,     151.8,
0.0);
     ( 373478.8, 3764528.2,     104.1,     151.8,       0.0);         ( 373578.8, 3764528.2,     137.0,     151.8,
0.0);
     ( 371578.8, 3764628.2,      11.4,     129.3,       0.0);         ( 371678.8, 3764628.2,      26.7,     129.3,
0.0);
```

```
     ( 371778.8, 3764628.2,      29.4,     129.3,       0.0);         ( 371878.8, 3764628.2,      34.1,     129.3,
0.0);
     ( 371978.8, 3764628.2,      45.8,     129.3,       0.0);         ( 372078.8, 3764628.2,      59.0,     129.3,
0.0);
     ( 372178.8, 3764628.2,      74.1,     129.3,       0.0);         ( 372578.8, 3764628.2,      96.1,     129.3,
0.0);
     ( 372678.8, 3764628.2,     100.5,     124.6,       0.0);         ( 372778.8, 3764628.2,      89.7,     129.3,
0.0);
     ( 372878.8, 3764628.2,      69.7,     151.8,       0.0);         ( 372978.8, 3764628.2,      62.1,     151.8,
0.0);
     ( 373078.8, 3764628.2,      60.1,     151.8,       0.0);         ( 373178.8, 3764628.2,      70.0,     151.8,
0.0);
     ( 373278.8, 3764628.2,      90.4,     151.8,       0.0);         ( 373378.8, 3764628.2,     108.0,     151.8,
0.0);
     ( 373478.8, 3764628.2,     119.8,     151.8,       0.0);         ( 373578.8, 3764628.2,     143.4,     151.8,
0.0);
     ( 371578.8, 3764728.2,      17.9,     129.3,       0.0);         ( 371678.8, 3764728.2,      25.5,     129.3,
0.0);
     ( 371778.8, 3764728.2,      28.2,     129.3,       0.0);         ( 371878.8, 3764728.2,      33.9,     129.3,
0.0);
     ( 371978.8, 3764728.2,      60.4,     129.3,       0.0);         ( 372078.8, 3764728.2,      64.1,     129.3,
0.0);
     ( 372178.8, 3764728.2,      69.4,     129.3,       0.0);         ( 372378.8, 3764728.2,     105.6,     129.3,
0.0);
     ( 372478.8, 3764728.2,     123.0,     123.0,       0.0);         ( 372578.8, 3764728.2,     103.2,     129.3,
0.0);
     ( 372678.8, 3764728.2,      81.8,     129.3,       0.0);         ( 372778.8, 3764728.2,      75.8,     129.3,
0.0);
     ( 372878.8, 3764728.2,      66.2,     151.8,       0.0);         ( 372978.8, 3764728.2,      59.5,     151.8,
0.0);
     ( 373078.8, 3764728.2,      58.7,     151.8,       0.0);         ( 373178.8, 3764728.2,      65.6,     151.8,
0.0);
     ( 373278.8, 3764728.2,      86.0,     151.8,       0.0);         ( 373378.8, 3764728.2,     124.8,     150.8,
0.0);
     ( 373478.8, 3764728.2,     121.2,     151.8,       0.0);         ( 373578.8, 3764728.2,     105.9,     151.8,
0.0);
     ( 371578.8, 3764828.2,      20.6,     129.3,       0.0);         ( 371678.8, 3764828.2,      11.9,     129.3,
0.0);
     ( 371778.8, 3764828.2,      24.0,     129.3,       0.0);         ( 371878.8, 3764828.2,      35.7,     129.3,
0.0);
```

```
     ( 371978.8, 3764828.2,      63.6,     129.3,       0.0);         ( 372078.8, 3764828.2,      76.6,     129.3,
0.0);
     ( 372178.8, 3764828.2,      77.8,     129.3,       0.0);         ( 372278.8, 3764828.2,     112.5,     129.3,
0.0);
     ( 372378.8, 3764828.2,     122.5,     129.3,       0.0);         ( 372478.8, 3764828.2,     124.5,     129.3,
0.0);
     ( 372578.8, 3764828.2,     102.2,     129.3,       0.0);         ( 372678.8, 3764828.2,      82.8,     129.3,
0.0);
     ( 372778.8, 3764828.2,      71.4,     129.3,       0.0);         ( 372878.8, 3764828.2,      64.8,     151.8,
0.0);
     ( 372978.8, 3764828.2,      54.8,     151.8,       0.0);         ( 373078.8, 3764828.2,      52.4,     151.8,
0.0);
     ( 373178.8, 3764828.2,      58.6,     151.8,       0.0);         ( 373278.8, 3764828.2,      93.2,     151.8,
0.0);
     ( 373378.8, 3764828.2,      99.2,     151.8,       0.0);         ( 373478.8, 3764828.2,      85.2,     151.8,
0.0);
     ( 373578.8, 3764828.2,      76.3,     151.8,       0.0);         ( 371578.8, 3764928.2,      23.0,     129.3,
0.0);
     ( 371678.8, 3764928.2,      18.2,     129.3,       0.0);         ( 371778.8, 3764928.2,      23.6,     129.3,
0.0);
     ( 371878.8, 3764928.2,      28.6,     129.3,       0.0);         ( 371978.8, 3764928.2,      55.2,     129.3,
0.0);
↑ *** AERMOD - VERSION  15181 ***   *** Inglewood Oil Field HRA                                                   ***
11/23/15
 *** AERMET - VERSION  14134 ***   *** Acute Analysis                                                            ***
11:10:50
                                                                                                                        PAGE
 7
 **MODELOPTs:   RegDFAULT CONC      ELEV      URBAN

                                              *** DISCRETE CARTESIAN RECEPTORS ***
                                            (X-COORD, Y-COORD, ZELEV, ZHILL, ZFLAG)
                                                           (METERS)

     ( 372078.8, 3764928.2,      55.8,     129.3,       0.0);         ( 372178.8, 3764928.2,      68.2,     129.3,
0.0);
     ( 372278.8, 3764928.2,      82.5,     129.3,       0.0);         ( 372378.8, 3764928.2,     111.5,     129.3,
0.0);
     ( 372478.8, 3764928.2,     123.1,     128.4,       0.0);         ( 372578.8, 3764928.2,     106.5,     129.3,
0.0);
```

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    ( 372678.8, 3764928.2,      85.9,     129.3,       0.0);         ( 372778.8, 3764928.2,      58.9,     151.8,
0.0);
    ( 372878.8, 3764928.2,      48.4,     151.8,       0.0);         ( 372978.8, 3764928.2,      43.2,     151.8,
0.0);
    ( 373078.8, 3764928.2,      46.1,     151.8,       0.0);         ( 373178.8, 3764928.2,      46.5,     151.8,
0.0);
    ( 373278.8, 3764928.2,      71.2,     151.8,       0.0);         ( 373378.8, 3764928.2,      66.6,     151.8,
0.0);
    ( 373478.8, 3764928.2,      63.9,     151.8,       0.0);         ( 373578.8, 3764928.2,      59.7,     151.8,
0.0);
    ( 371578.8, 3765028.2,      25.3,     129.3,       0.0);         ( 371678.8, 3765028.2,      24.7,     129.3,
0.0);
    ( 371778.8, 3765028.2,      13.0,     129.3,       0.0);         ( 371878.8, 3765028.2,      27.9,     129.3,
0.0);
    ( 371978.8, 3765028.2,      30.8,     129.3,       0.0);         ( 372078.8, 3765028.2,      56.1,     129.3,
0.0);
    ( 372178.8, 3765028.2,      73.8,     129.3,       0.0);         ( 372278.8, 3765028.2,      86.3,     129.3,
0.0);
    ( 372378.8, 3765028.2,     109.5,     128.4,       0.0);         ( 372478.8, 3765028.2,     102.1,     129.3,
0.0);
    ( 372578.8, 3765028.2,      88.5,     129.3,       0.0);         ( 372678.8, 3765028.2,      59.0,     129.3,
0.0);
    ( 372778.8, 3765028.2,      40.6,     151.8,       0.0);         ( 372878.8, 3765028.2,      38.5,     151.8,
0.0);
    ( 372978.8, 3765028.2,      37.9,     151.8,       0.0);         ( 373078.8, 3765028.2,      40.6,     151.8,
0.0);
    ( 373178.8, 3765028.2,      41.0,     151.8,       0.0);         ( 373278.8, 3765028.2,      37.0,     151.8,
0.0);
    ( 373378.8, 3765028.2,      40.1,     151.8,       0.0);         ( 373478.8, 3765028.2,      36.5,     151.8,
0.0);
    ( 373578.8, 3765028.2,      34.3,     151.8,       0.0);         ( 371578.8, 3765128.2,      26.4,     129.3,
0.0);
    ( 371678.8, 3765128.2,      25.8,     129.3,       0.0);         ( 371778.8, 3765128.2,      22.6,     129.3,
0.0);
    ( 371878.8, 3765128.2,      21.9,     129.3,       0.0);         ( 371978.8, 3765128.2,      28.5,     129.3,
0.0);
    ( 372078.8, 3765128.2,      31.8,     129.3,       0.0);         ( 372178.8, 3765128.2,      52.5,     129.3,
0.0);
    ( 372278.8, 3765128.2,      67.1,     129.3,       0.0);         ( 372378.8, 3765128.2,      71.9,     129.3,
0.0);
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     ( 372478.8, 3765128.2,      62.0,     129.3,       0.0);         ( 372578.8, 3765128.2,      49.2,     129.3,
0.0);
     ( 372678.8, 3765128.2,      36.4,     151.8,       0.0);         ( 372778.8, 3765128.2,      35.3,     151.8,
0.0);
     ( 372878.8, 3765128.2,      36.2,     151.8,       0.0);         ( 372978.8, 3765128.2,      35.7,     151.8,
0.0);
     ( 373078.8, 3765128.2,      36.6,     151.8,       0.0);         ( 373178.8, 3765128.2,      36.2,     151.8,
0.0);
     ( 373278.8, 3765128.2,      32.3,     151.8,       0.0);         ( 373378.8, 3765128.2,      30.9,     151.8,
0.0);
     ( 373478.8, 3765128.2,      31.2,     151.8,       0.0);         ( 373578.8, 3765128.2,      30.1,     151.8,
0.0);
     ( 371578.8, 3765228.2,      27.4,     129.3,       0.0);         ( 371678.8, 3765228.2,      26.8,     129.3,
0.0);
     ( 371778.8, 3765228.2,      25.8,     129.3,       0.0);         ( 371878.8, 3765228.2,      20.6,     129.3,
0.0);
     ( 371978.8, 3765228.2,      18.7,     129.3,       0.0);         ( 372078.8, 3765228.2,      21.3,     129.3,
0.0);
     ( 372178.8, 3765228.2,      22.9,     129.3,       0.0);         ( 372278.8, 3765228.2,      31.9,     129.3,
0.0);
     ( 372378.8, 3765228.2,      38.7,     129.3,       0.0);         ( 372478.8, 3765228.2,      39.0,     129.3,
0.0);
     ( 372578.8, 3765228.2,      30.7,     150.8,       0.0);         ( 372678.8, 3765228.2,      28.8,     151.8,
0.0);
     ( 372778.8, 3765228.2,      30.6,     151.8,       0.0);         ( 372878.8, 3765228.2,      33.9,     151.8,
0.0);
     ( 372978.8, 3765228.2,      33.1,     151.8,       0.0);         ( 373078.8, 3765228.2,      34.1,     151.8,
0.0);
     ( 373178.8, 3765228.2,      33.5,     151.8,       0.0);         ( 373278.8, 3765228.2,      30.5,     151.8,
0.0);
     ( 373378.8, 3765228.2,      30.1,     151.8,       0.0);         ( 373478.8, 3765228.2,      30.2,     151.8,
0.0);
     ( 373578.8, 3765228.2,      30.0,     151.8,       0.0);         ( 371578.8, 3765328.2,      28.3,     129.3,
0.0);
     ( 371678.8, 3765328.2,      27.8,     129.3,       0.0);         ( 371778.8, 3765328.2,      27.0,     129.3,
0.0);
     ( 371878.8, 3765328.2,      26.0,     129.3,       0.0);         ( 371978.8, 3765328.2,      24.7,     129.3,
0.0);
     ( 372078.8, 3765328.2,      20.9,     129.3,       0.0);         ( 372178.8, 3765328.2,      17.8,     129.3,
0.0);
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     ( 372278.8, 3765328.2,      17.4,     129.3,       0.0);         ( 372378.8, 3765328.2,      16.2,     129.3,
0.0);
     ( 372478.8, 3765328.2,      17.4,     130.5,       0.0);         ( 372578.8, 3765328.2,      22.1,     151.8,
0.0);
↑ *** AERMOD - VERSION  15181 ***   *** Inglewood Oil Field HRA                                           ***
11/23/15
 *** AERMET - VERSION  14134 ***   *** Acute Analysis                                                      ***
11:10:50
                                                                                                                    PAGE
 8
 **MODELOPTs:   RegDFAULT CONC      ELEV      URBAN

                                               *** DISCRETE CARTESIAN RECEPTORS ***
                                             (X-COORD, Y-COORD, ZELEV, ZHILL, ZFLAG)
                                                              (METERS)

     ( 372678.8, 3765328.2,      25.5,     151.8,       0.0);         ( 372778.8, 3765328.2,      28.2,     151.8,
0.0);
     ( 372878.8, 3765328.2,      30.4,     151.8,       0.0);         ( 372978.8, 3765328.2,      30.5,     151.8,
0.0);
     ( 373078.8, 3765328.2,      31.4,     151.8,       0.0);         ( 373178.8, 3765328.2,      31.8,     151.8,
0.0);
     ( 373278.8, 3765328.2,      29.8,     151.8,       0.0);         ( 373378.8, 3765328.2,      29.9,     151.8,
0.0);
     ( 373478.8, 3765328.2,      29.9,     151.8,       0.0);         ( 373578.8, 3765328.2,      30.1,     151.8,
0.0);
     ( 371578.8, 3765428.2,      28.9,     125.8,       0.0);         ( 371678.8, 3765428.2,      28.4,     129.3,
0.0);
     ( 371778.8, 3765428.2,      27.9,     129.3,       0.0);         ( 371878.8, 3765428.2,      27.2,     129.3,
0.0);
     ( 371978.8, 3765428.2,      26.4,     129.3,       0.0);         ( 372078.8, 3765428.2,      25.8,     129.3,
0.0);
     ( 372178.8, 3765428.2,      25.0,     129.3,       0.0);         ( 372278.8, 3765428.2,      23.3,     129.3,
0.0);
     ( 372378.8, 3765428.2,      24.4,     129.3,       0.0);         ( 372478.8, 3765428.2,      25.1,     129.3,
0.0);
     ( 372578.8, 3765428.2,      25.2,     129.3,       0.0);         ( 372678.8, 3765428.2,      22.2,     151.8,
0.0);
     ( 372778.8, 3765428.2,      24.6,     151.8,       0.0);         ( 372878.8, 3765428.2,      29.1,     151.8,
0.0);
```

```
     ( 372978.8, 3765428.2,      29.1,     151.8,       0.0);         ( 373078.8, 3765428.2,      30.1,     151.8,
0.0);
     ( 373178.8, 3765428.2,      30.3,     151.8,       0.0);         ( 373278.8, 3765428.2,      29.3,     151.8,
0.0);
     ( 373378.8, 3765428.2,      29.5,     151.8,       0.0);         ( 373478.8, 3765428.2,      29.8,     151.8,
0.0);
     ( 373578.8, 3765428.2,      30.0,     151.8,       0.0);         ( 372290.1, 3764775.0,     113.8,     129.3,
0.0);
     ( 372557.2, 3764615.5,      99.5,     129.3,       0.0);         ( 372578.7, 3764540.8,     110.8,     120.6,
0.0);
     ( 372785.1, 3764535.8,      83.0,     129.3,       0.0);         ( 372785.1, 3764509.2,      83.4,     128.0,
0.0);
     ( 372892.7, 3764509.2,      76.1,     151.8,       0.0);         ( 372963.6, 3764611.7,      64.0,     151.8,
0.0);
     ( 373097.8, 3764618.1,      60.5,     151.8,       0.0);         ( 373128.2, 3764430.7,      67.6,     151.8,
0.0);
     ( 373159.8, 3764329.4,      71.1,     151.8,       0.0);         ( 372057.1, 3764438.3,      56.5,     129.3,
0.0);
     ( 372328.2, 3764752.3,     107.1,     129.3,       0.0);         ( 372366.4, 3764729.5,     102.0,     129.3,
0.0);
     ( 372404.6, 3764706.7,     114.0,     129.3,       0.0);         ( 372442.7, 3764683.9,     122.0,     122.0,
0.0);
     ( 372480.9, 3764661.1,     119.3,     123.4,       0.0);         ( 372519.0, 3764638.3,     110.3,     127.5,
0.0);
     ( 372568.0, 3764578.2,     101.7,     129.3,       0.0);         ( 372620.0, 3764539.8,     113.8,     114.7,
0.0);
     ( 372661.3, 3764538.8,     105.3,     124.3,       0.0);         ( 372702.5, 3764537.8,      99.6,     125.2,
0.0);
     ( 372743.8, 3764536.8,      92.1,     125.3,       0.0);         ( 372821.0, 3764509.2,      80.6,     128.0,
0.0);
     ( 372856.8, 3764509.2,      78.2,     125.3,       0.0);         ( 372916.3, 3764543.4,      73.3,     151.8,
0.0);
     ( 372940.0, 3764577.6,      67.8,     151.8,       0.0);         ( 373008.3, 3764613.8,      60.5,     151.8,
0.0);
     ( 373053.0, 3764616.0,      59.7,     151.8,       0.0);         ( 373105.4, 3764571.2,      59.9,     151.8,
0.0);
     ( 373113.0, 3764524.4,      60.3,     151.8,       0.0);         ( 373120.6, 3764477.5,      64.9,     151.8,
0.0);
     ( 373138.7, 3764396.9,      69.1,     151.8,       0.0);         ( 373149.3, 3764363.2,      70.5,     151.8,
0.0);
```

```
    ( 372186.6, 3764625.4,      74.1,     129.3,       0.0);         ( 372212.4, 3764662.8,      81.0,     129.3,
0.0);
    ( 372238.3, 3764700.2,      84.1,     129.3,       0.0);         ( 372264.2, 3764737.6,      99.5,     129.3,
0.0);
↑ *** AERMOD - VERSION  15181 ***   *** Inglewood Oil Field HRA                                                 ***
11/23/15
 *** AERMET - VERSION  14134 ***   *** Acute Analysis                                                          ***
11:10:50
                                                                                                                    PAGE
 9
 **MODELOPTs:   RegDFAULT CONC      ELEV      URBAN

                                              *** METEOROLOGICAL DAYS SELECTED FOR PROCESSING ***
                                                                  (1=YES; 0=NO)

            1 1 1 1 1 1 1 1 1 1  1 1 1 1 1 1 1 1 1 1  1 1 1 1 1 1 1 1 1 1  1 1 1 1 1 1 1 1 1 1  1 1 1 1 1 1 1 1 1 1
            1 1 1 1 1 1 1 1 1 1  1 1 1 1 1 1 1 1 1 1  1 1 1 1 1 1 1 1 1 1  1 1 1 1 1 1 1 1 1 1  1 1 1 1 1 1 1 1 1 1
            1 1 1 1 1 1 1 1 1 1  1 1 1 1 1 1 1 1 1 1  1 1 1 1 1 1 1 1 1 1  1 1 1 1 1 1 1 1 1 1  1 1 1 1 1 1 1 1 1 1
            1 1 1 1 1 1 1 1 1 1  1 1 1 1 1 1 1 1 1 1  1 1 1 1 1 1 1 1 1 1  1 1 1 1 1 1 1 1 1 1  1 1 1 1 1 1 1 1 1 1
            1 1 1 1 1 1 1 1 1 1  1 1 1 1 1 1 1 1 1 1  1 1 1 1 1 1 1 1 1 1  1 1 1 1 1 1 1 1 1 1  1 1 1 1 1 1 1 1 1 1
            1 1 1 1 1 1 1 1 1 1  1 1 1 1 1 1 1 1 1 1  1 1 1 1 1 1 1 1 1 1  1 1 1 1 1 1 1 1 1 1  1 1 1 1 1 1 1 1 1 1
            1 1 1 1 1 1 1 1 1 1  1 1 1 1 1 1 1 1 1 1  1 1 1 1 1 1 1 1 1 1  1 1 1 1 1 1 1 1 1 1  1 1 1 1 1 1 1 1 1 1
            1 1 1 1 1 1 1 1 1 1  1 1 1 1 1 1

                NOTE:  METEOROLOGICAL DATA ACTUALLY PROCESSED WILL ALSO DEPEND ON WHAT IS INCLUDED IN THE DATA FILE.



                                    *** UPPER BOUND OF FIRST THROUGH FIFTH WIND SPEED CATEGORIES ***
                                                              (METERS/SEC)

                                                    1.54,   3.09,   5.14,   8.23,  10.80,
↑ *** AERMOD - VERSION  15181 ***   *** Inglewood Oil Field HRA                                                 ***
11/23/15
 *** AERMET - VERSION  14134 ***   *** Acute Analysis                                                          ***
11:10:50
                                                                                                                    PAGE
10
 **MODELOPTs:   RegDFAULT CONC      ELEV      URBAN
```

*** UP TO THE FIRST 24 HOURS OF METEOROLOGICAL DATA ***

Surface file: wsla8.sfc　　Met Version: 14134
Profile file: wsla8.PFL
Surface format: FREE
Profile format: FREE
Surface station no.: 0　　Upper air station no.: 3190
Name: UNKNOWN　　Name: UNKNOWN
Year: 2008　　Year: 2008

First 24 hours of scalar data

YR	MO	DY	JDY	HR	H0	U*	W*	DT/DZ	ZICNV	ZIMCH	M-O LEN	Z0	BOWEN	ALBEDO	REF WS	WD	HT	REF TA	HT
08	01	01	1	01	-999.0	-9.000	-9.000	-9.000	-999.	-999.	-99999.0	0.40	1.00	1.00	999.00	999.	-9.0	288.4	5.5
08	01	01	1	02	-999.0	-9.000	-9.000	-9.000	-999.	-999.	-99999.0	0.40	1.00	1.00	999.00	999.	-9.0	288.0	5.5
08	01	01	1	03	-999.0	-9.000	-9.000	-9.000	-999.	-999.	-99999.0	0.40	1.00	1.00	999.00	999.	-9.0	287.9	5.5
08	01	01	1	04	-999.0	-9.000	-9.000	-9.000	-999.	-999.	-99999.0	0.40	1.00	1.00	999.00	999.	-9.0	287.8	5.5
08	01	01	1	05	-999.0	-9.000	-9.000	-9.000	-999.	-999.	-99999.0	0.40	1.00	1.00	999.00	999.	-9.0	287.6	5.5
08	01	01	1	06	-999.0	-9.000	-9.000	-9.000	-999.	-999.	-99999.0	0.40	1.00	1.00	999.00	999.	-9.0	288.1	5.5
08	01	01	1	07	-999.0	-9.000	-9.000	-9.000	-999.	-999.	-99999.0	0.40	1.00	1.00	999.00	999.	-9.0	288.1	5.5
08	01	01	1	08	-999.0	-9.000	-9.000	-9.000	-999.	-999.	-99999.0	0.40	1.00	0.55	999.00	999.	-9.0	288.4	5.5
08	01	01	1	09	21.6	-9.000	-9.000	-9.000	53.	-999.	-99999.0	0.40	1.00	0.32	999.00	999.	-9.0	288.9	5.5
08	01	01	1	10	66.0	-9.000	-9.000	-9.000	139.	-999.	-99999.0	0.40	1.00	0.24	999.00	999.	-9.0	290.0	5.5
08	01	01	1	11	126.1	-9.000	-9.000	-9.000	371.	-999.	-99999.0	0.40	1.00	0.21	999.00	999.	-9.0	292.0	5.5
08	01	01	1	12	144.0	-9.000	-9.000	-9.000	600.	-999.	-99999.0	0.40	1.00	0.20	999.00	999.	-9.0	293.0	5.5
08	01	01	1	13	126.0	-9.000	-9.000	-9.000	722.	-999.	-99999.0	0.40	1.00	0.20	999.00	999.	-9.0	293.6	5.5
08	01	01	1	14	69.5	-9.000	-9.000	-9.000	753.	-999.	-99999.0	0.40	1.00	0.21	999.00	999.	-9.0	293.1	5.5
08	01	01	1	15	32.0	-9.000	-9.000	-9.000	767.	-999.	-99999.0	0.40	1.00	0.24	999.00	999.	-9.0	292.6	5.5
08	01	01	1	16	14.4	-9.000	-9.000	-9.000	773.	-999.	-99999.0	0.40	1.00	0.33	999.00	999.	-9.0	292.0	5.5
08	01	01	1	17	-999.0	-9.000	-9.000	-9.000	-999.	-999.	-99999.0	0.40	1.00	0.59	999.00	999.	-9.0	291.1	5.5
08	01	01	1	18	-999.0	-9.000	-9.000	-9.000	-999.	-999.	-99999.0	0.40	1.00	1.00	999.00	999.	-9.0	290.4	5.5
08	01	01	1	19	-999.0	-9.000	-9.000	-9.000	-999.	-999.	-99999.0	0.40	1.00	1.00	999.00	999.	-9.0	289.5	5.5
08	01	01	1	20	-999.0	-9.000	-9.000	-9.000	-999.	-999.	-99999.0	0.40	1.00	1.00	999.00	999.	-9.0	289.4	5.5
08	01	01	1	21	-999.0	-9.000	-9.000	-9.000	-999.	-999.	-99999.0	0.40	1.00	1.00	999.00	999.	-9.0	289.4	5.5
08	01	01	1	22	-999.0	-9.000	-9.000	-9.000	-999.	-999.	-99999.0	0.40	1.00	1.00	999.00	999.	-9.0	289.4	5.5
08	01	01	1	23	-999.0	-9.000	-9.000	-9.000	-999.	-999.	-99999.0	0.40	1.00	1.00	999.00	999.	-9.0	289.4	5.5
08	01	01	1	24	-999.0	-9.000	-9.000	-9.000	-999.	-999.	-99999.0	0.40	1.00	1.00	999.00	999.	-9.0	289.1	5.5

First hour of profile data

```
 YR MO DY HR HEIGHT F  WDIR    WSPD AMB_TMP sigmaA  sigmaW  sigmaV
 08 01 01 01    5.5 0 -999.  -99.00   288.5   99.0  -99.00  -99.00
 08 01 01 01    9.1 1 -999.  -99.00  -999.0   99.0  -99.00  -99.00

 F indicates top of profile (=1) or below (=0)
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*** AERMOD - VERSION 15181 *** *** Inglewood Oil Field HRA *** 11/23/15
*** AERMET - VERSION 14134 *** *** Acute Analysis *** 11:10:50
PAGE 11
**MODELOPTs: RegDFAULT CONC ELEV URBAN

*** THE PERIOD (43848 HRS) AVERAGE CONCENTRATION VALUES FOR SOURCE GROUP: PAREA1 ***
INCLUDING SOURCE(S): PAREA1 ,

*** DISCRETE CARTESIAN RECEPTOR POINTS ***

** CONC OF TACS IN MICROGRAMS/M**3 **

X-COORD (M)	Y-COORD (M)	CONC	X-COORD (M)	Y-COORD (M)	CONC
371578.83	3763428.16	0.44152	371678.83	3763428.16	0.48650
371778.83	3763428.16	0.54304	371878.83	3763428.16	0.61597
371978.83	3763428.16	0.70852	372078.83	3763428.16	0.82057
373178.83	3763428.16	3.50547	373278.83	3763428.16	3.60924
373378.83	3763428.16	3.62271	373478.83	3763428.16	3.69275
373578.83	3763428.16	3.40292	371578.83	3763528.16	0.47975
371678.83	3763528.16	0.52957	371778.83	3763528.16	0.59271
371878.83	3763528.16	0.67446	371978.83	3763528.16	0.77859
372078.83	3763528.16	0.91193	373178.83	3763528.16	4.18339

373278.83	3763528.16	4.33792	373378.83	3763528.16	4.33749
373478.83	3763528.16	4.18299	373578.83	3763528.16	3.72678
371578.83	3763628.16	0.52491	371678.83	3763628.16	0.58007
371778.83	3763628.16	0.65095	371878.83	3763628.16	0.74544
371978.83	3763628.16	0.87185	372078.83	3763628.16	1.03409
373178.83	3763628.16	5.00293	373278.83	3763628.16	5.11900
373378.83	3763628.16	4.97089	373478.83	3763628.16	4.43606
373578.83	3763628.16	4.01746	371578.83	3763728.16	0.57776
371678.83	3763728.16	0.64842	371778.83	3763728.16	0.72064
371878.83	3763728.16	0.82972	371978.83	3763728.16	0.97555
372078.83	3763728.16	1.16985	373178.83	3763728.16	5.98717
373278.83	3763728.16	5.98707	373378.83	3763728.16	5.63137
373478.83	3763728.16	4.86003	373578.83	3763728.16	4.26004
371578.83	3763828.16	0.63788	371678.83	3763828.16	0.71461
371778.83	3763828.16	0.80810	371878.83	3763828.16	0.93124
371978.83	3763828.16	1.09940	372078.83	3763828.16	1.35072
373178.83	3763828.16	7.14989	373278.83	3763828.16	6.93848
373378.83	3763828.16	6.00355	373478.83	3763828.16	5.13727
373578.83	3763828.16	4.41079	371578.83	3763928.16	0.70600
371678.83	3763928.16	0.79933	371778.83	3763928.16	0.91519

371878.83	3763928.16	1.06539	373178.83	3763928.16	8.55243
373278.83	3763928.16	7.86027	373378.83	3763928.16	6.55500
373478.83	3763928.16	5.34608	373578.83	3763928.16	4.40274
371578.83	3764028.16	0.77638	371678.83	3764028.16	0.88911
371778.83	3764028.16	1.03441	371878.83	3764028.16	1.23823
373178.83	3764028.16	10.23653	373278.83	3764028.16	8.65543
373378.83	3764028.16	6.78856	373478.83	3764028.16	5.29007
373578.83	3764028.16	4.16476	371578.83	3764128.16	0.83961
371678.83	3764128.16	0.98266	371778.83	3764128.16	1.16582
371878.83	3764128.16	1.43410	373178.83	3764128.16	11.82489
373278.83	3764128.16	9.38155	373378.83	3764128.16	6.74273

↑ *** AERMOD - VERSION 15181 *** *** Inglewood Oil Field HRA *** 11/23/15
*** AERMET - VERSION 14134 *** *** Acute Analysis *** 11:10:50
PAGE 12
**MODELOPTs: RegDFAULT CONC ELEV URBAN

*** THE PERIOD (43848 HRS) AVERAGE CONCENTRATION VALUES FOR SOURCE GROUP: PAREA1 ***
INCLUDING SOURCE(S): PAREA1 ,

*** DISCRETE CARTESIAN RECEPTOR POINTS ***

** CONC OF TACS IN MICROGRAMS/M**3 **

X-COORD (M)	Y-COORD (M)	CONC	X-COORD (M)	Y-COORD (M)	CONC

- - -

373478.83	3764128.16	4.90761	373578.83	3764128.16	3.73469
371578.83	3764228.16	0.88134	371678.83	3764228.16	1.05679
371778.83	3764228.16	1.29869	373178.83	3764228.16	13.15710
373278.83	3764228.16	8.81936	373378.83	3764228.16	5.72526
373478.83	3764228.16	4.20367	373578.83	3764228.16	3.13937
371578.83	3764328.16	0.89254	371678.83	3764328.16	1.08132
371778.83	3764328.16	1.35520	373178.83	3764328.16	13.17674
373278.83	3764328.16	7.02288	373378.83	3764328.16	4.66450
373478.83	3764328.16	3.34559	373578.83	3764328.16	2.19732
371578.83	3764428.16	0.86555	371678.83	3764428.16	1.05712
373178.83	3764428.16	9.19429	373278.83	3764428.16	5.25808
373378.83	3764428.16	3.59078	373478.83	3764428.16	2.66313
373578.83	3764428.16	1.52434	371578.83	3764528.16	0.80771
371678.83	3764528.16	0.99558	371778.83	3764528.16	1.26526
371878.83	3764528.16	1.70008	371978.83	3764528.16	2.51651
372878.83	3764528.16	15.97416	373178.83	3764528.16	6.69518
373278.83	3764528.16	4.29875	373378.83	3764528.16	3.00001
373478.83	3764528.16	1.93413	373578.83	3764528.16	1.04897
371578.83	3764628.16	0.74486	371678.83	3764628.16	0.93185
371778.83	3764628.16	1.17458	371878.83	3764628.16	1.56659

371978.83	3764628.16	2.31554	372078.83	3764628.16	3.95389
372178.83	3764628.16	8.29456	372578.83	3764628.16	14.46182
372678.83	3764628.16	11.43625	372778.83	3764628.16	11.17959
372878.83	3764628.16	9.39035	372978.83	3764628.16	8.82576
373078.83	3764628.16	7.10596	373178.83	3764628.16	5.06299
373278.83	3764628.16	3.74837	373378.83	3764628.16	2.30184
373478.83	3764628.16	1.47775	373578.83	3764628.16	0.91278
371578.83	3764728.16	0.71323	371678.83	3764728.16	0.87674
371778.83	3764728.16	1.10247	371878.83	3764728.16	1.46530
371978.83	3764728.16	2.25731	372078.83	3764728.16	3.45794
372178.83	3764728.16	5.68296	372378.83	3764728.16	10.51241
372478.83	3764728.16	6.81413	372578.83	3764728.16	8.89819
372678.83	3764728.16	8.29364	372778.83	3764728.16	7.37178
372878.83	3764728.16	6.50291	372978.83	3764728.16	5.74698
373078.83	3764728.16	4.86520	373178.83	3764728.16	3.95635
373278.83	3764728.16	3.24734	373378.83	3764728.16	1.74699
373478.83	3764728.16	1.44670	373578.83	3764728.16	1.39911
371578.83	3764828.16	0.68990	371678.83	3764828.16	0.81761
371778.83	3764828.16	1.04582	371878.83	3764828.16	1.39700
371978.83	3764828.16	2.10671	372078.83	3764828.16	3.14904

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 *** AERMOD - VERSION  15181 ***   *** Inglewood Oil Field HRA                                          ***
11/23/15
 *** AERMET - VERSION  14134 ***   *** Acute Analysis                                                    ***
11:10:50
                                                                                                              PAGE
13
 **MODELOPTs:   RegDFAULT CONC      ELEV      URBAN

                              *** THE PERIOD ( 43848 HRS) AVERAGE CONCENTRATION   VALUES FOR SOURCE GROUP: PAREA1   ***
                                  INCLUDING SOURCE(S):     PAREA1      ,

                                              *** DISCRETE CARTESIAN RECEPTOR POINTS ***

                                         ** CONC OF TACS     IN MICROGRAMS/M**3                         **
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X-COORD (M)	Y-COORD (M)	CONC	X-COORD (M)	Y-COORD (M)	CONC
372178.83	3764828.16	4.48509	372278.83	3764828.16	4.86900
372378.83	3764828.16	4.61406	372478.83	3764828.16	4.59196
372578.83	3764828.16	6.52224	372678.83	3764828.16	6.19455
372778.83	3764828.16	5.48160	372878.83	3764828.16	4.91095
372978.83	3764828.16	4.24204	373078.83	3764828.16	3.65394
373178.83	3764828.16	3.14082	373278.83	3764828.16	2.81910
373378.83	3764828.16	2.25082	373478.83	3764828.16	1.82103
373578.83	3764828.16	1.46901	371578.83	3764928.16	0.67631
371678.83	3764928.16	0.80506	371778.83	3764928.16	1.00813
371878.83	3764928.16	1.29798	371978.83	3764928.16	1.85256
372078.83	3764928.16	2.44132	372178.83	3764928.16	3.33648

372278.83	3764928.16	4.32441	372378.83	3764928.16	4.10169
372478.83	3764928.16	3.46093	372578.83	3764928.16	4.61185
372678.83	3764928.16	4.77974	372778.83	3764928.16	4.07619
372878.83	3764928.16	3.62963	372978.83	3764928.16	3.24342
373078.83	3764928.16	2.90885	373178.83	3764928.16	2.52580
373278.83	3764928.16	2.35481	373378.83	3764928.16	1.95302
373478.83	3764928.16	1.62483	373578.83	3764928.16	1.35095
371578.83	3765028.16	0.66677	371678.83	3765028.16	0.79707
371778.83	3765028.16	0.94661	371878.83	3765028.16	1.21952
371978.83	3765028.16	1.54253	372078.83	3765028.16	2.10752
372178.83	3765028.16	2.75667	372278.83	3765028.16	3.32142
372378.83	3765028.16	3.26551	372478.83	3765028.16	3.67405
372578.83	3765028.16	3.83897	372678.83	3765028.16	3.42439
372778.83	3765028.16	3.06156	372878.83	3765028.16	2.86159
372978.83	3765028.16	2.63245	373078.83	3765028.16	2.39755
373178.83	3765028.16	2.13119	373278.83	3765028.16	1.84708
373378.83	3765028.16	1.62396	373478.83	3765028.16	1.39071
373578.83	3765028.16	1.19418	371578.83	3765128.16	0.65506
371678.83	3765128.16	0.77665	371778.83	3765128.16	0.92614
371878.83	3765128.16	1.12191	371978.83	3765128.16	1.38708

372078.83	3765128.16	1.68114	372178.83	3765128.16	2.11306
372278.83	3765128.16	2.51936	372378.83	3765128.16	2.77290
372478.83	3765128.16	2.79199	372578.83	3765128.16	2.69534
372678.83	3765128.16	2.55591	372778.83	3765128.16	2.47300
372878.83	3765128.16	2.35995	372978.83	3765128.16	2.19903
373078.83	3765128.16	2.02242	373178.83	3765128.16	1.82776
373278.83	3765128.16	1.61933	373378.83	3765128.16	1.43525
373478.83	3765128.16	1.27115	373578.83	3765128.16	1.11716
371578.83	3765228.16	0.64142	371678.83	3765228.16	0.75228

*** AERMOD - VERSION 15181 *** *** Inglewood Oil Field HRA *** 11/23/15
*** AERMET - VERSION 14134 *** *** Acute Analysis *** 11:10:50
PAGE 14
**MODELOPTs: RegDFAULT CONC ELEV URBAN

*** THE PERIOD (43848 HRS) AVERAGE CONCENTRATION VALUES FOR SOURCE GROUP: PAREA1 ***
INCLUDING SOURCE(S): PAREA1 ,

*** DISCRETE CARTESIAN RECEPTOR POINTS ***

** CONC OF TACS IN MICROGRAMS/M**3 **

X-COORD (M)	Y-COORD (M)	CONC	X-COORD (M)	Y-COORD (M)	CONC
371778.83	3765228.16	0.88813	371878.83	3765228.16	1.04001
371978.83	3765228.16	1.22309	372078.83	3765228.16	1.43443

372178.83	3765228.16	1.63967	372278.83	3765228.16	1.85671
372378.83	3765228.16	2.02822	372478.83	3765228.16	2.11021
372578.83	3765228.16	2.08932	372678.83	3765228.16	2.06957
372778.83	3765228.16	2.03455	372878.83	3765228.16	1.97303
372978.83	3765228.16	1.85889	373078.83	3765228.16	1.73392
373178.83	3765228.16	1.59081	373278.83	3765228.16	1.43760
373378.83	3765228.16	1.30010	373478.83	3765228.16	1.17140
373578.83	3765228.16	1.04978	371578.83	3765328.16	0.62484
371678.83	3765328.16	0.72469	371778.83	3765328.16	0.84287
371878.83	3765328.16	0.97859	371978.83	3765328.16	1.12642
372078.83	3765328.16	1.26917	372178.83	3765328.16	1.40410
372278.83	3765328.16	1.52584	372378.83	3765328.16	1.61260
372478.83	3765328.16	1.67403	372578.83	3765328.16	1.71795
372678.83	3765328.16	1.72912	372778.83	3765328.16	1.71049
372878.83	3765328.16	1.66526	372978.83	3765328.16	1.58823
373078.83	3765328.16	1.49856	373178.83	3765328.16	1.39741
373278.83	3765328.16	1.28397	373378.83	3765328.16	1.17986
373478.83	3765328.16	1.07848	373578.83	3765328.16	0.98153
371578.83	3765428.16	0.60540	371678.83	3765428.16	0.69432
371778.83	3765428.16	0.79641	371878.83	3765428.16	0.90968

371978.83	3765428.16	1.02892	372078.83	3765428.16	1.14770
372178.83	3765428.16	1.25643	372278.83	3765428.16	1.34379
372378.83	3765428.16	1.41670	372478.83	3765428.16	1.46255
372578.83	3765428.16	1.48141	372678.83	3765428.16	1.46711
372778.83	3765428.16	1.45389	372878.83	3765428.16	1.43085
372978.83	3765428.16	1.37450	373078.83	3765428.16	1.31007
373178.83	3765428.16	1.23432	373278.83	3765428.16	1.15082
373378.83	3765428.16	1.07064	373478.83	3765428.16	0.99129
373578.83	3765428.16	0.91375	372290.09	3764775.05	5.89026
372557.21	3764615.54	15.23968	372578.73	3764540.84	15.38985
372785.09	3764535.78	17.36554	372785.09	3764509.19	21.05366
372892.70	3764509.19	18.51297	372963.59	3764611.74	9.78870
373097.78	3764618.07	6.91620	373128.17	3764430.70	14.49808
373159.82	3764329.43	15.41279	372057.15	3764438.30	4.17563
372328.25	3764752.26	8.35648	372366.41	3764729.48	11.28208
372404.57	3764706.69	9.56393	372442.73	3764683.90	8.89444
372480.89	3764661.11	9.52817	372519.05	3764638.33	11.69041
372567.97	3764578.19	16.99023	372620.00	3764539.83	13.16617

*** AERMOD - VERSION 15181 ***   *** Inglewood Oil Field HRA ***
11/23/15
*** AERMET - VERSION 14134 ***   *** Acute Analysis ***

**MODELOPTs: RegDFAULT CONC ELEV URBAN

*** THE PERIOD (43848 HRS) AVERAGE CONCENTRATION VALUES FOR SOURCE GROUP: PAREA1 ***
INCLUDING SOURCE(S): PAREA1 ,

*** DISCRETE CARTESIAN RECEPTOR POINTS ***

** CONC OF TACS IN MICROGRAMS/M**3 **

X-COORD (M)	Y-COORD (M)	CONC	X-COORD (M)	Y-COORD (M)	CONC
372661.27	3764538.82	16.06650	372702.55	3764537.80	17.97032
372743.82	3764536.79	19.16023	372820.96	3764509.19	19.71885
372856.83	3764509.19	18.85786	372916.33	3764543.37	14.74073
372939.96	3764577.56	11.96700	373008.32	3764613.85	9.36527
373053.05	3764615.96	8.28993	373105.38	3764571.23	8.18032
373112.98	3764524.39	9.81657	373120.57	3764477.54	12.14484
373138.72	3764396.94	15.10911	373149.27	3764363.19	15.46222
372186.56	3764625.38	8.88474	372212.44	3764662.80	9.63814
372238.33	3764700.22	9.64979	372264.21	3764737.63	8.68050

*** AERMOD - VERSION 15181 *** *** Inglewood Oil Field HRA ***
11/23/15
*** AERMET - VERSION 14134 *** *** Acute Analysis ***
11:10:50
PAGE
16
**MODELOPTs: RegDFAULT CONC ELEV URBAN

*** THE 1ST HIGHEST 1-HR AVERAGE CONCENTRATION VALUES FOR SOURCE GROUP: PAREA1 ***
INCLUDING SOURCE(S): PAREA1 ,

*** DISCRETE CARTESIAN RECEPTOR POINTS ***

** CONC OF TACS IN MICROGRAMS/M**3 **

X-COORD (M)	Y-COORD (M)	CONC	(YYMMDDHH)	X-COORD (M)	Y-COORD (M)	CONC	(YYMMDDHH)
371578.83	3763428.16	21.58201	(08100823)	371678.83	3763428.16	22.29431	(10092423)
371778.83	3763428.16	22.92665	(11100219)	371878.83	3763428.16	23.66802	(08100724)
371978.83	3763428.16	24.39799	(11050306)	372078.83	3763428.16	25.38751	(11101220)
373178.83	3763428.16	28.73032	(12100122)	373278.83	3763428.16	28.25126	(12101420)
373378.83	3763428.16	27.85191	(08041221)	373478.83	3763428.16	29.79592	(11101305)
373578.83	3763428.16	26.52523	(11101304)	371578.83	3763528.16	23.05105	(09011902)
371678.83	3763528.16	23.80429	(08100823)	371778.83	3763528.16	24.57615	(10092423)
371878.83	3763528.16	25.33505	(12102624)	371978.83	3763528.16	26.13564	(08092920)
372078.83	3763528.16	27.23936	(12091504)	373178.83	3763528.16	31.38945	(12101420)
373278.83	3763528.16	33.19735	(08051906)	373378.83	3763528.16	35.24045	(11101305)
373478.83	3763528.16	33.12350	(08051806)	373578.83	3763528.16	28.61764	(08110720)
371578.83	3763628.16	24.87153	(12100123)	371678.83	3763628.16	25.56764	(09011902)
371778.83	3763628.16	26.39999	(08100823)	371878.83	3763628.16	27.33900	(11100222)
371978.83	3763628.16	28.46350	(08100724)	372078.83	3763628.16	29.69047	(12091504)
373178.83	3763628.16	34.81514	(08041221)	373278.83	3763628.16	37.62030	(11101305)

373378.83	3763628.16	38.68069	(08110720)	373478.83	3763628.16	32.40064	(08100106)
373578.83	3763628.16	30.98826	(12100202)	371578.83	3763728.16	26.76135	(12082904)
371678.83	3763728.16	28.16564	(12100123)	371778.83	3763728.16	28.59670	(09011902)
371878.83	3763728.16	29.71150	(12110507)	371978.83	3763728.16	30.78964	(11100219)
372078.83	3763728.16	31.97128	(11050306)	373178.83	3763728.16	38.67068	(11050221)
373278.83	3763728.16	41.97709	(08110720)	373378.83	3763728.16	41.44433	(12100202)
373478.83	3763728.16	35.53767	(10121120)	373578.83	3763728.16	33.98560	(10092620)
371578.83	3763828.16	28.87114	(12102721)	371678.83	3763828.16	30.24792	(12082904)
371778.83	3763828.16	31.51453	(12100123)	371878.83	3763828.16	32.38544	(09011902)
371978.83	3763828.16	33.44507	(10092423)	372078.83	3763828.16	35.22177	(08100724)
373178.83	3763828.16	43.67486	(11101304)	373278.83	3763828.16	47.43289	(12100202)
373378.83	3763828.16	41.28642	(10092620)	373478.83	3763828.16	39.01217	(12091424)
373578.83	3763828.16	37.38961	(09101703)	371578.83	3763928.16	31.47748	(12091323)
371678.83	3763928.16	33.25145	(12030322)	371778.83	3763928.16	34.88762	(09121824)
371878.83	3763928.16	36.30964	(12100123)	373178.83	3763928.16	50.25787	(12100202)
373278.83	3763928.16	50.78991	(10092620)	373378.83	3763928.16	47.00289	(12091424)
373478.83	3763928.16	43.93264	(08111618)	373578.83	3763928.16	41.35378	(12082924)
371578.83	3764028.16	34.32345	(08100120)	371678.83	3764028.16	36.58762	(08082924)
371778.83	3764028.16	39.08819	(12101421)	371878.83	3764028.16	41.58011	(12102721)
373178.83	3764028.16	59.36567	(12091424)	373278.83	3764028.16	57.24635	(08111618)

373378.83	3764028.16	53.25373	(09112619)	373478.83	3764028.16	49.54118	(09101702)
373578.83	3764028.16	46.11921	(10110418)	371578.83	3764128.16	37.38487	(12100222)
371678.83	3764128.16	40.85729	(10092520)	371778.83	3764128.16	44.39353	(08100120)
371878.83	3764128.16	48.31372	(08082924)	373178.83	3764128.16	70.86618	(09112619)
373278.83	3764128.16	69.23217	(09101702)	373378.83	3764128.16	62.94995	(10110418)

↑ *** AERMOD - VERSION 15181 *** *** Inglewood Oil Field HRA *** 11/23/15
*** AERMET - VERSION 14134 *** *** Acute Analysis *** 11:10:50
PAGE 17
**MODELOPTs: RegDFAULT CONC ELEV URBAN

*** THE 1ST HIGHEST 1-HR AVERAGE CONCENTRATION VALUES FOR SOURCE GROUP: PAREA1 ***
INCLUDING SOURCE(S): PAREA1 ,

*** DISCRETE CARTESIAN RECEPTOR POINTS ***

** CONC OF TACS IN MICROGRAMS/M**3 **

X-COORD (M)	Y-COORD (M)	CONC	(YYMMDDHH)	X-COORD (M)	Y-COORD (M)	CONC	(YYMMDDHH)
373478.83	3764128.16	56.00563	(09083006)	373578.83	3764128.16	50.86951	(08100803)
371578.83	3764228.16	40.22544	(08103022)	371678.83	3764228.16	45.11676	(08092923)
371778.83	3764228.16	50.94099	(08111501)	373178.83	3764228.16	90.26697	(10110418)
373278.83	3764228.16	83.19555	(08100803)	373378.83	3764228.16	70.15365	(08100203)
373478.83	3764228.16	62.99738	(09100121)	373578.83	3764228.16	54.52373	(11090806)
371578.83	3764328.16	43.15576	(12100223)	371678.83	3764328.16	48.80180	(12100223)

371778.83	3764328.16	56.13504	(09102623)	373178.83	3764328.16	126.90168	(08102806)
373278.83	3764328.16	96.05204	(08083003)	373378.83	3764328.16	79.70343	(09012922)
373478.83	3764328.16	67.23234	(10092820)	373578.83	3764328.16	76.24360	(10092820)
371578.83	3764428.16	44.90434	(12081104)	371678.83	3764428.16	51.50998	(12081104)
373178.83	3764428.16	129.95399	(08101504)	373278.83	3764428.16	101.32332	(08101504)
373378.83	3764428.16	81.64164	(12091523)	373478.83	3764428.16	67.69420	(12091523)
373578.83	3764428.16	77.59141	(11072803)	371578.83	3764528.16	44.88619	(12081802)
371678.83	3764528.16	52.35001	(12081802)	371778.83	3764528.16	61.75435	(12082024)
371878.83	3764528.16	74.74049	(12082024)	371978.83	3764528.16	94.82633	(12090906)
372878.83	3764528.16	93.84813	(12081806)	373178.83	3764528.16	108.69317	(12081022)
373278.83	3764528.16	91.40782	(11090620)	373378.83	3764528.16	75.63349	(09030120)
373478.83	3764528.16	79.89186	(12081123)	373578.83	3764528.16	64.29733	(12082902)
371578.83	3764628.16	43.23467	(12090604)	371678.83	3764628.16	51.34291	(12010405)
371778.83	3764628.16	59.25540	(12090804)	371878.83	3764628.16	70.20388	(12091605)
371978.83	3764628.16	86.38831	(11050223)	372078.83	3764628.16	108.39628	(08092603)
372178.83	3764628.16	144.64660	(09090123)	372578.83	3764628.16	100.21114	(12091303)
372678.83	3764628.16	83.39900	(12030423)	372778.83	3764628.16	71.00709	(09121818)
372878.83	3764628.16	64.17021	(09121818)	372978.83	3764628.16	60.91640	(08090501)
373078.83	3764628.16	68.25623	(12091420)	373178.83	3764628.16	74.37788	(08090501)
373278.83	3764628.16	72.92713	(12081806)	373378.83	3764628.16	75.58503	(09090121)

373478.83	3764628.16	67.18021	(10101501)	373578.83	3764628.16	53.77550	(11090620)
371578.83	3764728.16	42.05288	(12091605)	371678.83	3764728.16	48.16364	(11050223)
371778.83	3764728.16	54.80496	(10092923)	371878.83	3764728.16	62.87189	(09083124)
371978.83	3764728.16	79.43251	(10092622)	372078.83	3764728.16	91.11194	(08100122)
372178.83	3764728.16	104.32473	(10092521)	372378.83	3764728.16	103.90420	(11090621)
372478.83	3764728.16	67.28604	(10092621)	372578.83	3764728.16	82.36763	(12091420)
372678.83	3764728.16	65.72271	(11090622)	372778.83	3764728.16	57.09471	(08082122)
372878.83	3764728.16	51.75018	(12091303)	372978.83	3764728.16	48.96798	(08083105)
373078.83	3764728.16	48.63507	(08083105)	373178.83	3764728.16	53.32911	(08082122)
373278.83	3764728.16	56.60285	(10071705)	373378.83	3764728.16	53.77897	(10071901)
373478.83	3764728.16	54.94823	(10093004)	373578.83	3764728.16	54.89604	(09090121)
371578.83	3764828.16	40.00859	(10092923)	371678.83	3764828.16	42.92153	(09083124)
371778.83	3764828.16	49.26605	(10092622)	371878.83	3764828.16	55.80615	(08062024)
371978.83	3764828.16	67.82650	(11090803)	372078.83	3764828.16	77.15796	(10092521)

↑ *** AERMOD - VERSION 15181 *** *** Inglewood Oil Field HRA ***
11/23/15
*** AERMET - VERSION 14134 *** *** Acute Analysis ***
11:10:50
PAGE
18
**MODELOPTs: RegDFAULT CONC ELEV URBAN

*** THE 1ST HIGHEST 1-HR AVERAGE CONCENTRATION VALUES FOR SOURCE GROUP: PAREA1 ***
INCLUDING SOURCE(S): PAREA1 ,

*** DISCRETE CARTESIAN RECEPTOR POINTS ***

** CONC OF TACS IN MICROGRAMS/M**3 **

X-COORD (M)	Y-COORD (M)	CONC	(YYMMDDHH)	X-COORD (M)	Y-COORD (M)	CONC	(YYMMDDHH)
372178.83	3764828.16	82.06851	(11090624)	372278.83	3764828.16	83.64614	(08062101)
372378.83	3764828.16	63.88497	(09080322)	372478.83	3764828.16	57.78819	(11082601)
372578.83	3764828.16	67.89926	(10092621)	372678.83	3764828.16	56.41512	(10092623)
372778.83	3764828.16	49.40644	(09042023)	372878.83	3764828.16	45.07236	(11090622)
372978.83	3764828.16	41.58043	(08082122)	373078.83	3764828.16	40.43354	(08082122)
373178.83	3764828.16	41.95935	(08082122)	373278.83	3764828.16	45.99055	(08082122)
373378.83	3764828.16	47.26202	(09082402)	373478.83	3764828.16	42.80288	(10071901)
373578.83	3764828.16	39.94563	(12030423)	371578.83	3764928.16	37.69383	(10092622)
371678.83	3764928.16	40.12293	(09090123)	371778.83	3764928.16	43.92327	(11090722)
371878.83	3764928.16	47.75273	(09041922)	371978.83	3764928.16	55.69478	(10092420)
372078.83	3764928.16	58.07610	(09090323)	372178.83	3764928.16	62.59054	(10110319)
372278.83	3764928.16	64.92007	(09082921)	372378.83	3764928.16	63.82014	(09080322)
372478.83	3764928.16	52.65310	(08080423)	372578.83	3764928.16	57.37488	(12091022)
372678.83	3764928.16	48.60141	(09082903)	372778.83	3764928.16	41.81889	(10092623)
372878.83	3764928.16	38.01753	(12091420)	372978.83	3764928.16	35.80924	(09042023)
373078.83	3764928.16	35.26858	(11090622)	373178.83	3764928.16	35.08382	(11090622)
373278.83	3764928.16	38.09951	(11090622)	373378.83	3764928.16	37.44601	(08062004)

373478.83	3764928.16	36.32470	(09082402)	373578.83	3764928.16	34.58738	(09121818)
371578.83	3765028.16	34.77874	(08062024)	371678.83	3765028.16	37.25956	(08100122)
371778.83	3765028.16	38.21478	(11101320)	371878.83	3765028.16	41.92068	(10092420)
371978.83	3765028.16	43.89469	(12100119)	372078.83	3765028.16	49.17202	(10110219)
372178.83	3765028.16	52.60237	(11090720)	372278.83	3765028.16	53.41027	(09082921)
372378.83	3765028.16	55.64971	(10081724)	372478.83	3765028.16	52.99192	(12082821)
372578.83	3765028.16	45.78087	(11101206)	372678.83	3765028.16	39.70388	(12081322)
372778.83	3765028.16	34.82195	(11063022)	372878.83	3765028.16	33.18454	(10092623)
372978.83	3765028.16	31.97041	(12091420)	373078.83	3765028.16	31.56038	(12091420)
373178.83	3765028.16	31.15161	(09042023)	373278.83	3765028.16	30.72513	(11090622)
373378.83	3765028.16	30.91102	(11090701)	373478.83	3765028.16	30.18195	(08062004)
373578.83	3765028.16	29.31433	(08083105)	371578.83	3765128.16	32.19595	(11090803)
371678.83	3765128.16	33.93920	(11101320)	371778.83	3765128.16	35.27976	(10092420)
371878.83	3765128.16	36.50887	(12100119)	371978.83	3765128.16	38.08974	(10092706)
372078.83	3765128.16	38.96674	(10110319)	372178.83	3765128.16	41.85669	(09082922)
372278.83	3765128.16	43.32835	(12091006)	372378.83	3765128.16	42.83329	(08041321)
372478.83	3765128.16	39.82866	(09090124)	372578.83	3765128.16	36.09954	(12100102)
372678.83	3765128.16	32.86486	(11101322)	372778.83	3765128.16	31.33784	(12091022)
372878.83	3765128.16	30.09761	(11091824)	372978.83	3765128.16	29.23303	(10092621)
373078.83	3765128.16	28.67132	(10092623)	373178.83	3765128.16	28.22877	(12091420)

373278.83	3765128.16	27.69596	(09042023)	373378.83	3765128.16	27.39791	(11090622)
373478.83	3765128.16	27.10063	(11090701)	373578.83	3765128.16	26.48374	(08082122)
371578.83	3765228.16	29.75743	(11100119)	371678.83	3765228.16	31.10243	(10092420)

↑ *** AERMOD - VERSION 15181 *** *** Inglewood Oil Field HRA *** 11/23/15
*** AERMET - VERSION 14134 *** *** Acute Analysis *** 11:10:50
PAGE 19
**MODELOPTs: RegDFAULT CONC ELEV URBAN

*** THE 1ST HIGHEST 1-HR AVERAGE CONCENTRATION VALUES FOR SOURCE GROUP: PAREA1 ***
INCLUDING SOURCE(S): PAREA1 ,

*** DISCRETE CARTESIAN RECEPTOR POINTS ***

** CONC OF TACS IN MICROGRAMS/M**3 **

X-COORD (M)	Y-COORD (M)	CONC	(YYMMDDHH)	X-COORD (M)	Y-COORD (M)	CONC	(YYMMDDHH)
371778.83	3765228.16	32.05961	(11082604)	371878.83	3765228.16	32.49062	(11082702)
371978.83	3765228.16	32.97230	(10110219)	372078.83	3765228.16	33.35687	(11090721)
372178.83	3765228.16	33.30924	(08062101)	372278.83	3765228.16	33.72923	(12091006)
372378.83	3765228.16	33.83216	(08041321)	372478.83	3765228.16	32.63790	(09080322)
372578.83	3765228.16	30.59153	(12082821)	372678.83	3765228.16	29.21179	(09072206)
372778.83	3765228.16	28.43131	(11082601)	372878.83	3765228.16	27.74125	(12091022)
372978.83	3765228.16	26.75958	(10092621)	373078.83	3765228.16	26.38065	(10092621)
373178.83	3765228.16	25.96630	(10092623)	373278.83	3765228.16	25.44410	(12091420)

373378.83	3765228.16	25.28041	(12091420)	373478.83	3765228.16	24.90779	(11090622)
373578.83	3765228.16	24.48501	(11090701)	371578.83	3765328.16	27.57181	(10092420)
371678.83	3765328.16	28.46944	(08080706)	371778.83	3765328.16	29.33683	(09090323)
371878.83	3765328.16	29.90361	(11090624)	371978.83	3765328.16	30.15104	(09082621)
372078.83	3765328.16	29.89660	(11090720)	372178.83	3765328.16	29.44577	(10101020)
372278.83	3765328.16	28.97027	(12080901)	372378.83	3765328.16	28.45672	(08041321)
372478.83	3765328.16	27.68020	(09080322)	372578.83	3765328.16	27.34988	(11090621)
372678.83	3765328.16	26.62536	(08080423)	372778.83	3765328.16	26.04003	(11101322)
372878.83	3765328.16	25.45703	(08091004)	372978.83	3765328.16	24.83354	(12091022)
373078.83	3765328.16	24.31478	(10092621)	373178.83	3765328.16	24.10572	(10092621)
373278.83	3765328.16	23.72598	(10092623)	373378.83	3765328.16	23.41871	(12091420)
373478.83	3765328.16	23.24910	(12091420)	373578.83	3765328.16	22.77563	(09042023)
371578.83	3765428.16	25.45589	(08080706)	371678.83	3765428.16	26.33234	(12090921)
371778.83	3765428.16	26.89289	(10092706)	371878.83	3765428.16	27.41033	(10110219)
371978.83	3765428.16	27.59063	(10110319)	372078.83	3765428.16	27.53611	(10081722)
372178.83	3765428.16	27.32528	(10101020)	372278.83	3765428.16	26.82716	(12080901)
372378.83	3765428.16	26.65226	(08041321)	372478.83	3765428.16	25.94113	(12082302)
372578.83	3765428.16	25.35255	(11090621)	372678.83	3765428.16	24.45691	(09091904)
372778.83	3765428.16	23.98390	(09072206)	372878.83	3765428.16	23.77047	(11082601)
372978.83	3765428.16	23.18255	(12081322)	373078.83	3765428.16	22.79511	(09082903)

373178.83	3765428.16	22.41270	(10092621)	373278.83	3765428.16	22.19580	(10092621)
373378.83	3765428.16	22.00145	(10092623)	373478.83	3765428.16	21.64302	(12091420)
373578.83	3765428.16	21.41497	(12091420)	372290.09	3764775.05	92.73497	(11090720)
372557.21	3764615.54	113.40022	(08083105)	372578.73	3764540.84	106.76155	(11090620)
372785.09	3764535.78	97.21085	(09121818)	372785.09	3764509.19	114.43615	(12030423)
372892.70	3764509.19	104.45638	(12081806)	372963.59	3764611.74	64.40751	(08090121)
373097.78	3764618.07	72.91127	(11090622)	373128.17	3764430.70	153.85619	(12100221)
373159.82	3764329.43	136.69509	(08102806)	372057.15	3764438.30	127.37983	(12092323)
372328.25	3764752.26	103.33775	(12091006)	372366.41	3764729.48	111.74612	(09090124)
372404.57	3764706.69	87.96526	(11082601)	372442.73	3764683.90	75.46595	(10092621)
372480.89	3764661.11	80.56057	(09042023)	372519.05	3764638.33	98.73993	(08082122)
372567.97	3764578.19	119.87056	(12030423)	372620.00	3764539.83	93.09828	(11090620)

↑ *** AERMOD - VERSION 15181 *** *** Inglewood Oil Field HRA *** 11/23/15
*** AERMET - VERSION 14134 *** *** Acute Analysis *** 11:10:50
PAGE 20
**MODELOPTs: RegDFAULT CONC ELEV URBAN

*** THE 1ST HIGHEST 1-HR AVERAGE CONCENTRATION VALUES FOR SOURCE GROUP: PAREA1 ***
INCLUDING SOURCE(S): PAREA1 ,

*** DISCRETE CARTESIAN RECEPTOR POINTS ***

** CONC OF TACS IN MICROGRAMS/M**3 **

X-COORD (M)	Y-COORD (M)	CONC	(YYMMDDHH)	X-COORD (M)	Y-COORD (M)	CONC	(YYMMDDHH)
372661.27	3764538.82	98.97533	(11090620)	372702.55	3764537.80	97.90008	(09090121)
372743.82	3764536.79	100.28988	(12091420)	372820.96	3764509.19	110.13929	(12030423)
372856.83	3764509.19	106.88197	(12081806)	372916.33	3764543.37	86.24409	(12030423)
372939.96	3764577.56	73.24524	(12030423)	373008.32	3764613.85	68.94840	(11090621)
373053.05	3764615.96	70.52460	(12091022)	373105.38	3764571.23	93.98066	(08090501)
373112.98	3764524.39	118.65272	(09090121)	373120.57	3764477.54	139.94554	(09030120)
373138.72	3764396.94	156.08883	(12091003)	373149.27	3764363.19	151.63412	(10092820)
372186.56	3764625.38	148.31266	(08062024)	372212.44	3764662.80	146.42400	(11101320)
372238.33	3764700.22	135.21307	(12100119)	372264.21	3764737.63	125.52890	(10110319)

*** AERMOD - VERSION 15181 *** *** Inglewood Oil Field HRA *** 11/23/15
*** AERMET - VERSION 14134 *** *** Acute Analysis *** 11:10:50
PAGE 21
**MODELOPTs: RegDFAULT CONC ELEV URBAN

*** THE SUMMARY OF MAXIMUM PERIOD (43848 HRS) RESULTS ***

** CONC OF TACS IN MICROGRAMS/M**3 **

GROUP ID		AVERAGE CONC	RECEPTOR (XR, YR, ZELEV, ZHILL, ZFLAG)	OF TYPE	NETWORK GRID-ID
PAREA1	1ST HIGHEST VALUE IS	21.05366	AT (372785.09, 3764509.19, 83.38, 127.99, 0.00)	DC	
	2ND HIGHEST VALUE IS	19.71885	AT (372820.96, 3764509.19, 80.64, 127.99, 0.00)	DC	

```
        3RD HIGHEST VALUE IS      19.16023 AT (  372743.82,  3764536.79,    92.08,   125.35,    0.00)  DC
        4TH HIGHEST VALUE IS      18.85786 AT (  372856.83,  3764509.19,    78.20,   125.35,    0.00)  DC
        5TH HIGHEST VALUE IS      18.51297 AT (  372892.70,  3764509.19,    76.06,   151.80,    0.00)  DC
        6TH HIGHEST VALUE IS      17.97032 AT (  372702.55,  3764537.80,    99.61,   125.21,    0.00)  DC
        7TH HIGHEST VALUE IS      17.36554 AT (  372785.09,  3764535.78,    82.99,   129.30,    0.00)  DC
        8TH HIGHEST VALUE IS      16.99023 AT (  372567.97,  3764578.19,   101.66,   129.30,    0.00)  DC
        9TH HIGHEST VALUE IS      16.06650 AT (  372661.27,  3764538.82,   105.35,   124.30,    0.00)  DC
       10TH HIGHEST VALUE IS      15.97416 AT (  372878.83,  3764528.16,    74.73,   151.80,    0.00)  DC


 *** RECEPTOR TYPES:  GC = GRIDCART
                      GP = GRIDPOLR
                      DC = DISCCART
                      DP = DISCPOLR
↑ *** AERMOD - VERSION  15181 ***   *** Inglewood Oil Field HRA                                        ***
11/23/15
 *** AERMET - VERSION  14134 ***   *** Acute Analysis                                                  ***
11:10:50
                                                                                                          PAGE
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 **MODELOPTs:   RegDFAULT CONC      ELEV      URBAN

                                                   *** THE SUMMARY OF HIGHEST  1-HR RESULTS ***


                                    ** CONC OF TACS     IN MICROGRAMS/M**3                          **

                                                         DATE
 NETWORK
GROUP ID                          AVERAGE CONC     (YYMMDDHH)             RECEPTOR  (XR, YR, ZELEV, ZHILL, ZFLAG)    OF TYPE
 GRID-ID
- - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - -
- - - -

PAREA1   HIGH   1ST HIGH VALUE IS     156.08883  ON 12091003: AT (  373138.72,  3764396.94,    69.15,   151.80,    0.00)  DC



 *** RECEPTOR TYPES:  GC = GRIDCART
                      GP = GRIDPOLR
```

```
                    DC = DISCCART
                    DP = DISCPOLR
↑ *** AERMOD - VERSION  15181 ***   *** Inglewood Oil Field HRA                                        ***
11/23/15
 *** AERMET - VERSION  14134 ***   *** Acute Analysis                                                  ***
11:10:50
                                                                                                            PAGE
23
 **MODELOPTs:   RegDFAULT CONC      ELEV      URBAN

 *** Message Summary : AERMOD Model Execution ***

  --------- Summary of Total Messages --------

 A Total of            0 Fatal Error Message(s)
 A Total of            0 Warning Message(s)
 A Total of         1558 Informational Message(s)

 A Total of        43848 Hours Were Processed

 A Total of          115 Calm Hours Identified

 A Total of         1443 Missing Hours Identified (  3.29 Percent)


    ******** FATAL ERROR MESSAGES ********
               ***  NONE  ***


    ********   WARNING MESSAGES   ********
               ***  NONE  ***


    ************************************
    *** AERMOD Finishes Successfully ***
    ************************************
```

```
** Lakes Environmental AERMOD MPI
**
****************************************
**
** AERMOD Input Produced by:
** AERMOD View Ver. 9.0.0
** Lakes Environmental Software Inc.
** Date: 11/24/2015
** File: C:\Lakes\AERMOD View\Projects\Psomas_IOF_Odor_Analysis\Psomas_IOF_Odor_Analysis.ADI
**
****************************************
**
**
****************************************
** AERMOD Control Pathway
****************************************
**
**
CO STARTING
   TITLEONE Inglewood Oil Field HRA
   TITLETWO Odor Analysis
   MODELOPT DFAULT CONC
   AVERTIME 1
   URBANOPT 9862049
   POLLUTID ODORS
   RUNORNOT RUN
   ERRORFIL Psomas_IOF_Odor_Analysis.err
CO FINISHED
**
****************************************
** AERMOD Source Pathway
****************************************
**
**
SO STARTING
** Source Location **
** Source ID - Type - X Coord. - Y Coord. **
   LOCATION PAREA1       AREAPOLY   372316.231  3764653.222       91.320
** Source Parameters **
   SRCPARAM PAREA1       4.1745E-08     4.572        14     1.064
```

```
   AREAVERT PAREA1       372316.231 3764653.222 372475.937 3764555.975
   AREAVERT PAREA1       372510.725 3764477.703 372513.888 3764467.424
   AREAVERT PAREA1       372747.913 3764462.681 372747.913 3764450.821
   AREAVERT PAREA1       372925.014 3764450.031 372935.292 3764449.240
   AREAVERT PAREA1       372993.008 3764536.209 373034.121 3764537.000
   AREAVERT PAREA1       373086.302 3764329.855 372653.038 3764322.739
   AREAVERT PAREA1       372623.785 3764282.417 372140.711 3764416.034
   URBANSRC ALL
   SRCGROUP PAREA1   PAREA1
SO FINISHED
**
****************************************
** AERMOD Receptor Pathway
****************************************
**
**
RE STARTING
   INCLUDED Psomas_IOF_Odor_Analysis.rou
RE FINISHED
**
****************************************
** AERMOD Meteorology Pathway
****************************************
**
**
ME STARTING
   SURFFILE wsla8.sfc
   PROFFILE wsla8.PFL
   SURFDATA 0 2008
   UAIRDATA 3190 2008
   SITEDATA 99999 2008
   PROFBASE 10.0 METERS
ME FINISHED
**
****************************************
** AERMOD Output Pathway
****************************************
**
**
OU STARTING
```

```
   RECTABLE ALLAVE 1ST
   RECTABLE 1 1ST
** Auto-Generated Plotfiles
   PLOTFILE 1 PAREA1 1ST PSOMAS_IOF_ODOR_ANALYSIS.AD\01H1G001.PLT 31
   SUMMFILE Psomas_IOF_Odor_Analysis.sum
OU FINISHED

 ***********************************
 *** SETUP Finishes Successfully ***
 ***********************************

↑ *** AERMOD - VERSION  15181 ***   *** Inglewood Oil Field HRA                                                          ***
11/24/15
 *** AERMET - VERSION  14134 ***   *** Odor Analysis                                                                    ***
07:52:09
                                                                                                                              PAGE
 1
 **MODELOPTs:   RegDFAULT CONC      ELEV      URBAN

                                              ***     MODEL SETUP OPTIONS SUMMARY       ***
 - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - -
-

 **Model Is Setup For Calculation of Average CONCentration Values.

   --  DEPOSITION LOGIC  --
 **NO GAS DEPOSITION Data Provided.
 **NO PARTICLE DEPOSITION Data Provided.
 **Model Uses NO DRY DEPLETION.  DRYDPLT  =  F
 **Model Uses NO WET DEPLETION.  WETDPLT  =  F

 **Model Uses URBAN Dispersion Algorithm for the SBL for     1 Source(s),
   for Total of    1 Urban Area(s):
   Urban Population =   9862049.0 ;  Urban Roughness Length =  1.000 m

 **Model Uses Regulatory DEFAULT Options:
         1. Stack-tip Downwash.
         2. Model Accounts for ELEVated Terrain Effects.
         3. Use Calms Processing Routine.
         4. Use Missing Data Processing Routine.
```

```
        5. No Exponential Decay.
        6. Urban Roughness Length of 1.0 Meter Assumed.

**Other Options Specified:
        TEMP_Sub - Meteorological data includes TEMP substitutions

**Model Assumes No FLAGPOLE Receptor Heights.

**The User Specified a Pollutant Type of:  ODORS

**Model Calculates  1 Short Term Average(s) of:   1-HR

**This Run Includes:      1 Source(s);       1 Source Group(s); and     338 Receptor(s)

               with:      0 POINT(s), including
                          0 POINTCAP(s) and      0 POINTHOR(s)
                and:      0 VOLUME source(s)
                and:      1 AREA type source(s)
                and:      0 LINE source(s)
                and:      0 OPENPIT source(s)


**Model Set To Continue RUNning After the Setup Testing.

**The AERMET Input Meteorological Data Version Date:  14134

**Output Options Selected:
         Model Outputs Tables of Highest Short Term Values by Receptor (RECTABLE Keyword)
         Model Outputs External File(s) of High Values for Plotting (PLOTFILE Keyword)
         Model Outputs Separate Summary File of High Ranked Values (SUMMFILE Keyword)

**NOTE:  The Following Flags May Appear Following CONC Values:  c for Calm Hours
                                                                m for Missing Hours
                                                                b for Both Calm and Missing Hours

**Misc. Inputs:  Base Elev. for Pot. Temp. Profile (m MSL) =    10.00 ;  Decay Coef. =    0.000     ;  Rot. Angle =     0.0
                 Emission Units = GRAMS/SEC                                ;  Emission Rate Unit Factor =   0.10000E+07
                 Output Units   = MICROGRAMS/M**3

**Approximate Storage Requirements of Model =      3.5 MB of RAM.
```

**Detailed Error/Message File: Psomas_IOF_Odor_Analysis.err

**File for Summary of Results: Psomas_IOF_Odor_Analysis.sum

↑ *** AERMOD - VERSION 15181 ***   *** Inglewood Oil Field HRA   ***
11/24/15
*** AERMET - VERSION 14134 ***   *** Odor Analysis   ***
07:52:09
PAGE
2
**MODELOPTs: RegDFAULT CONC   ELEV   URBAN

*** AREAPOLY SOURCE DATA ***

SOURCE ID	NUMBER PART. CATS.	EMISSION RATE (GRAMS/SEC /METER**2)	LOCATION OF AREA X (METERS)	Y (METERS)	BASE ELEV. (METERS)	RELEASE HEIGHT (METERS)	NUMBER OF VERTS.	INIT. SZ (METERS)	URBAN SOURCE	EMISSION RATE SCALAR VARY BY
PAREA1	0	0.41745E-07	372316.2	3764653.2	91.3	4.57	14	1.06	YES	

↑ *** AERMOD - VERSION 15181 ***   *** Inglewood Oil Field HRA   ***
11/24/15
*** AERMET - VERSION 14134 ***   *** Odor Analysis   ***
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**MODELOPTs: RegDFAULT CONC   ELEV   URBAN

*** SOURCE IDs DEFINING SOURCE GROUPS ***

SRCGROUP ID	SOURCE IDs
PAREA1	PAREA1 ,

↑ *** AERMOD - VERSION 15181 ***   *** Inglewood Oil Field HRA   ***

11/24/15
 *** AERMET - VERSION 14134 ***   *** Odor Analysis   ***
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 4
 **MODELOPTs: RegDFAULT CONC   ELEV   URBAN

*** SOURCE IDs DEFINED AS URBAN SOURCES ***

URBAN ID	URBAN POP	SOURCE IDs
	9862049.	PAREA1 ,

↑ *** AERMOD - VERSION 15181 ***   *** Inglewood Oil Field HRA   ***
11/24/15
 *** AERMET - VERSION 14134 ***   *** Odor Analysis   ***
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 **MODELOPTs: RegDFAULT CONC   ELEV   URBAN

*** DISCRETE CARTESIAN RECEPTORS ***
(X-COORD, Y-COORD, ZELEV, ZHILL, ZFLAG)
(METERS)

```
     ( 371578.8, 3763428.2,      18.8,     125.0,       0.0);         ( 371678.8, 3763428.2,      21.1,     125.0,
0.0);
     ( 371778.8, 3763428.2,      24.2,     125.0,       0.0);         ( 371878.8, 3763428.2,      29.3,     125.0,
0.0);
     ( 371978.8, 3763428.2,      36.2,     125.0,       0.0);         ( 372078.8, 3763428.2,      43.5,     125.0,
0.0);
     ( 373178.8, 3763428.2,      90.0,     119.1,       0.0);         ( 373278.8, 3763428.2,      90.8,     103.6,
0.0);
     ( 373378.8, 3763428.2,      96.0,     101.7,       0.0);         ( 373478.8, 3763428.2,      98.8,      98.8,
0.0);
     ( 373578.8, 3763428.2,      95.7,      99.6,       0.0);         ( 371578.8, 3763528.2,      19.0,     125.0,
0.0);
     ( 371678.8, 3763528.2,      21.3,     125.0,       0.0);         ( 371778.8, 3763528.2,      24.4,     125.0,
```

```
0.0);
     ( 371878.8, 3763528.2,      28.9,     125.0,       0.0);         ( 371978.8, 3763528.2,      34.5,     125.0,
0.0);
     ( 372078.8, 3763528.2,      42.0,     125.0,       0.0);         ( 373178.8, 3763528.2,      92.8,     118.0,
0.0);
     ( 373278.8, 3763528.2,      98.2,      98.2,       0.0);         ( 373378.8, 3763528.2,     104.0,     104.0,
0.0);
     ( 373478.8, 3763528.2,     100.3,     100.3,       0.0);         ( 373578.8, 3763528.2,      84.5,     104.8,
0.0);
     ( 371578.8, 3763628.2,      19.3,     125.0,       0.0);         ( 371678.8, 3763628.2,      21.0,     125.0,
0.0);
     ( 371778.8, 3763628.2,      24.0,     126.5,       0.0);         ( 371878.8, 3763628.2,      29.1,     126.5,
0.0);
     ( 371978.8, 3763628.2,      36.3,     126.5,       0.0);         ( 372078.8, 3763628.2,      44.0,     125.0,
0.0);
     ( 373178.8, 3763628.2,      93.3,      93.3,       0.0);         ( 373278.8, 3763628.2,      99.8,      99.8,
0.0);
     ( 373378.8, 3763628.2,     104.3,     104.3,       0.0);         ( 373478.8, 3763628.2,      95.8,     103.9,
0.0);
     ( 373578.8, 3763628.2,      79.6,     105.2,       0.0);         ( 371578.8, 3763728.2,      19.5,     126.5,
0.0);
     ( 371678.8, 3763728.2,      25.5,     126.5,       0.0);         ( 371778.8, 3763728.2,      23.3,     126.5,
0.0);
     ( 371878.8, 3763728.2,      28.4,     126.5,       0.0);         ( 371978.8, 3763728.2,      34.6,     126.5,
0.0);
     ( 372078.8, 3763728.2,      41.7,     126.5,       0.0);         ( 373178.8, 3763728.2,      90.8,      99.2,
0.0);
     ( 373278.8, 3763728.2,     100.2,     100.2,       0.0);         ( 373378.8, 3763728.2,     101.1,     101.1,
0.0);
     ( 373478.8, 3763728.2,      87.6,     105.2,       0.0);         ( 373578.8, 3763728.2,      79.0,     126.5,
0.0);
     ( 371578.8, 3763828.2,      19.2,     126.5,       0.0);         ( 371678.8, 3763828.2,      22.0,     126.5,
0.0);
     ( 371778.8, 3763828.2,      24.0,     126.5,       0.0);         ( 371878.8, 3763828.2,      27.0,     126.5,
0.0);
     ( 371978.8, 3763828.2,      31.4,     126.5,       0.0);         ( 372078.8, 3763828.2,      41.4,     126.5,
0.0);
     ( 373178.8, 3763828.2,      88.3,     101.0,       0.0);         ( 373278.8, 3763828.2,     100.7,     100.7,
0.0);
     ( 373378.8, 3763828.2,      90.0,     103.6,       0.0);         ( 373478.8, 3763828.2,      74.3,     151.8,
```

```
0.0);
     ( 373578.8, 3763828.2,      81.2,     149.4,       0.0);         ( 371578.8, 3763928.2,      19.9,     126.5,
0.0);
     ( 371678.8, 3763928.2,      22.8,     126.5,       0.0);         ( 371778.8, 3763928.2,      25.6,     126.5,
0.0);
     ( 371878.8, 3763928.2,      28.5,     126.5,       0.0);         ( 373178.8, 3763928.2,      90.0,     100.0,
0.0);
     ( 373278.8, 3763928.2,      96.5,      98.6,       0.0);         ( 373378.8, 3763928.2,      87.2,     148.2,
0.0);
     ( 373478.8, 3763928.2,      75.4,     151.8,       0.0);         ( 373578.8, 3763928.2,      83.6,     151.8,
0.0);
     ( 371578.8, 3764028.2,      20.5,     126.5,       0.0);         ( 371678.8, 3764028.2,      22.1,     126.5,
0.0);
     ( 371778.8, 3764028.2,      25.2,     129.3,       0.0);         ( 371878.8, 3764028.2,      32.5,     127.5,
0.0);
     ( 373178.8, 3764028.2,      88.1,      93.3,       0.0);         ( 373278.8, 3764028.2,      88.5,     151.8,
0.0);
     ( 373378.8, 3764028.2,      76.0,     151.8,       0.0);         ( 373478.8, 3764028.2,      75.0,     151.8,
0.0);
     ( 373578.8, 3764028.2,      82.1,     151.8,       0.0);         ( 371578.8, 3764128.2,      21.0,     126.5,
0.0);
     ( 371678.8, 3764128.2,      23.7,     129.3,       0.0);         ( 371778.8, 3764128.2,      25.9,     129.3,
0.0);
     ( 371878.8, 3764128.2,      34.5,     129.3,       0.0);         ( 373178.8, 3764128.2,      73.6,     151.8,
0.0);
     ( 373278.8, 3764128.2,      84.1,     151.8,       0.0);         ( 373378.8, 3764128.2,      78.4,     151.8,
0.0);
     ( 373478.8, 3764128.2,      76.5,     151.8,       0.0);         ( 373578.8, 3764128.2,      88.0,     151.8,
0.0);
     ( 371578.8, 3764228.2,      20.8,     129.3,       0.0);         ( 371678.8, 3764228.2,      24.9,     129.3,
0.0);
     ( 371778.8, 3764228.2,      30.5,     129.3,       0.0);         ( 373178.8, 3764228.2,      64.4,     151.8,
0.0);
     ( 373278.8, 3764228.2,      70.9,     151.8,       0.0);         ( 373378.8, 3764228.2,      66.0,     151.8,
0.0);
     ( 373478.8, 3764228.2,      80.2,     151.8,       0.0);         ( 373578.8, 3764228.2,      92.1,     151.8,
0.0);
```

**MODELOPTs: RegDFAULT CONC   ELEV   URBAN

*** DISCRETE CARTESIAN RECEPTORS ***
(X-COORD, Y-COORD, ZELEV, ZHILL, ZFLAG)
(METERS)

```
( 371578.8, 3764328.2,      21.9,     129.3,       0.0);         ( 371678.8, 3764328.2,      23.2,     129.3,       0.0);
( 371778.8, 3764328.2,      26.8,     129.3,       0.0);         ( 373178.8, 3764328.2,      69.5,     151.8,       0.0);
( 373278.8, 3764328.2,      67.0,     151.8,       0.0);         ( 373378.8, 3764328.2,      75.3,     151.8,       0.0);
( 373478.8, 3764328.2,      82.2,     151.8,       0.0);         ( 373578.8, 3764328.2,     104.4,     151.8,       0.0);
( 371578.8, 3764428.2,      22.1,     129.3,       0.0);         ( 371678.8, 3764428.2,      23.7,     129.3,       0.0);
( 373178.8, 3764428.2,      68.5,     151.8,       0.0);         ( 373278.8, 3764428.2,      74.9,     151.8,       0.0);
( 373378.8, 3764428.2,      81.2,     151.8,       0.0);         ( 373478.8, 3764428.2,      95.6,     151.8,       0.0);
( 373578.8, 3764428.2,     119.0,     151.8,       0.0);         ( 371578.8, 3764528.2,      18.1,     129.3,       0.0);
( 371678.8, 3764528.2,      24.4,     129.3,       0.0);         ( 371778.8, 3764528.2,      28.6,     129.3,       0.0);
( 371878.8, 3764528.2,      34.0,     129.3,       0.0);         ( 371978.8, 3764528.2,      42.3,     129.3,       0.0);
( 372878.8, 3764528.2,      74.7,     151.8,       0.0);         ( 373178.8, 3764528.2,      75.5,     151.8,       0.0);
( 373278.8, 3764528.2,      85.6,     151.8,       0.0);         ( 373378.8, 3764528.2,      90.7,     151.8,       0.0);
( 373478.8, 3764528.2,     104.1,     151.8,       0.0);         ( 373578.8, 3764528.2,     137.0,     151.8,       0.0);
( 371578.8, 3764628.2,      11.4,     129.3,       0.0);         ( 371678.8, 3764628.2,      26.7,     129.3,       0.0);
( 371778.8, 3764628.2,      29.4,     129.3,       0.0);         ( 371878.8, 3764628.2,      34.1,     129.3,       0.0);
( 371978.8, 3764628.2,      45.8,     129.3,       0.0);         ( 372078.8, 3764628.2,      59.0,     129.3,
```

```
0.0);
     ( 372178.8, 3764628.2,      74.1,     129.3,       0.0);         ( 372578.8, 3764628.2,      96.1,     129.3,
0.0);
     ( 372678.8, 3764628.2,     100.5,     124.6,       0.0);         ( 372778.8, 3764628.2,      89.7,     129.3,
0.0);
     ( 372878.8, 3764628.2,      69.7,     151.8,       0.0);         ( 372978.8, 3764628.2,      62.1,     151.8,
0.0);
     ( 373078.8, 3764628.2,      60.1,     151.8,       0.0);         ( 373178.8, 3764628.2,      70.0,     151.8,
0.0);
     ( 373278.8, 3764628.2,      90.4,     151.8,       0.0);         ( 373378.8, 3764628.2,     108.0,     151.8,
0.0);
     ( 373478.8, 3764628.2,     119.8,     151.8,       0.0);         ( 373578.8, 3764628.2,     143.4,     151.8,
0.0);
     ( 371578.8, 3764728.2,      17.9,     129.3,       0.0);         ( 371678.8, 3764728.2,      25.5,     129.3,
0.0);
     ( 371778.8, 3764728.2,      28.2,     129.3,       0.0);         ( 371878.8, 3764728.2,      33.9,     129.3,
0.0);
     ( 371978.8, 3764728.2,      60.4,     129.3,       0.0);         ( 372078.8, 3764728.2,      64.1,     129.3,
0.0);
     ( 372178.8, 3764728.2,      69.4,     129.3,       0.0);         ( 372378.8, 3764728.2,     105.6,     129.3,
0.0);
     ( 372478.8, 3764728.2,     123.0,     123.0,       0.0);         ( 372578.8, 3764728.2,     103.2,     129.3,
0.0);
     ( 372678.8, 3764728.2,      81.8,     129.3,       0.0);         ( 372778.8, 3764728.2,      75.8,     129.3,
0.0);
     ( 372878.8, 3764728.2,      66.2,     151.8,       0.0);         ( 372978.8, 3764728.2,      59.5,     151.8,
0.0);
     ( 373078.8, 3764728.2,      58.7,     151.8,       0.0);         ( 373178.8, 3764728.2,      65.6,     151.8,
0.0);
     ( 373278.8, 3764728.2,      86.0,     151.8,       0.0);         ( 373378.8, 3764728.2,     124.8,     150.8,
0.0);
     ( 373478.8, 3764728.2,     121.2,     151.8,       0.0);         ( 373578.8, 3764728.2,     105.9,     151.8,
0.0);
     ( 371578.8, 3764828.2,      20.6,     129.3,       0.0);         ( 371678.8, 3764828.2,      11.9,     129.3,
0.0);
     ( 371778.8, 3764828.2,      24.0,     129.3,       0.0);         ( 371878.8, 3764828.2,      35.7,     129.3,
0.0);
     ( 371978.8, 3764828.2,      63.6,     129.3,       0.0);         ( 372078.8, 3764828.2,      76.6,     129.3,
0.0);
     ( 372178.8, 3764828.2,      77.8,     129.3,       0.0);         ( 372278.8, 3764828.2,     112.5,     129.3,
```

```
0.0);
     ( 372378.8, 3764828.2,     122.5,     129.3,       0.0);         ( 372478.8, 3764828.2,     124.5,     129.3,
0.0);
     ( 372578.8, 3764828.2,     102.2,     129.3,       0.0);         ( 372678.8, 3764828.2,      82.8,     129.3,
0.0);
     ( 372778.8, 3764828.2,      71.4,     129.3,       0.0);         ( 372878.8, 3764828.2,      64.8,     151.8,
0.0);
     ( 372978.8, 3764828.2,      54.8,     151.8,       0.0);         ( 373078.8, 3764828.2,      52.4,     151.8,
0.0);
     ( 373178.8, 3764828.2,      58.6,     151.8,       0.0);         ( 373278.8, 3764828.2,      93.2,     151.8,
0.0);
     ( 373378.8, 3764828.2,      99.2,     151.8,       0.0);         ( 373478.8, 3764828.2,      85.2,     151.8,
0.0);
     ( 373578.8, 3764828.2,      76.3,     151.8,       0.0);         ( 371578.8, 3764928.2,      23.0,     129.3,
0.0);
     ( 371678.8, 3764928.2,      18.2,     129.3,       0.0);         ( 371778.8, 3764928.2,      23.6,     129.3,
0.0);
     ( 371878.8, 3764928.2,      28.6,     129.3,       0.0);         ( 371978.8, 3764928.2,      55.2,     129.3,
0.0);
↑ *** AERMOD - VERSION  15181 ***   *** Inglewood Oil Field HRA                                              ***
11/24/15
 *** AERMET - VERSION  14134 ***   *** Odor Analysis                                                        ***
07:52:09
                                                                                                                          PAGE
 7
 **MODELOPTs:   RegDFAULT CONC      ELEV      URBAN

                                              *** DISCRETE CARTESIAN RECEPTORS ***
                                            (X-COORD, Y-COORD, ZELEV, ZHILL, ZFLAG)
                                                            (METERS)

     ( 372078.8, 3764928.2,      55.8,     129.3,       0.0);         ( 372178.8, 3764928.2,      68.2,     129.3,
0.0);
     ( 372278.8, 3764928.2,      82.5,     129.3,       0.0);         ( 372378.8, 3764928.2,     111.5,     129.3,
0.0);
     ( 372478.8, 3764928.2,     123.1,     128.4,       0.0);         ( 372578.8, 3764928.2,     106.5,     129.3,
0.0);
     ( 372678.8, 3764928.2,      85.9,     129.3,       0.0);         ( 372778.8, 3764928.2,      58.9,     151.8,
0.0);
     ( 372878.8, 3764928.2,      48.4,     151.8,       0.0);         ( 372978.8, 3764928.2,      43.2,     151.8,
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0.0);
(373078.8, 3764928.2, 46.1, 151.8, 0.0); (373178.8, 3764928.2, 46.5, 151.8,
0.0);
(373278.8, 3764928.2, 71.2, 151.8, 0.0); (373378.8, 3764928.2, 66.6, 151.8,
0.0);
(373478.8, 3764928.2, 63.9, 151.8, 0.0); (373578.8, 3764928.2, 59.7, 151.8,
0.0);
(371578.8, 3765028.2, 25.3, 129.3, 0.0); (371678.8, 3765028.2, 24.7, 129.3,
0.0);
(371778.8, 3765028.2, 13.0, 129.3, 0.0); (371878.8, 3765028.2, 27.9, 129.3,
0.0);
(371978.8, 3765028.2, 30.8, 129.3, 0.0); (372078.8, 3765028.2, 56.1, 129.3,
0.0);
(372178.8, 3765028.2, 73.8, 129.3, 0.0); (372278.8, 3765028.2, 86.3, 129.3,
0.0);
(372378.8, 3765028.2, 109.5, 128.4, 0.0); (372478.8, 3765028.2, 102.1, 129.3,
0.0);
(372578.8, 3765028.2, 88.5, 129.3, 0.0); (372678.8, 3765028.2, 59.0, 129.3,
0.0);
(372778.8, 3765028.2, 40.6, 151.8, 0.0); (372878.8, 3765028.2, 38.5, 151.8,
0.0);
(372978.8, 3765028.2, 37.9, 151.8, 0.0); (373078.8, 3765028.2, 40.6, 151.8,
0.0);
(373178.8, 3765028.2, 41.0, 151.8, 0.0); (373278.8, 3765028.2, 37.0, 151.8,
0.0);
(373378.8, 3765028.2, 40.1, 151.8, 0.0); (373478.8, 3765028.2, 36.5, 151.8,
0.0);
(373578.8, 3765028.2, 34.3, 151.8, 0.0); (371578.8, 3765128.2, 26.4, 129.3,
0.0);
(371678.8, 3765128.2, 25.8, 129.3, 0.0); (371778.8, 3765128.2, 22.6, 129.3,
0.0);
(371878.8, 3765128.2, 21.9, 129.3, 0.0); (371978.8, 3765128.2, 28.5, 129.3,
0.0);
(372078.8, 3765128.2, 31.8, 129.3, 0.0); (372178.8, 3765128.2, 52.5, 129.3,
0.0);
(372278.8, 3765128.2, 67.1, 129.3, 0.0); (372378.8, 3765128.2, 71.9, 129.3,
0.0);
(372478.8, 3765128.2, 62.0, 129.3, 0.0); (372578.8, 3765128.2, 49.2, 129.3,
0.0);
(372678.8, 3765128.2, 36.4, 151.8, 0.0); (372778.8, 3765128.2, 35.3, 151.8,

0.0);
(372878.8, 3765128.2, 36.2, 151.8, 0.0); (372978.8, 3765128.2, 35.7, 151.8,
0.0);
(373078.8, 3765128.2, 36.6, 151.8, 0.0); (373178.8, 3765128.2, 36.2, 151.8,
0.0);
(373278.8, 3765128.2, 32.3, 151.8, 0.0); (373378.8, 3765128.2, 30.9, 151.8,
0.0);
(373478.8, 3765128.2, 31.2, 151.8, 0.0); (373578.8, 3765128.2, 30.1, 151.8,
0.0);
(371578.8, 3765228.2, 27.4, 129.3, 0.0); (371678.8, 3765228.2, 26.8, 129.3,
0.0);
(371778.8, 3765228.2, 25.8, 129.3, 0.0); (371878.8, 3765228.2, 20.6, 129.3,
0.0);
(371978.8, 3765228.2, 18.7, 129.3, 0.0); (372078.8, 3765228.2, 21.3, 129.3,
0.0);
(372178.8, 3765228.2, 22.9, 129.3, 0.0); (372278.8, 3765228.2, 31.9, 129.3,
0.0);
(372378.8, 3765228.2, 38.7, 129.3, 0.0); (372478.8, 3765228.2, 39.0, 129.3,
0.0);
(372578.8, 3765228.2, 30.7, 150.8, 0.0); (372678.8, 3765228.2, 28.8, 151.8,
0.0);
(372778.8, 3765228.2, 30.6, 151.8, 0.0); (372878.8, 3765228.2, 33.9, 151.8,
0.0);
(372978.8, 3765228.2, 33.1, 151.8, 0.0); (373078.8, 3765228.2, 34.1, 151.8,
0.0);
(373178.8, 3765228.2, 33.5, 151.8, 0.0); (373278.8, 3765228.2, 30.5, 151.8,
0.0);
(373378.8, 3765228.2, 30.1, 151.8, 0.0); (373478.8, 3765228.2, 30.2, 151.8,
0.0);
(373578.8, 3765228.2, 30.0, 151.8, 0.0); (371578.8, 3765328.2, 28.3, 129.3,
0.0);
(371678.8, 3765328.2, 27.8, 129.3, 0.0); (371778.8, 3765328.2, 27.0, 129.3,
0.0);
(371878.8, 3765328.2, 26.0, 129.3, 0.0); (371978.8, 3765328.2, 24.7, 129.3,
0.0);
(372078.8, 3765328.2, 20.9, 129.3, 0.0); (372178.8, 3765328.2, 17.8, 129.3,
0.0);
(372278.8, 3765328.2, 17.4, 129.3, 0.0); (372378.8, 3765328.2, 16.2, 129.3,
0.0);
(372478.8, 3765328.2, 17.4, 130.5, 0.0); (372578.8, 3765328.2, 22.1, 151.8,

0.0);

**MODELOPTs: RegDFAULT CONC ELEV URBAN

*** DISCRETE CARTESIAN RECEPTORS ***
(X-COORD, Y-COORD, ZELEV, ZHILL, ZFLAG)
(METERS)

(372678.8, 3765328.2, 25.5, 151.8, 0.0); (372778.8, 3765328.2, 28.2, 151.8, 0.0);
(372878.8, 3765328.2, 30.4, 151.8, 0.0); (372978.8, 3765328.2, 30.5, 151.8, 0.0);
(373078.8, 3765328.2, 31.4, 151.8, 0.0); (373178.8, 3765328.2, 31.8, 151.8, 0.0);
(373278.8, 3765328.2, 29.8, 151.8, 0.0); (373378.8, 3765328.2, 29.9, 151.8, 0.0);
(373478.8, 3765328.2, 29.9, 151.8, 0.0); (373578.8, 3765328.2, 30.1, 151.8, 0.0);
(371578.8, 3765428.2, 28.9, 125.8, 0.0); (371678.8, 3765428.2, 28.4, 129.3, 0.0);
(371778.8, 3765428.2, 27.9, 129.3, 0.0); (371878.8, 3765428.2, 27.2, 129.3, 0.0);
(371978.8, 3765428.2, 26.4, 129.3, 0.0); (372078.8, 3765428.2, 25.8, 129.3, 0.0);
(372178.8, 3765428.2, 25.0, 129.3, 0.0); (372278.8, 3765428.2, 23.3, 129.3, 0.0);
(372378.8, 3765428.2, 24.4, 129.3, 0.0); (372478.8, 3765428.2, 25.1, 129.3, 0.0);
(372578.8, 3765428.2, 25.2, 129.3, 0.0); (372678.8, 3765428.2, 22.2, 151.8, 0.0);
(372778.8, 3765428.2, 24.6, 151.8, 0.0); (372878.8, 3765428.2, 29.1, 151.8, 0.0);
(372978.8, 3765428.2, 29.1, 151.8, 0.0); (373078.8, 3765428.2, 30.1, 151.8, 0.0);
(373178.8, 3765428.2, 30.3, 151.8, 0.0); (373278.8, 3765428.2, 29.3, 151.8,

```
0.0);
     ( 373378.8, 3765428.2,      29.5,     151.8,       0.0);         ( 373478.8, 3765428.2,      29.8,     151.8,
0.0);
     ( 373578.8, 3765428.2,      30.0,     151.8,       0.0);         ( 372290.1, 3764775.0,     113.8,     129.3,
0.0);
     ( 372557.2, 3764615.5,      99.5,     129.3,       0.0);         ( 372578.7, 3764540.8,     110.8,     120.6,
0.0);
     ( 372785.1, 3764535.8,      83.0,     129.3,       0.0);         ( 372785.1, 3764509.2,      83.4,     128.0,
0.0);
     ( 372892.7, 3764509.2,      76.1,     151.8,       0.0);         ( 372963.6, 3764611.7,      64.0,     151.8,
0.0);
     ( 373097.8, 3764618.1,      60.5,     151.8,       0.0);         ( 373128.2, 3764430.7,      67.6,     151.8,
0.0);
     ( 373159.8, 3764329.4,      71.1,     151.8,       0.0);         ( 372057.1, 3764438.3,      56.5,     129.3,
0.0);
     ( 372328.2, 3764752.3,     107.1,     129.3,       0.0);         ( 372366.4, 3764729.5,     102.0,     129.3,
0.0);
     ( 372404.6, 3764706.7,     114.0,     129.3,       0.0);         ( 372442.7, 3764683.9,     122.0,     122.0,
0.0);
     ( 372480.9, 3764661.1,     119.3,     123.4,       0.0);         ( 372519.0, 3764638.3,     110.3,     127.5,
0.0);
     ( 372568.0, 3764578.2,     101.7,     129.3,       0.0);         ( 372620.0, 3764539.8,     113.8,     114.7,
0.0);
     ( 372661.3, 3764538.8,     105.3,     124.3,       0.0);         ( 372702.5, 3764537.8,      99.6,     125.2,
0.0);
     ( 372743.8, 3764536.8,      92.1,     125.3,       0.0);         ( 372821.0, 3764509.2,      80.6,     128.0,
0.0);
     ( 372856.8, 3764509.2,      78.2,     125.3,       0.0);         ( 372916.3, 3764543.4,      73.3,     151.8,
0.0);
     ( 372940.0, 3764577.6,      67.8,     151.8,       0.0);         ( 373008.3, 3764613.8,      60.5,     151.8,
0.0);
     ( 373053.0, 3764616.0,      59.7,     151.8,       0.0);         ( 373105.4, 3764571.2,      59.9,     151.8,
0.0);
     ( 373113.0, 3764524.4,      60.3,     151.8,       0.0);         ( 373120.6, 3764477.5,      64.9,     151.8,
0.0);
     ( 373138.7, 3764396.9,      69.1,     151.8,       0.0);         ( 373149.3, 3764363.2,      70.5,     151.8,
0.0);
     ( 372186.6, 3764625.4,      74.1,     129.3,       0.0);         ( 372212.4, 3764662.8,      81.0,     129.3,
0.0);
     ( 372238.3, 3764700.2,      84.1,     129.3,       0.0);         ( 372264.2, 3764737.6,      99.5,     129.3,
```

0.0);
↑ *** AERMOD - VERSION 15181 *** *** Inglewood Oil Field HRA ***
11/24/15
*** AERMET - VERSION 14134 *** *** Odor Analysis ***
07:52:09
PAGE
9
**MODELOPTs: RegDFAULT CONC ELEV URBAN

*** METEOROLOGICAL DAYS SELECTED FOR PROCESSING ***
(1=YES; 0=NO)

```
1 1 1 1 1 1 1 1 1 1  1 1 1 1 1 1 1 1 1 1  1 1 1 1 1 1 1 1 1 1  1 1 1 1 1 1 1 1 1 1  1 1 1 1 1 1 1 1 1 1
1 1 1 1 1 1 1 1 1 1  1 1 1 1 1 1 1 1 1 1  1 1 1 1 1 1 1 1 1 1  1 1 1 1 1 1 1 1 1 1  1 1 1 1 1 1 1 1 1 1
1 1 1 1 1 1 1 1 1 1  1 1 1 1 1 1 1 1 1 1  1 1 1 1 1 1 1 1 1 1  1 1 1 1 1 1 1 1 1 1  1 1 1 1 1 1 1 1 1 1
1 1 1 1 1 1 1 1 1 1  1 1 1 1 1 1 1 1 1 1  1 1 1 1 1 1 1 1 1 1  1 1 1 1 1 1 1 1 1 1  1 1 1 1 1 1 1 1 1 1
1 1 1 1 1 1 1 1 1 1  1 1 1 1 1 1 1 1 1 1  1 1 1 1 1 1 1 1 1 1  1 1 1 1 1 1 1 1 1 1  1 1 1 1 1 1 1 1 1 1
1 1 1 1 1 1 1 1 1 1  1 1 1 1 1 1 1 1 1 1  1 1 1 1 1 1 1 1 1 1  1 1 1 1 1 1 1 1 1 1  1 1 1 1 1 1 1 1 1 1
1 1 1 1 1 1 1 1 1 1  1 1 1 1 1 1 1 1 1 1  1 1 1 1 1 1 1 1 1 1  1 1 1 1 1 1 1 1 1 1  1 1 1 1 1 1 1 1 1 1
1 1 1 1 1 1 1 1 1 1  1 1 1 1 1 1
```

NOTE: METEOROLOGICAL DATA ACTUALLY PROCESSED WILL ALSO DEPEND ON WHAT IS INCLUDED IN THE DATA FILE.

*** UPPER BOUND OF FIRST THROUGH FIFTH WIND SPEED CATEGORIES ***
(METERS/SEC)

1.54, 3.09, 5.14, 8.23, 10.80,
↑ *** AERMOD - VERSION 15181 *** *** Inglewood Oil Field HRA ***
11/24/15
*** AERMET - VERSION 14134 *** *** Odor Analysis ***
07:52:09
PAGE
10
**MODELOPTs: RegDFAULT CONC ELEV URBAN

*** UP TO THE FIRST 24 HOURS OF METEOROLOGICAL DATA ***

Surface file: wsla8.sfc Met Version: 14134

Psomas_IOF_Odor_Analysis

Profile file: wsla8.PFL
Surface format: FREE
Profile format: FREE
Surface station no.: 0 Upper air station no.: 3190
Name: UNKNOWN Name: UNKNOWN
Year: 2008 Year: 2008

First 24 hours of scalar data

YR	MO	DY	JDY	HR	H0	U*	W*	DT/DZ	ZICNV	ZIMCH	M-O LEN	Z0	BOWEN	ALBEDO	REF WS	WD	HT	REF TA	HT
08	01	01	1	01	-999.0	-9.000	-9.000	-9.000	-999.	-999.	-99999.0	0.40	1.00	1.00	999.00	999.	-9.0	288.4	5.5
08	01	01	1	02	-999.0	-9.000	-9.000	-9.000	-999.	-999.	-99999.0	0.40	1.00	1.00	999.00	999.	-9.0	288.0	5.5
08	01	01	1	03	-999.0	-9.000	-9.000	-9.000	-999.	-999.	-99999.0	0.40	1.00	1.00	999.00	999.	-9.0	287.9	5.5
08	01	01	1	04	-999.0	-9.000	-9.000	-9.000	-999.	-999.	-99999.0	0.40	1.00	1.00	999.00	999.	-9.0	287.8	5.5
08	01	01	1	05	-999.0	-9.000	-9.000	-9.000	-999.	-999.	-99999.0	0.40	1.00	1.00	999.00	999.	-9.0	287.6	5.5
08	01	01	1	06	-999.0	-9.000	-9.000	-9.000	-999.	-999.	-99999.0	0.40	1.00	1.00	999.00	999.	-9.0	288.1	5.5
08	01	01	1	07	-999.0	-9.000	-9.000	-9.000	-999.	-999.	-99999.0	0.40	1.00	1.00	999.00	999.	-9.0	288.1	5.5
08	01	01	1	08	-999.0	-9.000	-9.000	-9.000	-999.	-999.	-99999.0	0.40	1.00	0.55	999.00	999.	-9.0	288.4	5.5
08	01	01	1	09	21.6	-9.000	-9.000	-9.000	53.	-999.	-99999.0	0.40	1.00	0.32	999.00	999.	-9.0	288.9	5.5
08	01	01	1	10	66.0	-9.000	-9.000	-9.000	139.	-999.	-99999.0	0.40	1.00	0.24	999.00	999.	-9.0	290.0	5.5
08	01	01	1	11	126.1	-9.000	-9.000	-9.000	371.	-999.	-99999.0	0.40	1.00	0.21	999.00	999.	-9.0	292.0	5.5
08	01	01	1	12	144.0	-9.000	-9.000	-9.000	600.	-999.	-99999.0	0.40	1.00	0.20	999.00	999.	-9.0	293.0	5.5
08	01	01	1	13	126.0	-9.000	-9.000	-9.000	722.	-999.	-99999.0	0.40	1.00	0.20	999.00	999.	-9.0	293.6	5.5
08	01	01	1	14	69.5	-9.000	-9.000	-9.000	753.	-999.	-99999.0	0.40	1.00	0.21	999.00	999.	-9.0	293.1	5.5
08	01	01	1	15	32.0	-9.000	-9.000	-9.000	767.	-999.	-99999.0	0.40	1.00	0.24	999.00	999.	-9.0	292.6	5.5
08	01	01	1	16	14.4	-9.000	-9.000	-9.000	773.	-999.	-99999.0	0.40	1.00	0.33	999.00	999.	-9.0	292.0	5.5
08	01	01	1	17	-999.0	-9.000	-9.000	-9.000	-999.	-999.	-99999.0	0.40	1.00	0.59	999.00	999.	-9.0	291.1	5.5
08	01	01	1	18	-999.0	-9.000	-9.000	-9.000	-999.	-999.	-99999.0	0.40	1.00	1.00	999.00	999.	-9.0	290.4	5.5
08	01	01	1	19	-999.0	-9.000	-9.000	-9.000	-999.	-999.	-99999.0	0.40	1.00	1.00	999.00	999.	-9.0	289.5	5.5
08	01	01	1	20	-999.0	-9.000	-9.000	-9.000	-999.	-999.	-99999.0	0.40	1.00	1.00	999.00	999.	-9.0	289.4	5.5
08	01	01	1	21	-999.0	-9.000	-9.000	-9.000	-999.	-999.	-99999.0	0.40	1.00	1.00	999.00	999.	-9.0	289.4	5.5
08	01	01	1	22	-999.0	-9.000	-9.000	-9.000	-999.	-999.	-99999.0	0.40	1.00	1.00	999.00	999.	-9.0	289.4	5.5
08	01	01	1	23	-999.0	-9.000	-9.000	-9.000	-999.	-999.	-99999.0	0.40	1.00	1.00	999.00	999.	-9.0	289.4	5.5
08	01	01	1	24	-999.0	-9.000	-9.000	-9.000	-999.	-999.	-99999.0	0.40	1.00	1.00	999.00	999.	-9.0	289.1	5.5

First hour of profile data

YR	MO	DY	HR	HEIGHT	F	WDIR	WSPD	AMB_TMP	sigmaA	sigmaW	sigmaV
08	01	01	01	5.5	0	-999.	-99.00	288.5	99.0	-99.00	-99.00
08	01	01	01	9.1	1	-999.	-99.00	-999.0	99.0	-99.00	-99.00

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 F indicates top of profile (=1) or below (=0)
↑ *** AERMOD - VERSION  15181 ***   *** Inglewood Oil Field HRA                                                    ***
11/24/15
 *** AERMET - VERSION  14134 ***   *** Odor Analysis                                                              ***
07:52:09
                                                                                                                   PAGE
11
 **MODELOPTs:   RegDFAULT CONC      ELEV      URBAN

                                *** THE   1ST HIGHEST  1-HR AVERAGE CONCENTRATION   VALUES FOR SOURCE GROUP:  PAREA1   ***
                                    INCLUDING SOURCE(S):     PAREA1      ,

                                               *** DISCRETE CARTESIAN RECEPTOR POINTS ***

                                          ** CONC OF ODORS    IN MICROGRAMS/M**3                          **
```

X-COORD (M)	Y-COORD (M)	CONC	(YYMMDDHH)	X-COORD (M)	Y-COORD (M)	CONC	(YYMMDDHH)
371578.83	3763428.16	0.14172	(08100823)	371678.83	3763428.16	0.14639	(10092423)
371778.83	3763428.16	0.15054	(11100219)	371878.83	3763428.16	0.15541	(08100724)
371978.83	3763428.16	0.16021	(11050306)	372078.83	3763428.16	0.16670	(11101220)
373178.83	3763428.16	0.18865	(12100122)	373278.83	3763428.16	0.18551	(12101420)
373378.83	3763428.16	0.18289	(08041221)	373478.83	3763428.16	0.19565	(11101305)
373578.83	3763428.16	0.17417	(11101304)	371578.83	3763528.16	0.15136	(09011902)
371678.83	3763528.16	0.15631	(08100823)	371778.83	3763528.16	0.16138	(10092423)
371878.83	3763528.16	0.16636	(12102624)	371978.83	3763528.16	0.17162	(08092920)
372078.83	3763528.16	0.17886	(12091504)	373178.83	3763528.16	0.20611	(12101420)
373278.83	3763528.16	0.21799	(08051906)	373378.83	3763528.16	0.23140	(11101305)

373478.83	3763528.16	0.21750	(08051806)	373578.83	3763528.16	0.18791	(08110720)
371578.83	3763628.16	0.16332	(12100123)	371678.83	3763628.16	0.16789	(09011902)
371778.83	3763628.16	0.17335	(08100823)	371878.83	3763628.16	0.17952	(11100222)
371978.83	3763628.16	0.18690	(08100724)	372078.83	3763628.16	0.19496	(12091504)
373178.83	3763628.16	0.22861	(08041221)	373278.83	3763628.16	0.24703	(11101305)
373378.83	3763628.16	0.25399	(08110720)	373478.83	3763628.16	0.21275	(08100106)
373578.83	3763628.16	0.20348	(12100202)	371578.83	3763728.16	0.17572	(12082904)
371678.83	3763728.16	0.18495	(12100123)	371778.83	3763728.16	0.18778	(09011902)
371878.83	3763728.16	0.19510	(12110507)	371978.83	3763728.16	0.20218	(11100219)
372078.83	3763728.16	0.20994	(11050306)	373178.83	3763728.16	0.25393	(11050221)
373278.83	3763728.16	0.27564	(08110720)	373378.83	3763728.16	0.27214	(12100202)
373478.83	3763728.16	0.23335	(10121120)	373578.83	3763728.16	0.22316	(10092620)
371578.83	3763828.16	0.18958	(12102721)	371678.83	3763828.16	0.19862	(12082904)
371778.83	3763828.16	0.20694	(12100123)	371878.83	3763828.16	0.21265	(09011902)
371978.83	3763828.16	0.21961	(10092423)	372078.83	3763828.16	0.23128	(08100724)
373178.83	3763828.16	0.28678	(11101304)	373278.83	3763828.16	0.31146	(12100202)
373378.83	3763828.16	0.27110	(10092620)	373478.83	3763828.16	0.25617	(12091424)
373578.83	3763828.16	0.24551	(09101703)	371578.83	3763928.16	0.20669	(12091323)
371678.83	3763928.16	0.21834	(12030322)	371778.83	3763928.16	0.22908	(09121824)
371878.83	3763928.16	0.23842	(12100123)	373178.83	3763928.16	0.33001	(12100202)

373278.83	3763928.16	0.33351	(10092620)	373378.83	3763928.16	0.30864	(12091424)
373478.83	3763928.16	0.28848	(08111618)	373578.83	3763928.16	0.27154	(12082924)
371578.83	3764028.16	0.22538	(08100120)	371678.83	3764028.16	0.24025	(08082924)
371778.83	3764028.16	0.25667	(12101421)	371878.83	3764028.16	0.27303	(12102721)
373178.83	3764028.16	0.38982	(12091424)	373278.83	3764028.16	0.37590	(08111618)
373378.83	3764028.16	0.34968	(09112619)	373478.83	3764028.16	0.32531	(09101702)
373578.83	3764028.16	0.30284	(10110418)	371578.83	3764128.16	0.24548	(12100222)
371678.83	3764128.16	0.26828	(10092520)	371778.83	3764128.16	0.29150	(08100120)
371878.83	3764128.16	0.31725	(08082924)	373178.83	3764128.16	0.46533	(09112619)
373278.83	3764128.16	0.45460	(09101702)	373378.83	3764128.16	0.41335	(10110418)

↑ *** AERMOD - VERSION 15181 *** *** Inglewood Oil Field HRA *** 11/24/15
*** AERMET - VERSION 14134 *** *** Odor Analysis *** 07:52:09
PAGE 12
**MODELOPTs: RegDFAULT CONC ELEV URBAN

*** THE 1ST HIGHEST 1-HR AVERAGE CONCENTRATION VALUES FOR SOURCE GROUP: PAREA1 ***
INCLUDING SOURCE(S): PAREA1 ,

*** DISCRETE CARTESIAN RECEPTOR POINTS ***

** CONC OF ODORS IN MICROGRAMS/M**3 **

X-COORD (M)	Y-COORD (M)	CONC	(YYMMDDHH)	X-COORD (M)	Y-COORD (M)	CONC	(YYMMDDHH)
373478.83	3764128.16	0.36775	(09083006)	373578.83	3764128.16	0.33403	(08100803)

371578.83	3764228.16	0.26413	(08103022)	371678.83	3764228.16	0.29625	(08092923)
371778.83	3764228.16	0.33450	(08111501)	373178.83	3764228.16	0.59273	(10110418)
373278.83	3764228.16	0.54629	(08100803)	373378.83	3764228.16	0.46065	(08100203)
373478.83	3764228.16	0.41366	(09100121)	373578.83	3764228.16	0.35802	(11090806)
371578.83	3764328.16	0.28338	(12100223)	371678.83	3764328.16	0.32045	(12100223)
371778.83	3764328.16	0.36860	(09102623)	373178.83	3764328.16	0.83328	(08102806)
373278.83	3764328.16	0.63071	(08083003)	373378.83	3764328.16	0.52336	(09012922)
373478.83	3764328.16	0.44147	(10092820)	373578.83	3764328.16	0.50064	(10092820)
371578.83	3764428.16	0.29486	(12081104)	371678.83	3764428.16	0.33823	(12081104)
373178.83	3764428.16	0.85333	(08101504)	373278.83	3764428.16	0.66533	(08101504)
373378.83	3764428.16	0.53609	(12091523)	373478.83	3764428.16	0.44450	(12091523)
373578.83	3764428.16	0.50949	(11072803)	371578.83	3764528.16	0.29474	(12081802)
371678.83	3764528.16	0.34375	(12081802)	371778.83	3764528.16	0.40550	(12082024)
371878.83	3764528.16	0.49077	(12082024)	371978.83	3764528.16	0.62266	(12090906)
372878.83	3764528.16	0.61624	(12081806)	373178.83	3764528.16	0.71372	(12081022)
373278.83	3764528.16	0.60022	(11090620)	373378.83	3764528.16	0.49664	(09030120)
373478.83	3764528.16	0.52460	(12081123)	373578.83	3764528.16	0.42220	(12082902)
371578.83	3764628.16	0.28389	(12090604)	371678.83	3764628.16	0.33714	(12010405)
371778.83	3764628.16	0.38909	(12090804)	371878.83	3764628.16	0.46098	(12091605)
371978.83	3764628.16	0.56726	(11050223)	372078.83	3764628.16	0.71177	(08092603)

372178.83	3764628.16	0.94980	(09090123)	372578.83	3764628.16	0.65802	(12091303)
372678.83	3764628.16	0.54763	(12030423)	372778.83	3764628.16	0.46626	(09121818)
372878.83	3764628.16	0.42136	(09121818)	372978.83	3764628.16	0.40000	(08090501)
373078.83	3764628.16	0.44820	(12091420)	373178.83	3764628.16	0.48839	(08090501)
373278.83	3764628.16	0.47887	(12081806)	373378.83	3764628.16	0.49632	(09090121)
373478.83	3764628.16	0.44113	(10101501)	373578.83	3764628.16	0.35311	(11090620)
371578.83	3764728.16	0.27613	(12091605)	371678.83	3764728.16	0.31626	(11050223)
371778.83	3764728.16	0.35987	(10092923)	371878.83	3764728.16	0.41284	(09083124)
371978.83	3764728.16	0.52158	(10092622)	372078.83	3764728.16	0.59827	(08100122)
372178.83	3764728.16	0.68503	(10092521)	372378.83	3764728.16	0.68227	(11090621)
372478.83	3764728.16	0.44182	(10092621)	372578.83	3764728.16	0.54086	(12091420)
372678.83	3764728.16	0.43156	(11090622)	372778.83	3764728.16	0.37490	(08082122)
372878.83	3764728.16	0.33981	(12091303)	372978.83	3764728.16	0.32154	(08083105)
373078.83	3764728.16	0.31936	(08083105)	373178.83	3764728.16	0.35018	(08082122)
373278.83	3764728.16	0.37167	(10071705)	373378.83	3764728.16	0.35313	(10071901)
373478.83	3764728.16	0.36081	(10093004)	373578.83	3764728.16	0.36047	(09090121)
371578.83	3764828.16	0.26271	(10092923)	371678.83	3764828.16	0.28184	(09083124)
371778.83	3764828.16	0.32350	(10092622)	371878.83	3764828.16	0.36644	(08062024)
371978.83	3764828.16	0.44537	(11090803)	372078.83	3764828.16	0.50665	(10092521)

*** AERMOD - VERSION 15181 *** *** Inglewood Oil Field HRA ***
11/24/15

**MODELOPTs: RegDFAULT CONC ELEV URBAN

*** THE 1ST HIGHEST 1-HR AVERAGE CONCENTRATION VALUES FOR SOURCE GROUP: PAREA1 ***
INCLUDING SOURCE(S): PAREA1 ,

*** DISCRETE CARTESIAN RECEPTOR POINTS ***

** CONC OF ODORS IN MICROGRAMS/M**3 **

X-COORD (M)	Y-COORD (M)	CONC	(YYMMDDHH)	X-COORD (M)	Y-COORD (M)	CONC	(YYMMDDHH)
372178.83	3764828.16	0.53889	(11090624)	372278.83	3764828.16	0.54925	(08062101)
372378.83	3764828.16	0.41949	(09080322)	372478.83	3764828.16	0.37946	(11082601)
372578.83	3764828.16	0.44585	(10092621)	372678.83	3764828.16	0.37044	(10092623)
372778.83	3764828.16	0.32442	(09042023)	372878.83	3764828.16	0.29596	(11090622)
372978.83	3764828.16	0.27303	(08082122)	373078.83	3764828.16	0.26550	(08082122)
373178.83	3764828.16	0.27552	(08082122)	373278.83	3764828.16	0.30199	(08082122)
373378.83	3764828.16	0.31034	(09082402)	373478.83	3764828.16	0.28106	(10071901)
373578.83	3764828.16	0.26230	(12030423)	371578.83	3764928.16	0.24751	(10092622)
371678.83	3764928.16	0.26346	(09090123)	371778.83	3764928.16	0.28842	(11090722)
371878.83	3764928.16	0.31356	(09041922)	371978.83	3764928.16	0.36571	(10092420)
372078.83	3764928.16	0.38135	(09090323)	372178.83	3764928.16	0.41099	(10110319)
372278.83	3764928.16	0.42629	(09082921)	372378.83	3764928.16	0.41907	(09080322)

372478.83	3764928.16	0.34574	(08080423)	372578.83	3764928.16	0.37674	(12091022)
372678.83	3764928.16	0.31913	(09082903)	372778.83	3764928.16	0.27460	(10092623)
372878.83	3764928.16	0.24964	(12091420)	372978.83	3764928.16	0.23514	(09042023)
373078.83	3764928.16	0.23159	(11090622)	373178.83	3764928.16	0.23037	(11090622)
373278.83	3764928.16	0.25018	(11090622)	373378.83	3764928.16	0.24588	(08062004)
373478.83	3764928.16	0.23852	(09082402)	373578.83	3764928.16	0.22711	(09121818)
371578.83	3765028.16	0.22837	(08062024)	371678.83	3765028.16	0.24466	(08100122)
371778.83	3765028.16	0.25093	(11101320)	371878.83	3765028.16	0.27527	(10092420)
371978.83	3765028.16	0.28823	(12100119)	372078.83	3765028.16	0.32288	(10110219)
372178.83	3765028.16	0.34541	(11090720)	372278.83	3765028.16	0.35071	(09082921)
372378.83	3765028.16	0.36542	(10081724)	372478.83	3765028.16	0.34796	(12082821)
372578.83	3765028.16	0.30061	(11101206)	372678.83	3765028.16	0.26071	(12081322)
372778.83	3765028.16	0.22865	(11063022)	372878.83	3765028.16	0.21790	(10092623)
372978.83	3765028.16	0.20993	(12091420)	373078.83	3765028.16	0.20724	(12091420)
373178.83	3765028.16	0.20455	(09042023)	373278.83	3765028.16	0.20175	(11090622)
373378.83	3765028.16	0.20297	(11090701)	373478.83	3765028.16	0.19819	(08062004)
373578.83	3765028.16	0.19249	(08083105)	371578.83	3765128.16	0.21141	(11090803)
371678.83	3765128.16	0.22286	(11101320)	371778.83	3765128.16	0.23166	(10092420)
371878.83	3765128.16	0.23973	(12100119)	371978.83	3765128.16	0.25011	(10092706)
372078.83	3765128.16	0.25587	(10110319)	372178.83	3765128.16	0.27485	(09082922)

372278.83	3765128.16	0.28451	(12091006)	372378.83	3765128.16	0.28126	(08041321)
372478.83	3765128.16	0.26153	(09090124)	372578.83	3765128.16	0.23704	(12100102)
372678.83	3765128.16	0.21580	(11101322)	372778.83	3765128.16	0.20578	(12091022)
372878.83	3765128.16	0.19763	(11091824)	372978.83	3765128.16	0.19195	(10092621)
373078.83	3765128.16	0.18827	(10092623)	373178.83	3765128.16	0.18536	(12091420)
373278.83	3765128.16	0.18186	(09042023)	373378.83	3765128.16	0.17990	(11090622)
373478.83	3765128.16	0.17795	(11090701)	373578.83	3765128.16	0.17390	(08082122)
371578.83	3765228.16	0.19540	(11100119)	371678.83	3765228.16	0.20423	(10092420)

↑ *** AERMOD - VERSION 15181 *** *** Inglewood Oil Field HRA *** 11/24/15
*** AERMET - VERSION 14134 *** *** Odor Analysis *** 07:52:09
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**MODELOPTs: RegDFAULT CONC ELEV URBAN

*** THE 1ST HIGHEST 1-HR AVERAGE CONCENTRATION VALUES FOR SOURCE GROUP: PAREA1 ***
INCLUDING SOURCE(S): PAREA1 ,

*** DISCRETE CARTESIAN RECEPTOR POINTS ***

** CONC OF ODORS IN MICROGRAMS/M**3 **

X-COORD (M)	Y-COORD (M)	CONC	(YYMMDDHH)	X-COORD (M)	Y-COORD (M)	CONC	(YYMMDDHH)
371778.83	3765228.16	0.21052	(11082604)	371878.83	3765228.16	0.21335	(11082702)
371978.83	3765228.16	0.21651	(10110219)	372078.83	3765228.16	0.21903	(11090721)
372178.83	3765228.16	0.21872	(08062101)	372278.83	3765228.16	0.22148	(12091006)

372378.83	3765228.16	0.22215	(08041321)	372478.83	3765228.16	0.21431	(09080322)
372578.83	3765228.16	0.20088	(12082821)	372678.83	3765228.16	0.19182	(09072206)
372778.83	3765228.16	0.18669	(11082601)	372878.83	3765228.16	0.18216	(12091022)
372978.83	3765228.16	0.17571	(10092621)	373078.83	3765228.16	0.17322	(10092621)
373178.83	3765228.16	0.17050	(10092623)	373278.83	3765228.16	0.16708	(12091420)
373378.83	3765228.16	0.16600	(12091420)	373478.83	3765228.16	0.16355	(11090622)
373578.83	3765228.16	0.16078	(11090701)	371578.83	3765328.16	0.18105	(10092420)
371678.83	3765328.16	0.18694	(08080706)	371778.83	3765328.16	0.19264	(09090323)
371878.83	3765328.16	0.19636	(11090624)	371978.83	3765328.16	0.19798	(09082621)
372078.83	3765328.16	0.19631	(11090720)	372178.83	3765328.16	0.19335	(10101020)
372278.83	3765328.16	0.19023	(12080901)	372378.83	3765328.16	0.18686	(08041321)
372478.83	3765328.16	0.18176	(09080322)	372578.83	3765328.16	0.17959	(11090621)
372678.83	3765328.16	0.17483	(08080423)	372778.83	3765328.16	0.17099	(11101322)
372878.83	3765328.16	0.16716	(08091004)	372978.83	3765328.16	0.16307	(12091022)
373078.83	3765328.16	0.15966	(10092621)	373178.83	3765328.16	0.15829	(10092621)
373278.83	3765328.16	0.15579	(10092623)	373378.83	3765328.16	0.15378	(12091420)
373478.83	3765328.16	0.15266	(12091420)	373578.83	3765328.16	0.14955	(09042023)
371578.83	3765428.16	0.16715	(08080706)	371678.83	3765428.16	0.17291	(12090921)
371778.83	3765428.16	0.17659	(10092706)	371878.83	3765428.16	0.17999	(10110219)
371978.83	3765428.16	0.18117	(10110319)	372078.83	3765428.16	0.18081	(10081722)

372178.83	3765428.16	0.17943	(10101020)	372278.83	3765428.16	0.17616	(12080901)
372378.83	3765428.16	0.17501	(08041321)	372478.83	3765428.16	0.17034	(12082302)
372578.83	3765428.16	0.16647	(11090621)	372678.83	3765428.16	0.16059	(09091904)
372778.83	3765428.16	0.15749	(09072206)	372878.83	3765428.16	0.15609	(11082601)
372978.83	3765428.16	0.15223	(12081322)	373078.83	3765428.16	0.14968	(09082903)
373178.83	3765428.16	0.14717	(10092621)	373278.83	3765428.16	0.14575	(10092621)
373378.83	3765428.16	0.14447	(10092623)	373478.83	3765428.16	0.14212	(12091420)
373578.83	3765428.16	0.14062	(12091420)	372290.09	3764775.05	0.60893	(11090720)
372557.21	3764615.54	0.74463	(08083105)	372578.73	3764540.84	0.70104	(11090620)
372785.09	3764535.78	0.63832	(09121818)	372785.09	3764509.19	0.75143	(12030423)
372892.70	3764509.19	0.68590	(12081806)	372963.59	3764611.74	0.42292	(08090121)
373097.78	3764618.07	0.47876	(11090622)	373128.17	3764430.70	1.01028	(12100221)
373159.82	3764329.43	0.89759	(08102806)	372057.15	3764438.30	0.83642	(12092323)
372328.25	3764752.26	0.67855	(12091006)	372366.41	3764729.48	0.73377	(09090124)
372404.57	3764706.69	0.57761	(11082601)	372442.73	3764683.90	0.49554	(10092621)
372480.89	3764661.11	0.52899	(09042023)	372519.05	3764638.33	0.64836	(08082122)
372567.97	3764578.19	0.78711	(12030423)	372620.00	3764539.83	0.61132	(11090620)

**MODELOPTs: RegDFAULT CONC ELEV URBAN

*** THE 1ST HIGHEST 1-HR AVERAGE CONCENTRATION VALUES FOR SOURCE GROUP: PAREA1 ***
INCLUDING SOURCE(S): PAREA1 ,

*** DISCRETE CARTESIAN RECEPTOR POINTS ***

** CONC OF ODORS IN MICROGRAMS/M**3 **

X-COORD (M)	Y-COORD (M)	CONC	(YYMMDDHH)	X-COORD (M)	Y-COORD (M)	CONC	(YYMMDDHH)
372661.27	3764538.82	0.64991	(11090620)	372702.55	3764537.80	0.64285	(09090121)
372743.82	3764536.79	0.65854	(12091420)	372820.96	3764509.19	0.72321	(12030423)
372856.83	3764509.19	0.70183	(12081806)	372916.33	3764543.37	0.56631	(12030423)
372939.96	3764577.56	0.48095	(12030423)	373008.32	3764613.85	0.45274	(11090621)
373053.05	3764615.96	0.46309	(12091022)	373105.38	3764571.23	0.61711	(08090501)
373112.98	3764524.39	0.77912	(09090121)	373120.57	3764477.54	0.91893	(09030120)
373138.72	3764396.94	1.02494	(12091003)	373149.27	3764363.19	0.99568	(10092820)
372186.56	3764625.38	0.97387	(08062024)	372212.44	3764662.80	0.96147	(11101320)
372238.33	3764700.22	0.88786	(12100119)	372264.21	3764737.63	0.82427	(10110319)

*** AERMOD - VERSION 15181 *** *** Inglewood Oil Field HRA *** 11/24/15
*** AERMET - VERSION 14134 *** *** Odor Analysis *** 07:52:09
PAGE 16
**MODELOPTs: RegDFAULT CONC ELEV URBAN

*** THE SUMMARY OF HIGHEST 1-HR RESULTS ***

Psomas_IOF_Odor_Analysis

```
                                   ** CONC OF ODORS    IN MICROGRAMS/M**3                          **

                                                        DATE
 NETWORK
GROUP ID                          AVERAGE CONC     (YYMMDDHH)             RECEPTOR  (XR, YR, ZELEV, ZHILL, ZFLAG)    OF TYPE
 GRID-ID
- - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - -
- - - -

PAREA1   HIGH   1ST HIGH VALUE IS       1.02494  ON 12091003: AT (  373138.72,  3764396.94,    69.15,   151.80,    0.00)  DC



 *** RECEPTOR TYPES:  GC = GRIDCART
                      GP = GRIDPOLR
                      DC = DISCCART
                      DP = DISCPOLR
↑ *** AERMOD - VERSION  15181 ***   *** Inglewood Oil Field HRA                                            ***
11/24/15
 *** AERMET - VERSION  14134 ***   *** Odor Analysis                                                      ***
07:52:09
                                                                                                                   PAGE
17
 **MODELOPTs:   RegDFAULT CONC      ELEV      URBAN

 *** Message Summary : AERMOD Model Execution ***

  --------- Summary of Total Messages --------

 A Total of            0 Fatal Error Message(s)
 A Total of            0 Warning Message(s)
 A Total of         1558 Informational Message(s)

 A Total of        43848 Hours Were Processed

 A Total of          115 Calm Hours Identified

 A Total of         1443 Missing Hours Identified (  3.29 Percent)
```

```
******** FATAL ERROR MESSAGES ********
           ***  NONE  ***


********   WARNING MESSAGES   ********
           ***  NONE  ***


************************************
*** AERMOD Finishes Successfully ***
************************************
```

HARP2 - HRACalc (dated 15197) 11/25/2015 11:18:34 AM - Output Log

GLCs loaded successfully
Pollutants loaded successfully
Pathway receptors loaded successfully
****
Start Age: -0.25
Total Exposure Duration: 11

****
Exposure Duration Bin Distribution for Cancer
3rd Trimester Bin: 0.25
0<2 Years Bin: 2
2<9 Years Bin: 0
2<16 Years Bin: 9
16<30 Years Bin: 0
16 to 70 Years Bin: 0

****
Pathways Enabled
Inhalation: True
Soil: True
Dermal: True
Mother's Milk: True
Water: False
Fish: False
Homegrown Crops: False
Beef: False
Dairy: False
Pig: False
Chicken: False
Egg: False

Calculating cancer risk
Cancer risk breakdown by pollutant and receptor saved to: C:\HARP2\PSOMAS - INGLEWOOD OIL FIELD\hra\PsomasConstruction-chronic2CancerRisk.csv
Cancer risk total by receptor saved to: C:\HARP2\PSOMAS - INGLEWOOD OIL FIELD\hra\PsomasConstruction-chronic2CancerRiskSumByRec.csv
Calculating chronic risk
Chronic risk breakdown by pollutant and receptor saved to: C:\HARP2\PSOMAS - INGLEWOOD OIL

FIELD\hra\PsomasConstruction-chronic2NCChronicRisk.csv
Chronic risk total by receptor saved to: C:\HARP2\PSOMAS - INGLEWOOD OIL
FIELD\hra\PsomasConstruction-chronic2NCChronicRiskSumByRec.csv
Calculating acute risk
Acute risk breakdown by pollutant and receptor saved to: C:\HARP2\PSOMAS - INGLEWOOD OIL
FIELD\hra\PsomasConstruction-chronic2NCAcuteRisk.csv
Acute risk total by receptor saved to: C:\HARP2\PSOMAS - INGLEWOOD OIL
FIELD\hra\PsomasConstruction-chronic2NCAcuteRiskSumByRec.csv
HRA ran successfully

HARP2 - HRACalc (dated 15197) 11/24/2015 11:26:22 AM - Output Log

GLCs loaded successfully
Pollutants loaded successfully
Pathway receptors loaded successfully
****
Start Age: -0.25
Total Exposure Duration: 11

****
Exposure Duration Bin Distribution for Cancer
3rd Trimester Bin: 0.25
0<2 Years Bin: 2
2<9 Years Bin: 0
2<16 Years Bin: 9
16<30 Years Bin: 0
16 to 70 Years Bin: 0

****
Pathways Enabled
Inhalation: True
Soil: False
Dermal: False
Mother's Milk: False
Water: False
Fish: False
Homegrown Crops: False
Beef: False
Dairy: False
Pig: False
Chicken: False
Egg: False

Calculating cancer risk
Cancer risk breakdown by pollutant and receptor saved to: C:\HARP2\PSOMAS - INGLEWOOD OIL FIELD\hra\PsomasConstruction-cancerburdenCancerRisk.csv
Cancer risk total by receptor saved to: C:\HARP2\PSOMAS - INGLEWOOD OIL FIELD\hra\PsomasConstruction-cancerburdenCancerRiskSumByRec.csv
HRA ran successfully

HARP2 - HRACalc (dated 15197) 11/25/2015 11:21:14 AM - Output Log

GLCs loaded successfully
Pollutants loaded successfully
Pathway receptors loaded successfully
****
Start Age: -0.25
Total Exposure Duration: 11

****
Exposure Duration Bin Distribution for Cancer
3rd Trimester Bin: 0.25
0<2 Years Bin: 2
2<9 Years Bin: 0
2<16 Years Bin: 9
16<30 Years Bin: 0
16 to 70 Years Bin: 0

****
Pathways Enabled
Inhalation: True
Soil: False
Dermal: False
Mother's Milk: False
Water: False
Fish: False
Homegrown Crops: False
Beef: False
Dairy: False
Pig: False
Chicken: False
Egg: False

Calculating chronic 8hr risk
Chronic 8-hr risk breakdown by pollutant and receptor saved to: C:\HARP2\PSOMAS - INGLEWOOD OIL FIELD\hra\PsomasConstruction-8hrchronicNCChronic8HrRisk.csv
Chronic 8-hr risk total by receptor saved to: C:\HARP2\PSOMAS - INGLEWOOD OIL FIELD\hra\PsomasConstruction-8hrchronicNCChronic8HrRiskSumByRec.csv
HRA ran successfully

HARP2 - HRACalc (dated 15197) 11/25/2015 10:56:34 AM - Output Log

GLCs loaded successfully
Pollutants loaded successfully
Pathway receptors loaded successfully
****
Start Age: -0.25
Total Exposure Duration: 11

****
Exposure Duration Bin Distribution for Cancer
3rd Trimester Bin: 0.25
0<2 Years Bin: 2
2<9 Years Bin: 0
2<16 Years Bin: 9
16<30 Years Bin: 0
16 to 70 Years Bin: 0

****
Pathways Enabled
Inhalation: True
Soil: False
Dermal: False
Mother's Milk: False
Water: False
Fish: False
Homegrown Crops: False
Beef: False
Dairy: False
Pig: False
Chicken: False
Egg: False

Calculating acute risk
Acute risk breakdown by pollutant and receptor saved to: C:\HARP2\PSOMAS - INGLEWOOD OIL FIELD\hra\PsomasConstruction-acute2NCAcuteRisk.csv
Acute risk total by receptor saved to: C:\HARP2\PSOMAS - INGLEWOOD OIL FIELD\hra\PsomasConstruction-acute2NCAcuteRiskSumByRec.csv
HRA ran successfully

HARP2 - HRACalc (dated 15197) 11/25/2015 11:11:54 AM - Output Log

GLCs loaded successfully
Pollutants loaded successfully
Pathway receptors loaded successfully
****
Start Age: 16
Total Exposure Duration: 11

****
Exposure Duration Bin Distribution for Cancer
3rd Trimester Bin: 0
0<2 Years Bin: 0
2<9 Years Bin: 0
2<16 Years Bin: 0
16<30 Years Bin: 11
16 to 70 Years Bin: 0

****
Pathways Enabled
Inhalation: True
Soil: True
Dermal: True
Mother's Milk: True
Water: False
Fish: False
Homegrown Crops: False
Beef: False
Dairy: False
Pig: False
Chicken: False
Egg: False

Calculating cancer risk
Cancer risk breakdown by pollutant and receptor saved to: C:\HARP2\PSOMAS - INGLEWOOD OIL FIELD\hra\PsomasConstruction-worker2CancerRisk.csv
Cancer risk total by receptor saved to: C:\HARP2\PSOMAS - INGLEWOOD OIL FIELD\hra\PsomasConstruction-worker2CancerRiskSumByRec.csv
Calculating chronic risk
Chronic risk breakdown by pollutant and receptor saved to: C:\HARP2\PSOMAS - INGLEWOOD OIL

FIELD\hra\PsomasConstruction-worker2NCChronicRisk.csv
Chronic risk total by receptor saved to: C:\HARP2\PSOMAS - INGLEWOOD OIL
FIELD\hra\PsomasConstruction-worker2NCChronicRiskSumByRec.csv
Calculating acute risk
Acute risk breakdown by pollutant and receptor saved to: C:\HARP2\PSOMAS - INGLEWOOD OIL
FIELD\hra\PsomasConstruction-worker2NCAcuteRisk.csv
Acute risk total by receptor saved to: C:\HARP2\PSOMAS - INGLEWOOD OIL
FIELD\hra\PsomasConstruction-worker2NCAcuteRiskSumByRec.csv
HRA ran successfully

```
HARP2 - HRACalc (dated 15197) 11/23/2015 3:32:11 PM - Output Log

GLCs loaded successfully
Pollutants loaded successfully
Pathway receptors loaded successfully
**********************************
Start Age: -0.25
Total Exposure Duration: 30

**********************************
Exposure Duration Bin Distribution for Cancer
3rd Trimester Bin: 0.25
0<2 Years Bin: 2
2<9 Years Bin: 0
2<16 Years Bin: 14
16<30 Years Bin: 14
16 to 70 Years Bin: 0

**********************************
Pathways Enabled
Inhalation: True
Soil: False
Dermal: False
Mother's Milk: False
Water: False
Fish: False
Homegrown Crops: False
Beef: False
Dairy: False
Pig: False
Chicken: False
Egg: False

Calculating cancer risk
Cancer risk breakdown by pollutant and receptor saved to: C:\HARP2\PSOMAS - INGLEWOOD OIL
FIELD\hra\PsomasOperation-chronicCancerRisk.csv
Cancer risk total by receptor saved to: C:\HARP2\PSOMAS - INGLEWOOD OIL
FIELD\hra\PsomasOperation-chronicCancerRiskSumByRec.csv
Calculating chronic risk
Chronic risk breakdown by pollutant and receptor saved to: C:\HARP2\PSOMAS - INGLEWOOD OIL
```

FIELD\hra\PsomasOperation-chronicNCChronicRisk.csv
Chronic risk total by receptor saved to: C:\HARP2\PSOMAS - INGLEWOOD OIL
FIELD\hra\PsomasOperation-chronicNCChronicRiskSumByRec.csv
Calculating acute risk
Acute risk breakdown by pollutant and receptor saved to: C:\HARP2\PSOMAS - INGLEWOOD OIL
FIELD\hra\PsomasOperation-chronicNCAcuteRisk.csv
Acute risk total by receptor saved to: C:\HARP2\PSOMAS - INGLEWOOD OIL
FIELD\hra\PsomasOperation-chronicNCAcuteRiskSumByRec.csv
HRA ran successfully

HARP2 - HRACalc (dated 15197) 11/25/2015 11:22:42 AM - Output Log

GLCs loaded successfully
Pollutants loaded successfully
Pathway receptors loaded successfully
****
Start Age: -0.25
Total Exposure Duration: 11

****
Exposure Duration Bin Distribution for Cancer
3rd Trimester Bin: 0.25
0<2 Years Bin: 2
2<9 Years Bin: 0
2<16 Years Bin: 9
16<30 Years Bin: 0
16 to 70 Years Bin: 0

****
Pathways Enabled
Inhalation: True
Soil: False
Dermal: False
Mother's Milk: False
Water: False
Fish: False
Homegrown Crops: False
Beef: False
Dairy: False
Pig: False
Chicken: False
Egg: False

Calculating chronic 8hr risk
Chronic 8-hr risk breakdown by pollutant and receptor saved to: C:\HARP2\PSOMAS - INGLEWOOD OIL FIELD\hra\PsomasOperational-8hrchronicNCChronic8HrRisk.csv
Chronic 8-hr risk total by receptor saved to: C:\HARP2\PSOMAS - INGLEWOOD OIL FIELD\hra\PsomasOperational-8hrchronicNCChronic8HrRiskSumByRec.csv
HRA ran successfully

HARP2 - HRACalc (dated 15197) 11/23/2015 3:35:50 PM - Output Log

GLCs loaded successfully
Pollutants loaded successfully
Pathway receptors loaded successfully
****
Start Age: -0.25
Total Exposure Duration: 30

****
Exposure Duration Bin Distribution for Cancer
3rd Trimester Bin: 0.25
0<2 Years Bin: 2
2<9 Years Bin: 0
2<16 Years Bin: 14
16<30 Years Bin: 14
16 to 70 Years Bin: 0

****
Pathways Enabled
Inhalation: True
Soil: False
Dermal: False
Mother's Milk: False
Water: False
Fish: False
Homegrown Crops: False
Beef: False
Dairy: False
Pig: False
Chicken: False
Egg: False

Calculating acute risk
Acute risk breakdown by pollutant and receptor saved to: C:\HARP2\PSOMAS - INGLEWOOD OIL FIELD\hra\PsomasOperation-acuteNCAcuteRisk.csv
Acute risk total by receptor saved to: C:\HARP2\PSOMAS - INGLEWOOD OIL FIELD\hra\PsomasOperation-acuteNCAcuteRiskSumByRec.csv
HRA ran successfully

HARP2 - HRACalc (dated 15197) 11/24/2015 1:45:55 PM - Output Log

GLCs loaded successfully
Pollutants loaded successfully
Pathway receptors loaded successfully
****
Start Age: 16
Total Exposure Duration: 25

****
Exposure Duration Bin Distribution for Cancer
3rd Trimester Bin: 0
0<2 Years Bin: 0
2<9 Years Bin: 0
2<16 Years Bin: 0
16<30 Years Bin: 0
16 to 70 Years Bin: 25

****
Pathways Enabled
Inhalation: True
Soil: True
Dermal: True
Mother's Milk: False
Water: False
Fish: False
Homegrown Crops: False
Beef: False
Dairy: False
Pig: False
Chicken: False
Egg: False

Calculating cancer risk
Cancer risk breakdown by pollutant and receptor saved to: C:\HARP2\PSOMAS - INGLEWOOD OIL FIELD\hra\PsomasOperational-workerCancerRisk.csv
Cancer risk total by receptor saved to: C:\HARP2\PSOMAS - INGLEWOOD OIL FIELD\hra\PsomasOperational-workerCancerRiskSumByRec.csv
Calculating chronic risk
Chronic risk breakdown by pollutant and receptor saved to: C:\HARP2\PSOMAS - INGLEWOOD OIL

FIELD\hra\PsomasOperational-workerNCChronicRisk.csv
Chronic risk total by receptor saved to: C:\HARP2\PSOMAS - INGLEWOOD OIL
FIELD\hra\PsomasOperational-workerNCChronicRiskSumByRec.csv
Calculating acute risk
Acute risk breakdown by pollutant and receptor saved to: C:\HARP2\PSOMAS - INGLEWOOD OIL
FIELD\hra\PsomasOperational-workerNCAcuteRisk.csv
Acute risk total by receptor saved to: C:\HARP2\PSOMAS - INGLEWOOD OIL
FIELD\hra\PsomasOperational-workerNCAcuteRiskSumByRec.csv
HRA ran successfully